Skintastic Aesthetic Lasers Ltd
Advanced Aesthetic Training Academy

MED-870+ FOCXEL
Fractional CO_2 Laser
CPD Course

Clinical Training Manual and Workbook



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This manual belongs to

Student name: _____

Training dates: _____

Trainer: _____

Certificate no: _____

16 CPD credits • CPD Group activity 1017976

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Skintastic Aesthetic Lasers Ltd

Advanced Aesthetic Training Academy

Fractional CO_2 Laser CPD Course

Clinical Training Manual and Workbook, taught on the MED-870+ FOCXEL

16 hours, blended: online study and one practical half day. 16 CPD credits.

Edition 1, October 2026.

Student registration

Full name: _____

Practical date: _____

Trainer: _____

Email: _____

Core of Knowledge held: _____

Insurance provider: _____

APPROVED PROVIDER #777800

26 The Avenue, Southampton, SO17 1XL

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Welcome to your training

Welcome, and congratulations on taking this step in your laser career. Fractional CO_2 is one of the most powerful tools in aesthetic laser practice. Used well, it can help with skin texture, fine lines, scars and sun damage. Used carelessly, it can burn, mark and scar. This course is about using it well.

This manual has been written for **first-time CO_2 users**. We assume you already hold a laser safety qualification and a laser and light qualification, but we do not assume you have ever used a CO_2 laser before. Every technical word is explained the first time it appears. Every practical task is broken down into numbered steps.

Please keep this manual. It is designed to be a working reference in your clinic long after the course has finished, with the settings tables, step-by-step guides and client forms you will use every day.

Key fact: a general course, taught on one machine

This is a **general fractional CO_2 laser course**. The science, safety, skin assessment, consultation, technique and aftercare apply to any fractional CO_2 laser.

The practical training is taught on one machine: the **MED-870+ FOCXEL Fractional CO_2 Laser Therapy System**. Anything that is specific to that machine (its parts, tips, screen and settings) is shown in a light blue box headed "On your teaching device: the MED-870+".

Every CO_2 laser is different. In your own clinic, always follow the manufacturer's manual for the machine you are using.

Caution: a note on safety and best practice

A CO_2 laser is a Class 4 medical laser. It can injure the eyes, burn the skin and start a fire. Completing this course does not on its own make you competent to treat every client. Build your experience slowly, start with conservative settings, work within your Local Rules and insurance, and refer anything outside your scope to a medical practitioner.

Where the guidance in this manual comes from

The content draws on the manufacturer's documents for the MED-870+, published UK guidance, the advice of our Laser Protection Adviser (LPA) and peer-reviewed clinical studies (listed in Section 9 and the References). It also draws on many years of clinical teaching experience. Manufacturer settings are given as reference starting points only. They are never a substitute for clinical judgement, patch testing and careful observation of the skin.

How to use this manual

The manual follows the order in which you will learn. We start with what a CO_2 laser is and how it works on the skin. We then cover the skin, your teaching device and laser safety, before moving on to who is suitable, the exact settings, and the step-by-step treatment. We finish with sessions and evidence, aftercare, the law (Section 11 and Appendix A), the assessment, your model sets and your client forms.

Throughout the manual you will see coloured boxes. Each one has a different job, and each carries a heading that says what it is, so nothing depends on colour alone:

Learning outcomes

These appear at the start of each section. They tell you what you should be able to do by the end of it.

Key fact

Something important you need to remember.

Caution

A safety point. Read these carefully every time.

▣ On your teaching device: the MED-870+

Information that applies to the MED-870+ only. Other CO_2 lasers may work differently.

> **Activity**
>
> A question or task for you to complete in the space provided. Your trainer may go through these with you.

Before your training

- Bring your Core of Knowledge laser safety certificate and your laser and light qualification certificate.
- Complete the Student registration form and the additional needs form at the end of this front section.
- The majority of this course is taken online. Study Sections 1 to 11 and Appendix A on the Skintastic online academy (skintasticaestheticsonlineacademy.com), using this manual as your workbook, and answer the Knowledge review, Parts 1 and 2, in this workbook before your practical day. Bring it with you: your trainer marks your written work on the practical day.
- Wear practical, comfortable clothing with no loose jewellery. Remove rings and watches before practical work.

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Your course at a glance

Course	Fractional CO_2 Laser CPD Course
Training provider	Skintastic Aesthetic Lasers Ltd. Trainer: Carla Cooper-Gale
Teaching device	MED-870+ FOCXEL Fractional CO_2 Laser Therapy System, using both the fractional scanning head and the UltraPulse surgical head
Accreditation	16 CPD credits, accredited by The CPD Group (activity reference 1017976)
Total hours	16 hours, blended: 12 hours 15 minutes of online study with this workbook, and 3 hours 45 minutes of guided practical learning on one half day. Breaks are not counted.
Practical half day	09:30 to 13:30 at Skintastic, 26 The Avenue, Southampton, SO17 1XL
Online study	The majority of the course is taken online, on the Skintastic online academy (skintasticaestheticsonlineacademy.com). This manual is your workbook and is sent to you before the course. Bring it with you on the practical day.
Entry requirements	An up-to-date accredited Core of Knowledge laser safety certificate, plus a Level 5 or Level 6 (or higher) laser and light qualification (see Entry requirements)
Written assessment	Knowledge review Parts 1 and 2, completed in this workbook during your online study and marked by your trainer on the practical day. Multiple-choice pass mark 100%: your trainer goes through any wrong answer with you.
Practical assessment	Three supervised treatments on three models: fractional skin rejuvenation, benign lesion removal with the UltraPulse head, and fractional treatment of scarring or skin texture. Skintastic provides all three models. Each model is patch tested and treated on the same day and signs a model disclaimer.
On completion	Certificate, issued on the practical day once your marked written work and all three practical assessments are passed; and a CPD reflective record for your portfolio

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What you will be able to do

These are the learning outcomes for the course as a whole. Each section has its own, more detailed, learning outcomes at its start, and the assessment section maps every one of them to the questions and checklists that assess it.

No.	By the end of this course you will be able to	Sections	How it is assessed
1	Explain what a fractional CO_2 laser is, what it can and cannot treat, and how it works on the skin.	1, 2	Knowledge review Parts 1 and 2
2	Describe the structure of the skin, how it heals after laser treatment, and how skin type affects risk.	3	Knowledge review Part 1
3	Identify the parts of the MED-870+, and explain what each head and spacer does.	4	Knowledge review Parts 1 and 2; practical checklists
4	Set up and run a Laser Controlled Area safely, including eye protection, fire safety and smoke evacuation.	5	Knowledge review Parts 1 and 2; practical checklists
5	Carry out a full consultation, identify contraindications and obtain informed consent.	6	Knowledge review; practical checklists; model sets 1 to 3
6	Choose, test and record treatment settings, including thermal card tests and patch tests.	7	Knowledge review; practical checklists; model treatment records
7	Carry out fractional skin rejuvenation and scar treatments, and benign lesion removal with the UltraPulse head, following step-by-step protocols.	8, Quick guide	Practical assessments 1, 2 and 3

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No.	By the end of this course you will be able to	Sections	How it is assessed
8	Plan sessions and intervals, and explain what the clinical evidence does and does not show.	9	Knowledge review Parts 1 and 2
9	Give clear aftercare advice and recognise and manage side effects and complications.	10	Knowledge review; aftercare given to each model (observed)
10	Work within UK law and professional standards, and keep accurate records.	11, Appendix A	Knowledge review; Appendix A questions; model sets

Caution: not included in this course

The MED-870+ also has Gynae and Vulva modes. Intimate and gynaecological treatments are not covered by this course and must not be carried out on the basis of this training. Treatment around the eyes is not covered either.

This is a CPD Course. It does not carry a qualification level.

The Fractional CO_2 Laser CPD Course is CPD. It is not a Level 4, 5 or 6 qualification. Where Skintastic delivers regulated qualifications, those are Focus Awards Level 4 and Level 5, named as such and quality assured externally.

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Your course programme

A blended course of 16 hours. The majority of the course is taken online: you study the theory on the Skintastic online academy (skintasticaestheticsonlineacademy.com), using this manual as your workbook. You then attend one practical half day at 26 The Avenue, 09:30 to 13:30. Breaks are not counted.

Time	Session	Duration	Element
Before	Online study: Sections 1 to 11 and Appendix A, using this workbook, and the Knowledge review, Parts 1 and 2, completed in this workbook	735 min	Theory

Online study, before the practical day

Time	Session	Duration	Element
09:30	Welcome and housekeeping; hand in your workbook for marking	15 min	Theory
09:45	Trainer demonstration: machine set-up and checks (Section 4), thermal card test and patch test (Section 7), fractional treatment and UltraPulse lesion removal	20 min	Practical
10:05	Model 1: patch test, then fractional skin rejuvenation (practical assessment 1)	50 min	Practical
10:55	Break	15 min	
11:10	Model 2: patch test, then UltraPulse benign lesion removal (practical assessment 2)	45 min	Practical
11:55	Model 3: patch test, then fractional treatment of scarring or texture (practical assessment 3)	50 min	Practical
12:45	Debrief: marked workbook returned, checklists and model records countersigned, learner feedback, CPD reflective record and close	45 min	Practical
13:30	Finish		

The practical half day: practical training and assessment

Timings are a guide and may be adjusted, for example to fit the models' appointment times. You may take an extra break whenever you need one.

How the 16 hours add up

Element	Time	Assessed by
Online study with this workbook, before the practical day: Sections 1 to 11, Appendix A and the Knowledge review	12 hours 15 minutes	Knowledge review Parts 1 and 2, marked on the practical day
Practical half day, 09:30 to 13:30 less a 15 minute break: welcome, demonstration, three models, debrief and close	3 hours 45 minutes	Practical assessments 1 to 3; model sets 1 to 3
Total	**16 hours**	**16 CPD credits**

> **You are observed three times, not once**
>
> Each of your three models is a separate practical assessment, recorded on its own checklist, with its own full model set. One good treatment does not show that you can repeat it safely.

About your trainer: Carla Cooper-Gale

Founder and Managing Director, Skintastic Aesthetic Lasers Ltd and Skintastic Aesthetic Supplies Ltd. Level 5 Diploma in Education and Training (DET) qualified teacher.

Carla brings nearly two decades in health and aesthetics, over a decade working with lasers, and a decade teaching. She founded Skintastic in Southampton in 2011; before that she worked in health and social care (Craegmoor Healthcare, 2006 to 2011). She writes and teaches 22 CPD-accredited courses, accredited by The CPD Group, and delivers Ofqual-regulated Focus Awards qualifications.



Carla Cooper-Gale, founder and lead trainer, in the Skintastic clinic. © Carla Cooper-Gale, Skintastic Aesthetic Lasers Ltd.

> **For this course:** the most relevant of these are CO2 fractional laser training (Hydurage) and her registration as UK Responsible Person for the Kes MED-870+ FOCXEL fractional CO2 laser.

Teaching and quality assurance (Ofqual regulated, Focus Awards)

- Level 5 Diploma in Education and Training (DET)
- Level 4 Internal Quality Assurance of Assessment (IQA)
- Level 3 Certificate in Assessing Vocational Achievement (Assessor)
- Level 3 Award in Education and Training

Laser, light and energy-based qualifications (Ofqual regulated)

- Focus Awards Level 5 Diploma in Laser Tattoo Removal
- VTCT Level 4 Certificate in Laser and IPL Treatments (2023)
- ITEC Level 4 Award in Core of Knowledge for Laser and Light Devices (2024)
- ITEC Level 4 Radio Frequency
- ProQual Level 4 Ultrasound Cavitation Treatments
- Focus Awards Level 4 Award in Facial Anatomy and Physiology

Also: Edexcel BTEC Level 3 National Diploma in Health and Social Care (2009).

Specialist operator training (CPD and awarding body certificates)

- Aesthetic Laser and IPL Core of Knowledge (Intermed Clinical, 2013; OCN Level 4, 2020)
- Laser tattoo removal and carbon face peel operator training (Intermed Clinical, 2014 and 2015)
- OCN Level 5 Laser Tattoo Removal (2018 and 2021)
- OCN Level 5 Q-switched Nd:YAG Laser Nail Fungal (2018)
- OCN Level 4 Laser, IPL and Nd:YAG (2021)
- IPL, radiofrequency, E-Light and SHR operator training (Intermed Clinical, 2015; Coolcontours, 2015)
- Laser lipolysis operator training (Intermed Clinical, 2015)
- Ultrasound cavitation lipolysis (CIBTAC, Intermed Clinical, 2021)
- CO2 fractional laser, cold plasma and endolifting fibre laser (Hydurage)
- HIFU in Aesthetic Practice (Skinovation, 2026)
- Cryotherapy fat freeze (Fox Tox Training Academy, 2022)
- HI-EMT high intensity electromagnetic technology (B&E, 2022)
- Laser hair removal (One Education, 2023)
- LED light therapy (2020)

Injectables and vitamins (CPD)

- Foundation botulinum toxin and dermal filler (Derma Pro Training, 2020)
- Injectable fat dissolve (Bellate, 2020)
- Vitamin B12, biotin (B7), C and D injections (Bellate)
- Complications and medical emergencies for injectables (Dr Radford Aesthetics, 2021)

First aid

- Qualifi Level 3 Emergency First Aid at Work
- Qualifi Level 3 Basic Life Support and Anaphylaxis

Memberships and registrations

- Full Member of the British Medical Laser Association (BMLA), 2026 to 2027
- UK Responsible Person registered with the MHRA for the Kes MED-870+ FOCXEL fractional CO2 laser and the AL1 Q-switched Nd:YAG (supplied by Skintastic Aesthetic Supplies Ltd). **Registration is not approval: no device is "MHRA approved".**
- The CPD Group accredited training provider
- Focus Awards approved centre, delivering Ofqual-regulated qualifications
- Skintastic is registered with the FCA for equipment finance

Your responsibilities as a practitioner

When you use a CO_2 laser, you take on real responsibility for your clients' safety. As a minimum you must:

- work only within your training, competence, insurance and the law in your part of the UK;
- work under Local Rules written by your Laser Protection Adviser (LPA), with a named Laser Protection Supervisor (LPS);
- carry out a full consultation, obtain informed consent and keep accurate records for every client;
- never treat a lesion or mole that has not been confirmed as benign by a doctor;
- refer clients who need prescription medicines, diagnosis or medical care to their GP or a suitable prescriber;
- never promise or guarantee a result.

Entry requirements

A fractional CO_2 laser is a Class 4 ablative laser. This course builds on laser safety and laser and light knowledge you already hold. The requirements below exist for safety reasons.

Requirement	Status	Why
An up-to-date accredited Core of Knowledge laser safety certificate	Essential	Laser safety, the Local Rules and the Laser Controlled Area are assumed knowledge. Section 5 applies them to CO_2.
A Level 5 or Level 6 (or higher) laser and light qualification	Essential	This is an advanced course. It assumes you already understand laser-tissue interaction, skin typing and consultation.
Insurance that covers fractional CO_2 treatment	Essential before you treat clients	Check with your insurer before you book (Section 11).
Three training models	Provided by Skintastic	Skintastic provides all three models, including the model with a benign lesion confirmed as harmless by a doctor. Each treatment is supervised and has a full model set.

Recognition of Prior Learning

We accept Recognition of Prior Learning (RPL) against the laser and light qualification entry requirement. If you hold a qualification, or have documented experience, that you believe covers it, send the evidence to us before you book and we will map it against the requirement.

What we will accept as evidence:

- a certificate from a recognised awarding organisation, with the units or learning outcomes listed;
- a CPD certificate with stated learning outcomes and hours;
- an overseas qualification, with a translation and, where needed, a UK ENIC statement of comparability;
- documented workplace experience, supported by a reference from an employer or a supervising practitioner.

We will confirm in writing what has been accepted. RPL is not accepted in place of a current Core of Knowledge certificate.

RPL is never granted for the practical element. Every learner completes all three supervised treatments on three models and is observed each time. RPL is not used in place of the written assessment either.

How the course is delivered

The course mixes several methods, so that you see, hear, discuss and do each part of the treatment.

Method	Where it is used	What it is for
Online study with this workbook	Sections 1 to 11, Appendix A	The majority of the course. The underpinning knowledge, studied on the Skintastic online academy (skintasticaestheticsonlineacademy.com) before the practical day, with the written assessment answered in this workbook.
Diagrams and photographs	Throughout	Most pages carry a picture, because what happens in the skin is easier to see than to read.
Hands-on time with the machine	Sections 4 and 7	A short part of the practical day: the heads, spacers, screen, thermal card test and checks, shown in the demonstration before the first model.
Activities	Every section	You answer in your own words as you study, and can go through them with your trainer.
Trainer demonstrations	Practical day	Machine set-up, a thermal card test and patch test, and how a fractional treatment and an UltraPulse lesion removal are carried out, talked through step by step.
Supervised practice on three models	Sections 6 to 8 and 10	Consultation, forms, patch test, treatment and aftercare, observed and recorded on the practical checklists.
Written assessment	Knowledge review	Completed in this workbook during your online study and marked by your trainer on the practical day.

Accessibility and additional support

We want everyone who books this course to be able to take part fully. Under the Equality Act 2010 we make reasonable adjustments, and we would far rather know what you need before the course than find out on the day.

Tell us, and we will sort it

Use the additional needs and reasonable adjustments form at the end of this front section. You do not have to give a diagnosis, or any detail you would rather not share. Tell us what would help. You can also ring 02381 946394 or email info@skintasticaesthetics.com at any point before the course, or tell your trainer on the day.

What we have already done

Need	What is built in as standard
Visual impairment and low vision	This manual follows RNIB Clear Print guidance: a plain sans-serif typeface, body text at least 12 point, generous line spacing, strong contrast, text aligned to the left, no italics and no text over pictures. Every picture has a written caption and a text description for screen readers. Large-print copies of this manual and of every client form are available on request; the skin typing and medical history forms are printed in their standard one-page layout. A digital (PDF) copy can be provided so you can enlarge the text or use screen-reader software.
Colour vision deficiency	No information is carried by colour alone. Every coloured box carries a heading, and every diagram is labelled in words.
Dyslexia and processing differences	Short paragraphs, plain English, and technical terms explained where they first appear. Coloured paper or overlays are available on request. The manual is yours to keep and annotate.
Hearing impairment	All key content is in this manual as well as spoken. Tell us if you lip-read and we will make sure you can see the trainer.
Assessment support	The written work is done during your online study, in your own time. Extra time, a reader, or giving your answers verbally can be arranged. Ask in advance.
Practical training	Practical sessions are taught in small groups, with demonstrations repeated as often as you need.
Concentration and fatigue	Regular short breaks, and a quiet space if you need one.

Physical access to our training venue

Please tell us before you book if you need step-free access, parking close to the door, or any other adjustment, and we will confirm in writing what we can arrange.

Student registration form

Please complete this form before the course begins and hand it to your trainer.

Full name (as it should appear on your certificate): _____

Clinic or business name: _____

Address: _____

Postcode: _____ **Telephone:** _____

Email: _____

Insurance provider: _____

Certificate seen by your trainer	Held	Awarding body and date
Core of Knowledge laser safety (in date)	☐ Yes ☐ No	
Laser and light qualification (Level 5, 6 or higher)	☐ Yes ☐ No	
Insurance covering fractional CO_2	☐ Yes ☐ No	

Which lasers or light devices have you used before, and for what treatments?

Your declaration

I confirm that the information on this form is true and complete, and that the qualifications I have listed are my own.

Signature: _____ **Date:** _____

Office use: certificates seen, RPL accepted (if any), enrolment confirmed by and date:

Additional needs and reasonable adjustments

Please tell us about anything that may affect your learning or safety on the practical day, so we can support you and make reasonable adjustments. This is confidential and is used only to support you. Sharing it will never affect your place on the course. If you would prefer to discuss anything privately, speak to your trainer before the course, or ring 02381 946394.

Name: _____

Please tell us about any of the following

- ☐ A disability or long-term health condition
- ☐ A specific learning difficulty such as dyslexia, dyscalculia or ADHD
- ☐ A visual or hearing impairment
- ☐ A medical condition relevant to the practical day (for example epilepsy, diabetes, pregnancy, reduced mobility)
- ☐ A need for large print, extra time, a quiet space, or a support person
- ☐ English is an additional language and you would like extra support
- ☐ Nothing to declare

If you ticked any of the above, please give a little more detail so we can help:

Is there anything we should be aware of in case of an emergency on the practical day?

Signature: _____ **Date:** _____

Trainer use

Adjustments agreed: _____

Trainer signature: _____ **Date:** _____

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An A to Z of the topics covered in this manual, with the page on which each is explained. Page numbers refer to the printed page shown at the foot of each page.

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Section 1 What a CO_2 laser is and what it does

Learning outcomes

By the end of this section you will be able to:

- explain in plain words what a laser is
- describe what a CO_2 laser is, including its wavelength of 10,600 nm
- outline the history of the CO_2 laser, from 1964 to modern fractional treatment
- explain the difference between ablative and non-ablative lasers
- list what fractional CO_2 is designed to help with, and what it cannot or should not treat
- compare fractional CO_2 with other common skin lasers and light devices
- describe the MED-870+ as the teaching device for this course

This section is the starting point for everything else in the manual. Before you learn settings, safety rules or treatment steps, you need a clear picture of what the machine is and what it is for. You do not need a science background. Every technical word is explained the first time it appears.

What is a laser?

Laser is short for Light Amplification by Stimulated Emission of Radiation. In everyday words:

- **Light:** a laser makes light. Some laser light you can see, and some, like the CO_2 laser, you cannot.
- **Amplification:** the light is made stronger inside the machine.
- **Stimulated emission:** energy is pumped into a material (for a CO_2 laser, a gas), and the material gives it back out as light in a very orderly way.
- **Radiation:** here this simply means energy that travels as waves, like light or heat. A CO_2 laser is not radioactive and does not use X-rays.

How laser light differs from a light bulb

A light bulb sends light in every direction, in many colours mixed together. Laser light is different in three ways:

1. **One wavelength.** Wavelength describes the "colour" of light, including colours we cannot see. It is measured in nanometres (nm). One nanometre is one millionth of a millimetre. A laser makes light of a single wavelength.

2. **All in step.** The light waves travel in step, like soldiers marching together. This is called coherence.

3. **A narrow beam.** The light travels in a tight beam that spreads very little, so a lot of energy can be focused onto a tiny spot.

These features make a laser precise. They also make it dangerous if used carelessly, because it can deliver a lot of energy to a very small area in a fraction of a second.

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The basic parts of any laser

Part	What it does
Active medium	The material that makes the light. In a CO_2 laser this is a gas mixture.
Energy source (the "pump")	Puts energy into the active medium, usually electricity or radio-frequency energy.
Mirrors (the laser cavity)	Bounce the light back and forth so it builds up. One mirror lets a little light out, and that becomes the beam.
Delivery system	Carries the beam to the skin. On a CO_2 laser this is usually a jointed (articulated) arm with mirrors inside, ending in a handpiece.
Cooling	Removes heat so the laser keeps working properly.

What is a CO_2 laser?

CO_2 is the chemical symbol for carbon dioxide, the gas we breathe out. A CO_2 laser uses carbon dioxide as its active medium. The carbon dioxide is usually mixed with nitrogen (which helps pass energy to the carbon dioxide) and helium (which helps carry heat away and supports the life of the laser tube).

When electrical or radio-frequency energy is applied, the gas is "excited" (given extra energy). As it settles back down, it releases that energy as light. The mirrors build the light into a strong beam, which travels down the arm to the handpiece.

> **Key fact: the CO_2 wavelength**
>
> A CO_2 laser produces light at 10,600 nanometres (nm), which is the same as 10.6 micrometres. This is infrared light, so it is invisible. You cannot see the treatment beam, even while the laser is firing. A low-power red aiming beam shows you where it will land.

Light of 10,600 nm is very strongly absorbed by water, and skin is mostly water. When the beam hits the skin, the water soaks up the energy, heats very quickly and turns to steam. This removes (vaporises) a tiny amount of tissue and heats the tissue around it. Section 2 explains this in detail. For now, remember: **the CO_2 laser targets water**.

Caution: invisible does not mean harmless

The CO_2 beam is invisible, and you will not see it reflect off a shiny surface. It can still burn skin, damage the front of the eye (the cornea) and set fire to dry materials. A CO_2 laser is a Class 4 laser, the highest hazard class. Section 5 covers safety in full.

A brief history of the CO_2 laser

1. **1960: the first working laser.** It was built by Theodore Maiman, using a ruby crystal.

2. **1964: the first CO_2 laser.** It was invented by Kumar Patel, a physicist at Bell Labs in the United States. It produced much more power than earlier lasers.

3. **Industry first.** The first practical uses were in industry, for cutting and engraving metal, plastic and wood.

4. **Surgery.** Because the beam is absorbed so strongly by water, doctors began to use it as a precise "light scalpel". It could cut and vaporise soft tissue and seal small blood vessels at the same time.

5. **Full-field resurfacing.** CO_2 lasers were then used to remove the whole top layer of skin across an area. Results on wrinkles and scars could be strong, but healing was long and the risk of side effects, such as lasting colour changes and scarring, was higher.

6. **Fractional CO_2.** Later, fractional technology was developed. The idea was first published in 2004, and the first study of ablative fractional CO_2 on living human skin followed in 2007 (see Section 9). The beam is placed as a grid of tiny spots, leaving untreated skin in between, which helps the area heal much faster. This is now the main way CO_2 lasers are used in aesthetic clinics, and it is what this course teaches.

Ablative and non-ablative

These two words describe what a laser does to the skin surface.

- **Ablative** means removing. An ablative laser vaporises a small amount of tissue and makes a real, tiny wound. The body heals it, making fresh skin and new collagen. CO_2 and erbium lasers are ablative.
- **Non-ablative** lasers heat the skin underneath without removing the surface. There is no open wound, so downtime is shorter, but the effect per session is usually milder.

Fractional CO_2 is ablative: each tiny spot removes a microscopic column of tissue. Because only a fraction of the skin is treated, it is gentler overall than full-field resurfacing. By changing the settings, and on some machines the spacer on the handpiece, you choose how deep and strong the treatment is, from very gentle to deeply ablative.

> **Key fact: fractional CO_2 is ablative**
>
> Some older materials describe CO_2 courses as "non-ablative". That is not correct. The depth can be adjusted from very gentle to deep, but the CO_2 laser works by vaporising tissue, so wound-style aftercare is always needed.

	Ablative (for example CO_2)	Non-ablative
Skin surface	Tiny areas removed	Left in place
Downtime	Longer: redness, crusting and peeling expected	Shorter
Effect per session	Generally stronger	Generally milder
Aftercare	Wound-style care	Simpler

Ablative and non-ablative at a glance

Activity: explain it to a client

A client asks, "What does ablative mean, and will the CO_2 laser make a wound?" Write a short answer in plain words.

What fractional CO_2 can and cannot treat

Every laser is designed to target something specific in the skin. The CO_2 laser targets water. That makes it well suited to resurfacing, but the wrong tool for problems that need a different target, such as blood vessels, tattoo ink or hair. Knowing what a laser cannot do is just as important as knowing what it can do.

What fractional CO_2 can and cannot treat

May help with	Not suitable for
✓ Skin resurfacing and rejuvenation	✗ Thread veins and other vascular lesions
✓ Fine lines and wrinkles	✗ Tattoo removal
✓ Acne scars	✗ Hair removal
✓ Surgical, burn and traumatic scars	✗ Active acne, infection or broken skin
✓ Enlarged pores and rough texture	✗ Keloid-prone skin
✓ Sun damage and pigment spots	✗ Undiagnosed or suspicious moles
✓ Stretch marks	! Melasma: only with great caution, by experienced practitioners
✓ Benign lesions, once confirmed benign (UltraPulse head)	

This chart is a quick guide only. Every client needs a full consultation (Section 6) before any decision is made.

Fractional CO_2 is designed to help with

Results vary from person to person, and most concerns need more than one session.

- ✔ **Skin resurfacing and rejuvenation:** removing tiny areas of tired surface skin and supporting fresh skin and new collagen.
- ✔ **Fine lines and wrinkles:** supporting collagen renewal and tightening, for example around the mouth and on the forehead.
- ✔ **Acne scars:** remodelling pitted or sunken scar tissue.
- ✔ **Surgical, burn and traumatic scars:** may help improve texture and blend the scar with the surrounding skin.
- ✔ **Enlarged pores and rough texture.**
- ✔ **Pigmentation and sun damage:** sun spots, freckles and photoageing (skin ageing caused by the sun).
- ✔ **Stretch marks (striae):** may help improve texture and colour.
- ✔ **Benign (harmless) lesions,** with the UltraPulse surgical head rather than the fractional head. These include skin tags, milia (tiny white keratin bumps), seborrhoeic keratoses (harmless "stuck-on" growths), warts (verrucae) and small benign moles (naevi). Treat them only once they are confirmed benign.

The CO_2 laser cannot or should not be used for

- ✘ **Vascular lesions such as thread veins, broken capillaries and port-wine stains.** These are made of blood vessels and need a vascular laser that targets haemoglobin (the red pigment in blood).
- ✘ **Tattoos.** Tattoo removal needs lasers with extremely short pulses designed to break up ink. A CO_2 laser would burn away the skin and is likely to scar. Do not treat over tattoos.
- ✘ **Hair removal.** This needs a laser or IPL designed to target the pigment in hair.
- ✘ **Active acne, infection or inflamed skin.** Never treat over spots, open sores, cold sores or broken skin. Wait until it has healed.
- ✘ **Keloid-prone skin.** A keloid is a raised scar that grows beyond the edges of the original wound. Clients who form keloids are at high risk after laser treatment.
- ✘ **Undiagnosed or suspicious moles or pigmented lesions,** including anything that may be a skin cancer or a pre-cancerous patch.
- ✘ **Treatment around the eyes.** This means inside or near the bony eye socket, including the eyelids and crow's feet close to the rim. It is not covered by this course. It needs further advanced training, specific eye protection and insurance cover. On full-face treatments, keep well outside the bony rim of the eye socket.
- ✘ **Melasma, except with great caution.** Melasma is a hormonal pigment condition. Heat and inflammation can make it return darker. It is an advanced indication for experienced practitioners only, treated very conservatively.

Caution: never treat a lesion that has not been diagnosed

Never laser a mole or other lesion unless a suitably qualified clinician, such as a GP or dermatologist, has confirmed it is benign. If you are unsure, do not treat. Refer the client to their GP. Section 8 explains why.

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> **Remember**
>
> This is an overview only. The full list of contraindications (reasons not to treat), and how to screen for them, is in Section 6.

How fractional CO_2 compares with other skin lasers

Clients often ask why you recommend one treatment over another. You should understand the basic differences so you can give honest information and refer on when another treatment is more suitable. The key idea: **each device targets something different, and that decides what it is good for**.

- **Full-field CO_2** removes the whole surface. It gives the strongest effect in one session, but the longest healing and the highest risk of side effects. Older training materials quote recovery from deep resurfacing of about 2 to 4 weeks, with redness lasting longer.
- **Fractional CO_2** treats tiny columns with untreated skin between them. It can reach both the surface and deeper layers, supports collagen renewal and heals faster than full-field. Older training materials quote about 1 to 2 weeks, depending on depth.
- **Erbium (Er:YAG)** also targets water, at a shorter wavelength (2,940 nm) that is absorbed even more strongly, so its energy is used up very close to the surface. It gives precise, shallow resurfacing with generally shorter recovery, but usually less tightening and less effect on deep wrinkles and severe scars. Its risk of pigment change is generally lower than CO_2, but not zero.
- **Pulsed dye laser (PDL)** works at about 585 to 595 nm and targets haemoglobin. It is designed for redness, rosacea and thread veins, not resurfacing.
- **Intense pulsed light (IPL)** is not a laser. It uses a filtered flash of many wavelengths to target pigment or blood vessels. It treats larger areas quickly with little downtime, but is less precise and not designed for resurfacing or scars.

Device	Main target	Best suited to	Downtime	Main limitation
Full-field CO_2	Water (whole surface)	Deep wrinkles, severe scarring	Longest	Highest risk of side effects
Fractional CO_2	Water (tiny columns)	Texture, lines, scars, sun damage	Moderate	Course often needed; pigment risk in darker skin
Erbium	Water (very shallow)	Lighter resurfacing	Shorter	Less deep tightening
Pulsed dye	Haemoglobin	Redness, thread veins	Minimal	Not for resurfacing
IPL	Pigment and blood	Sun spots, redness	Minimal	Less precise

Comparing common skin lasers and light devices

Advantages of fractional CO_2

- **Precision:** the beam is focused to a tiny spot, so you control exactly where energy goes.
- **Versatility:** one machine can be set for light rejuvenation or deeper scar work and, with a surgical head, removal of small benign lesions.
- **Collagen stimulation:** heat in the deeper skin encourages new collagen and elastin over the following months.
- **Faster healing than full-field:** the untreated skin between spots helps the area repair.
- **Adjustable depth:** energy, pulse duration, spacing and (on some machines) the spacer can be changed for each client and area.
- **Seals small blood vessels,** which helps control minor bleeding.

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Limitations of fractional CO_2

- **Downtime:** redness, swelling, crusting and peeling are expected.
- **A course may be needed,** because each session treats only a fraction of the skin.
- **Discomfort:** a topical anaesthetic suitable for your scope of practice is often used.
- **Pigment risk:** a real risk of post-inflammatory hyperpigmentation (PIH), which is darkening after inflammation, especially in darker skin types, and a smaller risk of lighter patches. Section 3 explains skin types.
- **Infection and scarring** can happen, especially if settings are too high or aftercare is not followed.
- **Class 4 laser:** it needs a Laser Controlled Area, correct eyewear, Local Rules and a Laser Protection Adviser (LPA). See Section 5.

Never promise or guarantee results to clients or in marketing. Section 11 explains the advertising rules (the ASA and the CAP Code).

Activity: choose the right tool

For each client, write whether fractional CO_2 may be suitable, or whether another treatment or a referral is more appropriate, and why.

1. A client with thread veins on the cheeks.
2. A client with pitted acne scars, no active spots and no history of keloids.
3. A client with a mole that has recently changed shape and colour.
4. A client who wants a small tattoo removed.
5. A client with fine lines and sun damage who can take a week off work.

Your teaching device: the MED-870+

What you learn on this course applies to any fractional CO_2 laser, but your hands-on training uses one machine, the MED-870+. When you work on a different machine in practice, the principles stay the same, but the controls, settings and accessories may differ.

The MED-870+ FOCXEL Fractional CO_2 Laser Therapy System



The MED-870+, your teaching device. The jointed arm on top carries the invisible beam to the handpiece. Skintastic photograph.

▣ On your teaching device: the MED-870+

Full name: MED-870+ FOCXEL Fractional CO_2 Laser Therapy System, made by Beijing Kes Biology Technology Co., Ltd, China. UK Responsible Person, importer and distributor: Skintastic Aesthetic Supplies Ltd, 26 The Avenue, Southampton, SO17 1XL. Carla Cooper-Gale is the MHRA-registered UK Responsible Person for this device.

Regulatory status: a Class IIb medical device, registered with the MHRA (the Medicines and Healthcare products Regulatory Agency).

- CO_2 laser at 10,600 nm (invisible infrared), Class 4.
- Laser source: a metal RF tube. RF means radio frequency, the energy used to excite the gas in a sealed metal tube.
- Maximum output power: 30 W (the figure recorded in the machine's EN 60601-2-22 test report).
- Red aiming beam at 635 nm.
- A 7-joint articulated arm and a colour touchscreen.
- **Fractional scanning head** with three spacers (Non-ablative, Micro-ablative and Ultra Fractional tips) that set the treatment depth. This is the main head, for resurfacing, lines, scars, pigmentation and stretch marks.
- **UltraPulse surgical head,** which replaces the whole fractional head and focuses the beam to a fine point for removing small benign lesions. The manufacturer warns that this head is high energy and must be used with great care.

Section 4 covers every part of the MED-870+ in detail.

Activity: check your understanding

1. What does the word laser stand for?
2. What wavelength does a CO_2 laser produce, and can you see it?
3. What does the CO_2 beam target in the skin?
4. Who invented the CO_2 laser, and in which year?
5. Name three things a CO_2 laser should not be used to treat, and give a reason for each.
6. Which MED-870+ head would you use to remove a confirmed benign skin tag?

Remember: section summary

- A laser makes a narrow beam of light of one wavelength, with the waves in step.
- A CO_2 laser uses carbon dioxide gas and produces invisible infrared light at 10,600 nm.
- The CO_2 laser targets water, which makes up most of the skin.
- Fractional CO_2 is ablative. It treats a grid of tiny spots and leaves untreated skin in between, which helps healing.
- It is not for blood vessels, tattoos, hair, infected or inflamed skin, keloid-prone clients or undiagnosed lesions. Melasma needs great caution. Treatment around the eyes is not covered by this course.

Check your understanding

Now answer questions 1 to 3 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Section 2 How the CO_2 laser works on the skin, and why

Learning outcomes

By the end of this section you will be able to:

- explain light and wavelength simply, and where 10,600 nm sits in the spectrum
- explain why the CO_2 laser is absorbed by water, and why that matters
- explain why darker skin carries a higher risk of post-inflammatory hyperpigmentation (PIH), even though the laser does not target melanin
- describe the three zones made by a single laser spot
- explain fractional and full-field treatment, and why fractional heals faster
- describe, step by step, how the skin heals and makes new collagen
- define each laser setting and say what happens when you turn it up
- work out point energy and fluence using simple sums

Every decision you make at the laser depends on understanding what the light is doing inside the skin. If you understand the "why", you will make safer choices, spot problems earlier and explain the treatment clearly to clients. There are some simple sums near the end. Each one is shown step by step.

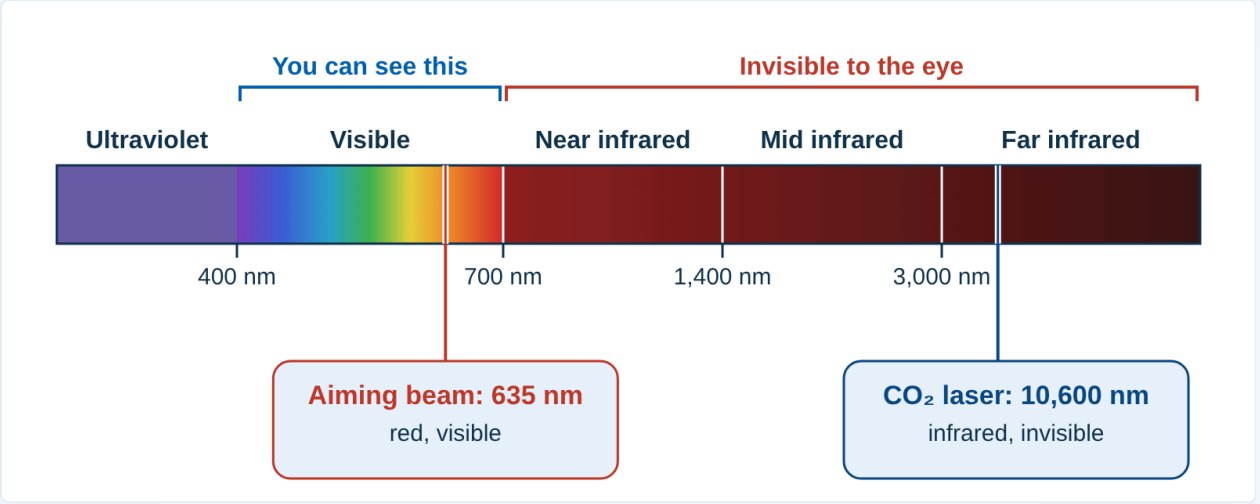
Light and wavelength, simply

Light travels as waves. The distance from the top of one wave to the top of the next is the wavelength, measured in nanometres (nm). Different wavelengths behave differently: some we see as colours, and some are invisible.

- **Ultraviolet (UV)** is shorter than visible light. It is invisible and causes sunburn.
- **Visible light** runs roughly from violet at about 400 nm to red at about 700 nm.
- **Infrared (IR)** is longer than visible red light. It is invisible, though we feel some of it as warmth.

The CO_2 laser sits far out in the infrared, at 10,600 nm, about fifteen times the wavelength of red light.

Where the CO_2 laser sits in the light spectrum



The red aiming beam (635 nm) is visible. The CO_2 treatment beam (10,600 nm) is far out in the infrared and cannot be seen.

The aiming beam

Because you cannot see the treatment beam, the laser has a low-power visible aiming beam that follows the same path and shows where the energy will land. It does not treat the skin. Never stare into it or point it at anyone's eyes. If it looks faint, blurred, split or off-centre, stop and check the machine, because the beam path may be out of line.

> **▣ On your teaching device: the MED-870+**
>
> The aiming beam is a red diode laser at 635 nm. Section 5 explains its laser class and why your CO_2 eyewear does not protect against it.

Why the CO_2 laser targets water

Every laser works by being absorbed by something in the skin. That target is called the chromophore (say "crow-mo-for"). The skin has three main chromophores:

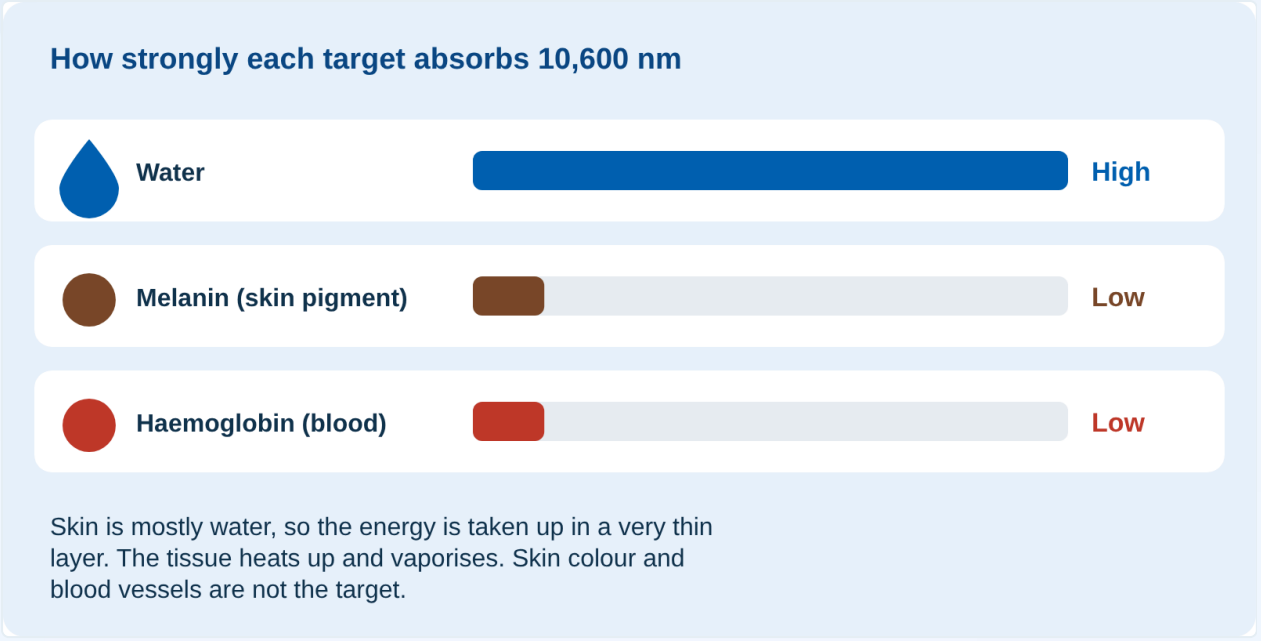
Chromophore	What it is	Lasers that mainly target it
Water	In every skin cell and the tissue around them	CO_2 and erbium
Melanin	The brown pigment in skin and hair	Hair removal and pigment lasers
Haemoglobin	The red pigment in blood	Vascular lasers

Light at 10,600 nm is very strongly absorbed by water, and skin is mostly water (the teaching device manual describes skin water content as above 75%). So the energy is soaked up almost straight away, close to where the beam lands.

1. **The water absorbs the light.** Water in the skin cells under the beam soaks up the energy.
2. **The water heats very quickly.** The energy turns into heat in a tiny fraction of a second.
3. **The water turns to steam.** The cells burst and the tissue under the beam is vaporised. This is ablation.
4. **Heat spreads a little.** Tissue around the vaporised area is heated: some is "cooked" (coagulated) and some is just warmed.
5. **The body responds.** The injury and heat switch on the skin's repair process, which makes fresh skin and new collagen over the following weeks and months.

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The CO_2 laser targets water



At 10,600 nm, water absorbs the light far more than melanin or blood.

Key fact: water is the target

The CO_2 laser targets water, not pigment and not blood. Because all skin contains water, the beam is absorbed by all skin, whatever its colour, and its effect stays close to where it lands. This is why it can be so precise.

Skin colour: absorption is not the same as risk

This point is often misunderstood, so read it carefully.

What is true: the CO_2 laser does not target melanin. Skin colour does not stop the light being absorbed, because the light is absorbed by water.

What is also true: darker skin still carries a higher risk of post-inflammatory hyperpigmentation (PIH), meaning dark patches that appear after the skin has been inflamed or injured. The reason is how the skin responds afterwards:

- Melanocytes are the cells that make melanin (pigment).
- In darker skin, melanocytes tend to be more active and more reactive.
- When the skin is heated and inflamed, as it is after any CO_2 treatment, these cells can respond by making extra pigment, causing dark patches that may take months to fade.
- Darker skin can also be at risk of hypopigmentation (lighter patches).

The more heat and inflammation you create, the higher the risk. Darker skin types need more conservative settings, a test patch, careful preparation and strict sun protection. Section 3 explains skin types and Section 7 covers settings.

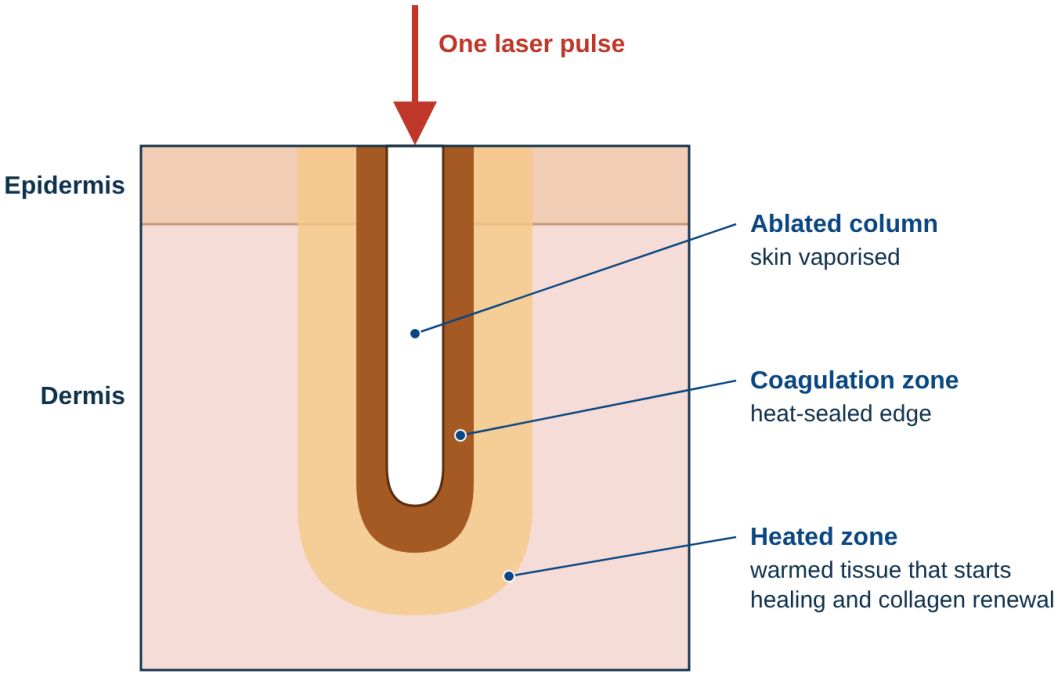
Caution: not targeting melanin does not mean safe for every skin

Never tell a client the CO_2 laser is risk-free for darker skin because it does not target pigment. The risk comes from the skin's inflammatory response. Darker skin types need extra care, lower settings, a test patch and full informed consent about the risk of PIH.

What happens in one laser spot

A single fractional CO_2 spot creates three zones, one inside the other. Picture a tiny column drilled into the skin, with a sleeve of cooked tissue around it, and a wider area of warmed tissue around that.

One laser spot: three zones



The vaporised column in the centre, the coagulation zone around it, and the wider heated zone, with untreated skin all around.

Zone	What happens there	Why it matters
1. Vaporised (ablation) column	The water boils and the tissue is removed, leaving a microscopic hole.	Removes damaged skin and starts repair.
2. Coagulation zone	Tissue is heated enough for its proteins to "set", like egg white cooking. Small blood vessels are sealed.	Reduces bleeding, tightens collagen and forms the tiny crusts that later flake off.
3. Heated zone	Tissue is warmed but not destroyed.	Sends signals that switch on healing and new collagen.

Useful words

- **Coagulation:** heating tissue so its proteins set and harden. It also seals small blood vessels.
- **Denature:** when heat changes the shape of a protein, like cooking an egg.
- **Carbonisation (charring):** tissue heated so much that it blackens. A small amount may be seen at some deep settings and is wiped away. Heavy charring is a sign of too much heat.

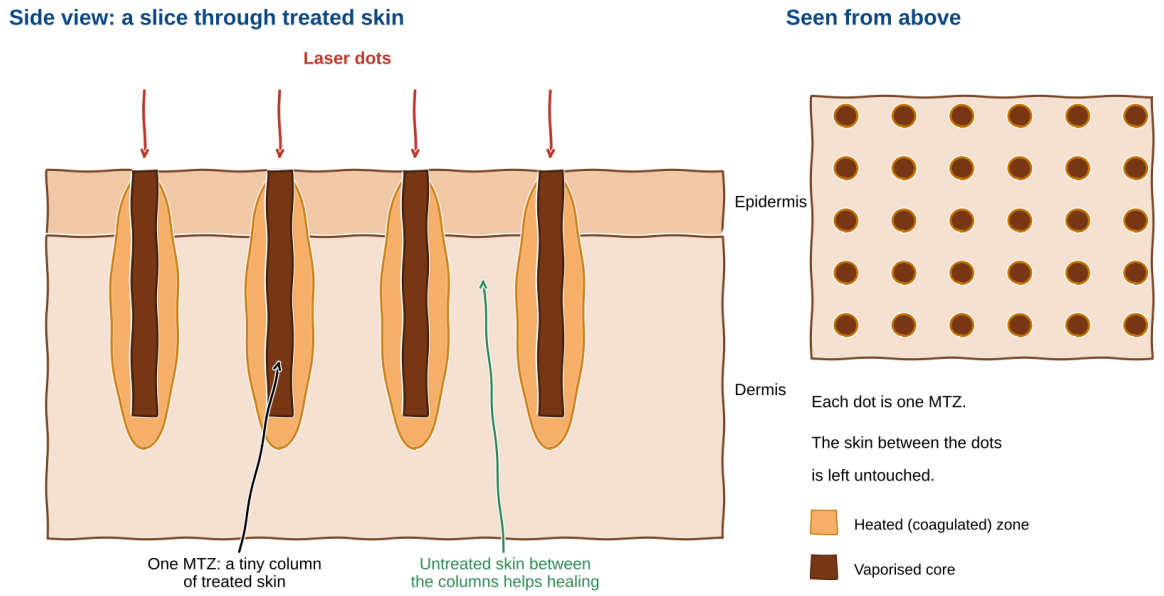
Your settings control the size of each zone. More energy per spot makes a deeper column. A very short pulse vaporises cleanly with little heat spreading sideways. A longer pulse lets more heat spread, giving wider coagulation and more tightening, but also more downtime and risk.

> **Key fact: three zones in every spot**
>
> Every spot has a vaporised column that removes tissue, a coagulation zone that seals and tightens, and a heated zone that triggers repair. You control the size of each zone through your settings.

Microscopic treatment zones

In fractional treatment, each spot and its surrounding zones make one microscopic treatment zone, often written MTZ. Some manuals say micro-thermal zone or micro-treatment zone; they all mean one tiny treated column. The scanner places hundreds or thousands of these in a neat grid. Straight after treatment you will often see a pattern of tiny dots. Between the columns is skin the laser has not touched, and that untreated skin is the secret of fractional treatment.

What a microscopic treatment zone (MTZ) looks like



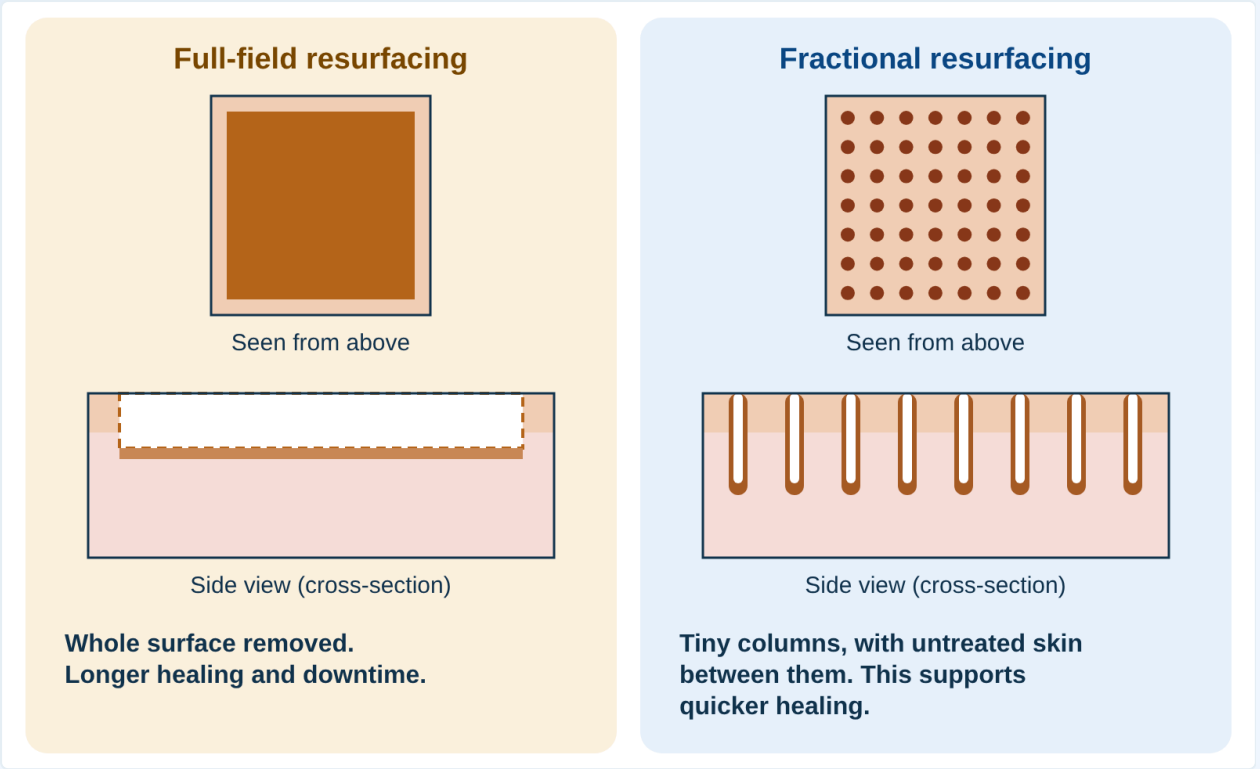
Each laser dot makes one tiny column of treated skin (an MTZ). The untreated skin between the columns helps the area heal quickly.

Fractional and full-field treatment

Full-field (traditional) resurfacing treats the whole surface, with no untreated skin left between. It gives the strongest effect in one session, but healing takes much longer, with more redness and a higher risk of infection and PIH.

Fractional resurfacing places a grid of tiny columns and leaves the skin between them untouched. Only a fraction of the surface is treated each session. Healing is faster and the risk of complications is lower, but each session corrects less, so a course may be needed.

Fractional and full-field treatment compared



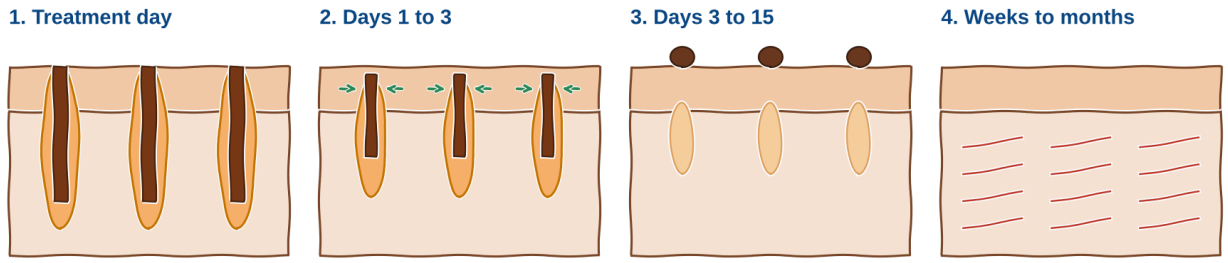
Full-field treatment (left) removes the whole surface. Fractional treatment (right) treats tiny columns and leaves bridges of untreated skin.

> **▣ On your teaching device: the MED-870+**
>
> On the MED-870+, full-field treatment corresponds to very tight dot spacing (for example 0.2 mm), or to continuous-wave operation. At 0.2 mm, spots are packed so closely that no untreated skin is left between them. Fractional work uses wider spacing; the manufacturer's reference settings range from 0.3 to 1.0 mm depending on the treatment. Section 7 gives the full settings.

Why fractional treatment heals faster

Think of a lawn. Dig up the whole lawn and the grass must grow back from nothing. Make small holes across it and the grass around each hole quickly fills the gap. The skin works in a similar way:

How the skin heals after fractional treatment



The healing process, step by step. Timings are typical and vary from person to person and with the depth of treatment.

1. **Healthy skin is close by.** Each treated column is surrounded by untreated skin, sometimes called skin bridges.

2. **Healthy cells move in.** Living cells from the skin bridges move across to cover each tiny wound, over a very short distance.

3. **The surface closes quickly.** Re-forming the surface layer (re-epithelialisation) happens much faster than after full-field treatment.

4. **The barrier stays largely intact,** which lowers the risk of infection.

> **Remember**
>
> The untreated skin between the columns is not "missed". It is left on purpose, and it is the reason fractional treatment heals faster than full-field resurfacing.

How the skin heals and makes new collagen

The laser does not make collagen itself. It creates a controlled injury, and the body's repair process does the rest. Collagen is the strong protein that gives skin structure. Elastin is a stretchy protein that lets skin spring back. Both are made by cells called fibroblasts in the dermis (the deeper layer of skin, covered in Section 3).

1. **Immediately: heat and tightening.** The heat makes existing collagen fibres shrink. The teaching device manual describes them contracting by approximately one third. Clients may feel some immediate tightness.

2. **Heat shock: the alarm is raised.** Cells in the heated zone sense the heat and injury and send out signals that call the body's repair systems into action.

3. **Inflammation: the first few days.** Blood flow increases. The skin becomes red, warm and swollen and may feel like sunburn. This is a normal part of healing.

4. **New surface: days to about two weeks.** Cells from the skin bridges cover each tiny wound. Micro-crusts usually form within about 3 days and shed over about 7 to 15 days. Redness usually settles over about a week, though deeper treatments can take longer.

5. **New collagen and elastin: weeks to months.** Fibroblasts are switched on and make new collagen and elastin.

6. **Remodelling: months.** The new collagen is organised and strengthened. Earlier training material describes this continuing over about 3 to 6 months, which is why improvement may continue gradually after the skin has visibly healed.

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Key fact: results build up over time

The surface heals over days to a couple of weeks. The collagen changes underneath take months. Tell clients that any improvement tends to build gradually and that results vary from person to person.

Caution: too much heat harms healing

A controlled injury supports healing. Too much heat does the opposite. If energy is too high, pulses too long, spacing too tight or passes stacked, heat builds up across the area (bulk heating). This can cause burns, blistering, long-lasting redness, PIH and scarring. More is not better.

Activity: the healing steps

Put these stages in order and add roughly when each happens: new collagen and elastin made; redness and swelling; micro-crusts form and shed; immediate collagen tightening; collagen remodelled; cells sense heat and raise the alarm. Then explain in one sentence why fractional treatment heals faster than full-field.

The laser settings: a glossary for first-time users

Each laser setting (parameter) changes how much energy reaches the skin, how deep it goes or how much heat spreads. This glossary explains each one. The numbers you will use are in Section 7. First, two units:

- **Joule (J)** is a unit of energy. A millijoule (mJ) is one thousandth of a joule: 1 J = 1,000 mJ.
- **Watt (W)** is a unit of power, meaning how fast energy is delivered. One watt is one joule every second.

Power (W)

How fast the laser delivers energy while firing. Higher power vaporises faster and deeper. On its own it does not tell the whole story, because the energy reaching each spot also depends on how long the laser fires.

Point energy (mJ)

The energy delivered into each single spot, also called pulse or microbeam energy. More energy per spot makes a deeper column. It is one of the most important settings for controlling depth.

Pulse duration and dwell time (ms)

How long the laser fires into each spot. A millisecond (ms) is one thousandth of a second. On many fractional machines, dwell time means the same thing. Short pulses vaporise cleanly with little heat spread. Long pulses spread more heat, giving more coagulation and tightening but more risk.

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▣ On your teaching device: the MED-870+

On the MED-870+, point energy equals power multiplied by pulse duration. The manufacturer's skin rejuvenation setting, step by step:

1. **Settings.** Power 20 W. Pulse duration 0.4 ms.
2. **Milliseconds to seconds.** 0.4 ms ÷ 1,000 = 0.0004 s.
3. **Power × time.** 20 W × 0.0004 s = 0.008 J.
4. **Joules to millijoules.** 0.008 J × 1,000 = 8 mJ.

20 W × 0.4 ms = 8 mJ, which matches the manufacturer's skin rejuvenation setting of 8 mJ. Shortcut: watts × milliseconds = millijoules.

So raising either the power or the pulse duration raises the point energy. Pulse duration can be set from 0.1 to 10 ms in 0.1 ms steps, and the specification lists pulse energy from 0.1 to 400 mJ.

Frequency (Hz)

How many pulses are delivered each second. One hertz (Hz) is one per second; one kilohertz (kHz) is a thousand per second. A shorter gap (interval) between pulses means a higher frequency. Higher frequency covers the area faster but delivers heat faster, leaving the tissue less time to cool. The MED-870+ specification lists an adjustment frequency of 0 to 20 kHz.

Dot spacing (mm) and density

Dot spacing (point distance or pitch) is the distance between the centres of neighbouring spots. Density is how much of the skin is covered. Smaller spacing means spots closer together, higher density and more energy on the area. Some machines show density as a percentage; the teaching device sets it through dot spacing, from 0.1 to 2 mm.

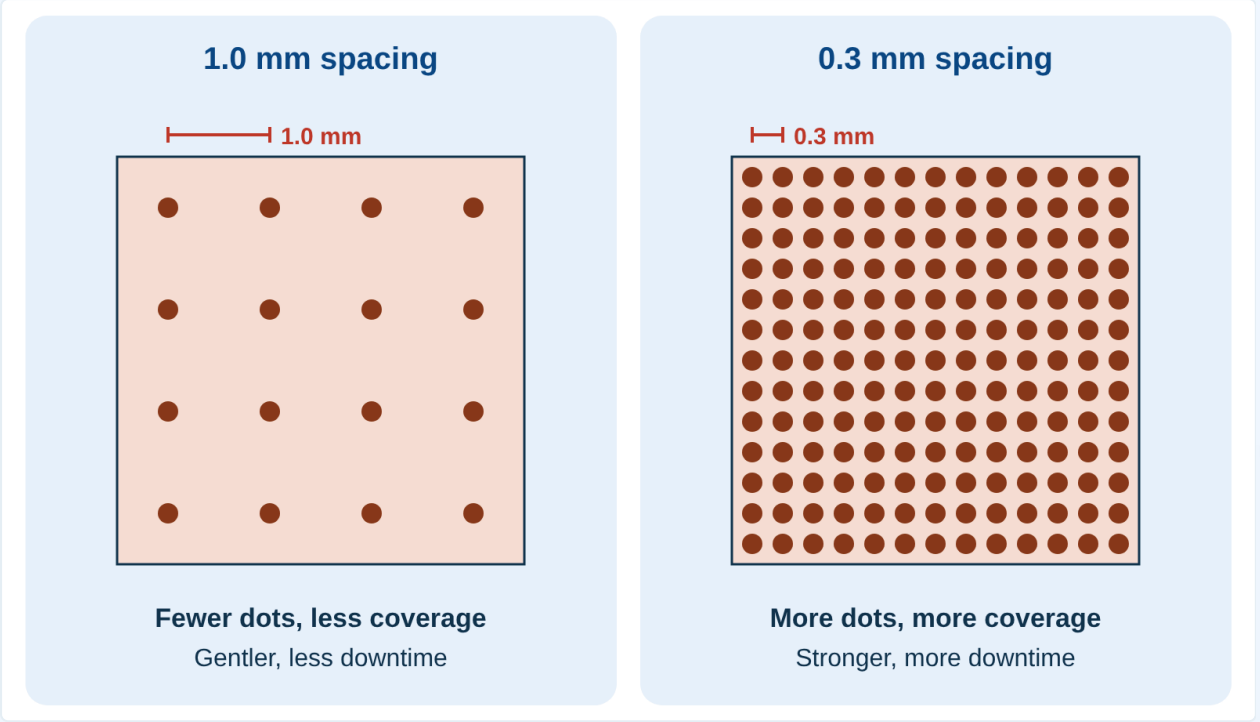
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Spacing works across and down at the same time, so halving the spacing gives four times as many spots, not twice as many. For one square centimetre (10 mm by 10 mm):

Dot spacing	Spots across 10 mm	Spots in 1 cm²
1.0 mm	10	10 × 10 = 100
0.5 mm	20	20 × 20 = 400
0.3 mm	about 33	about 33 × 33 = about 1,100

Moving from 1.0 mm to 0.3 mm places about eleven times as many spots on the same area. With the same energy per spot, the skin receives about eleven times as much energy overall, with far less untreated skin between.

Dot spacing: 1.0 mm compared with 0.3 mm



At 1.0 mm (left) there is plenty of untreated skin between spots. At 0.3 mm (right) spots are packed closely, delivering far more energy to the area.

Caution: change one setting at a time

Tightening the spacing and raising the energy together multiplies the effect on the skin. Change one setting at a time, in small steps, and check the skin response first.

Passes and stacking

A pass is going over the area once. Stacking is firing more than one pulse into the same spot. Both build up more heat and go deeper, increasing downtime and the risk of burns, PIH and scarring. For a first-time user, one pass with no deliberate stacking is the safe starting point. Section 8 explains placing scans edge to edge without overlap.

Scan shape and size

You choose the shape and size of the spot pattern to fit the area, for example a large square on the cheek or a narrow shape beside the nose.

▣ On your teaching device: the MED-870+

There are seven scan shapes (Section 4). The maximum scan size is 20 mm by 20 mm, which at 1.0 mm spacing holds about 20 × 20 = 400 spots. The manufacturer's reference settings use the sequential scan mode, shown as "Order".

Modes

Mode	What it does	Typical use
Fractional (scanning)	Places a grid of separate spots.	Resurfacing, lines, scars, pigment, stretch marks
Continuous (CW)	Fires without stopping while the foot switch is pressed. It has the greatest heating effect.	Cutting and vaporising with the surgical head
Pulse	Separate pulses, with gaps that let tissue cool a little.	Controlled surgical work
Single	Short, controlled bursts.	Precise removal of small lesions
UltraPulse	Very short, high peak-power pulses that vaporise efficiently with minimal sideways heat.	Precise lesion removal and cutting

Spot size (mm)

The width (diameter) of the beam where it meets the skin. A smaller spot concentrates the same energy into a smaller area, making it more intense.

> **▣ On your teaching device: the MED-870+**
>
> The specification gives a beam diameter and spot size of 0.15 mm. The manufacturer has also stated, in correspondence with the Laser Protection Adviser, that the focused spot at the tissue is 0.2 mm. Think of the spot as about 0.15 to 0.2 mm wide. The worked example below uses both figures.

Fluence (J/cm²)

Fluence is the energy delivered onto each square centimetre of the spot. It tells you how concentrated the energy is, and is one of the main things that decides how strongly the laser affects tissue.

