1. Purpose of guideline

To provide a standardised best practice approach to the diagnosis, treatment, management and prevention of scabies in Age-related residential care.

2. Definitions

Scabies is a contagious inflammatory disease of the skin that is primarily caused by the female scabies mite *Sarcoptes scabiei*. It is characterised by an intensely itchy skin rash that is an allergic reaction to the trail of debris, faeces and saliva deposited in the stratum corneum (just under the skin) by the scabies mite.

Scabies is not a result of poor hygiene, however it is often associated with overcrowding or close contact living environments such as prisons, schools, community homes and aged residential care (ARC) facilities.

Scabies mite (*Sarcoptes scabiei*)

- *Sarcoptes scabiei* is specific to humans (ARC facility animals are not a scabies infestation risk) and at 0.3mm long it is barely visible to the naked eye. It is prevalent in New Zealand and has been enjoying human company for at least 2500 years.
- Following a single fertilisation after which the male dies, the female mite burrows into the skin, often in protected areas such as skin folds between fingers, feeds off skin cells and lays two to three eggs daily for the rest of her life (1 to 2 months). It takes the fertilised female approximately 1 hour to submerge below the skin and she can burrow along under the skin at a rate of up to 5mm per day. Eggs take 2 to 4 days to hatch and larva take 7 to 9 days to mature, during which time they sit on the skin or make temporary burrows around hair follicles.
- The female can walk quite rapidly on warm skin (2.5 cm per minute) or almost from human head to toe in one hour, so burrows are found in many regions of the body.

Types of scabies

All scabies types are caused by the same mite *Sarcoptes scabiei.* However the clinical presentation that results from infestation with the scabies mite is dependant on the host's immune system response. Scabies is classified by the skin reaction it causes. Types of scabies include classical, nodular, crusted (AKA hyper-infestation and/or Norwegian scabies) and complicated.

- **Classical scabies:**
  Presents with small numbers of burrows on hands and wrists, associated with papular rash on trunk and limbs that is intensely itchy, worse at night and often after a hot shower/bath. The itch is due to variable hypersensitivity reaction to the mite, its eggs and faeces.

- **Nodular scabies:**
  Includes clusters of persistent itchy 5-15mm firm nodules in armpits, groin and genital areas.

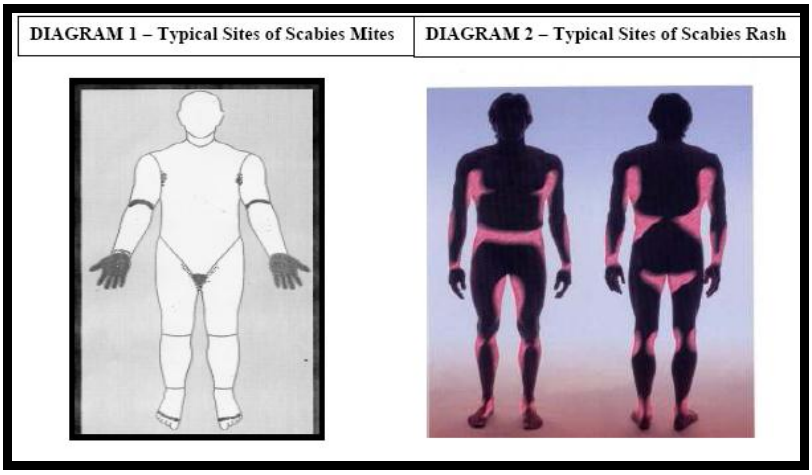
- **Crusted scabies**
  This form of scabies most commonly occurs in older, immune-compromised or institutionalised people. In this case there may be numerous scabies mite burrows, which cause thick scaling (hyperkeratosis) or crusts that resembles psoriasis, often located on the palms, in the finger webs, under finger nails and on the soles of the feet. There may be thousands or even millions of mites in the crusts making this type of scabies easily transmissible. The typical intense itch of classical scabies is often mild or even absent leading to delayed or missed diagnosis and outbreaks of the disease.

- **Complicated scabies**
  Scabies associated with impetigo, urticaria, cellulitis, dermatitis, pyeloenephritis, abscesses, pneumonia, septicaemia and other secondary diseases.

