

# Optimal use of topical and intralesional corticosteroids

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# Conflict of interest

- No conflicts to disclose



# Educational Objectives

- Know the different classes and strengths of topical corticosteroids
- The attendee will be able to select 4 topical corticosteroids to treat the majority of steroid responsive dermatoses
- Understand common adverse effects of topical and intralesional corticosteroids and principles to help avoid these side effects

# Principles of dermatologic therapies

- The efficacy of any topical medication is related to:
  - The active ingredient (inherent **strength**)
  - Anatomic **location**
  - The **vehicle** (the mode in which it is transported)
  - The **concentration** of the medication

# Topical corticosteroids

- Topical corticosteroids (TCS) produce an anti-inflammatory response in the skin
- They are used to treat many dermatological conditions, including atopic dermatitis and psoriasis
- They also provide symptomatic relief for burning and pruritic lesions



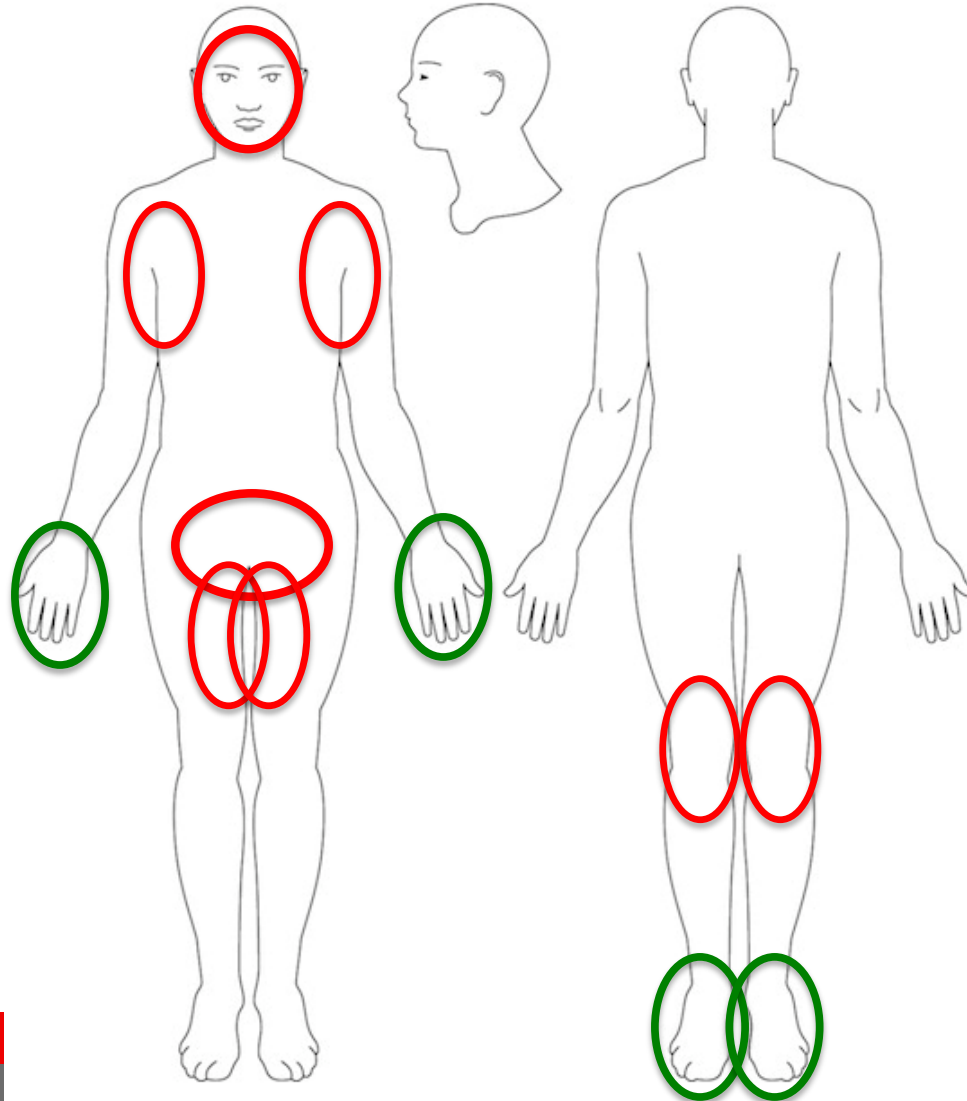
# Topical corticosteroids

- Topical corticosteroids are organized into classes based on their strength (**potency**), ranging from super high potency (class I) to low potency (class VII)
  - Steroids within any class are equivalent in strength
  - Class one is about 1000 times more potent than hydrocortisone 1%
- Strength is inherent to the molecule, not the concentration

