The IPL Dog & Lemon Guide

Contents

Introduction

Welcome to this the first in a series of comprehensive cosmetic equipment reviews designed to empower you to make the best evidence-based choices when purchasing high-tech gear.

It is with a degree of trepidation that we finally put our thoughts to paper. From the very inception of this project we've realised the potential to upset clinicians and manufacturers alike. Fearful of a back-lash we've sat on the truth and watched.

Watched the growing number of consumer complaints following ineffective and even harmful treatments.

Watched the growing number of clinician complaints following equipment ineffectiveness and insufficient returns.

Potential Consequences Of Poor IPL Purchasing Decision

- Ineffective Treatments
- Frequent Adverse Reactions
- High Number Of Retreats
- High Number Of Refunds
- High Number Of Complaints
- Negative Word Of Mouth
- Patient Avoidance Of Clinic
- Tarnished Reputation
- Investigation By Health and Safety
- Reduced Profits Due To High Cost Of Consumables
- Reduced Profits Due To Unnecessary High-Cost Marketing
- Lost Opportunity To Dominate Market
- Lost Opportunity To Charge Higher Fees
- Lost Opportunity To Cross Sell Services
- Lost Opportunity To Maximise Marketing ROI
- Lost Revenues Due To Ineffective Marketing
- Lost Revenues Due To Breakdown
- Financial Hardship

Obviously, your purchasing decisions have massive implications on the health of your patients as well as that of your business.

Keeping in mind that purchasing medical equipment often represents a significant capital investment that's extremely difficult to back-out of; the enormity of choosing wisely becomes evident.

Unfortunately, the best choice is not always clear.

Reliable, unbiased information is often distorted by the vested interests of distributors to close sales and the vested interests of colleagues to protect their clinic's reputation.

Your only other alternative for locating the best equipment was, until now, to personally invest a great deal of time and energy investigating all the options… two resources few of us have in excess.

However, with the ever growing number of complaints and complications fuelled by a pandemic of misinformation it's clear that our continued silence would only serve to cause more people harm. We are in a position to help you and your patients and we can no longer sit back and watch.

It's time to transform our fears of retribution into the courage of contribution. As such we are compelled to voice our conclusions loud and clear - no matter what the repercussions.

In a nutshell, the sole purpose of this and following reports is simple:

To provide you, the cosmetic clinician practical, unbiased, objective information that empowers you to purchase equipment that best serves the interests of your patients and business alike.

Our number one concern is the welfare of your patients and your business. We're not here to pussy-foot around anyone or sugar-coat anything.

We put the spotlight on the leading cosmetic equipment and then tell it as it is – no holds barred.

We keep the technical lingo to a minimum in preference for an easy-to-read style that ensures the practical aspects of our findings are readily understood and easily applied.

If we find a product that delivers exceptional quality, we'll openly sing its praises.

If we uncover any flaws or shenanigans we'll set alarm bells ringing.

In so doing we'll inevitable ruffle a few feathers. That's fine. Everyone is entitled to their opinion.

Yet know this: We have no chins to hit and no bellies to scratch. We care only for the truth. Everything you'll read in this report is based on sound practice and demonstrable fact.

So if a manufacturer doesn't like what they hear then we challenge them to step up and produce solutions that exceed the standards we set here.

And if a clinician doesn't like what they read then we challenge them to step up and better serve their patients and their practice.

It's our hope that you find this series of reports informative and helpful and if it saves you time and money while helping you boost your business, then our mission has been accomplished.

Enjoy!

Yours sincerely,

Paul Kadar
Chief Editor
Cosmetic Dog & Lemon Guides

Fundamental Requirements Of An IPL

We all know that a car is not a car. Simply compare a Skoda with a Lexus and you'll know this to be true.

The same can be said of Intense Pulsed Lights (IPL's). Despite popular belief, IPL's are not all created equal. The swell of practitioner and patient complaints gives testament to this.

Put simply, an IPL is not an IPL.

Which raises the question, "How do I spot the Lexus amongst the lemons?"

Naturally, you want to compare and contrast the strengths and weaknesses of the various available models. To do so objectively you need a set of fundamental requirements to serve as a benchmark guide.

And that is precisely what we've done in this report. We've identified what we believe to be the 4 critical functions an IPL must deliver to best serve the interests of you and your patients.

Fundamental Requirements Of An IPL

- Consistently Produce Predictably Excellent Clinical Results
- Minimise Frequency And Severity Of Adverse Reactions
- Optimise Return On Investment
- Minimise Profit Leakage

On review of this list you'll notice that there's more to consider than just technical performance. That's because an IPL (or any other piece of equipment) should never be thought of as a solitary tool that performs a specific procedure.

Rather, when you purchase an IPL you are investing in a total solution that must satisfy your patient's expectations AND make you money! One without the other will ultimately result in catastrophe.

In a nutshell, your IPL must deliver the intended clinical and financial objectives with optimal efficiency.

By objectively comparing the leading models we'll empower you to ask the right questions and in turn avoid being seduced by fast talking salespeople pushing glossy brochures. After all, the person ultimately responsible for your purchase is you – you wear the consequences of your choice and once you're committed there's no turning back.

To make this review valuable we review the 8 top selling genuine IPL systems currently available in Australia and NZ.

8 Top Selling IPL's

Cutera **Solera**
CyDen **iPulse i300**
DDD **Ellipse Super Flex**
Luminex **L600-L800**
Lumenis **Quantum HR/SR**
Palomar **Medilux**
Sciton **BBL**
Syneron **Elos Aroura**

Critical Factors For Producing Predictably Excellent Clinical Results

Uniform Delivery

As most IPL distributors will (and should) tell you, a common shortcoming of most IPL systems is an uneven delivery of light energy to the target tissue.

Naturally, to achieve predictable results across the entire treatment area it makes sense that the entire area of skin in contact with the IPL head should be uniformly exposed to an even fluence. Unfortunately, in reality this is rarely the case.

Most IPL heads concentrate light energy in the centre of the head and rapidly lose intensity towards the edges. This effect is known as “perimeter loss” and it creates two equally unfavourable clinical scenarios.

Firstly, if the central fluence is therapeutic (i.e. produces desired clinical result) then the peripheral fluence is sub-therapeutic (i.e. fails to achieve desired clinical effect). The net effect is an under-treatment of a significant portion of the treatment field.

With vascular work, the worst consequence of under-treatment at the peripheries is reduced profitability due to the increased number of shots required to achieve the desired end result.

With permanent hair reduction, there is a considerably less desirable (and even less talked about) consequence of under-treatment at the peripheries. To permanently destroy an unwanted hair follicle, you must heat the follicle to at least. However, a follicle heated below 70 $^{\circ}$C will not be permanently destroyed. Rather, the hair follicle will be only partially disrupted giving rise to a thinner, lighter follicle. And as we all know, the most resistant form of hair to photo-thermolysis is the thin light variety.

Hence, any system that does not heat the target tissues uniformly across the entire treatment area will ultimately compromise and complicate the clinical outcome. Audaciously, some distributors claim that producing finer, lighter hairs is actually a desirable outcome!

In order to get a uniform clinical result when the peripheral fluences are sub-therapeutic you must either:

A) Overlap spots; OR

B) Perform treatment over a greater number of appointments.

In both cases you spend more clinical time on the one patient as well fire more shots per treatment. As will be explained in Chapter 4, firing more shots per treatment dramatically reduces your profiability as well as the life of your treatment heads.

What’s more, the inherent randomness of overlapping shots considerably increases your chances of inducing an adverse reaction.

The second scenario created by perimeter loss has the peripheral edges delivering a therapeutic fluence. By definition this means your central fluence is supra-therapeutic and hence dramatically increases the incidence of adverse responses.

Furthermore, the higher the energy you put through your heads, the faster they deteriorate. Hence, not only does this scenario reduce patient comfort and satisfaction, it also accelerates the ultimate demise of your treatment heads.

So why does perimeter loss happen?

In essence it’s due to the decay of light intensity with distance. Specifically, the intensity of light decreases in proportion to the square of the distance it has to travel.

Put another way, if light that has travelled 10mm produces a fluence of 20 J/cm^2; that same light will produce a fluence of 5 J/cm2 if it has to travel another 10mm (i.e. a doubling of the distance produces a quarter of the fluence).

Obviously, light has to travel further from the point source of light to reach the edges of the head than it does to reach the centre and hence the reduced fluence at the edges.

Aware of this limitation, manufacturers attempt to overcome perimeter loss via one or more of the following techniques:

Ways To Overcome Perimeter Loss

1. Small Surface Area Of Head
2. Photon Recycling
3. Long Light Guide
4. Twin Flash Lamps

Small Surface Area Of Treatment Head

Just as doubling the distance reduces the fluence by a factor of four, the converse is also true. Specifically, by halving the size of a treatment head you reduce the effects of perimeter loss by a factor of four.

Hence, the smaller the treatment head, the less fluence variation you'll experience across the face of that treatment head.

However, this introduces a new set of problems. The smaller the head, the more shots you'll have to fire to cover a given treatment area. In turn, this increases the number of shots fired per treatment which in turn increases appointment time; reduces profit per shot; and accelerates demise of your treatment heads.

