

# Stewardship in a LTCF: “picking the low hanging fruit”



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# Long term care facility (LTCF)

- Variety of services
  - Medical
  - Non medical
- Supports
  - Health
  - Personal care needs
- Individuals
  - May have a chronic illness
  - Living with a disability

Tinelli M. Aging and infection: The clinician perspective.

4th AMIT Congress. Topics in Infectious and Tropical Diseases Milan, March 14-15, 2013:16-22

# Concerns of residencies for elderly

- Residents are clustered
- Residents cognitively impaired unable to follow basic hygiene precautions
- Caregivers inadequately trained
- Poor adherence
  - Hand washing
  - Universal precautions
- Understaffing (& young doctors in training with high turnover)

# Clinical challenges in LTCF

- Atypical clinical presentation
  - Fever absent or blunted
  - Vague symptoms
    - Confusion / Delirium, Weakness, Anorexia, Weight loss, Falls, Incontinence, Loss of physical functional capacity
- Diagnosis
  - Lack of diagnostic equipment
- Availability of clinicians
  - Telephone order

# Some challenges to address in improving antimicrobial use (I)

- High incidence of infection
  - Underlying illnesses
  - Use of invasive devices
  - Aging associated changes
  - Institutional exposure
- Bacterial cultures often positive in the absence of infection
  - Asymptomatic bacteriuria
  - Oropharyngeal colonization with Gram-negatives
  - Colonization of skin sites such as feeding tubes or decubitus ulcers with potentially pathogenic organisms
- Diagnostic uncertainty because of limitations in the clinical and microbiological evaluation

# Some challenges to address in improving antimicrobial use (II)

- Microbiologic tests must be interpreted critically in the context of the clinical presentation
- Antimicrobial therapy often prescribed for non-specific clinical alterations attributed to infection when evidence of infection is not present
  - Asymptomatic bacteriuria
  - Oropharyngeal colonization with Gram-negatives
  - Colonization of skin sites such as feeding tubes or decubitus ulcers with potentially pathogenic organisms
- Overdiagnosis of infections and overtreatment with empiric antimicrobial therapy → INCREASED AMR !



# Merging these realities is a real challenge



whoever is involved

anytime, anywhere

(not by chance, this very difficult route in the  
Yosemite Valley is called "Separate Reality" ...)

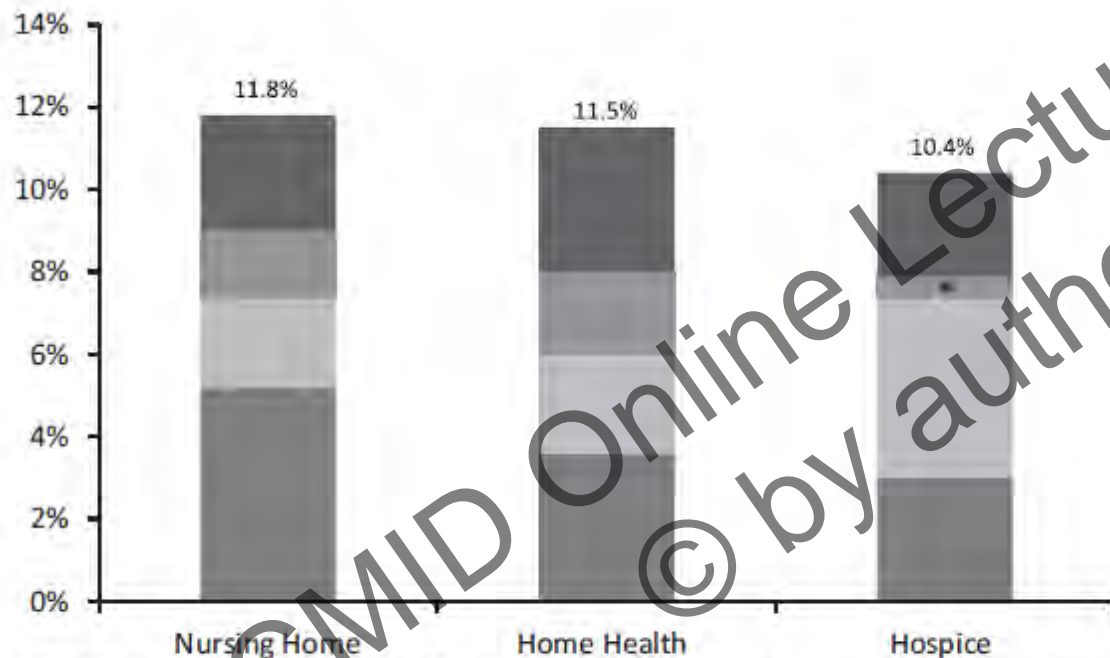
# European prevalence survey of antibiotic & infection in nursing homes, 2010

