

Antibiotic Stewardship:

Updates and Opportunities to
Reduce Healthcare-Associated
Infections



S O U T H D A K O T A

Foundation for Medical Care

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Agenda

Outline barriers to antibiotic stewardship. Provide resources, opportunities, and updates for reducing Healthcare-Associated Infections (HAI)

- Outpatient
- Clinical resources
- Dental guideline updates
- Agency for Healthcare Research and Quality (AHRQ)
 - Tool Kits
- Nursing homes
 - Guidance
 - Common infections

Explain the importance of the Core Elements for antibiotic stewardship

- Outpatient
- Inpatient
- Nursing homes (NH)

Explain why appropriate antibiotic use is important

- Universal Risk vs. Facility Specific Risk

Explain the importance of the Core Elements for antibiotic stewardship

Antibiotic Stewardship

Introduction and Definition

- Centers for Disease Control and Prevention (CDC): *Antibiotic stewardship is the effort to measure and improve how antibiotics are prescribed by clinicians and used by patients.*

Antibiotic Stewardship is an Effort to:

- I. Improve antibiotic prescribing so that antibiotics used are ONLY when needed**
- II. Ensure prompt initiation of the right antibiotic when needed**
- III. Ensure the right drug, correct dose, and duration when needed**
- IV. Measure antibiotic prescribing (trends)**

What is the Goal of Antibiotic Stewardship?



To improve antibiotic use in order to improve patient safety and the quality of healthcare while minimizing antibiotic resistance.

It's about patient safety and delivering high-quality healthcare.

Is Antibiotic Stewardship Necessary? Is Antimicrobial Resistance a Threat?



Antimicrobial resistance

[العربية](#) [中文](#) [Français](#) [Русский](#)
[Español](#)

17 November 2021

Key facts

- Antimicrobial resistance (AMR) is a global health and development threat. It requires urgent multisectoral action in order to achieve the Sustainable Development Goals (SDGs).
- WHO has declared that AMR is one of the top 10 global public health threats facing humanity.

Related

- [Global action plan](#)
- [Global report on surveillance](#)
- [Country situation analysis](#)
- [Policy to combat antimicrobial resistance](#)
- [More on antimicrobial resistance](#)



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What Accelerates the Emergence and Spread of Antimicrobial Resistance?

Who is responsible for risk reduction?

Everyone can play a role in reducing risk



- **Physicians, nurses, and pharmacists**
- **Administration, epidemiologists, infection preventionists, laboratory, and IT**
- **All play a role in antibiotic stewardship (guidance from CDC)**

What Defines a Quality Antibiotic Stewardship Program?

CDC Core Elements

- **Offers providers and facilities a set of key principles**
- **Guide efforts to improve antibiotic use (→ advances patient safety and improves outcomes)**
- **Complements existing guidelines and standards**
- **Infectious Diseases Society of America, Society for Healthcare Epidemiology of America, American Society of Health System Pharmacists, Society of Infectious Diseases Pharmacists, and The Joint Commission**
- **There is no “one size fits all” approach to optimize antibiotic use for all settings**

**There are
different
Core
Elements for
different
settings**

Hospital ★

Outpatient

Nursing Homes ★

Small and Critical Access Hospitals

Resource-Limited Settings

Hospital and Nursing Home Core Elements

Hospital
Core
Elements

- 1) Leadership Commitment
 - 2) Accountability
 - 3) Drug Expertise
 - 4) Action
 - 5) Tracking
 - 6) Reporting
 - 7) Education
- Culture, engage individuals that are accountable (medical/nursing directors), financial resources
- Pharmacists, ID specialists and consultants
- Policies, practice, and interventions- optimize and improve
- How, why, adverse outcomes and costs (*C. difficile* rates), impact of interventions
- Clinicians, staff, residents, and families

Nursing
Home Core
Elements

-AU Module reporting to National Healthcare Safety Network (NHSN) will be mandatory

Hospital and Nursing Home Core Elements

Hospital
Core
Elements

- 1) Leadership Commitment
- 2) Accountability
- 3) Drug Expertise
- 4) Action
- 5) Tracking

-CMS Prospective Payment Rule 8/10/22

-Beginning CY 2024

Nursing
Home Core
Elements

- 6) Reporting
- 7) Education

-To receive payment from the Promoting Interoperability Program

-All Acute Care Hospitals and CAHs report AU Module data into NHSN

-Helps satisfy Public Health and Clinical Data Exchange Objective

**There are
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Hospital

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Resource-Limited Settings

Outpatient Core Elements

Primary Care
Dental Clinics
Emergency Departments
Urgent Care

Outpatient
Core
Elements

- 1) Commitment** } Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety
- 2) Action for Policy and Practice** } Implement at least one policy, practice, and interventions- optimize and improve
- 3) Tracking and Reporting** } How, why, adverse outcomes and costs (*C. difficile* rates), impact of interventions
- 4) Education and Expertise** } Ensure access to needed expertise and provide education to clinicians, staff, residents, and families

