National Healthy Skin Guideline

Recognising & Treating Skin Infections:

A visual clinical handbook

3rd Edition, 2018

TELETHON KIDS INSTITUTE
Discover. Prevent. Cure.

WESFARMERS CENTRE OF VACCINES & INFECTIOUS DISEASES

menzies school of health research

HOT NORTH
Improving Health Outcomes in the Tropical North

History

1. This is the third edition of the Recognising and Treating Skin Infections resource. The first edition produced in 2004 by the Cooperative Research Centre for Aboriginal Health (now the Lowitja Institute) and the Menzies School of Health Research was developed as part of the East Arnhem Regional Healthy Skin Project to train health care professionals. It was updated in 2009 and has been widely used throughout Australia both in hardcopy and online.
2. This third edition has been developed for use in conjunction with the *National Healthy Skin Guideline: for the Prevention, Treatment and Public Health Control of Impetigo, Scabies, Crusted Scabies and Tinea for Indigenous Populations and Communities in Australia – 1st edition*.
3. We acknowledge the generosity of the Menzies School of Health Research and the Lowitja Institute in allowing us to update this resource.

the Lowitja Institute

Australia's National Institute for Aboriginal and Torres Strait Islander Health Research

menzies school of health research

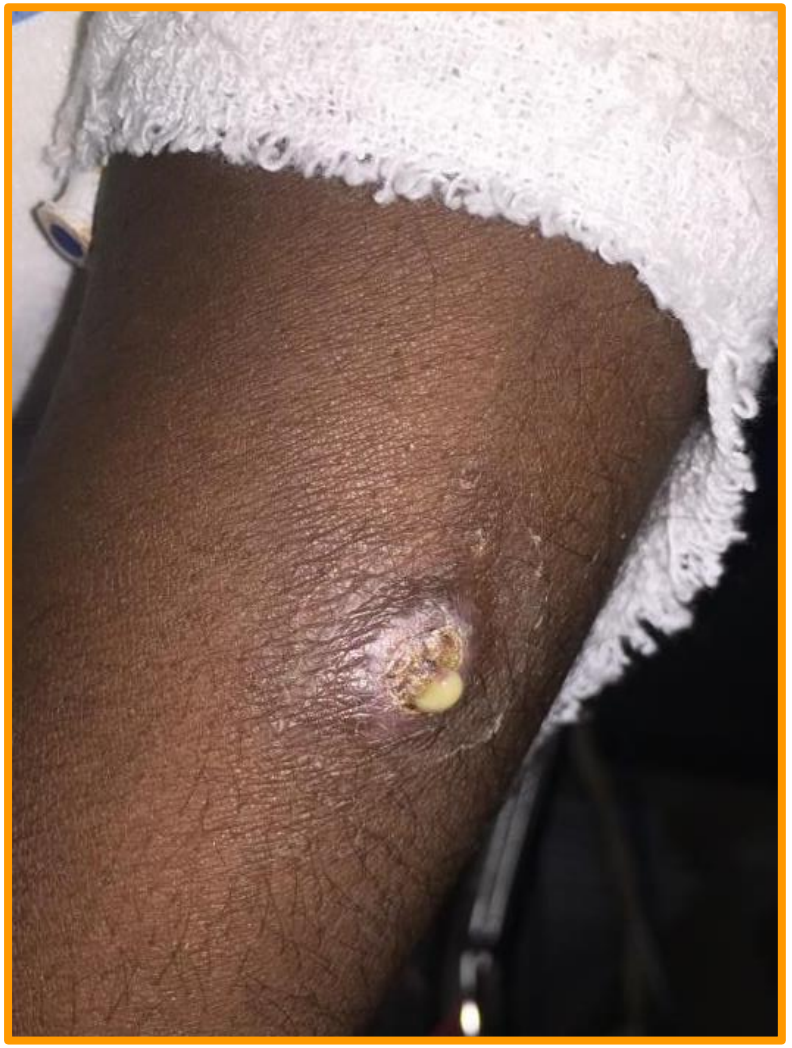
Contents

1. Skin sores "impetigo"

- Bacterial skin infection, very common in children
- Skin sores & scabies often occur at the same time
- Must treat as can lead to serious health problems

Look for:

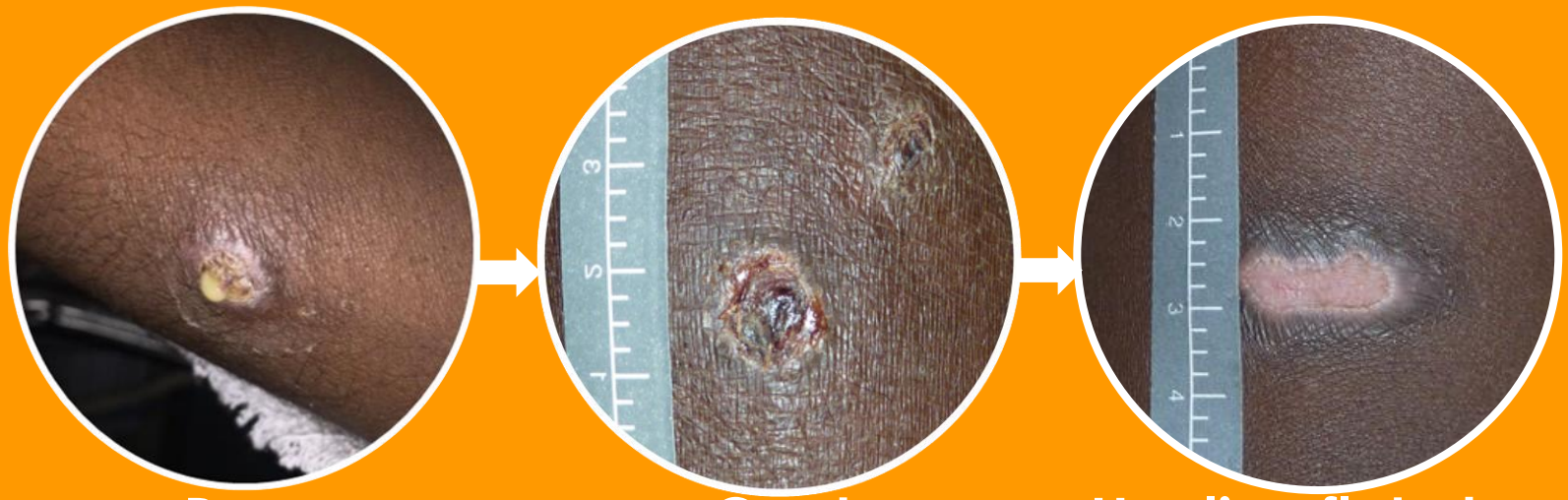
- **Yellow-brown crusted sores**
- **Sores with pus in them**
- **Check and treat for scabies at the same time if present**



Identify **Skin sores**

Due to the **serious consequences** if left untreated, skin sores (impetigo) should be recognised and treated as **a high priority**