# Where to use steroids

Class 4 or milder

High risk for atrophy



Need class 2 or stronger

Ointments better than creams



# Vehicles

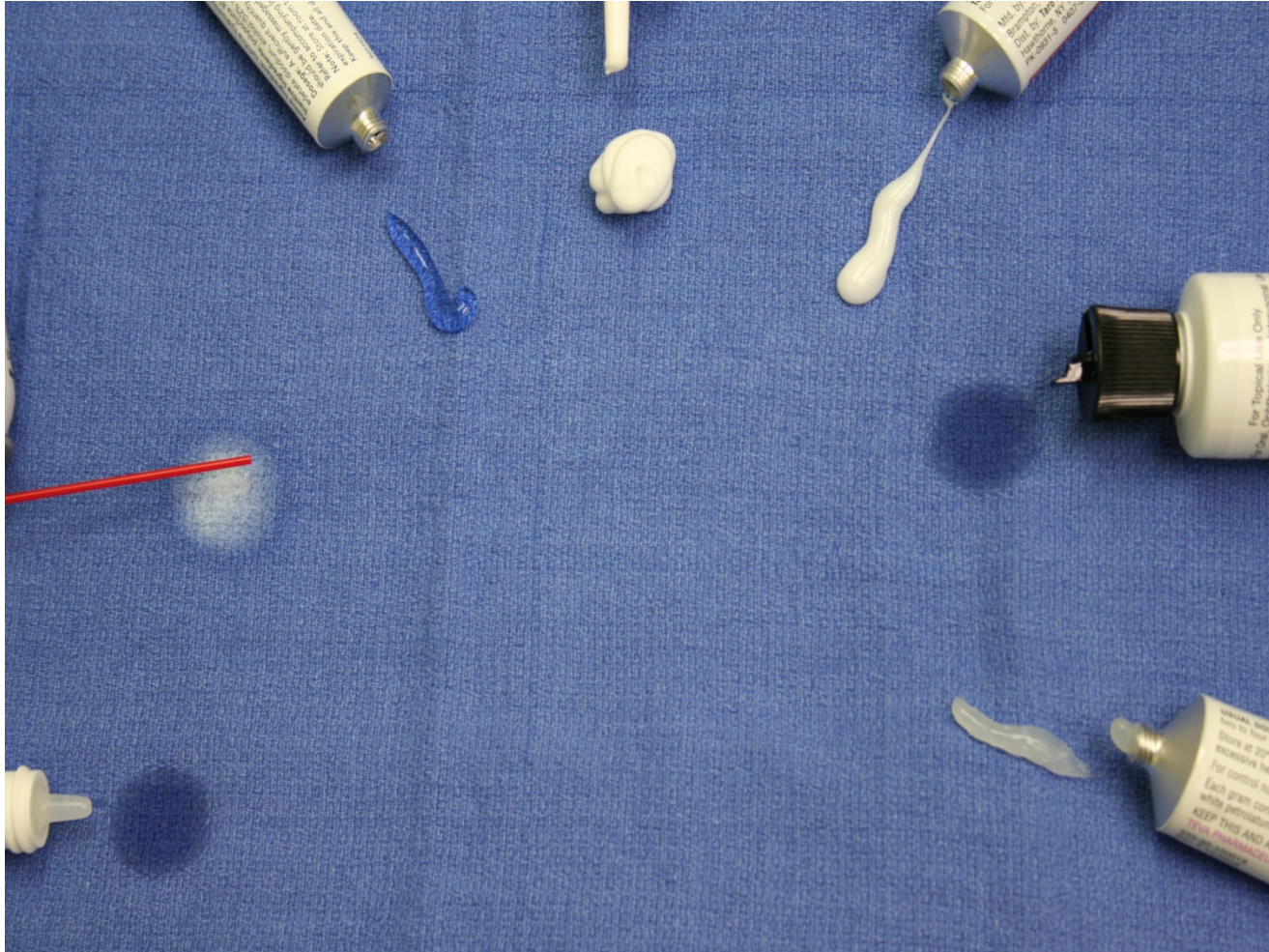
- **Ointments** (e.g. Vaseline): lubricating, semioclusive, greasy
  - Useful for smooth, non-hairy skin; dry, thick, or [hyperkeratotic](#) lesions
- **Creams** (vanish when rubbed in): less greasy, not occlusive, may sting, could cause irritation (preservatives/fragrances)
  - Useful for acute exudative inflammation, intertriginous areas (when skin is in contact with skin, e.g. armpits, groin, pannus)
- **Lotion** (pourable liquid): less greasy, less occlusive, may sting
  - Helpful for acute exudative inflammation (e.g. acute [contact dermatitis](#)) and on hairy areas