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The fluence formula

Fluence (J/cm²) = energy per spot (J) ÷ spot area (cm²)

Spot area = π × radius × radius (πr²), where π (pi) is about 3.1416 and the radius is half the spot width.

Worked example: 10 mJ with a 0.2 mm spot

1. **Energy into joules.** 10 mJ ÷ 1,000 = 0.010 J.
2. **Find the radius.** Half of 0.2 mm is 0.1 mm.
3. **Radius into centimetres.** 0.1 mm ÷ 10 = 0.01 cm.
4. **Square the radius.** 0.01 × 0.01 = 0.0001.
5. **Multiply by π.** 3.1416 × 0.0001 = about 0.000314 cm².
6. **Divide energy by area.** 0.010 ÷ 0.000314 = about 31.8, so about 32 J/cm².

With a 0.15 mm spot: radius 0.075 mm = 0.0075 cm; 0.0075 × 0.0075 = 0.00005625; × 3.1416 = about 0.000177 cm² (the device manual rounds this to about 0.00018 cm²); 0.010 ÷ 0.000177 = about 56.6, so about **57 J/cm²**.

Fluence: a worked example

Fluence = energy ÷ spot area (J/cm²)

Example A: 10 mJ on a 0.2 mm spot



1	**Energy**	10 mJ = 0.010 J
2	**Radius**	half of 0.2 mm = 0.1 mm = 0.01 cm
3	**Area**	3.1416 × 0.01 × 0.01 = 0.000314 cm²
4	**Fluence**	**0.010 J ÷ 0.000314 cm² = about 32 J/cm²**

Example B: 10 mJ on a 0.15 mm spot



1	**Energy**	10 mJ = 0.010 J
2	**Radius**	half of 0.15 mm = 0.075 mm = 0.0075 cm
3	**Area**	3.1416 × 0.0075 × 0.0075 = 0.000177 cm²
4	**Fluence**	**0.010 J ÷ 0.000177 cm² = about 57 J/cm²**

Same energy on a smaller spot gives a higher fluence (a stronger effect).

The same 10 mJ gives about 32 J/cm² on a 0.2 mm spot, but about 57 J/cm² on a 0.15 mm spot.

Key fact: small spot, high fluence

Because the spot is so tiny, even a modest energy gives a high fluence. Making the spot a quarter narrower (0.2 mm to 0.15 mm) raises the fluence by almost 80% for the same energy. This is why energy and spacing must be set with care, and never guessed.

What happens when you turn each setting up

This table brings the glossary together. Keep it in mind every time you change a setting.

What turning each setting up does

Setting	Turning it up gives	Risk if set too high
Power (W)	More energy reaches each dot: a stronger, deeper effect	Burns, blistering, scarring
Energy per dot (mJ)	Deeper columns	Deep injury, slow healing, scarring
Pulse duration (ms)	More energy, and more heat spreads around each column	Excess heating, burns, pigment change
Spacing made tighter	More dots, more coverage, a stronger effect	Dots merge, heat builds up, longer downtime, scarring
Number of passes	More total treatment and more heat	Heat build-up, burns, scarring

Turning almost any setting up increases depth, heat or both. Change one setting at a time, in small steps.

Setting	When you turn it up	Risk if set too high
Power (W)	More energy per unit of time; faster, deeper ablation.	Burns, charring and scarring.
Point energy (mJ)	Each column goes deeper.	Too much depth, heat injury, longer downtime.
Pulse duration or dwell (ms)	More heat spreads around each spot; more coagulation.	Heat damage to surrounding tissue; localised burns.
Frequency (Hz)	Area covered and heat delivered faster.	Heat builds up between pulses (thermal stacking); bulk heating and burns.

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Setting	When you turn it up	Risk if set too high
Density (smaller spacing)	More spots, coverage and heat.	Less untreated skin to support healing; longer downtime, PIH, scarring.
Passes or stacking	Deeper ablation, more heat.	Heat injury, longer downtime, scarring.
Smaller spot size	Energy concentrated; fluence rises.	Much higher fluence and depth at the same energy.
Continuous wave	Constant heating while the foot switch is pressed.	Rapid, deep heat damage and charring.
UltraPulse energy	Efficient ablation with little sideways heat.	High peak power; too much depth if energy is too high.

Section 7 explains how to start low, test-fire, patch test and adjust one setting at a time.

Activity: point energy, fluence and spacing

Show your working.

1. 25 W with a pulse duration of 0.6 ms. What is the point energy?
2. 30 W with 1.2 ms. What is the point energy?
3. At 25 W, what pulse duration gives 10 mJ?
4. What is the fluence for 8 mJ with a 0.2 mm spot (spot area 0.000314 cm^2)?
5. If you change the spacing from 1.0 mm to 0.5 mm, how many times more spots land on each square centimetre?

Activity: explain it to a client

A client with a darker skin type asks, "If the laser does not target pigment, why do I need a test patch?" Write a clear, honest answer in plain language.

Answers to the calculation activity

1. 25 × 0.6 = 15 mJ.
2. 30 × 1.2 = 36 mJ.
3. 10 ÷ 25 = 0.4 ms.
4. 8 mJ = 0.008 J; 0.008 ÷ 0.000314 = about 25.5, so about 25 J/cm^2.
5. Four times (20 × 20 = 400 instead of 10 × 10 = 100).

Remember: section summary

- The CO_2 laser works at 10,600 nm, invisible infrared. A red aiming beam shows where it will land.
- The beam is absorbed by water, so its energy is taken up close to where it lands.
- Skin colour does not stop absorption, but darker skin carries a higher PIH risk because of how melanocytes respond to heat and inflammation.
- Each spot makes a vaporised column, a coagulation zone and a heated zone.
- Fractional treatment leaves bridges of untreated skin, so it heals faster than full-field.
- The surface heals over days to a couple of weeks; collagen forms and remodels over months.
- Point energy (mJ) = power (W) × pulse duration (ms). Fluence = energy (J) ÷ spot area (cm^2).
- Turning almost any setting up increases depth, heat and risk. Start low and change one thing at a time.

Check your understanding

Now answer questions 4 to 7 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Section 3 The skin, healing and skin types

Learning outcomes

By the end of this section you will be able to:

- Name the three layers of the skin and say what each one does.
- Explain why thin skin (neck, chest, hands) needs gentler settings.
- Describe how skin heals after fractional CO_2, with a realistic timescale.
- Recognise the main types of scar and stretch mark, and know which need caution or referral.
- Use the Fitzpatrick scale to decide a client's skin type and adapt your approach.
- Explain post-inflammatory hyperpigmentation (PIH) and hypopigmentation, and recognise skin conditions that affect treatment.

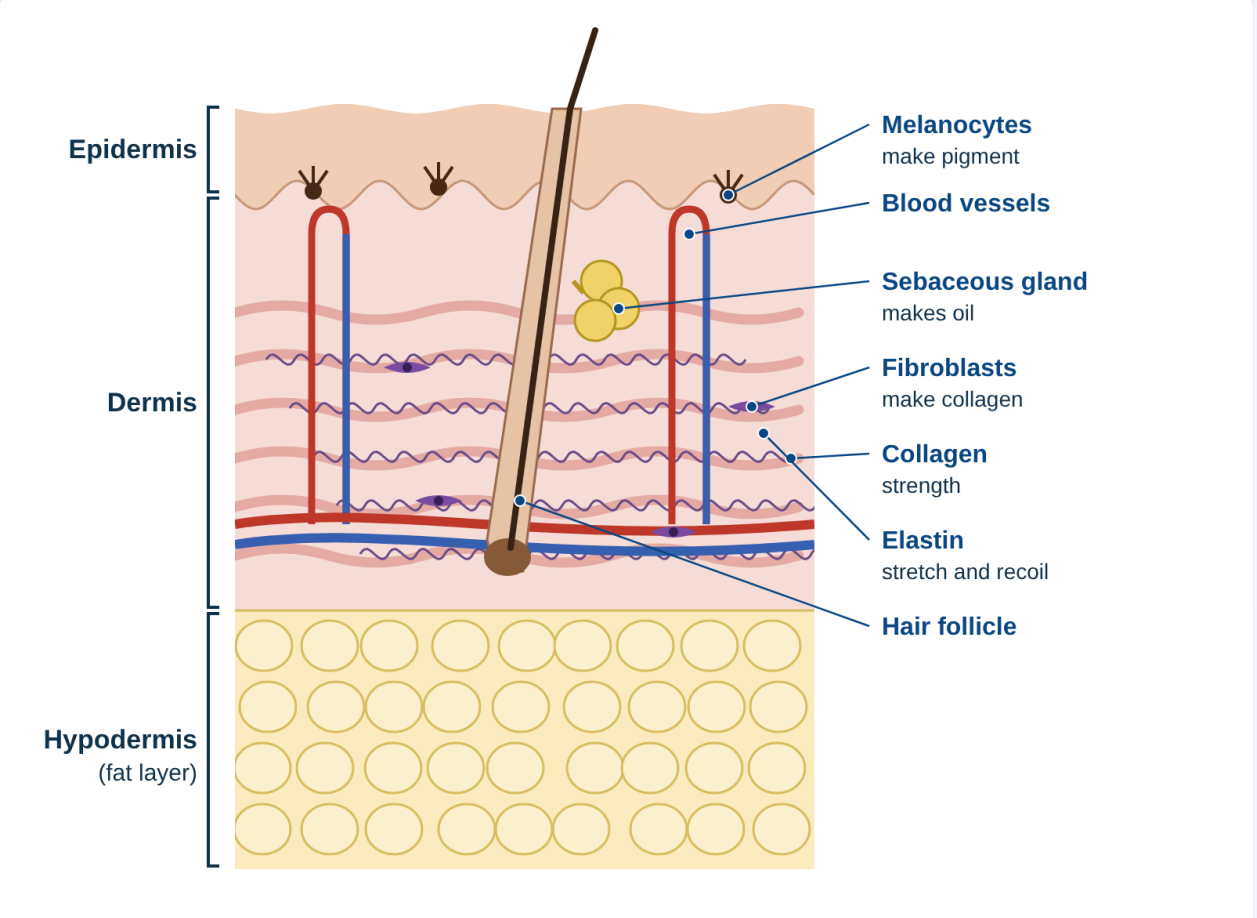
A CO_2 laser makes thousands of tiny, controlled injuries in the skin. The skin then repairs itself, and that repair is where any improvement comes from. Burns, scars and colour changes come from injuring the skin too much, too deeply, or in the wrong person. To work safely you need a clear picture of what the skin is made of, how it heals, and how different skin types react. Section 2 explains what the beam does; Section 7 gives the settings. This section is the bridge between them.

The structure of the skin

The skin protects us from germs, sunlight and injury, keeps water in, and lets us feel touch, heat and pain. It has three main layers. From the outside in:

1. **The epidermis** (say "epi-DER-mis"): the thin outer layer you can see and touch.
2. **The dermis** (say "DER-mis"): the thicker middle layer that gives skin its strength and bounce.
3. **The hypodermis**, also called the subcutaneous layer: the deepest layer, mostly fat.

The layers of the skin



The three layers of the skin. A fractional CO_2 laser works in the epidermis and the upper dermis. It should never reach the fat layer.

Layer 1: the epidermis

The epidermis is the protective outer layer. On most of the face it is thinner than a sheet of paper. It has no blood vessels of its own. Its main cells are **keratinocytes** (say "ker-AT-in-o-sites"), which make keratin, a tough protein.

New keratinocytes are made at the bottom of the epidermis and slowly travel up to the surface, where they flake off. This journey takes roughly a month in young adults and slows with age. It gives the epidermis its own layers:

Layer (bottom to top)	In plain English
Basal layer (stratum basale)	The "factory floor": a single row of cells that divide to make new skin. Pigment cells live here too.
Spiny layer (stratum spinosum)	Several rows of cells tightly joined together for strength.
Granular layer (stratum granulosum)	Cells flatten and make the fats that waterproof the skin.
Horny layer (stratum corneum)	The surface: flat, dead cells packed with keratin, shed every day. (Palms and soles have an extra clear layer.)

> **Key fact: the skin barrier**
>
> The horny layer and the fats between its cells form the "skin barrier", which keeps water in and germs out. A CO_2 laser deliberately breaks this barrier in thousands of tiny spots. Until it heals, the skin is more open to infection, irritation from products, and water loss. This is why aftercare (Section 10) matters so much.

Melanocytes and melanin

Melanocytes (say "MEL-an-o-sites") sit in the basal layer and make **melanin**, the pigment that colours skin, hair and eyes. They pass melanin to nearby keratinocytes, where it acts like a little umbrella against ultraviolet (UV) light.

- People of all skin colours have broadly similar numbers of melanocytes. Darker skin makes more melanin, and darker types of it.
- Melanocytes react to heat and injury. When irritated they may make too much melanin (dark patches); when damaged they may make too little (light patches). This is why skin type matters so much with CO_2.

Layer 2: the dermis

The dermis is much thicker than the epidermis. Most of the changes clients hope for (smoother texture, softer lines, flatter scars) happen here. Its thin upper part is the **papillary dermis**, with fine fibres and many small blood vessels. Its thicker lower part is the **reticular dermis**, with dense bundles of fibres.

Structure	What it is	Why it matters for CO_2
Collagen	Strong, rope-like protein fibres that give skin firmness. They make up most of the dermis.	The laser's heat triggers new collagen to be made and old collagen to be reorganised (remodelling).
Elastin	Stretchy fibres that let skin spring back.	Damaged by sun and age, adding to lines and sagging.
Fibroblasts	The cells that make collagen and elastin.	The "builders" the laser wakes up.
Water-holding gel	Fills the spaces between fibres.	Water is what CO_2 laser energy targets (Section 2).
Blood vessels and nerves	Bring oxygen and food; sense heat and pain.	Cause redness, swelling and pinpoint bleeding, and the hot, prickly feeling during treatment.
Hair follicles, oil (sebaceous) glands and sweat glands	Tubes and glands lined with skin cells.	Act as reservoirs of new cells that help the surface heal. The face has many; the neck and chest have fewer.

Layer 3: the hypodermis

The hypodermis is mainly fat, with larger blood vessels and nerves. It cushions and insulates the body. A fractional CO_2 laser used for skin treatment should never reach it.

Caution: depth and scarring

The deeper you injure the skin, the longer it takes to heal and the higher the risk of scarring, infection and colour change. Deep injury destroys the hair follicles and glands that the skin needs to rebuild its surface. Always start at the lower end of the settings and build up only when the skin shows you it is safe.

Skin thickness is not the same everywhere

A setting that is gentle on the cheek can be far too strong on the neck. Skin is also thinner with age, long-term steroid use and after radiotherapy.

Area	Skin	What this means for you
Eyelids and under the eyes	Among the thinnest on the body. Few oil glands, many small blood vessels.	Not treated on this course (Section 1). Swelling after full-face treatment often shows here first.
Neck, chest and backs of the hands	Thin, with fewer hair follicles and oil glands.	Heal more slowly and scar more easily. Reduce settings compared with the face.
Cheeks, forehead, nose and chin	Thicker, with many follicles and oil glands.	Usually tolerate standard starting settings and heal well.
Body (abdomen, thighs, arms)	Fewer oil glands than the face.	Heals more slowly. Extra care with darker skin types.

Key fact: thin skin means lower settings

Where skin is thin, or has few follicles and glands, the laser reaches proportionally deeper and there are fewer cells to heal from. Always turn settings down there: lower energy, wider dot spacing and fewer passes. Section 8 has a face map showing where to reduce.

▣ On your teaching device: the MED-870+

On the MED-870+, the depth and strength of treatment come from the spacer fitted to the fractional head (Non-ablative, Micro-ablative or Ultra Fractional tip), together with the software settings. The software settings are power, energy per dot, dot spacing, pulse duration and passes. Section 4 describes the spacers and Section 7 gives the settings.

How skin heals after a laser injury

Each laser dot vaporises a tiny column of tissue and heats the tissue around it (Section 2). The body treats each column as a small wound and repairs it the same way it repairs any graze. The stages overlap.

Stage 1: stopping bleeding and inflammation (the first few days)

- **Haemostasis** (say "hee-mo-STAY-sis") means stopping bleeding. Within minutes, small vessels tighten and platelets clump to seal any pinpoint bleeding. The laser's heat also seals many small vessels.
- **Inflammation** follows: more blood flows to the area and white blood cells arrive to clear damaged tissue and fight germs. This causes redness, warmth, swelling and stinging, like strong sunburn.
- Swelling is usually greatest in the first 48 hours, especially around the eyes. Redness usually settles over about a week, though a pink tone can last longer after deeper treatments.

Stage 2: rebuilding (proliferation and re-epithelialisation)

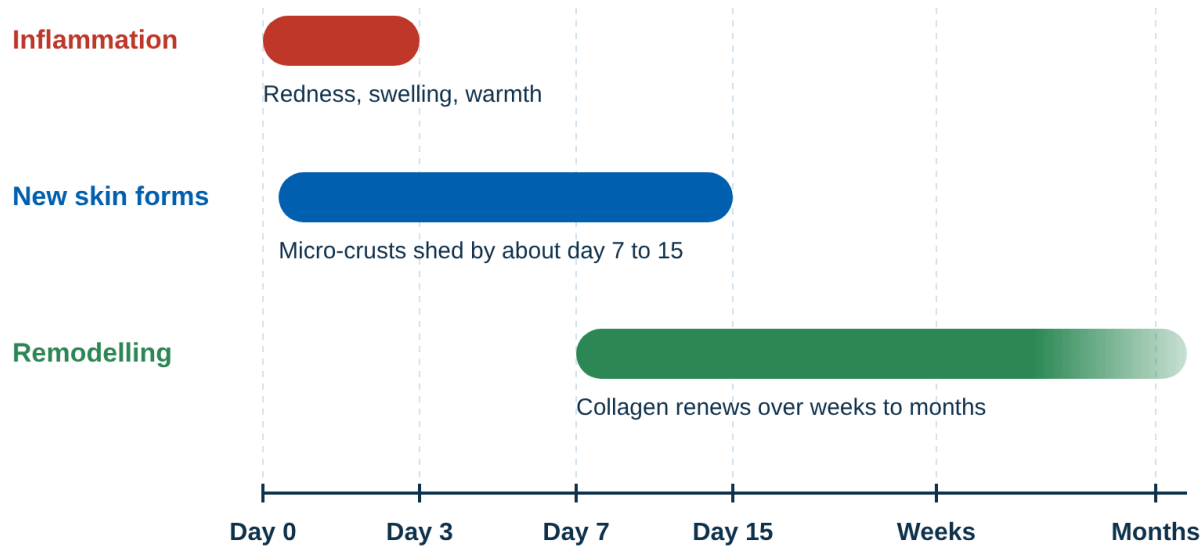
- **Re-epithelialisation** (say "ree-epi-THEE-lee-al-eye-ZAY-shun") means the surface skin growing back. New cells move in from the healthy skin around each tiny wound and up from follicles and glands.
- **Proliferation** means cells multiplying. Fibroblasts multiply and begin laying down new collagen.
- From about day 3, tiny brown dots or a bronzed, sandpaper look appear. These are micro-crusts: plugs of treated tissue pushed out by new skin underneath (sometimes called MENDs, microscopic epidermal necrotic debris).
- The micro-crusts flake off on their own, usually between about day 7 and day 15. Clients must not pick or scrub them.

Stage 3: remodelling (weeks to months)

- Fibroblasts keep making collagen, and it is gradually reorganised into a stronger pattern. This carries on for several months.
- This is why any change in texture, lines or scars appears gradually. Results vary from person to person.
- Temporary colour changes can also take months to settle. The manufacturer's older documents describe pigment recovering over about 2 to 6 months.

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How the skin heals after fractional CO_2



Redness usually settles in about a week, micro-crusts appear from about day 3 and shed between about day 7 and day 15, and collagen remodelling carries on for months. Deeper treatments take longer at every stage. Section 10 gives the day-by-day recovery guide.

Caution: when healing is not normal

Watch for pain that gets worse instead of better; yellow crusts, pus or a bad smell; spreading redness or heat; blisters; new cold sores; or redness that is not settling. These may mean infection, a burn or a cold sore outbreak. Section 10 explains what to do and when to refer.

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Why the untreated skin between the dots matters

"Fractional" means only a fraction of the skin is treated. The bridges of untouched skin between the dots are what make fractional treatment heal quickly:

- **Short distances:** new cells only travel a tiny way to cover each wound, so the surface closes far faster than after full-surface resurfacing.
- **Healthy cells nearby:** the skin, follicles and pigment cells between the dots supply the repair and help colour return evenly.
- **Barrier partly kept:** this lowers (but does not remove) the risk of infection, and keeps downtime to days rather than weeks.

> **Remember**
>
> Closer dots (smaller spacing) and more passes leave less healthy skin between the wounds. The treatment becomes stronger, but healing is slower and riskier, and overlapping dots start to behave like full-surface resurfacing. Never overlap scans unless your protocol tells you to.

Why skin ages

Intrinsic (natural) ageing happens to everyone, even on skin kept out of the sun. The skin becomes thinner and drier, fibroblasts make less collagen and elastin, renewal slows and fine lines appear.

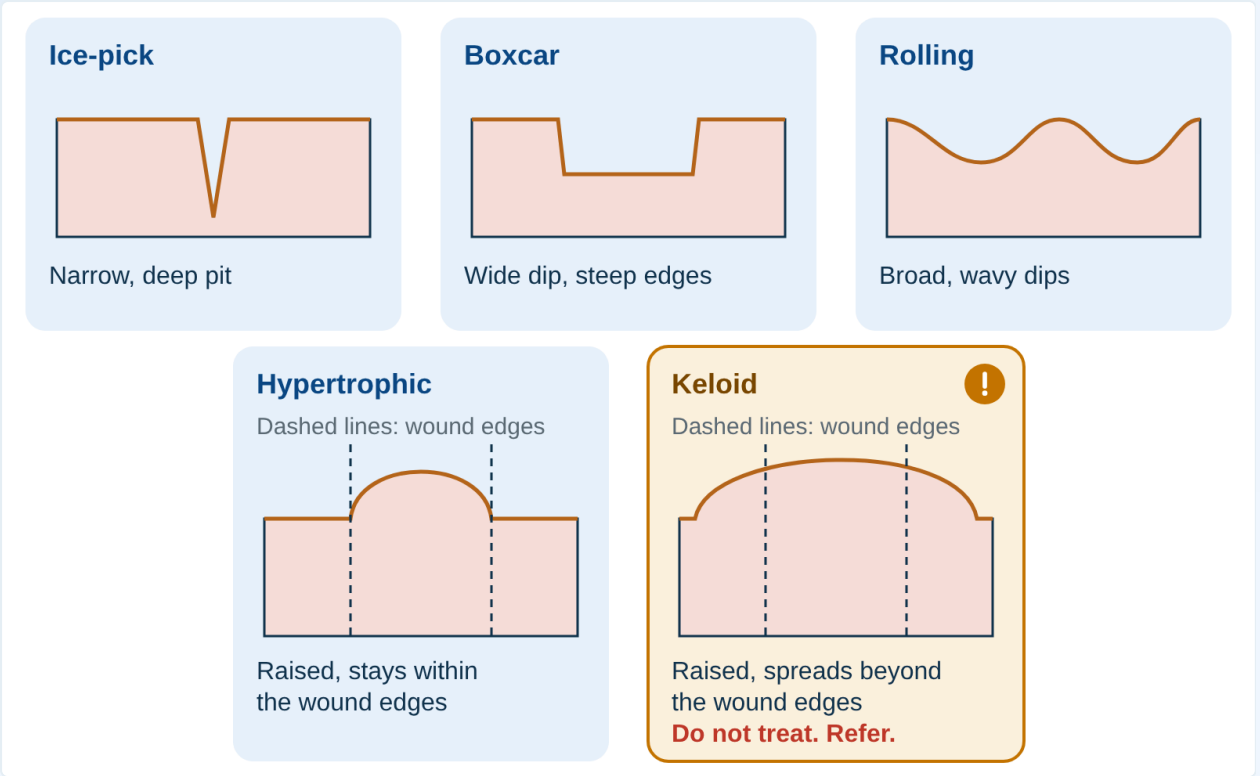
Photoageing is ageing caused by sunlight, mainly UV, on top of natural ageing. It shows most on the face, neck, chest and backs of the hands. UVA reaches the dermis and damages collagen and elastin; UVB mainly affects the epidermis and causes sunburn. Signs include coarse wrinkles, rough leathery texture, uneven colour, sun spots and small broken blood vessels. Smoking adds to both.

> **Key fact: what CO_2 can and cannot change**
>
> Fractional CO_2 is designed to work on the skin itself: texture, fine lines, some pigment and some scars. It may help mild laxity by supporting collagen remodelling. It does not replace lost fat or bone, lift heavy sagging, or stop ageing. Sun protection is essential to protect results and avoid colour change.

Scars

A scar is the skin's patch repair after an injury that reached the dermis. The new collagen is laid down quickly and untidily, with no hair follicles or sweat glands. Scars may be **atrophic** (sunken, too little collagen; most acne scars), **hypertrophic** (raised, but staying within the original wound) or **keloid** (raised and growing beyond the original wound).

Types of scar



The diagram shows three kinds of sunken (atrophic) acne scar and two kinds of raised scar. Keloids spread beyond the original wound, so do not treat them: refer the client instead.

Scar type	What it looks like	Fractional CO_2?
Ice-pick	Narrow, deep pits, as if pricked with an ice pick.	Often respond less well to fractional CO_2 alone. May need other treatments by a doctor.
Boxcar	Round or oval dips with steep, sharp edges and a flatter base.	Shallow to moderate boxcar scars may respond over a course of sessions.
Rolling	Broad, shallow dips with soft edges, giving a wavy surface.	May respond, especially in surface texture. Tethering bands underneath may need other treatment by a doctor.
Hypertrophic	Raised, firm, sometimes red or itchy, within the wound edges. Common after burns and surgery.	Established, healed scars only, and only if the client has no keloid tendency. Manufacturer settings in Section 7. If new, painful or growing: GP first.
Keloid	Raised, firm, growing beyond the wound, sometimes from a tiny injury. More common in darker skin and can run in families.	No. Do not treat. Refer to GP or dermatologist.

Most clients have a mix of scar types. Look under good, angled light. Explain that improvement, not removal, is the aim, that several sessions are usually needed, and that results vary. Do not treat over active acne.

Caution: keloids

Do not treat keloids, and do not treat clients with a history of keloid formation. The manufacturer lists a history of keloid or hypertrophic scarring as a contraindication. Ask every client: "Have you ever had a scar that grew bigger than the original wound, or became raised and lumpy?"

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Stretch marks (striae)

Stretch marks, or **striae** (say "STRY-ee"), are scars in the dermis that form when skin stretches quickly. Causes include pregnancy, growth spurts, weight change, muscle building and long-term steroid use.

- **Striae rubra** (newer): red, pink or purple, sometimes raised and itchy. Generally thought to be more responsive.
- **Striae alba** (older): white or silvery, often slightly sunken. Usually slower to show change, and colour may not change much.

Fractional CO_2 may help the texture of stretch marks over a course of sessions. They will not disappear. Body skin heals more slowly than the face, and colour change is a real risk on darker skin, so be conservative.

> ### Activity: scars and stretch marks
>
> A client shows you: (a) small, deep, narrow pits on her cheeks; (b) a raised, shiny scar on her shoulder that "started as a spot and kept getting bigger"; (c) silvery, slightly sunken lines on her hips from a pregnancy ten years ago. Name each one, say whether fractional CO_2 may be suitable, and say what you would tell her about realistic results.

Skin types: the Fitzpatrick scale

The **Fitzpatrick scale** groups skin into six types by how it reacts to the sun, from Type I (very fair, always burns) to Type VI (deeply pigmented, never burns). It is about how the skin **behaves**, not just its colour, so you must ask questions, not just look. This matters for CO_2 treatment. The more active a person's melanocytes are, the more likely they are to react to heat and injury by making extra pigment, or occasionally by losing it.

Type	Typical appearance	Reaction to sun	CO_2 risk	How to approach
I	Very pale. Often red or fair hair, light eyes, freckles.	Always burns, never tans.	Generally lower	Standard starting settings. Watch for prolonged redness.
II	Fair. Often fair hair, light eyes.	Usually burns, tans with difficulty.	Generally lower	Standard starting settings. Patch test.
III	Light to medium.	Sometimes burns, tans gradually.	Generally lower; some PIH risk	Start low. Patch test and wait for the result.
IV	Olive or light brown. Usually dark hair and eyes.	Rarely burns, tans easily.	Higher: PIH	More conservative (see below). Always patch test and wait.
V	Brown. Dark hair and eyes.	Very rarely burns.	High: PIH and hypopigmentation	Very conservative. Consider referral or an alternative.
VI	Deeply pigmented dark brown to black.	Never burns.	Highest: PIH, hypopigmentation, keloid	Very conservative or not at all. Consider referral or an alternative.

Skin type is a guide, not a certainty: always assess the individual.

The six Fitzpatrick skin types and CO_2 risk

Skin type	Reaction to sun	CO_2 risk	How to approach
I	Always burns, never tans	● Lower	Standard starting settings. Watch for long-lasting redness
II	Usually burns, tans with difficulty	● Lower	Standard starting settings. Patch test
III	Sometimes burns, tans gradually	● Lower, some risk of darkening	Start low. Patch test and wait for the result
IV	Rarely burns, tans easily	● Higher: darkening (PIH)	More conservative. Always patch test and wait
V	Very rarely burns	● High: darkening or loss of pigment	Very conservative. Consider referral or another option
VI	Never burns	● Highest: pigment change, keloid	Very conservative or not at all. Consider referral or another option

As skin type rises from I to VI, the risk of colour change after CO_2 rises. Types IV to VI need a more conservative approach every time.

Types I to III: generally lower risk

Use the manufacturer's reference settings for the indication, starting at the lower end, and build up only as the skin allows. Pigment change can still happen, especially with sun exposure afterwards. Type I in particular may stay red for longer. Always patch test and insist on strict sun protection.

Types IV to VI: higher risk, so be more conservative

- **Wider dot spacing**, so more untreated skin is left and less heat builds up.
- **Lower energy**: start at the bottom of the range and build up very gradually, if at all.
- **Fewer passes**: usually one conservative pass. Never stack pulses on the same spot.
- **Longer intervals** between sessions, so the skin (including any colour change) settles completely.
- **Always patch test and wait** at least 4 weeks before the full treatment (Section 7). Pigment changes can take several weeks to show.
- **Strict sun avoidance** before and after treatment.
- **Consider whether a referral or an alternative treatment is better**, especially for Types V and VI.

> ### Key fact: there is no proven non-prescription "priming" cream
>
> No non-prescription cream has been shown to stop pigment changes after CO_2 laser. In one trial, preparing the skin beforehand with glycolic acid, or with prescription creams, did not lower the rate of darkening compared with no preparation. What helps most is:
>
> - strict sun avoidance, no tanning or self-tan, and a daily broad-spectrum SPF 30 or higher (ideally SPF 50 with a high UVA rating) for at least 4 weeks before treatment;
> - stopping retinoids and exfoliating acids on the area at least 14 days before treatment (the stop period for skin types IV to VI in Section 6);
> - the gentler settings, patch test and wait listed above.
>
> Prescription lightening creams can only be recommended by a prescriber.

> **Remember: settings are in Section 7**
>
> This section shows which way to move the settings. The numbers, test-firing and patch testing are in Section 7. Some older texts give skin-type settings using large spot sizes (several millimetres) and long pulses. These do not apply to a fractional scanning head like the one on your teaching device, which uses a spot of about 0.15 to 0.2 mm.

How to work out a client's skin type

Do not judge by looking alone: lighting, make-up, a tan or redness can mislead you. Use the Fitzpatrick skin type questionnaire in the client forms at the back of this manual. Ask:

- What happens if you spend an hour in strong summer sun without protection? Do you burn, and how badly?
- Do you tan? How easily and how dark?
- What is your natural eye colour, and your natural hair colour (before colouring or greying)?
- What is your family background? (Ask sensitively. Skin behaviour is partly inherited, and people of mixed heritage may react in ways their skin colour does not suggest.)
- Have you ever had dark or light marks after a spot, cut, burn, wax or treatment?
- When did you last have sun, a sunbed or fake tan on the area?

Then compare untanned skin (such as the inner upper arm) with the treatment area.

> **Key fact: if in doubt, choose the higher type**
>
> If a client sits between two types, or their answers do not match what you see, treat them as the higher (darker) type. A "yes" to "Have you had dark marks after a spot or injury?" tells you the skin is prone to PIH, whatever its colour.

PIH and hypopigmentation

Post-inflammatory hyperpigmentation (PIH) means darker patches that appear after the skin has been inflamed or injured ("hyper" means too much). Irritated melanocytes make extra melanin. It usually shows as brown or grey-brown patches a few weeks after treatment. It is more common in Types IV to VI but can happen in anyone. The risk rises with aggressive settings, stacked or overlapping pulses, short intervals, picking crusts, infection and sun exposure. PIH often fades over months, but slowly.

Hypopigmentation means lighter or white patches where melanocytes have been damaged ("hypo" means too little). It is more noticeable on darker skin, more likely after deep or aggressive treatment, burns or infection, and may appear months later. It can be long-lasting and may not recover, so prevention is vital.

Caution: preventing colour change

- Assess skin type at every consultation, and again if the skin has changed (for example, a tan).
- Make sure the client understands strict sun avoidance and daily broad-spectrum sunscreen (Section 10), and never picks crusts.

Skin conditions that matter

Section 6 has the full contraindications table. Here is why these conditions matter.

Condition	What it is	What it means for CO_2
Active acne	Blocked, inflamed follicles: spots and sometimes cysts.	Do not treat over active acne: risk of flare, infection, PIH and new scars. GP first. Always ask about isotretinoin (Roaccutane): see Section 6.
Rosacea	Facial redness, flushing, visible vessels, sometimes spots. Heat is a trigger.	Do not treat during a flare. If mild and settled, use a conservative approach and patch test. CO_2 does not treat the redness itself.
Eczema (dermatitis)	Dry, itchy, inflamed skin with a weak barrier.	Do not treat active eczema. With a history, take extra care, patch test and keep aftercare fragrance-free.
Psoriasis	Raised, red or darker scaly patches, often on elbows, knees and scalp.	Risk of the Koebner response (see below). Do not treat active areas. With a history, seek medical advice and patch test first.
Vitiligo	The immune system destroys melanocytes, leaving white patches.	Can also show the Koebner response: new white patches may appear in treated skin and may not recover. Do not treat affected areas.
Melasma (chloasma)	Patchy brown pigment on cheeks, forehead and lip, linked to hormones and sun.	Heat can worsen it and rebound is a real risk. An advanced, cautious indication, not for new users.
Cold sores (herpes simplex)	A virus that lies dormant and can reactivate.	Treatment near the mouth can trigger an outbreak. Always ask (Section 6).

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The **Koebner response** (say "KERB-ner") is when a skin condition such as psoriasis or vitiligo appears in skin that has been injured, for example by a scratch, a burn or a laser. It means a CO_2 treatment could trigger new patches in the treated area.

Never treat any mole or lesion that is changing, bleeding, itchy or unusual. Refer the client to their GP.

Activity: skin typing in practice

Client A has light olive skin. She "never really burns" and tans quickly to a deep brown. Her parents are from southern Italy and Morocco. As a teenager she had dark marks after spots that took months to fade. (1) Which Fitzpatrick type would you record, and why? (2) List four ways you would adapt your approach. (3) What would you tell her about sun exposure?

Activity: healing and thin skin

(a) In your own words, tell a client how her face will look and feel on day 1, day 3, day 7 and day 14 after fractional CO_2, and what is happening underneath. (b) Explain in two sentences why the neck needs lower settings than the cheek.

Section 3 summary

- Fractional CO_2 works in the epidermis and upper dermis, stimulating fibroblasts to remodel collagen.
- Thin skin (neck, chest, hands) needs lower settings. The eye area is not treated on this course.
- Redness usually settles in about a week; micro-crusts appear from about day 3 and shed by about day 7 to 15; remodelling continues for months.
- The healthy skin between the dots is what makes fractional treatment heal quickly.
- Keloids and a keloid history: do not treat, refer.
- Types IV to VI: higher risk of PIH and hypopigmentation. Be more conservative, always patch test and wait, and consider referral or an alternative.

Check your understanding

Now answer questions 8 to 11 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Section 4 Your teaching device: the MED-870+

Learning outcomes

By the end of this section you will be able to:

- Name the main parts of the MED-870+ and say what each part does.
- Explain the regulatory status of the machine using the correct wording.
- Explain what each treatment head and each spacer is for, and choose the right one for a treatment.
- Find your way around the touchscreen and explain what each setting means.
- Choose a scan shape and size to suit the area being treated.
- Set the machine up, switch it on, check it and make it safe again, step by step.
- Move, store, clean and look after the machine correctly.
- Recognise common faults, know what you may safely check, and know when to stop and call an authorised engineer.
- Keep a maintenance record and a fault and repair log.

You will learn the practical skills on this course using one machine: the MED-870+ FOCXEL Fractional CO_2 Laser Therapy System. This section is your guide to that machine.

Most of what follows is specific to the MED-870+. Other fractional CO_2 lasers work on the same principles, but their parts, heads, screens, settings and maintenance needs are different.

Caution: every machine is different

The settings, parts and procedures in this section apply to the MED-870+ only. If you use a different CO_2 laser in practice, you must read and follow the manufacturer's user manual for that machine. You must also follow the Local Rules written for it by your Laser Protection Adviser (LPA). Never assume another machine works in the same way.

The machine at a glance

The MED-870+ is a Class 4 medical laser. It produces an invisible infrared beam at a wavelength of 10,600 nm (nanometres). Water in the skin absorbs this wavelength very strongly, which is why it is used to resurface the skin. You learned how this works in Section 2.

The machine is a free-standing console on wheels. The laser beam is made inside the console and travels up through a jointed arm to a treatment head that you hold in your hand. You fire the laser with a foot switch.

It has two treatment heads that are used on this course:

- **The fractional scanning head.** This is the main head. It places a grid of tiny laser spots on the skin, with untouched skin in between. It is used for resurfacing, rejuvenation, scars and pigmentation.
- **The UltraPulse surgical head.** This head focuses the beam into a single fine point. It is used for cutting, vaporising and sealing small lesions such as skin tags and milia.

> **Key fact: the name of the machine**
>
> The registered name is the MED-870+ FOCXEL Fractional CO_2 Laser Therapy System. Some older manufacturer documents use the names OEM-870+ or Model 870+. Use the registered name, MED-870+ FOCXEL, on your records, consent forms and Local Rules, as this matches the device label and its MHRA registration.

Regulatory status

When you talk to clients, insurers or inspectors about the machine, use accurate wording. The details below come from the manufacturer's documents and the MHRA registration.

Item	Details
Device name	MED-870+ FOCXEL Fractional CO_2 Laser Therapy System
Manufacturer	Beijing Kes Biology Technology Co., Ltd, No. 15, Zone 2, Mafang Industrial Park, Pingguyuan Zhongguancun Science and Technology Park, Pinggu District, 101204 Beijing, People's Republic of China
Medical device class	Class IIb
Laser class	Class 4 (BS EN 60825-1)
Notified body	TÜV SÜD (0123)
MHRA registration	Registered with the MHRA on 1 February 2026 under GMDN code 61473, dermatological carbon dioxide laser system. Registered devices can be checked on the MHRA's public register of medical devices (the Public Access Registration Database).
UK Responsible Person, UK importer and distributor	Skintastic Aesthetic Supplies Ltd. Carla Cooper-Gale is the MHRA-registered UK Responsible Person for this device.
Standards applied	IEC/EN 60601-1, 60601-1-2, 60601-2-22, 60825-1 and ISO 13485

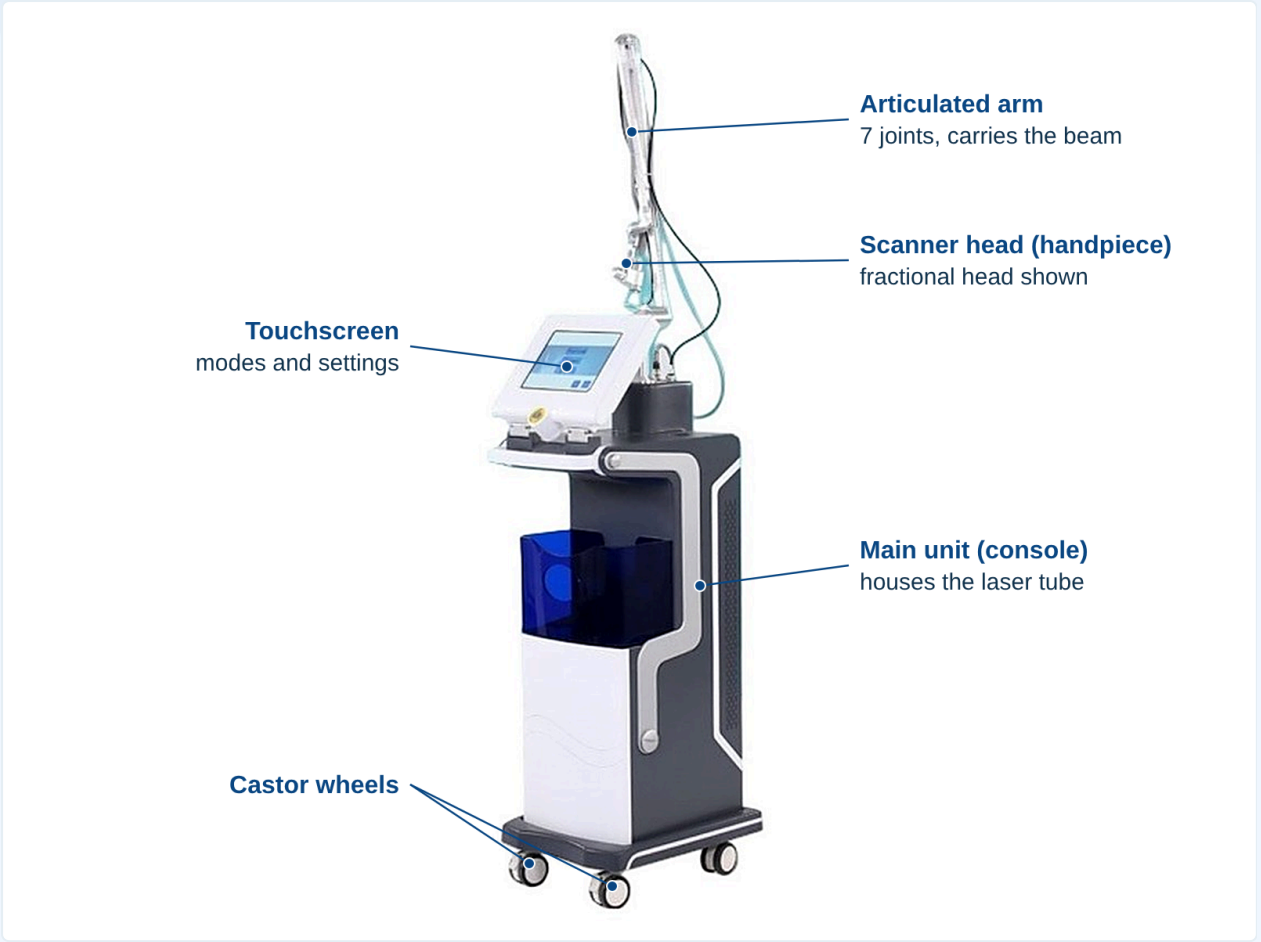
MED-870+ regulatory panel

Caution: what MHRA registration means

Registration with the MHRA does not represent accreditation, certification, approval or endorsement by the MHRA.

Never describe this machine (or any laser) as "MHRA approved", "MHRA certified" or "MHRA licensed". The correct phrase is "registered with the MHRA". Do not use the MHRA logo on any of your marketing.

The MED-870+: parts of the machine



The front and back of the MED-870+. Learn where each part is before you switch the machine on. Skintastic photograph.

Specification

The table below sets out the technical details of the MED-870+. You do not need to learn every figure, but you should know the ones in bold, because they matter for safety and for setting up treatments. Words you may not know are explained in Section 2.

Item	Specification
Laser type	**CO_2 laser, metal RF (radio frequency) tube**
Wavelength	**10,600 nm (invisible infrared)**
Laser class	**Class 4 (BS EN 60825-1)**
Maximum output power	**30 W** (see note 1)
Pulse energy	0.1 to 400 mJ
Pulse duration	0.1 to 10 ms, in 0.1 ms steps
Adjustment frequency	0 to 20 kHz
Dot spacing (fractional mode)	0.1 to 2 mm
Scanning area	**Maximum 20 × 20 mm**
Scan shapes	Rectangle, ellipse, circle, line, square, triangle and hexagon (plus a custom shape)
Beam diameter	0.15 mm
Spot size at the skin	About 0.15 to 0.2 mm (see note 2)
Beam divergence	5 mrad or less (full angle)
Working (focal) distance	50.8 mm (2 inches)
Nominal ocular hazard distance (NOHD)	**2 m (manufacturer's figure, to be confirmed for your premises by your LPA)**

MED-870+ technical specification

Item	Specification
Eyewear (manufacturer's statement)	OD 5+ at 10,600 nm. Your actual eyewear must be as specified by your LPA in your Local Rules (see the device box below).
Aiming beam	**Red diode laser, 635 nm, less than 5 mW (Class 3R)**
Beam delivery	7-joint balanced articulated arm
Cooling	Not stated in the manufacturer's specification. Follow your device manual.
Electrical supply	220 V ±10% or 110 V ±10%, 50/60 Hz (set at the factory for the UK supply)
Maximum power consumption	2000 W
Dimensions (L × W × H)	44 × 27 × 110 cm
Net weight	About 50 kg
Working temperature	+15 °C to +30 °C
Relative humidity	30% to 80%
Atmospheric pressure	86 to 106 kPa
Storage temperature	+5 °C to +55 °C, indoors, upright and dry (manufacturer's revised manual). Before use, let the machine reach the working range of +15 °C to +30 °C.

Note 1: 30 W is the maximum laser output recorded in the EN 60601-2-22 test report for this machine, and it is the figure Skintastic uses. Some marketing material for this model quotes 40 W. Do not repeat the 40 W figure: the tested maximum is 30 W. Your LPA bases the safety calculations for your premises on the information supplied for your machine.

Note 2: the manufacturer's specification table gives 0.15 mm. The manufacturer has also told the LPA that the focused spot at the tissue is 0.2 mm.

Operator and client eyewear for the MED-870+ is covered in Section 5. In your own clinic, your eyewear must always be as specified by your LPA in your Local Rules.

> **Key fact: the aiming beam**
>
> The red light you see when the machine is ready is the aiming beam. It shows you where the invisible CO_2 beam will land. It is a separate, low-power laser (Section 5 explains its class). Never look into it on purpose.

What comes in the box

The machine is delivered in two heavy-duty flight cases: one for the console and handpieces, and one just for the articulated arm. When it arrives, check every item against this list and report anything missing or damaged straight away.

Item	What it is	Quantity
Operator protective eyewear	Laser safety glasses for 10,600 nm to EN 207 (your LPA may require a higher specification; see above)	1
Patient protective eyewear	Total-blockout patient eye shields (the manufacturer lists them as corneal shields). Section 5 explains how client eye protection is used on this course.	1
Bind line (remote interlock bypass plug)	A plug that closes the interlock circuit when no door interlock is connected	1
Scanner head (galvanometer)	The fractional scanning handpiece	1
Articulated arm	7-joint balanced light-guide arm	1
Surgical cutting head	The UltraPulse incisional handpiece	1
Power cable	UK 13 A plug	1
User manual	English version	1
Key switch keys	Model 2801	2

Accessories supplied with the MED-870+

You will also use the foot switch, which plugs into the socket on the back of the machine, and the three spacers that fit on the fractional head. You may also find a separate silver arm in the box. The manufacturer says this is a tool for setting up (debugging) the machine, so store it safely and do not use it for treatment.

Caution: the interlock bypass plug ("bind line")

The manufacturer's documents call this plug the "bind line". It is a remote interlock bypass plug. A door interlock is a switch on the treatment room door that stops the laser if the door is opened. The bypass plug fools the machine into thinking an interlock is connected and closed.

Section 5 explains when it may be fitted.

Key fact: the keys

The machine comes with two keys (model 2801). The laser cannot be used without a key in the key switch. Remove the key whenever the machine is not in use or is left unattended, and keep both keys locked away. Your Local Rules will say who may hold them.

The parts of the machine

Front of the machine

Number	Part	What it does
1	Beam guide arm	The 7-joint articulated arm. It carries the beam from the console to the handpiece.
2	Fractional laser handpiece	The scanning head you hold during treatment. The UltraPulse head fits in its place when needed.
3	Colour touchscreen	Shows the settings, lets you change them, and shows the machine's status and alarms.
4	Power switch	Turns the machine on and off.
5	Main unit (console)	Contains the laser tube, power supply, cooling fans and electronics.
6	Castor wheels	Let you move the machine. Move it slowly and never tilt it.

Back of the machine

Number	Part	What it does
1	Air-pressure adjusting valve	Do not adjust the air-pressure valve unless your trainer or an authorised engineer tells you to.
2	Heat-dissipation vents	Let hot air out. Never block them. Keep the back of the machine clear of walls and curtains.
3	Power switch	The main power switch at the back.
4	Foot-switch socket	Where the foot switch plugs in.
5	Mains power socket	Where the power cable plugs in.

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Safety features

- **Key switch.** The laser cannot be used without the key.
- **Emergency stop.** The large red emergency stop button stops laser emission and cuts the power immediately. Before first use, your trainer will show you where it is on your machine. Write its location here: _____. The manufacturer describes it as "the prominent red button". Make sure you can reach it, and test it at the start of each session.
- **Remote interlock connector.** Connects the machine to a door interlock, so that opening the door stops the laser. Your trainer will show you where it is. Write its location here: _____. If the interlock (safety lock) plug is not connected, the machine sounds an alarm continuously until it is.
- **Self-test.** Each time you switch on, the machine checks itself, then keeps checking key functions during treatment.
- **Standby and ready.** The laser will only fire from the foot switch when the machine is in the ready state.

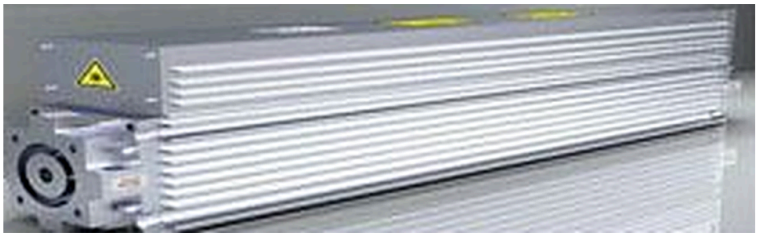
The laser tube

The beam is made inside the console by a metal RF tube. "RF" stands for radio frequency. The tube contains a gas mixture with carbon dioxide as the main working gas. Radio-frequency energy excites the gas so that it gives off laser light at 10,600 nm.

You never see or touch the tube. It sits inside the console, behind panels that must never be removed by anyone other than an authorised engineer. There is dangerous high voltage inside the machine, and some parts can hold a charge even when it is switched off.

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The RF metal laser tube



Metal RF laser tube

Makes the invisible 10,600 nm CO_2 beam. Sits inside the main unit. Air-cooled.

The metal RF tube is the heart of the machine. It sits inside the console and is not something you service yourself. Skintastic photograph.

Caution: never open the machine

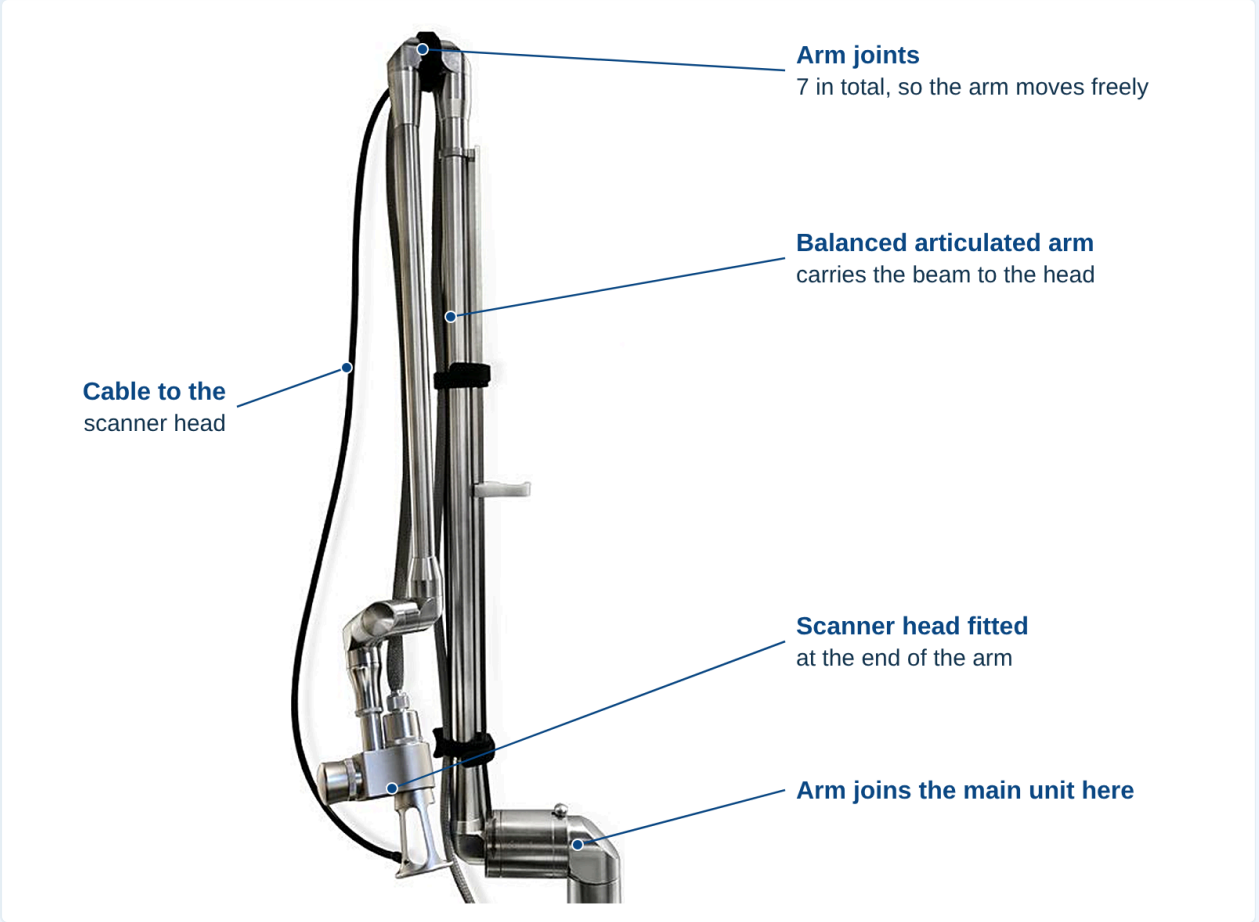
Only engineers authorised by the manufacturer or the distributor may open, repair or adjust the inside of the machine. Never remove the outer covers or the control or rear panels. Opening the machine is dangerous, and it will void the warranty.

The articulated arm

The beam cannot bend around corners by itself, so it travels from the console to your hand along an articulated arm. This is a hollow arm with seven joints. At the joints, small mirrors reflect the beam round each bend, so the beam reaches the handpiece wherever you move it. The arm is balanced so that it feels light and stays where you put it.

The mirrors inside the arm must stay perfectly lined up. A knock, a fall or a sharp twist can move them out of line. If that happens the beam may be weakened, land in the wrong place, or not reach the handpiece at all.

The 7-joint articulated arm



The 7-joint articulated arm carries the beam to the handpiece. Handle it gently and never force a joint. Skintastic photograph.

How to handle the arm

1. **Hold the handpiece, not the joints.** Guide the arm by the handpiece and let the joints follow. Do not pull the arm by its middle sections.
2. **Move it slowly and smoothly.** Avoid sudden swings, and never force a joint past the point where it stops.
3. **Never let it drop or hit anything.** Keep it clear of the couch, trolley, walls and lamp arms.
4. **Rest the head on its support.** When you are not treating, put the handpiece back on its holder on the machine. Never leave it hanging loose or lying on the couch.
5. **Do not lean on it or hang anything on it.** Cables, towels or the smoke evacuator tube should not be draped over the arm.
6. **Keep it clean and covered.** Wipe the outside of the arm weekly to remove dust. When storing the machine, protect the arm with a suitable cover, or return it to its own flight case for transport.

> **Remember**
>
> If the arm is knocked or dropped, do not carry on. Do a thermal card test-fire (see the set-up steps later in this section). If the pattern is weak, faded or out of line with the aiming beam, stop and contact an authorised engineer.

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What each tip does

This is one of the most important parts of the course. On the MED-870+ you control the type of treatment in two ways:

- by the treatment head you fit (fractional scanning head or UltraPulse surgical head), and
- on the fractional head, by the spacer you fit (Non-ablative, Micro-ablative or Ultra Fractional tip), together with the settings on the screen.

Most aesthetic treatments use the fractional head. The manufacturer describes it as sufficient for most aesthetic work. The UltraPulse head is only for cutting and removing small lesions.

The fractional scanning head

This is the main head for treatments on the face and body.

Inside the head is a fast-moving mirror called a galvanometer mirror. "Galvanometer" simply means a mirror that is moved very precisely by a small electric motor. The mirror steers the beam from spot to spot, many times a second, so that the laser places a neat grid of tiny spots (a dot matrix) on the skin.

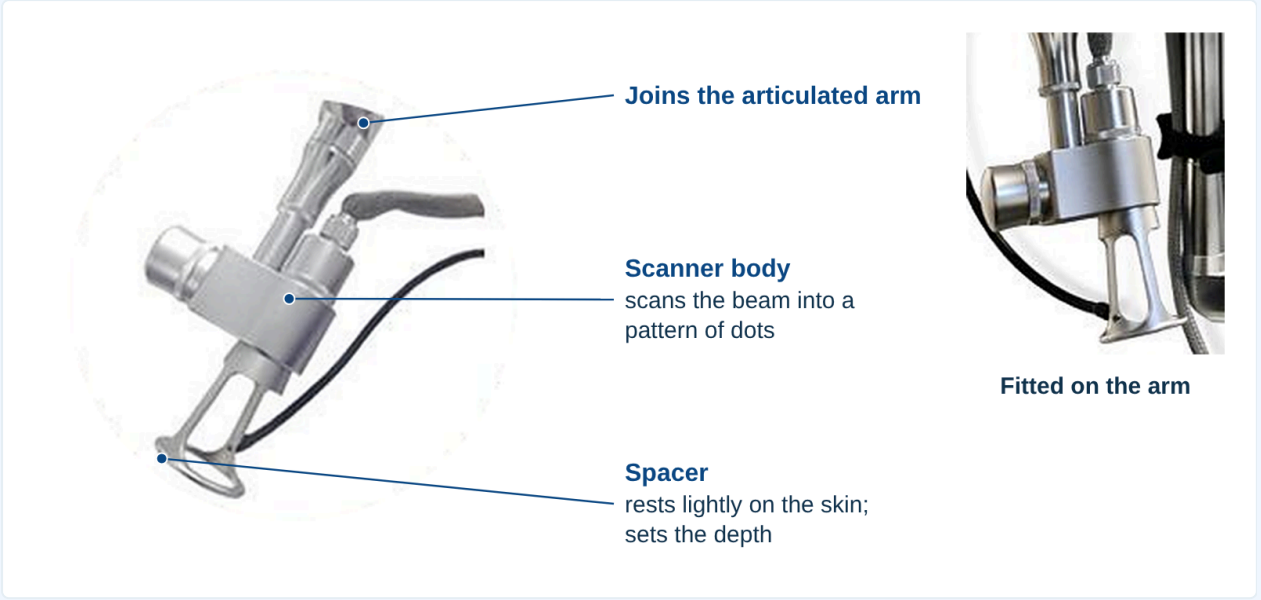
Each spot makes a microscopic treatment column called a microscopic treatment zone (MTZ). The untouched skin around each column helps the area heal more quickly. This is what "fractional" means: only a fraction of the skin is treated in each pass.

You choose the shape, size, spacing and energy of the grid on the Fractional screen.

The fractional head is used for:

- ✔ skin resurfacing and rejuvenation
- ✔ fine lines and wrinkles
- ✔ acne scars, acne marks and pits
- ✔ surgical, burn and traumatic scars
- ✔ enlarged pores and uneven texture
- ✔ pigmentation and sun-damaged (photoaged) skin
- ✔ stretch marks

The fractional scanning head



The fractional scanning head. A galvanometer mirror inside steers the beam into a grid of tiny spots. The spacer fits on the end. Skintastic photograph.

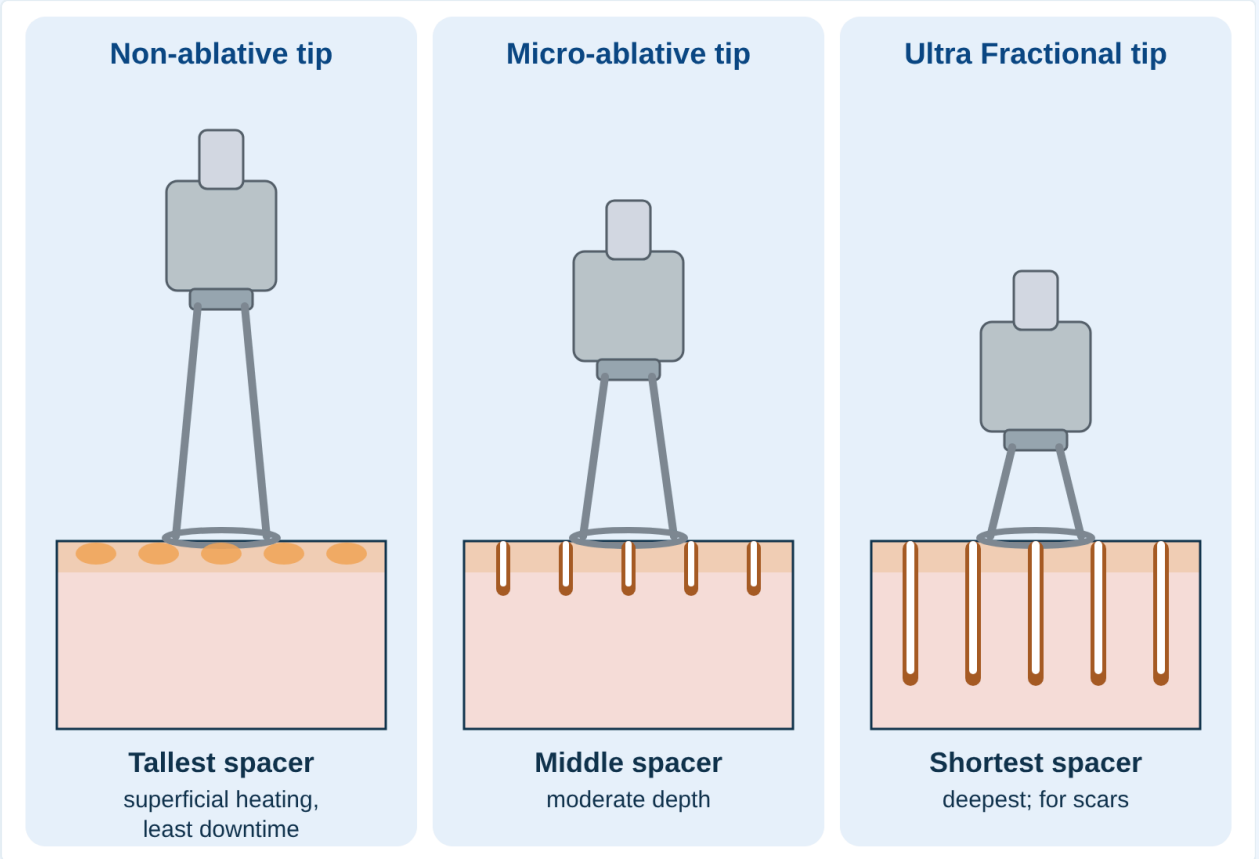
The three spacers

Three spacers fit onto the end of the fractional head. The spacer you choose controls how deep the treatment reaches. Choosing the spacer is the first decision for any fractional treatment. You then set the power, energy, duration and spacing on the screen.

The spacer also rests lightly on the skin during treatment. This keeps the head at the right distance and at a right angle (90 degrees) to the skin. Section 8 explains handpiece technique in detail.

- **Non-ablative tip: non-ablative.** The gentlest and most superficial setting, with the least downtime. Suited to lighter rejuvenation.
- **Micro-ablative tip: micro-ablative.** A moderate depth, between the other two. Used for superficial (epidermal) work.
- **Ultra Fractional tip: deep ablative.** The deepest setting, reaching into the dermis. Used for scar revision and more resistant problems. The manufacturer's parameter sheet calls this the "ultra-ablative" tip.

The three spacers and how deep each one reaches



The Non-ablative tip gives the most superficial treatment, the Micro-ablative tip a moderate depth and the Ultra Fractional tip the deepest. A shorter spacer means a deeper treatment.

Spacer	Depth	What it is best for	Typical treatments (manufacturer)
Non-ablative tip	Non-ablative (most superficial)	Gentle work with the least downtime	Light skin rejuvenation, fine texture and tone, tender skin
Micro-ablative tip	Micro-ablative (moderate)	Superficial (epidermal) ablation	Fine lines and wrinkles; chloasma (melasma), which is an advanced indication
Ultra Fractional tip	Deep ablative ("ultra-ablative")	The deepest treatment, into the dermis	Acne marks and pits, burn scars, other scars, stretch marks, speckle (freckles and pigment)

Which spacer to use

The three spacers side by side

Each spacer is engraved with its name, so always read the label before you fit it. The top of each spacer has a screw thread, and it screws onto the end of the fractional scanning head. The Ultra Fractional tip is engraved "Ultra Fractional tips". In this manual it is called the Ultra Fractional tip, and the manufacturer's settings sheet calls it the "ultra-ablative" tip.

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The three spacers: non-ablative, micro-ablative and ultra fractional (deep ablative)



From left to right: non-ablative, micro-ablative and ultra fractional (deep ablative). The ring at the bottom rests lightly on the skin; the threaded top screws onto the scanning head.

	Non-ablative	Micro-ablative	Ultra fractional (deep ablative)
Engraved	"Non-ablative tips"	"Micro-ablative tips"	"Ultra Fractional tips"
Length	Tallest	Middle	Shortest
What it does	Heats the skin in tiny columns without breaking the surface. The gentlest option.	Makes tiny, shallow treated channels in the upper layers of the skin.	Makes deeper treated channels reaching into the dermis. The strongest option.
Use it for	Skin rejuvenation: dull or sun-damaged skin, uneven texture, enlarged pores, first treatments.	Fine lines and wrinkles. Melasma is listed by the manufacturer but is advanced only.	Acne marks and pits, surgical and burn scars, stretch marks, pigment spots.
Manufacturer reference	Rejuvenation: 20 W, 0.4 ms, 8 mJ, 1.0 mm.	Fine lines: 25 W, 0.4 to 0.6 ms, 10 to 15 mJ, 0.6 to 0.8 mm.	Depends on the treatment: from 25 W, 0.4 to 0.6 ms, 10 to 15 mJ, 0.8 to 1.0 mm (acne marks) up to 30 W, 1.2 to 1.5 ms, 36 to 45 mJ, 0.6 to 0.8 mm (burn scars). See the Section 7 table.
Start here as a new user	20 W, 0.4 ms (8 mJ), 1.0 mm, one pass.	25 W, 0.4 ms (10 mJ), 0.8 mm, one pass.	The "Start here" setting on the treatment card for that indication, one pass, treating the scar or mark only.

	Non-ablative	Micro-ablative	Ultra fractional (deep ablative)
What you should see	Fine pinpoint redness and an even dot pattern.	Pinpoint redness and a light, even frosting that settles.	Fine carbonised dots over the scar or mark. Wipe residue with saline.
Typical downtime	About 3 to 5 days.	About 5 to 7 days.	About 7 to 10 days.
Sessions	1 to 4, 4 to 6 weeks apart.	1 to 4, 4 to 6 weeks apart.	Usually 1 to 3, 2 to 3 months apart for scars.

Key fact: same settings, different spacer, different result

The spacer and the screen settings work together. The same power, duration and spacing will treat more deeply with a shorter spacer. Always fit the spacer named on the treatment card, then enter the settings, then test on a thermal card. The full settings for every treatment are in Section 7 and on the Quick Guide cards.

