



ARPANSA advisory note

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Lasers, intense pulsed light (IPL) sources and light-emitting diode (LED) phototherapy in the cosmetic and beauty therapy industry

Core concepts

- Reports of injuries, increased media coverage and industry calls for regulation of non-surgical cosmetic treatments have led radiation regulators to consider the potential problems within the cosmetic and beauty therapy industry.
- Regulatory oversight of treatment providers varies throughout Australia. These services include using lasers and intense pulsed light (IPL) devices for procedures such as hair removal, skin resurfacing, acne and scar reduction and tattoo removal. There is no oversight and very little information available for providers or consumers regarding light-emitting diode (LED) phototherapy.
- In 2015, ARPANSA released a consultation Regulatory Impact Statement (RIS) for the use of lasers and IPL devices in the cosmetic and beauty therapy industry. The public consultation received a large number of submissions from the public and industry stakeholders.
- The majority of submissions indicated that the industry would benefit from some system of oversight in the use of lasers and IPLs for cosmetic treatments. However, there was insufficient information provided by submissions to support the introduction of a national regulatory framework.
- Based on the support for oversight and the safety concerns raised in the consultation process, the Radiation Health Committee (RHC) agreed that there was a need to develop nationally--available advice for the cosmetic and beauty therapy industry in order to promote a uniform approach to managing key issues around the use of optical radiation for non-surgical cosmetic treatments.
- This advice focuses on the safe delivery of cosmetic treatments in two key areas: consumer education and treatment provider competency.

What are the potential health consequences of light-based treatments?

Lasers, IPLs and LED phototherapy used in cosmetic treatments emit either visible or infrared (IR) light or, in the case of IPLs, a combination of both. This light is known as non-ionising radiation (NIR). The International Commission on Non-ionizing Radiation Protection (ICNIRP) is the peak world body for providing scientific advice and guidelines to protect people and the environment from detrimental exposure to NIR. This includes light that is emitted by sources such as lasers and powerful light sources such as IPLs and LEDs.

In ICNIRP's advice about visible and infrared optical radiation exposure, they have stated that:

“Visible radiation (light) is not thought to play a role in initiating skin cancer. However, some medications can result in the skin becoming photosensitized so that exposure to visible radiation (light) can cause toxic photochemical reactions in the skin.”

“With regard to shorter-wavelength (i.e. blue light) visible radiation, there are some ongoing discussions that this might accelerate retinal aging.”

“Blue light also suppresses the secretion of melatonin, which contributes to the regulation of sleep and wake cycles. The health implications of de-regulation of the day and night (circadian) rhythm remain unclear and continue to be the subject of research.”

“Exposure to extremely bright sources such as high power flash-lamps at close distances, or laser radiation (light) with intermediate or higher power levels, can also result in high local temperature rises inducing retinal thermal injury (eye damage) within milliseconds (i.e. much too fast for the natural aversion response to prevent injury). This retinal burn leads to a localised loss in the visual field, i.e. a dark spot. Other absorbing (sensitive) tissues, particularly the iris and the skin, are also at risk from burning.”

“IR (infrared light) penetrates the human skin and the eye to various depths ranging from several millimeters to superficial absorption. Harmful health effects of IR (infrared light) are due to thermal injury of tissues mediated largely through water molecules but also through changes to protein structure.”

In current cosmetic and beauty therapy industry practice the risk of inappropriate or incorrectly performed treatments is not well understood. There have been several reported instances of injuries received by consumers. The consequences of these incorrect treatments can range from minor burns to severe injuries requiring follow-up medical treatments leading to permanent scarring in the affected areas. Treatments conducted near the eyes could also lead to eye injuries and vision impairment. Of particular concern have been cases where cosmetic treatments have been performed inappropriately to treat the symptoms of malignant skin conditions including melanoma, effectively masking or removing these symptoms. This has led to several instances of late or missed diagnosis of serious underlying health problems.

Why is advice necessary?

The application of light-based cosmetic treatments provide a range of benefits to consumers but the delivery of these services comes with varying degrees of risk depending on the procedure performed.

Currently, regulatory oversight of the use of lasers and IPLs in cosmetic light-based treatments varies considerably throughout Australia. Tasmania, Queensland and Western Australia each have regulatory

frameworks in place to promote the safe delivery of services using lasers in cosmetic treatments. Each of these states have a different set of requirements for licensing. Regulations for the safe use of IPLs to perform cosmetic procedures are only in place in Tasmania. In the remaining states and territories there are no licensing requirements at all. Aside from causing confusion for treatment providers wanting to set up a business in the industry, there is no single national standard in place to promote the safe delivery of these services to consumers wishing to benefit from the range of treatments available.

There are currently a wide range of operators providing services with lasers, IPLs and LED phototherapy devices. While many are qualified professionals trained in the use of lasers and IPLs for cosmetic purposes, operators with limited or possibly no training can also provide services. Furthermore, the devices used for cosmetic treatments are not necessarily approved by the Therapeutic Goods Administration (TGA). This is because their application for cosmetic purposes is not considered medical. These devices are also easily available for purchase on the internet, sometimes at low cost; this relative ease of accessibility has resulted in a situation where consumers can receive cosmetic treatments using IPLs and lasers from operators who do not have a proper understanding of the risks involved in applying the treatment, and who are using equipment that may be sub-standard or poorly maintained.

