



STEWARDSHIP: LONG TERM CARE EDITION

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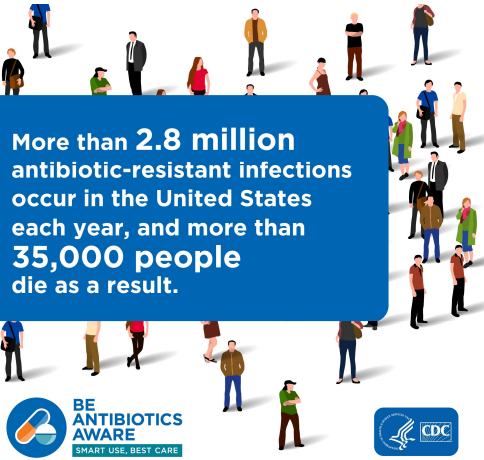
Disclosures

Scientific Advisory Board: HealthTrackRx

What is Stewardship?

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

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

AMR Impacts More Than Human Health...

A ONE HEALTH CHALLENGE

The Interconnected Threat of Antibiotic Resistance



Antibiotic Resistance Affects Humans, Animals & The Environment

People

Animals

Environment



CDC's 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**

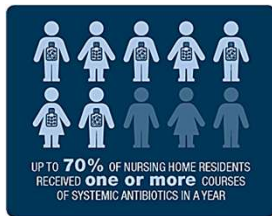
2020-2025

October 2020

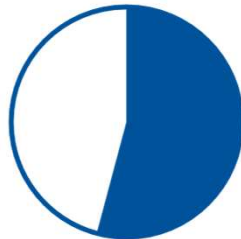
https://aspe.hhs.gov/sites/default/files/migrated_legacy_files/196436/CARB-National-Action-Plan-2020-2025.pdf

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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

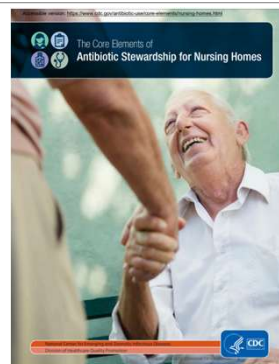
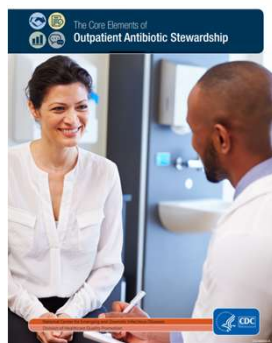
AGENCY: Centers for Medicare & Medicaid Services (CMS), HHS.

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

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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



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

- 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

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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. Harm 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 quality of care, we are dedicated to improving antibiotic use through antibiotic stewardship. Antibiotic stewardship refers to a set of commitments and actions to optimize the treatment of infections while reducing the adverse effects of antibiotic use.

We are committed to improving antibiotic prescribing practices, providing resources to support antibiotic stewardship implementation, and ensuring the support of front-line staff, prescribing clinicians, and residents 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.



Sample Policy Letter

TO: [Relevant staff]
FROM: [Antibiotic stewardship program team]
RE: [Name of antibiotic stewardship program intervention]
DATE: [Date]
Antibiotics are among the most commonly prescribed pharmaceuticals in long-term care settings, yet reports indicate that a high proportion of antibiotic prescriptions are unnecessary. The adverse consequences of unnecessary antibiotic use include adverse drug reactions or interactions, the development of Clostridium difficile infection, the emergence of multi-drug resistant organisms, antibiotic failure, increased mortality, and greatly increased costs. The Centers for Disease Control and Prevention characterize antibiotic resistance as "one of the world's most pressing public health threats." Unnecessary prescribing practices by clinicians and overuse of narrow-spectrum antibiotics when either no antibiotic or an older, narrow-spectrum drug would suffice are believed to be the primary contributors to this problem. As a result of the above complications, nursing homes are increasingly recognized as reservoirs of antibiotic-resistant bacteria. To address these issues, [Name of nursing home] has developed an antibiotic stewardship program that will identify the goals of selected interventions. Antibiotic stewardship is the use of antibiotics judiciously, that is, using them only when truly needed and using the right antibiotic for each infection. This program includes such policies, and procedures that aim to guide nursing home staff toward more judicious and effective use of antibiotics. To achieve our goal, [Name of nursing home] will be identifying specific activities for home staff and residents.