Caution: even the Non-ablative tip can burn

The manufacturer calls the Non-ablative tip "non-ablative", but it is still a Class 4 CO_2 laser. The manufacturer warns that even the non-ablative tip can burn if the energy is set too high. Always start low, test-fire on a thermal card and do a patch test. If you are unsure, lower the energy or the pulse duration.

▣ On your teaching device: the MED-870+

The spacer you fit must match the "tip" given for each treatment in the manufacturer's reference settings (Section 7). Check the spacer before every treatment: the wrong spacer with the right settings can still give the wrong depth.

The manufacturer confirms there are three spacers and that you tell them apart by their length. The tallest is non-ablative (gentlest), the middle one is micro-ablative, and the shortest is deep ablative (strongest). Screw the spacer onto the end of the scanning head by hand, exactly as your trainer shows you. It must be firmly seated before you fire: a loose spacer changes the treatment depth.

The UltraPulse surgical head

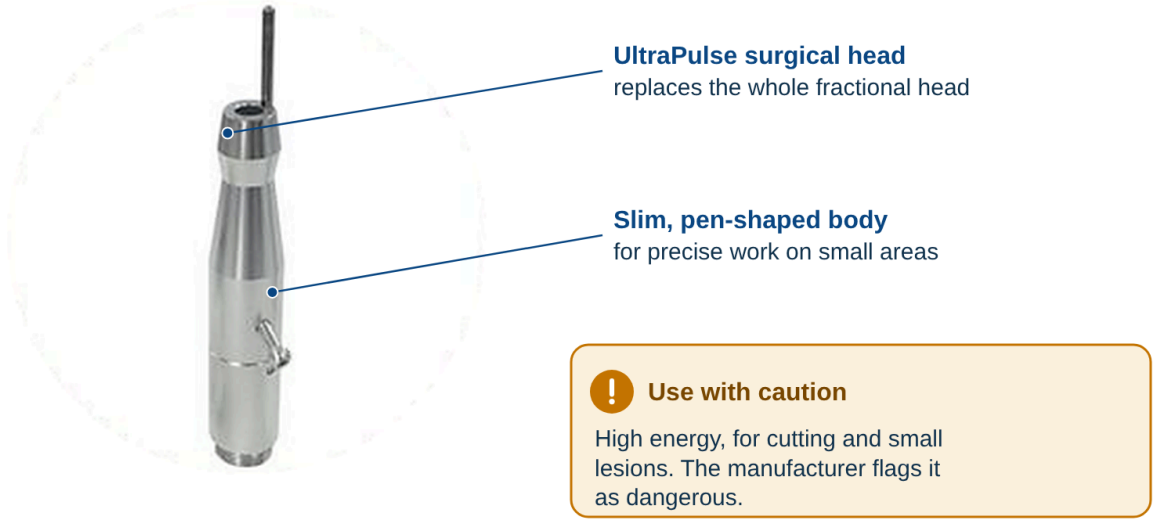
The UltraPulse head is completely different from the fractional head. It does not scan a grid. Instead it concentrates the beam into one fine point that you move by hand to cut, vaporise or seal tissue precisely.

To use it, you remove the whole fractional head from the arm and fit the UltraPulse head in its place. It is not a spacer or an attachment. You then set it up on the Pulse screen (the "Normal" button on the main screen), using Single mode for short bursts or Continuous mode for cutting.

The UltraPulse head is used for:

- ✔ removing skin tags
- ✔ removing milia
- ✔ removing moles (naevi) and other benign skin growths
- ✔ removing warts (verrucae)
- ✔ surgical incision (cutting)
- ✔ control of minor bleeding (haemostasis)

The UltraPulse surgical head



The UltraPulse surgical head replaces the whole fractional head. It focuses the beam to a single fine point for precise work on small lesions. Skintastic photograph.

Caution: the UltraPulse head is high-risk

The manufacturer has flagged the UltraPulse head as dangerous. It delivers concentrated, high-energy laser light to one point. Use it only for the purposes above, only within your training and competence, and always start at a low power.

Any lesion must be confirmed as benign first (Section 6 and Section 8).

Your LPA has said that using the UltraPulse head may affect the eyewear you need. Always check your Local Rules.

Activity: match the tip to the treatment

For each of these, write down which head you would fit and, for the fractional head, which spacer: (a) a client wanting a gentle "glow" treatment with little downtime; (b) rolling acne scars on the cheeks; (c) a small skin tag on the neck; (d) fine lines around the mouth.

The touchscreen, screen by screen

Everything about the treatment is set on the colour touchscreen. Along the top are five tabs. Touch a tab to open that screen. On each screen, touch the minus (−) or plus (+) button beside a setting to lower or raise it.

The five tabs along the top of the screen



The highlighted tab shows which screen is open.

Tab	What it opens	Used on this course?
Fractional	The fractional (dot pattern) screen, used with the fractional scanning head and its spacers.	Yes. This is the main screen.
Normal	The pulse screen, used with the UltraPulse surgical head. It has four firing modes: Pulse, Single, Ultra Pulse and Continuous.	Yes, for benign lesion removal.
Gynae	Settings for an intimate treatment head.	No. Not covered by this course.
Vulva	Settings for an intimate treatment head.	No. Not covered by this course.
Setting	Language, sound, alarms and the engineer's advanced settings.	Only to check alarms, language and sound.

Key fact: energy is worked out for you

On both treatment screens, the machine shows the energy per dot or per pulse in millijoules (mJ). It is worked out as power (W) multiplied by duration or pulse width (ms). You cannot type the energy in. To change it, change the power or the duration.

Examples from the photographs in this section: 20 W × 1.0 ms = 20 mJ on the Fractional screen, and 1 W × 5 ms = 5 mJ on the Normal screen. Always look at the Energy box after you change anything.

Caution: check every value before every client

The machine remembers the last settings used, and saved settings can be loaded with one touch. Never assume the screen is set correctly. Before every client, read every box on the screen from top left to bottom right and compare it with your treatment card.

The Fractional screen

Use this screen with the fractional scanning head. The settings on the left control the dots. The settings on the right control the shape and pattern. Power, Energy and the Ready button are along the bottom.

The Fractional screen on the MED-870+



The Fractional screen. The settings shown are an example only, not a treatment setting.

Each control on the Fractional screen, in order



Distance (mm)

What it is: The dot spacing: the gap between the centres of two neighbouring laser dots.

What it does to the skin: A smaller distance packs more dots into the same area. More skin is treated and more heat builds up, so the effect is stronger and downtime and risk go up. A larger distance is gentler.

Range: 0.1 to 2.0 mm, in 0.1 mm steps.

As a new user: Use the distance on the treatment card (for example 1.0 mm for skin rejuvenation). Never go tighter than the card on a first session.



Duration (ms)

What it is: How long the laser stays on each dot, in milliseconds. Also called dwell time.

What it does to the skin: A longer duration puts more energy into each dot. The column goes deeper and the heated zone around it gets wider.

Range: 0 to 10 ms, in 0.1 ms steps.

As a new user: Use the duration on the treatment card (for example 0.4 ms for skin rejuvenation). To make a treatment gentler, shorten the duration first.



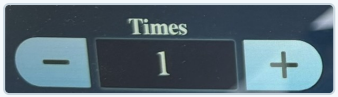
Interval (s)

What it is: The pause between one scan and the next while you keep the foot switch pressed down.

What it does to the skin: It does not change the energy in each dot. It controls how quickly the next scan follows, which decides how much time you have to lift and move the head.

Range: 0.1 to 2.0 s, in 0.1 s steps.

As a new user: Set a longer interval so you have time to move the head cleanly to the next area. Shorten it only as your technique becomes smooth and even.



Times

What it is: How many times the pattern is fired on the same spot each time a scan is triggered.

What it does to the skin: Any number above 1 stacks the pattern on the same skin. Heat builds up, so the treatment becomes deeper and riskier.

Range: 1 to 10.

As a new user: Always 1. Never stack as a new user.



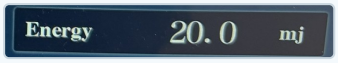
Power (W)

What it is: The laser output in watts.

What it does to the skin: With the same duration, more power means more energy per dot and a deeper, hotter column.

Range: From 1 W, in 1 W steps, up to the maximum of your laser (30 W on the MED-870+, the tested maximum output).

As a new user: Use the power on the treatment card.



Energy (mJ)

What it is: A display of the energy delivered to each dot. You cannot set it directly.

What it does to the skin: This is the figure that matters most for depth. Higher energy means deeper columns.

Range: Worked out by the machine: power × duration.

As a new user: Check it every time and compare it with the card.



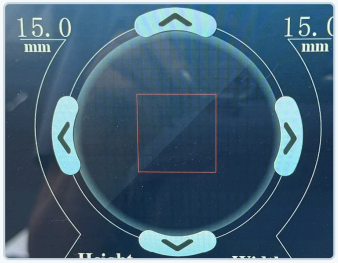
Shape

What it is: The outline of the scan pattern. Touch minus or plus to step through the seven shapes: square, rectangle, circle, ellipse, line, triangle and hexagon.

What it does to the skin: The shape does not change the depth. It decides which skin is covered, so you can fit the scan to the area.

Range: Seven shapes. The machine also has a custom drawing option, which is not covered by this course.

As a new user: Square or rectangle for the cheeks and forehead. Smaller squares and triangles for the nose. A line for narrow marks.



Height and width (the circle in the centre)

What it is: The circle shows the chosen shape. The two numbers above it (15.0 mm in the photograph) are the height and the width of the shape. The arrow buttons around the circle change them.

What it does to the skin: A bigger shape covers more skin with each scan. It does not change the depth. On curved areas a large shape loses even contact, so use a smaller one.

Range: 0.5 to 25 mm in 0.5 mm steps on the screen. The scanning area is only 20 × 20 mm, so never set more than 20 mm.

As a new user: Use the size on the treatment card. Make it smaller on the nose, around the mouth and on the jawline.



The three mode icons (under Height and Width)

What it is: Choose the treatment mode. Left icon (dots): Fractional mode. Middle icon (circles): Shallow mode. Right icon (dots and circles): Dual mode, which combines the two.

What it does to the skin: Shallow and Dual modes add a second, shallower pattern using the Shallow Distance and Shallow Energy settings.

Range: Three options.

As a new user: Always select the left (dots) icon. Shallow and Dual modes are not covered by this course.



Scan Modes

What it is: The order in which the dots are fired. Order fires them in rows from one side to the other. Random fires them in a random order. Split divides the shape into an upper and a lower half.

What it does to the skin: It does not change the energy per dot. Random spreads the heat because neighbouring dots are not fired one straight after another.

Range: Order, Random or Split.

As a new user: Order. All the manufacturer's reference settings use Order. Check this box before every client, as the machine remembers the last choice.



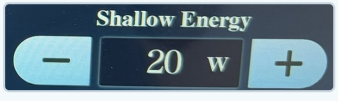
Shallow Distance (mm)

What it is: The dot spacing for the shallow pattern.

What it does to the skin: It only works in Shallow or Dual mode. In Fractional mode (the dots icon) it has no effect.

Range: As shown on the screen.

As a new user: Leave it alone.



Shallow Energy (W)

What it is: The power used for the shallow pattern.

What it does to the skin: It only works in Shallow or Dual mode. In Fractional mode it has no effect.

Range: As shown on the screen.

As a new user: Leave it alone.

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Memory buttons 1 to 5, Read and Save

What it is: Five memory slots for settings. Save stores the settings on the screen in a slot. Touching a number loads the settings saved in that slot, replacing what is on the screen.

What it does to the skin: None directly. Loading the wrong slot changes every setting at once.

Range: Five slots.

As a new user: Write down what each slot holds. After loading a slot, read every box before treating.



Red light

What it is: A slider that sets the brightness of the red aiming beam.

What it does to the skin: None. The aiming beam only shows where the laser will land.

Range: Dim (moon) to bright (sun).

As a new user: Bright enough to see clearly on the skin.



Standby and Ready

What it is: Standby: the laser cannot fire. Ready: the machine gives three beeps, and the laser then fires when you press the foot switch.

What it does to the skin: None in itself, but in Ready the laser is live.

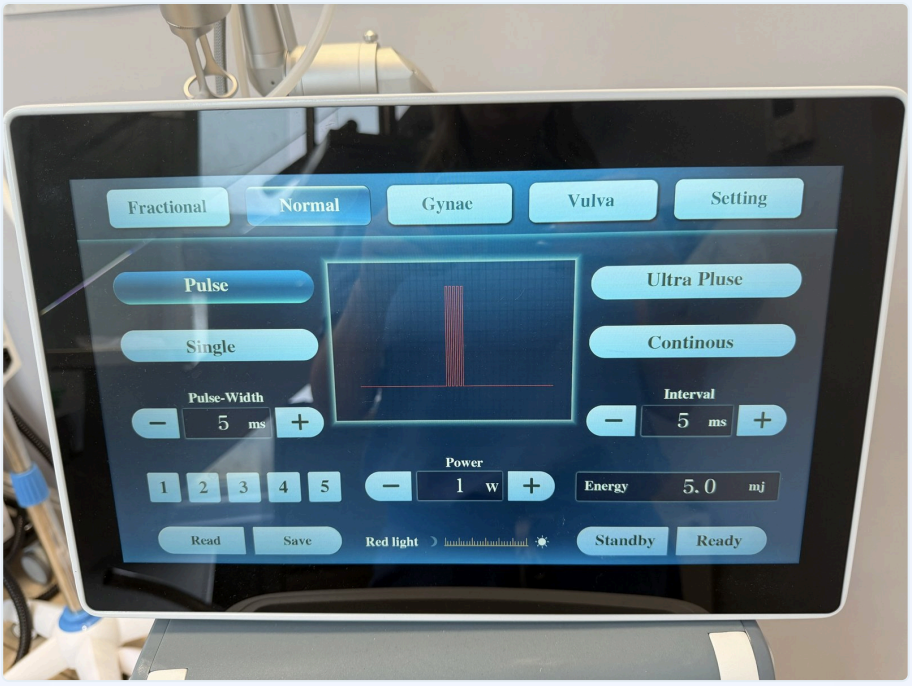
Range: Two states.

As a new user: Stay in Standby until eyewear is on, the client is protected and you are holding the head in position. Go back to Standby every time you stop, even for a moment.

The Normal screen (UltraPulse head)

Use this screen with the UltraPulse surgical head, for benign lesion removal. On the left and right are the four firing modes. Touch one to select it. It turns dark blue when selected. The graph in the centre shows the pattern of pulses.

The Normal screen on the MED-870+



The Normal screen with Pulse mode selected. The settings shown are an example only. The screen spells two buttons as "Ultra Pluse" and "Continous".

The four firing modes



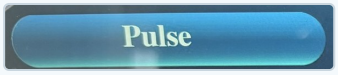
Single

What it is: One pulse each time you press the foot switch. The length of the pulse is set by Pulse-Width.

What it does to the skin: The most controlled mode. You decide every pulse.

Range: Pulse-Width 1 to 50 ms. No interval.

As a new user: This is the mode to use for small benign lesions as a new user.



Pulse

What it is: A stream of pulses for as long as you keep the foot switch pressed, with a gap (Interval) between them. The manufacturer describes it as the most commonly used mode.

What it does to the skin: More continuous heating than Single. The gap lets the tissue cool a little between pulses.

Range: Pulse-Width 1 to 50 ms. Interval 1 to 50 ms.

As a new user: Only once you are confident in Single mode, under supervision.



Ultra Pulse

What it is: Faster, shorter, higher-energy pulses.

What it does to the skin: Short pulses vaporise tissue with less heat spreading into the skin around it.

Range: Pulse-Width 0.1 to 5 ms. Interval 0.1 to 50 ms.

As a new user: Advanced. Use only under supervision.



Continuous

What it is: The laser fires without stopping for as long as the foot switch is pressed.

What it does to the skin: The greatest heat effect. Used for cutting. It can burn deeply and char tissue very quickly.

Range: No pulse width or interval.

As a new user: Not for new users.

The settings on the Normal screen



Pulse-Width (ms)

What it is: How long each pulse lasts, in milliseconds.

What it does to the skin: A longer pulse delivers more energy and more heat into the lesion and the skin around it.

Range: Depends on the mode (see above).

As a new user: Start short. The older manufacturer sheet uses 3.6 ms for small moles and milia.



Interval (ms)

What it is: The gap between pulses in Pulse and Ultra Pulse modes.

What it does to the skin: A longer gap gives the tissue more time to cool between pulses. Reducing it towards zero makes the laser behave almost like Continuous mode.

Range: 1 to 50 ms (Pulse), 0.1 to 50 ms (Ultra Pulse). Not used in Single or Continuous.

As a new user: Not used in Single mode.



Power (W)

What it is: The laser output in watts.

What it does to the skin: More power vaporises tissue faster and deeper.

Range: From 1 W in 1 W steps.

As a new user: Start low, below 15 W, in Single mode. Increase 1 W at a time only if needed.



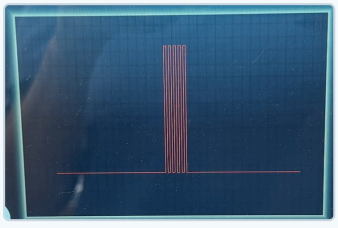
Energy (mJ)

What it is: A display of the energy in each pulse, worked out as power × pulse width.

What it does to the skin: The higher the energy, the more tissue each pulse removes.

Range: Displayed only.

As a new user: Check it before every pulse train.



The pulse graph (centre)

What it is: A picture of the pulse pattern for the mode you have chosen.

What it does to the skin: None. It is there to help you see what the laser will do.

Range: Changes with the mode.

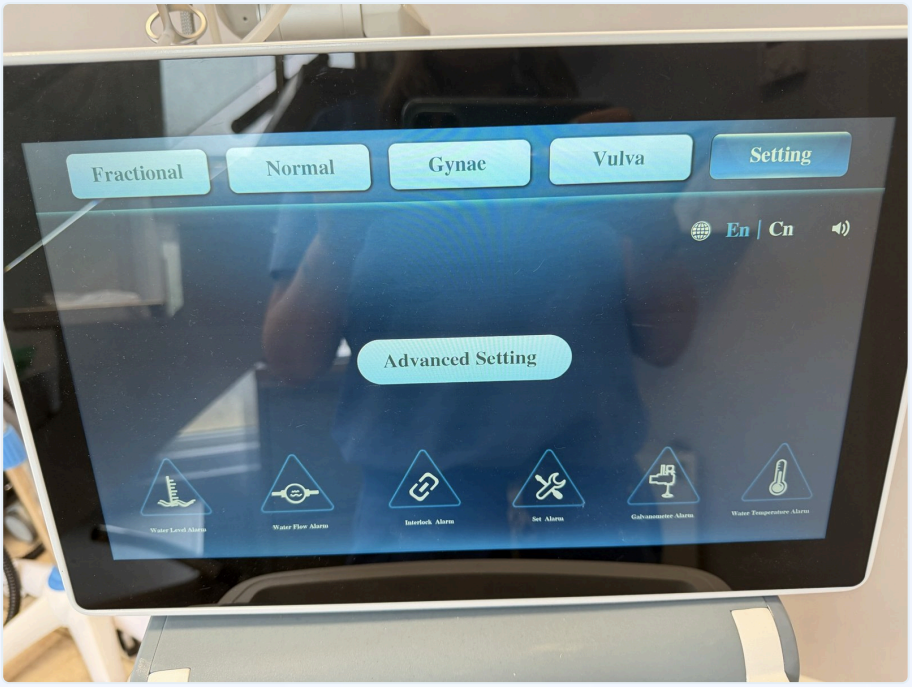
As a new user: Use it to check you are in the mode you meant to choose.

The memory buttons, Red light slider, Standby and Ready work in the same way as on the Fractional screen.

The Setting screen

Touch Setting to open this screen. It does not change any treatment settings.

The Setting screen on the MED-870+



The Setting screen, with the six alarm symbols along the bottom.



Language and sound

What it is: En or Cn sets the screen language to English or Chinese. The speaker symbol turns the beeps on or off.

What it does to the skin: None.

Range: English or Chinese. Sound on or off.

As a new user: English, with the sound on. The beeps tell you when the laser is ready.



Advanced Setting

What it is: Password-protected settings for the manufacturer and authorised engineers, including calibration.

What it does to the skin: Changing these could change the laser output.

Range: Engineer only.

As a new user: Never open it.

The six alarm symbols

If the machine detects a problem, the matching alarm shows and the machine sounds a warning. The table says what each symbol means and what to do.

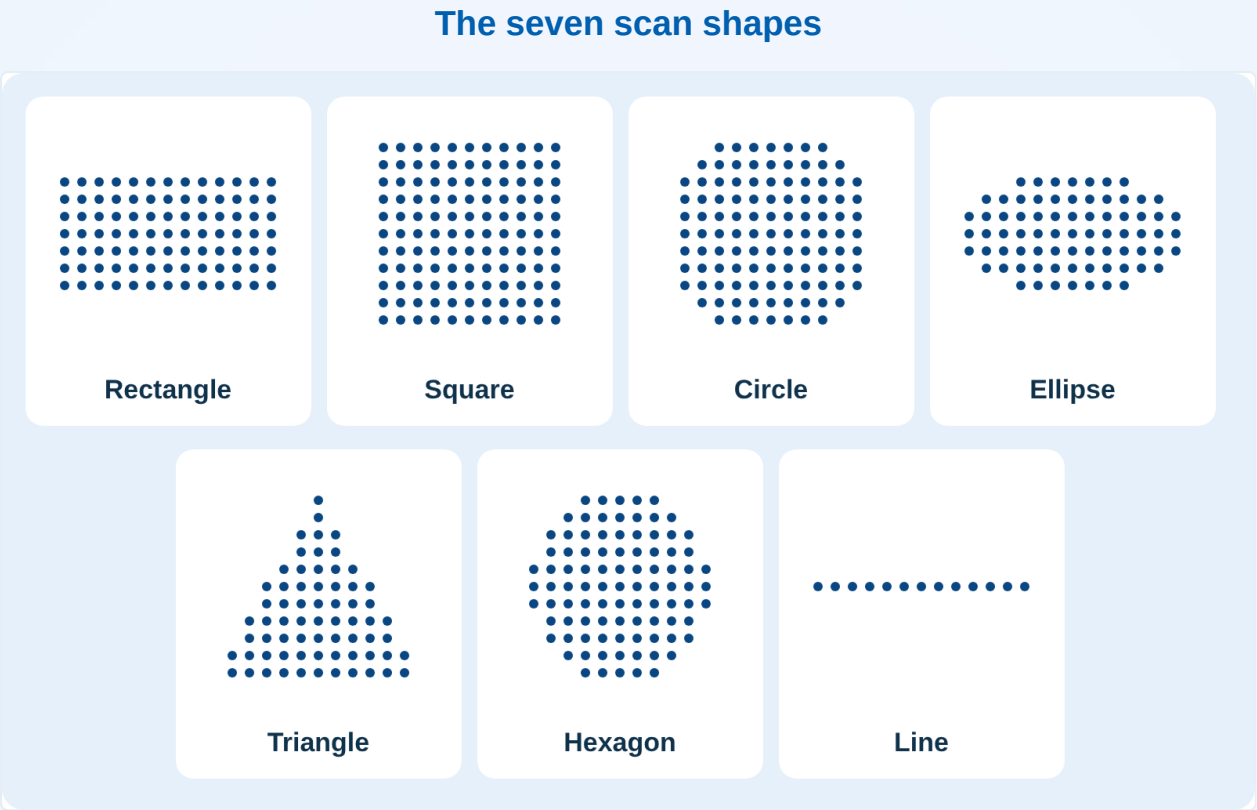
Alarm (left to right)	What it means	What to do
Water Level Alarm	A cooling water level problem.	Stop. Switch off with the key. Contact your supplier.
Water Flow Alarm	A cooling water flow problem.	Stop. Switch off with the key. Contact your supplier.
Interlock Alarm	The interlock (safety lock) is not connected, or the door is open. The alarm sounds continuously until it is connected.	Close the door and check the interlock plug is fully connected.
Set Alarm	A system malfunction.	Stop. Switch off with the key. Contact your supplier.
Galvanometer Alarm	A fault with the scanner (the moving mirrors in the fractional head).	Stop. Do not use the fractional head. Contact your supplier.
Water Temperature Alarm	The cooling system is too hot.	Stop. Switch off and let the machine cool. If it happens again, contact your supplier.

> **Key fact: never open Advanced Setting**
>
> Laser output and scanner calibration are factory settings. They must only be changed by an authorised engineer. If anything on the Setting screen looks different from normal, stop and contact your supplier.

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The seven scan shapes

In Fractional mode you choose a shape for the grid of spots. The MED-870+ has seven shapes: rectangle, ellipse, circle, line, square, triangle and hexagon. There is also a custom option, where you draw your own shape on the screen with your finger. You can then adjust its size and its height-to-width proportions. This is useful for scars and patches with an irregular outline.



The seven scan shapes. Choose the shape and size that let you cover the area evenly with the fewest gaps and no overlaps.

Choosing the shape and size

The aim is to cover the treatment area evenly, placing each scan edge to edge with the last one, without gaps and without overlaps. Overlapping scans give a double dose of energy to the overlap and can burn. Large shapes cover flat areas quickly. Small or narrow shapes let you work safely around curves and edges.

Area	Shape	Size
Cheeks, forehead and other broad, flat areas	Square	Up to the maximum 20 × 20 mm (manufacturer's guidance for the face)
Nose	Square and triangle together (manufacturer's guidance)	Smaller, to follow the curves
Edge of a full-face treatment nearest the eyes	Rectangle (manufacturer's guidance)	Narrow, to keep well outside the bony rim of the eye socket. Treatment around the eyes is not covered by this course.
Along the jawline, a lip line or the edge of a treatment area	Line or narrow rectangle	Small
A single round scar or spot	Circle or ellipse	Just larger than the scar
An irregular scar	Custom shape	Drawn to match the outline
Larger body areas	Square or hexagon (hexagons fit together with fewer gaps)	Larger

Shape and size guide

Before you fire, always press Preview. The aiming beam traces the shape on the skin, so you can check it is the right size, in the right place and clear of the eyes, lips and hairline.

Activity: getting to know the screen

Complete this on the practical day, during your trainer's demonstration, with the machine in standby. Find each of these on the touchscreen and write down what it is currently set to: power, duration, energy, distance, times, scan shape, graphic height and width, and scan mode. Then change the dwell from 0.4 ms to 0.6 ms at the same power and write down what happens to the point energy, and why.

Where to put the machine

Before you set up for the first time, make sure the room and power supply are right. Section 5 covers the Laser Controlled Area in detail. For the machine itself:

- Place it in a well-ventilated room, away from heaters, radiators and appliances that give off heat, such as fridges.
- Keep the temperature between 15 °C and 30 °C and the humidity between 30% and 80%. An air-conditioned room is ideal.
- Keep the room as free of dust as possible. Dust can absorb laser energy, heat up and damage the optics.
- Use a dedicated, earthed socket on its own circuit (the manufacturer specifies a stable 230 V, 10 A supply, ideally with its own circuit breaker). The machine draws up to 2000 W. Do not run it from an extension lead or from the same socket or circuit as other high-power equipment.
- Keep cables and the foot switch lead tidy and out of walkways so that nobody trips.

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Key fact: electrical safety and PAT testing

The machine must be properly earthed. Electrical safety testing (often called PAT testing, portable appliance testing) must be done by a competent person who knows how to test medical electrical equipment, following the manufacturer's instructions. Testing is needed when the machine is installed, before it is used on clients, and after any repair. Keep the certificate with your machine records.

The Health and Safety Executive (HSE) advises that the law does not set a fixed interval for retesting: how often depends on the risk. At Skintastic we recommend retesting at least once a year, alongside the annual service, or more often if your LPA or the manufacturer specifies it. Check the cable, plug and casing by eye before every session, and do not use the machine if you see any damage.

Electrical safety testing



Electrical safety testing must be carried out by a competent person. Generated image commissioned by Skintastic, not a photograph.

Caution: after delivery

After unpacking a new machine, leave it in a cool, dry place for 24 hours before you install and switch it on. This lets it settle and prevents damage from condensation after a long journey.

Setting up, step by step

Follow these steps in order every time you set up the machine. Your Local Rules and Section 5 cover the safety checks for the room (signs, eyewear, smoke evacuation, windows and access). Do these before step 7.

1. **Position the machine.** Wheel it slowly into place beside the couch, upright and without tilting. Leave space behind it so the vents are clear, and lock the castors if they have brakes.

2. **Check the machine and cables.** Look for any damage to the console, arm, handpieces, power cable and foot switch lead. Do not use anything that is cracked, frayed or loose.

3. **Connect the power.** With both power switches off, plug the power cable into the mains socket on the back of the machine, then into the dedicated wall socket.

4. **Connect the foot switch.** Plug it into the foot-switch socket on the back. Place it on the floor where you can reach it comfortably, and where nobody else can step on it.

5. **Connect the interlock.** Connect the door interlock to the remote interlock connector. Only fit the bypass plug ("bind line") instead if your LPA's Local Rules allow it.

6. **Fit the arm (if it has been removed).** First connect the air line: press the metal plate so that the small pin springs up, then insert the air line. Next connect the data line: turn the collar, then press it down firmly. Line the arm up with the mount on the machine and screw the arm section into place. Check it is secure.

7. **Fit the treatment head.** For fractional work, fit the fractional scanning head and then the correct spacer for the treatment (Non-ablative, Micro-ablative or Ultra Fractional tip). For lesion work, fit the UltraPulse head instead of the whole fractional head. Make sure the head is clean and secure.

8. **Insert the key.** Put the key in the key switch. Do this only once the room is prepared and you are ready to start.

9. **Switch on.** Switch on in the order shown on the machine label and by your trainer (usually the main power switch at the back, then the power switch on the front).

10. **Allow the self-test.** The machine runs an automatic self-test. Let it idle for 1 to 3 minutes so the output can stabilise (the device manual suggests allowing about 3 minutes). Do not fire during this time. Check the screen for any alarms.

11. **Select the mode.** Touch Fractional for the fractional head, or Normal for the UltraPulse head. Set your starting parameters, beginning at the lower end of the manufacturer's reference settings (Section 7). Do not point the head at anyone while you set the parameters.

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12 **Check the aiming beam.** Press Preview. Check that the red aiming beam is bright, clear, centred in the light outlet and traces the shape you chose. If it is dim, off-centre or the wrong shape, do not continue (see Calibration and Troubleshooting).

13 **Test-fire on a thermal card.** With everyone in the room wearing the correct eyewear, hold the head against a thermal test card on a safe, non-reflective surface. Switch to Ready (three beeps) and press the foot switch once. Check that the pattern matches your settings. Section 7 explains how to read the card.

14 **Return to standby.** Press Standby before you turn to the client. Only switch to Ready when the head is in position on the skin and you are about to fire.

> **Remember**
>
> Never press the foot switch unless the head is pointing at the target (the skin or the test card) and everyone in the room is wearing the correct eyewear. Keep the handpiece under your control the whole time the machine is in Ready.

Switching off and making the machine safe

1. **Return to standby.** Press Standby as soon as you have finished firing.
2. **Rest the head.** Place the handpiece on its support on the machine.
3. **Switch off.** Turn off the power switch on the front, then the main switch on the back.
4. **Remove the key.** Take the key out of the key switch straight away. Never leave it in the machine.
5. **Store the key securely.** Lock the key away in the place set out in your Local Rules, so that nobody can use the laser without authorisation.
6. **Clean the head and spacer.** Clean and disinfect them as described below, then return the head to its case if you are packing the machine away.
7. **Unplug if needed.** Unplug the machine from the wall before cleaning the console, before any maintenance, and before moving it.

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Moving and storing the machine

The machine weighs about 50 kg and contains delicate optics. Treat it with care.

Moving it within the room or building

1. **Switch off and remove the key.** Follow the switching-off steps above.
2. **Rest the treatment head on its support.** Make sure the arm is folded and the head cannot swing.
3. **Unplug the power cable and foot switch.** Coil the cables so they cannot catch under the wheels.
4. **Move it slowly and keep it upright.** Push it gently on its castors. Never tilt it, and take extra care over door thresholds and uneven floors.
5. **Check it after moving.** Before the next treatment, do the aiming beam check and a thermal card test-fire.

Transport and storage

- For transport, the machine must stand upright in its flight case, fixed so that the wheels cannot move. The arm travels in its own case. Mark the cases "Handle with care", "Keep dry" and "This way up".
- Store the machine somewhere cool, dry and dust-free, out of direct sunlight, with the arm covered.
- Use it only between 15 °C and 30 °C and between 30% and 80% humidity. If it has been somewhere cold, let it reach room temperature before you switch it on, to avoid condensation.
- After any transport, do a full aiming beam check and thermal card test before treating anyone.

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Cleaning the heads and spacers between clients

The spacer touches each client's skin, and the head is close to the plume, so both must be cleaned after every client. Clean lenses are also essential for accurate treatment: small particles that splash onto the lens can absorb laser energy and reduce the output.

1. **During treatment, wipe away debris.** If carbonised debris builds up on the spacer, put the machine in standby and wipe the tip with dry sterile gauze. Do not use alcohol during treatment.
2. **After the client, switch to standby and let the head cool.** Never clean a head while the machine is in Ready.
3. **Remove the spacer.** Take it off the head so that you can clean both fully.
4. **Clean, then disinfect.** Always switch off and unplug first. Wipe the head and spacer with a warm, damp cloth to remove debris, then wipe them with a cotton ball moistened with disinfectant, as the manufacturer's manual describes. Do not soak the parts, and do not use harsh chemicals.
5. **Clean the lens.** Wipe the treatment-head lens gently with lens paper, or a cotton ball moistened with anhydrous (99.9%) alcohol. Do not scratch it, and never use abrasive cloths.
6. **Make sure everything is completely dry.** Alcohol is flammable. Never fire the laser until every surface on the head, spacer and skin is fully dry.
7. **Inspect.** Look for cracks, scratches, film or residue on the lens and spacer. Do not use a damaged part.
8. **Store safely.** Return the head and spacers to their case, or to the holder on the machine, and record the cleaning.

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To clean the console, unplug the machine and wipe it with a soft, damp cloth. Never let any liquid run into the machine.

Each treatment head has a limited working life and must be replaced through authorised after-sales support when the manufacturer advises. Record every service, calibration and repair in the maintenance log.

Looking after the machine

Regular maintenance keeps the machine safe, keeps the energy delivery accurate and helps it last longer. Your insurer, your LPA and the warranty all depend on it, so keep a written record of every check.

Maintenance schedule

Before each session	☐ Aiming beam check and thermal card test ☐ Check the emergency stop and door interlock ☐ Check eyewear is correct and undamaged
After each client	☐ Clean and disinfect the head and spacer ☐ Clean the lens as the manual describes ☐ Check the smoke evacuator is capturing well
Weekly	☐ Inspect the arm, cables and connectors ☐ Check the smoke evacuator filter ☐ Clean the console
Periodically	☐ Replace smoke evacuator filters on schedule ☐ Replace heads at the end of their working life
Every year, or as the manufacturer advises	☐ Full service, output check and recalibration by an authorised engineer

Record every check, service and fault in your log.

The maintenance schedule at a glance. Keep a written record of every check.

When	What to do
Daily: before each session	Check the aiming beam and do a thermal card test-fire. Check the emergency stop and the door interlock. Check that the protective eyewear is to the specification in your Local Rules and is clean and undamaged. Inspect the handpiece for cracks, residue or loose parts. Check that all cables are secure and undamaged. Check that the smoke evacuator is working and its filter is not blocked. Switch on and confirm all modes load correctly.
Daily: after each session	Clean and disinfect the treatment head and spacers. Clean the lens with lens paper and 99.9% alcohol. Clean the client and operator eyewear with a suitable disinfectant. Check the smoke evacuator capture.
Weekly	Inspect the articulated arm, cables and connectors. Wipe the arm joints to remove dust and check they move smoothly. Check the lens for film, scuffs or smoke build-up (a magnifier helps). Check the smoke evacuator filter status. Clean the console. Make a note of your saved settings.
Periodically (monthly or every 50 hours of use)	Replace the smoke evacuator filters on their manufacturer's schedule. Inspect the power cable and foot switch for wear and test that the foot switch responds. Check that calibration is up to date and record it. Arrange replacement of any treatment head that has reached the end of its working life.
Annually (or as the manufacturer specifies)	Full service by an engineer authorised by the manufacturer, including output verification with a power meter, recalibration, inspection of the internal optics and checks of the safety systems. Keep the service certificate for your LPA and insurer.

Maintenance schedule for the MED-870+

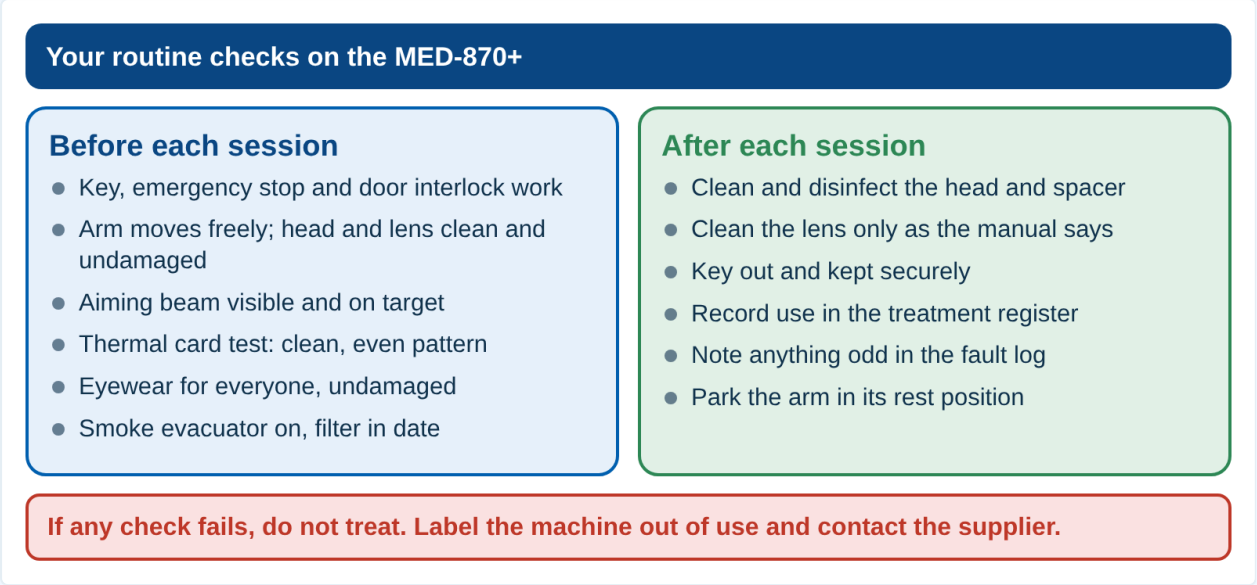
Keep all maintenance and service records for at least 7 years, or longer if your insurer requires it.

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Calibration and performance checks

"Calibration" means checking that the machine delivers what the screen says it is delivering, and adjusting it if not. There are two kinds:

Your routine checks



Routine checks before and after each session. Drawn for this manual.

- **Checks you do yourself**, before every treatment session.
- **Full calibration**, which only an authorised service engineer may carry out.

Checks you do before each session

1. **Aiming beam alignment.** Press Preview and check that the red aiming beam is centred and lines up with the light outlet of the head.
2. **Output check.** Fire a test pattern onto a thermal target card. Check that the pattern, the spots and their strength match your settings before you treat any skin.
3. **Record it.** Write the result in your maintenance log.

Scanner calibration (only if you have been shown how)

If the aiming beam is slightly out of line with the light outlet, the scanner calibration screen lets you correct it. Use the X/Y scale controls to resize the aiming beam pattern, and the X/Y displacement controls to move it. Continue until the red light lines up exactly with the inner circle of the light outlet. Leave the screen to save the change. Then repeat the thermal card test with different shapes and sizes to confirm.

Only do this if you have been trained to. If the beam stays out of line, or the test card does not match the aiming beam, stop and call an authorised engineer.

Caution: factory settings

Laser energy and scan speed calibration are factory settings. Never try to change them. Full recalibration and energy verification must only be done by an authorised service engineer using a calibrated power meter. Record every service and calibration in your log, with the date, the engineer's name and the measured output.

Remember: when to do a full check

Do the aiming beam check and thermal card test before every treatment day. Do a full scanner and spot alignment check after the machine has been moved, transported, knocked or serviced.

Troubleshooting

Most problems have a simple cause, such as a loose cable, a dirty lens or the machine not being in Ready. The table below tells you what you can safely check yourself, and when you must stop and call an authorised engineer.

If the machine misbehaves



What to do if the machine does not behave as expected. Drawn for this manual.

If you are ever unsure, stop. Put the machine in standby, switch it off, remove the key and contact your supplier. Never carry on treating with a machine you think may not be working properly.

Problem	Likely cause	What you can do	Stop and call an engineer if
Nothing on the screen	Power cable loose, socket or circuit breaker off, fuse blown, power switch off	Check the cable at both ends, the wall socket, the circuit breaker and both power switches	The screen still stays blank
No response when you press the power button	Internal fault	Check the power supply as above	There is still no response
The machine will not start up (initialise)	Power supply problem or internal fault	Check the power cable and socket	It still will not initialise, or an alarm appears
Aiming beam on, but no laser output	Machine not in Ready; interlock open or bypass plug missing; foot switch not connected. If all of these are fine: the RF tube is not triggering, or there is damage in the optical path (the arm mirrors, the internal beam path)	Check the machine is in Ready (three beeps), the interlock is connected and the door is closed, and the foot switch is plugged in. Do not keep firing.	The simple checks are all fine. This fault has happened on this model, and it is not something you can fix yourself.

Troubleshooting guide

Problem	Likely cause	What you can do	Stop and call an engineer if
Weak or uneven output; faded or patchy test card	Dirty or damaged lens, dirty reflector, head overheated, supply voltage too low, head reaching the end of its life	Clean the lens and reflector. If the head is hot, pause for about 30 minutes. Check the machine is on a dedicated socket.	Output is still weak after cleaning and cooling, or the lens or front reflector is damaged
Aiming beam and test pattern do not line up	Scanner out of calibration, or the arm has been knocked	Use the scanner calibration screen only if trained	It stays misaligned, or the arm has been knocked or dropped
Scan shape is distorted or spots are missing	Scanner fault or dirty optics	Clean the lens and test again	The shape is still wrong
Handpiece feels hot	Long use, blocked or dirty optics	Stop, allow it to cool, clean the optics	It overheats again quickly
Machine overheats or shows a temperature alarm	Vents blocked, room too hot	Switch off, clear the vents, cool the room, wait about 30 minutes and restart	The alarm returns

Problem	Likely cause	What you can do	Stop and call an engineer if
Squeaking sound when you press Standby	Machine not used for a long time, room too cold, or humidity too high	Bring the room into the working range (15 to 30 °C, 30 to 80% humidity) and let the machine acclimatise	The noise continues, as there may be a circuit fault
Interlock alarm (sounds continuously)	Door open, or the interlock (safety lock) plug is not connected	Close the door and check the interlock connection	The alarm continues with the door shut
Treatment head exposed or damaged	Physical damage	Do not use it	Always: the head must be replaced
Smoke evacuator not working	Filter full or motor fault	Replace the filter. Do not treat without working smoke evacuation.	It still does not work
"System fault" or "array fault" alarm, or a failed self-test	Internal fault	Switch off and remove the key	Always

If any alarm or error message appears that is not in this table, stop treatment, release the foot switch, switch off with the key, note the exact message, and contact your supplier. Do not try to repair the machine.

The manufacturer's manual lists these alarm icons on the screen: water level, water flow, interlock, system malfunction, array (scanning mirror) malfunction and water temperature. If any of these appears, stop and follow the steps above.

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Caution: no output does not mean no danger

If the laser is not firing properly, never look into the head or the arm to see what is wrong. Never point the head at yourself or anyone else to test it. The fault could clear without warning. Switch off, remove the key, and call an authorised engineer.

Key fact: authorised engineers only

Only engineers authorised by the manufacturer or distributor may open, repair, recalibrate or modify the machine. There is dangerous high voltage inside. Never use a machine that has been modified or tampered with. Use only genuine parts and accessories. When you contact support, always quote the serial number from the label on the back of the machine.

For servicing, spare parts, replacement heads and accessories for the MED-870+, contact the UK distributor and UK Responsible Person, Skintastic Aesthetic Supplies Ltd. The address is 26 The Avenue, Padwell Road, Southampton SO17 1XL, telephone 02381 946394, email info@skintasticaesthetics.com. The UK distributor passes faults on to the manufacturer.

Activity: what would you do?

You are about to start a treatment. The aiming beam is bright and centred, but when you test-fire on the thermal card, nothing appears. List, in order, the checks you would make. At what point would you stop and call an engineer? What would you write in the fault log?

The fault and repair log

Keep a fault and repair log with the machine. Record every fault, however small, what you did about it, and every visit by an engineer. This shows your LPA, insurer and any inspector that the machine is properly looked after, and it helps the engineer to find recurring problems.

Date	Fault or symptom	Action taken (and by whom)	Machine taken out of use? (Y/N)	Date back in use and signature

Fault and repair log: MED-870+ serial number _____

Maintenance and calibration log

Date	Check or task	Result	Done by	Notes

Maintenance and calibration log

Remember

- Most aesthetic work uses the fractional head. The spacer sets the depth: tall is gentlest, short is deepest.
- The UltraPulse head replaces the whole fractional head and is for small lesions and cutting only.
- Always check the aiming beam and test-fire on a thermal card before treating.
- Remove the key whenever the machine is not in use, and store it securely.
- Never open the machine. Only authorised engineers may repair it.
- If you use a different laser, follow that machine's manual and your LPA's Local Rules.

Check your understanding

Now answer questions 12 to 15 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Section 5 Laser safety and the Laser Controlled Area

Learning outcomes

By the end of this section you will be able to:

- explain the laser classes in plain English and say why a CO_2 laser is Class 4, the most hazardous class
- describe the main hazards of a CO_2 laser: eyes, skin, fire, plume (smoke), reflections and electricity
- explain what the nominal ocular hazard distance (NOHD) means and why everyone in the room still wears eyewear
- read an EN 207 eyewear marking and check eyewear before each use
- set up and run a safe Laser Controlled Area
- describe the roles of the Laser Protection Adviser (LPA), the Laser Protection Supervisor (LPS) and authorised users, and what the Local Rules and treatment register are for
- use a risk assessment to control the hazards of CO_2 laser treatment
- respond correctly to an accident or incident, including first aid for eye exposure and burns, and record it

Why this section matters

A fractional CO_2 laser is one of the most powerful lasers used in aesthetic practice. Used correctly, it is a precise and well-controlled tool. Used carelessly, it can injure eyes, burn skin, start a fire and fill the room with harmful smoke.

You will already hold a Core of Knowledge laser safety certificate before you join this course. This section builds on it. It focuses on the practical safety controls

you must use every time you switch on a CO_2 laser, and on who is responsible for what.

This section describes practical controls. The laws and regulations behind them are explained in Section 11, The law and professional practice.

> **Key fact: safety is a system, not a single item**
>
> No single item keeps you safe. Eyewear, the room, the Local Rules, your training, your settings and your concentration all work together. If one control fails, the others are there to protect you, your client and anyone else in the room.

Laser classes in plain English

Every laser product is given a class. The class tells you how hazardous the laser beam can be. Classes run from Class 1 (lowest hazard) to Class 4 (highest hazard). Lasers are classified under the British and European standard BS EN 60825-1.

Class	What it means in plain English	Example
Class 1	Safe under normal use. Often the laser is fully enclosed inside a machine so the beam cannot get out.	A laser sealed inside a printer
Class 1M	Safe to the naked eye, but may be hazardous if viewed through magnifying optics such as binoculars.	Some measuring equipment
Class 2	Low-power visible beam. The natural blink reflex normally protects the eye from brief accidental exposure.	Some low-power pointers
Class 2M	As Class 2, but may be hazardous if viewed through magnifying optics.	Some alignment lasers
Class 3R	Low risk, but can injure the eye if you look straight into the beam.	The red aiming beam on your CO_2 laser
Class 3B	The direct beam is dangerous to the eye, even briefly. Diffuse (scattered) reflections are normally safe.	Some low-level light devices
Class 4	The most hazardous class. The direct beam, reflected beams and even scattered light can injure the eyes. It can burn skin and can start a fire.	Your CO_2 treatment laser

Laser classes at a glance

Why a Class 4 laser is the most hazardous

A Class 4 laser carries several hazards at the same time:

- the direct beam can cause immediate, serious eye injury and skin burns
- a beam reflected from a shiny surface, such as a ring or a metal tray, can be just as harmful as the direct beam
- scattered (diffuse) light from the beam may also be hazardous close to the laser
- it is powerful enough to set fire to flammable materials
- when it vaporises skin, it produces a smoke called laser plume, which can be harmful to breathe

Because of this, a Class 4 laser must only be used inside a properly set up Laser Controlled Area, by trained and authorised users, under written Local Rules.

> **▣ On your teaching device: the MED-870+**
>
> The MED-870+ FOCXEL is a Class 4 laser product under BS EN 60825-1. Its treatment beam is CO_2 laser light at 10,600 nm, which is invisible.
>
> It also has a separate red aiming beam. This is a 635 nm red diode of less than 5 mW and is Class 3R. The aiming beam shows you where the invisible treatment beam will land.

The hazards of a CO_2 laser

The table below gives an overview. Each hazard is then explained in more detail.

Hazard	Who could be harmed	Main controls
Eye injury	Operator, client, anyone in the room	Eyewear specified by the LPA, client eye protection, controlled access, no reflective surfaces
Skin burns	Client, operator (especially hands)	Correct settings, test-firing, standby when not treating, careful foot switch use
Fire	Everyone	No flammable products near the beam, wet gauze, suitable fire extinguisher, emergency plan
Laser plume (smoke)	Operator, client, staff	Smoke evacuator held close, room ventilation, suitable respirator
Reflections	Operator, client	Matt instruments, jewellery removed, no mirrors or shiny surfaces
Electrical	Operator, staff	Earthed supply, regular servicing and electrical testing, never open covers

CO_2 laser hazards and the main controls

Hazard 1: the eyes

How the CO_2 beam injures the eye

The CO_2 laser works at a wavelength of 10,600 nanometres (nm). A nanometre is one millionth of a millimetre. Light at 10,600 nm is far infrared. You cannot see it and you cannot feel it coming.

CO_2 laser light is very strongly absorbed by water. The front of the eye, called the cornea, is the clear window over the coloured part of the eye. It contains a lot of water. So the CO_2 beam is absorbed at the very front of the eye, in the cornea. It does not travel through to the back of the eye.

This means that the typical CO_2 eye injury is a corneal burn. A corneal burn can happen in a fraction of a second, and serious damage can affect sight for good. The device manual warns that direct or scattered Class 4 radiation can cause immediate, irreversible blindness, corneal burns and severe skin injury.

> **Key fact: where the CO_2 beam does its damage**
>
> The 10,600 nm CO_2 beam is absorbed by the front of the eye (the cornea), so the injury is a corneal burn. Older training materials sometimes say a CO_2 laser causes retinal burns. That is not correct for the 10,600 nm treatment beam.

The aiming beam

The aiming beam is different. It is a visible red light at 635 nm and is Class 3R. Visible light passes through the front of the eye and is focused on the retina at the back of the eye. The aiming beam is low power and the risk is low, provided nobody looks into it on purpose. The natural blink reflex also helps.

CO_2 laser eyewear is made to block 10,600 nm. It is not designed to block the red aiming beam, so you will still see the red dot through your glasses. This is normal and helps you work. Never stare into the aiming beam and never point it at anyone's eyes.

Hazard 2: skin burns

The CO_2 laser is designed to vaporise tiny columns of skin. If the energy is too high, if pulses are stacked on the same spot, or if scans overlap, the heat can spread too far and cause a burn.

The client is most at risk, but the operator is at risk too. The most common accidental exposure for an operator is to the hands. This can happen if a hand is placed in front of the handpiece while the laser is ready to fire, or if the foot switch is pressed by mistake.

- Put the laser into standby whenever you are not actually treating, including when you pause to talk, wipe the skin or move position.
- Only rest your foot on the foot switch when the handpiece is on the treatment area and you intend to fire.
- Never put your hand, or anyone else's, in front of the handpiece.
- Never point the handpiece at anything other than the area you are treating.
- Always test-fire on a thermal card first (see Section 7).

Caution: even the gentlest setting can burn

Even the Non-ablative tip can burn if the energy is too high (Section 4). Always start low.

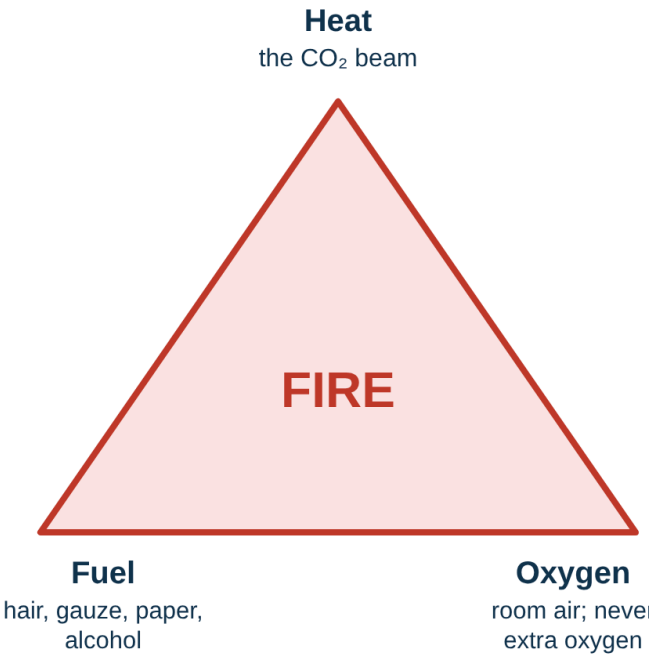
Hazard 3: fire

A fire needs three things: heat, fuel and oxygen. The CO_2 laser provides the heat. Your job is to keep fuel and extra oxygen away from the beam.

Things that can catch fire

- ✘ alcohol-based products, such as skin wipes, hand gel and some cleansers, especially if they are still wet
- ✘ some topical anaesthetic preparations and other products with a flammable base
- ✘ oxygen: supplementary oxygen makes things burn far more easily and fiercely
- ✘ dry drapes, dry gauze, paper towels and tissues
- ✘ hair, including eyebrows, eyelashes, beard hair and scalp hair near the treatment area
- ✘ plastics, such as plastic wrap, some eye shields and disposable items

The fire triangle in a laser room



Take one side away

- Let alcohol and skin prep dry fully before firing
- Damp gauze, not dry, near the treatment area
- Cover or wet hair near the area
- No supplementary oxygen in the room
- Fire in standby, never onto drapes or paper
- CO_2 or powder extinguisher to hand

A fire needs heat, fuel and oxygen. Remove one and a fire cannot start. Drawn for this manual.

How to prevent a fire

1. **Let skin preparations dry fully.** If you clean the skin with an alcohol-based product, wipe it off and make sure the skin is completely dry before you fire.

2. **Keep flammables away.** Keep alcohol, hand gel and other flammable products well away from the treatment field, with lids on.

3. **Use wet gauze, not dry.** Gauze or drapes near the treatment area should be damp with water or saline. Wet gauze can also protect nearby skin and hair.

4. **Protect hair.** Keep hair away from the area, for example with a hair band or cap. Hair close to the treatment area can be kept damp.

5. **No supplementary oxygen.** Never use the laser near supplementary oxygen. If a client uses oxygen, do not treat until you have taken advice from your LPA.

6. **Know your extinguisher.** Keep a fire extinguisher suitable for electrical fires in or next to the laser room. A carbon dioxide (CO_2) or powder extinguisher is suitable. Never use water on electrical equipment.

7. **Know the plan.** Know how to switch the laser off, how to get everyone out and how to raise the alarm. This is part of your Local Rules and fire procedures.

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Hazard 4: laser plume (smoke)

When the CO_2 laser vaporises skin, it makes a smoke called laser plume. You will see it and smell it. Plume is not just a nuisance. It can contain:

Personal protective equipment

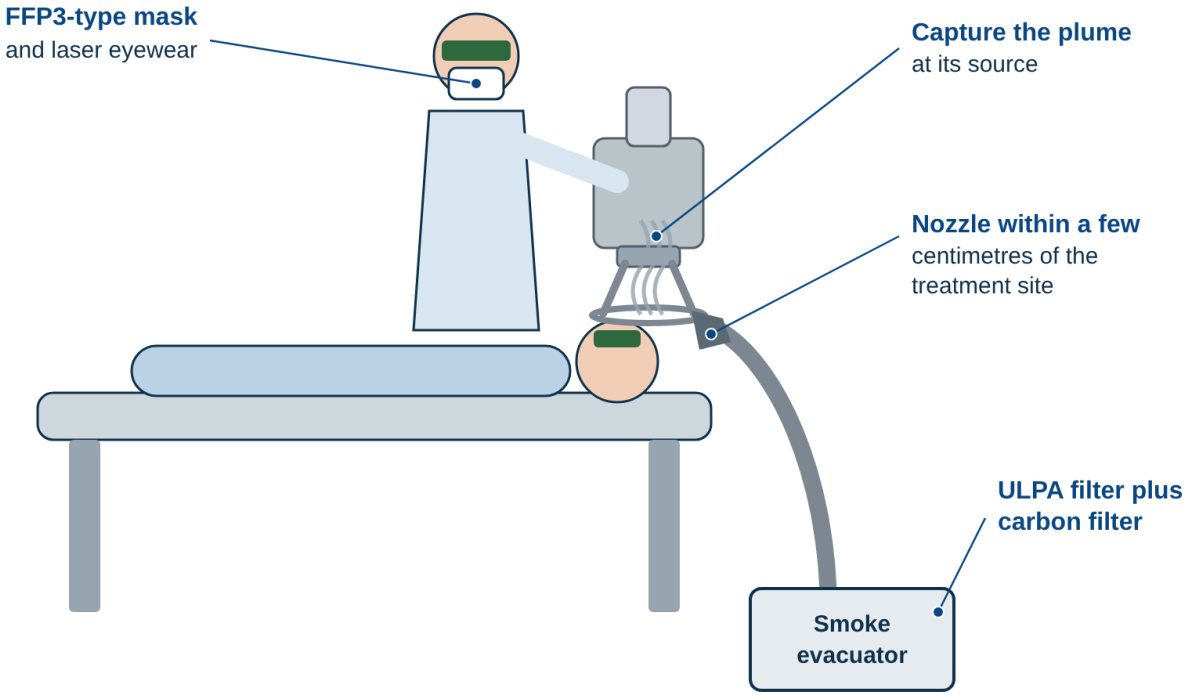


Masks, gloves and good hygiene form part of your protection, alongside a smoke evacuator. Generated image commissioned by Skintastic, not a photograph.

- very small particles that can be breathed deep into the lungs
- gases and vapours, some of which may be toxic
- tissue particles, which may be viable (still alive), and possibly viruses or bacteria
- tiny droplets of blood, especially with deeper or surgical work

Plume can affect the operator, the client and anyone else in the room. The aim is to capture it at the point where it is made, before anyone breathes it in.

Capturing laser plume at the source



Hold the smoke evacuator nozzle close to the treatment site so it captures the plume before it spreads into the room.

How to control plume

1. **Use a dedicated smoke evacuator.** It should have high-efficiency filtration: a ULPA filter (ultra low penetration air filter) for particles, plus an activated carbon filter for gases and smells.

2. **Hold the nozzle close.** Keep the capture nozzle close to the treatment site, about 5 to 10 cm away, and move it as you move the handpiece. An evacuator on the other side of the room does very little.

3. **Switch it on before you fire.** Check it is working and the filter is not blocked before you start. A blocked filter reduces suction.

4. **Wear respiratory protection where your risk assessment calls for it.** The smoke evacuator is the main protection; a mask or respirator is extra protection, not the main control. Ordinary surgical masks do not seal to the face. Where your risk assessment and Local Rules call for a respirator, use a disposable FFP3 respirator (it gives about twice the protection of FFP2). You must pass a face-fit test for that exact make and model before you use it. It only seals properly if you are clean-shaven where it touches the face.

5. **Ventilate the room.** Good room ventilation is needed as well as local extraction.

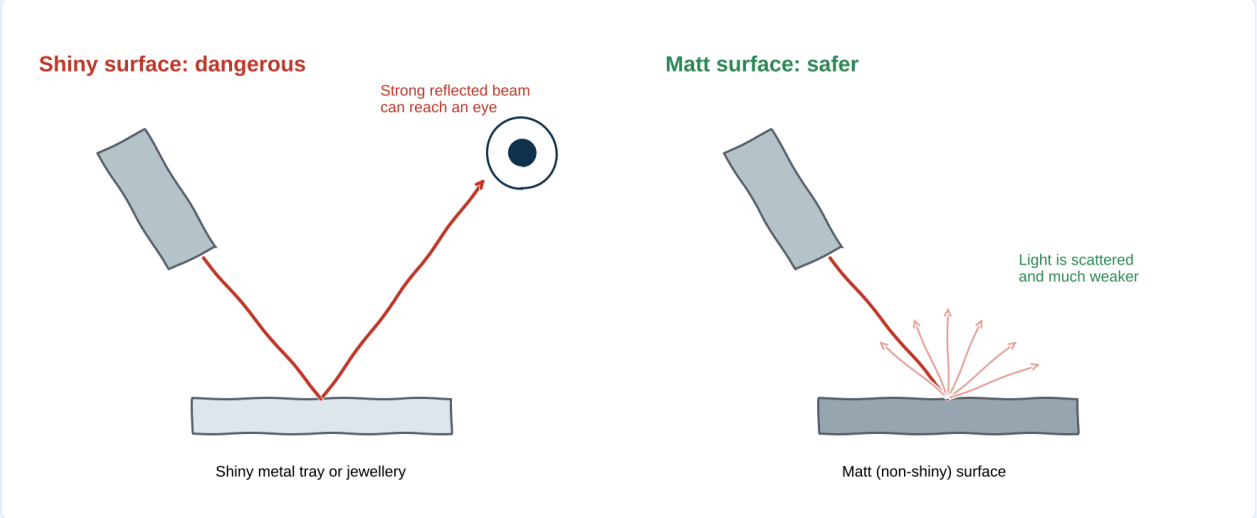
6. **Change filters on time.** Replace filters and service the evacuator as the evacuator maker says. Treat used filters as clinical waste.

Hazard 5: reflections

The CO_2 beam can bounce off shiny surfaces such as metal, mirrors, polished trays and jewellery. A reflected beam travels in a direction you did not plan, and it can hit someone's eyes or skin.

- Use matt (non-shiny) instruments and trays in the treatment field where possible.
- Remove jewellery and watches, both yours and the client's, before treatment. Operators are trained to do this as part of the Skintastic risk assessment controls.
- Remove or cover mirrors, glass-fronted pictures and shiny fittings in the room.
- Never aim the handpiece at walls, windows, equipment or people.

Why shiny surfaces are dangerous



A shiny surface can send the beam on in a new direction at almost full strength. A matt surface scatters it and makes it much weaker, but eyewear is still always needed.

Hazard 6: electrical and equipment hazards

The laser runs from mains electricity and has dangerous high voltage inside. Some parts can still hold an electrical charge after the machine has been switched off.

- Connect the laser to a properly earthed socket on a suitable circuit, as the device manual specifies. Do not share the socket or circuit with other high-power equipment.
- Check the power cable, foot switch, arm and handpiece for damage before every session. Never use damaged or faulty equipment.
- Never remove the outer covers or open the panels. Only authorised service engineers may do this.
- Switch off and unplug the laser before cleaning or disinfecting it.
- Keep liquids away from the console.
- Make sure the laser is serviced and electrically safety tested at the intervals your Local Rules and the manufacturer set, and keep the certificates.
- Route cables so that nobody can trip over them.

Other equipment hazards include moving the heavy console (the MED-870+ weighs about 50 kg) and knocking the articulated arm. Move the laser slowly, on level ground, and never by pulling on the arm.

Caution: never use a modified or damaged laser

The device manual warns that a modified or tampered device presents severe laser and electrical hazards. If anything looks wrong, sounds wrong or behaves strangely, stop, switch off, label the laser out of use and contact the supplier.

The nominal ocular hazard distance (NOHD)

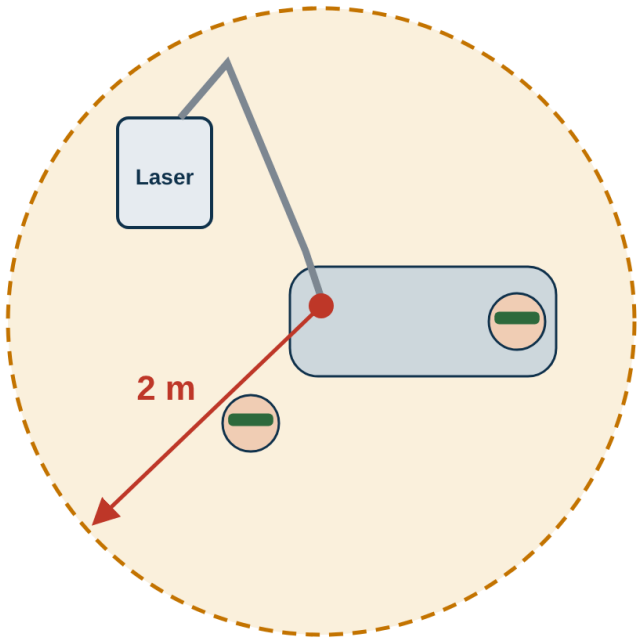
Two terms help explain how far the eye hazard reaches.

- The maximum permissible exposure (MPE) is the highest level of laser light the eye or skin can receive without injury.
- The nominal ocular hazard distance (NOHD) is the distance from the laser beyond which the beam has spread out enough to fall below the MPE.

In plain English: inside the NOHD, the direct beam could injure an unprotected eye. Outside the NOHD, the direct beam has spread out so much that it is below the safe limit.

The laser beam spreads out a little as it travels. This spreading is called beam divergence. The more it spreads, the weaker it becomes at a distance, so the shorter the NOHD.

The 2 m nominal ocular hazard distance



Inside 2 m
the direct beam is strong enough to injure the eye.

Everyone wears it
Everyone in the Laser Controlled Area wears eye protection specified by your LPA, wherever they stand.

Nominal ocular hazard distance (NOHD): 2 m

Inside about 2 m of the handpiece the direct beam could injure an unprotected eye. In practice, the whole room is the Laser Controlled Area and everyone in it wears eyewear.

Why everyone in the room still wears eyewear

In most treatment rooms, almost everyone in the room is within 2 m of the handpiece. Even someone standing further away still wears eyewear, because:

- the handpiece moves, and the beam could be pointed in any direction by accident
- reflections can send the beam where you do not expect
- people move around the room during a treatment
- the NOHD is calculated for set conditions, and real life can differ
- the Local Rules define the whole room as the Laser Controlled Area, and the rule is simple: if you are in the room while the laser is in use, you wear the specified eyewear

> **▣ On your teaching device: the MED-870+**
>
> The manufacturer gives these beam figures for the MED-870+:
>
> - Nominal ocular hazard distance (NOHD): 2 m.
> - Beam divergence: 5 mrad (full angle). An mrad (milliradian) is a measure of how quickly the beam spreads.
> - Working distance: 50.8 mm.
> - Beam diameter: 0.15 mm.
>
> These are the manufacturer's stated figures. Your LPA should confirm the NOHD for your own premises.

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Laser safety eyewear

Laser safety eyewear is the last line of defence for your eyes. It must be exactly right for the laser you are using.