Photon Recycling

A less feasible method for more evenly distributing light energy across the face of the head is Photon Recycling.

In simple terms, photon recycling is a "process" in which the treatment head captures light reflected back from the skin and then delivers it back into the treatment target. Although not specifically designed to minimise the effects of perimeter loss the proponents of photon recycling claim that it 'evens out' the fluence over the entire treatment area.

Looking back at the relationship between light intensity and distance, it doesn't take a rocket scientist to figure out that by the time this light is reflected from the skin into the treatment head and then back again, its fluence will have all but petered out.

In short, photon recycling is nothing but a marketing gimmick deceitfully used to entrap unwitting clinicians.

Long Light Guide

Another way to even out the fluence across the treatment head is to deliver it through a long light guide or crystal. The long walls of the crystal reflect the light within the crystal in effect homogenising the light.

However a crystal that is too long will loose some of the light through the walls and hence the fluence delivered at the treatment face may be sub-therapeutic.

Twin Flash Lamps

Currently, an effective way of producing a uniform fluence across the entire face of the treatment head while maintaining a relatively large treatment area is through the use of two flash lamps in an over-under or figure "8" configuration.

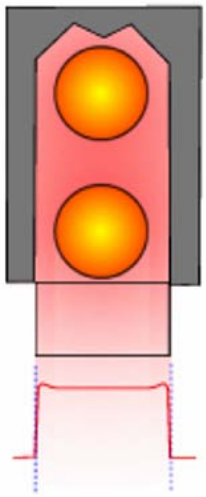
Here's how twin flash lamps in an over-under configuration work. The first flash lamp (i.e. the component that actually produces the intense pulse of light) transmits light in basically the same way as a conventional IPL head does – namely, with perimeter loss.

However, the second flash lamp fires in 'the shadow' of the first and consequently transmits light in a polar opposite manner to the first. In other words, where the light from the first flash lamp is most intense, the light from the second lamp is weakest and vice versa.

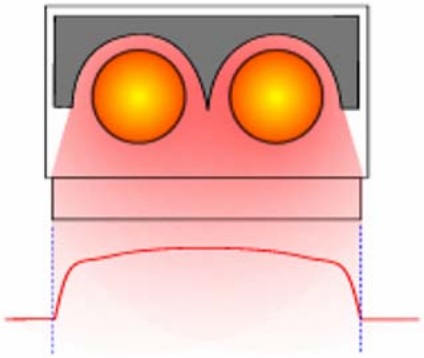
The net effect is that the two sources of light complement one another to give a uniform fluence across the entire face of the head.

Taking this a step further, virtually overcoming perimeter loss with twin flash lamps allows the manufacturers to use much larger treatment heads. And as you'll see in Chapter 4, the larger the treatment head, the greater the profit per shot and the longer the life of the treatment head.

We should point out that some models utilising twin flash lamps configure them side by side rather than over-under. Contrary to the claims of the manufacturers, the use of two flash lamps side by side does not address the issues of perimeter loss as this configuration provides no 'shadow compensation' what so ever (as demonstrated in the diagram below).



Over-Under Twin Flash Lamp Configuration



Side By Side Twin Flash Lamp Configuration

Of the 8 top selling IPL's reviewed, 6 employ a single flash lamp. The only two models utilising twin flash lamps are the Sciton BBL and the CyDen iPulse i300. However, only the **Sciton BBL** has the essential over-under twin flash lamp configuration.

KEY RECOMMENDATION

For the most predictable uniform treatment results use an IPL with twin flash lamps in an over-under configuration.

Head Size

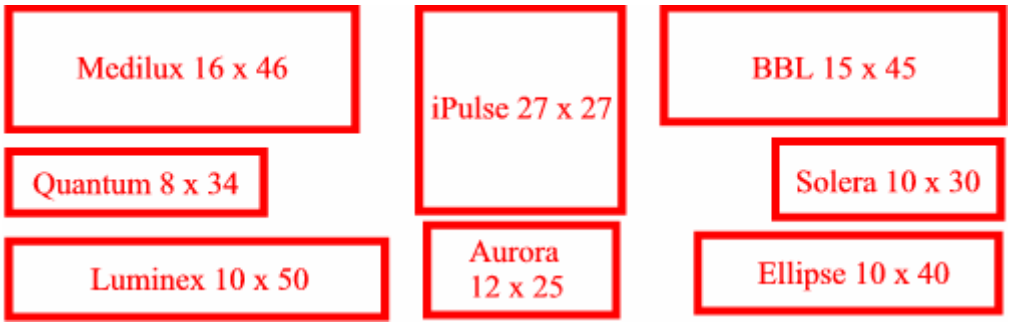
Following on from our discussion of perimeter loss, the next variable to consider in terms of clinical efficacy is the size of the treatment head.

Intuitively, the smaller the treatment head, the more shots you need to fire for a given treatment area. And the more shots you fire, the more times you physically have to move the treatment head. Consequently the smaller the treatment head, the greater the area of untreated skin (due to the inherently inaccuracy of head placement between shots).

The converse is also true. The larger the treatment head, the less likely you are to miss areas caused by head placement between shots.

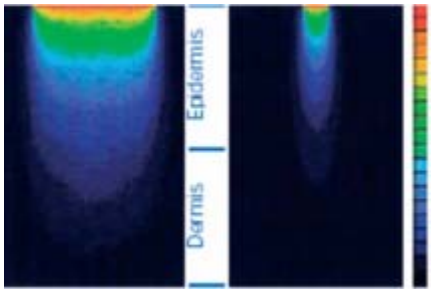
Consequently, the delivery of light across the entire treatment area (especially over extensive areas like the back) is more uniform and less likely to create uneven results (e.g. uneven hair re-growth) when using a larger treatment head.

Below is a comparison of the head sizes of the 8 IPL's reviewed in this report.



An added advantage of larger treatment heads is that their depth of penetration can be greater than that of smaller heads.

The diagram below published by CyDen demonstrates this principle. However, this diagram is misleading. Due to the inverse relationship of fluence and distance, the larger the surface area, the more energy is required to achieve the same clinical result.



To put this diagram into perspective, if both systems were delivering the same power, the penetration of the left image would be less than a third of that on the right.

In other words, as the area increases, so too must the energy delivered to produce the same effect.

Do not be seduced into believing that just because a system uses twin flash lamps it is more efficient and hence can achieve desired clinical outcomes at much lower fluences. Such irrational claims are totally baseless.

The bottom line is this: For a large treatment head to be effective it must have **twin flash lamps** (preferably in an over-under configuration) AND be able to deliver a **much higher energy** than IPL's with smaller heads.

Variable Temperature Control

The ability to control the treatment area temperature is critical for producing predictably excellent clinical outcomes.

The aim of most IPL photo-thermal treatments, whether it be for vascular work, hair removal or sun spots is to raise the temperature of the target chromophores to about 70°C while ensuring the surrounding tissues, and in particular the epidermal melanin layer, remain at a safe level (usually less than 45-50°C).

This need for a differential in temperatures has ramifications for different treatments.

For hair removal, the target tissue (i.e. hair follicle) is deep in the dermis. Due to the depth of heat generation (and hence increased insulation) the ability to dissipate heat away is reduced. Consequently, there is significant potential for heat to build up and induce adverse reactions.

Cooling the skin during treatment effectively dissipates heat which in turn allows you to use higher fluences delivered at a higher repetition rate while still maintaining comfort for the patient. The net result is more effective treatment requiring fewer visits to achieve the desired end result.

However, not all cooling is desirable. For more superficial vascular work such as facial flushing, redness and fine telangiectasias, pre-cooling causes the superficial blood vessels to constrict, reducing the volume of blood in the target vessels and thereby reducing the efficacy of the treatment. The upshot of this is a need for more treatment sessions.

Therefore, any IPL that does not give you **full control over the temperature of the skin** (irrespective of whether the particular IPL has an integrated cooling system or not) will give you less than desirable clinical results.

Of the 8 IPL's reviewed, 6 have integrated cooling. Of those, only four allow you to manually set the temperature.

	Integrated Cooling	Ability To Modify Temperature	Available Temperature Range
Cutera **Solera**	✓	✗	**Varies depending on head**
CyDen **iPulse i300**	✗	✗	**N/A**
DDD **Ellipse Super Flex**	✗	✗	**N/A**
Luminex **L600-L800**	✓	✗	**Varies depending on head**
Lumenis **Quantum HR/SR**	✓	✓	**0°C**
Palomar **Medilux**	✓	✓	**5-20°C**
Sciton **BBL**	✓	✓	**0-30°C**
Syneron **Elos Aroura**	✓	✓	**5-20°C**

NOTE: Contrary to the claims of manufacturers who don't provide integrated cooling, it is our firm belief that temperature control is critical to clinical success (as demonstrated in Chapter 3). Be wary of any distributor who tries to tell you cooling is unnecessary.

Long Pulse Widths

The pulse width can be defined as the length of time a pulse or rapid succession of pulses is emitted to produce a clinical shot. The ability to produce long pulse widths greatly influences the efficacy of an IPL.

