Supplementary File #2

Antibiotic Stewardship Moderator's Guide

Modified format for manuscript submission

1. Introduction
   a. Background: mirrors, taps
   b. Introduction of moderator, participants: name, years in practice, practice size, practice ownership (physician vs. hospital-owned), personal ownership status (i.e., employee vs. full/part owner)

2. Perceived Importance of Antibiotic Resistance as a Public Health Issue
   a. As physicians, you confront a myriad of public health issues that impact you and your patient care daily. I want to discuss some of those issues, so I can understand where your areas of greatest concerns are focused.
   b. Exercise #1

Exercise #1

Moderator will hand out Sheet A with the listing the following topics:
   ➢ Overweight and obesity
   ➢ Antibiotic resistance
   ➢ Misinformation about childhood vaccines (pediatricians only)
   ➢ Opioid abuse
   ➢ Diabetes
   ➢ Patient non-compliance with drug regimens
   ➢ Smoking and tobacco use

Questions
   1. On your sheet, would you please rank the public health issue from most important to least important? Put a 1 next to the most important, 2 for the next most important, etc. to the least important of these topics.
   2. Moderator goes around the room to get the scores, does a quick tally, and determines where antibiotic resistance falls within the list of public health issues.
   3. Overall, most of you have put antibiotic resistance as X in the list. Tell me why you believe it is important. What are your concerns about antibiotic resistance in the near term, say in the next 2-3 years? What about the next 10 years? Why isn't it higher on the list? Do you think that in 10 years it will be higher on the list?

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   c. What do you hear from colleagues and fellow physicians about antibiotic use and antibiotic resistance? Is it a subject of conversation when physicians get together? How much of an issue is it for you in your practice?

3. Attitudes and Perceptions of Antibiotics

    a. When you are deciding whether or not to prescribe an antibiotic for a patient, what are some of the factors you consider? (e.g., confidence in diagnosis [viral vs. bacterial infection], side effects associated with antibiotic use, AE risks such as C. diff, public health concerns such as antibiotic resistance)

        i. When patients present with ambiguous symptoms (i.e., ones that could be associated with bacterial or viral infections), do you see prescribing antibiotics for these patients as the safer option than doing nothing?

        ii. How often do adverse events or side effects associated with antibiotic use override the benefit of prescribing the antibiotic?

        iii. When those arise, what are your options for the patient?

    b. Do you talk to your patients about the potential adverse events before you decide to prescribe?

        i. Is it more often the patient, or yourself who is concerned about adverse events?

    c. How often in the past two months have you spoken to patients about the appropriate use of antibiotics, efficacy, resistance?

    d. Have you denied anyone antibiotics in the past two months who wanted them?

        i. Could you walk me through one of those conversations? For instance, if I am your patient, how would you talk to me about this?

        ii. What motivates this discussion?

        iii. How often does the issue of antibiotic overuse, or antibiotic resistance come up in these discussions?

        iv. How long, on average, does this type of discussion take? How much pushback do you receive from patients?

4. <u>Antibiotic Stewardship Definition</u>
    a. Exercise #3

Exercise #3

Please write down on your pad, what antibiotic stewardship means to you. Even if it's not a term you're familiar with, just jot down a sentence about what you believe it means.

Moderator will go around the room and have each participant read aloud their definition, if they have one. Moderator will then provide the following definition (verbally and in writing):

"Activities that aim to ensure that antibiotics are used only when indicated and, when needed, that the most appropriate antibiotic is prescribed at the right dose and duration of therapy."

Question: Do you have any thoughts on that?

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    b. Exercise #4

Exercise #4

Moderator will hand out Sheet B

> Questions:
>   1. Do these data match with your thoughts about antibiotic resistance?
>   2. What matches what you believe? What is different?
>   3. Do these points make sense to you as the basic tenets of antibiotic stewardship? Do you think there is anything that shouldn't be these? Anything that is missing?

5. Elements of Antibiotic Stewardship (15 minutes)

   a. Exercise #5

Exercise #5

Moderator will hand out modified versions of pages 16-24 of the Centers for Disease Control and Prevention's Core Elements of Outpatient Antibiotic Stewardship (https://www.cdc.gov/antibiotic-use/community/improving-prescribing/core-elements/core-outpatient-stewardship.html).

