



**Mercy  
Ships®**

Bringing Hope and Healing...

# Formulary 2009-2011



**An Essential Medicines Dosing Guide  
Based on the WHO Model Formulary**

## DERMATOLOGICALS

### 11.01 TOPICAL ANTIFUNGALS

#### WHO MODEL FORMULARY 2008 NOTES:

RINGWORM. **Benzoic acid** and **methylrosanilinium chloride** (gentian violet) solution [both not on Mercy Ships list] are inexpensive and effective fungistatic compounds for the treatment of dermatophyte infections such as ringworm. Minor skin lesions due to ringworm can be cleared with repeated applications of **compound benzoic acid** ointment (Whitfield ointment) [not on Mercy Ships list], which combines the fungistatic action of benzoic acid with the keratolytic action of salicylic acid. However, the most effective topical treatment for dermatophyte infections is a cream containing an imidazole such as **miconazole** or **clotrimoxazole** (section 6.02), which is effective for long-established lesions but is more expensive than compound benzoic acid ointment. Extensive and generalized infections of the skin, nails and scalp should be treated systemically for several weeks with **griseofulvin** or **fluconazole** (see section 6.02).

Scalp ringworm (tinea capitis) typically appears as a patch of scaling alopecia, or a swollen inflammatory area (tinea kerion). Mild forms may remit spontaneously at puberty. Inflamed lesions should be treated systemically with **griseofulvin**. Application of **miconazole** cream may accelerate healing of scaly lesions. Ringworm on the body (tinea corporis) can also be cleared with **compound benzoic acid** ointment or a topical **imidazole** such as miconazole. In resistant cases a 4-week course of oral **griseofulvin** is required.

Foot ringworm (tinea pedis or athlete's foot) is usually treated topically. **Compound benzoic acid** ointment should be applied twice daily to all infected areas and all toe clefts for at least 4 weeks. Systemic therapy with **griseofulvin** or **fluconazole** may be required if the foot is extensively infected. Tinea pedis commonly recurs and may be treated with miconazole cream. Severe weeping lesions respond to frequent soaking in solutions of 1:10000 **potassium permanganate**, and systemic antifungals may also be needed.

Nail infections (onychomycosis, tinea unguium) are difficult to treat; fingernails may require 6 months treatment with oral **griseofulvin** and toenails may require 12 months or more of this treatment. Approximately 60% of nail infections either do not respond or relapse after treatment with griseofulvin.

Ringworm of the groin (tinea cruris) is usually limited to the skin of the inner thigh in contact with the scrotum. Flexural eczema, often superinfected with candida or bacteria, occurs in the same site. The latter is frequently treated with combined antifungal/corticosteroid preparations, but must not be treated with a corticosteroid alone, which will worsen the condition. An imidazole cream such as

**miconazole** applied daily for 2 weeks is usually effective. Lesions unresponsive to topical preparations can usually be cleared with a 4-week course of **griseofulvin**.

CANDIDOSIS. Candida can infect the oral cavity, the vagina or the skin. Cutaneous lesions tend to occur in patients with diabetes mellitus and some chronic debilitating conditions, including hypoparathyroidism and various congenital disorders of the immune system. The most severe infections of candida are now seen in patients with HIV infection.

CUTANEOUS CANDIDOSIS usually responds to **miconazole** or **clotrimoxazole** cream as a twice daily application. Chronic candida paronychia, which can result ultimately in nail dystrophy, is more difficult to treat. Treatment should be based on determination of the underlying cause and its reduction or elimination; hands and folds of the nail must be kept dry and daily application of an imidazole cream for several months may be required, ensuring penetration of the cleft between the nail plate and the swollen skin around the nail.

PITYRIASIS (TINEA) VERSICOLOR is caused by a commensal yeast. Application of **sodium thiosulfate** [not on Mercy Ships list] twice daily for 4 weeks is usually effective although areas of depigmentation on darker skins remain after completion of treatment. Relapses can be frequent, however, probably because much of the infected area may appear normal and be left untreated. Better results have been reported with topical applications of **miconazole** or **selenium sulfide**.

