A/Prof Amanda Oakley CNZM
Dermatologist, Hamilton

Emollients and creams

DermNet NZ
All about the skin

THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

Waikato
District Health Board

A/Prof Amanda Oakley CNZM
Dermatologist, Hamilton

Moisturisers

New Zealand Wound Care Society 9th

National Conference 2019

"CHOICES, CHANGES AND CHALLENGES"

NZWCS 9th Biennial Conference

Dunedin Centre, Dunedin

May 23 - 25, 2019

Acknowledgements

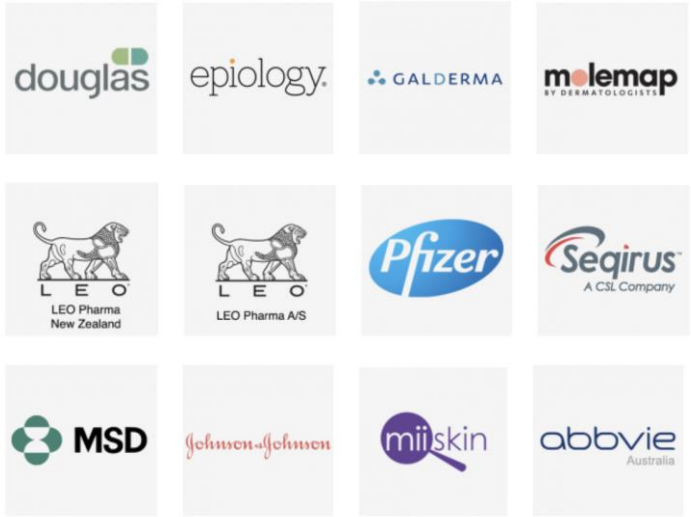
Thanks to Mandy Pagan and Kerryn Greive*

NZ Formulary

*Greive K. Cleansers and moisturisers: the basics. Wound Practice and Research 23 (2) 2015.

Pharmac online Schedule, May 2019

Silver sponsors



Bronze sponsors

Conflicts

- DermNet New Zealand is sponsored by companies that manufacture or market emollients and carries advertising for emollients
- I am Founder and Editor in Chief of DermNet NZ

Definitions

- Ointment: greasy, occlusive, based on paraffin
  - If including macrogols, can be washed off
  - No need for preservative
- Cream
  - Oil + water + preservative
- Lotion
  - More liquid, cooling, ok on hairy skin
  - Alcohol stings!
- Application
  - Solution, suspension for scalp, nails
- Gel
  - High water content for scalp, face
- Paste
  - Stiff, containing powder in an ointment

Definitions

Moisturiser is topical product for dry, flaky, or itchy skin

- Reduces water evaporation thus hydrating the skin
- Should have a blend of emollient, humectant and occludent

Emollient is an oily component of a moisturizer

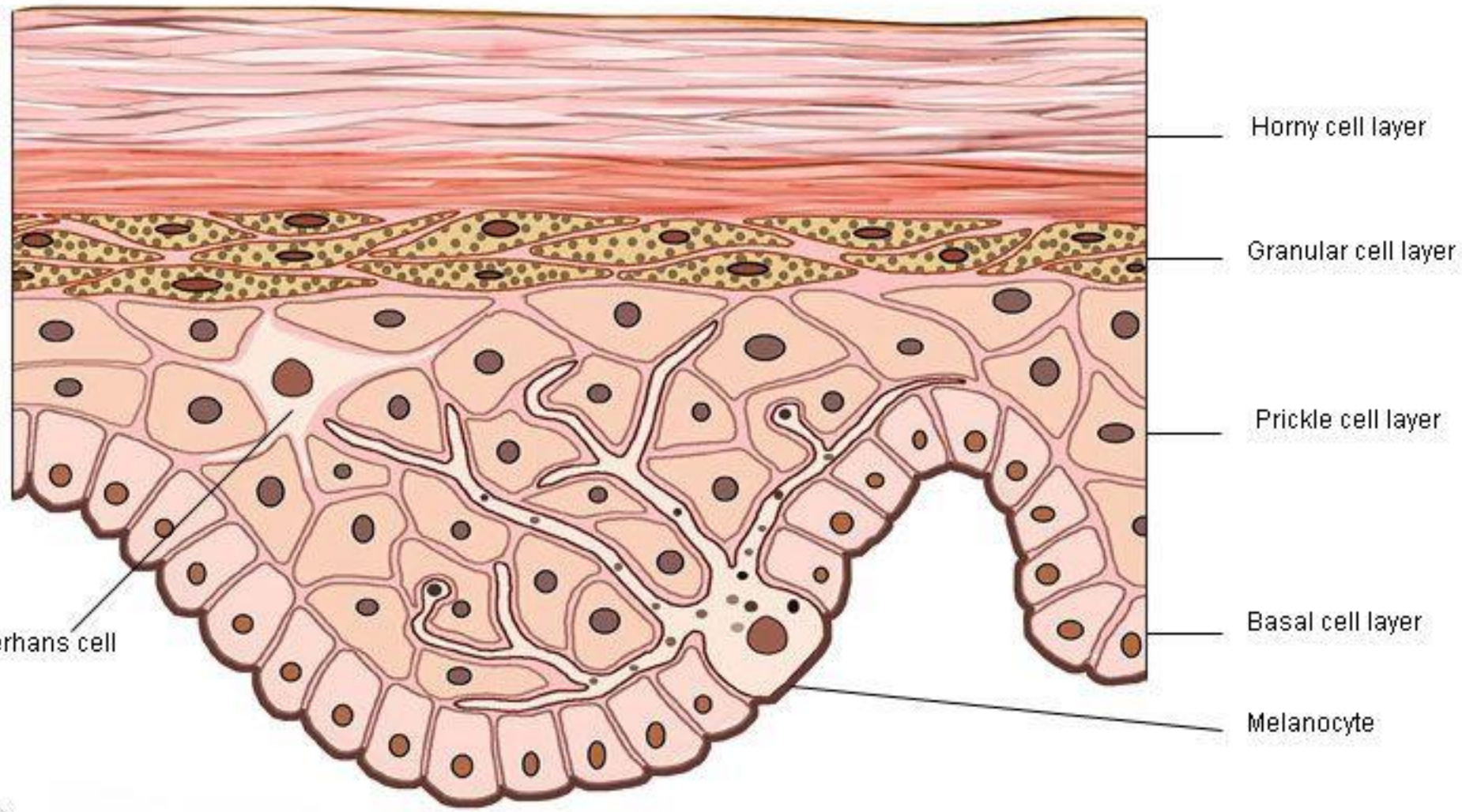
- Liquid paraffin, dimethicone, squalene, isopropyl myristate