This effort, to be implemented beginning [DATE], is crucial to improving outcomes for our residents and the nursing home as a whole. Your participation will be essential.

[NAME AND TITLE OF AUTHORIZING OFFICER]

[DATE]

Nursing Home Antibiotic Stewardship Guide
Implement, Monitor, & Sustain a Program

Table 1 of 1

<https://www.cdc.gov/antibiotic-use/week/pdf/Stewardship-Leadership-Commitment-Letter-6-Su11.pdf>

<https://www.hhs.gov/hhsa/foia/foia/monitor-sustain-program/monitor-sustain-program.html>

Sample Letters of support

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? ☐ Yes ☐ No

If yes, indicate which of the following are in place (select all that apply)

- ☐ Written statement of leadership support to improve antibiotic use
- ☐ Antibiotic stewardship duties included in medical director position description
- ☐ Antibiotic stewardship duties included in director of nursing position description
- ☐ Leadership monitors whether antibiotic stewardship policies are followed
- ☐ Antibiotic use and resistance data is reviewed in quality assurance meetings

ACCOUNTABILITY

2. Has your facility identified a lead(s) for antibiotic stewardship activities? ☐ Yes ☐ No

If yes, indicate who is accountable for stewardship activities (select all that apply)

- ☐ Medical director
- ☐ Director or assistant director of nursing services
- ☐ Consultant pharmacist
- ☐ Other: _____

DRUG EXPERTISE

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

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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 consider 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. A basic knowledge of antibiotics
- b. An interest in playing a leadership role in the nursing home
- c. The respect of his or her peers
- d. An understanding of how to be a good team player
- e. 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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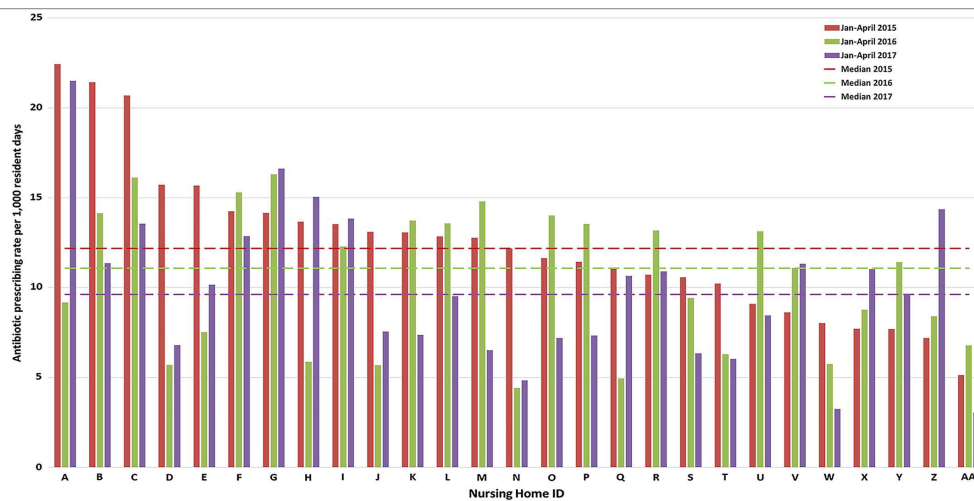
Action

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 interventions to improve antibiotic use
- Infection and syndrome specific interventions to improve antibiotic use

