

Equipment for cosmetic dermatology clinic



**ASSIGN
BUSTER**

A cosmetic dermatology clinic differs from the traditional dermatology clinic in terms of the requirement of a wide range of equipment to perform various aesthetic procedures. In the past, the only instrument associated with dermatology practice was a magnifying glass. It then progressed to equipment's such as Woods lamp, electrocautery, radiofrequency, cryotherapy and phototherapy units. Beyond these tools, the cosmetic dermatologists' armamentarium includes various basic and specialized equipment's to carry out a multitude of dermatological treatments and cosmetology procedures. (Box 1) In addition to the treatment equipment, photo documentation devices are also essential. These devices record the results and changes for analysis and prognosis of the treatments and can actually document the percentile UV damage, wrinkle score etc. The cosmetic clients (internet savvy) are aware of the equipment usage in various procedures and check for clinics offering facilities with the latest equipment and low downtime.

The cosmetic dermatologist not only needs to be updated about the latest equipment's but should also be aware of its management and maintenance needs. Poor maintenance leads to financial losses for the physician and compromises on efficacy and safety issues for the patient. This chapter gives a brief outline of equipment management and maintenance aspects which would enable the physician to provide safe, effective treatments and sustain the financial aspects of his/ her practice optimally.

Box 1: Basic and Specialized equipment in a cosmetic clinic

Basic Equipment

Specialised Equipment- LASERS and Light Systems

Microdermabrader	Intense Pulse Light
Radiofrequency and cautery	LASER Hair Reduction- Long Pulse Alexandrite, Long Pulsed ND YAG, Diode
Cryotherapy	Pigmentation- Q Switched ND YAG
Mesotherapy	Fractional and Ablative LASERS
Jet Peel or hydrafacial	Hair Restoration- Low Level Lasers and lights
Microcurrent	Skin Tightening- LASERS and Radiofrequency,
Electroporation	Micro needling Radiofrequency
Dermatoscope and photography equipment (detailed in chapter 5)	Vitiligo and Psoriasis- Excimer lamp and LASER
Phototherapy Units	Body contouring- Radiofrequency, cryolipolysis, ultrasound cavitation, low level laser therapy, e

BASIC REQUIREMENTS FOR EQUIPMENT MANAGEMENT

The basic requirement from any machine/ equipment is its longevity and optimal usage. This can be achieved by effective equipment management procedures [1] (Box 2)

Box 2: Effective equipment management procedures

- Equipment Purchase
- Installation requirements (storage and space electrical supply, air-conditioner)
- Standard Operating Protocols
- Training of the staff
- Quality control checks (cleaning, safety devices, consumables,

regular inspections)

- Maintenance and servicing (Daily, Preventive, Annual)
- Equipment/ Accessories modification

Equipment Purchase:

The following checklist should be kept in mind during purchase of the equipment. This helps to trouble shoot maintenance issues effectively.

- Always buy from a certified company or a certified official dealer
- Check with the dealer for skilled technicians for installation and troubleshooting
- Sign the maintenance contract with the company (No machine is zero maintenance)
- Establish the warranty period (details and time lines)
- Note of the date of manufacture and the numerical code unique to each equipment.

Installation Requirements

Space and storage Requirements of the equipment and accessories should be taken into account prior to installation.

Electrical connections and stabilizers: This has been detailed in Chapter 60.

Special sockets and high voltage breakers, stabilizers and UPS

(uninterrupted power supply) should be provided.

Air conditioner : Most of the LASER machines generate heat and require certain temperatures to be maintained while in operation. An air conditioned

environment is preferred as it remains closed, relatively dust free and is useful for machine longevity.

Smoke evacuators Fragments of skin, hair and aerosols can damage LASER lenses or light based equipment due to physical interference with transmission. Smoke evacuation systems may be used to reduce the plume debris and limit the harmful effects on the staff, patients/clients and the laser equipment.

Standard Operating protocols (SOPs)

SOPs regarding usage of the machine are provided by the manufacturer. Indications and Specifications are provided in the operator manual and should be adhered to. Based on the patient requirement, if modifications are made in the SOPs, these should be documented and informed to all the staff.

Training of staff(machine operators or staff responsible for maintenance)

All the staff members in the cosmetic dermatology set up should be trained to follow the SOPs, understand the need and importance of equipment maintenance for the smooth functioning of the clinic.

