# Antimicrobial Stewardship in Long-Term Care Facilities

Andrew B. Watkins, PharmD, BCIDP
Pharmacy Coordinator, Nebraska ASAP
Anwatkins@nebraskamed.com

ASAP

Nebraska Antimicrobial Stewardship Assessment and Promotion Program

# Objectives

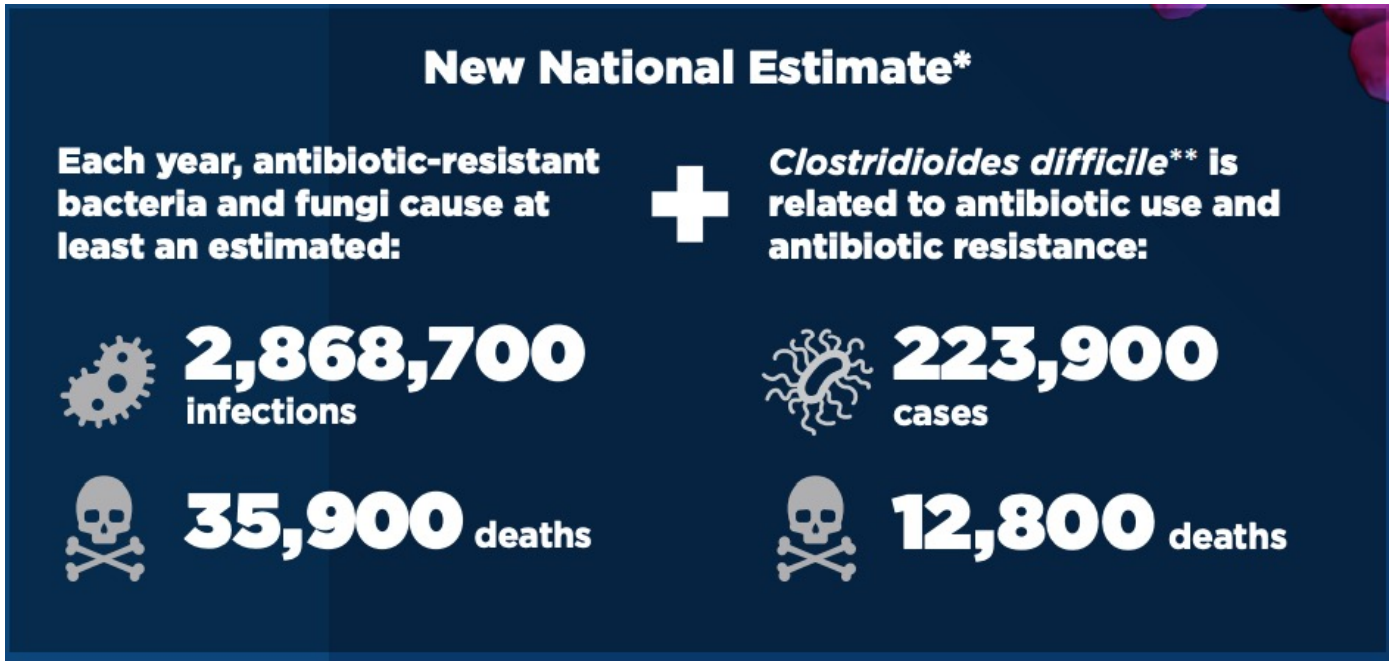
Describe the need for antimicrobial stewardship in post-acute and long-term care facilities

Recognize practical approaches towards starting and sustaining a successful antimicrobial stewardship program in post-acute and long-term care facilities

Locate available resources needed for implementation of antimicrobial stewardship program

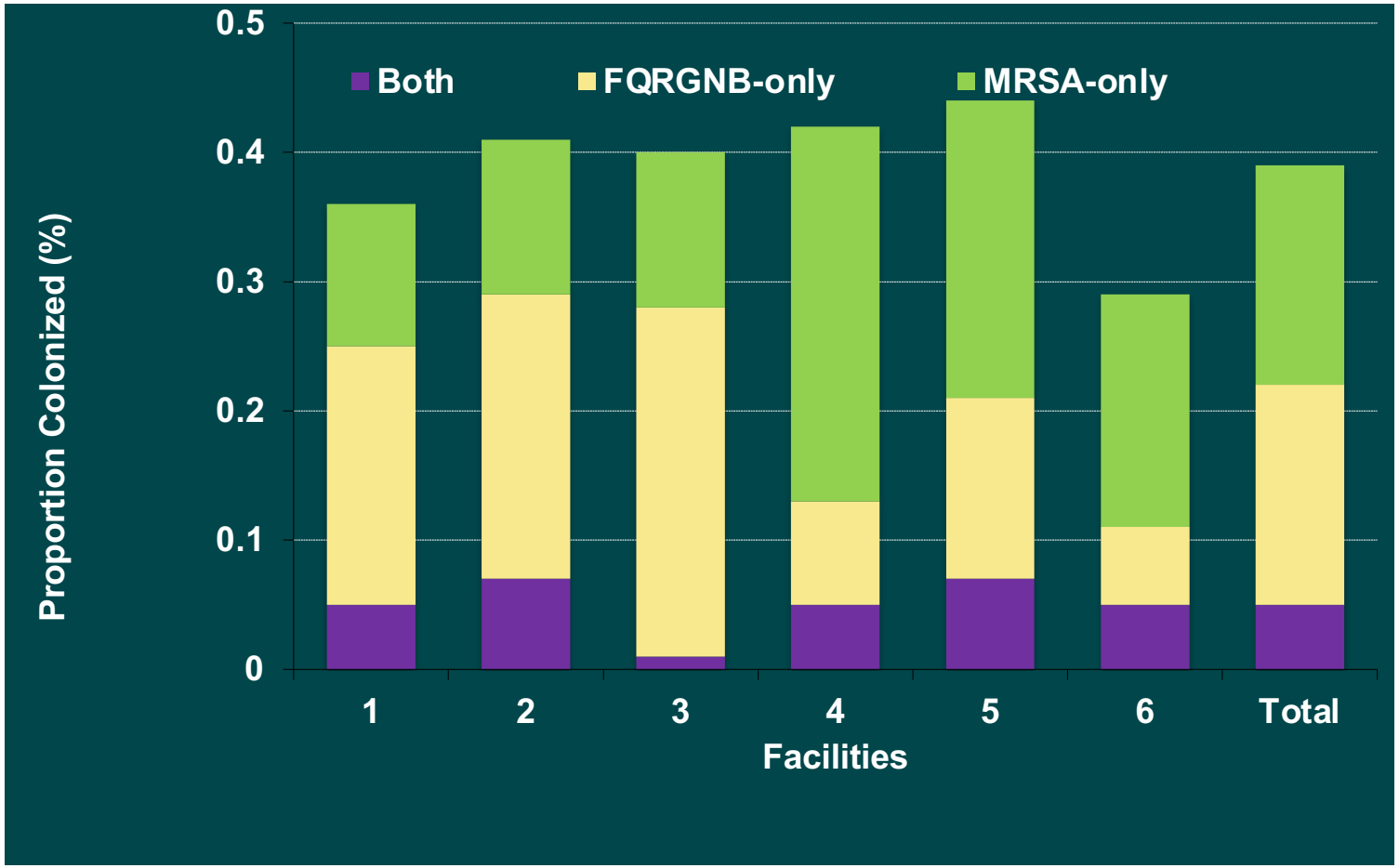
Why?
by e-magic

# Why It Matters: Antibiotic Resistance




https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf

# LTCFs as Reservoirs for MDROs



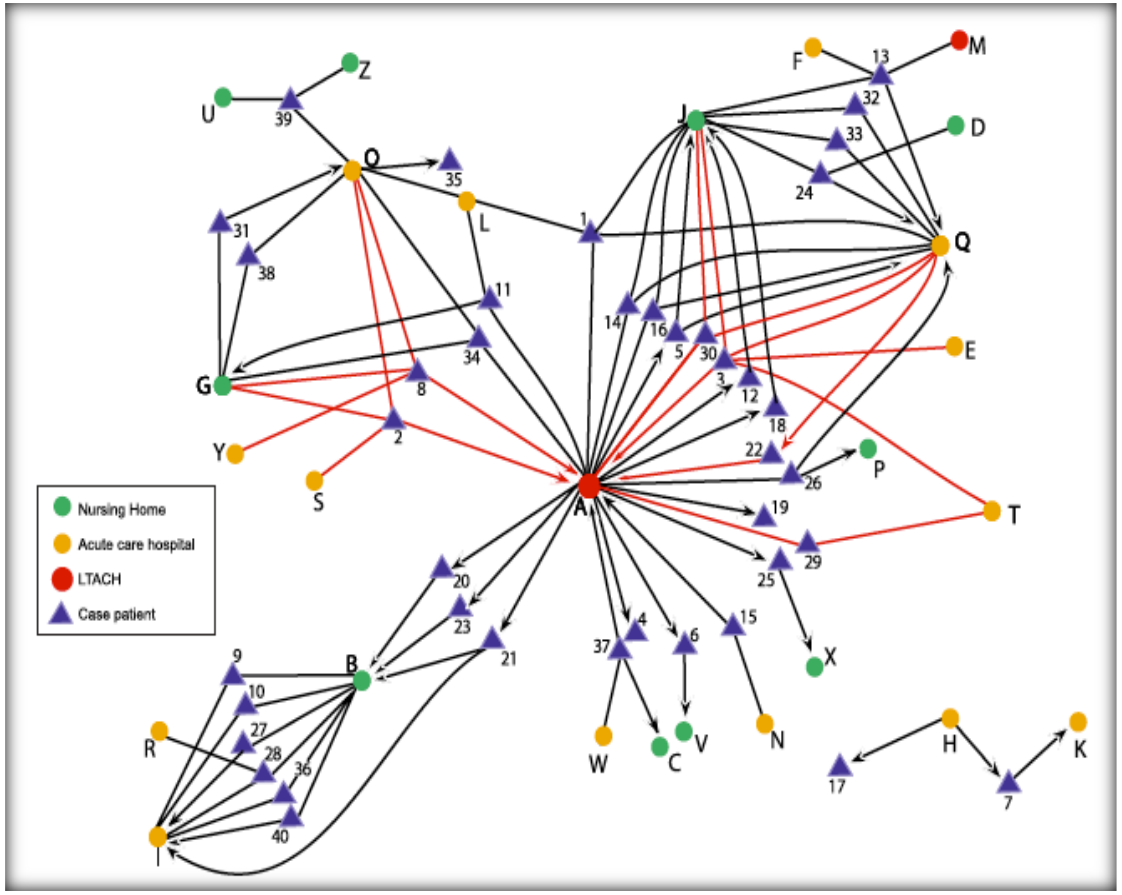

FQRGNB: Fluoroquinolone-resistant gram-negative bacteria

MRSA: Methicillin-resistant *Staphylococcus aureus*

Crnich et al. Infect Control Hospital Epidemiol 2012; 33(11):1172-4

# Role in Regional Dissemination of MDROs

- Outbreak of KPC-producing Enterobacterales studied over a period of one year
- 42 cases were identified
- 24 cases were linked to 1 LTACH
- 75% of rest of the cases were linked to 3 NH
- Successful control requires extensive coordination between acute and long-term care facilities




Won SY et al. Clin Infect Dis. 2011 Sep;53(6):532-40.

# *C. difficile* Infections on the Rise

- Up to 70% of residents receive antibiotics during a year
- 8% to 33% of those treated with an antibiotic in a LTCF acquire CDI.
- Prevalence has been reported to be as high as 14.7%
- Incidence has ranged from 0.2 to 2.6/1000 resident days in some older studies
- *C. difficile* estimated to have caused 112,800 infections with onset in nursing homes in 2012 representing one quarter of all cases in the US.