- First EU-wide point prevalence survey from May to September 2010
- Total of 64,007 residents surveyed in 722 LTCFs in 25 countries
- Confirmed HAI in 1 488 (2.4%) residents
- Most frequently reported HAI types:
  - respiratory tract infections (33.6%), urinary tract infections (22.3%), skin and soft tissue infections (21.4%), conjunctivitis (8%) and gastro-intestinal infections (4.6%)
- 4.3% received at least one antimicrobial agent
- 48.9% of all antimicrobial agents prescribed for a UTI
- Uro-prophylaxis: 27.7% of all prescribed antimicrobial agents



# Infections in Long-Term Care Populations in the United States

Lisa L. Dwyer, MPH,\* Lauren D. Harris-Kojetin, PhD,\* Roberto H. Valverde, MPH,\*  
 Joyce M. Frazier, MDiv,\* Alan E. Simon, MD,\* Nimalie D. Stone, MD, MS,<sup>†</sup> and  
 Nicola D. Thompson, PhD<sup>†</sup>



\*Estimate does not meet standards of reliability or precision because of small cell size.

Infection	Nursing Home	Home Health	Hospice
	%	%	%
Urinary tract infection	5.2	3.6	3.0
Pneumonia	2.2	2.4	4.4
Cellulitis	1.6	2.0	0.5
Other	2.8	3.5	2.5

# Skin and Soft-Tissue Infections Requiring Hospitalization at an Academic Medical Center: Opportunities for Antimicrobial Stewardship

Timothy C. Jenkins,<sup>1,4</sup> Allison L. Sabel,<sup>3,5</sup> Ellen E. Sarcone,<sup>2,4</sup> Connie S. Price,<sup>1\*</sup> Philip S. Mehler,<sup>2,3,4</sup> and William J. Burman<sup>1,4</sup>

- *S. aureus* or Streptococci in 145/150 (97%) of patients with positive culture in abscess, deep tissue or blood
  - Broad spectrum anti-Gram-negative antibiotics used in 61-80%
  - Anti-anaerobic antibiotics in 73-83%
- ...Enough to make Dr Osler or Dr Finland turn in their grave



# Prolonged...?

- Population based, point prevalence study
- 37 371 Ontario LTFC resident, 363 institutions
- April – June 2009
- 5,9% receiving antibiotics
- Variability in antibiotic use
- Most commonly used
  - Nitrofurantoin
  - Trimetoprim/sulfamethoxazole
  - Ciprofloxacin

