

Georgia Long-Term Care Antibiotic Stewardship Webinar Series

April 18, 2019

Developing an Antibiotic Stewardship Infrastructure in Nursing Homes: from Theory to Practice

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Disclosures



- R18HS023779-01
- 1R01HS026747-01



- Cooperative Studies Program #2001
- FOP 19-334 (VA-CDC Infection Control Practice Based Research Network)

Consultant Activities:

1. Zurex Pharmaceuticals (Madison, WI): provide strategic advice on development and testing of the company's novel anti-septic platform (<\$5,000).

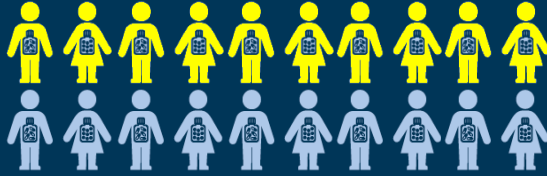
Objectives

- Regulatory requirements for the structure and process of an antibiotic stewardship program.
- Assessing your facility's compliance with existing regulatory requirements.
- Identification and involvement of individuals within the facility that should be involved in the antibiotic stewardship program.
- Identification of resources outside the facility that can assist with development of the antibiotic stewardship program.

Why Antibiotic Use in SNFs Matters

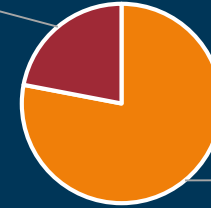


Up to **70%** of skilled nursing facility residents will receive **one or more** courses of systemic antibiotics in a year



~50% of antibiotics started in skilled nursing facilities are **unnecessary**

Narrow-Spectrum
22%



FQ, Ceph,
BL/BLI,
Macrol
78%

A majority of antibiotics prescribed in skilled nursing facilities **are broad-spectrum**

50% < 7d > 50%

Half of antibiotic course for treatment of common infections are prescribed for **more than a week.**



Why Antibiotic Use in SNFs Matters

HARMS AT INDIVIDUAL LEVEL

ADE

- 20% of all adverse drug events (ADEs) in nursing homes caused by antibiotics
- Antibiotic-associated ADEs are one of the most common reasons for transfer to ER

CDI

- *C. difficile* infection (CDI) is a life-threatening intestinal disease caused by antibiotics
- 12% of nursing home residents treated inappropriately for UTI develop CDI

ARO

- ~50% of nursing residents are colonized with antibiotic-resistant organisms (AROs)
- Antibiotic exposure is the single most important risk factor for ARO colonization

HARMS AT FACILITY LEVEL



Residents in nursing homes with higher antibiotic use have a **24% increased risk** of antibiotic-related harm



Antibiotics account for **1/3 of all survey penalties** for inappropriate medication use in Wisconsin nursing homes

HARMS AT POPULATION LEVEL



- Half of the residents transferred to the hospital are colonized with *C. difficile* and/or antibiotic-resistant bacteria which may be spread to others
- Nursing homes have been repeatedly implicated in the regional spread of resistance
- Mathematical models suggest that antibiotic resistance cannot be controlled in hospitals without controlling resistance in nursing homes



Our Government and Public Health Authorities Are Concerned



NATIONAL ACTION PLAN TO PREVENT HEALTH CARE-ASSOCIATED INFECTIONS: ROAD MAP TO ELIMINATION
APRIL 2013

CHAPTER 8: LONG-TERM CARE FACILITIES

NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA

MARCH 2015



**DEPARTMENT OF HEALTH AND
HUMAN SERVICES**

**Centers for Medicare & Medicaid
Services**

**42 CFR Parts 405, 431, 447, 482, 483,
485, 488, and 489**

[CMS-3260-F]

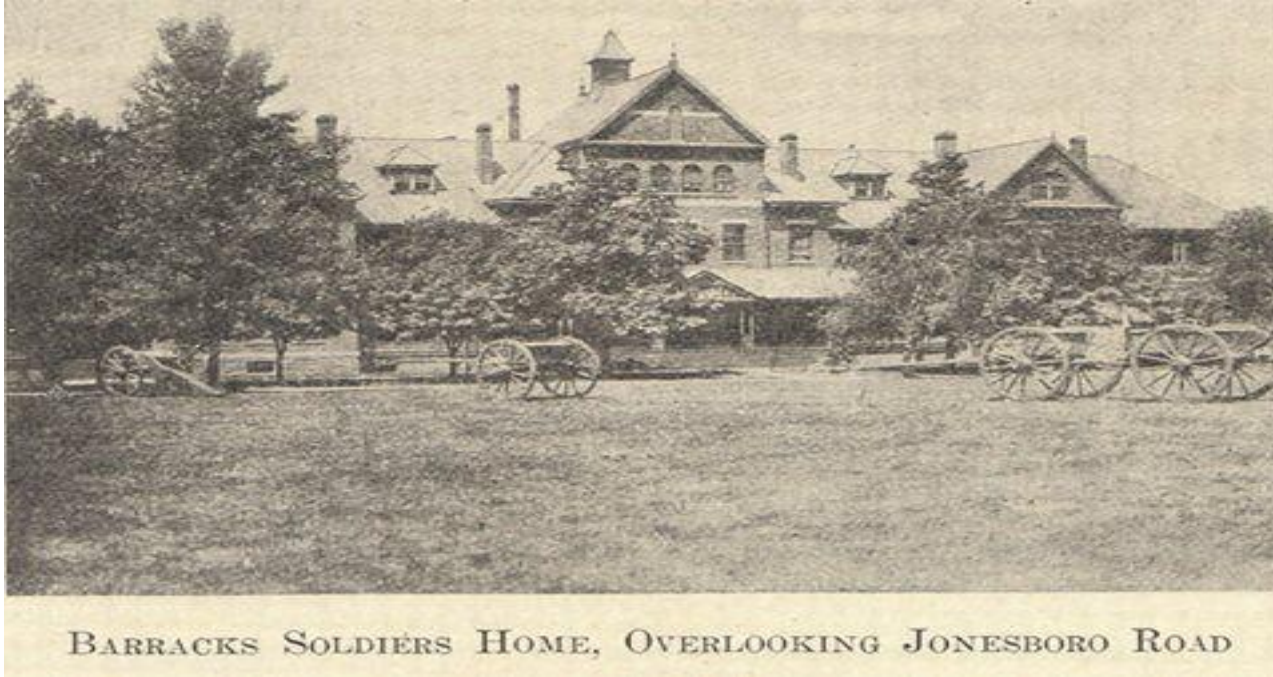
RIN 0938-AR61

**Medicare and Medicaid Programs;
Reform of Requirements for Long-
Term Care Facilities**

**AGENCY: Centers for Medicare &
Medicaid Services (CMS), HHS.**

ACTION: Final rule.

Evolution of Nursing Homes & the Regulatory Environment



Marion Branch National Home for Disabled Volunteer Soldiers, Indiana



1965 – The Older Americans Act (Medicare & Medicaid)



Nursing Home Reform Act of 1987

OBRA 87



2016 – CMS Updates “Requirements of Participation”