Crnich CJ et al. Infect Control Hosp Epidemiol. 2007 Aug;28(8):1006-8.
Hunter JC et al. Open Forum Infect Dis. 2016 Jan 18;3(1):ofv196.
Simor AE. J Am Geriatr Soc. 2010 Aug;58(8):1556-64

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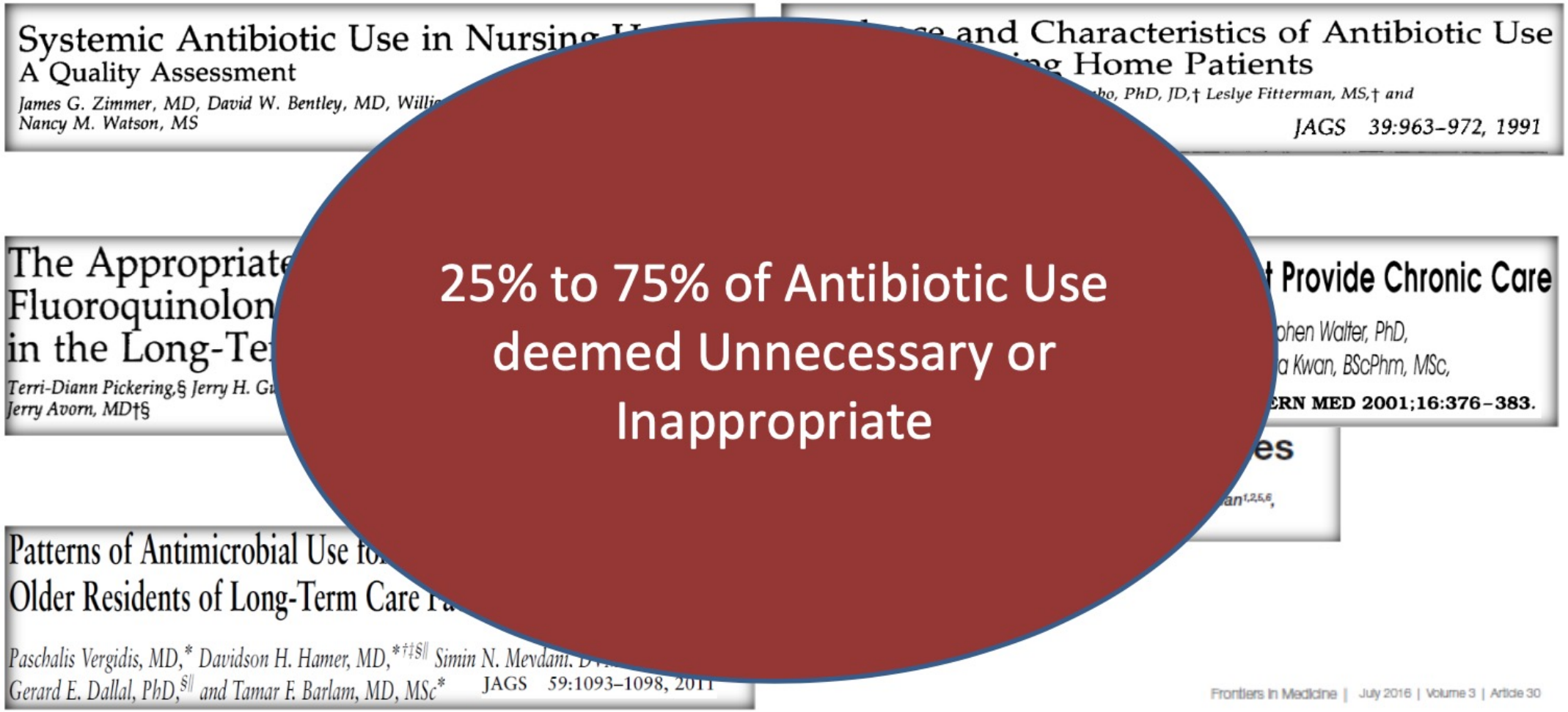
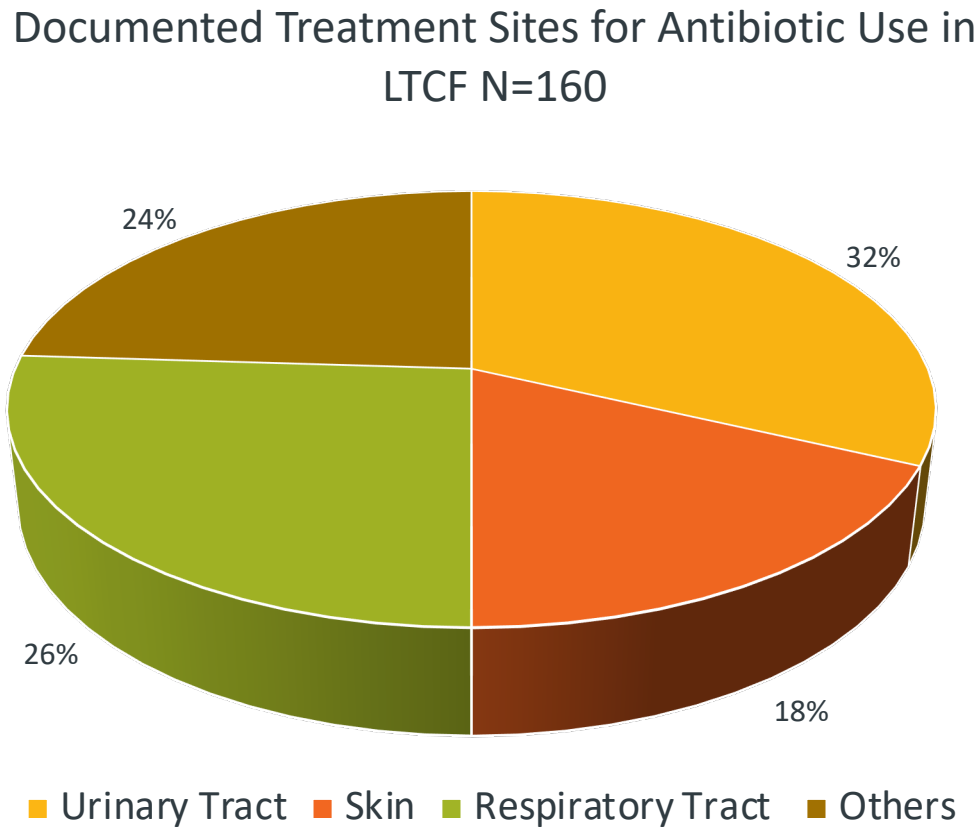
# How big is the antibiotic use problem in LTCF?




25% to 75% of Antibiotic Use deemed Unnecessary or Inappropriate

# Reasons for Antibiotic Prescriptions in LTCF

- Point Prevalence Survey of 9 LTCF in 4 different states demonstrated that almost 1 in 3 antibiotic prescriptions being written in LTCF were for suspected urinary tract infections
- Urinary tract, Respiratory Tract and Skin are the treatment sites documented for three quarters of all the antibiotic being prescribed.




Thompson ND et al. J Am Med Dir Assoc. 2016 Dec 1;17(12):1151-1153

# Inappropriately Treating Asymptomatic Bacteriuria

Up to one-third of prescriptions for suspected urinary tract infection in NH residents are for asymptomatic bacteriuria.

**Box 1: Summary of issues and themes identified in the focus group discussions**

- Nurses' and physicians' interpretation of bacteriuria as "symptomatic" in the presence of nonspecific symptoms
- The ordering of urine cultures for nonspecific changes in a resident's status
- The central role of the nurse in communicating nonspecific changes in the health status of a resident to physicians and family members
- The difficulty in eliciting information about symptoms from frail elderly residents
- Uncertainty of physicians about the significance and management of a positive urine culture result
- Concern over liability of nurses and physicians

Walker S et al. CMAJ. 2000 Aug 8;163(3):273-7
Mody L. J Am Geriatr Soc. 2007 Aug;55(8):1301-2

# Antibiotics for Respiratory Tract Infections

| | Signs and symptoms | Antibiotics |
|---|---|---|
| **Upper Respiratory Tract Infection (URTI)** | Runny nose<br>Sore throat<br>Cervical lymphadenopathy<br>Dry cough | ❌ |
| **Influenza like illness** | Fever with increased cough, headache, myalgia, sore throat | ❌ |
| **Bronchitis without COPD** | New or worsening cough<br>Sputum production | ❌ |
| **COVID-19** | May overlap with others plus<br>New loss of taste/smell, nausea, vomiting, diarrhea | ❌ |
| **Pneumonia (bacterial)** | New or worsening cough, sputum production, shortness of breath, pleuritic chest pain, HR > 125/min<br>RR> 24/min, fever, O2 saturation <94%<br>and **+ CXR** | ✅ |

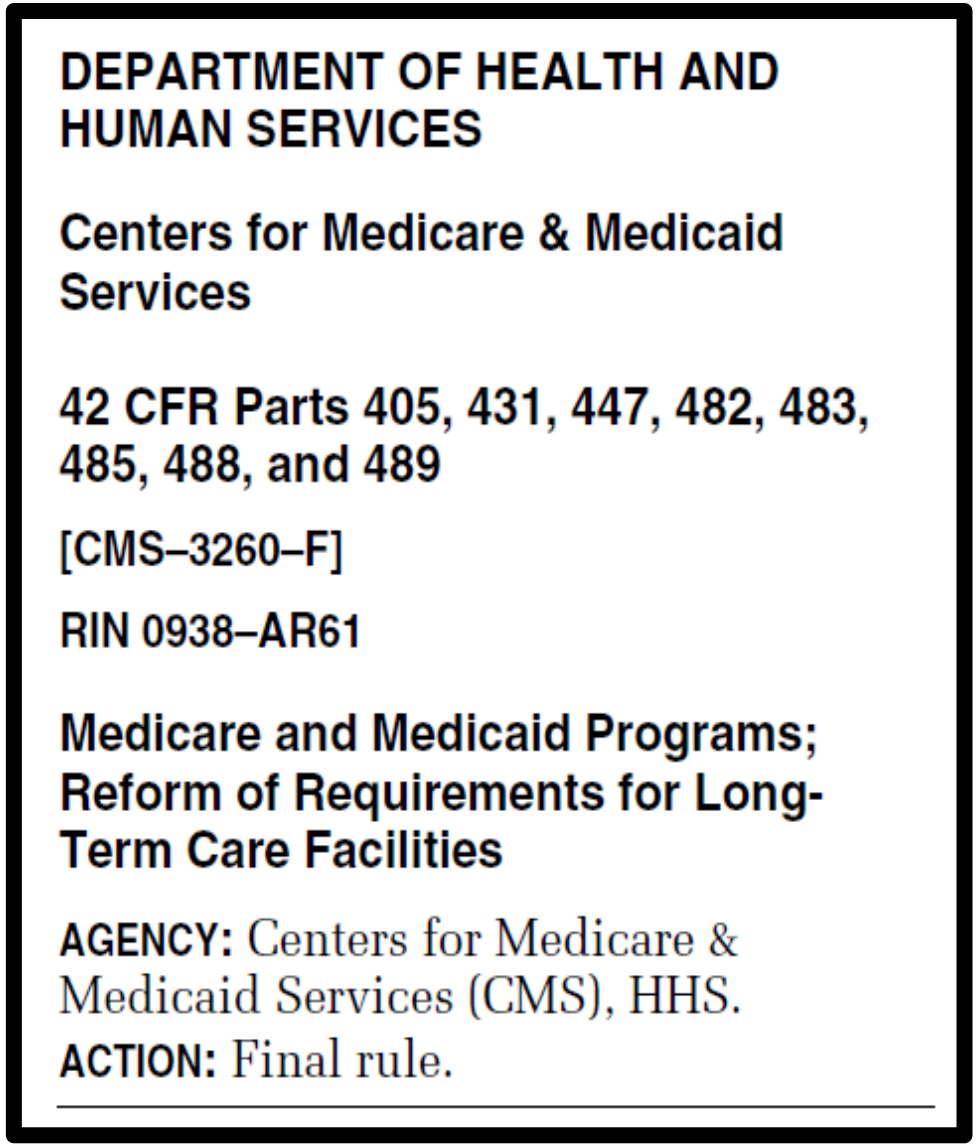
Adapted from Dumyati G. University of Rochester Medical Center. Available from: https://www.rochesterpatientsafety.com/Images_Content/Site1/Files/Pages/Nursing%20Homes/Managing%20Common%20Infections%20in%20Older%20Adults.pdf