3. Diagnosis[(1)]

- In frail older adults living in ARC facilities scabies infestations spread quickly and outbreaks are difficult to manage so maintaining a high index of suspicion for scabies is vital. Any rash affecting more than one person (residents or staff) should be considered scabies until proven otherwise.
- The diagnosis of scabies is made clinically; skin scrapings are not recommended in classic scabies as they often produce a false negative and facilitate outbreaks.[(1)] However, scrapings of crusted scabies easily reveal the cause of the scaling.
- There is usually a history of an intense itchy rash on the trunk, limbs, or hands, which is worse when hot (at night or after a shower or bath). Due to the itch, the skin is often scratched, and secondary infections and eczema can be present.
- The history of a rash affecting more than one person in ARC is so critical to accurate diagnosis that the general practitioner (GP) must be informed if there is more than one person with symptoms, even if that person is not under the care of that particular GP.
- A confident clinical diagnosis can be made if burrows are identified on the wrists, finger web spaces and/or sides and soles of feet. Scabies burrows are best seen under magnification (dermoscopy) through which burrows ending with tiny grey triangles (the mites) can be seen. Burrows can be difficult to identify if the skin has been scratched, is infected or if eczema is present.[(1)]
- Scabies hypersensitivity rash typically affects trunk and limbs especially forearms and waist. It is often polymorphic with scattered erythematous papules (red bumps), pustules and urticated plaques (hive-like). Folliculitis (pimples), impetigo (sores) and eczema (dry or blistered patches) are common in persistent cases. Longstanding infestation leads to clusters of larger nodules in armpits and groins.
- Residents with long standing skin conditions are not immune to scabies infestation; do not assume these residents are free of infestation.
- While itch is an important diagnostic criterion it is important to note that there is a variable time delay between infestation and the development of itch. For sensitised people, who have had a previous exposure to scabies, the itch develops within hours of infestation, but in people with no previous exposure this can take several weeks. Remember the itch may be absent in crusted scabies.
- Review by a dermatologist is recommended if there is any doubt of the diagnosis, either directly or via the GP. This may entail referral to a clinic or requesting a site visit.
- Population Health units are available to give advice on the investigation and management of cases and contacts. They do not diagnose or prescribe treatment options.

3.1 Diagnosis pictorial support



- **Classical Scabies**

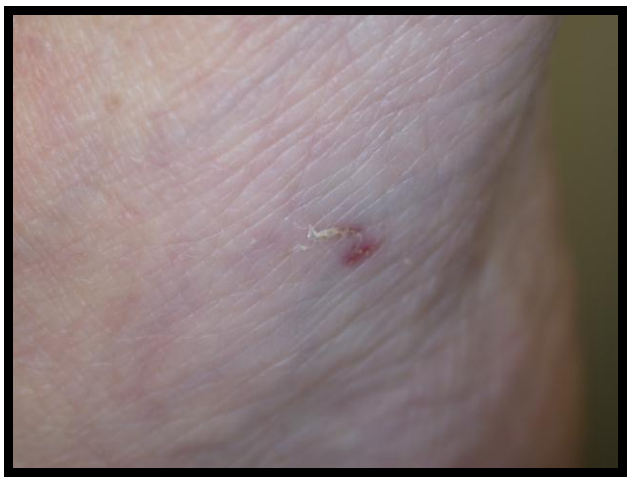


Fig 1- Classical single scabies burrow

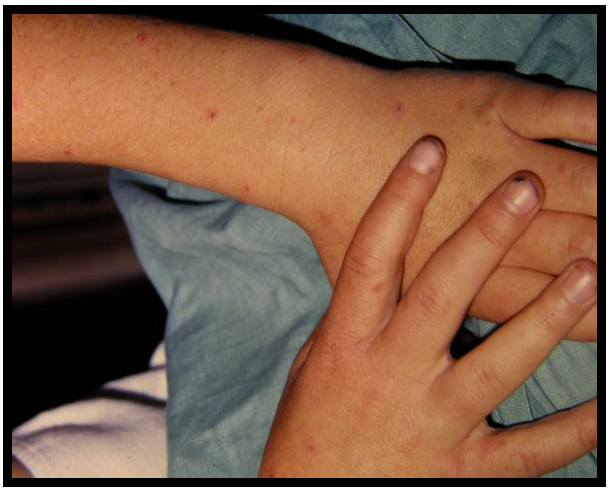


Fig 2 - Classical Scabies in staff. Small excoriations on forearms and hands are typical of scabies in a staff member