-Reporting to NHSN is not required (unlike hospitals)

There are different Core Elements for different settings

Hospital

Outpatient

Nursing Homes

Small and Critical Access Hospitals

Resource-Limited Settings

-CDC has Core Element resources available for other facilities

Core Element Implementation: Nursing Homes

- **Where to start?**
- **How to improve?**

**Antibiotic Stewardship Checklist for
Nursing Homes**

Core Element Analysis:

- 6 Questions
- Confidential
- South Dakota facilities only
- < 1 minute to complete
- Level of Core Element Implementation at your facility
- Assistance with ICAR or Core Elements through SDFMC

S O U T H D A K O T A

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Explain why appropriate antibiotic use is important

- Universal Risk vs. Facility Specific Risk

Antibiotic Use Risks:

Common side effects

- Rash
- Diarrhea
- Nausea
- Yeast infection

Severe side effects

- Allergic reaction
- Hives
- Angioedema

Individual Level:

- Adverse Drug Events (ADEs)
 - Risk = to antipsychotics
 - In a NH 1 in 5 ADEs is a result of antibiotics

Population Level:

- Antibiotic resistance
 - Commonly emerge following a course of antibiotics (broad spectrum)
 - Can persist in the body for > 1 year
 - Future treatments become difficult
- *Clostridium difficile* (CDI)
 - 8-fold increase in risk from antibiotic use
 - More than half of healthcare-onset cases occur in NHs

Antibiotic Use Risks: Nursing Home

Nursing Home Patients: Heightened risk for antibiotic-associated adverse events due to a convergence of patient-, facility-, and health care system–level risk factors.

- Older, comorbidities, functional disability, and indwelling devices
- Traverse multiple health care facilities; commonly rehospitalized within 30 days
- Antibiotic exposure is common- 30% to 50% of hospitalized patients and 40% to 70% of NH patients receive an antibiotic
- Antibiotic overuse in this population is associated with:
 - Multidrug-resistant organism (MDRO) colonization and infections
 - *Clostridium difficile* infection (microbiomes do not recover as quickly following antibiotic)
 - Rehospitalization
 - Unnecessary health care expenditures
 - Mortality

Agenda

Outline barriers to antibiotic stewardship. Provide resources, opportunities, and updates for reducing Healthcare-Associated Infections (HAI)

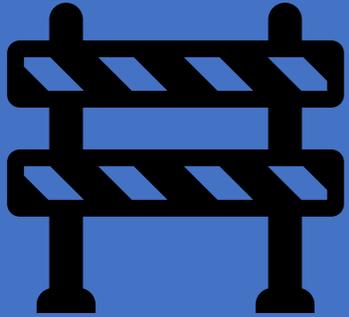
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Antibiotic Stewardship Barriers:

- **Staff have multiple roles in a facility → time constraints**
- **Leadership support and a lack of accountability**
- **Updated treatment guidelines and caregiver education**
 - **Proper use of antibiogram**
- **Limited knowledge on resources**
- **Patient and family member expectations**
 - **Physicians are in a challenging position (direct patient care: NH and Outpatient)**

Outpatient Antibiotic Use

According to the CDC what percent of outpatient antibiotic prescriptions are unnecessary?

A) 4%

B) 9%

C) 19%

D) 28%

E) 51%

Does this come as a surprise?

Outpatient Antibiotic Use

According to the CDC:

-60% of bronchitis and 24% of viral upper respiratory infections were prescribed an antibiotic (2018)

-In 2019 there were 251.1 million antibiotic prescriptions dispensed from outpatient pharmacies

-765 antibiotic prescriptions for every 1000 persons in the United States

-That is enough antibiotic for 3 out of 4 people to receive one course of therapy

-Physicians are in a challenging position



Physicians Must Weigh Risk vs. Benefit with patients

• Rectangular Snip

Diagnostic uncertainty and fear of complications?

- Clinicians cite diagnostic uncertainty and fear of infectious complications.

If antibiotics are not recommended... what can physicians do?

Strategy:
Communicating about adverse events to clinicians and patients is key.