Antibiotic use in nursing homes

JAC

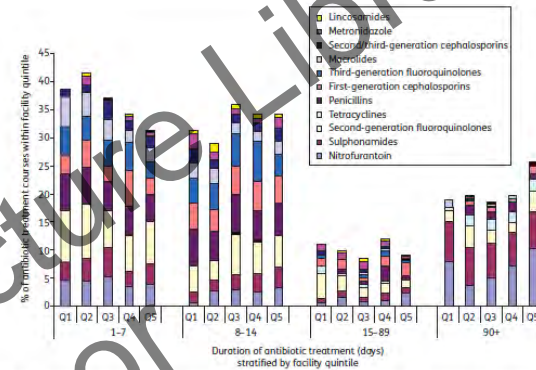


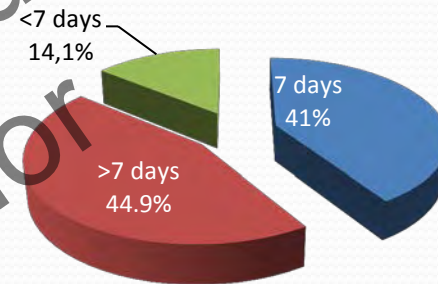
Figure 2. Duration of antibiotic therapy across long-term care facility quintiles. The duration of antibiotic treatments among Ontario long-term care residents with facilities stratified into five quintiles from lowest antibiotic prevalence (Q1) to highest antibiotic prevalence (Q5). The coloured bars indicate different antibiotic classes and subclasses. Chronic therapy ( $\geq 90$  days) usually involves nitrofurantoin, sulphonamides or second-generation fluoroquinolones and is most common in Q5.

- 20.9% exceeded 90 days
  - Chronic prophylaxis
- Less than half of the residents visited by a physician
  - Smaller minority of physicians documented infection

# Prolonged antimicrobial treatment

- Retrospective
- 66 901 Residents of Ontario, Canada, 630 LTCF in 2010
- 50 061 received antibiotics (77.8%)
- 2601 different physicians
  - 1/5th responsible for 4/5th of prescriptions
- Short, average, long duration prescribers exhibit similar characteristics
- Residents exhibit similar characteristics

Duration of Antibiotic Treatment



- Long duration appears to be influenced by prescriber preference more than patient characteristic
- Future trials should evaluate antibiotic stewardship interventions targeting prescriber preferences

Daneman N, et al. Less is more. Prolonged antibiotic treatment in long-term care. Role of the prescriber. JAMA Intern Med. 2013;173(8):673-682



individual patient care approach → 'broader is better at all cost'

- avoids uncertainty – antibiotics have a defensive function
- risk (perception) of individual failure overrides risk for longer-term loss of efficacy and societal costs.

societal approach → narrow-spectrum therapy

- attempts to conserve antibiotics & avoid selection pressure
- arguably requires more assessment to avoid errors

*Differences nuanced not by science but by different attitudes to prescribing and perception of risk-aversity*

- failures in reward system: juniors not applauded for using narrow choices or questioning antibiotic use.  
(rarely criticised by senior consultant for broad Rx)
- need to influence practice by broader clinical leadership and ownership of AMS

# Antimicrobial stewardship: a battle for hearts and minds



- To change behaviour, has to convince and be embraced by others
- Has to communicate AMR imperatives
- Debate inherently emotive
- It also has to be transparent
  - so it can be open to scrutiny
  - contradictions, schizoid issues & any 'collateral damage' can be identified
- Backed up with an evidence base
- Support lack of harm, demonstrate societal benefits
- Some of the defined outcomes harder to demonstrate





# ASP in LTCF

- Relatively new
- Stepwise approach recommended
- Initial steps
  - Least costly and intrusive
- Additional steps
  - Measures that direct the prescribing practices of providers
  - Real-time feedback

Smith PW, et al. Antibiotic stewardship programs in long-term care facilities. Clin Care Aging 2011;19:20-25

# Establishing an ASP in LTCF

- Create an ASP team
- Assess baseline practices
- Identify 1 -2 areas for intervention
- Set goals
- Implement strategies to reach the goals (quick wins as the first step)

- Calfee DP, et al. Establishment of antimicrobial stewardship programs in long-term care facilities. Program and abstracts of the Society for Healthcare Epidemiology of America 2011 Annual meeting; Dallas, Texas; April 1 -4, 2011. Abstract 393
- Trivedi KK, et al. Antimicrobial stewardship in long-term care [www.medscape.com/viewarticle/762755\\_print](http://www.medscape.com/viewarticle/762755_print)

# Undeniable obstacles

- Administrative infrastructure
- Potential barriers to overcome
  - Dedicated personnel
  - Absence of electronic records
  - Published guidelines specific to LTCF
  - Knowledge of treatment guidelines
  - Staff training
  - Access to infectious diseases experts
  - Onsite pharmacy-clinical pharmacology support