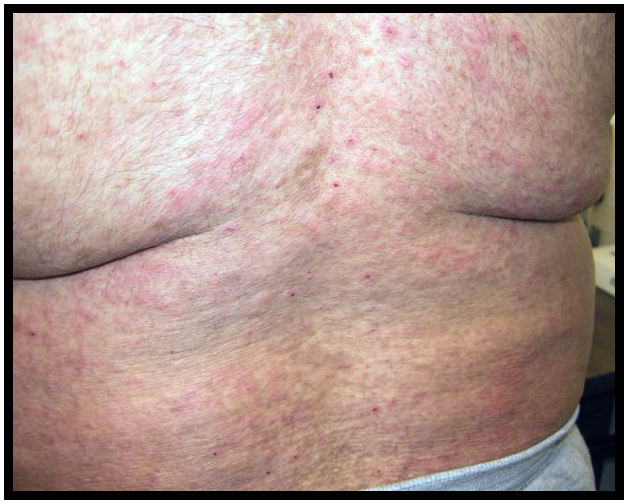


Fig 3 - Polymorphous rash - papules, hive-like plaques, scratch marks in classical scabies

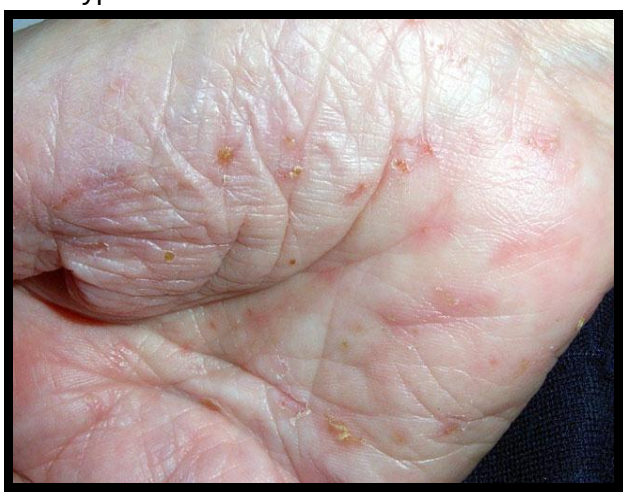


Fig 4 Extensive burrows in classical scabies (late diagnosis)

