A Field Guide to Antibiotic Stewardship in Outpatient Settings

July 2018



Quality Improvement Organizations

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Introduction

Antibiotic Stewardship (AS) is a coordinated program that promotes the appropriate use of antimicrobials to improve patient outcomes, reduce microbial resistance, and decrease the spread of multi-drug resistant organisms.¹ In clinical settings, stewardship activities focus on measuring and improving how antibiotics are prescribed by clinicians and used by patients. Improving antibiotic prescribing involves implementing effective strategies to modify prescribing practices to align them with evidence-based recommendations for diagnosis and management.

Promoting effective stewardship is especially important in outpatient settings, as the majority of U.S. antibiotic expenditures for humans are related to care received outside of hospitals and other institutions.² To address this need, the Centers for Disease Control and Prevention (CDC) released the Core Elements of Outpatient Antibiotic Stewardship³ in November 2016 as a guiding framework for establishing effective antibiotic stewardship programs in outpatient clinical care delivery facilities that routinely provide antibiotic treatment. The Centers for Medicare & Medicaid Services (CMS) included promotion of and support for outpatient antibiotic stewardship as a priority task for the Quality Innovation Network-Quality Improvement Organizations (QIN-QIOs) in the 11th Statement of Work.

QIN-QIOs work with a variety of outpatient settings to measure and improve antibiotic prescribing in order to promote the health of Medicare beneficiaries and all patients through ensuring that they reliably receive the right drug at the right dose for the right duration. The Core Elements serve as a structured approach for QIN-QIOs to use with outpatient settings to achieve these goals. Outpatient settings targeted by the QIN-QIOs include physician offices, outpatient pharmacies and clinics, emergency departments, urgent care clinics, and Federally Qualified Health Centers (FQHCs). At the time of this report, QIN-QIOs have assisted more than 7,500 outpatient facilities in developing and implementing antibiotic stewardship plans.

Information Source for this Guide

A required part of the QIN-QIO work is to submit quarterly narrative reports describing the outpatient facilities with which they are working, the progress of each towards successful achievement of core element implementation, and challenges and mitigating strategies tested. This Field Guide summarizes successful strategies identified in these narrative reports during the first nine months of work.

How to Use this Guide

This Field Guide is intended for use by outpatient healthcare providers and leaders interested in implementing the Core Elements of Outpatient Antibiotic Stewardship in their organizations. This Guide provides a collection of concrete implementation strategies, suggestions, and tools designed, tested, and applied by QIN-QIOs working with a variety of outpatient settings to implement the Core Elements.

Although the CDC provides the Core Elements as minimum activities needed for antibiotic stewardship in outpatient settings, the elements need not be addressed sequentially. Having a multi-disciplinary team, including facility leadership, conduct a gap-analysis of current antibiotic stewardship practices and weaknesses is beneficial in advance of attempting to accomplish these Core Elements. Gap analysis tools are provided in the overarching resources in *Appendix A*.

This Guide is intended to be complementary to literature reviews and other evidence-based tools and resources (see *Appendix A* for a selection of these resources). In addition, *Appendix B* includes a list of acronyms.

¹Assocation for Professionals in Infection Control and Epidemiology. Antimicrobial Stewardship. Accessed on July 7, 2018. https://apic.org/Professional-Practice/Practice-Resources/Antimicrobial-Stewardship.

²Shehab N, et al. Clin Infect Dis 2008;47:735–43. Gonzales R et al. Clin Infect Dis 2001;33:757–62. Suda et al. J Antimicrob Chemother 2013; 68: 715–718

³Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016;65 (No. RR-6):1–12.

Structure of Guide

To accompany the Core Elements of Outpatient Antibiotic Stewardship, the CDC provides a checklist of recommended activities outpatient clinicians and facilities can take to implement antibiotic stewardship. The checklist can be used as a baseline assessment of existing compliance with the Core Elements and can be used to track progress in expanding stewardship activities.

The implementation strategies provided in this Guide are organized by Core Element, then further categorized by each item in the CDC's checklist.

Acknowledgments

The Quality Innovation Network National Coordinating Center (QIN NCC) developed this Field Guide in conjunction with the CMS, CDC, and the QIN-QIOs (listed below). We would like to thank all for their recommendations, ideas, and support.





Commitment: demonstrated dedication to and accountability for optimizing antibiotic prescribing and patient safety



Action for policy and practice: implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed



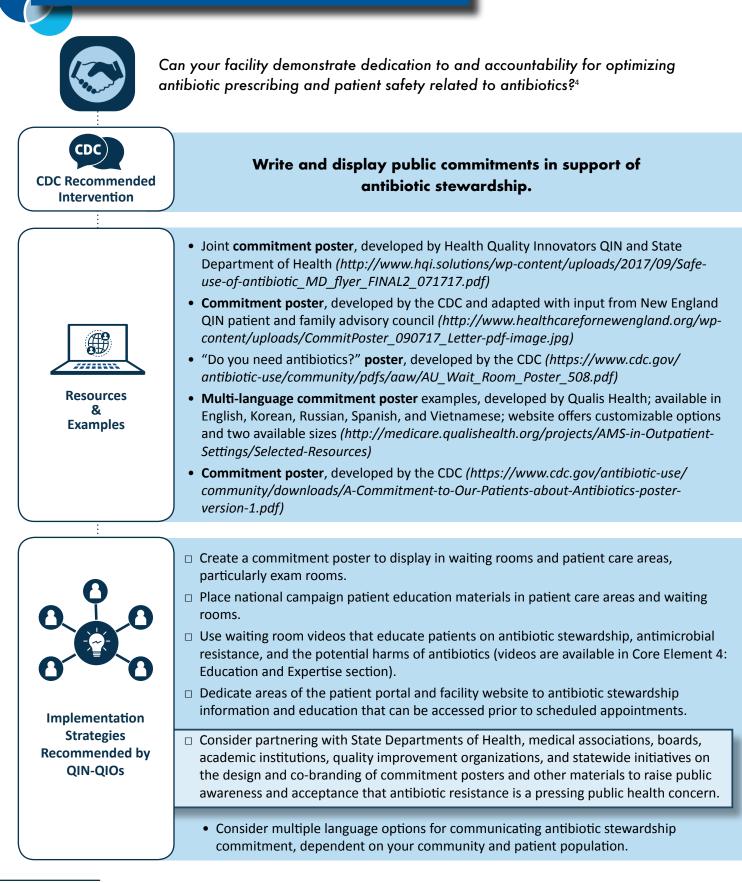
Tracking and reporting: monitor antibiotic prescribing practices and offer regular feedback to clinicians or have clinicians assess their own antibiotic use