2009 – Infection Control Guidance Updated



Regulatory Overview

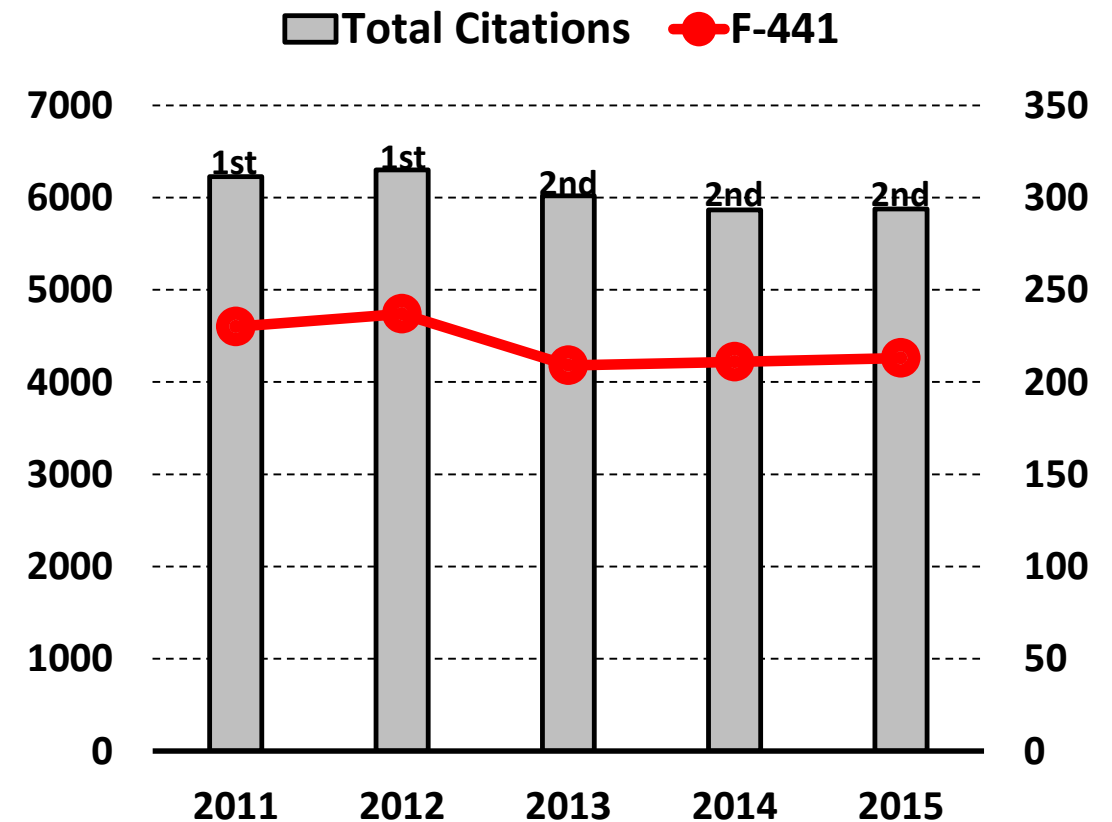
- SNF's are required to be "certified" in order to receive reimbursement from Medicare and Medicaid (majority are dually certified).
- Certification is renewed annually and involves an on-site inspection by team of surveyors.
- OBRA 87 led to the development of process standards that facilities must demonstrate during their inspection in order to remain certified
- 1991 introduced the MDS-derived outcome (QM/QI) measures
- Survey-identified deficiencies
 - Assigned to a specific category (F-tag)
 - Assigned a level of severity ("1" = no actual harm with potential for minimal harm → "4" = immediate jeopardy to resident health and/or safety)
 - Assigned scope (isolated, pattern, widespread)
 - Matrix assigned rating (A → J)
 - All identified deficiencies require corrective action and may result in fines or denial of recertification (i.e., closure)

History of Infection Control Regulations

• 1990-2009

- 5 survey tags – *6 pages* ←
 - F441 – “Infection Control”
 - F442 – “Preventing Spread of Infection”
 - F443 – “Employees with Communicable Disease”
 - F444 – “Handwashing”
 - F445 – “Linens”
- No clear guidance on how to interpret the regulations
 - Antimicrobial stewardship???

Trends in Survey Deficiencies in Wisconsin Nursing Homes: 2011-2015



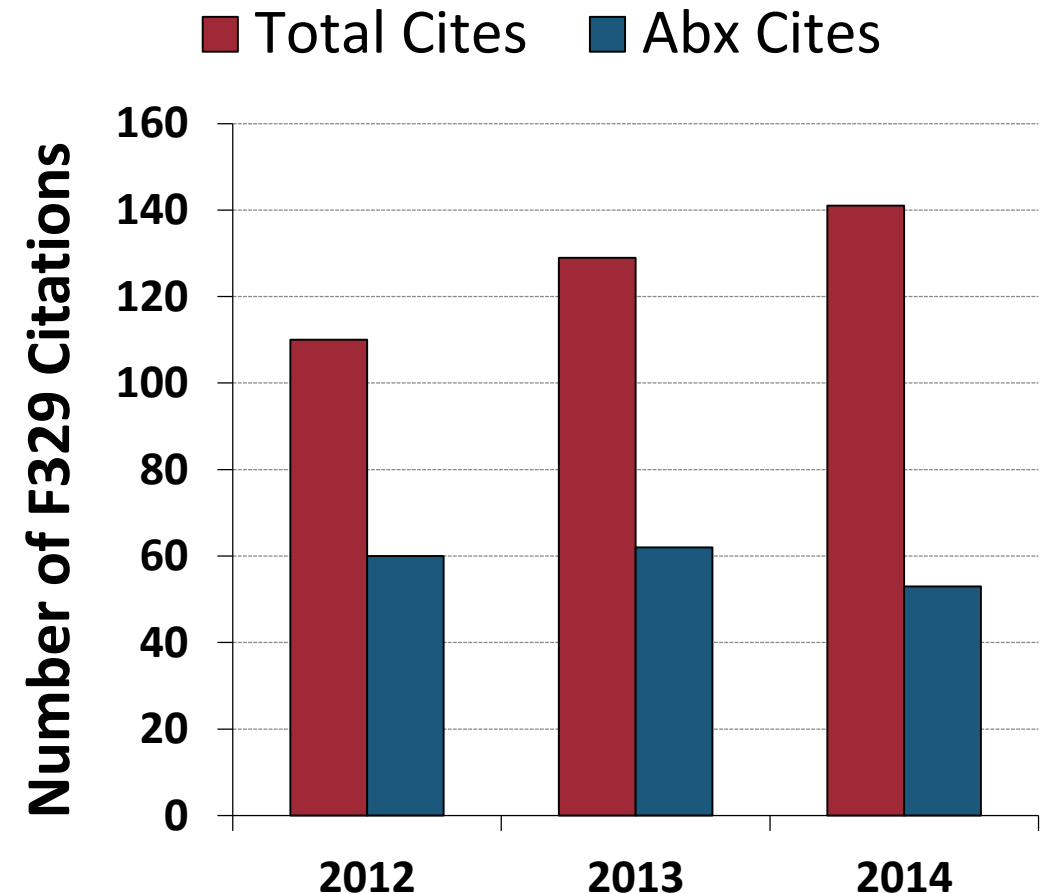
History of Infection Control Regulations

- 2005

- F329 – Unnecessary drugs
 - Often interpreted to apply only to antipsychotic medications
 - Actually applies to any high-risk medication

- 2009

- *Surveyor Guidance* updated - **34 pages**
- Collapsed tags to F441 – “Infection Control” – Required infection control program
 - Person who oversees, but short of requiring “IP”
 - Oversight not a full FTE
 - Hand hygiene
 - Transmission based precautions
 - Antibiotic review – review data to ensure appropriate use ???



History of Infection Control Regulations

- 2016

- Sweeping change to regulations
 - Moved vaccination regs under IC regs
 - Focus expanded to include interrupting transmission in addition to preventing infections
 - Must follow national standards (NHSN or McGeer)
 - Facilities are required to base their IPCP program based on an annual facility assessment
 - Facilities must employ and designate an individual for responsibility the IPCP who has received specific training in IP&C
 - §483.80(a)(3): The facility IPCP must include an antibiotic stewardship program that includes antibiotic use protocols and a system to monitor antibiotic use.

Interpretive guidance is 702 pages (IC-related sections 49 pages)

<https://www.federalregister.gov/documents/2016/10/04/2016-23503/medicare-and-medicaid-programs-reform-of-requirements-for-long-term-care-facilities>

https://www.ahcancal.org/facility_operations/Documents/SC17-36.03.Appendix%20PP%20with%20Final%20IGs.pdf

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11/2019 • Facilities must employ and designate an individual for responsibility the IPCP who has received specific training in IP&C

11/2017 • **§483.80(a)(3): The facility IPCP must include an antibiotic stewardship program that includes antibiotic use protocols and a system to monitor antibiotic use.**