Humectant is hygroscopic, eg glycerin

- Absorbs water
- To work, it must be in a cream containing water

Occludent traps water, eg petrolatum

- Lipophilic



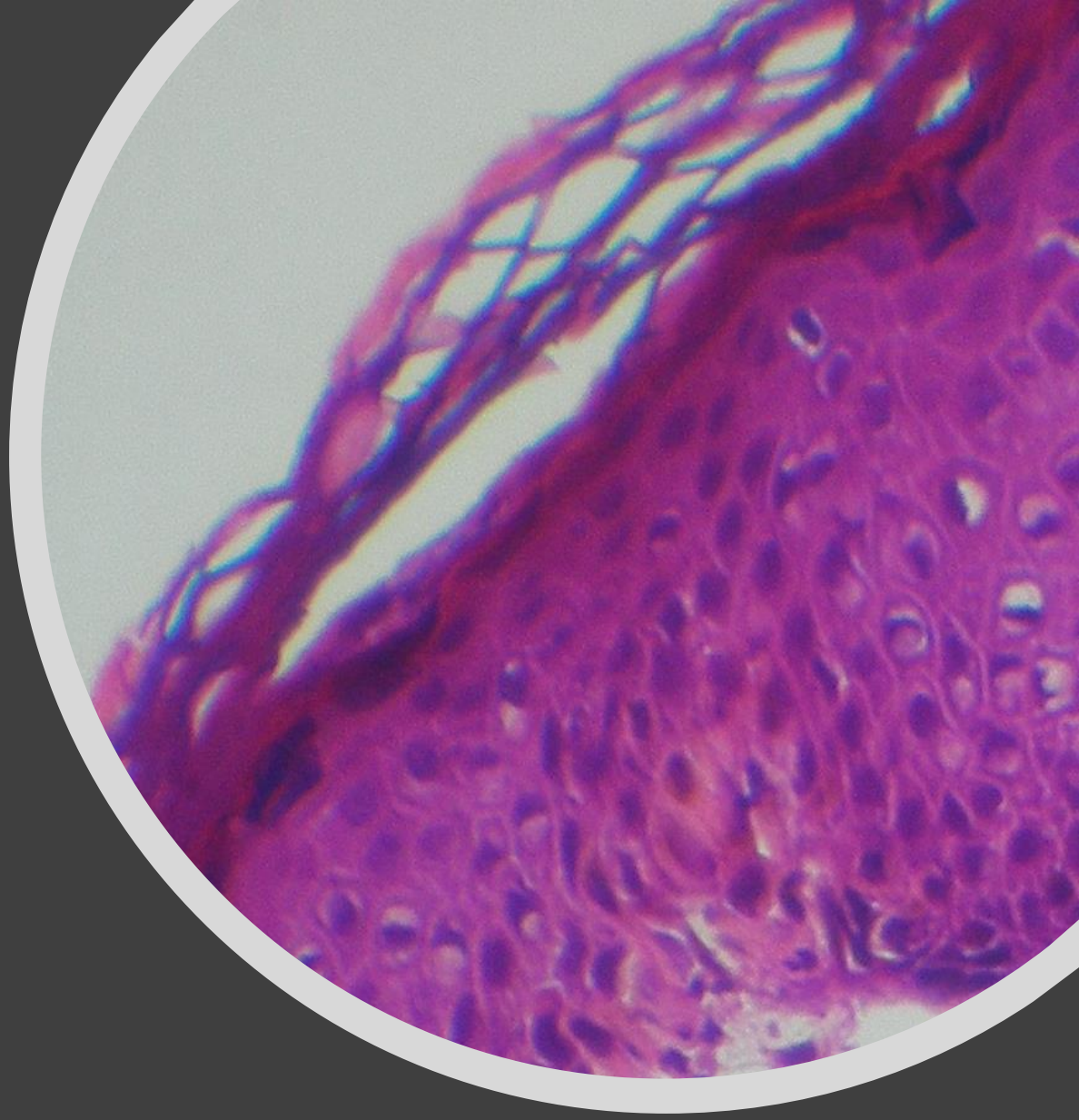
DermNetNZ.org

Normal horny cell layer (stratum corneum)

- Barrier to irritants, allergens, foreign bodies, pathogens
- Hydration due to natural moisturising factor, intracellular lipids, sebum
- Structure is influenced by proteases, protease inhibitors and depends on pH, bacterial flora, treatments
- Reduced barrier function — degradation of corneodesmosomes with age (very young or very old), genetics, disease, contact with irritants, long-term use of topical corticosteroids

Stratum corneum

- Natural moisturising factor
  - Washes out when bathing
  - Contains Sodium PCA, amino acids, lactate, glycerin
  - Formed from filaggrin
  - Reduced if filaggrin is deficient (ichthyosis vulgaris, atopic eczema)
- Intercellular lipids
  - Ceramides, free fatty acids and cholesterol
  - Water-repellent
- Sebum
  - On skin surface – pH 5.5
  - Squalene, triglycerides, wax esters



Cleanser to remove dirt, sweat, sebum, oil

- Require surfactants
- Bad ones leave skin feeling tight
  - Swollen skin while washed, excessively dry afterwards
  - Fragrances, preservatives may irritate and precipitate dermatitis
- Water alone removes natural moisturising factor
- Foam can be ok

Old-fashioned soap

- A fat or oil + a strong alkali (saponification): pH 9–10
- Bar of pure soap
- In liquid form, usually blended with synthetic detergent
- High pH → skin dries out, flaky, irritated, itchy skin
  - ▲ *Cutibacterium acnes*
  - ▲ proteases
  - ▲ pigmentation