Questions:
   1. I'm going to hand out some pages from the Elements of Antibiotic Stewardship. I know this is quite a bit to go through. If you will please read through this – focus on the bolded sentence and just scan the text below it. As you are reading, circle the phrases or sentences that attract you to the activity, that increase your interest in participating. If you would also cross out any phrases or sentences that you think would present a problem for you, be obstacles or would decrease your interest in the program.
   2. For each element, moderator will ask for (1) Overall reaction; (2) What areas did you like – what was circled; (3) What areas did you think were obstacles or that you disliked?

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6. Current/Past Stewardship or Quality Improvement Activities (15 minutes)

   a. Are you doing any kind of stewardship or quality improvement activities in your practice currently related to antibiotic prescribing or treatment, or any other disease area quality improvement activities?
        i. Describe those to me.
       ii. If no antibiotic related QA activities – probe for other areas of QA activities. In descriptions, include things like data collection, analysis, interpretation, personnel used, outside consulting used, design and implementation of activities, outcomes, cost and funding.
   b. In your practice, is there dedicated or protected time to perform quality improvement activities? This is for any area, not just antibiotics.
   c. Is there any dedicated expertise on staff for quality improvement activities? (probe if needed: like a data analyst)
   d. Is there any dedicated funding for quality improvement activities?
   e. What is your motivation for implementing quality improvement activities?

7. <u>Tools for Adoption of Antibiotic Stewardship</u> (15 minutes)

   a. Exercise #6

Exercise #6

Moderator will hand out Sheet C

Questions:
1. On this sheet I have listed a number of the issues we have discussed. I'd like you to think about your own practice and for each of the items, check whether you have access to each potential tool. If you do have access to a tool, please indicated whether you currently use this tool to support antibiotic stewardship activities and make a few notes as to why you do or don't. If you do not have access to a tool, please indicate the level of burden it would be to develop this tool for your practice.
2. Moderator will go around the room and determine the top two or three tools to discuss.
3. For each: What makes this tool such as big burden? What are some ideas you have that might help with this? Do you think it would be a serious impediment to implementing antibiotic stewardship?

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8. <u>Policies/Tools to Encourage the Adoption of Antibiotic Stewardship</u> (15 minutes)

   a. Exercise #7

Exercise #7

Moderator will hand out Sheet D

Questions:
1. There are a number of potential resources to support your efforts in the appropriate use of antibiotics. I'm going to hand out a list that I'd like you to read. Next to each item in the list is a rating scale of 1 to 5. Please check the box for each resource that describes how motivating each of these is for you. 1 means not at all useful. 5 means very useful. You can use any number in between. When you're done, we'll discuss it.
2. Moderator will collect the ratings and run a quick tally. Discussion will then start with the statement that is most motivating and work down from there.
3. Statement X has the greatest number of you giving it a high score. Those of you that gave it a high score, tell me what about X is the most useful. Are there any problem with it? (Moderator will then continue on for each of the 8 remaining statements.)
4. Is there anything that isn't on this list that you have seen utilized for other quality improvement programs that you think might be effective here?

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b. Realistically, without external aid/requirements, what is the likelihood of your adopting voluntary antibiotic stewardship activities? (defined as having the elements discussed previously: data tracking and reporting, development and implementation of improvement activities, education/training of providers and staff, etc.)

c. Do patient satisfaction scores influence your decision-making around prescribing antibiotics? What kind and how much of an impact do they have?

d. If you wanted to implement antibiotic stewardship activities in your practice, or just improve your antibiotic prescribing, what do you think would be helpful to you?
  i. Toolkits on how to implement antibiotic stewardship interventions?
  ii. Feedback on antibiotic prescribing patterns in your area/practice?
  iii. Incentives from payers?
  iv. Other?