- **Crusted Scabies**

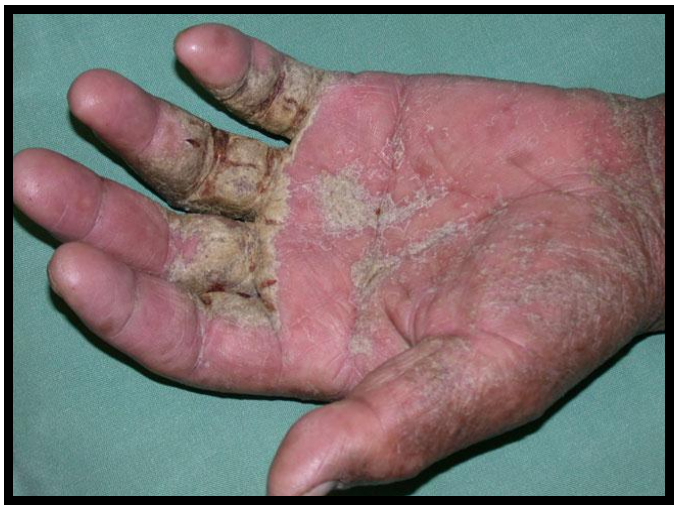


Fig 4 - Thick crusting in Crusted Scabies

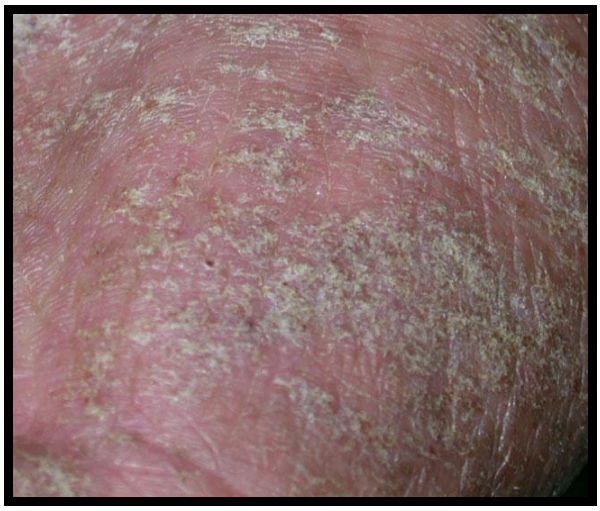


Fig 5 - Numerous scaly burrows - Crusted Scabies

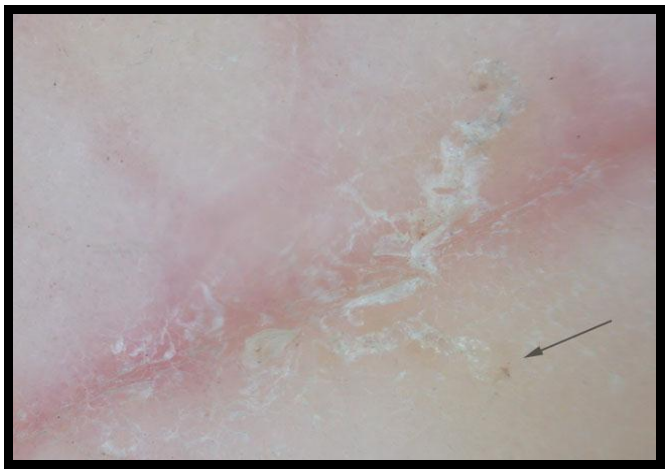


Fig 6 – (left) Dermoscopy view of burrows in Crusted Scabies

Scabies mite, darker triangular shape at far end of burrow.

- **Nodular Scabies**

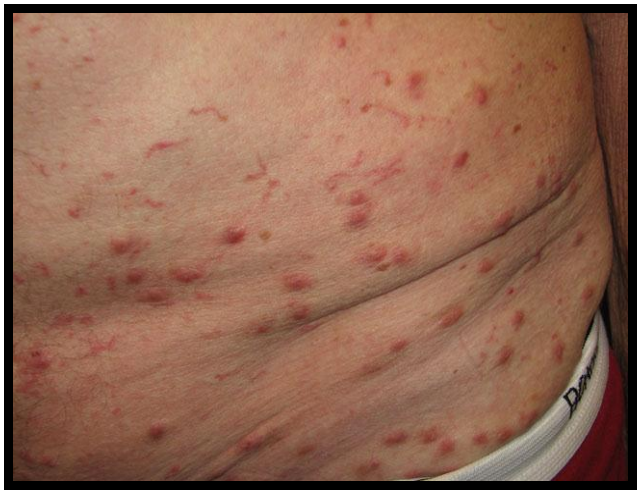


Fig 7 - Persistent scabies nodules, these are often seen best in the groin

- **Complicated (Infected) Scabies**

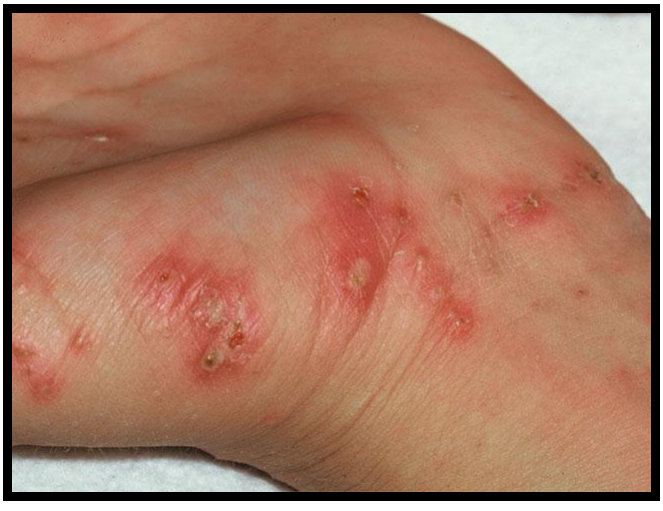


Fig 8 - Pustules indicate infected scabies burrows

Photographs accessed from DermNetNZ.org with permission [2]

4 Treatment options

- **Classical scabies** – healthy mobile individuals

  It is recommended that **classical scabies** in healthy, mobile individuals is treated topically with 5% permethrin lotion or cream (two doses one to two weeks apart). Systemic treatment with ivermectin* may be considered to manage the shear logistics of applying topical treatment to multiple residents.