# How can we address this problem?

# CMS Regulations

Facilities must establish an Infection Prevention and Control Program (IPCP) that includes:

- System for preventing, identifying, reporting, investigating and controlling infections
- Written standards, policies and procedures
- System for recording incidents identified under IPCP and corrective actions taken
- **Antibiotic stewardship program**
  - **Must include antibiotic use protocols and a system to track antibiotic use**



**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**

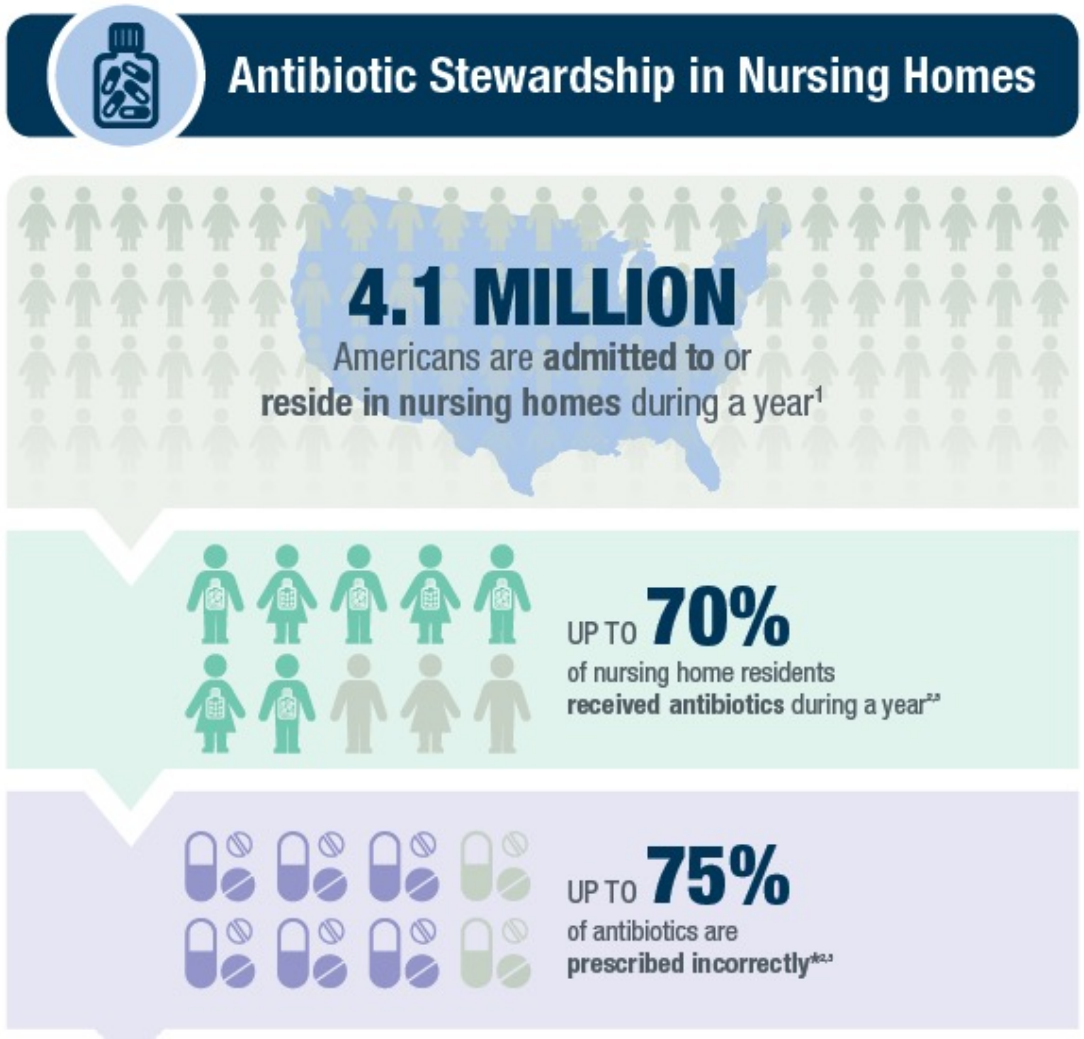
**Medicare and Medicaid Programs; Reform of Requirements for Long-Term Care Facilities**

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

**ACTION:** Final rule.

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

# Implementing Antimicrobial Stewardship in LTCFs

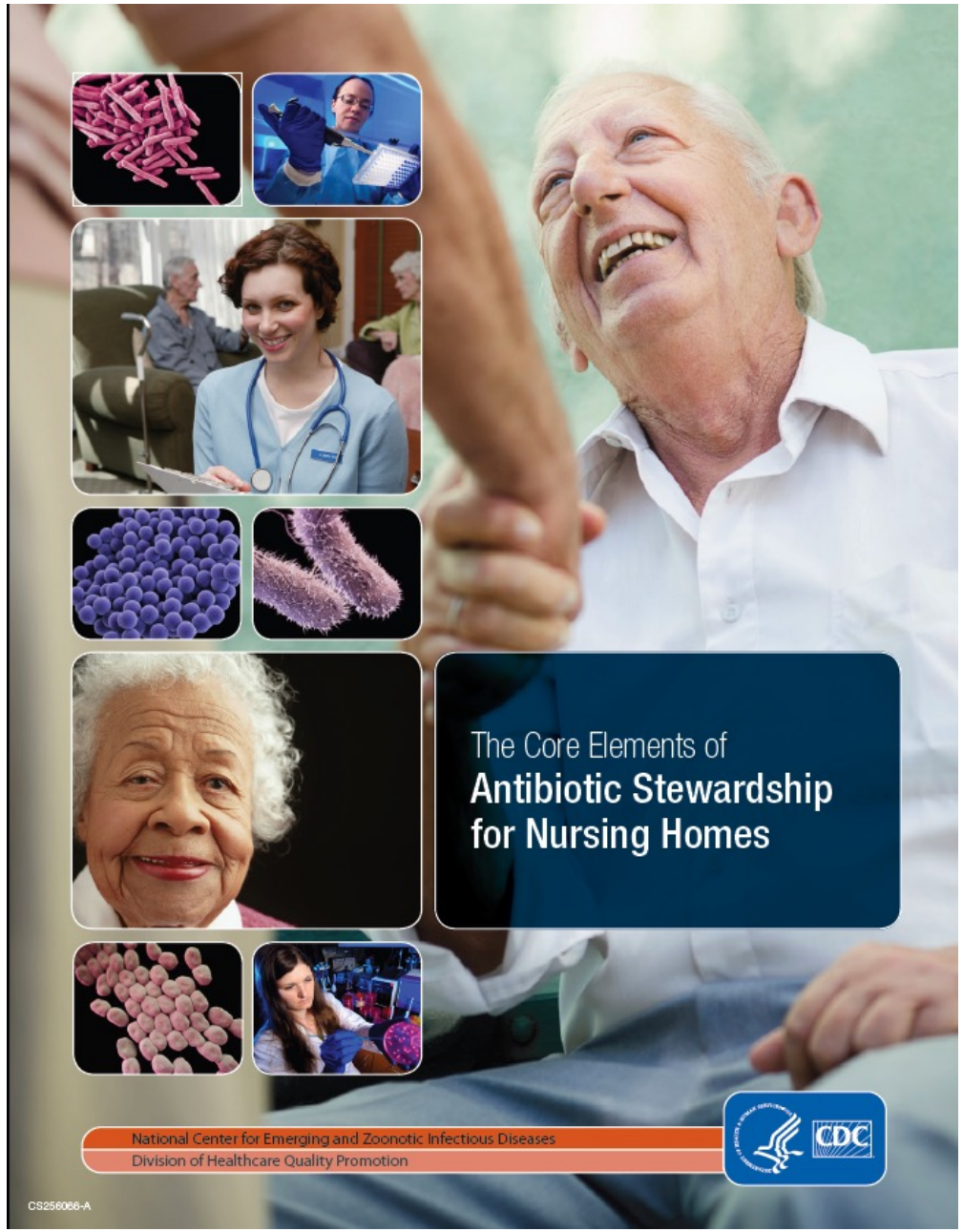



"Harms from antibiotic overuse are significant for the frail and older adults receiving care in nursing homes. These harms include risk of serious diarrheal infections from *Clostridium difficile*, increased adverse drug events and drug interactions, and colonization and/or infection with antibiotic-resistant organisms."

-CDC

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

https://www.cdc.gov/media/images/releases/2015/p0915-nursing-home-antibiotics.pdf




## Summary of Core Elements for Antibiotic Stewardship in Nursing Homes

**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

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

# Leadership Commitment

- Obtain written statement of support for the antimicrobial stewardship program (ASP)
- Outline duties of the ASP team members
    - Include stewardship-related duties in job description for medical director, clinical nurse leads, and consultant pharmacists
- Communicate expectations with the nursing staff and prescribing providers
- Create culture that promotes appropriate antibiotic use
    - Messaging, education, celebration of improvement

# Statement of Support Template

Leadership Support Statement Template for LTCF ASP

[Facility Logo]

**FROM:** [Executive Director, Medical Director, Director of Nursing, etc.]

**DATE:** [Date]

**RE:** Antimicrobial Stewardship Program

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Antibiotics are among the most commonly prescribed medications within long-term care facilities. However, misuse of antibiotics can lead to undesirable outcomes including emergence of multidrug resistant pathogens, development of *Clostridium difficile* infections, adverse drug reactions, increased mortality, and higher costs.

As part of the continuing commitment to provide high quality care to all our residents, the leadership team of [facility name] has created an Antibiotic Stewardship Program (ASP). This program will promote appropriate use of antibiotics in our facility. The overall goal of ASP is to prevent undesirable outcomes related to antibiotic misuse by optimizing the selection of drug, dose, route, and duration of therapy. Antibiotic use protocols and systems to monitor antibiotic use will be implemented to achieve ASP goals.

The ASP will be a part of the facility's Infection Prevention and Control Program. Infection preventionist will play a central role and the key leaders accountable for the program include [Medical Director, Director of Nursing, Consultant Pharmacist, etc.]. This multidisciplinary team will regularly review appropriateness of antibiotic courses and make recommendations for adjustment in practice where necessary, establish new or revise existing protocols relevant to appropriate antibiotic prescribing, monitor and report patterns of antibiotic use and resistance; and provide education on responsible use of antibiotics.