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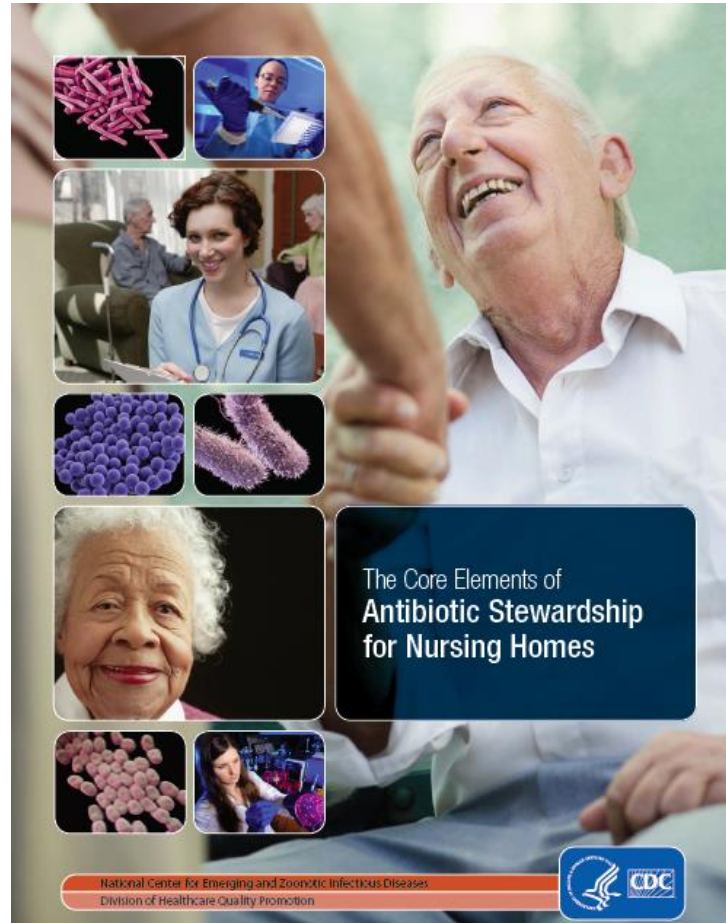
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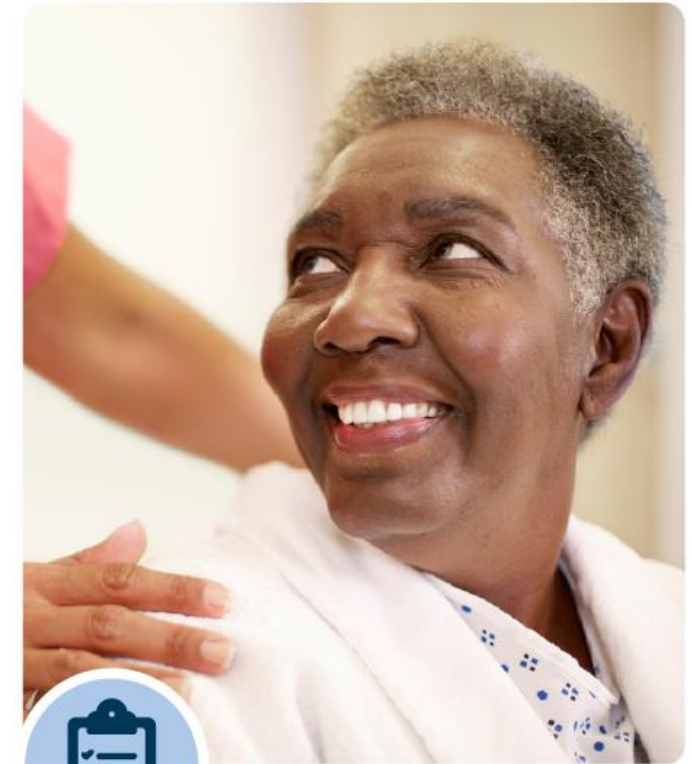
Is the Nursing Home Ready?	Yes	No
Is key leadership supportive of this effort? Support by leadership (i.e., the board and/or administrator, director of nursing, or medical director) is critical to change.		
Is the medical director actively involved in quality improvement and/or infection control?		
Is the nursing home financially stable?		
Is the nursing home's ownership and/or management stable (i.e., no changes anticipated over the next six months)?		
Is the nursing home in good standing with the State Survey Agency (e.g., not identified as a Special Focus Facility, not under State receivership, has not had admissions frozen)?		
Are there at least two staff who can serve as program champions and commit to leading the activity? Program champions could include (but are not limited to) the director of nursing, assistant director of nursing, charge nurse(s), infection prevention consultant/practitioner, and the medical director or other prescribing clinician. It is critical that at least two, if not more, staff are willing to lead the effort and champion it.		
Is there time to train staff? Implementation will require training for nursing staff and possibly prescribing clinicians, depending on the toolkit. Initial training for nurses and prescribing clinicians may take approximately 30 minutes to 2 hours. Are there sufficient resources (e.g., time, funds) to cover such training?		
Are there sufficient funds to make copies of materials for nurses, prescribing clinicians, and, as appropriate, residents and family members?		
Are there resources for implementing mechanisms to sustain the effort (e.g., staff who can train new nurses as they are hired and include the topic in the annual education program)? The key to sustaining any new activity is ensuring everyone is knowledgeable about it.		

Agency for Healthcare Research and Quality Nursing Home Antimicrobial Stewardship Guide: Toolkit 1 – Starting an Antimicrobial Stewardship Program (<https://www.ahrq.gov/nhguide/toolkits/implement-monitor-sustain-program/toolkit1-start-program.html>)

Regs Modeled on CDC Core Elements



- **Leadership commitment**
Demonstrate support and commitment to safe and appropriate antibiotic use in your facility
- **Accountability**
Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility
- **Drug expertise**
Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility
- **Action**
Implement **at least one** policy or practice to improve antibiotic use
- **Tracking**
Monitor **at least one process** measure of antibiotic use and **at least one outcome** from antibiotic use in your facility
- **Reporting**
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff
- **Education**
Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use



Checklist for Core Elements of Antibiotic Stewardship in Nursing Homes

Specific Regulatory Language

- ASP composition, governance and responsibilities
- Facilities will develop and implement an ASP protocol (policy) that includes the following:
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 5. Description of antibiotic use and resistance outcome monitoring procedures and how these data will be communicated to facility staff and providers
 6. Method and frequency of staff/prescriber education

Specific Regulatory Language

- ASP composition, governance and responsibilities

• Facility that



policy)

1. [Special Article
2. [Template for an Antibiotic Stewardship Policy for Post-Acute
3. [and Long-Term Care Settings
4. [Robin L.P. Jump MD, PhD ^{a,b,*}, Swati Gaur MD, MBA, CMD ^c, Morgan J. Katz MD ^d,
Christopher J. Crnich MD, PhD ^{e,f}, Ghinwa Dumyati MD ^g, Muhammad S. Ashraf MBBS ^h,
5. [Elizabeth Frentzel MPH ⁱ, Steven J. Schweon RN, MPH, MSN, CIC, HEM ^j,
Philip Sloane MD, MPH ^k, David Nace MD, MPH, CMD ^l on behalf of the Infection
Advisory Committee for AMDA—The Society of Post-Acute and Long-Term Care
Medicine
6. Method and frequency of staff/prescriber education

toring
facility

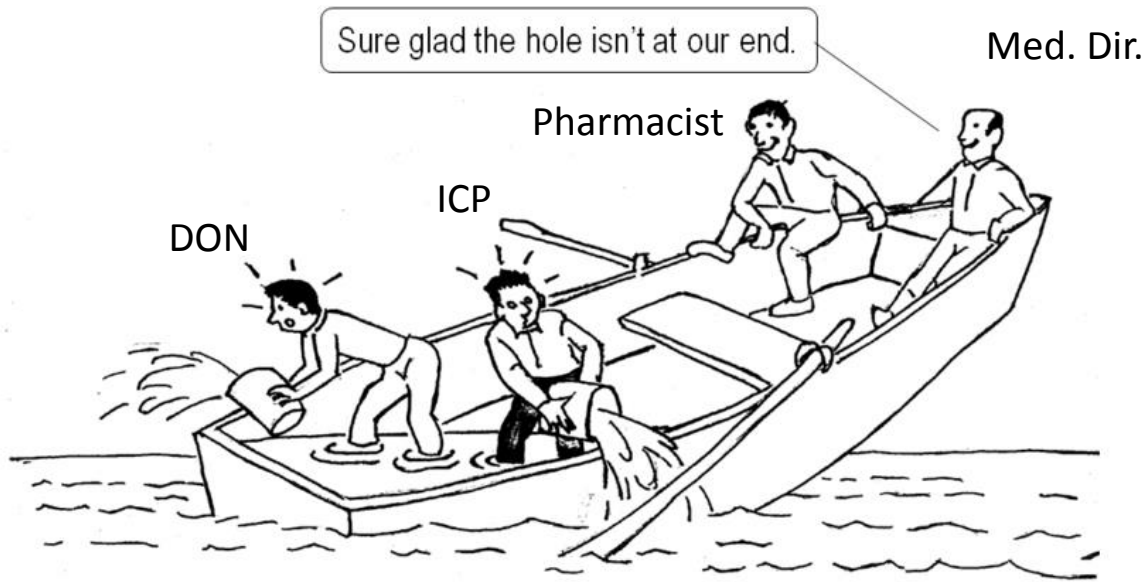
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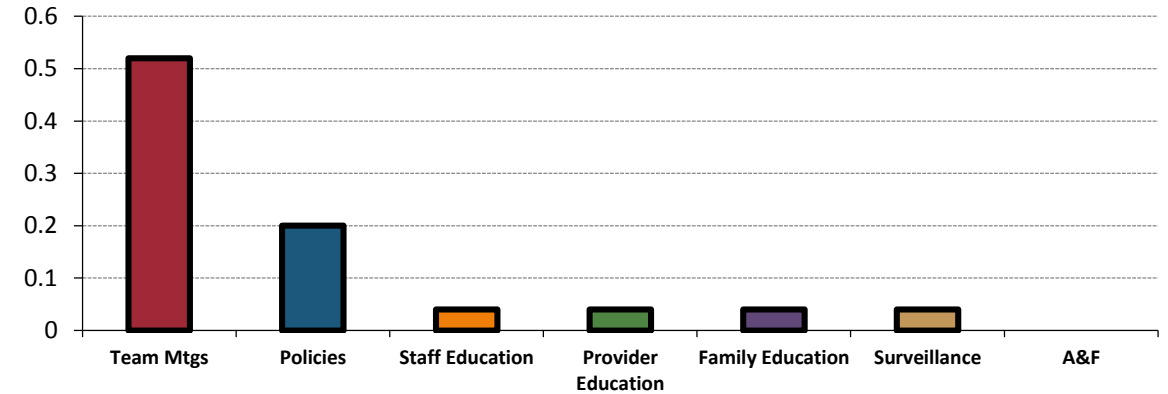
ASP Team Membership

