Te Tāhū Hauora
Health Quality & Safety Commission

Infections in aged residential care

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Today we are talking about:

- definitions of infection for residential aged care
- the importance of infection recognition and appropriate treatment
- identification of incontinence-associated dermatitis with or without infection.

Definitions of infection for aged care

Gastrointestinal

Gastroenteritis
Must have at least one criteria:
1. Diarrhoea
2. Vomiting
3. Both sub-criteria:
   a. a stool specimen positive for a pathogen (eg, *E. coli*)
   b. *at least one sub-criteria:* nausea, vomiting, abdominal pain or tenderness +/or diarrhoea.

Norovirus
Must have both criteria:
1. diarrhoea +/or vomiting
2. stool specimen for which norovirus is detected.

Clostridium difficile
Must have both criteria:
1. diarrhoea +/or presence of toxic mega-colon
2. at least one sub-criteria:
   a. a positive stool sample for *C. difficile* toxin A or B, or a toxin-producing *C. difficile* organism is identified from a stool sample culture or by a molecular diagnostic test such as PCR
   b. pseudomembranous colitis is identified during endoscopic examination or surgery or in histo-pathologic examination of a biopsy specimen.

Diarrhoea
Three or more liquid or watery stools above what is normal for the resident within a 24-h period.

Vomiting
Two or more episodes of vomiting in a 24-h period.

Respiratory

Common cold/pharyngitis
Must have at least two criteria:
1. runny nose or sneezing
2. stuffy nose
3. sore throat/hoarseness/ dysphagia
4. dry cough
5. swollen or tender glands – neck.

Influenza
Must have both criteria:
1. fever
2. at least three sub-criteria:
   a. chills
   b. new headache or eye pain
   c. myalgia
   d. malaise or loss of appetite
   e. sore throat
   f. new or increased dry cough.

Pneumonia
Must have all criteria:
1. recent CXR showing pneumonia or new infiltrate
2. at least one resp sub-criteria
3. at least one constitutional criteria.

Lower resp tract infection
Must have all criteria:
1. no recent CXR
2. at least two resp sub-criteria
3. at least one constitutional criteria.

Resp criteria
1. Increased cough
2. Increased sputum production
3. O_2 saturation <94% on room air or a reduction of >3% from baseline
4. New or changed lung examination abnormalities
5. Pleuritic chest pain
6. Resp rate ≥25 breaths/min.

Skin/soft tissue/mucosal

Cellulitis/soft tissue wound infection
Must have both criteria:
1. pus at wound, skin or soft tissue site
2. four or more sub-criteria:
   a. heat
   b. redness
   c. swelling
   d. tenderness or pain
   e. serious discharge
   f. one constitutional criteria.

Scabies
Must have both criteria:
1. maculo-papular rash
2. at least one sub-criteria:
   a. Dr or lab confirmation
   b. epidemiologic linkage to lab-confirmed scabies.

Oral candidiasis
Must have both criteria:
1. presence of raised white patches on inflamed mucosa or plaques on oral mucosa
2. Dr or dental provider confirmation.

Fungal skin infection
Must have both criteria:
1. characteristic rash or lesions
2. Dr or lab confirmation.

Herpes simplex or zoster
Must have both criteria:
1. vesicular rash
2. Dr or lab confirmation.

Conjunctivitis
Must have one criteria:
1. pus appearing from one or both eyes, present for >24 h
2. new or increased conjunctival redness ± itching or pain for >24 h.

Systemic

Primary bloodstream infection
Must have one criteria:
1. two or more positive blood cultures (same organism)
2. a single blood culture and at least one of the following:
   a. fever
   b. hypothermia (<34.5 °C or does not register)
   c. drop in SBP of >30 mmHg from baseline
   d. worsening mental or functional status.

Unexplained febrile episode
Must have documented record of fever on two or more occasions at least 12 h apart in any 3-day period with no known infectious or non-infectious cause.

Urinary

UTI – without IDC
Must have at least one criteria:
1. acute dysuria or acute pain, swelling or tenderness of the testes, epididymis or prostate
2. fever or leukocytosis and one localised urinary tract sub-criteria.

