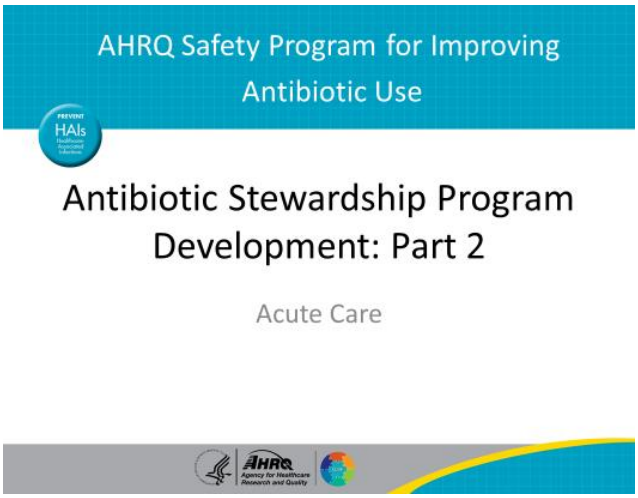
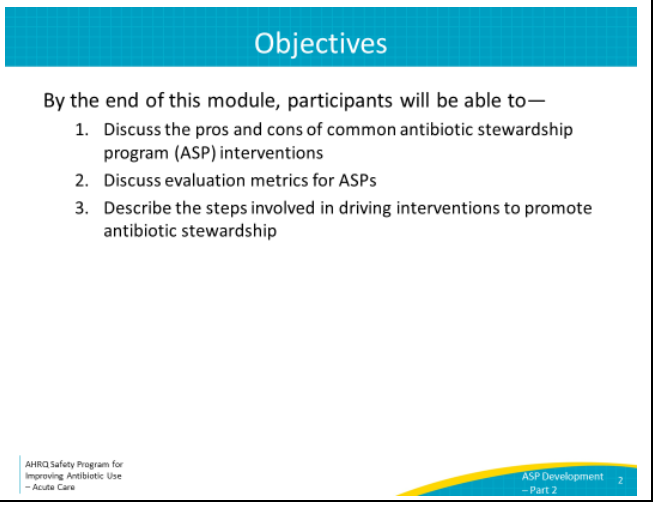
Antibiotic Stewardship Program Development: Part 2

Acute Care

Slide Title and Commentary	Slide Number and Slide
Title Slide **Antibiotic Stewardship Program Development: Part 2** **Acute Care** SAY: This presentation is the second of two that address key issues and approaches in developing an antibiotic stewardship program or ASP in the acute-care setting.	**Slide 1** 
Objectives SAY: By the end of this presentation, you will be able to discuss the pros and cons of common stewardship interventions, discuss evaluation metrics for stewardship programs and describe the steps involved in driving interventions to promote antibiotic stewardship.	**Slide 2** 