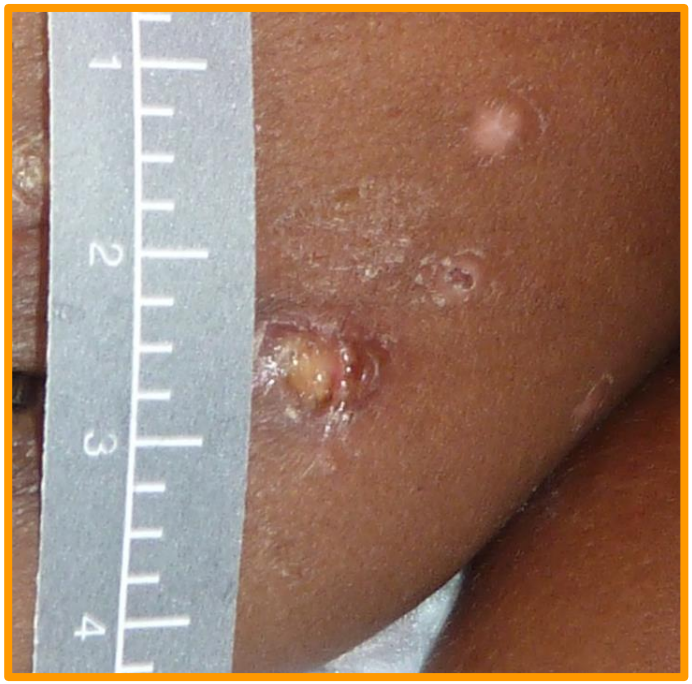
Skin Sore **Stages**

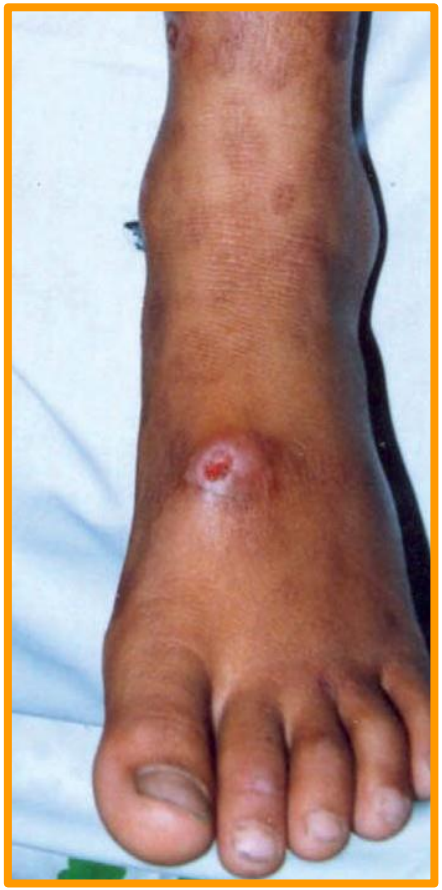


Pus | Crust | Healing flat, dry

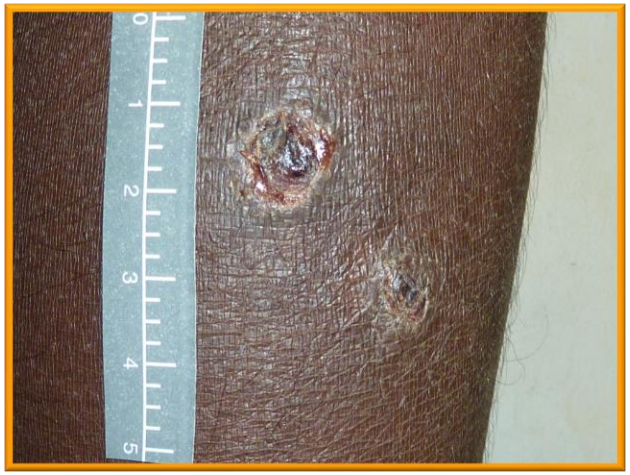
If impetigo is present, check for scabies and treat.