UTI – with IDC
Must have at least one criteria:
1. fever, rigors or new-onset hypotension, with no alternate site of infection
2. either acute change in mental status or acute functional decline with no alternate diagnosis and leukocytosis
3. new-onset supra-pubic pain or costo-vertebral angle pain or tenderness
4. purulent discharge from around the catheter or acute pain, swelling or tenderness of the testes, epididymis or prostate.

Localised urinary tract criteria
1. IF fever or leukocytosis present, acute costo-vertebral angle pain or tenderness
2. Supra-pubic pain
3. Gross haematuria
4. New or marked increase in incontinence
5. New or marked increase in urgency
6. New or marked increase in frequency

Constitutional criteria

Fever
1. Single oral temperature >37.8 °C
2. Repeated oral temperatures >37.2 °C or rectal temperatures >37.5 °C

OR

3. Single temperature >1.1 °C over baseline from any site (oral, tympanic, axillary)

Leukocytosis
As according to FBE results:
1. neutrophilia (>14,000 leukocytes/mm^3)

OR

2. Left shift (>6% bands or ≥1,500 bands/mm^3)

Acute change in mental status from baseline
Must meet all criteria:
1. Acute onset
2. Fluctuating course
3. Inattention
4. Either disorganised thinking or altered level of consciousness

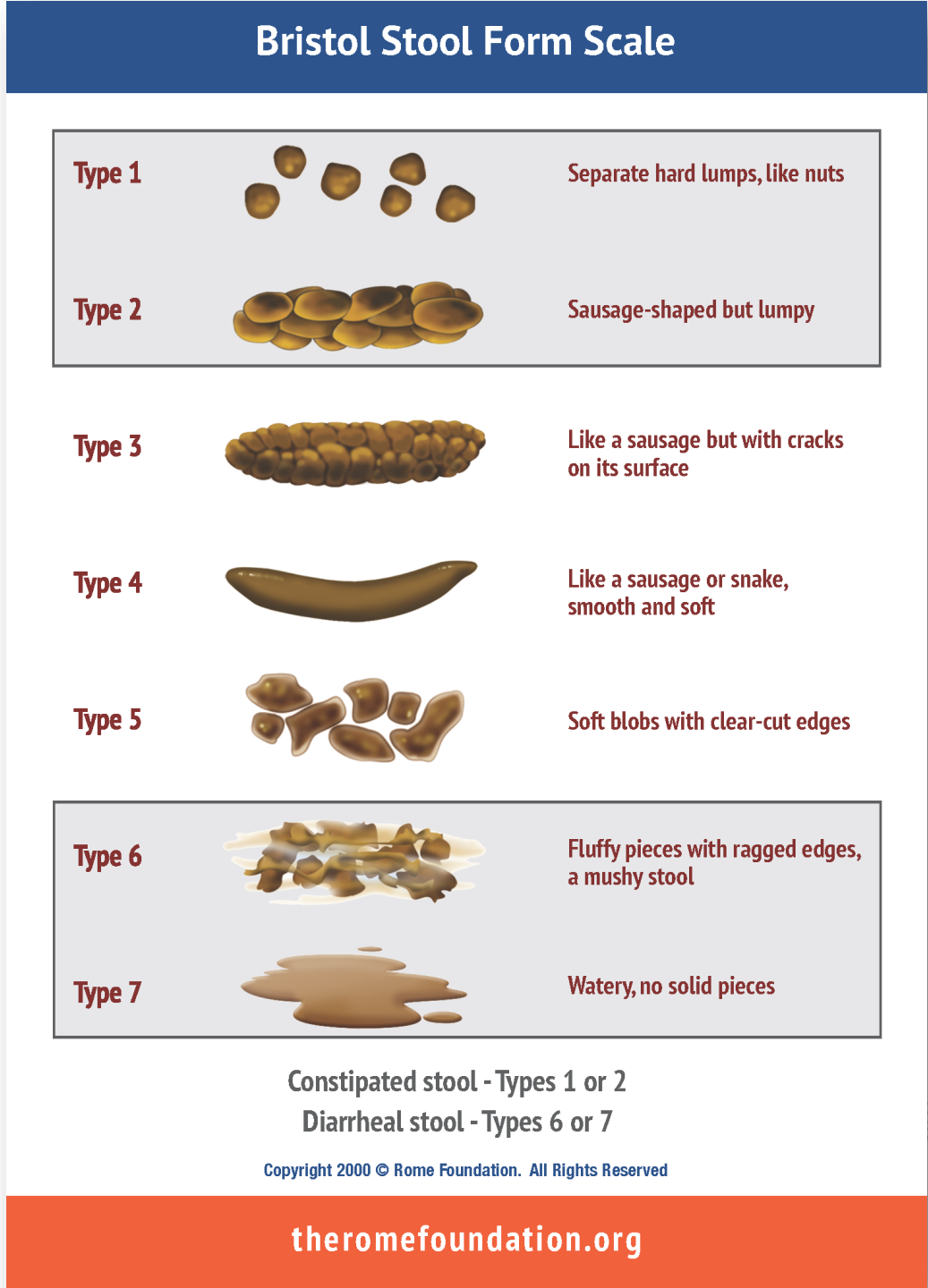
Acute functional decline
1. Increase in daily living activity score
2. Bed mobility
3. Transfer
4. Locomotion within facility
5. Dressing
6. Toilet use
7. Personal hygiene
8. Eating

