

# Recommendations

## Standard guidelines of care: Laser and IPL hair reduction

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### ABSTRACT

Laser-assisted hair removal, Laser hair removal, Laser and light-assisted hair removal, Laser and light-assisted, long-term hair reduction, IPL photodepilation, LHE photodepilation; all these are acceptable synonyms. Laser (Ruby, Nd Yag, Alexandrite, Diode), intense pulse light, light and heat energy system are the different light-/Laser-based systems used for hair removal; each have its advantages and disadvantages. The word “LONG-TERM HAIR REDUCTION” should be used rather than permanent hair removal. Patient counseling is essential about the need for multiple sessions. **Physicians’ qualifications:** Laser hair removal may be practiced by any dermatologist, who has received adequate background training during postgraduation or later at a centre that provides education and training in Lasers or in focused workshops providing such training. The dermatologist should have adequate knowledge of the machines, the parameters and aftercare. The physician may allow the actual procedure to be performed under his/her direct supervision by a trained nurse assistant/junior doctor. However, the final responsibility for the procedure would lie with the physician. **Facility:** The procedure may be performed in the physician’s minor procedure room. Investigations to rule out any underlying cause for hair growth are important; concurrent drug therapy may be needed. Laser parameters vary with area, type of hair, and the machine used. Full knowledge about the machine and cooling system is important. Future maintenance treatments may be needed.

**Key Words:** Photothermolysis, Hair removal, Permanent Hair Removal, Laser Hair Removal, LHE, IPL, Hirsutism, Hypertrichosis

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Evidence - Level A- Strong research-based evidence- Multiple relevant, high-quality scientific studies with homogeneous results, Level B- Moderate research-based evidence- At least one relevant, high-quality study or multiple adequate studies, Level C- Limited research-based evidence- At least one adequate scientific study, Level D- No research-based evidence- Based on expert panel evaluation of other information

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### INTRODUCTION

Hair reduction and hair removal are two of the most common cosmetology procedures performed by dermatologists all over the world. It is a safe and effective procedure.

### DEFINITION OF PROCEDURE

Any Laser/IPL/LHE-based equipment used for removal of

unwanted hair should be labeled as “Laser and light based techniques for long-term hair reduction”.

- i The word Laser is an acronym for Light Amplification by Stimulated Emission of Radiation
- ii. IPL is an acronym for Intense Pulsed Light system
- iii. LHE is an acronym for Light, Heat and Energy device
- iv. Any device that uses light and heat, either singly or both, and uses the basic principle of selective photothermolysis is included.

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- v. The phrase “long term hair reduction” should be used rather than permanent hair removal as the global experience of Laser and light-based technology is hardly two decades old.

## EVIDENCE: LEVEL A

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## RATIONALE AND SCOPE

Lasers are rapidly evolving with new machines being introduced each year. There are various claims made by the manufacturers, which are often not substantiated in clinical practice. Hence, variations exist in results and uniform recommendations are not possible in all cases. These guidelines outline the indications and treatment for removal of unwanted hair for cosmetic or medical reasons, various procedures and equipment that can be utilized, methodology, associated complications and expected results.

## INDICATIONS

- Removal of unwanted hair on the body for COSMETIC REASONS in a patient aged 15 years or older.<sup>[6]</sup> Evidence level B
- Hirsutism
- Removal of hair for medical treatment purpose, *e.g.*, sycosis barbae/pseudofolliculitis where hairs are not unwanted, but can be removed for therapeutic reasons.

Other uncommon indications include hair from donor site and men undergoing sex change operations.

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## CONTRAINDICATIONS

### Absolute:

- Less than 15 years of age.\*
- An uncooperative patient
- Associated photo-aggravated skin diseases and medical illness, *e.g.*, systemic lupus erythematosus (SLE) (evidence level A)
- Treatment area with active cutaneous infections, *e.g.*, herpes labialis, staphylococcal infections etc. (evidence level A)

Explanation: Age: No specific data exists on the precise age for Laser hair removal. There is no consensus on an age limit for Laser hair removal in adolescents. After taking all factors into consideration, the Task Force recommends that Laser hair removal may be performed above 15 years of age. However, proper counseling of the parent and the adolescent is important and the procedure should be performed only after proper considerations.