Syndets

- Combination product to achieve pH 5.5–7
- Wash off more completely than soap
- Include emollients, occlusive, humectants to counteract loss of lipids
- Avoid fragrance, colour, essential oils
- ▼ *Cutibacterium acnes*

Surfactants

- Needed to ‘cleanse’ and intended to be rinsed off
- Eg, sodium lauryl sulfate (SLS) in original aqueous cream
- SLS → inflammation, shedding of skin, immature stratum corneum
- Aqueous cream with SLS → aggravates eczema

13.2.1.1 Emollient bath additives and shower preparations

Emollient bath additives should be added to bath water; hydration can be improved by soaking in the bath for 10–20 minutes. Some bath emollients can be applied to wet skin undiluted and rinsed off. In dry skin conditions soap should be avoided (see section 13.2.1 for soap substitutes). The quantities of bath additives recommended for adults are suitable for an adult-size bath. Proportionately less should be used for a child-size bath or a washbasin; recommended bath additive quantities for children reflect this.

> These preparations make skin and surfaces slippery—particular care is needed when bathing.

- aqueous cream
- oatmeal colloidal
- paraffin liquid + lanolin (bath preparation)
- paraffin light liquid

Who has dry skin?

- Very young, very old
- People with ichthyosis, various kinds of dermatitis, rosacea
- Those in contact with irritants
- People who wash frequently, especially when using soap

Which moisturiser?

The choice depends on:

- How dry or scaly the skin is
- Patient preference, age, gender, dexterity and lifestyle
- Cost, subsidy and availability
- Storage requirements and expiry date
- Irritation from or allergy to certain ingredients
- Creams are usually preferred.

Moisturisers in atopic dermatitis

- Anti-inflammatory, anti-proliferative
- Reduce itch, stinging, severity of eczema
- May reduce bacterial infection
- Steroid-sparing
- Cosmetically acceptable
  - Should not be ‘too thick’ or ‘too thin’ or sting

Moisturisers in psoriasis

- May normalize proliferation, differentiation and apoptosis of keratinocytes
- More effective under an occlusive dressing

Water-free moisturisers are occlusive

- Less likely to sting
- Do not require a preservative
- Useful on surgical wounds

cetostearyl alcohol + paraffin liquid + paraffin soft white

cream

cetostearyl alcohol + paraffin liquid + paraffin soft white **full subsidy (restrictions)**

O/W Fatty Emulsion 500 g full subsidy (restrictions)

Fatty Cream (healthE) 100 g , 500 g

paraffin liquid + paraffin soft white + wax-emulsifying

ointment

paraffin liquid 20% (200 mg/g) + paraffin soft white 50% (500 mg/g) + wax-emulsifying 30% (300 mg/g) **full subsidy (restrictions)**

Emulsifying Ointment (AFT) 500 g full subsidy (restrictions) , 100 g

Emulsifying Ointment (Multichem) 500 g

Emulsifying Ointment BP (healthE) 100 g

Stinging

- An immediate sensation of discomfort
- May quickly resolve
- Can be associated with development of dermatitis
  - Irritant contact dermatitis
- Causes may include:
  - Fragrance
  - Preservative
  - Essential oil
  - Propylene glycol
  - Adhesion
  - Body fluid

Contact allergy

Beeswax	Imidurea
Benzyl alcohol	Isopropyl palmitate
Butylated hydroxyanisole	*N*-(3-Chloroallyl)hexaminium chloride (quaternium 15)
Butylated hydroxytoluene	Polysorbates
Cetostearyl alcohol (including cetyl and stearyl alcohol)	Propylene glycol
Chlorocresol	Sodium metabisulfite
Edetic acid (EDTA)	Sorbic acid
Fragrances	Wool fat and related substances including lanolin
Hydroxybenzoates (parabens)	

Contact dermatitis

Acute or chronic eczematous dermatitis

Irritant contact dermatitis

- Acute chemical burn
- Chronic repetitive exposure to irritants (low humidity, water, detergents, solvents, friction)

Allergic contact dermatitis

- Type IV hypersensitivity reaction due to immune reaction to hapten
- Allergens include: nickel, fragrance, preservative, rubber accelerant, adhesive

Allergy is confirmed by patch testing (refer dermatology or immunology)

