Choosing Wisely Canada™

Choisir avec soin MC

Using Antibiotics Wisely

Management of Urinary Tract Infections in Long-Term Care

Dr Andrea Moser and Dr Patrick Quail

Ontario Long-Term Care Clinicians Conference

October 26, 2019

Faculty/Presenter Disclosure

- **Faculty:** Andrea Moser

- **Relationships with financial sponsors:**
  - None

Disclosure of Financial Support

- **This program has received financial support from** Health Canada and Choosing Wisely Canada **in the form of** support for development of the Antibiotics Wisely tools

- **Potential for conflict(s) of interest:**
  - None – tools based on evidence and expert opinion

Mitigating Potential Bias

- None required

Faculty/Presenter Disclosure

- **Faculty:** Paddy Quail

- **Relationships with financial sponsors:**
  - None

Disclosure of Financial Support

- **This program has received financial support from** Health Canada and Choosing Wisely Canada **in the form of** support for development of the Antibiotics Wisely tools

- **Potential for conflict(s) of interest:**
  - None – tools based on evidence and expert opinion

Mitigating Potential Bias

- None required

Objectives for Today's Presentation

1. Discuss overview of the problem, aim of Using Antibiotics Wisely and known drivers of antibiotic prescribing for urinary tract infections in Long-Term Care.
2. Share recommended practice statements and evidence-informed tools to support change in practice.
3. Have a better understanding of the evidence-based tools available and how best to optimize treatments and tests in Long-Term Care.

Opening Question

- What barriers do you see with asymptomatic bacteria in LTC?

Priorities of *Using Antibiotics Wisely* Campaign

1. **Acute respiratory infection in primary care**
   30-50% of antibiotics are unnecessary

2. **Urinary tract infection in long-term care**
   50-70% of antibiotics are unnecessary

Public Health Agency of Canada
Agence de la santé publique du Canada

Health Canada
Santé Canada

Choosing Wisely Canada™
Choisir avec soin℠

Framework for *Using Antibiotics Wisely*

- Articulate the prescribing practices that we are looking to change
- Describe what is known about the drivers of these practices and the existing tools that are intended to address these
- Select existing tools that are most useful
- Identify the barriers to their use and how these tools need to be adapted to ensure their uptake into practice
- Determine how these tools are best disseminated to front-line prescribers

Our Team

Jerome Leis
Physician Lead

Andrea Moser
Long-Term care Physician co-Lead

Patrick Quail
Long-Term care Physician co-Lead

Doreen Day
Project Manager

Wendy Levinson
Chair

Steph Callan
Communications Specialist

Hayley Thompson
Implementation Community

Karen Born
Knowledge Translation Lead

Joanna Wong
Project Coordinator

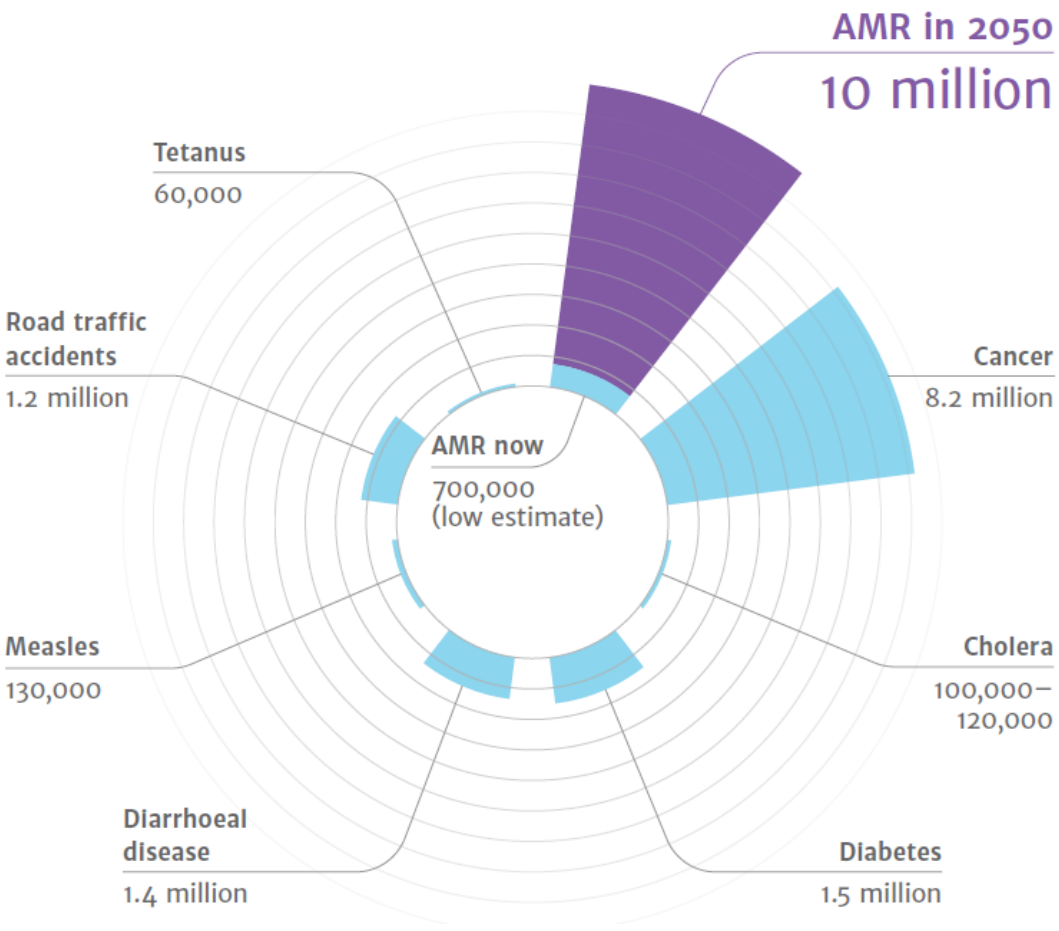
Long-Term Care Campaign Support

THE COLLEGE OF FAMILY PHYSICIANS OF CANADA
LE COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA

Long Term Care Medical Directors Association of Canada
Association canadienne des directeurs médicaux en soins de longue durée