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Clotrimazole Cream 1%, 20g (Canesten)</b>	IDA	Vulvovaginal candidiasis: apply cream to affected area 2-3 times daily for 7 days. Note. Vaginal tablet available, see Section 6.02 pg 83.
	EML	
<b>Miconazole Nitrate 2% Cream (Daktarin)</b>	MSL	Nail infections: <i>apply</i> 1-2 times daily. Skin infections: <i>apply</i> twice daily to clean dry lesions, continuing for at least 10 days after the condition has cleared.
	IDA	
	EML	

## 11.02 TOPICAL ANTIBACTERIALS

### WHO MODEL FORMULARY 2008 NOTES:

Staphylococcal infections of the skin such as impetigo, folliculitis, and furunculi and streptococcal infections such as cellulitis and erysipelas are very common where the climate is hot and humid, where standards of hygiene are compromised, and in immunodeficient patients.

In all skin infections, an important part of treatment is cleansing and thorough drying. Washing with soap and water will often help to prevent infection. Light localized infections can often be treated effectively with an antiseptic solution such as **chlorhexidine** (section 11.06). Superficial crusts should be gently washed with soap and water or a weak solution of **aluminium acetate** or a 0.01% solution of **potassium permanganate** [Note: both items not on Mercy Ships list]. Infected burns should be treated with **silver sulfadiazine**, which is bactericidal against both Gram-positive and Gram-negative organisms.

Topical formulations containing 2% mupirocin or 2% fusidic acid [neither included on WHO Model List] can be used to treat bacterial infections of the skin such as impetigo and folliculitis. To prevent the development of resistance, mupirocin and fusidic acid should not be used for more than 10 days. Topical preparations containing **neomycin** and **bacitracin** are also widely used but these carry a risk of sensitization particularly with continued or repeated use. Topical use of preparations containing antimicrobials which are widely used systemically should be avoided. These include penicillins, sulfonamides, streptomycin and gentamicin, which should be reserved for the systemic treatment of infections because of the possibility of inducing sensitivity and favouring the emergence of resistant organisms. Only widespread superficial or deep-seated infections associated with fever require treatment with a systemic antibiotic (Chapter 06). Whenever possible, the choice of an antimicrobial should be based on the results of sensitivity tests.

GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Mupirocin Ointment 2% 15g (Bactroban)</b>		For MRSA infection, apply up to 3 times daily max 10 days. NOT for intranasal use.
<b>Neomycin 0.5% (5mg) with Bacitracin 250 IU/g Cream (Cicatrin)</b>	MSL IDA EML	Superficial bacterial skin infection: Adult & Child > 2 yo, <i>apply</i> thin layer 3 times daily (short-term use).

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GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Silver Sulfadiazine Cream 1% (SSD) (Flammazine)</b>	MSL IDA  EML	Infection in burns: <i>Apply</i> using aseptic technique daily (more frequently if volume of exudate is large) whilst there is a possibility of infection, or until healing is complete.

**COMMENT/CAUTIONS:**

- **Neomycin adverse effects:** Avoid application to substantial areas of skin or to broken skin (risk of significant systemic absorption causing ototoxicity, particularly in children/elderly/renal impairment).
- **Silver Sulfadiazine adverse effects:** allergic reactions include rashes, burning and itching; argyria and sulfonamide-induced systemic toxicity, including blood disorders following application to large areas or prolonged use; transient leukopenia reported.

NOTE. See Section 11.06 for topical antiseptics/disinfectants (e.g. povidone-iodine).

