Antimicrobial resistance in RACFs is a growing concern; aged-care facility residents may be an important reservoir of multidrug-resistant *E. coli* (see ‘Vulnerable patient groups in RACFs’). An Australian study screened 119 patients across 3 RACFs: 14 residents (12%) overall had multidrug-resistant *E. coli*; with 27% of these residents in one of two wings of a single aged-care facility. Eight of 13 (62%) residents had persistent colonisation when re-tested 3 months later.

Inappropriate use of antibiotics is a particular problem for residents in aged-care facilities and may be contributing to the high prevalence of multidrug-resistant *E. coli* seen in this group. In one study, about 50% of antibiotics prescribed for a suspected UTI did not meet the clinical criteria for infection. Of these, 20% of patients were prescribed antibiotics for asymptomatic bacteriuria.

Consider differential diagnoses

In aged-care facilities where there is a high prevalence of asymptomatic bacteriuria, diagnosing symptomatic UTI requires assessment of new presenting signs and symptoms of genitourinary tract disease and consideration of other possible diagnoses (Table 1).

Symptoms such as incontinence, dysuria, and nocturia should not always be attributed to urinary infection — even in the presence of bacteriuria. Consider the patient’s existing medicines and conditions as the cause of chronic urinary symptoms (eg, diuretic use or a natural progression of incontinence).

Refer patients for a Residential Medication Management Review every two years to detect and address medicine-related problems.

Singular symptoms do not equate to a UTI

A resident without a catheter must have either acute dysuria or at least two new symptoms, including at least one general symptom (fever and/or mental status change without an alternative explanation), before being investigated for a UTI, eg, fever and subareopic pain or tenderness (Figure 1).

Alternative sampling may be required

If a UTI is suspected, obtain a urine sample for culture and susceptibility testing. Urine dipstick tests are often inaccurate in this population and a clean catch or mid-stream urine sample may be difficult to obtain. To avoid contamination consider:

- an in–out catheter for women
- a newly applied condom catheter for men.

Aspirate the catheter tubing port – not the drainage bag – for residents with short-term indwelling catheters. Replace the catheter and collect the sample immediately after insertion for residents with long-term catheters.

Considerations for patients with advanced dementia

Treatment of UTIs in people with advanced dementia should be concurrent with the patients’ therapeutic goals (eg, patient comfort vs prolonging life). Diagnosis and treatment of potential UTIs is challenging — urine specimens often need to be obtained by bladder catheterisation, which is an uncomfortable procedure.

There are limited data to guide empirical use of antibiotics in RACFs. Treating a suspected UTI with empirical antibiotics without urine culture risks switching a patient to an inappropriate antibiotic if they do not respond to empiric antibiotics. This puts the patient at unnecessary risk of potential adverse effects (eg, *Clostridium difficile*), which may be challenging to treat in people with swallowing problems.

Table 1: Differential diagnosis of new signs and symptoms

<table>
<thead>
<tr>
<th>NEW SIGN OR SYMPTOM</th>
<th>POTENTIAL DIAGNOSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloudy or malodorous urine</td>
<td>Fluid and food intake, medications, metabolic products and comorbid conditions can make urine cloudy or malodorous.</td>
</tr>
<tr>
<td>Positive result from urine dipstick</td>
<td>The result may be a false positive. After one week of exposure to air, 1 in 3 strips give false positives, and after two weeks 3 in 4 give false positives.</td>
</tr>
<tr>
<td>Identification of pyuria by urinalysis or leukocyte esterase dipstick</td>
<td>The presence of pyuria does not differentiate asymptomatic from symptomatic infections. Over 90% of residents with asymptomatic bacteriuria have associated pyuria.</td>
</tr>
<tr>
<td>Fever</td>
<td>Consider other possible causes of fever. Only 10% of fever episodes are attributable to a UTI for residents without chronic indwelling catheters, no localised symptoms and a positive urine culture.</td>
</tr>
</tbody>
</table>

Preventing UTIs by maintaining urinary tract health

Ensure proper hydration

Patients taking diuretics may be at risk of dehydration. Dehydration results in concentrated urine and less frequent voiding, which support bacterial growth in the bladder. Adequate hydration is indicated by normal specific gravity.

Be mindful of the possibility of causing hyponatraemia due to ‘over-hydration’ if recommending increased fluid intake, particularly in patients with heart failure.

Maintain good perianal hygiene

Ensure that personal hygiene is performed correctly to prevent prolonged contact with urine or faeces.

Promote healthy voiding habits

Provide a relaxed voiding environment to ensure complete emptying of the bladder. Address issues of constipation or faecal impaction.

No evidence for ...

There is no evidence to support the use of prophylactic antimicrobial therapy, cranberry products, probiotics or topical oestrogen to prevent recurrent infection in residents of RACFs. However, optimising long-term management of recurrent cystitis also involves reducing antibiotic exposure. While studies of topical oestrogen replacement have not been undertaken in the RACF setting, addressing oestrogen deficiency – a potential contributor of UTI in postmenopausal women – may be helpful.
**Vulnerable patient groups in RACFs**

### Patients with dementia

Inappropriate use of antibiotics in patients with advanced dementia is particularly concerning as they may have factors associated with harbouring antibiotic-resistant bacteria (ie, faecal incontinence, skin ulcers). These patients also require significant assistance with activities of daily living and this can contribute to the spread of antibiotic-resistant bacteria on healthcare workers’ hands and clothes. Poor infection control practices may facilitate the spread of resistant pathogens and rigorous application of infection control guidelines can minimise the risk of infection. High rates of hand washing can help reduce transfer of resistant uropathogens.

### Patients with catheters

Education and training of staff in RACFs about policies and procedures on catheter use, indications, insertion and maintenance techniques, discontinuation strategies, and replacement indications can help reduce transfer of antibiotic-resistant bacteria.

- **Limit the duration of time required with a catheter:** Permanently remove the catheter if possible. Use incontinence products in preference to catheters.
- **Address common underlying causes for UTI:** Avoid blockages, twisting or trauma. Adhere to appropriate catheter care techniques.
- **Consider a suprapubic catheter for long-term use:** For short-term use, antimicrobial impregnated catheters (silver alloy or antibiotic) decrease colonisation; further evaluation is needed to confirm if this translates to a reduction in symptomatic UTIs.

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**NB1:** Do not investigate or treat cloudy or malodorous urine in aged-care facility residents who do not have other symptoms or signs of UTI.

**NB2:** Consider whether an alternative diagnosis is likely. Consider both infective (eg, pneumonia) and noninfective causes (eg, medication-related adverse events).

**NB3:** Establish whether an advanced care plan is in place that may influence assessment and management (eg, whether investigations are performed or antibiotics given).

**NB4:** Fever is defined as a temperature higher than 38˚C or an increase of more than 1.5˚C above baseline temperature.

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* No validated diagnostic tool available. This algorithm is based on expert opinion.