## RELATIVE

The Laser has to be used cautiously in the following indications only after proper counseling of the patient. Use of the Laser in these situations depends on the individual situation and on the treating dermatologist’s judgment.

- Patient having keloid and keloidal tendencies: Caution should be exercised in patients with keloids and keloidal tendencies. Such patients should be treated less aggressively, and only after proper counseling of the patients. A test patch may be performed to judge the keloidal tendency. Laser hair removal should not be performed if the treatment area has keloid.
- Superficial cuts and injury in the treatment area.
- Patient on long-term drugs that cause the skin to be more sensitive towards light, *e.g.*, minocycline, isotretinoin etc. Patients who have been taking

the above drugs in the past can be taken for Laser treatment only after proper counseling.

- d) Patient with unrealistic expectations.
- e) Psoriasis and vitiligo patients should be treated cautiously (for risk of Koebnerization of treated area).
- f) Previous history of herpes simplex is a relative contraindication for Laser hair removal because of the risk of precipitation of active lesions. Laser hair removal being a cosmetic procedure, its risks should be seriously considered prior to performing the procedure. If the treating physician decides to perform the procedure, the risks and benefits should be explained to the patient. Also, the procedure should be performed only after getting proper informed consent and only after a course of acyclovir.

### EVIDENCE LEVEL D

Dierickx CC, Grossman MC. Chapter 4 -Laser hair removal, Lasers and lights. Vol 2. In: Goldberg DJ, editor. (ISBN 1 4160 2360 7) 2005. p. 61-6.

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### HAIR REDUCTION SYSTEMS

Different Laser systems are available:

- |  |             |
|--|-------------|
| 1. Ruby laser  | 694 nm      |
| 2. Alexandrite laser                                   | 755 nm      |
| 3. Diode laser   | 800 nm      |
| 4. Neodymium - yttrium-aluminium-garnet (Nd:YAG) laser | 1064 nm     |
| 5. Intense pulsed light system (IPL) without heat      | 550-1200 nm |
| 6. Light and heat energy LHE                           | 400-1200 nm |
- There is also no consensus on the most preferred and beneficial Laser or IPL broadband Light devices. Newer systems such as ELOS (electro optical surgical system) have also been introduced.
  - Efficacy and safety of each system varies
  - Each system has its own advantages and disadvantages
  - Each system has different power output/spot size and requires different lengths of exposure, which is also important in the selection of hair removal procedure according to the Fitzpatrick skin type classification of patient/client.
  - The treating dermatologist should always refer

to the manufacturer's / marketing company's specifications.

- Proper patient selection and tailoring of the fluence used to the patient's skin type, remain the most important factors in efficacious and well tolerated Laser treatment.

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### PHYSICIANS' QUALIFICATIONS

#### General

- a) Any qualified dermatologist (DVD or MD) may perform the procedure.
- b) The physician should have knowledge of skin, hair and subcutaneous tissue including structural and functional differences and variations in skin anatomy in general.

#### Specific

- a) The Physician should have basic knowledge and training about skin and Laser physics. Basic knowledge of how the Laser works, is important for successful outcome and ultimate cosmetic results.
- b) Proper hands-on training of any system is mandatory before a dermatologist actually start doing it. It can be obtained from the equipment supplier's medical experts or from dermatologists/plastic surgeons experienced in performing the procedure.
- c) The physician should have appropriate *hands-*

on training and experience in working with the particular Laser, IPL or LHE systems.

- d) Knowledge of basic anatomy of hair and the endocrine system is essential.
- e) The physician should be familiar with early recognition, prevention and treatment of Post-Laser (Postprocedure) contraindication such as hyperpigmentation or hypopigmentation, scarring, burns etc.

