



Pharmaceutical Services Programme
Ministry of Health, Malaysia

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Topical Preparations Counselling Guide for Pharmacist



DISCLAIMER This guide would serve as a handy reference for PHARMACIST ONLY and not as a complete drug information resource. It is NOT intended to replicate or replace the knowledge, skills and experience of trained dermatologist/ health professionals, nor is it a substitute for clinical judgement and advice. The nature of healthcare/ drug information is that it is constantly evolving with ongoing research and clinical experience and is often subject to interpretation. While best effort has been made to ensure the accuracy of the information and recommendation presented, reader is advised that the contributors, editors, reviewer and publisher cannot be responsible for the continued updates of the information, of any errors or/ and of any consequences arising from its application.

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Counselling is one of the important components in pharmaceutical care, in which to ensure patients adhere to their medication. It is the responsibility of the pharmacists to provide proper counseling and patient education in order to achieve the best possible pharmacotherapy outcomes. One of the commonly counsel medication by the pharmacists is topical preparations.

Skin is known to be the largest organ of our body. There are hundreds of skin conditions that affect humans and it can vary greatly in symptoms and severity. It can be temporary or permanent, and may be painless or painful. Some may be caused by external factors, while others may be genetic. Some skin conditions are minor and easily treated, and others can be life threatening.

There are various types of treatment available in the Ministry of Health Malaysia (MOH) Drug Formulary for treating skin conditions, either orally or as topical treatment. This counselling guide provides information for pharmacists specifically on the topical preparations available in the MOH formulary and relevant counselling points on its usage in providing effective and accurate patient education regarding their medicines. I believe the contents of this quick guide will be helpful for pharmacists providing care for patients in ensuring proper use of medications and for patients to be aware of possible side effects.

I would like to congratulate the Ambulatory Pharmacy Working Committee, Pharmaceutical Services Programme, Ministry of Health for their efforts and contributions to the development of this guideline.

Thank You.

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1. INTRODUCTION

Skin is human's largest organ, with a total area of about 2 square meters (m²) covering a human body. It acts as a waterproof, insulating shield that protects the body against dehydration, extremes temperature, damaging sunlight, and harmful chemicals. Skin also exudes an antibacterial substance that helps to prevent infection and manufactures vitamin D for converting calcium into healthy bones⁶.

Skin is made up of three layers:

1. **(Epidermis)** is the outermost layer of skin, which provides a waterproof barrier and creates our skin tone.
2. **(Dermis)** beneath the epidermis contains tough connective tissue, hair follicles, and sweat glands.
3. **(Subcutaneous tissue) (hypodermis)** is made of fat and connective tissue

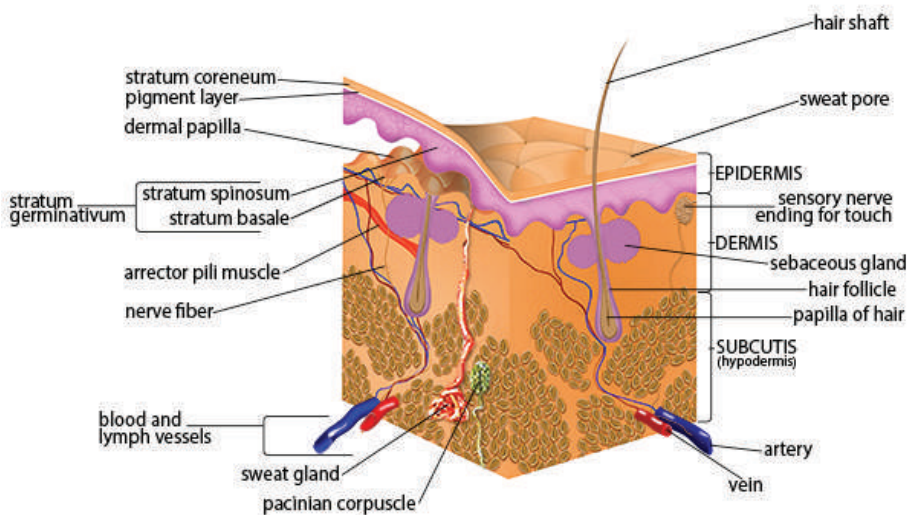


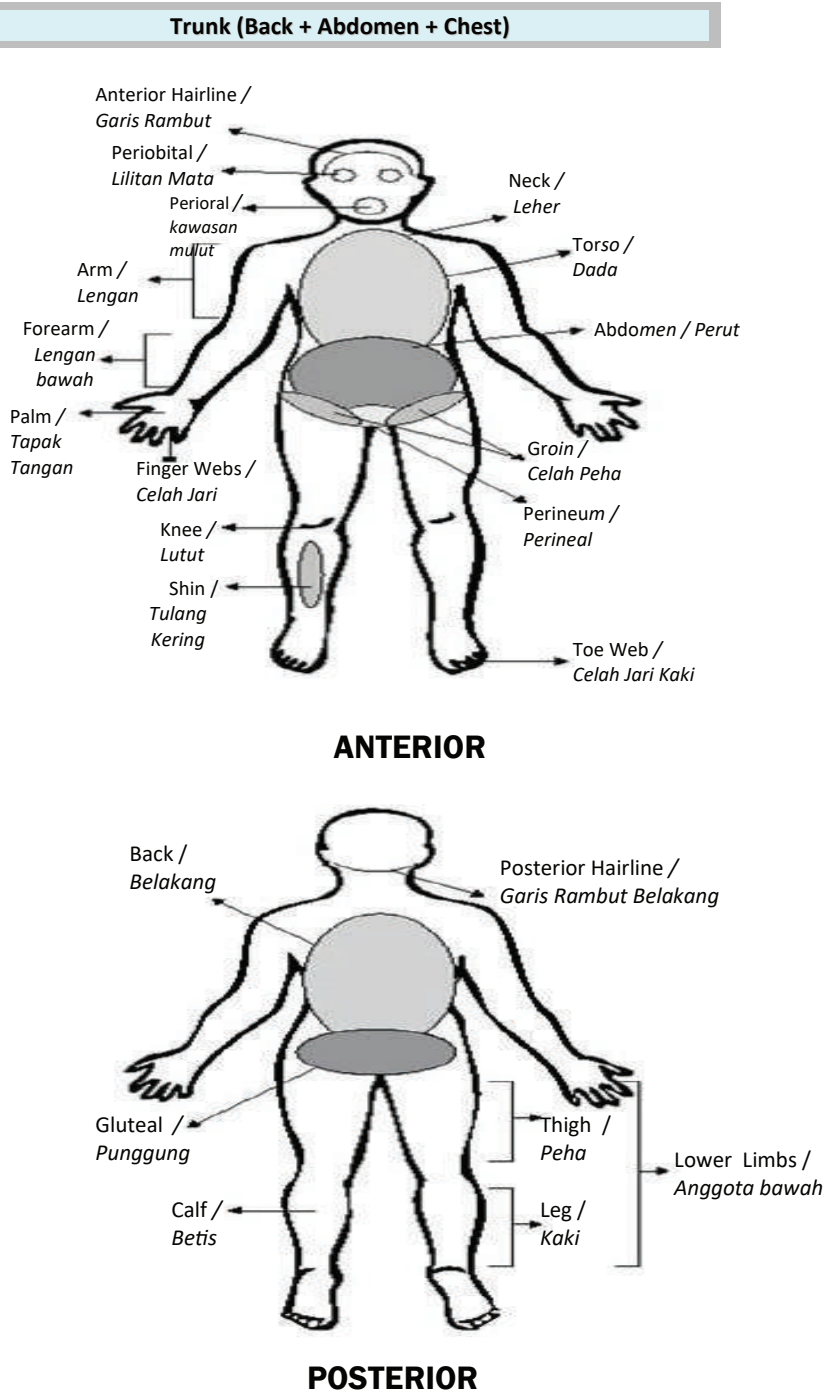
Figure 1: Skin Anatomy
(National Cancer Institute)

Any damage, clog or irritation to the skin layer or certain diseases/ immune system problems can cause skin problems, presented by symptoms of redness, itchiness, burning and/or swelling. Nevertheless, there are treatments available for variety of skin conditions in the form of oral or topical preparation.