The success of this initiative requires the full participation and support of those who prescribe, prepare, administer, and receive antimicrobial therapy. The facility will provide adequate staffing and resources to support the functions and goals of the ASP. ASP team will engage prescribing providers, staff, residents, and residents' families to ensure that antibiotic use protocols can be implemented smoothly. Facility leadership is confident that with the help of frontline staff, support of prescribing providers, understanding of resident and families, and guidance of ASP team, we will improve quality of care and minimize untoward consequences of antibiotic therapy.

https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

# Accountability

- Identify/appoint an accountable lead for ASP

- Empower leaders of the program:
  - Medical Director
  - Director of Nursing
  - Consultant Pharmacists

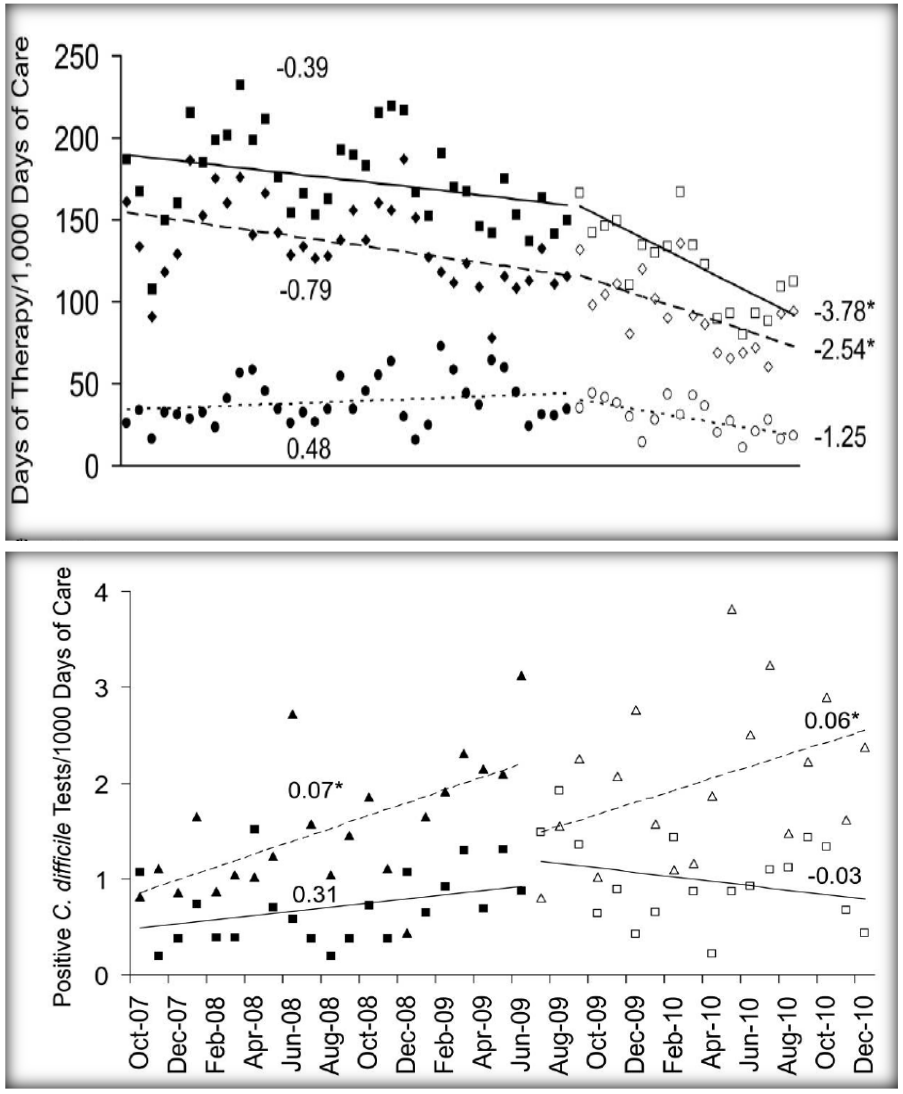
- Provide dedicated time for ASP activities to:
  - Program leaders
  - Infection Preventionists (who will support day to day activities of ASP)
    - Infection Advisory Committee of AMDA has recommended Infection Preventionists should get 10 hours/week dedicated towards ASP activities

# Drug Expertise

- Establish access to individuals with antibiotic expertise to implement antibiotic stewardship activities
    - Partner with local experts or develop expertise within the facility

- Examples of experts include:
    - Consultant pharmacists who have received specialized infectious diseases or antibiotic stewardship training
        - Many are being trained by their companies on Antimicrobial Stewardship concepts and activities
        - Training is also being made available to consultant pharmacists by national societies.
    - Antibiotic stewardship program leads at the hospitals within your referral network.
    - Develop relationships with infectious disease consultants in your community
    - Medical Directors and Lead Physicians can also take courses that can help them prepare for ASP activities including CDC/SHEA/AMDA course
    - Nebraska ASAP can serve as a helpful resource to solve issues, review antimicrobial use data, or implement stewardship strategies

# Impact of Partnership with ID Specialists




- 30% decrease in total antibiotic use
- 64% decline in tetracyclines use
- 61% decline in clindamycin use
- 38% decline in fluoroquinolones & sulfamethoxazole/trimethoprim
- 28% decline in beta lactam/ beta lactamase inhibitor use
- Rate of positive *C. difficile* tests at LTCF also declined while rate were the same in the hospital

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Jump RL et al. Infect Control Hosp Epidemiol. 2012 Dec;33(12):1185-92

# Take Action – Antibiotic Stewardship Policy

JAMDA 18 (2017) 913–920

ELSEVIER

JAMDA

journal homepage: www.jamda.com

Special Article

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

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], 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

Outline the goals of the Antibiotic Stewardship program, structure and procedures of the antimicrobial stewardship committee along with responsibilities of its members

ASAP

[Facility Logo]

| | |
|---|---|
| **SUBJECT:** | **Antimicrobial Stewardship Program** |
| **POLICY NO.:** | [Policy number] |
| **EFFECTIVE DATE:** | [Policy effective date] |
| **LAST REVISION DATE:** | [Date of last policy revision] |
| **RELEVANT REGULATION:** | CFR § 483.80(a)(1)-(4) |
| **APPROVED BY:** | [Approving individual or committee] |

**Policy Statement:**
The goal of the Antimicrobial Stewardship Program (ASP) is to promote the appropriate use of antimicrobials in order to maximize treatment outcome and minimize unintended consequences of antimicrobial therapy. The ASP aims to improve antibiotic prescribing practices through the development and implementation of antibiotic use protocols and a system to monitor antibiotic use.

**Structure:**
The Antimicrobial Stewardship Committee has been established to provide support and oversee activities of the ASP. This committee and the ASP will be part of the Infection Prevention and Control Program (IPCP). The IPCP will directly report all ASP-related activities and outcomes to the Quality Assurance and Performance Improvement (QAPI) Committee. QAPI Committee will in turn report all ASP activities and outcomes to nursing staff, prescribing clinicians, and other relevant staff.

**Procedure:**
1. Membership of the Antimicrobial Stewardship Committee
   a. Medical Director (required)
   b. Director of Nursing (required)
   c. Infection Preventionist (required)
   d. Consultant Pharmacist (required)
   e. Additional member as deemed appropriate by the Antimicrobial Stewardship Committee which may include Nurse representative, Nursing Aide representative, QAPI Director, Administrator or other healthcare workers

2. Meetings
   Antimicrobial Stewardship Committee will meet at least quarterly to review ASP-related activities and outcomes. The committee will also report its activities along with antibiotic use and resistance data to QAPI Committee at least on an annual basis.

3. Responsibilities
   a. Ensure appropriate use of antimicrobials through development and implementation of institutional policies, procedures, treatment algorithms, or other relevant initiatives

# ASP Policy Template

Some facilities prefer a brief policy version. A summarized modifiable version was developed by Nebraska ASAP and template is available at: https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

# Take Action – Form an Antibiotic Stewardship Committee/Team

**Required Members**

- Infection Preventionist
- Medical Director or a designated lead physician
- Director of Nursing or Assistant Director of Nursing
- Consultant Pharmacist

**Optional Members**

- Administrator
- Prescribing Provider (Attending Physician, Nurse Practitioner or Physician Assistant)
- Nurse representative
- Nurse Aid representative
- Allied Health Professional
- Representative from the Resident and Family Council

Committee should meet at least quarterly and review policy/program annually and as needed

# Task Antibiotic Stewardship Committee with Specific Responsibilities

Antibiotic Stewardship Committee should:

- Support and promote antibiotic use protocols
- Develop and maintain a system to monitor antibiotic use
- Develop and maintain a system to monitor resistance data
- Report antibiotic use and resistance data regularly to frontline staff and prescribing providers along with goals of antibiotic stewardship programs
- Provide education on antibiotic stewardship to prescribing providers and nursing staff in addition to residents and families

# Take Action – Antibiotic Use Protocols

Antibiotic use protocols can include:

- Requirement of specific dose, duration and indication with all antibiotic orders
- Guidance on prescribing based on national recommendations and facility specific data which highlights choosing narrow-spectrum antibiotics whenever possible
- Introduction of standardized tools and criteria for assessment and communication of infections (tools may also include decision support algorithms)
- Emphasis on reassessment of empiric antibiotics after 2 to 3 days for appropriateness and necessity (post-prescription review or antibiotic time out)

# Take Action – SBAR

- **S**ituation, **B**ackground, **A**ssessment, **R**ecommendation
  - Communication tool that facilitates structured sharing of information between nurses and prescribers, including recommendation of protocol-driven actions

**S — Situation**

I am concerned about a suspected UTI for the above resident.

**B — Background**

Indwelling catheter ☐ Yes ☐ No If yes, ☐ Urethral ☐ Suprapubic
Incontinence ☐ Yes ☐ No If yes, is this new or worsening ☐ Yes ☐ No
UTI in last 6 months ☐ Yes ☐ No If yes, Date: _____ Organism: _____ Treatment: _____
Active diagnosis (especially bladder, kidney, genitourinary conditions; diabetes; receiving dialysis, anticoagulants):
_____
Advance directives for limiting treatment (especially antibiotic use): _____
Medication allergies: _____

**A — Assessment**

Vital signs: BP____/____ HR_____ Resp. rate_____ Temp._____ $O_2$ Sats_____

**Resident WITH indwelling catheter**

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

No Yes
☐ ☐ Fever of 100°F (38°C), or 2°F (1.1°C) above baseline, or repeated temperatures of 99°F (37°C)
☐ ☐ New back or flank pain
☐ ☐ Rigors / shaking / chills
☐ ☐ New onset delirium (new dramatic change in mental status)
☐ ☐ Hypotension (significant change in baseline BP or SBP <90)
☐ ☐ Acute suprapubic pain
☐ ☐ Acute pain, swelling or tenderness of the scrotal area

**Resident WITHOUT indwelling catheter**

Criteria are met to initiate antibiotics if one of the three situations are met:

No Yes
☐ ☐ Any one of the following two:
- ☐ Acute dysuria alone (pain or burning while urinating)
- ☐ Acute pain, swelling or tenderness of the scrotal area

*OR*

☐ ☐ Single temp of 100°F (38°C), or 2°F (1.1°C) above baseline, or repeated temperatures of 99°F (37°C) **and** at least one of the following new or worsening symptoms:
- ☐ Urgency ☐ Suprapubic pain ☐ Frequency
- ☐ Gross hematuria ☐ Back or flank pain ☐ Urinary incontinence

*OR*

☐ ☐ No fever, but two or more of the following new or worsening symptoms:
- ☐ Urgency ☐ Suprapubic pain ☐ Frequency
- ☐ Gross hematuria ☐ Urinary incontinence

**$R_1$ — Recommendation when criteria are NOT met but ACTIVE MONITORING is being initiated**

Resident **DOES NOT** need immediate antibiotic but may need the following active monitoring protocol measures:
- ☐ Give / encourage liquid intake: _____ oz/mL _____ times / day, until symptoms resolve
- ☐ Record fluid intake and output until symptoms resolve (output can also be measured from urinals or by weighing diapers)
- ☐ Regular assessment of vital signs (temp, BP, heart rate, respiratory rate) every _____ hours for _____ hours
- ☐ Monitor and notify if S & S worsen or are unresolved in _____ hours
- ☐ Contact consultant pharmacist to review medication regimen for possible explanation of S & S
- ☐ Contact you (the provider) with an update of resident's condition in _____ hours/day
- ☐ Other (specify): _____

**$R_2$ — Recommendation when criteria ARE met and SIMPLE CYSTITIS is suspected**

Resident MET criteria for UTI and appear to have **cystitis** requiring the following measures:
- ☒ Urinalysis and urine culture (obtained under Medical Director standing order)
- ☒ Initiate empiric antibiotic therapy using the options for cystitis below