Neutrophils
Common type of leukocyte.

Left shift
Increase in number of immature leukocytes in peripheral blood.

CSR = chest X-ray; FBE = full blood examination; IDC = in-dwelling catheter; lab = laboratory; PCR = polymerase chain reaction; resp = respiratory; SBP = systolic blood pressure; UTI = urinary tract infection. Informed by Stone N, et al. 2012. Surveillance definitions of infections in long-term care facilities: revisiting the McGeer criteria. *Infection Control and Hospital Epidemiology* 33(10): 965–77. DOI: 10.1086/667743.

The Bristol stool chart is a tool to help staff determine whether a resident has diarrhoea.



Australian Aged Care National Antimicrobial Prescribing Survey (AC NAPS)

Participating in AC NAPS supports aged care facilities to identify areas for improvement in:

- antimicrobial use
- preventing infections
- helping reduce antimicrobial resistance and
- helps to improve care for residents.

The infection definitions used in the survey are based on the McGeer et al. infection surveillance definitions.

AC NAPS 2020 results

823 aged care facilities participated:

- 725 aged care homes
- 98 multipurpose services
- 46,922 residents surveyed

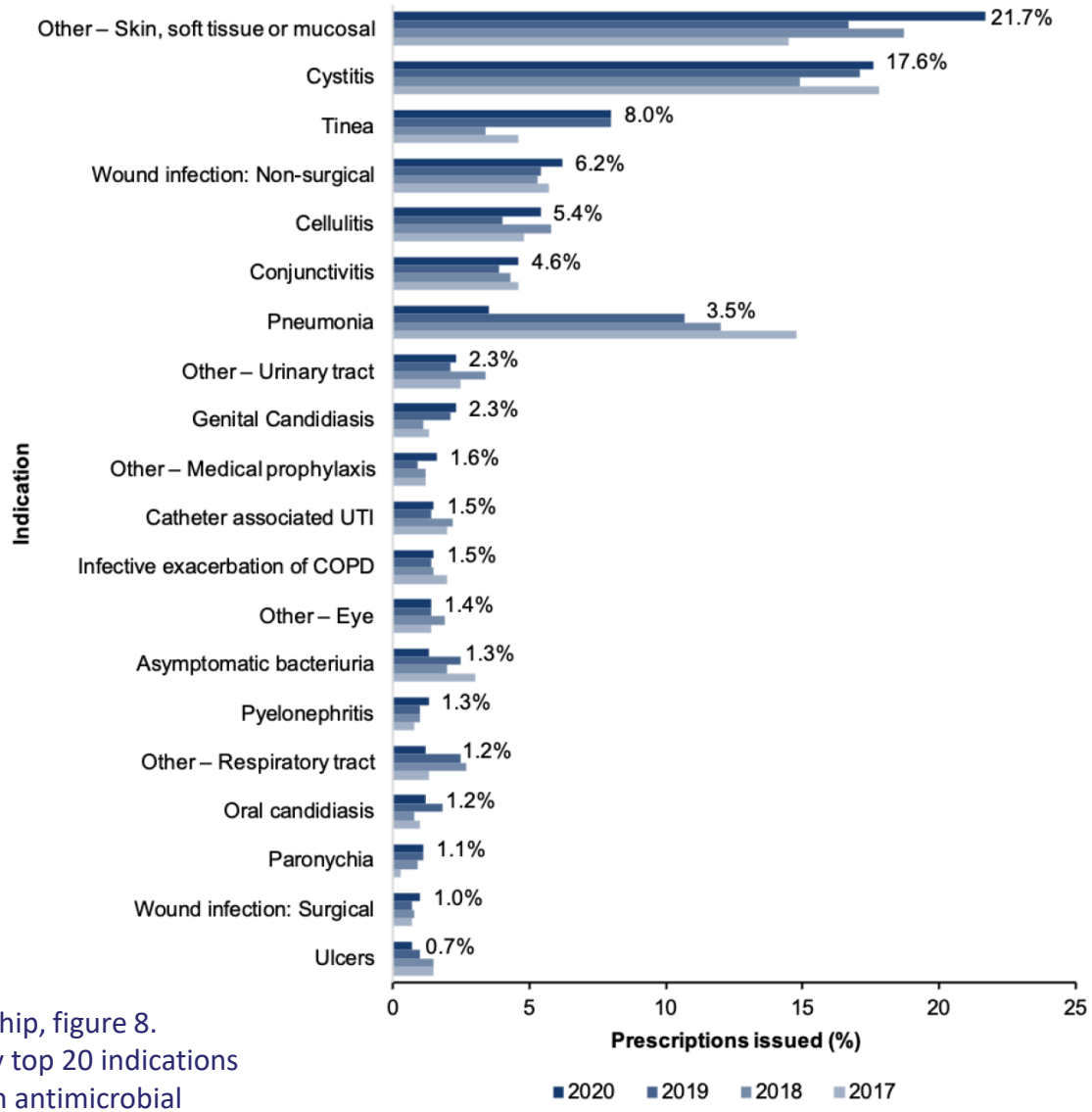
Most common indications for antimicrobial prescriptions

The top 5 known indications for prescribing antimicrobials were:

- other – skin, soft tissue or mucosal
- cystitis
- tinea
- wound infection (non-surgical) and
- cellulitis

About one-third met the McGeer et al. infection surveillance definitions.

Most common indications for antimicrobial prescriptions, aged care NAPS contributors, 2017–2020