This guide contains presentation of various skin conditions and its management using topical preparations with few points to remember when giving counselling. It will be useful for pharmacist who conducts counselling on the use of topical preparations available in Ministry of Health facilities.

A) Body Anatomy

Figure 2: Diagram of Human Body for Topical Application



B) Table 1: Terminology of Skin Conditions

TERMINOLOGY	DESCRIPTION
Macule	<1 cm diameter, flat lesion with change of skin color
Atrophy	Thin transparent epithelium or depression in the dermis
Lichenified	Thickened skin with exaggerated skin crease
Sclerosis	Indurated (hardened) skin
Targetoid	Pink macule with central purplish papule
Annular	Polycyclic pattern
Papule	< 0.5 cm diameter raised firm lesion
Vesicle	< 0.5 cm diameter raised firm lesion with clear fluid
Pustule	< 0.5 cm diameter raised firm lesion with yellow fluid
Plaque	> 1cm diameter raised flat top lesion
Nodule	> 0.5 cm diameter raised firm lesion
Bullae/Blister	> 0.5 cm diameter raised fluid filled lesion
Desquamation	Detachment of the superficial part of the skin
Excoriations/Scratch Marks	Shallow hemorrhagic excavation due to scratching
Necrosis	Death of skin tissue
Erosions	Partial loss of epithelium
Ulcer	Full thickness loss of epithelium
Crust	Dried exudates
Blanchable	Erythematous skin lesion appears pale on pressure
Non-blanchable	Skin lesion remain red purplish or pigmented on pressure

CHAPTER 1: INFECTIVE SKIN CONDITIONS

A. Bacterial skin infection

i) Impetigo (Superficial Skin Infection)

Impetigo is the most common skin infection in children. It is caused mainly by *Staphylococcus aureus* and sometimes by *Streptococcus pyogenes* (group A). Skin signs include small blisters, dark or honey-colored crust that forms after the pustules burst. Immediate antibiotic treatment is advised for most cases of impetigo, to achieve a quick cure and prevent spread of the infection to other children.



Figure 3: Presentation of Impetigo around the mouth area
(National Health Institute)

► Treatment for Impetigo

- For oral and IV antibiotic treatment, please refer latest National Antibiotic Guideline (NAG).
- Topical preparations for Impetigo:

a) 2% Fusidic acid cream	
MODE OF ACTION	Antibacterial activity against <i>Staphylococci</i>
SIDE EFFECTS	Contact Dermatitis
COUNSELLING POINTS	<ul style="list-style-type: none">• 1 application every 8 - 12 hour for duration of 7 days• Do not use for more than 2 weeks. May use again if infection relapse

b) 2% Mupirocin ointment	
MODE OF ACTION	Antibacterial activity against <i>Staphylococcus aureus</i> and coagulase- negative <i>Staphylococci</i>
SIDE EFFECTS	<ul style="list-style-type: none">• Common: Burning• Uncommon: Itchiness, erythma, stinging, dryness• Uncommon: Contact Dermatitis
COUNSELLING POINTS	<ul style="list-style-type: none">• 1 application every 8 - 12 hour for duration of 5 days• Do not use for more than 2 weeks. May use again if infection relapse

ii) Cellulitis (Deep Skin Infection)

Cellulitis is a bacterial infection of the deeper layers of the skin, the dermis and the subcutaneous tissue. Cellulitis is most often caused by *Streptococcus* and *Staphylococcus aureus* bacteria.

These bacteria are able to cause an infection if they get into the skin through a break in the skin barrier. This can happen with cuts, scrapes, ulcers, macerated skin at toe webs and surgical wounds. Cellulitis may also develop in normal skin.

The skin is usually painful, red, swollen, warm and tender to touch. It's often difficult to identify the border between normal and infected skin.



Figure 4: Bilateral leg cellulitis (University of California)

► Treatment for Cellulitis

- Cellulitis requires treatment with intravenous or oral antibiotics. Refer to latest National Antibiotic Guideline (NAG) for treatment.
- Topical preparation potassium permanganate solution is used to dry up lesions and blisters.

Potassium Permanganate 5%	
MECHANISM OF ACTION	Mild antiseptic and astringent properties which reduce the foul smell from infected wound.
SIDE EFFECTS	<ul style="list-style-type: none"> • Can cause staining on clothing, skin and nail. • It may cause a stinging sensation in some people. • If it is too concentrated, it may cause severe dry skin and fissure skin.
COUNSELLING POINTS	<ul style="list-style-type: none"> • To be use diluted as Figure 5 below: <div data-bbox="543 476 963 724" data-label="Image"> </div> <p style="text-align: right;"><i>a-b: Too diluted (ineffective)</i> <i>e-f: Too concentrated (cause side effects)</i></p> <p style="text-align: center;">Figure 5: Potassium Permanganate at different dilution</p> <ul style="list-style-type: none"> • Dilute 2 drops (0.1 ml) in 50 ml of normal saline/water to make 1:10,000 (Picture 5d) • Dilute 2 drops (0.1ml) in 100 ml of normal saline/water to make 1:20,000 (Picture 5c) • Use as wash (use as final rinse) / dab/ wet wrap (for 20 minutes) until there is no weeping lesions • Use immediately after diluting. Solution that are left standing can turn brown (oxidized) and is ineffective. • Advise patient to stop using this solution once skin become dry to avoid fissuring of skin.

B. Parasitic skin infection

i) Scabies

A highly pruritic and contagious parasitic disease caused by *Sarcoptes scabiei*. Associated with poverty and overcrowded area (nursing home, prisons and hospital wards). Scabies can be transmitted through a direct skin-to-skin contact with an infected person.



Figure 6: Presentation of scabies (*MedicineNet.com*)

Sign and symptom of scabies are not difficult to detect, patient will experience severe itchiness during night time and when sweating. Possible part of body affected by scabies are wrist, toes, finger webs, arm, buttock, breast (nipple), waist line, genitalia (as shown in Figure 7).

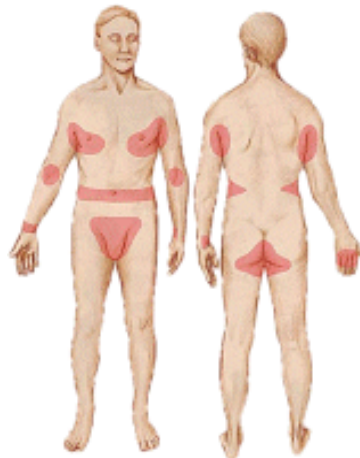


Figure 7: Common body area affected with scabies, in red (*Allstop.com*)

➤ Treatment for Scabies

- Immediate treatment for the patient (treat secondary infection first, as most scabicides are irritant).
- Treatment of patient and any household contacts who may or may not be symptomatic. Decontaminate all linens, towel and clothing use in the previous 4 days by hot water washing (60°C) or put under the sun.