- ASP team should involve the facility leadership
 - Medical director
 - Director of Nursing
 - Administrator
- Facility pharmacist should be involved in ASP team
 - *“Must perform a medication regimen review (MRR) at least monthly, including review of the medical record and identify any irregularities, including unnecessary drugs.”*
- Facility infection preventionist should be part of ASP team

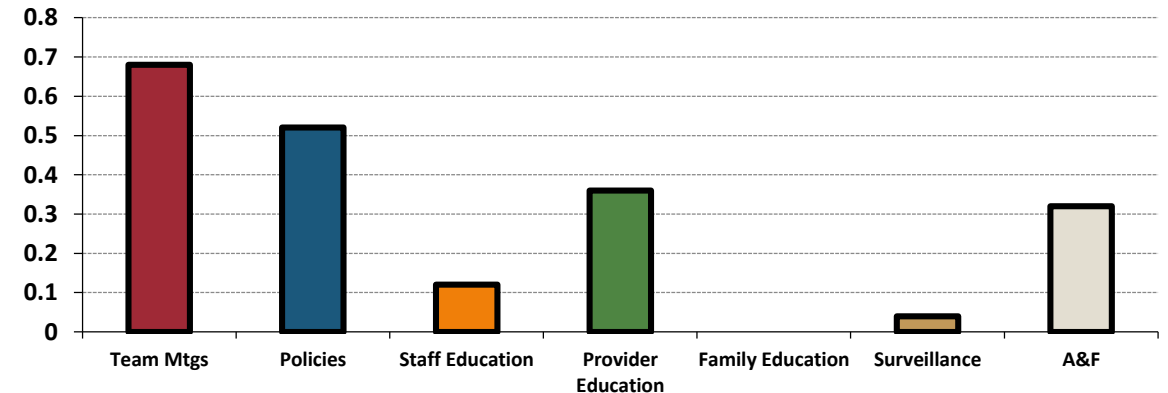
Who is doing the ASP work in NHs?



Which of the following stewardship activities is the facility pharmacist engaged in?



Which of the following stewardship activities is the medical director engaged in?



Crnich et al. *IDWeek* 2015
Taylor et al. *IDWeek* 2016

How can the Medical Director Help?

- Role modeling
- Active participant in QAPI meeting
 - Review antibiotic utilization data
 - Review antibiotic-related outcomes
- Review/development of policies and protocols
- Involved in staff and provider educational activities
- Involved in management of the “negative deviants”

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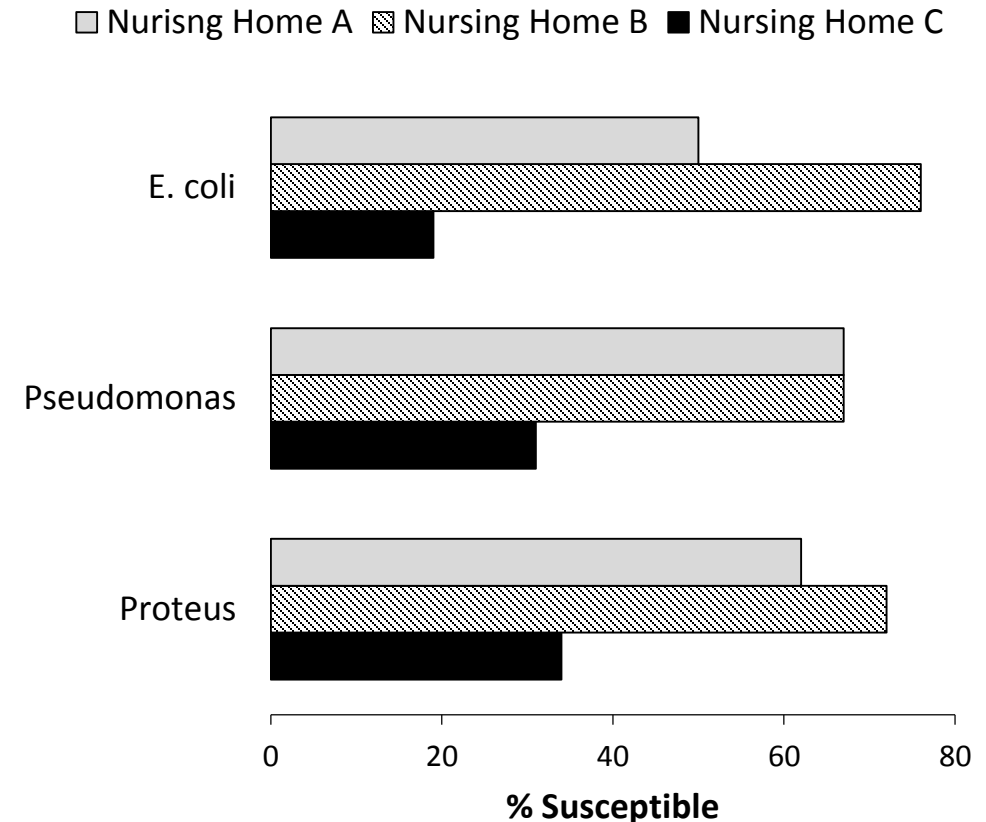


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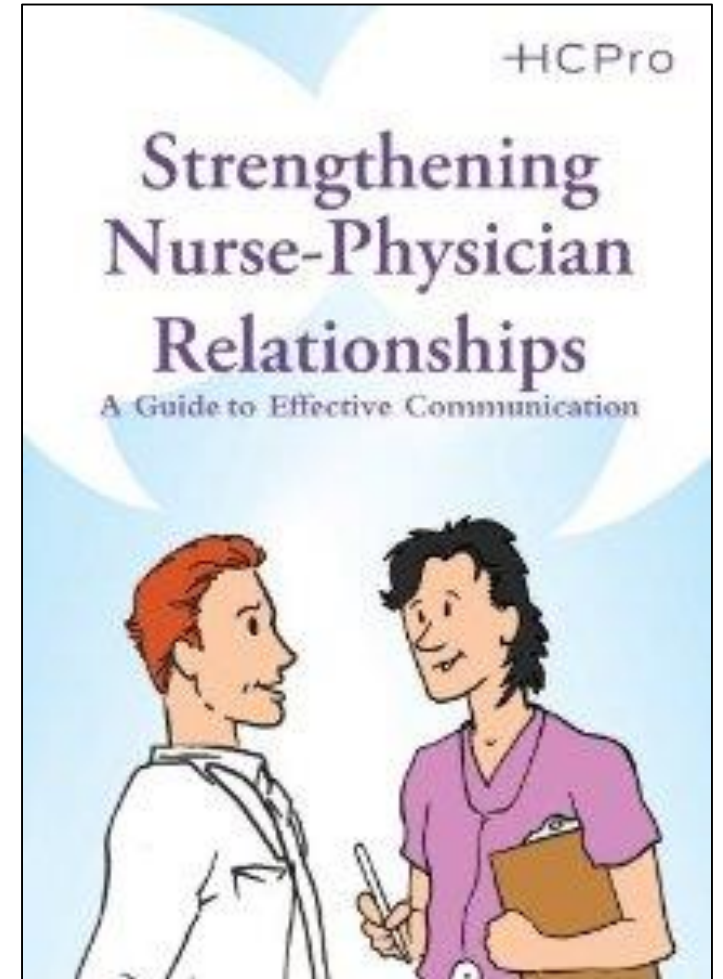