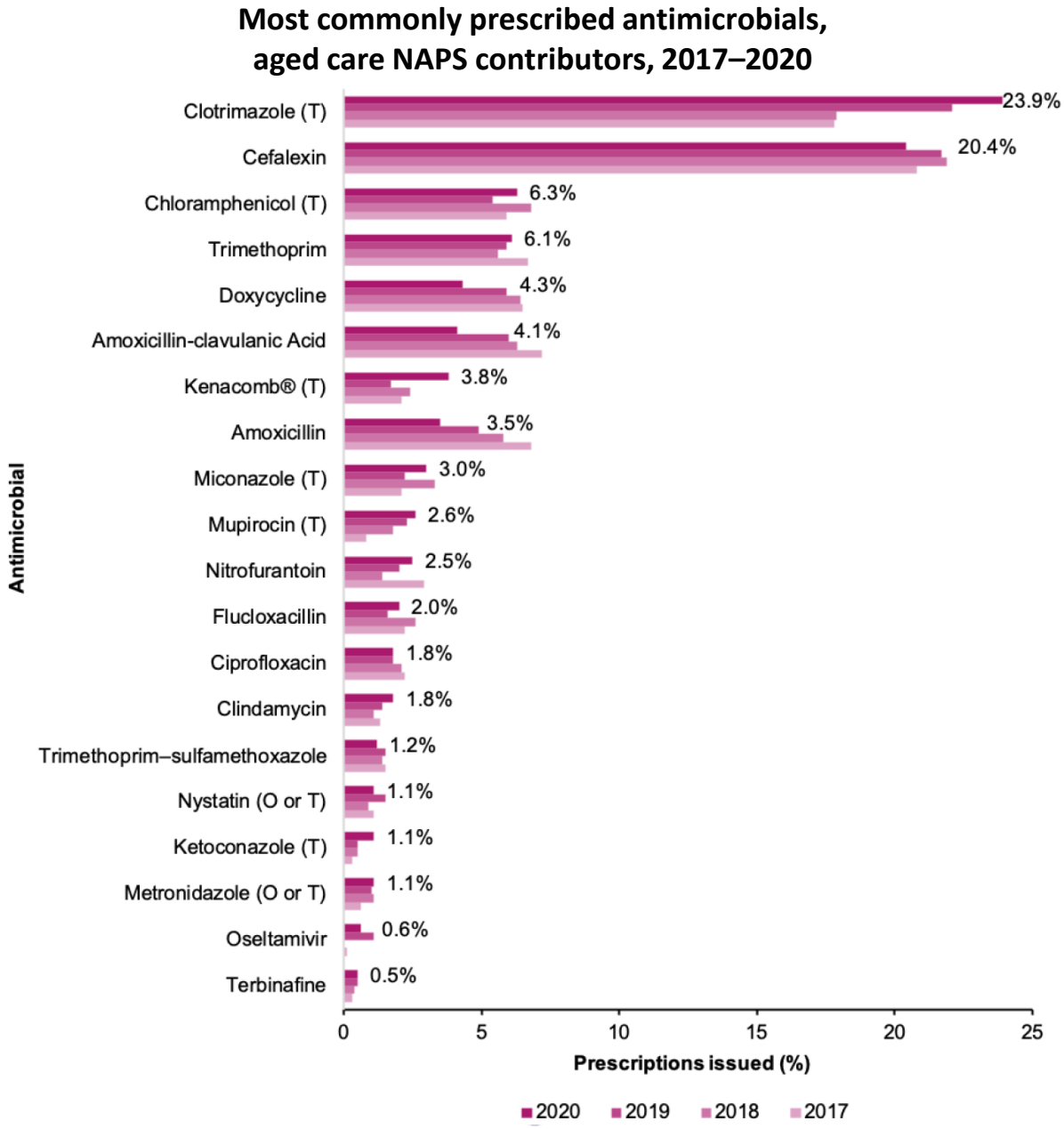


Royal Melbourne Hospital and the National Centre for Antimicrobial Stewardship, figure 8. Source: Antimicrobial and infection form section 2, method 1 and 2 data. Only top 20 indications for antimicrobial prescriptions listed. Unknown indications for commencing an antimicrobial excluded. COPD = chronic obstructive pulmonary disease; UTI = urinary tract infection.

Most commonly prescribed antimicrobials

6,382 antimicrobials were still prescribed on the survey day:

- 76 percent of prescriptions were for therapeutic use and the remainder were for prophylaxis.
- 23.9 percent were for clotrimazole (topical antifungal).



Royal Melbourne Hospital and the National Centre for Antimicrobial Stewardship, figure 5. Only top 20 antimicrobials prescribed listed. Denominator = all 8,322 antimicrobials prescribed. O = oral; PRN = as needed (pro re nata); T = topical. Kenacomb® contains triamcinolone, neomycin, nystatin and gramicidin.

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Left shift
Increase in number of immature leukocytes in peripheral blood.

