

STEWARDSHIP: LONG TERM CARE EDITION

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Disclosures

Scientific Advisory Board: HealthTrackRx, Biomerieux



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What is Stewardship?

Antimicrobial stewardship is the effort to measure and improve how antibiotics are prescribed by clinicians and used by patients.

US Centers for Disease Control and Prevention. <https://www.cdc.gov/antibiotic-use/core-elements/index.html#print> 3

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Why Stewardship?



More than **2.8 million** antibiotic-resistant infections occur in the United States each year, and more than **35,000 people** die as a result.



1.27 million deaths annually attributable to antimicrobial resistance (AMR), and nearly 5 million associated with resistant infections

Top 10 Global Health Threat

World Health Organization (WHO)

Source: <https://www.cdc.gov/antibiotic-use/images/AR-Burden-Numbers-2019.png>
Lancet 2022;399:629-55.
EClinicalMedicine 2021;41:101221

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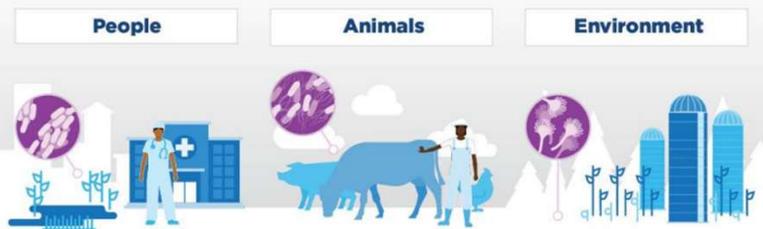
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AMR Impacts More Than Human Health...

A ONE HEALTH CHALLENGE

The Interconnected Threat of Antibiotic Resistance

 Antibiotic Resistance Affects Humans, Animals & The Environment



CDCs 2019 AR Threats Report. <https://www.cdc.gov/drugresistance/biggest-threats.html>

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Stewardship - Part of a Larger Plan...

2015 WHO Action Plan

- To improve awareness and understanding of AR through effective communication, education and training
- To strengthen the knowledge and evidence base through surveillance and research
- To reduce the incidence of infection through sanitation, hygiene and infection prevention measures
- To optimize the use of antimicrobial medicines in human and animal health
- To develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions



<https://www.who.int/publications/i/item/9789241509763>

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U.S. National Efforts – 5 Goals

- Goal 1. Slow the emergence of resistant bacteria and prevent the spread of resistant infections
- Goal 2. Strengthen national One Health surveillance efforts to combat resistance
- Goal 3. Advance development and use of rapid and innovative diagnostic tests for identification and characterization of resistant bacteria
- Goal 4. Accelerate basic and applied research and development for new antibiotics, other therapeutics and vaccines
- Goal 5. Improve international collaboration and capacities for antibiotic-resistance prevention, surveillance, control and antibiotic research and development



NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA

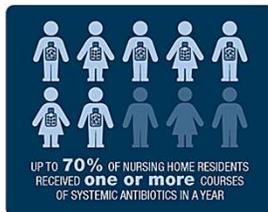
2020-2025
October 2020

https://aspe.hhs.gov/sites/default/files/migrated_legacy_files/196436/CARB-National-Action-Plan-2020-2025.pdf

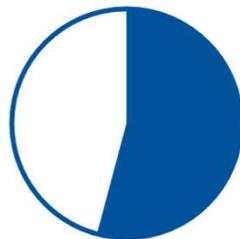
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Antibiotic Overuse is Common In Nursing Homes



75% of nursing home residents receive an antibiotic if stay > 6 months



> 50% of antibiotic prescriptions in nursing homes are unnecessary



If needed, the antibiotic prescribed is often too broad in spectrum and/or the course is longer than needed

J Am Med Dir Assoc 2012;13:568 e1-13.
Infect Dis Clin N Am 2017;31:619-38.

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U.S. Nursing Home Stewardship Regulatory Timeline



* COP= condition of participation

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Conditions of Participation

What exactly is required?

- have an ASP that includes antibiotic use protocols and a system to monitor antibiotic use
- Needs to be included in the Infection Control program



This document is scheduled to be published in the Federal Register on 10/04/2016 and available online at <https://federalregister.gov/d/2016-23503>, and on [FDsys.gov](https://www.FDsys.gov)

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.
SUMMARY: This final rule will revise the requirements that Long-Term Care facilities must meet to participate in the Medicare and Medicaid programs. These changes are necessary to

<https://federalregister.gov/d/2016-23503>

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There are Many Resources Available



<https://www.cdc.gov/antibiotic-use/core-elements/index.html>

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CDC Core Elements- 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/antibiotic-use/core-elements/index.html>

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Leadership Commitment

Demonstrate support and commitment to safe and appropriate antibiotic use in your facility.

Priority examples (select):

Write statements of support

Include stewardship-related duties in job descriptions

Communicate the priority with nursing and prescribers

Create a culture through messaging, education and celebrating improvement

<https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-H.pdf>

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Additional Resources

Nursing Home Antimicrobial Stewardship Guide



Agency for Healthcare
Research and Quality



Overview of the Guide

The Nursing Home Antimicrobial Stewardship Guide provides toolkits to help nursing homes optimize their use of antibiotics.

Browse Antimicrobial Stewardship Toolkits

Toolkits on four topic areas are available.

Implement, Monitor, and Sustain a Program

Two toolkits help nursing homes start and maintain antimicrobial stewardship programs.

