

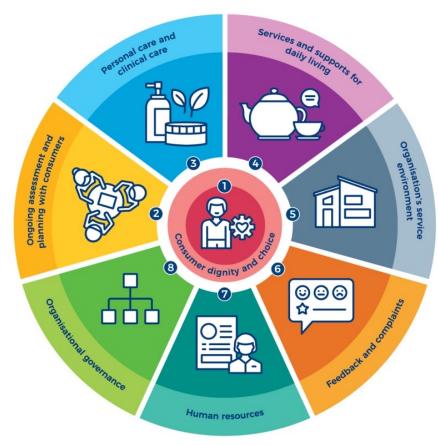
Dr Lyn-li Lim November 2021

**1800 951 822** agedcarequality.gov.au

### Aged Care Quality and Safety Commission



- January 2019 : The Commission commenced operations
- Primary point of contact for consumers and providers in relation to quality and safety
- July 2019: Aged Care Quality Standards
  - Providers of Commonwealth funded aged care services required to comply with these standards made under Aged Care Act 1997
  - 8 Quality Standards



### **Provider obligations around AMS**



### **Standard 3 requirement (3)(g)**

# Minimisation of infection-related risk through implementing:

standard and transmission-based precautions to prevent and control infection

practices to promote appropriate antibiotic prescribing and use to support optimal care and reduce the risk of increasing resistance to antibiotics.

#### Reflective questions

Evidence of antimicrobial stewardship policy and processes to support appropriate administration of antibiotics.

Evidence of care strategies used to minimise the need for antibiotics (such as measures to reduce the risk of urinary tract infections or treat minor skin infections).

The organisation's management describe how it supports members of the workforce to understand and promote appropriate prescribing of antibiotics.

Records show that the organisation educates relevant members of the workforce in antimicrobial resistance and strategies to reduce the risk of increasing resistance to antibiotics.

https://www.agedcarequality.gov.au/providers/standards/standard-3

### **Provider obligations around AMS**



### **Standard 8 requirement (3)(e)**

Effective organisation wide systems are required for preventing, managing and controlling infections and antimicrobial resistance.

A clinical governance framework should include, but is not limited to, antimicrobial stewardship.

#### Reflective questions

Evidence of strategies and practices that aim to make sure antimicrobials are prescribed according to best practice guidelines.

Records show that the organisation has a systematic approach to clinical audit and data comparisons that supports improvements in clinical care.

The workforce can describe their accountabilities and responsibilities for the effectiveness, safety and quality of clinical services.

The workforce can describe how they collect data to inform clinical performance indicators, they say the indicators are meaningful and can describe how they lead to improvements in clinical care.

Consumers say members of the workforce discuss their clinical care with them, including risks and benefits of any clinical treatment and the appropriate use of antibiotics.

https://www.agedcarequality.gov.au/providers/standards/standard-8







### AMS – A focus for improvement in aged care services

### **Antimicrobial use in aged care services**

At any point in time 8-9% of residents are on an antimicrobial

70% of residents are prescribed at least one antimicrobial course a year

20% of prescriptions are for prophylaxis

## Aged Care National Antimicrobial Prescribing Survey (AC-NAPS)

Prolonged duration of prescriptions
High rates of "PRN" prescriptions

### National surveillance reports (AURA 2021)

High rates of antimicrobial resistance in aged care services

- Staphylococcus aureus methicillinresistance : aged care 26% hospitals 22%
- Escherichia coli cefazolin-resistance : aged care 35% hospitals 20%



### AMS – What are the problems?



### **Antibiotic Overprescribing**

Clinical / undifferentiated syndromes that may not require antibiotics

- Fall, acute behaviour change

Viral infections

- Sore throat, sinusitis, conjunctivitis

Conditions mistaken as infection

- Asymptomatic bacteriuria ("ASB")

Incorrect interpretation of testing / treating the test result rather than the person

#### **Antimicrobial Over-treatment**

Excessive durations for treatment of infections

Excessive durations for prevention of infections

Excessive use of broad-spectrum antibiotics

Prescribing antimicrobials as "when required" (PRN)

- topical antifungals

Continuation of prescribing for >1 month without documentation of indication, or future stop date