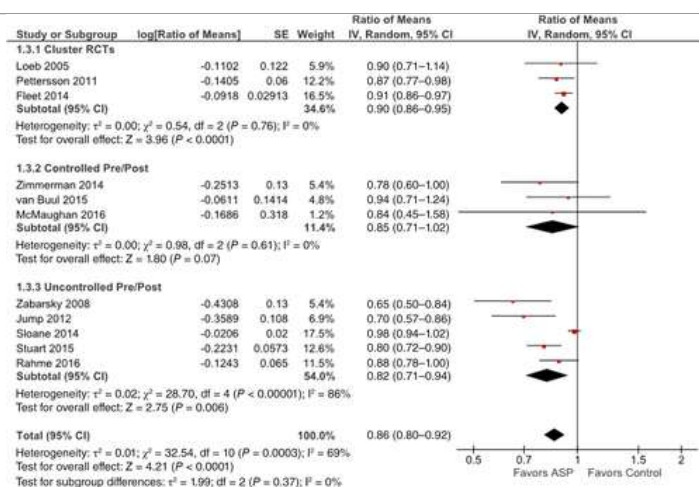
Action in Action



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



Nursing Home Antimicrobial Stewardship Guide Implement, Monitor, & Sustain a Program

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):

☒ Urinary Tract Infection ☐ Skin and Soft Tissue Infection ☐ Lower Respiratory Tract Infection

Does the resident have:

☒ No indwelling catheter ☐ Indwelling catheter

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/ncclasp/nursinghomes/resources-by-session/>
<https://www.health.state.mn.us/diseases/antibioticresistance/hcp/asp/ltc/index.html>

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Tracking & Reporting

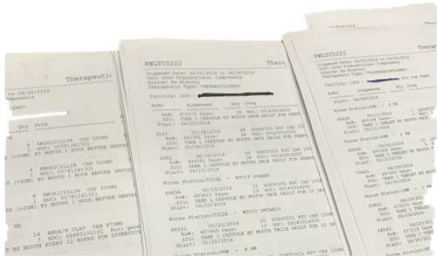
Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use at your facility.

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

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
*EPIDIOXIME 200 MG TABLET	TAKE ONE TABLET PO EVERY	12 HOURS FOR 10 DAYS	(PYELONEPHRITIS)	12-Jan-16	20	7

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

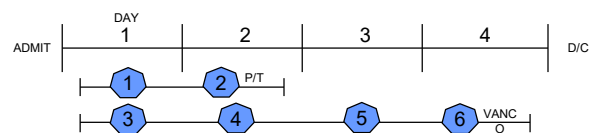
Paper and pencil 😊

- 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 AUTH	QTY DISP	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
SULFAMETHOXAZOLE/TMP DS	INFUSE 1GM I.V. EVERY 12	HOURS OVER 60-90 MINUTES	(*Activate before use*)	25-Jan-16	28	8
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:

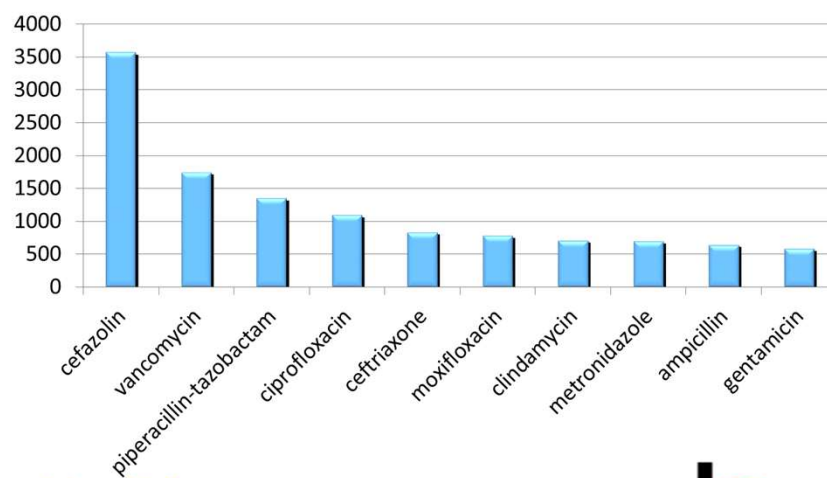
Doxycycline: 7 DOT

Ciprofloxacin: $55/2= 27.5$ - 28 DOT

Vancomycin: $8/2= 4$ DOT

DRUG NAME	SIG			DATE WRITTEN AUTH	QTY DISP	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
SULFAMETHOXAZOLE/TMP DS	INFUSE 1GM I.V. EVERY 12	HOURS OVER 60-90 MINUTES	(*Activate before use*)	25-Jan-16	28	8	4
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