CANADIAN NURSES ASSOCIATION

Overview

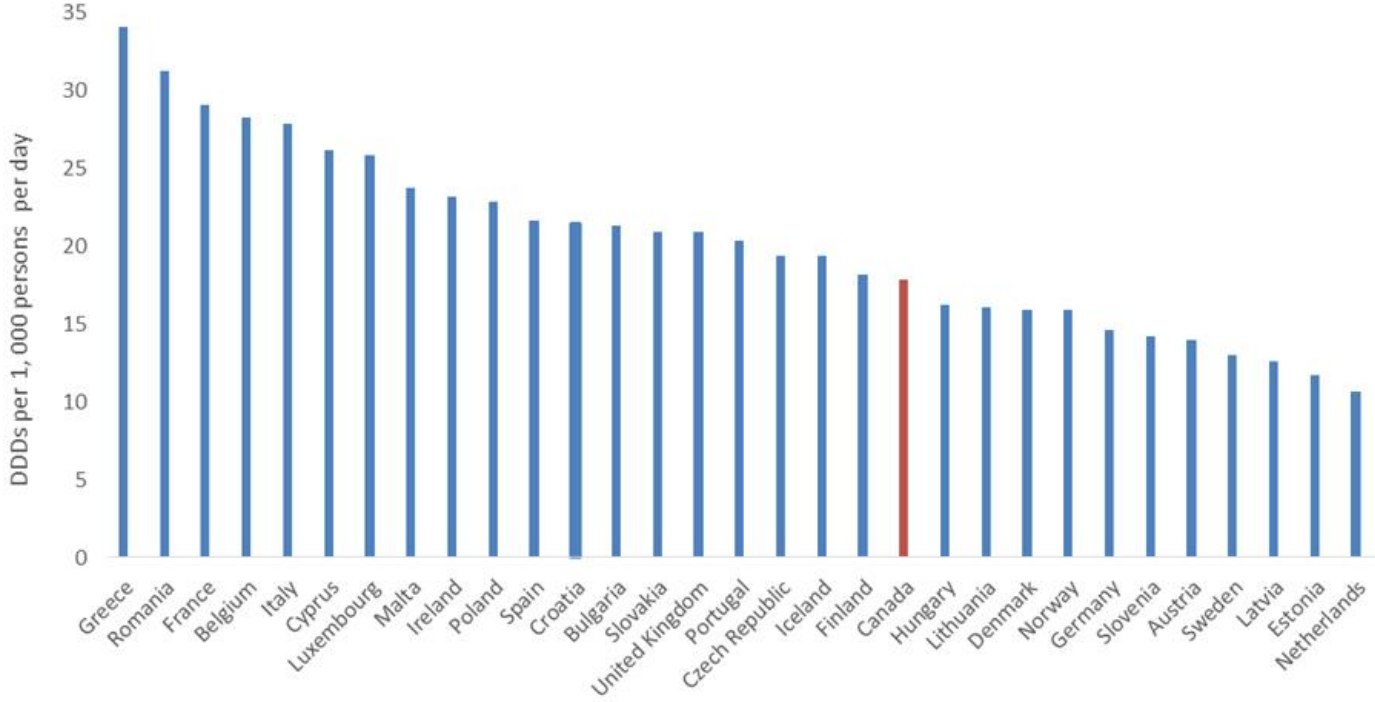


Sources:

Diabetes: www.whi.int/mediacentre/factsheets/fs312/en/ Cancer: www.whi.int/mediacentre/factsheets/fs297/en/
Cholera: www.whi.int/mediacentre/factsheets/fs107/en/ Diarrhoeal disease: www.sciencedirect.com/science/article/pii/S0140673612617280
Measles: www.sciencedirect.com/science/article/pii/S0140673612617280 Road traffic accidents: www.whi.int/mediacentre/factsheets/fs358/en/
Tetanus: www.sciencedirect.com/science/article/pii/S0140673612617280

Review on Antimicrobial Resistance

Outpatient antimicrobial use reported in Canada and in 30 European countries



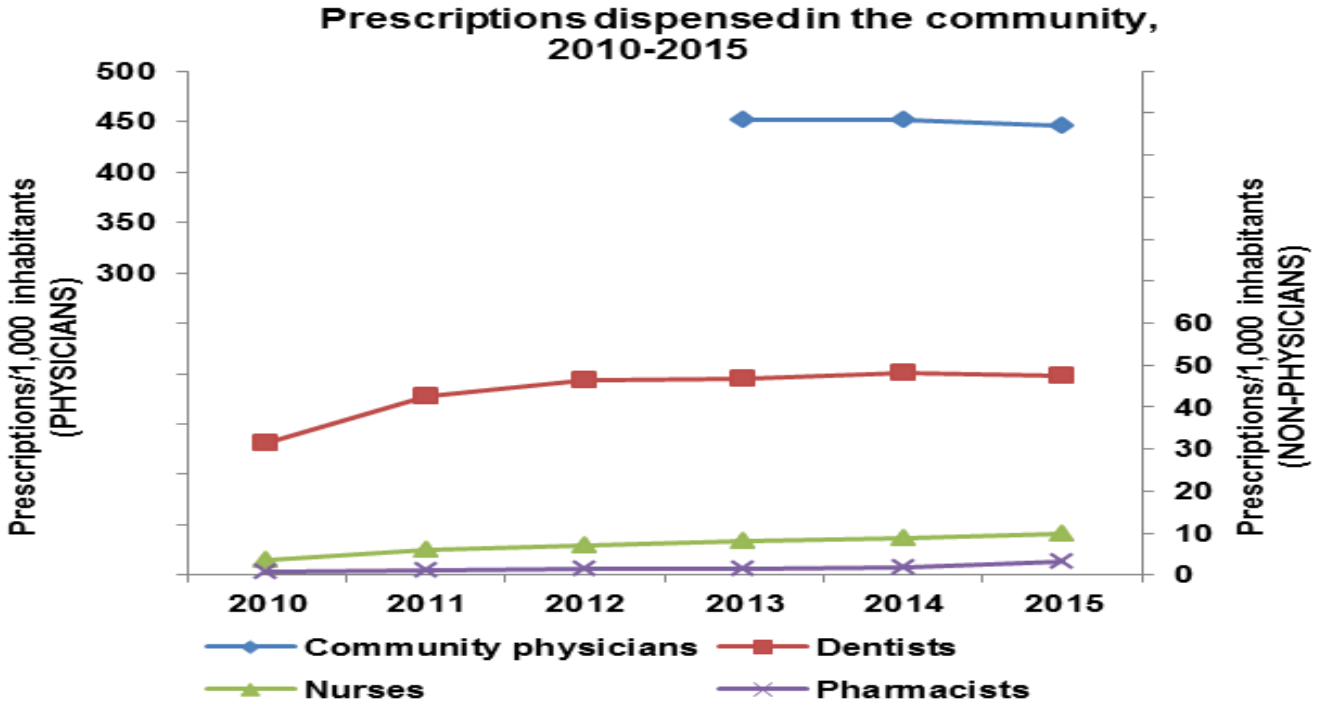
Canadian Antimicrobial Resistance Surveillance System Report 2016

Human antimicrobial utilization in Canada

- 247,014 kg of antimicrobials were dispensed/purchased in 2016, with a total expenditure of $766M
  - ➢92% prescribed in the community
  - ➢8% in hospitals

Courtesy of Public Health Agency of Canada

Who are the prescribers of antibiotics in Canada?