# Vehicles

- **Oils:** less stinging, keratolytic (removes scale)
  - Useful for the scalp, especially for people with coarse or very curly hair
- **Gel** (jelly-like): may sting, greaseless, least occlusive; dry quickly
  - Useful for acne; on scalp/hairy areas without matting
- **Foams** (cosmetically elegant): spread readily, easier to apply; more expensive
  - Useful for hairy areas, inflamed skin
- **Sprays:** aerosols (rarely used), pump sprays

# Vehicles:

Vehicle	Solvent	Ideal Locations	Ease of use	Effect on potency	Comments
Lotion	Water based	General	+++	-	
Cream	Water based	General	++	+	
Solution	Alcohol based	Scalp	+++	+	Stings in open wounds / eczema
Gel	Alcohol based	Face, Intertriginous	+++	+	Preferred by men
Foam	Variable – usually alcohol	Scalp, hair bearing areas	+++	++	Few generic forms available
Ointment	Oil based	Palms and soles	+	+++	Stains clothing, “greasy” feeling
Occlusive bandages	Impregnated in medical tape	Palms and soles	+	+++	Limited use, atrophy big concern
Proprietary Formulations	Micro - emulsions	Variable	+++	+++	Expensive - branded



Solution

lotion

cream

lipocream

ointment



Foam



# TCS Strength

Potency	Class	Example Agent
Super high	I	Clobetasol propionate 0.05%
High	II	Fluocinonide 0.05% Mometasone furoate ointment 0.1%
Medium	III – V	Mometasone furoate cream 0.1% Triamcinolone acetonide ointment 0.1% Triamcinolone acetonide cream 0.1%
Low	VI – VII	Fluocinolone acetonide 0.01% Desonide 0.05% Hydrocortisone 1%

**Table V.** Relative potencies of topical corticosteroids

Class	Drug	Dosage form(s)	Strength (%)	
I. Very high potency	Augmented betamethasone dipropionate	Ointment	0.05	
	Clobetasol propionate	Cream, foam, ointment	0.05	
	Diflorasone diacetate	Ointment	0.05	
	Halobetasol propionate	Cream, ointment	0.05	
II. High potency	Amcinonide	Cream, lotion, ointment	0.1	
	Augmented betamethasone dipropionate	Cream	0.05	
	Betamethasone dipropionate	Cream, foam, ointment, solution	0.05	
	Desoximetasone	Cream, ointment	0.25	
	Desoximetasone	Gel	0.05	
	Diflorasone diacetate	Cream	0.05	
	Fluocinonide	Cream, gel, ointment, solution	0.05	
	Halcinonide	Cream, ointment	0.1	
	Mometasone furoate	Ointment	0.1	
	Triamcinolone acetonide	Cream, ointment	0.5	
	III-IV. Medium potency	Betamethasone valerate	Cream, foam, lotion, ointment	0.1
		Clocortolone pivalate	Cream	0.1
Desoximetasone		Cream	0.05	
Fluocinolone acetonide		Cream, ointment	0.025	
Flurandrenolide		Cream, ointment	0.05	
Fluticasone propionate		Cream	0.05	
Fluticasone propionate		Ointment	0.005	
Mometasone furoate		Cream	0.1	
Triamcinolone acetonide		Cream, ointment	0.1	
V. Lower-medium potency		Hydrocortisone butyrate	Cream, ointment, solution	0.1
	Hydrocortisone probutate	Cream	0.1	
	Hydrocortisone valerate	Cream, ointment	0.2	
	Prednicarbate	Cream	0.1	
	VI. Low potency	Alclometasone dipropionate	Cream, ointment	0.05
Desonide		Cream, gel, foam, ointment	0.05	
Fluocinolone acetonide		Cream, solution	0.01	
VII. Lowest potency	Dexamethasone	Cream	0.1	
	Hydrocortisone	Cream, lotion, ointment, solution	0.25, 0.5, 1	
	Hydrocortisone acetate	Cream, ointment	0.5-1	