### Recognition

Sepsis Multidrug-resistant infections

#### **Treatment**

Use of non-pharmacological strategies to treat / prevent infections

- UTI: Hydration, urinary catheter change
- Skin: Keeping area clean and dry

# Why is prescribing for UTI one of the biggest antibiotic prescribing problems in aged care?

UTI is the most common reason for antibiotic prescribing in aged care services

#### **UTI** is overdiagnosed

- Non-specific symptoms and signs are incorrectly attributed to UTI
- Use of urine dipstick testing and inappropriate interpretation of positive dipstick results

#### Recurrent UTI is overdiagnosed

Overuse of broad-spectrum antibiotics

#### **Prolonged courses of antibiotics**

Side effects and other potential harms from unnecessary antibiotics

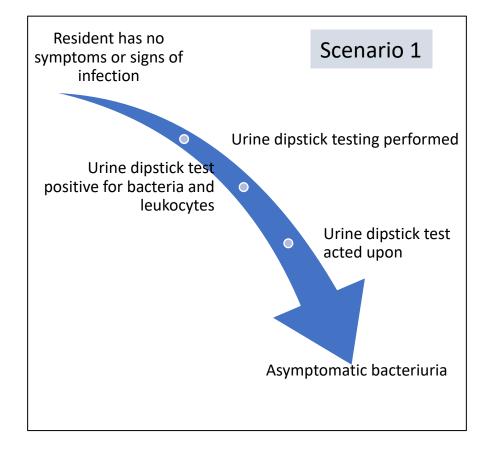
#### **Antimicrobial resistance**

- Impact on resident (more likely to carry a multidrug-resistant bacteria)
- Impact on aged care home environment (more likely to harbour multidrug-resistant bacteria that can be spread from person to person)





### What clinical syndromes are mistaken for UTI?





### Older people with bacteria present in their urine

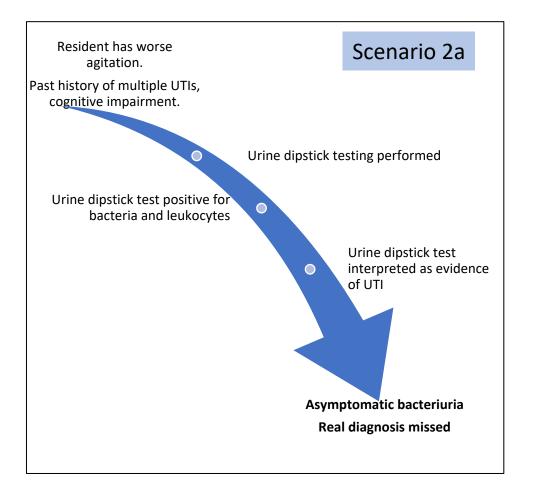


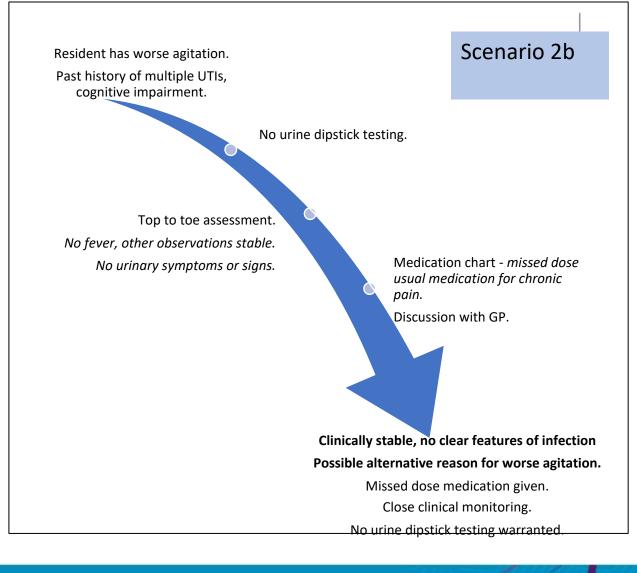
#### Asymptomatic bacteriuria (ASB)

- Harmless bacteria in urine
- Antibiotic treatment not required
- Antibiotic treatment does not reduce likelihood of UTI in future
- Antibiotic side-effects from treatment of ASB is preventable harm