**11.03 TOPICAL ANTI-INFLAMMATORY & ANTIPRURITICS**

**WHO MODEL FORMULARY 2008 NOTES:**

CONTACT DERMATITIS can result from an allergic or irritant skin reaction. Removal of the substance provoking the reaction is the first step in treating this condition. Mild cases of contact dermatitis can be treated with topical **hydrocortisone** which suppresses inflammation. A short course of oral prednisolone or a topical corticosteroid such as **betamethasone** should be considered for more severe cases and for suppression of severe acute reactions associated with blistering, exudation and oedema. Soaking in clean water or mild saline solution is recommended in the acute stages of severe dermatitis.

PRURITUS or itching is a common symptom of many skin diseases. However, systemic disease, contact with certain substances, conditions that dry the skin, stress, and extremes of temperature may also be a cause. Thus, an important part of treatment is to eliminate or minimize the reason for the irritation. Emollients are of value in pruritus associated with dry skin or in pruritus occurring in an otherwise healthy elderly individual; the value of calamine lotion is uncertain. Systemic antihistamines, such as oral chlorphenamine (section 3.03), may relieve generalized pruritus. Topical corticosteroids, such as hydrocortisone or betamethasone applied topically, are appropriate for treating insect stings.

ATOPIC DERMATITIS (or ECZEMA) is a common skin disorder, which mainly occurs in infants and children; it is associated with intense itching, with areas of red skin. Pruritus may be partially relieved by applying astringent **aluminium acetate** lotion [not on Mercy Ships list] to exudative lesions and emollients to lichenified plaques. Topical **hydrocortisone** should be applied in short courses of 1-2 weeks to treat even mild areas of involvement. The use of **betamethasone** should be considered in the treatment of persistent localized dermatitis in adults. Topical antihistamines are not effective and should be avoided because of the risk of sensitization. However, a sedative antihistamine can be given at night to calm pruritus and facilitate sleep (section 3.03). A secondary infection, often involving *Staphylococcus aureus*, may be responsible for exacerbations; in such cases, an oral antibiotic such as erythromycin can be given for 7-10 days (section 6.01d).

SEBORRHOEIC DERMATITIS. Use of a keratolytic shampoo and exposure to ultraviolet light reduce both inflammation and scaling resulting from seborrhoeic dermatitis of the scalp (DANDRUFF). The shampoo should be massaged into the scalp, immediately rinsed off and then reapplied until a foam is produced, leaving the second application in contact with the scalp for at least 5 minutes. **Selenium sulfide**, [not on Mercy Ships list, but try the ship shop 😊!] which has both antifungal and keratolytic properties, is widely used in many proprietary shampoos. A combination of sulfur and salicylic acid, which has an additional antimicrobial action, is also effective.

ICHTHYOSIS. Emollients such as aqueous creams and emulsifying creams should be applied daily (or more frequently in severe cases) to affected skin. The addition of a keratolytic, such as **salicylic acid 5%** can be helpful.

LICHEN PLANUS is a chronic, papular, pruritic skin eruption that occurs typically in middle age and later life; the condition is often mild and may need no treatment. In generalized mild cases, a topical corticosteroid may relieve pruritus. In severe forms systemic treatment may be necessary; oral corticosteroids, ciclosporin and retinoids have been used.

PITYRIASIS ROSEA is a common self-limiting dermatosis that is probably of infective origin, **calamine lotion** helps to relieve pruritus in most cases. If it does not, topical application of **hydrocortisone** in a concentration not exceeding 1% may be tried.