Table 2: Treatment for Scabies according to patient's category

Patient Category	Recommended Therapy
Newborn to 2 months of age	<ul style="list-style-type: none"> • Crotamitone 10% cream
Children (2 months to 2 years old)	<ul style="list-style-type: none"> • Permethrin 5% • Crotamitone 10% • 6% sulphur in calamine / petrolatum
Children (2-12 years old)	<ul style="list-style-type: none"> • Emulsion benzyl benzoate 12.5% • Permethrin 5%
Adult	<ul style="list-style-type: none"> • Emulsion benzyl benzoate 25% • Permethrin 5%
Pregnant women	<ul style="list-style-type: none"> • Permethrin 5% • 6% sulphur in calamine/ petrolatum

- Topical preparations for treating scabies:

a) Emulsion Benzoyl Benzoate (EBB) 12.5% & 25%	
MODE OF ACTION	Benzyl benzoate exerts toxic effects on the nervous system of the parasite, resulting in its death. It is also toxic to mite ova, though its exact mechanism of action is unknown. <i>In vitro</i> , benzyl benzoate kills the <i>Sarcoptes</i> mite within 5 minutes.
SIDE EFFECTS	Burning sensation, rashes, skin irritation
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply from neck to soles, avoid head and face area • Apply on the skin surface continuously for 24 hours for 2-3 days. • Rinse off after 24 hours and then reapply, with a bath taken in between each application. • A third application may be required in some cases i.e. HIV/ immunocompromised patients • Wash off thoroughly after the recommended time period • Use of EBB is contraindicated in pregnancy, breast feeding woman and infant of <2 years old.

b) Permethrin 5% Lotion	
MODE OF ACTION	Pyrethroid insecticide
SIDE EFFECTS	Burning, itching, rash, redness, stinging, swelling, numbness
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply over whole body include face, neck, scalp and ears in infants & HIV patients who has scabietic lesions on the head. Otherwise in normal adults, apply from neck to soles. • Wash off after 8 - 12 hours • Repeat 1 week later

c) Crothamitone 10%	
MODE OF ACTION	Scabicial agent
SIDE EFFECTS	Burning, itching, rash, redness, stinging, swelling, numbness
COUNSELLING POINTS	<ul style="list-style-type: none"> • Bathe and dab dry before applying crothamitone. • Apply over whole body except face and scalp; once daily, up to 7 days. • Avoid any contact with eyes or mucous membrane • Avoid massive, prolonged use in pregnant woman and infant • For nodular scabies; Apply to the nodules 3 times a day for 7-14 days.

d) 6% sulphur in calamine/ petrolatum	
MODE OF ACTION	Parasiticial
SIDE EFFECTS	Irritation
COUNSELLING POINT	Rinse off after 24 hours and then reapply every day for the next 3 days (with a bath taken in between each application).

ii) Head Lice

Head lice (*Pediculus humanus capitis*) are whitish to grey-brown in colour and smaller than the size of a pinhead when first hatched. When fully grown, they are about the size of a sesame seed. They cannot fly, jump or swim and are spread by head-to-head contact, climbing from the hair of an infected person to the hair of someone else. A head lice infestation is not the result of dirty hair or poor hygiene. All types of hair can be affected, regardless of its length and condition. Head lice only affect humans and cannot be passed on to animals or be caught from them.



Figure 6: Presentation of scabies (*MedicineNet.com*)

► Treatment for Head Lice

- Topical preparations for treating head lice:

a) Permethrin 1% Lotion	
MODE OF ACTION	Pyrethroid insecticide
SIDE EFFECTS	Mild skin irritation, burning
COUNSELLING POINTS	<ul style="list-style-type: none">• Apply lotion onto clean towel-dried hair, ensuring every strand comes in contact with lotion for at least 10 minutes.• Rinse completely• Re-apply after 7-10 days (to ensure total recovery)

b) Gamma Benzene Hexachloride (GBH) 0.1% Lotion	
MODE OF ACTIONS	<ul style="list-style-type: none"> • Parasitocidal action by being directly absorbed through the parasite's exoskeleton and their ova. • Blockage of the GABA-gated Chloride (Cl⁻) Channel reduces neuronal inhibition, which leads to hyper-excitation of the Central Nervous System. This results in paralysis, convulsions, and death of lice.
SIDE EFFECTS	<ul style="list-style-type: none"> • CNS effects (Dizziness, Headache, Nausea, Vomiting), Skin Irritation, Contact Dermatitis. • Not for use by infant as it can cause toxic encephalopathy.
COUNSELLING POINTS	<ul style="list-style-type: none"> • Before using the GBH shampoo, make sure hair is clean by using regular shampoo without conditioner and dry it. However, do not wash hair within 1 hour before using GBH shampoo. • Shake the GBH shampoo bottle well. • Use 1 ounce (30ml) or not more than 2 ounces (60ml) of GBH shampoo on dry hair to wet the hair and scalp. • Do not add water to the hair at this time • Also, put GBH Shampoo on the short hairs at the back of neck and sideburns. • Keep GBH Shampoo on hair for 4 minutes • Do not wear a shower cap or any covering on head while waiting for the 4 minutes to pass. • Rinse thoroughly with warm water and towel dry briskly. • Remove the dead lice, nits and nit-shells using a fine-toothed comb <p>Additional Information:</p> <ul style="list-style-type: none"> • Boil/ wash/ dry-clean used clothes, bed linen and get all the household members treated simultaneously in order to avoid re-infection. • On evidence of re-infection, may advice for a second application only after 7 days following the first. • Risk of neurologic toxicity (seizures and death) with prolonged or repeated exposure

C. Fungal infections

Superficial Mycoses


The common fungi that cause superficial fungal infections are Dermatophytes, *Malassezia furfur* and *Candida* spp.





i) Dermatophyte infections (Dermatophytoses)

Dermatophytes are fungi that requires keratin for growth. These fungi can cause superficial infections of the skin, hair, and nails. Dermatophytes are spread by direct contact from other people, animals and soil. Most common fungi that cause dermatophyte infection or dermatophytoses are *Epidermophyton*, *Microsporum* and *Trichophyton*.

Dermatophytoses are referred to as “tinea” infections or ringworm. They are also named based on the body site involved.