During a shot, enough energy is delivered to heat the target tissue to a therapeutic temperature. It follows on then that the shorter the pulse width, the higher the energy required to heat up the target tissue in that shorter period of time.

With respect to hair removal, short pulse widths (e.g. 10 ms) tend to vaporize the hair shaft with little effect on the follicle itself. Consequently, short pulse widths create temporary hair loss but fail to produce long-term reduction or permanency. Worse still, short pulse widths can also give rise to poorly treatable fine, light hairs.

Longer pulse widths, on the other hand deliver a lower amount of energy over a longer period of time. In so doing they allow more time for the energy to radiate out into the follicle tissue, ensuring greater tissue destruction and hence greater hair loss permanency.

In addition, longer pulse widths are safer to use (especially on darker skins) as the energy is released over a longer period and reduces the spike effect of shorter pulse widths (which have a greater tendency to produce adverse reactions).

Having said all this, if the pulse width is longer than the time required for the skin to dissipate heat (known as the thermal relaxation time) then a prolonged delivery of heat will not keep pace with the rate at which it is lost. Hence, excessively long pulse widths can lead to inadequate clinical results.

As such, the most desirable IPL will give you a wide range of available pulse widths so as not to limit your control over treatment parameters.

	Maximum Pulse Width
Cutera **Solera**	**50ms**
CyDen **iPulse i300**	**50ms**
DDD **Ellipse Super Flex**	**55ms**
Luminex **L600-L800**	**45ms**
Lumenis **Quantum HR/SR**	**200ms**
Palomar **Medilux**	**400ms**
Sciton **BBL**	**200ms**
Syneron **Elos Aroura**	**25ms**

High Fluence

No discussion of clinical efficacy would be complete without reference to fluence.

When in the market for an IPL, one of the most commonly used yardsticks to determine IPL clinical efficacy is its fluence. The assumption is that the higher the fluence a machine delivers the more powerful and hence the more effective it is.

On the surface this appears logical. However, it's not until you understand the effects of having one vs. two flash lamps as well as the wave pattern generated (see Chapter 3) that it becomes clear that fluence is not directly proportional to clinical efficacy.

A twin-flash system which produces a true square wave pulse will generally operate at much lower fluence levels than single lamp, non-square pulsed systems and yet still be orders of magnitude more effective.

Bottom line: Do NOT judge the efficacy of an IPL based on its reported fluence outputs.

Clinical Training

Critical to predictably excellent results is the ability of the distributor to impart competence and confidence in using the IPL to the clinical staff. It is the distributors' duty to comprehensively educate and certify the clinical team.

Ideally, the initial training and certification process should involve 4 distinct phases:

1. **Pre-Training:** Once a clinician has committed to the purchase of an IPL but prior to delivery of the IPL, the clinical staff should receive theoretical tuition. This phase of training should impart fundamental principles in the use of IPL such as basic IPL physics, safety, and treatment parameters. The purpose of this phase is to give the entire clinical team a solid understanding of IPL therapy.

2. **Competency:** After a pre-defined period of time following the Pre-Training Phase, the distributor (or an authorised agent) should then examine the clinical team. This phase of training sets out to determine a base level of knowledge before allowing any person to operate an IPL on a live subject. Obviously, without this step, the distributor has no way of making the clinical staff accountable for their competence. And as such, it could be argued that any clinical complications that arise following a failure to assess the competence of a clinician the responsibility should fall squarely on the shoulders of the distributor.

3. **Clinical Tuition:** Once the clinical team has objectively demonstrated a core level of knowledge, the distributor should then instruct the clinical team to organise a list of people willing to act as "test subjects". This phase of training involves hands-on application of knowledge gained from the previous phases. To be successful, this phase requires that enough 'test subjects' be available to offer a wide variety of clinical scenarios. If the numbers and / or variety are too small then the trainer / distributor should seriously consider repeating this phase before provisionally certifying the team. However, if the trainer / distributor is satisfied with the clinical competence of the team then they should proceed to provisionally certify the team. In so doing the distributor acknowledges that in their opinion the team is safe to practice IPL therapy effectively.

4. **Reassessment:** Finally, after a pre-defined period of time after clinical tuition, the distributor should assess the competence of the clinical team. The aim of this phase is two fold. Firstly, it allows the distributor to detect and rectify any misunderstandings the team may have. Secondly, it allows the distributor to further advance the skills and knowledge of the clinical team. To carry out this phase the distributor may require the team to present a number of clinical cases; to participate in continuing education; and /or take a more stringent test. It is only after satisfactorily completing a reassessment phase that the distributor should confer someone as a certified IPL therapist.

The correlation between clinical competence and clinical outcomes should be obvious. Just as the ability drive a car and knowledge of avionics does not qualify you to fly a 747 nor does owning an IPL and reading the manual qualify you to competently operate an IPL.

Unfortunately, this fundamental aspect of clinical efficacy is all too often over-looked or watered-down. With the thrill of the conquest behind them and with their sights fixed on their next meal, most distributors baulk at the thought of having to conduct training. It's doesn't pay anything and it takes them away from tracking more sales. Yet, for the long term success of all parties, comprehensive training is essential.

The following table summarises which phases of training each of the 8 reviewed IPL distributors deliver.

	Pre-Training	Competency	Clinical Tuition	Reassessment
Cutera **Solera**	✓	✗	✓	✗
CyDen **iPulse i300**	✓	✓	✓	✓
DDD **Ellipse Super Flex**	✓	✓	✓	✗
Luminex **L600-L800**	✓	✓	✓	✓
Lumenis **Quantum HR/SR**	✓	✗	✓	✗
Palomar **Medilux**	✓	✗	✓	✗
Sciton **BBL**	✓	✓	✓	✓
Syneron **Elos Aroura**	✓	✗	✓	✗

Clinician Exchange Program

Just as comprehensive initial training gives rise to predictably excellent clinical outcomes, the ability to exchange ideas and experiences with other IPL operators dramatically magnifies your clinical competence.

Once you gain a basic degree of competence it's easy to become complacent with your results. Having nothing to compare your self with, your own clinical outcomes become their own benchmark. In other words, without seeing other peoples results you have no idea whether or not you can achieve better clinical results.

A worthwhile clinician exchange program should utilise one or more of the following media: online forums, Tele-seminars, Webinars, and live phone support.

Once again, any IPL that's purchased with access to an established clinician exchange program can only benefit you and your patients.

	Clinician Exchange Program
Cutera **Solera**	✗
CyDen **iPulse i300**	✓
DDD **Ellipse Super Flex**	✗
Luminex **L600-L800**	✗
Lumenis **Quantum HR/SR**	✗
Palomar **Medilux**	✗
Sciton **BBL**	✗
Syneron **Elos Aroura**	✗

Critical Factors To Minimise Frequency And Severity Of Adverse Reactions

Of equal importance to producing predictably excellent outcomes is the minimization of adverse reactions. Once again, this is determined by both technological features as well as after-sales support.

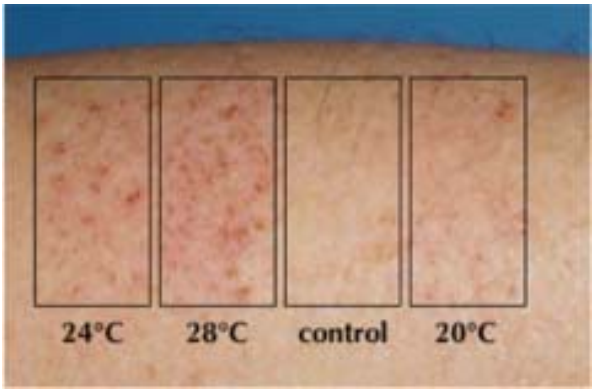
Integrated Cooling

As already discussed in the previous chapter, the ability to cool the skin, especially during hair reduction therapy, is critical to minimising the potential for pain, redness, burns and hyper-pigmentation. That's because the deeper the target tissue, the more time it takes for the heat to dissipate (due to the greater degree of insulation).

As a result, if insufficient time is allowed for the heat to dissipate between shots, you can very easily build up temperature with each successive shot. So much so that a fluence that would normally not cause any adverse effects now becomes the straw that breaks the camel's back.

Hence, the ability to cool the skin rapidly dissipates this latent heat and hence minimises the chances of adverse effects due to over-heating.

Despite this, some distributors argue that contact cooling is not proven to reduce the incidence of adverse reactions. The photo below speaks for itself.



Effects of temperature variation on skin. All four shots were made at a fluence of 18J/cm2. The only difference between the shots is the temperature of the skin during the shot.

By far the most effective type of cooling is what's known as integrated contact cooling (ICC). While there are several ways of producing ICC, in essence ICC is where the IPL crystal is chilled and kept constantly cold. This ensures the skin is chilled before, during and after the delivery of the shot.

Any other method of cooling (e.g. air or cold gel) is simply ineffective. Hence, any system that does not come with integrated cooling greatly increases the frequency and severity of adverse reactions.