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GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Betamethasone 17-valerate Cream/Ointment 0.1% (Betnovate Full Strength)</b>  <b>Potency: potent</b>	IDA   EML	Inflammatory skin conditions: Adult & Child > 2 yo, <i>apply</i> small quantity to the affected area 1-2 times daily until improvement occurs, then less frequently.
<b>Betamethasone 17-valerate Cream/Ointment 0.05% (Betnovate 1:2)</b>  <b>Potency: moderately potent</b>	EML	Application: as above. [In-house preparation: Dilute full strength (0.1%) with equal volume of aqueous cream or emulsifying ointment. Expiry 2 weeks.]
<b>Betamethasone 17-valerate Cream/Ointment 0.025% (Betnovate 1:4)</b>  <b>Potency: moderate</b>	EML	Application: as above. [In-house preparation: Dilute 1part full strength (0.1%) with 3 parts of aqueous cream or emulsifying ointment. Expiry 2 weeks.]
<b>Calamine Lotion</b>	IDA  EML	Mild pruritus, <i>apply</i> liberally 3-4 times daily but see Cautions below.
<b>Clobetasol Propionate Cream/Oint 0.05% (Dermovate)</b>  <b>Potency: very potent</b>	D	Inflammatory skin conditions: Adult & Child > 2 yo, <i>apply</i> a small quantity to the affected area 1-2 times daily until improvement occurs, then less frequently.
<b>Hydrocortisone Acetate Cream 1%</b> <b>Potency: mild</b>	MSL IDA  EML	Inflammatory skin conditions: <i>Apply</i> a small quantity to the affected area 1-2 times daily until improvement occurs, then less frequently.
<b>Ketoconazole Shampoo 2% 120ml (Nizoral)</b>	D	Seborrheic dermatitis/dandruff: use as shampoo twice weekly (at least 3 days between uses) for 4 weeks, and then intermittently as needed.
<b>Zinc Oxide Ointment 10%</b>	MSL IDA	Napkin/urinary rash & eczematous conditions: <i>apply</i> twice daily to the affected area.

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**COMMENT/CAUTIONS:**

- Topical corticosteroids according to potency:
  - Mild** - Hydrocortisone acetate 1%;
  - Moderate** - Clobetasone butyrate 0.05%;
  - Potent** - Betamethasone valerate 0.1% or dipropionate 0.05%,  
Hydrocortisone butyrate 0.1%;
  - Very Potent** - Clobetasol propionate 0.05%.
- Generally **the least potent preparation effective** should be used as there is greater risk of side effects with potent or very potent steroids. Potent topical steroids should be reserved for recalcitrant conditions such as chronic discoid lupus erythematosus, and avoided in psoriasis unless under specialist care.
- Potent preparations should not be used on the **face**, with rare exceptions.
- Topical steroids are of no value in treating urticaria and acne. They are **contraindicated** in rosacea and ulcerative conditions, and should not be used indiscriminately for pruritus.
- **Children/babies** are especially susceptible to side effects and more potent preparations are contraindicated in infants (< 1 yo). Generally topical steroids are avoided in paediatric treatment or limited to use over short periods. For **Fingertip dosing units** of topical corticosteroids for children see Appendix I.
- **Suitable quantities** of corticosteroid topical cream or ointment to be prescribed for adults, for a twice daily application for 1 week: face and neck (15-30g), both hands (15-30g), scalp (15-30g), both arms (30-60g), both legs (100g), trunk (100g), groins and genitalia (15-30g).
- **Calamine lotion:** Use with discretion, may reduce lesions healing rate and dry the skin thus exacerbating itch, no longer recommended in some nations.

#### 11.04 SCABICIDES & PEDICULICIDES

##### WHO MODEL FORMULARY 2008 NOTES:

SCABIES is caused by a mite, *Sarcoptes scabiei*, that burrows into the skin. It is readily transmitted from person to person; therefore the entire household must be treated at the same time to prevent reinfection. It is not necessary to take a bath before treatment with an acaricide, but all clothing and bedding should be washed to prevent reinfection. **Benzyl benzoate** is an inexpensive scabicide. It must be applied to all skin surfaces, from the scalp to the soles of the feet, avoiding contact with the eyes; it is too irritant for use on children. **Permethrin** is less irritant and more effective than benzyl benzoate, but also more expensive; it may be used on children. Young infants can be treated with a cream containing precipitated **sulfur** 6-10% applied once daily for 1 week [not on Mercy Ships list].