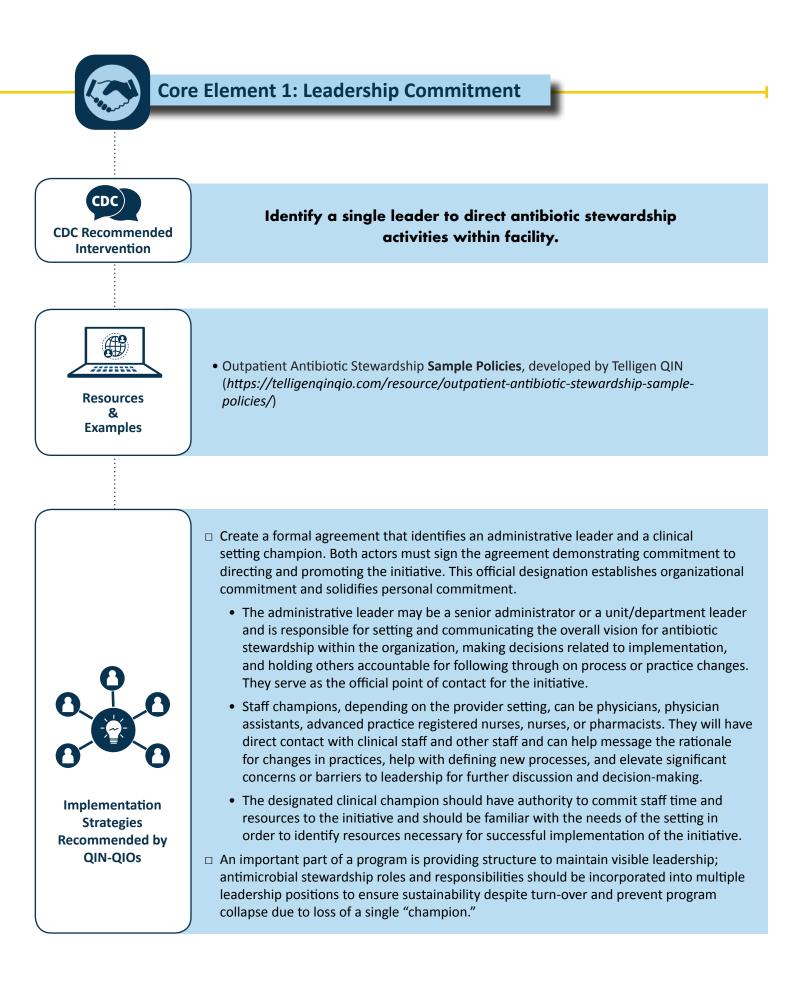


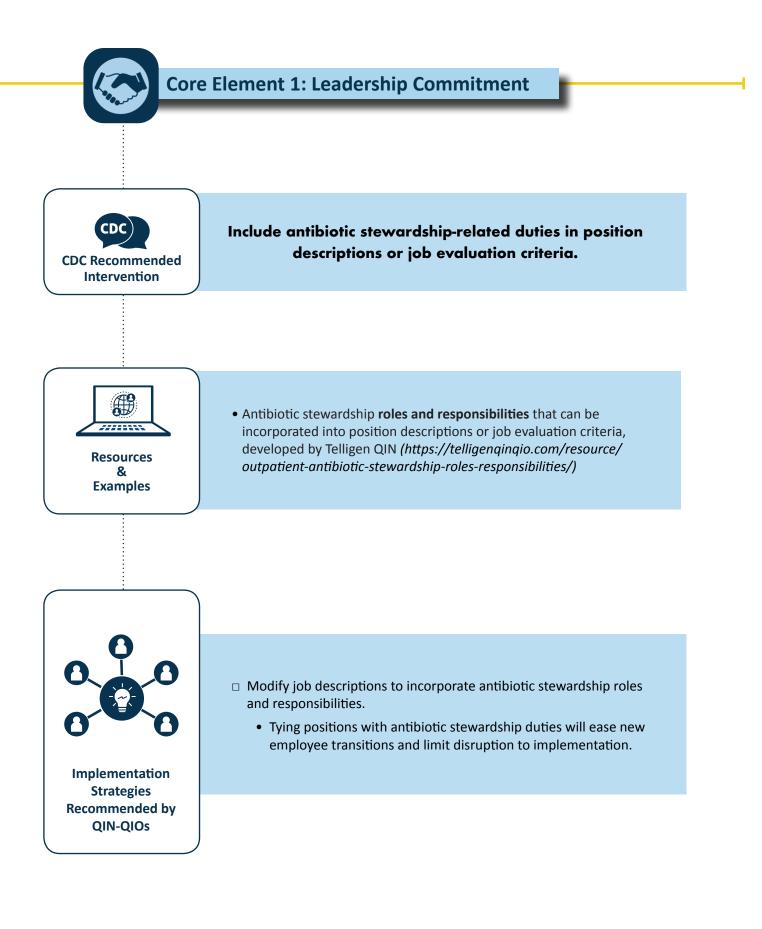
Education and expertise: provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on antibiotic prescribing

https://www.cdc.gov/getsmart/community/improving-prescribing/core-elements/core-outpatient-stewardship.html

Core Element 1: Leadership Commitment







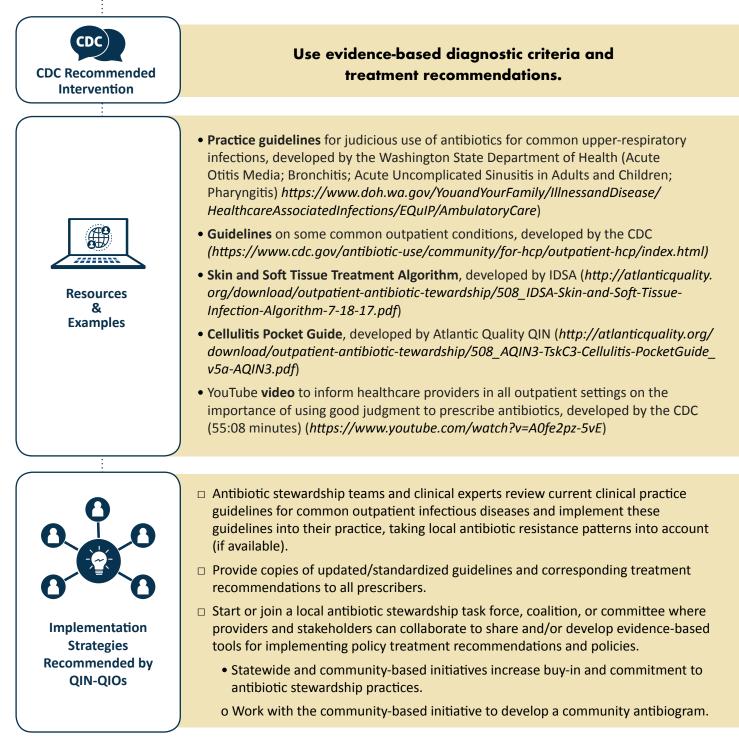


CDC Recommended Intervention	Communicate with all clinic staff to set patient expectations.
Resources & Examples	 On-demand video on the Commitment Core Element includes strategies for demonstrating commitment of antibiotic stewardship, developed by Lake Superior QIN (7:34 minutes) (<i>https://www.youtube.com/watch?v=IJqBF7T7dJU</i>) A collection of templates and sample policy documents that can be adapted for your organization, developed by Telligen QIN (<i>https://telligenqinqio.com/resource/outpatient-antibiotic-stewardship-sample-policies/</i>)
A Contraction Strategies Recommended by QIN-QIOS	 Educate all staff, including administrative and clinical care teams, on the importance of antibiotic stewardship, its priority in the organization, and its benefit to patients. This inclusive approach will affirm organizational commitment and ensure consistent staff messaging to patients on antibiotic expectations. Staff champions may also help with ensuring messages are repeated consistently and often. Set up mandatory staff training on antibiotic stewardship and patient communication about antibiotic treatment and resistance. Consider implementing lunch and learn meetings with staff or integrating antibiotic stewardship into staff learning management software. Create an internal multidisciplinary committee to collaborate on antibiotic stewardship work, since logistic decisions and implementation activities often impact many roles within the outpatient setting. A diverse set of skills and authority should be represented on your committee, including but not limited to multiple physician specialties, nursing, pharmacy, information technology, electronic health records experts, infection control, possible study design expertise (i.e., quality improvement), and risk-management. The IT team plays a significant role in implementing a successful tracking program for antibiotic prescribing and can inform the initiative of tracking
	 and reporting capabilities for their facility. Demonstrate organizational commitment by establishing written policies on antibiotic stewardship.