Know one steroid from each class that would be available to the majority of your patients

# TCS Strength

- Remember to look at the **class** not the percentage
  - Note that clobetasol 0.05% is much stronger than hydrocortisone 1%.
- Note that mometasone ointment is a high potency while mometasone cream is low potency because of the nature of the vehicle

Potency	Class	Example Agent
Super high	I	Clobetasol 0.05%
High	II	Fluocinonide 0.05% Mometasone furoate ointment 0.1%
Medium	III – V	Mometasone furoate cream 0.1% Triamcinolone acetonide ointment 0.1% Triamcinolone acetonide cream 0.1%
Low	VI – VII	Fluocinolone 0.01% Desonide 0.05% Hydrocortisone 1%



# TCS Selection

- **Super high** potency (class I) are used for severe dermatoses over nonfacial and nonintertriginous areas
  - **Scalp, palms, soles, and thick plaques** on extensor surfaces
- **Medium to high** potency steroids (classes II-V) are appropriate for mild to moderate nonfacial and nonintertriginous areas
  - Okay to use on flexural surfaces for limited periods
- **Low** potency steroids (classes VI, VII) can be used for large areas and on thinner skin
  - **Face, eyelid, genital and intertriginous** areas

# Absorption

- TCS are better absorbed through areas of inflammation and desquamation compared to normal skin
- Absorbed more readily through thin stratum corneum of infants compared to adults
- Anatomic regions with a thin epidermis are significantly (e.g., eyelid) more permeable than thick-skinned areas (e.g., palms)
- Ointments allow better percutaneous drug absorption and are therefore more potent than creams or lotions



# Local side effects of TCS

- Local side effects of topical steroids include:
  - Skin atrophy
  - Telangiectasias
  - Striae
  - Acne or rosacea-like eruption
  - Allergic contact dermatitis
  - Hypopigmentation
- The higher the potency the more likely side effects are to occur
- To reduce risk, the least potent steroid should be used for the shortest time, while still maintaining effectiveness

# Perioral Dermatitis



# Striae from topical steroids



# Local Cutaneous Side Effects

Skin Atrophy



Striae



# Local Cutaneous Side Effects

## Hypopigmentation



# Systemic Side Effects of TCS

- Systemic side effects are **rare** due to low percutaneous absorption
- They can include:
  - Glaucoma
  - Hypothalamic pituitary axis suppression
  - Cushing's syndrome
  - Hypertension
  - Hyperglycemia
- Exercise caution with widespread use and occlusive methods (e.g., plastic wrap, bandages)

# Principles of use

- In general:
  - Super high potency: treat for <4 weeks
  - High and Medium potency: <6-8 weeks
  - Low potency: side effects are rare. Treat facial, intertriginous, and genital dermatoses for 1-2 week intervals to avoid skin atrophy, telangiectasia, and steroid-induced acne
- Longer-term management: use least-potent corticosteroid that is effective

# Principles of use

- Stop treatment when skin condition resolves
  - Taper with gradual reduction of both potency and dosing frequency to avoid rebound/flares
- Intermittent therapy may be effective for maintaining long-term disease control
  - Twice weekly application of TCS have been shown to reduce the risk of relapse in patients with atopic dermatitis
- If the patient does not respond to treatment within these guidelines, consider referral to a dermatologist

# Treatment Tips

- Greater caution regarding potency is needed when treating thin sites (face, neck and skin folds)
- Avoid placing an absolute limit on duration of steroid use, which can lead to unsatisfactory outcomes
- Address patient fears of side effects
  - Improve adherence and avoid under treatment