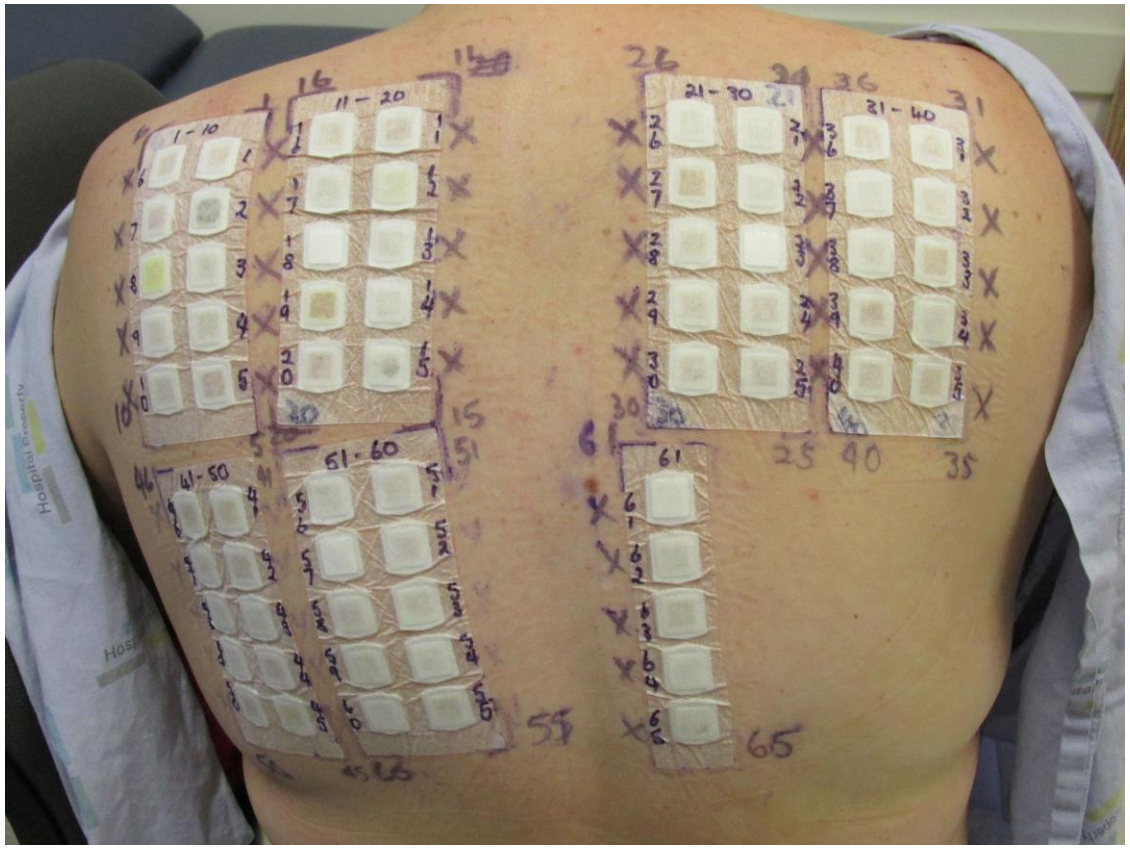
Contact dermatitis

Irritant

Allergic

Patch testing

Patch testing



PHARMAC

<< Dermatologicals

Online Pharmaceutical Schedule - May 2019

Search

Barrier Creams and Emollients

- Barrier Creams **Dimethicone; Zinc and castor oil**
- Emollients **Aqueous cream; Cetomacrogol; Cetomacrogol with glycerol; Emulsifying ointment; Oil in water emulsion; Paraffin; Urea;** Wool fat with mineral oil
- Other Dermatological Bases **Paraffin**

Barrier creams

- For stoma, pressure area, hand dermatitis
- Include dimethicone 5 or 10%, zinc oxide, castor oil, retinol palmitate, cetrimide, soft white paraffin

Barrier Creams

Dimethicone

- Crm 5% pump bottle
  - ✔ **healthE Dimethicone 5%** **2373319** $4.59 per 500 ml OP

- Crm 10% pump bottle
  - ✔ **healthE Dimethicone 10%** **2373289** $4.52 per 500 ml OP

Parasiticidal Preparations

Dimethicone

- Lotn 4%
  - ✔ **healthE Dimethicone 4% Lotion** **2351293** $4.98 per 200 ml OP

Barrier Creams

Zinc and castor oil

- Oint

✔ **Boucher**	**2537753**	$4.25	per 500 g

Emollients

Paraffin

Oint liquid paraffin 50% with white soft paraffin 50%

✔ **healthE**	**2322072**	$5.35	per 500 ml OP

Moisturisers/emollients

- Best applied after washing/bathing
- If in a pot, remove cream with spatula
- Apply in direction of hair growth
- Occlusion can cause folliculitis

Fire hazard!

- Any product with paraffin can act as an accelerant for a fire
- Warn patient to stay away from flames, smoke
- Change impregnated clothing, bedding regularly

Emollients

- **Urea** **Crm 10%**
- **Wool fat with mineral oil** Lotn hydrous 3% with mineral oil
- **Aqueous cream** **Crm**
- **Cetomacrogol** **Crm BP**
- **Emulsifying ointment** **Oint BP**
- **Paraffin** **Oint liquid paraffin 50% with white soft paraffin 50%**
- **Oil in water emulsion** **Crm**
- **Cetomacrogol with glycerol** **Crm 90% with glycerol 10%**

Urea cream

- Softens and hydrates keratin
- For dry, scaly skin, eg ichthyosis, venous disease

Salicylic acid

- Softens and hydrates keratin
- For dry, scaly skin, eg ichthyosis, venous disease, psoriasis
- May irritate and dry the skin; potentially toxic

SALICYLIC ACID
Powder – Only in combination.....18.88 250 g ✔ **PSM**
1) Only in combination with a dermatological base or proprietary Topical Corticosteroid – Plain or collodion flexible
2) With or without other dermatological galenicals.

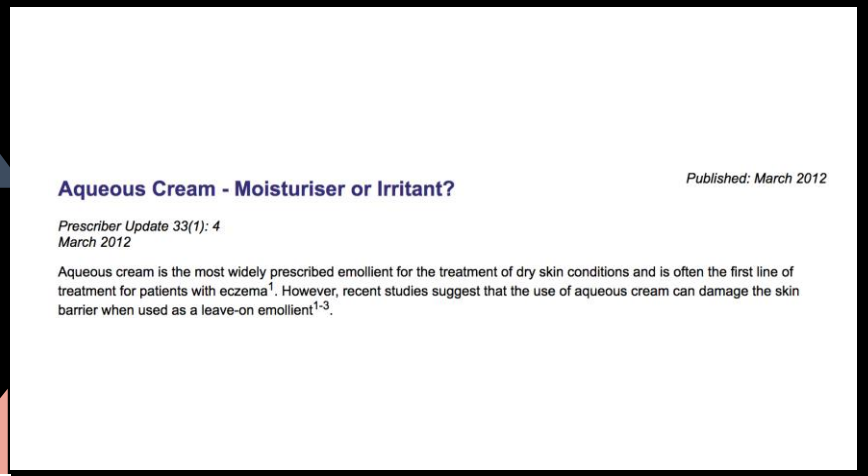
Note Only available as an extemporaneous preparation. The strength and dermatological base should be specified on the prescription.

Wool fat with mineral oil

- Only on a prescription

* Lotn hydrous 3% with mineral oil

Alpha-Keri Lotion	**268070**	$5.60 ($20.53)	per 1000 ml
BK Lotion	**325295**	$1.40 ($7.73)	per 250 ml OP
BK Lotion	**325309**	$5.60 ($23.91)	per 1000 ml
DP Lotion	**619779**	$1.40 ($4.53)	per 250 ml OP
DP Lotion	**619787**	$5.60 ($11.95)	per 1000 ml



Aqueous Cream - Moisturiser or Irritant?