	Integrated Contact Cooling
Cutera **Solera**	✓
CyDen **iPulse i300**	✗
DDD **Ellipse Super Flex**	✗
Luminex **L600-L800**	✓
Lumenis **Quantum HR/SR**	✓
Palomar **Medilux**	✓
Sciton **BBL**	✓
Syneron **Elos Aroura**	✓

Filtering

One of the chromophores most likely to cause adverse reactions is water. As water is present everywhere in the skin, if an IPL emits light at a wavelength that is absorbed by water then there is tremendous potential to cause widespread damage.

Water begins to absorb light at a wavelength of around 950nm. Hence, any IPL head that emits wavelengths above 950nm has the ability to produce an adverse reaction. And while contact cooling can help minimise these effects, it does not prevent them from occurring.

In an effort to overcome the side-effects of water absorption of light, most but not all IPL's filter out wavelengths above 950 nm. These undesirable wavelengths are filtered out either directly by an Infra-Red filter or by way of the water jacket that also serves to cool the flash lamp. In this way these systems ensure that the light directed to your skin contains only the wavelengths that are relevant to perform the desired treatment.

The chart below identifies which systems filter out harmful wavelengths above 950nm.

	Filter Out Wavelengths Above 950nm
Cutera **Solera**	✓
CyDen **iPulse i300**	✗
DDD **Ellipse Super Flex**	✓
Luminex **L600-L800**	✓
Lumenis **Quantum HR/SR**	✓
Palomar **Medilux**	✓
Sciton **BBL**	✓
Syneron **Elos Aroura**	✓

KEY RECOMMENDATION

Do not purchase any IPL that does not filter out wavelengths above 950nm.

Duration of Therapeutic Dose

All IPL devices work on the same principle: When a flash lamp produces the appropriate wavelength spectrum output, that light is absorbed by the 'target' tissue (e.g. haemoglobin) and is converted into heat that creates the desired therapeutic effect.

Obeying basic laws of physics, the spectrum output of a flash lamp varies as the current through the lamp changes. To affect the desire clinical outcome, an IPL must deliver the therapeutic wavelength for a sufficient length of time.

It follows on then that to achieve this desired duration of therapeutic light exposure, the IPL must pass enough current through the flash lamp to produce the desired amount of light.

Hence, for each IPL procedure there is range of pulse energy that the IPL must deliver to the tissue to achieve the desired clinical result. This range of pulse energy is called the therapeutic range.

Any energy delivered below the therapeutic range is generally considered ineffective in producing any beneficial clinical change (and may induce hairs to become finer and lighter).

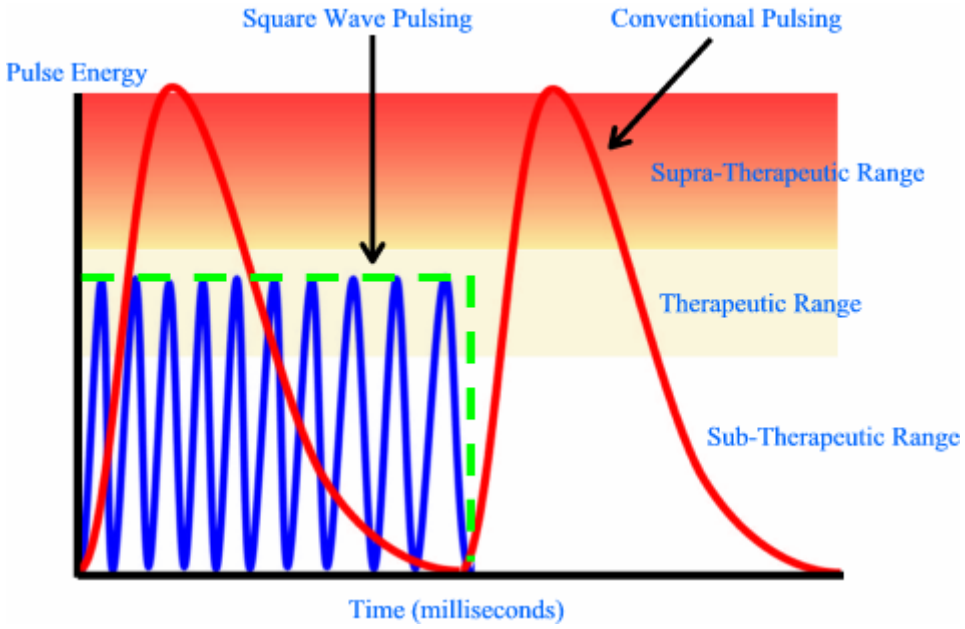
However, any energy delivered above the therapeutic range has the potential to induce tissue damage.

At present, there are generally two ways that IPL's emit energy.

1. Non-Square Wave Delivery: In early generation IPL systems the current surges through the flash lamp like a wave, producing a rising then falling pattern (see diagram below). To achieve a sufficient dose within the therapeutic range, these earlier models fire 1 to 3 hi fluence pulses with extended low level tails. As a result, the spectrum output varies constantly throughout the pulse and, at the peak, the spectrum output is well above the therapeutic range.

In turn, the supra-therapeutic output above the therapeutic range greatly increases the risk of discomfort, pain and more serious adverse reactions. What's more, with this form of delivery the extended low power tails produce unwanted and potentially harmful infra-red wavelengths which need to be filtered out.

2. Square Wave Delivery: More advanced IPL's fire up to 10 narrower pulses per shot to produce a more even energy output. As demonstrated in the diagram below, by precisely modulating on and off times these IPL's deliver multiple very rapid pulses whose peaks remain entirely within the therapeutic range. In so doing they achieve the desired clinical effect using considerably lower fluences and emit significantly less undesirable infra-red wavelengths than Non-Square Wave models. What's more, because no energy is delivered above the therapeutic range, square wave IPL's have a significantly reduced risk of inducing undesirable side effects.



NOTE: While square wave technology is currently considered the optimum form of fluence delivery, this may change in future. To safeguard against the possibility of having to modify the output in future, the Ellipse Super Flex and the Sciton BBL have the potential to change pulse production in future with a simple software upgrade.

	Deliver Square Wave Pulsing
Cutera **Solera**	✓
CyDen **iPulse i300**	✓
DDD **Ellipse Super Flex**	✓
Luminex **L600-L800**	✓
Lumenis **Quantum HR/SR**	✗
Palomar **Medilux**	✗
Sciton **BBL**	✓
Syneron **Elos Aroura**	✗

Sapphire vs. Quartz Crystal

A phenomenon that's becoming more widely recognised and understood is one of pitting. Pitting is where the face of the treatment head crystal develops pin-head sized divots. These divots then diffract light and consequently disrupt the uniform output of light. As such, pitted treatment heads give rise to uneven distribution of light and hence run the risk of both under treating and over treating (i.e. potential to inflict harm).

Pitting occurs with hair removal more often than with other procedures and is thought to be due to thermal damage caused by heated hair in direct contact with the crystal. However, what is not so widely publicised is that this effect only occurs with quartz crystals. To date the more expensive sapphire crystals show no evidence of pitting.

Another short coming of quartz heads is their tendency to develop frank internal fractures. If undetected by the clinician these cracked heads will always produce adverse effects and may easily cause serious burns. Once again, this phenomenon has only been documented in quartz heads.

	Sapphire Crystal
Cutera **Solera**	✓
CyDen **iPulse i300**	x
DDD **Ellipse Super Flex**	x
Luminex **L600-L800**	✓
Lumenis **Quantum HR/SR**	x
Palomar **Medilux**	x
Sciton **BBL**	✓
Syneron **Elos Aroura**	✓

KEY RECOMMENDATION

Based on current evidence it's clear that the most desirable crystal to have in your treatment head is sapphire. Quartz should be avoided.

Ongoing Education And Support

Any form of information that improves your knowledge and skill set will serve to reduce the frequency and severity of adverse reactions. Such information can be delivered in one of three ways:

1. Clinical Exchange Channel: As previously described, a clinical exchange program is an open forum where IPL operators can share ideas and experiences.

2. On-Call Clinical Support: Should you have ancillary staff operating an IPL in your absence and you are out of reach, it would be beneficial to all involved for your team to have access to a support person. Such a support person should be capable of knowledgably talking your staff through any treatment planning issues or unexpected clinical outcomes.

3. Formal Ongoing Education: As the field of IPL therapy advances, all new clinically relevant findings and advanced techniques should be made readily available to you via a continuing education program. This may take the form of a newsletter, website, DVD/video and/or live workshops.

To minimise the incidence of adverse reaction your distributor should directly or indirectly supply you with at least one of these ongoing education and support channels.

	Clinician Exchange Program	On-Call Support	Continuing Education
Cutera **Solera**	✗	✓	✗
CyDen **iPulse i300**	✓	✓	✓
DDD **Ellipse Super Flex**	✗	✓	✓
Luminex **L600-L800**	✗	✓	✓
Lumenis **Quantum HR/SR**	✗	✓	✗
Palomar **Medilux**	✗	✓	✗
Sciton **BBL**	✗	✓	✓
Syneron **Elos Aroura**	✗	✓	✗

Adverse Reaction Action Plan

Every clinician should be prepared to recognise and appropriately deal with any adverse reaction ranging from minor irritation to disfiguring burns and pigment changes.