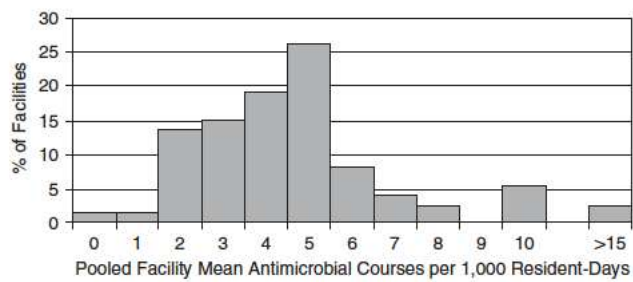
DukeMedicine

dason

DUKE
ANTIMICROBIAL
STEWARDSHIP
OUTREACH
NETWORK

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*

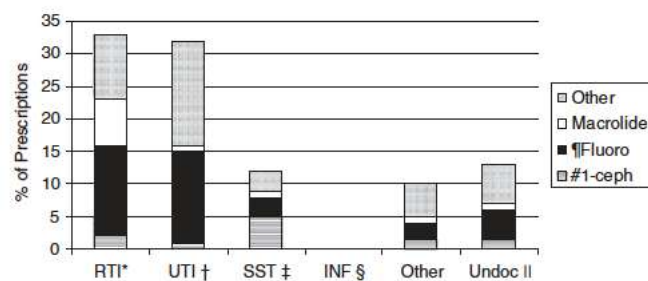
Physician code	Incidence	AUR	Cost/RCD	Cost/Ab-day
A	3.7 ± 1.3	3.7 ± 1.6	\$0.18 ± 0.11	\$5.49 ± 2.50
B	4.9 ± 1.4	4.7 ± 1.3	\$0.25 ± 0.12	\$5.35 ± 1.83
C	4.6 ± 2.7	4.2 ± 2.2	\$0.30 ± 0.20	\$7.43 ± 4.52
D	6.5 ± 2.4	6.5 ± 2.5	\$0.39 ± 0.19	\$5.87 ± 1.72
E	5.5 ± 1.4	4.7 ± 1.3	\$0.25 ± 0.12	\$5.31 ± 1.74
F1	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.

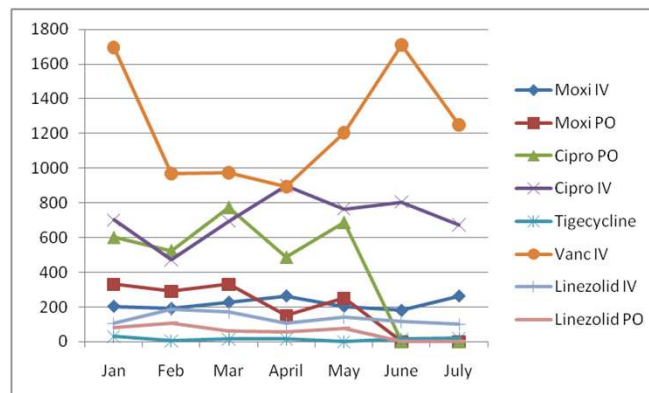
Mylotte JM and Neff M. AJC 2003;18-25.

Understanding Why Antibiotics are Used



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

Time Trends More Useful



University of Rochester Medical Center

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.