[Back to Top](#)

<https://www.ahrq.gov/nhguide/index.html>

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Leadership Commitment Resources

Our Commitment to Antibiotic Stewardship

Antibiotics save lives, but are frequently prescribed unnecessarily. Harms from antibiotic overuse can be significant, especially for frail older adults, including adverse drug events, drug interactions, and antibiotic-resistant infections.

As part of our continuing commitment to provide the best care, we are dedicated to improving antibiotic use through antibiotic stewardship. Antibiotic stewardship refers to a set of commitments and activities for the treatment of infections while reducing the adverse effects.

We are committed to improving antibiotic prescribing practices, resources to support antibiotic stewardship implementation, the support of front-line staff, prescribing clinicians, and to continue to provide residents with the best quality care by protecting them from the unintended harms of inappropriate antibiotic use.

Sincerely,

To learn more about appropriate antibiotic prescribing and stewardship, visit www.cdc.gov/antibiotic-use.

Navigating Home Antimicrobial Stewardship Guide: Implement, Monitor, & Sustain a Program. Page 17 of 24

Sample Letters of support

<https://www.cdc.gov/antibiotic-use/week/pdfs/Stewardship-Leadership-Commitment-Letter-8x11.pdf>

Assessing Nursing Home Stewardship



Checklist for Core Elements of Antibiotic Stewardship in Nursing Homes

The following checklist is a companion to the Core Elements of Antibiotic Stewardship in Nursing Homes. The CDC recommends that all nursing homes take steps to implement antibiotic stewardship activities. Before getting started, use this checklist as a baseline assessment of policies and practices which are in place. Then use the checklist to review progress in expanding stewardship activities on a regular basis (e.g., annually). Over time, implement activities for each element in a step-wise fashion.

| LEADERSHIP SUPPORT | ESTABLISHED AT FACILITY |
|---|-------------------------|
| 1. Can your facility demonstrate leadership support for antibiotic stewardship through one or more of the following actions? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate which of the following are in place (select all that apply): <input type="checkbox"/> Written statement of leadership support to improve antibiotic use <input type="checkbox"/> Antibiotic stewardship duties included in medical director position description <input type="checkbox"/> Antibiotic stewardship duties included in director of nursing position description <input type="checkbox"/> Leadership monitors whether antibiotic stewardship policies are followed <input type="checkbox"/> Antibiotic use and resistance data is reviewed in quality assurance meetings | |
| ACCOUNTABILITY 2. Has your facility identified a lead(s) for antibiotic stewardship activities? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate who is accountable for stewardship activities (select all that apply): <input type="checkbox"/> Medical director <input type="checkbox"/> Director or assistant director of nursing services <input type="checkbox"/> Consultant pharmacist <input type="checkbox"/> Other: _____ | |
| DRUG EXPERTISE | |

<https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-checklist-508.pdf>



Accountability

Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility

Key points:

- Empower the medical director
- Empower the director of nursing
- Engage the consultant pharmacist
- Partner with infection prevention program coordinator, referral lab, department of health

<https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-H.pdf>

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Accountability Resources



Toolkit 1. Start an Antimicrobial Stewardship Program

Tool 2. Roles and Responsibilities for Antimicrobial Stewardship

This table provides an example role and responsibility. Each nursing home should do what the team needs to accomplish and how best to assign roles and responsibilities.

| Name | Title | Roles, Responsibilities, and Tasks | Phone & Email |
|---------|-------------------------------|--|--|
| Example | Assistant Director of Nursing | Co-champion and infection control lead. Co-develop agendas. Lead trainings. Monitor the new intervention. Draft policies and procedures; obtain necessary review and approval for new policies and procedures. Help develop staff training. Review whether materials are used. Develop findings related to monitoring the new intervention. | 000-000-0000. name@organization.net |
| | | | |

3. **Appoint two champions to promote the importance of an antimicrobial stewardship program in the nursing home.** These individuals should lead the effort and be responsible for program outcomes. Two champions are recommended to increase the chance that the antimicrobial stewardship program always has a leader through periods of staff change. These champions should have the following qualities:

- A basic knowledge of antibiotics
- An interest in playing a leadership role in the nursing home
- The respect of his or her peers
- An understanding of how to be a good team player
- An understanding of the importance of improving antibiotic use in nursing homes

<https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-H.pdf>

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Drug Expertise

Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility.

Priority areas:

- Work with consultant pharmacists
- Partner with local antibiotic stewardship program leads
- Develop relationships with infectious diseases consultants

<https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-H.pdf>

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Action

Implement at least one policy or practice to improve antibiotic use.