**Provider: Please select an antibiotic regimen**

☐ Initiate empiric antibiotic therapy based on Linden Court antibiotic susceptibilities:
- ☐ Nitrofurantoin (Macrobid) 100mg PO BID if estimated creatinine clearance (eCrCl) >30 mL/min x _____ Days
- ☐ Cephalexin (Keflex) 500mg PO BID if eCrCl ≥10 mL/min x _____ Days
- ☐ Cephalexin 250mg PO BID if eCrCl <10 mL/min x _____ Days
- ☐ SMX-TMP (Bactrim) 1 double-strength PO BID if eCrCl >30 mL/min x _____ Days
- ☐ SMX-TMP (Bactrim) 1 single-strength PO BID if eCrCl 15-30 mL/min x _____ Days
- ☐ Fosfomycin (Monural) 3g PO once **(for female residents)**
- ☐ Fosfomycin 3g PO once every 3 days for 3 doses **(for male residents)**
- ☐ If above cannot be used, ciprofloxacin 250mg PO BID eCrCl >30 mL/min x _____ Days
- ☐ If above cannot be used, ciprofloxacin 250mg PO daily eCrCl ≤30 mL/min x _____ Days

☐ Initiate empiric antibiotic therapy based on resident's urine culture(s) within the past 6 months

Antibiotic: _____ Dose: _____ Route: _____ Frequency: _____ Duration: _____ Days

**$R_3$ — Recommendation when criteria ARE met and COMPLICATED UTI is suspected**

Resident MET criteria for UTI and appear to have **complicated UTI** (e.g., pyelonephritis) requiring the following measures:
- ☒ Urinalysis and urine culture (obtained under Medical Director standing order)
- ☐ Obtain blood culture
- ☒ Initiate empiric antibiotic therapy using the options for complicated UTI below

**Provider: Please select an antibiotic regimen**

☐ Initiate empiric antibiotic therapy based on Linden Court antibiotic susceptibilities:
- ☐ Ceftriaxone 1g IM once *[strongly consider if resident is clinically unstable AND/OR received any of the antibiotics below within the previous 3 months]*

---------- FOLLOWED BY ----------
- ☐ SMX-TMP (Bactrim) 1 double-strength PO BID eCrCl >30 mL/min x _____ Days
- ☐ SMX-TMP (Bactrim) 1 single-strength PO BID eCrCl 15-30 mL/min x _____ Days
- ☐ Ciprofloxacin 500mg PO BID eCrCl >30 mL/min x _____ Days
- ☐ Ciprofloxacin 500mg PO daily eCrCl ≤30 mL/min x _____ Days
- ☐ **Oral** beta-lactam—Name: _____ Dose: _____ Frequency: _____ Duration: _____ Days

☐ Initiate empiric antibiotic therapy based on resident's urine culture(s) within the past 6 months

Antibiotic: _____ Dose: _____ Route: _____ Frequency: _____ Duration: _____ Days

https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

# Effectiveness of Assessment/ Communication Tool

**A – Assessment** (check boxes and determine recommendation prior to call)

**Resident with indwelling catheter:**

- ☐ fever of 100◦F (38◦C)or 2◦F (1◦C) greater than baseline
- ☐ new costovertebral tenderness
- ☐ rigors
- ☐ new delirium
- ☐ hypotension

**Any one of the above present**

**Resident without indwelling catheter:**

- ☐ Acute dysuria alone;

**OR**

- ☐ Single temperature of 100◦F (38◦C), multiple at 99◦F (37◦C) or above, or 2◦F (1◦C) degrees greater than baseline AND at least one new or worsening of the following:
  - ☐ urgency ☐ suprapubic pain
  - ☐ frequency ☐ gross hematuria
  - ☐ costovertebral angle tenderness
  - ☐ new/worsening urinary incontinence

Yes No Yes No

**R - Recommendation**

☐ **Protocol criteria ARE met.**

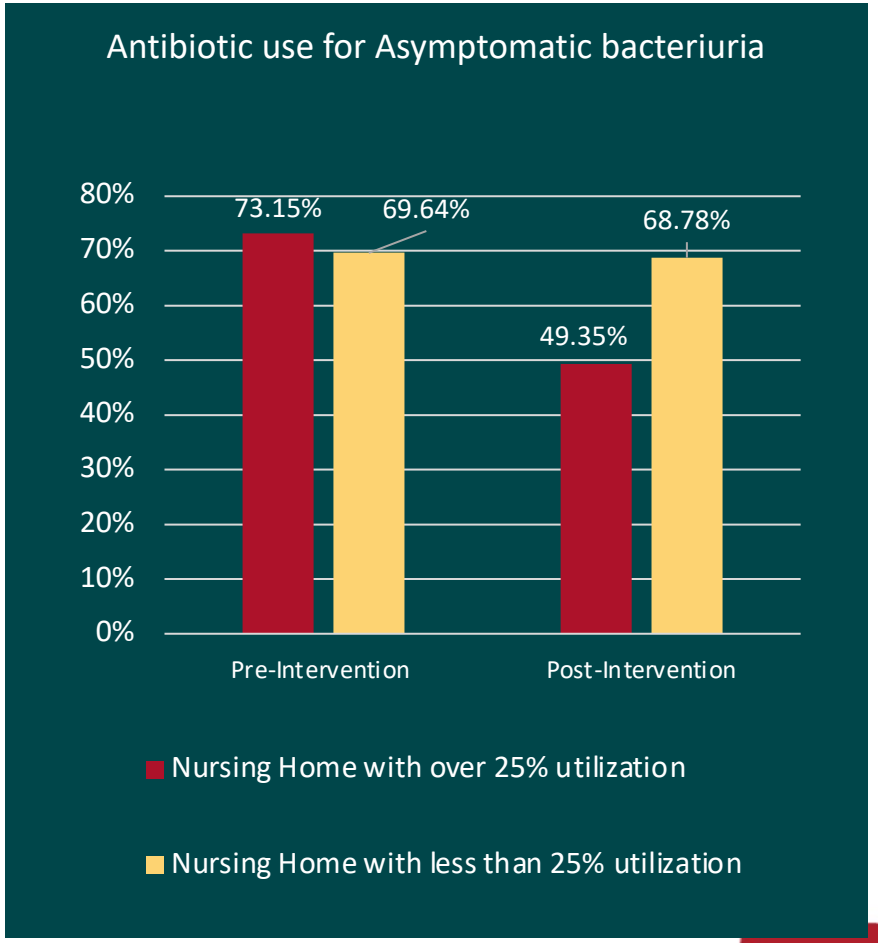
According to our understanding of best practices and our facility protocols the resident may have a urinary tract infection and need a prescription for an antibiotic agent.

**Staff:**

**Please Check Box for Course of Action Recommended**

☐ **Protocol criteria are NOT met.**

According to our understanding of best practices and our facility protocols, the information is insufficient to indicate an active urinary tract infection. The resident does NOT need an immediate prescription for an antibiotic, but may need additional observation.




McMaughan DK et al. BMC Geriatr. 2016 Apr 15;16:81

# Antibiotic Time Outs

Goals are to determine:

- Were initial symptoms due to bacterial infection that requires antibiotic?
- If yes, is the current antimicrobial treatment appropriate (e.g., rule out bug-drug mismatch, reconfirm agent, dose, route)?
- Can antibiotics be de-escalated?
- What will be the length of therapy?
- Is further evaluation required?

SBAR Communication Tool Template for Antibiotic Time-Out

[Facility Logo] | Resident Label

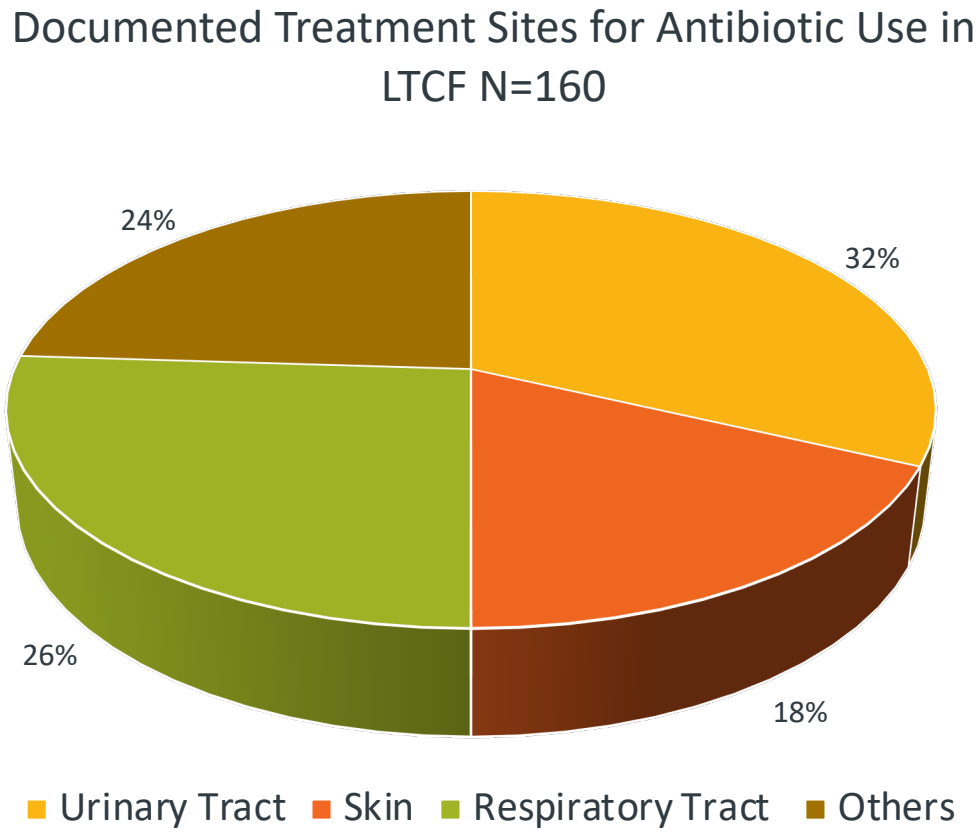
| | |
|---|---|
| S | **Situation:** I am calling to follow-up on [resident's name: _____] who was started on antibiotic(s) recently. |
| B | **Background:** This patient was started on:<br>Antibiotic #1: _____ Start date: _____<br>Antibiotic #2: _____ Start date: _____<br>For: ☐UTI ☐Pneumonia ☐Bronchitis ☐Skin infection ☐GI infection<br>☐Fever of unknown source ☐Other, specify: _____<br>Vitals at initial presentation were as follows: BP____/____ HR_____ Resp. rate_____ Temp._____ $0_2$ Sats.____<br>Symptoms and positive exam findings at that time were: _____<br>The diagnosis fits: ☐McGeer criteria ☐Loeb criteria ☐Neither ☐Assessment tool not used |
| A | **Assessment:**<br>Current vital signs: BP____/____ HR_____ Resp. rate_____ Temp._____ $0_2$ Sats.____<br>Since starting antibiotic(s), the resident:<br>☐now has *no* signs or symptoms of infection ☐has remained the same<br>☐has improved but continues to have signs and symptoms of: _____<br>☐has *new or worsening* signs/symptoms of: _____<br>Microbiology culture result (fax microbiology report if available):<br>☐has not returned yet ☐has *no* growth ☐was not obtained<br>☐has positive Gram stain/growth of [specify Gram stain/microorganism: _____]<br>Is susceptible to the antibiotic(s) prescribed: ☐Yes ☐No ☐Don't know ☐Not tested by lab ☐Not yet performed by lab<br>Other antibiotics the organism is sensitive to: _____ |
| R | **Recommendation:**<br>☐Patient **is not improving** and needs further evaluation.<br>☐Patient **has improved** and needs final antibiotic therapy plan. |
| | **Nurse's Signature:** _____ **Date/Time:** _____<br>☐**Faxed or** ☐**Called to:** _____ **By:** _____ **Date/Time:** _____ |

**Physician Orders/Response (Please check all that apply)**

https://www.cdc.gov/longtermcare/pdfs/core-elements-antibiotic-stewardship-appendix-a.pdf

https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

# SBAR/Time Out Resources




Thompson ND et al. J Am Med Dir Assoc. 2016 Dec 1;17(12):1151-1153

https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

## TOOLS AND TEMPLATES FOR LONG-TERM CARE

Home / Long-Term Care / Tools and Templates for Long-Term Care

ASAP
Nebraska Antimicrobial Stewardship Assessment and Promotion Program

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

SBAR Tool Collections

SBAR tool for antibiotic time out

SBAR tool for suspected lower respiratory tract infection (LRTI)

SBAR tool for suspected skin and soft-tissue infection (SSTI) (new)

SBAR tool for suspected urinary tract infection (UTI)–refer to the companion documents on how to use and implement SBAR tools

SBAR tool for suspected UTI with treatment recommendations

# Tracking/Reporting – Antibiotic Use

Require review of antibiotics:

- On admission to and transfer out of the facility.
- When it is prescribed by a provider not on facility's staff (like ED provider)
- Of all ongoing and completed courses of antibiotics by consultant and/or dispensing pharmacists during monthly medication review

Periodic (quarterly) tracking of adherence to antibiotic use protocols

Conduct at least an annual review of antibiotic use data in the facility to identify:

- Specific antibiotic that is being excessively used or
- Providers who are using excessive antibiotics as compared to their peers.