Ask any medical indemnity provider and they'll tell you, what most upsets patients following an adverse reaction is not the incident itself, but rather how poorly it's handled after the event.

As you'll inevitably experience an adverse reaction at some point with your IPL, having clear and specific protocols for the management of these incidents will save both you and your patients unnecessary grief.

While ultimately it is your responsibility to have these in place, it makes sense that the distributors should provide such a protocol with every IPL they install. In fact, not only should they supply you with step-by-step procedures manuals for every type of adverse reaction, they should also consider giving you patient instruction forms; incident report forms; occupational health and safety forms; and ongoing patient contact guidelines.

Once again, this is a critical area generally disregarded by IPL distributors.

The only distributor of the 8 reviewed here that supplies such protocols and forms is Sciton. They take this duty of care one step further by supplying their clinicians with a first aid kit specifically designed to deal with IPL adverse reactions.

	Adverse Reaction Action Plan	IPL First Aid Kit
Cutera **Solera**	✗	✗
CyDen **iPulse i300**	✗	✗
DDD **Ellipse Super Flex**	✗	✗
Luminex **L600-L800**	✗	✗
Lumenis **Quantum HR/SR**	✗	✗
Palomar **Medilux**	✗	✗
Sciton **BBL**	✓	✓
Syneron **Elos Aroura**	✗	✗

Critical Factors To Optimise Your return On Investment

Like most other medical equipment, an IPL represents a significant financial investment…. once you've purchased a model it can be extremely difficult and/or painful to change your mind.

It makes sense then that when choosing a particular IPL you want to be extremely confident that not only will the machine deliver excellent clinical results, it will also give you the largest return on your investment in the shortest possible time.

Before discussing the various factors that determine an IPL's return on investment, it's helpful to understand two simple concepts.

1. Profit Per Shot: Every treatment head has a limited number of shots it can fire before needing to be replaced. Bearing in mind that an individual full course of treatment will incur a set fee, it follows on then that the more full courses of treatment you deliver per head, the higher your overall income will be.

Now if you divide that income by the number of shots delivered to generate that income you will come up with the Profit Per Shot.

It makes sense then that anything which increases the number of shots required to complete a full course of treatment will directly reduce your Profit Per-Shot.

2. Equipment Optimisation: The concept of Per-Shot Profit is all well and good, however it does not take in to account one critical factor– time. As a business person you want the money you paid for the equipment back as fast as possible. This is known as **Return OF Investment**.

Once you've recouped you're investment all subsequent revenues drop straight to your bottom line.

The concept that determines the speed of the return of your investment is Equipment Optimisation. Anything that increases the number of maximum-profit-shots fired each day will accelerate your return of investment.

Put another way, no matter how profitable each shot you fire is, if you're not firing any shots you'll go broke!

Ideally, then, you want your IPL to be running all day every day at maximum profit per shot.

With this in mind, let's turn our attention to the technical and non-technical determinants of maximum return on investment.

Repetition Rate

Flash lamps are hungry beasts. They require huge bursts of current to produce therapeutic light. The way IPL's deliver these bursts of energy is by means of their capacitors.

Without getting technical, capacitors are large, heavy electrical components that draw current from your power point to store large amounts of energy. This stored energy is then rapidly discharged to fire the flash lamp.

In much the same way as a camera flash has to recharge after being fired, so too capacitors have to recharge before they can fire a flash lamp.

The time it takes between IPL flashes (i.e. the time it takes for the capacitors to recharge) is called the Repetition Rate. The shorter the interval between shots - the higher the repetition rate.

Relating this to profitability, the faster the repetition rate, the shorter the duration of each treatment and hence the more treatments you can do in a day. Obviously, the more treatments you can do in a day the greater your level of potential equipment optimisation.

In this manner, IPL's with faster repetition rates produce less down time and consequently accelerate return OF investment.

So how does an IPL manufacturer maximise repetition rate?

Quiet simply, by drawing more current from your power point to recharge capacitors quickly.

Extending our camera flash analogy, a cheap camera flesh will take an eternity to recharge between flashes. However, a professional camera flash recharges almost instantly… but they drain the power to do so. And so it is with IPL's.

Translating this in practical terms, any IPL that can be plugged in to a standard 10amp power socket will cost you money. Either it will take an eternity between shots to recharge OR its capacitors are small and produce weak fluences.

In the first scenario, excessive down time between shots reduces equipment optimisation. In the second scenario a weak fluence creates a need for more treatment sessions and hence reduces profits per shot.

Conversely, any IPL that requires the power point to be modified to either a 15 amp or 20 amp socket will have the ability to increase the repetition rate and/or increase the fluence output.

Naturally, an IPL with twin flash lamp and square pulse technology (i.e. lower fluence level required to produce therapeutic light) requiring a 15 or 20 amp power supply will produce the fastest repetition rates and hence be most profitable.

Finally, we should point out that no matter how fast an IPL's repetition rate is if the shots are uncomfortable it's likely that you'll have to pause between shots anyway. As such, IPL's with high repetition rates should ideally possess square wave technology and have integrated cooling to take advantage of their rapid firing ability.

	Power Supply	Max. Repetition Rate (delay between shots)
Cutera **Solera**	**20 amp**	**1Hz (1 sec)**
CyDen **iPulse i300**	**10 amp**	**0.25Hz (4 sec)**
DDD **Ellipse Super Flex**	**10 amp**	**1Hz (1sec)**
Luminex **L600-L800**	**10 amp**	**0.33Hz (3 sec)**
Lumenis **Quantum HR/SR**	**15 amp**	**0.5Hz (2 sec)**
Palomar **Medilux**	**10 amp**	**1Hz (1 sec)**
Sciton **BBL**	**20 amp**	**2Hz (0.5 sec)**
Syneron **Elos Aroura**	**10 amp**	**0.7Hz (1.4 sec)**

Range Of Wavelengths

An IPL flash lamp can generally emit a continuous spectrum of wavelengths ranging from about 400nm to 1200 nm. Within this range of wavelengths an IPL can produce there are a number of conditions which can be treated. It follows on that the more therapeutic wavelengths an IPL can deliver the more treatments you can provide and hence the less likely the IPL will be sitting idle in your clinic.

Restating this: the more therapeutic wavelengths an IPL possess, the greater the potential for maximum equipment optimisation.

A good question to ask is "If a flash lamp can deliver a wide spectrum of light, why then are there so many different heads?"

The answer is in the filtering.

By selectively filtering out non-therapeutic wavelengths you can target a specific chromophore without affecting other tissues. For instance, without filtering you can not selectively treat hair without affecting oxyhaemoglobin. This could easily result in burning and hyperpigmentation, especially if the fluence required is high as in hair removal.

As you can see in the table below, not all IPL's deliver the full spectrum of therapeutic wavelengths. Naturally, you'll enjoy greater returns on your investment the more treatments you can deliver.

But the number of available wavelengths is only part of the picture. Unfortunately, most IPL manufacturers mandate that you purchase a separate treatment head for each therapeutic wavelength. In other words, if you want to provide the full range of available therapies, you usually have to pay extra for additional heads.

And if that's not enough, on top of the additional head fee some distributors have the audacity to charge an extra licence fee to 'activate' your IPL to work the respective heads.

These systems obviously increase your capital outlay and hence delay your return OF investment. Naturally, these systems should be avoided if at all possible.

Filter Wavelength	Indicated Treatment
420	Photodynamic Therapy
515	Pigmented Lesions
560	Vascular and Pigmented Lesion
590	Vascular
640	Collagen Stimulation
695	Hair Reduction
755	Hair Reduction In Dark Skin

	420	515	560	590	640	695	755
Cutera **Solera**	✗	✗	?*	?*	?*	?*	?*
CyDen **iPulse i300**	✗	?*	?*	?*	?*	?*	?*
DDD **Ellipse Super Flex**	✗	✓	✓	✓	✓	✓	✓
Luminex **L600-L800**	✗	✗	✓	✓	✓	✓	✓
Lumenis **Quantum HR/SR**	✗	✗	✓	✓	✓	✓	✓
Palomar **Medilux**	✗	✓	✓	✓	✓	✓	✓
Sciton **BBL**	✓	✓	✓	✓	✓	✓	✓
Syneron **Elos Aroura**	✗	✓	✗	✓	✓	✓	✓

***NOTE:** While on the topic of filtering two systems stand out as being very different from the rest. The first of these is the iPulse i300 which has only one head and no filters. They state that the emitted wavelengths are directly determined by the energy delivered to the flash lamp. While this has merit, what they do not explain (and we do not understand) is if the fluence determines the emitted wavelengths, how does one modify the fluence for a particular treatment? The other is the Cutera Solera which comes with two heads and again relies on fluence variation to control the emitted light. Should you be thinking about purchasing either the iPulse i300 or the Cutera Solera be sure that you completely and thoroughly understand how you can modify fluence without affecting the therapeutic wavelength.