Table 3: Clinical feature of the various Dermatophytoses

TYPES OF DERMATOPHYTOSES	CLINICAL FEATURES
<p data-bbox="198 971 407 1002">Tinea pedis (foot)</p>  <p data-bbox="198 1288 407 1312"><i>(Access Medicine.com)</i></p>	<ol data-bbox="538 971 1179 1312" style="list-style-type: none">1. Interdigital type:<ul data-bbox="577 1006 890 1070" style="list-style-type: none">• Dry scaling type or• Moist (macerated) type2. Moccasin type:<ul data-bbox="577 1106 1066 1137" style="list-style-type: none">• Chronic dry hyperkeratotic appearance3. Inflammatory or bullous (vesicular) type:<ul data-bbox="577 1173 819 1204" style="list-style-type: none">• Blister formation4. Ulcerative type:<ul data-bbox="577 1241 1179 1312" style="list-style-type: none">• An extension of interdigital type into dermis due to maceration

<p>Tinea unguium (nail)</p>  <p><i>(Clinical Advisor.com)</i></p>	<ol style="list-style-type: none"> 1. Toenails more often infected than fingernails. 2. First and fifth toenails most commonly infected, probably due to traumatic damage by ill-fitting footwear. 3. White or yellow irregular lesion appears first at free end of nail and spreads slowly to cause entire nail to become thickened, opaque and yellow in colour, and it may crumble.
<p>Tinea Cruris (groin)</p>  <p><i>(www.nursingfile.com)</i></p>	<ol style="list-style-type: none"> 1. Scaly, well-demarcated dull red/ tan/ brown patch with central clearing. 2. Papules, pustules may be seen at the rash margin.
<p>Tinea Capitis (Scalp)</p>  <p><i>(Mdk.com.)</i></p>	<ol style="list-style-type: none"> 1. Localised scales lesions to widespread patches of alopecia. 2. Kerion: Localised swollen, tender red bald patch that contain pus. 3. Black dot noted on hair. 4. Favus is a distinctive infection with grey, crusting lesions
<p>Tinea Corporis (Body)</p>  <p><i>(Candida Hub)</i></p>	<p>Scaly, sharply marginated annular, concentric rings or arcuate patch with central clearing.</p>

➤ Treatment for Dermatophytoses infection

- Topical preparation for treating Dermatophytoses infection:

Topical Imidazole (miconazole cream/powder, clotrimazole cream)	
MODE OF ACTION	Inhibits biosynthesis of ergosterol, damaging the fungal cell wall membrane, which increases permeability causing leaking of nutrients.
SIDE EFFECTS	Contact dermatitis in sensitized patients
COUNSELLING POINTS	<ul style="list-style-type: none">• Apply twice daily to affected area optimally for 4 weeks including 2 weeks after lesions have cleared.• Apply 2-3 cm beyond advancing margin of lesion.

ii) Pityriasis Versicolor

A common fungal infection of the skin caused by the dimorphic lipophilic yeast *Pityrosporum orbiculare* (round form) and *Pityrosporum ovale* (oval form). Both were previously called *Malassezia furfur*. Pityriasis Versicolor is sometimes known as tinea versicolor.



Figure 9: Presentation of Pityriasis Versicolor infection
(Merck Manual)

Clinical features of Pityriasis Versicolor:

- More common in adolescence and young adulthood.
- Macules, sharply marginated, round or oval in shape, varying in size with fine scales.
- In untanned skin, lesions are light brown whereas it is white on tanned skin.
- In immunocompromised individuals, the rash may be extensive and appeared red.

► Treatment for Pityriasis Versicolor

- Topical preparation for treating Pityriasis Versicolor:

a) Selenium Sulphide (2.5%) lotion or shampoo	
MODE OF ACTION	Anti-mitotic action, resulting in a reduction in the turnover of epidermal cells.
SIDE EFFECTS	Burning, contact dermatitis
COUNSELLING POINTS	Apply daily for 1 week to affected areas for 10-15 minutes followed by a shower & rinse off,. Then apply 2-3 times per week.

b) Ketoconazole Shampoo	
MODE OF ACTION	Inhibits biosynthesis of ergosterol, damaging the fungal cell wall membrane, which increases permeability causing leaking of nutrients.
SIDE EFFECTS	<ul style="list-style-type: none"> • Burning, contact dermatitis in sensitized patient. • Safety and efficacy not established in <12 years old.
COUNSELLING POINTS	Apply onto skin/hair and leave it for 3-5 minutes before rinsing, use it once daily for 5 days.

c) Topical Imidazole (miconazole cream/powder, clotrimazole cream)	
MODE OF ACTION	Inhibits biosynthesis of ergosterol, damaging the fungal cell wall membrane, which increases permeability causing leaking of nutrients.
SIDE EFFECTS	Contact dermatitis in sensitized patients
COUNSELLING POINTS	<ul style="list-style-type: none"> • Applied twice daily to affected area optimally for 4 weeks including 2 weeks after lesions have cleared. • Apply 2-3 cm beyond advancing margin of lesion.

iii) Cutaneous Candidiasis

Our skin normally hosts variety of bacterial and fungal. Most of them are useful for our body function; however there are some that are harmful to our health especially when it multiplies uncontrollably such as fungi-like *Candida* sp. Overgrowth of *Candida* fungi causes a condition known as candidiasis of the skin, or cutaneous candidiasis. Cutaneous candidiasis are commonly caused by *Candida albicans* and mostly occurs in areas such as the armpit, groin, and gluteal folds (e.g. diaper rash), in digital web spaces, on the glans penis or beneath the breasts.

Candidiasis can cause a wide spectrum of clinical syndromes, as described below. The clinical presentation varies, depending on the type of infection and the degree of immunosuppression.

Clinical Features of Cutaneous Candidiasis:

- Primary lesion is a pustule on erythematous base that becomes eroded and confluent
- Subsequently, fairly sharply demarcated, polycyclic, erythematous, eroded patches with small pustular lesions at the periphery (satellite pustulosis)
- The advancing infected border usually stops when it reaches dry skin

Types of *candida* infections include:

- Athlete's foot
- Oral thrush
- Vaginal yeast infection
- Nail fungus
- Diaper rash

Presentations of Candidiasis at different parts of body:



Figure 10 : Diaper rash around the groin area
(Merck Manual)



Figure 11 : Oropharyngeal (Medscape)

► Treatment for Cutaneous Candidiasis:

- Topical preparations for treating Cutaneous Candidiasis:

a) Topical Imidazole (miconazole cream/powder, clotrimazole cream)	
MODE OF ACTION	Inhibits biosynthesis of ergosterol, damaging the fungal cell wall membrane, which increases permeability causing leaking of nutrients.
SIDE EFFECTS	Skin irritation or sensitivity, Contact dermatitis, vaginal burning due to cream base
COUNSELLING POINTS	<ul style="list-style-type: none">• Apply twice daily to affected area, optimally for 4 weeks including 2 weeks after lesions have cleared.• Apply 2-3 cm beyond advancing margin of lesion.

b) Nystatin cream	
MODE OF ACTION	Fungistatic activity against <i>Candida spp</i>
SIDE EFFECTS	<ul style="list-style-type: none"> • Irritation and sensitisation are reported but are rare • When sensitisation or severe irritation reactions develop, stop using this preparation and do not use it again.
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply liberally to affected area twice daily or as required. • After lesion has disappeared, continue treatment for 10 days to prevent relapses. • For nail infection, cut nails as short as possible. Apply cream once daily until growth of new nail has set in.

c) Whitfield Ointment	
MODE OF ACTION	Fungistatic activity combines with keratolytic properties. Useful for superficial skin infections caused by fungi such as ringworm and athlete's foot.
SIDE EFFECTS	Local irritation
COUNSELLING POINTS	<ul style="list-style-type: none"> • The cream should be applied twice daily in a thin layer to the affected parts of the skin. Treatment may take several weeks. • Wash the skin with water and soap. Apply the cream in a thin layer and rub it into the skin. Whitfield's cream should only be applied to affected parts of the skin. • Contact with the eyes, mouth and other mucous membranes should be avoided.