Reach out to pharmacy to provide antibiotic use data and/or use infection/ antibiotic start log to obtain antibiotic use measurements like:

- Antibiotic starts/ 1000 resident days
- Days of therapy/ 1000 resident days

# Template for Tracking Antibiotics

## January Infection and Antibiotic Start Log

| Resident | Room | Diagnosis | Antibiotic | Start Date | Stop Date | Days of Therapy | Prescriber | Lab Sent | Test Date | Culture f/u at 48-72h? | Pathogen | Result Date | Community vs. Facility | Assessment / SBAR Tool Completed? | Criteria Met? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 135B | UTI | nitrofurantoin | 1/2/16 | 1/4/16 | 3 | Dr. Lexin | UA, reflex C&S | 1/30/16 | Yes | Proteus mirabilis | 1/2/16 | Facility | Yes | No |
| B | 156A | SSTI | cephalexin | 1/15/16 | 1/21/16 | 7 | PA Cillin | None | NA | NA | NA | NA | Facility | Yes | Yes |
| C | 251B | UTI | ciprofloxacin | 1/1/16 | 1/14/16 | 14 | PA Cillin | UA, reflex C&S | 1/30/16 | Yes | E coli | 2/1/16 | Community | No | No |
| D | 551A | Pneumonia | azithromycin | 1/20/16 | 1/26/16 | 7 | Dr. Lexin | None | NA | NA | NA | NA | Community | Yes | Yes |
| D | 551A | UTI | nitrofurantoin | 1/3/16 | 1/5/16 | 3 | Dr. Lexin | UA, reflex C&S | 1/3/16 | Yes | E coli | 1/5/16 | Community | Yes | No |
| E | 431B | Pneumonia | azithromycin | 1/20/16 | 1/24/16 | 5 | Dr. Peni | None | NA | NA | NA | NA | Community | Yes | Yes |
| E | 431B | Pneumonia | amoxicillin-clavulanate | 1/20/16 | 1/24/16 | 5 | Dr. Peni | None | NA | NA | NA | NA | Community | Yes | Yes |
| F | 251B | C difficile | vancomycin po | 1/14/16 | 1/23/16 | 10 | PA Cillin | C difficile PCR | 1/13/16 | No | C difficile | 1/18/16 | Facility | No | Yes |
| G | 301A | Influenza | oseltamivir | 1/1/16 | 1/5/16 | 5 | Dr. Gripe | Flu swab | 1/1/16 | Yes | Influenza A | 1/1/16 | Facility | Yes | Yes |
| H | 301B | Influenza | oseltamivir | 1/2/16 | 1/6/16 | 5 | Dr. Gripe | Flu swab | 1/2/16 | Yes | Influenza A | 1/2/16 | Facility | Yes | Yes |
| I | 302A | Influenza | oseltamivir | 1/1/16 | 1/5/16 | 5 | Dr. Gripe | Flu swab | 1/1/16 | Yes | Influenza A | 1/1/16 | Facility | Yes | Yes |
| J | 303A | Influenza | oseltamivir | 1/1/16 | 1/5/16 | 5 | Dr. Gripe | Flu swab | 1/1/16 | Yes | Negative | 1/1/16 | Facility | Yes | No |
| K | 303B | Influenza | oseltamivir | 1/1/16 | 1/5/16 | 5 | Dr. Gripe | Flu swab | 1/1/16 | Yes | Negative | 1/1/16 | Facility | Yes | No |
| K | 303B | Pneumonia | levofloxacin | 1/2/16 | 1/8/16 | 7 | Dr. Gripe | None | NA | NA | NA | NA | Facility | Yes | Yes |

Type additional antibiotic start in the next row. Summary 1 & 2 data to the right of column "R" will automatically update in this tab and in the Summary tab.

Summary | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

This template is available at Nebraska ASAP website:
https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

Different antibiotic tracking template along with some other tools can also be found at:
http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes

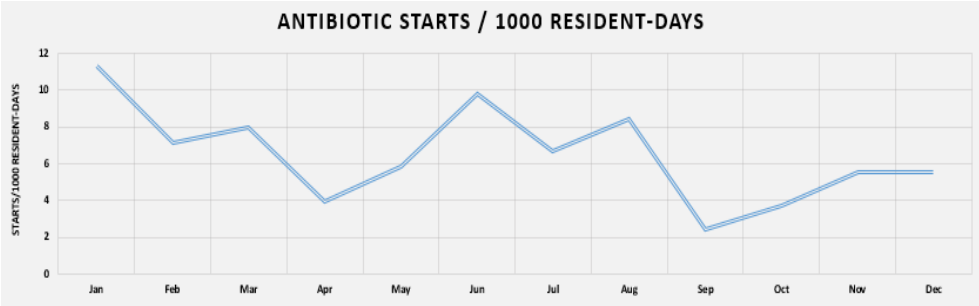
Online REDCap version also available by emailing Anwatkins@nebraskamed.com

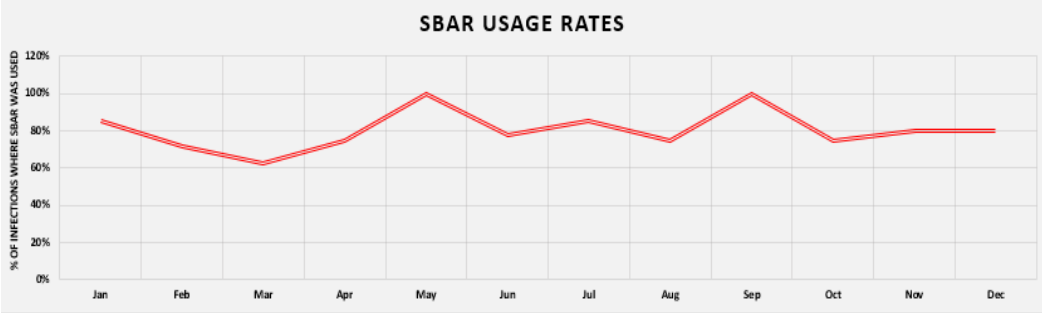
# Reporting Antibiotic Use from Tracking Template

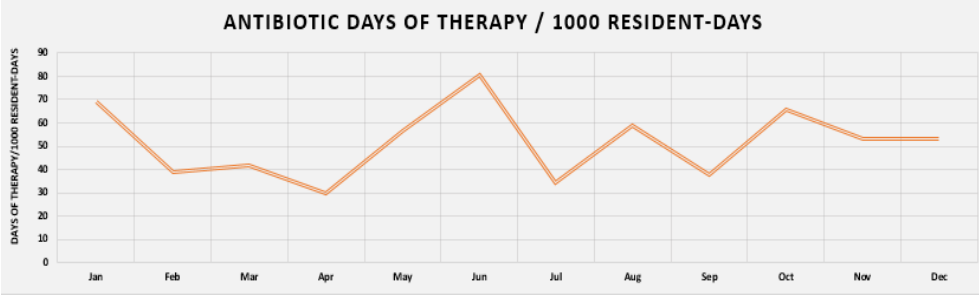
Infection and Antibiotic Start Log Template, Version 3

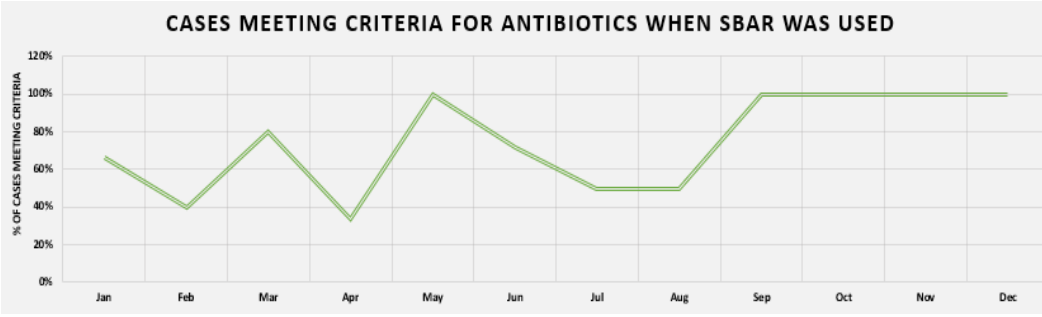
Year = 2018

| Parameters | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Average | Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antibiotic Start / 1000 RD | 11.29 | 7.14 | 7.98 | 3.99 | 5.88 | 9.78 | 6.67 | 8.42 | 2.44 | 3.76 | 5.56 | 5.56 | 6.54 | |
| Days of Therapy / 1000 RD | 69.35 | 38.78 | 41.87 | 29.91 | 56.47 | 80.43 | 34.29 | 58.95 | 37.80 | 65.73 | 53.33 | 53.33 | 51.69 | |
| SBAR Used and Completed | 86% | 71% | 63% | 75% | 100% | 78% | 86% | 75% | 100% | 75% | 80% | 80% | 81% | |
| *Met Criteria to Start ABX* | 67% | 40% | 80% | 33% | 100% | 71% | 50% | 50% | 100% | 100% | 100% | 100% | 74% | |



# Tracking/Reporting – Resistance Data

- Perform at least annual review of surveillance data pertaining to microorganisms related to antibiotic use like:
    - Methicillin-resistant *Staphylococcus aureus* (MRSA)
    - Carbapenem-resistant *Enterobacteriaceae* (CRE)
    - *Clostridioides difficile*
    - Any other drug resistant organism with which a facility seems to be struggling
- Make sure that the facility's contract with laboratory includes provision of facility-specific antibiogram
- Resistance data/antibiogram should also be considered when developing facility-specific antibiotic use guidance

# Reporting/Feedback Process

- Antibiotic Stewardship Committee/Team should be part of Infection Prevention and Control Program (IPCP).
- It will report progress to the Quality Assessment and Assurance (QAA) Committee at least annually
- New CMS rules mandate IPCP to be reviewed at least annually.
- In addition to QAA committee, annual written feedback on facility's antibiotic use and resistance data should be shared with:
    - Prescribing providers
    - Nursing Staff
    - Administration
    - Resident and Family Council
- Provide written feedback on antibiotic use for each provider on an annual basis
- Also share facility specific antibiograms with all the prescribing providers

# Antibiotic Use Summary Report Template

Sample Antibiotic Use Summary Report is available at Nebraska ASAP website.

https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care



[Facility Logo]

