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## Objectives

- Discern difference between punch and shave biopsy and their indication
- Discuss method of anesthesia and hemostasis for biopsy and lesion removal
- Recognize appropriate situations and technique for cryotherapy
- Return demonstration of punch and shave biopsies and closure with simple interrupted suture

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## Prevalence of Skin Disorders

- 2013, 85 million sought care from health care provider for at least 1 skin related disorder
- Direct cost \$75 billion, lost opportunity cost \$11 billion
- Average 1.6 skin disorder per individual, 2.2 age 65 and older
- UK study 23%-33% of the population has some type of skin disease at any one time, up to 54% when evaluated over 12 months

(Lim, et al., 2017)

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## Prevalence of Skin Disorders

- Skin and subcutaneous diseases were the 18th leading cause of global disability adjusted life years . Skin diseases were the fourth leading cause of disability worldwide
- Skin cancer most common cancer in the US. Basal and Squamous are highly curable if detected early and properly treated. Five year survival for melanoma is 99% if diagnosed early

(American Academy Dermatology [AAD], 2018.; Foggin, Cuddy, & Young, 2017; Karimkhani et al., 2017)

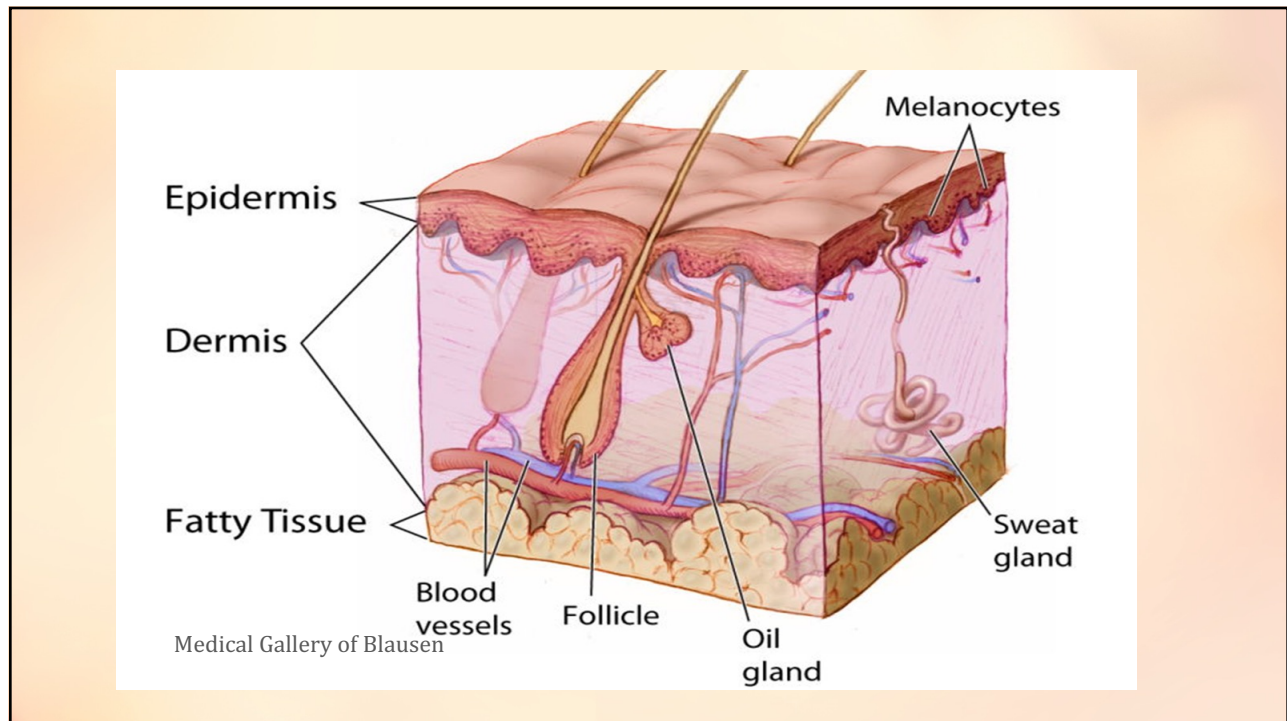
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## Prevalence of Skin Disorders

- 2013 22,953 deaths from skin disease, average age 68.2
- Melanoma 41% of skin related deaths
- Five year survival for melanoma that has spread to regional and distant sites 63% and 20% respectively

(AAD, 2018)

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## Pattern Recognition

- Morphology
- Secondary Changes
- Color- Red, Pink, Purple, Tan, Brown, Black, Grey, White, Yellow
- Configuration
- Area Involved