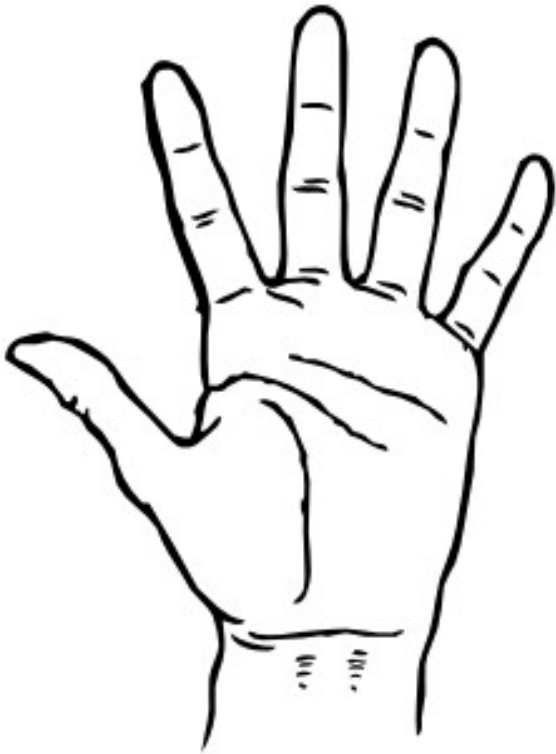
# What do I use?

- Low potency: Desonide or hydrocortisone butyrate
- Medium potency: triamcinolone 0.1%
- High potency: clobetasol
  
- These will allow you to treat most steroid responsive skin diseases. All come in generic options

# Prescribing TCS

The following slides will review how to estimate the amount of medication to prescribe according to the affected body surface area (BSA)

# Estimating BSA: Palm of Hand



1 Palm = 1% BSA  
Use the size of the  
patient's palm, not your  
own

# Estimating Topicals: Fingertip Unit

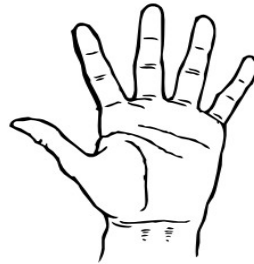


- Quantity of topical medication (dispensed from a 5mm nozzle) placed on pad of the index finger from distal tip to DIP joint
- Fingertip unit (FTU) = 500 mg = treats 2% BSA

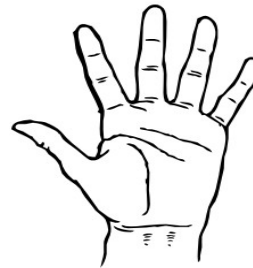
# 1 FTU (0.5 grams) = 2% BSA



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1 Palm = 1% BSA



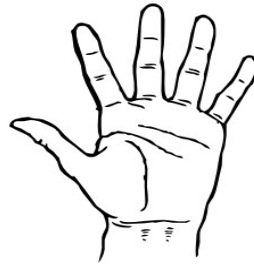
1 Palm = 1% BSA

How much TCS should you prescribe for 2%  
BSA BID x 30 days?