### What clinical syndromes are mistaken for UTI?







# ACQSC To Dip or Not to Dip Quality Improvement activity: Urine dipstick testing in aged care services



#### What we know about dipstick testing

- Urine dipstick testing when not needed is a widespread and longstanding problem
- There is high reliance on using these results to guide care
- Dipstick testing can pick up asymptomatic bacteriuria (ASB) which is mislabelled as UTI, and result in prescribing of antibiotics which doesn't help the resident

### Common beliefs about urine dipstick testing

- A positive urine Dipstick (nitrite/leukocyte) result confirms the resident has a UTI NOT TRUE
- Dipstick testing should be performed if resident has smelly urine NOT TRUE
- Dipstick testing should be performed in residents after a course of antibiotics to confirm UTI cure
   NOT TRUE





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Home > Antimicrobial stewardship



Antimicrobials can speed up your recovery if you have an infection and can save your life if you have a serious infection. However, overuse of antimicrobials can lead to antimicrobial resistance - infections with bugs that cannot be treated effectively with antimicrobials.

Antimicrobial stewardship is about avoiding unnecessary use of antimicrobials and making sure that whenever an antimicrobial is used, it is used with care to minimise the risk of antimicrobial resistance.

Consumers, doctors, nurse and pharmacists are important in antimicrobial stewardship.

#### On this page:

- · What are infections?
- · What are antimicrobials?
- What is antimicrobial resistance?
- What is antimicrobial stewardship?
- Who contributes to AMS in aged care services?
- AMS is a focus for improvement in aged care services
- · Commission's aim
- Quality Standards
- Resources

COVID-19 provider resources

Becoming an approved aged care provider

**Commission Act and Rules** 

**Quality Standards** 

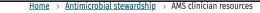
**Prudential Standards** 

Serious Incident Response Scheme

Minimising the use of restrictive practices

National Aged Care Mandatory Quality **Indicator Program** 

Notifying material changes for approved providers



#### AMS clinician resources

This page provides antimicrobial stewardship (AMS) resources for aged care clinicians (nurses, personal care attendants, general practitioners).

We also have dedicated AMS resources pages for consumers and providers.

#### On this page:

- To Dip or Not to Dip
- · Clinical pathway for suspected urinary tract infections
- · Do you need antibiotics?
- Webinars
- External resources

#### To Dip or Not to Dip

To Dip or Not to Dip is an evidence-based pathway which aims to improve the diagnosis and management of urinary tract infections (UTI) in older people living in aged care services. This pathway has been shown to reduced antibiotic use and hospital admissions for UTIs.

#### Video

This training video introduces a clinical care pathway for UTIs.





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Home > Antimicrobial stewardship > AMS provider resources

#### AMS provider resources

This page provides antimicrobial stewardship (AMS) resources for aged care providers.

We also have dedicated AMS resources pages for consumers and clinicians.

#### On this page:

- · Quality bulletins
- . To Dip or Not to Dip
- Webinars
- · External resources

#### **Quality bulletins**

- From the Chief Clinical Advisor #33 September 2021
- From the Chief Clinical Advisor #32 August 2021
- Information about antimicrobial stewardship in aged care #31 July 2021
- Updates from the Chief Clinical Advisor #30 June 2021
- Examining consumer feedback on medication use in residential aged care #29 May 2021
- Our current work on antimicrobial stewardship #28 April 2021
- Antimicrobial stewardship #27 March 2021



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Home > Antimicrobial stewardship > AMS consumer resources

#### AMS consumer resources

This page provides antimicrobial stewardship (AMS) resources for aged care consumers.

We also have dedicated AMS resources pages for providers and clinicians.

#### On this page:

- · Do you need antibiotics?
- To Dip or Not to Dip
- · Using antibiotics well Do I need a drug for every bug?
- · External resources

#### Do you need antibiotics?

This flyer has information about antibiotics for aged care residents and their families, carers and

You can use it when talking to your doctors, care staff or pharmacist about antibiotics you are already taking or antibiotics that have been prescribed for you.

Download the Do you need antibiotics? flyer

#### To Dip or Not to Dip

To Dip or Not to Dip is a clinical pathway that aims to improve the diagnosis and management of urinary tract infections (UTI) in older people living in aged care services.