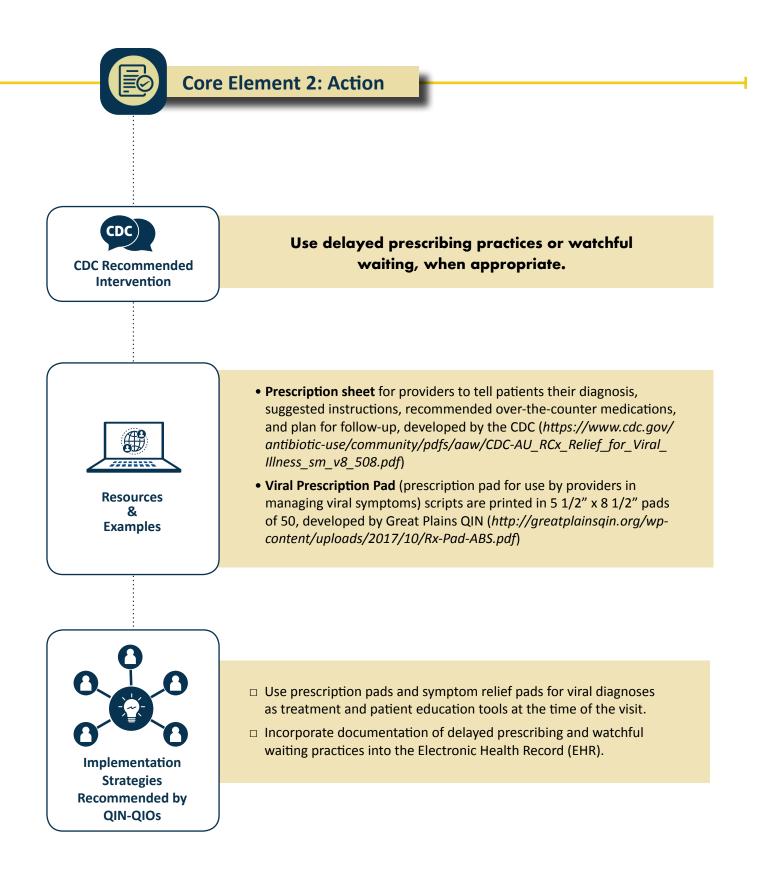
Core Element 2: Action



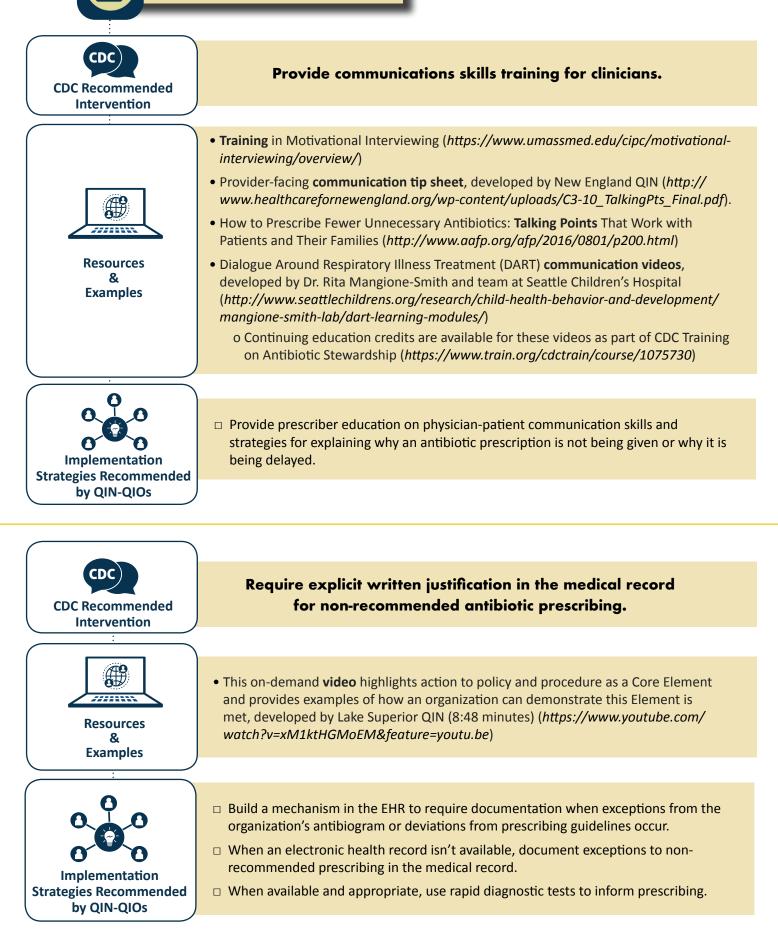
Has your facility implemented at least one policy or practice to improve antibiotic prescribing?⁵

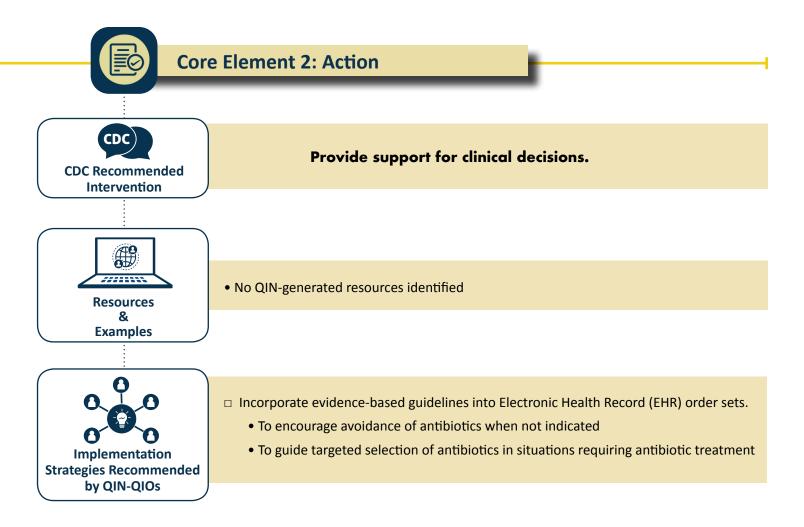


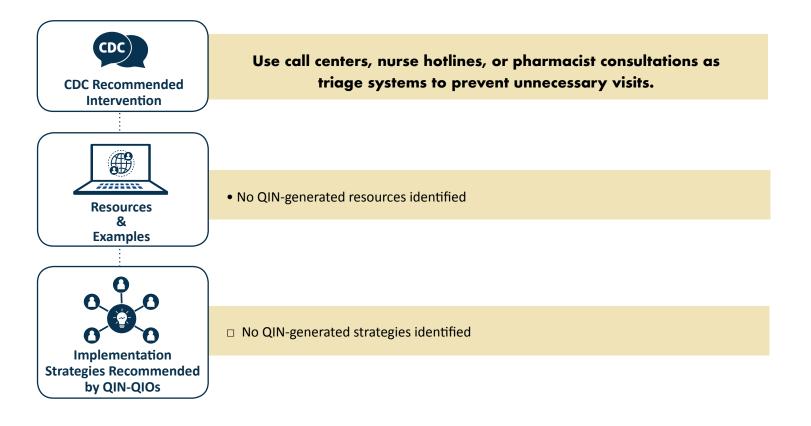
⁵Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016;65(No. RR-6):1–12.