## Three simple things to improve antibiotic use in hospitals and long-term care facilities.



- Ensure that all antibiotic orders have 3 pieces of information: dose, duration, and indication
  - this will help other clinicians caring for the patient to change or stop therapy when appropriate
- When placing orders, make certain that they include getting microbiology cultures.
- When the data suggest an antibiotic is needed, target therapy and specify a final duration of treatment.
- This challenge is compounded in today's healthcare system where the primary responsibility for patient care is frequently transitioned from one clinician to another

## Plan for and create short term wins

### Is the “Low-Hanging Fruit” Worth Picking for Antimicrobial Stewardship Programs?

Debra A. Goff,<sup>1</sup> Karri A. Bauer,<sup>1</sup> Erica E. Reed,<sup>1</sup> Kurt B. Stevenson,<sup>2,3</sup> Jeremy J. Taylor,<sup>1</sup> and Jessica E. West<sup>2</sup>

<sup>1</sup>Department of Pharmacy, The Ohio State University Wexner Medical Center, <sup>2</sup>Division of Infectious Diseases, College of Medicine, and <sup>3</sup>Division of Epidemiology, College of Public Health, The Ohio State University, Columbus

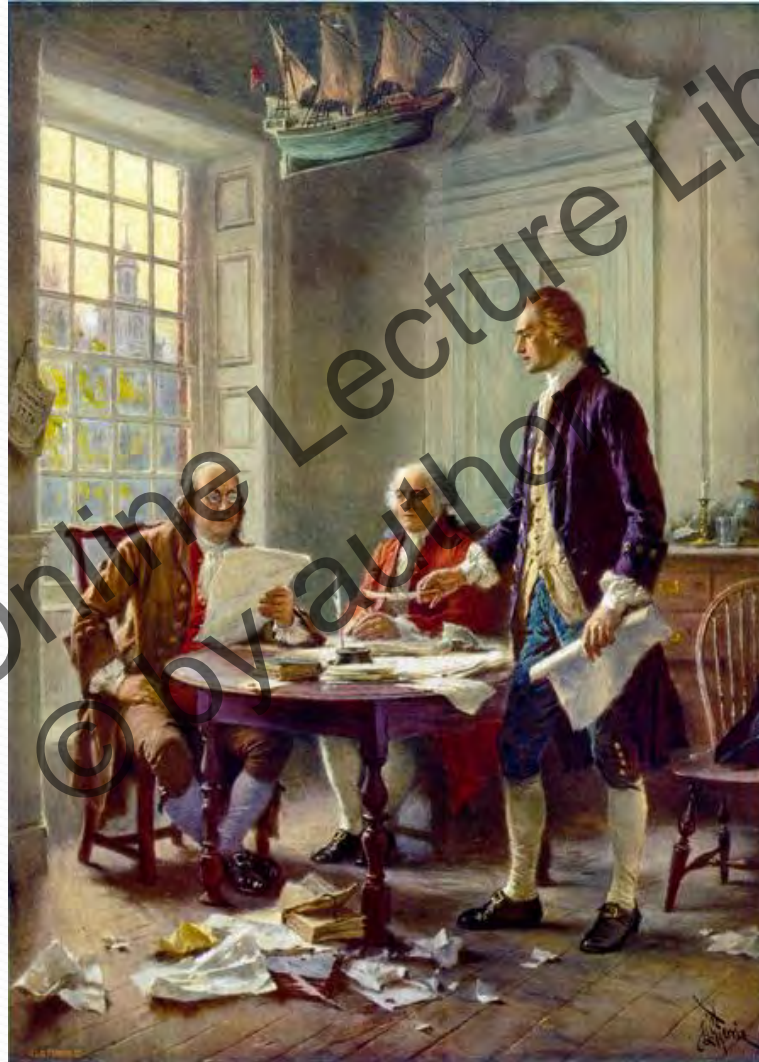
measurable process goals (the “low hanging” fruit)

- Point prevalence audits, prescriber education
  - Monitoring of selected MDRO rates (local epidemiology)
  - Antimicrobial utilisation review, 3<sup>rd</sup> gen cephalosporins and CD-associated antimicrobials
  - Recording of reason for prescription
  - Conversion from iv to oral treatment
- Recognize the team and the front-line staff as critical in making the changes
- The battle between junior doctors and nurses for smelling urines