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Options for Primary ASP Interventions SAY: An ASP must decide what approaches to use to intervene to improve antibiotic use. Direct interaction with clinicians, whether by phone or in person, to discuss recommendations is perhaps the most important part of stewardship as it allows the ASP and clinicians to build a trusting relationship. Although some stewardship interventions might be accomplished with prompts in the electronic health record or EHR, we believe that such "electronic stewardship" will never fully substitute for human interactions to promote rational antibiotic use. Stewardship programs generally choose to perform pre-prescription approval of antibiotics or post-prescription review and feedback of antibiotic therapy as the primary intervention. In pre-prescription approval, prescribers must place a phone call or fill out a form justifying use before the pharmacy dispenses an antibiotic. The advantage of this approach is that unnecessary antibiotic starts can be avoided and empiric selection of antibiotics optimized. With this approach, the ASP can also advise about obtaining the correct cultures. The disadvantage of this approach is that it impacts only the agents that are restricted, does not address downstream antibiotic use and requires resources to field requests in real time.	**Slide 3** Options for Primary ASP Interventions[1] Approach: **Pre-prescription approval** of antibiotics Definition: Phone call placed or form filled out *before* pharmacy dispenses antibiotic Pros: • Reduces initiating unnecessary antibiotics • Optimizes empiric antibiotic choices • Gives opportunity to advise about sending appropriate cultures Cons: • Impacts use of restricted agents only • Addresses empiric use more than downstream use • Is real-time resource intensive AHRQ Safety Program for Improving Antibiotic Use – Acute Care ASP Development – Part 2 3
Options for Primary ASP Interventions SAY: Post-prescription review and feedback generally occur 48 to 72 hours after antibiotics are started when more clinical data are available to make recommendations. Other advantages to this approach include greater flexibility in the timing of interventions and the ability to address downstream therapy and duration. The primary disadvantage of this approach is that recommendations are generally optional and may not be followed.	**Slide 4** Options for Primary ASP Interventions[1] Approach: **Pre-prescription approval** of antibiotics Definition: Phone call placed or form filled out *before* pharmacy dispenses antibiotic Pros: • Reduces initiating unnecessary antibiotics • Optimizes empiric antibiotic choices • Opportunity to advise about sending appropriate cultures Cons: • Impacts use of restricted agents only • Addresses empiric use more than downstream use • Real-time resource intensive Approach: **Post- prescription review and feedback** of antibiotics Definition: Downstream review of appropriateness of antibiotic therapy, usually at 48–72 hours Pros: • More clinical data available to enhance uptake of recommendations • Greater flexibility in timing of interventions • Can address duration of therapy Cons: • Recommended action generally optional and may not be followed AHRQ Safety Program for Improving Antibiotic Use – Acute Care ASP Development – Part 2 4

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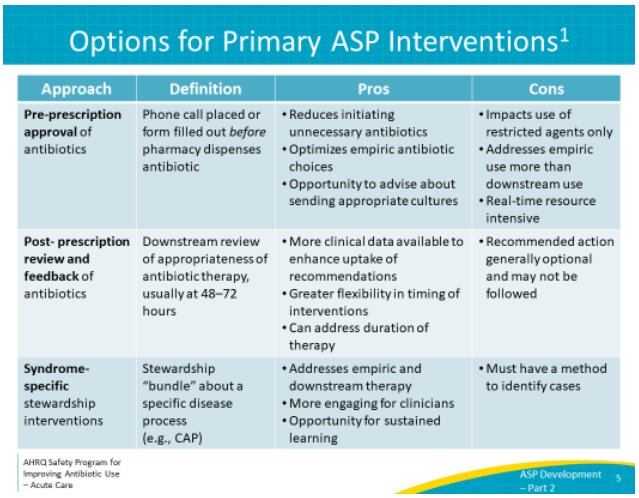
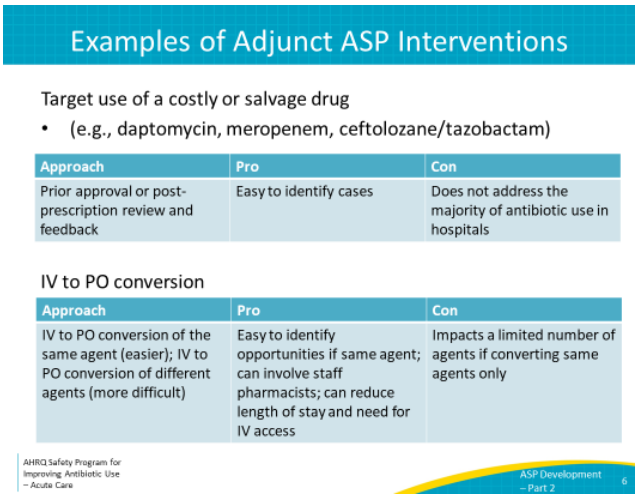
Options for Primary ASP Interventions SAY: A third category of interventions is syndrome-specific interventions, in which a stewardship "bundle" is developed and implemented for a specific disease process such as community-acquired pneumonia, urinary tract infection, or asymptomatic bacteriuria. One of the goals of the AHRQ Safety Program for Improving Antibiotic Use is to assist ASPs and frontline providers with syndrome-specific interventions. The advantages of these interventions are that they can address empiric and downstream therapy and are more engaging for clinicians. Clinician engagement can facilitate sustained learning. The primary disadvantage is that it can be difficult for the ASP to identify cases of some syndromes, particularly those in which cultures are often not sent, such as community-acquired pneumonia, in order to trigger a review.	**Slide 5** 