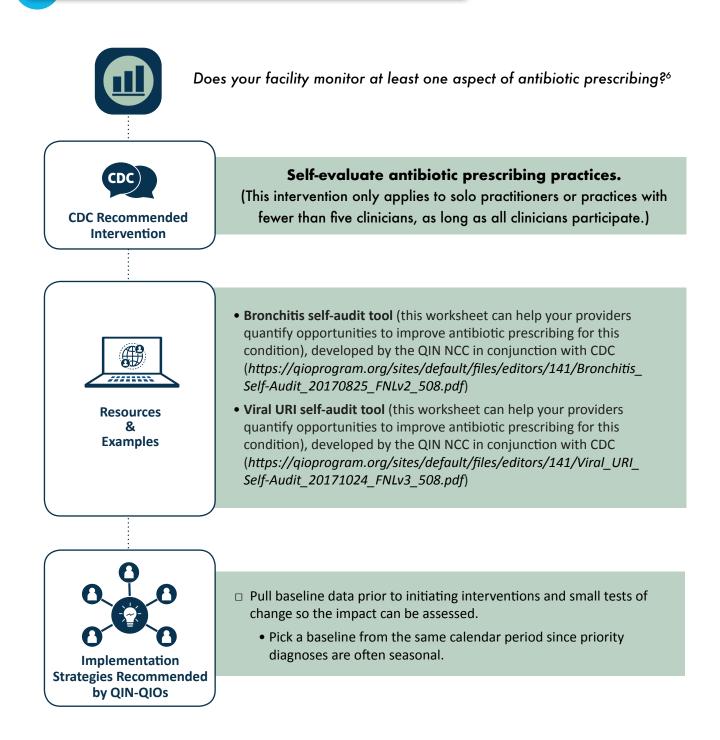




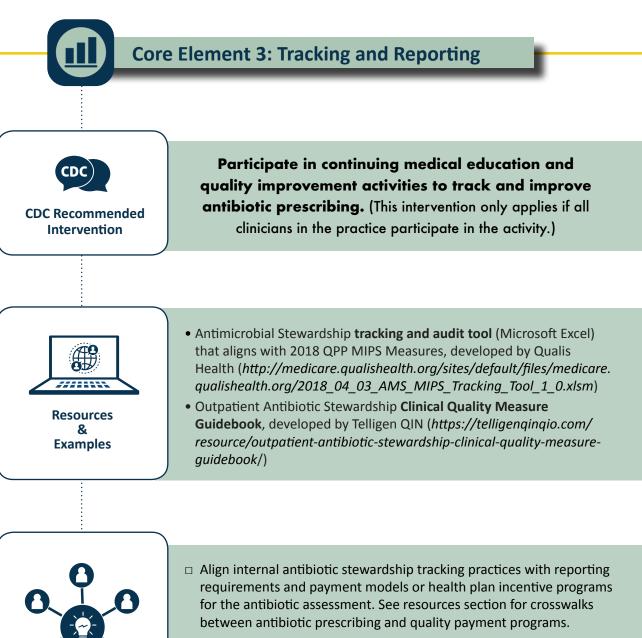




Core Element 3: Tracking and Reporting



⁶Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016;65(No. RR-6):1–12.

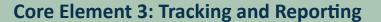


- This will consolidate resources and staff time and ease reporting since new EHR functionality does not need to be developed.
- This can also provide financial incentives for implementing antibiotic stewardship, leading to increased organizational commitment.

Implementation

Strategies Recommended

by QIN-QIOs



CDC Recommended

Track and report antibiotic prescribing for one or more high priority conditions.