- **Classical scabies** - debilitated, bed-bound or immobile resident:

  It is recommended that **classical scabies** in debilitated bed-bound or immobile residents is treated with oral ivermectin; 200 mcg/kg (two doses one to two weeks apart). Topical treatment with 5% permethrin is an option, but treatment failure is common.

- **Crusted scabies**

  It is recommended that **crusted scabies** is treated with oral ivermectin; 200 mcg/kg. Successful treatment of crusted scabies can require two to four doses of ivermectin (each one to two weeks apart), plus topical 5% permethrin all over (weekly) and to crusted areas (daily) and 6% salicylic acid ointment applied to crusted areas (daily).

5 Extent of treatment [6]

- The extent of the scabies treatment needed in ARC facilities depends on the number and location of residents and staff affected by scabies. Scabies treatment may be contained to one unit of a facility (e.g. dementia unit) provided staff and residents do not routinely move between units. If staff and/or residents routinely move between units to the whole facility must be considered potentially contaminated.
- Due to the variable incubation period, treatment of scabies always includes simultaneous treatment of close contacts of affected individuals. Carefully consider whether to treat close contacts of asymptomatic staff or visitors.
- Due to scabicides being ineffective against eggs, treatment is considered to be at least two treatments with anti-scabies medication (i.e. ivermectin and/or permetherin) one to two weeks apart, this includes asymptomatic close contacts.
- Close contacts are defined as people providing direct personal care (staff and others), regular visitors who usually touch residents, intimate contacts and co-habitants; this includes intimate relationships between residents.
- The discovery of scabies in any resident or staff member necessitates the checking of skin of all residents, staff and visitors at least of that unit (see flow chart)

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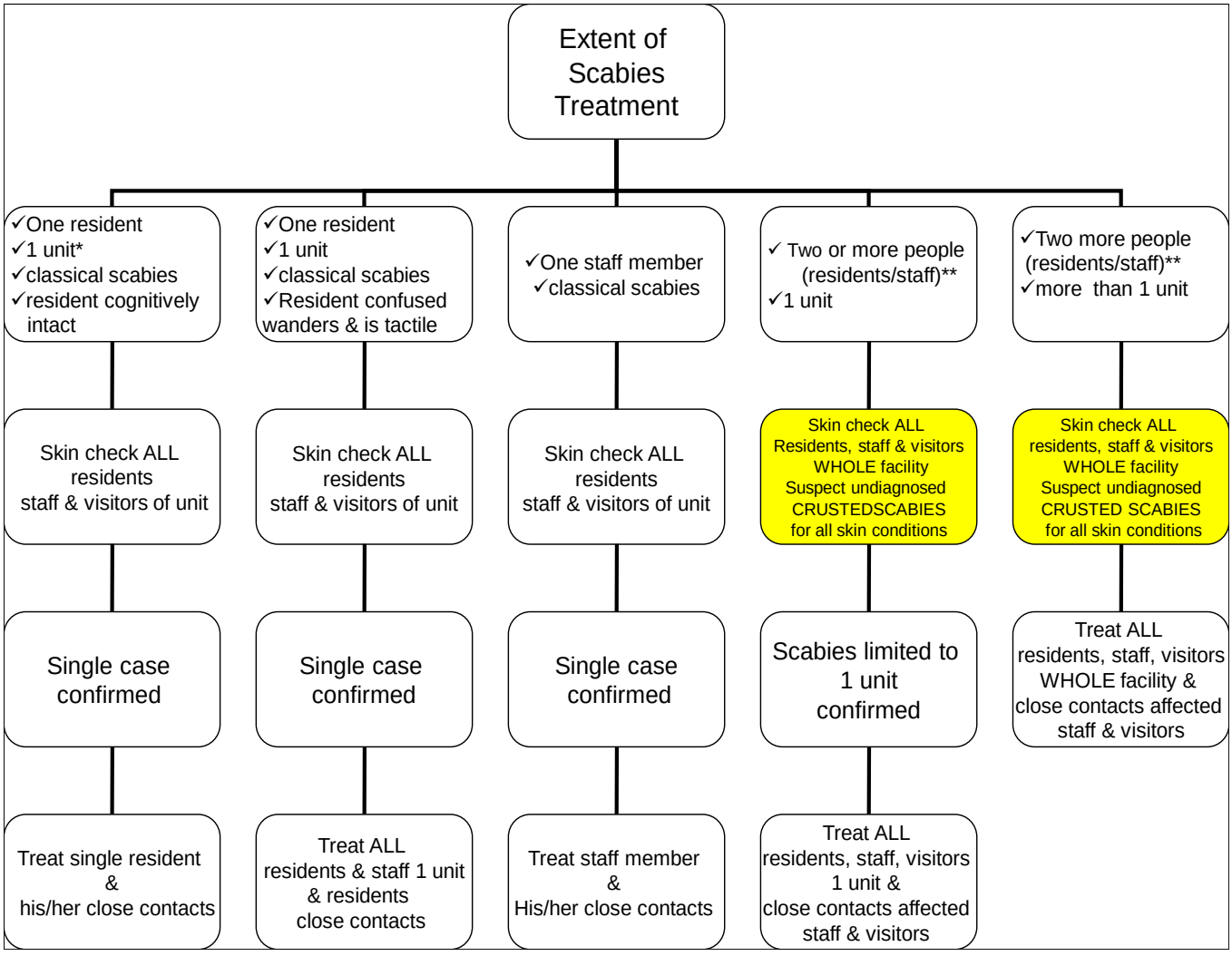
*__ivermectin__ is subsidised via special authority form **SA1225** the full conditions of the application are on the form. It is a prerequisite that the applying clinician has discussed the diagnosis of scabies with a dermatologist, infectious disease physician or clinical microbiologist
http://www.pharmac.govt.nz/2014/04/01/SA1225.pdf