Slide Title and Commentary	Slide Number and Slide
Examples of Adjunct ASP Interventions SAY: The next three slides provide examples of specific adjunct stewardship interventions. In general, ASPs should perform both routine daily interventions using the approaches described on the previous slide as well as interventions that target specific problems around antibiotic prescribing that they or other stakeholders identify in the institution as needed. For example, ASPs could target use of a costly or salvage drug (e.g., daptomycin, meropenem, ceftolozane/tazobactam) using either prior approval or post-prescription review and feedback approaches. The advantages are that it is generally easy to find patients who are on these antibiotics; however, targeting only these agents does not address the majority of antibiotic use in the hospital. ASPs may elect to focus on intravenous to oral, or IV to PO, conversion with the goals of avoiding IV lines and perhaps reducing length of stay. If the conversion involves the same agent, a protocol can be developed and the work executed by staff pharmacists independent of direct ASP involvement. However, if the intervention focuses on converting the same agents from IV to PO, only a limited number of agents can be targeted. Conversely, if the ASP is targeting IV-to-PO conversion of different agents, such as piperacillin-tazobactam to levofloxacin, more direct ASP involvement will be needed to ensure that the oral regimen covers the desired spectrum of activity.	**Slide 6** 

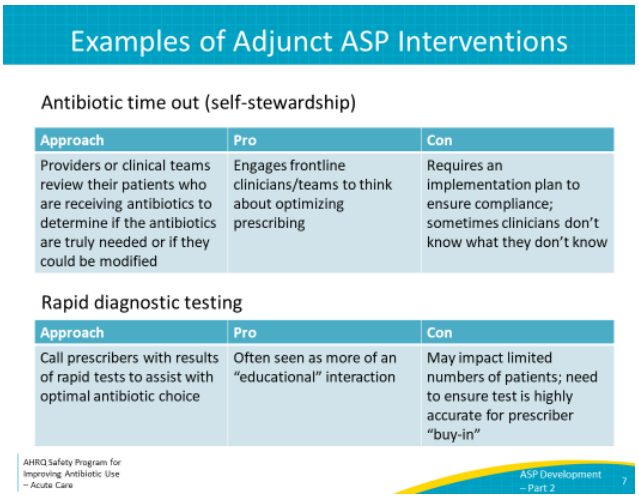
Slide Title and Commentary	Slide Number and Slide
Examples of Adjunct ASP Interventions	**Slide 7**

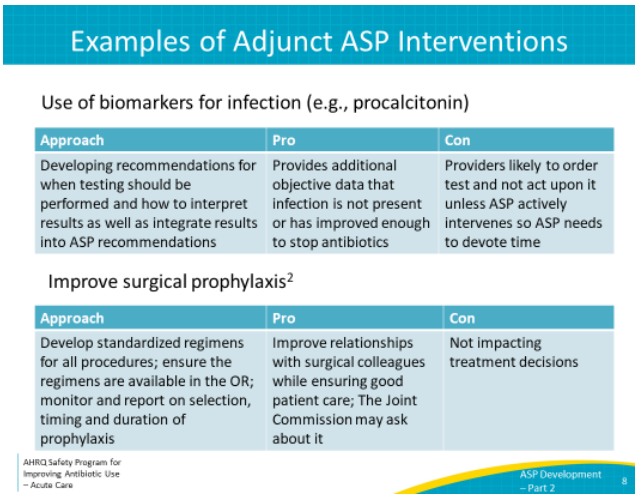
SAY:

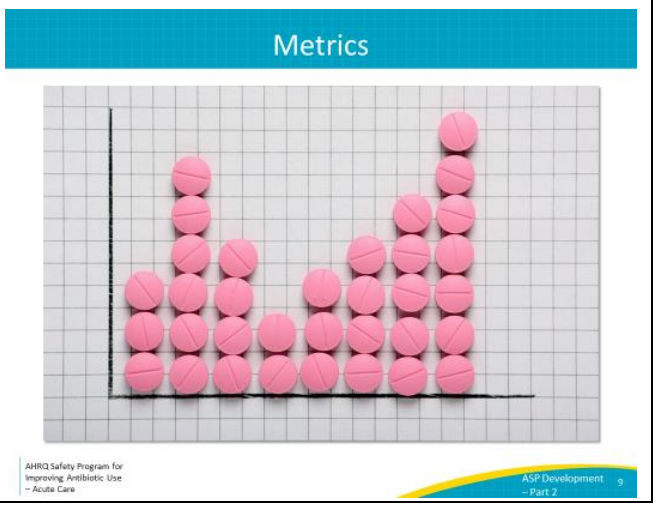
ASPs may consider working with individual providers and/or clinical teams to assist them in implementing a daily antibiotic time out. This intervention is a major component of the AHRQ Safety Program for Improving Antibiotic Use. An antibiotic time out allows providers or teams to review their patients on antibiotics to determine if the antibiotics are needed or if they could be modified at a designated time each day.

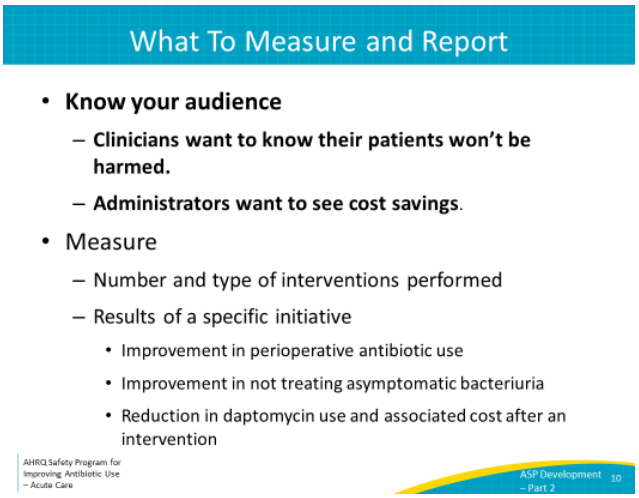
The advantage of this approach is that it engages frontline clinicians/teams to think about optimizing prescribing. However, clinicians have to agree to implement the process independent of prompting by the ASP. Also, sometimes clinicians think their prescribing is correct when in reality there might be room for improvement. The AHRQ Safety Program seeks to address this issue by providing presentations and tools to update frontline providers on data regarding optimal antibiotic decision making for common infectious diseases syndromes. The ASP should promote itself as a content-expert resource for all teams and be available for questions and concern that emerge as the providers and team do their daily review.

If microbiology labs implement rapid diagnostic tests, ASPs can intervene by calling prescribers with results and assisting with optimal antibiotic choices. This may be viewed as quite helpful by clinicians and can help them become knowledgeable and comfortable about the test. The main disadvantages of interventions around implementation of rapid diagnostic tests is the impact is on a limited number of patients (often just patients with bacteremia). ASPs may also struggle with ensuring prescriber "buy-in" if the test is not highly accurate.



Slide Title and Commentary	Slide Number and Slide
Examples of Adjunct ASP Interventions SAY: Like rapid diagnostic tests, use of biomarkers for determining presence of infection, such as procalcitonin (PCT), can assist ASPs by providing an additional data point that can be used to persuade providers to stop antibiotic therapy. Some institutions have successfully integrated the use of PCT into AS activities and seen a reduction in antibiotic use. Because there are gray areas in how to interpret the results, the ASP will need to actively assist providers in using PCT to ensure that testing is both done appropriately and acted upon. ASPs should consider whether they are prepared to monitor and intervene on PCT results before implementing this approach as successful implementation is likely to consume a fair amount of ASP time. Another area for intervention is optimizing surgical prophylaxis. This includes working with surgery and anesthesia colleagues to determine antibiotic selection and duration as well as developing approaches to ensure that the right agents are available in the operating room, or OR, when they are needed. Data on compliance can be obtained and fed back to providers more easily than with some other interventions, as there will be easily determined correct and incorrect selection, timing, and duration data. You will also be able to initiate discussions about Centers for Disease Control and Prevention (or CDC) recommendations that antibiotics be given only in the OR and not after the operation is complete. Advantages of interventions in improving surgical prophylaxis include building relationships with surgeons and preventing both surgical site infection and unnecessary antibiotic exposure. In addition, The Joint Commission may ask how appropriate prophylaxis is being monitored now that Surgical Care Improvement Project or SCIP measures have been retired. A disadvantage of only addressing surgical prophylaxis is that you are not impacting treatment decisions on surgical services; thus, additional attention should be given to optimizing antibiotic management of surgical infections.	**Slide 8** 