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

Kabbani S et al. *Antimicrob Stewardship & Healthcare Epidemiol* 2021;1:e5817



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

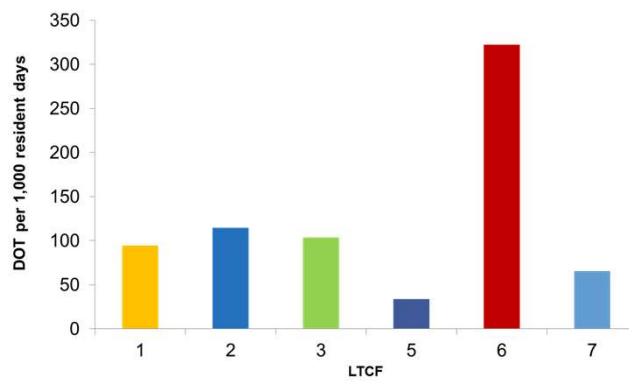
Note. IQR, interquartile range; IV, intravenous.

*Nursing home-initiated courses, first antibiotic order start date ≥ 3 days after nursing home admission.

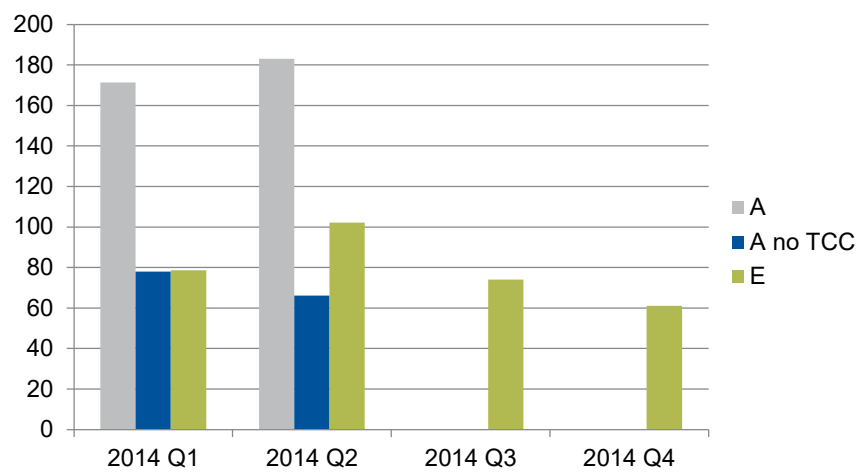
*Antibiotic course, all orders for the same drug with ≤ 1 day gap.

*Prophylaxis, defined as courses ≤ 1 day or >42 days, excluded.

Large Variation in Antibiotic Use by LTCF

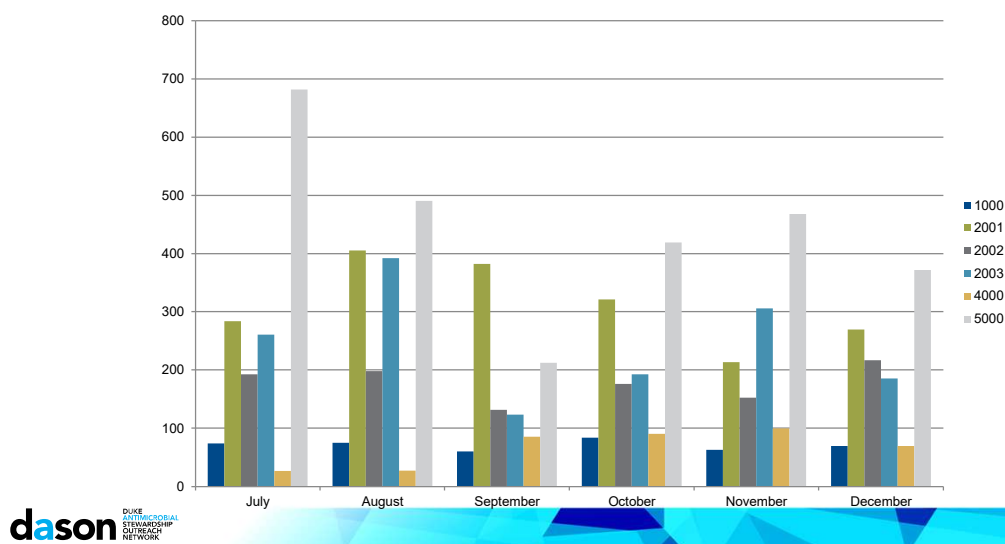


Location Specific Data are Important



Based on Dispensing Data

Time Trends Also Help



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^a

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.