### ACQSC To Dip or Not to Dip

Suspected UTI -Without catheter

For use after medical emergencies excluded e.g., sepsis, pyelonephritis

### Resources to support best practice

- Evidence-based clinical pathway for residents with suspected UTI
- Encourage collection of MSU / CSU for suspected UTI
- Discourage urine dipstick testing

Education and communication

Nurse / GP communication



Engage Empower Safeguard

	-		eople in age ections (UT		nes:		Without	Catheter
<b>Nurse/Carer:</b> Co File in resident n	mplete iotes. <b>D</b> e	resident detail O NOT PERFOR	s, assessment ar M AN INITIAL URI	nd managemen NE DIPSTICK.	sections.			
Resident name	_			Starr	name startii	ng form		
Date of birth			Gender	Date		Time		
Observations	Pulse	Bloo	d pressure	Respira	atory rate		Temperature	

PCA/Nurse to complete	Nurse to complete		
NEW or WORSE problem with no other reason found in resident without catheter	nterpretation in resident without catheter	Final interpretation	
Category A		UTI possible.	
Dysuria, pain or burning on passing urine	f Category A ticked: JTI possible, for UTI investigation and management.		
Category B	Category B — If both ticked:		
Fever (≥38°or >1.5° above usual temperature) NB paracetamol formulations e.g. Panadol Osteo™ may mask fever	JTI possible, for UTI investigation and management.  f one of Category B and one or more of Category C ticked: JTI possible, for UTI investigation and management.	Consider other causes as well as UTI. Do not perform	
Confusion, agitation	f <b>one</b> of <b>Category B</b> ticked:	urine Dipstick.	
Category C	Consider other causes as well as UTI and discuss		
Frequency on passing urine	with GP. <b>Do not perform urine Dipstick</b> (unless specific SP request). If UTI considered possible, for further	UTI unlikely.	
Urgency on passing urine	JTI investigation and management.	Do not perform urine Dipstick.	
Urinary incontinence	f Category C only ticked:	Consider	
Flank, loin, kidney pain or tenderness	Consider other causes as well as UTI. Do not perform urine Dipstick. If concern contact  3P as usual and monitor resident for changes.	other causes of symptoms. If concern	
Low abdominal pain		contact GP	
Visible blood in urine	f Category D ticked: JTI unlikely. Do not perform urine Dipstick.	as usual and monitor resident	
Category D	Consider other causes of symptoms. If concern	for changes.	
No signs or symptoms	contact GP as usual and monitor resident for changes.		

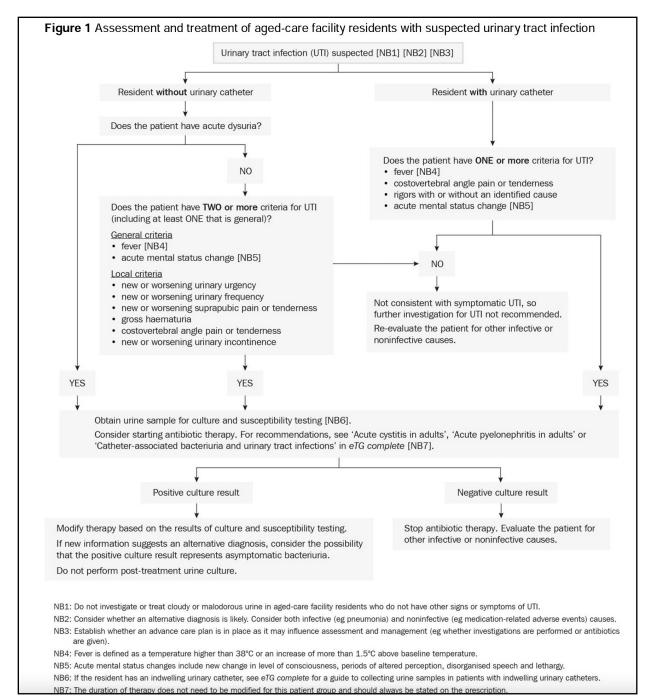
Action — undate as conducted (tick ☑ if undertaken)		Date of action
If <b>UTI possible: send urine culture.</b> Preferred collection techniques: MS (e.g., if incontinent). Transport to lab within 2 hours or refrigerate (4-10°C).		
Dipotials performed? Do not perform dipotials unless specific CP requ	ot.	
GP review requested.		
Assess hydration status and encourage fluid intake if dehydrated.		
Were antihintics prescribed? If VES, document prescription		
(e.g. trimethoprim 300mg orally nocte for 3-days).		
<b>Urine culture sent: results followed up?</b> Lab results usually available of Nursing staff should follow up and discuss with GP (and resident) cultureview clinical progress and antibiotic plan.		