6 Co-ordination of treatment

Co-ordination of treatment and environmental decontamination is the key to the successful eradication of scabies from an ARC facility. Communication with, and the cooperation of, the whole team (family, visitors, residents, staff, GP, laundry and cleaning services, pharmacy) and the development of a plan of action is essential, even if this delays treatment for a few days

Extent of treatment flow chart



* A “unit” is a discrete building/wing/section of a residential care facility that has staff and residents separate from the rest of the facility.

** If two or more people are suspected of having a scabies infestation it is recommended that support with diagnosis and treatment regimes are accessed from a dermatology specialist and contact tracing support is accessed via population health.

ACTION	RATIONALE
1. Treatment	
Treat all affected residents/staff/close contacts on the same day (24 hour period). Staff on duty should treat themselves after treating residents and decontaminating the environment.	To avoid risk of re-infestation and treatment failure
Staff off duty and affected visitors, friends/families should treat themselves prior returning to the facility	To prevent inadvertent re-infestation of themselves during resident and environment decontamination
Advice regarding investigation and management of cases and contacts is available from Population Health Units.	
Treatment for scabies infestation is generally prescribed by the general practitioner (GP) however lotions and creams can be purchased over the counter	Involving the primary care giver (GP) ensures medication safety.
2. 5% permethrin lotion or cream is applied to the whole body including the **scalp, neck, face** and **ears**. Take particular care to ensure permethrin is applied to the webs of the fingers and toes and under finger and toe nails (use a nail brush as necessary), in the umbilicus, to the genitals and other skin folds[7].	These are areas of particular infestation
NOTE: For bed bound frail residents pay particular attention to the scalp, face and neck.	Frail older adults experience infestation in the scalp/head.
Wash off the lotion or cream after at least 8 hours (up to 14 hours).	Permethrin is an insecticide and needs prolonged contact to be effective.
If areas (eg hands or bottom) are washed during this time, re-apply the lotion or cream. After this time remove via usual personal care methods.	
Repeat this treatment in one to two weeks	Permethrin is effective against mites, but not eggs. Treatment is repeated to kill any hatchlings and to cover any areas of skin inadvertently missed during application one.