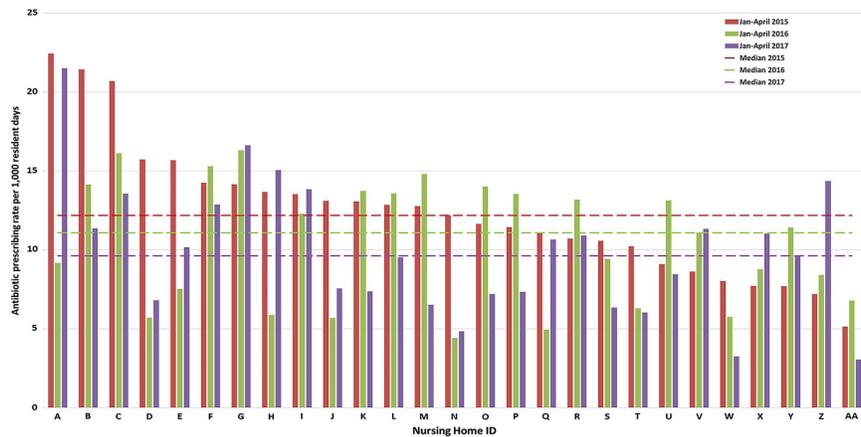
Priority examples (select):

- Policies that support optimal antibiotic use
- Broad interventions to improve antibiotic use
- Pharmacy-based interventions to improve antibiotic use
- Infection and syndrome specific interventions to improve antibiotic use

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Action in Action

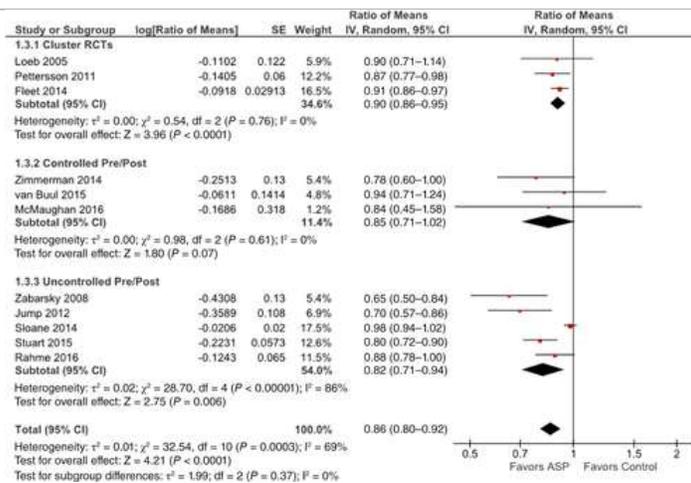


Sloane PD et al. JAGS 2020;68:46-54.

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Action in Action



Wu JH et al J Am Geriatr Soc 2019;67:392-99

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Action Resources



Toolkit 1. Start an Antimicrobial Stewardship Program

Tool 5. Draft Policies and Procedures for the Antimicrobial Stewardship Program

This tool includes a draft policy and a draft set of procedures. As needed, the antimicrobial

Determine Whether It Is Necessary To Treat a Potential Infection With Antibiotics

- [Minimum Criteria for Antibiotics Tool](#)
- [Toolkit 1. Suspected UTI SBAR Toolkit](#)
- [Toolkit 2. Common Suspected Infections: Communication](#)
- [Toolkit 3. Minimum Criteria for Three Infections Toolkit](#)

CHOOSE POTENTIAL INFECTION (CHOOSE ONE):

Does the resident have:

Notes:

1. Urine cultures should not be performed on a scheduled basis (e.g., monthly).
2. Urine cultures should not be used to identify UTIs in the absence of symptoms.
3. Smelly or cloudy urine is not a symptom of a UTI.
4. Residents with an intermittent catheter or a condom catheter should be evaluated as if they are not catheterized.
5. Urine cultures should be used to identify the most appropriate antibiotic. For residents with acute dysuria, it may be appropriate to initiate empirical antibiotic therapy, but for all other symptoms, wait for a urine culture.
6. For residents who regularly run a lower temperature, use a temperature of 2°F (1°C) above the baseline as a definition of a fever.

<https://www.ahrq.gov/nhguide/toolkits/implement-monitor-sustain-program/toolkit1-start-program.html>

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Action Resources



HOME ABOUT FACILITY TYPE COURSES BROWSE ALL RESOURCES

IMPROVING ANTIBIOTIC USE

EDUCATION:

- Strategies to Promote Appropriate Treatment of Urinary Tract Infections in Older Adults
- Antibiotic Review: Focus on Older Adults
- Managing Common Infections in the Elderly
- UTI An Opportunity for Antimicrobial Stewardship
- Workshop 2.28.18 - Stewardship for SSTI and PNA

GUIDELINES:

- Guidelines for Treatment of Urinary Tract Infections
- Guidelines for Treatment of Pneumonia
- Active Monitoring Pocket Card
- Renal Dosing Guidelines for Common Antibiotics
- Guidelines for the Diagnosis and Treatment of SSTI

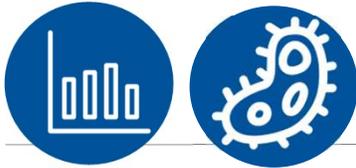
NC CLASP: ANTIBIOTIC STEWARDSHIP RESOURCES FOR NURSING HOME

Minnesota Antimicrobial Stewardship Program Resources for Long-term Care Facilities

<https://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes>
<https://spice.unc.edu/nccclasp/nursinghomes/resources-by-session/>
<https://www.health.state.mn.us/diseases/antibioticresistance/hcp/asp/ttc/index.html>

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Tracking & Reporting

Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use at your facility.

Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant clinical staff.

