

# Laser/IPL information and comparison for the Professional

## Laser = Light Amplification Stimulated Emission of Radiation

- A laser is a machine that emits a high intensity, narrow beam of light usually of one colour (wavelength). There are many types of laser e.g. those used in medicine have diverse applications, e.g. destroying tumours and reshaping the surface of the eye for short sightedness. Different lasers have different features. The Copper Bromide laser emits yellow light (absorbed by blood vessels) the green light (absorbed by brown pigments). Each colour can be used independently or in combination. Haemoglobin (the red component of blood) strongly absorbs yellow light whereas sweat glands, hair follicles, connective tissues (collagen and elastic) do not absorb this light energy so yellow light laser coagulates 'broken capillaries, and red birthmarks while surrounding tissue is claimed to remain undamaged.

## IPL = Intense Pulsed Light

- IPL is visible light of various wavelengths (colour) which is pulsed and delivered to the skin through a filter selected based on the patients skin type
- The machine contains a flash lamp which is an extremely bright light source. The shorter dangerous wavelengths are filtered out. A computer is used to set the length of the flash and calibrate the machine.

## 4 types of Laser Light that are commonly used for hair removal:

- Alexandrite
- Ruby
- Diode
- ND, and LP ND Yag

## Laser Features

- There are several factors or parameters that a laser clinician can often control to customise a laser hair removal treatment for efficacy, safety and comfort:
- Pulse length - longer pulsed lasers are considered safest
- Fluence - Selection of energy levels can be varied for skin type
- Delay - The time in-between pulses of light effects how much the skin and hair follicle are allowed to cool off
- Spot Size - effects the speed and penetration of the laser. A larger spot penetrates deeper. A good selection of spot sizes helps the technician reach the hair at the depth at which it grows
- Cooling - The surrounding skin may be protected by a gel, spray or cooled tip pressed against the skin

## How does Laser/IPL work?

- The hand held treatment head is placed against the skin, this is covered with a cooling conducting gel (alternative methods of cooling can be used)
- The pulses of light are delivered through a filter selected to suit the patients skin type
- Energy from the light source is absorbed by the pigment melanin, which is the chromophore, which gives hair its colour
- The hair rapidly absorbs this filtered light and transfers it to the surrounding cells
- these in turn are converted into heat raising them to a temperature of 70° Centigrade or more

## Who can be treated?

- Dark hairs are most easily treated due to the high concentration of melanin that gives maximum absorption and conversion of light energy into heat
- Very fair hair has less melanin and consequently less heat is produced
- White hair has no melanin and cannot be efficiently treated
- The upper skin layer of the epidermis also contains melanin and the concentration increases when the skin is exposed to UV light. It is therefore necessary to treat the dark skinned individuals with less energy to avoid generation of excess heat and pain in the skin
- IPL software allows adjustment of the treatment parameters for different hair and pigment types

## **Electrolysis and Laser/IPL comparisons for Professionals**

### **Cost to perform treatment**

- 1 electrolysis needle costs per treatment £0.30
- Items used are 1+ needles, cotton pad, tissue, couch roll, aftercare product
- IPL/Laser costs approximately 6.7 pence per shot (can take from 6 to several hundred shots per session dependant on size of area being treated)
- Items used are as above, plus shots, plus aftercare

### **Treatment costs**

Electrolysis is usually charged at between £1.00 - £2.00 per minute of treatment with discount often offered for longer treatment time e.g.

- 10 mins = £10
- 30 mins = £30
- 60 mins = £50
- 10 mins = £20
- 30 mins = £60
- 60 mins = £100

#### **Laser/IPL**

- Treatment time of 15 minutes (average approx) = £40.
- e.g. upper lip would be 3 or 4 flashes and 2 minutes treatment time
- Full leg 1 ½ hours treatment time average cost £215

### **Operating costs** (2008 information)

- Electrolysis set up requires local bylaw and environmental health registration at average set up costs of £100
- Laser/IPL requires Health Care Commission legislation at a cost of £1,500+ (inc VAT) for registration which can take up to 12 weeks followed by an annual fee of £1225 (inc VAT) to be allowed to operate
- Additional costs occur if the HCC needs to visit the salon/clinic
- Lease for the laser costs £800 p.a, maintenance contracts £250 p.a, laser protection advisor (RPA £2000 qualified) with an expert medical practitioner costing £1,200 p.a (£100 per month retainer payment)

### **Cost of equipment**

- Electrolysis equipment - A Sterex SX-B rrp £749+ VAT (2008)
- Prices range from between £10,000 to £200,000 for Laser/IPL machine

### **Treatment/Cost Recuperation**

- Sterex SX-B (RRP £749.00)
- Advanced Electrolysis = 4.4 hours (based on £50 per 15 min treatment)
- Hair removal electrolysis = 6.24 hours (based on £ 2 per 1 min treatment)
- Laser/IPL based on £10,000 based on £40 per treatment = 250 clients

## Machine Specifications

- Electrolysis machines vary but an average dimension would be 31cm x 20cm x 9cm. Weight 3 kilos (suitable for the mobile therapist)
- Laser and IPL machines vary but
- Typical dimensions are 1 metre x 50cm x 50cm (depth) Weight 30 Kgs (can be wheeled around but very heavy and not suitable for mobile)