Version 1. August 2021

Pathway based on Therapeutic Guidelines: Assessment and treatment of aged care residents with suspected UTI.

### Aligned with:

### **Therapeutic Guidelines: Antibiotics, ACSQHC**



# ACQSC To Dip or Not to Dip

#### Surveillance

- Track process measures
  - Documentation
  - Prescribing according to guidelines
- Track outcome measures
  - Review and cease long term prescriptions



Engage *Empower* **Safeguard** 

#### To Dip or Not to Dip Audit

RACS ID:					Da	ate audit:							
Resident: Surname					Αι	Audit by (name / designation):			(1)				
Resident: First name					Ar	ntibiotic allergies / adverse effect: or no					or not documented		
DOB					If	allergy / a	dverse effect, n	ature	and seve	rity			or not documented
Gender	Male Female				Di	Did resident have a urinary catheter at onset of UTI symptoms and signs? Yes No Unknown						No Unknown	
Agent	Dose	Route	Frequency	Start date	date? which	or review Indicate is nented	What is the stop or review date?	bein trea	dition Ig ted: Site llved	For urinary tract sites, more details	For urinary tract sites, Indication: Treatment or Prophylaxis	only. Has i this antibi	6-month audits resident received otic continuously rious audit?
Free text	Free text	o / im / IV	Daily / BD / TDS / QID	Date	☑ Stop	☑ Review	Date	See	options	See options	Treatment or Prophylaxis	Y / N / Not Not applica	known / able (Baseline audit)
		o / im / IV	Daily / BD / TDS / QID								Treatment or Prophylaxis	Y / N / Not Not applica	known / able (Baseline audit)
		o / im / IV	Daily / BD / TDS / QID								Treatment or Prophylaxis	Y / N / Not Not applica	known / able (Baseline audit)
		o / im / IV	Daily / BD / TDS / QID								Treatment or Prophylaxis	Y / N / Not Not applica	known / able (Baseline audit)
		o / im / IV	Daily / BD / TDS / QID								Treatment or Prophylaxis	Y / N / Not Not applica	known / able (Baseline audit)

#### For antimicrobial prescriptions related to urine tract sites ONLY

Agent	Antibiotic start date	Symptoms or signs on start date related to urinary tract	GP review: Date most recent GP clinical or prescription review related to this condition	GP review: Outcome of most recent review, more details	Was urine culture sent? If yes date sent	Acknowledgement of urine culture result by GP or service staff. If yes, date
Free text	Free text	See options, choose all that apply	Date or Not known	See options, choose all that apply	Y / N / Not known If yes, date	Y / N / Not known If yes, date

Version 1 (September 2021) Review date: September 2022

### Education and communication

 AMS education and communication to service staff

### To Dip or Not to Dip

To Dip or Not to Dip is an evidence-based pathway which aims to improve the diagnosis and management of urinary tract infections (UTI) in older people living in aged care services. This pathway has been shown to reduced antibiotic use and hospital admissions for UTIs.

#### Video

This training video introduces a clinical care pathway for UTIs.



### Education and communication

 AMS education and communication to service staff

### Presentation and guide

Download the <u>To Dip or Not to Dip: case-based education</u> presentation

Download the <u>Facilitator guide for To Dip or Not to Dip</u> to deliver case-based learning

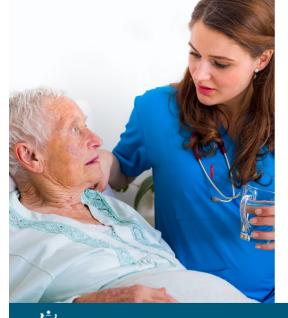


#### Case study #1

#### John Lee is an 80 year-old resident

- · Has had antibiotics in the past for suspected UTI
- Increasing confusion over 2 days
- No history of fever, temp 36.5°C
- · Urine: clear yellow, smells strong, not catheterised

What else should you ask about?