CO_2 laser safety glasses used at Skintastic



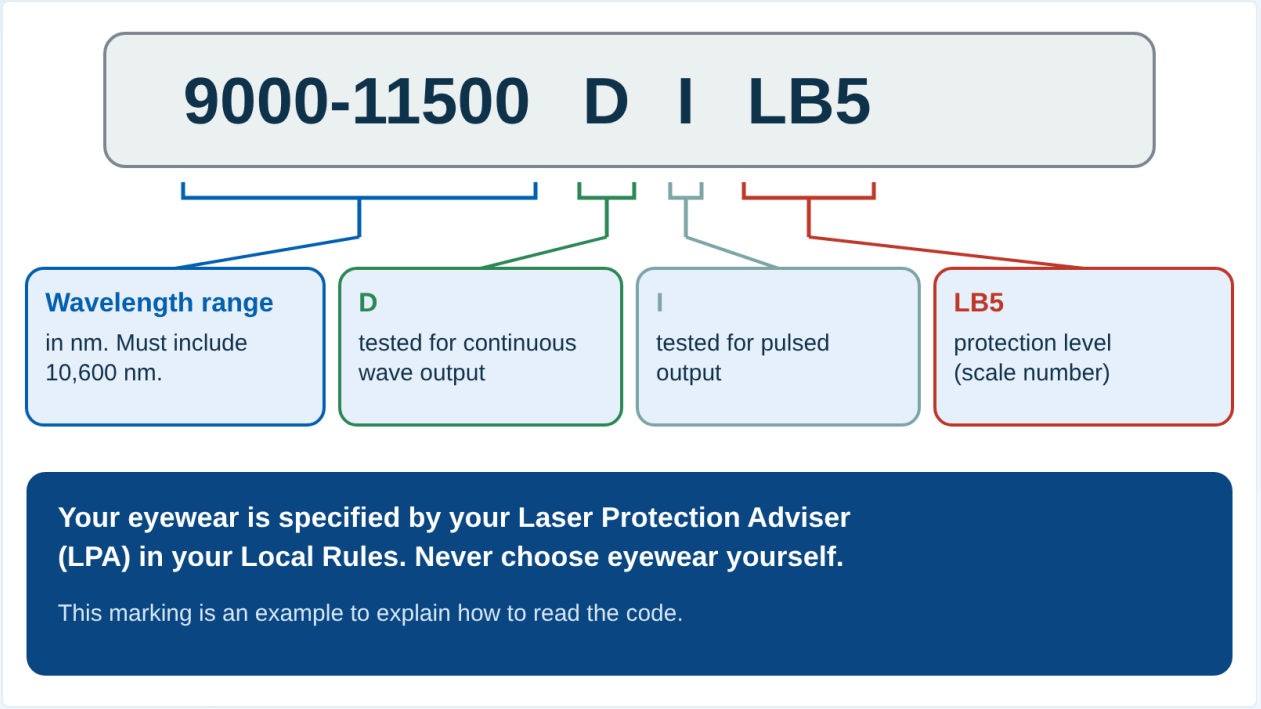
CO_2 laser safety glasses. The protection markings are engraved on the lenses. Always check the markings match the eyewear specified in your Local Rules before use.

> **Key fact: who decides which eyewear you use**
>
> Laser eyewear must be as specified by your Laser Protection Adviser (LPA) in your Local Rules. Never choose eyewear yourself from a catalogue or a website, and never assume eyewear is suitable because it came with the laser.

The standard: EN 207

Laser safety eyewear in the UK is made and tested to the standard BS EN 207. Each filter and frame carries a marking that tells you what it protects against. Learning to read it helps you check that you have picked up the right pair.

Reading an EN 207 eyewear marking



This example marking reads 9000-11500 nm DI LB5. Check the wavelength range includes 10,600 nm and that the mode letters and scale number match your Local Rules.

Part of the marking	What it means	What you check
9000-11500 nm	The wavelength range the filter protects against.	10,600 nm must sit inside this range.
D	Tested for continuous wave operation (the beam is on steadily).	Needed when the laser is used in continuous modes.
I	Tested for pulsed operation (pulses between about 1 microsecond and 0.25 seconds).	Needed when the laser is used in pulsed modes.
R or M	R means tested for very short (Q-switched) pulses, about 1 nanosecond to 1 microsecond. M means tested for ultra-short pulses, under 1 nanosecond. Neither is in this example.	Only relevant if your LPA specifies it.
LB5	The protection level on the EN 207 scale. Each step up gives about ten times more protection. The eyewear has been tested to withstand a direct hit at that level for a few seconds without failing.	It must be at least the scale number in your Local Rules for each mode letter.

What each part of the example marking means

The scale number (LB number) is not just about how much light is blocked. It also reflects how well the filter stands up to being hit by the laser beam. This is why the LB number and an optical density (OD) figure are not always the same number. Follow the Local Rules, not a single figure you have read elsewhere.

Check your eyewear before each use

1. **Right laser.** Check the eyewear is labelled for this laser and that the wavelength range includes 10,600 nm.
2. **Right marking.** Check the mode letters and scale number match those in your Local Rules.
3. **No damage.** Look for cracks, deep scratches, pits, burn marks, discolouration or loose filters. Damaged eyewear must be taken out of use.
4. **Side protection.** Check the side shields are present and intact.
5. **Clean and comfortable.** Clean the eyewear as the maker advises and make sure it fits well and stays in place.
6. **Enough pairs.** Check there is a suitable pair for everyone who will be in the room.
7. **Store safely.** After use, clean and disinfect the eyewear and store it in its case.

Caution: never use eyewear for the wrong wavelength

Many clinics have more than one laser or IPL. Eyewear for a different device may give no protection at all at 10,600 nm. Ordinary sunglasses, tinted glasses, prescription glasses and surgical loupes give no protection either. Keep each laser's eyewear clearly marked and stored with that laser. If you are not sure a pair is correct, do not use it.

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Protecting the client's eyes

The client's eyes must be fully protected throughout the treatment.

- For every treatment on this course, the client wears close-fitting, opaque (total blockout) external laser eye protection suitable for 10,600 nm, as specified by your LPA in your Local Rules. When treating above the neck, use close-fitting eye protectors made for the client, such as opaque metal laser eye shields placed over the closed eyes; ordinary goggles should not be used. Never use plastic shields with a CO_2 laser, because they can melt or burn.
- Treatment around the eyes is not covered by this course (Section 1). Work on the eyelids or inside the rim needs internal eye shields that sit directly on the eye. These are only inserted by suitably trained medical practitioners. The numbing eye drops normally used before inserting them (such as proxymetacaine or tetracaine) are prescription-only medicines.
- Damp gauze placed over the face around the treatment area can give extra protection to surrounding skin.
- Clean and disinfect reusable client eye protection between clients, or use single-use items where specified.
- Explain to the client that they must keep their eye protection in place and their eyes closed until you tell them the laser is off.

Section 8 shows how to place and check the client's eye protection step by step.

▣ On your teaching device: the MED-870+

The manufacturer states a minimum optical density of OD 5+ at 10,600 nm for operator eyewear. The manufacturer also states that the LPA should confirm the scale number for the worst-case exposure at your premises.

At the time of writing (11 October 2026), the LPA for Skintastic has provisionally accepted the Univet 559G glasses with the UL-2012 filter for routine operator protection. They are marked EN 207 9000-11500 nm DI LB5, OD 6. The final specification is pending, now that the course uses both the fractional scanning head and the UltraPulse surgical head.

For the client, the manufacturer supplies total blockout patient eye protection. On this course the client's eye protection is always worn externally, over the closed eyes, as the LPA specifies. Internal shields that sit on the eye are not used on this course. The red aiming beam is not covered by the CO_2 glasses. The LPA regards it as low risk provided nobody looks deliberately into the beam.

In your own clinic, always use the eyewear your own LPA specifies in your Local Rules.

The Laser Controlled Area

The Laser Controlled Area (LCA) is the area in which people could be exposed to laser radiation above the safe limit. In practice, it is usually the whole treatment room. Your LPA defines it in the Local Rules.

Controls for the Laser Controlled Area

Warning sign
Class 4 laser sign on the door, lit sign on while the laser is in use.

Door interlock
Connected as your Local Rules say; the bypass plug only where your LPA allows it.

Key control
Key out when not in use, kept by an authorised user.

Emergency stop
Big red button, easy to reach, checked before each session.

Windows and surfaces
Blinds down; no mirrors or shiny surfaces near the beam.

Fire and plume
Smoke evacuator on; suitable extinguisher next to the room.

Your LPA sets the exact controls for your room in your Local Rules.

The six main controls on a Laser Controlled Area. Your LPA sets the details in your Local Rules. Drawn for this manual.

Laser warning sign and eyewear

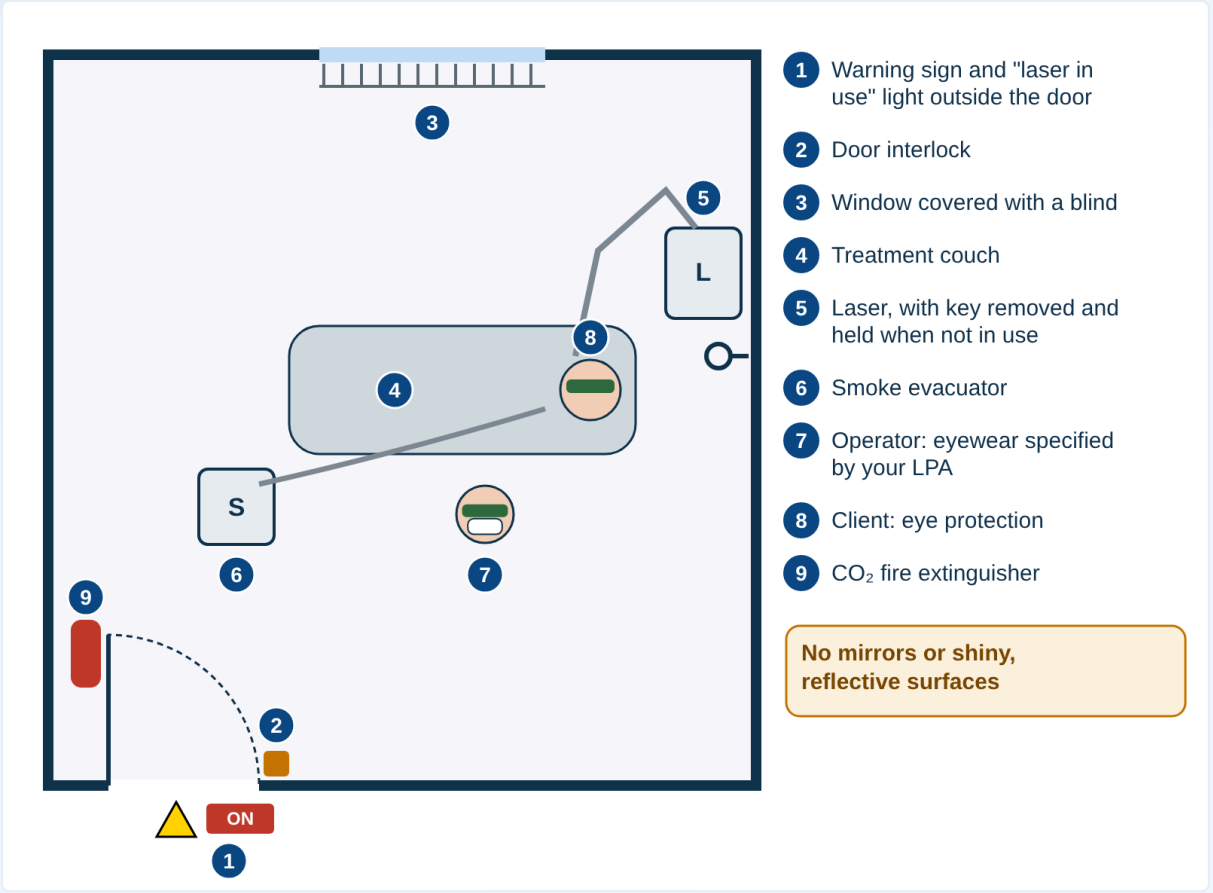


The laser warning sign marks the Laser Controlled Area. Eyewear goes on before the laser is made ready. Generated image commissioned by Skintastic, not a photograph.

The laser must only be used inside the Laser Controlled Area. At Skintastic, one treatment room is specifically set aside as the laser room. Clients are taken to it one at a time and escorted back afterwards.

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A well set up Laser Controlled Area



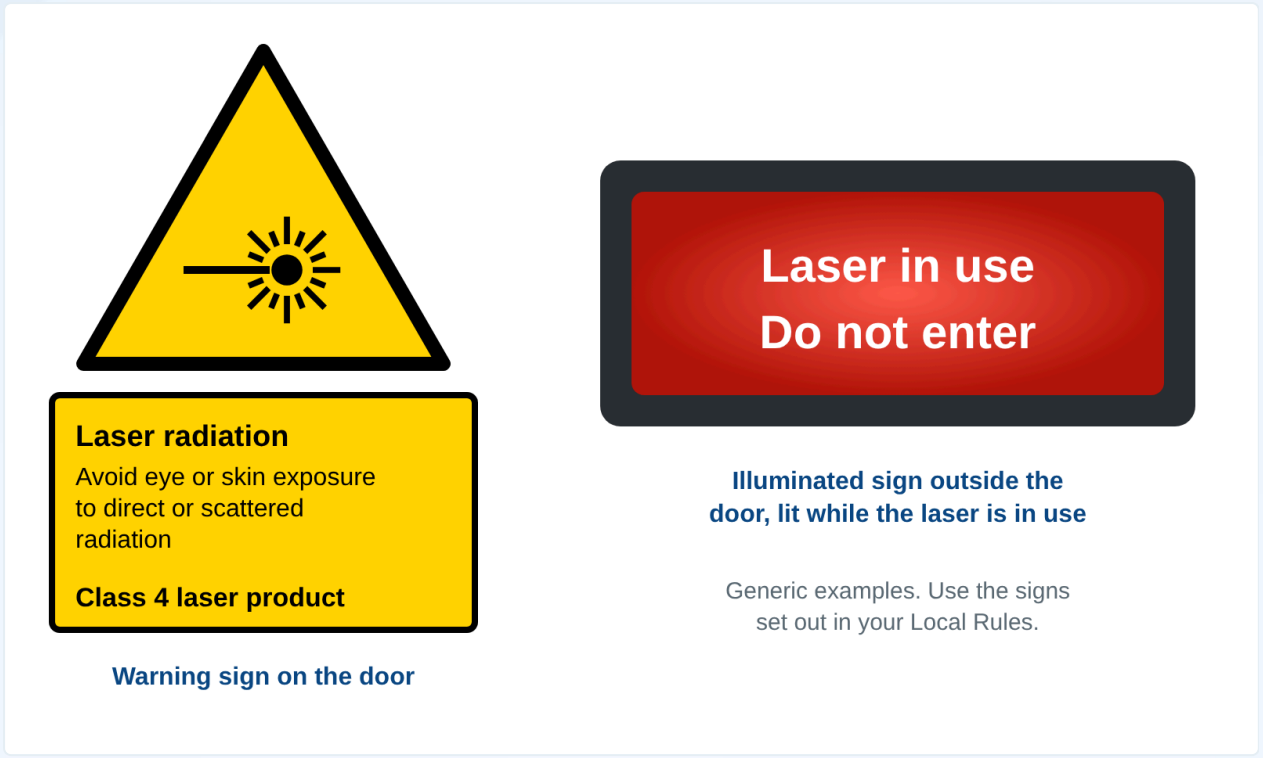
The main features of a Laser Controlled Area: signs, interlock, key control, emergency stop, covered windows, no reflective surfaces, smoke evacuation and controlled access.

Signs on the door

Every entrance to the Laser Controlled Area must have a laser warning sign. The sign tells people there is a Class 4 laser inside and that they must not enter without permission and eye protection.

An illuminated "laser in use" sign above or beside the door lights up when the laser is ready to fire. It tells people outside not to enter.

Warning signs for a Class 4 laser



A laser warning sign on the door, and an illuminated "laser in use" sign that lights when the laser is ready to fire.

Signs are displayed at each entrance only while the laser is in use, and removed or covered afterwards. A typical door sign reads: "Danger: Class 4 laser in use. Invisible laser radiation (10,600 nm). Eye protection must be worn. No entry without permission." Your LPA decides the exact wording in your Local Rules.

Door interlock and bypass plug

A door interlock links the door to the laser. If the door is opened while the laser is in use, the interlock stops the laser firing. The MED-870+ has a remote interlock connector for this.

The laser is also supplied with a bypass plug (called a "bind line" in some manufacturer documents). The bypass plug lets the laser work without a door interlock. Only fit the bypass plug where your LPA's Local Rules allow it. Otherwise, connect the door interlock. Never use the bypass plug to get round a fault or to save time.

Where a door lock is used to stop people entering, the LPA's site guidance is that it should be a lock that can be opened from the outside in an emergency. This is so that help can get in.

Key control

The laser has a key switch. The key prevents unauthorised use.

- Remove the key whenever the laser is not in use or is left unattended, even for a short time.
- The key is held by an authorised user, or kept in the secure place named in the Local Rules.
- Never leave the key in the machine at the end of the day.

Emergency stop

The emergency stop is a large red button. Pressing it stops laser emission and cuts power immediately. It must be easy to reach. Check it works before each session, as the device manual's maintenance schedule says.

Windows, walls and surfaces

- Cover or screen windows, for example with blinds, so that the beam cannot pass out of the room and people cannot see in during treatment.
- Use matt wall finishes and avoid significant reflective surfaces.
- Remove or cover mirrors and shiny objects.
- Use flame-resistant furnishings where possible.

Controlled access

- Only people who need to be in the room may enter while the laser is in use: the authorised user, the client and anyone the Local Rules allow, such as a trainee under supervision.
- Everyone in the room wears the specified eyewear.
- Keep the door closed during treatment.
- Anyone wanting to enter must knock and wait. The operator puts the laser into standby before the door is opened.

Safety equipment in or next to the room

- ✔ a fire extinguisher suitable for electrical fires (CO_2 or powder)
- ✔ a first aid kit and an eye wash station
- ✔ the smoke evacuator and spare filters
- ✔ enough pairs of the specified eyewear, and client eye protection
- ✔ a copy of the signed Local Rules and emergency contact details

> **Activity: check a Laser Controlled Area**
>
> Look at the room you will use for CO_2 treatments, or the training room on day one. List every Laser Controlled Area feature you can see. Then list anything that is missing or could be improved, and say who you would tell.

People and roles

Laser safety depends on people knowing their role. The table shows who does what.

Who does what in laser safety



The three laser safety roles. Drawn for this manual.

Role	Who it is	Main responsibilities
Laser Protection Adviser (LPA)	An external, specialist laser safety expert appointed by the business	Assesses the risks, carries out the risk assessment, writes the Local Rules, specifies the eyewear and room controls, and gives advice when anything changes or goes wrong.
Laser Protection Supervisor (LPS)	A named person on site, usually a senior practitioner	Makes sure the Local Rules are followed day to day, keeps the list of authorised users, oversees the treatment register, reviews the risk assessment each year (with LPA input if needed) and is the first point of contact for safety concerns.
Authorised user	A trained practitioner named in the Local Rules	Operates the laser safely, follows the Local Rules, checks equipment and eyewear, keeps records and reports incidents.
Other people in the room	Clients, assistants, supervised trainees	Follow the operator's instructions and wear the eye protection provided.

Laser safety roles

The LPA's guidance for Skintastic is that anyone who acts as Laser Protection Supervisor when Carla is absent should hold a Core of Knowledge certificate. The Skintastic risk assessment sets a Core of Knowledge training update every three years.

The Local Rules

The Local Rules are a written document, prepared with the LPA, that sets out how the laser is used safely in your premises. They usually include:

- the names and contact details of the LPA and the LPS
- the list of authorised users
- a description of the laser and the Laser Controlled Area
- the eyewear that must be worn, and by whom
- how access, the key and the interlock are controlled
- safe working procedures, including plume and fire precautions
- what to do in an emergency, how to shut the laser down, and who to contact
- how accidents and incidents are recorded and reported

Every authorised user must read the Local Rules and sign to confirm they understand them and will follow them. The Local Rules should be kept where users can see them.

> **Key fact: no signature, no laser**
>
> You must not use the laser until you are named as an authorised user and have signed the Local Rules for that laser and those premises. Being trained on the course is not, by itself, authorisation to use a laser in a particular clinic.

The treatment register (laser log)

The treatment register is a record of every time the laser is used. It shows who used the laser, when, on whom and at what settings. It helps you spot problems, supports follow-up and is needed for insurance and audits. Record at least:

- the date and time
- the client's name or reference number
- the operator's name
- the area treated and the indication
- the head, spacer and settings used (power, energy, dot spacing, pulse duration, passes, scan shape)
- the eyewear used and that safety checks were done
- any incident, unexpected reaction or equipment fault

Keep the register with your client records and the laser's service and maintenance log. Section 11 explains how long records should be kept and how to store them securely.

Your safety checks before each session

1. **Room ready.** Signs in place, windows covered, reflective items removed, fire extinguisher and first aid kit in place.
2. **Laser checked.** Cables, arm and handpiece undamaged; emergency stop and door interlock working; aiming beam aligned; test-fire on a thermal card.
3. **Plume control ready.** Smoke evacuator on, filter in date, nozzle positioned, respirators available.
4. **Eyewear checked.** Correct, undamaged eyewear for everyone, and client eye protection ready.
5. **Fire risks removed.** Skin preparations dry, flammable products put away, wet gauze ready.
6. **Access controlled.** Door closed, illuminated sign on, only authorised people in the room.
7. **Records ready.** Consent and photographs complete, settings ready to record in the treatment register.

Risk assessment for CO_2 laser treatment

A risk assessment is a careful look at what could cause harm, who could be harmed, and what you do to prevent it. UK health and safety law, including the Management of Health and Safety at Work Regulations and the Control of Artificial Optical Radiation at Work Regulations 2010, expects these risks to be assessed. Many of these requirements can be met by carrying out, and regularly reviewing, a risk assessment of the equipment, the premises and the activities. Section 11 explains the legislation.

The Skintastic CO_2 laser risk assessment was carried out by the LPA and follows the Health and Safety Executive (HSE) five steps:

1. **Look for the hazards.** What could cause harm?
2. **Decide who might be harmed.** The operator (O), the client (P) or other staff (S).
3. **Evaluate the risks.** Look at the controls already in place and decide whether more are needed.
4. **Record your findings.** Write down the hazards, controls and actions.
5. **Review and revise.** Look at it again regularly and after any change or incident.

It considers six types of hazard: optical radiation (laser light), electrical, chemical (including the plume), mechanical and ergonomic, temperature and fire, and electromagnetic interference.

Hazard	Who	Existing controls	Risk	Further action
Eye damage from the laser	O, P	Protective eyewear mandatory; warnings in manual; operator training	Medium	Check eyewear regularly and make sure it suits the wavelength; mark all eyewear for the laser it is used with; train all new operators
Overexposure of the treatment area (for example too high a fluence)	P	Operator training; user and training manuals; servicing and calibration	Medium	Regular servicing; plan update training; keep optical parts clean
Exposure of non-target areas or people	O, P, S	Operator training; staff read the Local Rules; LPA available	Low	Local Rules signed by all operators
Reflections	O, P	Eyewear always worn; operators remove jewellery	Low	None
Unauthorised access or use	S, P	Warning sign; lockable door; key control in Local Rules	Low	None

Examples from the Skintastic CO_2 laser risk assessment (August 2026)

Hazard	Who	Existing controls	Risk	Further action
Airborne contaminants (plume)	O, P, S	Room ventilation; suitable respirator and eye protection for all	Medium	Use plume control procedures
Electrical fault causing a fire	O, P, S	Electrical safety testing; fire extinguisher; evacuation procedure	Low	Regular servicing; check extinguisher; plan fire training
Cross-infection	O, P	Cleaning and disinfection schedule; training	Medium	Keep device and handpiece clean; separate infection control risk assessment

The risk assessment is reviewed every year by the LPS, with input from the LPA if needed. It must also be reviewed after any incident, or if anything changes, such as a new head, a new room or a new type of treatment.

> **Remember**
>
> A risk assessment is only useful if people follow it. Read the risk assessment for every laser you use, and tell the LPS if something in practice does not match what is written down.

Activity: add to the risk assessment

Choose one hazard of CO_2 laser treatment that is not fully covered in the table above, for example fire from flammable skin products, or burns to the operator's hands. Write it as a risk assessment row: the hazard, who could be harmed, the controls you would use, and the risk level after controls.

Accidents and incidents

An accident is an event that causes harm. An incident, or near miss, is an event that could have caused harm but did not. Both must be dealt with and recorded. Near misses are valuable warnings: they show where a control is weak before someone is hurt.

Straight after an accident or incident

Straight after an accident or incident

1. **Stop the laser**
   Foot off, standby. Emergency stop if needed.
2. **Make the area safe**
   Nobody else exposed. Key out.
3. **First aid and help**
   Eye: cover, no rubbing, same-day eye casualty. Burn: cool running water for 20 minutes.
4. **Tell the LPS**
   The LPS contacts the LPA if needed.
5. **Keep the evidence**
   Possible fault: label the laser out of use, do not change the settings.
6. **Record and report**
   Incident log, client notes. HSE, MHRA and insurer where required.

Say straight away if something goes wrong. Quick, honest action protects the client.

The order of actions after an accident or incident. Drawn for this manual.

What to do straight away

1. **Stop the laser.** Take your foot off the foot switch and put the laser into standby. In an emergency, press the emergency stop.
2. **Make the area safe.** Make sure nobody else can be exposed. Remove the key if needed.
3. **Look after the injured person.** Give first aid within your training and get help.
4. **Get medical help when needed.** Call 999 for an emergency. Arrange urgent medical assessment for any suspected eye injury.
5. **Tell the LPS.** The LPS will contact the LPA if needed.
6. **Keep the laser out of use if it may be faulty.** Label it, do not change the settings, and contact the supplier.
7. **Record everything.** Write down what happened as soon as you can.

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First aid for eye exposure

If a laser beam may have entered anyone's eye:

1. **Stop.** Stop the laser at once (emergency stop). Keep the person seated and calm.
2. **Do not rub.** Do not let them rub or touch the eye, and do not put anything in the eye. Do not try to examine or treat the eye yourself.
3. **Cover.** Cover the eye lightly to protect it, for example with a clean pad held loosely in place.
4. **Get an urgent eye assessment the same day.** Arrange this at your nearest eye casualty or A&E, or call NHS 111 for advice on where to go, even if the eye seems fine. Some injuries are not obvious straight away. Any change in sight, or severe pain, means A&E or 999. Do not let the person drive.
5. **Send the details.** Send the incident grab pack with them: laser type (CO_2), wavelength 10,600 nm, Class 4, the settings, the head and spacer used, and the time.
6. **Report.** Tell the Laser Protection Supervisor (LPS) and the LPA the same day, and record it in the incident log.

Possible signs of a corneal injury include pain, a gritty feeling, watering, redness, blurred vision and sensitivity to light.

> **Remember: know your route**
>
> Know the route to your nearest eye casualty service, check whether you must phone first, and write it in your Local Rules. Many eye casualty services are not walk-in clinics.

First aid for a skin burn

- Stop treatment and assess the area.
- Cool the burn under cool or lukewarm running water for 20 minutes, as the NHS advises. Do not use ice, iced water or creams, and do not burst any blisters.
- Then cover it loosely with a sterile, non-stick dressing or cling film.
- Do not apply prescription-only creams. If the client may need medicated treatment, refer them to their GP or an independent prescriber.
- Send the client to A&E for any burn on the face, any large or deep burn, and any electrical burn. For other burns, refer for medical assessment if you are unsure, or call NHS 111 for advice.
- Section 10 explains how to manage burns and other complications after treatment.

Fire and electrical emergencies

- Fire: press the emergency stop, get everyone out, raise the alarm and call 999. Only use the extinguisher on a small fire if you are trained and it is safe to do so.
- Electric shock: do not touch the person until the power is off. Switch off at the mains if it is safe, then call 999.

Recording an accident or incident

Record every accident, incident and near miss in the accident book or incident log, as well as in the client's notes and the treatment register. Include:

- the date, time and place
- the names of the people involved and any witnesses
- what happened, in plain factual words
- the laser, head, spacer and settings in use
- any injury and the first aid given
- who was told, and any referral made
- photographs, where appropriate and with consent

Reporting

Some accidents and incidents must be reported outside the business. For example, certain injuries at work must be reported to the Health and Safety Executive. Incidents involving a medical device should be reported to the MHRA and to the manufacturer or UK Responsible Person. You should also tell your insurer. Section 11 explains the reporting routes.

After any incident, the LPS reviews what happened, with the LPA if needed, and the risk assessment and Local Rules are updated if a control needs to change.

Caution: do not hide a mistake

If something goes wrong, say so straight away. Quick, honest action protects the client and helps prevent the same thing happening again. Your insurer may not cover you if an incident is not reported.

Activity: incident scenario

During a full-face treatment, an assistant opens the door to pass you a message. You are wearing your eyewear, the client has opaque external laser eye shields on, and the assistant is not wearing eyewear. The laser was in standby. Was this an incident? What should have stopped it happening? What would you record, and who would you tell?

Activity: read the marking

Pick up the laser safety eyewear in the training room. Copy the EN 207 marking below. Then answer: does the wavelength range include 10,600 nm? Which mode letters are shown? What is the scale number? Does it match the Local Rules?

Check your understanding

Now answer questions 16 to 20 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Section 6 Who and what it is suitable for: consultation and contraindications

Learning outcomes

By the end of this section you will be able to:

- Describe a suitable client and set realistic, honest expectations.
- Say what fractional CO_2 may help, and what it cannot or should not treat.
- Carry out a full consultation, step by step, using the client forms.
- Recognise absolute and relative contraindications and reasons to defer.
- Know which medicines to ask about and when to refer.
- Obtain valid informed consent, take standardised photographs and keep proper records.

The consultation is the most important safety step in the whole treatment. Most serious problems after laser treatment trace back to something missed here: a medicine, a cold sore history, a tan, a keloid tendency, or a client who expected far more than the treatment can offer. Never rush it, and never consult and give a full treatment in the same visit. The client needs time to think, and you need time for a patch test.

The ideal client

- ✔ Aged 18 or over and in good general health.
- ✔ Has a concern fractional CO_2 is designed to help, such as texture, fine lines, sun damage or certain scars.
- ✔ Has no contraindications, or only ones that can be safely managed.
- ✔ Has a skin type you can treat safely within your training and experience.
- ✔ Has no tan, and can avoid the sun before and after treatment.
- ✔ Can take time out for redness, swelling and micro-crusts, and will follow aftercare.
- ✔ Understands that results vary, several sessions may be needed, and change appears gradually.

Realistic expectations

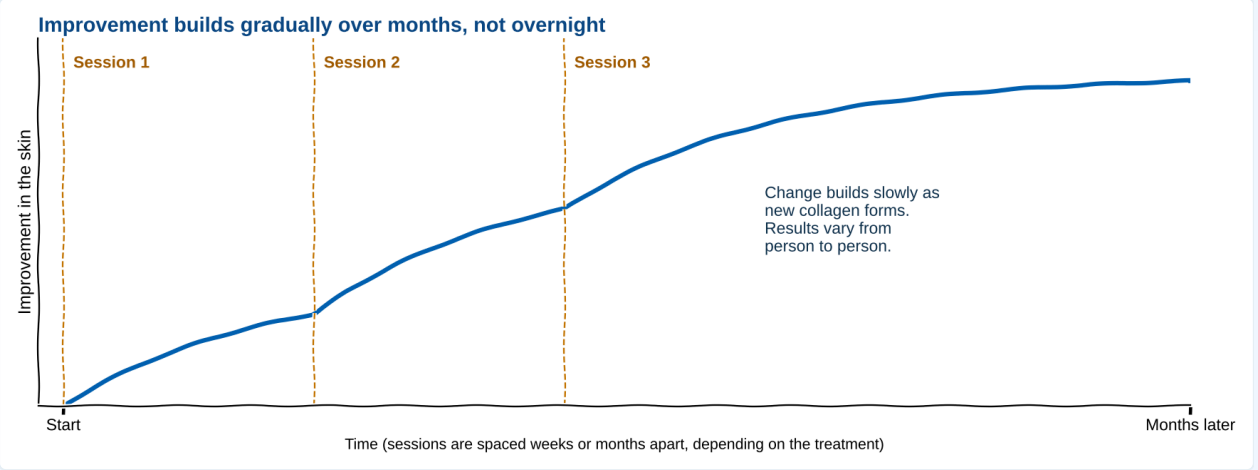
Choose your words carefully, in consultation and in advertising. Advertising must not mislead, and under the CAP Code (enforced by the Advertising Standards Authority, ASA) claims must be backed by evidence. Never promise or guarantee results.

Say this	Not this
"This treatment is designed to improve skin texture. Results vary from person to person."	"This will get rid of your wrinkles."
"Scars can often be softened, but not removed."	"Your acne scars will disappear."
"You will usually need several sessions, weeks or months apart."	"One session is all you need."
"Expect about a week of redness and some flaking. It feels hot and prickly; a numbing cream can help."	Any claim that there is no downtime or no discomfort.

Key fact: improvement, not perfection

Fractional CO_2 is designed to support the skin's own repair. Any change develops gradually over months as collagen remodels (Section 3), and depends on the concern, skin type, settings, number of sessions, aftercare and sun protection. Make sure the client hears this, reads it on the consent form, and signs to say they understand it.

What clients should expect



Improvement builds slowly between and after sessions as new collagen forms. Results vary from person to person.

What fractional CO_2 can and cannot treat

This table turns the overview in Section 1 into a practical consultation guide. The manufacturer's listed skin applications are: skin renewal and resurfacing; wrinkles and tightening; acne and scars; burn, surgical and traumatic scars; chloasma and pigmentation; sun damage; collagen stimulation; and benign lesion removal.

Concern	Suitable?	Notes
Rough texture, dullness, sun damage, fine lines	Yes	Often the gentlest treatments (Non-ablative tip). A good starting point for new users.
Mild skin laxity	With realistic expectations	May give some tightening. Does not replace a surgical lift.
Atrophic acne scars (boxcar, rolling)	Yes	Several sessions, 2 to 3 months apart. Ice-pick scars respond less well.
Surgical, traumatic and burn scars	Yes, if healed and established	Medical advice first for new, painful or growing scars.
Hypertrophic (raised) scars	With caution	Only if the client has no keloid tendency.
Stretch marks	With realistic expectations	May improve texture; will not remove them. Caution on darker skin.
Sun spots, freckles, other pigment	With caution	PIH risk, especially Types IV to VI. Patch test.
Melasma (chloasma)	Advanced use only	Real risk of worsening or rebound. Not for new users.
Skin tags, milia, seborrhoeic keratoses (UltraPulse or fractional head)	Only if confirmed benign	Lesions confirmed benign by a medical professional, within your scope of practice and insurance.
Keloids; undiagnosed moles or lesions	No	Do not treat. Refer to GP or dermatologist.

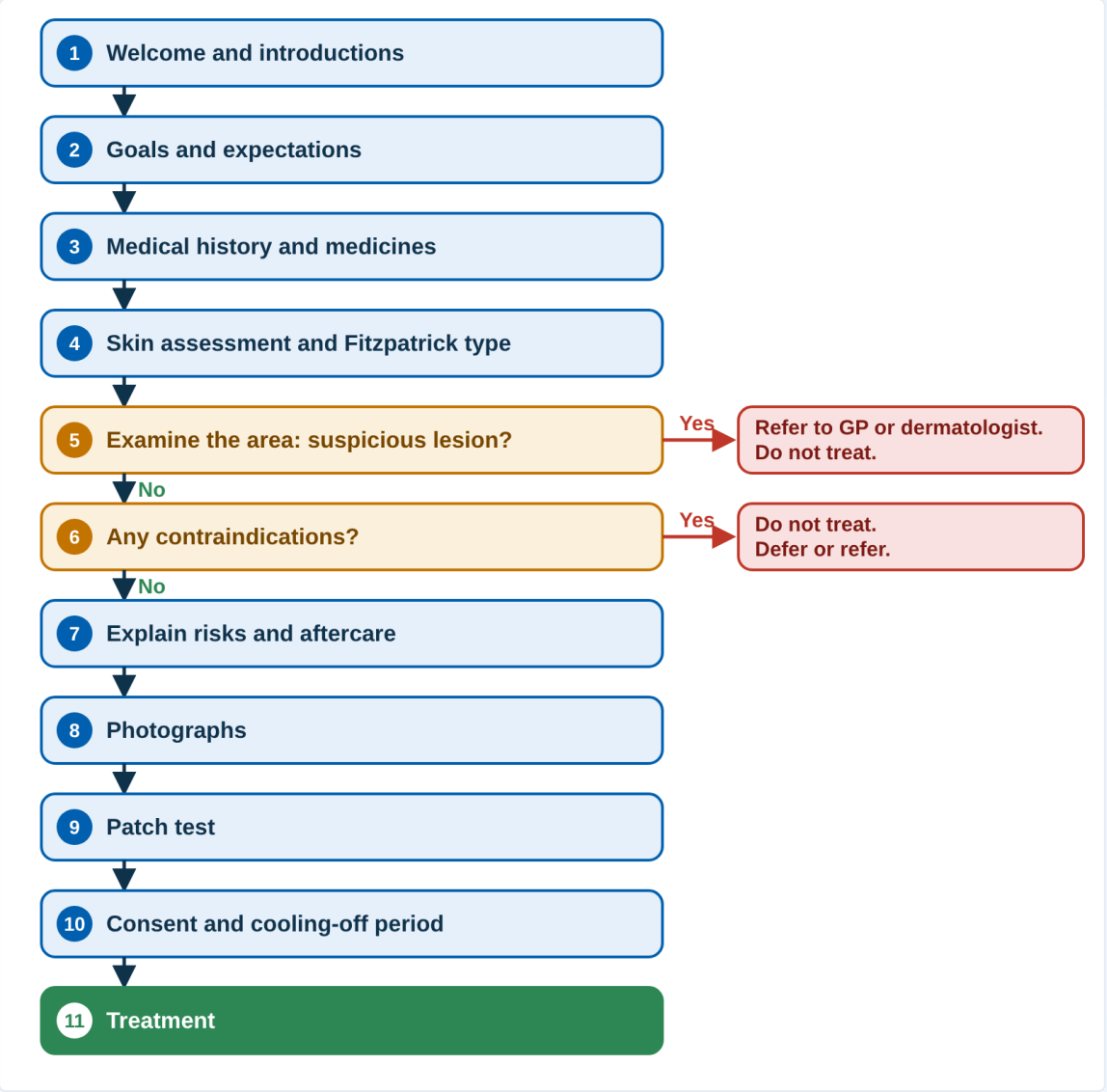
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Concern	Suitable?	Notes
Active acne; vitiligo; active psoriasis or eczema	No	Do not treat the area. Refer to the GP for the condition.
Rosacea redness, thread veins	No	Not designed for blood vessels; heat can trigger flares.
Deep folds, heavy sagging, volume loss	No	Does not replace lost fat or lift heavy tissue.
Hair removal, tattoo removal	No	Other lasers are designed for these. Never treat over tattoos.
Lines, crepey skin or laxity around the eyes	No, not on this course	Not covered by this course (Section 1).

▣ On your teaching device: the MED-870+

The MED-870+ has a fractional scanning head with three spacers (Non-ablative, Micro-ablative and Ultra Fractional tips) for skin treatments, and a separate UltraPulse surgical head for lesions, skin tags and milia. Section 4 describes both heads.

From consultation to treatment decision



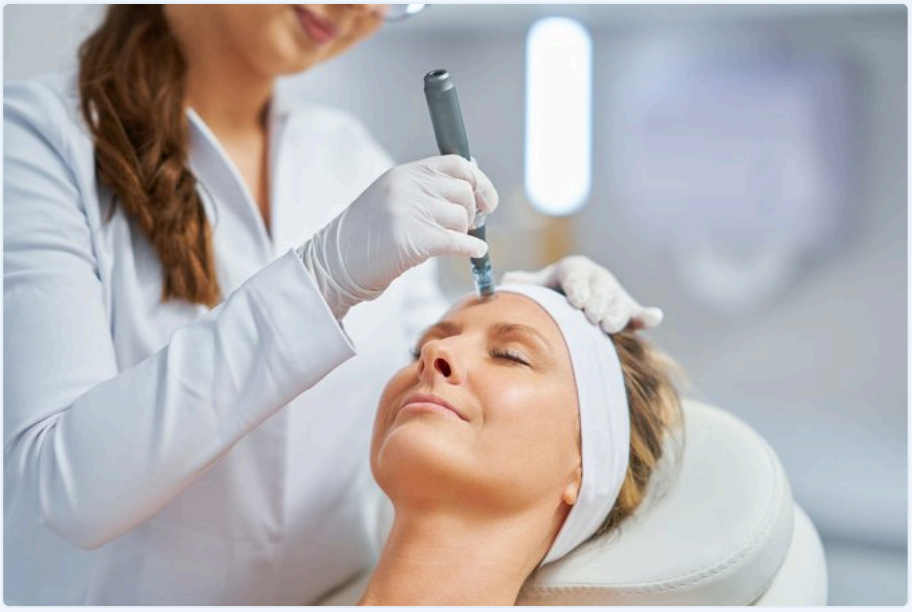
At each decision point you may stop, defer or refer. Treatment is booked only after a satisfactory patch test and the cooling-off period.

The consultation, step by step

Use the client forms at the back of this manual: medical history questionnaire, Fitzpatrick questionnaire, consent form, photography consent and aftercare sheet. Complete every section; do not leave blanks.

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A facial laser treatment



A thorough consultation always comes before any laser treatment. Generated image commissioned by Skintastic, not a photograph.

1. **Welcome and listen.** Greet the client in a private, quiet space and explain what the consultation covers. Let them talk first.

2. **Find out their goals.** Ask what bothers them most, what they hope will change, and what they have tried before. Ask them to point to it in a mirror. Listen for unrealistic hopes or distress out of proportion to what you can see.

3. **Take a full medical history.** Go through the questionnaire with them. Cover general health, skin conditions, scarring, cold sores, pregnancy, plans to become pregnant and breastfeeding. Also cover allergies (including anaesthetics and plasters), previous treatments, recent sun exposure and sunbed use, and any self-tan or aromatherapy products on the area.

4. **Ask about all medicines.** Include prescribed and over-the-counter medicines, herbal remedies, supplements and skincare. See "Medicines to ask about" below.

5. **Assess the skin and Fitzpatrick type.** Use the questionnaire (Section 3). Check for tan, fake tan, sunburn, spots, broken skin or inflammation.

6. **Examine the area closely.** Use good light and magnification if available. Look for any mole or lesion that is new, changing, bleeding, itchy, irregular or unusual. If you find one, do not treat it or the skin around it: advise the client to see their GP or a dermatologist. For UltraPulse lesion removal, only treat lesions a medical professional has confirmed are benign.

7. **Explain the treatment honestly.** Explain what will happen, how it feels, how long it takes and how many sessions may be needed. Explain the use of a topical anaesthetic suitable for your scope of practice. Explain the risks (including rare serious ones), downtime, aftercare and alternatives, including doing nothing. Give written information to take home.

8. **Take photographs, with consent.** Get written photography consent first, then take standardised photographs (see below).

9. **Book the patch test.** This is a small test treatment on a discreet area near the treatment site, using the planned settings. You then wait to see how the skin reacts. Section 7 explains how to do it and how long to wait.

10. **Obtain written informed consent.** Go through the form, answer every question, and both sign and date it.

11. **Allow a cooling-off period.** The first CO_2 treatment is never on the same day as the consultation. At Skintastic we recommend at least 7 days between consultation and first treatment, and 14 days for full-face or deeper treatments. This gives the client time to read the information, ask questions and change their mind. Professional guidance (the GMC, and the JCCP and CPSA Code of Practice) says clients must have the time they need to make a voluntary, informed decision. They can change their mind at any point, including on the day. It appears there is no fixed legal cooling-off period for non-surgical treatments in England, so also follow any longer period your insurer requires. Never pressure anyone to book or pay on the day.

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> **Remember**
>
> At every step you can stop. If treatment is not safe or not right for this client, tell them kindly and clearly, explain why, refer if needed, and record it. Saying "no" is part of professional practice.

Contraindications

A **contraindication** is a reason not to treat, or to treat only with special care. There are three groups:

A mole you must not treat



An irregular mole like this must never be treated with a laser. Refer the client to their GP straight away. Generated image commissioned by Skintastic, not a photograph.

- **Absolute:** do not treat.
- **Relative:** treat only with caution, usually after medical advice. For a new practitioner the safest answer is often "not yet" or "not by me".
- **Temporary deferral:** not now, but perhaps once time has passed or the problem has cleared.

The tables combine the MED-870+ manufacturer's lists with good clinical practice. They are not complete, and you are responsible for a full assessment. If unsure,

do not treat: ask the client to get advice from their GP or specialist, in writing where possible.

Caution: never advise stopping a prescribed medicine

Never tell a client to stop, reduce or change a prescribed medicine. If a medicine affects whether you can treat, the client must speak to their GP or prescriber. Only the prescriber can decide.

Absolute contraindications: do not treat

Contraindication	Why and what to do
Pregnancy or breastfeeding	Listed by the manufacturer. Do not treat. Reassess once breastfeeding has finished. A client who is trying to conceive may be treated, but ask at every visit whether there is any chance she could be pregnant; if there is, postpone. Some insurance policies exclude clients who are intending to become pregnant: if yours does, follow your policy.
Active cancer, or current cancer treatment (chemotherapy, radiotherapy, immunotherapy or hormone treatment for cancer)	Do not treat. A client in remission may be treated only with written clearance from their oncologist or GP, and at least 6 months after their cancer treatment ended.
Under 18	Do not treat anyone under 18, even with a parent's consent. Ask for proof of age if in doubt. Suggest the GP for scar concerns.
Skin cancer, or a suspicious or undiagnosed lesion in the area	Listed by the manufacturer. Treating could hide or delay a cancer diagnosis. Refer to GP or dermatologist.
History of keloid scarring	Listed by the manufacturer. Any injury may trigger a new keloid.
Bleeding disorders (for example haemophilia)	Listed by the manufacturer. Risk of bleeding and bruising.
Anticoagulants or antiplatelet medicines (blood thinners), including regular aspirin	Do not treat with the CO_2 laser, either fractional treatment or UltraPulse lesion removal. Risk of bleeding and bruising, and pinpoint bleeding during lesion removal. Never advise the client to stop or change their medicine.

Contraindication	Why and what to do
Photosensitivity or photodermatitis, including porphyria	Photosensitivity and photodermatitis are listed by the manufacturer. Skin reacts abnormally to light. Porphyria is a group of conditions that can make the skin very sensitive to light, and some insurance policies exclude it.
Severe or uncontrolled systemic disease: serious heart disease, uncontrolled diabetes, poorly controlled high blood pressure	Listed by the manufacturer. Poor healing, infection, risk of becoming unwell. If well controlled, see the relative contraindications table.
Epilepsy, especially if triggered by light	Listed by the manufacturer. Risk of a seizure during treatment.
Tattoos (including cosmetic tattooing such as brows or lip blush) or dark moles on or near the area	Tattoos are listed by the manufacturer. Unpredictable reaction and burns. Do not treat over or close to them. Some insurance policies exclude treatment where there are dark moles or tattoos on or in the immediate vicinity of the area.
Vitiligo or active psoriasis in the area	Koebner response: new patches can appear in injured skin (Section 3).
Eczema, dermatitis or psoriasis on or near the area	Treating can trigger a flare and slow healing. Some insurance policies exclude treatment where these are on or in the immediate vicinity of the area.
Radiotherapy to the area	Skin may be thin and heal poorly. The client should ask their specialist.
Unrealistic expectations or signs of body dysmorphic disorder	Listed by the manufacturer. The client is unlikely to be satisfied and may be harmed. See below.

Relative contraindications: caution, and medical advice first

Contraindication	Why and what to do
History of hypertrophic scarring	Listed by the manufacturer. Do not treat unless a medical professional advises it is appropriate. If so, use very conservative settings, patch test, and record the discussion.
Well-controlled diabetes, heart disease or high blood pressure	Slower healing, infection risk. Written GP advice recommended. Some insurance policies exclude clients with diabetes of any kind, however well controlled: check yours.
Weakened immune system (transplant medicines, chemotherapy, long-term steroids, HIV)	Infection and slow healing. Only with full medical advice when stable.
Autoimmune or connective tissue disease (for example lupus, scleroderma)	Unpredictable healing and pigment. Only with specialist advice.
History of cold sores, especially near the mouth	The laser can trigger an outbreak that spreads across treated skin. Refer to GP or a prescriber about antiviral cover first (prescription-only). Record the advice.
History of psoriasis or vitiligo elsewhere	Risk of the Koebner response. Seek medical advice and patch test first.

Contraindication	Why and what to do
Fitzpatrick Types IV to VI	Higher PIH and hypopigmentation risk. Conservative settings, always patch test and wait, longer intervals. Consider referral or an alternative.
Settled rosacea or acne; thin or fragile skin; eczema elsewhere on the body (not on or near the area); light-coloured moles nearby	Conservative approach and patch test. Avoid moles; treat a mole only if confirmed benign by a medical professional.
Smoking	Reduces blood flow and slows healing. Explain this and record it.

Temporary deferrals: not now, perhaps later

Reason to defer	How long to wait
Active cold sore (listed by the manufacturer)	Until fully healed. Then treat as a cold sore history (above).
Active infection, inflammation, open wound or flare (spots, rash, eczema, rosacea) in the area (listed by the manufacturer)	Until fully cleared or healed.
Recent surgery in the area	Until fully healed, with the surgeon's or GP's agreement.
Sunburn or recent tan, or sunbed use in the last 4 weeks	At least 1 month, as stated by the manufacturer, and until the tan has faded. Do not treat anyone who has used a sunbed in the last 4 weeks.
Self-tan (fake tan) or aromatherapy products on the area in the last 10 days	At least 10 days since they were last applied, and until any self-tan has fully worn off or been removed.
Recent laser resurfacing, deep chemical peel or exfoliating treatment in the area	At least 3 months, as stated by the manufacturer.
Botulinum toxin or dermal filler in the area	The manufacturer states 3 to 6 months, as heat could break down or move the product. Follow your own protocol and insurer.
Photosensitising medicine being taken (listed by the manufacturer)	Do not treat while taking it. Client to check with their GP or pharmacist.

Reason to defer	How long to wait
Oral isotretinoin (Roaccutane), now or recently. The manufacturer lists recent retinoid therapy.	Do not treat during the course. Our standard is at least 6 months after the last dose, and only once a prescriber has agreed treatment is safe. Section 11 gives the UK product information for Roaccutane. Also follow your insurer's requirements.
Topical retinoids or exfoliating acids on the area	Stop all retinoid products (retinol, retinal, tretinoin, adapalene and similar) and exfoliating acids (glycolic, lactic, salicylic, mandelic, azelaic) on the area at least 7 days before treatment. For Fitzpatrick skin types IV to VI, sensitive skin or deeper settings, stop them at least 14 days before.
Client unwell on the day	Rebook once well.

▣ On your teaching device: the MED-870+

The MED-870+ user manual lists its contraindications in two places (the safety chapter and the clinical chapter). The waiting times in the deferral table above (sunburn at least 1 month; resurfacing or deep peels at least 3 months; toxin or filler 3 to 6 months) come from the manufacturer. The manufacturer states that its list is not exhaustive and that the treating practitioner is responsible for a full assessment.

Key fact: your insurer's conditions come first

Insurance policies for laser treatment often list clients who must not be treated. If you treat one of them, you may not be covered. As an example of the kind of conditions one UK aesthetic insurance policy sets, its laser endorsement says the insurer will not cover treatment of clients who:

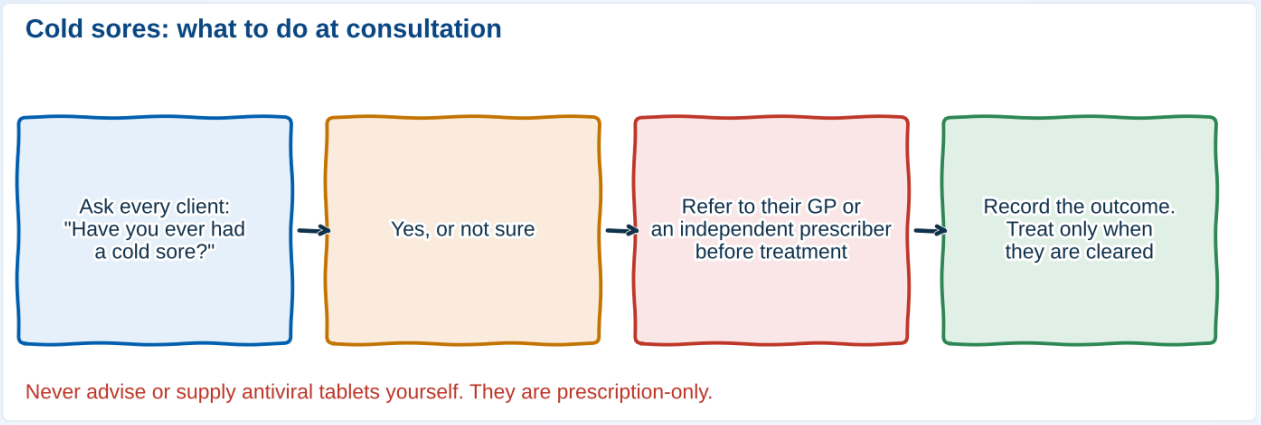
- are taking photosensitive medication;
- have active melanin in the skin, or sun-tanned or sunburned skin;
- have used a sunbed within the preceding four weeks;
- have had laser or skin peeling treatment on the area within the preceding ten days;
- have applied aromatherapy or self-tanning products to the area within the preceding ten days;
- have dark moles, eczema, dermatitis, psoriasis or tattoos on or in the immediate vicinity of the area;
- are intending to become pregnant, are pregnant or are breastfeeding;
- have, or may have, skin tumours, skin cancer, porphyria, diabetes or epilepsy.

Other policies will differ. Read your own policy, including any endorsements, before you treat anyone. Where this manual and your policy say different things, follow whichever is stricter.

Caution: ask about cold sores

Ask every client, "Have you ever had a cold sore?" Many people carry the virus without thinking of it as a medical condition. An outbreak after treatment can spread across treated skin and cause scarring.

Cold sores: what to do



Ask, refer, record. Only treat once the client has been cleared.

Medicines to ask about

Ask, "Is there anything you take or use regularly, even if it is not from the doctor?" Clients often forget the pill, inhalers, creams, supplements and herbal remedies.

Medicine group	Examples (not a full list)	Why it matters
Anticoagulants and antiplatelets (blood thinners)	Warfarin and other blood-thinning tablets, clopidogrel, regular aspirin	Bleeding and bruising. Do not treat with the CO_2 laser (absolute contraindications table). Never advise the client to stop their medicine.
Photosensitisers	Some antibiotics (for example the tetracycline group, such as doxycycline), some water tablets and heart medicines	Stronger reaction to light and heat.
Herbal remedies	St John's wort	Can increase sensitivity to light.
Retinoids	Isotretinoin (Roaccutane) tablets; tretinoin, retinol and adapalene creams or gels	Affect healing and sensitivity.
Steroids and immunosuppressants	Steroid tablets, long-term steroid creams, transplant or arthritis medicines, chemotherapy	Thin skin, slow healing, infection.

If you are unsure whether a medicine matters, do not guess. Ask the client to check with their pharmacist or GP before you treat, and record it.

Unrealistic expectations and body dysmorphic disorder

Body dysmorphic disorder (BDD) is a mental health condition in which a person worries intensely about flaws in their appearance that others often cannot see. Cosmetic treatment does not usually help and can make the distress worse. Signs include a client who:

- is very distressed by a flaw you can barely see
- has had many treatments and was never satisfied
- says the concern stops them going out or working
- expects treatment to change their life
- keeps asking for reassurance or stronger settings

You are not there to diagnose. If you have concerns, do not treat. Explain kindly that you do not think this treatment will give them what they hope for, suggest they talk to their GP, and record your concerns factually.

Activity: contraindication sorting

For each client decide: treat, defer (how long?), refer, or do not treat, and give a reason. (1) A woman breastfeeding her 4-month-old. (2) A man back from a beach holiday 10 days ago with a tan. (3) A client who had cheek filler 6 weeks ago and wants her cheeks treated. (4) A client who takes warfarin. (5) A client who gets cold sores twice a year and wants her upper lip lines treated. (6) A client with a cheek mole that has "got darker and itchy". (7) A 17-year-old with acne scars whose mother will sign the consent form.

Informed consent, in plain English

Consent is the client's permission for you to treat them. **Informed consent** means they give it after receiving, and understanding, all the information they need to make a real choice. It is a conversation; the signed form is the record of it.

Informed consent in six steps



Informed consent in six steps. Drawn for this manual.

For consent to be valid it must be:

- **Voluntary:** freely given, without pressure from you, a partner, friends or family, or from offers and deadlines.
- **Informed:** the client has been told everything a reasonable person would want to know, in words they understand, and has been able to ask questions.
- **Given by someone with capacity:** able to understand the information, remember it, weigh it up and tell you their decision. Someone drunk, under the influence of drugs, very distressed or confused cannot consent at that time.

Consent must cover:

- what the treatment is and what will happen on the day;
- the likely benefits, described honestly, and that results vary;
- the risks: common ones (redness, swelling, micro-crusts, discomfort, temporary darkening) and rare serious ones (burns, infection, cold sore outbreak, scarring, long-lasting light or dark patches);
- the alternatives, including doing nothing;
- downtime, number of sessions, the aftercare the client must follow, and the full costs;
- that the client can change their mind at any time, even on the day.

Both the client and the practitioner sign and date the form, and the client is offered a copy. Consent must be renewed when anything important changes: a new area or indication, a significant change in settings or device, a change in health or medicines, or a long gap since the last treatment. On each treatment day, check and record that the client still consents and nothing has changed.

> **Key fact: consent is a process**
>
> A signature alone does not prove valid consent. If the client did not understand, or felt pressured, consent may not be valid. Use plain words, ask the client to explain back in their own words what they have agreed to, and record the conversation.

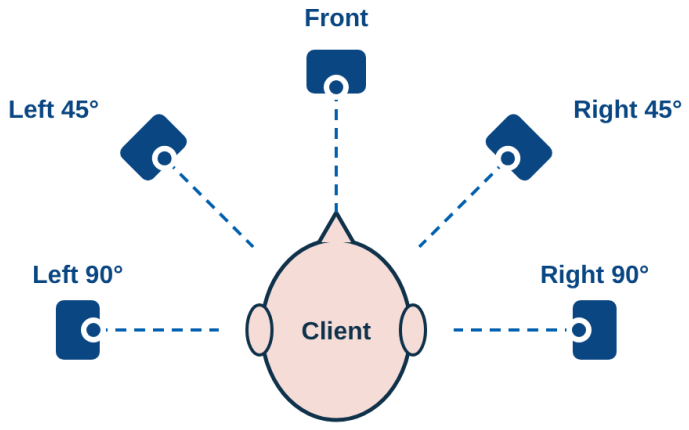
Activity: is this consent valid?

Say whether consent is valid and why. (1) A client signs in the waiting room without reading the form and goes straight into treatment. (2) A client's partner keeps saying "just get it done" during the consultation. (3) A client consented for her cheeks six months ago and today asks you to "quickly do her neck too". (4) A client read the information, asked questions, explained the risks back in her own words, and signed a week after her consultation.

Photographs

Before and after photographs help you and the client see change over time, and protect you if there is a complaint.

Standard photograph positions



Seen from above. Sides are named from the client's point of view.

Every photograph

- Same light and plain background
- Same camera, distance and zoom
- Bare skin, hair back, neutral expression, eyes open
- No filters or editing
- Written consent first

The five standard face views. Take every photograph the same way so that before and after pictures can be compared fairly. Drawn for this manual.

- Get written consent before taking any photographs, using the photography consent form. Explain what they are for, where they are stored and who can see them.
- Ask separately whether the client agrees to use for training or marketing. This must be an optional choice, which they can withdraw at any time.

"Standardised" means taking every photograph the same way, so before and after pictures can be fairly compared. A change in lighting alone can make skin look better or worse.

1. **Same background and lighting.** Plain background, same light source and position. Avoid changing daylight. No filters or editing.
2. **Same camera, distance and zoom.** Use the same device every time.
3. **Same positions.** For the face: front, both sides and both angled views, neutral expression, eyes open, hair back.
4. **Bare skin.** No make-up, jewellery or glasses.
5. **Label and store securely.** Label with the date and client reference. Store on a secure, password-protected system, not a personal phone.

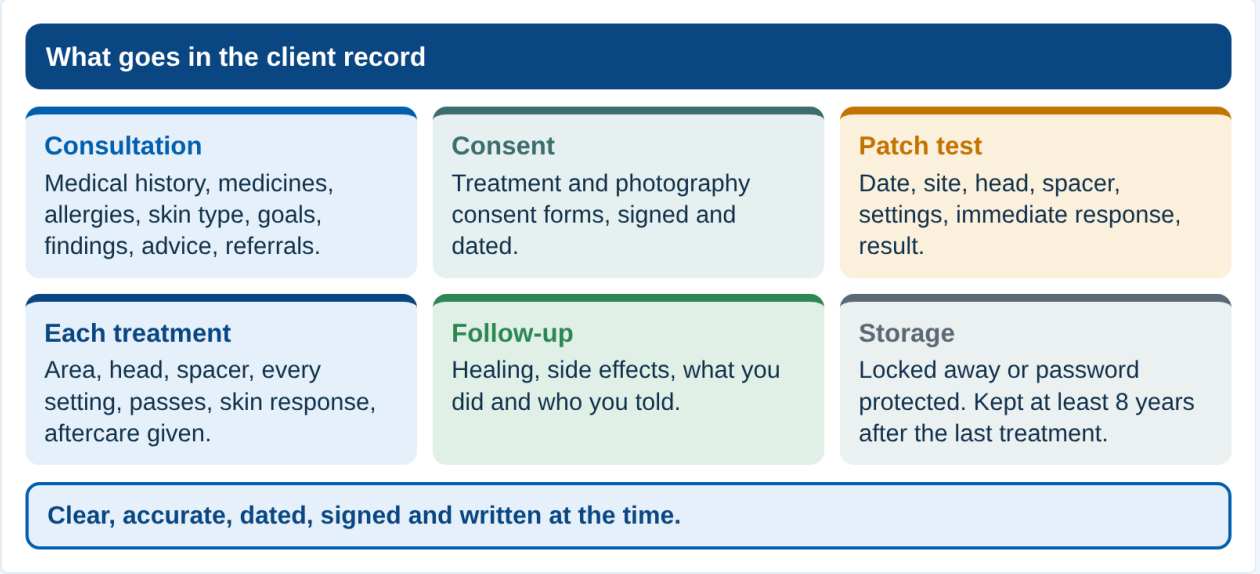
Caution: photographs are personal data

Photographs of a client are personal data, and health records need extra care. Store them securely, limit access, and never share them, including on social media, without the client's specific written consent. Section 11 covers data protection.

Record keeping basics

If it is not written down, it is hard to show it happened. Records must be clear, accurate, dated, signed and made at the time. Record:

What goes in the client record



What to record, and how to keep it. Drawn for this manual.

- **Consultation:** medical history, medicines, allergies, Fitzpatrick type, goals, findings, advice and any referral.
- **Consent:** treatment and photography consent forms, signed and dated, and photographs.
- **Patch test:** date, site, device, head and spacer, settings, immediate response and result.
- **Each treatment:** date, practitioner, area, head, spacer, all settings (power, energy, spacing, pulse duration, scan shape and size, passes), skin response, any problems and aftercare given.
- **Follow-up and incidents:** how the skin healed, any side effects or adverse events, what you did and who you told.

Clients have a legal right to ask for a copy of their records. Section 11 explains how to store records securely, how long to keep them and how to destroy them.

Remember: the forms at the back of this manual

The client forms section contains the medical history questionnaire, Fitzpatrick skin type questionnaire, consent form, photography consent, treatment record and aftercare advice. Use them on your practical day and in your own practice.

Section 6 summary

- Use honest, ASA/CAP-compliant language: "designed to", "may help", "results vary".
- Follow the consultation steps in order, and never treat on the day of the consultation.
- Never treat a suspicious or undiagnosed lesion: refer. Use UltraPulse lesion removal only for lesions confirmed benign by a medical professional.
- Know the absolute, relative and temporary contraindications, and ask about every medicine. Never advise stopping a prescribed medicine.
- Valid consent is voluntary, informed and given with capacity. It is signed, dated and renewed when anything changes.

Check your understanding

Now answer questions 21 to 24 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Section 7 Settings: the exact parameters

Learning outcomes

By the end of this section you will be able to:

- Read the treatment settings on the MED-870+ screen and explain what each one does.
- Work out the energy per spot from the power and the duration.
- Apply the golden rules for choosing and changing settings safely.
- Use the manufacturer's reference settings to choose a safe starting point for each treatment.
- Explain how to reduce settings for thin skin and for Fitzpatrick skin types IV to VI.
- Recognise the clinical endpoints you should see, and the warning signs that mean you must stop.
- Carry out a thermal card test and a patch test, step by step.
- Record settings fully and accurately in the treatment record.

This section gives you the settings for the MED-870+. It also teaches you the habits that keep those settings safe: starting low, testing first and watching the skin.

Settings are where most laser injuries begin. A setting that suits one client can burn another. The numbers in this section are a starting point, never a recipe.

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How to read the settings on the screen

Section 4 showed you where each setting is on the touchscreen. Here is what each one means for the skin. Section 2 explains the science in more depth.

Setting on screen	Unit	What it controls	Turning it up means
Power	Watts (W)	How strong the laser output is	More energy in each spot
Duration	Milliseconds (ms)	How long the laser stays on each spot	More energy in each spot and more heat spreading sideways
Energy	Millijoules (mJ)	The energy in each spot. The machine calculates it and shows it in a box.	Deeper columns and more downtime
Distance	Millimetres (mm)	The gap between the centres of the spots	Spots further apart, so less skin is treated and less heat builds up (a gentler treatment)
Times	Number	How many times the pattern is fired on the same area	A deeper, stronger effect and longer healing
Scan Modes	Order, Random or Split	The order in which the spots are fired	The reference settings all use Order

The fractional settings and what they do to the skin

Key fact: energy = power × duration

On the MED-870+, the energy in each spot equals the power multiplied by the duration. Watts multiplied by milliseconds gives millijoules.

- 20 W × 0.4 ms = 8 mJ
- 25 W × 0.6 ms = 15 mJ
- 30 W × 1.2 ms = 36 mJ

This means that, at a fixed power, you can lower the energy by shortening the duration. In the manufacturer's settings, the power stays the same within each treatment and the energy is adjusted through the duration.

Key fact: spacing works the opposite way

Most settings make the treatment stronger when you turn them up. Spacing does the opposite. A larger spacing puts the spots further apart, so there is less energy on the skin overall. A smaller (tighter) spacing increases coverage and heat, and makes the treatment stronger. If you are unsure, widen the spacing.

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The golden rules

1. **Start low.** Begin at the lower end of the manufacturer's range: the shortest duration (lowest energy) and the widest spacing. Go below it on thinner skin and darker skin types.

2. **Change one thing at a time.** If you change two settings at once, you will not know which one caused the skin's response. Change one, test, look, then decide.

3. **Test-fire every time.** Fire onto a thermal card before every treatment and after any change of head, spacer or setting.

4. **Patch test first.** Patch test every new client, every new area and every new set of settings before a full treatment.

5. **Go by the skin, not the number.** The right setting is the one that gives the correct clinical endpoint on this client's skin today. If the skin is reacting more than expected, turn down, even if the number is below the reference figure.

6. **Check the spacer.** The settings only make sense with the correct spacer fitted. Check it before every treatment.

7. **If in doubt, treat more gently.** You can always add another session. You cannot undo a burn.

The manufacturer's reference settings: fractional mode

These are the manufacturer's recommended settings for the MED-870+, as given on its parameter sheet for this screen and in the device manual. Scan mode is "Order" (sequential) for every treatment. The "tip" is the spacer you fit on the fractional head (see Section 4).

▣ On your teaching device: the MED-870+

The table below gives the manufacturer's reference settings for the MED-870+. They are not starting points: see "Where to start" below.