# Other possible interventions

- Presentation of data of inappropriate treatment of asymptomatic bacteriuria
  - Develop clinical protocol for urinary tract infection diagnosis and treatment
  - Record facility-specific antibiogram
  - List of “restricted” antimicrobials
- Calfee DP, et al. Establishment of antimicrobial stewardship programs in long-term care facilities. Program and abstracts of the Society for Healthcare Epidemiology of America 2011 Annual meeting; Dallas, Texas; April 1 -4, 2011. Abstract 393
- Trivedi KK, et al. Antimicrobial stewardship in long-term care [www.medscape.com/viewarticle/762755\\_print](http://www.medscape.com/viewarticle/762755_print)





Thomas Jefferson drafting  
an audit on ceftriaxone use

# tá is féidir linn

(yes, we can)

- 69 LTCF (61 public, 8 private) surveyed
- 28% antimicrobial guidelines
  - More likely to be in use in LTCF with a coordinating physician (45%)
- 16% antimicrobial stewardship committee
  - Antimicrobial guidelines
  - Collection of microbiologic samples before antibiotics

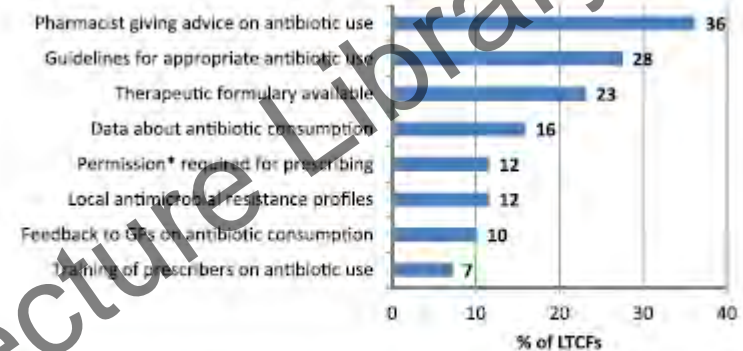


Fig 2. Summary of antimicrobial stewardship activities in 69 Irish long-term care facilities (LTCFs). \*Permission required for prescribing restricted antimicrobials.

## Need for specific LTCF initiatives

- Variation in potential antimicrobial prescribers
- Deficits in IPC and antimicrobial stewardship governance

Donlon S, et al. A national survey of infection control and antimicrobial stewardship in Irish long-term care facilities *Am J Infect Control* 2012

# Antimicrobial Stewardship in LTCF

## Effective Antimicrobial Stewardship in a Long-Term Care Facility through an Infectious Disease Consultation Service: Keeping a LID on Antibiotic Use

Robin L. P. Jump, MD, PhD;<sup>1,2,3</sup> Danielle M. Olds, RN, PhD;<sup>4</sup> Nasim Seifi, MS;<sup>1</sup> Georgios Kypriotakis, MS;<sup>1,3</sup>  
Lucy A. Jury, RN, CNP;<sup>1</sup> Emily P. Peron, PharmD;<sup>5</sup> Amy A. Hirsch, PharmD;<sup>3,6</sup> Paul E. Drawz, MD;<sup>2,3</sup>  
Brook Watts, MD;<sup>2,3</sup> Robert A. Bonomo, MD;<sup>1,2,3,7,8</sup> Curtis J. Donskey, MD<sup>1,2,3,7</sup>