CDC Recommendations for Treatment of Common Outpatient Conditions

The image is a screenshot of the CDC website's 'Antibiotic Prescribing and Use' section. At the top left is the CDC logo and the text 'Centers for Disease Control and Prevention CDC 24/7: Saving Lives. Protecting People™'. To the right is a search bar with a magnifying glass icon and a link to 'Advanced Search'. Below the search bar is a blue header with the text 'Antibiotic Prescribing and Use'. Underneath the header is a breadcrumb trail: 'CDC > Antibiotic Use > Healthcare Professional Resources and Training'. On the right side of the breadcrumb trail are social media icons for Facebook, Twitter, LinkedIn, and YouTube. On the left side of the page is a navigation menu with the following items: 'Antibiotic Use' (with a home icon), 'About Antibiotic Use' (with a plus icon), 'Patient Resources and Education' (with a plus icon), 'Healthcare Professional Resources and Training' (with a minus icon), 'Educational Resources for Healthcare Professionals', 'CE and Training', and 'Treatment Recommendations' (with a minus icon). The main content area has the title 'Treatment Recommendations for Common Illnesses and Penicillin Allergy'. Below the title are three buttons: 'Adult Outpatient Treatment Recommendations' (with a yellow star icon), 'Pediatric Outpatient Treatment Recommendations', and 'Is It Really a Penicillin Allergy?'.

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People™

Search  [Advanced Search](#)

[A-Z Index](#)

Antibiotic Prescribing and Use

CDC > Antibiotic Use > Healthcare Professional Resources and Training    

- Antibiotic Use
- About Antibiotic Use +
- Patient Resources and Education +
- Healthcare Professional Resources and Training -
- Educational Resources for Healthcare Professionals
- CE and Training
- Treatment Recommendations -

Treatment Recommendations for Common Illnesses and Penicillin Allergy

- Adult Outpatient Treatment Recommendations 
- Pediatric Outpatient Treatment Recommendations
- Is It Really a Penicillin Allergy?

Symptom Relief

Antibiotic Prescribing and Use

CDC > Antibiotic Use > Patient Resources and Education

Antibiotic Use

About Antibiotic Use +

Patient Resources and Education -

Print Materials

Treatment for Common Illnesses -

Chest Cold (Acute Bronchitis)

Common Cold

Ear Infection

Flu (Influenza)

Sinus Infection (Sinusitis)

Skin Infections

Sore Throat

Urinary Tract Infection

Video and Audio

Web Images and Graphics

Healthcare Professional +

Treatment for Common Illnesses

[Español \(Spanish\)](#) | [Print](#)

Will antibiotics help for these common infections?

Chest Cold (Acute Bronchitis)

Cough, mucus

Common Cold

Sneezing, runny or stuffy nose, sore throat, cough

Ear Infection

Ear pain, fever

Flu (Influenza)

Fever, cough, sore throat, runny or stuffy nose, body aches

Sinus Infection (Sinusitis)

Headache, stuffy or runny nose, face pain or pressure

Skin Infections

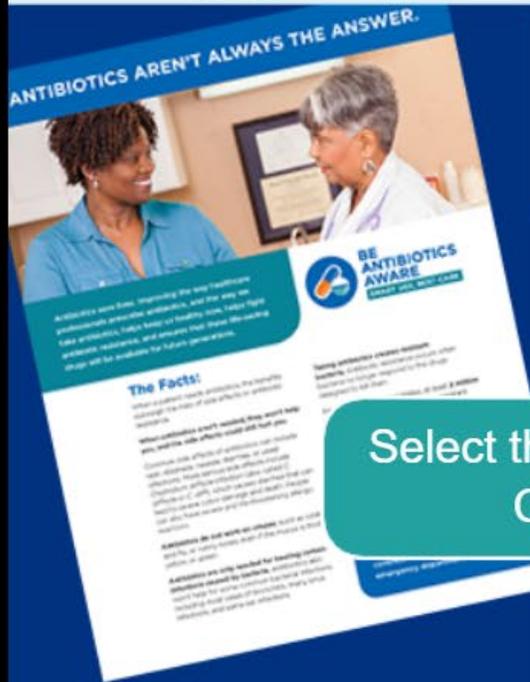
CDC Recommendations for Common Outpatient Conditions