Treatment	Tip (spacer)	Power	Spacing	Energy	Duration
Skin rejuvenation	Non-ablative tip	20 W	1.0 mm	8 mJ	0.4 ms
Fine lines and wrinkles	Micro-ablative tip	25 W	0.6-0.8 mm	10-15 mJ	0.4-0.6 ms
Acne marks	Ultra Fractional tip	25 W	0.8-1.0 mm	10-15 mJ	0.4-0.6 ms
Acne pits (holes)	Ultra Fractional tip	25 W	0.6-0.8 mm	20-25 mJ	0.8-1.0 ms
Burn scars	Ultra Fractional tip	30 W	0.6-0.8 mm	36-45 mJ	1.2-1.5 ms
Scars	Ultra Fractional tip	30 W	0.8-1.0 mm	30-36 mJ	1.0-1.2 ms

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Treatment	Tip (spacer)	Power	Spacing	Energy	Duration
Stretch marks	Ultra Fractional tip	30 W	0.3-0.4 mm	30-36 mJ	1.0-1.2 ms
Speckle (freckles, pigment)	Ultra Fractional tip	25 W	0.3-0.4 mm	15-20 mJ	0.6-0.8 ms
Chloasma (melasma)	Micro-ablative tip	25 W	1.0 mm	12.5-17.5 mJ (see note)	0.5-0.7 ms

Manufacturer's reference settings: fractional mode (scan mode: Order)

Note on the melasma row: the manufacturer's printed sheet shows 15-20 mJ for this row, which does not match its own power x duration. Use the lower figures until the manufacturer confirms. Always follow the manual for whichever device you use in practice; these figures apply to the MED-870+ only.

> **Key fact: the manufacturer specifies the Ultra Fractional tip for acne marks**
>
> Note that the manufacturer lists the Ultra Fractional tip for acne marks and acne pits, speckle and stretch marks, not only for scars. These are strong treatments. Treat conservatively, start at the lowest settings in the range, and assess the skin's response carefully.

Where to start: guidance for first-time users

The table below turns the manufacturer's ranges into a starting point. It always takes the gentlest end of each range: the shortest duration (so the lowest energy) and the widest spacing. On thinner skin and on Fitzpatrick skin types IV to VI, start below these figures (see the next pages).

Treatment	Spacer	Start at	Notes for first-time users
Skin rejuvenation	Non-ablative tip	20 W, 0.4 ms (8 mJ), 1.0 mm	The manufacturer gives a single figure, not a range. On thinner or darker skin, start below it by shortening the duration, or widen the spacing.
Fine lines and wrinkles	Micro-ablative tip	25 W, 0.4 ms (10 mJ), 0.8 mm	Increase in small steps only if the patch test and skin response allow.
Acne marks	Ultra Fractional tip	25 W, 0.4 ms (10 mJ), 1.0 mm	An Ultra Fractional tip. Be cautious, especially on darker skin, where marks may be pigment rather than texture.
Acne pits (holes)	Ultra Fractional tip	25 W, 0.8 ms (20 mJ), 0.8 mm	A strong treatment. Treat the scarred area only.
Burn scars	Ultra Fractional tip	30 W, 1.2 ms (36 mJ), 0.8 mm	An advanced indication. Burn scar tissue can be thin and unpredictable. Patch test and seek supervision.
Scars	Ultra Fractional tip	30 W, 1.0 ms (30 mJ), 1.0 mm	Check the scar type first (Section 3). Do not treat keloid scars.

Where to start on the MED-870+ (normal-thickness facial skin, lighter skin types)

Treatment	Spacer	Start at	Notes for first-time users
Stretch marks	Ultra Fractional tip	30 W, 1.0 ms (30 mJ), 0.4 mm	Very tight spacing, so the treatment is intense even at the lower energy. Treat the marks only.
Speckle (freckles, pigment)	Ultra Fractional tip	25 W, 0.6 ms (15 mJ), 0.4 mm	Tight spacing. High risk of post-inflammatory hyperpigmentation (PIH) on darker skin.
Chloasma (melasma)	Micro-ablative tip	Advanced only	Not for first-time users. See the caution below.

Caution: melasma (chloasma) can get worse

Melasma is an advanced indication. CO_2 laser treatment of melasma carries a real risk of making it worse. Heat in the skin can trigger rebound hyperpigmentation, where the patches return darker or larger than before, and post-inflammatory hyperpigmentation (PIH). The risk is higher in darker skin types.

Do not treat melasma until you are experienced with the machine and with pigment. Even then, treat only with great caution. Use very conservative settings and a patch test with a wait of at least 4 weeks. Insist on strict sun protection before and after, and make sure the client fully understands and accepts the risk in writing. If you are in any doubt, do not treat, and refer the client on.

The manufacturer's reference settings: UltraPulse mode

The UltraPulse head is used for surgical work: cutting, removing small lesions (such as skin tags, milia and benign growths) and sealing small blood vessels. It replaces the whole fractional head and is set up on the Pulse screen (the "Normal" button).

▣ On your teaching device: the MED-870+

Use	Power	Pulse width	Interval	Mode
Lesion or tissue cutting	Never above 30 W, the machine's tested maximum (see the caution below)	5 ms	5 ms	Pulse
General cutting	Start low (the older manufacturer sheet says from 1 W) and increase to suit the depth of the cut	Not stated	Not stated	Continuous for steady cutting; Single for short, controlled bursts
Small naevi and milia (older manufacturer sheet)	15-18 W	3.6 ms dwell	Not stated	Single

Manufacturer's reference settings: UltraPulse (surgical) head

Always start low and increase in small steps until you see the effect you need on the lesion. The manufacturer's reference values are 15 to 18 W in Single mode for small naevi and milia, and a pulse width of 5 ms with an interval of 5 ms for cutting tissue, never above 30 W. For surgical cutting the manufacturer says start from 1 W and increase with the depth needed. These are reference values, not starting points: never begin at the top reference value.

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Caution: 30 W is the maximum

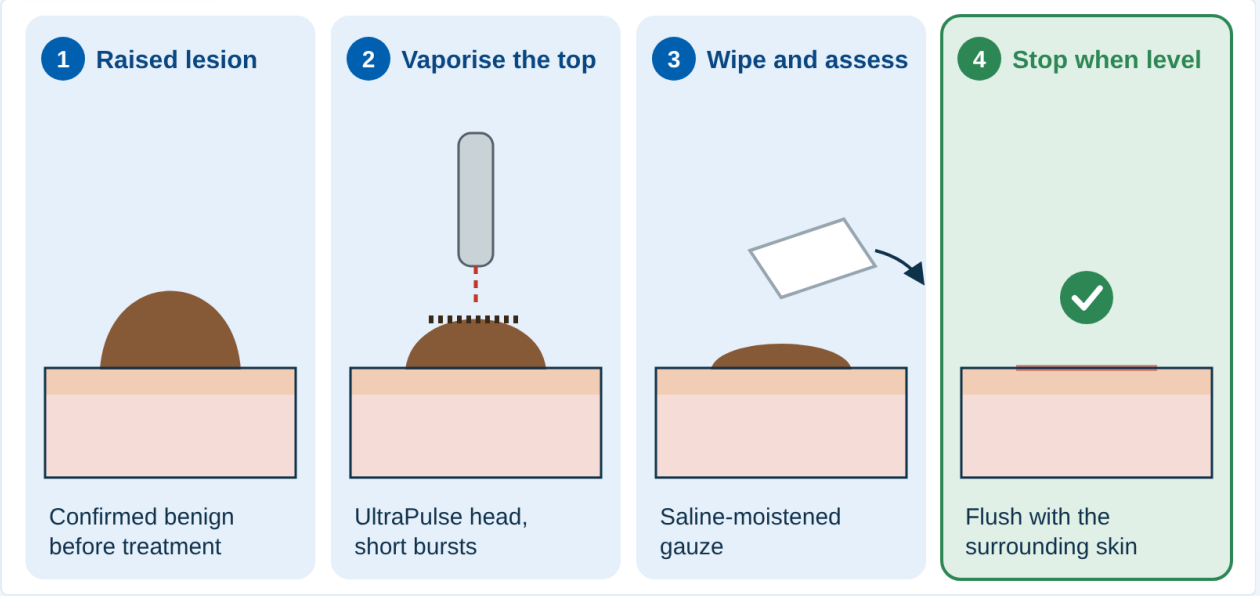
The tested maximum output of the MED-870+ is 30 W (EN 60601-2-22 test report, Section 4). Never set the UltraPulse head above 30 W. Start low and never go above the power on your trainer's treatment card.

The Normal screen set to Single mode



Select Single on the Normal screen for small lesions: each press of the foot switch gives one controlled pulse.

Removing a lesion layer by layer

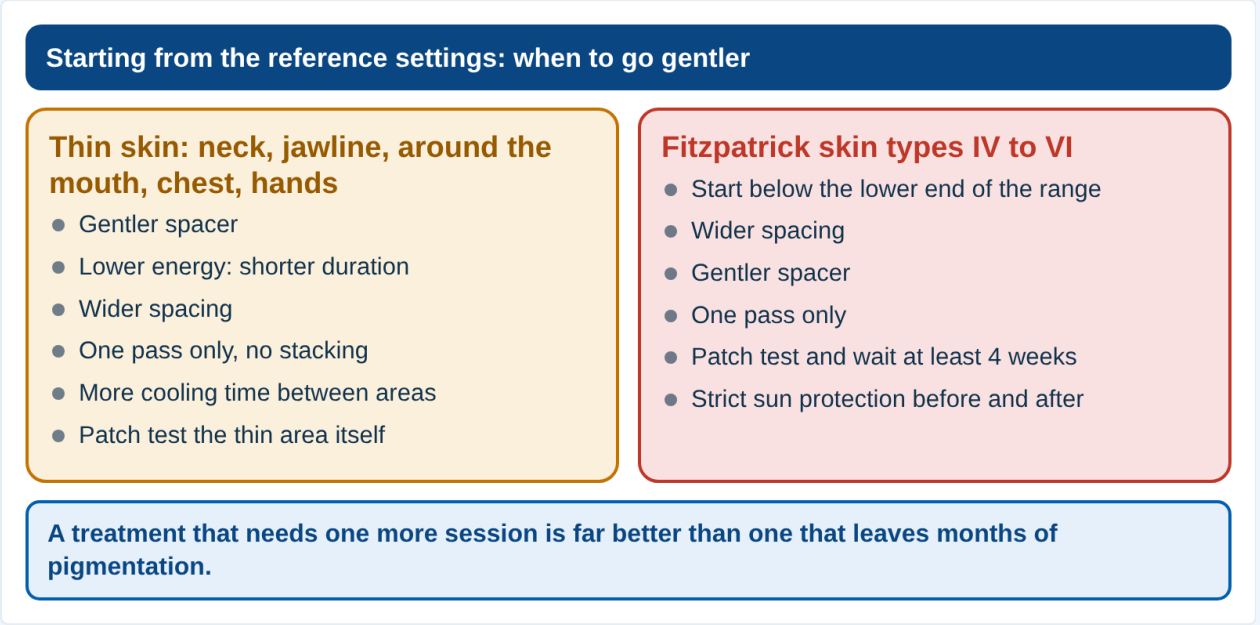


Work in thin layers, wipe and check between each one, and stop as soon as the area is level with the surrounding skin.

Reducing settings for thin skin

Skin is not the same thickness everywhere. The neck, jawline, the skin around the mouth, the chest and the backs of the hands have thinner or more delicate skin than the cheeks, with fewer oil glands to help healing. They heal less well and scar more easily. Published reports link scarring after fractional CO_2 to treatments that were too aggressive (too much energy, too many dots, or both) in these sensitive areas. The chest and lower neck need the gentlest settings of all. The skin around the eyes is thinner still, and is not treated on this course.

When to go gentler



How to reduce from the reference settings for thin skin and for darker skin types. Drawn for this manual.

The manufacturer's reference settings do not give separate figures for these areas, so you must reduce the strength of the treatment yourself. On thinner skin:

1. **Use a gentler spacer.** Choose the tall or Micro-ablative tip rather than the Ultra Fractional tip wherever the indication allows.
2. **Lower the energy.** Shorten the duration so that the point energy falls below the starting figure you would use on the cheeks.
3. **Widen the spacing.** This reduces the heat building up in the skin.
4. **Use one pass only.** Never add a second pass on thin skin, and never stack or overlap scans.
5. **Allow more cooling time.** Leave more time before treating the neighbouring area, so heat does not build up.
6. **Use smaller shapes.** Smaller or narrower shapes let you follow curves without overlapping.
7. **Patch test the thin area itself.** A patch test on the cheek does not tell you how the neck, chest or hand skin will respond.

Your trainer will give you the exact reductions for this machine.

The eye area is not treated on this course (Section 1). Section 5 covers client eye protection.

Reducing settings for Fitzpatrick skin types IV to VI

Darker skin has more melanin and more active pigment cells. Heat from the laser can stimulate these cells, causing post-inflammatory hyperpigmentation (PIH): dark patches that can take months to fade. Lighter patches (hypopigmentation) can also occur. Section 3 explains why.

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For Fitzpatrick skin types IV to VI:

- **Start below the lower end of the range.** Lower the energy by shortening the duration.
- **Widen the spacing.** Treating less of the skin surface means less heat and less inflammation.
- **Prefer gentler spacers.** Use the Ultra Fractional tip only when it is clearly needed and the patch test has gone well.
- **Use one pass.** Avoid stacking or a second pass.
- **Allow more cooling time.** Leave more time before treating neighbouring areas, so heat does not build up.
- **Patch test and wait.** Wait at least 4 weeks before the full treatment (see the patch test steps below).
- **Insist on strict sun protection.** This applies before and after treatment.

> **Remember**
>
> On darker skin, a slightly under-powered treatment that needs one more session is far better than an over-powered treatment that leaves months of pigmentation.

Passes

A pass is one complete coverage of the treatment area, with each scan placed edge to edge. On the screen, "Times" sets how many times the pattern fires on the same spot before you move.

- The manufacturer's parameter sheet is based on one pass (Times set to 1). Use one pass as your standard.
- Do not overlap scans within a pass. An overlap gives a double dose to that strip of skin.
- A second pass is only for experienced users, on suitable skin, once you have seen the response to the first pass. Section 8 shows how to offset a second pass.
- Never use extra passes on thin skin, on Fitzpatrick types IV to VI, or when the skin is already showing a strong response.

Clinical endpoints: what you should see

A clinical endpoint is the visible change in the skin that tells you the right amount of energy has been delivered. Watch for it with every scan. It is a far better guide than the number on the screen.

Treatment	What you should see	What to do
Skin rejuvenation (Non-ablative tip)	A fine, even grid of tiny dots, mild redness (erythema) and possibly a slight white haze (frosting)	Continue if even and as expected
Wrinkles (Micro-ablative tip)	Epidermal vaporisation: a neat grid of pinpoint marks with mild to moderate redness	Keep scans edge to edge with no overlap
Scars, burn scars and acne pits (Ultra Fractional tip)	Controlled carbonisation and ablation within the treated dots. There may be slight oozing of tissue fluid or pinpoint bleeding.	Wipe away the carbonised residue and continue to the level of the scar, as taught
Pigment, freckles and melasma	Epidermal ablation and vaporisation of the pigmented area	Gently wipe away the carbonised residue with saline so that no abnormal pigment remains

Clinical endpoints on the MED-870+

After treatment, what to expect

Section 9 covers the number of sessions and the gaps between them. Section 10 covers healing and recovery.

Caution: stop and reassess if you see

- Charring that spreads beyond the dots or joins them together, or a grey or white patch of skin.
- Blistering.
- Excessive blanching (the skin turning very pale).
- A strong burning smell.
- A response much stronger than in the patch test.
- The client reporting severe or unexpected pain.

Put the machine in standby. Cool the area as taught, check your settings and spacer, and do not continue until you are sure it is safe. If in doubt, stop the treatment.

The thermal card test

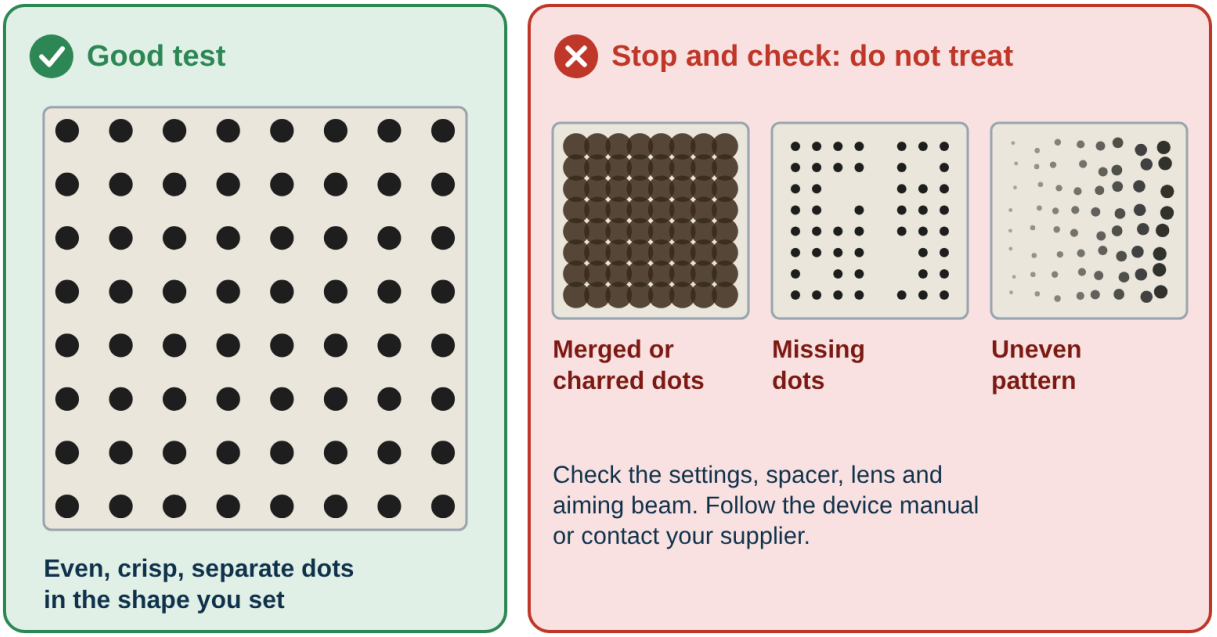
A thermal card (also called a thermal target card or laser test paper) is a special card that marks where laser energy hits it. Test-firing onto the card shows you whether the machine is delivering the pattern you have set before any of it reaches skin.

Do a thermal card test at the start of each treatment day, after changing the head or spacer, after any change of setting, and whenever the output seems different.

1. **Make the room safe.** Everyone in the room wears the correct eyewear as set out in your Local Rules. The door is closed and the warning sign is on.
2. **Set up the card.** Place the thermal card flat on a safe, non-reflective surface, such as a dark, matt board. Never hold it in your hand.
3. **Set the treatment settings.** Enter the settings you plan to use, starting low.
4. **Preview.** Press Preview and check the aiming beam traces the shape in the middle of the card.
5. **Position the head.** Rest the spacer lightly on the card, at a right angle (90 degrees), exactly as you would hold it on skin.
6. **Fire once.** Switch to Ready (three beeps) and press the foot switch once. Then switch back to Standby.
7. **Read the card.** Compare the mark with the good and bad examples below.
8. **Record the result.** Write "thermal card: pass" (or what you found) in the treatment record and keep or photograph the card if your clinic policy requires it.

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Test-firing on a thermal card: good and bad results



A good test shows a clean, even grid in the right shape and place. Faded, missing, uneven, shifted, merged or scorched marks mean something is wrong.

What you see	What it may mean	What to do
A clean, even grid of evenly spaced dots, all the same strength, in the shape and size you chose, centred where the aiming beam was	Good. The machine is delivering what you set.	Proceed to the patch test or treatment
Faded, weak or missing dots	Dirty or damaged lens, weak output	Clean the lens and retest. If still weak, see Troubleshooting in Section 4.
Uneven or smudged dots	Dirty optics, head not at a right angle, or head moved during firing	Clean, reposition and retest

What you see	What it may mean	What to do
Pattern shifted away from where the aiming beam showed	Scanner out of calibration, or the arm has been knocked	Do not treat. Recalibrate only if trained, otherwise call an engineer.
Dots merging together	Spacing too tight or energy too high for your intention	Check the settings you entered
Card scorched or burnt through	Energy too high	Lower the settings and retest
No mark at all	Not in Ready, interlock, foot switch, or a fault	Check, then see Troubleshooting in Section 4

Reading the thermal card

Activity: energy and starting points

(a) Work out the point energy for: 25 W at 0.4 ms; 25 W at 0.8 ms; 30 W at 1.0 ms. (b) A client with Fitzpatrick skin type V wants treatment for acne marks on the cheeks. Using the tables in this section, write down the spacer and the starting settings you would test, and explain how and why you would go below the "where to start" figure.

The patch test

A patch test (also called a test spot) treats a very small area of skin with the settings you plan to use. This lets you see how this client's skin responds before you treat a whole area. It helps to identify whether the client is suitable and how much energy their skin will tolerate, and it reduces the risk of burns and pigment changes.

The patch test in clinic practice

The patch test in clinic practice

Day 0	Consultation, consent and the patch test on a small, discreet area of the skin to be treated, at your starting settings.
Straight after	Record the immediate reaction: redness, swelling, any whitening or blistering.
24 to 72 hours	Review the patch. Record what you see.
At least 4 weeks	For skin types IV to VI, melasma or a history of pigment change: wait and review again before the full treatment.

Training models are the exception: on the training day they are patch tested and treated the same day, and sign the model disclaimer.

Patch testing in your own clinic. Training models are the exception on the training day. Drawn for this manual.

1. **Complete the consultation first.** The client must have had a full consultation, medical history check and consent (Section 6), and you must have confirmed they are suitable.

2. **Choose the site.** Pick a small, discreet area close to the treatment area, with the same skin type, thickness and texture. For example, in front of the ear for the face. Test the thin area itself if you plan to treat the neck, chest or hands.

3. **Prepare the skin.** Cleanse the site and make sure it is completely dry.

4. **Choose the settings.** Use the spacer and the conservative starting settings you intend to use for the treatment: the "where to start" figures, or below them for thin skin or Fitzpatrick types IV to VI.

5. **Test-fire on a thermal card.** Confirm the pattern is correct.

6. **Fire a small test.** Use a small scan shape and fire one scan (or up to three, spaced apart, if you want to compare settings). Never overlap them.

7. **Look at the immediate response.** Note the endpoint you see: for example, a fine grid with mild redness.

8. **Give aftercare.** Give the client aftercare advice and sun protection advice for the test site.

9. **Check at 24 to 72 hours.** Check the test site at 24 to 72 hours for any burn, blister or unexpected reaction.

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10 **Wait longer for higher-risk skin.** For skin types IV to VI, anyone with melasma, or anyone with a history of pigment changes after treatment, wait at least 4 weeks before the full treatment. Darkening of the skin (post-inflammatory hyperpigmentation, PIH) can take several weeks to show, so a check at 24 to 72 hours cannot rule it out.

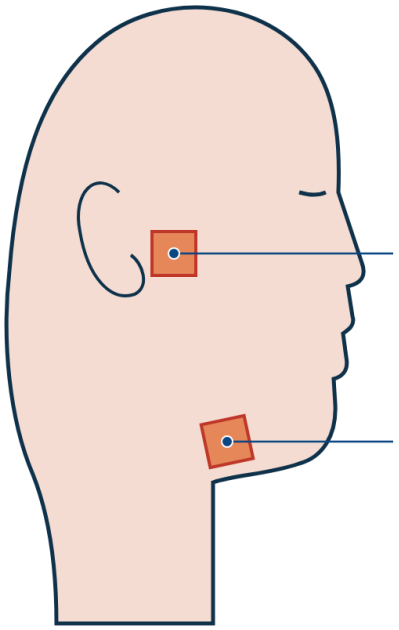
11 **Review the site.** Check for blistering, prolonged redness, swelling, crusting beyond what you expected, or any darkening or lightening of the skin. Do not go ahead if there is an adverse response.

12 **Record everything.** Write down the device, head, spacer, site, settings, immediate and delayed responses, the date and your initials.

Key fact: why wait 4 weeks for higher-risk skin

No guideline or study sets a specific patch test waiting time for fractional CO_2. In a trial after fractional CO_2, pigment changes were measured from 1 week to 3 months after treatment, showing that pigment change develops over weeks, not hours. The 4-week wait is Skintastic's safe standard, based on this timing.

Patch test layout



One or two small test squares, in a discreet area. Use the settings you plan to use.

In front of the ear

Under the jawline

Wait and review before full treatment. Allow longer for darker skin types.

Place the patch test in a discreet spot close to the treatment area. Label and record each test scan, and review it before the full treatment.

When to repeat the patch test

- The client's skin colour has changed (for example a tan or sunburn).
- The client has started a new medicine.
- You are treating a new area or using a different device, head or spacer.
- You plan to use higher settings than those tested.
- 6 months have passed since the last test patch.

> **Remember: training models on the course**
>
> The waiting times above are for your own clinic. On the training day, each model is patch tested and then treated on the same day, under supervision, at conservative settings. The model initials a statement in the model disclaimer accepting that the usual waiting time has not been allowed (model sets, form 3).

Writing settings into the treatment record

Record the exact settings for every area you treat, at the time you treat it. Good records protect your client and you. They let you repeat what worked, adjust what did not, and show your insurer or a court exactly what you did.

For every treatment, record:

- the date, the client's name or reference, and your name and signature
- the device (MED-870+ FOCXEL) and its serial number
- the head (fractional or UltraPulse) and, for the fractional head, the spacer (Non-ablative, Micro-ablative or Ultra Fractional tip)
- the mode, scan shape, shape size and scan mode
- the power, duration, point energy and spacing, exactly as shown on the screen
- scan times and the number of passes
- the areas treated, and any area where you changed the settings, with the reason
- the thermal card result
- the date and result of the patch test
- the clinical endpoint you saw, and the client's comfort
- the eyewear used by the client and by everyone in the room
- the aftercare given

Write the numbers down from the screen. Do not write "as last time" or "usual settings".

A worked example

The example below shows a complete settings record for a fictional client. Use it as a model for your own records.

Item	Record
Client	Client A (fictional), Fitzpatrick skin type II
Indication	Mild photoageing: dull tone, uneven texture and fine lines on the cheeks
Device	MED-870+ FOCXEL, serial number as on the rear label
Head and spacer	Fractional scanning head, Non-ablative tip
Patch test	Done 7 days earlier in front of the left ear at the same settings. Reviewed at 48 hours: mild redness that settled; no blistering or pigment change.
Thermal card	Pass: clean, even square grid, centred
Mode and shape	Fractional; square, 20 × 20 mm; scan mode Order
Settings	Power 20 W; duration 0.4 ms; point energy 8 mJ; spacing 1.0 mm; scan times 1
Passes	1 pass, scans placed edge to edge, no overlap
Areas	Both cheeks and forehead at the settings above
Endpoint seen	Fine, even grid of dots with mild redness. Comfortable throughout.

Worked example: treatment settings record

Item	Record
Eyewear	Client: opaque (total blockout) external laser eye shields, as specified in the Local Rules. Practitioner and assistant: eyewear as specified in the Local Rules.
Aftercare	Written and verbal aftercare given, including avoiding the sun and daily broad-spectrum SPF 50 from the day after treatment
Signed	Practitioner signature, name and date

Key fact: why the example looks "low"

In the example, the practitioner used the manufacturer's single reference figure for skin rejuvenation and did not increase it, because the patch test response was already the correct endpoint. More energy is not better. The right setting is the lowest one that gives the endpoint you want.

Activity: complete a settings record

A client with Fitzpatrick skin type III has fine lines around the mouth. Using the manufacturer's reference settings and the "where to start" table, complete a settings record for a first treatment, as in the worked example. Include the spacer, every setting, the patch test and the endpoint you would look for. Then explain how you would change one setting at the next session if the response was too mild.

Remember

- Energy per spot = power × duration. Wider spacing is gentler.
- Start at the gentlest end of the range, and below it on thin skin and darker skin types.
- Change one thing at a time, test-fire and patch test.
- Go by the skin's response, not the number on the screen.
- Melasma is an advanced indication with a real risk of making it worse.
- These settings are for the MED-870+ only.

Check your understanding

Now answer questions 25 to 27 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Section 8 Step-by-step treatment guide and treatment protocols

Learning outcomes

By the end of this section you will be able to:

- Follow a complete fractional CO_2 treatment session in the correct order, from the day before to shutting the machine down.
- Prepare the client, the room and the machine safely, including fire precautions, eye protection and smoke evacuation.
- Hold and move the handpiece correctly, place scans edge to edge without overlapping, and work across the face in a set order.
- Recognise the expected skin response (the clinical endpoint) and the warning signs that mean you must stop.
- Describe the treatment protocols for skin rejuvenation, fine lines, acne scars, other scars, stretch marks and benign lesion removal, and explain why treatment around the eyes is not covered by this course.
- Explain why a lesion must be diagnosed as benign by a doctor before you remove it.
- Act quickly and correctly if something goes wrong during treatment, and record and report it.

This is the most practical section of your manual. It brings together everything you have learned so far: how the laser works (Section 2), the skin (Section 3), your machine (Section 4), laser safety (Section 5), consultation (Section 6) and settings (Section 7).

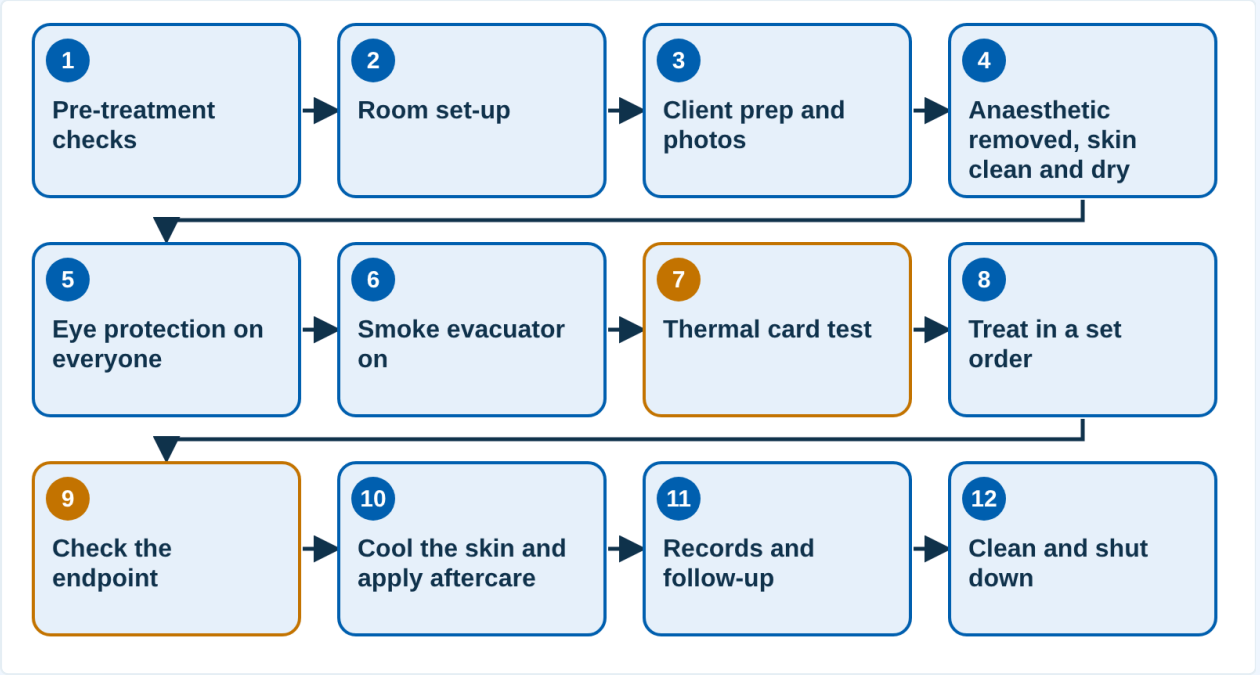
Every stage is written as numbered steps. Follow them in order.

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The settings in this section are the manufacturer's reference settings for the MED-870+. They are starting points only: Part B explains how to use them.

> **Key fact: the order matters**
>
> A missed step, or a step done in the wrong order, can cause injury: wet or alcohol-covered skin, eye protection put on late, the smoke evacuator not switched on, or the wrong spacer fitted. A fixed routine, followed the same way every time, is your best protection.

The treatment session from start to finish



The treatment session in order. Each box matches a numbered stage in Part A of this section.

Part A: The treatment session from start to finish

Part A follows one fractional treatment session, stage by stage. The same routine applies to every protocol in Part B. Where a protocol needs something different, Part B tells you.

Stage 1: The day before (or at the latest, before the client arrives)

Check the paperwork and the client's preparation before the day of treatment. If anything is missing or not right, re-book. Do not treat "just this once".

1. **Check the consultation is complete.** The medical history, contraindication screening and Fitzpatrick skin type must be recorded (see Section 6). If anything has changed since the consultation, the client must tell you and you must review it on the day.

2. **Check written informed consent.** The client must have signed consent for this treatment, on this area, after you explained the risks, the expected recovery and that results vary from person to person.

3. **Check the patch test result.** A patch test should have been checked at 24 to 72 hours. For skin types IV to VI, anyone with melasma, or anyone with a history of pigment changes after treatment, at least 4 weeks must have passed since the patch test (see Section 7). Read and record the result. If there was any unexpected reaction, do not go ahead at the planned settings.

4 **Check the client has followed the pre-care instructions.** No tanning, sunbeds or self-tan on the area, a daily broad-spectrum SPF 30 or higher (ideally SPF 50 with a high UVA rating) for at least 4 weeks before treatment, and retinoids and exfoliating acids stopped on the area for the period set in Section 6.

5 **Check for oral isotretinoin.** Recent oral isotretinoin (Roaccutane) is a contraindication. Confirm the client has not taken it within the period set in Section 6.

6 **Check cold sore history.** CO_2 laser on the face can trigger a cold sore (herpes simplex). If the client has a history of cold sores, they should have spoken to their GP or an independent prescriber before treatment. Antiviral tablets are prescription-only: you must not advise or supply them. If a cold sore is active on the day, do not treat.

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Stage 2: Setting up the Laser Controlled Area

Set up the room before the client comes in. Use your Local Rules as the checklist. Section 5 explains each item in detail.

1. **Put the warning sign on the door.** Display the laser warning sign at every entrance, and switch on the illuminated "laser in use" sign if fitted.

2. **Secure the door.** Close the door and connect the door interlock, or lock the door as your Local Rules direct, so no one can walk in during treatment.

3. **Close the blinds.** Cover or screen windows. Remove or cover mirrors and shiny objects near the treatment area. Remove jewellery (yours and the client's) from the area.

4. **Set up the smoke evacuator.** Position it beside the couch with the nozzle on an adjustable arm. Check the filter is in date and the unit switches on.

5. **Lay out the eyewear.** Check that there is eyewear for everyone who will be in the room, as specified by your Laser Protection Adviser (LPA) in your Local Rules. Check each pair for scratches, cracks and the correct marking. Lay out the client's eye protection too.

6. **Check the key.** The machine key should be held by you, the authorised user. Do not leave it in the machine while you set up the rest of the room.

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7 **Check the emergency stop.** Make sure the large red emergency stop button can be reached easily and is not blocked. Test it as part of your pre-session checks.

8 **Fire precautions.** Check the fire extinguisher is in the room, in date and of the type in your Local Rules (your LPA's site guidance names a CO_2 or powder extinguisher for electrical fire). Have a bowl of saline or water and wet gauze within reach. Remove flammable items, such as alcohol wipes, aerosols and dry paper towels, from near the couch.

9 **Prepare your trolley.** See the list below.

Item	What it is for
Thermal target card	Test-firing before you treat skin
Sterile gauze (plenty)	Cleansing, drying, wet gauze for hair and surrounding skin, wiping residue
Sterile normal saline	Wetting gauze, wiping carbonised residue, cool compresses
Non-alcohol antiseptic cleanser	Cleansing the skin before treatment
Topical anaesthetic and plastic film	Numbing the area, if used (see Stage 4)
Skin-safe white pencil or surgical marker	Marking the edge of the treatment area
Disposable gloves, gown and respirator mask	Your personal protective equipment

Item	What it is for
Disposable couch cover and headband or hair cap	Hygiene and keeping hair away from the area
Ice packs or cool compresses and a cooling or hydrating mask	Immediate aftercare
Aftercare leaflet and record form	Records and client information

Trolley checklist for a fractional CO_2 treatment (based on the manufacturer's preparation list and the Skintastic protocol).

▣ On your teaching device: the MED-870+

Before each session the device manual asks you to: check the aiming beam and output on a thermal card; check the emergency stop and door interlock; and confirm the protective eyewear is to standard and undamaged.

Stage 3: Preparing the client

1. **Welcome the client and re-check.** Confirm their identity, that nothing has changed in their health or medicines, and that they still wish to go ahead. Answer any questions. Check the patch test site again.

2. **Position the client.** Lay them comfortably on the couch so they can stay still. Adjust the couch height so you can reach the area without stretching or twisting. Use a headband or cap to keep hair back.

3. **Remove all make-up.** Make-up, sunscreen and moisturiser must come off completely, including around the eyes and hairline.

4. **Cleanse the skin.** Use a non-alcohol antiseptic cleanser on sterile gauze. Cleanse the whole area evenly. Repeat if the skin is still oily or has make-up residue.

5. **Take standardised "before" photographs.** Use the same room, lighting, background, distance and camera settings every time, with the client in the same position (front, left side, right side). Take them before marking and before anaesthetic, so the photos show the true skin. Section 6 covers photographs and consent to photographs.

6. **Mark the area.** Use a sterile, skin-safe pencil or surgical marker. Mark around the edge of the treatment area, not inside it. For a large area you may draw light guide lines to help you place scans evenly. Never use an ordinary pen.

Stage 4: Topical anaesthetic

Ablative and deep fractional treatments can be uncomfortable. A topical anaesthetic cream may help the client tolerate the treatment. Use a topical anaesthetic suitable for your scope of practice, and follow the product's own instructions.

1. **Check the client can have it.** Ask about allergy to local anaesthetics and check the medical history before you apply anything.

2. **Apply a thin, even layer.** Wear gloves. Spread the cream evenly over the marked area only. Keep it away from the eyes, lips and inside the nose.

3. **Cover if the product instructions say so.** A plastic film may be placed over the cream if the product's instructions allow it.

4. **Time it.** The source documents give 20 to 40 minutes. The manufacturer's care pathway says 20 minutes. The previous Skintastic protocol says 20 to 30 minutes, or 30 to 40 minutes for full-face rejuvenation. Always follow the instructions for the product you use. Write the start and finish times on the record.

5. **Remove it completely.** Wipe off every trace with damp sterile gauze. Cream left on the skin can block the laser and increase the risk of an adverse skin reaction.

Stage 5: Cleanse again and make sure the skin is completely dry

Caution: fire risk

Do not use alcohol wipes on the treatment area: the Skintastic protocol uses a non-alcohol antiseptic. If any alcohol-based product has touched the skin (the manufacturer's care pathway mentions alcohol or iodophor disinfectant), it must have fully evaporated, and the skin must be completely dry, before you fire the laser. Section 5 lists what can catch fire.

1. **Cleanse after removing the anaesthetic.** Use the non-alcohol antiseptic on fresh sterile gauze over the whole area.

2. **Rinse and dry.** Rinse with sterile saline, then pat dry gently with fresh sterile gauze. Wait until the skin looks and feels completely dry. Check the hairline, the creases beside the nose and under the jaw, where moisture collects.

3. **Protect hair near the area.** Cover eyebrows, the hairline, beard hair and any other hair close to the treatment area with wet gauze. Keep this gauze wet throughout treatment. Never use dry gauze near the beam.

4. **Protect surrounding skin.** Cover nearby skin, clothing and the couch with moistened gauze or flame-resistant drapes, secured so they do not slip.

Stage 6: Eye protection for everyone

A Class 4 CO_2 beam, direct or reflected, can cause immediate and irreversible eye injury. Eye protection goes on before the machine is put into the ready state, and stays on until the machine is back in standby or switched off.

A fractional CO_2 treatment in progress



The client wears external eye shields throughout. Note the red aiming beam and the gloved hands. Skintastic client photograph, used with the client's written consent.

1. **Protect the client's eyes.** Use the client eye protection specified by your LPA in your Local Rules: close-fitting, opaque (total blockout) external laser eye shields or goggles, worn over the closed eyes. On this course this applies to every facial treatment. Treatment around the eyes is not covered by this course: on full-face treatments, keep well outside the bony rim of the eye socket. Never use plastic shields with a CO_2 laser. Internal (corneal) shields are outside the scope of this course (Section 5).

2. **Check the client's eye protection is secure.** Make sure it fits closely with no gaps and will not slip when the client moves. Explain that they must keep it on and keep their eyes closed until you tell them otherwise.

3. **Put on your own eyewear.** Wear the laser eyewear specified for this laser in your Local Rules. Never use sunglasses or eyewear made for a different laser.

4. **Check everyone else in the room.** Any assistant or observer must wear the specified eyewear too. Anyone without eyewear must leave the room before you start.

Stage 7: Smoke evacuator on

Ablation produces a plume (smoke) that can contain fine particles, vapours and living cell material. Section 5 explains the risks.

1. **Put on your respirator mask.** Wear the respiratory protection named in your Local Rules and risk assessment. A standard surgical mask does not give adequate protection from laser plume.

2. **Switch the smoke evacuator on before the first shot.** It stays on for the whole treatment and for a short time after the last shot.

3. **Hold the nozzle close to the treatment site.** The previous Skintastic protocol advises within about 5 to 10 cm. Move the nozzle with you as you work across the face, so it is always next to the area you are treating. If you have an assistant, they can hold it.

Stage 8: Set up the machine and test-fire

1. **Fit the correct head and spacer.** For fractional work, fit the fractional scanning head with the spacer the protocol needs (Non-ablative, Micro-ablative or Ultra Fractional tip). For lesion work, fit the UltraPulse head instead. Check the head and lens are clean and undamaged.

2. **Switch on and let the self-test finish.** Insert the key and switch on. Check there are no error messages or alarms on the screen and no unusual noises. If the self-test fails, do not treat.

3. **Choose the mode and enter the settings.** Select Fractional mode (or Normal/Pulse mode for the UltraPulse head). Enter the settings from your treatment plan, starting at the lower end of the reference range in Section 7. Choose the scan shape and size for the first zone. While you enter settings, never point the head at anyone.

4. **Read back the settings.** Check every setting on the screen against your treatment plan, out loud if you have an assistant. Check the point-energy box shows what you expect.

5. **Test-fire on a thermal card.** Put the machine into the ready state, hold the head on the thermal card in the same way you will hold it on skin, and press the foot switch. Check the pattern, the spot size and the evenness of the marks. Section 7 shows a good and a bad test-fire.

6. **Place a test pulse on the skin.** Fire a single scan on an inconspicuous part of the treatment area, such as near the jawline, and watch the skin response for a short time. Adjust if needed before you treat the whole area.

Section 4 shows the MED-870+ Fractional screen and how to switch between standby and ready.

Stage 9: Handpiece technique

How you hold the handpiece decides how evenly the energy reaches the skin. A tilted head or uneven pressure gives some dots more energy and some less, and can leave stripes or burns.

1. **Hold the head perpendicular to the skin.** The head should be at 90 degrees (a right angle) to the skin surface. On curved areas, such as the chin, cheekbones and nose, keep adjusting your wrist so the head stays square to the skin under it.

2. **Let the spacer rest in light, even contact.** The spacer sets the correct distance between the lens and the skin. Rest the whole rim of the spacer lightly and evenly on the skin.

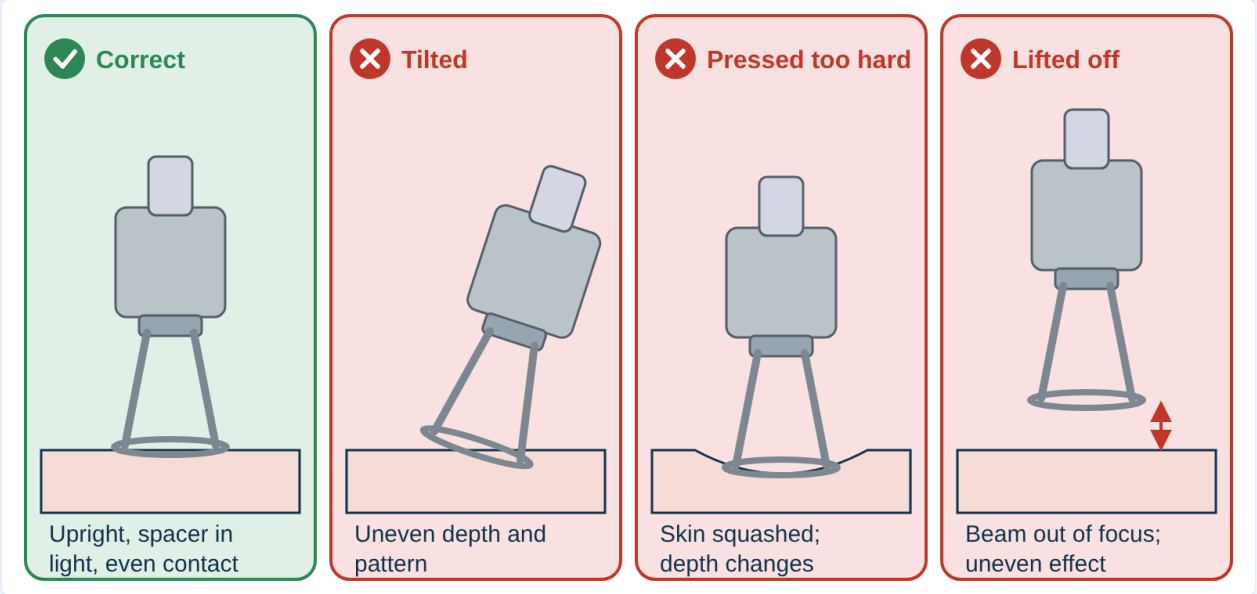
3. **Do not press.** Pressing squashes the skin and changes the distance. Support your hand on the couch or the client's head if you need steadiness.

4. **Hold still while the scan runs.** Keep the head completely still until the scan has finished, then lift it and move to the next position. Do not hold the head over one place for too long.

5. **Keep your foot off the switch while you move.** Only press the foot switch when the head is in position on the skin.

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Holding the handpiece



Correct: head at 90 degrees, spacer in light and even contact. Incorrect: tilted, or pressed into the skin.

Stage 10: Placing scans and working across the face

Fractional treatment depends on leaving small areas of untreated skin between the laser columns. If scans overlap, the dots in the overlap get a double dose. This is called stacking, and it raises the risk of burns, prolonged redness and pigment change.

1. **Place scans edge to edge.** Put each new scan right next to the last one, so the edges meet but do not overlap. Use the aiming beam to see the outline before you fire.

2. **Leave no gaps.** Gaps between scans leave untreated strips, which can show as uneven results.

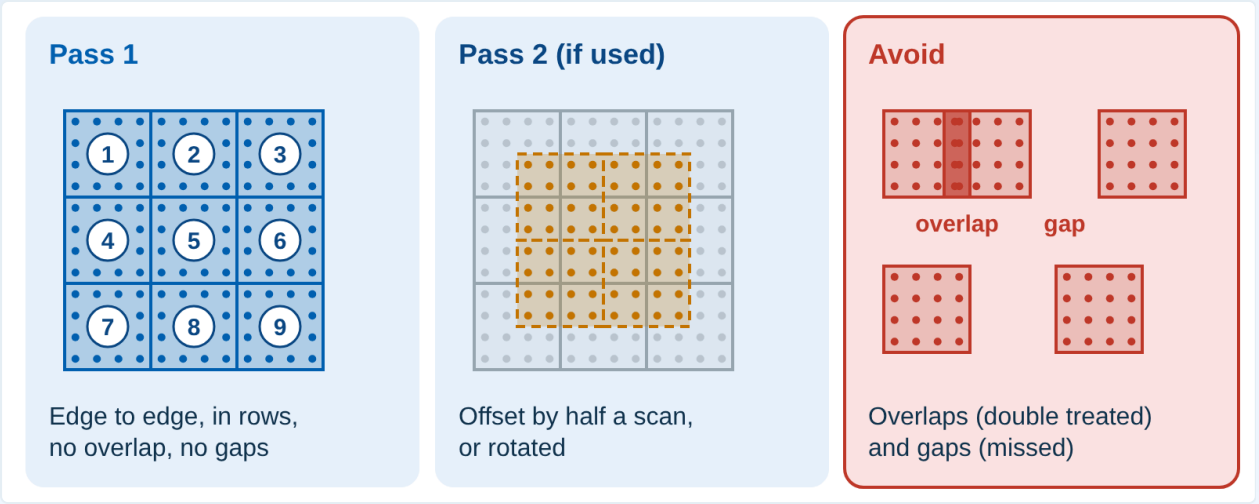
3. **Work in a set order.** Treat the face in the same order every time, zone by zone, so you always know which areas you have done. A common order is forehead, then one cheek, nose, the other cheek, upper lip, chin, then jawline, as your trainer shows you.

4. **Change the scan shape to fit the zone.** The older manufacturer sheet suggests a 20 x 20 mm square for the main face, a square plus triangle for the nose, and a narrow rectangle at the edge of the treatment area nearest the eyes, keeping well outside the bony rim (the eye area itself is not treated on this course). Make the shape smaller rather than overlapping the edge of a zone.

5. **Feather the edges.** At the outer edge of the treatment area, blend gently into untreated skin so there is no hard line, as your trainer demonstrates.

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Placing scans edge to edge

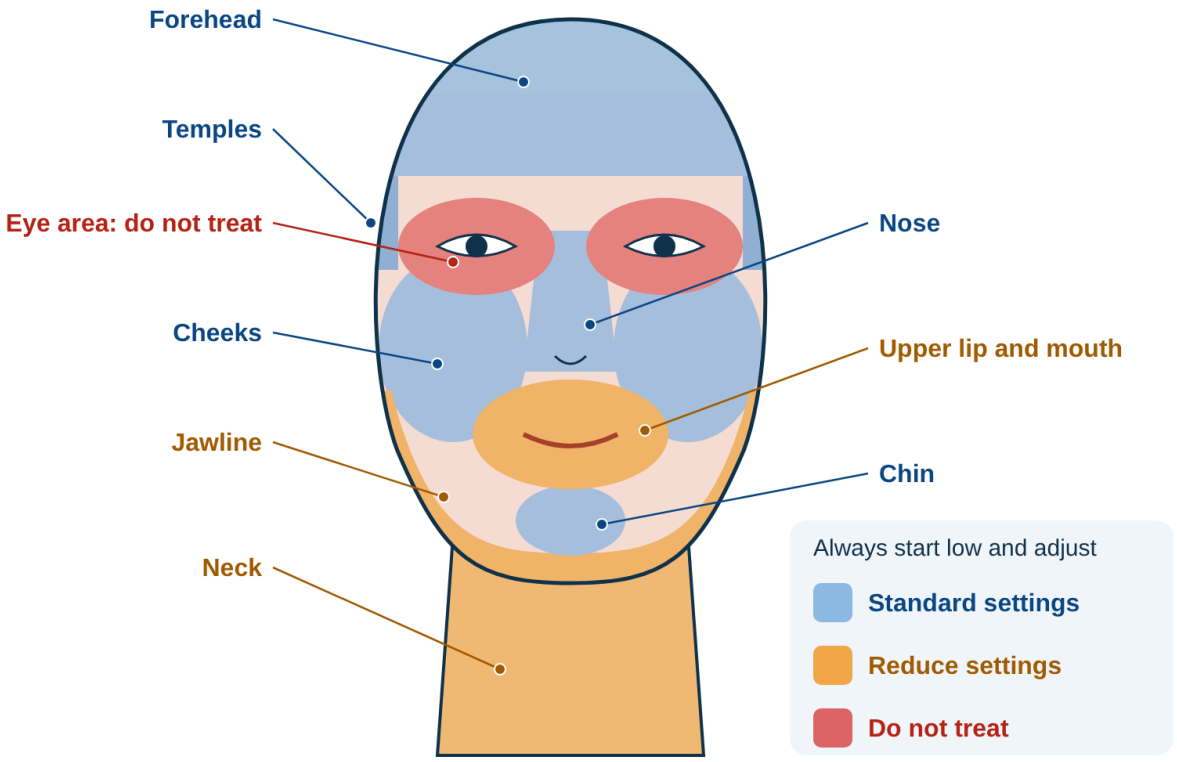


Place scans edge to edge with no overlap. If a second pass is planned, it is offset so new dots fall between the first ones.

Where to reduce your settings

The skin is not the same thickness all over the face and neck. Thin or delicate skin heals less easily and is more likely to burn, scar or change colour. Use gentler settings in these areas: lower energy (shorter dwell or lower power), wider spacing, or a taller spacer.

Face zones and where to reduce settings



Treat the main face zones at your planned settings. Reduce settings around the mouth, along the jawline and on the neck. On this course, the zone covering the eyelids and the area around the eyes is not treated at all: keep well outside the bony rim of the eye socket.

Zone	Why care is needed	What to do
Eyelids and around the eyes	The thinnest skin on the face, with many small blood vessels, close to the eye	Do not treat on this course. Keep well outside the bony rim of the eye socket. External eye protection as specified for every facial treatment. See the caution box after Protocol 5.
Around the mouth	Delicate skin in a high-movement area, which can delay healing; the lip edge needs precise placement	Reduce energy, use a smaller scan shape, do not cross onto the lip itself
Jawline	It borders the more delicate skin of the neck, and a hard edge here is easy to see	Reduce settings as you move down; feather the edge
Neck	Thinner, more delicate skin than the face	Lower energy and wider spacing than the face; single pass only

Zones that need reduced settings, and the zone not treated on this course. Your trainer will show you how much to reduce for each client.

On every reduced zone: use a lower energy, wider dot spacing (fewer dots), one pass only, never stack or overlap, and allow more cooling time. The chest and lower neck need the gentlest settings of all.

Stage 11: Watch the skin response and the endpoint

The clinical endpoint is the skin reaction that tells you the laser has done what you intended. Watch the skin after every scan, not just at the end. The client's comfort is also part of your feedback.

What you see	What it means	What to do
Pinpoint redness and a fine, even pattern of tiny dots	Expected response for rejuvenation work	Continue at the same settings
Light, even frosting (a fine white sheen) that settles	Expected for many treatments	Continue; keep scans edge to edge
Slight swelling during or straight after treatment	Expected; on full-face treatments it often shows around the eyes	Continue; cool afterwards
Fine dark (carbonised) dots in scar or pigment work	The planned endpoint for scars, acne pits and pigment	Wipe residue with saline as the protocol says
Dense white or grey patches, or charring well beyond the dots	Too much energy or stacking	Stop. Reassess settings and technique
Blistering, or pinpoint bleeding on thin skin	Over-treatment	Stop treating that area. See Part C
Severe or unexpected pain	Possible over-treatment or anaesthetic wearing off	Stop. Check the skin. See Part C

Expected responses and warning signs during fractional treatment.

Stage 12: Passes

A pass is one complete covering of the treatment area. The Times setting on the machine controls how many times each scan repeats in one go: keep it at 1 unless the protocol says otherwise.

1. **Start with one pass.** The manufacturer's older parameter sheet gives one pass for every fractional treatment. On a first session, one pass is enough.
2. **Only add a second pass if the protocol and your trainer say so.** A second pass is never used on a first session, on thin skin, on the neck, or on darker skin types (Fitzpatrick IV to VI).
3. **Let the skin cool between passes.** Wait for the heat to settle before the second pass, so heat does not build up.
4. **Offset the second pass.** Place the second pass so its dots fall between the dots of the first, never directly on top.

Stage 13: Wiping away carbonised residue

For deeper scar, acne pit and pigment work, the manufacturer's endpoint includes removing the carbonised (charred) residue.

1. **Use saline, not alcohol.** Moisten sterile gauze or a cotton bud with sterile saline.
2. **Wipe gently.** Wipe the residue away with light strokes. Do not scrub. For pigment work, wipe until no abnormal pigment remains in the treated spots.
3. **Dry before you fire again.** If you are going to treat the area again, dry it completely first.

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Stage 14: Immediate aftercare

1. **Put the machine into standby.** Do this as soon as the last scan is done, before anyone removes eye protection.

2. **Remove the client's eye protection safely.** Remove the external eye shields or goggles gently, as you were trained.

3. **Cool the skin.** Apply cool saline compresses or a cooling or hydrating mask. Use ice packs only wrapped, never directly on the skin. The previous Skintastic protocol uses cool compresses for 10 to 15 minutes at a time.

4. **Hydrate and protect the barrier.** Apply a thin layer of a plain petrolatum-based barrier ointment (petroleum jelly, also called white soft paraffin) that is fragrance-free and lanolin-free. Do not use antiseptic creams, tea tree, essential oils, "healing" balms or prescription-only medicines (Section 10).

5. **No friction.** Tell the client not to rub, scratch or pick the area, and not to touch it with unwashed hands.

6. **Check the client is well.** Ask how they feel. Check the treated area once more before they leave.

Stage 15: Photographs, records, aftercare and follow-up

1. **Take "after" photographs.** Use the same set-up as the "before" photographs.
2. **Complete the treatment record.** Record everything listed in the table below, while it is fresh.
3. **Give verbal and written aftercare.** Go through the aftercare leaflet (Section 10) with the client. Tell them what is normal, what is not, and how to contact you at any time if they are worried.
4. **Book the follow-up.** Arrange the follow-up contact and review set out in Section 10 and, if planned, the next session at the right interval for the protocol (see Part B and Section 9).

Record	Example of what to write
Date, area treated, protocol	Full face, skin rejuvenation
Head and spacer	Fractional head, Non-ablative tip
Settings for each zone	Power, dwell time, spacing, point energy, scan shape and size, scan mode
Number of passes	One pass; neck reduced settings
Anaesthetic	Product, area, start and removal times
Endpoint and skin response	Even pinpoint redness, light frosting, no blistering
Client comfort and feedback	Tolerated well; warm afterwards
Aftercare given, photographs, follow-up date	Leaflet given and explained; photos taken; review booked
Any adverse event	None, or details and actions taken

What to record after every treatment.

Stage 16: Cleaning the heads and the room

1. **Put the machine in standby and remove the key.** Do this before you start cleaning around it. The device manual says to shut down the system and disconnect the power before cleaning, disinfection or routine maintenance.

2. **Clean the treatment head.** Wipe it with a warm, damp cloth, then disinfect it with a cotton ball moistened with disinfectant, as the device manual describes. Clean the spacer the same way.

3. **Clean the lens if needed.** Use lens paper and the cleaning fluid named in the device manual. Never touch the lens with your fingers.

4. **Return the head to its case.** Store heads and spacers safely so they cannot be knocked or dropped.

5. **Clean the room.** Dispose of gauze, gloves and couch covers as clinical waste where contaminated. Wipe down the couch, trolley and evacuator nozzle. Check the evacuator filter status.

6. **Clean the eyewear.** Clean and inspect the client's and your own eyewear before storing it.

Stage 17: Shutting the machine down

1. **Return to standby.** Make sure the laser is not in the ready state.
2. **Switch off the power.** Use the power switch as described in Section 4.
3. **Remove the key and keep it safe.** The key must never be left in an unattended machine.
4. **Unplug and tidy.** Unplug the device, coil cables safely, and park the articulated arm in its rest position.
5. **Take down the signs.** Switch off the illuminated sign and remove the door sign only when the laser is off and the key removed.
6. **Complete the logs.** Record the session in the laser register and note any fault in the fault and repair log (Section 4).

Activity 1: The final check before you press the foot switch

Without looking back, list every check you must have completed before you press the foot switch for the first scan on the client's skin. Then compare your list with Stages 2 to 8.

Activity 2: Spot the hazards

A practitioner cleanses the face with an alcohol wipe, applies dry gauze over the eyebrows, and starts treating straight away while the smoke evacuator is still being set up. Name three things that are wrong and explain what should have happened instead.

Part B: Treatment protocols

Each protocol below follows the full session in Part A. The protocol tells you what is different: the tip (spacer), the starting settings, the endpoint, the number of sessions and what to watch for.

The settings are the manufacturer's reference settings for the MED-870+, given in full in the Section 7 table. They are not a recipe. For a first-time user, and for every new client:

- Start at the lower end of each range, or lower.
- Test-fire on a thermal card.
- Use the patch test result and a test pulse on the day.
- Adjust to the endpoint you see on the skin.
- Use more conservative settings for darker skin types (Fitzpatrick IV to VI), as Section 3 and Section 7 explain.

Choosing the spacer is your first decision for every treatment. Section 4 explains the three spacers and the depth each one gives.

Protocol 1: Full-face skin rejuvenation and photoageing

Item	Detail
What it is for	Dull or rough texture, enlarged-looking pores, superficial uneven tone and early signs of photoageing (sun-related ageing). Designed to support skin renewal and collagen remodelling.
Suitable clients	Clients with early to moderate signs of ageing who have passed consultation and patch testing. Ideal first treatment for building your experience.
Tip (spacer)	Non-ablative tip for light rejuvenation. Micro-ablative tip for a slightly stronger treatment, once you have seen how the client's skin responds.
Starting settings	Manufacturer reference (Section 7 table), Non-ablative tip: 20 W, spacing 1.0 mm, 8 mJ, 0.4 ms, scan mode Order. Start at or below this.
Scan shapes	Square (up to 20 x 20 mm) for the main face; smaller shapes for the nose and for the edges nearest the eyes, keeping well outside the bony rim of the eye socket.
Passes	One pass.
Endpoint	Even pinpoint redness and light frosting (fine epidermal vaporisation). No blistering and no dense whitening.
Sessions and interval	The manufacturer's older sheet gives 1 to 4 sessions per course, 4 to 6 weeks apart. Rejuvenation often needs fewer sessions than scars. See Section 9.

Item	Detail
Expected healing	Days 1 to 2: redness, mild swelling, tight feeling. Days 3 to 5: peeling, possible bronzing. Days 6 to 7: pink, fresh skin. Micro-crusts shed in about 7 to 10 days. Redness fades over the following weeks.
Specific cautions	The skin's response in the first weeks can look dramatic. Make sure the client knows the recovery timeline and has planned for it. Reduce settings on the neck, jawline and around the mouth. Keep well outside the bony rim of the eye socket.
Practical assessment	Assessed using the skin rejuvenation competency checklist in the Knowledge review section.

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Protocol 2: Fine lines and wrinkles

Item	Detail
What it is for	Fine lines and wrinkles, for example on the forehead and around the mouth, and mild skin laxity. Lines around the eyes are not treated on this course. Designed to support collagen remodelling and skin tightening.
Suitable clients	Clients with fine to moderate lines who understand that deep, dynamic lines (caused by muscle movement) may respond only partly.
Tip (spacer)	Micro-ablative tip.
Starting settings	Manufacturer reference (Section 7 table): 25 W, spacing 0.6 to 0.8 mm, 10 to 15 mJ, 0.4 to 0.6 ms. Start at 0.4 ms (10 mJ) and the wider 0.8 mm spacing.
Passes	One pass. A second, offset pass over the deeper lines only if your trainer agrees.
Endpoint	Even pinpoint redness and light frosting along the treated lines; no blistering.
Sessions and interval	Usually a course of sessions 4 to 6 weeks apart (manufacturer's older sheet: 1 to 4 per course). See Section 9.
Expected healing	Similar to Protocol 1, sometimes a little longer because the treatment is deeper. Micro-crusts form within about 3 days and shed over 7 to 15 days.
Specific cautions	Lines around the mouth are in thinner skin: reduce settings there. Do not treat lines around the eyes on this course. Do not try to "chase" a deep line by stacking scans.
Practical assessment	Skin rejuvenation competency checklist, with the treatment area recorded.

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Protocol 3: Acne scars and other atrophic (sunken) scars

Atrophic scars sit below the surrounding skin. Section 3 describes the three main types of acne scar:

- **Ice-pick scars:** narrow, deep pits.
- **Boxcar scars:** wider depressions with sharp, steep edges.
- **Rolling scars:** wide, shallow dips with soft edges that give the skin a wavy look.

Identify and record the scar types at consultation. Many clients have more than one type. Several sessions are usually needed, and results vary from person to person.

Item	Detail
What it is for	Acne marks, acne pits and other depressed scars. Designed to support resurfacing and collagen remodelling to improve the appearance of the scars.
Suitable clients	Clients with settled (not active) acne and stable scars, who have passed consultation and patch testing and have realistic expectations. Not for clients with active acne or a history of keloid or hypertrophic scarring.
Tip (spacer)	Ultra Fractional tip. The manufacturer specifies the Ultra Fractional tip for both acne marks and pits: treat conservatively and assess the skin response.
Starting settings: acne marks	Manufacturer reference (Section 7 table): 25 W, spacing 0.8 to 1.0 mm, 10 to 15 mJ, 0.4 to 0.6 ms.
Starting settings: acne pits	Manufacturer reference (Section 7 table): 25 W, spacing 0.6 to 0.8 mm, 20 to 25 mJ, 0.8 to 1.0 ms.
Spacing advice	Smaller (tighter) spacing gives a stronger effect but more damage to the epidermis. The older manufacturer sheet suggests 0.7 to 0.9 mm for milder pitting, and allows spacing as tight as 0.5 mm for severe pits. Tight spacing is for experienced practitioners only, under your trainer's guidance.
Passes	One pass.
Endpoint	Controlled carbonisation and ablation. There may be slight seeping of tissue fluid. Wipe the carbonised residue away with saline (Stage 13).

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Item	Detail
Sessions and interval	Scar work typically needs 1 to 3 sessions, 2 to 3 months apart. See Section 9.
Expected healing	Dark micro-crusts within about 3 days, shedding over 10 to 15 days. Redness usually settles within about a week but can last longer after deeper treatment.
Specific cautions	Higher risk of post-inflammatory hyperpigmentation (PIH) in darker skin types: be conservative. Never stack scans over a scar to "push" it.
Practical assessment	Assessed against the skin rejuvenation and scar competency criteria in the Knowledge review section.

Protocol 4: Surgical, traumatic and burn scars

Item	Detail
What it is for	Smoothing the appearance of surgical scars, scars from injuries and burn scars.
Suitable clients	Clients with stable, healed scars, who have passed consultation and patch testing. Not for clients with a history of keloid scarring. The wound must be fully healed and closed, with no scab, stitches or open areas, and the scar must not be growing, painful, itchy or inflamed. Our clinic minimum is 6 months after the injury or operation. Refer red, raised, itchy, growing or keloid scars, any scar less than 6 months old, and any client under a hospital team for the scar, to a doctor. (Some doctors treat scars earlier as part of medical scar management; that is outside this course.)
Tip (spacer)	Ultra Fractional tip.
Starting settings: scars	Manufacturer reference (Section 7 table): 30 W, spacing 0.8 to 1.0 mm, 30 to 36 mJ, 1.0 to 1.2 ms.
Starting settings: burn scars	Manufacturer reference (Section 7 table): 30 W, spacing 0.6 to 0.8 mm, 36 to 45 mJ, 1.2 to 1.5 ms.
Raised (hypertrophic) scars	The older manufacturer sheet lists lower power (3 to 8 W) at tight 0.2 mm spacing, with epidermal carbonisation as the endpoint. This is an advanced technique: only under your trainer's guidance.
Passes	One pass. Be conservative.
Endpoint	Controlled carbonisation and ablation; wipe the residue away with saline.
Sessions and interval	1 to 3 sessions, with longer intervals of 2 to 3 months apart, to let the scar remodel.

Item	Detail
Expected healing	Micro-crusts within about 3 days, shedding over 7 to 15 days. Pinpoint scabs may take about 15 days to separate.
Specific cautions	Hypertrophic scarring after CO_2 is usually caused by too much heat in the deep dermis: control dwell time and energy carefully and never overlap.
Practical assessment	Scar competency criteria in the Knowledge review section.

Protocol 5: Stretch marks

Item	Detail
What it is for	Stretch marks (striae distensae). Designed to support collagen remodelling to improve their appearance.
Suitable clients	Clients who have passed consultation and patch testing, with realistic expectations. Not during pregnancy or breastfeeding.
Tip (spacer)	Ultra Fractional tip.
Starting settings	Manufacturer reference (Section 7 table): 30 W, spacing 0.3 to 0.4 mm, 30 to 36 mJ, 1.0 to 1.2 ms. Note that this spacing is very tight. Start with the lower energy and, until you are experienced, a wider spacing.
Technique	Treat the stretch marks themselves with a scan shape sized to fit, keeping to the marked area.
Passes	One pass.
Endpoint	Even pinpoint ablation within the marks; no blistering.
Sessions and interval	Most people need a course of about 3 sessions, 4 to 6 weeks apart. For skin types IV to VI, leave 6 to 8 weeks between sessions. Review results about 3 months after the last session. Older, white (silvery) stretch marks usually respond less than newer red or purple ones, and improvement is often modest. See Section 9.
Expected healing	Micro-crusts within about 3 days, shedding over 7 to 15 days. Clothing may rub the area: advise loose, soft clothing.
Specific cautions	Thin or fragile skin increases the risk of thermal injury: assess the skin first. Hyperpigmentation is a particular risk in Fitzpatrick IV to VI. Results can be inconsistent and vary from person to person.
Practical assessment	Not one of the three practical assessment models on this course.