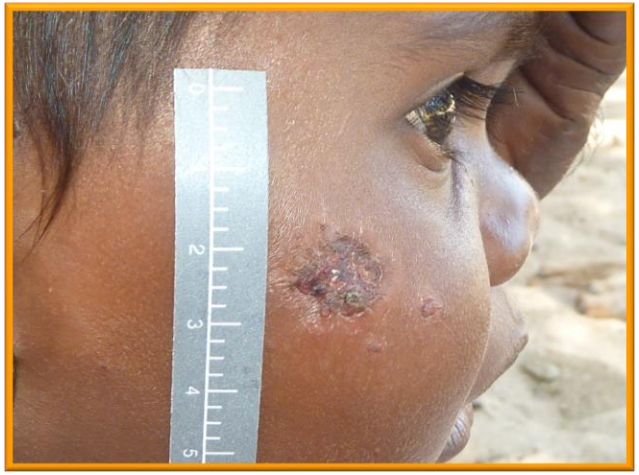
Purulent Skin sores

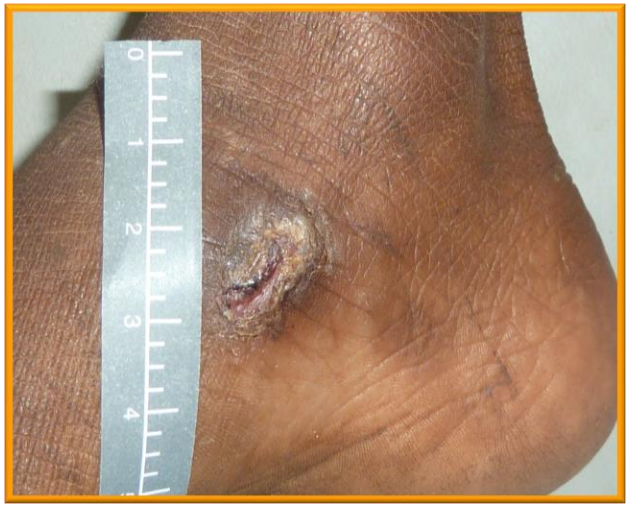


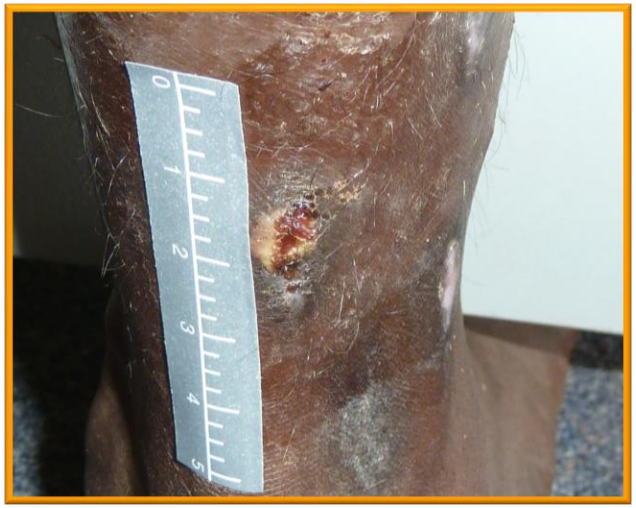


Crusted Skin sores

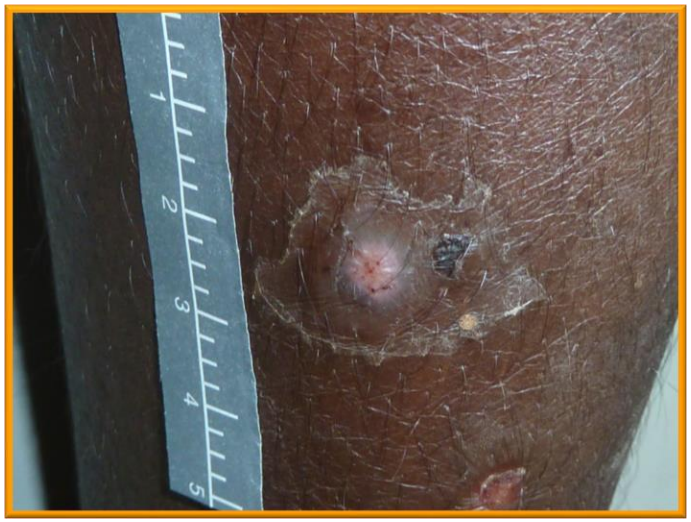


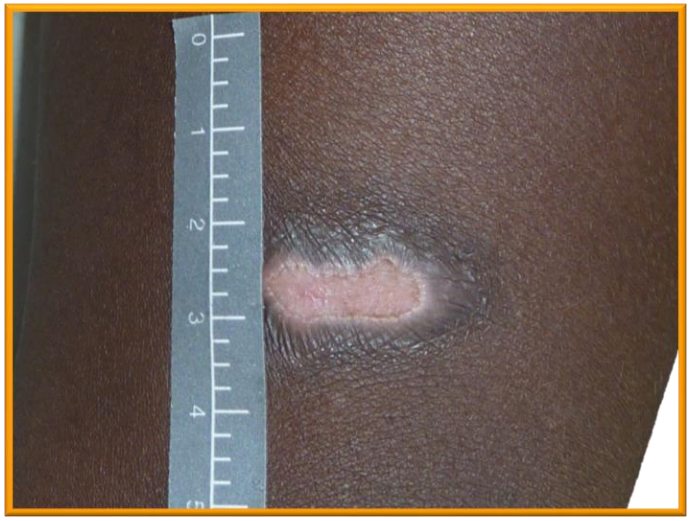


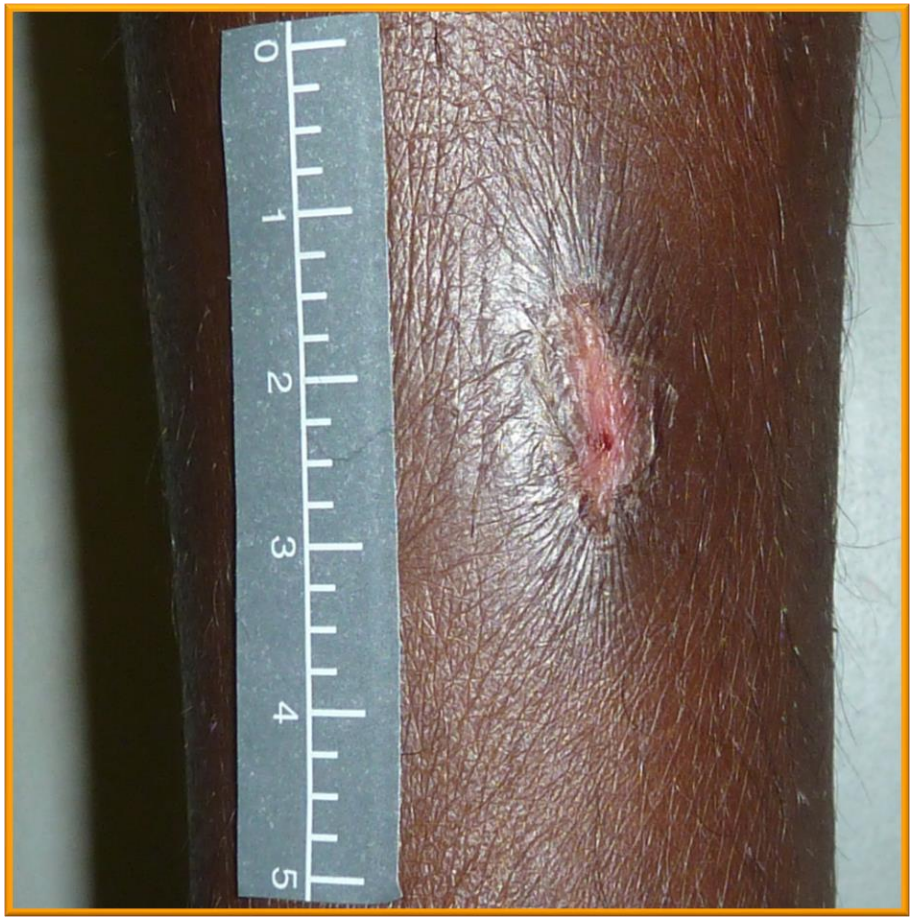




Healing Skin sores





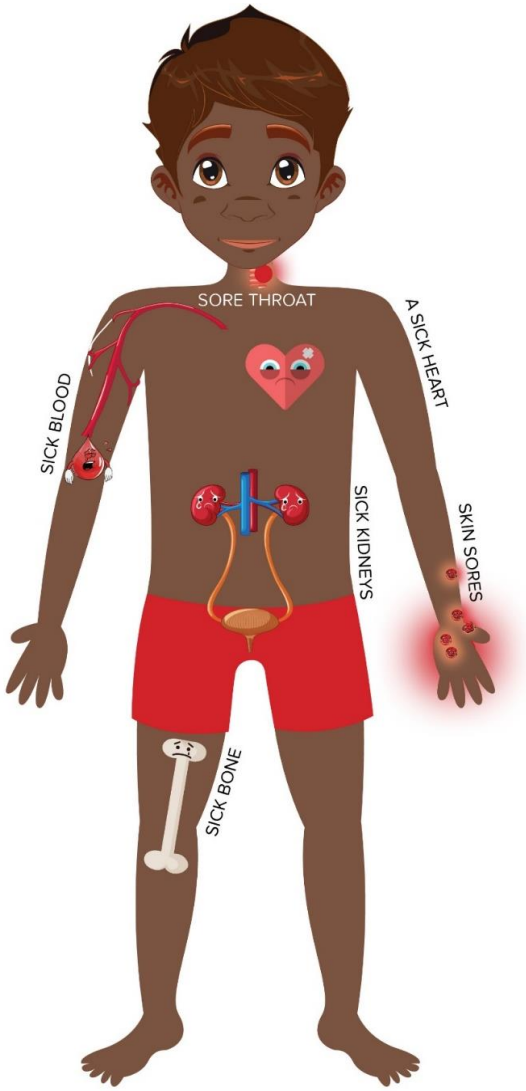


Skin sores: why do we treat?

Skin sores are caused by Group A Strep and *Staph aureus*.

These bacteria can cause:

- Boils
- Bone and Joint infections
- Sepsis
- Kidney Disease (APSGN)
- Rheumatic Heart



Treat Skin sores

A

Oral co-trimoxazole

4mg/kg/dose of trimethoprim component

Twice daily for 3 days

OR

B

Oral co-trimoxazole

8mg/kg/dose of trimethoprim component

Once daily for 5 days

OR

C

IM benzathine penicillin G (BPG)

Single weight band dose

AVOID cream mupirocin (Bactroban) as resistance develops rapidly

Treat Skin sores

Ⓐ Give oral **co-trimoxazole** 4mg/kg/dose of trimethoprim component **TWICE** daily for **3 days**

Table 2.

Weight band	Syrup Dose (Give morning & night) Cotrimoxazole syrup is 40mg trimethoprim/5mL	Tablet Dose (Give morning & night) Tablets are 160/800 of trimethoprim/sulfamethoxazole components
3 – < 6 kg	**1.5 mL** (12mg BD)	N/A
6 – < 8 kg	**3 mL** (24 mg BD)	N/A
8 – < 10 kg	**4 mL** (32 mg BD)	N/A
10 – < 12 kg	**5 mL** (40 mg BD)	N/A
12 – < 16 kg	**6 mL** (48 mg BD)	N/A
16 – < 20 kg	**8 mL** (64 mg BD)	N/A
20 – < 25 kg	**10 mL** (80 mg BD)	**½ tablet**
25 – < 32 kg	**12.5 mL** (100 mg BD)	**¾ tablet**
32– < 40 kg	**16 mL** (128 mg BD)	
≥ 40kg	**20 mL** (160 mg BD)	**1 tablet**

Treat Skin sores

B

Give oral **co-trimoxazole** 8mg/kg/dose of trimethoprim component **ONCE** daily for **5 days**

Table 3.

Weight band	Syrup Dose (Once daily) Cotrimoxazole syrup is 40mg trimethoprim/5mL	Tablet Dose (Once daily) Tablets are 160/800 of trimethoprim/sulfamethoxazole components
3 – < 6 kg	**3 mL** (24mg BD)	N/A
6 – < 8 kg	**6 mL** (48 mg BD)	N/A
8 – < 10 kg	**8 mL** (64 mg BD)	N/A
10 – < 12 kg	**10 mL** (80 mg BD)	N/A
12 – < 16 kg	**12 mL** (96 mg BD)	N/A
16 – < 20 kg	**16 mL** (128 mg BD)	N/A
20 – < 25 kg	**20 mL** (160 mg BD)	**1 tablet**
25 – < 32 kg	**24 mL** (200 mg BD)	**1 ½ tablets**
32 – < 40 kg	**32 mL** (256 mg BD)	
≥ 40kg	**40 mL** (320 mg BD)	**2 tablets**

Treat Skin sores

Give **IM benzathine penicillin G (BPG)** as a **single** weight band dose

Table 4.

Weight band	Injection Dose 1 syringe of BPG is 900mg in 2.3mL
3 – < 6 kg	**0.5 ml** (225 mg)
6 – < 8 kg	**0.8 ml** (337.5 mg)
8 – <10 kg	
10 – < 12 kg	
12 – < 16 kg	**1.0 ml** (450 mg)
16 – < 20 kg	**1.6 ml** (675 mg)
20 – < 25 kg	**2.3 ml** (900 mg)
25 – < 32 kg	
32– < 40 kg	
≥ 40kg	

Prevent Skin sores

1) Clean

- Bathe/wash children **every day**
- Clean hands with **soap** & **water**
- **Wash towels**, **clothes** & **bedding** regularly and dry in the sun

2) Check

- If skin is not improving after a day or two, **speak to your health clinic**

3) Prevent transmission

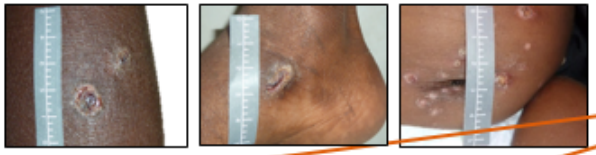
- **Prompt treatment** of skin sores prevents further transmission

IMPETIGO ALGORITHM

Identify

Diagnose impetigo clinically*

Is there pus or crusting?



Yes

No

Treat

Oral co-trimoxazole twice daily for 3 days (see Table 2 for dosing)

OR

Oral co-trimoxazole once daily for 5 days (see Table 3 for dosing)

OR

Single IM injection of BPG penicillin (see Table 4 for dosing)

May not be impetigo

Consider:

- tropical ulcer
- waterborne infection
- Melioidosis (B. pseudomallei)
- chronic dermatitis
- non-infective e.g. autoimmune, skin cancer

Treatment success?

Yes

No

Collect swab to help with antibiotic choice
While waiting for results try alternate treatment eg BPG if co-trimoxazole was used as initial treatment, or co-trimoxazole if BPG was used

Treatment success?