Quality control checks(cleaning, safety devices, consumables)

In addition to the daily cleaning; regular weekly or fortnightly check of each machine, safety devices and consumables should be done. This helps to prevent emergency maintenance issues and financial losses.

Maintenance and servicing(Daily, Preventive, Annual)

A record should be maintained of all planned and unplanned maintenance and services, including any problems or modifications. The service contract records, contact details of service personnel should be documented well.

Equipment/ Accessory modification

Any modification to the equipment or accessories; or change in its operational usage may have safety implications associated with it. Hence, whenever any modification is done, appropriate documentation is mandatory. Standard accessories should be used.

STANDARDISED AND EFFECTIVE EQUIPMENT MANAGEMENT

A standardised form, including all the aspects detailed above for equipment management should be kept with individual machines. A soft/ hard copy of this format for all machines should be catalogued and serve as a ready reckoner to the concerned staff. A basic outline of the form has been provided in Box 3. The salient aspects for effective equipment management have been included in Box 4.

Box 3: Standard form for individual machines

Name of the machine

Indications

Standard specifications (usually provided by manufacturer)

Storage specifications: Equipment/ Accessories

Space: Table mounted/ Floor mounted

Electricity: Earthing/ UPS requirement

AC requirement

Consumables

Safety devices- Goggles, cooling devices, smoke evacuators

Cleaning Techniques

Maintenance- Daily, Preventive, Annual or comprehensive maintenance services (AMC/ CMC)

Special tips do's and don't's

Installation date

Operator Training: Names/ Dates

Contact details for Maintenance services: Phone/ Mail id/ Website address/
Personnel

Warranty details: Equipment/ Accessories, along with datelines

Services Contract: AMC/ CMC, Renewal along with Dates

Service done: Dates/ Done by whom/ Supervisory staff

Box 4: General Tips for effective equipment management

- Keep a standardised form with individual machines.
- Train the staff to handle the equipment carefully
- Understand the Operators manual
- Take care of all the parts of machine.
- Hand pieces are the most important part. Place them in a protective box or on

the machine as instructed

- Keep a check list of the consumables
- Keep all the machines covered and in a dust free environment
- Contact technical personnel for preventive machine maintenance at regular intervals
- Check for contraindication in case of all clients

BASIC EQUIPMENT MAINTENANCE

The general principles of basic equipment maintenance (as per the standardised form) has been outlined in Table 1. Modifications can be done based on individual machines and clinic requirements.

Table 1: Basic Equipment Management

Crystal					
Diamond-					
USG,	Microcurrent	Radiofreque	Mesomate/Dr Injector		
Equipment Cleanser,	Diamond Pro Lift	ncy /Cautery	Injector MesoGun-	Jet M	
head			Manual-Automatic	Machi	
Salt -					
cartridges					
Indications	Exfoliation	Facial lift	Dermatoses	Dull skin	Lymph
	gently	Muscle lift	papulosa	Irregular texture	draina
	removes	Body Contouring	nigra (DPNs)	Uneven skin tone	Exfolia
	the	Iontophoresis-			

outermost
dead skin
cell layer
for the
epidermis.

Reduces
pigmentat
ion and

tanning Product

Improves penetration

Acne Disencrustation-

scars Deep cleansing

Reduces

fine lines

and

wrinkles

Reduces

pore size

and age

spots

Warts

Skin tags

Moles

Seborrheic

Keratosis Hair loss

Granuloma Cellulite

pyogenicum

Xanthelesm

a

Rhinophyma

Infusio

Standard

operating

Available

Available

Available

Available

Availa

protocols

				Temperature: 20 -60 °C	
Storage	-	-	-	C	-
				Humidity < 95%	
Space	Table mounted	Table mounted	Table mounted	Table mounted Dr. . Injector has its own Trolley	Table mounted or special design trolley
Electric/UPS/ AC	Earthing + UPS/ AC-	Earthing + UPS/ AC-	Earthing + UPS/ AC-	-	Earthing + UPS/ A
Consumables	Hand piece depending on the type of machine Nozzles of two different sizes small for	Two long metal probes, one small probe with sponge for earthing , two sets of coloured wires, one metal roller, sticky pads and big pads.	Hand piece Wire loop electrode and pointed electrode Disposable as well as reusable tips are available	Safety devices	Foot p Air tub Triple nozzle handp Safety goggle (durin peel infusio