Published: March 2012

Prescriber Update 33(1): 4
March 2012

Aqueous cream is the most widely prescribed emollient for the treatment of dry skin conditions and is often the first line of treatment for patients with eczema[1]. However, recent studies suggest that the use of aqueous cream can damage the skin barrier when used as a leave-on emollient[1-3].

Aqueous cream

Cetomacrogol cream

cetomacrogol wax-emulsifying + paraffin liquid + paraffin soft white + water purified

MONOGRAPH

Preparations

Non-Ionic (healthE) **cetomacrogol** wax-emulsifying + paraffin liquid + paraffin soft white + water purified cream Full subsidy **(restrictions)**
Cetomacrogol (Pharmacy Health) **cetomacrogol** wax-emulsifying + paraffin liquid + paraffin soft white + water purified cream
Cetomacrogol (PSM) **cetomacrogol** wax-emulsifying + paraffin liquid + paraffin soft white + water purified cream

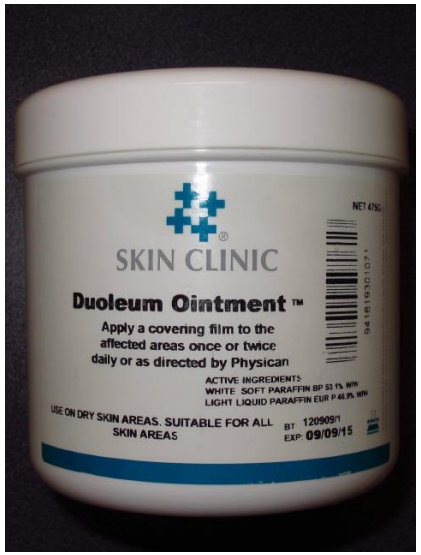
Emulsifying ointment

- May contain SLS

Emulsifying ointment

- Oint BP
  - ✓ **AFT** **2072246** $3.59 per 500 g

50:50



- White soft paraffin 50%
- Liquid paraffin 50%

Oil in water emulsion

- Emulsion = a cream (oil + water)

Oil in water emulsion

- Crm
  - ✔ **O/W Fatty Emulsion Cream** **2491311** $2.19 per 500 g

Compare Sorbolene cream + 10% glycerin

HealthE 500 ml*

- Water + glycerin
- Petroleum jelly
- Liquid paraffin
- Cetearyl alcohol
- Ceteareth-20
- Parabens

Pharmacy Health 1000 ml*

- Water + glycerin
- Petrolatum
- Paraffin
- Cetostearyl alcohol
- Propylene glycol
- Ceteth-20
- Chlorocresol

*Funded product

A word about calamine

Calamine

- Only on a prescription
- Not in combination

Crm, aqueous, BP

✔ **healthE Calamine Aqueous Cream BP**	**2318628**	$1.26	per 100 g

Lotn, BP

✔ **PSM**	**285994**	$12.94	per 2000 ml

Watch out for phenol in calamine lotion

calamine MONOGRAPH

Preparations

Calamine Aqueous (healthE) **calamine** 4% (40 mg/g) + zinc oxide 3% (30 mg/g) cream Full subsidy **(restrictions)**
Calamine (PSM) **calamine** 4% (40 mg/g) + zinc oxide 3% (30 mg/g) cream
Calamine Aqueous (ABM) **calamine** 4% (40 mg/g) + zinc oxide 3% (30 mg/g) cream
Calamine Aqueous (Home Essentials) **calamine** 4% (40 mg/g) + zinc oxide 3% (30 mg/g) cream
Calamine Aqueous (Pharmacy Health) **calamine** 4% (40 mg/g) + zinc oxide 3% (30 mg/g) cream
Calamine (PSM) **calamine** 15% (150 mg/mL) + phenol liquified 0.5% (0.005 mL/mL) + zinc oxide 5% (50 mg/mL) lotion Full subsidy **(restrictions)**
Calamine (ABM) **calamine** 15% (150 mg/mL) + phenol liquified 0.5% (0.005 mL/mL) + zinc oxide 5% (50 mg/mL) lotion
Calamine (Home Essentials) **calamine** 15% (150 mg/mL) + phenol liquified 0.5% (0.005 mL/mL) + zinc oxide 5% (50 mg/mL) lotion
Calamine (Medco) **calamine** 15% (150 mg/mL) + phenol liquified 0.5% (0.005 mL/mL) + zinc oxide 5% (50 mg/mL) lotion
Calamine (Midwest) **calamine** 15% (150 mg/mL) + phenol liquified 0.5% (0.005 mL/mL) + zinc oxide 5% (50 mg/mL) lotion

- NZF : *Preparations containing **calamine** are often ineffective and may increase dry skin.*
- NZF*: Calamine preparations are of little value for the treatment of insect stings or bites*

Management of itch

Find and treat the cause (eg, topical steroid for dermatitis)