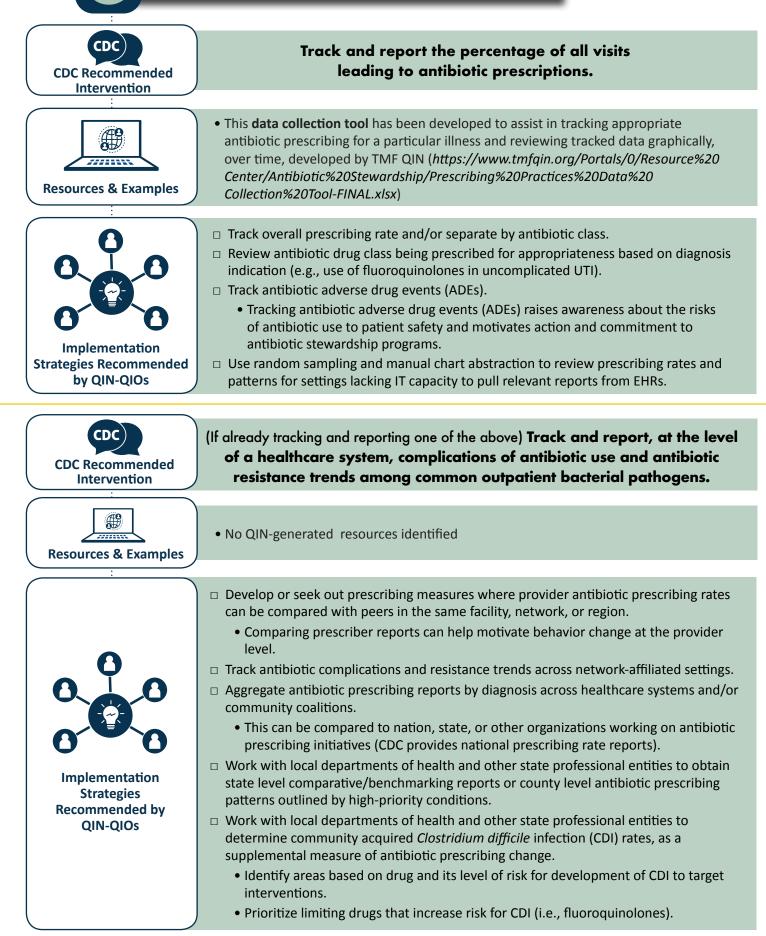
Resources & Examples

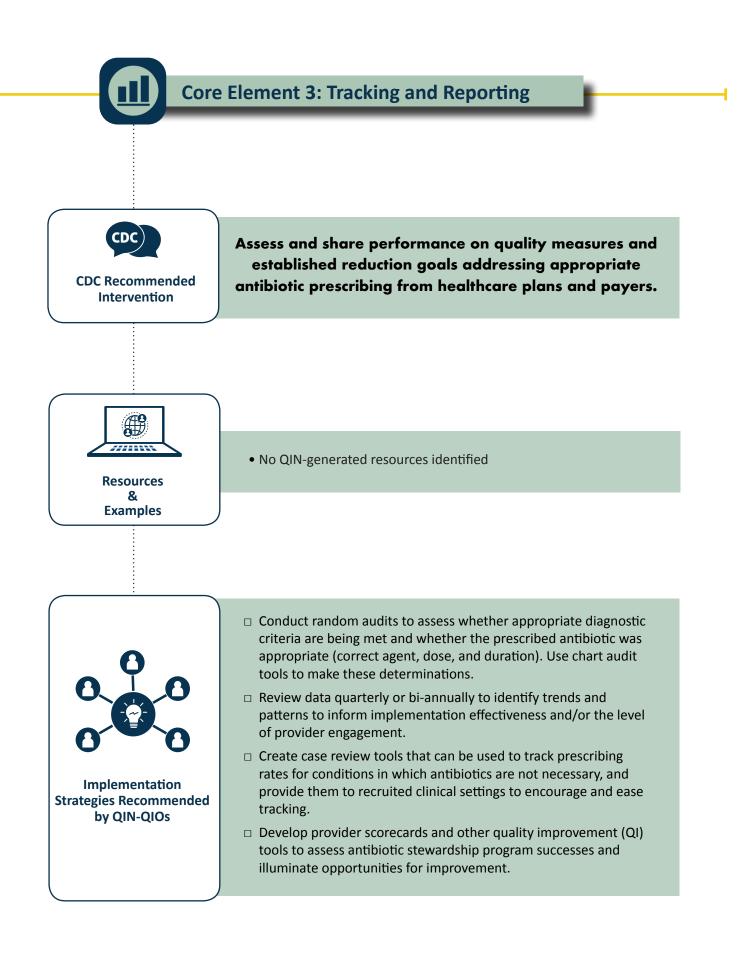
- Acute Uncomplicated Bronchitis Record Review (Adult) this record review tool was developed to assist in determining a bronchitis diagnosis. This evaluation should focus on ruling out the diagnosis of pneumonia, which is rare in healthy patients, in the absence of normal vital signs, developed by TMF QIN (https://www.tmfqin.org/Portals/0/Resource%20Center/ Antibiotic%20Stewardship/PI_Bronchitis_508.pdf)
- Antimicrobial Stewardship tracking and audit tool (Microsoft Excel) that assesses upper-respiratory infection prescribing that aligns with IDSA guidelines, developed by Qualis Health (http://medicare.qualishealth.org/ sites/default/files/medicare.qualishealth.org/20180404_AMSURI_Audit_ Tool_1_0_Download.xlsx)
- Bronchitis tracking tool for investigating appropriateness of prescribing, developed by Alliant Quality QIN (*http://www.alliantquality.org/sites/default/files/Bronchitis%20Tracking%20Tool%2011SOW-GMCFQIN-C310-18-04_0_0.pdf*)
- Sinusitis tracking tool for investigating appropriateness of prescribing, developed by Alliant Quality QIN (*http://www.alliantquality.* org/sites/default/files/Sinusitis%20Tracking%20Tool_11SOW-GMCFQIN-C310-18-02%20%282%29_0.pdf)
- Pharyngitis tracking tool, for investigating appropriateness of prescribing, developed by Alliant Quality QIN (http://www.alliantquality. org/sites/default/files/Pharyngitis%20Tracking%20Tool%2011SOW-GMCFQIN-C310-18-03_0.pdf)



- Track antibiotics prescribed that potentially were not needed.
 - Bronchitis, acute sinusitis, other (or all) upper-respiratory conditions.
 - Many of these diagnoses are viral in origin. Tracking these conditions and those that result in an antibiotic prescription constitutes following one or more high priority diagnoses.
- Track drug class being prescribed for appropriateness based on diagnosis indication (e.g., targeting reducing the use of fluoroquinolones for uncomplicated UTI when another agent would be recommended first-line).



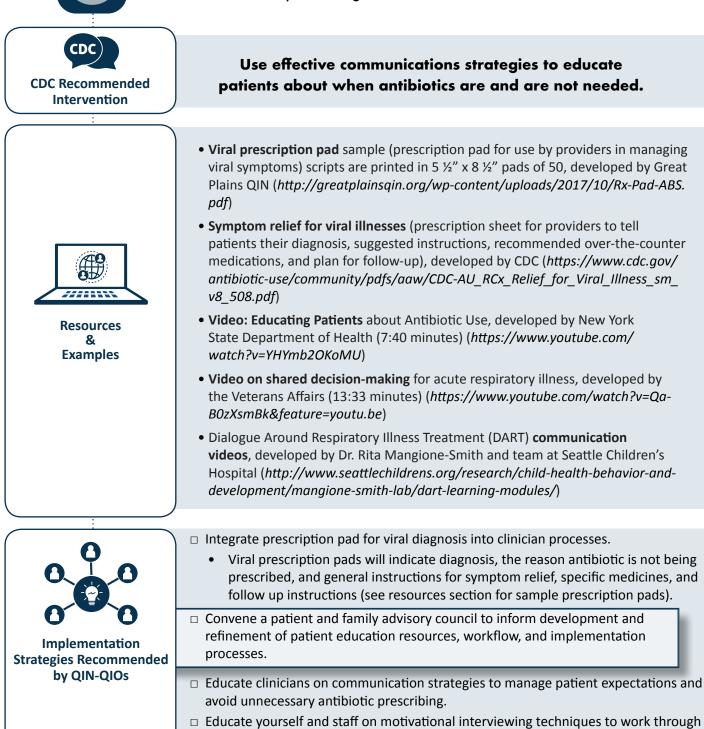




Core Element 4: Education and Expertise

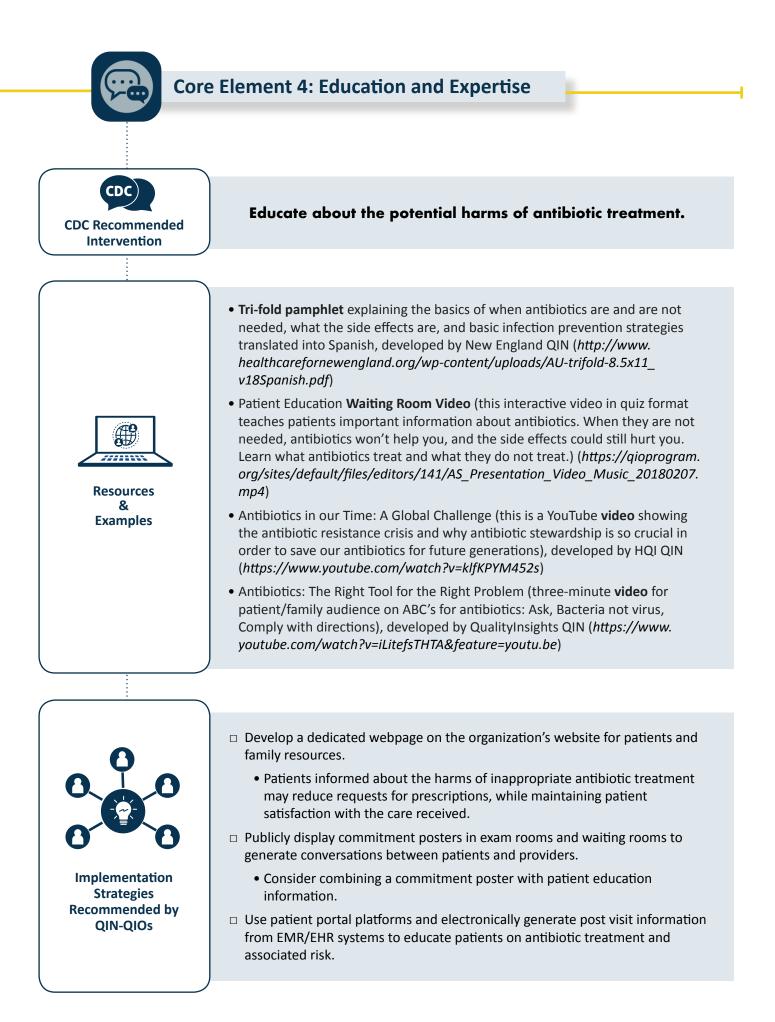


Does your facility provide resources to clinicians and patients on evidencebased antibiotic prescribing?⁷