Yes

No

Prevent

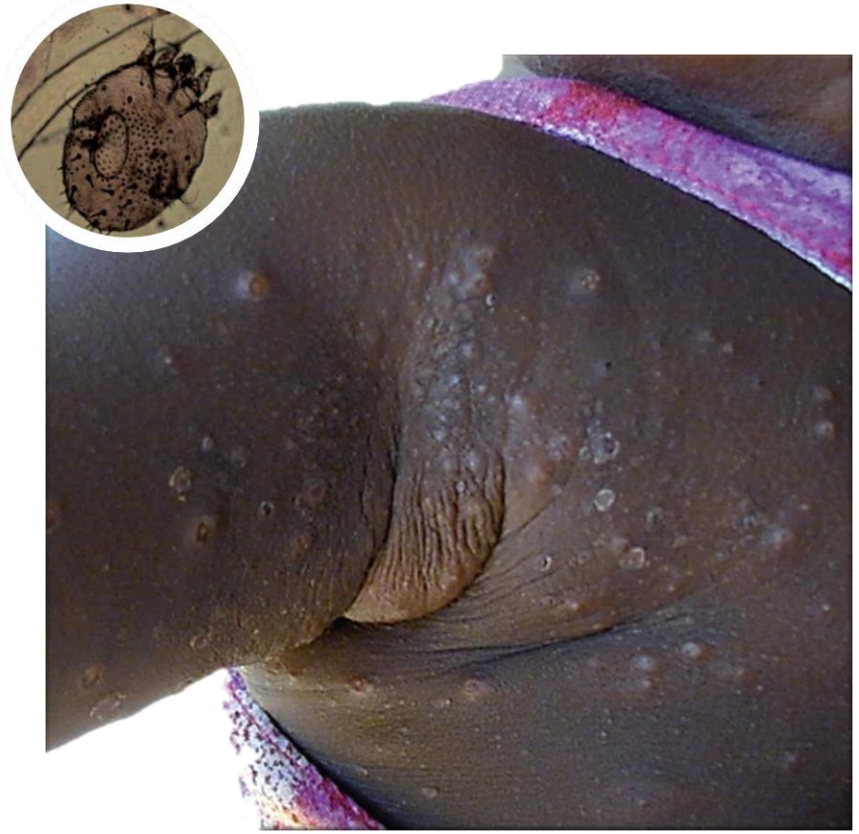
Handwashing with soap, and other preventive measures

Medical consult required

*If impetigo infection is present, consider and examine for evidence of scabies infestation.

2. Scabies

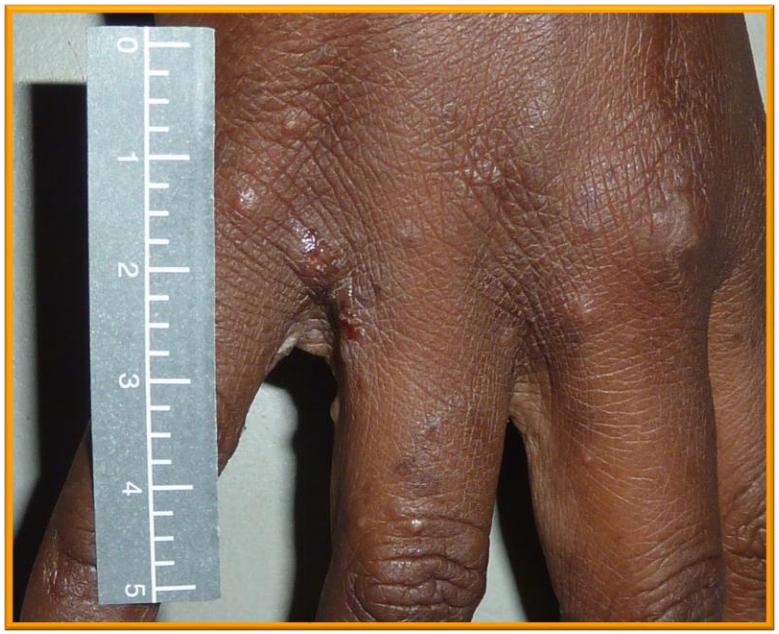
- Tiny mites burrow under the skin to lay their eggs
- Very itchy skin, especially at night
- Spreads easily between people who are in close contact

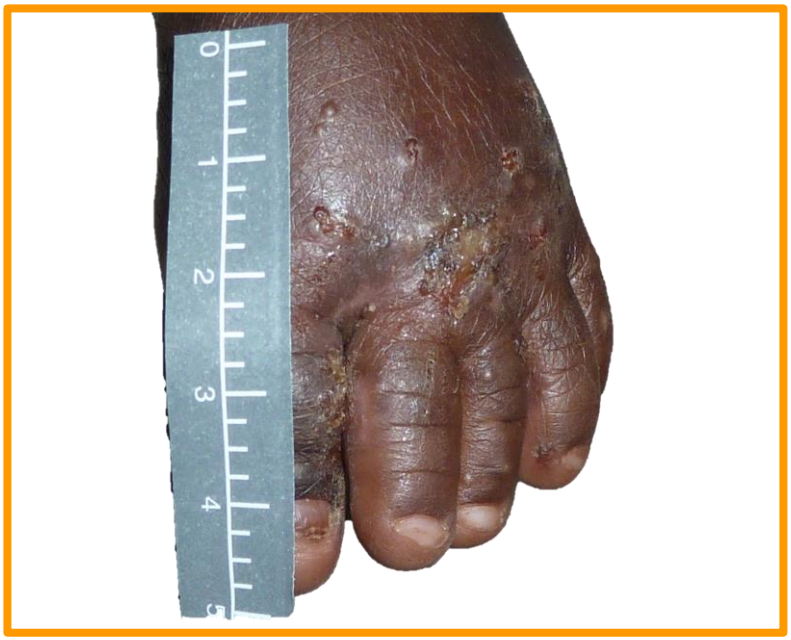


Look for

- **Scratches & sores between fingers & toes; on wrists, elbows, knees, ankles & bottom**
- **Babies often have "pimple-like" pustules on the hands & feet**

Identify Scabies

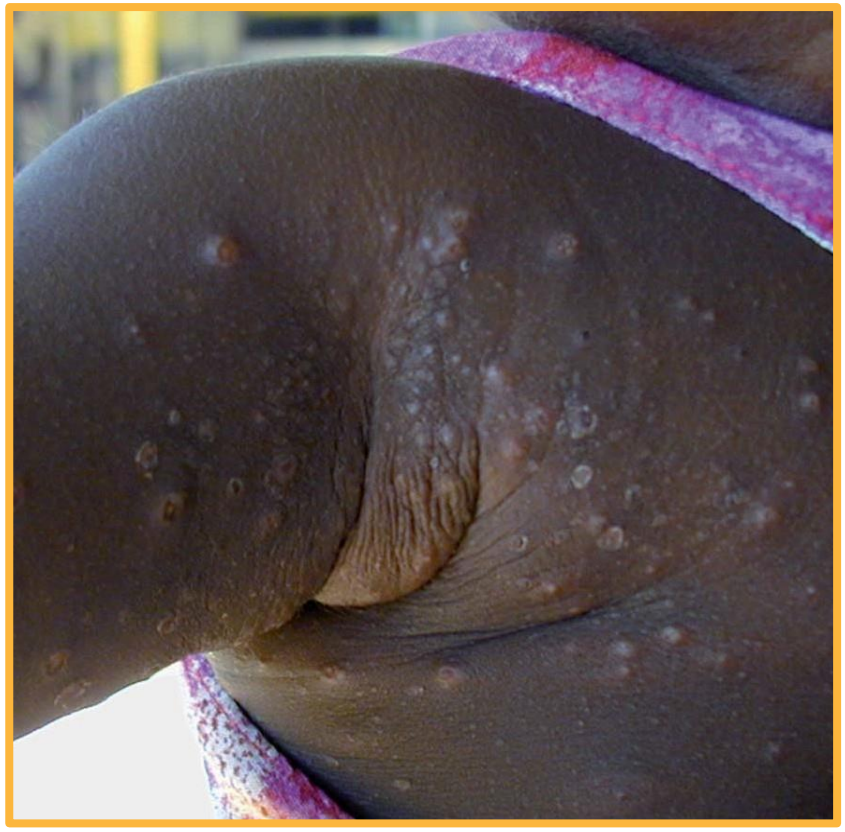




- Scabies should be **recognised** and **treated** as a **high priority**
- Treatment of scabies **reduces itch** leading to better sleep and daytime concentration

If scabies is present, check for impetigo and treat.