PEDICULOSIS of the head & body is caused by *Pediculus humanus capitis* and *Pediculus humanus corporis* respectively; pubic LICE (crab lice) infestations are caused by *Phthirus pubis*, which may also affect the eye lashes and brows. All are transmitted by person to person contact, and may also contaminate clothing and



**COMMENT/CAUTIONS:**

- Avoid contact with eyes and mucous membranes; do not use on broken or secondarily infected skin; pregnancy and breast-feeding.
- **Benzyl Benzoate Emulsion (EBB)** application may need to be extended to areas including the scalp, neck, face and ears in the elderly, the immunocompromised and those who have experienced treatment failure. Reapply after each hand washing session. Mercy Ships note: EBB may be diluted with clean water to 12.5% for children and 6.25% for infants for scabies treatment as a last resort when permethrin cream is unavailable.

**11.05 PREPARATIONS FOR WARTS & CALLUSES**

**WHO MODEL FORMULARY 2008 NOTES:**

WARTS most commonly affect the hands, feet (plantar warts, verrucas), and anogenital region (condylomata acuminata); all are caused by the human papilloma virus. They may regress spontaneously at any time within months or years of their first appearance; however, particularly in immunosuppressed patients, they may spread and be difficult to cure. Many common, plane and plantar warts can reasonably be left untreated, but painful or unsightly lesions generally respond to application of preparations containing **salicylic acid**. Where available, cryotherapy using liquid nitrogen applied with a cotton-tip or a spray is highly effective; however, freezing the skin can produce temporary or permanent depigmentation (particularly on dark skin), and should be used with caution. *Anogenital warts* are usually transmitted by sexual contact; they should always be treated, although they frequently recur, because of the increased risk of cervical cancer. [Mercy Ships note: **Podophyllum resin** is not on the Mercy Ships list so related WHO notes are edited from here.]

<b>GENERIC (TRADE) NAME</b>	<b>CAT.</b>	<b>INDICATION/DOSE</b>
<b>Salicylic acid 16.7%, Lactic acid 16.7% in Flexible Collodion BP 15ml (Duofilm)</b>	D  EML	Corns, calluses, warts: soak lesion in hot water for 5 minutes, dry thoroughly and <i>apply</i> to affected area only once daily until healed.
<b>Silver Nitrate Sticks or Caustic Pencils (various)</b>		Common warts/verruccas: <i>Apply</i> moistened caustic pencil tip for 1-2 minutes, repeat after 24 hours, warts max 3 applications, verrucas max 6 applications. Also used for hypergranulation in wounds. See product leaflet for details.

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**COMMENT/CAUTIONS:**

- Use pumice stone or emery board to remove hardened skin after soaking in hot water, and cover with plaster after keratolytic application. Protect surrounding healthy skin at affected area with petroleum jelly or white soft paraffin before applying keratolytics if needed.

**11.06 ANTISEPTICS & DISINFECTANTS**

<b>GENERIC (TRADE) NAME</b>	<b>CAT.</b>	<b>INDICATION/DOSE</b>
<b>Acetic Acid Solution 0.5% &amp; 5%</b>		Use as disinfectant/antiseptic especially in jellyfish stings (3-5%) or <i>Ps. aeruginosa</i> infection of wound/burns (0.5-5%). See The Martindale for details.
<b>Chlorhexidine Gluconate 5% &amp; 20% Concentrated Solution (Hibitane)</b> <b>Diluted to give:</b> <b>Chlorhexidine Gluconate Solution in 70% Alcohol (Hibitane, diluted)</b>	IDA  EML	Pre-op skin disinfection & emergency instrument disinfection: Dilute 1 part 20% concentrate with 3 parts water to give 5% concentrate. Dilute 10ml of 5% concentrate with 15ml water and top up to 100ml with 95% alcohol, for use as directed.
<b>Chlorhexidine Gluconate Scrub 4% (Hibiscrub)</b>		For pre-op skin preparation and hand washing, apply 3-5ml over hands, forearms or skin area, rub vigorously for 1-2 minutes, rinse and dry, then repeat procedure.
<b>Chlorhexidine 1:200 in Alcohol with Emollient (Hibisol 0.5%)</b>	EML	For pre-op skin prep/hand washing, apply 3-5ml over hands/forearms/skin area, then rub vigorously for 2-5 minutes. When dry reapply and repeat procedure.
<b>Chlorhexidine 1.5% with Cetrimide 15% Concentrated Solution (Savlon)</b>		For disinfection of skin, burns, wounds & instruments: dilute 20ml concentrated solution in 1 litre of water to give 0.03% chlorhexidine and 0.3% cetrimide.