3. If treating with ivermectin (Stromectol™)† the dose is calculated by resident weight (200 micrograms per kilogram) and rounded up to available tablet size (it is supplied as 3 mg tablets) dependent on resident weight Kilograms / tablets 25 – 35 / 2 36 - 50 / 3 51 - 65 / 4 66 – 79 / 5 This dose is repeated in one to two weeks. It may be necessary to repeat the dose up to four times for crusted scabies under the direction of a dermatologist.	Repeated doses 1 week apart have a 98% cure rate. The cure rate of a single dose is as low as 70% in immuno-compromised patients. Ivermectin is effective against mites not eggs. Treatment is repeated to kill hatchlings. The shear volume of mites in crusted scabies can reduce the effectiveness of ivermectin
4. Severe crusted scabies warrants the combined use of ivermectin (2-4 doses), 5% permethrin (to entire body once a week and daily to crusted plaques) and 6% salicylic acid debridement of crusts (daily). This should be done under the direction of a dermatologist‡ either directly or via the GP	Crusted scabies requires aggressive treatment to successfully treat due to the large number of mites and mite protection offered by the crusted skin. This degree of treatment needs specialist review and advice
5. All residents should have a complete head to toe skin assessment one week after the second treatment. If scabies does not appear to be improving the patient(s) should be reassessed by the GP or dermatologist.	To detect unsuccessful treatment early and avoid facility re-infestation

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‡ Waikato District Health Board dermatology clinic T:07 839-8944/Fax 07 839 867 (ask to speak to dermatologist or dermatology registrar). For other dermatologist see New Zealand Dermatological Society website http://www.nzdsi.org/

6. On the morning after everyone has been treated, all bedding and towels must be stripped and hot washed (50^0C or 120^0F for at least 10 minutes) and hot dried (hottest tumble dryer setting for 20 minutes). For bedding that can not be hot washed/dried, see options below	Bedding of affected individual is the most highly contaminated area, heat kills the mite[3]
Contaminated clothing (clothing worn immediately prior to treatment and stored clothing that has been regularly handled by contaminated person) must also be decontaminated using one of the following methods • hot wash and dry as above or • dry clean or • seal in plastic bag for one week (7 days) at room temperature or • seal in plastic bag and freeze to below -20^0C for at least 12 hours [4]	In the laboratory mites have survived off host for 14 days in warm moist environments. In normal circumstances mites live up to a few days off host.[3]
7. Environmental decontamination includes: Thorough vacuuming of soft furnishings, which should be covered by plastic or a clean sheet during treatment and for 7 days afterward. Thorough vacuuming of carpets. Wiping down hard surfaces with a solution of detergent and water. Decontamination of curtains that have been regularly handled by residents with crusted scabies (as per clothing above). Cleaning items used by multiple residents (walking belts, wheelchairs, blood pressure cuff) after treatment. Sealing cosmetics in plastic bag for 2 weeks at room temperature. Note: Spraying with pesticide sprays or fogs is unnecessary and is discouraged.[1]	In the laboratory mites have survived off host for 14 days in warm moist environments. In normal circumstances mites live up to a few days off host.[3] Items that have been regularly handled are more likely to be contaminated

8. **Infection control precautions**; the scabies mite is transmitted by direct skin to skin contact with an infested person or contaminated surface. In addition to standard precautions (hand hygiene) contact precautions are recommended, particularly with in the event of crusted scabies. **Direct care staff** should wear disposable gloves and long sleeved impervious gowns when: • providing personal care for a person with scabies • handling potentially contaminated clothing, linen and equipment of the person with scabies • this should continue until the resident is successfully treated [5] **Laundry staff:** ideally contaminated linen should be sealed in dissolvable laundry bags and be placed in washing machines without opening. If this is not possible laundry staff must wear disposable gloves and long sleeved impervious gowns when handling contaminated linen. **Visitors:** it is ideal to limit visitors during treatment but if that is not possible, visitors should also use contact precautions (disposable gloves and hand washing) when visiting residents with crusted scabies.[5] **Isolation:** it is recommended that residents with crusted scabies are isolated to their room until at least after the second treatment with ivermectin [5]	
9. Surveillance It is recommended that a scabies outbreak log is kept during the whole treatment period (includes identification, treatment and follow up period) example log appendix For individual residents accurately document the progress of the rash and itch at least weekly following treatment; itching can persist for several weeks following successful treatment. Pruritus (itch) is likely to need active treatment. Anti-histamines, emollients and/or steroid creams can be useful; discuss this with the resident's GP Secondary bacterial infections (usually streptococci and/or staphylococci) need treating with oral antibiotics (commonly oral flucloxacillin for seven days). Itch that persists beyond six weeks (particularly if of increasing intensity) can indicate treatment failure and needs reassessment.	The itch or rash associated with scabies can persist for weeks after treatment. Treatment failure in an individual can re-infest a facility Symptomatic treatment reduces the chance of secondary infection, behavioural disturbance and aids sleep. Untreated secondary infections can lead to cellulitis, pyelonephritis, internal abscesses, pneumonia, septicaemia and ultimately death.

