### Slide Title and Commentary

**Making Effective Behavior Changes Around Antibiotic Prescribing Acute Care**

**SAY:**

This talk is titled “Making Effective Behavior Changes Around Antibiotic Prescribing.”

### Objectives

**SAY:**

By the end of this talk, participants will be able to—

1. Examine what motivates health care providers to prescribe antibiotics.
2. Review basic theories regarding implementation science to implement antibiotic stewardship or AS interventions and to change prescribing habits.
3. Describe successful AS behavioral interventions in the acute care setting.

### Slide Number and Slide

**Slide 1**

AHRQ Safety Program for Improving Antibiotic Use

Making Effective Behavior Changes Around Antibiotic Prescribing

Acute Care

**Slide 2**

**Objectives**

1. Examine what motivates health care providers to prescribe antibiotics.
2. Review basic theories regarding implementation science to implement AS interventions and to change prescribing habits.
3. Describe successful AS behavioral interventions in the acute care setting.
### Diffusion of Innovations

**SAY:**

Everett Rodgers was a sociologist who spent his career studying how innovations, defined as an idea, practice, or object perceived as new by an individual or other group, are adopted, or diffused, over time throughout a social system. He began his career studying the diffusion of use of hybrid seed corn among farmers in two Iowa communities in the 1950s, and developed a framework to describe the spread of use of this corn through the farming community. It is useful to consider this concept as it relates to how clinicians integrate antibiotic stewardship into their prescribing practices.

### Attributes of Innovations That Help Spread

**SAY:**

Dr. Rodgers identified five attributes of innovations that help them to spread. As you develop stewardship interventions, consider whether they would be perceived by the end user as meeting these attributes:

- **Relative advantage**
  - Is it better than what we already have according to the users (not the observer)?
- **Compatibility**
  - Is it consistent with existing values and practices?
- **Simplicity/ease of use**
  - Is it easy to understand/adopt?
- **Trialability**
  - Can the innovation be experimented with on a limited basis?
- **Observability**
  - Can users see the results of the innovation?
Diffusion of Innovation—Categories of Adopters

SAY:

Dr. Rodgers also described categories of adopters. Starting on the far left of the curve are the innovators who develop an innovation and are highly likely to adopt it. Next are the early adopters, followed by the early majority and late majority. At the far right of the curve are the laggards—these individuals have a high propensity to resist adoption of a new innovation regardless of how beneficial it may be. For stewardship leaders, the good news is that once an innovation is adopted by some of the early majority, it is likely to ultimately be adopted by most of the group. However, stewardship teams have a propensity to focus on the laggards, which are usually their most challenging prescribers. While it is worthwhile to try to change the minds of this group (and we will discuss some approaches in the next few slides), remember that this group makes up a small proportion of the entire social system.

Managing the Majority (and Some Laggards)

SAY:

When developing interventions and approaches to improve antibiotic prescribing among the majority, understanding what drives prescribing behavior and how to modify it based on that understanding is of great importance. In the next few slides, we will discuss drivers of prescribing behavior and approaches to reach certain problem prescribers. However, it is also important to be self-reflective and ensure that you are providing clear and valuable messages to prescribers.
### Slide Title and Commentary

**Drivers of Suboptimal Antibiotic Prescribing**

**SAY:**

This slide lists some of the reasons that antibiotics are prescribed for suboptimal reasons:

Prescribers may fear “failing” to cover certain organisms may lead to adverse outcomes, medico-legal risk, or criticism by peers, and thus they elect to provide broad-spectrum coverage regardless of the clinical situation.

Prescribers may be hesitant to change antibiotics that other prescribers have started both because they believe it is safer or they are concerned they may offend the original prescriber; this latter situation has been called “prescriber etiquette.”

Prescribers may feel that their patients are different and thus refuse to follow standard guidelines.

Prescribers may feel that external recommendations about antibiotic use impinge upon their autonomy.

Prescribers may believe that antibiotics are always safe because of a difficulty in perceiving the association between antibiotic use and adverse events, which may occur after they are no longer caring for the patient.

Prescribers may be much more interested in other patient care activities besides optimizing antibiotic therapy, which can be perceived as boring or less important. There may be systems challenges that interfere with optimal prescribing such as inadequate communication among prescribers or difficulty in getting accurate data from the electronic health record or EHR.

Finally, prescribers may have incomplete knowledge of antibiotic spectrum or new data regarding acceptable durations of therapy.