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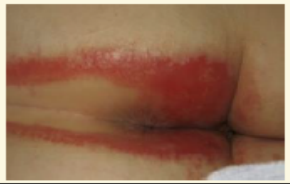
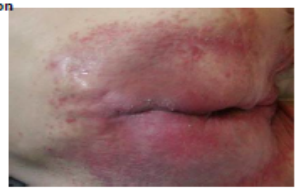
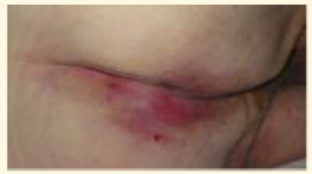
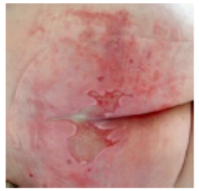
Guide in clinical care

Incontinence Associated Dermatitis with Suspected Infection

Incorporating the Ghent Global IAD Categorisation Tool (GLOBIAD) [1] and Antimicrobial Stewardship Recommendations

Incontinence Associated Dermatitis (IAD) is the skin damage associated with exposure to urine or faeces.

RISK FACTORS INCLUDE ■ incontinence ■ use of occlusive containment products ■ compromised mobility ■ damaged skin integrity ■ diminished cognitive awareness ■ inability to perform personal hygiene ■ pain ■ raised body temperature ■ poor nutrition ■ medications (eg: immunosuppressants) ■ critical illness ■ poor hygiene ■ inappropriate application of barrier cream ■ comorbidities (eg: diabetes*)

ASSESSMENT			MANAGEMENT		
CATEGORY	CRITICAL CRITERIA	ADDITIONAL CRITERIA	CORE MEASURES Use for all IAD categories	TARGETED MEASURES Use in addition to core measures	
1A: Persistent redness WITHOUT clinical signs of infection 	• Persistent redness A variety of tones of redness may be present. In persons with darker skin tones, the skin may be paler or darker than normal, or purple in colour.	• Marked areas or discolouration from a previous (healed) skin defect • Shiny appearance of the skin • Macerated skin • Intact vesicles or bullae • Skin may feel tense or swollen at palpation • Burning, tingling, itching or pain	• Investigate for and manage the preventable causes of incontinence such as urinary tract infection, faecal impaction, excessive urine output, delirium etc.[2] • Screen for pressure injury risk and manage accordingly.[3] **MONITOR, CLEANSE, PROTECT, RESTORE and MONITOR again.** ALL persons who are incontinent require a skin management regime • Use soap-free pH adjusted cleansers, 'no-rinse' wipes or '3-in-1' wipes after each episode of incontinence. • Avoid rubbing - pat skin dry. • Apply a skin barrier product according to the manufacturer's instructions. • Use barrier products that are transparent and easily removed to allow for skin inspection. • Avoid using powders. • Use products that do not interfere with absorption or function of continence aids (for example petrolatum containing products). • If skin is dry, apply a topical leave-on skin moisturiser to support restoration of the skin barrier function.[2] • Use continence aids that are well fitted, reduce humidity and have a superior wicking ability. • See medication therapy (page 2): Consider using topical steroids only to manage inflammation and pain.[3] • Inspect affected skin at least twice daily and document observations/ actions. • Consider referral to an employed Continence Advisor.	Persistent redness WITHOUT clinical signs of infection • Do NOT prescribe antimicrobial agents, including antifungal creams.	* 1.If on an SGLT2 inhibitor, refer to GP for cessation of medication. 2. If BGL > 10 mmol per litre (and not on an SGLT2 inhibitor) refer to a Credentialled Diabetes Educator