D. Viral skin infections

i) Warts

Warts are benign proliferations of skin and mucosa caused by human papillomavirus (HPV). It usually affects the hands, feet (plantar warts) and the anogenital area. It is contagious and can spread through contact



Figure 13: Plantar Warts
(Askpodiatrist)



Figure 12: Warts on hand
(WebMD)

► Treatment of Warts

a) Salicylic Acid 1-20%	
INDICATION	Warts other than genital warts
MODE OF ACTION	Potent keratolytic action and antiseptic action. Soften and destroy the stratum corneum.
SIDE EFFECTS	<ul style="list-style-type: none">• Skin irritation• Skin ulceration (with higher concentration)
COUNSELLING POINT	<ul style="list-style-type: none">• Apply carefully onto wart• Advise to protect surrounding skin with soft paraffin.

b) Podophyllum 10- 20% paint	
INDICATION	External genital warts
MODE OF ACTION	Prevents growth of wart tissue.
SIDE EFFECT	Local irritation
COUNSELLING POINTS	<ul style="list-style-type: none">• Application must be done by trained personnel.• Avoid normal skin and open wound• Strong irritant to the skin and mucous membrane. Special care must be taken to ensure application is restricted to the wart itself.

c) Imiquimod 5% cream	
INDICATION	External genital warts
MODE OF ACTION	Immune response modifier
SIDE EFFECTS	<ul style="list-style-type: none"> • Burning sensation • Erosion • Erythema • Itching • Excoriation
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply three times weekly up to 16 weeks. • Apply thin layer of cream to the wart and rub it until the cream vanishes • Leave the cream for 6-10 hours then wash the area with mild soap and water

CHAPTER 2: CHRONIC NON-INFECTION SKIN CONDITION

A. Eczema and Dermatitis

The terms eczema and dermatitis are often used interchangeably. In some cases, the term eczematous dermatitis is sometimes used. Dermatitis can be acute or chronic or both. Dermatitis means inflammation of the skin which is characterised by sore, red, itching skin. In primary care, the two commonest forms of dermatitis are irritant and allergic dermatitis.

- Acute eczema (or dermatitis) refers to a rapidly evolving red rash which may be weepy and swollen.
- Chronic eczema (or dermatitis) refers to a longstanding irritable area. It is often darker than the surrounding skin, thickened (lichenified) and scaly.

Pathophysiologic features:

- Heredity (80% in monozygous twins, 20% in heterozygous twins)
- Increased IgE production
- Lack of skin barrier producing dry skin due to abnormalities in lipid metabolism & protein formation
- Susceptibility to infections caused by *Staphylococcus aureus/epidermidis* & *Malassezia furfur*
- Common causes include allergens such as fragrance product, food, soaps, detergents, inhalant allergens and skin infections.

Common body areas for eczema and dermatitis by ages:

Infants 0 – 2 years:

- Extensor surfaces of extremities
- Face (forehead, cheeks, chin)
- Neck
- Scalp
- Trunk

2 -12 years old:

- Flexural surfaces of extremities
- Neck
- Wrists, ankles

12 years old – adulthood:

- Flexural surfaces of extremities
- Hands, feet

► Treatment for Eczema and Dermatitis

• Non-Pharmacological Therapy:

- **Patient education:** Discuss the chronic nature of the disease in some patients, the importance of adherence to treatment and convey the goal of treatment rather than cure, avoiding triggering factors.
- **Skin care:** Hydration of skin with emollients, regular bathing, wet dressing
- **Clothing:** Wear cotton or soft fabrics. Avoid rough, scratchy fibres and tight clothing.

• Pharmacological Therapy:

i. Emollients

- Soften and smoothen the stratum corneum by a trapping mechanism that decreases the rate of trans-epidermal water loss.
- Often use to manage dry or scaly skin.

<ul style="list-style-type: none"> a) Aqueous cream b) Emulsifying ointment c) Liquid paraffin d) Glycerin 25% - 50% in Aqueous cream e) White/ Yellow soft paraffin f) Urea cream 	
MODE OF ACTIONS	<ul style="list-style-type: none"> • Standard adjunctive therapeutic approach to the treatment of chronic inflammatory skin condition. • Emollients either as soap substitutes or moisturizers are routinely used. • It has steroid-sparing effect when used in combination with topical corticosteroids as it restore normal hydration and epidermal barrier function & increase the efficacy of corticosteroids. • Soften & smoothen the stratum corneum, achieved by a trapping mechanism that decreases the rate of trans-epidermal water loss.
SIDE EFFECTS	Contact dermatitis in sensitized patients, itching It may cause the floor to be slippery and increase risk of patient fall.

COUNSELLING POINTS

As a soap:

- To apply cream/ ointment on cotton wool. Then wet the body, smear the cotton wool onto the skin. Wash and then use the dry cotton wool to remove excess oil.

Precaution: To prevent fall in bathroom, have a stool in bathroom, anti-slip mat, wall-hand railing. Caretaker to accompany elderly patient in bathroom.

As an emollient:

- To apply after taking a bath or showering when the skin is moist.
- To apply emollients liberally (at least 2-4 times a day).
- To be applied smoothly in the general direction of growth of body hair in order to prevent accumulation at hair bases which might predispose to folliculitis (as Figure 14 below)

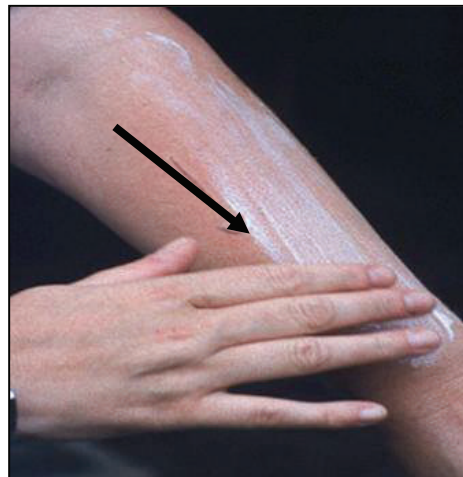


Figure 14 : Emollient application
(PAPAA.org)

ii. Topical corticosteroids

- Anti-inflammatory & anti-pruritic activity through several mechanism:
 - a) Alteration in leucocyte number and activity
 - b) Suppression of mediator release (histamine, prostaglandin)
 - c) Enhanced response to agents that increase cyclic adenosine monophosphate

- Used as 1st line treatment for mild to severe eczema to provide symptomatic relief.
- Types of topical corticosteroids use dependent on:
 - Disease condition
 - Area of application
 - Age of the patient
- Systemic effects of Topical Corticosteroid:
 - a) Prolonged absorption through the skin can cause pituitary-adrenal-axis suppression, growth retardation, hypertension & Cushing`s syndrome
 - b) Absorption is increased if skin is by thin and/or raw skin applied on intertriginous areas or occluded skin
 - c) Absorption is more likely when used over very large areas and in children
- Suggested potencies and preparations for long term use of topical corticosteroids for chronic dermatoses are as Table 3 below:

Table 4: Selections of topical Corticosteroid according to potency

POTENCY CLASS	DRUG	FREQUENCY	SITES
Very Potent	<ul style="list-style-type: none"> ▪ Clobetasol propionate** cream/ointment 	Once daily	Thick lichenified, palm or sole and scalp
Potent	<ul style="list-style-type: none"> ▪ Mometasone furoate** (Elomet) (short term only) ▪ Betamethasone valerate cream/ointment full strength (0.1%) ▪ Bethamethasone valerate cream/oint 1:2 (0.05%) 	Once daily	Body and limbs
Moderate Potency	<ul style="list-style-type: none"> ▪ Betamethasone valerate cream/ointment 1:4 (0.025%) ▪ Clobetasone butyrate cream/ointment 	Three times daily (3x) Two times daily (2x)	Any site
Mild Potency	<ul style="list-style-type: none"> ▪ Hydrocortisone cream/ointment 1% ▪ Bethamethasone valerate cream/ ointment 1:8 (0.0125%) 	Three times daily (3x) Three times daily (3x)	Face, ear or flexural, elderly with thin skin

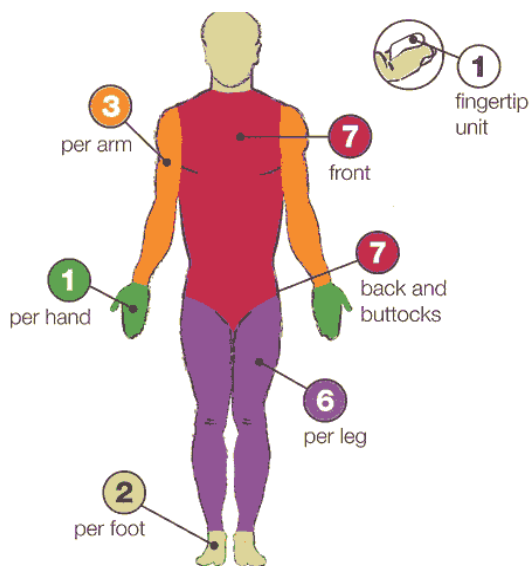
<p>COUNSELLING POINTS FOR TOPICAL CORTICOSTEROID APPLICATION</p>	<ul style="list-style-type: none"> • Topical corticosteroids should not be used to provide emollient effect, but ideally applied shortly after bath/shower. • Length of cream/ ointment squeezed from tube can be measured by Fingertip units (FTU). <ul style="list-style-type: none"> ○ 0.5 g steroid cream = 1 finger tip unit (FTU) ○ 1 FTU steroid cream to be applied to skin lesion as large as 1 side of the hand • Short term therapy with potent and very potent topical corticosteroids may be used to gain rapid clearance. These preparations should be avoided on the face, genitalia and skin folds. <ul style="list-style-type: none"> ○ Limit use of super potent corticosteroids to less than 30g/ week. Refer to dermatologist's order. ○ Limit use of potent corticosteroids to less than 60mg/ week. ○ Continuous use of potent corticosteroids should not exceed two weeks. ○ Continuous use of super potent corticosteroids should not exceed two weeks. • Mild potency corticosteroids may be use for face, genitalia and body folds.
<p>SIDE EFFECTS</p>	<ul style="list-style-type: none"> • Local effects: Skin damage (skin thinning, redness and dilated surface blood vessel, easy bruising, striae) • Skin infections such as acne or fungal



Figure 15: Fingertip Unit
(Veterans' MATES)

Table 5: Fingertip units for different areas of the body


FTU	Area
2.5	Neck & Face
7	Front
3	Per arm
7	Back & Buttocks
1	Per hand
6	Per leg
2	Per foot



(The Medicing Box)

iii. Topical Calcineurin Inhibitors (TCIS)

a) Tacrolimus 0.03% & 0.1% ointment	
MODE OF ACTIONS	<ul style="list-style-type: none"> • Immunosuppressant that has been shown to be effective for the treatment of atopic dermatitis. • Inhibits inflammatory cytokine transcription in activated T-cells & other inflammatory cells through inhibition of calcineurin. • Steroid-free ointment for patients aged 2 years and older who have moderate to severe eczema. • Improvement is seen within 1 week of therapy & sustained for at least 12 month
SIDE EFFECTS	<ul style="list-style-type: none"> • Local effects: Burning, stinging, pruritus which usually decrease with continued use
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply a thin layer of the affected skin, rub in gently & completely • Do not apply to areas of acute cutaneous viral infections • Continue treatment for another one week after sign & symptoms of atopic dermatitis has cleared.

b) Silver Nitrate 0.5%, 2% 5% and 10% solution	
MODE OF ACTIONS	Bactericidal agent
SIDE EFFECTS	Stinging and burning sensation at the site of application
COUNSELLING POINTS	<p>Apply using aid of sharpen orange stick, dip in solution, touch the side of the bottle to remove drips of solution and then apply the moistened sharpen tip on macerated or fissured skin moistened caustic pencil tip for 1-2 minutes once daily at night. Maximum for 3 days.</p> <div style="text-align: center;">  <p>Figure 16: Orange stick (wooden stick applicator) (Medical Box)</p> </div>




B. Psoriasis



Psoriasis is a common chronic non-contagious inflammatory skin condition that develops when a person's immune system send faulty signals that tell skin cells to grow too quickly. New skin cells form in days rather than weeks. The body does not shed these excess skin cells causing the skin cells to pile up on the surface of the skin, resulting in patches of psoriasis to appear. Psoriasis is characterized by thickened patches of inflamed, red skin covered with thick, silvery scales.

Psoriasis can be exacerbated by drugs such as lithium, chloroquine, hydroxychloroquine, beta-blockers, NSAIDs, and ACE inhibitors. The reaction can occur within weeks until months after initiation of the medication. Other triggering factors may include stress, dry, smoking, alcohol consumption and injury to skin.

There are many types of psoriasis, as described below:

Table 6: Types of Psoriasis

<p>Plaque psoriasis</p>  <p><i>(National Psoriasis Foundation)</i></p>	<ul style="list-style-type: none">• The most common form of psoriasis, affecting 80-90% of patients• Irregular, round to oval in shape & tends to be symmetrically distributed• Site of lesions: elbows, knees, scalp, trunks, inter-gluteal cleft, buttocks, soles, palms and on the genitalia
<p>Guttate psoriasis</p>  <p><i>(No Skin Problems.com)</i></p>	<ul style="list-style-type: none">• Affects < 2% of psoriasis patients• Teardrop-shaped, salmon-pink flat top scaly plaque measuring 1-10mm• Found on trunk and proximal extremities• Usually occurs after upper respiratory infection
<p>Pustular psoriasis</p>  <p><i>(PsoriasisFreeTips.com)</i></p>	<ul style="list-style-type: none">• Characterized by white sterile pustules surrounded by red skin. In extensive skin involvement, skin protection functions may be lost rendering patient more susceptible to infections, loss of fluids and nutrients.• Can be life threatening

<p>Erythrodermic psoriasis</p>  <p>(PAPAA.org, 2016)</p>	<ul style="list-style-type: none"> • Severe generalised erythema affecting 80%-90% of the body surface area with various degrees of scaling • Skin's protection function is lost, patient is more susceptible to infections, loss of fluids and nutrients. • Can be life threatening
<p>Inverse Psoriasis</p>  <p>(PsoriasisSPEAKS)</p>	<ul style="list-style-type: none"> • Lesions consist of erythematous plaques with minimal scales • Located in the skin folds such as axillary, genitalia, perineal, inter-gluteal, inframmary areas