Drinka et al. *JAMDA* 2013; 14(6): 443

Furuno et al. *Infect Control Hosp Epidemiol* 2014

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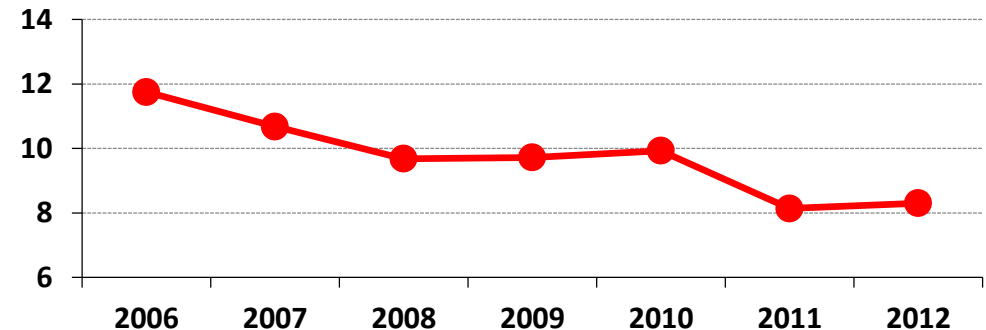


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- A MRSA outbreak in a 147-bed NH in WI led to an intensive review of facility microbiology and antibiotic prescribing data
- Review of urinary antibiogram identified
 - 31/100 (27%) all isolates were *Enterococcus* sp.
 - 87% of *E. coli* resistant to ciprofloxacin
- Facility embarked on several interventions:
 - Provided staff with antibiogram results
 - Guideline-concordant prescribing tracked by facility staff
 - Medical director sent out letters to outlier providers

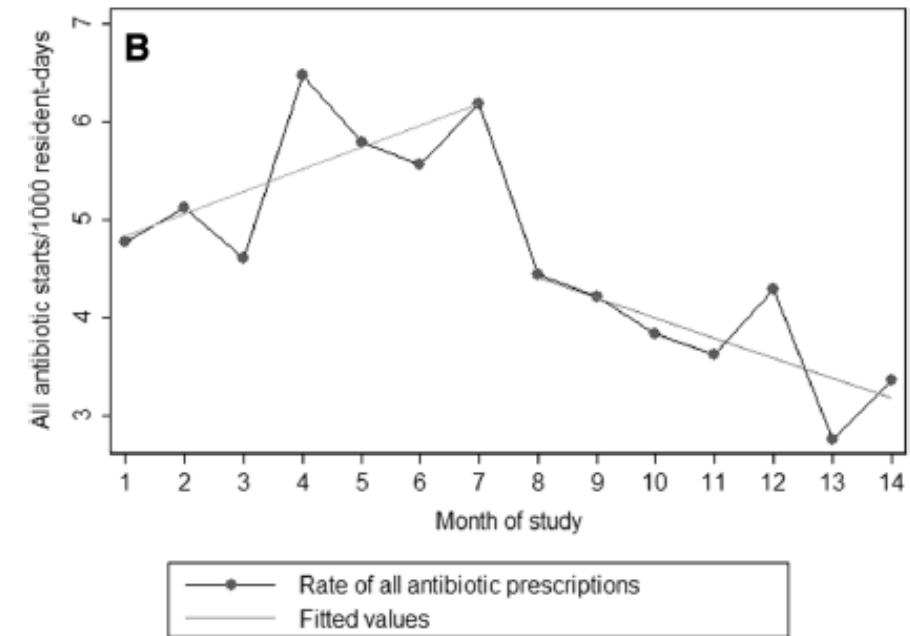
Abx Starts per 1,000 Resident-Days



The Pew Charitable Trusts – A path to better antibiotic stewardship, 2016

How can the Pharmacist Help?

- Active participant in QAPI meeting
 - Review antibiotic utilization data
 - Review antibiotic-related outcomes
- Review/development of treatment protocols
- Play an active role in tracking and reporting of antibiotic utilization
- Play an active role in identification of potentially inappropriate antibiotic use & provision of recommendations for modification to providers



Doernberg et al. *Antimicrob Res Infect Control* 2015; 4(1): p. 54

Specific Regulatory Language

- ASP composition, governance and responsibilities
- Facilities will develop and implement an ASP protocol (policy) that includes the following:
 1. How program will be integrated into facility IPCP
 2. Frequency of program review (at least annually)
 3. Description of the procedures for establishing infection
 4. Description of expected antibiotic prescribing practices
 5. Description of antibiotic use and resistance outcome monitoring procedures and how these data will be communicated to facility staff and providers
 6. Method and frequency of staff/prescriber education

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Suspected UTI SBAR

Complete this form before contacting the resident's physician.

Date/Time _____

Nursing Home Name _____

Resident Name _____ Date of Birth _____

Physician/NP/PA _____ Phone _____

_____ Fax _____

Nurse _____ Facility Phone _____

Submitted by Phone Fax In Person Other _____

S Situation

I am contacting you about a suspected UTI for the above resident.

Vital Signs BP _____ / _____ HR _____ Resp. rate _____ Temp. _____

B Background

Active diagnoses or other symptoms (especially, bladder, kidney/genitourinary conditions)

Specify _____

- No Yes The resident has an indwelling catheter
- No Yes Patient is on dialysis
- No Yes The resident is incontinent **If yes, new/worsening?** No Yes
- No Yes Advance directives for limiting treatment related to antibiotics and/or hospitalizations
Specify _____
- No Yes Medication Allergies
Specify _____
- No Yes The resident is on Warfarin (Coumadin*)



www.ahrq.gov/NH-ASPGuide • June 2014
AHRQ Pub. No. 14-0010-2-EF

Nursing Home Name _____ Facility Fax _____

Resident Name _____

A Assessment Input (check all boxes that apply)

Resident WITH indwelling catheter

The criteria are met to initiate antibiotics if one of the below are selected

- No Yes**
- Fever of 100°F (38°C) or repeated temperatures of 99°F (37°C)*
 - New back or flank pain
 - Acute pain
 - Rigors /shaking chills
 - New dramatic change in mental status
 - Hypotension (significant change from baseline BP or a systolic BP <90)

Resident WITHOUT indwelling catheter

Criteria are met if one of the three situations are met

- No Yes**
- 1. Acute dysuria alone
 - _____ **OR** _____
 - 2. Single temperature of 100°F (38°C) **and** at least one new or worsening of the following:
 - urgency suprapubic pain
 - frequency gross hematuria
 - back or flank pain urinary incontinence
 - _____ **OR** _____
 - 3. No fever, but two or more of the following symptoms:
 - urgency suprapubic pain
 - frequency gross hematuria
 - incontinence

Nurses: Please check box to indicate whether or not criteria are met

- Nursing home protocol criteria are met.** Resident may require UA with C&S or an antibiotic.†
- Nursing home protocol criteria are NOT met.** The resident does NOT need an immediate prescription for an antibiotic, but may need additional observation.††

R Request for Physician/NP/PA Orders

Orders were provided by clinician through Phone Fax In Person Other _____

- Order UA
- Urine culture
- Encourage _____ ounces of liquid intake _____ times daily until urine is light yellow in color.
- Record fluid intake.
- Assess vital signs for _____ days, including temp, every _____ hours for _____ hours.
- Notify Physician/NP/PA if symptoms worsen or if unresolved in _____ hours.
- Initiate the following antibiotic
 - Antibiotic: _____ Dose: _____ Route: _____ Duration: _____
 - No Yes Pharmacist to adjust for renal function
- Other _____

Physician/NP/PA signature _____ Date/Time _____

Telephone order received by _____ Date/Time _____

Family/POA notified (name) _____ Date/Time _____

* For residents that regularly run a lower temperature, use a temperature of 2°F (1°C) above the baseline as a definition of a fever.
† This is according to our understanding of best practices and our facility protocols. Minimum criteria for a UTI must meet 1 of 3 criteria listed in box.
†† This is according to our understanding of best practices and our facility protocols. The information is insufficient to indicate an active UTI infection.