Courtesy of Public Health Agency of Canada

How much community antibiotic prescribing is appropriate?

- Best estimate from United States (2010-11)
  - 506 antibiotic prescriptions per 1000 population
  - 353 (70%) considered appropriate

- By syndrome
  - Acute respiratory infection (50%)
  - Urinary tract infection *(15-60%)

Fleming-Dutra et al, *JAMA* 2016
*Rotjanapan et al, Arch Intern Med, 2011
*Eure et al, Infect Control Hosp Epidemiol 2017

About half of antibiotic prescriptions in long term care are unnecessary or inappropriate

Author	Year	Population	N	% inappropriate
Zimmer	1986	42 U.S. NHs	1748	38%
Jones	1987	2 Portland NHs	120	51%
Loeb	2001	22 chronic care facilities in Canada	3656	51%
Mitchell	2014	Patients with advanced dementia in 21 Boston NHs	214	56%
Rotjapanan	2011	Urinary tract infections in 2 Rhode Island NHs	172	73%

Courtesy of Dr. Nick Daneman

Loeb *JGIM* 2001; Jones *AJM* 1987; Mitchell *JAMA IM* 2014; Rotjapanan *JAMA IM* 2011; Zimmer *JAGS* 1986

Research

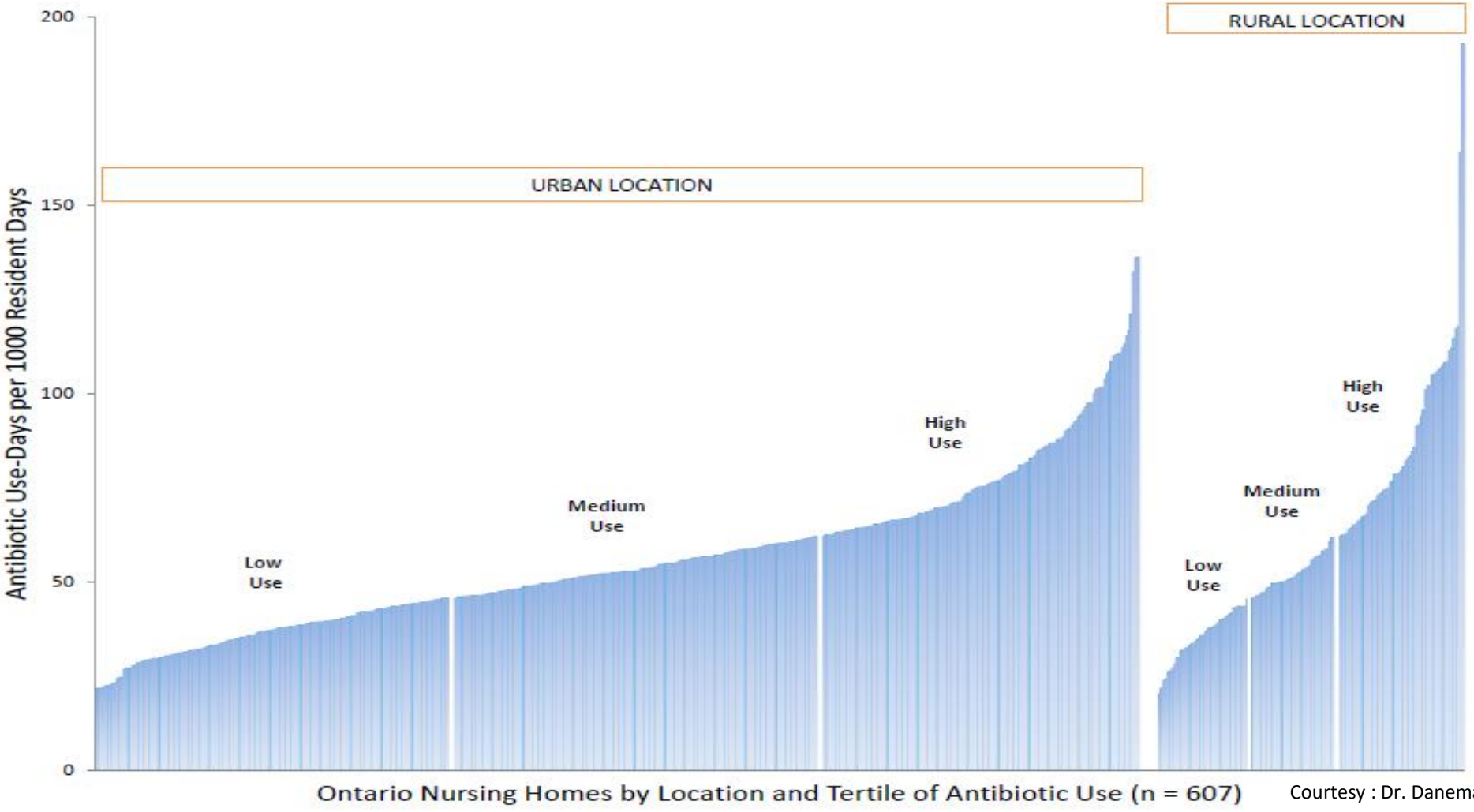
Original Investigation | LESS IS MORE

Variability in Antibiotic Use Across Nursing Homes and the Risk of Antibiotic-Related Adverse Outcomes for Individual Residents

Nick Daneman, MD, MSc; Susan E. Bronskill, PhD; Andrea Gruneir, PhD; Alice M. Newman, MSc; Hadas D. Fischer, MD, MSC; Paula A. Rochon, MD, MPH; Geoffrey M. Anderson, MD, PhD; Chaim M. Bell, MD, PhD

- retrospective open cohort study
- all residents living in Ontario nursing homes at any time in Jan, 1 2010 - Dec 31 2011
- 110,656 residents in 607 nursing homes
- antibiotic treatment on:
  - 2,783,000 antibiotic days / 50,953,000 resident days
  - 55 antibiotic days / 1000 resident days
  - 10-fold variation across facilities