➤ Treatment of Psoriasis

- Principles of therapy:
 - o Choice of therapy should be individualized.
 - o Mild psoriasis can usually be treated by topical therapy.
 - o In moderate to severe psoriasis, adequate control of skin lesion is not achieved using topical agents alone.
- The following considerations will influence the choice & frequency of therapy:
 - o Severity, body surface area (BSA) and site of lesion
 - o Effect of psoriasis on quality of life
 - o Degree of psychological impairment caused by the disease
 - o Risk versus benefit ratio must be considered for each treatment regimen
 - o Co-morbidities (e.g.: diabetes, hypertension)
 - o Patient's preference
 - o Cost of therapy
- Topical therapy :

a) Emollients (First-line treatment for all types of psoriasis)

(Aqueous cream, Ung emulsificant ointment, 25% glycerine in Aqueous cream, 50% glycerine in aqueous cream, white/yellow soft paraffin and liquid paraffin) – refer to **Eczema-Emollient section**

b) Tar-based preparation: <ul style="list-style-type: none"> ▪ Coal Tar in Vaseline 1%, 3%, 6% (Liquor Picis Carbonis, LPC) ▪ Coal Tar and Salicylic Acid shampoo, ▪ Coal Tar Solution 20% ▪ UngCocois Co 	
MODE OF ACTION	<ul style="list-style-type: none"> • Anti-inflammatory properties • Anti-scaling properties • Inhibits DNA replication in cells, which slows down cell division and stops the cells from multiplying excessively. Hence, reducing thickening and scaling of the skin. • Breaks down keratin, helping the skin cells shed from the treated area, thus reducing thickening and scaling.
SIDE EFFECTS	Stain and irritate skin, folliculitis
COUNSELLING POINTS	<p><u>Coal tar in Vaseline 1%, 3%, 6% (LPC)</u></p> <ul style="list-style-type: none"> • Start with coal tar in vaseline 1% and slowly titrate to higher strength if needed. • Test dose: To apply onto the affected area (small amount). If patient experienced irritation to LPC, please ask patient to see doctor immediately • Usually apply at night due to the unpleasant smell <p><u>Coal tar and Salicylic acid shampoo</u></p> <ul style="list-style-type: none"> • Use as shampoo for 2-3 times a week. • Apply for 5 minutes then wash off • Do not scratch the scalp as it will worsened the psoriasis <p><u>Coal tar solution 20%</u></p> <ul style="list-style-type: none"> • 1 cap (15 ml) added to 10L of water in a pail • Soak diluted solution for 20 minutes • Do not rinse again with tap water <p><u>UngCocois Co</u></p> <ul style="list-style-type: none"> • Separate hair • Apply to scalp once at night • Wrap scalp with towel or shower cap • Cover pillow (can stain pillow) • Shampoo off the next morning <p>All tar-based preparation should not be used on body-folds, face and genitalia.</p>

c) Topical Corticosteroids - refer to *Eczema- topical Corticosteroids section*

d) Vitamin D Analogues

MODE OF ACTION	Regulates proliferation and differentiation of keratinocytes after binding to vitamin D receptors
SIDE EFFECTS	Itching, rash, thinning of the skin, skin burning
COUNSELLING POINTS	<ul style="list-style-type: none"> Do not use more than recommended dose because of the risk of hypercalcaemia. Recommended dose: <ul style="list-style-type: none"> ✓ Adult: 100gm/week ✓ Children (2-14 years) : 50 gm/ week Not recommended for use on face and flexures Avoid excessive exposure to sunlight Avoid in erythrodermic and generalised pustular psoriasis <p><u>Calcipotriol + Betamethasone Ointment</u></p> <ul style="list-style-type: none"> Once daily application (usually at night) <p><u>Calcipotriol + Betamethasone Gel</u></p> <ul style="list-style-type: none"> To be used on scalp once a day after shampoo

e) Dithranol (Anthralin)

MODE OF ACTION	Reduce proliferation of stem cells & prevents T-lymphocyte activation so that normal keratinization may occur
SIDE EFFECTS	Skin irritation, burning sensation, staining of skin and clothing
COUNSELLING POINTS	<ul style="list-style-type: none"> Apply on the skin lesion for 30 minutes and wash off Not suitable for flexural areas and face Start by applying a low-strength preparation (such as 0.1% dithranol) for a week, and then increase the strength gradually over the next few weeks until the best suitable strength. It should be possible to clear the patches within about 4-6 weeks of treatment.

CHAPTER 3: ACNE VULGARIS

Acne Vulgaris (Acne) is a common skin condition that occurs when hair follicles become clogged with dead skins and oil, and eventually become inflamed. Acne sign includes whiteheads, blackheads, red pimples, nodules and cyst. It can occur on the face, neck, shoulders, back, or chest. Acne can be classified as:

- Non-inflammatory: Characterised by comedones
- Inflammatory: Characterised by papules, pustules, nodules, and cysts

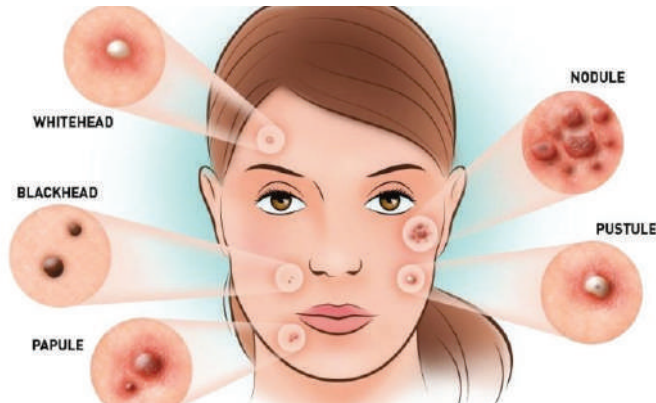


Figure 17: Different presentations of Acne Vulgaris (Acne.com)

Acne Vulgaris has a multifactorial pathogenesis in which the key factor is genetics. Acne develops as a result of interplay of the following 4 factors:

- Follicular epidermal hyper-proliferation with subsequent plugging of the follicle
- Excess sebum production
- The presence and activity of the commercial bacteria *Propionibacterium Acnes*
- Inflammation

➤ Treatment of Acne vulgaris

• Topical therapy:

a) Cetrimide 1%, 2% solution	
MODE OF ACTION	Bactericidal activity against gram-positive bacteria
SIDE EFFECTS	Burning sensation
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply solution onto the face twice daily • Cetrimide mix with water on palms, rub hand together until froth • Apply froth on face • Then rinse off with water • Dap dry

b) Benzyl Peroxide 5%; 10%	
MODE OF ACTION	<ul style="list-style-type: none"> • Antibacterial activity against <i>Propionibacteria Acnes</i> • It decomposes to release free oxygen radicals, which have potent bactericidal activity in the sebaceous follicles and anti-inflammatory action
SIDE EFFECTS	Dryness, skin irritation, bleaching or discoloration of fabrics (e.g. clothing, bed linen, towels)
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply on the acne spot after washing skin. May apply twice/ thrice a day if needed. • Start on night for a week, if no irritation, then can apply twice a day. • Stop if skin irritation occurs.

c) Adapalene, Tretinoin Cream/Gel	
MODE OF ACTIONS	<ul style="list-style-type: none"> • Normalisation or differentiation of follicular epithelial cells resulting in decreased micromedone formation • Reducing inflammatory components of acne (papules and pustules)
SIDE EFFECTS	Erythema, scaling, dryness, pruritus, burning, photosensitivity
COUNSELLING POINTS	<ul style="list-style-type: none"> • Apply thin layer to the entire face or other affected area at night after washing. • Wash well in the morning. • Protect face from direct sunlight. • Pregnancy should be avoided during treatment & at least 4 weeks after stopping treatment for Tretinoin cream/gel.

d) Azelaic Acid 20% cream	
MODE OF ACTION	Inhibit the growth of susceptible organism (<i>Propionibacterial acnes</i>) on the skin surface and inhibits follicular keratinisation. This restricts the development of comedone.
SIDE EFFECTS	Local skin irritation (erythema, scaling, burning, itching), photosensitivity
COUNSELLING POINTS	Massage a thin layer onto the affected area on the face twice a day.

