LAC+USC MEDICAL CENTER STANDARDIZED PROCEDURE

Subject:	Original Issue Date: 6/1/14	Standardized Procedure #
PHOTOTHERAPY STANDARDIZED PROCEDURE	Supersedes: 02/18	Effective Date: 5/23
	Reviewed & Approved by: Professional Practice Committee Nurse Executive Committee Interdisciplinary Practice Committee Attending Staff Association Executive Committee	

POLICY:
This standardized procedure has been written in a consistent format which is in compliance with the guidelines found in the Board of Registered Nursing, Title 16, California Code of Regulations, and Section 1474.

This standardized procedure was developed in collaboration with Nursing Staff, Nurse Manager, Clinical Providers, the Nursing Director, and the Dermatology Service Chief.

Function:
Phototherapy is an important aspect of treating patients with various skin conditions. LAC+USC Medical Center Dermatology Clinic / Phototherapy Standardized Procedure will be implemented only after the dermatology patient has received a full evaluation by the provider and the provider has ordered a prescribed phototherapy treatment regimen. The Standardized Procedure allows the Registered Nurse (RN) to safely administer phototherapy as ordered by the provider and allows the Registered Nurse to adjust the dosing at every phototherapy session based on patient response. The Registered Nurse may act on the standardized procedure after completion of training and after providing evidence of competency in performing the phototherapy treatments.

Circumstances under which RN may perform function:
Only Registered Nurses under the direction of the Physician, are authorized to initiate this standardized procedure after completion of training and after providing evidence of competency.

Setting:
LAC+USC Ambulatory Care- Dermatology Clinic

Supervision:
The Supervising Dermatology Provider and the clinic RN are responsible for delivery of the phototherapy treatments. If the Provider is not present during the administration of the phototherapy treatment, he/she shall be immediately available via pager in order to maintain communication related to the condition of a phototherapy patient.

The Supervising Provider and the Nurse Manager/designee shall be notified immediately in the event of:

- Any adverse/unanticipated outcome related to the phototherapy treatment such as: underdosing, overdosing, equipment malfunctions, or patient complaint of burning as per screening questions.

Procedure:
Supervising Dermatologists/Dermatology clinic provider at the Dermatology Clinic determine which patients require phototherapy. After the provider discusses the risks, benefits, and alternatives with patient, the informed consent is signed, and the patient is given education regarding the risks and side effects of treatment (attachment A).

The provider is responsible for writing the initiation order for phototherapy. The order contains the patient's reason for phototherapy, which protocol [narrow band Ultraviolet UVB Hi (nbUVB Hi) or Ultraviolet A (UVA)] will be followed for the patient, and which skin type the patient is (based of the Fitzpatrick Skin Type Scale). The provider will indicate the frequency of the phototherapy treatments.

For nbUVB Hi protocol, the provider will indicate the patient's Minimal Erythema Dose (MED) based on the patient's Fitzpatrick Skin Type. A starting dose will be determined by the provider that is 70% of the MED is as per each respective skin type:

Table 1: MED and Starting Doses for nbUVB Hi by Skin Type

Fitzpatrick Skin Type	MED	Starting Dose (mJ/cm²)
I	143	100
II	286	200
III	357	250
IV	429	300
V	500	350
VI	643	450

The RN will begin treatment as indicated by the provider. All patients will be given an instruction sheet for phototherapy (Attachment A). At each subsequent treatment visit, the RN will adjust the dose per treatment according to the attached protocol based on the patient's number of treatments and skin type (see Attachment B for UVA and Attachment C for nbUVB Hi).

Prior to each lightbox treatment, each patient will be screened as per the following protocol (nbUVB Hi or UVA):

1. Did the patient experience any burning or pain after the last treatment?
    a. If no, proceed with treatment according to protocol
    b. If yes, use the following instructions
        I. No redness → Administer treatment per protocol
        II. Mild, non-tender redness lasting <24 hours → repeat previous dose
        III. Mild, non-tender redness lasting >24 hours → do not administer treatment, return for next scheduled phototherapy session and repeat previous dose at next session. No need for provider assessment.
        IV. Tenderness and redness still present → do not administer treatment. Patient to see provider if present or overbook patient for next clinic session. Nursing to page Dermatology provider to inform them of the findings and receive further instructions.