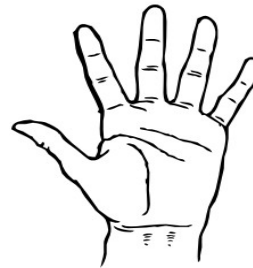
1 FTU (0.5 grams) = 2% BSA



=



1 Palm = 1% BSA



1 Palm = 1% BSA

**1FTU = 0.5 grams = 2% BSA**

**0.5 grams x 2 times per day = 1 gram**

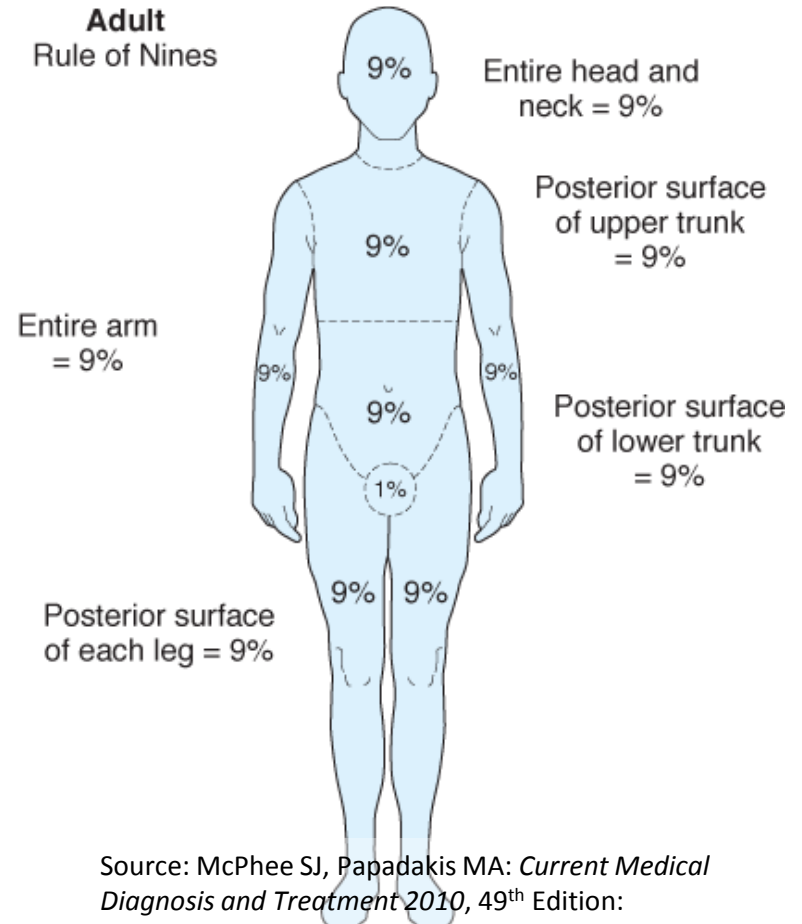
**1 gram x 30 days = 30 grams**

# Estimating Amounts: Reassess

- It takes ~**30 grams** to cover an average adult body (for one application)
- The best way to assure you are giving the right amount is to re-assess on follow-up
  - If your patient was given a 30-gram tube, confirm they are using it according to instructions, and ask how long that tube lasts
  - If a 30-gram tube only lasts them 2 weeks, they need 2 of them to last a month

# Estimating BSA: Rule of Nines

- The “rule of nines” is a quick way of estimating the affected BSA
- The body is divided into areas of 9%
- Pediatric versions exist and should be used when evaluating children



Source: McPhee SJ, Papadakis MA: *Current Medical Diagnosis and Treatment 2010*, 49<sup>th</sup> Edition: <http://www.accessmedicine.com>. Copyright © The McGraw-Hill Companies, Inc.

# Which corticosteroid would you choose?



- a. Clobetasol 0.05% ointment BID
- b. Desonide 0.05% ointment BID
- c. OTC topical hydrocortisone multiple times per day
- d. Triamcinolone 0.1% ointment BID

# Which corticosteroid would you choose?

- a. Clobetasol 0.05% ointment BID
- ~~b. Desonide 0.05% ointment BID~~
- ~~c. OTC topical hydrocortisone multiple times per day~~
- d. Triamcinolone 0.1% ointment BID

I would pick triamcinolone or clobetasol BID and see them back in clinic in 2-4 weeks for re-evaluation.

# Intralesional corticosteroids

- Direct delivery of corticosteroids into skin lesions
- Indications: acute and chronic inflammatory skin diseases, hypertrophic scarring/keloids
  - Psoriasis, lichen simplex chronicus, cystic acne, inflamed epidermoid cysts, keloid scarring, discoid lupus and others

# Equipment

- 1 mL syringe
- 30 gauge needle
  - Locking needles
- ½ or 1 inch needles
- Bacteriostatic saline or lidocaine to mix/dilute the corticosteroid
- Triamcinolone 10mg/mL or 40mg/ML





# Mixing solution

- Shake bottle
- Determine concentration of desired injection
  - 2.5mg/mL up to 40mg/mL
  - Example: for acne 2.5mg/mL, for keloid may need 20-40mg/mL
  - Dilute with desired amount of saline
  - Mix/shake syringe to be sure medication is adequately diluted



# Injection technique

- Inject into dermis
  - Injecting into subcutis more likely to cause atrophy
- Inject at 45 to 90 degree angle
- Inject enough to cause blanching

# Side effects and complications

- Most common side effects are local: atrophy and hypopigmentation, sterile abscess
- Avoid complications by using lowest concentration and smallest quantity of drug to achieve desired results
  - Error on side of undertreating and repeating treatment
  - Avoid injecting into fat. Greater risk of atrophy and minimal anti inflammatory effect

# Side effects

- Avoid injecting lesions in the glabella
- Possible systemic steroid effects with high concentrations
  - Hyperglycemia, adrenal suppression, menstrual irregularity

# Steroid Summary

- Topical and intralesional steroids are safer than systemic
- Know the strength of what you are prescribing
- Side effects happen – educate your patient
- Get good at 4 topical steroids
- Remember to choose the vehicle wisely
- Application is time consuming <10% BSA for most patients



# Are there any questions?

- Enjoy the meeting