	Treatment Head Options
Cutera **Solera**	2 available heads - see NOTE above
CyDen **iPulse i300**	1available head - see NOTE above
DDD **Ellipse Super Flex**	5 available heads
Luminex **L600-L800**	2 available heads
Lumenis **Quantum HR/SR**	5 available heads
Palomar **Medilux**	5 available heads
Sciton **BBL**	1 head with complete set of insertable, interchangeable filters
Syneron **Elos Aroura**	3 available heads

Treatment Head Size

As discussed earlier, with a corresponding increase in fluence, the larger the head size the greater depth of penetration. Hence, the larger the treatment head size (especially for twin-flash lamp models) the more effective the treatment and consequently the fewer appointments needed to achieve a clinical end point (i.e. greater profit per shot).

Similarly, the larger the treatment head, the fewer shots required to cover a given area as compared to a smaller head. Put another way, for the same given area charged at the same fee to the patient, the larger the head the higher the profit per shot.

Portability

In order to build up clientele quickly, you may choose to operate from more than one clinic. In this instance, a portable IPL will hold great appeal.

While weight and size are critical factors in determining portability, your purchasing decision should not be disproportionately biased by a desire to own a light-weight, transportable IPL. Rather, weight and size should be balanced with efficacy and profitability factors.

	Size (cm)	Weight (Kg)
Cutera **Solera**	51 x 38 x 34	23
CyDen **iPulse i300**	51 x 35 x 31	25
DDD **Ellipse Super Flex**	160 x 45 x 38	72
Luminex **L600-L800**	121 x 60 x 48	52
Lumenis **Quantum HR/SR**	100 x 40 x 40	75
Palomar **Medilux**	60 x 45 x 30	29
Sciton **BBL**	110 x 82 x 38	67
Syneron **Elos Aroura**	90 x 38 x 38	25

Clinical Pre-Evaluation

As an IPL represents a significant financial commitment you want to be sure your clinic can support one. However, unless you've had previous experience with an IPL it can be very difficult to know before hand just how profitable (or how burdensome) an IPL will be.

To ensure you have a fair chance of maximising your return on investment a diligent distributor with experience in promoting a successful IPL clinic should assess your clinic prior to selling you their IPL.

They should thoroughly examine every prospective clinic for things such as existing systems, human resources, financial resources, complimentary services and competition. If according to this assessment the distributor concludes a clinic is inadequately prepared to support a successful IPL then they should refuse to sell their machine to that clinic in its curent state.

However, having gone through this process the clinician is given a unique opportunity to identify and rectify the deficiencies before committing to a potential financial burden.

Naturally, should the clinician bring their clinic up to speed then the distributor would gladly sell them their machine. Similarly, if the clinician is unwilling to take on board their recommendations then the 'no-sale' stands.

On the surface such a process may seem counter intuitive. Why would any distributor do anything to risk losing the sale?

The reality is, by restricting their sales exclusively to clinics set-up to succeed they will ensure they associate with only the most profitable clinics. This in turn creates a win-win-win for all parties.

The clinician who purchases wins because they have the confidence of knowing they have what it takes to succeed.

The non-purchasers win because they are not set-up and left to struggle.

And the distributor wins because their track record for success attracts even more clinicians who wish to emulate that success.

Of the 8 IPL's reviewed here, only one performs a clinical pre-evaluation.

	Clinical Pre-Evaluation
Cutera **Solera**	✗
CyDen **iPulse i300**	✗
DDD **Ellipse Super Flex**	✗
Luminex **L600-L800**	✗
Lumenis **Quantum HR/SR**	✗
Palomar **Medilux**	✗
Sciton **BBL**	✓
Syneron **Elos Aroura**	✗

Marketing Support

Without question, the single most critical factor in determining the level of success an IPL clinic will enjoy is marketing.

No matter how fantastic an IPL performs clinically, if no one knows about your IPL you'll go broke.

In our opinion every prospective IPL customer should spend at least as much time investigating the marketing support that comes with an IPL as they do investigating the technical aspects.

The sole objective of your marketing package is to provide you with a turn key solution that will unlock maximum profits with minimal outlay of time and money.

Four components go in to creating a comprehensive marketing package:

1. A Customised Marketing Plan: There is no one size fits all marketing solution that can be dropped in to any clinic anywhere in the world and churn out money. Each clinic has its unique strengths and weaknesses. To ensure you succeed in this competitive market your IPL distributor should to come in to your clinic and devise a marketing plan that maximises your profitability. Such a consult should take place prior to the IPL being installed so that when it does arrive, patients are already lined up to use it.

In designing this customise plan, the consultant should at least take in to consideration the following factors:

- Your marketing knowledge
- Your marketing experience
- Your existing marketing material
- Your existing database
- Your marketing budget
- Complimentary services you provide
- Potential business allies
- Your competitors

2. Sales Training: While effective marketing will get people calling, if your team is not trained to sell then all the time and money spent generating leads will not be fully leveraged. Such training should include converting prospects to customers; getting IPL customers to buy more IPL services; getting IPL customers to purchase product and / or other services; and getting existing clients using IPL services.

3. An Initial Set Of Marketing Tools: To support your initial marketing efforts you should be supplied with a basic marketing kit. While brochures, posters and clinical photographs are desirable, these are by no means all one needs to market their clinic. A comprehensive starter kit should have the following material as a bare minimum to ensure rapid profitability:

- Pamphlet templates
- Poster templates
- Before and after booklet
- Stock of clinical photographs
- Direct mail pieces
- Newspaper ads
- Postcards
- Yellow pages ads
- Press releases
- Magazine articles
- Radio ads
- Newsletter templates
- Phone scripts
- Guarantees
- Joint venture proposals
- Cross selling scripts
- Consultation flip charts

All of these tools should come packaged as customisable templates on CD Rom so that you are free to redesign them as you wish.

4. Ongoing Tested Marketing Support: One final marketing element that will maximise your return on investment is ongoing tested marketing support. To find new ways to sell to new and existing clients you must continually expand your marketing. Most clinicians are too busy to create, test and measure new marketing material. Hence, if a distributor can supply you with fresh, tested and proven marketing material not only will they save you precious time but they'll also ensure you always keep ahead of your competition.

To reiterate, do not underestimate the importance of marketing support in relation to maximising your profits. Effective marketing support is the difference between just getting by and hitting the mother load.

	Customised Marketing Plan	Sales Training	Ongoing Marketing Support
Cutera **Solera**	✓	✓	✗
CyDen **iPulse i300**	✓	✓	✗
DDD **Ellipse Super Flex**	✗	✗	✗
Luminex **L600-L800**	✓	✓	✓
Lumenis **Quantum HR/SR**	✗	✓	✗
Palomar **Medilux**	✓	✓	✗
Sciton **BBL**	✓	✓	✓
Syneron **Elos Aroura**	✓	✗	✗

Critical Factors To Minimise Profit Leakage

While the previous chapter examined the variable which increase profitability, this chapter examines the other side of the coin – how to minimise loss of profits.

Treatment Head Replacement

Without question, the largest source of profit leakage from an IPL is the cost of replacing treatment heads. Unfortunately, this cost is often hidden at the time of purchase and it's not until you're well and truly committed to your machine that the real cost of head replacement becomes apparent.

When investigating the cost of head replacement there are three intimately related variables to consider:

1. Number Of Heads: For each therapeutic wavelength most IPL's have a separate treatment head. That can mean up to 7 different heads for the one machine. Apart from the clutter and additional down time this creates; multiple heads introduce another more far reaching draw back. As highlighted in the profitability spread sheet in the next chapter, the more heads you have, the greater the financial impact head replacement will have on your bottom line.

2. Life Expectancy Of Heads: Naturally, the shorter the life expectancy of a head, the greater will be the negative impact on your bottom line. There are three primary determinants of the life expectancy of a head.

The first of these is the number of shots delivered by a head. Understandably, the smaller the treatment head face and the less effective the treatment delivered by that head, the more shots it will fire per course of treatment. Consequently, small inefficient heads will produce less income by the time they need replacing than would larger more efficient heads.

The second determinant of life expectancy is the composition of the treatment head crystal. While the majority of IPL's currently use quartz in their heads, it is now clear that sapphire is orders of magnitude more durable than quartz.

The final critical determinant of head life expectancy is the average fluence that is delivered through the head. It is widely recognised that as the average fluence delivered by a head increases, the life expectancy of that head decreases exponentially. For this reason, treatment heads that have twin flash lamps and true square wave delivery (i.e. require lower fluences) generally have a life expectancy significantly greater than single lamp, non-square-wave heads.

3. Cost Per Head: While it may seem reasonable to think that the more money it costs to replace (or service) a head, the greater the impact head replacement will have on your profits, this is not so. What plays a more significant role in determining how much profit head replacement takes away from your bottom line is the inter-play of all three variables. To give you a deeper appreciation of how these three variables can come together and ferociously eat away your profits take a look at the profitability spread sheet in the next chapter.