Use moisturisers

Menthol 0.25–1% in aqueous cream

- Note that strong menthol creams (8% in Deep Heat) may BURN

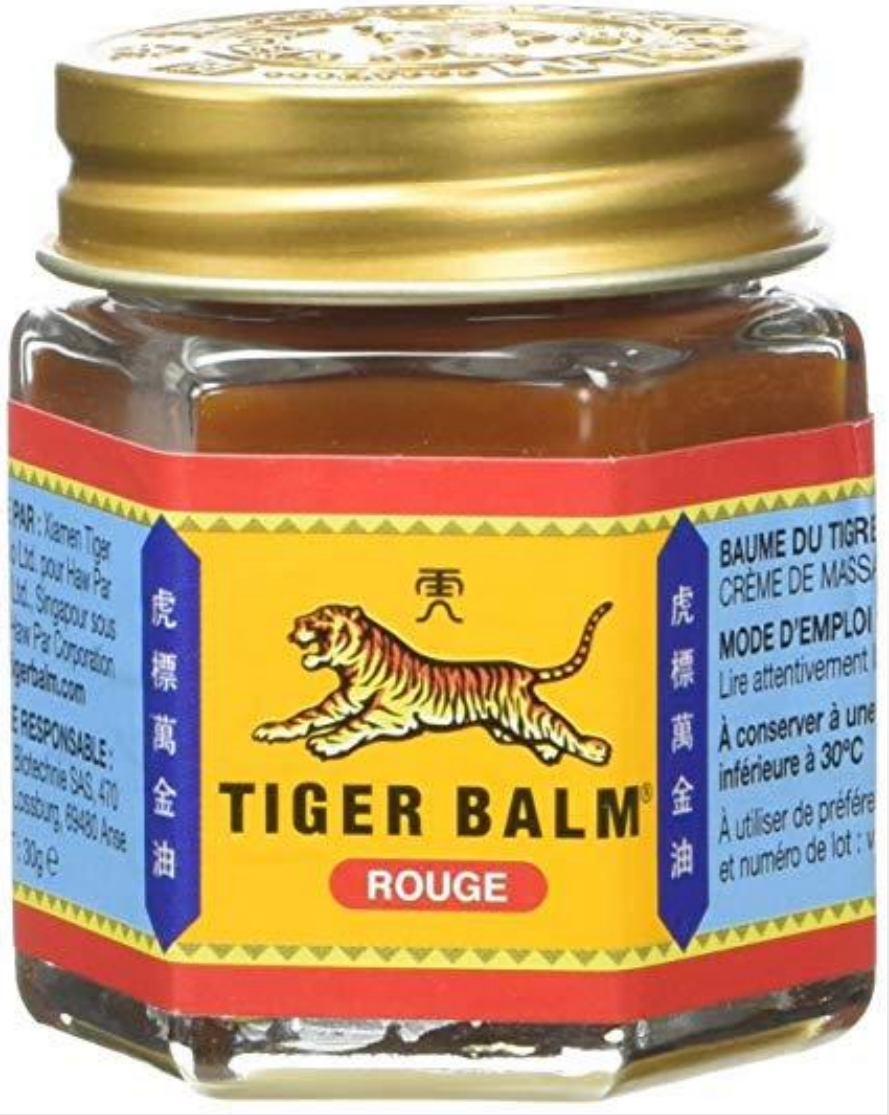
Role of crotamiton is uncertain

MENTHOL – Only in combination

1) Only in combination with a dermatological base or proprietary Topical Corticosteriod – Plain
2) With or without other dermatological galenicals.

Crystals	6.92	25 g	✔ **MidWest**
	29.60	100 g	✔ **MidWest**

crotamiton
cream
10% (100 mg/g) **full subsidy (restrictions)**
Itch-Soothe 20 g full subsidy (restrictions)
Eurax 20 g



Itch is most often due to dermatitis: rx tcs

Itch due to a systemic or neuropathic cause

Itch

Avoid local anaesthetics

Avoid sedating antihistamines in general (due to s/e)

- Non-sedating antihistamines are good in urticaria but not much good for anything else
- Tricyclics are sometimes helpful, eg doxepin [unapproved]

Dermatological base

Paraffin

White soft - Only in combination

PSM	**221783**	$3.58 ($8.69)	per 500 g
IPW	**768804**	$3.58 ($7.78)	per 500 g
✓ **IPW**	**779679**	$20.20	per 2500 g

Only in combination with a dermatological galenical or as a diluent for a proprietary Topical Corticosteroid – Plain.

Topical corticosteroids

Corticosteroids - Plain

- **Methylprednisolone aceponate** **Crm 0.1%; Oint 0.1%**
- **Betamethasone dipropionate** **Crm 0.05%; Crm 0.05% in propylene glycol base; Oint 0.05%; Oint 0.05% in propylene glycol base**
- **Clobetasol propionate** **Crm 0.05%; Oint 0.05%**
- **Clobetasone butyrate** Crm 0.05%
- **Diflucortolone valerate** Crm 0.1%; Fatty oint 0.1%
- **Hydrocortisone and paraffin liquid and lanolin** **Lotn 1% with paraffin liquid 15.9% and lanolin 0.6%**
- **Hydrocortisone butyrate** **Lipocream 0.1%; Oint 0.1%; Milky emul 0.1%**
- **Hydrocortisone** **Crm 1%; Powder**
- **Triamcinolone acetonide** **Crm 0.02%; Oint 0.02%**
- **Betamethasone valerate** **Crm 0.1%; Oint 0.1%; Lotn 0.1%**
- **Mometasone furoate** **Crm 0.1%; Oint 0.1%; Lotn 0.1%**

Corticosteroids - Combination

- **Betamethasone valerate with clioquinol** Crm 0.1% with clioquinol 3%
- **Betamethasone valerate with sodium fusidate [fusidic acid]** Crm 0.1% with sodium fusidate (fusidic acid) 2%
- **Hydrocortisone with miconazole** **Crm 1% with miconazole nitrate 2%**
- **Hydrocortisone with natamycin and neomycin** **Crm 1% with natamycin 1% and neomycin sulphate 0.5%; Oint 1% with natamycin 1% and neomycin sulphate 0.5%**
- **Triamcinolone acetonide with gramicidin, neomycin and nystatin** Crm 1 mg with nystatin 100,000 u, neomycin sulphate 2.5 mg and gramicidin 250 mcg per g