V. If blistering present in clinic, have the patient see a provider. If provider not in clinic, notify Dermatology provider on call to inform them of the findings and receive further instructions or to go to urgent care if necessary.

2. Has the patient started any new oral medications?
   a. If no, proceed with treatment according to protocol
   b. If yes, notify the provider and review medication list with them before administering treatment
3. Has the patient started any new creams, prescription or non-prescription?
   a. If no, proceed with treatment according to protocol
   b. If yes, notify the provider and review medication list with them before administering treatment
4. Has the patient missed any scheduled treatments?
   a. If no, proceed with treatment according to protocol
   b. If yes, see Table 2

Table 2-Dosing Adjustment for a Missed Scheduled Treatment

Number of Days Since Last Treatment	Dose Change
0 – 7	Proceed as scheduled per protocol (ie. use previous dose)
8 – 14	Decrease dose by 25% (use closest dose on the patient's protocol sheet)
15 – 21	Decrease dose by 40% (use closest dose on the patient's protocol sheet)
22 – 28	Decrease dose by 60% (use closest dose on the patient's protocol sheet)
Greater than 28	See provider for evaluations to re-start treatments.

Each patient will have a provider assessment approximately every 12 weeks after starting treatment. If this length of time is exceeded, Phototherapy will be held until the patient is seen by the provider. The provider will determine if the patient has reached the maximum needed therapeutic dose. If so, the patient will continue to receive this same dose as indicated by the provider, unless the patient misses a visit, in which case the treatment will be reduced as per table 2 and, at subsequent visits, increased per protocol (Attachment B or C) until the maximum needed therapeutic dose is again achieved.

Phototherapy Unit Procedures

- Patients are brought to the phototherapy room and their identification is confirmed using name and date of birth.
- The patient is instructed to expose the affected areas that require treatment. They are required to wear goggles and cover genitalia while in the Unit.
- The RN enters the patient information into the "3 Series Smart Touch"™ Daavlin computer program. At the initial visit, the nurse is prompted to enter the patient's identifying information, Fitzpatrick Skin Type, MED, type of therapy, and frequency of therapy as per the provider's order.

- Based on the protocol nvUVB Hi or UVA, the Daavlin computer program calculates the patient's treatment. The nurse confirms that the dosage the computer indicates is correct by comparing it to the protocol. (Attachment B and C)
    - If the dosage the Daavlin computer program recommends does not match the dosage recommended by the protocol, the nurse will adjust the dose according to protocol until she/he has confirmed the correct dose with the Daavlin computer program and document.
    - Any non-protocol dose will only be administered with a written order by the provider. The nurse is able to override the computer and manually input the dose.
- Using the Daavlin computer program, the nurse starts the treatment.
- The Daavlin computer program informs the nurse when the treatment is completed.
- The patients have a call button which they can use in the event of any concern during treatment.
- The nurse provides the patient with their follow up appointment and discharge summary and education prior to the patient's departure.

Hand and Foot Unit Procedures.

Prior to each hood lamp (hand & foot) treatment, each patient will be screened as per the following protocol:

1. Did the patient experience any burning or pain after the last treatment?
    a. If no, proceed with treatment according to protocol
    b. If yes, use the following instructions
        I. No redness → Administer treatment per protocol
        II. Mild, non-tender redness lasting <24 hours → repeat previous dose
        III. Mild, non-tender redness lasting >24 hours → do not administer treatment, return for next scheduled phototherapy session and repeat previous dose at next session. No need for provider assessment.
        IV. Tenderness and redness still present → do not administer treatment. Patient to see provider if present or overbook patient for next clinic session. Nursing to page Dermatology provider to inform them of the findings and receive further instructions.
        V. If blistering present in clinic, have the patient see a provider. If provider not in clinic, notify Dermatology provider on call to inform them of the findings and receive further instructions or to go to urgent care if necessary.
2. Has the patient started any new oral medications?
    c. If no, proceed with treatment according to protocol
    d. If yes, notify the provider and review medication list with them before administering treatment
3. Has the patient started any new creams, prescription or non-prescription?
    c. If no, proceed with treatment according to protocol
    d. If yes, notify the provider and review medication list with them before administering treatment