	Number of Heads	Life Expectancy	Cost Per Head
Cutera **Solera**	2	100,000 shots	$8,500
CyDen **iPulse i300**	1	20,000 shots	$1,150[1]
DDD **Ellipse Super Flex**	5	15,000 – 60,000 shots	$3,500[2]
Luminex **L600-L800**	2	20,000 – 100,000 shots	$0[3]
Lumenis **Quantum HR/SR**	5	20,000 shots	$4,000
Palomar **Medilux**	5	20,000 shots	$5,500
Sciton **BBL**	1	300,000 shots	$12,500
Syneron **Elos Aroura**	3	20,000 – 60,000 shots	$5,500

1. Has replaceable flash lamps i.e. no need to purchase new heads, only flash lamps.
2. $20,000 warranty plan to cover unlimited head replacement for 12 months.
3. Head replacement is factored in to the monthly payment scheme.

Breakdown Technical Support

In a busy practice, each day that goes by without an IPL can end up costing your clinic thousands of dollars of lost revenue. Hence, how a distributor manages any breakdown / service issues with your IPL has a great bearing on minimising profit leakage.

While one hopes to never need call on breakdown support, when investigating various IPL's to purchase it's important to clarify the terms and conditions of breakdown support. Things to look out for include any hidden costs of servicing; is a replacement model available; what is the maximum down town a distributor can leave you without a functional IPL; and does the distributor accept accountability for lost revenues if they exceed their maximum down time allowance.

Consumables

In addition to treatment heads and optical gel some IPL's require frequent replacement (i.e. purchasing) of consumables. These need to be factored in to your projections when investigating the profitability of a particular IPL.

Machine Down Time

Any time that your IPL is not treating patients is effectively costing you money. While a breakdown that puts your IPL out of action for a day or two may seem devastating, like a dripping tap what's more insidious is the day to day down time of your machine.

The best way to keep your IPL running day-in, day-out is to have an effective marketing and sales plan and implement it vigilantly. While you can spend time and money testing and measuring various marketing pieces, a more leveraged approach is to use a turn key tried and tested proven marketing solution. This has already been covered in the previous chapter under Marketing Support.

Profitability Analysis

Having discussed the various characteristics of an IPL solution that maximize profits and minimise losses, this chapter aims to quantify the overall profitability of the 8 IPL's reviewed in this study.

In the spreadsheet below we have brought all profitability variables together in an effort to pit the reviewed IPL's head to head on level terms. For the sake of making the comparison relevant, we have arbitrarily created a baseline scenario.

This scenario presumes that a regular IPL clinic treats 5 new patients per week at an average cost of $1,200 per full course of treatment and that a full course of treatment requires on average 5 appointments to complete. The final assumption made is that the average treatment surface area per session is 50000 mm^2 (i.e. the approximate surface area of a face).

In addition to these assumptions we have introduced two factoring constants.

The first of these is the Marketing Factor which subjectively incorporates all the marketing support in an effort to demonstrate its effect on the number of new patients treated per week. The better the marketing support, the higher the Marketing Factor and hence the more new patients treated per week.

The second of these is the Re-Treatment Factor which subjectively incorporates all the variables that contribute to clinical effectiveness in an effort to demonstrate its effect on the average number of appointments per course of treatment. The worse the clinical efficacy, the higher the Re-treatment Factor and hence the more average visits required to complete a full course of treatment.

New Pt Per Week	5	5	5	5	5	5	5	5
Av Cost of Course of Tx	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200
Av No. Apts Per Course of Tx	5	5	5	5	5	5	5	5
Av Tx Area Per Apt	50000	50000	50000	50000	50000	50000	50000	50000
IPL Price	$95,000	$47,000	$149,000	$30,000	$110,000	$135,000	$147,000	$110,000
	Solera	**iPulse**	**Ellipse**	**Luminex**	**Quantum**	**Medilux**	**BBL**	**Aurora**
Head Width	10	27	10	10	8	16	15	12
Head Length	30	27	50	50	34	46	45	25
Head Area	300	729	500	500	272	736	675	300
Marketing Factor	1.25	1.5	1	1.75	1.25	1.25	2	1
Retreatment Factor	1.4	1.8	1.2	1.7	1.7	1.4	1	1.9
Shots Per Apt	167	69	100	100	184	68	74	167
Shots Per Course	1167	617	600	850	1563	476	370	1583
Profit Per Shot	**$ 0.92**	**$ 1.90**	**$ 1.67**	**$ 1.19**	**$ 0.56**	**$ 2.06**	**$ 3.09**	**$ 0.45**
No of Shots Over 3 Yrs	1,093,750	694,444	450,000	1,115,625	1,464,844	445,822	555,556	1,187,500
Shot Head Life	100,000	20,000	30,000	60,000	20,000	20,000	300,000	40,000
No. Heads Used	10	34	16	17	65	24	2	56
No. New Heads	8	33	10	36	60	21	1	53
Cost per New Head	$ 8,500	$ 1,150	$ 3,500	$ 7,800	$ 4,000	$ 5,500	$ 8,500	$ 5,500
Cost of Head Replacement	$ 68,000	$ 37,950	$ 35,000	$ 280,800	$ 240,000	$ 115,500	$ 8,500	$ 291,500
Gross Income Over 3 Yrs	$1,170,000	$1,404,000	$ 936,000	$1,638,000	$1,170,000	$1,170,000	$1,872,000	$ 936,000
Less Replacement Head Cost	$1,102,000	$1,366,050	$ 901,000	$,357,200	$ 930,000	$1,054,500	$1,863,500	$ 644,500
Less Purchase Price	$1,007,000	$1,319,050	$ 752,000	$1,327,200	$ 820,000	$ 919,500	$1,712,500	$ 534,500
Net Profit	**$1,007,000**	**$1,319,050**	**$752,000**	**1,327,200**	**$820,000**	**$919,500**	**$1,712,500**	**$534,500**
Profit Difference	$ 472,500	$ 784,550	$ 217,500	$ 792,700	$ 285,500	$ 385,000	$1,178,000	$ -
Profitability Factor	**1.88**	**2.47**	**1.41**	**2.48**	**1.53**	**1.72**	**3.20**	**1.00**

In the analysis above, the two most telling factors are the Profit Per Shot and the Profitability Factor. While the former is self explanatory, the latter is simply an indicative ratio of how much more profitable a specific IPL is as compared to the least profitable machine (in this case the Aurora).

The chart below demonstrates the relative Profitability Ratios of all IPL's as compared to one another. To make sense of this spreadsheet, simply look for the model you are interested in along the top line in red and then go down that column to see much more profitable it is compared to other models. If the figure is greater than 1, then the model in red is more profitable then the IPL compared in blue. If the figure is less than 1 then the red IPL is less profitable than the blue.

For instance, if you want to see how the iPulse compares to the Quantum, go to the column headed by the red iPulse then go down to the row headed by Quantum in blue and you'll see the number 2.75. This simply means that the iPulse is 2.75 times more profitable than the Quantum.

	Solera	iPulse	Ellipse	Luminex	Quantum	Medilux	BBL	Aurora
Solera	-	1.31	0.75	1.32	0.81	0.91	1.70	0.53
iPulse	0.76	-	0.57	1.01	0.62	0.70	1.30	0.41
Ellipse	1.34	3.61	-	1.76	1.09	1.22	2.28	0.71
Luminex	0.76	0.99	0.57	-	0.62	0.69	1.29	0.40
Quantum	1.23	2.75	0.92	1.62	-	1.12	2.09	0.67
Medilux	1.10	1.43	0.82	1.44	0.89	-	1.86	0.58
BBL	0.59	0.77	0.44	0.78	0.48	0.54	-	0.31
Aurora	1.88	2.47	1.41	2.48	1.53	1.72	3.20	-

	Profitability Rank
Solera	4
iPulse	3
Ellipse	7
Luminex	2
Quantum	6
Medilux	5
BBL	1
Aurora	8

1 = Most Profitable 8 = Least Profitable

System Summary

Having discussed the critical characteristics of an ideal IPL solution in isolation, this chapter brings it all together to summarise the good, the bad and the ugly of each IPL reviewed.

Cutera Solera

The Good:

- Portable
- Square pulse
- Very long head life (100,000 shots)

The Bad:

- Small head size
- Single flash lamp with associated problems
- Poor profit per shot
- Poor continuing education program

Rating:

A generally sound IPL let down by it's poor profitability. Better suited for beauty therapy clinic but its price may serve as a barrier to this market.

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CyDen iPulse i300

The Good:

- Affordable price
- Excellent clinical training and continuing education
- Square pulse
- Very good marketing support
- Portable
- Easy to change, low cost replaceable flash lamps
- Good profits per shot
- Big head

The Bad:

- No integrated cooling
- Quartz crystal
- No filtering of wavelengths above 950nm
- Very poor repetition rate (4 second delay between shots) due to very small capacitors
- Questionable efficacy of fluence control over emitted light without the use of filters
- Poor design and construction

Rating:

The numerous appealing benefits make this IPL very attractive. However, the lack of infra-red filtering, the lack of integrated cooling, the extremely small (and under-powered) flash-lamps, the extremely small capacitors and the overall cheap design and construction are major shortcomings which dramatically increase the potential for adverse reactions and negatively impact clinical efficacy. For these reasons great caution should be exercised when investigating this option.