Courtesy of Dr. Nick Daneman



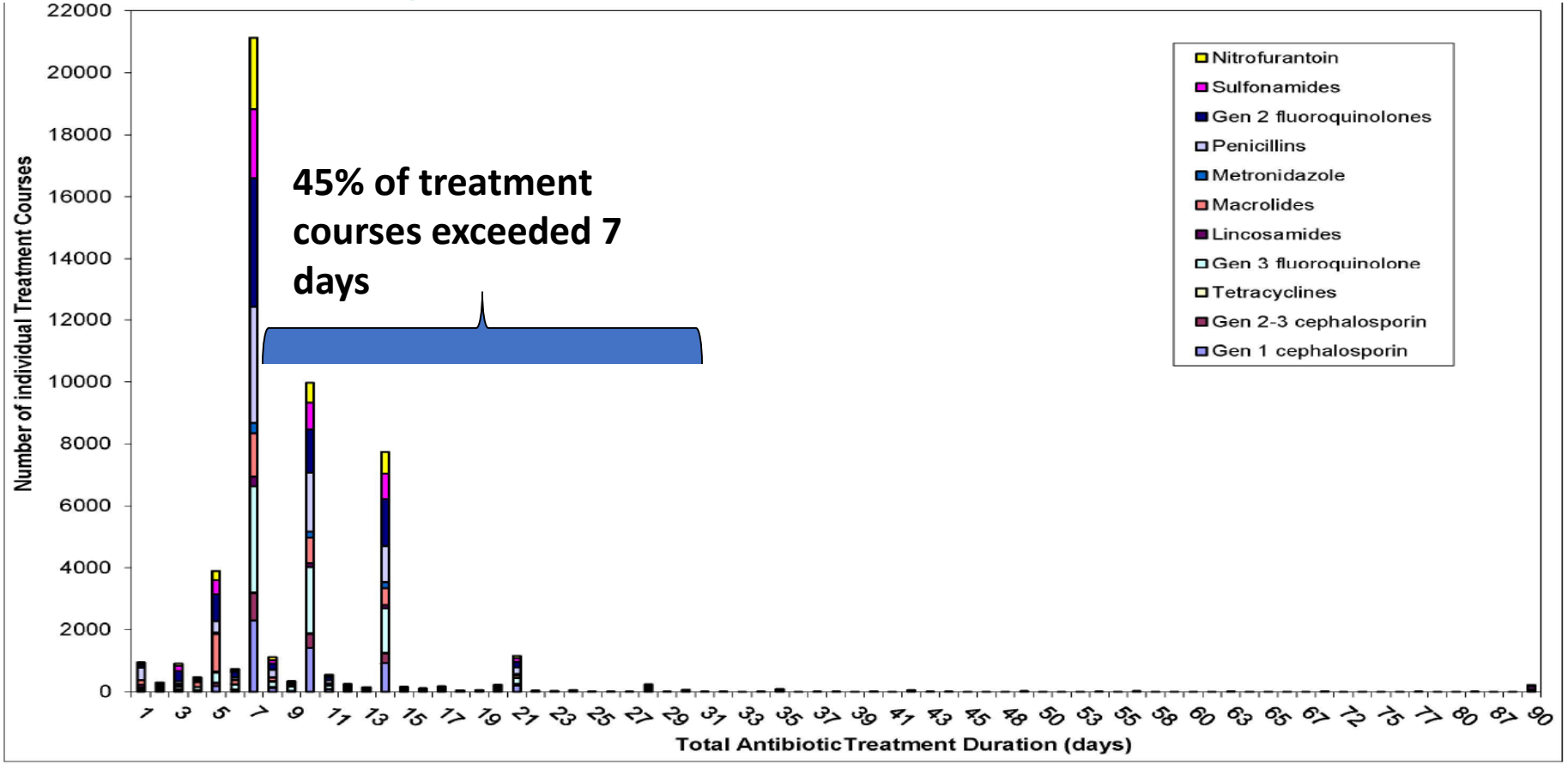
Courtesy : Dr. Daneman

Antibiotic-related harms in low, medium and high antibiotic homes

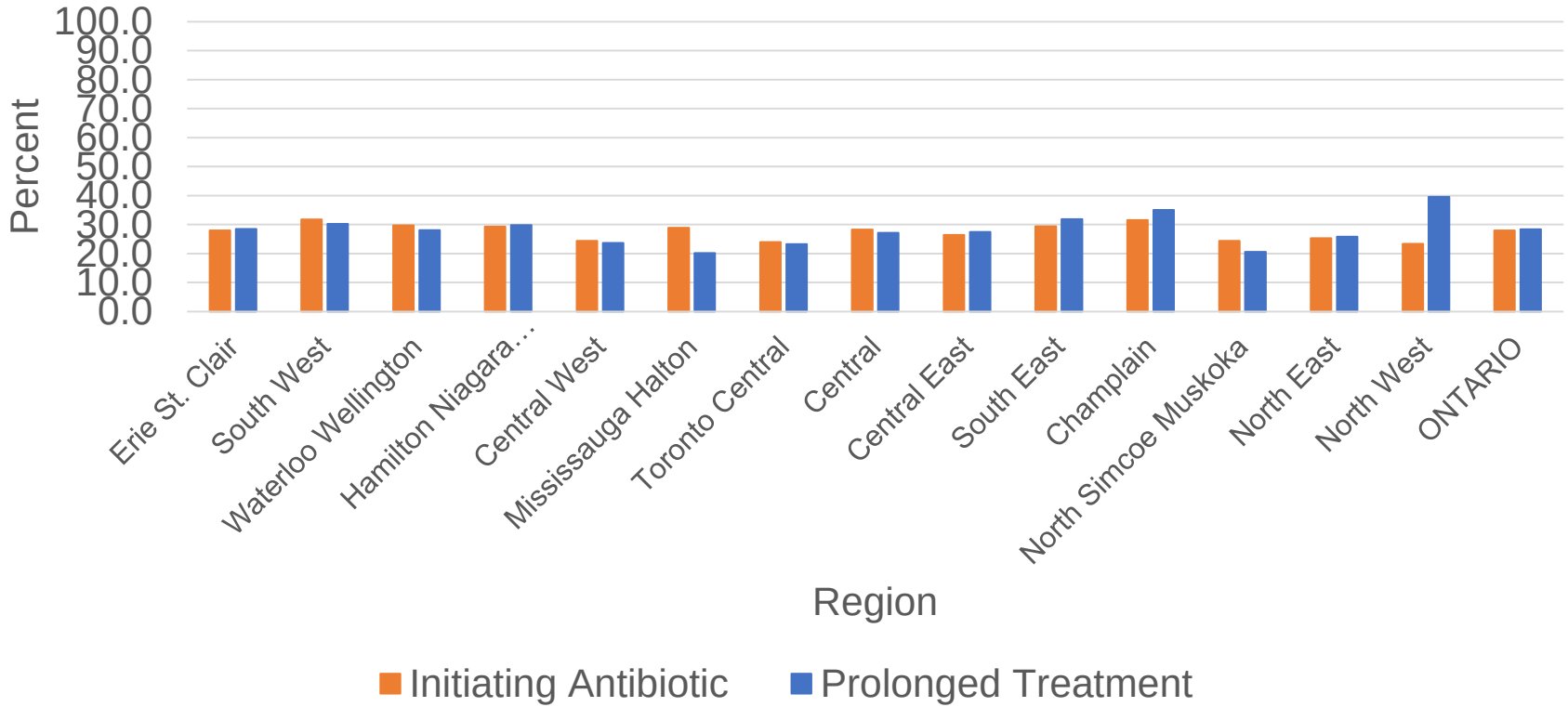
Antibiotic-Related Harm	Low Antibiotic Use Facility	Medium Antibiotic Use Facility	High Antibiotic Use Facility
C. Difficile	274 (0.8%)	268 (0.9%)	221 (0.9%)
Diarrhea	3347 (9.9%)	3388 (10.8%)	2889 (11.6%)
Antibiotic-resistant organisms	412 (1.2%)	431 (1.4%)	319 (1.3%)
Antibiotic allergy	13 (0.0%)	25 (0.1%)	22 (0.1%)
Medication adverse event	96 (0.3%)	124 (0.4%)	88 (0.4%)
ANY OF THE ABOVE	3869 (**11.4%**)	3890 (**12.4%**)	3311 (**13.3%**)