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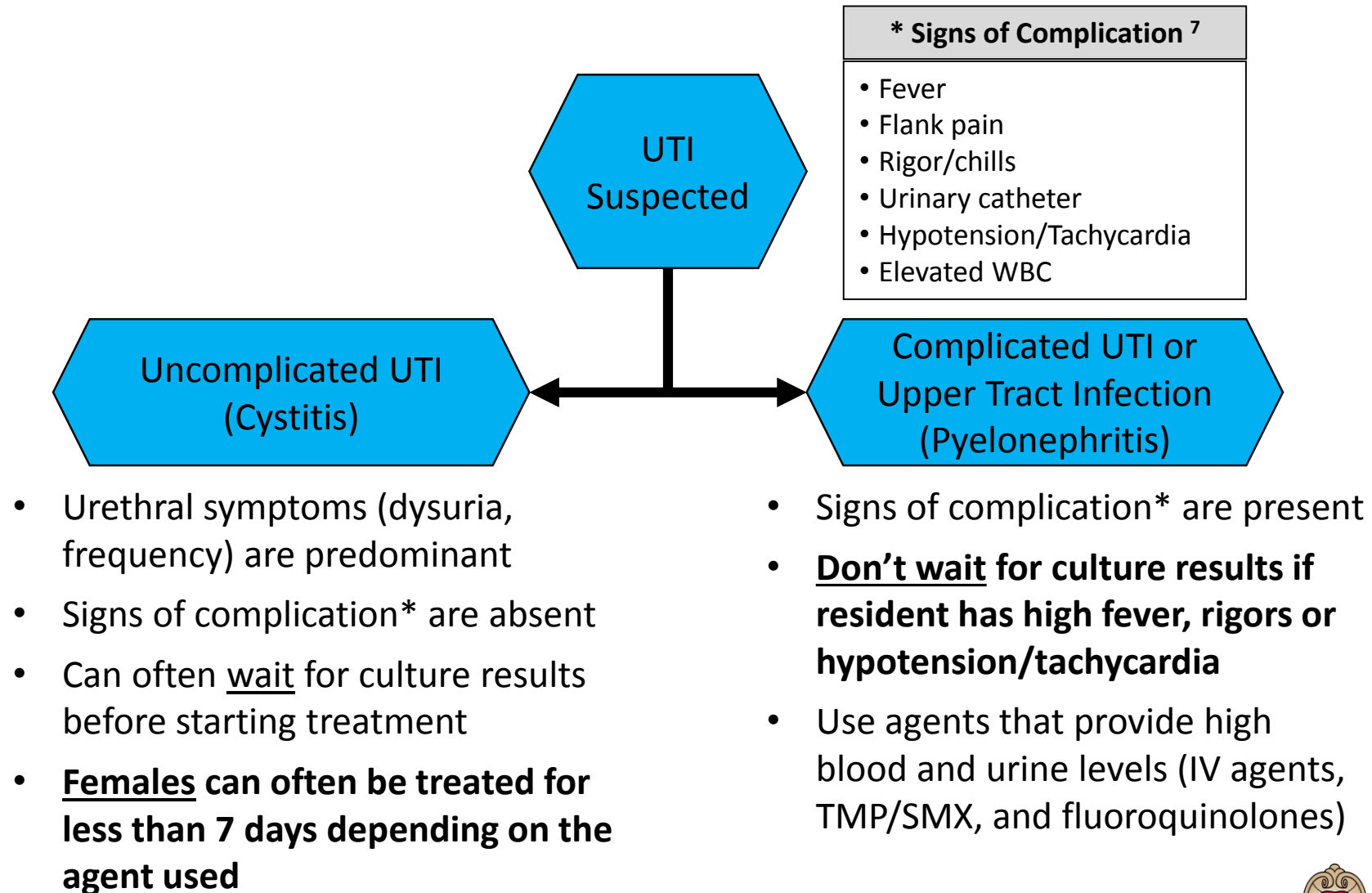
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Antibiotic Prescribing Practices & Treatment Protocols

- Practices
 - Documentation of treatment indication, drug, dose duration (high likelihood of survey focus)
 - Procedures for reviewing lab/imaging studies and communicating results to providers (high likelihood of survey focus)
 - Antibiotic time-out procedures (negative cultures & bug-drug mismatches will get you in trouble)
- Treatment Protocols
 - Preferred antibiotics for specific infections
 - Avoidance of specific agents (fluoroquinolones)
 - Minimizing long-course therapy

What Am I Treating?



Empiric Treatment of Cystitis

Females

Preference	Estimated Creatinine Clearance (eCrCl)		
	>30	15 – 30	<15
First	Nitrofurantoin 100mg BID (5 days) OR TMP/SMX 160/800 BID (3 days)	TMP/SMX 80/400 BID (3 days)	Ciprofloxacin 250mg BID (3 days)
Second	Fosfomycin 3gm (Once) Re-dose on day #3 if extending treatment >3d	Fosfomycin 3gm (Once) Re-dose on day #3 if extending treatment >3d	Fosfomycin 3gm (Once) Re-dose on day #3 if extending treatment >3d
Third	Ciprofloxacin 250mg BID (3 days)	Ciprofloxacin 250mg BID (3 days)	---

Empiric Treatment of Cystitis

Males

Preference	Estimated Creatinine Clearance (eCrCl)		
	>30	15 – 30	<15
First	Nitrofurantoin 100mg BID (7 days) OR TMP/SMX 160/800 BID (7 days)	TMP/SMX 80/400 BID (7 days)	Ciprofloxacin 250mg BID (7 days)
Second	Fosfomycin 3gm (Dose on day #1, #3, #5)	Fosfomycin 3gm (Dose on day #1, #3, #5)	Fosfomycin 3gm (Dose on day #1, #3, #5)
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Antibiotic tracking and reporting requirements

- What needs to be tracked?
 - Utilization measure
 - Outcome measure (C. diff rates, MRSA rates, antibiogram)
 - Appropriateness measure
- What type of reporting?
 - QAA meeting
 - Providers

Antibiotic Measures

Utilization	Appropriateness
<ul style="list-style-type: none">• Antibiotic start (event)	<ul style="list-style-type: none">• Necessity
<ul style="list-style-type: none">• Days of therapy (DOT/AUR)	<ul style="list-style-type: none">• % of courses exceeding “X” days
<ul style="list-style-type: none">• Length of therapy (LOT)	<ul style="list-style-type: none">• Appropriateness of spectrum
<ul style="list-style-type: none">• Defined daily dose (DDD)	<ul style="list-style-type: none">• Appropriateness of dose
<ul style="list-style-type: none">• Costs (per a-day/r-day)	

Antibiotic Starts

- Pros

- Many facilities are already doing this (typically counts only)
- Aligned with current 24-hour report & infection log processes
- Relatively easy to marry with treatment indication
- Not influenced by prophylactic therapy
- Can be easily modified to exclude hospital-initiated antibiotics

- Cons

- Current data systems dictate reliance on manual data abstraction methods
 - If automated, could be inflated by intermittent therapy (fosfomycin, vancomycin), treatment interruptions and treatment modifications
 - Suboptimal reliability of 24-hour report/infection logs
- Does not address prophylactic antibiotics
- Does not address dimensions of appropriateness (necessity, duration, spectrum)

Days of Therapy (DOT)