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Stretch marks: before and after fractional CO_2



Before (top) and after (bottom) fractional CO_2 treatment of stretch marks at Skintastic. The marks are softer and smoother but still visible. Individual results vary. Skintastic client photograph, used with the client's written consent.

Protocol 6: Benign lesion removal with the UltraPulse head

The UltraPulse head replaces the whole fractional head. It delivers a focused beam that vaporises tissue layer by layer and seals small blood vessels as it works. The manufacturer flags it as the more dangerous head: use it with great care.

Treating a scar: the order of work

Treating a scar: the order of work

1. **Assess and record**
   Scar type, age, size and colour. Photograph it.
2. **Mark the area**
   Outline the scar and a small margin with a skin marker.
3. **Choose the spacer**
   Micro-ablative or Ultra Fractional tip, from the treatment card.
4. **Test-fire**
   Thermal card, then start at the lower end of the range.
5. **Place scans**
   Edge to edge across the marked area. Never stack over the scar.
6. **Watch the endpoint**
   Stop at the endpoint for the concern. Wipe residue with saline.

Raised (hypertrophic) scars and keloids need a medical opinion first.

The order of work for a scar treatment. Drawn for this manual.

Before you remove any lesion

Before you remove any lesion with the UltraPulse head

1. **Doctor's confirmation**
   Written confirmation from a doctor that the lesion is benign.
2. **Look again**
   Any change in size, colour, shape, bleeding or itching since? Stop and refer.
3. **Photograph and measure**
   With consent, same light and distance. Record the size.
4. **Consent**
   The lesion removal consent form, including the risk of a mark or scar.
5. **Set up safely**
   UltraPulse head, Single mode, low power. Smoke evacuator close.
6. **Layer by layer**
   Wipe with saline-moistened gauze between passes. Stop when level with the skin.

Never treat a lesion that has not been confirmed as benign. Nothing is left to send to a laboratory.

The checks before and during UltraPulse lesion removal. Drawn for this manual.

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Caution: diagnosis first, always

The CO_2 laser vaporises the tissue it removes. Nothing is left to send to a laboratory for histology (examination under a microscope). If a skin cancer were treated by mistake, the chance to diagnose it would be lost, and the cancer could be hidden under a scar while it continues to grow.

- Only treat a mole (naevus) when a doctor has confirmed in writing that it is benign.
- Never treat a lesion that is changing, bleeding, itching, irregular in shape or colour, or undiagnosed.
- If you have any doubt at all, do not treat. Refer the client to their GP.

Lesions this protocol covers

Skin tags



Skin tags are one of the benign lesions covered by this protocol, once confirmed by a doctor. Generated image commissioned by Skintastic, not a photograph.

Seborrhoeic keratoses and moles



Raised brown lesions like these must be diagnosed by a doctor before any treatment. Generated image commissioned by Skintastic, not a photograph.

- ✔ Skin tags.
- ✔ Seborrhoeic keratoses (benign, often raised, "stuck-on" growths).
- ✔ Milia (small, white, hard bumps).
- ✔ Small benign naevi (moles), only when confirmed benign by a doctor.
- ✘ Any lesion that is changing, bleeding, itching or irregular.
- ✘ Any pigmented lesion that has not been diagnosed by a doctor.
- ✘ Any lesion the client or you are worried about.

Item	Detail
Head and mode	UltraPulse head, set on the Pulse screen. Single mode gives one short, controlled burst each time you press the foot switch.
Manufacturer reference	For cutting, pulse width 5 ms, interval 5 ms, Pulse mode. The machine's tested maximum output is 30 W: never set it higher (Section 7).
Start lower	The older manufacturer sheet gives 15 to 18 W in Single mode for small naevi and milia. Start low and increase in small steps, never beginning at the top reference value (Section 7).

Item	Detail
Seborrhoeic keratosis alternative	The older manufacturer sheet also lists the fractional head for seborrhoeic keratosis at 3 to 4 W with tight 0.2 mm spacing, one treatment.
Endpoint	The lesion is removed to its base, with no remaining pigment or lesion tissue, stopping as soon as healthy tissue is reached. No excessive charring.
Sessions	Usually one treatment, with a review.
Expected healing	Superficial lesions such as skin tags: about 5 to 7 days. Medium-depth seborrhoeic keratoses or moles: about 7 to 14 days. Deeper lesions: about 14 to 21 days, sometimes longer for the colour to fully fade.
Practical assessment	Assessed using the lesion and mole removal competency checklist in the Knowledge review section.

Step by step: layer-by-layer lesion removal

Marking a lesion



Mark and photograph the lesion before treatment, and record the doctor's confirmation that it is benign. Generated image commissioned by Skintastic, not a photograph.

1. **Confirm the diagnosis and consent.** Check the doctor's confirmation for any mole, and your own assessment of the lesion. Take a close-up photograph with a scale if possible. Obtain written consent.

2. **Prepare as for Part A.** Cleanse with a non-alcohol antiseptic, make sure the skin is completely dry, and protect the surrounding skin and any hair with wet gauze. Use eye protection as specified for the UltraPulse head in your Local Rules.

3. **Fit the UltraPulse head and set it up.** Select Pulse or Single mode and enter a low starting power. Test-fire on a thermal card.

4. **Position the head.** Hold the head perpendicular to the lesion. Keep the smoke evacuator nozzle right next to it.

5. **Remove the first layer.** Work from the edge of the lesion inwards, using short, controlled bursts. Do not hold the beam in one spot.

6. **Wipe with saline.** Wipe away the carbonised residue with a saline-moistened cotton bud so you can see what is left.

7. **Look before the next layer.** Check the depth and colour of what remains. Let the area cool for a moment.

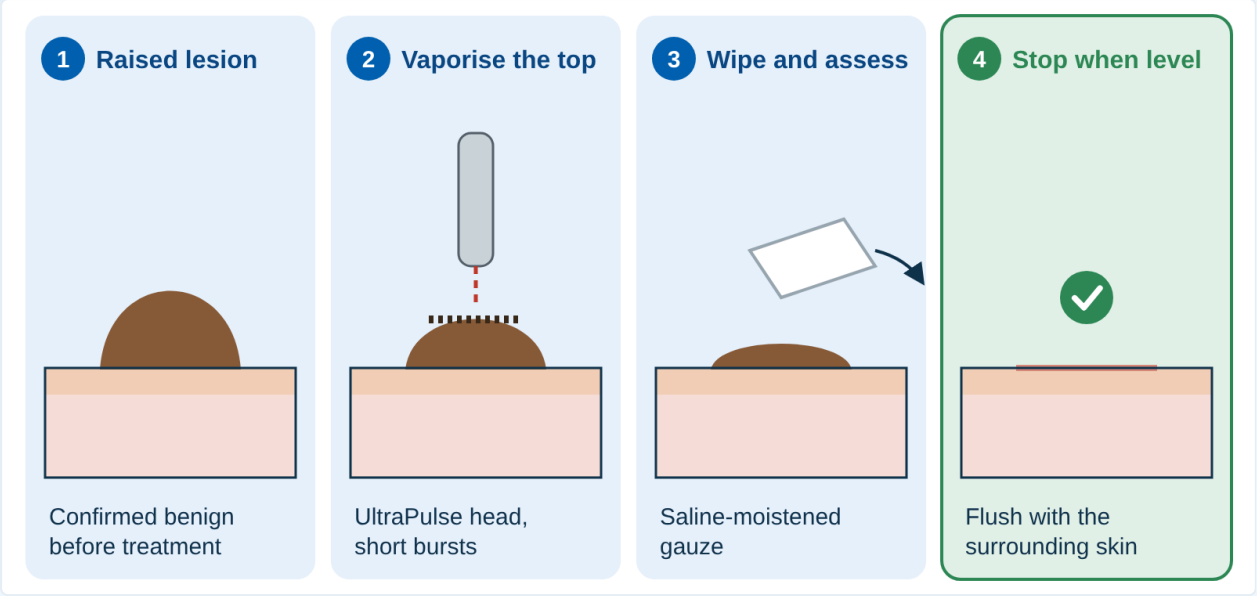
8. **Repeat, layer by layer.** Remove the next thin layer, wipe, and look again. Repeat until the lesion has gone and healthy tissue is reached. Stop there.

9. **Keep the edges neat.** Do not extend into the surrounding healthy skin, especially on the face.

10. **Seal small bleeding points if needed.** Minor oozing can be controlled with a low, short burst as your trainer shows you. Avoid charring.

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Layer-by-layer lesion removal



Remove one thin layer, wipe with saline, look, then repeat. Stop when healthy tissue is reached.

Wound care after lesion removal

1. **Cool and protect.** Apply a cool compress or a non-alcohol soothing gel, then a sterile, non-stick dressing where needed.

2. **Explain wound care.** Give the standard aftercare in Section 10: no washing on the day, gentle rinsing from day 2, plain barrier ointment, and daily broad-spectrum SPF 50 for at least 3 months. Do not pick the scab: let it fall away naturally. Avoid heat while it heals.

3. **No prescription medicines from you.** If the client may need an antibiotic cream, refer them to their GP or an independent prescriber.

4. **Review.** Reassess within 7 to 10 days for infection, delayed healing or scarring. Healing may be slower in clients with diabetes or poor circulation, after infection, or on high-movement areas.

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Activity 3: Choose the spacer and starting point

For each client, name the spacer you would fit and where you would start in the reference range: (a) a Fitzpatrick II client with dull, rough texture and enlarged-looking pores; (b) a Fitzpatrick III client with rolling and boxcar acne scars; (c) a Fitzpatrick II client with fine lines on the forehead.

Activity 4: Treat or refer?

A client asks you to remove a dark mole on her cheek. She says it has "got a bit bigger this year" and sometimes itches, but she is sure it is nothing. What do you do, and why can you not simply remove it and "see"?

Part C: What to do if something goes wrong during treatment

Problems are rare when you follow the routine in Part A. But you must know exactly what to do, without stopping to think. Practise these steps with your trainer.

Key fact: the first three actions are always the same

Take your foot off the foot switch. Put the machine into standby, or press the emergency stop if there is any danger. Then deal with the client.

The general emergency routine

1. **Stop firing.** Lift your foot off the foot switch at once.
2. **Make the laser safe.** Press standby. If there is any danger of further emission, fire, or you are not sure, press the large red emergency stop button. This stops laser emission and cuts the system power immediately.
3. **Keep eye protection on.** Keep it on until the laser is safe. Then remove the client's eye protection only if it is safe and needed.
4. **Give first aid.** Follow your first-aid training and the steps in the table below.
5. **Call for help.** Call a colleague into the room once the laser is safe. In an emergency, call 999.
6. **Do not restart.** Wait until you know what happened and it is safe to continue. If in doubt, end the session.
7. **Record and report.** Complete an incident report, inform your Laser Protection Supervisor (LPS), and follow your Local Rules for reporting to your LPA and any other bodies. Section 11 covers reporting duties.

Situation	What to do
Client in severe or unexpected pain	Stop and go to standby. Look at the skin. Cool the area with cool, damp compresses. Check your settings and technique. Do not continue at the same settings. If the client wants to stop, stop.
Unexpected dense whitening or charring	Stop and go to standby. Do not treat that spot again. Cool the area. Check for stacking, a tilted head, pressure, moisture on the skin or a wrong setting or spacer. Record what you saw and the settings.
Suspected burn or blistering	Stop. Cool the burn under cool or lukewarm running water for 20 minutes (no ice, no creams, do not burst blisters), then cover loosely with a sterile, non-stick dressing or cling film. A burn on the face, a large or deep burn, or an electrical burn needs A&E. Record the exact settings and the location of the burn, with photographs if the client agrees, and follow up until it has fully healed.
Possible eye exposure (client, you or anyone in the room)	Press the emergency stop. Do not let the person rub their eye. Do not put anything in the eye; cover it lightly. Arrange an urgent eye assessment the same day at your nearest eye casualty or A&E, or call NHS 111 (999 for any change in sight or severe pain). Send the incident details with them. Report to your LPS and LPA the same day. Know the route to your nearest eye casualty and write it in your Local Rules (Section 5).

What to do in specific situations.

Situation	What to do
Fire (hair, gauze, drapes)	Press the emergency stop. Smother small flames on the client at once with wet gauze or saline. Remove burning material away from the client. For an electrical fire, use the extinguisher named in your Local Rules (a CO_2 or powder extinguisher) and follow your evacuation procedure. Call 999 if the fire is not out at once.
Machine fault or alarm	Stop and go to standby. Read the alarm on the screen. Do not try to repair the machine or open any panel. Follow the troubleshooting guide in Section 4. If the fault continues, switch off, remove the key, label the machine "do not use", record it in the fault and repair log and contact your supplier.
Client feels faint or unwell	Stop and press standby. Lay the client flat, keep them safe on the couch, and give first aid. Call 999 if needed.

You give non-medicated first aid and aftercare only. Section 10 explains what to do if a client may need a prescription-only medicine.

Activity 5: Talk it through

During a full-face treatment, the client's eyebrow hair starts to smoulder. Write down, in order, exactly what you would do and say, from the first second to the end of the day.

Remember

Same routine, every time. Dry skin, wet gauze on hair, eye protection on, evacuator on, test-fire, head at 90 degrees, light contact, scans edge to edge, watch the endpoint, and if anything looks wrong: foot off, standby, assess.

Check your understanding

Now answer questions 28 to 32 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Quick guide The MED-870+ made simple

This part of the manual is your clinic quick reference. It pulls together, in one place, what you need at the treatment couch: what each probe does, how to start the machine, the basic technique, and a one-page card for each treatment with a clear settings window.

Everything here is explained in full in Sections 4 to 8. If anything on a card is unclear, go back to those sections or ask your trainer before you treat.

How to read a settings window

Start here: the setting to begin with on a new client, on normal-thickness facial skin in lighter skin types. Always test on a thermal card and patch test first.

Manufacturer reference: the setting range on the manufacturer's sheet for the MED-870+.

Never go above: the top of the manufacturer's range. As a new user you should rarely need to go near it.

Energy (mJ) on this machine = power (W) x duration (ms). For example 25 W x 0.4 ms = 10 mJ. To lower the energy, shorten the duration.

These are not recipes

The settings on the cards are starting points for the MED-870+ only. Go by the skin's response, not the number. If the skin reacts more than expected, stop and lower the setting. Every other CO_2 laser is different: always follow the manual for the machine you are using.

Skin types IV to VI, and thin skin: every card

Use the start setting or lower: shorten the duration (less energy) and use the widest spacing. One pass only. Patch test and wait 4 weeks before full treatment. Leave longer between sessions.

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The ten golden rules

1. **Consultation, consent and patch test first.** Never treat on the day of the first consultation.
2. **Eyewear on everyone.** As specified in your Local Rules, before the machine goes into Ready.
3. **Skin completely dry.** No alcohol, no anaesthetic cream left, no wet products. Fire risk.
4. **Smoke evacuator on.** Nozzle close to the treatment site.
5. **Thermal card test every time.** Before you touch the skin.
6. **Start low.** Use the "Start here" setting. Change one thing at a time.
7. **Probe straight and light.** Perpendicular to the skin, spacer just resting on it, no pressing.
8. **Edge to edge, never overlap.** One pass on a first session.
9. **Watch the skin, not the screen.** Stop at the endpoint or at any warning sign.
10. **Foot off the pedal and Standby.** Do this whenever you stop, move or talk to the client.

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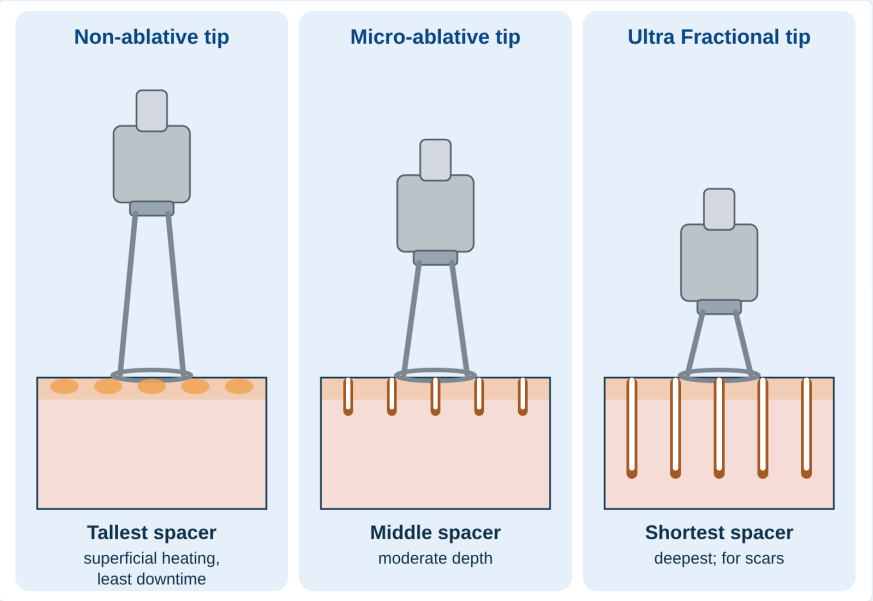
Which probe does what

The MED-870+ has two heads. The **fractional scanning head** takes one of three spacers. The **UltraPulse surgical head** replaces the whole fractional head. You can tell the three spacers apart by their length: the tallest is the gentlest and the shortest is the strongest.

Probe	What it does	Use it for	Do not use it for
Non-ablative tip (non-ablative)	Heats the skin without breaking the surface. Gentlest. Least downtime.	Skin rejuvenation, texture, dull skin	Deep scars, stretch marks, lesions
Micro-ablative tip (micro-ablative)	Makes tiny shallow channels in the top layers. Moderate.	Fine lines and wrinkles; melasma (advanced users only)	Deep scars; very thin skin as a beginner
Ultra Fractional tip (deep ablative, called "ultra-ablative" on the manufacturer's sheet)	Makes deeper channels into the dermis. Strongest. Most downtime.	Acne marks and pits, surgical and burn scars, stretch marks, pigment spots	The neck as a beginner; skin types V and VI as a beginner
UltraPulse head (surgical)	A single focused beam that vaporises tissue layer by layer. The manufacturer flags it as dangerous.	Benign lesions confirmed by a doctor: skin tags, seborrhoeic keratoses, milia, small benign moles	Anything undiagnosed, changing or suspicious; large areas; resurfacing

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The three spacers and the depth each one gives



The shorter the spacer, the deeper and stronger the treatment.

▣ On your teaching device: the MED-870+

On the touchscreen, use only **Fractional** mode (dot icon) with the fractional head and **Normal** (the Pulse screen) with the UltraPulse head. The Shallow and Dual functions, and the Gynae and Vulva modes, are not covered by this course. Scan mode: **Order**. Keep scan shapes within 20 x 20 mm (the screen allows larger, but the scanning area is 20 x 20 mm).

Starting up and shutting down

Start-up, every session

1. **Room ready.** Warning sign up, door closed, blinds down, no shiny objects, fire extinguisher in place.
2. **Check the machine.** Arm and cables undamaged, lens clean, correct head and spacer fitted.
3. **Interlock connected.** If the alarm sounds constantly, the interlock (safety lock) plug is not connected.
4. **Power on and key in.** Switch on and turn the key. Allow about 3 minutes for the self-test before you continue.
5. **Choose the mode.** Fractional for the scanning head; Normal (Pulse screen) for the UltraPulse head.
6. **Eyewear on.** Everyone in the room, as your Local Rules specify. Client's eyes protected.
7. **Enter the settings.** Use the "Start here" settings from the treatment card.
8. **Aiming beam check.** The red aiming beam should be bright and even.
9. **Thermal card test.** Press Ready, fire one scan on the card, check for even, crisp dots, then press Standby.
10. **Smoke evacuator on.** Then you are ready to treat.

Shutting down

1. **Standby,** foot off the pedal.
2. **Remove the key** and keep it locked away.
3. **Switch off,** unplug, then clean: warm towel, then disinfectant on a cotton ball for the head and spacer; lens paper with 99.9% alcohol for the lens.
4. **Record** the session and any fault in the logbook.

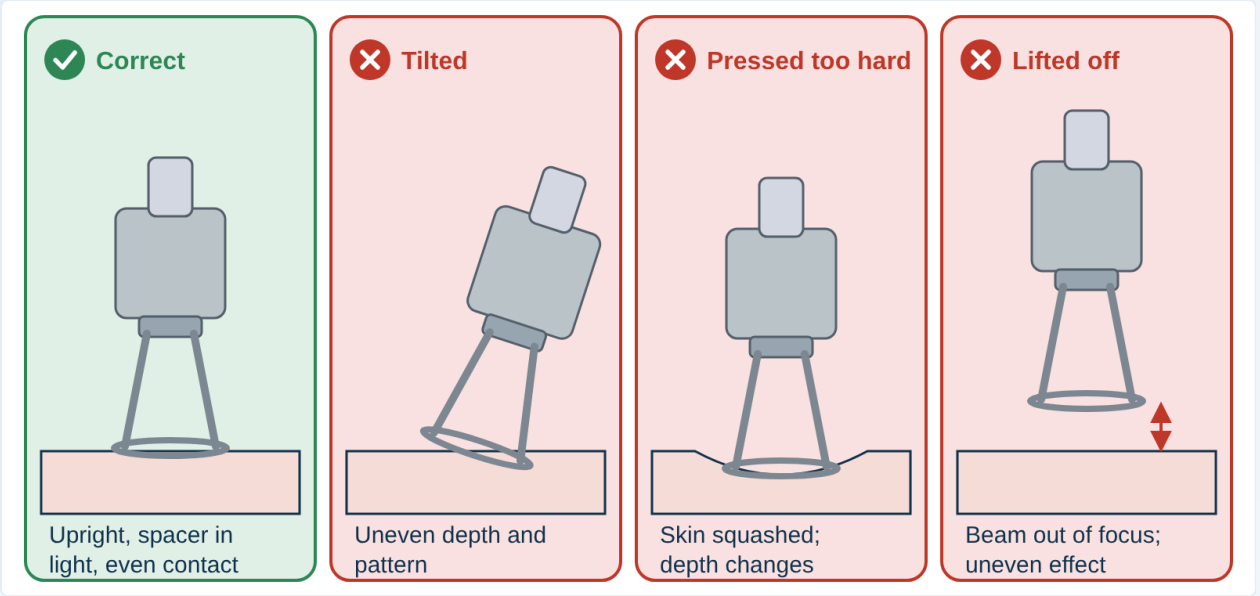
> **Emergency:** press the red emergency stop button. Know where it is on your machine and label it.

The basic technique for every fractional treatment

1. **Prepare the skin.** Cleanse, take photographs, mark the area. If anaesthetic cream was used, remove every trace.
2. **Dry the skin completely.** Wait until any alcohol-based product has fully evaporated. Cover nearby hair with wet gauze.
3. **Hold the probe straight.** At 90 degrees to the skin, spacer resting lightly and evenly. Do not press or tilt.
4. **Start in one place and work in order.** For example forehead, then cheeks, nose, upper lip, chin.
5. **Fire one scan, then move.** Lift, move one scan-width, and place the next scan edge to edge. No overlaps, no gaps.
6. **Watch every scan.** Look for the expected endpoint. If you see a warning sign, stop.
7. **Reduce on thin areas.** Neck, jawline and around the mouth: lower energy, wider spacing, one pass. Never treat inside or near the bony rim of the eye socket.
8. **Wipe if the card says so.** On scar and pigment work, wipe carbonised residue with saline-moistened gauze.
9. **Finish.** Cool the skin, apply plain barrier ointment, photograph, record every setting, give the aftercare leaflet.

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Hold the probe straight, with light contact



Tilting, pressing or lifting the probe changes the depth and the pattern.

Treatment card

Skin rejuvenation

What it is for: Dull, tired or sun-damaged skin, uneven texture, enlarged pores.

Probe	Non-ablative tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
20 W, 0.4 ms (8 mJ), 1.0 mm spacing	20 W, 0.4 ms (8 mJ), 1.0 mm	20 W, 0.4 ms (8 mJ), 1.0 mm. Do not tighten the spacing on a first session.

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One
What you should see	Fine pinpoint redness and an even dot pattern. Mild warmth and swelling.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	Typically 1 to 4 sessions, 4 to 6 weeks apart, once fully healed.

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Treatment card Fine lines and wrinkles

What it is for: Fine lines and early wrinkles, for example on the forehead and cheeks.

Probe	Micro-ablative tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
25 W, 0.4 ms (10 mJ), 0.8 mm spacing	25 W, 0.4 to 0.6 ms (10 to 15 mJ), 0.6 to 0.8 mm	25 W, 0.6 ms (15 mJ), 0.6 mm spacing

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One
What you should see	Pinpoint redness, light even frosting that settles, tiny dots.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	Typically 1 to 4 sessions, 4 to 6 weeks apart (longer for skin types IV to VI).

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Treatment card

Acne marks

What it is for: Shallow, flat or slightly uneven marks left after acne.

Probe	Ultra Fractional tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
25 W, 0.4 ms (10 mJ), 1.0 mm spacing	25 W, 0.4 to 0.6 ms (10 to 15 mJ), 0.8 to 1.0 mm	25 W, 0.6 ms (15 mJ), 0.8 mm spacing

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One
What you should see	Fine pinpoint dots and redness. Wipe any residue with saline.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	Usually 1 to 3 sessions, 2 to 3 months apart.

Check what the mark is

On darker skin, many "acne marks" are pigment (PIH), not texture. CO_2 can make PIH worse. Do not use a deep probe on pigment marks in skin types IV to VI.

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Treatment card

Acne pits and sunken scars

What it is for: Ice-pick, boxcar and rolling acne scars, and other sunken (atrophic) scars.

Probe	Ultra Fractional tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
25 W, 0.8 ms (20 mJ), 0.8 mm spacing	25 W, 0.8 to 1.0 ms (20 to 25 mJ), 0.6 to 0.8 mm	25 W, 1.0 ms (25 mJ), 0.6 mm spacing

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One. Treat the scarred area only, not the whole face at this setting.
What you should see	Controlled fine carbonised dots over the scars. Wipe residue with saline-moistened gauze.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	Usually 1 to 3 sessions, 2 to 3 months apart. Scars must be at least 6 months old and stable.

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Treatment card Surgical and traumatic scars

What it is for: Mature, flat or slightly raised scars from surgery or injury.

Probe	Ultra Fractional tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
30 W, 1.0 ms (30 mJ), 1.0 mm spacing	30 W, 1.0 to 1.2 ms (30 to 36 mJ), 0.8 to 1.0 mm	30 W, 1.2 ms (36 mJ), 0.8 mm spacing

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One. Treat the scar only.
What you should see	Controlled carbonisation over the scar. Wipe residue with saline.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain. Never treat a keloid scar.
Sessions	Usually 1 to 3 sessions, 2 to 3 months apart. Scars at least 6 months old.

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Treatment card

Burn scars (advanced)

What it is for: Mature burn scars. An advanced treatment: burn scar skin can be thin and unpredictable.

Probe	Ultra Fractional tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
30 W, 1.2 ms (36 mJ), 0.8 mm spacing, on a patch test first, under supervision	30 W, 1.2 to 1.5 ms (36 to 45 mJ), 0.6 to 0.8 mm	30 W, 1.5 ms (45 mJ), 0.6 mm spacing

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One
What you should see	Controlled carbonisation. Wipe residue with saline.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	Usually 1 to 3 sessions, 2 to 3 months apart. Major burns: only with the client's medical team's agreement.

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Treatment card

Stretch marks

What it is for: Older, white stretch marks (striae alba). Results are often modest.

Probe	Ultra Fractional tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
30 W, 1.0 ms (30 mJ), 0.4 mm spacing	30 W, 1.0 to 1.2 ms (30 to 36 mJ), 0.3 to 0.4 mm	30 W, 1.2 ms (36 mJ), 0.3 mm spacing

Skin types IV to VI, and thin skin: use the start setting or lower (see the rule at the start of this guide).

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One. Treat the marks only, not the skin between them.
What you should see	Fine carbonised lines of dots along the mark.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	About 3 sessions, 4 to 6 weeks apart (6 to 8 weeks for skin types IV to VI).

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Treatment card Pigment spots and freckles

What it is for: Sun spots and freckles in lighter skin types.

Probe	Ultra Fractional tip
Mode	Fractional, Order

Your settings window

Start here	Manufacturer reference	Never go above
25 W, 0.6 ms (15 mJ), 0.4 mm spacing	25 W, 0.6 to 0.8 ms (15 to 20 mJ), 0.3 to 0.4 mm	25 W, 0.8 ms (20 mJ), 0.3 mm spacing

Skin types IV to VI, and thin skin

Not recommended for first-time users on skin types IV to VI. On thin skin, use the start setting with the widest spacing.

Technique

1. **Thermal card test at the start setting.**
2. **Treat in a set order, scans edge to edge, no overlap.**
3. **One pass.** Check the skin after every scan.
4. **Cool, apply barrier ointment, give aftercare.**

Passes	One
What you should see	The spot darkens slightly. Wipe residue with saline. It flakes off over 7 to 10 days.
Stop straight away if	You see dense white or grey patches, charring beyond the dots, blistering or bleeding, or the client has severe pain.
Sessions	Usually 1 to 3 sessions, 4 to 6 weeks apart, once fully healed.

Not for darker skin as a beginner

Tight spacing on a deep probe carries a high risk of PIH on skin types IV to VI. Refer, or use a gentler alternative.

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Treatment card Benign lesions (UltraPulse head)

What it is for: Skin tags, seborrhoeic keratoses, milia and small moles, only when a doctor has confirmed in writing that they are benign.

Probe	UltraPulse surgical head (replaces the fractional head)
Mode	Normal (Pulse screen), Single mode: one controlled burst each time you press the foot switch.

Your settings window

Start here	Manufacturer reference	Never go above
Single mode, low power (below 15 W). Increase in 1 W steps only as needed.	Small naevi and milia: 15 to 18 W, Single mode (older manufacturer sheet). Cutting: 5 ms pulse width, 5 ms interval, Pulse mode, never above the tested 30 W maximum (Section 7).	Never above the power on your trainer's card. As a new user, stay in Single mode and below 18 W.

Skin types IV to VI, and thin skin

Use the lowest power that works. Darker skin is more likely to leave a light or dark mark where the lesion was.

Technique

1. **Doctor's written confirmation that the lesion is benign, checked and filed.**
2. **Fit the UltraPulse head.** Select Normal (Pulse screen), Single mode, low power.
3. **Test on a thermal card, then aim the red beam on the lesion and press the foot switch for one burst.**
4. **Wipe with saline gauze, look, repeat layer by layer.** Stop when level with the skin; dress and give wound-care advice.

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Passes	Layer by layer until the lesion is level with the surrounding skin.
What you should see	The lesion vaporises in thin layers. Stop as soon as it is flush with the skin, with no remaining lesion tissue and no deep charring.
Stop straight away if	The lesion bleeds heavily, the base looks deeper than the surrounding skin, or the client has severe pain.
Sessions	Usually one treatment, review at 4 to 6 weeks.

Diagnosis first, always

Vaporised tissue cannot be sent to a laboratory. Never treat a lesion that is changing, bleeding, itching, irregular or undiagnosed. If in doubt, refer to the GP.

Not for first-time users

- ✘ **Melasma (chloasma).** CO_2 can make melasma worse (rebound darkening). Only for experienced users, with very conservative settings and a long patch test wait.
- ✘ **The neck and chest at deep settings.** Thin skin that scars easily. Use the Non-ablative tip only, at the rejuvenation start setting or lower, one pass.
- ✘ **Deep probes on skin types V and VI.** High risk of pigment change. Refer or choose a gentler treatment.
- ✘ **Around the eyes.** Treatment inside or near the bony eye socket, including the eyelids, is not covered by this course. On full-face treatments, keep well outside the bony rim.
- ✘ **Keloid scars, active acne, infection or cold sores, undiagnosed lesions.** Do not treat.
- ✘ **The Shallow and Dual functions, Gynae and Vulva modes.** Not covered by this course.

Notes

Section 9 Sessions, intervals and the clinical evidence

Learning outcomes

By the end of this section you will be able to:

- Plan how many sessions a client may need, and how long to leave between them.
- Explain why the skin needs time to heal and remodel between treatments.
- Describe what published clinical studies show about fractional CO_2 for photoageing, acne scars, other scars and stretch marks.
- Describe how often side effects happen, according to the research.
- Read a clinical study sensibly, and explain its limits honestly to a client.

Why the gap between sessions matters

Every fractional CO_2 treatment is a controlled injury. The skin needs time to do three jobs: close the tiny wounds, settle the redness and inflammation, and then slowly build new collagen. New collagen keeps forming and reorganising for months after a treatment (see Section 3).

If you treat again too soon, you are injuring skin that has not finished healing. This raises the risk of prolonged redness, pigment changes and scarring, and it does not make results come faster.

> **Key fact: wait until the skin has fully settled**
>
> Never repeat a treatment until the skin has completely healed from the last one, with no redness, crusting, sensitivity or pigment change left. If in doubt, wait longer. Darker skin types and deeper treatments usually need longer gaps.

How many sessions, and how far apart?

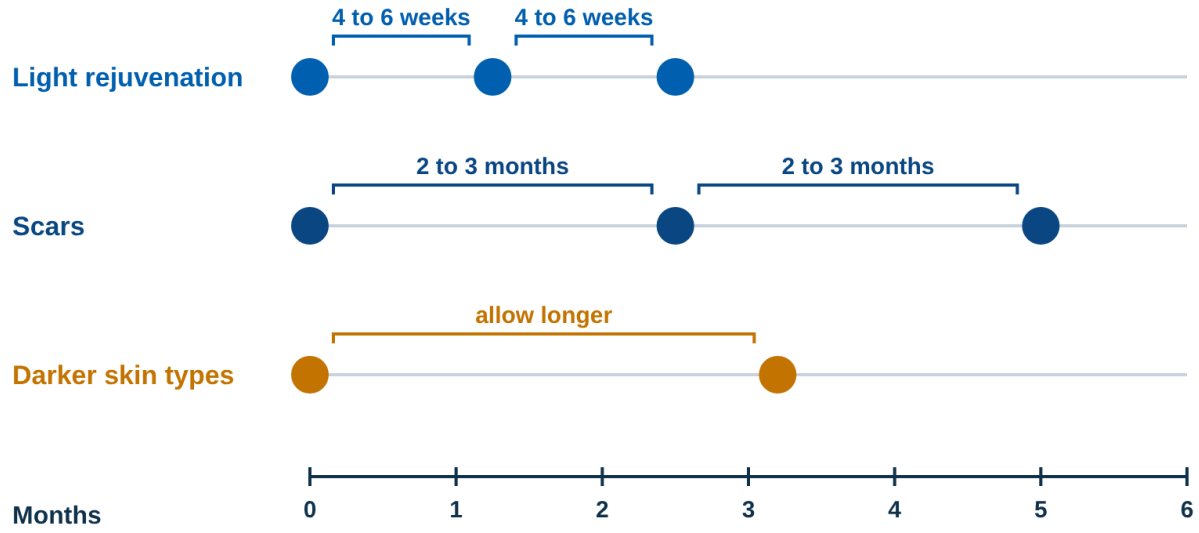
There is no single, research-proven interval for fractional CO_2. The published studies used different machines, settings and timings. The table below brings together the guidance from the manufacturer of your teaching device and the intervals used in the studies described later in this section. Use it as a starting point and adjust for the individual client.

Indication	Typical number of sessions	Typical interval	Where this comes from
Skin rejuvenation, fine lines, texture	1 to 4	4 to 6 weeks for light (non-ablative or micro-ablative) treatments; longer for deeper work	Manufacturer guidance. Studies of photoageing used a single treatment [7, 8].
Pigmentation and sun damage	1 to 3	4 to 6 weeks, or longer	Manufacturer guidance
Acne scars and other sunken (atrophic) scars	1 to 3 (sometimes more)	2 to 3 months	Manufacturer guidance. Studies used 2 to 3 treatments, 1 to 2 months apart [3, 4].

A guide only. Always follow your own device's manual and adjust for the client's skin type, the depth of treatment and how the skin healed last time.

Indication	Typical number of sessions	Typical interval	Where this comes from
Raised, surgical, traumatic and burn scars	1 to 3 (often more)	2 to 3 months	Manufacturer guidance. Burn scar protocols vary widely between studies [6].
Stretch marks	About 3	4 to 6 weeks; 6 to 8 weeks for skin types IV to VI. Review about 3 months after the last session.	Skintastic recommendation. Recent trials used 2 or 3 sessions about 4 weeks apart (see "Further guidance" in the references); one older study used a single session [9]. Older, white marks usually respond less, and improvement is often modest.
Benign lesions with the UltraPulse head	Usually 1	Review at 4 to 6 weeks; retreat only once fully healed	Manufacturer guidance

Planning intervals between sessions



All intervals are approximate. Follow your assessment of each client.

Lighter treatments can be repeated sooner. Scars and deeper treatments need longer for the collagen to remodel.

▣ On your teaching device: the MED-870+

The manufacturer's documents for the MED-870+ describe a full course as 1 to 4 sessions, with 4 to 6 weeks between sessions. For scars and resurfacing they describe 1 to 3 sessions, 2 to 3 months apart.

These are manufacturer recommendations, not research findings. In the studies we reviewed, we did not find one that tested and proved a 4 to 6 week interval for ablative fractional CO_2. Be honest about this if a client asks.

Things that should make you leave a longer gap

- Fitzpatrick skin types IV to VI, or any client who has had pigment changes before.
- Deep (Ultra Fractional tip) treatments, tight dot spacing or several passes.
- Any redness, sensitivity or pigment change still present.
- Thin-skinned areas such as the neck, chest and hands.
- Recent sun exposure or a holiday planned in the coming weeks.
- Slow healing last time, or any complication.

Activity: plan a course

A client with Fitzpatrick type III skin has moderate rolling acne scars on both cheeks. Write a treatment plan: which tip, how many sessions you would expect, the gap between them, and what you would check before each repeat session.

What results to expect, and when

Results from fractional CO_2 build slowly. The skin may look fresher once the redness has gone, but the main benefit comes from new collagen, which takes months to form. Most studies measure results at 3 to 6 months after treatment.

What to expect over time

Day 0 to a few days	About 1 to 2 weeks	After healing	3 to 6 months
Redness, swelling and warmth	Micro-crusts shed	Skin may look and feel smoother	Collagen renewal continues; changes develop gradually

Results vary from person to person.

Healing happens in days and weeks. Collagen improvement happens over months. Results vary from person to person.

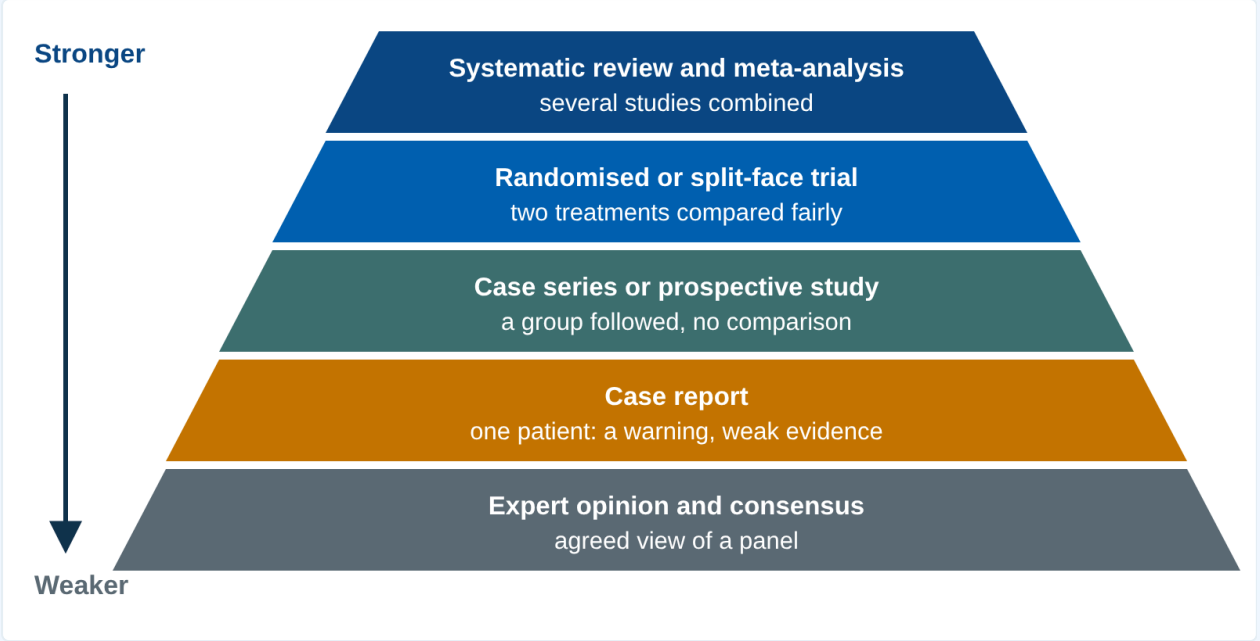
Caution: study results are not promises

Studies report average improvements in groups of people, not what will happen to one client. Do not quote study percentages to clients as a promise. Use honest wording such as "this treatment is designed to improve the appearance of acne scarring, and several sessions may be needed".

How to read a clinical study

You do not need to be a scientist to use research sensibly. Ask these simple questions about any study you read or are shown by a supplier:

How strong is the evidence?



Types of evidence, from strongest to weakest. A consensus report records expert opinion. Drawn for this manual.

1. **Which laser was used?** Many famous fractional laser studies used erbium lasers, not CO_2. Their results cannot simply be applied to a CO_2 laser.

2. **How many people took part?** A study of 9 people tells us much less than a study of 400.

3. **Who were they?** Check their skin types. Results in light skin may not apply to darker skin.

4. **Was there a comparison?** A split-face study (one side treated one way, the other side another way) or a randomised trial is stronger than a simple before-and-after series.

5. **How long were people followed?** Pigment problems can appear weeks later, so short studies may miss them.

6. **Who judged the results?** Blinded assessors (people who do not know which treatment was given) are more reliable.

Key fact: the main types of study

Case report: one patient. Useful as a warning, but weak evidence.
Case series or prospective study: a group treated and followed, with no comparison group.
Split-face or randomised trial: two treatments compared fairly. Stronger evidence.
Systematic review and meta-analysis: the results of several studies combined. Usually the strongest evidence, but only as good as the studies it includes.
Consensus report: the agreed opinion of a panel of experts.

The clinical evidence for fractional CO_2

The studies below have been checked against their published summaries on PubMed. The numbers in square brackets match the References at the back of this manual. They are a starting point for your own reading, not the whole of the research.

Where fractional treatment came from

Manstein and colleagues, 2004 [1]. This paper introduced the idea of "fractional photothermolysis": treating the skin in thousands of tiny columns and leaving untreated skin in between to speed healing. The skin surface healed within a day, and wrinkle scores improved by 18% three months after treatment.

Caution: not a CO_2 study

This first study used a non-ablative laser at about 1,500 nm, not a CO_2 laser. Use it to explain the idea of fractional treatment, not as evidence for CO_2 results.

Hantash and colleagues, 2007 [2]. This was the first study of ablative fractional CO_2 on living human skin. When the energy per spot was raised from 5 mJ to 30 mJ, the treated columns became more than three times deeper and twice as wide. The skin's collagen remodelling response lasted at least 3 months. This shows clearly why higher energy means a deeper, stronger treatment.

Photoageing, fine lines and wrinkles

Tierney and colleagues, 2012 [7]. A study of 10 people with sun-damaged skin, with skin samples and blinded photo assessment. At 6 months the average scores had improved by about half: wrinkles 52.5%, texture 56%, laxity (looseness) 56%, uneven pigment 47.5% and overall appearance 61.5%. The depth of treatment increased as the pulse duration increased.

Chan and colleagues, 2010 [8]. Nine Chinese patients (skin types III and IV) had one full-face fractional CO_2 treatment. Texture, laxity, wrinkles, pores and acne

scars improved and 86% were satisfied or very satisfied. However, post-inflammatory hyperpigmentation (PIH, darkening of the skin after inflammation) affected 55.5% of patients at 1 month, falling to 11.1% at 6 months. This is an important reminder about darker skin types.

Acne scars

Chapas and colleagues, 2008 [3]. Thirteen people with moderate to severe acne scars (skin types I to IV) had 2 or 3 treatments, 1 to 2 months apart. All showed at least a 26 to 50% improvement in texture and appearance. Measured scar depth improved by an average of 66.8%. Side effects were mild to moderate and temporary.

Manuskiatti and colleagues, 2013 [4]. A split-face study of 24 people with darker skin, comparing fractional CO_2 with a fractional erbium laser. Two treatments were given, 2 months apart. At 6 months, 65% of CO_2-treated sides had more than 50% improvement, compared with 55% for erbium; the difference was not significant. The CO_2 laser was more uncomfortable.

Surgical, traumatic and burn scars

Anderson and colleagues, 2014 [5]. A consensus report from a panel of 8 expert doctors (dermatologists and plastic surgeons). They concluded that laser treatment, particularly ablative fractional resurfacing, is "a promising and vastly underused tool" for traumatic scars. This was based mainly on expert opinion.

Mahar and colleagues, 2021 [6]. A systematic review and meta-analysis of 8 studies, covering 282 patients with burn scars. On average, burn scars improved by 29% on a standard scar scale (the Vancouver Scar Scale) after fractional CO_2. Treatment plans varied so much that the authors could not recommend one protocol.

Caution: burn and surgical scars

Major burn and surgical scars are often under the care of a medical team. Only treat with the client's medical team's agreement where appropriate, and within your training and insurance.

Stretch marks

Lee and colleagues, 2010 [9]. A review of 27 women with older, white stretch marks (striae alba) who had a single fractional CO_2 session. At 3 months, about 59% showed good or very good improvement (grade 3 or 4), none got worse, and 74.1% were satisfied or very satisfied.

Benign lesions

Zaresharifi and colleagues, 2021 [15]. Thirty patients each had four similar seborrhoeic keratoses on the face treated in four different ways. CO_2 laser, erbium laser and electrodesiccation all gave significantly better healing than cryotherapy (freezing), with little difference between those three.

Gottschaller and colleagues, 2006 [16]. A warning case report. A pigmented mark on a woman's cheek was diagnosed by eye as a harmless lentigo and treated several times with a CO_2 laser. Later she was found to have melanoma that had spread. The authors stress that moles and other pigmented lesions "are not a routine indication for laser treatment".

This is why every lesion must be confirmed as benign by a doctor before you treat it (Section 8).

What the research says about side effects

Shamsaldeen and colleagues, 2011 [10]. This is the best CO_2-specific information on side effects that we found: a review of 490 deep fractional CO_2 treatments in 374 patients (skin types I to IV). A side effect followed 13.6% of treatments. The table shows the most common.

Side effect after deep fractional CO_2	How often (per treatment)
Acne-like breakouts	5.3%
Cold sore (herpes simplex) outbreaks	2.2%
Bacterial infection	1.8%
Yeast (fungal) infection	1.2%
Hyperpigmentation (darkening)	1.2%
Redness lasting over 1 month	0.8%
Contact dermatitis (skin reaction to a product)	0.8%

Source: Shamsaldeen and colleagues, 2011 [10]. No scarring or loss of pigment was reported in this group.

Metelitsa and Alster, 2010 [12]. A review of fractional laser complications. Complications are much less common than with old-style fully ablative resurfacing, but they can be serious and long-lasting. Risk is higher in sensitive areas, in darker skin types and in people with medical risk factors. Many complications can be prevented.

Graber and colleagues, 2008 [11] reviewed 961 treatments and found complications after 7.6%, and **Chan and colleagues, 2007 [13]** studied PIH in Asian skin. Both are often quoted, but both used non-ablative lasers, not CO_2. They are useful background, but their figures should not be quoted as CO_2 figures.

Darker skin and pigment changes

The research consistently shows that darker skin types have a higher risk of PIH after fractional treatment [8, 12]. In one split-face study of 40 people with type IV skin and acne scars, PIH developed on 75% of the sides treated with petroleum jelly alone after fractional CO_2 [14]. Using a prescription steroid cream for 2 days afterwards reduced this to 40%.

Caution: prescription medicines

The steroid cream used in that study, and antiviral tablets used to prevent cold sores [17], are prescription-only medicines. Do not advise or supply them: refer (Section 10).

Laser plume (smoke)

Smoke from a CO_2 laser is not just unpleasant. Researchers have found intact wart virus DNA in CO_2 laser plume [18]. An animal study showed that plume can transmit disease [19]. Live viruses, bacteria and harmful chemicals have also been found in surgical smoke [20]. This is why a smoke evacuator held close to the treatment site, and suitable masks, are essential (see Section 5).

Activity: explaining evidence to a client

A client says: "I read online that CO_2 gets rid of acne scars completely in one session." Using what you have learned in this section, write how you would answer them honestly and kindly.

Activity: spot the problem

A supplier's leaflet quotes "18% wrinkle improvement" from the Manstein 2004 study to promote their CO_2 laser. What is wrong with using that study in this way?

Check your understanding

Now answer questions 33 to 35 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Section 10 Aftercare, side effects and complications

Learning outcomes

By the end of this section you will be able to:

- explain to a client, in plain words, what to expect day by day after fractional CO_2 laser treatment
- give clear aftercare instructions, both spoken and written
- tell the difference between normal healing and warning signs
- recognise the main complications of CO_2 laser treatment, explain why they happen and say what to do
- manage a complication within your scope of practice, including when and how to refer
- stay within the law on prescription-only medicines
- plan follow-up reviews after treatment

Why aftercare matters

A fractional CO_2 treatment does not end when the laser is switched off. The laser makes thousands of tiny, controlled wounds in the skin. What happens over the next days and weeks, while those wounds heal, has a big effect on the result and on the risk of side effects.

Good aftercare is designed to:

- support the skin's natural healing
- reduce the risk of infection
- reduce the risk of pigment changes, especially from sun exposure
- help the client feel prepared, calm and in control
- spot any problem early, while it is easier to manage

In the first few weeks the skin's response can look quite dramatic. Clients must know exactly what to expect and may need to plan their daily routine around their recovery. Explain this at consultation, again before treatment, and again afterwards, both in words and in writing.

> **Key fact: why fractional skin heals faster**
>
> A fractional laser treats tiny columns of skin and leaves bridges of untreated skin in between. Healthy cells from these untreated bridges move across and close the tiny wounds. This is why fractional treatment usually heals faster than treating the whole skin surface at once. Section 2 and Section 3 explain how this works.

What the client should expect, day by day

Healing time depends mainly on how deep and how dense the treatment was. A light treatment with the Non-ablative tip and wide dot spacing heals faster than a deep scar treatment with the Ultra Fractional tip and close spacing.

Healing after fractional treatment



Before treatment, at 24 hours and at 2 weeks. Results vary from person to person. Skintastic client photograph, used with the client's written consent.

Recovery over two weeks



Before, day 1, day 5 and day 14 after treatment. Individual results vary. Skintastic client photograph, used with the client's written consent.

Recovery after fractional CO_2 treatment



A typical healing timeline. Lighter treatments are at the shorter end; deeper treatments take longer. Every client heals differently.

When	What the client may notice	What it means
Straight after treatment and the first 24 to 48 hours	Redness, swelling and heat, like sunburn. Tightness or tenderness. Possibly slight oozing of clear fluid or tiny pinpoint spots of blood. Swelling may look worse in the morning, especially around the eyes.	The normal response to heat and to the tiny wounds. Swelling usually peaks early and then settles.
From about day 3	Tiny dark dots (micro-crusts) appear in a grid. The skin can look bronzed or darker. Dryness, flaking and some itching.	Treated tissue is being pushed up and out as new skin forms underneath. The dark dots are not dirt and must not be picked.
Days 7 to 15	The micro-crusts flake off by themselves. Fresh pink skin shows underneath.	The skin surface has healed over. Lighter treatments shed sooner (about 7 to 10 days); deeper treatments, such as acne scars, take longer (about 10 to 15 days).
About 1 week (light) or longer (deeper)	Redness fades. With deeper treatments some pinkness may last several weeks.	Blood flow returns to normal as healing settles.

A typical recovery timeline

When	What the client may notice	What it means
Weeks 2 to 4	Remaining pinkness fades. The skin may feel smoother.	The surface is healed, but changes deeper in the skin are only just starting.
2 to 6 months	Any temporary pigment changes gradually settle.	Pigment cells calm down after the inflammation.
Over several months	Gradual improvement in texture, fine lines or scars may be seen. Results vary from person to person.	New collagen is formed and reorganised (collagen remodelling). This can continue for up to about 6 months.

Downtime by treatment depth

"Downtime" means the time when the skin looks visibly treated and the client may prefer not to go out or go to work. As a guide:

Treatment intensity	Main downtime	Skin surface recovered	Changes start to show
Light fractional	3 to 5 days	7 to 10 days	4 to 6 weeks
Moderate fractional	5 to 7 days	10 to 14 days	6 to 8 weeks
Deep ablative	7 to 10 days	14 to 21 days	8 to 12 weeks

Typical downtime guide (from the Skintastic CO_2 course materials)

Always give the client a realistic range rather than a single promise. Some clients heal faster and some slower.

Things that can slow healing

- deeper or denser treatment settings
- treating thin or delicate skin, such as the neck
- smoking, which reduces blood flow and oxygen to the skin (clients are advised to stop for 2 to 4 weeks before and after treatment)
- poorly controlled medical conditions, such as diabetes
- picking, scratching or rubbing the skin
- sun exposure, heat and sweating
- using the wrong skincare products too soon

Aftercare in the clinic, straight after treatment

1. **Cool the skin.** Apply cool compresses, using sterile gauze dampened with cool sterile water or saline, for 10 to 15 minutes. Never put ice directly on the skin.

2. **Protect the skin.** Apply a thin layer of a plain petrolatum-based barrier ointment (petroleum jelly, also called white soft paraffin) that is fragrance-free and lanolin-free. Petrolatum-based ointments are the best-supported aftercare after ablative resurfacing: they keep the healing skin moist. Lanolin can cause an allergic rash on healing skin. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it.

3. **Check the skin.** Look at the whole treated area and record its appearance. Take post-treatment photographs if this is part of your protocol and the client has consented.

4. **Talk the client through aftercare.** Explain what to expect, the dos and don'ts, and the warning signs. Ask the client to repeat back the key points so you know they have understood.

5. **Give written aftercare.** Give the client the written aftercare leaflet with your clinic's contact details, including what to do out of hours.

6. **Book the follow-up.** Tell the client you will contact them by phone or message 24 to 48 hours after treatment to check how their skin is healing. Book a review at about 1 to 2 weeks before the client leaves, and make sure they have your contact number to call at any time if they are worried.

7. **Record everything.** Record the aftercare given, the products applied and the leaflet issued in the client's notes.

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Caution: prescription-only medicines

Medicines such as antibiotic creams, antiviral tablets, steroids and hydroquinone are prescription-only (Section 11). If a client may need one, refer them to their GP or an independent prescriber.

The manufacturer's documents for many CO_2 lasers, including the teaching device, mention antibiotic ointments (such as erythromycin or gentamicin), steroid tablets, hydroquinone and a growth factor spray. As a non-prescribing practitioner you must not advise, supply or apply any of these. You give non-medicated aftercare only.

Aftercare instructions: do and don't

The lists below are written so you can explain them to the client and so they can be adapted into the client aftercare leaflet in the forms at the back of this manual.

Gentle aftercare



Keep aftercare simple: a gentle cleanser, a plain barrier ointment and broad-spectrum sun protection. Generated image commissioned by Skintastic, not a photograph.

The first 48 hours

- ✔ Use cool compresses for short spells (10 to 15 minutes) to ease heat and swelling. Wrap anything cold in a clean cloth.
- ✔ Sleep with your head raised on an extra pillow for the first nights to help swelling settle.
- ✔ Keep the area as clean as possible and keep your hands away from it.
- ✔ Use a clean pillowcase and clean towels.
- ✔ Drink plenty of water.
- ✘ Do not touch, rub or scratch the treated skin.
- ✘ Do not have hot showers, hot baths or steam on the treated area.
- ✘ Do not apply make-up or any product your practitioner has not recommended.
- ✘ Do not wash the treated area on the day of treatment.

Cleansing

On the day of treatment, do not wash the area. Use cool (not iced) compresses and the barrier ointment. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only. Do not rub or scrub. Pat dry with a clean tissue and put a thin layer of barrier ointment back on straight away. Do not pick crusts.

> **Key fact: why gentle cleansing from day 2**
>
> The manufacturer of the teaching device advises keeping the area dry for the first 3 days. This manual departs from that advice. A 2025 expert consensus on fractional CO_2 found most experts allow a gentle cleanser from the second or third day. Keeping healing skin moist with a petrolatum ointment is also better supported than keeping it dry. UK NHS leaflets for CO_2 laser also advise gentle washing and patting dry.

Until the skin has healed (usually 7 to 15 days)

- ✔ Apply a thin layer of plain petrolatum-based, fragrance-free and lanolin-free barrier ointment, thinly and often, to keep the skin moist, and always straight after rinsing.
- ✔ Let the micro-crusts and flakes come away by themselves.
- ✔ Stay out of the sun and cover up (see sun protection below).
- ✔ Contact the clinic if anything worries you.
- ✘ Do not pick, peel, scratch or scrub the skin, even when it is itchy or flaking.
- ✘ Do not wear make-up until the skin has healed, usually 5 to 7 days or longer after deeper treatments.
- ✘ Do not do strenuous exercise or anything that makes you sweat heavily for 5 to 7 days.
- ✘ Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid very hot baths too.
- ✘ Do not use scrubs, exfoliating brushes, face masks or facial treatments until at least 4 weeks after treatment (see Active skincare below).
- ✘ Do not wax or use hair removal products on the treated area until the skin has fully recovered.
- ✘ Do not smoke, if you can avoid it, as smoking slows healing.

Active skincare

Active skincare means products designed to change the skin, such as acids (AHAs, BHAs, glycolic acid), retinoids (vitamin A creams, retinol), vitamin C serums and skin brighteners. These can irritate healing skin and increase the risk of pigment changes.

- ✘ Use only the barrier ointment, a gentle cleanser, a plain moisturiser and sunscreen until the skin has fully healed: no crusts, no raw or weeping areas, and no stinging when a plain moisturiser is applied.
- ✘ Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment. Wait at least 6 weeks for skin types IV to VI or after deeper settings.
- ✘ Wait 3 months before any peel, microneedling or other exfoliating treatment on the area.

Why these times: healing of the skin surface after fractional CO_2 can take from about 8 days to 6 weeks, depending on depth. A 2025 expert consensus found most experts restart active products once the skin has healed, with all back by about 6 weeks. NHS CO_2 leaflets advise no peels or exfoliation for 3 months. The manufacturer of the teaching device is more cautious and advises no active or functional cosmetics for 3 months; this is also acceptable. If in doubt, the client should ask you first.

Sun protection

Sun protection is the single most important part of aftercare. Healing skin is very sensitive to ultraviolet (UV) light. Sun exposure during healing is one of the main causes of post-inflammatory hyperpigmentation (darker patches).

- ✔ Before treatment: avoid tanning and use a broad-spectrum SPF 30 or higher (ideally SPF 50 with a high UVA rating) every day for at least 4 weeks.
- ✔ After treatment: keep out of the sun completely. Cover up with a wide-brimmed hat, long sleeves and, if possible, shade such as a UV umbrella.
- ✔ From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen for sensitive skin over the treated area every morning. Choose one with good UVA protection (for example a UVA logo or a high UVA rating).
- ✔ Reapply sunscreen when outdoors, at least every 2 hours.
- ✔ Avoid the sun between 10am and 4pm, when it is strongest.
- ✔ Keep using sunscreen every day for at least 3 months, and avoid strong sun for 6 months.
- ✘ No sunbathing, sunbeds or fake tan on the treated area until your practitioner says it is safe.
- ✘ Do not rely on sunscreen alone: cover up and stay in the shade as well.

> **Key fact: why sunscreen starts the day after treatment**
>
> In a split-face trial after fractional CO_2, sunscreen started on the first day after treatment gave lower pigment readings at 1 week than starting later. It caused no harm to the skin barrier. UK NHS leaflets also start SPF 50 within about two days. Sunscreen helps protect healing skin, but it cannot on its own prevent pigment changes: sun avoidance and covering up matter just as much.

Key fact: SPF and UVA are different

SPF measures protection mainly against UVB, the rays that cause sunburn. UVA rays go deeper and also drive pigment changes. That is why the sunscreen must be broad-spectrum with good UVA protection, not just a high SPF number.

Client aftercare advice (leaflet wording)

This is the core wording for the client leaflet. It is written in the client's own language. Adapt it to your clinic protocol and add your contact details.

After your CO_2 laser treatment

Your treatment is designed to improve the texture and appearance of your skin. Results vary from person to person and develop gradually over several months. Following this advice supports safe healing.

What is normal. Your skin will be red, swollen and warm, like sunburn, for the first few days. From about day 3 you may see tiny dark dots and your skin may look bronzed. These flake off by themselves, usually between day 7 and day 15. New skin may look pink for a week or longer.

Please do. Use cool compresses for short spells. Sleep with your head raised for the first nights. Do not wash the area on the day of treatment. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only, and pat dry with a clean tissue. Straight away, put on a thin layer of plain petroleum jelly (white soft paraffin) ointment with no fragrance and no lanolin. Apply it thinly and often to keep the skin moist. Keep out of the sun completely and wear a wide-brimmed hat. From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen every morning and reapply when outdoors. Keep this up every day for at least 3 months, and avoid strong sun for 6 months. Drink plenty of water.

Please do not. Do not pick, scratch or scrub your skin, or pick crusts. Do not wear make-up until your skin has healed. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it. Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid hard exercise for 5 to 7 days. Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment (at least 6 weeks if you have skin type IV to VI or had deeper settings). Wait 3 months before any peel, microneedling or other exfoliating treatment on the area.

Checking on you. We will contact you by phone or message 24 to 48 hours after your treatment to check how your skin is healing, and book a review at about 1 to 2 weeks. You also have our contact number to call at any time if you are worried.

Please contact us if pain, swelling or redness gets worse after day 3; you see yellow or green fluid or crusts; you get blisters, cold sores or an itchy rash; dark patches appear; or healing seems slow.

Get urgent medical help if you have a high temperature or feel unwell, redness is spreading fast, or you have any change in your vision or pain in your eye. Call 999 if you have any difficulty breathing or swelling of your lips, tongue or throat.

Activity: explain recovery to a client

Write what you would say, in your own words, to explain to a client what their skin will look like on day 1, day 4 and day 10 after a moderate fractional treatment. Use words a client would understand and do not make any promises about results.

Normal reactions and warning signs

Many clients worry about normal healing. Others may miss early signs of a problem. You need to teach both what is normal and what is not.

Normal healing or a warning sign?

Normal expected after treatment	Warning signs contact the clinic or seek medical help
✓ Redness	! Pain that gets worse
✓ Mild swelling	! Redness that spreads
✓ Warmth	! Pus or yellow crusting
✓ Tightness	! Fever or feeling unwell
✓ Micro-crusts (tiny dark dots)	! Blisters
✓ Mild itching	! Cold sore spots
	! Open, weeping wounds
	! Eye pain or any change in vision

Normal healing settles day by day. A warning sign usually gets worse rather than better, or looks different from the expected grid of tiny crusts.

Normal (expected)	Warning sign (contact the clinic)
Redness, swelling and heat that are worst in the first 1 to 2 days and then improve	Pain, swelling or redness that gets worse after day 3
A little clear fluid or pinpoint bleeding on the first day	Yellow or green discharge, or yellow or honey-coloured crusts
Tiny, evenly spaced dark dots from about day 3	Large dark scabs, or areas that look different from the rest
Dryness, tightness, flaking and mild itching	Intense itching with a red rash, especially if it spreads beyond the treated area
A bronzed look that flakes away by about day 7 to 15	Blisters, or clusters of small painful blisters (possible cold sores)
Pink skin that slowly fades	Redness that is not fading, or is getting worse, after 2 weeks
Swelling around the eyes in the first days that settles	Raised, firm or thickened areas; dark or pale patches; slow healing

Normal reactions compared with warning signs

Tell the client to contact the clinic if they have

- increasing pain, swelling or redness after day 3
- yellow or green discharge, or crusts that look yellow
- blisters, open areas that are not healing, or dark scabs
- tingling, burning or small blisters that could be cold sores
- an itchy rash, or a reaction to a product
- redness that is not settling after 2 weeks
- dark or light patches
- raised, firm or lumpy areas
- any unusual or worrying change

Tell the client to seek urgent medical help if they have

- a high temperature, chills or generally feeling unwell
- redness that is spreading quickly, hot red streaks, or swollen glands
- any sudden change in vision, eye pain, or persistent eye irritation
- severe swelling around the eyes that affects their vision
- difficulty breathing, or swelling of the lips, tongue or throat: they must call 999

Caution: make it easy for clients to contact you

Give every client a phone number they can use if they are worried, and explain what to do out of hours. A client who cannot reach you may wait too long, or may follow advice from the internet. Record every contact in the client's notes.

Activity: normal or warning sign?

For each of these, write N (normal) or W (warning sign), and what you would tell the client. (a) Day 2: face red and puffy, worse in the morning. (b) Day 4: tiny dark dots all over the treated area. (c) Day 5: pain getting worse and yellow crusts on one cheek. (d) Day 6: a cluster of small painful blisters at the corner of the mouth. (e) Day 10: pink skin, flaking has stopped. (f) Week 3: a firm, raised red line along the jaw.

Complications: what they look like and what to do

Most clients heal without problems when they are carefully selected, treated with suitable settings and given good aftercare. However, every CO_2 treatment carries some risk. You must be able to recognise complications early, act within your scope and refer when needed.

In the table, "refer" means refer to the client's GP, an independent prescriber or another suitable medical practitioner. Section 6 covers the medical history and contraindications that reduce these risks before treatment.

Ectropion, lines of demarcation and contact dermatitis are all documented in the published literature on fractional and ablative resurfacing (see the references).

Prolonged redness (erythema)

What it looks like: Redness lasting longer than expected for the depth of treatment

Why it happens: Deeper or denser treatment; sensitive skin or rosacea; irritation from products, heat or rubbing

What to do: Avoid rubbing, heat and active products; plain barrier ointment or plain moisturiser; strict sun protection; review

When to refer: If not fading, or getting worse, after 2 weeks, or with other warning signs

Post-inflammatory hyperpigmentation (PIH)

What it looks like: Darker brown patches in the treated area during or after healing

Why it happens: Inflammation triggers pigment cells; higher risk in darker skin types; sun exposure; aggressive settings; picking

What to do: Strict sun protection; no picking; no actives until healed; reassure that it usually fades over time; delay further treatment until settled

When to refer: If the client wants lightening treatment (hydroquinone is prescription-only), or if it is not improving

Hypopigmentation

What it looks like: Lighter or white patches; may appear later in healing

Why it happens: Damage to pigment cells, usually from deep or aggressive treatment; higher risk in darker skin types

What to do: Record and photograph; sun protection; do not re-treat the area

When to refer: Refer for medical review; it can be slow to recover and may not fully recover

Bacterial infection

What it looks like: Increasing pain, swelling, heat and redness after day 3; yellow or green discharge; yellow crusts; possibly fever

Why it happens: Bacteria entering open skin; touching, poor hygiene, dirty pillowcases or towels

What to do: Keep clean; stop any non-essential products; contact the client the same day

When to refer: Same day to GP or prescriber (antibiotics are prescription-only); urgently if fever, feeling unwell or spreading redness

Herpes simplex (cold sore) reactivation

What it looks like: Tingling or burning, then clusters of small painful blisters or shallow sores, often around the mouth

Why it happens: The cold sore virus lying dormant in nerves is triggered by the treatment; more likely if the client has a history of cold sores

What to do: Keep the area clean; do not touch or burst blisters; prevent spread

When to refer: Same day to GP or prescriber (antivirals are prescription-only); urgently if near the eye

Fungal infection

What it looks like: Itching, soreness, white or red patches, slow healing

Why it happens: Yeast (such as candida) growing on warm, moist healing skin, often under heavy ointments

What to do: Keep the area clean; do not apply further heavy ointment without advice

When to refer: Refer for diagnosis and treatment

Acne flare and milia

What it looks like: New spots, or tiny white bumps (milia) in the treated area as it heals

Why it happens: Heavy or occlusive products blocking pores during healing; a tendency to acne

What to do: Reassure; do not squeeze; review aftercare products; switch to a lighter, non-blocking moisturiser once the skin has healed

When to refer: If severe, painful, or not settling

Contact dermatitis

What it looks like: An itchy, red, sometimes bumpy rash, which may spread beyond the treated area

Why it happens: Irritation or allergy to an aftercare product, fragrance, lanolin or other topical product on healing skin. Prevent it by using plain petrolatum and no fragranced or lanolin products.