(DermNet New Zealand)

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## Lesion Morphology

- Macule- up to 0.5cm (5 mm) in size, circumscribed lesion, not palpable
- Papules- Circumscribed, solid, no visible fluid, vary in size from pinhead to 1cm (10mm), vary in color
- Patches- A macule that is larger than 0.5cm (5 mm)
- Plaques- Papule or group of papules 1cm (10mm) or greater
- Pustules- Small elevations that contain purulent material. Usually is white or yellow in color

(DermNet New Zealand)

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## Lesion Morphology

- Vesicle-small blister, circumscribed lesion  $\leq 10\text{mm}$  in diameter, contains liquid (clear, serous or hemorrhagic)
- Bulla- a large blister, circumscribed lesion  $>$  than 10mm in diameter, contains liquid
- Nodule- elevated, solid, palpable lesion  $> 10\text{ mm}$  usually arising from the dermis and/or subcutaneous layers
- Wheal- a transient elevation of the skin due to dermal edema, often pale centrally with an erythematous rim, urticaria most commonly known lesion

(DermNet New Zealand)

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## Secondary Changes

- Scale - flakes of the horny epithelium, often accompanied by another descriptive term, such as, silvery scale, sandpaper-like scale
- Crust - dried serum, blood or pus on the surface of the skin. It is rough on the surface and is yellow or brown in color. Bloody crust appears red, purple or black
- Lichenification – palpable, thickened skin with increased skin markings and lichenoid scale
- Erosions - superficial or partial destruction of surface tissue such as the skin

(DermNet New Zealand)

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## Secondary Changes

- Ulcer - full-thickness loss of the epidermis plus at least a portion of the dermis; it may extend into the subcutaneous tissue
- Fissure - split, crack, erosion or narrow ulceration of the skin
- Atrophy -occurs when some component of the skin has shrunk, wasting of the skin

(DermNet New Zealand)

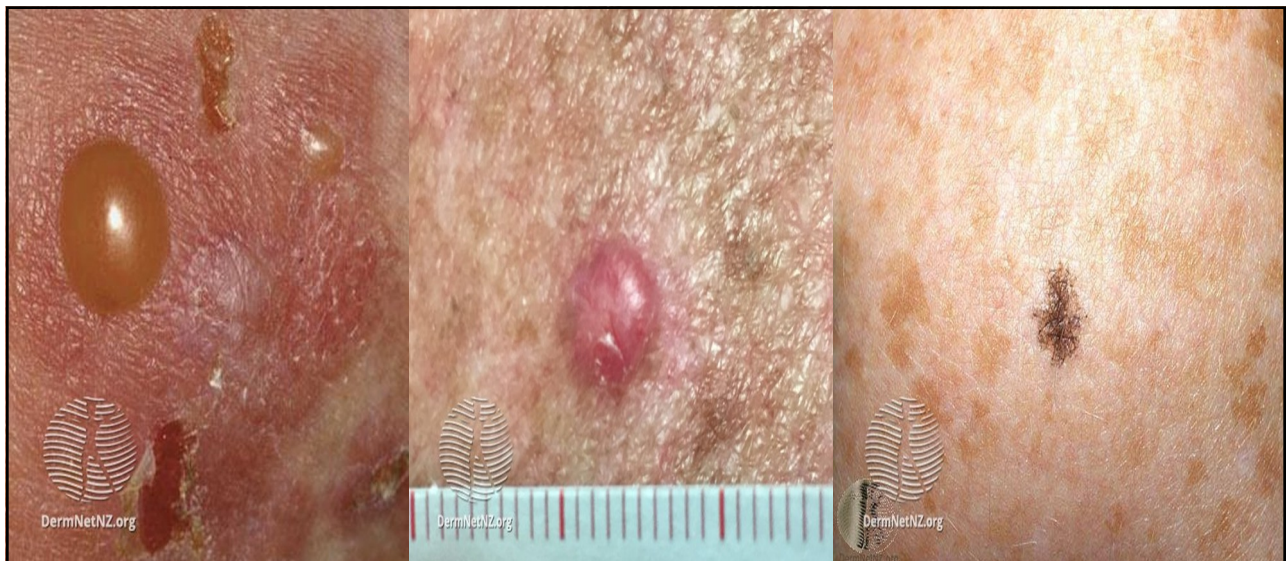
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## Configuration

- Discrete - separated from other lesions by normal skin
- Confluent - flowing or coming together
- Linear - resembling a line
- Serpiginous – shape of a snake or serpent
- Annular - grouped in a circle