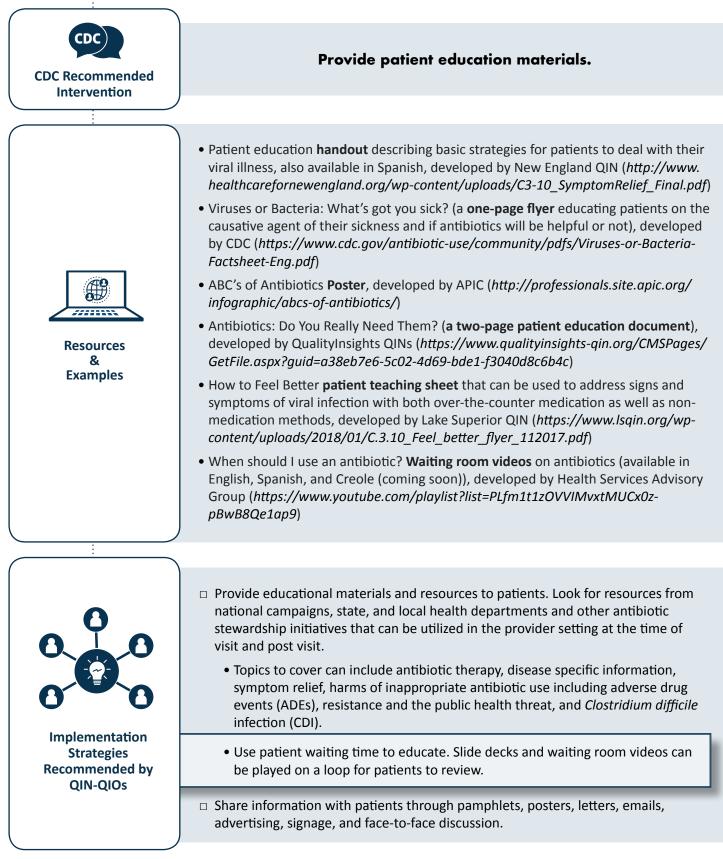
⁷Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016;65 (No. RR-6):1–12

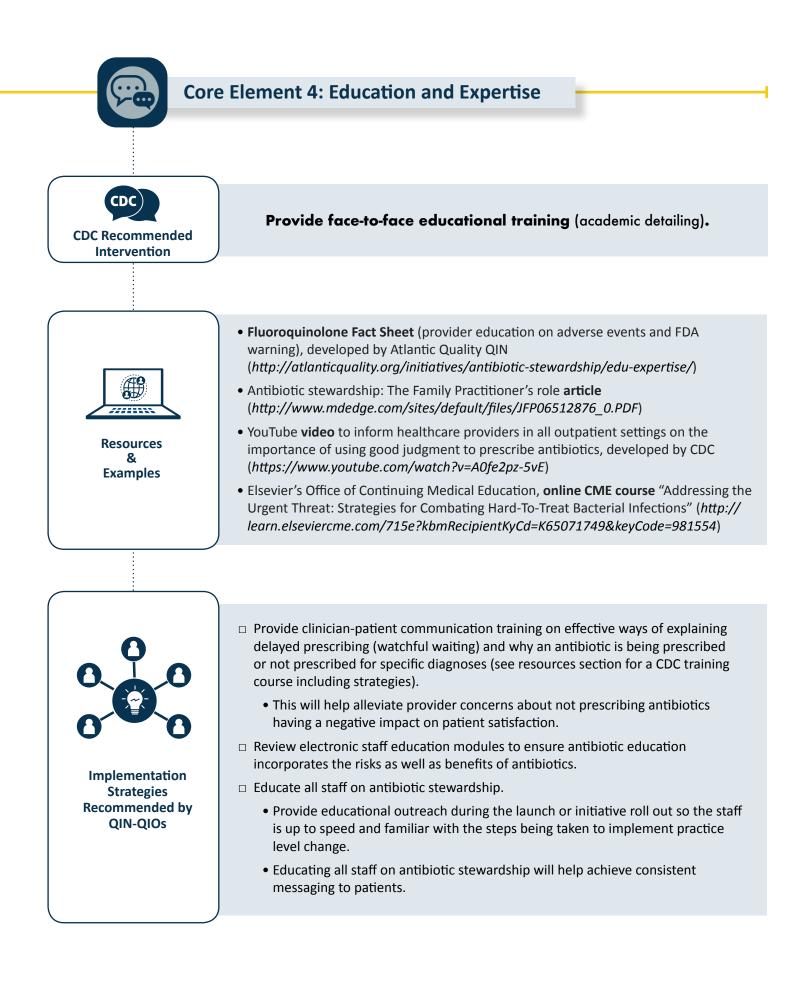
possible conflict and uncertainty.