What to do: Stop the suspected product; go back to plain petrolatum; record the product

When to refer: Refer to a doctor or pharmacist, as treatment may need a prescription medicine; urgently if severe or swelling is significant

Burns

What it looks like: Redness beyond what is expected, sometimes greyish or white areas, severe pain

Why it happens: Energy too high; stacking or overlapping pulses; dwelling on one spot; tanned or sensitive skin

What to do: Stop; cool under cool or lukewarm running water for 20 minutes (no ice, do not burst blisters); cover loosely with a non-stick dressing; record settings

When to refer: A&E for a burn on the face, a large or deep burn, or an electrical burn; urgently if signs of infection

Blistering

What it looks like: Fluid-filled blisters in the treated area

Why it happens: Excess heat in the skin, as for burns

What to do: Do not burst; keep clean and covered with a non-stick dressing; avoid friction

When to refer: If large, widespread, near the eyes or showing signs of infection

Scarring and hypertrophic scarring

What it looks like: Raised, firm, red or thickened areas, often appearing weeks after treatment

Why it happens: Excessive heat reaching deep in the skin; burns; infection; picking; a personal tendency to scar or keloids

What to do: Record and photograph; do not re-treat the area

When to refer: Early, as soon as a firm red raised area is noticed; early treatment by a medical practitioner may help

Ectropion (a general risk of laser resurfacing near the eye)

What it looks like: The lower eyelid is pulled down and outwards; watery, dry or irritated eye

Why it happens: Skin tightening and scarring of the lower eyelid after aggressive treatment close to the eye

What to do: Do not attempt to treat it yourself; record and photograph. Prevention: treatment around the eyes is not covered by this course, so on full-face treatments keep well outside the bony rim of the eye socket.

When to refer: Urgently to a medical practitioner (eye specialist)

Lines of demarcation

What it looks like: A visible line or edge between treated and untreated skin, in colour or texture

Why it happens: Stopping a treatment abruptly at an edge, or treating only part of a facial area

What to do: Sun protection; reassure that it often softens as redness settles. Prevention: treat whole cosmetic units (such as the whole cheek) and feather the edges with slightly lower settings.

When to refer: If it persists after healing or causes concern

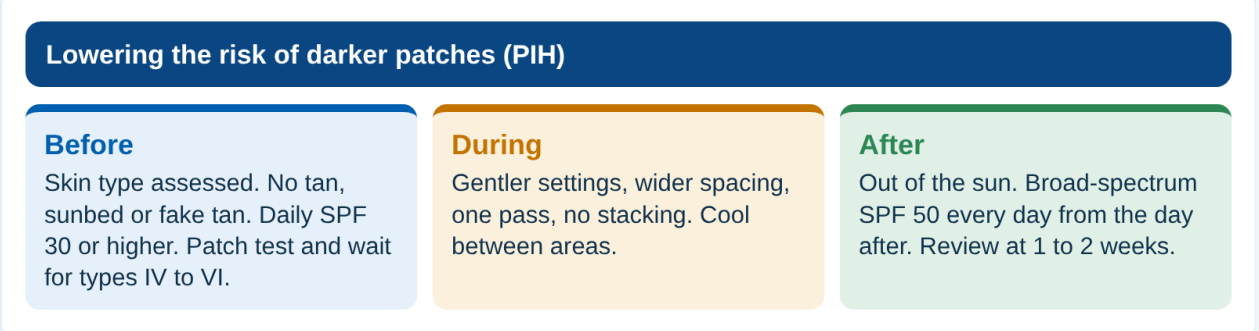
Reducing the risk of complications

- ✔ Take a full medical history and screen for contraindications, including a history of cold sores, scarring or keloids (Section 6).
- ✔ Assess the client's skin type and treat darker skin types with extra caution (Section 3). Treat melasma conservatively, explain the pigment risk clearly at consultation and record it on the consent form (Section 7).
- ✔ Do not treat tanned or sunburned skin.
- ✔ Patch test and test-fire before treatment, and always start with conservative settings (Section 7).
- ✔ Do not stack or overlap pulses. Blend the edges of the treated area and treat whole areas where appropriate (Section 8).
- ✔ Keep well outside the bony rim of the eye socket, and use extra caution on thin skin.
- ✔ Make sure the client understands and can follow the aftercare before you treat.

How to manage a complication within your scope

When a client reports a problem, or you notice one at review, follow the same calm, structured approach every time.

Lowering the risk of PIH



Lowering the risk of darker patches before, during and after treatment. Drawn for this manual.

A complication: the same calm steps

A complication: the same calm steps every time

1 Stop
No more treatment on the area until it has settled.

2 Assess
See the client. When did it start, what changed, what did they apply?

3 Record and photograph
What you see, the settings used, the aftercare followed.

4 Support
Explain calmly. Give simple, non-medicated advice.

5 Refer
GP or prescriber for diagnosis or medicines. 999 or A&E in an emergency.

6 Insurer and reporting
Tell your insurer. Device fault: take it out of use and report it.

7 Follow up
Keep in contact until it has fully resolved.

8 Learn
Review with your LPS. Update the protocol or risk assessment.

Referring early is good practice, not a failure.

The steps for managing any complication within your scope. Drawn for this manual.

1. **Stop.** Do not carry out any further treatment on the area until the problem has been assessed and has resolved.

2. **Assess.** See the client in person as soon as possible, or by video if they cannot attend. Ask when it started, how it has changed, what they have applied and whether they feel unwell.

3. **Record.** Write down what you see and what the client tells you, the treatment date and settings, and the aftercare followed.

4. **Photograph.** Take clear, consented photographs in the same lighting and position as the treatment photographs.

5. **Support the client.** Listen, explain calmly what you think is happening and what will happen next, and give simple non-medicated aftercare advice.

6. **Refer.** If the problem needs diagnosis or medicine, or is outside your scope, refer the client to their GP, an independent prescriber or another suitable medical practitioner. Write a short referral note with the treatment details. In an emergency, tell the client to call 999 or go to accident and emergency.

7. **Inform your insurer.** Tell your insurer about any complication that could lead to a claim, as your policy requires.

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8. **Report.** If the complication may be linked to the device, for example unexpected energy, a misfire or a fault, take the laser out of use, record it and report it. Section 11 explains the reporting routes.

9. **Follow up.** Keep in contact and review the client regularly until the problem has fully resolved. Record each contact.

10. **Learn.** Review what happened with your Laser Protection Supervisor (LPS) or supervisor. Update your protocol or risk assessment if something should change.

> **Remember**
>
> Your scope is non-medicated care, clear advice, good records and timely referral. You do not diagnose medical conditions or advise prescription-only medicines. Referring early is good practice, not a failure.

Follow-up review schedule

Regular follow-up lets you check healing, catch problems early, reassure the client and plan any further sessions.

When	What to do
Before the client leaves	Check the skin, give spoken and written aftercare, confirm contact details, book the review.
24 to 48 hours	A phone call or message to check how the skin is healing and answer questions. Published case reports link infection after fractional CO_2 to scarring, so careful monitoring after treatment matters.
About 1 to 2 weeks	Review healing: has the surface closed? Any signs of infection, abnormal healing or pigment change? Check sunscreen is being used every day and confirm when make-up can start.
2 to 4 weeks	Review progress and redness. Take photographs. Discuss the plan for further treatment.
Before each further session	Confirm full healing and no pigment problems before treating again. Typical intervals are 4 to 6 weeks for rejuvenation and 2 to 3 months for scars (Section 9).
3 to 6 months after the last session	Final review and photographs, as collagen remodelling can continue for up to about 6 months.

Suggested follow-up schedule

Activity: case study

Six days after a full-face treatment for acne scarring, a client messages you. Her left cheek is more painful than yesterday, there are yellow crusts, and she has been using a thick ointment from a friend. Using the ten steps above, write what you would do, what you would record, who you would refer her to, and what you would say to her.

Check your understanding

Now answer questions 36 to 39 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Section 11 The law and professional practice

Learning outcomes

By the end of this section you will be able to:

- Name the main UK laws that apply when you use a CO_2 laser at work.
- Explain what Local Rules are, and the roles of the Laser Protection Adviser (LPA) and Laser Protection Supervisor (LPS).
- Describe how laser clinics are registered or licensed in England, Scotland, Wales and Northern Ireland, and how this is changing.
- Explain what informed consent means in law.
- Advertise your treatments within the CAP Code.
- Report adverse incidents and keep records correctly.

Caution: the law is changing

The rules for non-surgical cosmetic treatments are changing across the UK, and ablative lasers such as CO_2 are one of the main targets. This section reflects the position checked against official sources in October 2026. Check the current rules for your part of the UK before you start offering CO_2 treatments, and at least once a year after that. Check with your local council or regulator, your insurer and your LPA. This manual is a guide, not legal advice. Appendix A, after this section, sets out every piece of law in more detail, with a compliance checklist.

Health and safety law

Several laws apply to anyone using a laser at work. In plain English:

Law	What it means for you
Health and Safety at Work etc. Act 1974	Employers must protect the health and safety of their staff (section 2) and of other people affected by their work, such as clients (section 3). Self-employed practitioners have duties too.
Management of Health and Safety at Work Regulations 1999	You must carry out a suitable and sufficient risk assessment, and review it when things change. Employers with five or more employees must write down the significant findings.
Control of Artificial Optical Radiation at Work Regulations 2010	The specific law on lasers and other artificial light at work. You must assess the risk to eyes and skin and reduce it as far as reasonably practicable. You must also mark out and restrict access to areas where exposure limits could be exceeded, display signs, and give staff information and training.
Electricity at Work Regulations 1989	Electrical equipment must be built and maintained to prevent danger. HSE advises that how often you inspect and test equipment should be based on risk, rather than a fixed yearly rule.
RIDDOR 2013	Certain work-related injuries and incidents must be reported to HSE, including a member of the public being taken straight from the scene to hospital for treatment.
COSHH 2002	Covers hazardous substances. HSE guidance on surgical smoke says it can contain toxic gases, particles and vapours, and that exposure is usually controlled by extraction at the source. Treat laser plume in the same way: use a smoke evacuator close to the site.

Full texts are on legislation.gov.uk. HSE guidance is on hse.gov.uk.

Law	What it means for you
Provision and Use of Work Equipment Regulations 1998 (PUWER)	Work equipment, including your laser and smoke evacuator, must be suitable, maintained in good order, inspected where needed, and used only by people who have been trained on it. Your service records and training certificates are your evidence.
Personal Protective Equipment at Work Regulations 1992 (as amended in 2022)	Suitable PPE must be provided, maintained and used. For you this is the laser safety eyewear specified by your LPA, and any respiratory protection your plume risk assessment calls for.
Regulatory Reform (Fire Safety) Order 2005	A written fire risk assessment for your premises (England and Wales; Scotland and Northern Ireland have their own fire safety law). A Class 4 CO_2 laser can ignite hair, dressings, paper and alcohol-based products, so your fire risk assessment must cover the laser room (Section 5, Hazard 3).

Local Rules, the LPA and the LPS

The MHRA's guidance on the safe use of lasers (2015) sets out good practice that inspectors, councils and insurers expect to see. It has no legal status on its own, but it is the standard you will be measured against.

- **Laser Protection Adviser (LPA).** A certificated expert who advises on laser safety. The LPA carries out or reviews the risk assessment, defines the Laser Controlled Area, specifies eyewear and writes the Local Rules.
- **Laser Protection Supervisor (LPS).** A named person on site who makes sure the Local Rules are followed day to day, with a deputy for when they are away. The LPS reviews the risk assessment each year.
- **Local Rules.** A written document for each laser and its uses. It covers who may use the laser, key security, the controlled area, pre-use checks, eyewear, and what to do in an incident or fault. Everyone who uses the laser reads and signs it.
- **Register of authorised users.** A list of everyone allowed to use each Class 3B or Class 4 laser.
- **Training.** Authorised users need training on the equipment and a Core of Knowledge laser safety course, refreshed at least every 5 years.
- **Equipment records.** Keep service, calibration and fault records for each laser (see the fault and repair log in Section 4).
- **Audit.** The MHRA guidance recommends that the LPA audits the risk assessment at least every 2 years.

Registration and licensing around the UK

Where you work decides what registration or licence you need. The table gives the position as checked in October 2026.

England

Current position: No national licence yet. Some councils, including London boroughs under the London Local Authorities Act 1991, license premises offering laser and IPL treatments. Check with your council.

What is changing: The Health and Care Act 2022 allows a national licensing scheme. In its 2025 response the government said the highest-risk procedures will become regulated by the Care Quality Commission (CQC) and limited to healthcare professionals, with council licensing for the rest. The 2023 consultation proposed placing CO_2 lasers used for extensive, fully ablative resurfacing in the highest-risk (red) group. Final decisions had not been made when this manual was written.

Scotland

Current position: Healthcare Improvement Scotland registers independent clinics run by healthcare professionals.

What is changing: The Non-surgical Procedures and Functions of Medical Reviewers (Scotland) Act 2026 lists "ablative laser treatment" as a covered procedure. When fully in force, it will be an offence to provide it to under-18s, or outside permitted premises (mainly registered clinics run by doctors, dentists or independent prescribers). These main offences were not yet in force in October 2026.

Wales

Current position: Healthcare Inspectorate Wales (HIW) states that treatment with a Class 3B or Class 4 laser or IPL must be registered with HIW, with some exceptions.

What is changing: Check with HIW before offering CO_2 treatment.

Northern Ireland

Current position: The Regulation and Quality Improvement Authority (RQIA) registers establishments using Class 3B or Class 4 lasers. Inspectors check for an LPA, Local Rules and medical treatment protocols written by a named doctor.

What is changing: Check with RQIA.

Key fact: CO_2 is treated as higher risk

Across the UK, regulators treat ablative lasers such as CO_2 as one of the higher-risk non-surgical treatments. In Scotland they are now listed in law, and in England they have been proposed for the highest-risk group. Plan your practice with this in mind, and keep checking for changes.

Medical devices

Medical devices placed on the market in Great Britain must be registered with the Medicines and Healthcare products Regulatory Agency (MHRA) under the Medical Devices Regulations 2002. A manufacturer based outside the UK must appoint a UK Responsible Person to act for it.

▣ On your teaching device: the MED-870+

The MED-870+ is a Class IIb medical device registered with the MHRA. Carla Cooper-Gale, through Skintastic Aesthetic Supplies Ltd, is its MHRA-registered UK Responsible Person. Registration with the MHRA does not represent accreditation, certification, approval or endorsement by the MHRA.

Medicines and your scope of practice

- **Prescription-only medicines (POMs).** Antibiotic creams, antiviral tablets, steroid creams and hydroquinone are POMs. Only a prescriber can decide a client needs one. Refer the client to their GP or an independent prescriber.
- **Topical anaesthetic creams.** Some topical anaesthetic creams are pharmacy (P) medicines. For example, the NHS medicines dictionary lists EMLA 5% cream and LMX 4 cream packs as P medicines. Other strengths, combinations and compounded "numbing creams" may be prescription-only or unlicensed. Check the legal category of every product you use, follow its instructions (including the maximum amount and area), and make sure your insurer covers its use.
- **Isotretinoin (Roaccutane).** The UK product information for Roaccutane says laser skin treatment should be avoided for 5 to 6 months after the end of treatment, because of the risk of raised scarring. Section 6 gives the Skintastic standard.

Consent in law

The leading UK case on consent is **Montgomery v Lanarkshire Health Board (2015)**. The Supreme Court said a practitioner must take reasonable care to make sure the patient knows about any material risks of the treatment, and any reasonable alternatives.

A risk is material if a reasonable person in the client's position would think it significant, or if you know (or should know) that this particular client would think it significant. The case was about a doctor, but it is widely treated as the standard for all practitioners.

In practice this means you must:

1. **Explain clearly.** What the treatment is, the likely benefits, downtime, aftercare and costs.
2. **Discuss the risks.** Common ones such as redness and swelling, and rarer serious ones such as scarring, pigment change and eye injury.
3. **Discuss alternatives.** Including other treatments and doing nothing.
4. **Check understanding.** Ask the client to tell you in their own words, and answer their questions.
5. **Give time.** Never treat on the same day as the consultation, so the decision is not rushed. Section 6 gives the recommended cooling-off period.
6. **Record it.** The client signs and dates the consent form, and you renew consent if the treatment plan changes.

Advertising your treatments

Two consumer laws apply to every treatment you sell, as well as the advertising code:

- **Digital Markets, Competition and Consumers Act 2024.** Since 6 April 2025 the rules on unfair commercial practices are in this Act, which replaced the Consumer Protection from Unfair Trading Regulations 2008. Misleading actions and misleading omissions are unlawful, and some practices, such as fake reviews, are always unfair.
- **Consumer Rights Act 2015.** A service must be carried out with reasonable care and skill. A prepaid course of treatments is a contract, and clients have rights if you do not deliver what was agreed.

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The CAP Code (enforced by the Advertising Standards Authority, ASA) applies to your website, social media, leaflets and adverts.

- ✘ Do not mislead, exaggerate or leave out important information (rules 3.1, 3.3 and 3.11).
- ✘ Do not make claims you cannot prove with evidence held before you publish (rules 3.7 and 12.1).
- ✘ Do not advertise prescription-only medicines or treatments to the public (rule 12.12).
- ✘ Do not aim cosmetic intervention adverts at under-18s (rule 12.25).
- ✘ Do not use words like "guaranteed", "permanent", "pain-free" or "no downtime".
- ✘ Never describe a device as "MHRA approved".
- ✔ Use honest wording such as "designed to", "may help" and "results vary from person to person".
- ✔ Use only genuine before-and-after photographs, with the client's signed consent, without editing, and keep proof that they are genuine. The ASA treats them as testimonials.

What you may and may not say

Advertising a CO_2 treatment: the CAP Code in practice

You may say

- "Designed to improve the appearance of..."
- "May help with..."
- "Results vary from person to person"
- "Registered with the MHRA"
- Genuine, unedited before and after photographs, with written consent

Never say

- "Guaranteed results"
- "Permanent"
- "Pain-free" or "no downtime"
- "MHRA approved"
- Claims you cannot prove with evidence held before you publish

The Digital Markets, Competition and Consumers Act 2024 also bans misleading claims and fake reviews.

Advertising wording at a glance. Drawn for this manual.

Activity: rewrite this advert

"Our MHRA approved CO_2 laser permanently removes acne scars in one pain-free session with no downtime. Guaranteed results!" List what is wrong, then rewrite it so it meets the CAP Code.

Reporting incidents

Who to tell



Reporting routes at a glance. The table below gives the detail. Drawn for this manual.

What happened	Who to report to
A fault or problem with the laser, or an incident that caused or nearly caused injury	The MHRA Yellow Card scheme (yellowcard.mhra.gov.uk). Anyone can report. Keep the device as it is, as the MHRA or manufacturer may need to examine it. Tell the supplier or UK Responsible Person too. In Scotland, healthcare professionals report to the Incident Reporting and Investigation Centre (IRIC).
A client taken straight from your clinic to hospital for treatment, or a reportable injury to a member of staff	HSE, under RIDDOR.
Any laser incident or near miss	Your LPS and LPA, as set out in your Local Rules. Record it in your incident log.
A complaint or possible claim	Your insurer, as soon as possible.

Insurance

You must have insurance that covers CO_2 laser treatment specifically, including treatment liability and public liability. Check that your policy covers fractional resurfacing and lesion removal, and any conditions it sets, such as qualifications, patch testing and record keeping. Many policies also list clients who must not be treated (see the key fact box in Section 6). Some policies apply a higher excess for ablative laser treatment on skin types V and VI, and for practitioners with less than one year's ablative laser experience, so check yours. Treatment around the eyes is not covered by this course, and needs its own training and insurance cover. Tell your insurer about any incident or complaint straight away.

Records and data protection

- Keep a full record of every consultation, consent, patch test and treatment, with all settings.
- Client health information is "special category" personal data under UK GDPR and the Data Protection Act 2018. Keep paper records locked away and digital records password-protected.
- Photographs are personal data. Use them only for the purposes the client agreed to in writing.
- Keep treatment records, consent forms and photographs securely for at least 8 years after the client's last treatment, or longer if your insurer requires it. Then destroy them securely. This follows the 8-year period for adult health records in the NHS England Records Management Code of Practice, which private providers can use for guidance. Write your retention period in your privacy notice.
- Clients can ask to see their records. Respond within one month.

Equality and accessibility

The Equality Act 2010 requires you to make reasonable adjustments for disabled clients, such as large-print forms, extra time at consultation or a ground-floor room. Offer your client paperwork in large print and keep text clear and simple.

Professional development

Keep a CPD record (there is one at the back of this manual), refresh your Core of Knowledge at least every 5 years, and keep up to date with changes to the law, your device and the evidence.

Activity: your own clinic

Which nation do you work in? Write down what registration or licence you currently need for CO_2 treatment, who your LPA is, and the date your Local Rules were last reviewed.

Check your understanding

Now answer questions 40 to 43 in the Knowledge review, Part 1 (page 385). Write your answers in this workbook as part of your online study, and bring it on the practical day, when your trainer will mark them.

Notes

Appendix A Legislation and regulatory requirements

Learning outcomes

By the end of this appendix you will be able to:

- Name the health and safety laws that apply to a laser treatment room, and state the four duties in the Control of Artificial Optical Radiation at Work Regulations 2010.
- Explain what the medical device rules ask of you as a user, including the UK Responsible Person and how to report an adverse incident.
- Explain how licensing and registration of laser treatment differ between England (including London), Scotland, Wales and Northern Ireland, as they stood in October 2026.
- Describe the data protection, equality, consumer and advertising duties you owe your clients.
- Use the compliance checklist to check your own business, and know where to find the current position.

Read this first

This appendix sets out the law and the regulatory requirements that apply to laser treatment, including fractional CO_2 laser treatment, in the United Kingdom, as they stood when this edition was checked in October 2026.

We are a training provider and a device supplier. We are not lawyers and we are not regulators. This is here to help you understand what applies to you and where to look. It is not legal advice, and it does not replace checking the current position yourself.

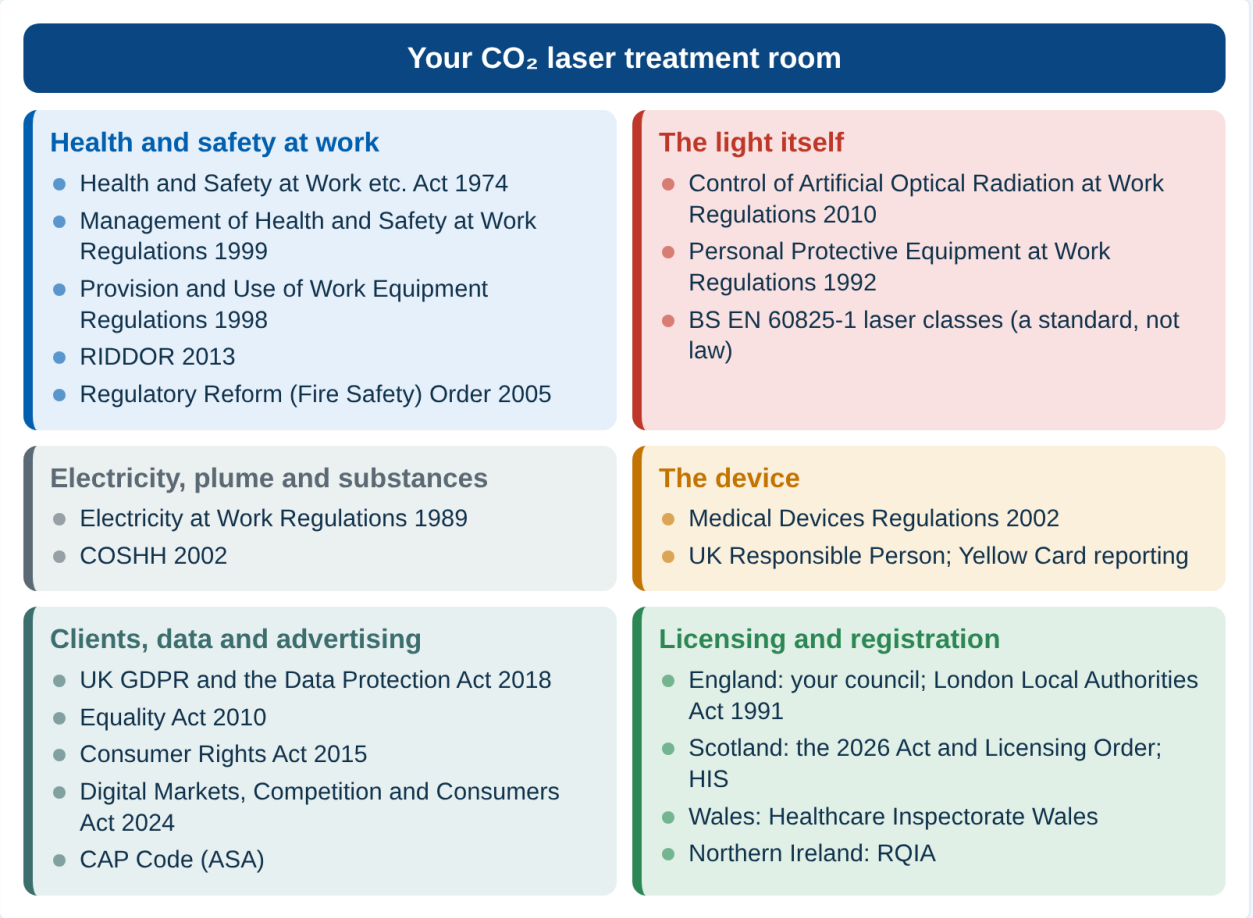
Two things change often: what your own local authority requires, and the licensing of non-surgical cosmetic procedures, which is coming in England and has already been legislated for in Scotland. Check both before you treat anyone, and check them again each year.

How to use this appendix

Part 1 tells you who regulates what. **Parts 2 to 5** give you the individual pieces of law and what each one actually asks of you. **Part 6** is a checklist you can work through. **Part 7** tells you where to check the current position.

Where a piece of law is named, the title and year given are the ones you would type into legislation.gov.uk to read it for yourself. We would rather you looked it up than took our word for it.

The law around your laser room



Six groups of law and rules. Each is explained in the parts that follow.

Part 1: Who regulates what

Body	What they cover
Health and Safety Executive (HSE), or your local authority environmental health team	Your safety and your staff's safety at work, including the optical radiation from your device, your electrical equipment and your accident reporting. Which of the two enforces depends on the type of premises.
Your local authority licensing team	Whether your premises and you personally need a licence to give the treatment at all. This differs from council to council (Part 4).
Medicines and Healthcare products Regulatory Agency (MHRA)	Medical devices: whether a device may lawfully be placed on the market, and adverse incidents involving it.
Care Quality Commission (CQC), England	Registration of regulated activities. Non-surgical cosmetic laser treatment, such as cosmetic fractional CO_2 resurfacing by a non-healthcare professional, is not at present a regulated activity, although the government has said the highest-risk procedures will come under CQC oversight (Part 4). Treatment of disease, disorder or injury by a healthcare professional is.
Healthcare Improvement Scotland (HIS), Healthcare Inspectorate Wales (HIW), and the Regulation and Quality Improvement Authority (RQIA) in Northern Ireland	Registration of independent healthcare. In Wales and Northern Ireland this includes premises using Class 3B or Class 4 lasers or IPL. In Scotland it covers clinics where a doctor, dentist, nurse, midwife or pharmacist provides the services (Part 4). The rules outside England are stricter.
Information Commissioner's Office (ICO)	The client records you hold, which are health data.

Body	What they cover
Advertising Standards Authority (ASA), and the Committee of Advertising Practice, who write the CAP Code	Everything you publish about the treatment.
Competition and Markets Authority (CMA), and Trading Standards	Consumer protection: misleading a client into a purchase, fake reviews, and clients' rights when they pay for a service.
Your insurer	Not a regulator, but in practice the strictest set of requirements you will meet.

Part 2: Health and safety at work

The one that matters most for this treatment

The Control of Artificial Optical Radiation at Work Regulations 2010 (SI 2010/1140), in force since 27 April 2010.

This is the regulation written for exactly what you do. Artificial optical radiation means light from a source other than the sun, and that includes lasers and intense pulsed light. It places four duties on the employer.

Regulation	What it requires
Regulation 3	Risk assessment. Assess the exposure of your staff to optical radiation and the risk to their eyes and skin. Record the significant findings, and the measures you are taking, in writing.
Regulation 4	Eliminate or reduce the risk to as low a level as is reasonably practicable, and have an action plan where exposure limits could be exceeded. This is where your eye protection, your controlled treatment room, your signage and your safe working practices sit.
Regulation 5	Information and training. Staff must be told what the risk assessment found, what the exposure limits are, how to work safely, and how to use their protective equipment. This course and this manual are part of how you meet that duty, and your certificate is your evidence of it.
Regulation 6	Health surveillance where the risk assessment shows a risk to the skin, and a medical examination where exposure has exceeded the limits or skin damage from the light has been found.

Four duties on the employer

The Control of Artificial Optical Radiation at Work Regulations 2010: four duties on the employer

Regulation 3: assess

Assess the risk to your staff's eyes and skin from the laser. Record the significant findings.

Regulation 4: reduce

Eliminate the risk, or reduce it as far as is reasonably practicable: eyewear, controlled room, signs, safe working.

Regulation 5: inform and train

Tell staff what the assessment found, the limits, how to work safely and how to use their protective equipment.

Regulation 6: health surveillance

Where the assessment shows a risk to the skin: health surveillance by a doctor or occupational health professional. A medical examination if exposure has exceeded the limits.

This course and your certificate are part of your evidence for regulation 5.

Assess, reduce, inform and train, and watch for harm.

The rest of the health and safety picture

Law	What it asks of you
Health and Safety at Work etc. Act 1974	The parent Act. A general duty to keep employees and anyone else affected by your work, which includes your clients, safe so far as is reasonably practicable.
The Management of Health and Safety at Work Regulations 1999 (SI 1999/3242)	Suitable and sufficient risk assessments, recorded in writing if you have five or more employees, and arrangements to put the findings into effect. Skintastic recommends writing them down whatever your size.
The Provision and Use of Work Equipment Regulations 1998 (SI 1998/2306)	Equipment must be suitable, maintained, inspected, and used only by people who have been trained on it. Your service records and your training certificates are the evidence.
The Electricity at Work Regulations 1989 (SI 1989/635)	Electrical systems and equipment maintained so as to prevent danger. In practice, portable appliance testing at the interval your risk assessment sets, and a look at every lead before you switch on.
The Personal Protective Equipment at Work Regulations 1992 (SI 1992/2966), as amended in 2022 (SI 2022/8)	PPE provided, suitable, maintained and used. For you that is eye protection of the correct optical density for the wavelength you are using, for yourself, the client and anyone else in the room.

Law	What it asks of you
The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (SI 2013/1471), known as RIDDOR	Certain injuries, diseases and dangerous occurrences at work must be reported to the enforcing authority. A serious burn to a member of staff can be reportable. So can an injury to a client who, because of a work-related accident, is taken from your premises to hospital for treatment of the injury (regulation 5).
The Control of Substances Hazardous to Health Regulations 2002 (SI 2002/2677), known as COSHH	Substances hazardous to health, which for you means your disinfectants and skin preparations, and the laser plume (smoke) from CO_2 treatment, which is controlled by a smoke evacuator held close to the site (Section 5).
The Regulatory Reform (Fire Safety) Order 2005 (SI 2005/1541)	A fire risk assessment for your premises. Relevant here because oxygen, alcohol-based products and a Class 4 laser in one room is a fire risk, and alcohol is a reason not to use spirit-based preparations on the treatment area. This Order applies in England and Wales; Scotland and Northern Ireland have their own fire safety law.

The standard behind the class numbers

BS EN 60825-1 is the laser safety standard that gives you the class numbers. It is a standard, not a law, but the classes it defines are used throughout the regulations and by every regulator and insurer.

Class 3B and Class 4 are the classes that matter to you. A Class 4 laser can cause eye and skin injury from the direct beam and from scattered light, and can be a fire hazard. The MED-870+ fractional CO_2 laser you train on is one.

Part 3: The device itself

Requirement	What it means for you
The Medical Devices Regulations 2002 (SI 2002/618, as amended)	The rules for placing a medical device on the market in Great Britain. A medical device should carry a valid UKCA or, where still accepted, CE mark, and must come with instructions for use in English.
UK Responsible Person (regulation 7A, for general medical devices)	Where the manufacturer is outside the UK, a UK Responsible Person must be appointed. They confirm the declaration of conformity and technical documentation exist and keep them available to the regulator, deal with the MHRA, and must pass on complaints and reports of suspected incidents to the manufacturer. Your supplier must be able to tell you who the UK Responsible Person is for your device, and the supplier and the UK Responsible Person are not always the same. For example, Carla Cooper-Gale, through Skintastic Aesthetic Supplies Ltd, is the MHRA-registered UK Responsible Person for the MED-870+ you train on, while for the DPL4 (made by Beijing Stelle) the UK Responsible Person is MedPath Limited, and Skintastic is only the importer and distributor. Registration is not MHRA approval.
Adverse incident reporting	An adverse incident is an event that caused, or could have caused, injury to a patient or anyone else, or a wrong or delayed treatment. In the UK, problems with medical devices are reported to the MHRA through the Yellow Card scheme; gov.uk explains the different route for Scotland, Wales and Northern Ireland. Keep the device and keep it out of use. Do not reset, repair or throw it away: the manufacturer may need to examine it. Record what happened on the day on the adverse incident report in the client forms; first aid for a burn or an eye exposure is in Section 5.
Buying second hand or importing	A device bought privately, imported directly, or bought from a seller who is not the manufacturer or an appointed representative may have no valid conformity assessment, no UK Responsible Person and no support. If it injures a client, that is your problem. Ask for the declaration of conformity before you buy.

Before you buy

Before you buy a device: four questions to ask the seller

1 Is it a medical device?
And what is it registered for? A CO_2 laser for skin resurfacing is a medical device.

2 Is it UKCA or CE marked?
By whom, and for what intended purpose?

3 Show me the paperwork
The declaration of conformity, and instructions for use in English.

4 Who stands behind it?
For a medical device made outside the UK: the UK Responsible Person. Who services it, and who you ring when it goes wrong.

If the seller cannot answer, do not buy. If it injures a client, that is your problem.

Four questions, asked before any money changes hands.

Regulation in this area is changing

The MHRA has published draft Medical Devices (Amendment) Regulations 2026, with a stakeholder survey that closed on 19 June 2026. The proposals include unique device identifiers, longer retention of technical documentation, and a route recognising approvals from some other regulators. CE marked medical devices are accepted in Great Britain only for a limited time, depending on the type of device. For a general medical device certified under the EU Medical Devices Directive, gov.uk gives that as until its certificate expires or 30 June 2028, whichever is sooner. A UKCA marked device made outside the UK must show its UK Responsible Person's name and address on its labelling; a CE marked device does not have to.

Nothing in this appendix should be taken as the final position. Check gov.uk for what has actually come into force before you rely on it.

Part 4: Premises, licensing and who may treat

This is the part that catches people out, because there is no single national answer. What applies to you depends on where your premises are.

Licensing and registration across the four nations, October 2026

England
No national licence. In London and Nottinghamshire, a council licence. Elsewhere, ask your council. A national scheme is planned (Health and Care Act 2022, section 180).

Scotland
Clinics led by a doctor, dentist, nurse, midwife or pharmacist register with HIS. Ablative laser treatment is listed in the 2026 Act: when its offences come into force, only permitted premises may provide it.

Wales
Class 3B and Class 4 lasers and IPL: register with Healthcare Inspectorate Wales as an independent hospital. Protocols from an Expert Medical Practitioner; a Laser Protection Adviser.

Northern Ireland
Class 3B and Class 4 lasers and IPL: register with RQIA as an independent hospital. A Laser Protection Adviser and an Expert Medical Practitioner.

In every nation: ask before you open, and get the answer in writing.

The position when this edition was checked. It is changing, most of all in Scotland and England.

England

England: the short version

There is no national licence for non-surgical cosmetic laser treatment.

Until October 2010, premises using Class 3B and Class 4 lasers and IPL had to register under the Care Standards Act 2000: with the Healthcare Commission, and from 2009 with the Care Quality Commission. That requirement was removed for cosmetic use, and the focus moved from the strength of the device to the activity carried out with it.

CQC registration is still required where the activity amounts to the treatment of disease, disorder or injury, or surgical procedures, by or under the supervision of a healthcare professional. Cosmetic fractional CO_2 resurfacing by a practitioner who is not a healthcare professional is not that at present, but see the scheme that is coming, below.

What filled the gap is local, and it varies:

Where	What applies
The London boroughs	London Local Authorities Act 1991, Part II. Section 6(1) says no premises may be used as an establishment for special treatment except under a special treatment licence. Section 4 defines an establishment for special treatment to include premises used for "light, electric or other special treatment of a like kind", which covers laser and IPL. Premises where the treatment is given by or under the supervision of certain registered healthcare professionals are excluded.
Nottinghamshire	Nottinghamshire County Council Act 1985, Part IV. Councils there license both the premises and the individual practitioner.
Everywhere else in England	Depends entirely on your council. Many have their own scheme or code of practice; some have none. Ring your council's licensing team and ask. Do not rely on what a colleague in another town tells you.

Note that the Local Government (Miscellaneous Provisions) Act 1982, Part VIII (sections 13 to 17) covers registration for acupuncture, tattooing, semi-permanent skin-colouring, cosmetic piercing and electrolysis. It does not cover laser treatment. If your registration certificate is under that Act, it is not a laser licence.

England: the licensing scheme that is coming

Section 180 of the Health and Care Act 2022 gives the Secretary of State a power to make regulations requiring a personal licence and a premises licence for specified cosmetic procedures in England. Its definition of a cosmetic procedure includes "the application of light, electricity, cold or heat".

The government consulted in 2023 on a scheme that sorted procedures into green, amber and red groups by risk, with local authorities licensing the lower groups and the highest-risk procedures restricted to regulated healthcare professionals in CQC-registered premises. It published its response on 7 August 2025. It committed to bring the highest-risk procedures into CQC oversight, to develop local authority licensing for lower-risk procedures, and to introduce age restrictions. It said further work was needed to decide where specific procedures will sit, and noted that the consultation had proposed that laser procedures sit across different groups, depending on their strength and depth.

When this edition was checked in October 2026, no scheme was in force. When it arrives, expect it to ask for what this course already gives you: accredited training on the

device you use, documented consultation and consent, proper records, insurance and premises standards. Keep your certificate and keep your records.

England: how the rules have moved

England: how the rules have moved

Until October 2010	Premises using Class 3B and Class 4 lasers and IPL were registered under the Care Standards Act 2000: with the Healthcare Commission, then from 2009 the Care Quality Commission.
October 2010	That requirement removed for cosmetic use. Licensing became local: London boroughs, Nottinghamshire and some other councils.
2022	Health and Care Act 2022, section 180: a power to license people and premises for cosmetic procedures, including the application of light.
September 2023	Consultation: procedures sorted into green, amber and red by risk.
7 August 2025	Government response: highest-risk procedures into CQC oversight; council licensing for lower-risk procedures; age restrictions. Final lists not published.

Check gov.uk: the next announcement may say where ablative lasers such as CO_2 sit.

Check gov.uk: the next announcement may say where laser and IPL sit.

Scotland, Wales and Northern Ireland are stricter

Nation	Requirement
Scotland	An independent clinic, meaning one where the services are provided by a doctor, dentist, nurse, midwife, pharmacist, pharmacy technician or dental care professional, must register with Healthcare Improvement Scotland and meet the Health and Social Care Standards. A clinic run by a practitioner who is not one of those is not an independent clinic, and from 6 September 2027 needs a council licence instead (below).
Wales	Under the Independent Health Care (Wales) Regulations 2011, treatment using a Class 3B or Class 4 laser or an intense light source makes the premises an independent hospital, which must register with Healthcare Inspectorate Wales. Treatment protocols must be written by an Expert Medical Practitioner, and safety advice must come from a certificated Laser Protection Adviser.
Northern Ireland	Under the Independent Health Care Regulations (Northern Ireland) 2005, the same treatments make the premises an independent hospital, which must register with RQIA. The minimum care standards require both a Laser Protection Adviser and an Expert Medical Practitioner.

If you are moving your business across a border, ask that nation's regulator before you move. A registration in England does not travel with you.

Scotland: the two new laws

The Civic Government (Scotland) Act 1982 (Licensing of Non-surgical Procedures) Order 2026 (SSI 2026/87) came into force on 13 February 2026. From **6 September 2027**, providing a procedure listed in its Schedule 1 needs a licence from the council. If you apply before that date, you can keep working while your application is decided.

The list includes **"non-ablative laser and light treatment"**: "a procedure in which light treatment or laser treatment is used to destroy or stimulate skin tissue or fat cells in a specific area of the body but which does not remove any of the epidermis". Fractional CO_2 removes tiny columns of skin, epidermis included, so it is not non-ablative in the sense of this Order. It falls under the 2026 Act below instead.

The Order does not apply in "excepted premises", which include an independent hospital registered with HIS, and an independent clinic registered with HIS whose services are provided or managed by a doctor, dentist, or a nurse, midwife or pharmacist independent prescriber. Licence conditions include a notice that no procedure will be given to anyone under 18, set hygiene facilities in the treatment room, and written information for clients on the process, the risks and the aftercare of each procedure.

The Non-surgical Procedures and Functions of Medical Reviewers (Scotland) Act 2026 (asp 13) received Royal Assent on 12 May 2026. When fully in force, it makes it an offence to provide a procedure in its Schedule 1 to anyone under 18, or anywhere other than "permitted premises", such as an HIS-registered independent clinic led by a doctor, dentist, or nurse, midwife or pharmacist independent prescriber. Its Schedule 1 includes ablative laser treatment (a laser used "to remove one or more layers of skin"), and any procedure listed in the 2026 Order that is carried out with a prescription-only anaesthetic or on an intimate area. Fractional CO_2 resurfacing is ablative laser treatment, so it is on that list. When the offences are in force, it may be provided only in permitted premises, and never to anyone under 18. When checked on legislation.gov.uk in October 2026, the Act's definitions and Schedule 1 had come into force on 22 July 2026, but the under-18 offence (section 2) and the premises offence (section 3) were not yet in force.

Scotland: the two new laws

Scotland: the two new laws, as checked in October 2026

13 February 2026	Licensing Order (SSI 2026/87) in force. Its list includes "non-ablative laser and light treatment".
12 May 2026	Non-surgical Procedures and Functions of Medical Reviewers (Scotland) Act 2026 receives Royal Assent. Its Schedule 1 lists "ablative laser treatment".
22 July 2026	The Act's definitions and Schedule 1 in force. Its offences (under 18s, and outside permitted premises) were not yet in force when checked.
Not before 6 September 2027	The premises offence cannot start before this date. The same date applies to council licences for non-ablative laser and light treatment.

Fractional CO_2 removes columns of skin: it is ablative laser treatment. In Scotland, plan for permitted premises only.

If you work in Scotland, fractional CO_2 is ablative laser treatment under the 2026 Act. Check what has come into force before you offer it.

The Laser Protection Adviser and the Expert Medical Practitioner

Two roles you will hear about, and which your insurer or your council may require whether or not the law in your area does.

Laser Protection Adviser (LPA). A qualified, certificated person who advises on the safety of your installation: room, controls, signage, eyewear and local rules. An LPA visit produces your local rules and a risk assessment.

Expert Medical Practitioner (EMP). A doctor who writes or approves your treatment protocols.

In Wales and Northern Ireland these are requirements. Elsewhere they are strongly advisable, and many insurers ask for them. Budget for them rather than being surprised by them.

Written & copyright to Carla Cooper-Gale, Skintastic Aesthetic Lasers Ltd, October 2026

Part 5: Your clients, your records and your advertising

Law or code	What it asks of you
UK GDPR and the Data Protection Act 2018 (both amended by the Data (Use and Access) Act 2025)	Your consultation forms, medical histories and clinical photographs are health data, which is special category data under Article 9. It needs a lawful basis and a separate Article 9 condition, it must be kept securely, and it must not be kept longer than you need it. Clients have the right to ask for a copy.
Your ICO registration	Most businesses processing personal data must pay the data protection fee and be on the ICO register. Check yours is current, in the right company name and at the right address.
Equality Act 2010	You must not discriminate, and you must make reasonable adjustments for disabled clients. Pregnancy is a protected characteristic: declining to treat a pregnant client on a genuine safety ground is lawful, but be clear that the reason is safety, and record it.
Consumer Rights Act 2015	A service must be carried out with reasonable care and skill and, where nothing is agreed, within a reasonable time and for a reasonable price. Prepaid courses of treatment are a contract, and clients have rights if you do not deliver.

Law or code	What it asks of you
Digital Markets, Competition and Consumers Act 2024	Since 6 April 2025 the unfair commercial practices rules sit here, replacing the Consumer Protection from Unfair Trading Regulations 2008. Misleading actions and misleading omissions that would make the average consumer take a different decision are unlawful. Schedule 20 lists practices that are always unfair, including submitting or commissioning fake consumer reviews. The CMA can enforce these rules directly.
The Consumer Contracts (Information, Cancellation and Additional Charges) Regulations 2013 (SI 2013/3134)	Where a client books away from your premises or online, cancellation rights and pre-contract information requirements apply.
The CAP Code, enforced by the ASA	Not law, but it governs everything you publish. Objective claims must be backed by evidence held before publication, and the burden of proof is on you. Rulings are published with your business name on them.

Key fact: age

Clinic policy in this manual is 18 and over. Note the direction of travel. The Botulinum Toxin and Cosmetic Fillers (Children) Act 2021 made it an offence in England to give those treatments to under-18s for cosmetic purposes; laser and IPL are not covered by that Act. The government has said it will introduce age restrictions in England. In Scotland, a licence under the 2026 Order carries a condition that no procedure is given to anyone under 18.

The commonest gaps we see

- **ICO registration** in the wrong company name, or at an address you left years ago. Check it today. If you run two companies and one of them holds the student or client records, that company may need its own registration.
- **No written optical radiation risk assessment.** Regulation 3 of the 2010 Regulations is not optional, and it is the first thing anyone will ask for.
- **Clinical photographs in a personal phone gallery.** That is special category data on a device that may back up to a personal cloud account and be seen by family.
- **Insurance bought before the training, and never re-checked.** Tell your insurer every time you add a device or a treatment.

Part 6: Your compliance checklist

Work through this before you treat a paying client, and again every year. Tick and date each one.

Item	Done
The device	
The machine carries a valid UKCA or CE mark and I hold the declaration of conformity	☐
I hold the manufacturer's instructions for use, in English, where I work	☐
I know whether it is a medical device and, if it is, who the UK Responsible Person is and how to contact them	☐
Servicing and calibration are up to date and recorded	☐
Electrical equipment is checked and tested at the interval my risk assessment sets	☐
Health and safety	
Written artificial optical radiation risk assessment, reviewed in the last 12 months	☐
Local rules for the treatment room, displayed	☐
Controlled treatment area: door signage, window covering, no reflective items, restricted access	☐
Eye protection of the correct optical density for every wavelength I use, for me, the client and any observer, checked for damage	☐
General risk assessment, fire risk assessment and COSHH assessments in place	☐
Accident book, and I know what RIDDOR would require me to report	☐
Permission to operate	
I have asked my own local authority what licence or registration they require, and I have it in writing	☐
If I am in a London borough or in Nottinghamshire, I hold the special treatment licence	☐
If I am in Wales or Northern Ireland, I am registered with HIW or RQIA	☐
If I am in Scotland, I have checked whether my premises will be permitted premises for ablative laser treatment under the 2026 Act	☐

Item	Done
Laser Protection Adviser appointed, or I have recorded a reasoned decision not to	☐
Expert Medical Practitioner protocols in place, or I have recorded a reasoned decision not to	☐
Public liability and professional indemnity insurance covering this specific treatment and this specific device	☐
Clients and records	
ICO data protection fee paid, in the correct company name and at the current address	☐
Written consultation, medical history and consent for every client, signed and dated	☐
Records stored securely, with a written retention period	☐
Separate written consent for clinical photographs, and separate consent again for any marketing use	☐
A written complaints procedure I can hand to a client	☐
What I say	
Every objective claim on my website, social media and price list is one I can evidence	☐
No guaranteed results, no percentages I have not measured, no surgical comparisons	☐
Before and after photographs are genuine, mine, unedited, and used with written consent	☐
Testimonials and reviews are real and held on file	☐

Completed by: _____ **Date:** _____

Next review due: _____

> **Key fact: keep the evidence, not just the knowledge**
>
> Every item in this checklist is something someone may one day ask you to produce: an insurer after a claim, a council officer on an inspection, a solicitor acting for a client, or us as your supplier after an incident. Keep them together, in one folder, in date order. A practitioner who can hand over the folder is in a completely different position from one who cannot.

Part 7: Where to check the current position

For	Go to
The wording of any Act or regulation named here	legislation.gov.uk
Optical radiation, risk assessment and general workplace safety	hse.gov.uk
Medical devices, UKCA marking, the UK Responsible Person, and reporting an adverse incident	gov.uk/mhra, and yellowcard.mhra.gov.uk to report
Reporting an injury or dangerous occurrence under RIDDOR, and what counts as reportable	hse.gov.uk/riddor
Whether you need a licence where you are	Your own council's licensing team. Ask for the answer in writing and keep it.
Registration in Scotland, Wales or Northern Ireland	healthcareimprovementscotland.scot, hiw.org.uk, rqia.org.uk
Scotland's licensing order and 2026 Act	legislation.gov.uk (SSI 2026/87 and asp 2026/13), and your council
The licensing scheme for non-surgical cosmetic procedures in England	gov.uk (search "licensing of non-surgical cosmetic procedures")

Written & copyright to Carla Cooper-Gale, Skintastic Aesthetic Lasers Ltd, October 2026

For	Go to
Data protection, the fee, and what to do after a breach	ico.org.uk
What you may and may not say in advertising	asa.org.uk, which has a free copy advice service
Anything about a device Skintastic supplied	Ring us on 02381 946394. As your supplier, we would far rather hear from you early.

Check your understanding

You complete these in your own words. Your trainer will go through your answers with you.

1. Which regulations deal specifically with exposure to light from lasers at work, and what four duties do they place on an employer?

2. Is CQC registration required at present for cosmetic fractional CO_2 treatment by a practitioner who is not a healthcare professional in England, and what has the government said will change? Explain your answer.

3. You are opening in a London borough. What licence do you need, and under which Act?

4. Your friend is opening a laser clinic in Cardiff. What does she need that you, in England, do not?

5. What is a UK Responsible Person, and what must they do when a user reports a suspected incident?

Check your understanding (continued)

6. How do you report an adverse incident involving a medical device, and what must you not do with the device?

7. Why are your consultation records and clinical photographs treated differently from an ordinary client list?

8. Which law now covers unfair commercial practices, when did it take effect, and name one practice it specifically bans.

9. You plan to offer fractional CO_2 treatment from a beauty salon in Glasgow. Which Scottish law lists it, under which entry, and what will that law mean for where you may provide it once its offences are in force?

Notes on the legislation

Assessment Knowledge review and practical competency

This part of the manual checks your learning. It has three parts:

- **Part 1:** short-answer questions for each section.
- **Part 2:** multiple-choice questions.
- **Part 3:** practical competency checklists for your three supervised treatments.

Key fact: how you are assessed

This manual is your workbook. Answer Part 1 and Part 2 as part of your online study, in this workbook, before the practical day, and bring it with you. Your trainer marks your written work on the practical day. The pass mark for the multiple-choice questions is 100%: if you get a question wrong, your trainer will go through it with you and you answer it again. The short answers are marked against the trainer's marking guide, and any answer that is not yet complete is talked through and corrected on the day.

On the practical half day you complete three practical assessments on three models (Part 3). Your certificate is issued on the practical day, once your written work has been marked and passed and all three practical assessments are passed.

Remember

Use the manual to help you. The aim is understanding, not memorising. Write in your own words.

How the assessment maps to the learning outcomes

Every learning outcome in this manual is assessed. The outcomes below are copied from the blue box at the start of each section. Under each section you will find the questions and practical checklists that assess them.

Section 1

Learning outcomes: 1. Explain in plain words what a laser is. **2.** Describe what a CO_2 laser is, including its wavelength of 10,600 nm. **3.** Outline the history of the CO_2 laser, from 1964 to modern fractional treatment. **4.** Explain the difference between ablative and non-ablative lasers. **5.** List what fractional CO_2 is designed to help with, and what it cannot or should not treat. **6.** Compare fractional CO_2 with other common skin lasers and light devices. **7.** Describe the MED-870+ as the teaching device for this course.

Assessed by: Part 1, questions 1 to 3; Part 2, questions 1 and 24

Section 2

Learning outcomes: 1. Explain light and wavelength simply, and where 10,600 nm sits in the spectrum. **2.** Explain why the CO_2 laser is absorbed by water, and why that matters. **3.** Explain why darker skin carries a higher risk of post-inflammatory hyperpigmentation (PIH), even though the laser does not target melanin. **4.** Describe the three zones made by a single laser spot. **5.** Explain fractional and full-field treatment, and why fractional heals faster. **6.** Describe, step by step, how the skin heals and makes new collagen. **7.** Define each laser setting and say what happens when you turn it up. **8.** Work out point energy and fluence using simple sums.

Assessed by: Part 1, questions 4 to 7; Part 2, questions 1, 2, 4, 5 and 6

Section 3

Learning outcomes: 1. Name the three layers of the skin and say what each one does. **2.** Explain why thin skin (neck, chest, hands) needs gentler settings. **3.** Describe how skin heals after fractional CO_2, with a realistic timescale. **4.** Recognise the main types of scar and stretch mark, and know which need caution or referral. **5.** Use the Fitzpatrick scale to decide a client's skin type and adapt your approach. **6.** Explain post-inflammatory hyperpigmentation (PIH) and hypopigmentation, and recognise skin conditions that affect treatment.

Assessed by: Part 1, questions 8 to 11

Section 4

Learning outcomes: 1. Name the main parts of the MED-870+ and say what each part does. **2.** Explain the regulatory status of the machine using the correct wording. **3.** Explain what each treatment head and each spacer is for, and choose the right one for a treatment. **4.** Find your way around the touchscreen and explain what each setting means. **5.** Choose a scan shape and size to suit the area being treated. **6.** Set the machine up, switch it on, check it and make it safe again, step by step. **7.** Move, store, clean and look after the machine correctly. **8.** Recognise common faults, know what you may safely check, and know when to stop and call an authorised engineer. **9.** Keep a maintenance record and a fault and repair log.

Assessed by: Part 1, questions 12 to 15; Part 2, questions 3, 7 and 24; Practical assessments 1 to 3 (machine set-up, heads, shut-down)

Section 5

Learning outcomes: 1. Explain the laser classes in plain English and say why a CO_2 laser is Class 4, the most hazardous class. **2.** Describe the main hazards of a CO_2 laser: eyes, skin, fire, plume (smoke), reflections and electricity. **3.** Explain what the nominal ocular hazard distance (NOHD) means and why everyone in the room still wears eyewear. **4.** Read an EN 207 eyewear marking and check eyewear before each use. **5.** Set up and run a safe Laser Controlled Area. **6.** Describe the roles of the Laser Protection Adviser (LPA), the Laser Protection Supervisor (LPS) and authorised users, and what the Local Rules and treatment register are for. **7.** Use a risk assessment to control the hazards of CO_2 laser treatment. **8.** Respond correctly to an accident or incident, including first aid for eye exposure and burns, and record it.

Assessed by: Part 1, questions 16 to 20; Part 2, questions 8, 9, 10 and 11; Practical assessments 1 to 3 (Laser Controlled Area, eyewear, plume)

Section 6

Learning outcomes: 1. Describe a suitable client and set realistic, honest expectations. **2.** Say what fractional CO_2 may help, and what it cannot or should not treat. **3.** Carry out a full consultation, step by step, using the client forms. **4.** Recognise absolute and relative contraindications and reasons to defer. **5.** Know which medicines to ask about and when to refer. **6.** Obtain valid informed consent, take standardised photographs and keep proper records.

Assessed by: Part 1, questions 21 to 24; Part 2, questions 12, 13 and 17; Practical assessments 1 to 3 (consultation checks); model sets 1 to 3

Section 7

Learning outcomes: 1. Read the treatment settings on the MED-870+ screen and explain what each one does. **2.** Work out the energy per spot from the power and the duration. **3.** Apply the golden rules for choosing and changing settings safely. **4.** Use the manufacturer's reference settings to choose a safe starting point for each treatment. **5.** Explain how to reduce settings for thin skin and for Fitzpatrick skin types IV to VI. **6.** Recognise the clinical endpoints you should see, and the warning signs that mean you must stop. **7.** Carry out a thermal card test and a patch test, step by step. **8.** Record settings fully and accurately in the treatment record.

Assessed by: Part 1, questions 25 to 27; Part 2, questions 6 and 14; Practical assessments 1 to 3 (thermal card, settings, patch test, record)

Section 8

Learning outcomes: 1. Follow a complete fractional CO_2 treatment session in the correct order, from the day before to shutting the machine down. **2.** Prepare the client, the room and the machine safely, including fire precautions, eye protection and smoke evacuation. **3.** Hold and move the handpiece correctly, place scans edge to edge without overlapping, and work across the face in a set order. **4.** Recognise the expected skin response (the clinical endpoint) and the warning signs that mean you must stop. **5.** Describe the treatment protocols for skin rejuvenation, fine lines, acne scars, other scars, stretch marks and benign lesion removal, and explain why treatment around the eyes is not covered by this course. **6.** Explain why a lesion must be diagnosed as benign by a doctor before you remove it. **7.** Act quickly and correctly if something goes wrong during treatment, and record and report it.

Assessed by: Part 1, questions 28 to 32; Part 2, questions 15, 16 and 17; Practical assessments 1 to 3 (technique, endpoint, lesion removal)

Section 9

Learning outcomes: 1. Plan how many sessions a client may need, and how long to leave between them. **2.** Explain why the skin needs time to heal and remodel between treatments. **3.** Describe what published clinical studies show about fractional CO_2 for photoageing, acne scars, other scars and stretch marks. **4.** Describe how often side effects happen, according to the research. **5.** Read a clinical study sensibly, and explain its limits honestly to a client.

Assessed by: Part 1, questions 33 to 35; Part 2, question 21

Section 10

Learning outcomes: 1. Explain to a client, in plain words, what to expect day by day after fractional CO_2 laser treatment. **2.** Give clear aftercare instructions, both spoken and written. **3.** Tell the difference between normal healing and warning signs. **4.** Recognise the main complications of CO_2 laser treatment, explain why they happen and say what to do. **5.** Manage a complication within your scope of practice, including when and how to refer. **6.** Stay within the law on prescription-only medicines. **7.** Plan follow-up reviews after treatment.

Assessed by: Part 1, questions 36 to 39; Part 2, questions 18, 19 and 20; Practical assessments 1 to 3 (aftercare given); model sets 1 to 3

Section 11

Learning outcomes: 1. Name the main UK laws that apply when you use a CO_2 laser at work. **2.** Explain what Local Rules are, and the roles of the Laser Protection Adviser (LPA) and Laser Protection Supervisor (LPS). **3.** Describe how laser clinics are registered or licensed in England, Scotland, Wales and Northern Ireland, and how this is changing. **4.** Explain what informed consent means in law. **5.** Advertise your treatments within the CAP Code. **6.** Report adverse incidents and keep records correctly.

Assessed by: Part 1, questions 40 to 43; Part 2, questions 22 and 23

Appendix A

Learning outcomes: 1. Name the health and safety laws that apply to a laser treatment room, and state the four duties in the Control of Artificial Optical Radiation at Work Regulations 2010. **2.** Explain what the medical device rules ask of you as a user, including the UK Responsible Person and how to report an adverse incident. **3.** Explain how licensing and registration of laser treatment differ between England (including London), Scotland, Wales and Northern Ireland, as they stood in October 2026. **4.** Describe the data protection, equality, consumer and advertising duties you owe your clients. **5.** Use the compliance checklist to check your own business, and know where to find the current position.

Assessed by: Part 1, questions 40 to 43; Part 2, questions 22 and 23; Appendix A, Check your understanding questions 1 to 9

Part 1: Short-answer questions

Section 1: What a CO_2 laser is

1. What wavelength does a CO_2 laser emit, and is this light visible?

2. Explain the difference between ablative and non-ablative treatment in your own words.

3. List four things a fractional CO_2 laser can be used for, and three things it should not be used for.

Section 2: How it works on the skin

4. What does the CO_2 wavelength target in the skin, and why does this matter?

5. Describe the three zones created around a single laser spot.

6. Why does fractional treatment heal faster than full-field resurfacing?

7. Work out the energy per spot when the power is 25 W and the pulse duration is 0.6 ms. Show your working.

Section 3: The skin, healing and skin types

8. Name the three main layers of the skin and one important structure in each.

9. Describe the three phases of wound healing and roughly how long each lasts.

10. Why do Fitzpatrick skin types IV to VI need a more conservative approach with CO_2, even though the laser does not target melanin?

11. Name three types of atrophic acne scar.

Section 4: Your teaching device

12. Name the three spacers on the MED-870+ fractional head and what each one is used for.

13. What is the UltraPulse surgical head used for, and how is it fitted?

14. What should you do if the aiming beam works but there is no laser output?

15. List three daily checks you would carry out before treating.

Section 5: Laser safety

16. Which part of the eye is injured by CO_2 laser light?

17. What is the NOHD of the MED-870+, and why must everyone in the Laser Controlled Area still wear eyewear?

18. Who specifies the eyewear you must use, and where is this written down?

19. List four fire precautions you must take when using a CO_2 laser.

20. Why must you use a smoke evacuator, and where should the nozzle be held?

Section 6: Suitability and consultation

21. List five absolute contraindications to fractional CO_2 treatment.

22. What would you do if you noticed a mole that was changing in size and colour in the treatment area?

23. What must a client understand for their consent to be informed?

24. Why must you ask every client about a history of cold sores?

Section 7: Settings

25. State the golden rules for choosing settings as a new CO_2 user.

26. Describe how to carry out a thermal card test, and what a good result looks like.

27. Describe how you would carry out and review a patch test on a client with Fitzpatrick type IV skin.

Section 8: Step-by-step treatment

28. Why must the skin be completely dry, and any alcohol-based product fully evaporated, before you fire the laser?

29. Describe the correct handpiece angle and contact.

30. How do you place scans across the face, and what must you avoid?

31. Why must a lesion be confirmed as benign by a doctor before UltraPulse removal?

32. List the immediate actions if a client suffers a burn during treatment.

Section 9: Sessions and evidence

33. What is a typical interval between sessions for light rejuvenation, and for scar treatment?

34. Give three signs that you should leave a longer gap before the next session.

35. Why should the Manstein 2004 study not be quoted as evidence for CO_2 results?

Section 10: Aftercare and complications

36. List five aftercare instructions you would give every client.

37. List four normal reactions and four warning signs after treatment.

38. What is post-inflammatory hyperpigmentation, and how can you reduce the risk?

39. A client may need an antiviral tablet or steroid cream. What should you do?

Section 11: The law and professional practice

40. What are Local Rules, and who writes them?

41. Explain the role of the Laser Protection Adviser and the Laser Protection Supervisor.

42. What must you never say in advertising a CO_2 treatment?

43. How would you report an adverse incident involving a medical device?

Part 2: Multiple-choice questions

Tick one answer for each question.