## EVIDENCE: LEVEL A

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## TASKFORCE RECOMMENDATION

*The actual procedure of Laser hair removal is a simple procedure once the parameters have been determined. While it is preferable for the physician himself/herself to perform the entire procedure, this may not be possible in all situations, particularly in large body areas. It is therefore, acceptable for the nurse assistant/junior doctor to perform the procedure after proper training. However, the nurse assistant should perform the procedure only after the patient has been informed about this and only under the direct supervision of the senior physician, as per the directions of the physician and after the parameters have been determined. Further, it should be understood that the final responsibility for the procedure rests solely with the physician.*

## FACILITY

Laser hair removal is a simple procedure needing only minor facilities. It may be performed in the dermatologist's clinic/minor procedure room/day care theatre. The presence of a female nurse assistant is desirable for female patient/client. Proper lighting, operating table/cosmetic chair and comfortable seating for the treating physician are essential. Proper cooling systems need to be available for each individual machine, as per the manufacturer's recommendation. A cosmetic chair without a metallic surface (which may reflect Laser/light beams accidentally)

and of washable material is preferred. An emergency hazard switch should be in place (for shutting off of all systems in case of any accidents).

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## INFORMED CONSENT

A detailed consent form (see appendix 1) should specifically state that multiple sessions may be needed for significant hair reduction and that performing Laser hair removal will not prevent future hair growth due to any underlying cause. Patients should be provided with adequate information through brochures, photographs and personal consultation.

Counseling should include information on hair anatomy, medical reasons why hair grows, importance of drugs to be avoided, actual procedure (if possible with actual video or power point slides), likely side effects, numbers of approximate sittings required, interval between two sittings, per sitting cost etc. As with any cosmetic procedure, realistic expectations are important for patients, particularly because of the exaggerated claims that are mentioned in media advertisements.

## EVIDENCE: LEVEL B

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## HISTORY AND EXAMINATION

A complete and detailed history should be obtained to rule out associated illness. This should include history of any photosensitizing drugs, keloid and hypertrophic scars, history of recent sun exposure and tanning and occupations involving prolonged exposure to sun. Female patients must be evaluated properly to rule out the underlying cause for hirsutism. If necessary, a gynecologist's / endocrinologist's opinion should be sought. While no investigations may be necessary in most patients, specific tests such as complete blood counts, fasting blood sugars, urine analysis, serum LH, FSH, prolactin, DHEAS, free testosterone and USG-whole abdomen (PCOD) etc may be evaluated in consultation with the gynecologist or endocrinologist in selected patients.

## PREPROCEDURE WORK-UP

- i. The patient should be instructed not to use bleaching, plucking, thermolysis or electrolysis or waxing in treatment areas once he/she decides to start with the Laser hair reduction treatment.
- ii. The patient should be instructed to avoid sunbathing, swimming in sea water and other activities which might produce tanning of treatment areas.
- iii. Patient should avoid any over the counter (OTC) products / herbal remedies / homeopathic medicines etc.
- iv. Photography: Preprocedure photographs of treatment areas are recommended but not mandatory and should mention the name of the patient, date of the photograph. This practice will make the work of the practicing doctor easier at a later date in case of patient dissatisfaction.

It has been recommended by many dermatologists that it is preferable to start with broad-spectrum sunscreens prior to Laser hair removal. As tanned skin is more likely to absorb Lasers (as it contains more melanin), it is thought to be more likely to develop Laser burns after the use of Lasers. However, there is no convincing data to support a mandatory pretreatment with sunscreen in all patients nor is there any data on the likely duration of use of sunscreen. Hence, no recommendations can be made for the routine

use of sunscreens. However, if in a physician's opinion, the patient has had increased sun exposure, which may increase the chances of Laser erythema, the use of broadband sunscreens may be recommended. Likewise, if a patient has tanned skin, mild depigmenting creams like plain hydroquinone 2-4% may be used at night for 10-15 days before treatment. *The taskforce recommends this preprocedure preparation only as an optional requirement to be chosen by the physician, and not as mandatory requirement. Level D*

Test patch: An initial "test patch" has been practiced by many dermatologists. A test patch has the advantages of defining the precise treatment parameters and determining the pain threshold of the patient. It may also help determine the attitude and expectations of the patient. However, a test patch is not feasible in all cases and hence, is not to be recommended as a mandatory requirement. It may be considered in selected cases such as a nervous and unreliable patient with unrealistic expectations.