Slide Title and Commentary	Slide Number and Slide
Metrics SAY: Over the next few slides we will discuss the metrics within the antibiotic stewardship program.	**Slide 9** 

Slide Title and Commentary	Slide Number and Slide
What To Measure and Report SAY: ASPs should plan to collect data to demonstrate the activities and success of their programs. When presenting data, it is important to consider who the audience is. Clinicians want to know their patients won't be harmed and that ASP interventions will improve their patient's outcomes. Administrators care about this, too, of course but also like to see cost savings. If you focus on cost savings with clinicians, they can get turned off by the ASP and think they are "only focused on saving money." ASPs may report the number and type of interventions they perform. This is useful for demonstrating how their work benefits patient care. They may report results of a specific initiative. Some examples include improvement in perioperative antibiotic use (percent of cases where an antibiotic is given correctly), improvement in not treating asymptomatic bacteriuria (percent of patients treated inappropriately before and after an intervention, reduction in antibiotic use), or reduction in daptomycin use and associated cost after an AS intervention. Reporting results of a specific initiative is attractive because you are able to tell a good story that will be of interest to leadership, other clinicians, and The Joint Commission. Seek to get your results featured in an institutional publication such as a newsletter to increase attention to your ASP.	**Slide 10** 

What To Measure and Report

SAY:

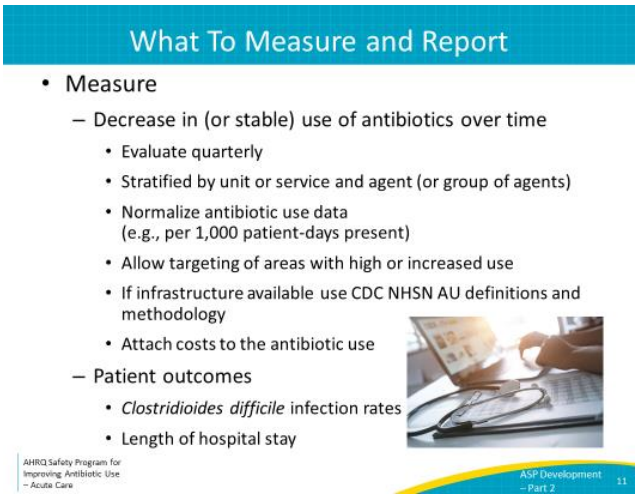
ASPs should plan to report antibiotic use data both for internal purposes and to demonstrate a decrease in use. It is important to understand and let administrators know that antibiotic use will and should eventually plateau as the program progresses over time, since of course appropriate antibiotic needs will not entirely disappear.

Use should be evaluated quarterly and stratified by unit or service and agent (or group of agents). You may also consider grouping agents together on the same graph—for example all agents used to treat MRSA or all antipseudomonal beta-lactam agents. Antibiotic use data should be normalized (e.g., per 1,000 patient-days present). The CDC National Healthcare Safety Network (NHSN) Antimicrobial Use and Resistance Module uses antimicrobial days/days present by month by patient location and total admissions and reports observed antibiotic use versus expected antibiotic use, a metric known as the Standardized Antibiotic Administration Ratio (SAAR). If your EHR has the infrastructure, you should use the CDC NHSN Antibiotic Use and Resistance or AUR definitions and methodology. Antibiotic use data can be converted to antibiotic cost data by determining acquisition costs for each antibiotic.

Assessment of antibiotic use data is essential to identify areas with high use where investigation and intervention may be needed. However, in our experience, clinicians sometimes report that aggregate antibiotic use data is relatively uninformative in helping them understand specific areas for improvement. ASPs should direct them to focus on specific antibiotics that for which use can be decreased. Determining the best ways to report antibiotic use data that is actionable for clinicians is an area of active research.