Courtesy of Dr. Nick Daneman

The Prescriptions

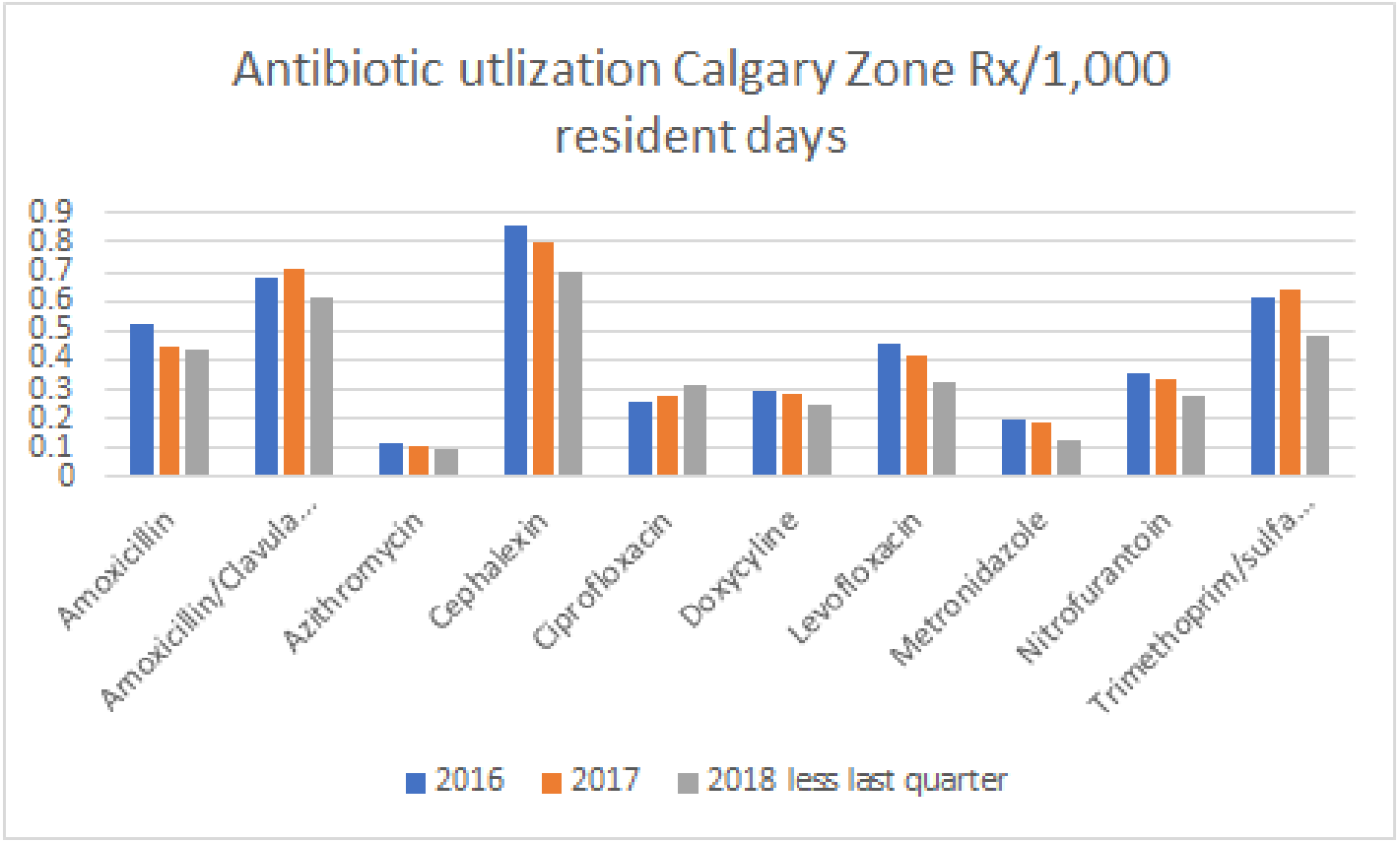


Percent of residents dispensed an antibiotic, and the percent of treatments longer than seven days, Ontario and Regions, January 1, 2018 to March 31, 2018



Slide courtesy of HQO

- Inappropriate initiation of antibiotics
- Excess durations
- Most glaring opportunity for improvement is in UTI management


Antibiotic utlization Calgary Zone Rx/1,000 resident days
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Amoxicillin
Amoxicillin/Clavula...
Azithromycin
Cephalexin
Ciprofloxacin
Doxycycline
Levofloxacin
Metronidazole
Nitrofurantoin
Trimethoprim/sulfa...
2016
2017
2018 less last quarter

There are barriers to appropriate antibiotic prescribing in long term care

- Limited histories in cognitively impaired patients
- Blunted febrile responses in older patients
- difficulty distinguishing infection from comorbidity mimickers
  - eg, pneumonia VS congestive heart failure and COPD
  - eg, venous stasis VS cellulitis
  - eg, altered mental status from dementia VS sepsis
- Off-site radiology and laboratory testing
- Off-site physicians
  - up to half of antibiotic prescriptions called in by phone

Nicolle *ICHE* 2000; Crnich *Drugs Aging* 2015; Katz *Arch IM* 1990

Practice Change Recommenations

Development Process

- National Working Group - October 2018
- Development of practice change recommendations
- Review and feedback on existing successful tools
- Finalizing Practice Change Statements
- Vetting and endorsement by CFPC, the LTCMDAC and the CNA
- Dissemination of Practice Change Statements
- Ongoing national collaboration on development and implementation of tools to support these practice changes

Practice Change Recommendations

- Review of Practice Change Recommendations (21 versions!)
  - ✓College of Family Physicians of Canada (CFPC)
    - ✓Care of the Elderly Committee
  - ✓Long-Term Care Medical Directors of Canada Association
  - ✓Public Health Ontario (PHO)
  - ✓Alberta Health Services (AHS)
  - ✓Nursing
    - ✓Registered Nurses Association of Ontario (RNAO)
    - ✓Nurse Practitioners Association of Ontario (NPAO)
    - ✓Canadian Nurses Association (CNA)

Practice Change Recommendations

- The following key practice changes have been identified and are intended to reduce unnecessary antibiotic use for urinary tract infections (UTI) in long-term care (LTC).