Scabies v Infected Scabies



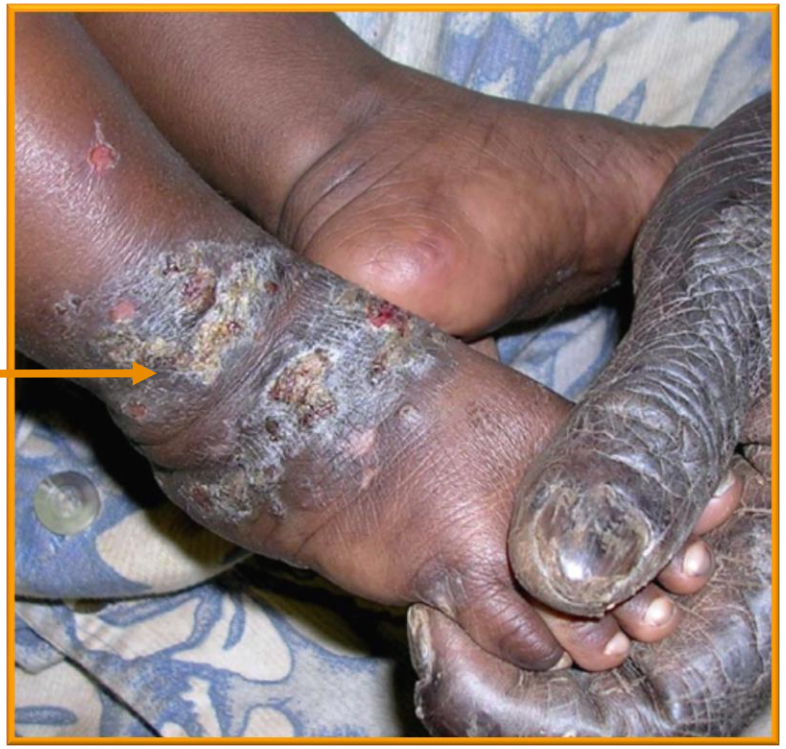
Scabies without signs of secondary bacterial infection.

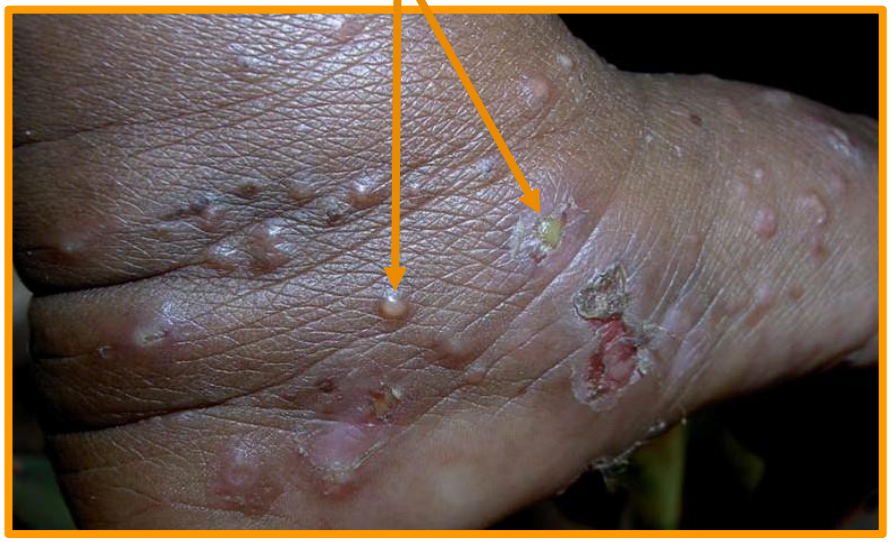
- **Infected scabies** occurs when **papules** caused by the burrowing scabies mite become **secondarily infected with bacteria** (commonly Group A Strep and *Staph aureus*).
- If **scabies is infected**, please follow **both** the scabies and impetigo algorithms.

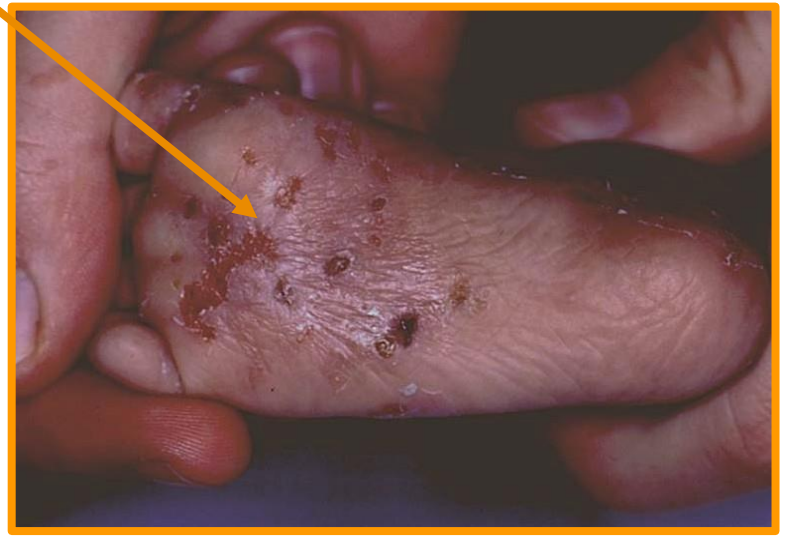
Infected Scabies

Signs that scabies could be infected:

- **Crust**
- **Pus**







Treat Scabies

Topical permethrin 5% is recommended as **first line treatment** in Australia for all age groups.

Repeat application in one week.

Recommendations
Oral ivermectin is recommended if topical treatments have failed and with a medical consult.
Topical crotamiton is safe in infants, but permethrin is recommended above topical crotamiton.
Topical permethrin is recommended for the treatment of scabies in pregnant women.

Ivermectin **CANNOT** be used in **pregnant** or **breastfeeding** women, or **children under 5** years of age or **less than 15kg**.

Treat Scabies

Application of Scabies Creams & Lotions

1. Rub cream on **after shower**
2. Leave cream on **overnight**
3. **Start with head** (including the scalp & face)
4. Avoid the eyes, lips and mouth
5. **Work carefully down** the entire body
6. Put on hands again after washing
7. Put on child's hands again before bed

Make sure no skin is missed especially the back, buttocks and difficult to reach spots!

REMEMBER

Body creases
- Behind ears, under jaw, neck, armpits, groin, bottom, under breasts

- **Between fingers and toes**
- **Soles of feet**
- **Under nails**

Joint & joint creases
- Elbows, knees and heels

If hair is very thick/very bad infestation, the head may need to be shaved (with permission).

Recommendation

*Application of topical treatments should cover the **entire body from head to toe**.*

Prevent Scabies

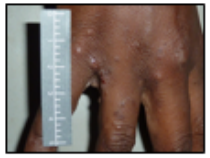
- **Prompt treatment** of scabies prevents further transmission.
- **Treatment of household contacts is recommended** for the community control of scabies in resource-limited settings.
- **Treatment of cases and contacts** is recommended in scabies outbreaks.

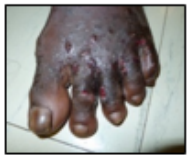
SCABIES ALGORITHM

Identify

Diagnose scabies clinically*

Intensely itchy rash with scratches or small bumps between fingers or toes, on wrists, elbows, knees ankles or bottom?





Yes

No

Treat

Topical permethrin 5% applied head to toe**, repeated in 1 week

May not be scabies

Consider:
- eczema or other dry skin condition
- papular uticaria (from insect bites)
- impetigo

Treatment success?

Yes

No

Oral Ivermectin **CAN NOT** be used in children under 5 years or pregnant/breastfeeding women

Medical consult required
Oral ivermectin single dose, repeat in 1 week

Treatment success?

Yes

No

Consider crusted scabies in community/household - medical consult

Prevent

Household and community control programs, Mass Drug Administration (MDA)

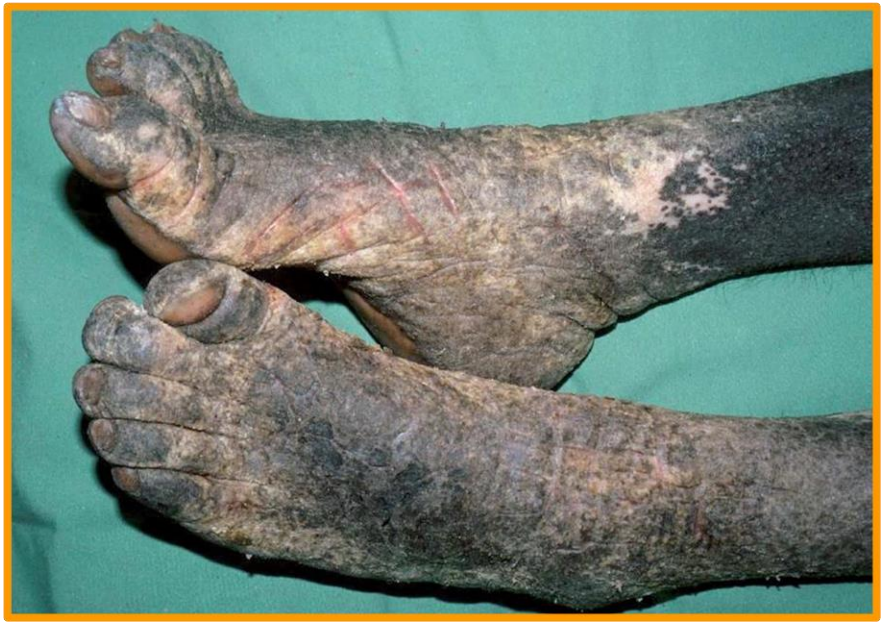
***If scabies infestation is present, consider and examine for evidence of impetigo.**