10. Prevention	
Isolate and screen all incoming residents (new residents, returning residents and residents from other ARC facilities).	Resident movement is the most common route of transmission.
Screening consists of a full skin check completed by a nurse and GP or dermatologist, it is recommended that this occurs within 24 hours of arrival.	Scabies is common, transfers quickly in ARC and is hard to eradicate.
Contact precautions are recommended until the skin check is completed.	. Avoid a potential outbreak of scabies
Where isolation is not possible (eg cognitively impaired residents) a skin check is still necessary to predict risk to other residents.	
Document and obtain a medical diagnosis of any rash. Do not treat symptoms (i.e. itch) without obtaining a diagnosis.	Treatments that mask itch in scabies risk provoking an outbreak of scabies.
Share information; notify originating and receiving facilities if you discover scabies in your facility and/or transferring resident [3].	The identification and active treatment of scabies is evidence of high quality care.
Maintain a high index of suspicion for scabies at all times; in residential care itchy, scratched rashes are scabies until proved otherwise.	Treatment of scabies is low-risk compared to the risk of miss-diagnosis
Have a low threshold for treating scabies	
11. Staff education	
Education of staff includes what causes scabies, their role in identification of potential scabies, infection control principles, talking to families/visitors about scabies. Resources to assist this process include; this guideline and the Waikato Scabies flip chart	Fully informed staff are critical to identifying and controlling scabies infestations
12. Family/visitor information	
Families can help control the transmission of scabies if provided with the correct information. Resources to support this include Scabies from: http://www.healthed.govt.nz/uploads/docs/HE4191.pdf	It is important families and visitors understand that scabies is not a result of poor hygiene. Identification, treatment, management and prevention of scabies is an indicator of a responsible provider .

4. Evidence

Level IV

5. References

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7. Woods, DJ (editor), New Zealand Formulary [Internet]. 2012 [updated 2014 April; cited 2014 April 22]. Available from: www.nzformulary.org

Name & location	Date 1st symptoms	<u>Scabies type:</u> ☐asymptomatic contact ☐ classical ☐nodular ☐ crusted ☐complicated	Date resolved/comment
	1st scabies treatment	<u>Scabies treatment:</u> ☐ permetherin ☐ ivermectin ☐ salicylic acid	
Follow up skin review:	2nd scabies treatment	<u>Adjunct treatment:</u> ☐antihistamine oral/topical ☐antibiotic ☐steroid ☐fatty cream	*2st treatment ≥ 6 weeks ago, symptoms unresolved consider treatment failure*

Date:	**Date:**	**Date:**	**Date:**	**Date:**	**Date:**
☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust
☐ infection	☐ infection	☐ infection	☐ infection	☐ infection	☐ infection

Name & location	Date 1st symptoms	<u>Scabies type</u>: ☐asymptomatic contact ☐ classical ☐nodular ☐ crusted ☐complicated	Date resolved/comment
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Follow up skin review:	2nd scabies treatment	<u>Adjunct treatment</u>: ☐antihistamine oral/topical ☐antibiotic ☐steroid ☐fatty cream	*2st treatment ≥ 6 weeks ago, symptoms unresolved consider treatment failure*

Date:	**Date:**	**Date:**	**Date:**	**Date:**	**Date:**
☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust
☐ infection	☐ infection	☐ infection	☐ infection	☐ infection	☐ infection

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Date:	**Date:**	**Date:**	**Date:**	**Date:**	**Date:**
☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust	☐ Itch ☐ Rash ☐ Crust
☐ infection	☐ infection	☐ infection	☐ infection	☐ infection	☐ infection