face and
neck and
big for the
body
parts
Aluminiu
m oxide
crystals

Kinked wires
may need
replacement

Vitam

Cleaning	The jar has to be cleared of all the crystals after every service and cleaned.	Hand piece needs to be cleansed with alcohol swab before use.	Tissue residue should be removed from the active electrode (Rf power ON) with a sterile moist gauze (water only) No scalpel scissors or any sharp objects should be used as it	Sterilize the guard with alcohol swab prior to the service	Regula cleani of han piece
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may lead to

tissue

adherence

Disinfection

All

commerciall

y available

disinfectants

may be used

to disinfect

the

electrodes.

Electrodes

should be

immersed in

fresh cidex

solution .

then they

must be

washed and

under tap

water , dried

and Placed

in the

supplied box

Sterilisation

All non-disposable hand pieces, cables, plugs and electrodes are autoclavable to 250 ° F or 121 ° C.

Steam cleaning of electrodes must be done just before use.

Maintenance	Jar needs to be replaced every fortnight for smooth	Preventive machine maintenance at an interval of 1-2 months.	The electrodes should be dipped in dilute H ₂ O ₂ solution so that debris	<i>Daily Maintenance</i>	<i>AMC</i>
				Clean the gun exterior with spirit.	Preventive maintenance should be done at an
				Do not allow spirit to enter the interiors.	
				Charge the Gun daily	

functionin gets cleared, *AMC* interv
g of the before Preventive machine 6 mon
machine washing maintenance should be
Spare *AMC* at an interval of 6
hand months.
pieces Preventive
should machine
always be maintenanc
available e should be
Replace at an
filter and interval of 6
nozzle months.
after
every 15
bottles

Daily
Maintena
nce:

Clean
hand
piece with
alcohol
swabs or
SPCL
cleaning

Solution.

Straighten
the tubes.

AMC

Preventiv
e
maintena
nce
should be
done at
an
interval of
1-2
months

Special	Do's-	Don'ts-	Coloured	Do's- The	Use the injector and	-
Tips: Do's	follow the	wires should		only way the	needle that meets the	
and Don'ts	instructio	always be tied up	radiosurgery	international and		
	ns	and placed on	can create	domestic standards.		
	mentione	the machine	tissue			
	d in the	when not in use	damage is if			
	user		the heat is			
	manual		allowed to			
	Don'ts -		accumulate			
	do not		in the tissue			

place
anything
on the
machine

to the point
where it can
lead to
excessive
dehydration
and hence
tissue
destruction.
Preventing
accumulation
of such
heat is the
basic
objective of
radiosurgery
technique
and hence
one should
practice 10
seconds ON
and 30
seconds
OFF.

Don'ts - Do
not Use any

inflammable
anesthetics
or cleaning
agents.

SPECIALISED EQUIPMENT MAINTENANCE

Specialised equipment's such as Lasers, lights, radiofrequency based machines are now an integral part of cosmetic clinics. Most of these equipment are expensive and have specific maintenance issues. In addition, the optical radiation emitted by lasers, IPLs and LEDs has potentially hazardous effects on patients, clients and equipment users. There can be direct damage to eyes or skin. A potential risk of fires or explosions from lasers igniting gases or fabrics and the problem of smoke inhalation exist. Engineering (in- built safety measures provided within the laser machine), procedural (policies and practices followed at the cosmetic clinic) and administrative (review by health department) control measures are needed to prevent exposure to potential laser hazards. [2]

Effective equipment management procedures as outlined in Box 2 should be followed for each of the specialised equipment in the clinic. The most important aspect of maintenance is simple prevention. This can be achieved through the following measures:

- Routine inspection, of the laser system and the surroundings (Daily/ weekly checks)
- Periodic inspection and maintenance of optical components and critical subassemblies (Preventive and annual maintenance checks)

- Documentation and Record keeping

Few examples for daily/ weekly/ preventive checks for laser equipment are outlined in Box 5 [1]

Box 5: Examples for daily/ weekly/ preventive checks for laser equipment

Examples for daily checks:

Check whether the laser output terminates on release of foot/ hand switch

Check the device's alignment of the aiming beam with the therapeutic beam

Check device's filters/ tips for scratches or dirt.

Check all system alarms and lights are operating appropriately

Assess all device accessories including cables and connectors are clean and functioning.