### Slide Number and Slide

**Slide 7**

**Drivers of Suboptimal Antibiotic Prescribing**

- Fear of inadequate antibiotic coverage leading to patient harm (or legal harm)
- Fear of judgment by peers and superiors (deviation from the norm)
- Not wanting to change what other prescribers have started (“prescribing etiquette”)
- Feeling that one’s patients are different
- Desire for autonomy
- Difficulty perceiving the association between antibiotic use and adverse events
- Not paying attention or not interested
- System challenges: inadequate communication, difficulty getting accurate data from EHR
- Incomplete knowledge of antibiotic spectrum or new data
### Slide Title and Commentary

#### Drivers of Suboptimal Antibiotic Prescribing

SAY:

It is important to note that most of these reasons, the first seven indicated in blue, are primarily related to feelings and attitudes rather than lack of knowledge about antibiotics or new data about their use. However, many stewardship interventions focus on delivery of knowledge rather than approaches to change prescribing behavior. The eighth reason, shown in gray, refers to work system challenges such as inadequate communication regarding reasons and plans for antibiotic therapy among providers and difficulty getting data from the HER such as how long a patient has been on antibiotics. The ninth reason, incomplete knowledge of antibiotics or emerging scientific data, shown in red, is often over-estimated as a cause of suboptimal prescribing.

#### How To Change When Change Is Hard

SAY:

In a book titled “Switch: How to Change Things When Change is Hard,” Chip and Dan Heath observed that the biggest error we make in trying to change behavior is assuming that knowledge will change behavior. We believe, particularly in medical fields where our training often centers on didactic lectures, that if we get our audience to analyze and think about a situation, that they will then change practice. However, you can’t fix ingrained antibiotic prescribing practices with lectures alone. Instead, the more effective way to change behavior is to have prescribers see and feel why suboptimal antibiotic prescribing can hurt patients and to own the problem themselves and create change.
### Slide Title and Commentary

**The St. Lucia Parrot**

SAY:

In the 1970s, the St. Lucia parrot, found only on this small island in the eastern Caribbean, was close to extinction both because of deforestation and because hunters captured the birds and sold them as exotic pets. Paul Butler, an English biologist, took on saving this endangered bird upon completion of his Ph.D. He found only 100 remaining parrots, wrote a dire report, and began the challenge of putting his written recommendations into practice.

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### Slide Number and Slide

**Slide 10**

**The St. Lucia Parrot Intervention**

SAY:

Because he was trained as an academician, his instinct was to educate residents on the science of conservation, but conservation was not of great interest to St. Lucia residents at the time. When this approach failed, he took a different approach and developed a marketing campaign to make the parrot a symbol of the newly independent nation. The parrot was made the national bird, forest reserves were developed, and hunters were harshly penalized. Pop songs celebrated the parrot and its image was placed on phone covers, T-shirts, and pacifiers. The St. Lucia parrot population is now more than 1,500.

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**Slide 11**

- ** Academic impulse: Educate on the science of conservation**
- **Problem:** St. Lucia residents were not interested
- **Solution:** Marketing campaign to make the parrot a symbol of the newly independent nation
Antibiotics Are Our Parrot

SAY:

Antibiotics are our parrot. We must motivate prescribers to preserve them by not using them when they are not needed. In turn, optimal prescribing will decrease harm to their patients. In the next few slides, we will discuss some prescriber behavioral types and approaches to working with them to improve antibiotic use. Keep in mind these “types” are a bit exaggerated for educational purposes, and that most prescribers exhibit at least some of these behaviors from time to time. After we go through these behavioral types, we will review an intervention that engaged prescribers to change longstanding practice.

The Insecure Prescriber

SAY:

The insecure prescriber is usually risk averse and nervous—nervous about missing a diagnosis, nervous about not covering an organism that is highly unlikely to be present, and nervous about what others will think. They tend to treat with broad-spectrum antibiotics for long periods. The most important approach you can take is to acknowledge their worries and be gentle in your communication—they will not respond well to aggressively delivered advice. Negotiation can be a successful strategy—slow removal of antibiotics one at a time with demonstration that the patient is not harmed. They may be responsive to formal infectious diseases or ID consultation that assists with this process and provides reassurance. Some may also respond well to seeing local data or working with peers on a guideline so they can see the practice of others in the institution and feel that they are following the norm.
The “Special” Prescriber

SAY:

The special prescriber thinks his or her patients are different from other patients in the hospital and thus doesn’t believe that guidelines apply. They tend to treat with broad regimens based on “how it was done at their previous institution” or “what they learned at a conference recently” rather than using hospital guidelines and formulary agents. It is important for the stewardship team to build a working relationship with these prescribers by acknowledging their concerns, ideally with face-to-face conversations and reminders. If you make the effort to attend their team meetings to make your case about a certain recommendation, they may be more inclined to follow it. You can show them that what you are recommending is similar to that of other comparable institutions and patient populations. It can be very helpful to invite them to your committee meetings and to assist with guidelines so that they feel they have input into recommendations, as they may feel that their autonomy is threatened by antibiotic stewardship activities. Some may respond to data that they are outliers or that your approach does not lead to harm. Of course, sometimes patient populations are truly unique. It is useful to address these patient populations when they are brought up. You can develop specific guidelines for circumstances that occur commonly enough to warrant guidelines.

<table>
<thead>
<tr>
<th>Prescribers Who—</th>
<th>Potential Solutions</th>
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<tbody>
<tr>
<td>Think their patients are different</td>
<td></td>
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<tr>
<td>Don’t believe the evidence</td>
<td>Acknowledge their concerns (face to face preferred to build trust)</td>
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<td></td>
<td>Attend their meetings</td>
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<td></td>
<td>Show that your recommendations are similar to those from other similar institutions (peer pressure)</td>
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<td></td>
<td>Invite to guideline committees (allows them to feel they have control over recommendations)</td>
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<tr>
<td></td>
<td>Negotiate (identify a subset of patients they are concerned about and develop specific guideline for them)</td>
</tr>
<tr>
<td></td>
<td>Show local data indicating that your approach works just as well</td>
</tr>
</tbody>
</table>

AHRQ Safety Program for Improving Antibiotic Use – Acute Care
### The Disorganized Prescriber

**SAY:**

The disorganized prescriber is well meaning but can’t seem to remember that his or her patient is receiving antibiotics or can’t reliably execute recommendations from the stewardship team. This behavior is easier to address as it can often be solved by using tools and approaches to help the prescriber be more organized. Approaches to remind the prescriber to evaluate antibiotic use such as prompts on a daily goals sheet or use of a time out tool may be helpful. These prescribers may benefit from seeing your recommendations in writing or at least being asked to repeat your recommendation back to you. If delivering recommendations in person, it may be best to deliver them to an entire team at once so that team members can be “on the same page” regarding what you are recommending.

### The Rogue Prescriber

**SAY:**

Rogue prescribers are the hardest for a stewardship team to manage as they often feel that institutional guidelines about antibiotic prescribing do not apply to them. They don’t care about antibiotic stewardship and often encourage others to behave the same way. Some rogue prescribers may respond to conversation with a peer they respect; if this can be arranged, it is likely the most effective management approach. Sometimes, they will respond to engagement in being included in making guidelines and algorithms. If not, then an in-person meeting with evidence that their patients have been harmed may be helpful if available. This meeting should be called by the most senior member of the stewardship team. If a rogue prescriber is unable to change his or her ways, a senior executive may have to intervene.
**Slide Title and Commentary**

**It’s Not You, It’s Me...**

SAY:

We can’t blame everything on prescribers. Sometimes the problem is in how we as the stewardship team communicate with them.

**Stewardship Team Communication Failures**

SAY:

Some common stewardship team communication failures include:

- Recommendations are too complex
- Sounding doubtful
- Sounding accusatory
- Not appreciating perspective at the bedside
- Not acknowledging how busy clinicians are
- Not acknowledging complicated team dynamics
- There are mixed messages from the antibiotic stewardship program, or ASP, and infectious diseases consultant

**Slide Number and Slide**

**Slide 17**

**Slide 18**

*Stewardship Team Communication Failures*

- Recommendations are too complex
- Sounding doubtful
- Sounding accusatory
- Not appreciating perspective at the bedside
- Not acknowledging how busy clinicians are
- Not acknowledging complicated team dynamics
- Mixed messages from ASP and infectious diseases consultant
### Communication Solutions

**SAY:**

Some approaches to improve how we communicate include:

- Always lead with a respectful and nonjudgmental tone.
- Make a single recommendation or provide no more than two options.
- Be confident.
- Acknowledgement. This might be acknowledgement of what they did well, or it might be acknowledgement that stewardship may not be their priority at the moment.
- Don’t use bad messages, such as prioritizing cost above all else.
- Discuss ID consult patients with ID consult physician(s).

### A Multifaceted Intervention To Improve the Management of Community-Acquired Pneumonia

**SAY:**

Next, we will discuss an example of an intervention that demonstrates some approaches to take into consideration from the viewpoint of the prescriber when developing interventions to improve antibiotic use.