(DermNet New Zealand)

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(DermNet New Zealand)

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(DermNet New Zealand)

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DermNet New Zealand)

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## Why Biopsy

- To entirely remove a lesion
- Establish or confirm diagnosis of rash/lesion
- Ensure proper treatment
- Reassurance
- Referral purposes

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## Choosing The Proper Procedure

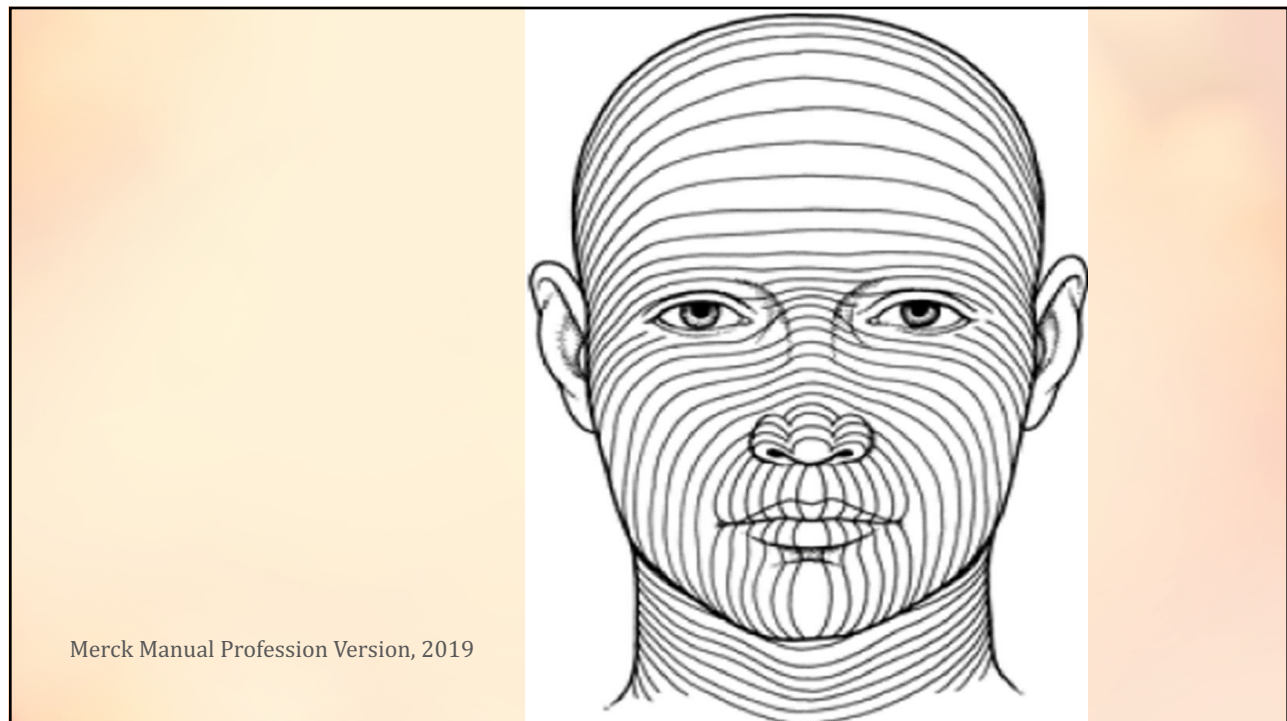
### Punch

- Full thickness sample
- Indicated for all rashes, blistering eruptions and vasculitides
- Can be used to remove entire pigmented lesion as long as biopsy instrument is large enough

### Shave

- Not meant for rashes
- Remove lesions that are causing discomfort
- Sample or remove entire small lesion (actinic or seborrheic keratosis or other benign lesions)
- Indicated for all skin cancers in all locations

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## Shave



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## Documentation

- Document the history of the rash/lesion development
- Prior to biopsy or lesion removal document site with drawing or photo.
- Include written description of site and provide measurements
- Statement added to consent forms that includes permission for photo documentation

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## Proper Tissue Sampling

- Sample the newest forming lesion: the area of most inflammation, or the newest vesicles, area that is un-excoriated
- Punch the edge of a bullous lesion ensuring to include sample of the perilesional skin
- Punch from the edge of an ulcerative lesion, not the center
- Make sure to get a large enough sample

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## Contraindications And Precautions

- Infection at biopsy site
- Bleeding concerns
- Choosing to biopsy over areas of thin skin (eyelids, nose, shin, scalp, forehead), blood vessel or nerve damage
- Any facial and neck lesions
- Dorsal aspect of hands, feet, face