**** Follow instructions from CARPA manual**

3. Crusted Scabies

"Norwegian scabies"

- Severe form of scabies
- Skin forms scales & crusts
- Requires more extensive treatment
- Often not itchy



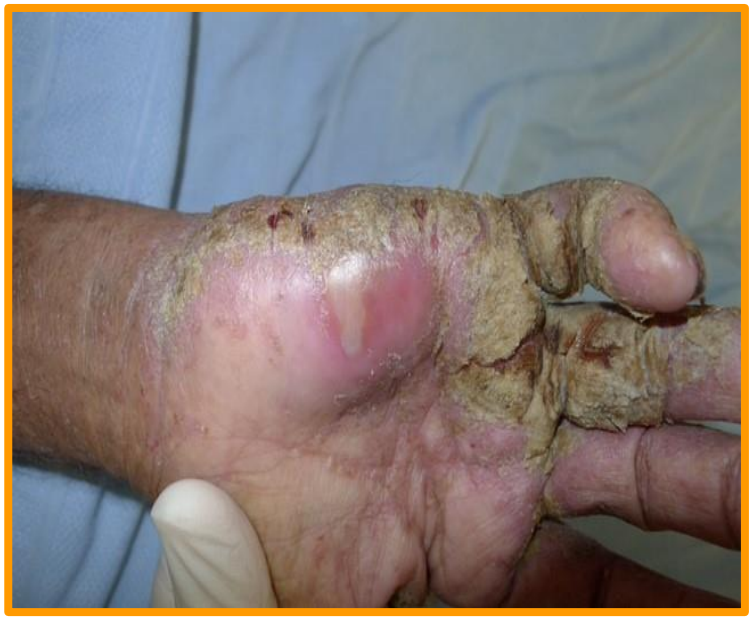
Look for

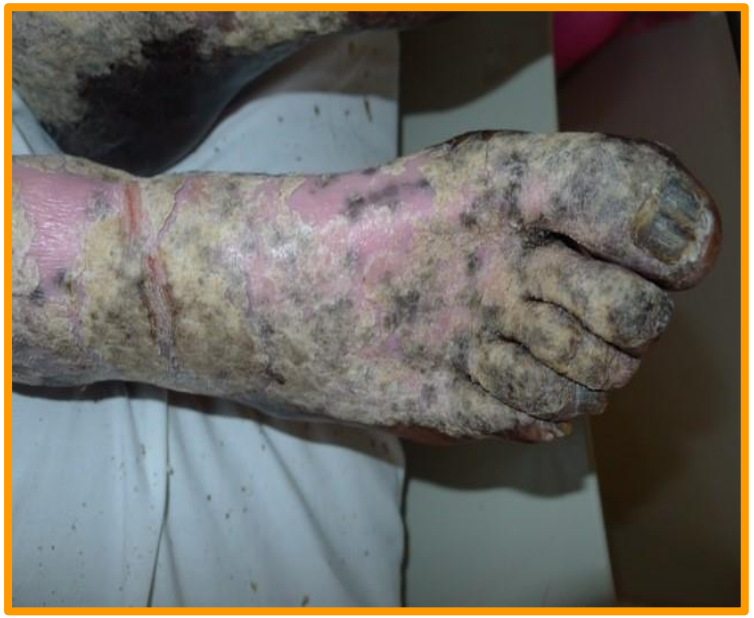
- **Patches of skin with a thick & flaky crust**
- **Area of depigmented or lighter skin**
- **Usually on hands, elbows, armpits, under breasts, buttocks & feet**
- **Different from scabies with sores (pus & crusts)**

Collect scrapings of the skin to look for scabies mites

Identify Crusted Scabies

- Crusted scabies is **highly infectious** and causes further **scabies outbreaks** in affected communities
- Treatment and control efforts are essential
- **Crusted scabies is notifiable in the NT**





If crusted scabies is present, check for impetigo and treat.

Crusted Scabies Grading Scale

Table 5.

Category	Description	Score
A. Distribution & extent of crusting	Wrists, web spaces, feet only *OR* <10% total body surface area (TBSA)	1
	As above + forearms, lower legs, buttocks, trunk *OR* 10-30% TBSA	2
	As above + scalp *OR* >30% TBSA	3
B. Crusting/ shedding	Mild crusting (<5mm deep); minimal skin shedding	1
	Moderate crusting (5-10mm deep); moderate skin shedding	2
	Severe crusting (>10mm deep); profuse skin shedding	3
C. Past episodes of crusted scabies	Never had it before	1
	1-3 prior hospitalisations *OR* depigmentation of elbows and/or knees	2
	≥4 prior hospitalisations *OR* depigmentation as above and/or legs/back *OR* residual skin thickening or scaly skin	3
D. Skin condition	No cracking or pus	1
	Any of- multiple pustules, weeping sores, superficial skin cracking	2
	Deep skin cracking with bleeding, widespread pus	3

Grade 1 = 4-6	Grade 2 = 7-9	Grade 3 = 10-12		Total	

Grading scale can be helpful in discussing and referring patients to the doctor.

Treat Crusted Scabies

Call a doctor to discuss crusted scabies

1. **Oral ivermectin** with **topical keratolytics** and **topical antiparasitic** treatment
2. Intensive supportive treatment is required for patients
3. Coordinated case management may be of benefit

Treat Crusted Scabies

Give tablet **ivermectin** 200mcg/kg once daily at **days 1, 2 & 8** with food/milk

PLUS

- Apply **Calmurid** (10% urea, 5% lactic acid in moisturizing cream) every second day to soften skin.
- On alternate days **5% Permerthrin cream (Lyclear)** OR **25% Benzyl benzoate** after bathing for **one week**, then reduce to 2-3 times a week until the skin is clear.

Call a doctor to discuss crusted scabies

Practice Points

- Crusted scabies may need hospital admission: contact paediatrician or doctor for advice
- Ivermectin **may be indicated in children <15kg** if crusted scabies is confirmed

AVOID ivermectin in pregnant females or in **breastfeeding mothers** whose child is < 1 week old

Treat Crusted Scabies

Weight band dosing for oral ivermectin* (200mcg/kg)

Table 6.

Weight band	Dose 1 tablet contains 3 mg of ivermectin
15 – < 25 kg	**1 tablet** (3 mg)
25 – < 35 kg	**2 tablets** (6 mg)
35 – < 55 kg	**3 tablets** (9 mg)
55 – < 65 kg	**4 tablets** (12 mg)
65 – < 80 kg	**5 tablets** (15 mg)
≥ 80 kg	**6 tablets** (18 mg) or **200 mcg/kg** (rounded up to the nearest 3 mg)

***Oral ivermectin cannot be used in children less than 5 years of age or under 15 kg, and in pregnant or breastfeeding women.**

Crusted Scabies Follow-Up

Refer to a doctor as soon as possible

Treat **person with crusted scabies** with **oral ivermectin** on **days 1, 2 & 8** (plus topical keratolytics and topical antiparasitics)

Treat **all others in the household** for scabies with **topical Permethrin 5%.** Repeat in 1 week.

Review regularly until crusts resolve and skin is in good condition

Prevent Crusted Scabies

- **Break the cycle of transmission:** Keep individuals scabies free & in a scabies free environment
- **Prompt treatment** of scabies prevents further transmission

Maintain scabies free households

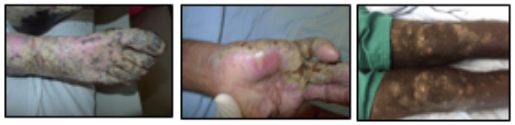
CRUSTED SCABIES ALGORITHM

Identify

Diagnose crusted scabies clinically*
Grade according to 'One Disease' Severity Grade
Grade 1: follow algorithm; Grade 2 & 3 require hospitalisation

Call a doctor to discuss crusted scabies

Confirmed with skin scrapings?



Grade 1

Yes

No

Treat

Oral ivermectin, single dose repeated on day 1, 2 and 8 (see Table 6 for dosing)

PLUS topical antiparasitic** (permethrin or benzyl benzoate) every second day for the first week then twice per week until cure

PLUS keratolytics** (lactic acid or urea) on days when not using scabicide cream

May not be crusted scabies

Consider:

- severe scabies with secondary bacterial infection
- tinea
- psoriasis
- eczema
- dermatitis
- crusted school sores

Treatment success?