Ideally, ASPs would report on how their work leads to decreased *C. difficile* infection or CDI rates or length of stay across the institution. However, many factors are related to patient outcomes, and it can be difficult to know whether ASP interventions are directly correlated with them. If a specific ASP intervention targets CDI or length of stay (LOS) reduction, then these are important outcomes to collect for that intervention. ASPs should work with infection-control colleagues to evaluate units where CDI rates are high and determine if interventions related to antibiotic use are needed in those areas.

Slide 11



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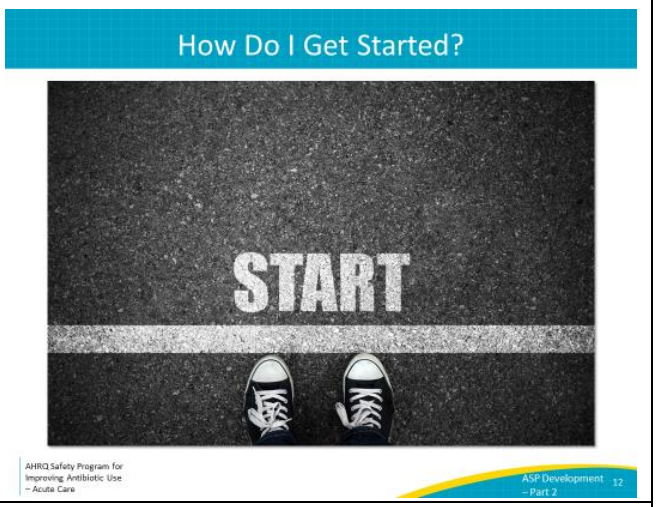
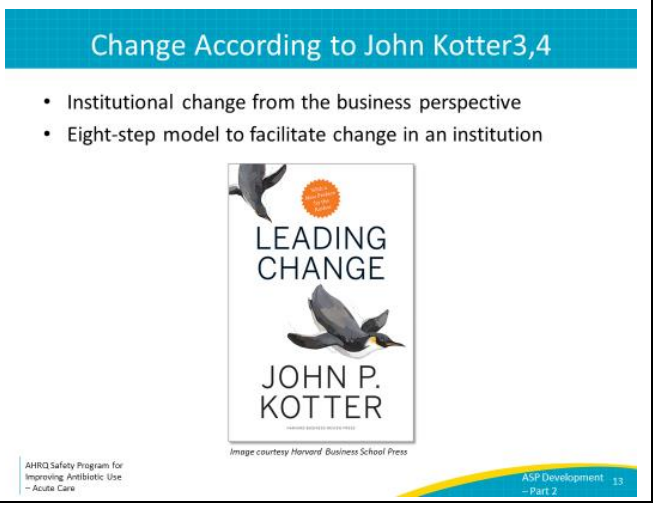
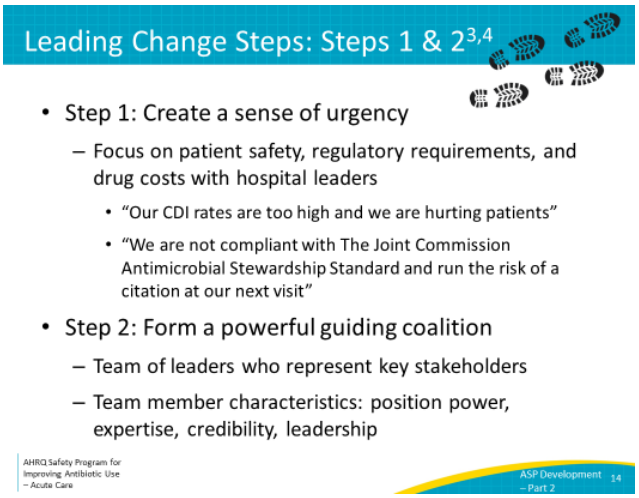
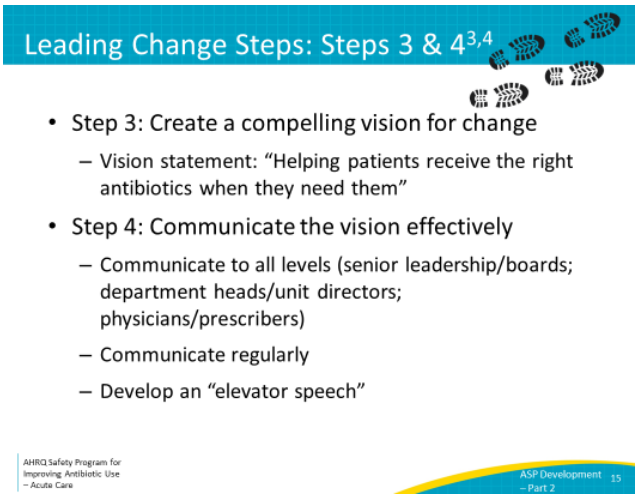
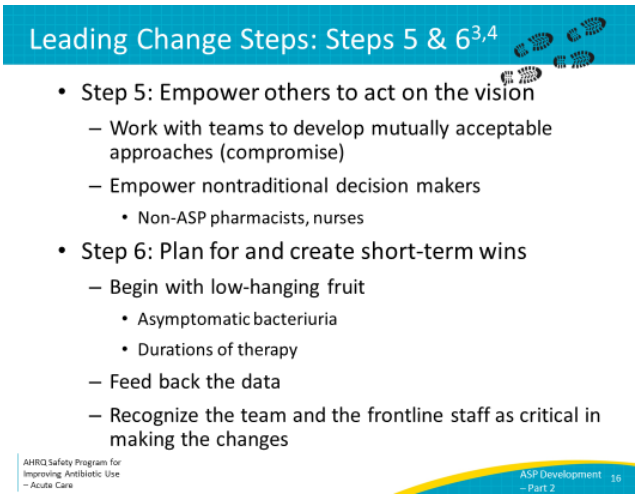
How Do I Get Started? SAY: Many ASPs find that it can be difficult to introduce the concepts of AS in an institution that is not used to AS activities. Existing ASPs may want to relaunch their programs to generate further interest and buy in from leadership and prescribers. The final section of this presentation will discuss an approach to lead change within your institution.	**Slide 12** 
Change According to John Kotter SAY: John Kotter has published widely in the area of leadership and change in the business world. He has developed an eight-step model to facilitate change in an institution. Andrew Morris, who directs an ASP in Toronto at the Sinai Hospital-University Health Network, has applied this change model to implementation of AS. The steps and approach are reviewed in the next several slides.	**Slide 13** 