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**

<https://www.ahrq.gov/nhgguide/toolkits/implement-monitor-sustain-program/toolkit2-monitor-sustain-program.html>

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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-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01
New ABX Starts for Month																			
New ABX Start Rate (New ABX Starts for Month/1000 Resident Days)																			
Days of Therapy Rate (Monthly Days of Therapy/1000 Resident Days)																			
DID NOT Meet Facility Adopted Criteria																			
Not Re-Assessed within 48-72 hours of Facility Start																			

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

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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



Toolkit To Educate and Engage Residents and Family Members



Learning Center

Tool 3. Resident Information Sheet: Antibiotic-Res

One of your tests showed that you have a type of bacteria that ca antibiotics you have been taking. [Optional: Insert specific info the culture site, and which antibiotics are not effective.] It is imp this and learn how it may affect you.

This information sheet will answer questions and help you under 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



Username *(Required)*

Password *(Required)*

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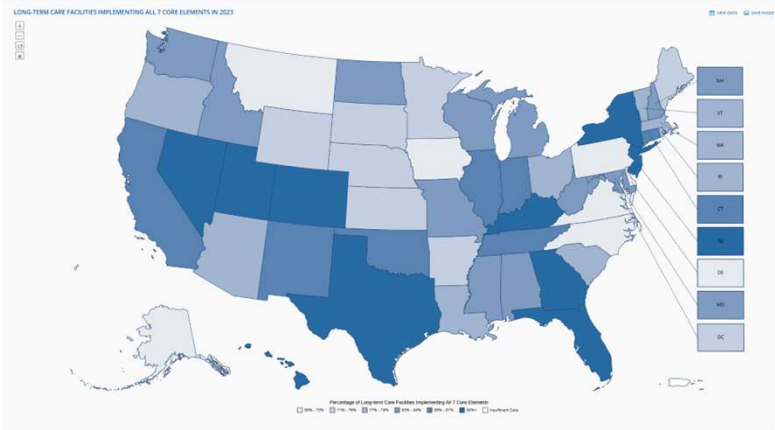
Register

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

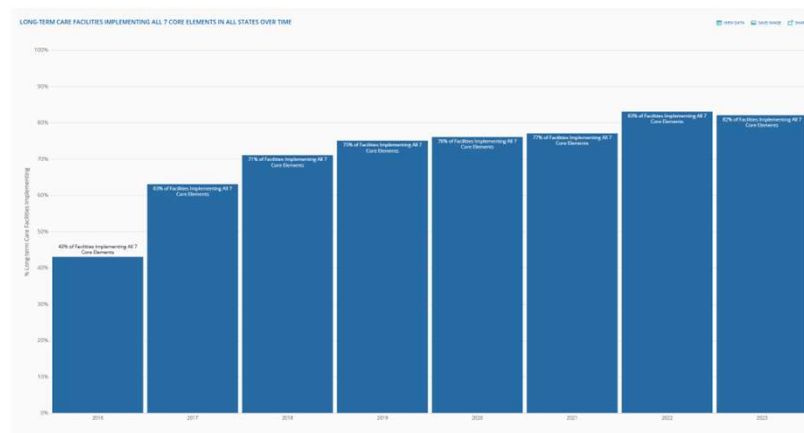
<https://www.ahrq.gov/nhguide/toolkits/implement-monitor-sustain-program/toolkit1-start-program.htm>

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So, how are we doing?



Annual Progress



Libby.dodds@duke.edu