Yes

No

Medical consult required

Prevent

Household, community and environmental control measures

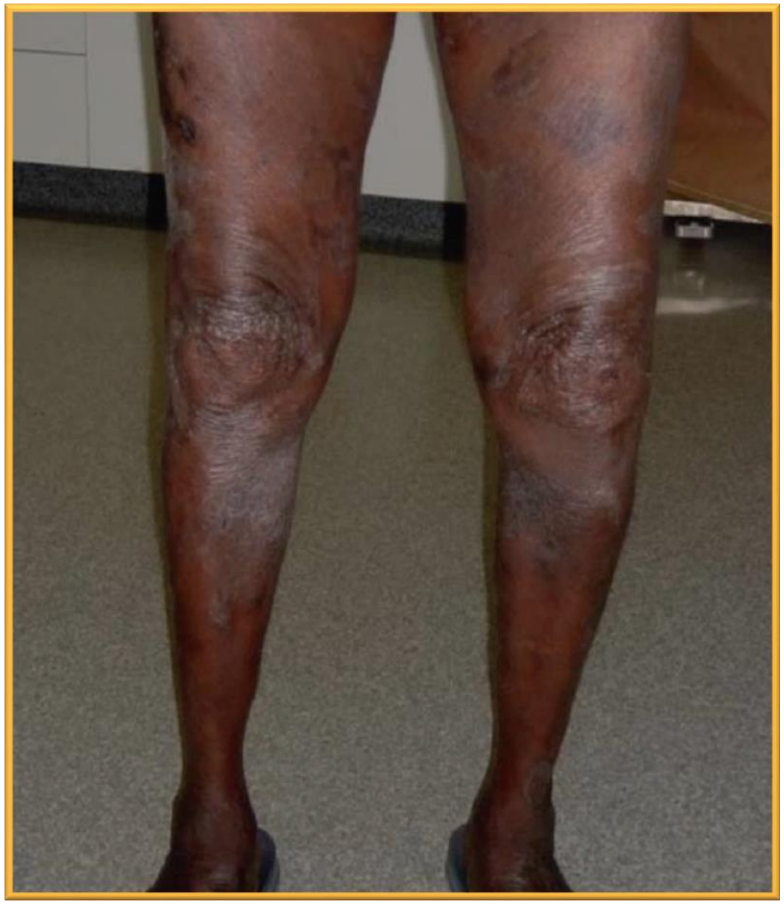
Oral Ivermectin **CAN NOT** be used in children under 5 years or when pregnant/breastfeeding

*If crusted scabies is present, consider and examine for evidence of impetigo.

**Follow instructions from CARPA manual

4. Tinea "Ringworm"

- Common fungal infection of the skin, scalp & nails
- Mainly spread between people
- Lasts a long time without treatment

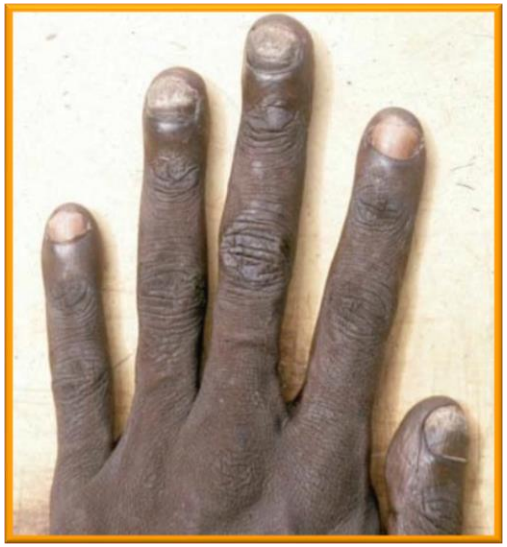


Look for

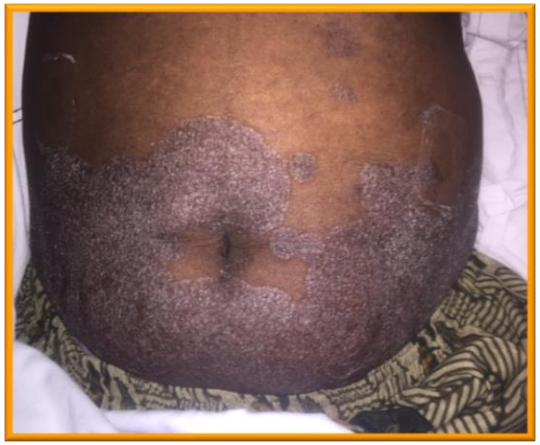
- **Scaly, well-defined patches on skin**
- **Often the skin is darker & tougher**
- **Any area of the body can be affected**
- **Thickened, broken white or yellow nails**

Identify **Tinea**

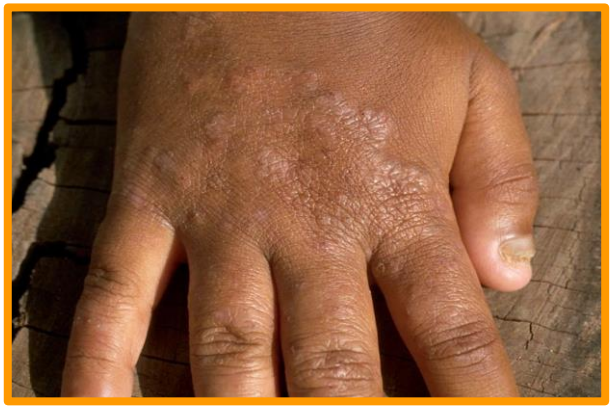
Due to the **serious consequences** if left untreated, **fungal infections** should be recognised and treated as a **high priority.**



Nail tinea



Body tinea



Hand & thumbnail tinea

Treat Tinea

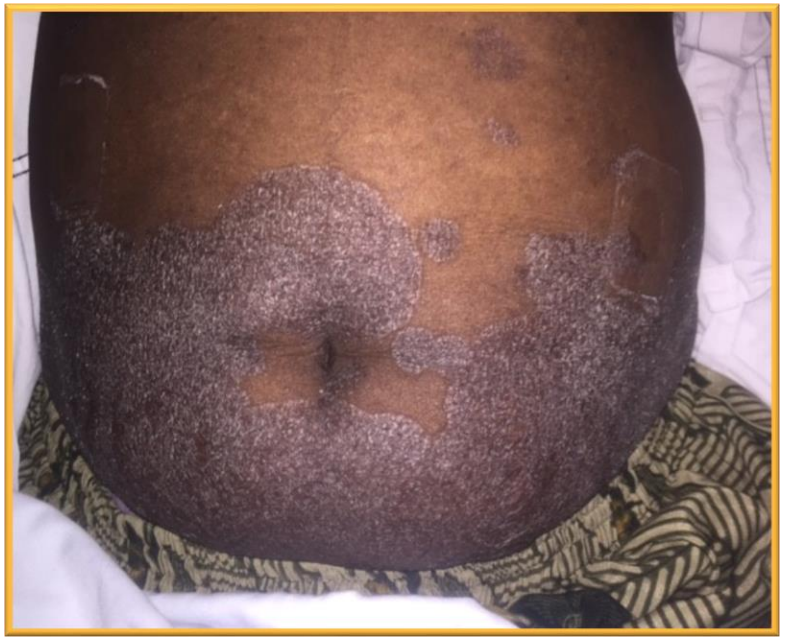
For small patches

- **Topical miconazole is recommended** over other agents
- **2% miconazole** is applied **twice daily** for 4 to 6 weeks (including 2 weeks after the rash has completely disappeared)

OR

For widespread rash

- **Oral terbinafine*** is given once daily for 2 weeks

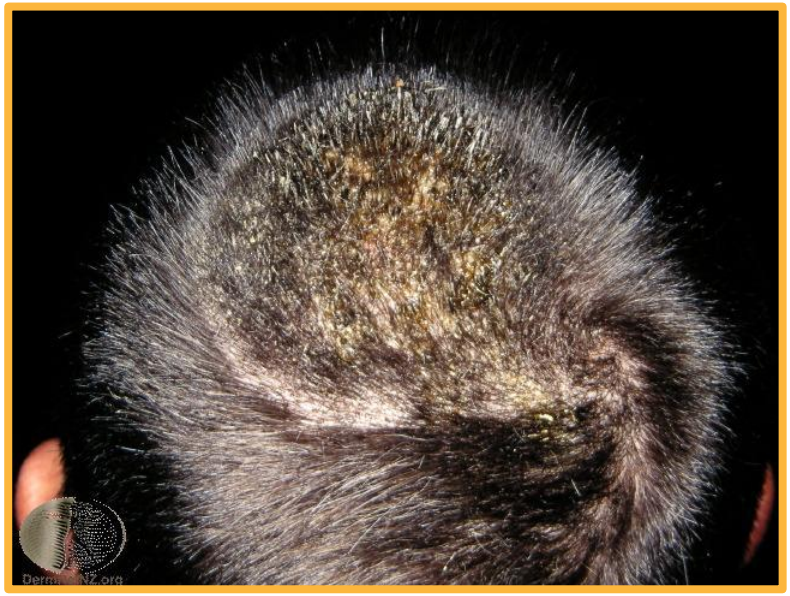


Body tinea

- Take skin scraping to confirm the diagnosis
- Discuss treatment with oral terbinafine with a doctor