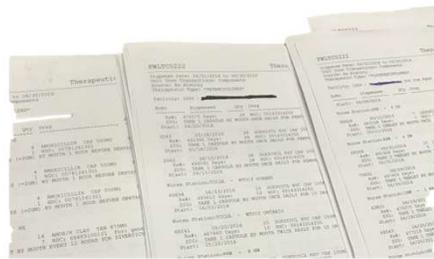
Priority examples (select):

- Process measures: How and why antibiotics are prescribed
- Antibiotic use measures: How often and how antibiotics are prescribed
- Antibiotic use outcome measures: Tracking the adverse outcomes and costs from antibiotics

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Measuring Antimicrobial Use



| DRUG NAME | SIG | | | DATE WRITTEN | QTY | QTY DISP |
|-----------------------------|---------------------------|--------------------------|-------------------------|--------------|-----|----------|
| DOXYCYCLINE 100 MG CAPSULE | TAKE ONE CAPSULE PO TWICE | DAILY X 7 DAYS | (BRONCHITIS/COPD) | 27-Jan-16 | 14 | 14 |
| CIPROFLOXACIN 500MG TABS(*) | ONE TABLET PO TWICE | DAILY, (OSTEOMYELITIS) | (DC 2/8/16) | 4-Jan-16 | 70 | 55 |
| VANCOMYCIN 1 GM ADD-VAN VIA | INFUSE 1GM I.V. EVERY 12 | HOURS OVER 60-90 MINUTES | (*Activate before use*) | 12-Jan-16 | 60 | 8 |
| VANCOMYCIN 1 GM ADD-VAN VIA | INFUSE 1GM I.V. EVERY 12 | HOURS OVER 60-90 MINUTES | (*Activate before use*) | 25-Jan-16 | 28 | 8 |
| SULFAMETHOXAZOLE/TMP DS TAB | TAKE 1 TABLET BY MOUTH | TWICE DAILY X 14 DAYS. | (PYELONEPHRITIS) | 11-Jan-16 | 28 | 2 |
| *EPIDOXIME 200 MG TABLET | TAKE ONE TABLET PO EVERY | 12 HOURS FOR 10 DAYS | (PYELONEPHRITIS) | 12-Jan-16 | 20 | 7 |

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Sources for Antibiotic Data in Nursing Homes

Purchasing data

- Can be difficult for dispensing from a central pharmacy location to many facilities

Dispensing data

- Can be difficult with a lot of floor stock

Electronic MAR

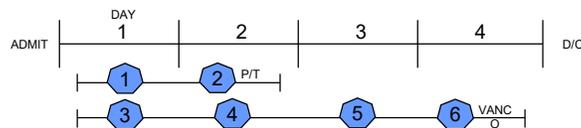
Paper and pencil 😊

- Point prevalence survey

Are Additional Metrics Available?

Number of antibiotic days

- Note: this is not the same as Days of Therapy



- DOT:
 - Piperacillin/tazobactam = 2
 - Vancomycin = 4
- Antibiotic days:
 - Overall = 4

Polk et al. CID 2011;53(11):1100-10

Data Example

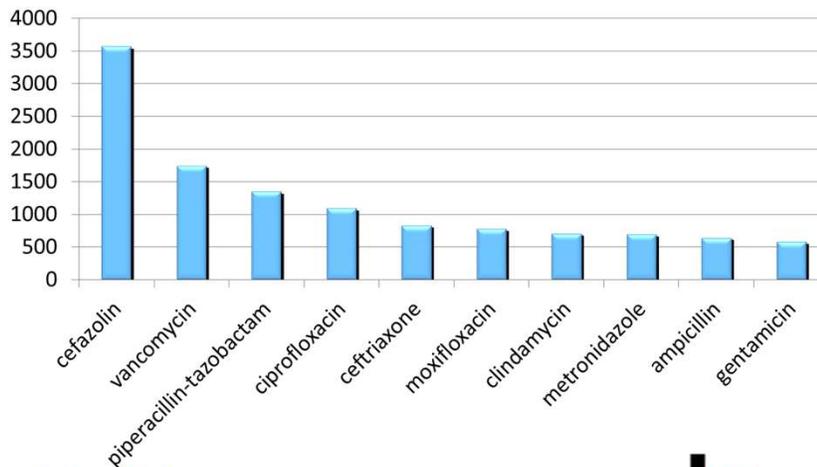
| DRUG NAME | SIG | | | DATE WRITTEN | QTY AUTH | QTY DISP |
|-----------------------------|---|-------------------------|-------------------|--------------|----------|----------|
| DOXYCYCLINE 100 MG CAPSULE | TAKE ONE CAPSULE PO TWICE | DAILY X 7 DAYS | (BRONCHITIS/COPD) | 27-Jan-16 | 14 | 14 |
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| VANCOMYCIN 1 GM ADD-VAN VIA | INFUSE 1GM I.V. EVERY 12 HOURS OVER 60-90 MINUTES | (*Activate before use*) | | 25-Jan-16 | 28 | 8 |
| SULFAMETHOXAZOLE/TMP DS TAB | TAKE 1 TABLET BY MOUTH TWICE DAILY X 14 DAYS. | (PYELONEPHRITIS) | | 11-Jan-16 | 28 | 2 |
| CEFPODOXIME 200 MG TABLET | TAKE ONE TABLET PO EVERY 12 HOURS FOR 10 DAYS | (PYELONEPHRITIS) | | 12-Jan-16 | 20 | 5 |