Slide Title and Commentary	Slide Number and Slide
Leading Change Steps: Steps 1 & 2 SAY: The first step is to create a sense of urgency within the institution. This inspires people to care about a problem in a more immediate way. This can be referred to as creating a "burning platform." ASPs can elect to focus on patient safety, regulatory requirements, and/or drug costs with hospital leaders as potential topics requiring urgent attention. Some examples include: "Our CDI rates are too high and we are hurting patients" and "We are not compliant with The Joint Commission Antimicrobial Stewardship Standard and run the risk of a citation at our next visit." The second step is to form a powerful guiding coalition. This is a team of leaders who represent key stakeholders and should have characteristics such as position power, expertise, credibility, and leadership skills. You should think about who these individuals might be in your hospital. They may include a senior executive and physician thought leaders. They may also be good candidates to be on the stewardship committee.	**Slide 14** 

Slide Title and Commentary	Slide Number and Slide
Leading Change Steps: Steps 3 & 4 SAY: The third step is to create a compelling vision for change. You can consider this a vision statement. An example might be, "Helping patients receive the right antibiotics when they need them." The goal is to make a clear, succinct, and positive statement that people can remember and rally around. The fourth step is to communicate the vision effectively. ASPs should think carefully about communication to all levels such as senior leadership, boards, department heads, unit directors, physicians, and other prescribers. Regular communication is recommended to keep interest and enthusiasm. You should consider developing an "elevator speech," a brief 30- to 45-second statement about what you do, what you are trying to accomplish, and why it is important. Obtaining and integrating input from all team members is important in ensuring engagement of all clinicians.	**Slide 15** 
Leading Change Steps: Steps 5 & 6 SAY: The fifth step is to empower others to act on the vision. This step can be viewed as spreading your passion and enthusiasm effectively by working with teams to develop buy in and mutually acceptable approaches to antibiotic use, and to empower nontraditional decision makers such as nurses and non-ASP pharmacists to engage in AS work. The sixth step is to plan for and create short-term wins. This step emphasizes the importance of demonstrating that your ASP can improve antibiotic use and that the improvement can be observed by relevant stakeholders. ASPs should engage in projects in which rapid improvement can be seen such as nontreatment of asymptomatic bacteriuria or reduction in the duration of therapy for a specific syndrome. They should provide feedback about these successes and emphasize the importance of the team that participated in the work.	**Slide 16** 