#### Case study #2

#### Mary Brown is a 78 year-old resident

- · New urinary incontinence
- Temperature 38°C
- · Antibiotics previously for suspected UTI

Is this serious requiring immediate escalation?
Is this a UTI?
What else could it be?
What are your next steps?
Does urine dipstick help?











Safeguard





Glen Edwards is a 72-year-old resident

Stroke three years ago, cognitive impairment 2 admissions to hospital for UTI, multiple courses of antibiotics C. difficile diarrhoea with recent antibiotics

Simon, his son, visits and notices Glenn is sleepier than usual and that his urine smells.

Simon thinks this might be another UTI and wants him started on antibiotics right away.

How do you respond to Simon's request? Should the GP be contacted to prescribe antibiotics?

### **Consider What Residents** and Families are Actually Saying

#### **Example Dialogue**

Family says: "My mum always looks like this when he has a UTI."

- · We are going to watch him closely
- Let's help him drink more fluids. Would you be able to encourage him to drink some extra juice?

Family says: "Let's just give him antibiotics just in case."

- Antibiotics won't help if he doesn't have a UTI
- Antibiotics could hurt him (e.g., diarrhoea)
- We don't want to miss the real cause

infections such as infections of the urinary tract, skin and respiratory system. They can be

Why are antibiotics

important to you? Antibiotics are precious and powerful

life-saving for serious infections such as sepsi: When antibiotics are needed, their benefits outweigh the risks of side effects and

They can be helpful against many bacteria

But antibiotics are not always needed

#### What don't antibiotics treat?

· many upper respiratory tract infections that

ome bacterial infections that get bette of this are bronchitis, sinus and ear infection

harmless bacteria in conditions where there are no symptoms or signs of infection. Examples of this would be asymptomatic bacteriuria (harmless bacteria in the urine culture), or uninfected skin wounds when used for prevention of infection (prophylaxis). Examples of this are skin

antifungal creams used for months, or oral antibiotics started just in case infection may develop used for months, sometimes years

Information about antibiotics for aged care residents and their families.

1800 951 822

Do you need

antibiotics?

Aged Care Quality and





Adapted from CDC resources for clinical staff managing Infections in LTCFs

Ensure that residents' needs for pain relief and other supportive care are met.

Educate residents and families regarding antibiotic use!

### ACQSC Complaints 2019-2020



#### Of all medication-related complaints

- 10% related to infectious disease
- Third most common complaint after pain/palliative care and sedatives

### Infectious diseases clinical indications or other

53.7% 11.1%	Urinary tract Skin
-	_
9.3%	Eye
5.6%	Respiratory
1.9%	Allergy mismatch
18.7%	Administration:
	clinical
	indication
	unspecified

Of urinary tract indications;
35% Recurrent UTI

One-quarter relating to service not adequately monitoring for recurrent UTI,
followed by service not diagnosing UTI in timely fashion

24% Inadequate or lack of clinical review

Lim L, Breen J. National Medicines Symposium 2021

### **ACQSC**

### Why are antibiotics important to you?

### Antibiotics are precious and powerful drugs – and they should only be used for specific purposes.

They can be helpful against many bacterial infections such as infections of the urinary tract, skin and respiratory system. They can be life-saving for serious infections such as sepsis.

When antibiotics are needed, their benefits outweigh the risks of side effects and antibiotic resistance.

But antibiotics are **not always needed**. When they aren't needed, they won't help you, and the side effects could still cause harm and contribute to antibiotic resistance.

#### What don't antibiotics treat?

- many upper respiratory tract infections that are caused by viruses
- some bacterial infections that get better quickly even without antibiotics. Examples of this are bronchitis, sinus and ear infections
- harmless bacteria in conditions where there are no symptoms or signs of infection. Examples of this would be asymptomatic bacteriuria (harmless bacteria in the urine detected on testing with dipstick or urine culture), or uninfected skin wounds
- when used for prevention of infection (prophylaxis). Examples of this are skin antifungal creams used for months, or oral antibiotics started just in case infection may develop used for months, sometimes years.