9. <u>Quality Measures for Appropriate Antibiotic Use</u> (10 minutes)

a. Our last subject today is quality measures. How familiar would you say you are with the Healthcare Effectiveness Data and Information Set (HEDIS) published by the National Committee for Quality Assurance (NCQA).
  i. For antibiotics, other disease areas?
  ii. Do you report HEDIS measures related to antibiotic use as part of your quality reporting?
  iii. Do you believe that these measures appropriately capture your antibiotic prescribing practices? Is the HEDIS measure accurate for your practice? (e.g., Bronchitis (adults) and upper respiratory infections (children)) If the participants indicate they do not think these measures accurately capture their prescribing, ask what would be needed for them to trust these data?

b. At your practice, are there direct/individual financial incentives for you – i.e., bonuses – tied to your performance on quality measures (antibiotics or otherwise)? In your opinion, do they work?

c. If antibiotic use quality measures were among the measures you can choose from to report to public (CMS) or private health plans as part of quality reporting requirements, how likely is it that you will select antibiotic quality measures vs. other quality measures?

10. Thank and end group

Sheet A

	Ranking 1-6 1 = most important 6 = least important
A. Overweight and Obesity	
B. Opioid Abuse	
C. Antibiotic Resistance	
D. Misinformation About Childhood Vaccines (pediatricians only)	
E. Diabetes	

F. Patient Non-Compliance with Drug Regimens	
G. Smoking and Tobacco Use	

Sheet B

According to the CDC, antibiotic resistance is among the greatest public health threats today.
- Leading to an estimated 12 million infections and 23,000 deaths per year in the US.

The most important modifiable risk factor for antibiotic resistance is inappropriate prescribing of antibiotics.
- Approximately half of outpatient prescribing in humans might be inappropriate including:
  - Antibiotic selection
  - Dosing or duration
  - Unnecessary antibiotic prescribing
- Estimates are that at least 30% of outpatient antibiotic prescriptions in the US are unnecessary.

Antibiotic stewardship is the effort

- To measure antibiotic prescribing
- To improve antibiotic prescribing by clinicians and use by patients so that antibiotics are only prescribed and used when needed
- To minimize misdiagnoses or delayed diagnoses leading to underuse of antibiotics
- To ensure that the right drug, dose, and duration are selected when an antibiotic is needed

Sheet C

Potential tools available to use antibiotics more effectively	Currently have access to this	If you have access, are you currently using this tool to support antibiotic stewardship efforts? Why/why not?	If you do not have access, how much of a burden would it be to develop this type of tool for your practice?
1. Timely, Accurate Feedback Reports on Antibiotic Prescribing			☐ Not a burden ☐ Some burden ☐ Large burden

2. Information on antibiotic adverse effects seen in your patients			☐ Not a burden ☐ Some burden ☐ Large burden
3. Reports from electronic health records on antibiotic prescribing practices.			☐ Not a burden ☐ Some burden ☐ Large burden
4. Clinical decision support tools for antibiotic prescribing/ diagnosis aids that leads to antibiotic prescribing			☐ Not a burden ☐ Some burden ☐ Large burden
5. Patient triage system			☐ Not a burden ☐ Some burden ☐ Large burden
6. Access to experts in infectious diseases, pharmacy, quality improvement practices			☐ Not a burden ☐ Some burden ☐ Large burden
7. Access to physician education/ training materials on antibiotic prescribing			☐ Not a burden ☐ Some burden ☐ Large burden
8. Access to materials for patient education on appropriate use of antibiotics			☐ Not a burden ☐ Some burden ☐ Large burden

Sheet D

Potential feedback loops on antibiotic use	1 Not at all useful	2	3	4	5 Very useful
1. If you received a letter from state department of health or health plan notifying your that you or your practice is a "high prescriber" of antibiotics when compared to other providers in your state/region					
2. If private health plans create a stand-alone quality incentive program for antibiotic stewardship					

3. If private health plans include antibiotic stewardship as a "menu item" for a quality incentive program					
4. If your state publicly recognizes practices/individuals that have demonstrated most appropriate antibiotic prescribing					
5. If your state publicly publishes results of quality measures for appropriate antibiotic use for all practice locations					
6. If your state department of health publishes aggregate data on the volume of outpatient antibiotic prescribing in your state					
7. If your state publicly reports "high prescribing" practices					
8. If you received a report card from state department of health or health plans that measure the rates of antibiotic adverse events for your patients compared to other providers in your state/region					
9. If you received a report card from state department of health or health plans on quality measures for antibiotics when compared to other providers in your state/region					