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4. Has the patient missed any scheduled treatments?
   c. If no, proceed with treatment according to protocol
   d. If yes, see Table 5

TABLE 5 SAFE RESTART AFTER MISSING TREATMENT (HAND/FOOT)	
8-11 days	Repeat previous dosage
12-15 days	Decrease dosage by 2 treatments worth
15-20 days	Decrease by 25%
21-28 days	Decrease dosage by 50%
Over 28 days	See provider for evaluations to re-start treatments.

Each patient will have a provider assessment approximately every 12 weeks after starting treatment. If this length of time is exceeded, Phototherapy will be held until the patient is seen by the provider. The provider will determine if the patient has reached the maximum needed therapeutic dose. If so, the patient will continue to receive this same dose as indicated by the provider, unless the patient misses a visit, in which case the treatment will be reduced as per table 5 and, at subsequent visits, increased according to table 7 and UVB Back Up Time chart until the maximum needed therapeutic dose is again achieved.

TABLE 7 EXPOSURE INCREASE SCHEDULE FOR PSORIASIS		
Severe	No treatment. When erythema resolve, 50% of 1st dose, then increase by 10%	
Moderate	Decrease dosage by 20%	
Mild (reddening)	Same Dose	
None	Increase dose by:	
15mJ/cm²	Type I	
25mJ/cm²	Type II	
40 mJ/cm²	Type III	
45 mj/cm²	Type IV	
60 mJ/cm²	Type V	
65 mJ/cm²	Type VI	

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Phototherapy Hand & Foot Procedures:

- Patients are brought to the phototherapy room and their identification is confirmed using name and date of birth.
- The patient is instructed to expose the affected areas (hand and/or foot) that require treatment.
- The patient is required to wear goggles during the phototherapy hand and foot session.
- The RN enters the dose according to table 7 and UVB Back Up Time chart into the Daavlin hood lamp™. At the initial visit, the RN is prompted to enter the patient's dose per the provider's order.
- Based on the protocol from table 7 and UVB Back Up Time chart, the RN calculates the dosage treatment. The RN confirms that the dosage in the hood lamp is correct by comparing it to table 7 and UVB Back Up Time chart.
    - The RN will adjust the dose according to protocol until she/he has confirmed the correct dose and document.
    - The dose is entered in the Daavlin hood lamp by the RN.
    - Any non-protocol dose will only be administered with a written order by the provider. The RN is able to override the computer and manually input the dose.
- Using the Daavlin hood lamp, the RN starts the treatment.
- The Daavlin hood lamp informs the RN when the treatment is completed.
- The RN provides the patient with their follow up appointment and discharge summary and education prior to the patient's departure.

308 Excimer System

Procedure

Supervising Dermatologists/Dermatology clinic provider at the Dermatology Clinic determine which patients requires 308 Excimer treatment. After the provider discusses the risks, benefits, and alternatives with patient, the informed consent is signed, and the patient is given education regarding the risks and side effects of treatment (attachment A).
The provider is responsible for writing the initiation order for 308 Excimer treatment. The order contains the patient's reason for treatment, (Vitiligo or Psoriasis), location, frequency of treatments and starting dose.