## Quarterly Antimicrobial Use Summary Report

This report summarizes all systemic antibiotics (IV, IM, PO) prescribed between [month/year] to [month/year]. A total number of [aa] antibiotic courses in [bb] patients were reviewed. During this three-month period, a total of [cc] antibiotic starts / 1000 resident-days (RD) and [dd] days of therapy (DOT) / 1000 RD were observed. The most common reasons for starting antibiotic therapy were [top 3 infectious syndromes]. The three most frequently prescribed antibiotics were [antibiotic names]. Of all the antibiotic courses initiated during this period, [ee]% of courses of therapy were appropriate based on [McGeer, Loeb] criteria. The table below further details antibiotic prescribing patterns and appropriateness during this period.

| Month | New Antibiotic Start / 1000 RD | DOT / 1000 RD | Top 3 Antibiotics with highest DOT / 1000 RD | Top 3 Indications for Starting Antibiotic Therapy | Met Criteria for Initiating Antibiotic Therapy |
|---|---|---|---|---|---|
| Month 1 | [cc] | [dd] | Ciprofloxacin ([ff] DOT/1000 RD)<br>Cephalexin ([gg] DOT/1000 RD)<br>Amoxicillin ([hh] DOT/1000 RD) | UTI ([ii] %)<br>SSTI ([jj] %)<br>ARI ([kk] %) | UTI ([ll] %)<br>SSTI ([mm] %)<br>ARI ([nn] %)<br>Overall [ee] |
| Month 2 | | | | | |
| Month 3 | | | | | |

Abbreviations: RD = resident-day; DOT = days of therapy; UTI = urinary tract infection; SSTI = skin and soft tissue infection; ARI = acute respiratory infection

# Example of Provider Feedback

## PMNH Antibiotic Report Card for Treatment of Respiratory Infection, 2014

| Provider | Antibiotic starts | Appropriate | Not appropriate* | Percent not appropriate |
|---|---|---|---|---|
| Provider 1 | 38 | 36 | 2 | 5.3 |
| Provider 2 | 24 | 23 | 1 | 4.2 |
| Provider 3 | 8 | 6 | 2 | 25 |
| Provider 4 | 2 | 2 | 0 | 0 |
| Provider 5 | 0 | 0 | 0 | 0 |
| PMNH cumulative | 72 | 67 | 5 | 6.9 |

* Nursing home residents' clinical symptoms met the McGeer Surveillance Criteria for diagnosis of viral respiratory infection.

© 2016 The Pew Charitable Trusts

This facility was highlighted in a report for successfully implementing ASP.

Multiple interventions were implemented including communication tools and vigorous review of antibiotic orders

However, one of the main interventions was to provide feedback to the providers in addition to one-on-one discussions by medical director

http://www.pewtrusts.org/~/media/assets/2016/04/apathtobetterantibioticstewardshipininpatientsettings.pdf

Antibiograms for Most Frequently Isolated Pathogens, with Summary Comments

[Facility Logo]

**Antibiotic Susceptibility Report for Most Frequently Isolated Gram-Negative Organisms (January 2015 to December 2016)**

| Pathogen | Isolate Tested | Percent Susceptible | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ampicillin | Ampicillin/Sulbactam | Piperacillin/Tazobactam | Cefazolin | Cefepime | Cefoxitin | Ceftazidime | Ceftriaxone | Cefuroxime | Aztreonam | Ertapenem | Meropenem | Amikacin | Gentamicin | Tobramycin | Ciprofloxacin | Levofloxacin | Trimethoprim/Sulfa | Nitrofurantoin[1] | Tetracycline |
| *Escherichia coli* | 111 | 53 | 59 | 99 | 86 | 98 | 92 | 98 | 97 | 91 | 98 | 100 | 100 | 100 | 91 | 91 | 58 | 59 | 76 | 99 | 77 |
| *Klebsiella pneumoniae* | 41 | -- | 78 | 98 | 93 | 98 | 95 | 98 | 98 | 93 | 98 | 100 | 100 | 100 | 98 | 98 | 95 | 95 | 93 | 63 | 83 |
| *Proteus mirabilis* | 41 | 98 | 98 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 75 | 75 | 75 | 75 | 50 | 75 |
| *Pseudomonas aeruginosa* | 31 | -- | -- | 97 | -- | 97 | -- | 97 | -- | -- | 84 | -- | 90 | 100 | 74 | 77 | 71 | 71 | -- | -- | -- |

-- Denotes organism has intrinsic resistance to this antimicrobial

1. Nitrofurantoin is reported for urine sources only

***Summary for Gram-Negative Organisms***

During the 2-year period between January 2015 and December 2016, a total of 111 *E coli* were identified, making it the most commonly identified Gram-negative pathogen. Antibiotic susceptibility of these *E coli can be summarized as follow:*

1. Oral antibiotics with the ***highest*** susceptibilities (in descending order) were:
    a. Nitrofurantoin (99%)
    b. Cefuroxime (91%)
    c. Cephalexin (86%, as indicated by cefazolin susceptibility)
    d. Trimethoprim/sulfamethoxazole (76%)

2. Susceptibilities of antibiotics available only in intravenous formulation (e.g., ceftriaxone) exceed 90%, except:
    a. Ampicillin/sulbactam (59%)
    b. Cefazolin (86%)

*Antibiotic susceptibility data can be useful for guiding selection of empiric antibiotic therapy for residents in whom culture and susceptibility data from the past few months are not available.*

# Antibiogram Template

Available from:
https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

# Education

- Nursing staff, prescribers, and consultant pharmacists
  - Need for antibiotic stewardship program and its goals
  - Understanding of antibiotic use protocols
  - Responsibility of each healthcare worker for ensuring its implementation
  - Updated treatment guidelines and best practices (e.g., recommended treatment durations, appropriateness criteria, etc.)
- Residents and Family
  - Dangers of antibiotic misuse
  - Role of antibiotic stewardship program in promoting appropriate antibiotic use

**Table 1. Recommended Duration of Therapy**

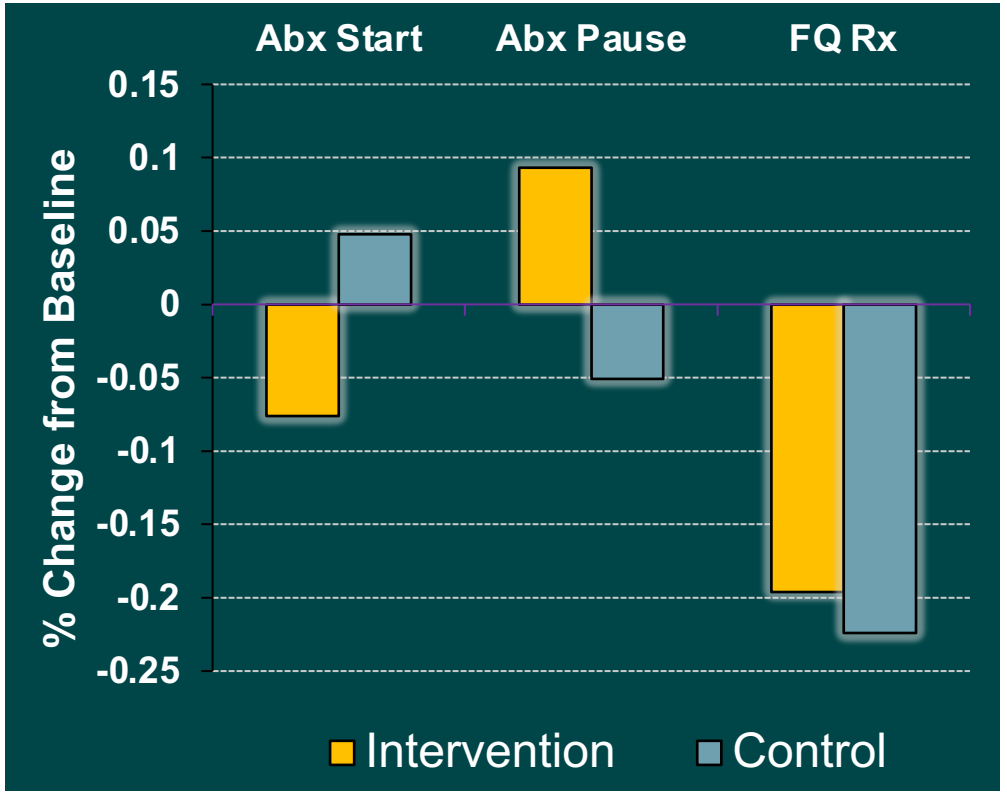
| Infection Syndrome | Typical Duration of Therapy |
|---|---|
| Uncomplicated cystitis[1,2] | 5 days for Nitrofurantoin<br>3 days for TMP/SMX<br>1 dose for Fosfomycin<br>3 days for Fluoroquinolones<br>3-7 days for Beta-Lactams |
| Pyelonephritis[1] | 7 days for Fluoroquinolones<br>14 days for TMP/SMX<br>10-14 days for Beta-Lactams |
| Catheter-associated urinary tract infection[3] or complicated* UTI[2,4] | 7 days if prompt resolution of symptoms<br>10-14 days if delayed response to therapy |
| Pneumonia[5] | 5-7 days |
| Bronchitis[6,7] | No antibiotic therapy is recommended |
| Acute exacerbation of COPD[8] | 5 days if treatment criteria met |
| Influenza[9,10] | 5 days for treatment<br>Minimum of 2 weeks, continuing for at least 7 days after the last known case was identified for chemoprophylaxis in influenza outbreak |
| Pharyngitis, streptococcal[11] | Up to 10 days for penicillin, amoxicillin, 1st-generation oral cephalosporins, clindamycin<br>5 days for azithromycin |
| Sinusitis[12] | 5-7 days if improvement after 3-5 days of treatment<br>7- 10 days if delayed response or switched to alternative therapy due to lack of response |
| Cellulitis or cutaneous abscess[13] | 5-7 days |
| Shingles[14] | 7 days for famciclovir, valacyclovir<br>7-10 days for acyclovir |
| *Clostridium difficile* infection[15] | 10-14 days<br>10 days for fidaxomicin |
| Gastroenteritis, bacterial[16] | 3-5 days if treatment criteria met |

* Refer to Table 2 for factors associated with complicated UTI.

This handout and other educational resources can be found at:
https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/

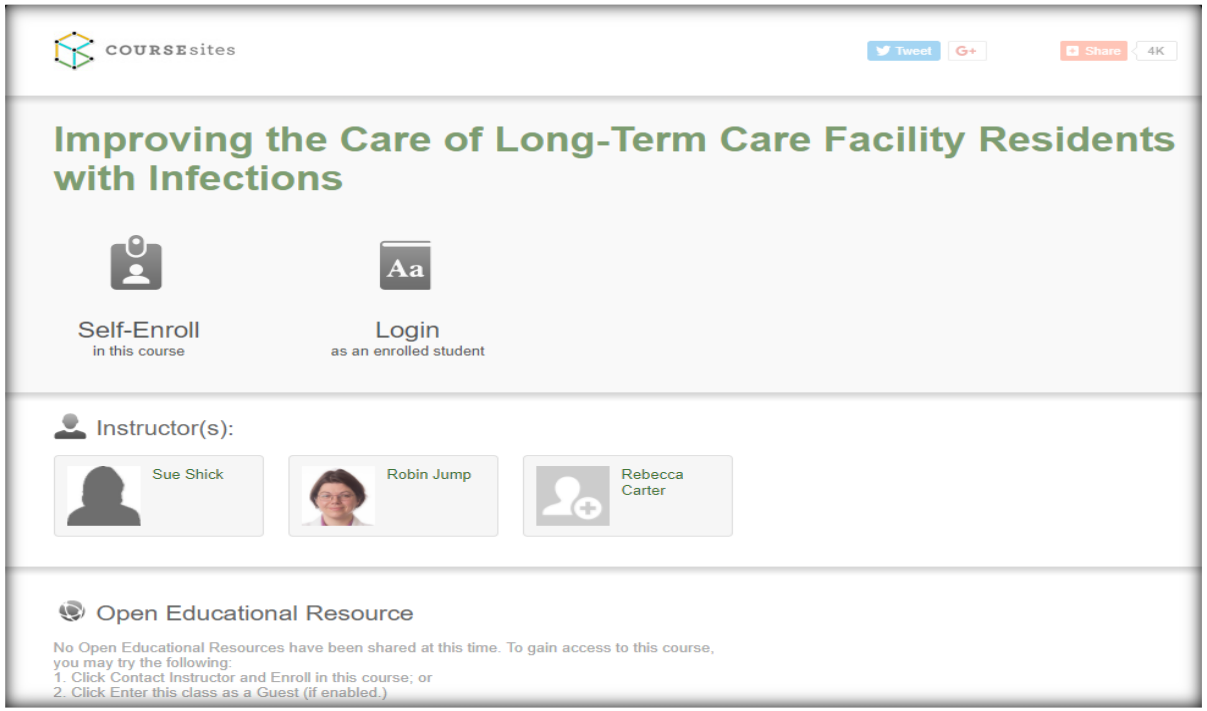
# Education of Nursing Staff and Providers About Guidelines