***See Table 7 for weight-band dosing.**

Treat Tinea



Scalp Tinea (Image courtesy of DermNet NZ) https://creativecommons.org/licenses/by-nc-nd/3.0/nz/legalcode

- Take hair sample to confirm the diagnosis
- Discuss treatment with oral terbinafine with a doctor

☑ Tinea of the scalp

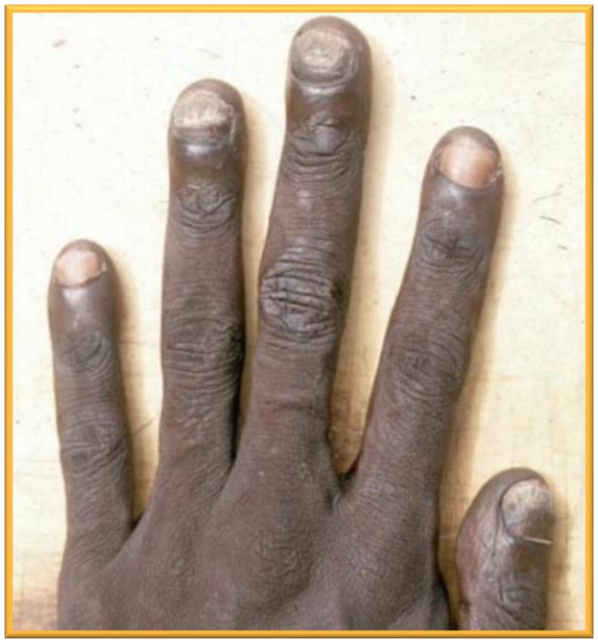
- **Oral terbinafine***, once a day for 4 weeks
- **Oral griseofulvin** or **oral fluconazole**, if available, are also appropriate
- **Antifungal shampoo e.g. ketoconazole** in conjunction with oral treatment may limit the spread scalp ringworm

***See Table 7 for weight-band dosing.**

Treat Tinea

☑ Nail tinea

- **Oral terbinafine*** once daily for 4-6 weeks (fingernails) or 12 weeks (toenails)



Nail tinea

- Take nail cutting to confirm the diagnosis
- Discuss treatment with oral terbinafine with a doctor

***See Table 7 for weight-band dosing.**

Dosing for oral terbinafine*

Table 7.

Weight band	**Dose** 1 tablet contains 250 mg of terbinafine
10 – < 20 kg	**¼ tablet** (62.5 mg)
20 – < 40 kg	**½ tablet** (125 mg)
≥ 41 kg	**1 tablet** (250 mg)

***If possible, wait until after pregnancy and breastfeeding before treating.**

Box 2.

Precautions for oral terbinafine

Serious side effects can develop after 4 weeks of treatment:

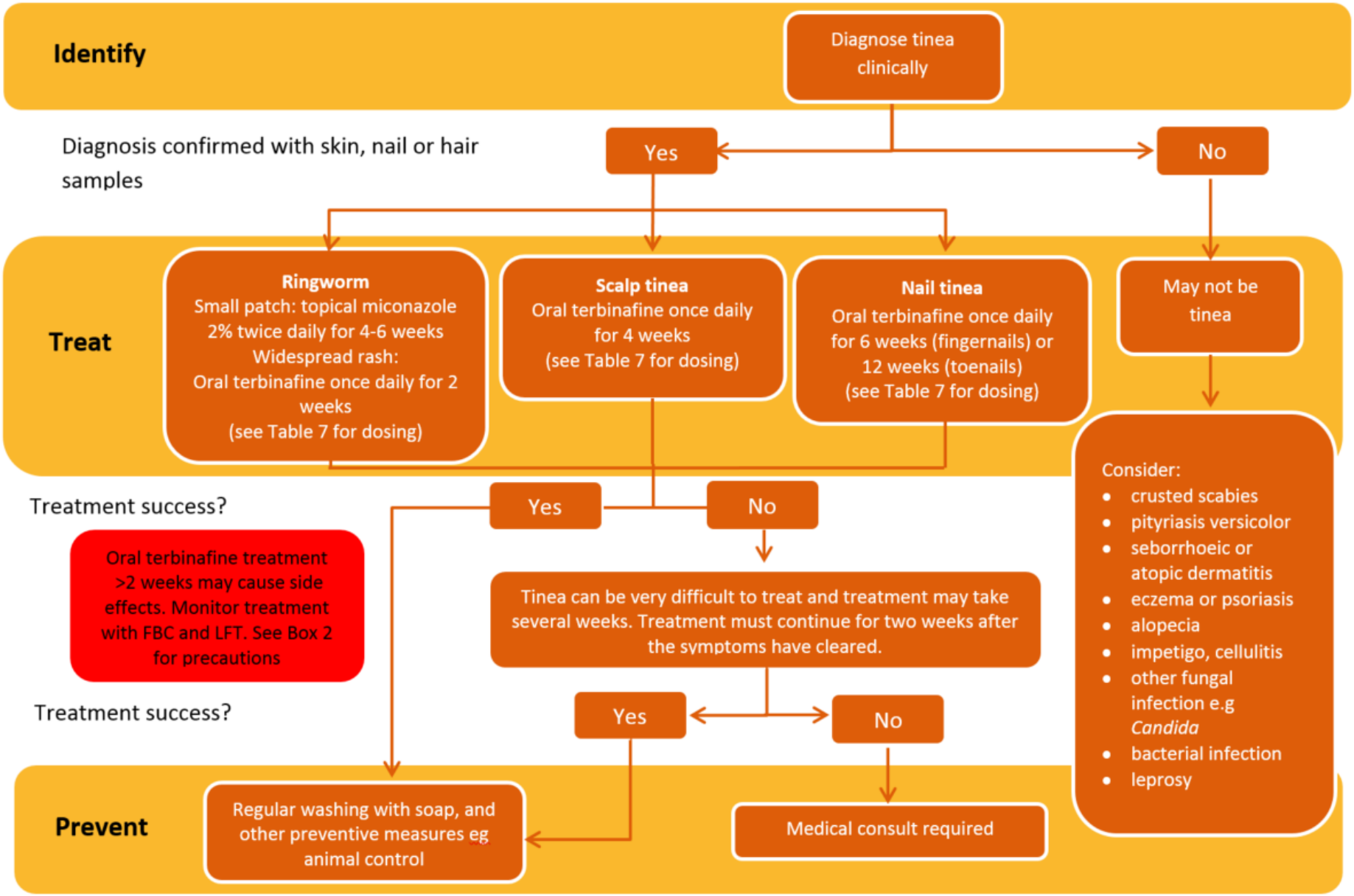
Treatment lasting > 2 weeks needs medical supervision and blood testing.

Individual Factors	Action
• > 40 years-old • Acute or chronic liver disease • Kidney disease • High alcohol consumption	Check LFT and FBC before treatment • If LFTs abnormal – retest after 2 weeks of treatment • If LFTs worsen – consider giving half usual dose • Retest LFTs and FBC again after another 2 weeks
Adult with no risk factors	Check LFTs and FBC after 2 weeks and then after every 4 weeks of treatment
Child on treatment >6 weeks	Check LFTs and FBC at 4 weeks
If symptoms of **low white cell count** or **liver toxicity** (i.e. fever, nausea, jaundice, abdominal pain, sore throat)	**Cease medication and check LFTs and FBC**

Prevent Tinea

- Soap is recommended as a preventative measure against tinea
- Prompt treatment of tinea prevents further transmission
- Check other family members for tinea

TINEA ALGORITHM



5. Maintaining Healthy Skin

Clean

- **Clean hands with soap & water**
- Bathe/wash children every day

Other suggestions for **maintaining healthy skin**:

Home

- Consider a **referral to environmental health** if available
- **Wash towels, clothes** & **bedding** regularly & dry in sun

Care

- **Moisturise** dry, cracked skin
- **Cover skin sores** from dirt or being scratched
- Apply **bush medicines**

Check

- If skin is not improving after a day or two, advise to **return to clinic**

Strong, Healthy Skin

Strong, Healthy Skin

Contact Details

skinhealthresearch@telethonkids.org.au

TELETHON KIDS INSTITUTE
Discover. Prevent. Cure.

WESFARMERS
CENTRE OF VACCINES
& INFECTIOUS DISEASES

menzies
school of health research

HOT NORTH
Improving Health Outcomes in the Tropical North