- Pros

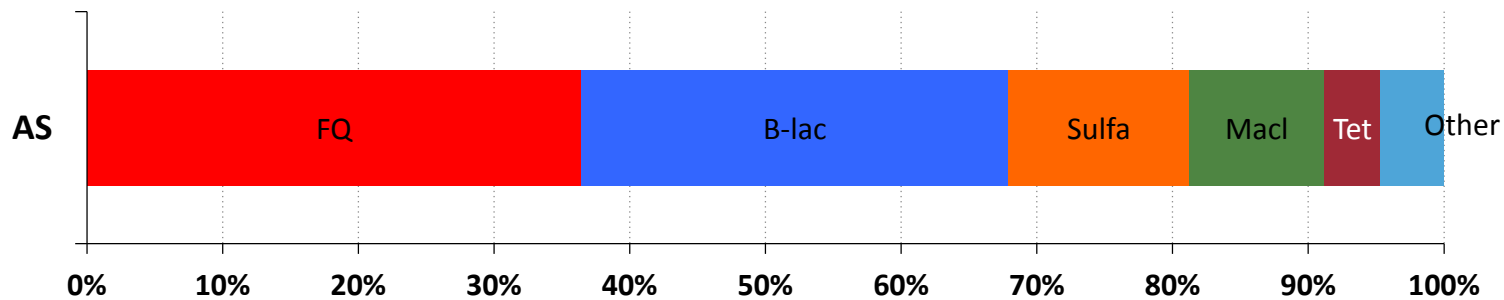
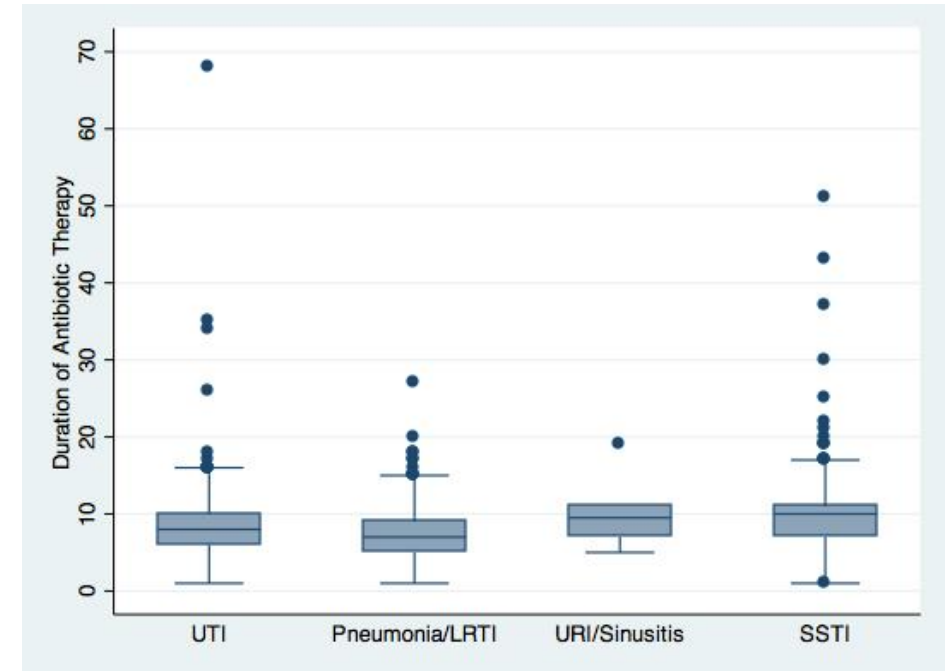
- Identical to the hospital AU measure
- Does provide indirect information on length of therapy (not the case in hospitals)
- More amenable to automation than antibiotic starts

- Cons

- May be difficult to parse out hospital-initiate antibiotics
- May be difficult to parse out prophylactic antibiotics
- May be difficult to parse out relative contribution of different treatment indications
- Only captures information on one dimension of appropriateness (duration)

Measures of Appropriateness

 <p>No indwelling device: Dysuria alone T>100°F or +2.4°F from baseline + at least ONE of the following:</p> <ul style="list-style-type: none"> urgency frequency suprapubic pain costovertrbral tenderness rigors delirium 	<p>With indwelling device: Any one of the following:</p> <ul style="list-style-type: none"> T>100°F or +2.4°F from baseline costovertrbral tenderness rigors delirium
 <p>New or increasing purulent drainage at a wound, skin or soft-tissue site</p> <p>+ at least TWO of the following:</p> <ul style="list-style-type: none"> T>100°F or +2.4°F from baseline new or increased swelling at site redness 	<ul style="list-style-type: none"> tenderness warmth
 <p>When T>102°F: + at least ONE of the following:</p> <ul style="list-style-type: none"> RR > 25 breaths per min. Productive cough 	<p>When 100°F<T<102°F: + at least ONE of the following:</p> <ul style="list-style-type: none"> RR> 25 breaths per min. Pulse>100 beats per min delirium rigors



Loeb et al. *ICHE* 2001

Crnich et al. *IDWeek* 2012

Daneman et al. *JAMA Intern Med* 2013; 173(8): 673-82

Suggestions for developing tracking workflows

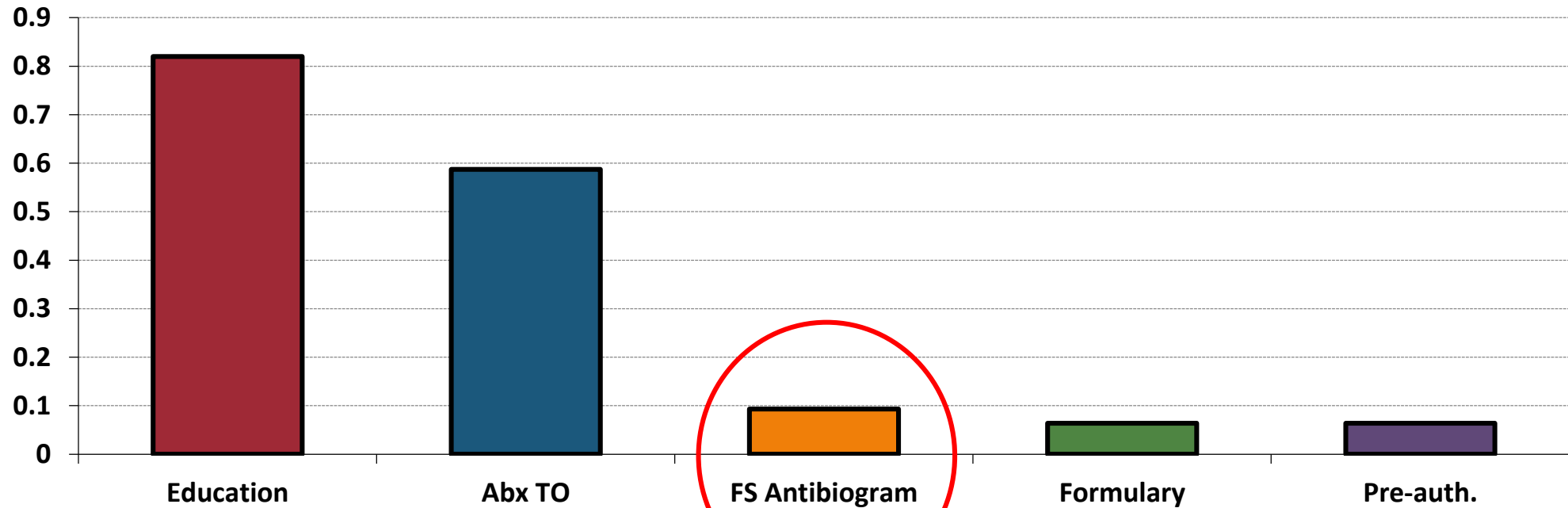
- Start having conversations with facility pharmacy
 - Most pharmacy services maintain a database that details drug, dispense date and days of therapy that was dispensed
 - They will not often have data on indication or appropriateness
- Offload primary data collection to frontline staff
 - Every facility uses a 24-hour board that can potentially be adapted to capture discrete resident information
 - Can get information on antibiotic starts, duration of therapy and indication
 - Will be difficult to incorporate appropriateness (duration being an exception)
- Integrate into infection surveillance activities
 - IP is required to maintain line-list of infections in the facility
 - It is minimal effort to capture data on antibiotic use
 - Can assess appropriateness

Other suggestions

- Use cross-sectional approaches to identify problem areas
- Design prospective tracking efforts with your improvement activities in mind
 - Focus on tracking UTI treatment if your efforts are only focused on UTI
 - Make sure you have some tool for assessing diagnosis shifting (everyone who used to have UTI now has respiratory tract infection)
- Trend your data using incidence densities (e.g., events per 1,000 resident-days) rather than count data
- Be careful when comparing your data to external data