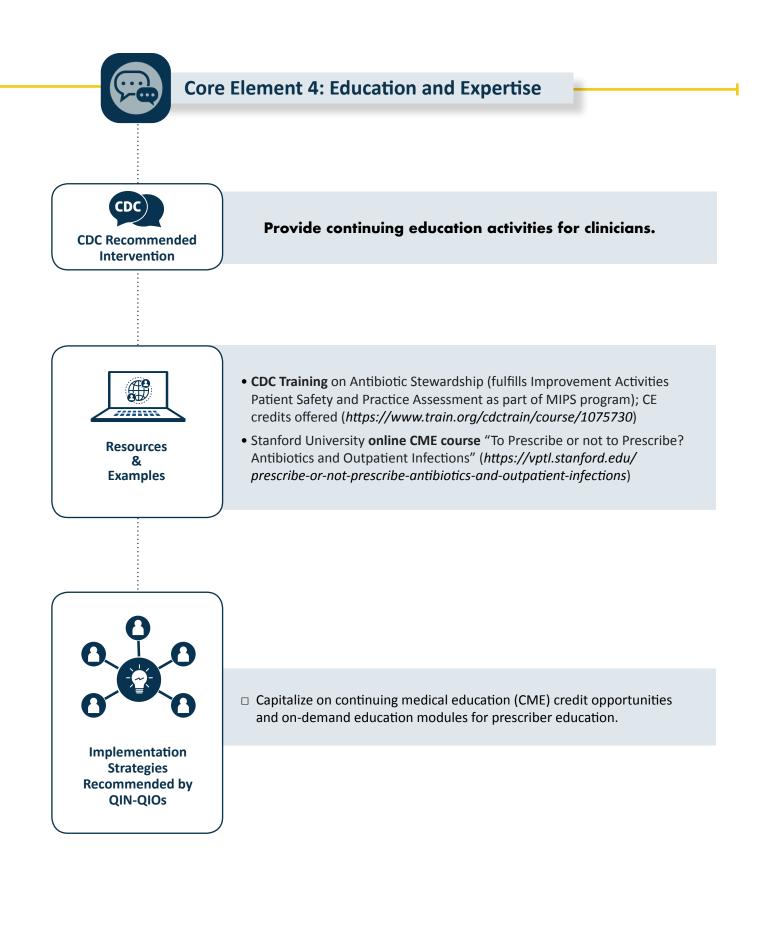




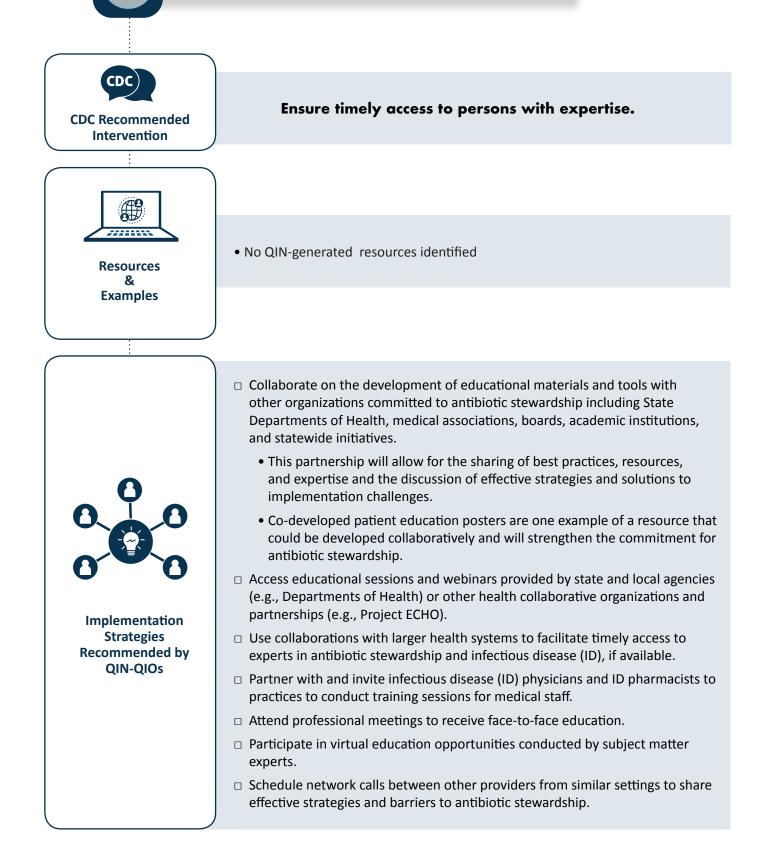
Core Element 4: Education and Expertise











Potential Barriers & Suggested Solutions

Each core element for outpatient settings presents different challenges. Additionally, barriers vary by type of setting (e.g., emergency department, primary care practice, pharmacy) and/or provider/prescriber.

The QIN-QIOs' experience suggests three specific categories of prominent barriers faced in outpatient settings: (1) leadership engagement and staffing; (2) patient expectations; and (3) capacity, resources, and infrastructure. The table below provides common mitigating strategies for each barrier. Many of the implementation strategies included in this Field Guide may also address these challenges.

BARRIERS	SUGGESTED SOLUTIONS
Challenges related to leadership engagement and staffing	 Partner with State Departments of Health, medical associations, boards, academic institutions, and statewide initiatives to raise awareness that antibiotic resistance is a pressing public health concern. Share national campaign materials (e.g., CDC, Choosing Wisely, etc.) to increase engagement and buy-in. Share data showing CDI rates and the risks associated with the use of certain antibiotics. Calculate rates of inappropriate prescribing (e.g., rates of antibiotic use for URI) by facility and share facility specific and facility comparison data with leaders. Emphasize patient safety and the importance of appropriate prescribing to limit adverse drug events. To minimize the impact of staff turnover, assign the antibiotic stewardship role in job descriptions. This will set the expectation for new hires to be qualified for the antibiotic stewardship responsibilities and ensure training on antibiotic stewardship role is conducted upon hire. Align stewardship strategies and activities with payment programs and quality improvement processes. Use antibiotic prescribing data from peer organizations and prescribers for peer comparisons.
Challenges related to patient expectations for antibiotics	 Promote use of prescription pads with alternatives to antibiotics (symptom relief interventions) to educate patients as to why an antibiotic is not being prescribed and increase satisfaction by providing alternative solutions for symptom relief. Learn motivational interviewing techniques to enhance communication with the patient. Train providers on communication techniques that can increase patient satisfaction in visits for which antibiotics are not prescribed. Display posters, flyers, and videos in the waiting room to educate patients on antibiotics prior to their scheduled appointment. Aim for messages to be delivered multiple times in different formats.
Challenges related to capacity, resources, and infrastructure	 Use chart audits and provide feedback from these audits to clinicians when prescribing data cannot be obtained from the electronic health record. Network with other settings (similar to your own) to share processes for retrieving data, to discuss diagnostic codes, and share examples of specific measures to track. Examine any standing order protocols that lead to over diagnosis (i.e., urinalysis for certain visits).

Although antibiotic prescribing has improved since 2011, children under two and adults over the age of 65 still receive the most antibiotic prescriptions.⁸ A draft proposal on the HAI Action Plan calls for federal agencies to work together on antibiotic stewardship efforts. Included in phase four is a goal to reduce inappropriate antibiotic use in outpatient settings by 20% by the year 2020.

CDC used evidence-based guidance and expert opinion to create the Core Elements of Antibiotic Stewardship in Outpatient Settings. Over the past year, QIN-QIOs have been in the field, working with thousands of outpatient settings to adopt these guiding elements. This Field Guide offers knowledge, strategies, tools, and resources for you to test and implement within your organization.

Several key findings have emerged as a result of the QIN-QIO work on antibiotic stewardship. First, is the importance of partnering with other organizations working on antibiotic stewardship initiatives to achieve commitment and to enable access to resources to support implementation. Resources include patient and provider education, data that supports the prioritization of antibiotic stewardship objectives and additional tools to help monitor and measure the impact of implementation. By engaging local partners, outpatient settings can create action on policy that will ultimately better support antibiotic stewardship across communities, statewide, and even at the national level. Outpatient settings can work with other providers to develop initiatives and monitor progress through sharing local data. The impact of antibiotic stewardship initiatives will be greater as more providers and partners are involved across a community.

At the setting level, maximizing stakeholder involvement in conceptualizing and implementing antibiotic stewardship is critical. Clinical and administrative staff at all levels should be involved in planning meetings in order to secure buy-in from those who will be putting new processes in place, and to ensure barriers are identified promptly so that workflows can be adjusted as necessary. In particular, involvement of those with expertise in information technology and setting-specific capabilities is necessary to ensure that changes to processes are made with EHR and other IT functionality in mind, and to optimize availability of data for ongoing monitoring.

Finally, antibiotic stewardship is essentially a behavior change intervention. An approach that provides education and resources to providers and to patients and their families is necessary to alter often long-held perceptions related to antibiotic use. Educating patients on the wide use of antibiotics and providing clinicians access to education and expertise will help realize changes needed to slow the growth of antibiotic resistance and advance patient safety goals, while patients remain at the center of care.