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## LASER HAIR REMOVAL PROCEDURE

- i. Hair should be trimmed with a electrical trimmer or the patient can shave the area a day earlier (at the time of treatment, hair length should not be more than 1-5 mm)
- ii. The area to be treated should be properly cleaned with soap/detergent and it should be free from make-up.
- iii. Local anesthesia is rarely required; however, in a nervous patient and in patients with poor pain tolerance (low pain threshold),, a topical anesthetic such as EMLA/Prilox<sup>®</sup> is recommended 30-90 minutes before the actual procedure
- iv. Adequate lighting on treatment area is essential.
- v. Cooling is essential after the treatment; however, this depends on the system used. Some systems have inbuilt cooling devices, others do not. If inbuilt cooling is not available, ice cubes or cryogen spray may be used.
- vi. Depending on the area to be treated, the patient can be in a supine or sitting position (use of hydraulic

- chairs or operation tables is to be encouraged).
- vii. Standard precautionary measures should be observed for all devices:
    1. Eyes of the patient should be wrapped with white gauze pieces or covered with eye protective devices such as goggles (as specified in the Laser manufacturer's manual).
    2. The treating doctor and assistant should use the goggles provided by the manufacturer.
    3. The treatment area should not be covered by metallic objects such as chains etc
    4. Cosmetic chairs made of washable material and without any visible metallic surface, which may reflect light-Laser beams accidentally, should be used.
    5. An emergency hazard switch should be used-provided in all systems for immediate shut-off of systems in case of accidents.
  - viii. If a "test patch" has been performed, the parameters of that patch may serve as the guide for treatment.
  - ix. Each patient needs individualized parameters; hence, maintenance of individual records is vital.
  - x. Surgical jelly should be used as specified in manual except in the case of LHE systems, where it is contraindicated.
  - xi. It is always helpful to inform the patient just before starting the treatment that actual delivery of Laser light is about to begin.
  - xii. The hand piece of the system should be placed perpendicularly to the skin surface (gently but to press sufficiently to displace blood from capillaries and to bring the hair follicle nearer to the aiming source).
  - xiii. All areas may be treated in one sitting.
  - xiv. Overlapping of hand pieces in treating adjacent areas (10%) is generally accepted.
  - xv. The larger the spot size, the better is the penetration.
  - xvi. The presence of any severe erythema/blisters in the previously treated areas should alert the physician to reduce fluence or halt the procedure (rarely needed if proper selection of the patient and test patch has been performed).
  - xvii. After the entire procedure is complete, cryogen spray or chilled Eau Thermal water or ice packs may be used.
  - xviii. Proper sunscreen block or Lotion is applied.

## EVIDENCE: LEVEL B

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## POSTPROCEDURE

- A. Analgesics are not usually needed. but paracetamol and other pain-reducing agents may be prescribed for three days.
- B. Sunscreen lotion should be prescribed along with detailed instructions on how to use it.
- C. Immediate and continuous sun exposure as well as working under halogen lights is to be avoided.
- D. Depending on the area of treatment-proper schedule, with date and time should be given to the patient in their native language so that there is no lapse in treatment.
- E. The patient should be counseled about possible, immediate perifollicular erythema and edema and damaged hair (explain to them that is transient or temporary).
- F. In case of any persistent pain-blisters or vesicles in the treated areas, the patient should be asked to report for proper management.

## POTENTIAL SIDE / ADVERSE EFFECTS

1. Pain and discomfort may occur; mild oral analgesics may be prescribed.
2. Vesiculation and local crusting are treated with antibiotic/steroid creams and mild emollients.
3. Secondary infection is rare and can be treated with antibiotic cream and antibiotics
4. Hyperpigmentation may occur infrequently and is treated with sun block and/or a mild steroid cream such as hydrocortisone and/or hydroquinone cream. This is usually temporary and needs to be explained to the patient.
5. Localized hypertrichosis in other areas or compensatory hypertrichosis is rare, but may occur and cause anxiety to the patient. This also may need to be treated with Lasers.