1. The CO_2 laser wavelength is:

- ☐ A. 635 nm
- ☐ B. 755 nm
- ☐ C. 1,064 nm
- ☐ D. 10,600 nm

2. The main target (chromophore) of the CO_2 laser in skin is:

- ☐ A. Water
- ☐ B. Melanin
- ☐ C. Haemoglobin
- ☐ D. Tattoo ink

3. The MED-870+ aiming beam is:

- ☐ A. Invisible infrared
- ☐ B. Green light at 532 nm
- ☐ C. Ultraviolet
- ☐ D. Red visible light at 635 nm

4. Fractional treatment means:

- ☐ A. Tiny columns are treated, leaving untreated skin in between
- ☐ B. The whole skin surface is removed
- ☐ C. Only the dermis is heated
- ☐ D. The laser is used at half power

5. Making the dot spacing tighter (smaller) will:

- ☐ A. Reduce coverage and effect
- ☐ B. Make no difference
- ☐ C. Increase coverage, effect and downtime
- ☐ D. Only change the scan shape

6. On the MED-870+, 20 W for 0.4 ms gives an energy per spot of:

- ☐ A. 0.8 mJ
- ☐ B. 8 mJ
- ☐ C. 20 mJ
- ☐ D. 80 mJ

7. The Ultra Fractional tip on the MED-870+ fractional head is used for:

- ☐ A. Non-ablative treatment
- ☐ B. Micro-ablative treatment
- ☐ C. Lesion cutting
- ☐ D. Deep ablative treatment

8. CO_2 laser light injures which part of the eye?

- ☐ A. The cornea
- ☐ B. The retina
- ☐ C. The optic nerve
- ☐ D. The lens only

9. Laser safety eyewear for your clinic is specified by:

- ☐ A. The client
- ☐ B. Your Laser Protection Adviser in your Local Rules
- ☐ C. The supplier's website
- ☐ D. Any glasses marked OD 4

10. Which fire extinguisher is suitable for an electrical fire in a laser room?

- ☐ A. Water
- ☐ B. Foam
- ☐ C. Wet chemical
- ☐ D. CO_2 or powder

11. The smoke evacuator nozzle should be held:

- ☐ A. Close to the treatment site
- ☐ B. On the other side of the room
- ☐ C. Above the operator's head
- ☐ D. Only switched on after treatment

12. Which client should **not** be treated?

- ☐ A. A client with Fitzpatrick type II skin and fine lines
- ☐ B. A client with mild acne scarring
- ☐ C. A pregnant client
- ☐ D. A client with sun damage who has followed pre-care

13. A client has a history of cold sores. You should:

- ☐ A. Prescribe antiviral tablets
- ☐ B. Ignore it
- ☐ C. Treat the lips first
- ☐ D. Refer them to their GP or a prescriber before treatment

14. Before full treatment, a patch test on darker skin should be:

- ☐ A. Reviewed after a longer wait
- ☐ B. Skipped
- ☐ C. Done on the day of treatment only
- ☐ D. Done on the inside of the wrist

15. The correct handpiece position is:

- ☐ A. Tilted at 45 degrees
- ☐ B. Perpendicular, with the spacer in light, even contact
- ☐ C. Pressed firmly into the skin
- ☐ D. Held 10 cm above the skin

16. Scans should be placed:

- ☐ A. Overlapping by half
- ☐ B. Randomly
- ☐ C. Edge to edge, without overlapping
- ☐ D. Only once over the centre of the face

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17. A suspicious mole is found in the treatment area. You should:

☐ A. Remove it with the UltraPulse head

☐ B. Treat around it

☐ C. Cover it with make-up

☐ D. Not treat it, and refer the client to their GP

18. Micro-crusts after fractional CO_2 usually shed within about:

☐ A. 1 day

☐ B. 7 to 15 days

☐ C. 6 weeks

☐ D. 3 months

19. After treatment, clients should use:

☐ A. No sunscreen for a month

☐ B. Broad-spectrum SPF 50 every day from the day after treatment, and avoid the sun

☐ C. A sunbed to even out colour

☐ D. Retinoid cream the next day

20. Which is a warning sign that needs the client to contact the clinic?

☐ A. Increasing pain with spreading redness or pus

☐ B. Mild warmth

☐ C. Tightness

☐ D. Light flaking

21. A typical interval between scar treatments is:

- ☐ A. 1 week
- ☐ B. 2 weeks
- ☐ C. 2 to 3 months
- ☐ D. 2 years

22. Which wording is acceptable in an advert?

- ☐ A. Guaranteed results
- ☐ B. Pain-free with no downtime
- ☐ C. Designed to improve the appearance of acne scarring
- ☐ D. Permanent removal of all wrinkles

23. The MED-870+ is described correctly as:

- ☐ A. MHRA approved
- ☐ B. Registered with the MHRA
- ☐ C. Licensed by the MHRA
- ☐ D. Certified by the MHRA

24. Which mode of the MED-870+ is **not** covered by this course?

- ☐ A. Fractional
- ☐ B. UltraPulse
- ☐ C. Gynae and Vulva
- ☐ D. Single

Score: _____

Trainer signature: _____

Practical assessment 1: Fractional skin rejuvenation

Student name: _____ **Model 1 initials:** _ **Date:** _____

The student:	Competent	Not yet
Checks the consultation, medical history, contraindications and signed consent		
Patch tests the model on the training day, records the result, and checks the model disclaimer is signed and pre-care has been followed		
Sets up the Laser Controlled Area: sign, door, blinds, key, emergency stop, fire precautions		
Checks and wears the eyewear specified in the Local Rules; protects the model's eyes		
Switches the machine on correctly, waits for the self-test and selects the correct mode		
Fits the correct head and spacer for the treatment		
Takes standardised before photographs with consent		
Cleanses the skin, removes anaesthetic fully and makes sure the skin is completely dry		
Switches the smoke evacuator on and holds the nozzle close to the site		
Test-fires on a thermal card and checks the pattern		
Chooses suitable starting settings from the reference table and explains the choice		
Holds the head perpendicular with the spacer in light, even contact		
Places scans edge to edge, without overlap, in a set order across the face		
Reduces settings appropriately over thinner areas		
Observes the skin response and stops at the correct endpoint		
Gives immediate aftercare and clear verbal and written aftercare advice		
Completes the treatment record with all settings in full		
Cleans the head, spacer and equipment, and shuts the machine down safely, removing the key		
Communicates clearly and checks the model's comfort throughout		

Assessor comments:

Outcome: ☐ Competent ☐ Not yet competent, further practice needed

Assessor signature: _____

Student signature: _____

Practical assessment 2: Benign lesion removal with the UltraPulse head

Student name: _____ **Model 2 initials:** _ **Date:** _____

The student:	Competent	Not yet
Checks the consultation, medical history, contraindications and signed consent		
Patch tests the model on the training day, records the result, and checks the model disclaimer is signed and pre-care has been followed		
Sets up the Laser Controlled Area: sign, door, blinds, key, emergency stop, fire precautions		
Checks and wears the eyewear specified in the Local Rules; protects the model's eyes		
Switches the machine on correctly, waits for the self-test and selects the correct mode		
Fits the correct head and spacer for the treatment		
Takes standardised before photographs with consent		
Cleanses the skin, removes anaesthetic fully and makes sure the skin is completely dry		
Switches the smoke evacuator on and holds the nozzle close to the site		
Test-fires on a thermal card and checks the pattern		
Confirms the doctor's written confirmation that the lesion is benign		
Fits the UltraPulse head and selects conservative Pulse or Single settings		
Removes the lesion layer by layer, wiping with saline-moistened gauze between passes		
Stops when the lesion is level with the surrounding skin, without going too deep		
Gives wound care advice for the treated lesion		
Observes the skin response and stops at the correct endpoint		
Gives immediate aftercare and clear verbal and written aftercare advice		
Completes the treatment record with all settings in full		
Cleans the head, spacer and equipment, and shuts the machine down safely, removing the key		
Communicates clearly and checks the model's comfort throughout		

Assessor comments:

Outcome: ☐ Competent ☐ Not yet competent, further practice needed

Assessor signature: _____

Student signature: _____

Practical assessment 3: Fractional treatment of scarring or texture (second fractional model)

Student name: _____ **Model 3 initials:** _ **Date:** _____

The student:	Competent	Not yet
Checks the consultation, medical history, contraindications and signed consent		
Patch tests the model on the training day, records the result, and checks the model disclaimer is signed and pre-care has been followed		
Sets up the Laser Controlled Area: sign, door, blinds, key, emergency stop, fire precautions		
Checks and wears the eyewear specified in the Local Rules; protects the model's eyes		
Switches the machine on correctly, waits for the self-test and selects the correct mode		
Fits the correct head and spacer for the treatment		
Takes standardised before photographs with consent		
Cleanses the skin, removes anaesthetic fully and makes sure the skin is completely dry		
Switches the smoke evacuator on and holds the nozzle close to the site		
Test-fires on a thermal card and checks the pattern		
Identifies and records the scar type or texture concern, and marks the treatment area		
Chooses the spacer (Micro-ablative or Ultra Fractional tip) and starting settings from the treatment card for the concern and skin type, and explains the choice		
Places scans edge to edge, without gaps or overlap, keeping to the marked area and never stacking over a scar		
Wipes carbonised residue away with saline-moistened gauze where the protocol says so		
Recognises the correct endpoint for the concern, watches for signs of over-treatment, and adjusts or stops as needed		
Does not treat inside the bony eye socket rim, and keeps well outside the rim on any facial work		
Gives immediate aftercare and clear verbal and written aftercare advice		

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The student:	Competent	Not yet
Completes the treatment record with all settings in full		
Cleans the head, spacer and equipment, and shuts the machine down safely, removing the key		
Communicates clearly and checks the model's comfort throughout		

Assessor comments:

Outcome: ☐ Competent ☐ Not yet competent, further practice needed

Assessor signature: _____

Student signature: _____

Overall assessor feedback and sign-off

Requirement	Completed	Date
Knowledge review: short-answer questions		
Knowledge review: multiple-choice questions (100%)		
Practical assessment 1: fractional skin rejuvenation		
Practical assessment 2: UltraPulse benign lesion removal		
Practical assessment 3: fractional treatment of scarring or texture		

Strengths:

Areas to develop:

Action plan and further practice:

Assessor signature: _____

Student signature: _____

Date: _____

Forms Client forms, model sets and records

How to use these forms

Each form starts on a new page, so it can be copied on its own.

- **Client paperwork**: blank master forms for use in practice, including Carla's skin typing and medical history forms in their standard one-page layout, and an adverse incident report. You may photocopy them for your own clinic. Add your clinic name and contact details.
- **Model sets**: one set for each of your three practical assessments. Each set has five forms: skin typing, medical history and medication, consent and model disclaimer, patch test and treatment record, and client aftercare. Skintastic provides all three models, including the model with a benign lesion confirmed as harmless by a doctor.
- **Completion pages**: feedback forms, your CPD reflective record, the record of course completion and the certificate details.

The order of client paperwork

1. **Skin typing** (Fitzpatrick skin typing, taking tanning into account), checked against your own assessment.
2. **Medical history and medication**, then the patch test record.
3. **Consent** for the treatment planned, plus the photograph consent form.
4. **Treatment record** during the session, then the **aftercare** leaflet.
5. **Model disclaimer** (training models only): signed after the medical history and before the observation, with the model initialling each statement. Training models are patch tested and treated on the same training day, and initial a statement accepting this.

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Key fact: keep records safe

Store completed forms securely, limit who can see them, and follow UK GDPR and the Data Protection Act 2018. Keep treatment records, consent forms and photographs securely for at least 8 years after the client's last treatment, or longer if your insurer requires it. Then destroy them securely. These forms are templates: check them against your device manual, your Laser Protection Adviser's Local Rules and your insurer before use.

Fitzpatrick Skin Typing (taking Tanning into account)

CLIENT NAME _____ **DATE** _____

My ethnic origin is closest to: (Tick one)	I. Very fair (Celtic and Scandinavian)	☐
	II. Fair-skinned Caucasians with light hair and light eyes	☐
	III. Pale-skinned Caucasians with dark hair and dark eyes	☐
	IV. Olive-skinned (Mediterranean, some Asian, some Hispanic)	☐
	V. Dark-skinned (Middle Eastern, Hispanic, Asians, some Africans)	☐
	VI. Very dark-skinned (African)	☐

Please answer the following questions by circling the number which best describes you. We will total the score during the consultation.

My eye colour is:	Light blue	0
	Blue/green	1
	Green/grey/golden	2
	Hazel/light brown	3
	Brown	4
My natural hair colour at age 18 was:	Red	0
	Blonde	1
	Light brown	2
	Dark brown	3
	Black	4
The colour of my skin that is not normally exposed to sun is:	Pink to reddish	0
	Very pale	1
	Pale with a beige tint	2
	Light brown	3
	Medium to dark brown	4
	Dark brown-black	6
If I go out into strong sunlight for an hour or so without sunscreen and have not been out in the sun for weeks, my skin will:	Burn, blister and peel	0
	Burn, then when the burn resolves there is little or no colour change	1
	Burn, but then turns to tan in a few days	2
	Get pink, but then turns to tan quickly	3
	Just tan	4
	Just gets darker	5
	My skin colour is so dark I can't tell	6
When was the last time the area to be treated was exposed to strong sunlight or UV tanning booths?	Longer than one month ago	0
	Within the past month	1
	Within the past two weeks	3
	Within the past week	4

Total Score: _____

If your score is:	Your skin type is:
0 - 3	I
4 - 7	II
8 - 11	III
12 - 15	IV
16 - 19	V
20 - 24	VI

IMPORTANT:
a) Please note that if you have used a Melanin stimulating injection that you will have to cease this therapy and wait until your skin returns to it's normal colour before any treatment will be possible.
b) If you have used an artificial tanning cream or spray tan then you will have to wait until this pigment has faded and your natural skin type is evident.

Signature of Client

_____ Date_____

FRACTIONAL CO_2 LASER MEDICAL HISTORY / MEDICATION FORM

Client Name: _____ **Date of Birth:** _____

Address: _____

_____

_____

_____

Please put a check mark next to a past or current medical condition:

Conditions affecting your Immune System

- ____ Systemic Lupus Erythematosus (SLE), "Lupus", or scleroderma
- ____ Severe Rheumatoid Arthritis especially if treated with "Gold Injections" or Methotrexate
- ____ Any other known auto-immune disorder
- ____ Weakened immune system (transplant medicines, long-term steroids, HIV)
- ____ Any active infection

Bleeding Abnormalities

- ____ Haemophilia, Von Willebrand Disease, Thrombocytopenia

Blood Thinning Medication

- ____ Anticoagulants such as Warfarin, Heparin, Clexane Or Dabigatran
- ____ Clopidogrel, or regular or high doses of Aspirin, Ibuprofen, Diclofenac

Skin Conditions

- ____ Prone to Keloid or very thick or raised scarring
- ____ Vitiligo, Psoriasis, Eczema or Dermatitis
- ____ Rosacea, active Acne, a rash or open wound in the area
- ____ Sun, sunbed or tan in the last 4 weeks; fake tan in the last 10 days

Cancer treatment

- ____ Cancer, now or under investigation, or a mole that has changed
- ____ Cancer in the past (date treatment ended):
- ____ Chemotherapy/Radiotherapy for Cancer, Leukaemia, Myeloma or Lymphoma

Skin Treatments and Medicines on the Area

- ____ Laser resurfacing or deep peel on the area in the last 3 months
- ____ Botox or Fillers in the area (date):
- ____ Tattoos or cosmetic tattooing (brows, lips) on or near the area
- ____ Retinoid or exfoliating acid creams in the last 14 days
- ____ Treatment with Ro-Accutane® (Iso Tretinoin) in the last 6 months

Other Conditions

- ____ Currently Pregnant or Breast Feeding
- ____ Trying to conceive
- ____ Cold Sores (ever)
- ____ Epilepsy
- ____ Diabetes
- ____ Heart disease or high blood pressure
- ____ Porphyria or sensitivity to light
- ____ Medicines that make you sensitive to light, or St John's wort
- ____ Implants / Metal Plates/ or Pacemakers
- ____ Surgery on the area (date):
- ____ Other Allergies (including anaesthetic creams or plasters)
- ____ Smoking
- ____ Any current illness or fever

Other Medication

Please list below any medicines or herbal remedies that you are currently taking that are not shown elsewhere on this form:-

_____

_____

_____

_____

_____

Any other Declaration

Please record here any other pertinent information you feel may be relevant to your treatment

_____

_____

_____

_____

_____

Client Signature _____ **Date** _____

Client paperwork. Form 3

Patch test record

Client name: _____ **Date of birth:** _____

Date of patch test: _____ **Practitioner:** _____

Fitzpatrick skin type: _____ **Test site:** _____

Device and serial number: _____ **Head and spacer:** _____

Choose a discreet test site close to the treatment area, with the same skin type and texture. Start with conservative settings. Deliver 1 to 3 test pulses or a small test area. Eyewear as specified by your Laser Protection Adviser (LPA) in your Local Rules.

Setting	Test 1	Test 2	Test 3
Mode			
Tip or spacer			
Power (W)			
Spacing (mm)			
Energy (mJ)			
Duration (ms)			
Scan shape and size			
Passes			

Immediate reaction

Review: check at 24 to 72 hours; for skin types IV to VI, melasma or a history of pigment changes, review again and wait at least 4 weeks before the full treatment

Date of review: _____ **Reviewed by:** _____

Reaction seen	Yes	No	Details
Redness	☐	☐	
Swelling	☐	☐	
Blistering	☐	☐	
Crusting or scabbing	☐	☐	
Darker or lighter patches	☐	☐	
Any other reaction	☐	☐	

Outcome

☐ Suitable to treat at the test settings ☐ Adjust settings and re-test

☐ Not suitable for treatment

Settings agreed for treatment: _____

Repeat the patch test if the skin tone has changed (for example a tan), the client starts a new medicine, a new area or device is used, or 6 months have passed since the last test patch.

Client signature: _____ **Date:** _____

Practitioner signature: _____ **Date:** _____

Client paperwork. Form 4

Informed consent form: fractional CO_2 laser

Client name: _____ **Date of birth:** _____

Area(s) to be treated: _____ **Date:** _____

About the treatment

A fractional CO_2 laser uses invisible infrared light, which is absorbed by the water in the skin. It makes thousands of tiny treated dots (columns) in the skin, leaving untreated skin in between to help healing. The treatment is designed to support skin renewal and collagen production.

You may feel heat and a prickling or stinging sensation. A topical anaesthetic (numbing cream) may be used to make you more comfortable.

Healing and downtime

- Redness, swelling and warmth for the first few days.
- Tiny dark crusts from about day 3, then peeling or flaking that usually sheds in about 7 to 15 days.
- Pinkness that fades gradually over the following weeks.
- Most people need more than one session. Sessions are usually 4 to 6 weeks apart, or 2 to 3 months apart for scars.
- Results build slowly and vary from person to person. No result is promised.

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Possible risks and side effects

Please initial each box to show the risk has been explained to you.

No.	Statement	Initials
1	Redness, swelling, crusting, flaking and peeling, which may last longer than expected.	
2	Darker patches (post-inflammatory hyperpigmentation, PIH), more likely in darker skin and with sun exposure, or lighter patches (hypopigmentation), which may be long-lasting.	
3	Infection, including reactivation of cold sores (herpes simplex).	
4	Blistering, burns and scarring, including raised scars.	
5	Injury to the eyes. Eye protection will be worn by everyone in the room, and I agree to keep mine on until told.	
6	The result may be less than I hoped for, and more than one session may be needed.	

Before and after treatment I agree to

No.	Statement	Initials
7	Avoid sun, sunbeds and fake tan, and use a broad-spectrum SPF 30 or higher every day for at least 4 weeks before treatment. Stop retinoid products and exfoliating acids on the area at least 7 days before treatment (at least 14 days for skin types IV to VI, sensitive skin or deeper settings). Tell the practitioner about any tan, sunburn or new medicines.	
8	Tell the practitioner if I have ever had cold sores. I understand I may be asked to speak to my GP or an independent prescriber before treatment.	
9	Follow the aftercare advice given to me, verbally and in writing, and attend my review appointment.	
10	Keep out of the sun and, from the day after treatment, use a broad-spectrum SPF 50 sunscreen every day for at least 3 months.	

Declaration

I have read this form (or had it read to me), had the chance to ask questions, and my medical history is accurate. I consent to fractional CO_2 laser treatment.

Client signature: _____ **Date:** _____

Practitioner signature: _____ **Date:** _____

Client paperwork. Form 5

Informed consent form: UltraPulse benign lesion removal

Client name: _____ **Date of birth:** _____

Date: _____ **Number of lesions:** _____

The lesion(s) to be treated

No.	Location on the body	Type (for example skin tag)	Size (mm)
1			
2			

Doctor's confirmation that the lesion is benign

Each lesion must be confirmed as benign (not cancerous) by a doctor before treatment. Do not treat without it.

Doctor's name: _____ **Date confirmed:** _____

GMC number: _____ **Practice or hospital:** _____

Diagnosis: _____ **Tissue analysis advised (yes or no):**

GMC register checked (date): _____ **Seen and checked by:** _____

About the treatment and healing

The UltraPulse head of the CO_2 laser removes the growth in very thin layers and seals small blood vessels as it works. The tissue is vaporised, so there is normally nothing left to send for laboratory testing. This is why a doctor must confirm the growth is benign first. A topical anaesthetic suitable for the practitioner's scope of practice may be used.

The treated spot forms a small wound and then a scab. The scab normally falls away on its own within about 2 to 3 weeks, and the redness then fades over several weeks. Deeper or larger growths take longer to heal. More than one session may be needed, and no result is promised.

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Informed consent form: UltraPulse benign lesion removal (continued)

Client name: _____

Possible risks

Please initial each box to show the risk has been explained to you.

No.	Statement	Initials
1	Redness, swelling, minor bleeding, and a scab while the area heals.	
2	Darker patches (PIH) or lighter patches (hypopigmentation) where the lesion was.	
3	Infection, including reactivation of cold sores.	
4	A small dent, mark or scar.	
5	The growth may not be fully removed, or may come back.	
6	Injury to the eyes. Eye protection will be worn by everyone in the room.	

I agree to

No.	Statement	Initials
7	Follow the aftercare advice, keep the area clean, and not pick the scab.	
8	Keep out of the sun and, from the day after treatment, use a broad-spectrum SPF 50 sunscreen every day for at least 3 months.	
9	Return to my doctor if this area, or any other mole or growth, changes, bleeds, itches or grows.	

I have had the chance to ask questions. My medical history is accurate. I give my consent to the laser removal of the lesion(s) listed.

Client signature: _____ **Date:** _____

Practitioner signature: _____ **Date:** _____

Client paperwork. Form 6

Treatment record

Client name: _____ **Date:** _____

Practitioner: _____ **Session number:** _____

Device and serial number: _____ **Fitzpatrick skin type:** _____

Before treatment

Check	Yes	No	Details
Medical history reviewed and updated today	☐	☐	
Consent form signed for this treatment	☐	☐	
Patch test done and reviewed (date in details)	☐	☐	
Before photographs taken (photograph consent signed)	☐	☐	
Laser Controlled Area set up: signs on, door controlled, key held	☐	☐	
Test-fired on a thermal card	☐	☐	

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Settings used

Always follow the manual for the device you are using.

Setting	Area 1	Area 2	Area 3
Mode (Fractional, Single, Continuous)			
Head (fractional or UltraPulse)			
Spacer (Non-ablative, Micro-ablative or Ultra Fractional tip)			
Power (W)			
Spacing (mm)			
Energy (mJ)			
Duration (ms)			
Scan shape			
Scan size (mm)			
Passes			
Clinical endpoint seen			

Safety and comfort

Operator eyewear (as Local Rules): _____

Client eye protection used: _____

☐ Smoke evacuator used ☐ Plume masks worn

Anaesthetic (product, time on, time off): _____

Cooling used: _____

Skin reaction and client comfort

☐ Redness ☐ Swelling ☐ Pinpoint bleeding

☐ Carbonisation (charring) ☐ Blistering ☐ Other

Aftercare

☐ Verbal aftercare given ☐ Written aftercare leaflet given

☐ Clinic contact number given

Products applied after treatment: _____

Next appointment: _____ **Review date:** _____

Adverse events or notes: _____

Practitioner signature: _____ **Date:** _____

Client paperwork. Form 7

Client aftercare leaflet: fractional CO_2 laser

Client name: _____ **Date and area:** _____

Looking after your skin well while it heals supports a good result and lowers the risk of problems.

What is normal

- Days 1 to 2: redness, swelling and warmth, like sunburn.
- Around day 3: tiny dark dots (micro-crusts) and a rough, sandpaper feel.
- Days 3 to 15: peeling, flaking or a bronzed look, then the crusts shed and pink, fresh skin shows.
- Week 2 onwards: redness slowly fades. Results build gradually over the following weeks and months, and vary from person to person.

Please do

- ✔ Use a cool compress (a clean cloth in cool water, never ice straight on the skin) for short spells in the first 48 hours, to ease heat and swelling.
- ✔ On the day of treatment, do not wash the area. Use cool (not iced) compresses and the barrier ointment we give you. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only. Do not rub or scrub. Pat dry with a clean tissue and put a thin layer of barrier ointment back on straight away. Do not pick crusts.
- ✔ Use a plain petroleum jelly (white soft paraffin) ointment with no fragrance and no lanolin, applied thinly and often to keep the skin moist. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it.
- ✔ Let any crusts, scabs or flakes fall off on their own.
- ✔ Keep out of the sun completely and wear a wide-brimmed hat. From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen for sensitive skin over the treated area every morning and reapply when outdoors. Keep this up every day for at least 3 months, and avoid strong sun for 6 months.
- ✔ Drink plenty of water, and go to your review appointment.
- ✔ We will contact you by phone or message 24 to 48 hours after your treatment to check how your skin is healing, and book a review at about 1 to 2 weeks. You also have our contact number to call at any time if you are worried.

Please do not

- ✘ Do not pick, scratch, rub or peel the skin.
- ✘ Do not wear make-up on the area until the skin has fully healed.
- ✘ Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid hot baths and hard exercise that makes you sweat for 5 to 7 days, or longer if advised.
- ✘ Use only your barrier ointment, a gentle cleanser, a plain moisturiser and sunscreen until your skin has fully healed: no crusts, no raw or weeping areas, and no stinging when you apply a plain moisturiser. Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment. Wait at least 6 weeks if you have skin type IV to VI or had deeper settings. If in doubt, ask us first.
- ✘ Do not use sunbeds or sunbathe, and avoid strong sun for 6 months. Do not use fake tan on the area until your practitioner agrees.
- ✘ Wait 3 months before any peel, microneedling or other exfoliating treatment on the area. Do not have other skin treatments, waxing or threading on the area until your practitioner agrees.

Contact the clinic if you notice

- Pain, swelling or redness that gets worse after day 3.
- Yellow or green discharge (pus), or a bad smell.
- Blisters, dark scabs, slow healing, or signs of a cold sore (tingling, small blisters).
- Dark or light patches, or anything else that worries you.

Get urgent medical help

Contact your GP or call NHS 111 straight away if you have a fever, feel unwell, or redness is spreading. Seek urgent help for any eye pain or change in your vision. Call 999 if your face, lips or tongue swell, or you have trouble breathing.

We cannot give prescription medicines (such as antibiotic creams, antiviral tablets or steroids). If you might need one, we will ask you to see your GP or an independent prescriber.

Clinic contact details

Clinic name: _____

Telephone: _____ **Review appointment:** _____

Client paperwork. Form 7 (lesion version)

Client aftercare leaflet: laser removal of a benign lesion

Client name: _____ **Date and area:** _____

Caring for the area well while it heals supports a good result and lowers the risk of problems.

What is normal

- Days 1 to 3: the spot may be red, a little swollen, and may weep slightly. It may feel tight or sting.
- Days 4 to 7: a scab or crust forms. Itching and dryness are common.
- Weeks 2 to 6: the scab falls away on its own, leaving pink new skin that slowly fades. Larger or deeper growths take longer.

Please do

- ✔ Use a cool compress (a clean cloth in cool water, never ice straight on the skin) for short spells in the first 48 hours, to ease heat and swelling.
- ✔ Follow your practitioner's advice about any dressing. On the day of treatment, do not wash the area. Use cool (not iced) compresses and the barrier ointment we give you. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only. Do not rub or scrub. Pat dry with a clean tissue and put a thin layer of barrier ointment back on straight away.
- ✔ Use a plain petroleum jelly (white soft paraffin) ointment with no fragrance and no lanolin, applied thinly and often to keep the skin moist. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it.
- ✔ Let the scab fall off on its own. This lowers the risk of a scar or a mark.
- ✔ Keep out of the sun completely and wear a wide-brimmed hat. From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen for sensitive skin over the treated area every morning and reapply when outdoors. Keep this up every day for at least 3 months, and avoid strong sun for 6 months.
- ✔ Drink plenty of water, and go to your review appointment.
- ✔ We will contact you by phone or message 24 to 48 hours after your treatment to check how your skin is healing, and book a review at about 1 to 2 weeks. You also have our contact number to call at any time if you are worried.

Please do not

- ✘ Do not pick, scratch, rub or peel the skin.
- ✘ Do not wear make-up on the area until the skin has fully healed.
- ✘ Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid hot baths and hard exercise that makes you sweat for 5 to 7 days, or longer if advised.
- ✘ Use only your barrier ointment, a gentle cleanser, a plain moisturiser and sunscreen until your skin has fully healed: no crusts, no raw or weeping areas, and no stinging when you apply a plain moisturiser. Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment. Wait at least 6 weeks if you have skin type IV to VI or had deeper settings. If in doubt, ask us first.
- ✘ Do not use sunbeds or sunbathe, and avoid strong sun for 6 months. Do not use fake tan on the area until your practitioner agrees.
- ✘ Wait 3 months before any peel, microneedling or other exfoliating treatment on the area. Do not have other skin treatments, waxing or threading on the area until your practitioner agrees.

Contact the clinic if you notice

- Pain, swelling or redness that gets worse after day 3.
- Yellow or green discharge (pus), or a bad smell.
- Blisters, dark scabs, slow healing, or signs of a cold sore (tingling, small blisters).
- Dark or light patches, or anything else that worries you.

Get urgent medical help

Contact your GP or call NHS 111 straight away if you have a fever, feel unwell, or redness is spreading. Seek urgent help for any eye pain or change in your vision. Call 999 if your face, lips or tongue swell, or you have trouble breathing.

We cannot give prescription medicines (such as antibiotic creams, antiviral tablets or steroids). If you might need one, we will ask you to see your GP or an independent prescriber.

Clinic contact details

Clinic name: _____

Telephone: _____ **Review appointment:** _____

Client paperwork. Form 8

Photograph consent form

Client name: _____ **Date:** _____

Area(s) to be photographed: _____

Photographs taken before and after treatment are part of your clinical record. They help us check your progress and plan your care. They are stored securely and kept private, in line with UK GDPR and the Data Protection Act 2018. Please tick Yes or No for each use. You can change your mind at any time by telling us in writing.

I agree to photographs being used for	Yes	No	Any conditions
Photographs for my clinical record only	☐	☐	
Photographs used for training, with my face or identifying features hidden	☐	☐	
Photographs used for training, showing my face	☐	☐	
Photographs used as assessment evidence for an accrediting body (training models)	☐	☐	
Photographs used in marketing, on a website or on social media	☐	☐	

I understand that I will not be named in any photograph used outside my clinical record, and that refusing does not affect my treatment.

Client signature: _____ **Date:** _____

Practitioner signature: _____ **Date:** _____

Client paperwork. Form 9

Adverse incident report

Complete on the day, whether or not anyone was harmed. A near miss is worth recording too. Write down the settings before you change anything on the screen. First aid for a burn or an eye exposure is in Section 5.

Date and time: _____ **Location:** _____

Person affected: _____ **Client, staff or other:** _____

Practitioner: _____ **Witnesses:** _____

What happened

Settings and equipment at the time

Device and serial number: _____ **Head and spacer:** _____

Mode and power (W): _____ **Spacing, energy, duration:** _____

Any alarm symbol shown: _____ **Device taken out of use: yes / no** _____

Injury and first aid

☐ Burn cooled 20 minutes under running water
☐ Eye covered, same-day eye casualty ☐ 999 or A&E ☐ Referred to GP

Reported to

☐ LPS ☐ LPA ☐ Insurer ☐ MHRA Yellow Card ☐ HSE (RIDDOR)
☐ Supplier or UK Responsible Person

Follow-up arranged: _____ **Lessons learned:** _____

Completed by (signature): _____ **Date:** _____

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Fitzpatrick Skin Typing (taking Tanning into account)

CLIENT NAME _____ **DATE** _____

My ethnic origin is closest to: (Tick one)	I. Very fair (Celtic and Scandinavian)	☐
	II. Fair-skinned Caucasians with light hair and light eyes	☐
	III. Pale-skinned Caucasians with dark hair and dark eyes	☐
	IV. Olive-skinned (Mediterranean, some Asian, some Hispanic)	☐
	V. Dark-skinned (Middle Eastern, Hispanic, Asians, some Africans)	☐
	VI. Very dark-skinned (African)	☐

Please answer the following questions by circling the number which best describes you. We will total the score during the consultation.

My eye colour is:	Light blue	0
	Blue/green	1
	Green/grey/golden	2
	Hazel/light brown	3
	Brown	4
My natural hair colour at age 18 was:	Red	0
	Blonde	1
	Light brown	2
	Dark brown	3
	Black	4
The colour of my skin that is not normally exposed to sun is:	Pink to reddish	0
	Very pale	1
	Pale with a beige tint	2
	Light brown	3
	Medium to dark brown	4
	Dark brown-black	6
If I go out into strong sunlight for an hour or so without sunscreen and have not been out in the sun for weeks, my skin will:	Burn, blister and peel	0
	Burn, then when the burn resolves there is little or no colour change	1
	Burn, but then turns to tan in a few days	2
	Get pink, but then turns to tan quickly	3
	Just tan	4
	Just gets darker	5
	My skin colour is so dark I can't tell	6
When was the last time the area to be treated was exposed to strong sunlight or UV tanning booths?	Longer than one month ago	0
	Within the past month	1
	Within the past two weeks	3
	Within the past week	4

Total Score: _____

If your score is:	Your skin type is:
0 - 3	I
4 - 7	II
8 - 11	III
12 - 15	IV
16 - 19	V
20 - 24	VI

IMPORTANT:
a) Please note that if you have used a Melanin stimulating injection that you will have to cease this therapy and wait until your skin returns to it's normal colour before any treatment will be possible.
b) If you have used an artificial tanning cream or spray tan then you will have to wait until this pigment has faded and your natural skin type is evident.

Signature of Client

_____ Date_____

FRACTIONAL CO_2 LASER MEDICAL HISTORY / MEDICATION FORM

Client Name: _____ **Date of Birth:** _____

Address: _____

_____

_____

_____

Please put a check mark next to a past or current medical condition:

Conditions affecting your Immune System

- ____ Systemic Lupus Erythematosus (SLE), "Lupus", or scleroderma
- ____ Severe Rheumatoid Arthritis especially if treated with "Gold Injections" or Methotrexate
- ____ Any other known auto-immune disorder
- ____ Weakened immune system (transplant medicines, long-term steroids, HIV)
- ____ Any active infection

Bleeding Abnormalities

- ____ Haemophilia, Von Willebrand Disease, Thrombocytopenia

Blood Thinning Medication

- ____ Anticoagulants such as Warfarin, Heparin, Clexane Or Dabigatran
- ____ Clopidogrel, or regular or high doses of Aspirin, Ibuprofen, Diclofenac

Skin Conditions

- ____ Prone to Keloid or very thick or raised scarring
- ____ Vitiligo, Psoriasis, Eczema or Dermatitis
- ____ Rosacea, active Acne, a rash or open wound in the area
- ____ Sun, sunbed or tan in the last 4 weeks; fake tan in the last 10 days

Cancer treatment

- ____ Cancer, now or under investigation, or a mole that has changed
- ____ Cancer in the past (date treatment ended):
- ____ Chemotherapy/Radiotherapy for Cancer, Leukaemia, Myeloma or Lymphoma

Skin Treatments and Medicines on the Area

- ____ Laser resurfacing or deep peel on the area in the last 3 months
- ____ Botox or Fillers in the area (date):
- ____ Tattoos or cosmetic tattooing (brows, lips) on or near the area
- ____ Retinoid or exfoliating acid creams in the last 14 days
- ____ Treatment with Ro-Accutane® (Iso Tretinoin) in the last 6 months

Other Conditions

- ____ Currently Pregnant or Breast Feeding
- ____ Trying to conceive
- ____ Cold Sores (ever)
- ____ Epilepsy
- ____ Diabetes
- ____ Heart disease or high blood pressure
- ____ Porphyria or sensitivity to light
- ____ Medicines that make you sensitive to light, or St John's wort
- ____ Implants / Metal Plates/ or Pacemakers
- ____ Surgery on the area (date):
- ____ Other Allergies (including anaesthetic creams or plasters)
- ____ Smoking
- ____ Any current illness or fever

Other Medication

Please list below any medicines or herbal remedies that you are currently taking that are not shown elsewhere on this form:-

_____

_____

_____

_____

_____

Any other Declaration

Please record here any other pertinent information you feel may be relevant to your treatment

_____

_____

_____

_____

_____

Client Signature _____ **Date** _____

Model 1 of 3 (skin rejuvenation, fractional). Form 3 of 5

Model 1: consent and model disclaimer

Sign after the medical history is checked and before the observation. Initial each statement to show you understand and agree.

Model name: _____

Student name: _____ **Supervising trainer:** _____

Date and area to be treated: _____

Part one: about being a training model

No.	Statement	Initials
1	I am attending as a training model, not as a client of the clinic.	
2	I will be treated by a student, under the direct supervision of a qualified trainer.	
3	This is a training treatment using conservative (cautious) settings, so the effect may be less than a full clinic treatment.	
4	No result has been promised to me. Results vary from person to person.	
5	Photographs of the treated area may be taken as assessment evidence for the accrediting body.	
6	I may ask to stop the treatment at any time, without giving a reason.	
7	I have completed my medical history truthfully and fully, and will tell the trainer about any changes.	
8	I am attending voluntarily and have not been pressured into taking part.	
9	I understand that I will be patch tested and treated on the same training day. The usual waiting time after a patch test has not been allowed, and I accept this.	

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Model 1: consent and model disclaimer (continued)

Model name: _____

Part two: about this treatment

No.	Statement	Initials
10	The fractional CO_2 laser makes thousands of tiny treated dots in the skin, with untreated skin in between, to support skin renewal. I may feel heat and stinging.	
11	Downtime: redness and swelling for a few days, tiny dark crusts from about day 3, and peeling that usually sheds in 7 to 15 days. Pinkness may last for weeks.	
12	Risks include redness, swelling, crusting, darker patches (PIH), lighter patches (hypopigmentation), infection, cold sore reactivation and scarring.	
13	The laser can injure the eyes. I will wear the eye protection given to me for the whole treatment.	
14	I have followed the pre-care advice: no sun, sunbeds or fake tan, and daily SPF 30 or higher for at least 4 weeks. I stopped retinoids and exfoliating acids on the area at least 7 days before (at least 14 days for skin types IV to VI, sensitive skin or deeper settings).	
15	I will follow the aftercare advice given verbally and in writing, and contact the clinic with any concerns.	
16	I will keep out of the sun and, from the day after treatment, use a broad-spectrum SPF 50 sunscreen every day for at least 3 months, to help protect the healing skin.	

Model signature: _____ **Date and time:** _____

Student signature: _____ **Date:** _____

Trainer signature: _____ **Date:** _____

Model 1 of 3 (skin rejuvenation, fractional). Form 4 of 5

Model 1: patch test and treatment record

Model name: _____ **Date:** _____

Student: _____ **Supervising trainer:** _____

Skin type (form 1): _____ **Area to be treated:** _____

Patch test on the training day

Site of patch test: _____ **Time:** _____

Settings used: _____ **Immediate reaction:** _____

☐ Model disclaimer statement 9 initialled ☐ Patch test satisfactory: go ahead
☐ Not satisfactory: do not treat

Settings used

Setting	Area 1	Area 2
Spacer (Non-ablative, Micro-ablative or Ultra Fractional tip)		
Power (W)		
Spacing (mm)		
Energy (mJ)		
Duration (ms)		
Scan shape and size (mm)		
Passes (Times)		

Skin response:

☐ Even redness ☐ Pinpoint bleeding ☐ Carbonised residue wiped
☐ Whitening or blister (stop; Section 5 first aid; incident report)

Before photographs: taken / not taken **After photographs: taken / not taken**

Aftercare given: verbal / written _____ **Follow-up call booked for:** _____

Student signature: _____ **Trainer signature:** _____

Model 1 of 3 (skin rejuvenation, fractional). Form 5 of 5

Model 1: client aftercare

Model name: _____ **Date and area:** _____

Looking after your skin well while it heals supports a good result and lowers the risk of problems.

What is normal

- Days 1 to 2: redness, swelling and warmth, like sunburn.
- Around day 3: tiny dark dots (micro-crusts) and a rough, sandpaper feel.
- Days 3 to 15: peeling, flaking or a bronzed look, then the crusts shed and pink, fresh skin shows.
- Week 2 onwards: redness slowly fades. Results build gradually over the following weeks and months, and vary from person to person.

Please do

- ✔ Use a cool compress (a clean cloth in cool water, never ice straight on the skin) for short spells in the first 48 hours, to ease heat and swelling.
- ✔ On the day of treatment, do not wash the area. Use cool (not iced) compresses and the barrier ointment we give you. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only. Do not rub or scrub. Pat dry with a clean tissue and put a thin layer of barrier ointment back on straight away. Do not pick crusts.
- ✔ Use a plain petroleum jelly (white soft paraffin) ointment with no fragrance and no lanolin, applied thinly and often to keep the skin moist. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it.
- ✔ Let any crusts, scabs or flakes fall off on their own.
- ✔ Keep out of the sun completely and wear a wide-brimmed hat. From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen for sensitive skin over the treated area every morning and reapply when outdoors. Keep this up every day for at least 3 months, and avoid strong sun for 6 months.
- ✔ Drink plenty of water, and go to your review appointment.
- ✔ We will contact you by phone or message 24 to 48 hours after your treatment to check how your skin is healing, and book a review at about 1 to 2 weeks. You also have our contact number to call at any time if you are worried.

Please do not

- ✘ Do not pick, scratch, rub or peel the skin.
- ✘ Do not wear make-up on the area until the skin has fully healed.
- ✘ Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid hot baths and hard exercise that makes you sweat for 5 to 7 days, or longer if advised.
- ✘ Use only your barrier ointment, a gentle cleanser, a plain moisturiser and sunscreen until your skin has fully healed: no crusts, no raw or weeping areas, and no stinging when you apply a plain moisturiser. Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment. Wait at least 6 weeks if you have skin type IV to VI or had deeper settings. If in doubt, ask us first.
- ✘ Do not use sunbeds or sunbathe, and avoid strong sun for 6 months. Do not use fake tan on the area until your practitioner agrees.
- ✘ Wait 3 months before any peel, microneedling or other exfoliating treatment on the area. Do not have other skin treatments, waxing or threading on the area until your practitioner agrees.

Contact the clinic if you notice

- Pain, swelling or redness that gets worse after day 3.
- Yellow or green discharge (pus), or a bad smell.
- Blisters, dark scabs, slow healing, or signs of a cold sore (tingling, small blisters).
- Dark or light patches, or anything else that worries you.

Get urgent medical help

Contact your GP or call NHS 111 straight away if you have a fever, feel unwell, or redness is spreading. Seek urgent help for any eye pain or change in your vision. Call 999 if your face, lips or tongue swell, or you have trouble breathing.

We cannot give prescription medicines (such as antibiotic creams, antiviral tablets or steroids). If you might need one, we will ask you to see your GP or an independent prescriber.

Clinic contact details

Telephone: _____ **Review appointment:** _____

Aftercare explained by (student): _____ **Model signature:** _____

Fitzpatrick Skin Typing (taking Tanning into account)

CLIENT NAME _____ **DATE** _____

My ethnic origin is closest to: (Tick one)	I. Very fair (Celtic and Scandinavian)	☐
	II. Fair-skinned Caucasians with light hair and light eyes	☐
	III. Pale-skinned Caucasians with dark hair and dark eyes	☐
	IV. Olive-skinned (Mediterranean, some Asian, some Hispanic)	☐
	V. Dark-skinned (Middle Eastern, Hispanic, Asians, some Africans)	☐
	VI. Very dark-skinned (African)	☐

Please answer the following questions by circling the number which best describes you. We will total the score during the consultation.

My eye colour is:	Light blue	0
	Blue/green	1
	Green/grey/golden	2
	Hazel/light brown	3
	Brown	4
My natural hair colour at age 18 was:	Red	0
	Blonde	1
	Light brown	2
	Dark brown	3
	Black	4
The colour of my skin that is not normally exposed to sun is:	Pink to reddish	0
	Very pale	1
	Pale with a beige tint	2
	Light brown	3
	Medium to dark brown	4
	Dark brown-black	6
If I go out into strong sunlight for an hour or so without sunscreen and have not been out in the sun for weeks, my skin will:	Burn, blister and peel	0
	Burn, then when the burn resolves there is little or no colour change	1
	Burn, but then turns to tan in a few days	2
	Get pink, but then turns to tan quickly	3
	Just tan	4
	Just gets darker	5
	My skin colour is so dark I can't tell	6
When was the last time the area to be treated was exposed to strong sunlight or UV tanning booths?	Longer than one month ago	0
	Within the past month	1
	Within the past two weeks	3
	Within the past week	4
	Total Score:	

If your score is:	Your skin type is:
0 - 3	I
4 - 7	II
8 - 11	III
12 - 15	IV
16 - 19	V
20 - 24	VI

IMPORTANT:
a) Please note that if you have used a Melanin stimulating injection that you will have to cease this therapy and wait until your skin returns to it's normal colour before any treatment will be possible.
b) If you have used an artificial tanning cream or spray tan then you will have to wait until this pigment has faded and your natural skin type is evident.

Signature of Client

_____ Date_____

FRACTIONAL CO_2 LASER MEDICAL HISTORY / MEDICATION FORM

Client Name: _____ **Date of Birth:** _____

Address: _____

_____

_____

_____

Please put a check mark next to a past or current medical condition:

Conditions affecting your Immune System

- ____ Systemic Lupus Erythematosus (SLE), "Lupus", or scleroderma
- ____ Severe Rheumatoid Arthritis especially if treated with "Gold Injections" or Methotrexate
- ____ Any other known auto-immune disorder
- ____ Weakened immune system (transplant medicines, long-term steroids, HIV)
- ____ Any active infection

Bleeding Abnormalities

- ____ Haemophilia, Von Willebrand Disease, Thrombocytopenia

Blood Thinning Medication

- ____ Anticoagulants such as Warfarin, Heparin, Clexane Or Dabigatran
- ____ Clopidogrel, or regular or high doses of Aspirin, Ibuprofen, Diclofenac

Skin Conditions

- ____ Prone to Keloid or very thick or raised scarring
- ____ Vitiligo, Psoriasis, Eczema or Dermatitis
- ____ Rosacea, active Acne, a rash or open wound in the area
- ____ Sun, sunbed or tan in the last 4 weeks; fake tan in the last 10 days

Cancer treatment

- ____ Cancer, now or under investigation, or a mole that has changed
- ____ Cancer in the past (date treatment ended):
- ____ Chemotherapy/Radiotherapy for Cancer, Leukaemia, Myeloma or Lymphoma

Skin Treatments and Medicines on the Area

- ____ Laser resurfacing or deep peel on the area in the last 3 months
- ____ Botox or Fillers in the area (date):
- ____ Tattoos or cosmetic tattooing (brows, lips) on or near the area
- ____ Retinoid or exfoliating acid creams in the last 14 days
- ____ Treatment with Ro-Accutane® (Iso Tretinoin) in the last 6 months

Other Conditions

- ____ Currently Pregnant or Breast Feeding
- ____ Trying to conceive
- ____ Cold Sores (ever)
- ____ Epilepsy
- ____ Diabetes
- ____ Heart disease or high blood pressure
- ____ Porphyria or sensitivity to light
- ____ Medicines that make you sensitive to light, or St John's wort
- ____ Implants / Metal Plates/ or Pacemakers
- ____ Surgery on the area (date):
- ____ Other Allergies (including anaesthetic creams or plasters)
- ____ Smoking
- ____ Any current illness or fever

Other Medication

Please list below any medicines or herbal remedies that you are currently taking that are not shown elsewhere on this form:-

_____

_____

_____

_____

_____

Any other Declaration

Please record here any other pertinent information you feel may be relevant to your treatment

_____

_____

_____

_____

_____

Client Signature _____ **Date** _____

Model 2 of 3 (benign lesion removal, UltraPulse). Form 3 of 5

Model 2: consent and model disclaimer

Sign after the medical history is checked and before the observation. Initial each statement to show you understand and agree.

Model name: _____

Student name: _____ **Supervising trainer:** _____

Date and area to be treated: _____

Part one: about being a training model

No.	Statement	Initials
1	I am attending as a training model, not as a client of the clinic.	
2	I will be treated by a student, under the direct supervision of a qualified trainer.	
3	This is a training treatment using conservative (cautious) settings, so the effect may be less than a full clinic treatment.	
4	No result has been promised to me. Results vary from person to person.	
5	Photographs of the treated area may be taken as assessment evidence for the accrediting body.	
6	I may ask to stop the treatment at any time, without giving a reason.	
7	I have completed my medical history truthfully and fully, and will tell the trainer about any changes.	
8	I am attending voluntarily and have not been pressured into taking part.	
9	I understand that I will be patch tested and treated on the same training day. The usual waiting time after a patch test has not been allowed, and I accept this.	

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Model 2: consent and model disclaimer (continued)

Model name: _____

Part two: about this treatment

Doctor's confirmation that the lesion is benign

Doctor's name: _____ **Date confirmed:** _____

GMC number: _____ **Practice or hospital:** _____

Diagnosis: _____ **Tissue analysis advised (yes or no):**

Lesion and location: _____ **Seen by trainer (GMC register checked):**

No.	Statement	Initials
10	The UltraPulse head removes the growth in thin layers and seals small blood vessels. The tissue is vaporised, so nothing is left for laboratory testing.	
11	The spot will form a small wound and scab, which normally falls away in about 2 to 3 weeks. Redness then fades over several weeks.	
12	Risks: redness, swelling, minor bleeding, crusting, darker or lighter patches (PIH, hypopigmentation), infection, cold sore reactivation, a dent or scar, and the growth returning.	
13	The laser can injure the eyes. I will wear the eye protection given to me for the whole treatment.	
14	I will follow the aftercare advice, not pick the scab, and from the day after treatment use a broad-spectrum SPF 50 sunscreen every day for at least 3 months.	
15	I will return to my doctor if this area, or any other mole or growth, changes, bleeds, itches or grows.	

Model signature: _____ **Student signature:** _____ **Trainer signature:** _____

Date and time: _____

Model 2 of 3 (benign lesion removal, UltraPulse). Form 4 of 5

Model 2: patch test and treatment record

Model name: _____ **Date:** _____

Student: _____ **Supervising trainer:** _____

Skin type (form 1): _____ **Area to be treated:** _____

Patch test on the training day

Site of patch test: _____ **Time:** _____

Settings used: _____ **Immediate reaction:** _____

☐ Model disclaimer statement 9 initialled ☐ Patch test satisfactory: go ahead
☐ Not satisfactory: do not treat

Settings used

Setting	Lesion 1	Lesion 2
Doctor's confirmation seen (yes or no)		
Lesion type and size (mm)		
Head and mode (UltraPulse: Single, Pulse or Continuous)		
Power (W)		
Pulse width and interval (ms)		
Number of layers removed		
Endpoint reached		

Skin response:

☐ Even redness ☐ Pinpoint bleeding ☐ Carbonised residue wiped
☐ Whitening or blister (stop; Section 5 first aid; incident report)

Before photographs: taken / not taken **After photographs: taken / not taken** _____

Aftercare given: verbal / written _____ **Follow-up call booked for:** _____

Student signature: _____ **Trainer signature:** _____

Model 2 of 3 (benign lesion removal, UltraPulse). Form 5 of 5

Model 2: client aftercare

Model name: _____ **Date and area:** _____

Caring for the area well while it heals supports a good result and lowers the risk of problems.

What is normal

- Days 1 to 3: the spot may be red, a little swollen, and may weep slightly. It may feel tight or sting.
- Days 4 to 7: a scab or crust forms. Itching and dryness are common.
- Weeks 2 to 6: the scab falls away on its own, leaving pink new skin that slowly fades. Larger or deeper growths take longer.

Please do

- ✔ Use a cool compress (a clean cloth in cool water, never ice straight on the skin) for short spells in the first 48 hours, to ease heat and swelling.
- ✔ Follow your practitioner's advice about any dressing. On the day of treatment, do not wash the area. Use cool (not iced) compresses and the barrier ointment we give you. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only. Do not rub or scrub. Pat dry with a clean tissue and put a thin layer of barrier ointment back on straight away.
- ✔ Use a plain petroleum jelly (white soft paraffin) ointment with no fragrance and no lanolin, applied thinly and often to keep the skin moist. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it.
- ✔ Let the scab fall off on its own. This lowers the risk of a scar or a mark.
- ✔ Keep out of the sun completely and wear a wide-brimmed hat. From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen for sensitive skin over the treated area every morning and reapply when outdoors. Keep this up every day for at least 3 months, and avoid strong sun for 6 months.
- ✔ Drink plenty of water, and go to your review appointment.
- ✔ We will contact you by phone or message 24 to 48 hours after your treatment to check how your skin is healing, and book a review at about 1 to 2 weeks. You also have our contact number to call at any time if you are worried.

Please do not

- ✘ Do not pick, scratch, rub or peel the skin.
- ✘ Do not wear make-up on the area until the skin has fully healed.
- ✘ Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid hot baths and hard exercise that makes you sweat for 5 to 7 days, or longer if advised.
- ✘ Use only your barrier ointment, a gentle cleanser, a plain moisturiser and sunscreen until your skin has fully healed: no crusts, no raw or weeping areas, and no stinging when you apply a plain moisturiser. Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment. Wait at least 6 weeks if you have skin type IV to VI or had deeper settings. If in doubt, ask us first.
- ✘ Do not use sunbeds or sunbathe, and avoid strong sun for 6 months. Do not use fake tan on the area until your practitioner agrees.
- ✘ Wait 3 months before any peel, microneedling or other exfoliating treatment on the area. Do not have other skin treatments, waxing or threading on the area until your practitioner agrees.

Contact the clinic if you notice

- Pain, swelling or redness that gets worse after day 3.
- Yellow or green discharge (pus), or a bad smell.
- Blisters, dark scabs, slow healing, or signs of a cold sore (tingling, small blisters).
- Dark or light patches, or anything else that worries you.

Get urgent medical help

Contact your GP or call NHS 111 straight away if you have a fever, feel unwell, or redness is spreading. Seek urgent help for any eye pain or change in your vision. Call 999 if your face, lips or tongue swell, or you have trouble breathing.

We cannot give prescription medicines (such as antibiotic creams, antiviral tablets or steroids). If you might need one, we will ask you to see your GP or an independent prescriber.

Clinic contact details

Telephone: _____ **Review appointment:** _____

Aftercare explained by (student): _____ **Model signature:** _____

Fitzpatrick Skin Typing (taking Tanning into account)

CLIENT NAME _____ **DATE** _____

My ethnic origin is closest to: (Tick one)	I. Very fair (Celtic and Scandinavian)	☐
	II. Fair-skinned Caucasians with light hair and light eyes	☐
	III. Pale-skinned Caucasians with dark hair and dark eyes	☐
	IV. Olive-skinned (Mediterranean, some Asian, some Hispanic)	☐
	V. Dark-skinned (Middle Eastern, Hispanic, Asians, some Africans)	☐
	VI. Very dark-skinned (African)	☐

Please answer the following questions by circling the number which best describes you. We will total the score during the consultation.

My eye colour is:	Light blue	0
	Blue/green	1
	Green/grey/golden	2
	Hazel/light brown	3
	Brown	4
My natural hair colour at age 18 was:	Red	0
	Blonde	1
	Light brown	2
	Dark brown	3
	Black	4
The colour of my skin that is not normally exposed to sun is:	Pink to reddish	0
	Very pale	1
	Pale with a beige tint	2
	Light brown	3
	Medium to dark brown	4
	Dark brown-black	6
If I go out into strong sunlight for an hour or so without sunscreen and have not been out in the sun for weeks, my skin will:	Burn, blister and peel	0
	Burn, then when the burn resolves there is little or no colour change	1
	Burn, but then turns to tan in a few days	2
	Get pink, but then turns to tan quickly	3
	Just tan	4
	Just gets darker	5
	My skin colour is so dark I can't tell	6
When was the last time the area to be treated was exposed to strong sunlight or UV tanning booths?	Longer than one month ago	0
	Within the past month	1
	Within the past two weeks	3
	Within the past week	4

Total Score: _____

If your score is:	Your skin type is:
0 - 3	I
4 - 7	II
8 - 11	III
12 - 15	IV
16 - 19	V
20 - 24	VI

IMPORTANT:
a) Please note that if you have used a Melanin stimulating injection that you will have to cease this therapy and wait until your skin returns to it's normal colour before any treatment will be possible.
b) If you have used an artificial tanning cream or spray tan then you will have to wait until this pigment has faded and your natural skin type is evident.

Signature of Client

_____ Date_____

FRACTIONAL CO_2 LASER MEDICAL HISTORY / MEDICATION FORM

Client Name: _____ **Date of Birth:** _____

Address: _____

_____

_____

_____

Please put a check mark next to a past or current medical condition:

Conditions affecting your Immune System

- ____ Systemic Lupus Erythematosus (SLE), "Lupus", or scleroderma
- ____ Severe Rheumatoid Arthritis especially if treated with "Gold Injections" or Methotrexate
- ____ Any other known auto-immune disorder
- ____ Weakened immune system (transplant medicines, long-term steroids, HIV)
- ____ Any active infection

Bleeding Abnormalities

- ____ Haemophilia, Von Willebrand Disease, Thrombocytopenia

Blood Thinning Medication

- ____ Anticoagulants such as Warfarin, Heparin, Clexane Or Dabigatran
- ____ Clopidogrel, or regular or high doses of Aspirin, Ibuprofen, Diclofenac

Skin Conditions

- ____ Prone to Keloid or very thick or raised scarring
- ____ Vitiligo, Psoriasis, Eczema or Dermatitis
- ____ Rosacea, active Acne, a rash or open wound in the area
- ____ Sun, sunbed or tan in the last 4 weeks; fake tan in the last 10 days

Cancer treatment

- ____ Cancer, now or under investigation, or a mole that has changed
- ____ Cancer in the past (date treatment ended):
- ____ Chemotherapy/Radiotherapy for Cancer, Leukaemia, Myeloma or Lymphoma

Skin Treatments and Medicines on the Area

- ____ Laser resurfacing or deep peel on the area in the last 3 months
- ____ Botox or Fillers in the area (date):
- ____ Tattoos or cosmetic tattooing (brows, lips) on or near the area
- ____ Retinoid or exfoliating acid creams in the last 14 days
- ____ Treatment with Ro-Accutane® (Iso Tretinoin) in the last 6 months

Other Conditions

- ____ Currently Pregnant or Breast Feeding
- ____ Trying to conceive
- ____ Cold Sores (ever)
- ____ Epilepsy
- ____ Diabetes
- ____ Heart disease or high blood pressure
- ____ Porphyria or sensitivity to light
- ____ Medicines that make you sensitive to light, or St John's wort
- ____ Implants / Metal Plates/ or Pacemakers
- ____ Surgery on the area (date):
- ____ Other Allergies (including anaesthetic creams or plasters)
- ____ Smoking
- ____ Any current illness or fever

Other Medication

Please list below any medicines or herbal remedies that you are currently taking that are not shown elsewhere on this form:-

_____

_____

_____

_____

_____

Any other Declaration

Please record here any other pertinent information you feel may be relevant to your treatment

_____

_____

_____

_____

_____

Client Signature _____ **Date** _____

Model 3 of 3 (fractional treatment of scarring or skin texture). Form 3 of 5

Model 3: consent and model disclaimer

Sign after the medical history is checked and before the observation. Initial each statement to show you understand and agree.

Model name: _____

Student name: _____ **Supervising trainer:** _____

Date and area to be treated: _____

Part one: about being a training model

No.	Statement	Initials
1	I am attending as a training model, not as a client of the clinic.	
2	I will be treated by a student, under the direct supervision of a qualified trainer.	
3	This is a training treatment using conservative (cautious) settings, so the effect may be less than a full clinic treatment.	
4	No result has been promised to me. Results vary from person to person.	
5	Photographs of the treated area may be taken as assessment evidence for the accrediting body.	
6	I may ask to stop the treatment at any time, without giving a reason.	
7	I have completed my medical history truthfully and fully, and will tell the trainer about any changes.	
8	I am attending voluntarily and have not been pressured into taking part.	
9	I understand that I will be patch tested and treated on the same training day. The usual waiting time after a patch test has not been allowed, and I accept this.	

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Model 3: consent and model disclaimer (continued)

Model name: _____

Part two: about this treatment

No.	Statement	Initials
10	The fractional CO_2 laser will be used with the deep ablative or Micro-ablative tip (probe) to treat scarring or skin texture. It makes thousands of tiny treated dots in the skin, with untreated skin in between, to support skin renewal and collagen remodelling. I may feel heat and stinging.	
11	Downtime: redness and swelling for a few days, tiny dark crusts from about day 3, and peeling that usually sheds in 7 to 15 days. Pinkness may last for weeks, and longer after deeper treatment.	
12	Scars can often be softened, but not removed. Several sessions, usually 2 to 3 months apart, may be needed, and change appears gradually.	
13	Risks include redness, swelling, crusting, darker patches (PIH), lighter patches (hypopigmentation), infection, cold sore reactivation and scarring. The risk of darker patches is higher in darker skin types.	
14	The laser can injure the eyes. I will wear the eye protection given to me for the whole treatment.	
15	I have followed the pre-care advice: no sun, sunbeds or fake tan, and daily SPF 30 or higher for at least 4 weeks. I stopped retinoids and exfoliating acids on the area at least 7 days before (at least 14 days for skin types IV to VI, sensitive skin or deeper settings).	
16	I will follow the aftercare advice given verbally and in writing, and contact the clinic with any concerns. I will keep out of the sun and, from the day after treatment, use a broad-spectrum SPF 50 sunscreen every day for at least 3 months.	

Model signature: _____ **Date and time:** _____

Student signature: _____ **Date:** _____

Trainer signature: _____ **Date:** _____

Model 3 of 3 (fractional treatment of scarring or skin texture). Form 4 of 5

Model 3: patch test and treatment record

Model name: _____ **Date:** _____

Student: _____ **Supervising trainer:** _____

Skin type (form 1): _____ **Area to be treated:** _____

Patch test on the training day

Site of patch test: _____ **Time:** _____

Settings used: _____ **Immediate reaction:** _____

☐ Model disclaimer statement 9 initialled ☐ Patch test satisfactory: go ahead
☐ Not satisfactory: do not treat

Settings used

Setting	Area 1	Area 2
Spacer (Non-ablative, Micro-ablative or Ultra Fractional tip)		
Power (W)		
Spacing (mm)		
Energy (mJ)		
Duration (ms)		
Scan shape and size (mm)		
Passes (Times)		

Skin response:

☐ Even redness ☐ Pinpoint bleeding ☐ Carbonised residue wiped
☐ Whitening or blister (stop; Section 5 first aid; incident report)

Before photographs: taken / not taken **After photographs: taken / not taken**

Aftercare given: verbal / written _____ **Follow-up call booked for:** _____

Student signature: _____ **Trainer signature:** _____

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Model 3 of 3 (fractional treatment of scarring or skin texture). Form 5 of 5

Model 3: client aftercare

Model name: _____ **Date and area:** _____

Looking after your skin well while it heals supports a good result and lowers the risk of problems.

What is normal

- Days 1 to 2: redness, swelling and warmth, like sunburn.
- Around day 3: tiny dark dots (micro-crusts) and a rough, sandpaper feel.
- Days 3 to 15: peeling, flaking or a bronzed look, then the crusts shed and pink, fresh skin shows.
- Week 2 onwards: redness slowly fades. Results build gradually over the following weeks and months, and vary from person to person.

Please do

- ✔ Use a cool compress (a clean cloth in cool water, never ice straight on the skin) for short spells in the first 48 hours, to ease heat and swelling.
- ✔ On the day of treatment, do not wash the area. Use cool (not iced) compresses and the barrier ointment we give you. From day 2, rinse gently twice a day with cool water or a soap-free, fragrance-free cleanser, using clean fingertips only. Do not rub or scrub. Pat dry with a clean tissue and put a thin layer of barrier ointment back on straight away. Do not pick crusts.
- ✔ Use a plain petroleum jelly (white soft paraffin) ointment with no fragrance and no lanolin, applied thinly and often to keep the skin moist. Do not use antiseptic creams, antibiotic creams, tea tree, essential oils or "healing" balms unless a doctor or pharmacist advises it.
- ✔ Let any crusts, scabs or flakes fall off on their own.
- ✔ Keep out of the sun completely and wear a wide-brimmed hat. From the day after treatment, once any oozing has stopped, apply a gentle broad-spectrum SPF 50 sunscreen for sensitive skin over the treated area every morning and reapply when outdoors. Keep this up every day for at least 3 months, and avoid strong sun for 6 months.
- ✔ Drink plenty of water, and go to your review appointment.
- ✔ We will contact you by phone or message 24 to 48 hours after your treatment to check how your skin is healing, and book a review at about 1 to 2 weeks. You also have our contact number to call at any time if you are worried.

Please do not

- ✘ Do not pick, scratch, rub or peel the skin.
- ✘ Do not wear make-up on the area until the skin has fully healed.
- ✘ Do not swim (pools, sea, lakes, hot tubs), or use saunas or steam rooms, for at least 14 days. Wait longer if any crusts remain: the skin must be fully closed first. Avoid hot baths and hard exercise that makes you sweat for 5 to 7 days, or longer if advised.
- ✘ Use only your barrier ointment, a gentle cleanser, a plain moisturiser and sunscreen until your skin has fully healed: no crusts, no raw or weeping areas, and no stinging when you apply a plain moisturiser. Do not restart retinoids, acids, scrubs, vitamin C serums or other active products until at least 4 weeks after treatment. Wait at least 6 weeks if you have skin type IV to VI or had deeper settings. If in doubt, ask us first.
- ✘ Do not use sunbeds or sunbathe, and avoid strong sun for 6 months. Do not use fake tan on the area until your practitioner agrees.
- ✘ Wait 3 months before any peel, microneedling or other exfoliating treatment on the area. Do not have other skin treatments, waxing or threading on the area until your practitioner agrees.

Contact the clinic if you notice

- Pain, swelling or redness that gets worse after day 3.
- Yellow or green discharge (pus), or a bad smell.
- Blisters, dark scabs, slow healing, or signs of a cold sore (tingling, small blisters).
- Dark or light patches, or anything else that worries you.

Get urgent medical help

Contact your GP or call NHS 111 straight away if you have a fever, feel unwell, or redness is spreading. Seek urgent help for any eye pain or change in your vision. Call 999 if your face, lips or tongue swell, or you have trouble breathing.

We cannot give prescription medicines (such as antibiotic creams, antiviral tablets or steroids). If you might need one, we will ask you to see your GP or an independent prescriber.

Clinic contact details

Telephone: _____ **Review appointment:** _____

Aftercare explained by (student): _____ **Model signature:** _____

Feedback forms

Client feedback form

Clinic name: _____ **Practitioner:** _____

Date of treatment: _____ **Area(s) treated:** _____

Your name (optional): _____

Please tick one box for each question.

1. Before your treatment	Your answer
Was the consultation clear and thorough?	☐ Yes ☐ Somewhat ☐ No
Were the risks, benefits and aftercare clearly explained?	☐ Yes ☐ Somewhat ☐ No
Did you feel comfortable and well prepared?	☐ Yes ☐ Somewhat ☐ No

2. During your treatment	Your answer
How comfortable were you during the treatment?	☐ Excellent ☐ Good ☐ Fair ☐ Poor
Was enough done to keep you comfortable?	☐ Yes ☐ Somewhat ☐ No
Were you happy with how professional the practitioner was?	☐ Yes ☐ Somewhat ☐ No

3. After your treatment	Your answer
Were your aftercare instructions clear?	☐ Yes ☐ Somewhat ☐ No
How comfortable was your recovery?	☐ Excellent ☐ Good ☐ Fair ☐ Poor
Were any concerns dealt with promptly?	☐ Yes ☐ Somewhat ☐ No ☐ Not needed

4. Your experience overall	Your answer
How satisfied are you with your treatment?	☐ Very satisfied ☐ Satisfied ☐ Neutral ☐ Dissatisfied
Would you have this treatment again?	☐ Yes ☐ Maybe ☐ No
Would you recommend this treatment to others?	☐ Yes ☐ Maybe ☐ No

5. Any other comments

Signature (optional): _____ **Date:** _____

Feedback forms

Learner course feedback

Please complete this at the end of your course. Your feedback helps us improve our training.

Name: _____ **Date:** _____

Please tick one box for each statement: 1 is poor and 5 is very good.

Statement	1	2	3	4	5
I am satisfied with the overall quality of the course.	☐	☐	☐	☐	☐
The CO_2 laser training was explained clearly.	☐	☐	☐	☐	☐
The practical sessions on the MED-870+ helped me learn.	☐	☐	☐	☐	☐
The course met my expectations.	☐	☐	☐	☐	☐
I feel more confident in my understanding of fractional CO_2 laser and in delivering treatments safely.	☐	☐	☐	☐	☐
I will be able to apply what I learned in my practice.	☐	☐	☐	☐	☐
I would recommend this course to others.	☐	☐	☐	☐	☐

Is there anything that could be improved in the course?

Were there any topics you found particularly challenging? If so, which?

Would you be interested in further CPD courses on related topics? If so, which?

Any other comments:

If you would like information about future courses, please leave your details and tick the box.

Name: _____ **Email:** _____

☐ I am happy to be contacted about future courses

Your continuing professional development

CPD reflective record

Name: _____ **Practical date:** _____

Course: Fractional CO_2 Laser CPD Course, Skintastic Aesthetic Lasers Ltd. 16 hours, 16 CPD credits.

What have I learned that I did not know before?

How will I apply it in my practice, and what will I do differently?

What did treating my three models teach me?

What do I still need to learn or practise, and how will I do it?

Signature: _____ **Date:** _____

Completion

Record of course completion

Learner name: _____ **Practical date:** _____

Fractional CO_2 Laser CPD Course, Skintastic Aesthetic Lasers Ltd. Trained on the MED-870+ FOCXEL Fractional CO_2 Laser Therapy System.

Hours completed

Element	Hours	Trainer initials
Online study with this workbook, including the written assessment	12 h 15 min	
Guided practical learning on the half day (09:30 to 13:30, less a 15 minute break)	3 h 45 min	
Total	**16 hours**	

Assessment completed

Requirement	Done	Date
Part 1 short answers, marked on the practical day	☐	
Part 2 multiple-choice questions, 100%	☐	
Practical assessments 1, 2 and 3	☐	
Model sets 1, 2 and 3 complete and countersigned	☐	

Trainer declaration

I confirm that the learner has completed every element above to the required standard.

Trainer signature: _____ **Date:** _____

Learner declaration

I confirm that the written work is my own, and that I will work within my training, my Local Rules and my insurance.

Learner signature: _____ **Date:** _____

SkinTastic
Aesthetic UK

Certificate details

This is to certify that

_____

has successfully completed the

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References and useful links

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Each study was checked against its PubMed record in October 2026. PMID is the PubMed reference number: type it into pubmed.ncbi.nlm.nih.gov to read the summary.

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Device documents (MED-870+)

- MED-870+ FOCXEL Fractional CO_2 Laser Therapy System: user manual, clinical parameter sheets and recommended settings, Beijing Kes Biology Technology Co., Ltd. Available to course students through Skintastic Aesthetic Supplies Ltd.
- Skintastic Aesthetic Lasers Ltd. CO_2 laser risk assessment (August 2026) and Local Rules prepared with our Laser Protection Adviser.

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The machine settings come from the documents supplied by the manufacturer of the MED-870+, Beijing Kes Biology Technology Co., Ltd, and are presented as the manufacturer's reference settings. Facts drawn from published research are credited in the text and listed in full in the References. Laws and guidance are named so that you can read them for yourself on legislation.gov.uk and gov.uk.

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