DERMOL™ 0.05%
Topical Ointment 30 g
P'CODE 229040
NACO04130-101-NZ
EMULSIFYING OINTMENT BP
500g
CAUTION: NOT TO BE TAKEN
AFT pharmaceuticals
FOR EXTERNAL USE
Non-Ionic Cream
Pharmacy Health
(Cetomacrogol cream BP 88 formula)
PHARMACY MEDICINE
KEEP OUT OF REACH OF CHILDREN
FOR EXTERNAL USE ONLY
PRESCRIPTION MEDICINE
LOCOID® 0.1%
Hydrocortisone 17-butyrate 1 mg/mL
SCALP LOTION
100 mL
PRESCRIPTION ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
ARISTOCORT®
Triamcinolone Cream
Topical Cream
Triamcinolone acetonide 0.02% w/w
AUST R 15121
PRESCRIPTION MEDICINE
LOCOID LIPOCREAM® 0.1%
Hydrocortisone 17-butyrate 1 mg/g
100 g
ARISTOCORT®
Triamcinolone Ointment
Topical Ointment
Triamcinolone acetonide 0.02% w/w
AUST R 15123
PRESCRIPTION ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
PHARMACIST ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
MICREME H
Anti-inflammatory
Antifungal Cream 15 g
Advantan® Ointment
CSL
— 0.1%
— 15 g
— for external use
PRESCRIPTION ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
Diprosone® Ointment
PRESCRIPTION ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
Diprosone® Cream 0.05%
BETAMETHASONE DIPROPIONATE EQUIV. TO BETAMETHASONE 0.5mg/g
TOPICAL CORTICOSTEROID - FOR EXTERNAL USE ONLY
DIRECTIONS: Use strictly as directed by physician.
MSD
15g
AUST R 18818
CSL
PRESCRIPTION ONLY MEDICINE
KEEP OUT OF REACH OF CHILDREN
Daivobet® 50/500
30 g Tube
Calcipotriol 50 microgram/g
Betamethasone 500 microgram/g
present as betamethasone dipropionate
30 g ointment
CSL Biotherapies
Pharmacy Health
Sorbolene Cream
WITH 10% GLYCERIN
healthE
Fatty
Emollient cream
FOR EXTERNAL USE ONLY
ETA 0.1%
Topical Cream 50 g
CSL
DERMOL™ 0.05%
Topical Cream 30 g
Scytera

Strengths

Mild

- Hydrocortisone 0.1–2.5%

Moderate (2–25 times as potent as hydrocortisone)

- clobetasone butyrate
- triamcinolone acetonide

Potent (100–150 times as potent as hydrocortisone)

- betamethasone valerate
- betamethasone dipropionate (*Diprosone*® cream/ointment; *Daivobet*® ointment/gel)
- diflucortolone valerate
- hydrocortisone butyrate
- mometasone furoate
- methylprednisolone aceponate

Very potent (up to 600 times as potent as hydrocortisone)

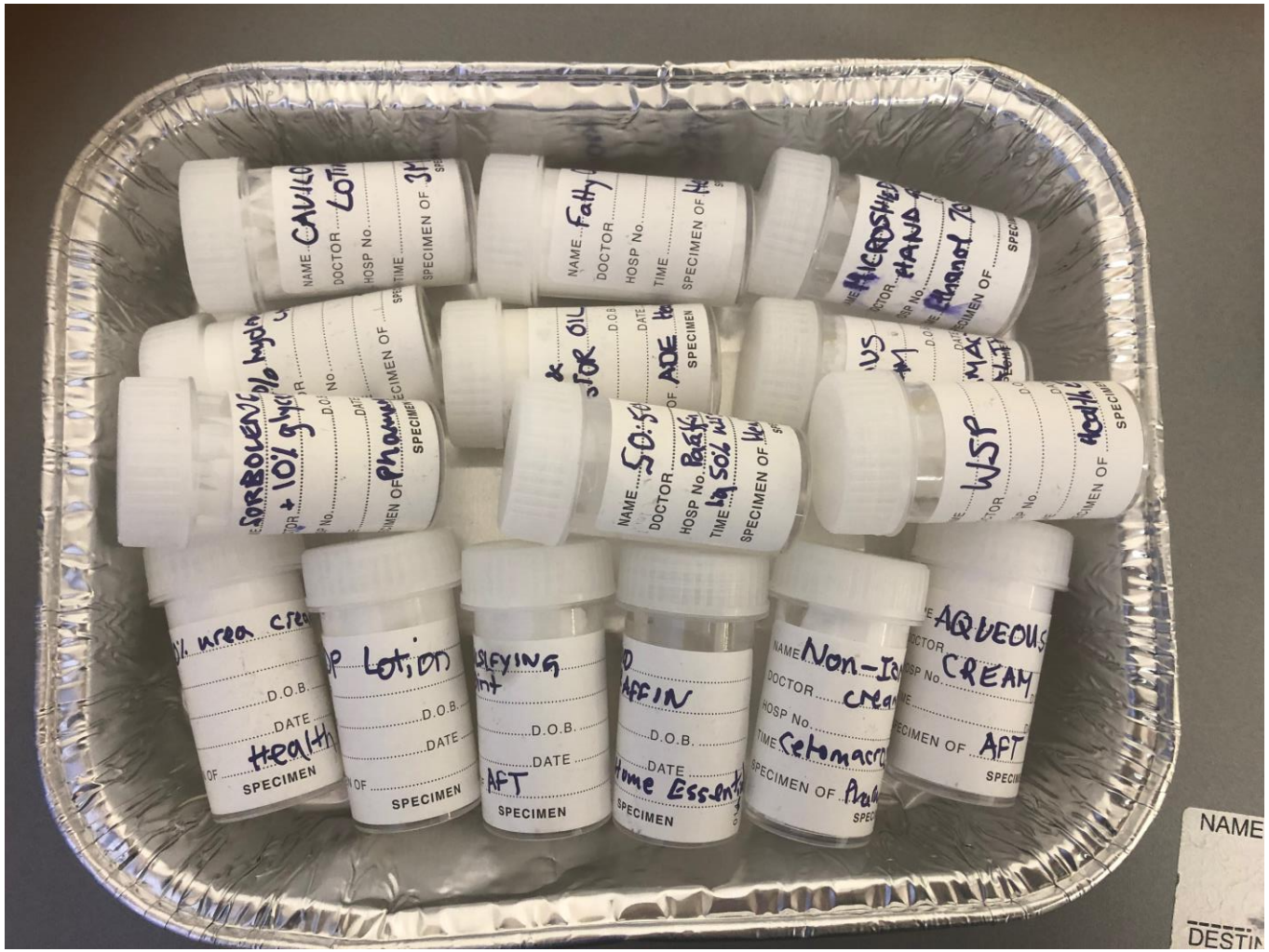
- clobetasol propionate
- betamethasone dipropionate (*Diprosone OV*® cream/ointment)

Quantities

Suitable quantities of corticosteroid preparations to be prescribed for specific areas of the body	
	Creams and Ointments
Face and neck	15–30 g
Both hands	15–30 g
Scalp	15–30 g
Both arms	30–60 g
Both legs	100 g
Trunk	100 g
Groins and genitalia	15–30 g
These amounts are usually suitable for an adult for a single daily application for 2 weeks	