ASP Process

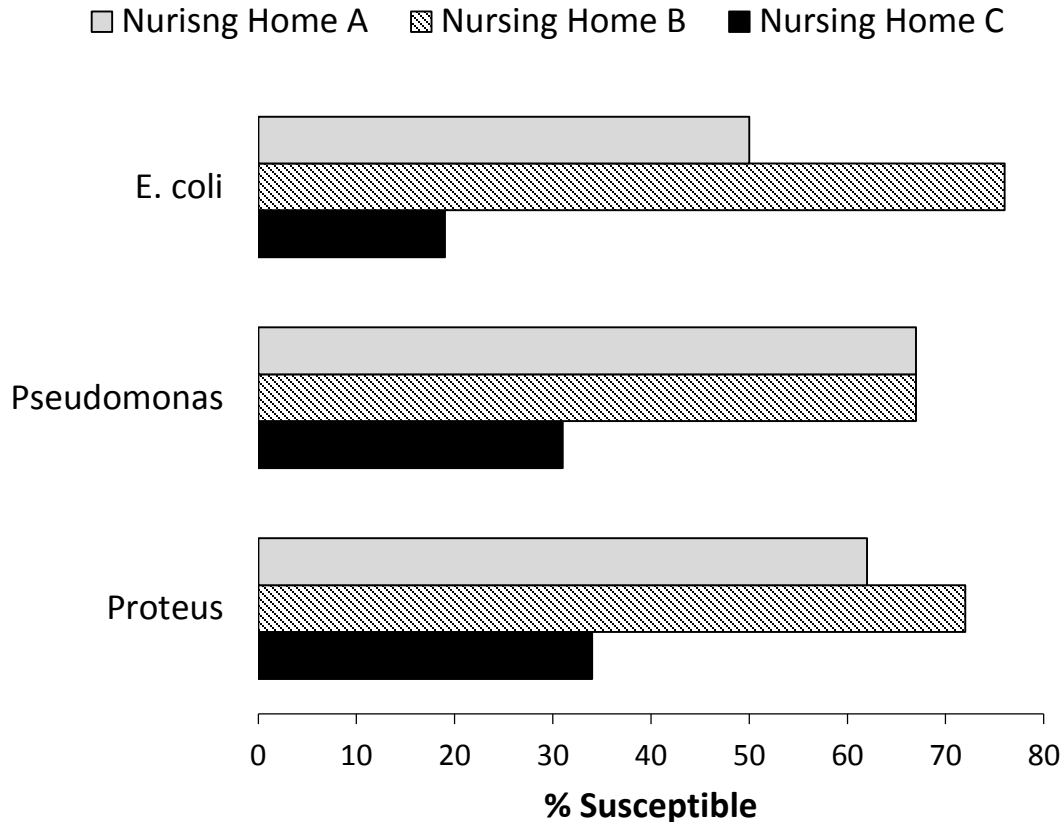
Which of the following stewardship interventions are employed in your facility?



Abx = antibiotic; TO = timeout; FS = facility specific; Pre-auth. = preauthorization

Crnich et al. *IDWeek* 2015
Taylor et al. *IDWeek* 2016

Antibiotic-Related Outcomes



Gram (-)	SNF	# of Isolates	Aminoglycosides			B-Lactams			Carbapenems			Cephalosporins					Quinolones			Others				
			Gentamicin	Amikacin	Tobramycin	Ampicillin	Ampicillin-Sulbactam	Piperacillin-tazobactam	Imipenem	Meropenem	Ertapenem	Cefazolin	Cefoxitin	Ceftriaxone	Ceftazidime	Cefepime	Ciprofloxacin	Levofloxacin	Moxifloxacin	Tetracycline	TMP/SMX	Tigecycline	Nitrofurantoin	
<i>Escherichia coli</i>	1	13	85	100	92	39		92	100			85	100	100	100		39					39		92
	2	19	84			32	42	100	100		100	84					37	37				58	58	
	3	16	69	100	71	31			100	100				93		93	38		36			50	100	94
<i>Klebsiella sp</i>	1	7	57	71	71			86	86					57	57		67	78				71	89	29
	2	9	100			0	67	89			89	56										78	89	
	3	0																						
<i>Proteus mirabilis</i>	1	13	83	100	92	92		100					82	100	100		31						69	
	2	17	100			82		94			100	82					53	59			0	88		
	3	10	100	100	100	60				100	100	70		70		70						70		0
<i>Pseudomonas aeruginosa</i>	1	4	100	100	100			100	100						100		75							
	2	0																						
	3	0																						

- 80% of cultures from a urine sample
- 85% of the antibiotic use in the 3 NHs was empiric (before cultures)
 - 54% involved a fluoroquinolone antibiotics
 - 65% of episodes associated with discordant (inappropriate) therapy
- Making antibiogram available reduced inappropriate use to 55%

Drinka et al. *JAMDA* 2013; 14(6): 443

Furuno et al. *Infect Control Hosp Epidemiol* 2014

Specific Regulatory Language

- ASP composition, governance and responsibilities
- Facilities will develop and implement an ASP protocol (policy) that includes the following:
 1. How program will be integrated into facility IPCP
 2. Frequency of program review
 3. Description of the procedures for establishing infection
 4. Description of expected antibiotic prescribing practices
 5. Description of antibiotic use and resistance outcome monitoring procedures and how these data will be communicated to facility staff and providers
 6. Method and frequency of staff/prescriber education

Staff & Provider Education

Table 3. Random Assignment and Treatment with Parenteral Antibiotics According to Guideline

	Random Assignment of SNFs	
	Multi-Disciplinary Training	Physician-Only Training
	(% of episodes with guideline indication)	
Preintervention	50% (10/20)	64.5% (69/107)
Postintervention	81.8%* (18/22)	69% (29/42)

*P = .06.

SNF = skilled nursing facility.

Naughton et al. *J Am Geriatr Soc* 2001; 49(8): 1020-4



Brief report

Results of a Veterans Affairs employee education program on antimicrobial stewardship for older adults



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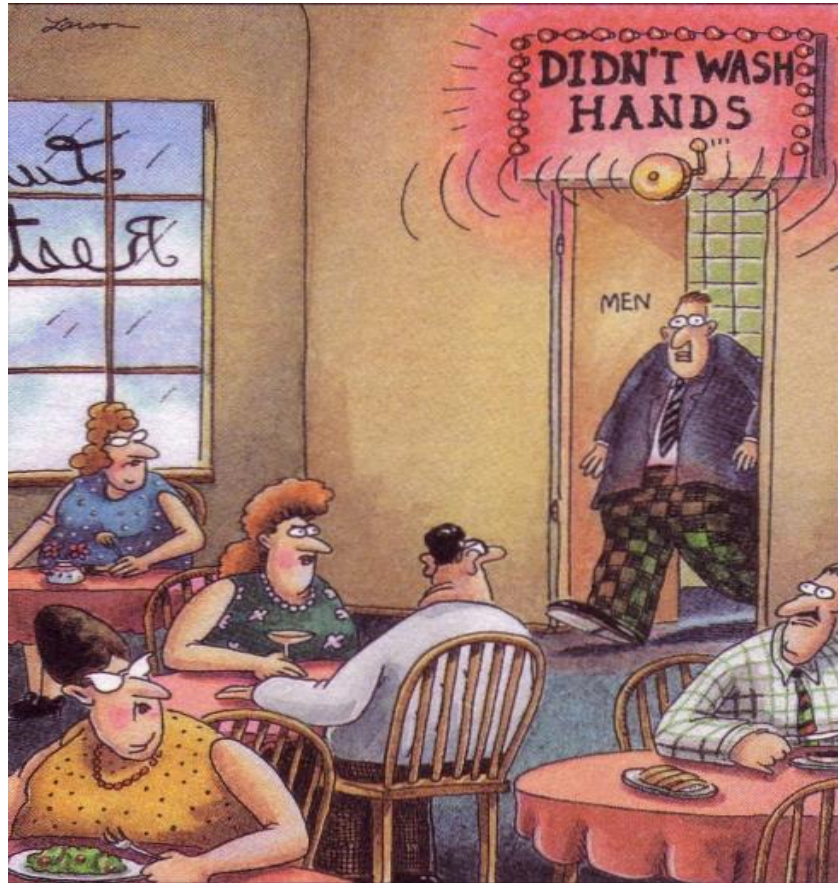
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- Focus on treatment of common infections (PUS)
- Emphasize alternatives to problematic antibiotics in older adults (e.g., fluoroquinolones, macrolides, clindamycin, TMP/SMX)
- Emphasize benefits of short-course therapy (most infections can be treated with ≤7 days of therapy)
- Nursing education: [https://www.coursesites.com/webapps/Bb-sites-course-creation-BBLEARN/courseHomepage.htmlx?course_id= 3489311](https://www.coursesites.com/webapps/Bb-sites-course-creation-BBLEARN/courseHomepage.htmlx?course_id=3489311)
- Provider education: MedPortal Curriculum (https://dx.doi.org/10.15766%2Fmep_2374-8265.10754)

How Can External ID & Pharmacy Stewards Help NHs?

- Facility assessment and improvement target identification
- Guidance on how facilities can best harness existing utilization data
- Guidance on which outcomes to track and how
 - Antibigram?
- Development of antibiotic use protocols
 - Testing protocols
 - Treatment protocols for common infections (when/how to treat)
 - Testing/prescribing practices to avoid (test-of-cure UCx, suppressive Abx)
- Staff and provider education
- Detailing of outlier providers

Thank You



See Table 1
for good list of additional resources



JAMDA

journal homepage: www.jamda.com



Special Article

Template for an Antibiotic Stewardship Policy for Post-Acute and Long-Term Care Settings

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Philip Sloane MD, MPH ^k, David Nace MD, MPH, CMD ^l on behalf of the Infection
Advisory Committee for AMDA—The Society of Post-Acute and Long-Term Care
Medicine