Calculations:
 Doxycycline: 7 DOT
 Ciprofloxacin: $55/2 = 27.5$ - 28 DOT
 Vancomycin: $8/2 = 4$ DOT

| DRUG NAME | SIG | | | DATE WRITTEN | QTY AUTH | QTY DISP | DOT |
|-----------------------------|---|-------------------------|-------------------|--------------|----------|----------|-----|
| DOXYCYCLINE 100 MG CAPSULE | TAKE ONE CAPSULE PO TWICE | DAILY X 7 DAYS | (BRONCHITIS/COPD) | 27-Jan-16 | 14 | 14 | 7 |
| CIPROFLOXACIN 500MG TABS(*) | ONE TABLET PO TWICE | DAILY. (OSTEOMYELITIS) | (DC 2/8/16) | 4-Jan-16 | 70 | 55 | 28 |
| VANCOMYCIN 1 GM ADD-VAN VIA | INFUSE 1GM I.V. EVERY 12 HOURS OVER 60-90 MINUTES | (*Activate before use*) | | 12-Jan-16 | 60 | 8 | 4 |
| VANCOMYCIN 1 GM ADD-VAN VIA | INFUSE 1GM I.V. EVERY 12 HOURS OVER 60-90 MINUTES | (*Activate before use*) | | 25-Jan-16 | 28 | 8 | 4 |
| SULFAMETHOXAZOLE/TMP DS TAB | TAKE 1 TABLET BY MOUTH TWICE DAILY X 14 DAYS. | (PYELONEPHRITIS) | | 11-Jan-16 | 28 | 2 | 1 |
| CEFPODOXIME 200 MG TABLET | TAKE ONE TABLET PO EVERY 12 HOURS FOR 10 DAYS | (PYELONEPHRITIS) | | 12-Jan-16 | 20 | 5 | 3 |

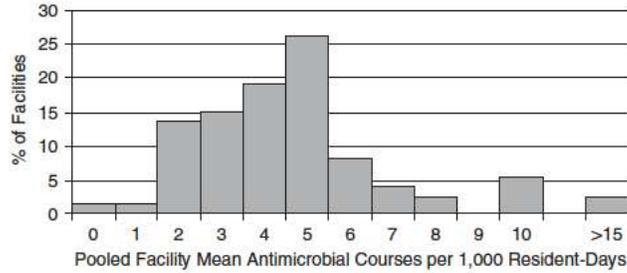


Top 10 Antibiotics: By Number of Patients Treated



New Starts

Courses/starts per 1,000 resident days



- Advantages: easier to measure
- Disadvantages: does not tell the whole picture- what about durations and overall exposure
 - Remember- a single course of chronic UTI prophylaxis is only started once!!!

Benoit SR et al. JAGS 2008;56:2039-44.



Proportion of Residents Receiving Antibiotics

Number (or percentage) of patients receiving antimicrobials

Advantages:
This number can help target education.

Disadvantages:
This can still underestimate key prescribing practices.

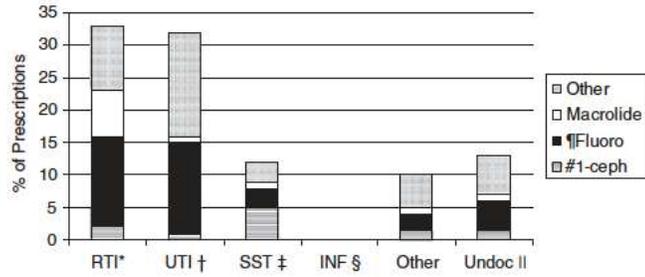
Table 2. Comparison of antibiotic use and cost indicators by physician, February 1999-September 2001*

| Physician code | Incidence | AUR | Cost/RCD | Cost/Ab-day |
|----------------|-----------|-----------|---------------|---------------|
| A | 3.7 ± 1.3 | 3.7 ± 1.6 | \$0.18 ± 0.11 | \$5.49 ± 2.50 |
| B | 4.9 ± 1.4 | 4.7 ± 1.3 | \$0.25 ± 0.12 | \$5.35 ± 1.83 |
| C | 4.6 ± 2.7 | 4.2 ± 2.2 | \$0.30 ± 0.20 | \$7.43 ± 4.52 |
| D | 6.5 ± 2.4 | 6.5 ± 2.5 | \$0.39 ± 0.19 | \$5.87 ± 1.72 |
| E | 5.5 ± 1.4 | 4.7 ± 1.3 | \$0.25 ± 0.12 | \$5.31 ± 1.74 |
| F1 | 4.1 ± 2.1 | 3.3 ± 1.9 | \$0.19 ± 0.12 | \$6.01 ± 3.37 |
| F2 | 6.1 ± 1.9 | 5.5 ± 2.1 | \$0.27 ± 0.17 | \$5.00 ± 1.93 |
| P value | <.001 | <.001 | <.001 | .08 |

RCD, Resident care-days; Ab, antibiotic; AUR, antimicrobial utilization ratio; Cost/RCD = Total cost for antibiotics per month/total resident care-days per month; cost per A Day = Total cost for antibiotics per month/total antibiotic-days per month; incidence = Number of antibiotic courses started per 1000 resident care-days per month; AUR = Number of antibiotic days per month/number of resident care-days per month multiplied by 100 (%).
*Values are mean ± standard deviation per month for 32-month study period.
Mylotte JM and Neff M. AJC 2003;18-25.