⁸ Centers for Disease Control and Prevention. Antibiotic use in the United States, 2017: progress and opportunities. Atlanta, GA: US Department of Health and Human Services, CDC; 2017. https://www.cdc.gov/antibiotic-use/stewardship-report/pdf/stewardship-report.pdf. Accessed June 15, 2018

Resource Description	Link
Selected Resources from CDC	
Checklist for Clinicians: Core Elements of Outpatient Antibiotic Stewardship: Clinicians can use this checklist to ensure they are successfully implementing the Core Elements of Outpatient Antibiotic Stewardship: commitment, action, tracking and reporting, and, lastly, education and expertise.	https://www.cdc.gov/antibiotic-use/ community/pdfs/16_268900-A_ CoreElementsOutpatient_check_1_508.pdf
Checklist for Outpatient Care Facilities: Core Elements of Outpatient Antibiotic Stewardship: Outpatient care facilities can use this checklist to ensure they are successfully implementing the Core Elements of Outpatient Antibiotic Stewardship.	https://www.cdc.gov/antibiotic-use/ community/pdfs/16_268900-A_ CoreElementsOutpatient_check_2_508.pdf
Speakers discuss efforts to measure and improve antibiotic prescribing through stewardship. Video includes lessons learned from improving antibiotic use in pediatrics, and what providers and health systems can do to improve use in adults.	https://www.cdc.gov/grand-rounds/ pp/2018/20180515-antibiotics-aware.html
Antibiotic Prescribing and Use in Doctor's Offices - Systematic Reviews of Outpatient Antibiotic Stewardship: These systematic reviews from the Centers for Disease Control and Prevention (CDC) provide evidentiary support of interventions and outcomes used to improve outpatient antibiotic prescriptions.	https://www.cdc.gov/antibiotic-use/ community/improving-prescribing/evidence/ systematic-reviews.html
Summary of recommendations for appropriate antibiotic prescribing, including clinical practice guidelines.	https://www.cdc.gov/antibiotic-use/ community/for-hcp/outpatient-hcp/index.html
Selected Resources from QIN-QIOs	
Outpatient Antibiotic Stewardship Playbook: The Telligen Outpatient Antibiotic Stewardship Playbook is designed to provide concrete strategies and suggestions for organizations committed to implementing successful antibiotic stewardship programs in outpatient settings. Use this Playbook as a practical guide to options and resources that clinicians in outpatient settings can use to create, implement, or strengthen antibiotic stewardship programs. Choose options that fit your local context, resources, and needs. It's not a list of "must dos" to be completed.	https://telligenqinqio.com/resource/ outpatient-antibiotic-stewardship-playbook/
Outpatient Antibiotic Stewardship Gap Analysis Tool: The Outpatient Antibiotic Stewardship Gap Analysis Tool compares your current antibiotic stewardship practices with identified best practices. This assessment will help you identify your organization's short- and long-term goals for antibiotic stewardship.	https://telligenqinqio.com/resource/ outpatient-antibiotic-stewardship-gap- analysis-tool/

Resource Description	Link
Steps to Combat Antimicrobial Resistance in Outpatient Settings: This two-page checklist style document was developed from a CDC online resource. The document lists steps and suggested interventions.	https://www.qualityinsights-qin.org/ CMSPages/GetFile.aspx?guid=22a460bb- c206-41cf-b119-9a8e13ba4d18
Qualis Health QIN Antimicrobial Resources Page	http://medicare.qualishealth.org/projects/ AMS-in-Outpatient-Settings/Selected- Resources
Antibiotic Stewardship Improvement Guide: This document provides electronic hyperlinks to resources and tools as sorted by Core Elements. Includes information for all healthcare settings, developed by Lake Superior QIN.	http://bit.ly/1P9yTdj
This YouTube video from the Centers for Disease Control and Prevention (CDC) provides more information on the Core Elements of Antibiotic Stewardship in Outpatient Settings and includes a 15-minute Q&A between the presenter and webinar participants.	https://www.youtube.com/ watch?v=aQhENZiISr0
Toolkit provides tools and resources to help implement the Core Elements in your facility, developed by HQI QIN.	http://www.hqi.solutions/wp-content/ uploads/2017/11/Antibiotic-Stewardship- Toolkit_Final-1.pdf
Pharmacy Specific Resources	
Community Pharmacy Antibiotic Stewardship Toolkit, developed by Lake Superior QIN.	http://bit.ly/2FuKdmg
CDC Core Elements checklist designed for use by the community pharmacy setting.	http://healthinsight.org/files/Outpatient%20 Antibiotic%20Stewardship/CDC_Core_ Checklist_Community_Pharmacy_2018-04-19- form.pdf
Emergency Department and Urgent Care Specific Resources	
MITIGATE Antimicrobial Stewardship Toolkit: This guide outlines how facilities can implement individualized, effective, and practical antimicrobial stewardship programs in acute care (emergency department and urgent care) settings.	https://qioprogram.org/antibiotic- stewardship-resources/
Additional Selected Resources	
Antibiotic Use in Outpatient Settings resource, developed by Pew Charitable Trusts	http://www.pewtrusts.org/en/research-and- analysis/reports/2016/05/antibiotic-use-in- outpatient-settings
The Center for Disease Research and Policy (CIDRAP) from the University of Minnesota is a premier source of information for news and resources. CIDRAP has a webpage dedicated to the Antibiotic Stewardship Program, including clinical tools. Other AS resources includes a YouTube Channel and weekly newsletter.	http://www.cidrap.umn.edu/asp/clinicaltools

Resource Description	Link
Association for Professionals in Infection Control and Epidemiology (APIC) resources on antimicrobial stewardship for healthcare professionals and consumers	https://apic.org/Resources/Topic-specific- infection-prevention/Antimicrobial- stewardship
World Health Organization (WHO) Antimicrobial Resistance resources	http://www.who.int/antimicrobial-resistance/ en/
The Society for Healthcare Epidemiology of America (SHEA) is on the forefront in education, research, and guidelines on antimicrobial stewardship.	https://www.shea-online.org/index. php/practice-resources/priority-topics/ antimicrobial-stewardship
Jumpstart Stewardship: Implementing Antibiotic Stewardship in Ambulatory Settings: A comprehensive workbook of AMS tools, developed by Washington State Department of Health, Qualis Health, and other AMS partners.	https://www.doh.wa.gov/Portals/1/ Documents/ 5000/JumpStartStewardship AmbulatorySettings.pdf

ACRONYM	MEANING
ADE	Adverse Drug Events
AS	Antibiotic Stewardship
САН	Critical Access Hospitals
CDC	Centers for Disease Control and Prevention
CDI	Clostridium Difficile Infection
CDS	Clinical Decision Support
CME	Continuing Medical Education
CMS	Centers for Medicare and Medicaid Services
ECHO	Extension for Community Healthcare Outcomes
ED	Emergency Department
EHR	Electronic Health Record
EMR	Electronic Medical Record
FQHC	Federally Qualified Health Center
ID	Infectious Disease
IDSA	Infectious Diseases Society of America
IT	Information Technology
PDSA	Plan, Do, Study, Act
QI	Quality Improvement
QIN NCC	Quality Innovation Network National Coordinating Center
QIN-QIO	Quality Innovation Network - Quality Improvement Organization
URI	Upper Respiratory Infection
UTI	Urinary Tract Infection