# Hierarchy of a stepwise approach

	Antibiotic Stewardship Strategy	Examples
<p><b>Least Intrusive</b> Requires the least expertise, effort, and expense</p> <p><b>Most Intrusive</b> Requires the most expertise, effort, and expense</p>	<b>Passive Monitoring</b>	Measuring the types and quantities of antibiotics used in the facility, and assessing the presence of antimicrobial resistance in cumulative laboratory culture and sensitivity reports
	<b>Education</b>	Classes or training session regarding antibiotic resistance, stewardship practices, and other relevant topics offered to LTC facility employees or staff  Small group sessions with prescriber feedback and case discussions
	<b>Passive "Front-End" Approach (passive direction of antibiotic selection)</b>	Guidelines, treatment algorithms, antibiotic formulary, and antimicrobial order forms
	<b>Active "Front-End" Approach (active direction of antibiotic selection)</b>	Preauthorization of antibiotics based upon predetermined criteria for use  Review of case and immediate feedback on appropriateness of choice at initiation
	<b>"Back-End" Approach (review of already prescribed antibiotics)</b>	Individual cases are concurrently reviewed for appropriateness, usually by an expert, with feedback to the provider  Individual use data with comparators and benchmarks is provided to prescribers regarding appropriate use

**Figure.** Hierarchy of Long-Term Care (LTC) Antibiotic Stewardship Measures.

Smith PW, et al. Antibiotic stewardship programs in long-term care facilities. *Clin Care Aging* 2011;19:20-25

# Measures of Antibiotic Policy Change

- Process
  - Promoted and restricted antibiotics
  - Compliance with policy
- Outcome
  - *C difficile* infection
  - Resistance [difficult!]



## To summarize...

- Current evidence is insufficient to support recommendations for one specific program, or any specific program components
- Provision of on-site ID consultation may be really effective, but likely unrealistic for most facilities
- Program flexibility for customization to address local considerations and specific needs



# FIGHT ERRORISM !!

## Combat ignorance: Antimicrobial Stewardship

- Inappropriate antibiotic use is a medication error and we must begin tackling it now as such
- Ensuring that infections are treated properly is an important step in that direction
- In the absence of outcome monitoring, ASP are nothing more than programs to reduce AB use with a largely unproven effect on patient care
- Implementing a step by step-approach can be a simple way to start stewardship in a facility



Sisyphus. Titian. Prado, Madrid; Spain

AMS is like repetitively rolling a boulder up a steep hill.

(Such interminable activities are sometimes described as *Sisyphean*)

"one must imagine Sisyphus happy ..... the struggle itself towards the heights is enough to fill a man's heart."

*Albert Camus, The Myth of Sisyphus (1942)*

# Stewardship

The careful and responsible management of something entrusted in one's care.



Stewardship

*A way of living*



# Save the date and join us!



#### Target Audience

Up to 80 infectious diseases specialists, geriatricians, clinical pharmacologists with clinical commitment, internal medicine specialists in charge of elderly patients.

#### Invited Faculty Members

Benedetta Allegranzi, Geneva, Switzerland  
 Jean-Pierre Bru, Anancy, France  
 Andrea Corsonello, Cosenza, Italy  
 William Couet, Poitiers, France  
 Emmanuel Forestier, Chambéry, France  
 Jacques Gaillat, Anancy, France  
 Gaetan Gavazzi, Grenoble, France  
 Leonard Leibovici, Tel Aviv, Israel  
 Jean-Pierre Michel, Geneva, Switzerland  
 Maria Luisa Merlo, Bologna, Italy  
 Johan W. Mouton, Nijmegen, The Netherlands  
 Leonardo Paganì, Bolzano, Italy  
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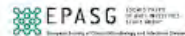
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Scientific picture inside 1: Basic principles of pharmacokinetics  
 Scientific picture inside 2: Polypharmacy and drug interactions



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 in the Elderly:  
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#### Organisers

- ESCMID PK/PD of Anti-Infectives Study Group (EPASG)
- ESCMID Study Group for Infections in the Elderly (ESGIE)

#### Supporters

- Anancy-Genevois Hospital Centre (CHANGE)
- Société de Pathologie Infectieuse de Langue Française (SPILF)

#### Course Coordinators

- Jean-Pierre Bru, Anancy, France
- Leonardo Paganì, Bolzano, Italy
- Mical Paul, Haifa, Israel

#### Course Objectives

Age-related changes in pharmacokinetics and pharmacodynamics occur with several drugs and often need to be considered for an optimal dosing regimen of antimicrobials. The aim is to provide participants with an updated insight into PK/PD concepts of antimicrobial therapy for geriatric patients.

Thank you very much for your attention!