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Vitiligo

MED TEST	MED Test is not necessary
Fluence	Start with 100mJ/CM2
	Increase in steps of 100mJ/Cm2 per session until a slight erythema appears after 24 hours.
	Decrease 100mJ/Cm2 in case erythema lasting greater than 24 hours. Continue with decrease dose with 2 consecutive sessions, then increase by 50mJ/cm2.
	Do not treat on crusting or blistering, notify provider.
	1-2 treatments per weeks are recommended until reasonable improvement is seen, once good improvement is achieved 1 treatment every two weeks is recommended.
Endpoint for optimal fluence	Slight erythema, no crusting, no blistering.
Number of sessions	Typically, 20-25 sessions
	Discontinue treatment if no improvement Is seen after 15 sessions.
Before treatment	Remove cosmetics
Caution	Avoid exposure to the peri-Orbital areas (eyelids)
	Patient & nurse in treatment room must wear wavelength specific protective eyewear.

Psoriasis

MED Test	MED Test is not necessary
Fluence	Start with 300mJ/cm2
	Increase in steps of 100mJ/Cm2 per session. until a slight erythema appears after 24 hours.
	Decrease 50mJ/ Cm2 in case erythema lasting greater than 24 hours. Continue with decrease dose with 2 consecutive sessions, then increase by 100mJ/cm2.
	Do not treat on crusting or blistering, notify provider.
	1-2 treatments per weeks are recommended until reasonable improvement is seen, once good improvement is achieved 1 treatment every two weeks is recommended.
Endpoint for optimal fluence	Slight erythema, no crusting, no blistering.
Number of sessions	No overlap treatments
	2-3 sessions per week, minimum 24 hours interval between sessions.
	Only treat affected lesions.

	No treatments of areas with intense erythema, crusting or blistering wait for complete healing. Notify provider.
Before treatment	Remove cosmetics
Caution	Avoid exposure to the peri-Orbital areas (eyelids)
	Patient & nurse in treatment room must wear wavelength specific protective eyewear.

The Nurse will begin treatment as indicated by the provider. All patients will be given an instruction sheet. (Attachment A). At each subsequent treatment visit, the Nurse will adjust the dose per treatment according to the protocol based on the patient's number of treatments.

Vitiligo

Prior to each 308 Excimer treatment, each patient will be screened as per the following.

1. Did the patient experience any burning or pain after the last treatment?
    a. If no, proceed with treatment according to protocol
    b. If yes, use the following instructions
        I. No redness → Administer treatment per protocol
        II. Mild, non-tender redness lasting <24 hours → repeat previous dose
        III. Mild, non-tender redness lasting >24 hours → Decrease by 100mJ/Cm2 continue with decrease dose with 2 consecutive sessions, then increase by 50mJ/cm2.
        IV. Tenderness and redness still present → do not administer treatment. Patient to see provider if present or overbook patient for next clinic session. Nursing to page Dermatology provider to inform them of the findings and receive further instructions.
        V. If blistering present in clinic, have the patient see a provider. If provider not in clinic, notify Dermatology provider on call to inform them of the findings and receive further instructions or to go to urgent care if necessary.

2. Has the patient started any new oral medications?
    a. If no, proceed with treatment according to protocol
    b. If yes, notify the provider and review medication list with them before administering treatment

3. Has the patient started any new creams, prescription or non-prescription?
    a. If no, proceed with treatment according to protocol
    b. If yes, notify the provider and review medication list with them before administering treatment

4. Has the patient missed any scheduled treatments?
    a. If no, proceed with treatment according to protocol.

Psoriasis

Prior to each 308 Excimer treatment, each patient will be screened as per the following.

1. Did the patient experience any burning or pain after the last treatment?
    a. If no, proceed with treatment according to protocol
    b. If yes, use the following instructions
        I. No redness → Administer treatment per protocol
        II. Mild, non-tender redness lasting <24 hours → repeat previous dose
        III. Mild, non-tender redness lasting >24 hours → Decrease by 50mJ/Cm2, continue with decrease dose with 2 consecutive sessions, then increase by 100mJ/cm2.
        IV. Tenderness and redness still present → do not administer treatment. Patient to see provider if present or overbook patient for next clinic session. Nursing to page Dermatology provider to inform them of the findings and receive further instructions.
        V. If blistering present in clinic, have the patient see a provider. If provider not in clinic, notify Dermatology provider on call to inform them of the findings and receive further instructions or to go to urgent care if necessary.