1B: Persistent redness WITH clinical signs of infection 	• Persistent redness: As above. • Signs of infection: such as - White scaling of the skin (suggesting a fungal infection) - Satellite pustule lesions (suggesting a Candida albicans fungal infection).	• Marked areas or discolouration from a previous (healed) skin defect • Shiny appearance of the skin • Macerated skin • Intact vesicles or bullae • Skin may feel tense or swollen at palpation • Burning, tingling, itching or pain		Persistent redness WITH clinical signs of infection • See medication therapy (page 2): -If suspected fungal infection, apply antifungal cream. -If suspected bacterial infection, administer antibiotics. • Apply barrier product after antifungal cream (see page 2). • Document the reason, name, dose, route of administration, (if topical, exact site of application), intended duration and review plan for each prescribed medication. • Refer to a Continence Advisor or Wound Specialist/Consultant (with dedicated hours for this role) if no improvement after 3-5 days.	
2A: Skin loss WITHOUT clinical signs of infection 	• Skin loss May present as skin erosion (may result from damaged/eroded vesicles or bullae), denudation or excoriation. The skin damage pattern may be diffuse.	• Persistent redness. A variety of tones of redness may be present. In persons with darker skin tones, the skin may be paler or darker than normal, or purple in colour. • Marked areas or discolouration from a previous (healed) skin defect • Shiny appearance of the skin • Macerated skin • Intact vesicles or bullae • Skin may feel tense or swollen at palpation • Burning, tingling, itching or pain		Skin loss WITHOUT clinical signs of infection • Do not prescribe antimicrobial agents, including antifungal creams.	
2B: Skin loss WITH clinical signs of infection 	• Skin loss: As above • Signs of infection: such as - White scaling of the skin (suggesting a fungal infection) - Satellite pustule lesions (suggesting a Candida albicans fungal infection). - Slough (yellow/brown/greyish) visible in the wound bed - Green appearance within the wound bed, suggesting a Pseudomonas aeruginosa (bacterial) infection, - Excessive exudate levels, - Purulent exudate (pus), or - Shiny appearance of the wound bed.	• Persistent redness. A variety of tones of redness may be present. In persons with darker skin tones, the skin may be paler or darker than normal, or purple in colour. • Marked areas or discolouration from a previous (healed) skin defect • Shiny appearance of the skin • Macerated skin • Intact vesicles or bullae • Skin may feel tense or swollen at palpation • Burning, tingling, itching or pain		Skin loss WITH clinical signs of infection • See medication therapy (page 2): -If suspected fungal infection, apply antifungal cream. -If suspected bacterial infection, administer antibiotics. • Apply barrier product after antifungal cream (see page 2). • Document the reason, name, dose, route of administration, (if topical, exact site of application), intended duration and review plan for the prescribed medication(s). • Take microbiology samples only for suspected bacterial infections. Clean first before swabbing at exudate site. • Refer to a Continence Advisor or Wound Specialist/Consultant (with dedicated hours for this role) if no improvement after 3-5 days.	