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Web: http://www.ipulse.com.au/

DDD Ellipse Super Flex

The Good:

- Square pulse
- Comes with two of each heads so that never without a head when one requires replacement
- $20,000 warranty for unlimited head replacement during a 12 month period

The Bad:

- Expensive
- Quartz crystal
- No cooling mechanism
- Single flash lamp with associated problems
- Poor marketing support
- Not portable

Rating:

Marketed as a top end IPL (with a price to match) its numerous and significant draw-backs make it difficult to justify the financial outlay and risks.

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Luminex L600 – L800

The Good:

- Very low entry cost
- Excellent profitability
- Unlimited head replacement
- Square pulse
- Very good training and ongoing support

The Bad:

- Poor repetition rate
- Ongoing monthly payment plan
- Not portable
- Only comes with 2 treatment heads

Rating:

Marketed to beauty clinics the price, benefits and limited short comings make this an excellent investment for the beauty therapist.

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Lumenis Quantum HR/SR

The Good:

- Integrated cooling

The Bad:

- Small head size
- Poor repetition rate
- Single flash lamp with associated problems
- Non-square pulse
- Quartz head
- Poor head life
- Poor profit per shot
- Poor marketing support
- Not portable
- Lack of continuing education program

Rating:

Once the king of IPL the Quantum has rapidly been superseded by almost every other IPL on the market. Even its own manufacturer has all but abandoned it in favour of its big brother, the Lumenis 1. With its plethora of problems and lack of endearing benefits there is practically no compelling reason for anyone to invest good money in a Quantum. An easy decision to cross this of your list.

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Email: arjenb@medtel.co.nz

Web: www.aesthetic.lumenis.com/wt/page/prodsol

Palomar Medilux

The Good:

- Biggest head size
- Good profit per shot
- Integrated cooling
- Portable

The Bad:

- Single flash lamp with associated problems
- Non-square pulse
- Quartz head
- Poor marketing support
- Lack of continuing education program
- Photon recycling little more than a marketing gimmick

Rating:

One of the original 'Big 3' IPL's the Medilux still holds its own, especially for those seeking a portable solution.

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Sciton BBL

The Good:

- Best profit per shot
- Most profitable machine (despite its price)
- Unparalleled exceptional marketing support
- 300,000 shot warranty for head
- Interchangeable filters that slip into the 1 head
- Over-under twin flash lamp configuration
- Square wave
- Big head
- Thorough evaluation of clinic before committing to sale
- Adjustable integrated cooling
- Fastest repetition rate (0.5 second delay between shots)
- Can easily add other lasers on the base platform
- Provide adverse reaction protocol with free IPL first aid kit
- Provide a 'minimum income' guarantee

The Bad:

- Not portable
- Price

Rating:

Without question, the current gold standard of IPL. In addition to its exceptional design, clinical efficacy and safety, the plethora of supporting non-technical features (especially the comprehensive ongoing marketing support) make this the most complete IPL solution for the serious clinician. P rice more than justified by the endless benefits.

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Syneron Elos Aurora

The Good:

- Integrated cooling
- Portable
- Heavily marketed in media

The Bad:

- Worst profit per shot
- Least profitable machine
- Single flash lamp with associated problems
- Non-square pulse
- Smallest head on market
- Lack of continuing education program

Rating:

While the Elos Aurora enjoys widespread publicity in the media (at considerable expense to it distributors) its distinction as the least profitable IPL of those compared in this report make it difficult to justify the outlay.

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Multi-Platform Options

No review of IPL's would be complete without acknowledging the current emerging trend of multi-platform solutions. In essence, multi-platform solutions are pieces of medical equipment which incorporate a number of laser as well as IPL modalities in to the one system.

The benefits of multi-platform solutions include less down time (i.e. machine can be used for multiple different applications); greater affordability (i.e. negates need to pay for multiple expensive machines); and less service contract issues (i.e. only deal with one service contract for multiple functions).

The four most popular multi-platform solutions currently available are:

4 Top Selling Multi-Platforms

- Lumenis **Lumenis 1**
- Palomar **Starlux**
- Sciton **Profile MP**
- Syneron **Galaxy**

Although we are currently compiling a comprehensive review of these systems for future publication, it is appropriate to summarise some of the key factors to look for as part of this review.

When in the market for a multi-platform solution, there are 4 critical questions you must ask (in addition to all the IPL-related questions covered in this review) before making your choice.

What Modalities Are Available With The Machine?

As these machines have an IPL component as well as one or more laser components it makes sense to evaluate the IPL features based on the review presented in this report as well as compare the available laser applications.

The following table summarises the IPL components of these systems.

	Lumenis 1	Starlux	Profile MP	Galaxy
Square Wave	✓	✓	✓	x
Crystal	Sapphire	Quartz	Sapphire	Sapphire
Flash Lamp Configuration	Single	Single	Over-Under Twin	Single
Head Size (mm)	15 x 35 + 8 x 15	10 x 15	15 x 45 + 15 x 15	12 x 25
Number of IPL Heads	1 head with 7 interchangeable filters	5 separate IPL heads	1 head with 7 interchangeable filters	3 separate IPL heads
Wavelength Ranges (nm)	515; 560; 590; 615; 640; 695; 755	400-700; 525-1200; 650-1200; 500-670;	420; 515; 560; 590; 640; 695; 755	680-980 580-980 400-980
Treatment Head Warranty	100,000	300,000	300,000	60,000
Integrated Cooling	✓	✓	✓	✓
Variable Temp Control	x	x	✓	✓
Repetition Rate (Hz)	1	2	2	0.7
Size (cm)	159 x 67 x 47	60 x 45 x 30	110 x 82 x 38	100 x 46 x 36
Weight (Kg)	154	29	67	35
Power Supply (Amp)	16	10	20	10

The following table summarises the available laser wavelengths and their respective clinical applications.

	Head Name	Wavelength	Application	Treatment Area	Contact Cooling	Repetition Rate
Lumenis 1	LightSheer	800nm	Hair Removal	9 x 9 mm	5 °C	2 Hz
	Multi Spot Nd:Yag	1064nm	Leg Veins	2x4, 6, 9 mm	5 °C	1 Hz
	Aluma	Bipolar RF	Collagen stimulation			
Starlux	Nd:Yag	1064nm	Leg Veins	1.5, 3, 6, 9 mm	None	1 Hz
	Lux IR	850-1350nm	Collagen stimulation	12 x 28 mm	5 °C	0.75cm^2/sec
Profile MP	MicroLaserPeel	2940nm	10 - 50 µm Ablation		None	
	Contour	2940nm	10 - 200 µm Ablation + 25 - 100 µm Coagulation		None	
	ClearScan - Hair	1064nm	Hair Removal	30 x 30 mm	-5 °C to 30 °C	460mm^2 / sec
	ClearScan - Vein	1064nm	Leg Veins	3, 6, 8 mm	-5 °C to 30 °C	2.7 Hz
	ThermaScan	1319nm	Collagen stimulation + Acne	30 x 30 mm	-5 °C to 30 °C	15 Hz
Galaxy	Vascular	900nm	Leg veins	5 x 8 mm	5 °C	1 Hz
	Wrinkle Reduction	900nm	Collagen stimulation	8 x 12 mm	5 °C	1 Hz

How Many Of These Modalities Can I Integrate On My Machine?

It's one thing to have multiple options available to you. It's another thing to have all of these applications operating on your machine. The following table summarises the number of available modalities as well as the minimum and maximum number you can have on you machine at any one time.

	Lumenis 1	Starlux	Profile MP	Galaxy
No. Available Modalities*	4	3	6	3
Minimum No. of Modalities	1	1	1	1
Maximum No. of Modalities	3	3	6	3

* All IPL heads are considered as one modality

Can I Change My Selection Of Modalities In The Future?

The attraction of multi-platform machines is the apparent ability to pick and choose the components that suit you best. With time and as new modalities arise you would like the ability to once again add and subtract elements as your needs change.

A multi-platform machine that offers you this complete flexibility is known as a **modular** unit. Modular units afford you genuine future-proof protection.

On the other hand, some multi-platform units **can not** be reconfigured in future. Such machines are referred to as **static** units. So while you van pick and choose your initial components, once in your office, that's it… you're stuck with that configuration for good. Naturally, static units are considerably more restrictive and less desirable than modular units.

In between are **semi-modular** units. Semi-modular units allow you to add and subtract existing elements. However, they do not allow you to add on any new components that may become available in the future,

The following table indicates which systems are modular (and hence future proof) and which ones are static.

	Lumenis 1	Starlux	Profile MP	Galaxy
Upgrade-ability	Static	Semi-modular	Modular	Semi-modular

What Marketing Support Comes With The Machine?

As is case with IPL's, the ultimate success of a multi-platform solution relies heavily on the marketing support it comes with. Unfortunately, for all but the Sciton MP Profile, the marketing support that comes with these machines is only slightly better than that supplied with their respective IPL's.

Cosmetic Equipment Reviews

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