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<b>GENERIC (TRADE) NAME</b>	<b>CAT.</b>	<b>INDICATION/DOSE</b>
<b>Hydrogen Peroxide 7% Solution</b>  <b>Protect from light. Store in dark bottles. NOTE : Caution in handling, Use gloves as 35% concentrate is corrosive and flammable.</b>		Use as 3.5-7% solution for disinfection of instruments/laundry. For skin disinfection and cleansing of crusted/odorous wounds or ulcers, dilute to 1.75% before use (add 1 part hydrogen peroxide 7% to 3 parts of water). Dilution from 35% concentrate: measure 400ml of 35% concentrate and top up with water to 2000ml to give a 7% solution.
<b>Povidone Iodine 10% in Aqueous Solution or Ointment (Betadine)</b> <b>(available Iodine 1% w/v)</b>	EML	To be applied undiluted in pre- and post-op skin disinfection/preparation or as directed. For use in eye surgery see chapter 09 section 9.05 peri-operative preps.
<b>Povidone Iodine 7.5% Scrub (Betadine)</b>		Use as pre-op scrub as directed.
<b>Note: Use antiseptics/disinfectants according to current Infection Control Guidelines, store in clean area. Procurement: Some items listed above are not on the pharmacy needs list but on the general needs list, please check.</b>		

#### 11.07 OTHER TOPICAL PREPARATIONS

<b>GENERIC (TRADE) NAME</b>	<b>CAT.</b>	<b>INDICATION/DOSE</b>
<b>Diclofenac Topical Gel 1% or 5% (Voltarol Emulgel)</b>	MSL D	<i>Apply</i> with gentle massage 3-4 times daily, see product leaflet for detail.
<b>Emollient, various (e.g. Aqueous Cream, Emulsifying Ointment, White Soft Paraffin or Vaseline)</b>		<i>Apply</i> generously as often as required.

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GENERIC (TRADE) NAME	CAT.	INDICATION/DOSE
<b>Lidocaine HCl Topical Gel or Jelly 2%</b> <b>[Lignocaine]</b>	<i>MSL</i> <i>IDA</i>  <i>EML</i>	Local skin anaesthesia, apply as directed, see current guidelines or product leaflet for detail.
<b>Lidocaine 2.5% with Prilocaine 2.5%, 5g cream &amp; patch (EMLA)</b> <b>[Lignocaine]</b>		Venipuncture (for Child > 1 yo): <i>apply</i> one patch or cream as a thick layer under an occlusive dressing, 1 hour before procedure.
<b>Lidocaine Hydrochloride Topical Solution 4% 40mg/ml (Xylocaine 4% Topical)</b>  <b>Lidocaine Hydrochloride Topical Spray 10% 10mg/metered dose of 0.1ml (Xylocaine Spray)</b> <b>[Lignocaine]</b>		Local skin anaesthesia. Use minimal effective dosage according to area to be anaesthetised and procedure. See respective product leaflets for dosing detail.
<b>Muscle Rub (various)</b>	<i>MSL</i>	Apply as directed; see individual product leaflets for detail.