Differential diagnosis
It is important to exclude pressure injuries, dermatologic conditions (e.g. psoriasis), other bacterial and viral (e.g. herpes zoster) infections

Regional Wounds Network · VICNISS · Grampians Region Infection Control Group · Barwon Health · QUT · NCAS

VICNISS – Health Associated Infection Surveillance Coordinating Centre.

2023 frailty care guides

As Aotearoa New Zealand's aged population increases, the recognition and treatment of frailty has become crucial to all health care environments. It:

- is a recognised clinical syndrome
- requires specialised assessment
- requires specialised interventions.

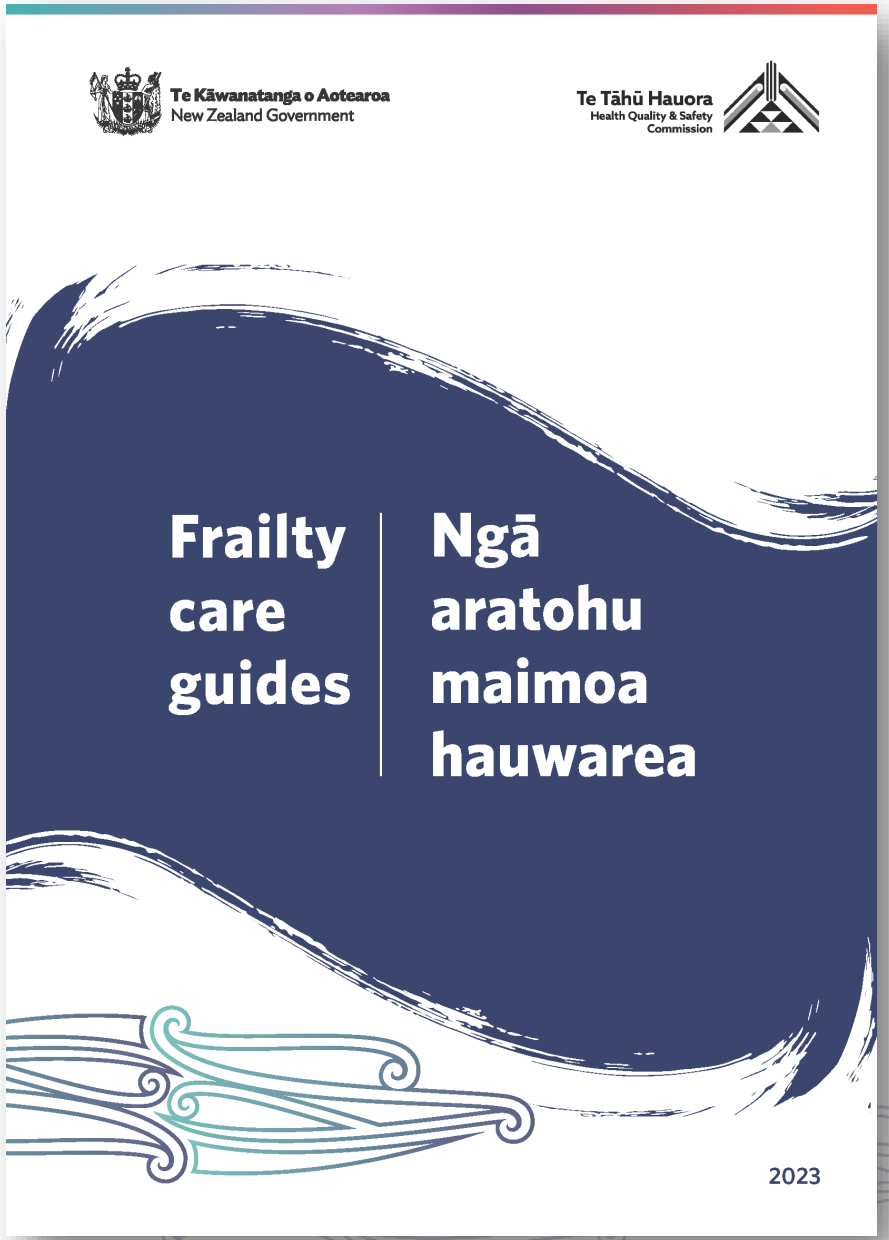
2023 frailty care guides

The frailty care guides:

- focus on the aged residential care environment
- may also be helpful in other health care settings
- are designed for use by health care professionals
- support rather than replace clinical judgement.

2023 frailty care guides

- Urinary incontinence | Te tururuturu o te mimi
- Urinary tract infections | Te pokenga pūaha mimi
- Wound assessment | Te aromatawai taotū
- Wound care | Te maimoatanga ō ngā taotū



References

- Royal Melbourne Hospital and the National Centre for Antimicrobial Stewardship. 2023. Antimicrobial prescribing practice in Australian residential aged care facilities: results of the 2020 Hospital National Antimicrobial Prescribing Survey. Canberra: Department of Health and Aged Care. URL: irp.cdn-website.com/d820f98f/files/uploaded/antimicrobial-prescribing-in-australian-residential-aged-care-facilities-results-of-the-2020-aged-care-national-antimicrobial-prescribing-survey.pdf
- Stone N, et al. 2012. Surveillance definitions of infections in long-term care facilities: revisiting the McGeer criteria. *Infection Control and Hospital Epidemiology* 33(10): 965–77. DOI: 10.1086/667743.

References

- Te Tāhū Hauora Health Quality & Safety Commission. 2023. Frailty care guides | Ngā aratohu maimoa hauwarea (2023 edition). Wellington: Te Tāhū Hauora. URL: www.hqsc.govt.nz/resources/resource-library/frailty-care-guides-nga-aratohu-maimoa-hauwarea-2023-edition
- VICNISS – Health Associated Infection Surveillance Coordinating Centre. Incontinence associated dermatitis with suspected infection. URL: www.vicniss.org.au/media/2089/iad_landscape-october-2019.pdf