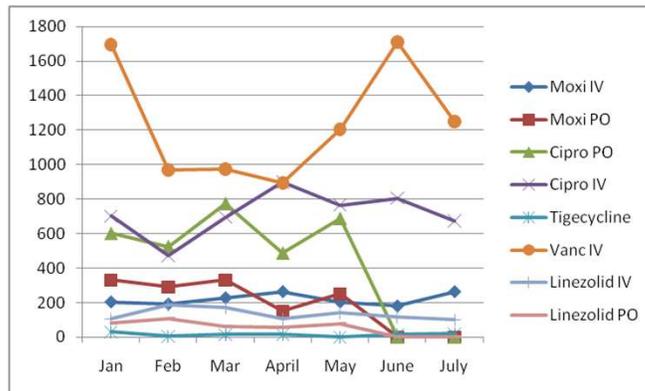
Understanding Why Antibiotics are Used



Benoit SR et al. JAGS 2008;56:2039-44.

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Time Trends More Useful



University of Rochester Medical Center

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There is no substitute for chart review (in some cases)...

Measures of antibiotic use

Point prevalence of antibiotic use. Point prevalence surveys of antibiotic use track the proportion of residents receiving antibiotics during a given time period (i.e., a single-day, a week, or a month). Because the data collection is time-limited, point prevalence surveys are an easier way to capture antibiotic use data. In addition to providing a snap-shot of the burden of antibiotic use in a facility, point-prevalence surveys can capture specific information about the residents receiving antibiotics and indications for antibiotic therapy.¹ Unlike other antibiotic use measures which focus only on the prescriptions initiated in the nursing home, prevalence surveys could also include data on residents admitted to the facility already receiving an antibiotic to track the total burden of individuals at risk for complications from antibiotic use (e.g., *C. difficile* infection).

CDC. Core Elements of Antibiotic Stewardship in Nursing Homes- Appendix B 2015.

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National Data

- Cohort of 309,884 US nursing homes residents from 1,664 nursing homes in 2016
 - 54% of residents received at least 1 systemic antibiotic

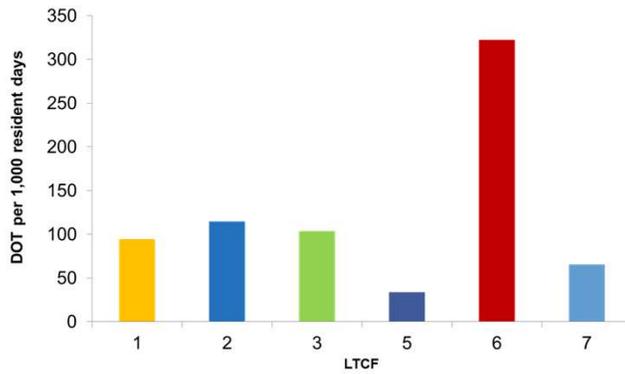
| Antibiotic | Total Courses | | Course Duration (Days) | |
|--|---------------|----|------------------------|------|
| | No. | % | Median | IQR |
| Total | 436,619 | NA | 7 | 5-10 |
| Genitourinary infections | | | | |
| Total | 146,239 | NA | 7 | 5-8 |
| Ciprofloxacin | 32,042 | 22 | 7 | 4-8 |
| Nitrofurantoin | 22,995 | 16 | 8 | 6-9 |
| Trimethoprim-sulfamethoxazole | 18,492 | 13 | 7 | 5-8 |
| Levofloxacin | 12,736 | 9 | 6 | 4-7 |
| Cephalexin | 12,351 | 8 | 7 | 5-8 |
| Respiratory infections | | | | |
| Total | 100,165 | NA | 7 | 4-8 |
| Levofloxacin | 32,966 | 33 | 7 | 5-8 |
| Azithromycin | 17,879 | 17 | 5 | 4-5 |
| Amoxicillin-Clavulanic Acid | 9,768 | 10 | 8 | 5-10 |
| Doxycycline | 7,359 | 7 | 8 | 6-10 |
| Ceftriaxone | 4,472 | 4 | 5 | 3-7 |
| Skin, soft-tissue, and musculoskeletal infections | | | | |
| Total | 81,488 | NA | 8 | 6-11 |
| Cephalexin | 17,476 | 21 | 8 | 6-11 |
| Doxycycline | 9,918 | 12 | 9 | 7-11 |
| Trimethoprim-sulfamethoxazole | 9,186 | 11 | 8 | 7-11 |
| Vancomycin (IV) | 6,005 | 7 | 7 | 4-13 |
| Clindamycin | 5,960 | 7 | 8 | 6-11 |
| Gastrointestinal and intraabdominal infections | | | | |
| Total | 26,105 | NA | 9 | 6-13 |
| Metronidazole | 10,539 | 40 | 9 | 6-12 |
| Vancomycin (oral) | 8,428 | 32 | 10 | 6-14 |
| Rifaximin | 1,612 | 6 | 13 | 7-22 |
| Ciprofloxacin | 1,178 | 6 | 7 | 7-10 |
| Levofloxacin | 683 | 3 | 7 | 5-8 |

Kabbani S et al. *Antimicrob Stewardship & Healthcare Epidemiol* 2021;1:e581-7

Note. IQR, interquartile range; IV, intravenous.
¹Nursing home-initiated courses, first antibiotic order start date ≥3 days after nursing home admission.
²Antibiotic course, all orders for the same drug with ≤1 day gap.
³Prophylaxis, defined as courses ≤1 day or >42 days, excluded.