- They are not a substitute for timely individual clinical assessment and management and do not apply to the acutely unwell resident with suspected sepsis.

	Process of Care in Long-Term Care	Practice Change Recommendations
1	New admission/periodic health examinations /new referrals in long-term care (LTC)	Institutional policy/order sets: Don't perform screening urinalysis/urine dipstick and/or urine culture and sensitivity for residents on admission, during periodic health examinations, or prior to new specialist referrals.
2	Use of urine dipstick or urinalysis	Urine dipsticks: Don't perform urine dipstick/urinalysis to diagnose a urinary tract infection (UTI). Although it has some value in ruling out infection of the urinary tract, accuracy is poor in older adults, and the harms of using this test in terms of triggering overtreatment outweigh benefits.

Practice Change Recommendations

	Process of Care in Long-Term Care	Practice Change Recommendations
3	Assessment of resident with change in health status (e.g., change in urine odour or colour, change in behaviour, fever, etc.)	Nurses, physicians, and nurse practitioners: Don't assume a UTI is the cause of any change in health status, including behaviours, until alternate explanations are excluded, such as volume depletion, constipation, skin breakdown, medication side effects, and other sources of infection. Don't send a urine culture unless the change noted is accompanied by minimum criteria for a UTI (specific for residents with and without catheters). Do perform a clinical assessment to identify alternate causes for change in health status including examination of the perineal skin. Do complete a comprehensive delirium workup, if clinically indicated, which may include a urine culture (see Practice Change Recommendation #5). Do encourage increased fluid intake if urine is concentrated or malodorous. Do document and reassess.

Practice Change Recommendations

	Process of Care in Long-Term Care	Practice Change Recommendations
4	Substitute decision maker/family request to submit a urine culture or treat a UTI	Nurses, physicians, and nurse practitioners: Don't collect a urine culture upon request without first seeking to understand and address resident/substitute decision maker/family concerns. If the resident does not meet minimum criteria for a UTI, provide educational materials about risks of treating positive urine cultures in absence of convincing features of infection. Provide resident/substitute decision maker/family with a differential diagnosis and a rationale for the investigations that will help identify the etiology of the symptoms.

Practice Change Recommendations

	Process of Care in Long-Term Care	Practice Change Recommendations

5	Management of resident with clinical criteria for a UTI	When to collect a urine culture: Don't order a urine culture unless minimum criteria for a UTI are present (modified Loeb criteria).
		• In a non-catheterized resident, the minimum criteria include:
		  ○ acute dysuria or
		  ○ 2 or more of the following:
		  ▪ fever [> 37.9°C (100°F) (or a 1.5°C (2.4°F) increase above baseline on at least two occasion over the last 12 hours] and , new or worsening urgency, frequency, suprapubic pain, gross hematuria, flank pain , urinary incontinence
		• In a catheterized resident, minimum criteria include:
		  ○ Any one of the following after alternate explanations have been excluded: fever [> 37.9°C (100°F) (or a 1.5° C (2.4°F) increase above baseline on at least two occasions over the past 12 hours], flank pain, shaking chills, new onset delirium

Practice Change Recommendations

Process of Care in Long-Term Care	Practice Change Recommendations
	How to collect a urine culture: Don't collect urine specimens that are likely to be contaminated (not urine hat or catheter bag). Use approved sterile collection container. Non-catheterized residents should have a midstream urine if they are able, or alternatively a urine sample collected through intermittent catheterization. Catheterized residents should have a new urinary catheter placed before collecting the first void urine if catheter has remained in place for more than 14 days. When to treat: Don't initiate antimicrobial therapy empirically without a strong clinical suspicion of a UTI and until after the appropriate urine specimen has been collected (assuming laboratory pick-up within 24 hours), unless resident is hemodynamically unstable.

Note: The Loeb criteria clinical criteria validated for diagnosis for UTI and differ from criteria that are used for surveillance.
Note: Confusion alone is not symptom of UTI in non-catheterized resident.

Practice Change Recommendations

	Process of Care in Long-Term Care	Practice Change Recommendations
6	Management of resident with positive urine culture	Nurses: Before calling physician/nurse practitioner, reassess for presence of minimum criteria for a UTI in order to inform recommendation. Physicians/nurse practitioners: • Don't prescribe antibiotics before first asking why a urine culture was submitted, and if the initial reason has improved already without antibiotic treatment, don't treat • Ask about localizing symptoms of a UTI and only prescribe antibiotics if minimum criteria are still present Pharmacist: Verify with the physician or nurse practitioner for any antibiotics prescription received, typically used for a UTI, that has a duration greater than a 7-day course.

Practice Change Recommendations

	Process of Care in Long-Term Care	Practice Change Recommendations
7	Selecting antibiotic and duration for a resident with clinical criteria for a UTI	Physicians/nurse practitioners/pharmacists: Don't treat a UTI for excessive durations. Empiric antibiotic choice should be based on resident tolerance, renal function, and local/institutional resistance pattern (antibiogram) where available. Duration of therapy depends on the UTI syndrome: uncomplicated cystitis is 3–5 days depending on the antibiotic chosen; complicated cystitis (male resident, catheterized residents, urological abnormalities) requires 7 days; acute pyelonephritis can generally be treated for 7 days.
8	Follow-up assessment of resident with clinical criteria for a UTI	Nurses/physicians/nurse practitioners/pharmacists: Don't forget to reassess the need for antibiotic therapy within 3 days of starting antibiotics to check antibiotic sensitivity results and that the resident is improving. Urine culture results should be reviewed and antibiotic therapy adjusted according to culture result and sensitivity testing. Antibiotic therapy should be stopped if result of the urine culture collected before antibiotics is negative. An alternate diagnosis should be considered for residents without improvement despite 3 days of effective therapy. Don't repeat urine culture (test of cure) for residents who have improved or completed their treatment course.

Practice Change Recommendations

	Process of Care in Long-Term Care	Practice Change Recommendations
9	Resident transferred to the emergency department	Emergency medicine physicians and nurse practitioners: Don't routinely screen residents from LTC homes with a urinalysis/urine dipstick unless minimum criteria for a UTI are present. Look for alternate explanations for change in clinical status, refer to Practice Change Recommendation #3.