## Is all hair treated?

- With electrolysis each individual hair can be easily pinpointed and 100% treated
- Laser cannot penetrate through another hair so if a hair is “behind” another in relation to the angle of the beam it is not treated

## Hair growth stages

- Electrolysis treatments are most effective when hair is in its active growth phase the Anagen phase
- Laser treatments are most effective when the hair is in the active Anagen phase when the melanin is most abundant

## How many treatments are needed?

- Courses of electrolysis are required for ultimate success with the exact number and frequency of treatments varying from client to client
- Laser/IPL client would typically need a course of 6-12 treatments, carried out 4-6 weekly intervals although and exact number of treatments vary from client to client

## Legal Situation

- Electrolysis remains the only method allowed by the FDA, Beauty Industry’s Governing Body and also the ASA (Advertising Standards Authority) to claim it offers permanent hair removal
- IPL / Laser – are hair management systems, not legally permitted to offer permanent hair removal. Can claim permanent hair **reduction**

## Old or New Technology

- Electrolysis invented in 1875 has been proven permanent and safe over the years
- Laser/IPL is much newer technology for hair removal (approx 10 years)

## Area Efficiency

- Electrolysis is brilliant for small areas and proven permanent removal
- IPL/Laser is brilliant for large areas but is a hair management system and electrolysis is often required to ‘complete the job’

## Areas Treated

- Electrolysis is suitable for small areas that IPL/Laser cannot go eg eyebrows
- Laser/IPL cannot work on eyebrows due to the safety requirements of goggles

## Hair colour treated

- Electrolysis treats **ALL** hair colour types
- IPL/Laser only successfully treats strongly pigmented hair

## Natural Results

- Part of the beauty of an electrolysis treatment is that it can pick out random hairs, if required, leaving blonde fine hairs and a natural “downy” look
- Laser may ‘remove’ all hair growth in a given area

## Discomfort levels

- With sophisticated modern machines, needles, choice of modality and treatment techniques, electrolysis is now a comfortable treatment for the majority of clients
- As the light energy is absorbed by the pigment melanin, discomfort levels depend upon the concentration of melanin in the epidermis and the density of the hair. Consequently it hurts more in dark skinned people and those with dense dark hairs

## Sensation

### Electrolysis

- The Diathermy method feels like tiny bursts of energy like a pin prick.
- The Galvanic method feels like a build up of warmth for 10+ seconds
- The Blend method feels like a comfortable warmth building to a crescendo
- Laser/IPL
- Repetitive extremely short flashes that feel like the snap of a rubber band

## Skin reaction after treatment

- Electrolysis 3 modalities
- Diathermy - Minor oedema and erythema for a few hours
- Galvanic - Minor oedema and erythema
- Blend - Mild oedema and erythema for 20 minutes
- Laser/IPL
- A mild burning sensation can be felt for a while afterwards
- Occasional swelling subsiding in 1-2 days. Possible crusting and blistering

## Versatility

- Electrolysis with its versatility of 3 modalities and the choice of different probes is suitable for all skin types
- Laser/IPL are not suitable for Asian or dark skin types. Clement Beaumont Director of Dectro International stated that laser destroys melanocytes and therefore pigmentation problems are not uncommon in laser epilation patients

### **Accuracy**

- Electrolysis, with its pin point accuracy and ability of the current to be targeted at the base of the hair, increases efficiency
- Laser travels down the hair shaft and therefore “refraction” (the way laser bounces off surfaces), affects its efficiency

### **Risk Assessment**

- With electrolysis there is no risk of scarring or pigmentation when performed correctly and the correct modality chosen
- With Laser/IPL there is a risk of scarring or pigmentation when performed correctly by fully trained staff on suitable skin and hair type - it is generally recognised that there is a risk of hyper/hypo-pigmentation if performed on skin of Fitzpatrick scale 3+ which some media suggest are suitable candidates for treatment

### **Practitioners Qualifications**

- Electrolysis operators are trained Beauty Therapists, Doctors or Nurses who have passed the module for electrolysis (part of NVQL3). They are therefore fully trained and highly skilled individuals
- There are no requirements for a recognised qualification to operate a Laser/IPL machine. That individual may not even be a therapist and have no in depth knowledge of the skin nor an understanding of hair growth, its causes and related disorders

### **Premises**

- Room requirements for electrolysis are minimal
- Room requirements for laser/IPL require
- no reflective surfaces
- warning signage on door
- good ventilation

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### **Safety Requirements**

- No personal protection required
- Protective goggles have to be worn during treatment by therapist and client

## Preparation

- Electrolysis treatment does not require the client to shave
- Laser/IPL treatment requires the client to shave the area prior to treatment so that the hair is 1-2mm, the client cannot bleach or wax

## Methods

- Blend electrolysis produces sodium hydroxide which destroys the bulge of the hair and dormant hair germ cells preventing/slowing down hormonal hair growth
- Laser/IPL treats with heat like Thermolysis and therefore only treats existing hairs and not dormant hair germ cells

## After Treatment

- Electrolysis removes all hairs on the day of treatment (dependent on treatment length)
- Hair is still present following Laser/IPL and will fall out over the next few days

## Speed of Results

- Electrolysis
- Slow, sure, steady
- IPL/Laser
- Short, fast. sharp but not as thorough

## Efficiency

- Electrolysis works for **ALL** clients **ALL** the time
- IPL/Laser will **NOT** work for ALL clients ALL the time