(Edmunds, 2017)

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## Basic Steps To Biopsy

- Obtain Consent
- Label Specimen Containers
- Identify and cleanse the area
- Mark the area
- Provide Anesthesia
- Remove Lesion
- Control Bleeding
- Close or dress the Wound

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## Anesthesia

- Local anesthesia- lidocaine 1%, lidocaine 1% with epinephrine
- Buffer lidocaine with sodium bicarb (1 ml sodium bicarb with 10 ml lidocaine) \*shelf life issue\*
- If lidocaine allergy diphenhydramine 50 mg diluted with 4 ml normal saline or tetracaine
- Topical creams not practical due to amount of time produce anesthesia effect
- Anesthetize with smallest needle possible, inject slowly, allow time for effect

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## Biopsies for skin cancer detection: Dispelling the myths

This review debunks 5 myths and provides the information you need to perform rapid, high-quality biopsies to detect skin cancers at their earliest stages.

### MYTH #5

**Epinephrine cannot be used for biopsies on the fingers, toes, nose, or penis.**

Lidocaine with epinephrine is safe to use in areas with end-arteries, such as the fingers, toes, nose (FIGURE 4), and penis. There is no evidence to support the notion that local anesthesia with vasoconstriction can cause necrosis in these areas, and no case of necrosis has been reported since the introduction of commercial lidocaine with epinephrine in 1948.<sup>18</sup>

In addition to an absence of complications, epinephrine supplementation results in a relatively bloodless operating field and longer effectiveness of local anesthesia, as a study of more than 10,000 ear and nose surgeries using epinephrine-supplemented local anesthetics showed.<sup>19</sup> The relative absence of blood in the operating field signifi-

## Hemostasis

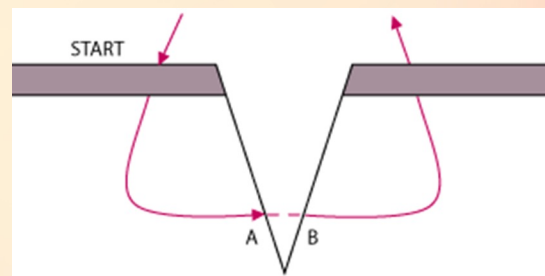
- Aluminum chloride-preferred
- Monsel solution, silver nitrate- may tattoo the skin
- Electrocautery if on anticoagulants, scarring, caution on patients with pacemakers/defibrillators

(Usatine, et al, 2012)

## Method Of Closure

- Healing by secondary intention
- Suture all punch biopsies 3mm or larger in diabetics or those with pvd. Do not biopsy diabetics/pvd below the knee poor healing and high rate of infection
- If not diabetic 3mm biopsies do not have to be sutured unless cosmetic concern

(Usatine, et al, 2012)



Merck Manual Profession Version, 2019

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## CPT Codes

- Punch
  - 11100- biopsy of skin, subcutaneous tissue and or oral mucous membranes including simple closure
  - 11101- each additional lesion (list separate in addition to primary code)
- Shave
  - 11300- shave of epidermal or dermal lesion, single lesion, trunk, arms or legs. Lesion diameter 5mm or less

(Edmonds, 2017)

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## CPT Codes

- Shave
  - 11301-11303- lesion diameters 6mm to over 20mm
  - 11305- shaving of epidermal or derma lesion, single lesion, scalp, neck, hands, feet, genitalia. Lesion diameter 5mm or less
  - 11306-11308- lesion diameter 6mm to over 20mm
  - 11310-shaving or epidermal or dermal lesion, single lesion face, ears, eyelids, nose lips, mucous membranes with lesion diameter 5mm or less
  - 11311-11313- lesion diameters 6mm to over 20mm

(Edmonds, 2017)

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## Cryotherapy

- Method of lesion removal using liquid nitrogen by tissue destruction, disruption of cell membrane and circulatory changes in skin
- Effective method of benign and malignant lesion removal with appropriate freeze times
- Liquid nitrogen boils at -320 F
  - Benign lesion destruction begins at -4 F
  - Malignant lesion destruction -40 F

(Moses, 2019)

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## Cryotherapy

- Why Cryotherapy?
  - Tried and true
  - Has been around since 1800's
  - Commercially available after WWII
  - Initially used with cotton tip applicator

(Wetmore, 1999.)