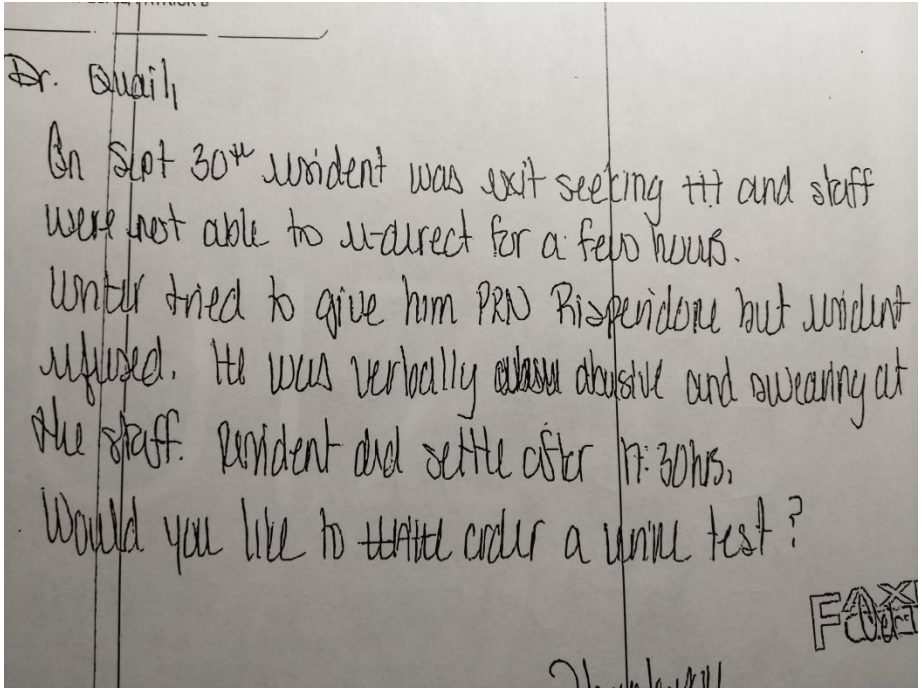
Discussion

- How would you apply these in practice?

Matching The Solution To The Problem

Process of Care in Long-Term Care	Barrier to Practice Change	Tools/Institutional Changes to Support Practice
New admission/annual investigations	Ordersets/medical directive	Remove from order sets/admission orders/medical directives. Family/resident communication tool
Use of urine dipstick or urinalysis	Access to dipsticks	Remove dipsticks
Assessment of resident with change in health status	Lack of objective criteria and alternate explanations	Traffic light decision aid poster Visual care pathway (for LTC) Clinician tool on delirium
Substitute Decision Maker/Family request to submit a urine culture or treat a UTI	Expectations for testing/treatment	Traffic light decision aid poster Family/resident communication tool
Management of resident with clinical criteria for UTI	Lack of objective criteria	Visual care pathway (paper or EMR integrated)
Selecting antibiotic and duration for a resident with clinical criteria for UTI	Prescriber knowledge gap	Clinician tool on duration of therapy
Follow up assessment of resident with clinical criteria for UTI	Workflow does not include re-assessment of antibiotic therapy at day 3	Interprofessional team (Nurse Practitioner/ Nurses/Pharmacists) to prompt reassessment and discussion with prescriber when appropriate (e.g. for negative urine culture)
Resident transferred to the Emergency Department	Lack of objective criteria, access to dipsticks	Not ordering urine dipsticks for residents from LTC Visual care pathway (for acute care) Clinician tool on delirium

Clinical Case #1



Dr. Quail,

On Sept 30th resident was exit seeking ++ and staff were not able to redirect for a few hours.
Writer tried to give him PRN Risperidone but resident refused. He was verbally abusive and swearing at the staff. Resident did settle after 11:30hrs.
Would you like to ~~still~~ order a urine test?

FAX

Clinical Case #1

- 82 year old male
- Supportive living resident
- Advanced dementia CPS= 5
- Wife is SDM
- Hypertension
- Remote hx pneumonia
- Hearing impairment

Clinical Case #2

- Recent admission to LTC from community.
- History of recurrent UTI and patient had standing script at community pharmacy for daughter to fill in a prn basis if behaviour change.
- Long-standing relationship with family physician.
- Potential for new behaviours symptoms high with transitions of care (new environment, new routines, new care team).
- Provided education on asymptomatic bacteriua to daughter
- Resident 2 months into admission gradual change in behaviours . More refusal of care, decreased engagement.
- No specific symptoms
- Family certain this was UTI - I did delirium workup including urine c/s. It is positive.

Clinical Case #3

- Resident is 88 year old
- History of Moderately advanced Dementia, Osteoarthritis, Atrial Fibrillation, Hypertension
- Presents with Dysuria
- Vitals stable, afebrile

- You are called with result of positive urine culture

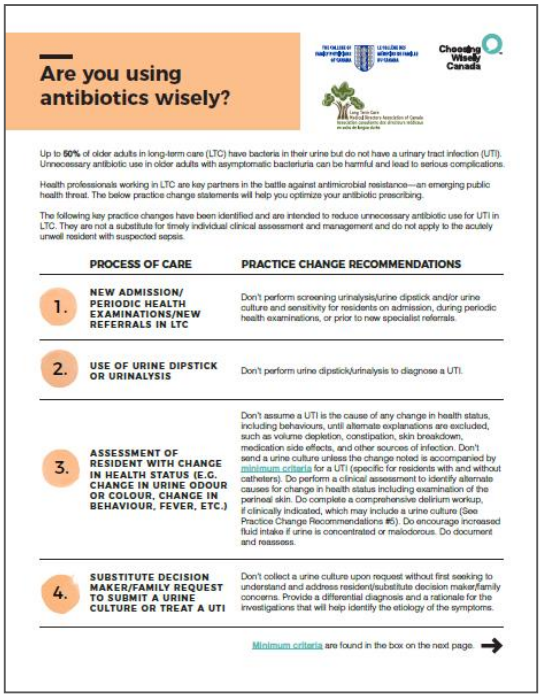
Clinical Case #4

- Resident is 75 year old female with a history of depression, insomnia, chronic pain, Parkinsons disease and falls

- She fell when walking back from breakfast and suffered a hematoma and laceration over her eye. Decision was made to transfer to ED.

- On return from ED, she has no fractures, and received 5 sutures. In addition returns with prescription for Ciprofloxacin 500mg daily x 7 days for UTI.

Supporting Materials



Are you using antibiotics wisely?

Choosing Wisely Canada

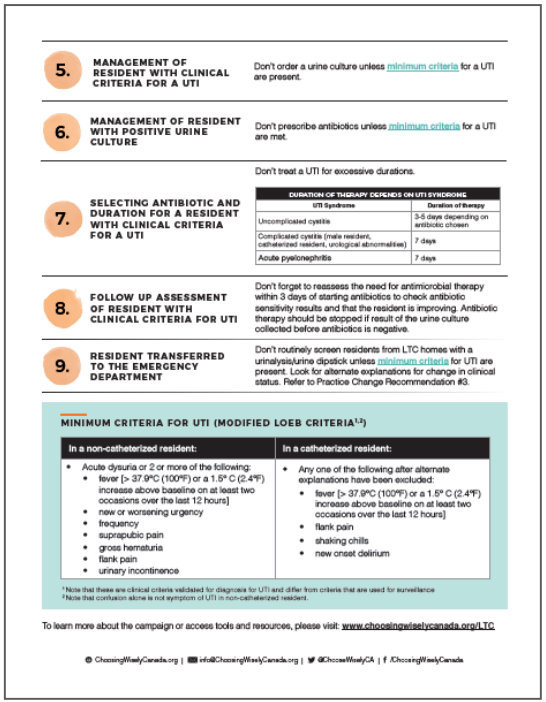
Up to **50%** of older adults in long-term care (LTC) have bacteria in their urine but do not have a urinary tract infection (UTI). Unnecessary antibiotic use in older adults with asymptomatic bacteriuria can be harmful and lead to serious complications.