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**Slide 19**

**Communication Solutions**

- Be respectful.
- Be nonjudgmental.
- Make a single recommendation or provide no more than two options.
- Be confident.
- Acknowledge: what they did well, stewardship may not be their priority at the moment.
- Don’t use bad messages (prioritizing cost above all else).
- Discuss ID consult patients with ID consult physician(s).

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**Slide 20**

**A MULTIFACETED INTERVENTION TO IMPROVE THE MANAGEMENT OF COMMUNITY-ACQUIRED PNEUMONIA**
### Community-Acquired Pneumonia Intervention

**SAY:**

Despite a longstanding ASP and local treatment guidelines, one hospital observed that patients with community-acquired pneumonia or CAP were being treated for a median of 10 days and did not have therapy narrowed based on microbiology and clinical data. The ASP developed an intervention around all components of diagnosis and treatment of CAP. They found that it was easier to rally a group around messages pertaining to a syndrome than an antibiotic because it was more oriented to patient care, viewed as educational rather than restrictive, and allowed the ASP and prescribers to address care at different time points (empiric therapy, narrowing therapy, discharge therapy).

### Approaches to Obtaining Provider Engagement

**SAY:**

Several approaches were used to engage prescribers in improving CAP management. A survey of CAP prescribing practices was administered to medicine house staff with the goal of encouraging them to think about how they practice and how they make decisions. Despite data that most patients with CAP were treated for 10 or more days, less than 10 percent of house staff said 10 days was the most common duration they used. The survey results and actual baseline data were presented to house staff along with literature on CAP therapy. The ASP requested feedback about their questions and concerns regarding the management of CAP. Existing treatment guidelines were modified to be more specific and succinct. Finally, the ASP provided direct, real-time feedback of management of CAP patients for a five-month period.
Research – BMJ

SAY:

Review of existing literature included the results of a randomized trial of patients with mild to moderate-severe community-acquired pneumonia. Patients were randomized to stop treatment after 3 days or to continue therapy for 8 days if they were clinically improved by day 3. Clinical cure rates were the same in both groups, but patients who received the longer course were twice as likely to experience an adverse event.

Improving Local Guidelines

SAY:

Existing treatment guidelines were found to provide inadequate guidance to prescribers regarding how to narrow therapy. Too many antibiotic choices were provided without direction about how to choose an agent. In addition, day ranges suggested for length of therapy were broad and without guidance about choosing a duration. In evaluating the ranges provided in red, it is easy to understand why most patients received 10 or more days of therapy as clinicians are likely to pick the longer duration of therapy offered.

Decision Paralysis

SAY:

When people are given too many choices, they often have difficulty in making a choice. It is not surprising that prescribers elected not to narrow therapy for CAP when faced with too many choices. This is known as decision paralysis. You may have experienced this before when faced with too many choices, such as at a dessert buffet. When developing guidelines and making recommendations, ASPs should make efforts to minimize choices and be as specific as possible.
Improving Local Guidelines

SAY:

The panel on the right shows the modified guidelines developed as part of the syndrome-specific intervention. Specific recommendations are provided for choosing a duration of therapy based on clinical status and host status.

Pathogen-Specific Local Guidelines

SAY:

In addition, specific guidance was developed for step-down therapy based on specific organisms that were identified. Only one intravenous or IV and one oral option were provided.

Initial Results

SAY:

The intervention resulted in a reduction in median duration of therapy to 7 days, a reduction in excess days of therapy and an increase in cases where therapy was narrowed. There were nonsignificant reductions in 30-day readmissions and *Clostridiodes difficile* infections.
Followup Results

SAY:

Three years after the intervention treatment of CAP was reassessed. No additional interventions had occurred in the intervening years. Three years after the intervention, the median duration of therapy remained 7 days, there were few to no excess antibiotic days and the house staff narrowed therapy in even more cases. 30-day readmissions and *C. difficile* infections remained low. A multifaceted syndrome-specific intervention that specifically aimed to integrate house staff into the decision-making process led to sustained improvement in CAP management.

Summary

SAY:

In summary, understanding theories of diffusion of innovation and behavior change can help in designing successful stewardship interventions. ASPs should tailor their messages and interventions based on the audience. ASPs should work to engage both the minds and hearts of prescribers.

Disclaimer

SAY:

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Any practice described in this presentation must be applied by health care practitioners in accordance with professional judgment and standards of care in regard 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.
### References

**Slide 32**

6. Photo Credit: Paul Butler and Rani, Used with permission.

**Slide 33**