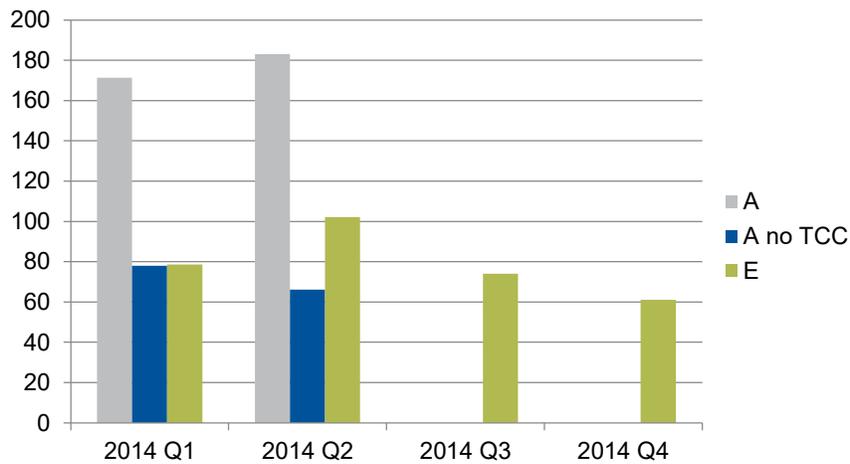
36

Large Variation in Antibiotic Use by LTCF



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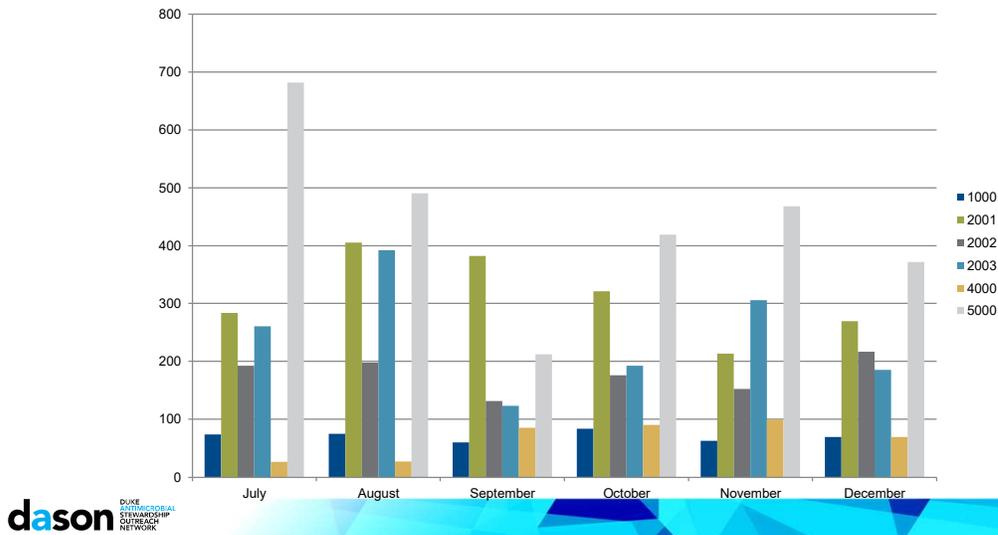
Location Specific Data are Important



Based on Dispensing Data

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Time Trends Also Help



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Do we know our target?

Less is better:

Table 3. Antibiotic-Related Adverse Outcomes Among Residents Living in Nursing Homes With Low, Medium, and High Antibiotic Use*

| Characteristic | Antibiotic Use, No. (%) | | |
|---|-------------------------|------------------------|----------------------|
| | Low (n = 33 822) | Medium (n = 31 425) | High (n = 24 943) |
| <i>Clostridium difficile</i> | 274 (0.8) | 268 (0.9) | 221 (0.9) |
| Diarrhea or gastroenteritis | 3347 (9.9) | 3388 (10.8) | 2889 (11.6) |
| Infection with antibiotic-resistant organism | 412 (1.2) | 431 (1.4) | 319 (1.3) |
| Antibiotic allergy | 13 (0.0) | 25 (0.1) | 22 (0.1) |
| General adverse event from medication | 96 (0.3) | 124 (0.4) | 88 (0.4) |
| Any antibiotic complication with or without potential for indirect harms to nonrecipients (primary composite outcome ^b) | 3869 (11.4) | 3890 (12.4) | 3311 (13.3) |
| Only antibiotic complications with potential for indirect harms to nonrecipients (secondary composite outcome ^b) | 3797 (11.2) | 3801 (12.1) | 3237 (13.0) |

Daneman N et al. *JAMA Internal Medicine* 2015;175:1331-9.

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Making the Data Actionable

Data alone will not answer all the questions, but it allows more refined reviews

- Who?- Who is writing for the antibiotics?
- What?- What is the most frequently used antibiotic?
- Where?- Are there units that tend to use the most antibiotics?
- When?- Are there times when antibiotics are most likely to be prescribed?
- Why? - What is the most common reason antibiotics are used?

From there

- Conversations become more productive
- Guidelines for use can be created with provider input
- Remember- always ask why- the reasons behind the use might not be what you had guessed!