### What are possible antibiotic side effects and risks?

Antibiotic side effects are common, and older people are at increased risk. Common side effects are:

- Loss of appetite/ reduced eating and drinking
- Nausea

#### Antibiotics can also have other, sometimes more serious, side effects and risks:

Diarrhoea

Rash

Yeast infections

such as thrush

- · Life-threatening allergic reactions
- Interactions between antibiotics and other medications
- Infections with antibiotic resistant bacteria, because exposure to an antibiotic may allow bacteria (including harmless bacteria) on your body to adapt so they are no longer killed by that antibiotic
- C. difficile (or C. diff) infection which is a gastrointestinal illness caused when good bacteria in your gut are destroyed by antibiotics. C. diff infection causes abdominal pain, nausea and diarrhoea. It can lead to severe bowel damage and can be spread to other people. The risk of C. diff infection lasts for months even after antibiotics have been stopped.

One in five prescriptions are for prevention of infection, and many of these may not be required.

### How does taking antibiotics lead to antibiotic resistance?

Whenever antibiotics are used, harmless bacteria that live on our bodies can become resistant to these antibiotics. When bacteria develop resistance to different types of antibiotics,

more

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ead

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he future.

Seven in ten residents receive one or more antibiotic courses a year. Some of these courses may not be necessary.

If a doctor plans to prescribe an antibiotic

for you, ask them to explain why first.

#### How can I stay healthy?

#### You can stay healthy and keep others healthy by:

- Performing hand hygiene often by washing your hands with soap and water after going to the toilet and using alcohol-based handrub before touching others or eating
- Insisting healthcare professionals and visitors clean their hands before touching you or caring for your wound
- Covering your cough to prevent the spread of germs
- Asking family or friends not to visit when they don't feel well
- Staying in your room when sick
- Protecting yourself by getting vaccines for flu, COVID-19 and pneumonia and encouraging others around you to do the same.

For more information about this, speak to your aged care home staff and doctor.

Smart use of antibiotics today makes sure antibiotics work tomorrow.

#### What if I have questions about antibiotics?

Talk to your aged care home staff and doctor if you have any questions about your antibiotics. Ask:

- What is this antibiotic? What condition is it being prescribed for?
- · Can my condition get better without antibiotics?
- Have you done any tests to help with diagnosing the infection? When will the results be available?
- · Are there any other treatments and care recommended?
- What are the risks or side effects of this antibiotic?
- How long do I need to take this antibiotic?
- Are there any instructions on the way I should take the antibiotic to make sure it works well? (Some antibiotics work best with food, or on an empty stomach, or separated from other medications)
- Will it interact with my other medications? (for example, some antibiotics can interact with blood thinners such as warfarin)
- How will you know that the antibiotic is working for my infection?

You can ask your aged care home staff or doctor for written information about the antibiotic being recommended or about your infection.



Australian Government
Aged Care Quality and

Engage Empower



Information about antibiotics for aged care residents and their families, carers and representatives.

**1800 951 822** agedcarequality.gov.au



### Education and communication

 AMS education and communication to residents and families

# ACQSHC To Dip or Not to Dip

### Education and communication

 AMS education and communication to service staff

### Education and communication

 AMS education and communication to residents and families

### **Urine dipsticks not used here!**





Australian guidelines advise that urine dipsticks are not a first step in diagnosing UTIs in older people.
Instead our home is using a Clinical Pathway



Bacteria in the urine can be normal in older people.



If you think a resident may have a UTI, **use the Clinical Pathway** to check for signs and symptoms and the action to take.



Giving antibiotics when they are not really needed will lead to 1 in 3 residents developing side-effects such as diarrhoea.

#### Please speak to the aged care home manager if you have any questions.

Adapted from NHS Nottinghamshire County Council 'To Dip or Not to Dip' project and Dr Annie Joseph's work.