Examples for weekly checks:

Inspect protective eye wear for lens scratches or general damage

Check all protective blinds, windows and doors, are dust free and functioning appropriately

Check that electrical system connections/ UPS, warning lights are functioning correctly

Examples of annual/ preventive checks:

Electrical safety

Device calibration checks

Output measurements

Beam alignment

Shutter operation

Accuracy of timer

Filters

The general tips for effective and safe laser equipment management are outlined in Box 6. The general principles of specialised equipment maintenance (as per the standardised form) has been outlined in Table 2. Modifications can be done based on individual machines and clinic requirements.

Box 6: General tips for effective and safe laser equipment management

Laser Room(details in chapter 60)

- Restrict entry to the room when the system is in use; put laser warning sign
- Do not include any light reflecting objects such as mirror,
- Provide rubber mat flooring (prevents damage and losses in case of accidents of hand pieces, goggles, etc)

Services/ Maintenance checklist

- Maintain a logbook of regular maintenance check and calibration
- Maintain detailed information about service centre/ personnel
- Check for engineers training certificate.

- Calibration must be checked by authorized personnel with calibrated power meter
- Always check for calibration certificate when under AMC/ Maintenance
- Deionized (DI) water is needed for cooling in some machines. Check levels 1-3 monthly and change
- Check fire safety measures
- Check for Electromagnetic immunity and declaration compliance.
- Check for recommended separation distances between portable and mobile RF communications equipment and laser

Equipment Use

- Check the power supply/ UPS before the machine is switched on.
- If the machines need to be moved to a different room, do it carefully and avoid jerky movements
- Always place the tips or hand pieces in the designated box so as to avoid any accidental fall or damage to the same
- Optical lenses, fibre optic cord, some hand pieces contain lasing medium are expensive, hence handle all equipment parts with care Never leave the system ready mode unattended
- Practice use of hand switch as much as possible
- Most laser screens have a touch screen. Be sure not to point on the screen when firing the laser shot (Can inadvertently happen with the foot pedal)
- In event of any emergency use the emergency shut -off knob
- Use colourless gels for lasers
- Use Skin markers and colours for demarcating areas. Skin markers should be preferably white or appropriate colour depending on the laser absorption spectrum or else they can act as chromophores and cause burns

- Cleanse and dry the area to be lased thoroughly
- Inspect the laser tip always before treating the patient. Do not use if damaged
- Make sure the correct eye wear is used (Different protective eyewear is indicated for different wavelengths)
- Do not treat eyebrows eyelashes or other areas surrounding the eye orbit with YAG or Er: YAG lasers. The light emitted by these can cause serious eye damage or blindness. Use corneal shields especially in cases of direct touch lasers being used in the orbital area.

Gas based and pulse dye lasers(Example- Excimer, Pulse dye lasers)

- Switch ON everyday
- Cleaning of hand piece with alcohol swabs.
- Gas bottles used as consumables are very expensive
- Mirrors needs to be cleaned by engineers every 3 months.
- Calibration of voltages is very important.
- Dye needs to be replaced after 50000 shots

Body shaping and contouring machines:

- All hand pieces need to be cleaned daily
- Better to use specific oils or gels, otherwise ultra-sonography gel can be used; may be glycerine based.
- The emitted sounds should be perfect

Phototherapy units

- Check lamp power every month and calibrate if needed
- Clean fans every quarterly

Table 2: General principles of specialised equipment maintenance (separate doc- horizontal chart)

CONCLUSION

Equipment management and maintenance is an integral part of the cosmetic practice set- up. Specialised equipment such as lasers and radiofrequency based devices are expensive and have specific maintenance issues. In addition to the financial implications for the practice, the safety and efficacy of the treatments provided by the physician are chiefly dependent on well managed equipment.

SUMMARY

A cosmetic dermatology clinic differs from the traditional dermatology clinic in terms of the requirement of a wide range of equipment to perform various aesthetic procedures. It is a good practice to employ equipment management and maintenance measures. The effective equipment management procedures include checklists and processes for purchase, installation, developing standard operating protocols, staff training, quality control checks, maintenance and servicing (daily, preventive, annual) and modifications in equipment/ accessories. Good equipment management and maintenance practices have healthy financial implications for the practice. It assures optimal usage and longevity of the machine life, along with safe and effective treatments for the patients/ clients.