Bases

- Hair bearing – lotion
- Dry lesion – ointment
- Flexures – cream



Adverse reactions

Immediate stinging

- Skin barrier defect (eg, atopic dermatitis)

Irritant contact dermatitis

- Irritants include propylene glycol, fragrances, preservatives …

Allergic contact dermatitis

- Allergens include fragrances, preservatives, emulsifiers …

Photocontact dermatitis

- Irritants/allergens include sunscreens, antimicrobials

Morphology

Stinging → temporary erythema

Irritant contact dermatitis

- Surface change: blisters, scale + erythema, oedema
- Confined to areas in contact with product

Allergic contact dermatitis

- Surface change: blisters, scale + erythema, oedema
- May spread beyond areas in contact with product

Photocontact dermatitis

- Confined to (or worse in) areas exposed to the sun

Irritant contact dermatitis

Allergic contact dermatitis

Diethylthiourea (neoprene)

Quaternium-15 (preservative)

Phototcontact dermatitis

Sunscreen

Lime

Occlusive effects

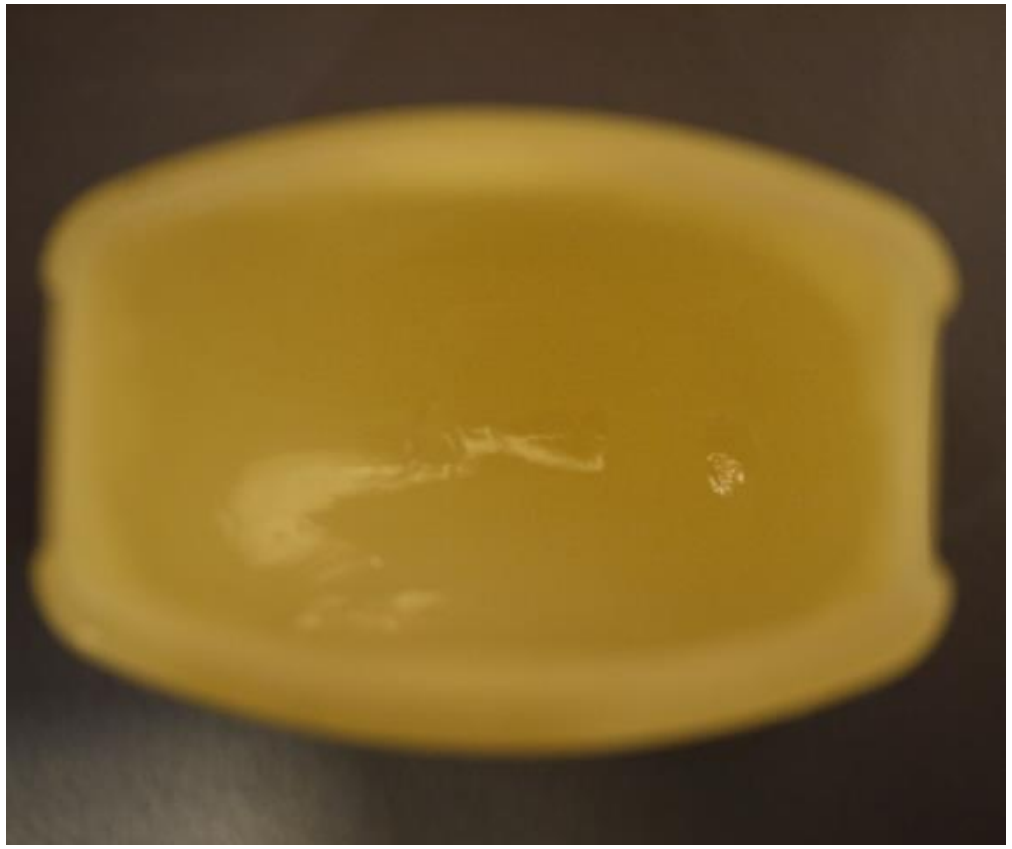
Unpleasant cosmetically

Affects clothing

Folliculitis

- Sterile
- Staphylococcal

Mess



Folliculitis

Cases

Case 1 – venous eczema

- Treat venous disease
  - Compression
  - Vascular assessment
- Treat eczema
  - Topical steroids
- Moisturisers
  - Sorbolene + glycerine
- Non-soap cleanser

Case 2 – lymphoeodema

- Treat venous/lymphatic disease
  - Compression
  - Vascular assessment
- Moisturisers
  - 10% urea cream / 5% Salicylic acid ointment
- Non-soap cleanser

Case 2 – lymphoeodema

- Treat venous/lymphatic disease
  - Compression
  - Vascular assessment
- Moisturisers
  - 20% urea cream / 10% Salicylic acid ointment
- Non-soap cleanser

Case 3 – discoid eczema (no venous disease)

- Treat eczema
  - Topical steroids
  - Sometimes, oral steroids, methotrexate, phototherapy
- Moisturisers
  - Sorbolene + glycerine
- Non-soap cleanser

Case 4 – ichthyosis

- Moisturisers
  - Urea, lactic acid cream
- Non-soap cleanser

Case 5 – contact dermatitis (swollen legs)

- Treat swelling
  - Compression
- Treat eczema
  - Topical steroids
- Moisturisers
  - Sorbolene + glycerine
- Non-soap cleanser
- Arrange patch testing

Case 6 - scabies

- Identify and kill the mite!
  - Insecticides, eg, permethrin cream
  - Treat contacts at the same time
  - Wash clothing/bedding
- Treat secondary eczema
  - Topical steroids
- Moisturisers
  - Sorbolene + glycerine
- Non-soap cleanser

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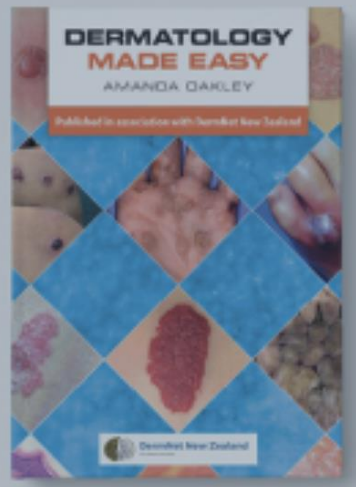

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