Tracking & Reporting Resources

- **Tool options for monitoring**
 - **Antibiotic Use Tracking Sheet** (tool 2) ([PDF](#) | [Word](#) | [Excel](#))
 - **Sample Monthly Summary Reports** to review progress (tool 3) ([PDF](#) | [Word](#) | [Excel](#))
 - **Quarterly or Monthly Prescribing Profile** to report findings back to prescribing clinicians (tool 4) ([PDF](#) | [Word](#))



**Agency for Healthcare
Research and Quality**



Tracking & Reporting Resources



TRACKING ANTIBIOTIC USE

EXCEL TRACKING WORKSHEETS AND INSTRUCTIONS:

- Monthly Antibiotic Tracking Worksheet (NEW)
- Summary Antibiotic Tracking Worksheet (NEW - Use with monthly tracking sheet)
- Antibiotic Tracking Sheets Instructions (NEW)
- NYSDOH UTI Tracking Worksheet
- NYSDOH UTI Tracking Worksheet Instructions for Use



| Antibiotic Statistical Trending Report | | Facility Name: | | | | | | | | | | | | Unit/Floor: | | | | | |
|---|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|--|
| Month/Year | | Jan-10 | Mar-10 | Apr-10 | May-10 | Jun-10 | Jul-10 | Aug-10 | Sep-10 | Oct-10 | Nov-10 | Dec-10 | Jan-11 | Mar-11 | Apr-11 | May-11 | Jun-11 | Aug-11 | |
| New ABB Starts for Month | | | | | | | | | | | | | | | | | | | |
| New ABB Start Rate (New ABB Starts for Month/1000 Resident Days) | | | | | | | | | | | | | | | | | | | |
| Days of Therapy Rate (Monthly Days of Therapy/1000 Resident Days) | | | | | | | | | | | | | | | | | | | |
| Did NOT Meet Facility-Adapted Criteria | | | | | | | | | | | | | | | | | | | |
| Not Re-Assessed within 48-72 hours of Facility Start | | | | | | | | | | | | | | | | | | | |

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



Education

Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use.

Priority examples (select):

- Education to prescribers
- Education to nursing
- Education to residents and families



Education Resources

PREVENT HAIs
Healthcare-Associated Infections

Nursing Home Antimicrobial Stewardship Guide
Educate & Engage Residents, Family

Toolkit To Educate and Engage Residents and Family Members



Tool 3. Resident Information Sheet: Antibiotic-Res:

One of your tests showed that you have a type of bacteria that can't be treated with antibiotics you have been taking. [Optional: Insert specific info on the culture site, and which antibiotics are not effective.] It is important to understand this and learn how it may affect you.

This information sheet will answer questions and help you understand your infection.

Are you looking for education on essential health care topics? The Learning Center offers free courses for health care settings. Our goal is to share education to help you improve the quality, efficiency and value of healthcare.



Anywhere



Break-Sized



Current

EDUCATION

RESIDENTS AND FAMILIES

- Resident Family QI Letter Template
- Residents and Families QI Pamphlet (English)
- Residents and Families QI Pamphlet (Spanish)

NURSES

- Assessment of Urinary Tract Infections in LTC Residents
- Dr. Robin J. Lynch: Improving the Care of LTC Residents with Infections
- Workshop 2.28.16 - Establishing Infection Control Programs
- Workshop 2.28.16 - Managing MRSA and C. difficile Infections

Username (Required)

Password (Required)

Remember Me

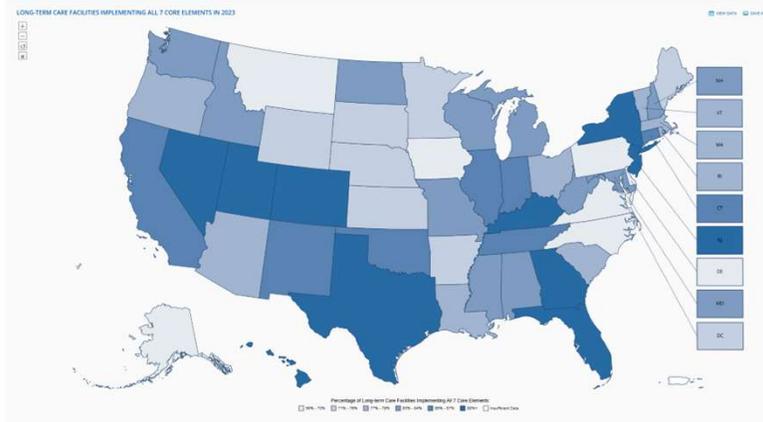
Login

Register

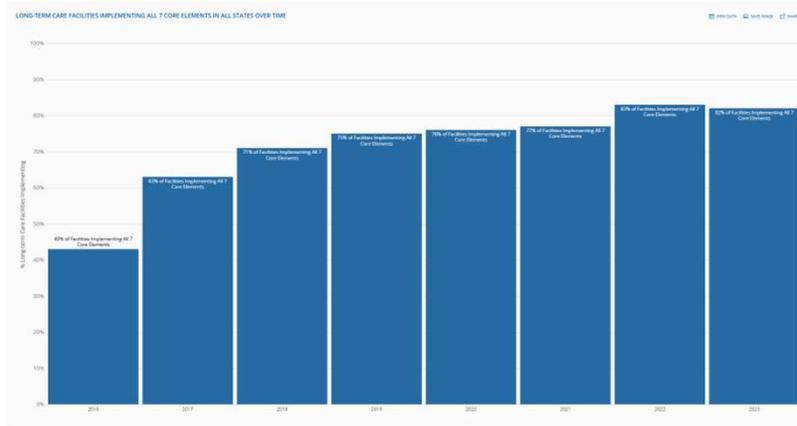
<https://learningforquality.org/login/?redirect=%2F>

<https://www.ahrq.gov/nhgide/toolkits/implement-monitor-sustain-program/toolkit1-start-program.htm>

So, how are we doing?



Annual Progress



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