Infection Type	Epidemiology	Diagnosis (of bacterial)	Treatment
Acute rhinosinusitis	98% of cases are viral	<ul style="list-style-type: none"> Severe Persistent Worsening 	<ul style="list-style-type: none"> Watchful waiting Amoxicillin/Augmentin (if bacterial) Not macrolides
Acute uncomplicated bronchitis	Cough is the common symptom	Abnormal vitals (rule out pneumonia)	Symptom relief: <ul style="list-style-type: none"> Cough suppressants 1st generation antihistamines Decongestants
Common cold or non-specific upper respiratory tract infection (URTI)	<ul style="list-style-type: none"> Most adults experience 2-4 colds annually >200 different viruses can cause the common cold 	Rapid tests to rule out : <ul style="list-style-type: none"> COVID-19 Influenza 	Symptom relief: <ul style="list-style-type: none"> Cough suppressants NSAIDS Decongestants
Pharyngitis	Only 5-10% of adult sore throat cases are caused by Group A beta-hemolytic streptococcus	Rapid antigen detection to establish GAS	Antibiotic treatment is not recommended for patients with negative rapid antigen test

Resources to help clinicians with stewardship



Provide Patient Education Materials



Viruses or Bacteria What's got you sick?

Antibiotics are often prescribed when they are not needed for respiratory infections. Antibiotics are only needed for treating certain infections caused by bacteria. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your healthcare professional for tips on how to relieve symptoms and feel better.

Common Respiratory	Common Cause	Are Antibiotics
COVID-19	✓	No
Flu	✓	No
Bronchitis/chest cold (in otherwise healthy children and adults)*		✓ No*

Select this button to access patient education materials from CDC's Be Antibiotics Aware educational effort.



Antimicrobial Stewardship in Dentistry

1 out of 10 antibiotics in the US are prescribed by dentists

Dentists tend to:

Prescribe clindamycin more frequently

More antibiotics for preventative reasons (endocarditis and prosthetic joints)

Feel more pressure to prescribe antibiotics from patients AND physicians

ADA Guideline:

Prevention of prosthetic joint infection (PJI)

*“In general, for patients with prosthetic joint implants, prophylactic antibiotics are **not** recommended prior to dental procedures to prevent prosthetic joint infection.”*

Rationale:

- There is evidence that dental procedures are not associated with PJI.
- There are potential harms of antibiotics including risk for anaphylaxis, antibiotic resistance, and opportunistic infections such as *Clostridium difficile*.
- The benefits of antibiotic prophylaxis may not exceed the harms for most patients.
- The individual patient’s circumstances and preferences should be considered when deciding whether to prescribe prophylactic antibiotics prior to dental procedures.

ADA/AHA Guideline: Prevention of infective endocarditis

Guidelines were updated in 2021 from previous version (2007)

- No longer recommend use of clindamycin for endocarditis prophylaxis**
- Use of amoxicillin or a 1st generation cephalosporin for penicillin/amoxicillin allergy patients**

Table 5. Antibiotic Regimens for a Dental Procedure Regimen: Single Dose 30 to 60 Minutes Before Procedure

Situation	Agent	Adults	Children
Oral	Amoxicillin	2 g	50 mg/kg
Unable to take oral medication	Ampicillin OR	2 g IM or IV	50 mg/kg IM or IV
	Cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV
Allergic to penicillin or ampicillin—oral	Cephalexin† OR	2 g	50 mg/kg
	Azithromycin or clarithromycin OR	500 mg	15 mg/kg
	Doxycycline	100 mg	<45 kg, 2.2 mg/kg >45 kg, 100 mg
Allergic to penicillin or ampicillin and unable to take oral medication	Cefazolin or ceftriaxone†	1 g IM or IV	50 mg/kg IM or IV

Clindamycin is no longer recommended for antibiotic prophylaxis for a dental procedure.

IM indicates intramuscular; and IV, intravenous.

* Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosing.

Nursing Care Specific Recommendations:

- **All antibiotic orders should stipulate an indication, drug, dose, and duration (stop date)**
- **An antibiogram (facility specific) can be useful, but it is not required**
- **Facility specific treatment guidelines:**
 - **Antibiogram**
 - **Urinary Tract Infection (UTI)**
 - **Upper Respiratory Tract Infection (URTI)**
 - **Skin and Soft Tissue Infection (SSTI)**
- **Discourage the use of prophylactic antibiotics:**
 - **Antibiotic UTI prophylaxis is only effective for 1-3 months, then the urinary tract gets colonized with other organisms and the tract is colonized with resistant bacteria**

Nursing Care Specific Recommendations:



PHARMACY
INFORMATICS
ACADEMY

S

Situation

B

Background

A

Assessment

R

Recommendation

- Significant impact on physician's decision
- Use caution with vocabulary (very sick vs. febrile with elevated blood pressure)
- Obtain background information including whether resident has a urinary catheter, history of recent UTI, other active diagnosis
- Discuss within the antimicrobial stewardship committee and determine the best SBAR format (paper vs. electronic)
- Willingness to use watchful waiting
- Training available (pharmacy societies and AHRQ)