2. Has the patient started any new oral medications?
    a. If no, proceed with treatment according to protocol
    b. If yes, notify the provider and review medication list with them before administering treatment

3. Has the patient started any new creams, prescription or non-prescription?
    a. If no, proceed with treatment according to protocol
    b. If yes, notify the provider and review medication list with them before administering treatment

4. Has the patient missed any scheduled treatments?
    a. If no, proceed with treatment according to protocol.

Each patient will have a provider assessment approximately every 8 weeks after starting treatment. If this length of time is exceeded, 308 Excimer treatment will be held until the patient is seen by the provider. The provider will determine if the patient has reached the maximum needed therapeutic dose. If so, the patient will continue to receive this same treatment as indicated by the provider unless there is no improvement seen.

308 Excimer Treatment procedure

Patients are brought to the phototherapy room and their identification is confirmed using name and date of birth.

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The patient is instructed to remove cosmetics before treatment and to expose the affected area that requires treatment.
The patient and RN are required to wear protective eyewear at time of treatment.
At the initial visit, the nurse checks to ensure that the external power is connected to the device's primary electrical plug (the green indicator will light up)
Adjust the main switch to "I" (ON)
At this point the nurse enters the activation 4-digist PIN code (5555).
When the whole PIN code is entered, press the validation button to activate the 308 excimer UV lamp.
Then, the main menu page is displayed. At this point, the Nurse will have the option to choose from one of the three following modes: 1. "TREATMENT 2. "MED-TEST 3. "SERVICE" selects one of these modes, press the corresponding arrow.
The indicator light at the top of the screen will display either a green or orange circle. This color-coded system will help the user determine the machine's state and function:

1. GREEN light- Indicates no risk to the user or patient; The machine cannot fire in STANDBY state.

2. ORANGE light- The device is in READY mode and will fire if the trigger is pulled.

3. FLASHING ORANGE light- Treatment is in progress; Potentially dangerous UV radiation is being emitted.

Cleaning the Cover

The vents on the sides of the device enable air circulation, which is necessary for proper functioning. If necessary, remove all dust obstructing these vents with a soft, dry wipe. The body of the device is coated with epoxy paint. Use a damp cloth for cleaning.
Do not use solvents or alcohol!

Cleaning the Optical Head

The front window of the optical head is fused silica, which is transparent for UV at 308 nm. To preserve the power and homogeneity of the beam, it is very important to clean the window of optical head with alcohol on a very strict and regular basis, i.e., after each patient. When cleaning and disinfecting the optical head, special care should be taken not to damage it.
Caution Clean the device delicately with an alcohol swab. Do not use solvents!

Cleaning the Masks

The masks must also be cleaned after each patient with an alcohol swab.
Do not use Solvents!

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Record Keeping:
All shall be documented in the Electronic Medical Record (EMR). Notification of the provider shall be documented in the EMR (see LAC+USC Medical Center Nursing Policy #402).

Training and Competency:
Training consists of:

1. Train the trainer, by trained RN nurse
2. Hands on observation by trained RN and 3rd year Dermatology Provider.

Competency is demonstrated by:

- Return demonstration

Competency will be assessed prior to the RN initiating any phototherapy treatments and annually thereafter.

Only those RNs that have documented evidence of the above stated training and competency will be allowed to perform phototherapy treatments according to the Phototherapy Standardized Procedure. Written evidence of training and competency will be maintained by the Nurse Manager/designee and filed in the employee area personnel file.

A list of those RNs that are competent in providing Phototherapy services will be kept by the LAC+USC Medical Center Nursing Department.

Review:
The Phototherapy Standardized Procedure shall be reviewed a minimum of 3 years, or when any phototherapy equipment changes occur or in the case that national guidelines for phototherapy are updated.

REVISION DATES

August 23, 2017; February 7, 2018; April 13, 2022, May 3, 2023