Health professionals working in LTC are key partners in the battle against antimicrobial resistance—an emerging public health threat. The below practice change statements will help you optimize your antibiotic prescribing.

The following key practice changes have been identified and are intended to reduce unnecessary antibiotic use for UTI in LTC. They are not a substitute for timely individual clinical assessment and management and do not apply to the acutely unwell resident with suspected sepsis.

	PROCESS OF CARE	PRACTICE CHANGE RECOMMENDATIONS
1.	NEW ADMISSION/ PERIODIC HEALTH EXAMINATIONS/NEW REFERRALS IN LTC	Don't perform screening urinalysis/urine dipstick and/or urine culture and sensitivity for residents on admission, during periodic health examinations, or prior to new specialist referrals.
2.	USE OF URINE DIPSTICK OR URINALYSIS	Don't perform urine dipstick/urinalysis to diagnose a UTI.
3.	ASSESSMENT OF RESIDENT WITH CHANGE IN HEALTH STATUS (E.G. CHANGE IN URINE ODOUR OR COLOUR, CHANGE IN BEHAVIOUR, FEVER, ETC.)	Don't assume a UTI is the cause of any change in health status, including behaviours, until alternate explanations are excluded, such as volume depletion, constipation, skin breakdown, medication side effects, and other sources of infection. Don't send a urine culture unless the change noted is accompanied by minimum criteria for a UTI (specific for residents with and without catheters). Do perform a clinical assessment to identify alternate causes for change in health status including examination of the perineal skin. Do complete a comprehensive delirium workup, if clinically indicated, which may include a urine culture (See Practice Change Recommendations #5). Do encourage increased fluid intake if urine is concentrated or malodorous. Do document and reassess.
4.	SUBSTITUTE DECISION MAKER/FAMILY REQUEST TO SUBMIT A URINE CULTURE OR TREAT A UTI	Don't collect a urine culture upon request without first seeking to understand and address resident/substitute decision maker/family concerns. Provide a differential diagnosis and a rationale for the investigations that will help identify the etiology of the symptoms.

Minimum criteria are found in the box on the next page. →



5.	MANAGEMENT OF RESIDENT WITH CLINICAL CRITERIA FOR A UTI	Don't order a urine culture unless minimum criteria for a UTI are present.
6.	MANAGEMENT OF RESIDENT WITH POSITIVE URINE CULTURE	Don't prescribe antibiotics unless minimum criteria for a UTI are met.
7.	SELECTING ANTIBIOTIC AND DURATION FOR A RESIDENT WITH CLINICAL CRITERIA FOR A UTI	Don't treat a UTI for excessive durations.
8.	FOLLOW UP ASSESSMENT OF RESIDENT WITH CLINICAL CRITERIA FOR UTI	Don't forget to reassess the need for antimicrobial therapy within 3 days of starting antibiotics to check antibiotic sensitivity results and that the resident is improving. Antibiotic therapy should be stopped if result of the urine culture collected before antibiotics is negative.
9.	RESIDENT TRANSFERRED TO THE EMERGENCY DEPARTMENT	Don't routinely screen residents from LTC homes with a urinalysis/urine dipstick unless minimum criteria for UTI are present. Look for alternate explanations for change in clinical status. Refer to Practice Change Recommendation #3.

DURATION OF THERAPY DEPENDS ON UTI SYNDROME	
UTI Syndrome	Duration of therapy
Uncomplicated cystitis	3-5 days depending on antibiotic chosen
Complicated cystitis (male resident, catheterized resident, urological abnormalities)	7 days
Acute pyelonephritis	7 days

MINIMUM CRITERIA FOR UTI (MODIFIED LOEB CRITERIA[1,2])

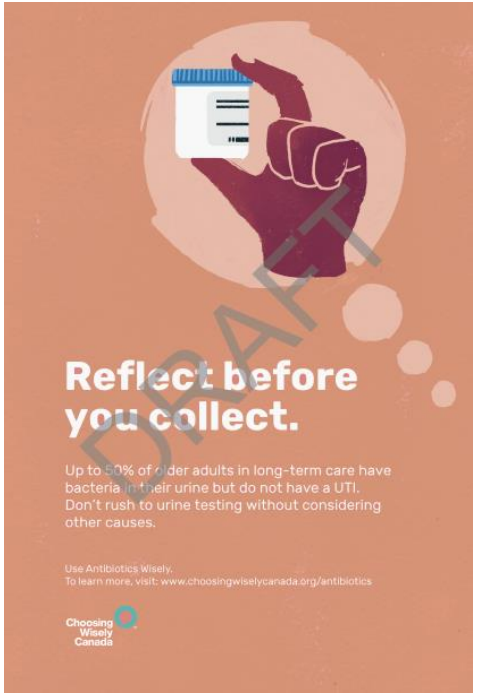
In a non-catheterized resident:	In a catheterized resident:

• Acute dysuria or 2 or more of the following:
  • fever [> 37.9°C (100°F) or a 1.5° C (2.4°F) increase above baseline on at least two occasions over the last 12 hours]
  • new or worsening urgency
  • frequency
  • suprapubic pain
  • gross hematuria
  • flank pain
  • urinary incontinence
	• Any one of the following after alternate explanations have been excluded:
	  • fever [> 37.9°C (100°F) or a 1.5° C (2.4°F) increase above baseline on at least two occasions over the last 12 hours]
	  • flank pain
	  • shaking chills
	  • new onset delirium

[1] Note that these are clinical criteria validated for diagnosis for UTI and differ from criteria that are used for surveillance
[2] Note that confusion alone is not symptom of UTI in non-catheterized resident.

To learn more about the campaign or access tools and resources, please visit: www.choosingwiselycanada.org/LTC

ChoosingWiselyCanada.org | info@ChoosingWiselyCanada.org | @ChooseWiselyCA | /ChoosingWiselyCanada



Dissemination and Communication

- Presentation at FMF
  - Oct 30 – Nov 2, 2019
- Choosing Wisely Talks
  - Nov 13th 12pm ET
- Social Media Promotion during Antibiotics Awareness Week
  - Nov 18-24, 2019
- Future dissemination opportunities with the CNA

Thank You!

- Questions?