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## Cryotherapy

- Advantages
  - EASY for provider and patient
  - QUICK – do not need an assistant
  - Pays\*\*
  - Good cosmetic result
  - Safe and simple

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## Cryotherapy

- MUST KNOW THE DIAGNOSIS!!!
- Always have patient follow-up

(Wetmore, 1999)

**Table 1. Common skin lesions amenable to cryosurgical treatment**

Actinic keratosis
Common verrucae
Condylomata
Dermatofibroma
Keloids
Lentigo
Molluscum contagiosum
Seborrheic keratosis
Acne cysts
Basal cell carcinoma
Benign nevi

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(DermNet New Zealand)

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## Cryotherapy

- Key Observation: Freeze-thaw cycle
- Short Freeze Time- 5 seconds after freeze ball formation
  - Ak's, Skin tags
- Moderate Freeze Time- 10 seconds after freeze ball formation
  - Common warts
- Long Freeze Time- 20 seconds after freeze ball formation
  - Seborrheic keratosis, dermatofibroma

(Moses, 2019)

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## Cryotherapy

**Table 4. Freeze times for various benign skin lesions**

LESION	FREEZE TIME* LIQUID NITROGEN (SECONDS)	NITROUS OXIDE (SECONDS)	COMMENTS
Actinic keratosis	8-20	60-90	3-mm margin of freeze; single freeze-thaw cycle
Warts			
• Non-plantar	10-20	Up to 60	
• Plantar	30-60	40 after paring	Pare plantar warts first; use double freeze-thaw cycle
• Periungual	Up to 45		
Condylomata	Up to 30	Up to 45	
Benign nevi	10-20		
Dermatofibroma	30-60	30-60	After shave excision of roof, treat base for 30 s
Keloids	30-60, spray	30-60	Very successful for earlobe keloids; 73% have good cosmetic results. <sup>9</sup> Watch for hypopigmentation and slight atrophy <sup>18</sup>
Lentigo (freckles)	10, spray or swab	20 cryoprobe	1- or 2-mm margin of freeze
Molluscum contagiosum	10, spray or swab	20 cryoprobe	1- or 2-mm margin of freeze
Seborrheic keratosis	10-30, spray or swab	30-60 cryoprobe	2-mm margin of freeze

\*Freeze times adapted from Hocutt Jr<sup>4</sup> and Graham.<sup>9</sup> Times are approximate and should be modified according to location and lateral spread of freeze.

(Wetmore, 1999)

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## Cryotherapy

- Storage- metal lined container allowing for some evaporation/leakage
- Do not pour unused product back into the container
  - HSV, HPV, Hepatitis can survive for years at -320 F

(Moses, 2019)



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## Cryotherapy



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## Cryotherapy

- Pour LN2 into Styrofoam cup
- Rough up cotton tip applicators
- Place cotton tip on lesion until ice ball extends 2-3mm beyond base of lesion
- Pressure on swab increases the depth of the penetration
- Duration of application 30-90 seconds depending on the depth of the lesion

(Edmunds, 2017)

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## Cryotherapy

- Interchangeable/adjustable nozzle to adapt to shape, diameter of lesion
- Otoscope cover cut to the size of the lesion to focus on target area
- Once again, close attention to what you are freezing and free times
- 2-3 mm border
- Always follow up

(Edmunds, 2017)



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## Cryotherapy Post Procedure Care

- Pale, red, swelling, blistering. Blister should cover entire lesion with a desired 2-3mm border. Scab formation 1-2 weeks, lesion resolution after 3 weeks
- Wash with mild soap and water twice daily, petroleum jelly and band aid

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## Complications/Contraindications/Caution

- Complications:
  - Acute – pain, blister
  - Delayed – hemorrhage, infection, excessive granulation
  - Prolonged temporary – sensation changes, hyperpigmentation
  - Permanent – alopecia, atrophy, keloid, scarring, hypopigmentation, **ectropion formation**
- Contraindications
  - Absolute - near eye margins
  - Relative – cold sensitivities
- Caution
  - Dark skinned individuals prone to hypopigmentation

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## CPT Codes

- Cryotherapy
  - 17110- destruction of benign lesions other than skin tags or cutaneous vascular proliferative lesions up to 14 lesions.
  - 17111- 15 or more lesions
  - 54056- destruction of lesion(s), penis

(Edmonds, 2017)

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## Useful Websites

- Emedicine.com- extensive dermatology content including pediatric, skin signs of systemic disease
- Up-To-Date- similar to emedicine, not a free site.
- Dermnet.org.nz- a New Zealand site created by dermatologists for primary care
- MedlinePlus.gov-NIH site, patient information
- AAD.org-American Academy of Dermatology good site for patient information

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