The current status quo – different approaches to oversight of the industry, depending on state or territory of practice – does not promote a uniform approach to safety. It has also led to gaps in the stakeholder knowledge about their obligations as treatment providers. Treatment providers seeking to gain qualifications or training for service provision, whether required by local law or not, do not have a clear understanding of the types of courses available.

ARPANSA's public consultation, conducted in 2015 on the range of issues outlined above, showed that the industry supported some system of oversight in the use of lasers and IPLs for cosmetic treatments. The RHC agreed that there was an opportunity to develop nationally available recognized advice that focused on the safe delivery of cosmetic treatments in the two key areas of consumer education and treatment provider competency.

The importance of uniform service provision and public education

There is a common public perception that cosmetic medicine using laser and IPL techniques is quick, easy, painless and low risk. This low-risk perception is not supported as evidenced by the repeated calls for regulation of the industry and the inconsistent approach to oversight in Australia. Many procedures are complex and require a high level of skill and experience, regarding treatment application, aesthetic appreciation of the desired appearance outcome, after-treatment care and understanding of risks. Exposure to LED sources, for example, may present a hazard to the eye depending on the intensity and time of the exposure. Exposure to blue light (a component of certain LED phototherapy treatments) and its effect on day and night rhythm is still the subject of health research.

Promoting a uniform approach to delivering light-based cosmetic treatments creates an opportunity for treatment providers across all of Australia to better understand and manage the risks involved with the procedures they perform. Information about common standards and risk management strategies can

improve the safety of not only clients seeking these treatments but also treatment providers exposed to hazards from the equipment they use. From a consumer perspective, providing nationally available advice around the delivery of services based on good safety practice can increase confidence in the safe delivery of the desired cosmetic outcome.

Educating consumers provides individuals seeking cosmetic treatments with the ability to make informed decisions. The decisions consumers make should relate to both the choice of treatment provider and the procedure itself. The communication of the risks associated with light-based cosmetic treatments can assist consumers in deciding whether a treatment is necessary or advisable in their particular circumstance.

What information will the advice contain?

The advice is in the form of questions and answers (Q&As) related to the safe delivery of cosmetic treatments. The information presented centers on the radiation protection aspects of using lasers, IPLs and LED phototherapy to deliver cosmetic outcomes. The central focus of the advice is for the protection of the client undergoing treatment; however, there is also information available for the safety of treatment providers and other potentially exposed individuals.

The advice consists of two parts: advice for consumers seeking cosmetic treatments and advice for treatment providers delivering these services.

Advice for consumers

The advice for consumers is presented in simple language as far as possible. Where more complicated concepts are discussed these are defined with examples to make the messages clear. The information focuses on what a light-based cosmetic procedure is and what a consumer should expect from a cosmetic treatment service provider. Additionally, the advice discusses some of the important responsibilities of the consumer seeking treatment. The underlying message aims to promote risk awareness and provides simple strategies for minimising the potential for harm when undergoing treatments with either lasers, IPLs or LED phototherapy.

Some important highlights include:

- how laser, IPL and LED phototherapy treatments result in cosmetic outcomes
- circumstances and conditions which may affect treatment outcomes or increase the risk of treatment to a point where undergoing a light-based procedure is inadvisable
- strategies for assessing whether treatment providers are reputable
- common general side effects from treatment along with more serious adverse reactions needing medical follow-up.

Advice for treatment providers

The advice for treatment providers contains detailed information about aspects that contribute to safety when providing light-based cosmetic treatments. The scope of the advice includes discussion of equipment, appropriate training, safety strategies, client assessments and injury reporting related specifically to radiation hazards and protection only. The safety information contained in the advice discusses equipment requirements, training, relevant competencies, definitions of various treatments from a risk perspective, and risk mitigation strategies.

There is also information on service provision discussing consultations with clients and relevant considerations before treatment commences. Common terms are defined to assist with understanding the nature of light-based treatments and recommendations are provided to assist in good practice for treatment providers.

Some important highlights include:

- licensing awareness for states that have a regulatory framework in place.
- possible negative effects (contraindications) to light-based treatments and how to assess the risk of providing services to clients based on their circumstances, health conditions or personal physical traits.
- appropriate types of training courses for gaining competencies in performing various procedures
- relevant standards for equipment and personal protective equipment.

What are the goals of the advice?

This advisory and the Q&As aim to provide necessary information to assist in the safe delivery of light-based cosmetic treatments and promote risk awareness about their use. Our advice for the use of lasers, IPLs and LED phototherapy in the cosmetic industry has two main focuses:

- to promote a nationally available resource for service providers in the industry to measure their own safety performance
- to assist consumers in making informed decisions as to which service providers they choose for their treatments.

What are the implications?

This advice is intended to provide a common frame of reference for understanding the risks involved in the provision of light-based cosmetic treatments. While there are many benefits to undergoing these

treatments, it is important that both treatment providers and consumers be well informed about the treatment being provided and the potential risks involved.

The publication of advice for individuals considering light-based cosmetic treatments aims to help consumers make informed decisions about which treatment provider they choose.

The publication of advice for treatment providers aims to provide nationally available guidance for achieving good practice in the delivery of light-based cosmetic treatments that can be used to affect business and safety outcomes. The advice may be used by businesses wishing to brand the standard of their service delivery and may also lead to the creation of self-accrediting bodies where information exchange and continuous improvements may be facilitated through its membership.

References

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