Nursing Care Specific Resources:



Agency for Healthcare
Research and Quality

Topics ▾

Programs ▾

Research ▾

Data ▾

Tools ▾

Funding & Grants ▾

Home > Nursing Home Antimicrobial Stewardship Guide > **Toolkits**



Nursing Care Specific Resources:



Toolkits (4):

- **Implement, Monitor, and Sustain an Antimicrobial Stewardship Program**
 - Starting or sustaining a program
- **Determine Whether it is Necessary to Treat a Potential Infection with Antibiotics**
 - Suspected UTI SBAR
 - Communicating and decision making for Four Infections:
 - UTI, URTI, SSTI, GI
- **Help Prescribing Clinicians Choose the Right Antibiotic**
 - Working with a Lab
 - Antibigram guidance
- **Educate and Engage Residents and Family Members**
- **Nursing and Staff Training available (pharmacy societies and AHRQ)**

Common infections Nursing Homes:

Urinary Tract Infection

- **Very common- among older adults and NH residents**
- **Common cause of bacteremia**
- **20-60% of antimicrobial use**
- **Clinical diagnosis.... not a laboratory diagnosis!**
 - **Urinalysis is great when negative...but positive screen does not diagnose a UTI!**
 - **Urine Culture is great to help decide about what agent to use... if needed!**
- **Follow up on culture and deescalate to narrow antibiotic spectrum as soon as possible**
- **Avoid prolonged courses of antibiotic therapy**
- **If resident is not better and culture says drug should be active.... Consider alternative diagnosis**

Common infections Nursing Homes (cont.):

Upper Respiratory Tract Infections

- **Acute rhinosinusitis:**
 - 90% viral
 - Purulence does not indicate bacterial infection
 - Antibiotics for severe symptoms
 - Fever
 - Double sickening (viral → bacteria)
- **Acute bronchitis:**
 - Nearly always viral
 - Presence of other symptoms will rule out pneumonia (rhinorrhea, etc.)
 - Symptoms last 2-4 weeks
- **Pharyngitis:**
 - Group A strep is uncommon in adults (<10 %)
 - Test before treatment

Common infections Nursing Homes (cont.):

Skin and Soft Tissue Infection

- **Antibiotics work well for patients with two or more:**
 - **Fever**
 - **Tenderness**
 - **Warmth**
 - **New or increased swelling**
- **Must consider vascular sufficiency- the antibiotic needs to get to the wound**

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Everyone has a role in antibiotic stewardship



U.S. Antibiotic Awareness Week (USAAW)

[Print](#)

Rectangular Snip

U.S. Antibiotic Awareness Week is November 18-24, 2022.



USAAW is an annual observance that raises awareness of the threat of antibiotic resistance and the importance of appropriate antibiotic use.

Thank you!

Core Element Analysis:

S O U T H D A K O T A
Foundation for Medical Care

- 6 Questions
- Confidential
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- < 1 minute to complete
- Level of Core Element Implementation at your facility
- Assistance with ICAR or Core Elements through SDFMC



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<https://forms.monday.com/forms/985f8a2bcbe376c4bf4832ca870d16cd?r=use1>

HAI Resources



South Dakota Department of Health – HAI Program

The national goal is to prevent, reduce, and ultimately eliminate healthcare-associated infections (HAIs). South Dakota is actively engaged, with support from the Centers for Disease Control and Prevention, in working to address the issue of HAI prevention.

740 E. Sioux, Suite 107
Pierre, SD 57501
(605) 773-4672

Online: <https://doh.sd.gov/diseases/hai/>

S O U T H D A K O T A Foundation for Medical Care

South Dakota Foundation for Medical Care

The South Dakota Foundation for Medical Care provides technical assistance on NHSN as well as HAI outbreaks and Antimicrobial Stewardship activities.

NHSN Support

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Centers for Disease Control and Prevention

CDC works 24/7 keeping America safe from health, safety, and security threats, both foreign and domestic. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease, and supports communities and citizens to do the same.

Online: <https://www.cdc.gov/hai/>

The Association for Professionals in Infection Control and Epidemiology (APIC) has a mission to create a safer world through prevention of infection. APIC provides evidence-based, scientific, and proven resources to infection preventionists, healthcare professionals, and patients.

Online: <http://www.apic.org/Professional-Practice/Overview>