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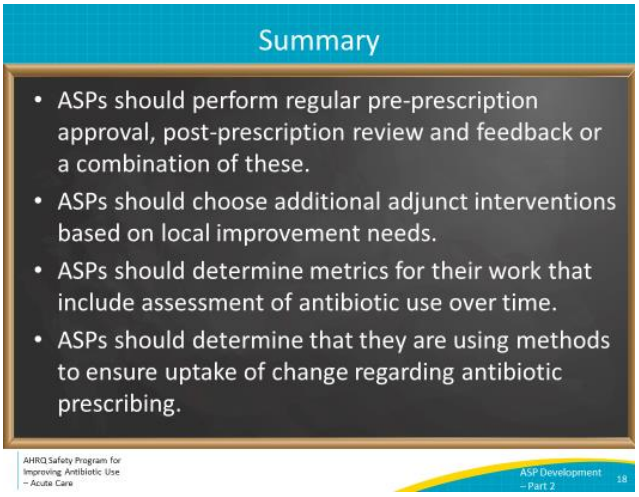
Leading Change Steps: Steps 7 & 8 SAY: The seventh step is to consolidate improvements and create still more change. ASPs should learn from successes and strive to spread successful interventions to other clinicians and units. The eighth step is to institutionalize new approaches. This includes ensuring that the positive results of an intervention are recognized by the institution. This recognition establishes the importance of the ASP and its relevance to improving the safety of patients receiving antibiotics. At the same time, work should continue to have prescribers themselves be stewards of antibiotics. One of the primary goals of the AHRQ Safety Program for Improving Antibiotic Use is to assist ASPs in working with frontline teams to change permanently how they think about antibiotic prescribing.	**Slide 17** 
Summary **SAY:** In summary, ASPs should perform regular pre-prescription approval, post-prescription review and feedback, or a combination of these. ASPs should choose additional adjunct interventions based on local improvement needs. ASPs should determine metrics for their work that include assessment of antibiotic use over time. ASPs should determine that they are using methods to ensure uptake of change regarding antibiotic prescribing, and to ensure sustainment of positive change.	**Slide 18** 

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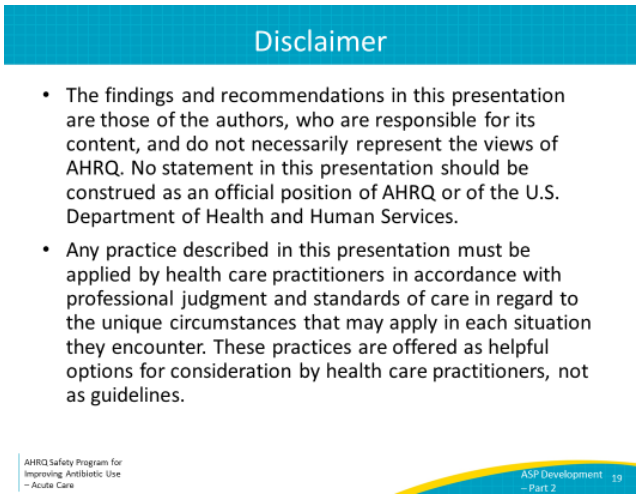
Disclaimer SAY: • The findings and recommendations in this presentation are those of the authors, who are responsible for its content, and do not necessarily represent the views of AHRQ. No statement in this presentation should be construed as an official position of AHRQ or of the U.S. Department of Health and Human Services. • Any practice described in this presentation must be applied by health care practitioners in accordance with professional judgment and standards of care in regards to the unique circumstances that may apply in each situation they encounter. These practices are offered as helpful options for consideration by health care practitioners, not as guidelines.	**Slide 19** 
References	**Slide 20**