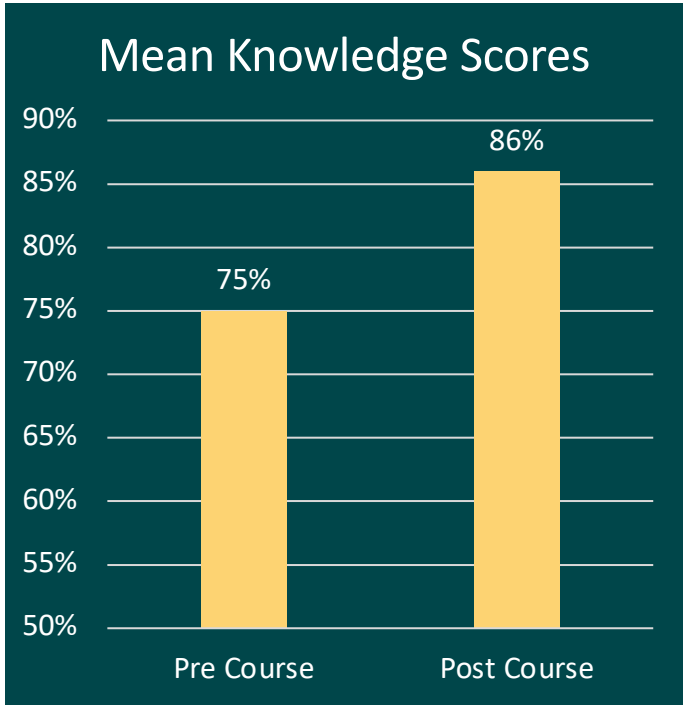
- Cluster RCT in 58 NHs in Sweden
- Prescribing guideline disseminated through interactive case-based sessions with nurses and providers
- Total antibiotic prescriptions decreased and “wait and see” approach by physicians increased




Pettersson E et al. J Antimicrob Chemother. 2011 Nov;66(11):2659-66

# Impact of Online Course for Nurses




After the course, nurses' agreement that their role influences whether residents receive antimicrobials also increased significantly

Wilson BM et al. Am J Infect Control. 2017 May 1;45(5):466-470

https://www.coursesites.com/webapps/Bb-sites-course-creation-BBLEARN/handleSelfEnrollment.htmlx?course_id=_348931_1

# ANTIMICROBIAL STEWARDSHIP PROGRAM

## What is an Antimicrobial Stewardship Program?

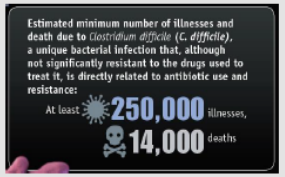
An Antimicrobial Stewardship Program is a set of systematic activities aimed to promote the appropriate use of antimicrobials.

**The program goals are to:**

- Improve quality of patient care and patient outcomes
- Minimize side effects from antimicrobials
- Limit the development of antimicrobial resistance
- Educate providers on when to prescribe antimicrobials, and the right drug, dose and duration to use

## Why is Antimicrobial Stewardship Program needed?

- Up to 75% of antimicrobial use is considered inappropriate
- Inappropriate use will increase antimicrobial resistance and lead to unwanted side effects (*Clostridium difficile* infection)
- An Antimicrobial Stewardship Program can improve patient outcomes and reduce inappropriate antimicrobial use



## How can Antimicrobial Stewardship Program be implemented?

**Practical steps of implementation include:**

1. Obtain program support from facility leadership
2. Partner with regional physicians or pharmacists with infectious diseases or antimicrobial stewardship expertise
3. Form an Antimicrobial Stewardship Committee
4. Review data on infection assessment practices, and antimicrobial use and resistance patterns
5. Determine program goals such as the types and extents of interventions (e.g., use assessment tools for all suspected infections, eliminate treatment of asymptomatic bacteriuria)
6. Educate prescribers and staff on the types, reasons and goals of the selected interventions
7. Track outcomes after implementation of interventions
8. Report and educate program activities and outcomes to prescribers, staff and residents/families

## Who should be part of the program?

**Ideally everyone who is involved in the antibiotic use process:**

- Medical Directors: set standards for antibiotic prescribing practices
- Directors of Nursing: set standards for nursing practices
- Infection Preventionists: be responsible for the Infection Prevention and Control Program and support Antimicrobial Stewardship Program activities
- Consultant Pharmacists: perform drug use review, provide antibiotic use data and assist with developing treatment guidelines
- Prescribers: prescribe antimicrobials only when clearly indicated
- Nursing staff: evaluate patient using standardized assessment tools and communicate patients' symptoms to prescribers

ASAP Nebraska Antimicrobial Stewardship Assessment and Promotion Program

Infection Control Assessment & Promotion Program

University of Nebraska Medical Center Nebraska Medicine

NEBRASKA Good Life. Great Mission. DEPT. OF HEALTH AND HUMAN SERVICES

Content developed based on resources provided by the Centers for Disease Control and Prevention (CDC) – retrieved October 2017 from https://www.cdc.gov/drugresistance/threat-report-2013/index.html and https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html.

The above poster and other educational materials can be found from Nebraska ASAP at the following link:
https://asap.nebraskamed.com/long-term-care/educational-materials-long-term-care/

The pocket card to the right can be found from AHRQ at the following link:
https://www.ahrq.gov/sites/default/files/wysiwyg/nhguide/4_TK2_T2-Antibiotic_Pocket_Cards.pdf

PREVENT HAIs Healthcare Associated Infections

## 12 Common Nursing Home Situations in Which Systemic Antibiotics are Generally Not Indicated

1. Positive urine culture in an asymptomatic resident.
2. Urine culture ordered solely because of change in urine appearance.
3. Nonspecific symptoms or signs not referable to the urinary tract, such as falls or mental status change (with or without a positive urine culture).
4. Upper respiratory infection (common cold).
5. Bronchitis or asthma in a resident who does not have COPD.
6. "Infiltrate" on chest x-ray in the absence of clinically significant symptoms.
7. Suspected or proven influenza in the absence of a secondary infection (but DO treat influenza with antivirals).
8. Respiratory symptoms in a resident with advanced dementia, on palliative care, or at the end of life.
9. Skin wound without cellulitis, sepsis, or osteomyelitis (regardless of culture result).
10. Small (<5cm) localized abscess without significant surrounding cellulitis (drainage is required of all abscesses).
11. Decubitus ulcer in a resident at the end of life.
12. Acute vomiting and/or diarrhea in the absence of a positive culture for shigella or salmonella, or a positive toxin assay for Clostridium difficile.

AHRQ Agency for Healthcare Research and Quality
Advancing Excellence in Health Care ● www.ahrq.gov

www.ahrq.gov/NH-ASP

# Choosing the Right Intervention

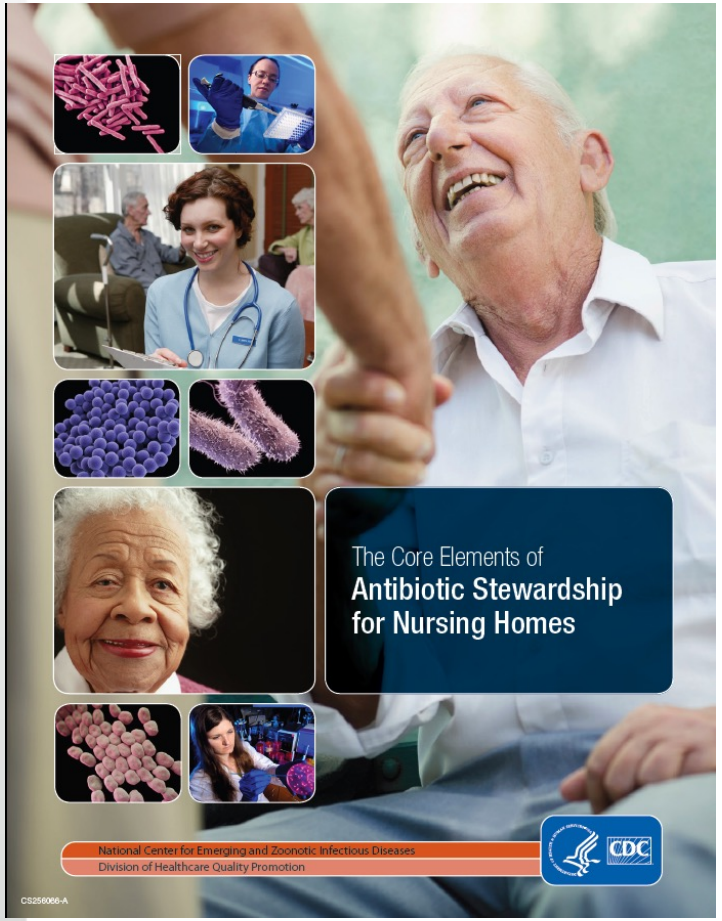
| Target for Intervention | Intervention |
|---|---|
| Antibiotics being prescribed even when clinical criteria for infection are not met | • SBAR tool implementation |
| Diagnostic tests being sent unnecessarily | • SBAR tool implementation<br>• Use of decision-making algorithm |
| Broad spectrum agent being used unnecessarily | • Develop facility-specific guidance<br>• Implement antibiotic time-out |
| Bug-drug mismatches | • Antibiogram use for empiric treatment |
| Continuation of empiric antibiotics even after infection ruled out | • Implement antibiotic time-out |
| Inappropriate length of therapy | • Develop facility-specific guidance<br>• Implement antibiotic time-out |
| Unnecessary antibiotics being started by outside providers | • Implement mandatory review of necessity by medical directors for all outside antibiotic orders<br>• Antibiotic time-out |
| Unnecessary antibiotics being started by specific providers | • Consider providing specific feedback to the providers |

Provide relevant education to nursing staff and prescribers about the intervention

Engage consultant pharmacists in reviewing antibiotic orders and provide feedback to prescribers when improvement opportunities are found

Build partnership, whenever possible, with local antibiotic stewardship experts for their input on the interventions and facility specific protocols

# Recap of the CDC Core Elements




1. Leadership Commitment
2. Accountability
3. Drug Expertise
4. Action
5. Tracking
6. Reporting
7. Education

# Antimicrobial Stewardship Resources

https://asap.nebraskamed.com

http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

http://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/nh-aspguide/index.html

http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes

https://www.health.state.mn.us/diseases/antibioticresistance/hcp/asp/ltc/index.html

# Summary

- Implementing Antimicrobial Stewardship in long-term care facilities is a team effort.
- CDC Core Elements for ASP in Nursing Homes need to be followed when establishing a successful program.
- There are numerous different ASP interventions, and facilities should use approaches that work best for them
- Free resources and tools are available to help facilities implement various components of core elements.

# Antimicrobial Stewardship in Long-Term Care Facilities

Andrew B. Watkins, PharmD, BCIDP
Pharmacy Coordinator, Nebraska ASAP
Anwatkins@nebraskamed.com

ASAP

Nebraska Antimicrobial Stewardship Assessment and Promotion Program