#### ACQSC To Dip or Not to Dip

### Education and communication

 AMS education and communication to service staff

### Education and communication

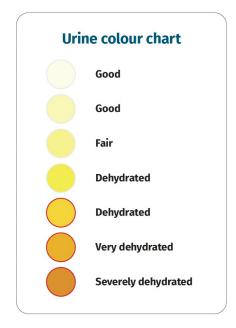
 AMS education and communication to residents and families

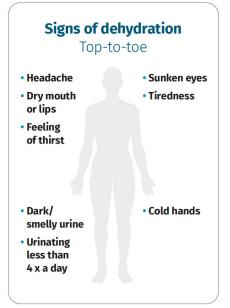
# Australian Government Aged Care Quality and Safety Commission

### **Preventing Urinary Tract Infections**

Recognise dehydration









Encourage regular bladder emptying and mobilise as much as able

Act quickly to resolve constipation and continence problems

#### Please speak to the aged care home manager if you have any questions.

Adapted from NHS Nottinghamshire County Council 'To Dip or Not to Dip' project and Dr Annie Joseph's work.

Version 1 (September 2021)







### **RESOURCES**



#### **ACQSC developed AMS resources**

https://www.agedcarequality.gov.au/providers/better-use-medication/antimicrobial-stewardship

AURA 2021: Fourth Australian report on antimicrobial use and resistance in human health – Consumer summary <a href="https://www.safetyandquality.gov.au/publications-and-resources/resource-library/aura-2021-consumer-summary">https://www.safetyandquality.gov.au/publications-and-resources/resource-library/aura-2021-consumer-summary</a>

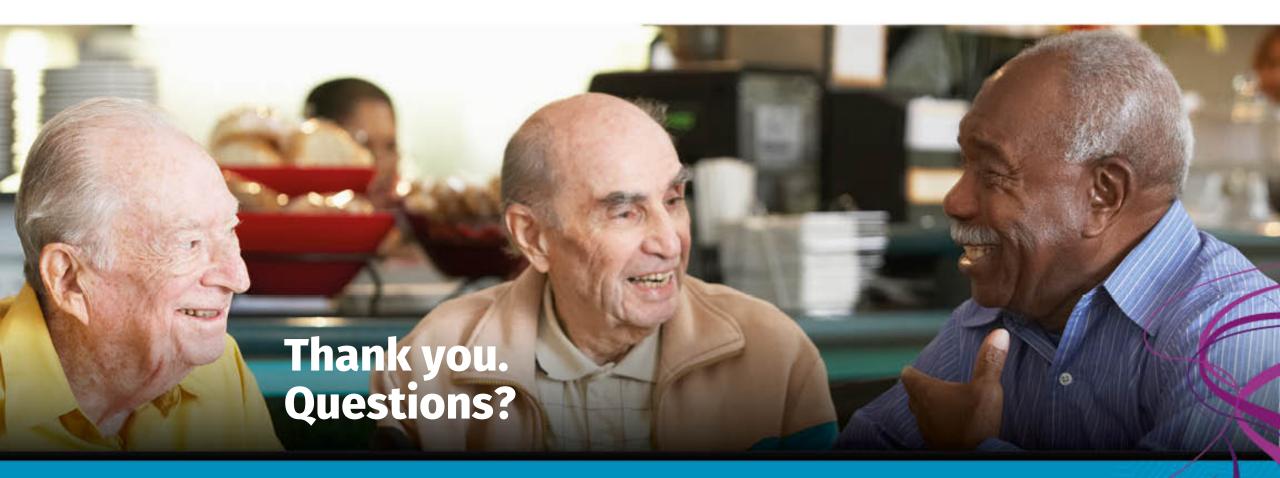
ACQSHC. Antimicrobial Stewardship in Australian Health Care book 'Antimicrobial Stewardship in community and residential aged care' (chapter 16)

https://www.safetyandquality.gov.au/sites/default/files/2021-06/d16-39424 ams in community and residential aged care - chapter 16 ams book - formatted for publication - june 2021.pdf

ACQSHC. Fact sheet - Asymptomatic bacteriuria <a href="https://www.safetyandquality.gov.au/sites/default/files/2020-01/fact\_sheet\_-asymptomatic\_bacteriuria\_-2020.pdf">https://www.safetyandquality.gov.au/sites/default/files/2020-01/fact\_sheet\_-asymptomatic\_bacteriuria\_-2020.pdf</a>

OPAN / ACQSC webinar "Using antibiotics well. Do I need a drug for every bug?" \_20.8.21 <a href="https://opan.org.au/antimicrobials1/">https://opan.org.au/antimicrobials1/</a>





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