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CARTA ALIR PROSES KAUNSELING PRODUK DERMATOLOGI TOPIKAL**TANGGUNGJAWAB****CARTA ALIR**

Pegawai Farmasi

Terima pesakit

Pegawai Farmasi

Perkenalkan diri dan jelaskan tujuan kaunseling

Pegawai Farmasi

a) rekod dalam borang kaunseling
 b) Ubat dilabel dengan kod yang ditentukan seperti dalam Rajah Pendispensan Ubat Dermatologi Topikal

Pegawai Farmasi

Jalankan penilaian (jika berkaitan)
 Beri kaunseling & dispens ubat kepada pesakit

Pegawai Farmasi

Tetapkan temujanji susulan jika perlu

Pegawai Farmasi

Lengkapkan borang kaunseling

Pegawai Farmasi

Failkan borang kaunseling

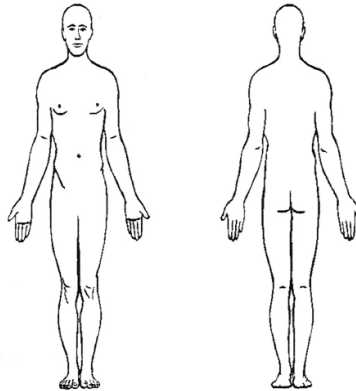
Appendix ii

RAJAH PENDISPENSAN UBAT DERMATOLOGI TOPIKAL

Nama:

MRN:

Tarikh:



SENARAI UBAT SAPU / LIST OF TOPICAL MEDICATION

(adapted from: *My Skin Diary (Jan 2015), Projek Inovasi Jabatan Farmasi Hospital Serdang*)

ITEM	CODE	ITEM	CODE	ITEM	CODE
Aqueous Cream		Clobetasol Propionate 0.05% Ointment		Magnesium Sulphate 45% Paste	
Adapalene 0.1% Cream/Gel		Castellani's Paint		Neomycin 0.5% Cream	
Amorolfine 5% Nail Lacquer		Coal Tar 20% Solution		Nystatin 100,000 units/g Cream	
Benzoic Acid Compound Ointment		Coal Tar 1% with Vaseline		Paraffin, White soft	
Benzyl Benzoate Emulsion 12.5% (Child) / 25% (Adult)		Coal Tar 3% with Vaseline		Permethrin 5% w/v Lotion	
Benzoyl Peroxide 5% Gel		Coal Tar 6% with Vaseline		Podophyllum 10% Paint	
BVC 0.01% (1:10)		Clotrimazole 1% Cream		Pot. Permanganat 0.1% Solution	
BVC 0.05% (1:2)		Emulsifying Ointment		Pot. Permanganat 5% Solution	
BVC 0.025% (1:4)		Fusidic acid 2% Ointment		Salicylic acid 2% Ointment	
BVC 0.1%		Fusidic acid 2% in BVC 0.1%		Salicylic acid 5% Ointment	
BVO 0.1%		Gamma Benzene Hexa 1% Lotion		Salicylic acid 10% Ointment	
BVO 0.05% (1:2)		Gentamicin 0.1% Cream		Salicylic acid 20% Ointment	
BVO 0.25% (1:4)		Glycerin 25% in Aqueous Cream		Salicylic acid 2% in BVO 0.025%(1:4)	
Calamine + 6% Sulphur Lotion		Glycerin 50% in Aqueous Cream		Selenium Sulphide 2.5% Shampoo	
Calamine with 0.5% Menthol Lotion		Hydrocortisone 1% Cream		Silver Nitrate 0.5% Lotion	
Calcipotriol 50mcg/g Cream		Hydrocortisone 1% Ointment		Sod. Chloride 0.9% (For Irrigation)	
Calcipotriol 50mcg/g + Betamet. 0.5mg/g Gel (Xamiol)		Hydroquinone Comb Depigmentation Cream		Sulfacetamide 15% Solution	
Calcipotriol 50mcg/g + Betamet. 0.5mg/g Ointment (Daivobet)		Ketoconazole 2% Shampoo		Tar, Coal Tar, and Salicylic Acid Liquid (Sebitar)	
Carbamide (urea) 10% Cream		Methoxsalen 0.01% Ointment		Tretinoin 0.05% Cream / Gel	
Cetrimide 2% Lotion		Methoxsalen 0.05% Ointment		Zinc Oxide Cream	
Clobetasone Butyrate 0.05% Cream		Miconazole cream			
Clobetasone Butyrate 0.05% Ointment		Mometasone Furoate 0.1% Cream			
Clobetasol Propionate 0.05% cream		Mupirocin 2% Ointment			

NOTA:

Cara Mengisi Rajah Pendispensan Ubat Dermatologi Topikal

- i. Ubat yang dipreskrib diberikan Kod pada Senarai Ubat Sapu. (*kod ditentukan oleh pegawai yang memberikan kaunseling*)

Contoh:

- Hydrocortisone Ointment = A
- Aqueous Cream = B

- ii. Labelkan pada label ubat kod yang telah ditentukan.
- iii. Tandakan Kod tersebut pada nama ubat disenaraikan dalam **RAJAH PENDISPENSAN UBAT DERMATOLOGI TOPIKAL**
- iv. Jika terdapat maklumat tambahan, sila isikan di ruang nota yang disediakan.
- v. Berikan **RAJAH PENDISPENSAN UBAT DERMATOLOGI TOPIKAL** kepada pesakit untuk rujukan.
- vi. Sekiranya ubat pesakit tidak tersenarai dalam jadual ubat tersebut, mohon tambah pada ruang kosong yang ada.

General Counselling Points for Topical Dermatology Products

- Ensure that the patient knows which product to apply to which part of the body; and the difference in potencies.
- If both emollient & topical corticosteroid to be use at the same area, apply emollient first and wait for several minutes before applying topical corticosteroid.
- Always apply cream based preparation prior to ointment based preparation.
- Do not scratch the affected area as it will worsened the condition.
- Remind Patient to practice hand hygiene before & after applying topical preparation and to Cut nails as short as possible.
- Provide information on storage.
- Always apply 'wet the dry"and 'dry the wet' concept when counselling patient.
 - 'wet the dry' – use emollient to moisten the dry area
 - 'dry the wet' – use KMNO₄ on weepy area

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