

Supplemental Online Content

**Changing antibiotic prescribing in a primary care network:
The role of readiness to change and group dynamics in success**

Figure S1 – Survey Instrument

Figure S2 – Interview Guide

Figure S1 – Survey Instrument

Organizational Readiness to Change Assessment (ORCA)¹ – Adapted for use by CHOP Outpatient Antibiotic Stewardship Initiative - <https://tiu.research.chop.edu/redcap/redcap/surveys/?s=S4UWj2texc>

I. Evidence Assessment

Guideline: Increasing narrow-spectrum antibiotic prescribing for the treatment of acute otitis media, acute sinusitis, pharyngitis, and community-acquired pneumonia is the best management for our patients.

1. Based on your assessment of the evidence basis for this statement please rate the strength of the evidence in your opinion

Very weak	Weak	Neither weak nor strong	Strong	Very Strong	Don't know/Not applicable
1	2	3	4	5	0

2. Now, please rate the strength of the evidence basis for this statement based on how you think respected clinical experts in your institution feel about the strength of the evidence

Very weak	Weak	Neither weak nor strong	Strong	Very Strong	Don't know/Not applicable
1	2	3	4	5	0

For each of the following statements, please rate your agreement with the statement, from strongly disagree to strongly agree

3. The proposed implementation of antibiotic stewardship guidelines:
- a. is supported by randomized control trials or other scientific evidence from CHOP
 - b. is supported by randomized control trials or other scientific evidence from other health care systems
 - c. should be effective, based on current scientific knowledge

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

4. The proposed implementation of antibiotic stewardship guidelines:
- a. is supported by clinical experience with CHOP patients
 - b. is supported by clinical experience with patients in other health care systems
 - c. conforms to the opinions of clinical experts in this setting

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

5. The proposed implementation of antibiotic stewardship guidelines:
- has been well-accepted by CHOP patients in a pilot study
 - is consistent with clinical practices that have been accepted by CHOP patients
 - takes into consideration the needs and preferences of CHOP patients
 - appears to have more advantages than disadvantages for CHOP patients

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

II. Context Assessment

For each of the following statements, please rate your agreement with the statement, from strongly disagree to strongly agree

6. Senior leadership/clinical management at your office:
- reward clinical innovation and creativity to improve patient care
 - solicit opinions of clinical staff regarding decisions about patient care
 - seek ways to improve patient education and increase patient participation in treatment

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

7. Staff members at your office:
- have a sense of personal responsibility for improving patient care and outcomes
 - cooperate to maintain and improve effectiveness of patient care
 - are willing to innovate and/or experiment to improve clinical procedures
 - are receptive to change in clinical processes

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

8. Senior leadership/clinical management at your office:
- provide effective management for continuous improvement of patient care
 - clearly define areas of responsibility and authority for clinical managers and staff
 - promote team building to solve clinical care problems
 - promote communication among clinical services and units

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

9. Senior leadership/clinical management at your office:

- a. provide staff with information on CHOP performance measures and guidelines
- b. establish clear goals for patient care processes and outcomes
- c. provide staff members with feedback/data on effects of clinical decisions
- d. hold staff members accountable for achieving results

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

10. Opinion leaders (someone whose opinion you respect) at your office:

- a. believe that the current practice patterns can be improved
- b. encourage and support changes in practice patterns to improve patient care
- c. are willing to try new clinical protocols
- d. work cooperatively with senior leadership/clinical management to make appropriate changes

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

11. In general in my office, when there is agreement that change needs to happen:

- a. we have the necessary support in terms of budget or financial resources
- b. we have the necessary support in terms of training
- c. we have the necessary support in terms of facilities
- d. we have the necessary support in terms of staffing

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

III. Facilitation Assessment

For each of the following statements, please rate your agreement with the statement, from strongly disagree to strongly agree

12. Senior leadership/clinical management will:

- a. propose a project that is appropriate and feasible
- b. provide clear goals for improvement in patient care
- c. establish a project schedule and deliverables
- d. designate a clinical champion(s) for the project

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

13. The Project Clinical Champion for the antibiotic stewardship project:

- a. accepts responsibility for the success of this project
- b. has the authority to carry out the implementation
- c. is considered a clinical opinion leader
- d. works well with the project team and providers

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

14. Senior leadership/clinical management/staff opinion leaders:

- a. agree on the goals for this intervention
- b. will be informed and involved in the intervention
- c. agree on adequate resources to accomplish the intervention
- d. set a high priority on the success of the intervention

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

15. The implementation team members (any clinician prescribing antibiotics):

- a. share responsibility for the success of this project
- b. have clearly defined roles and responsibilities
- c. have release time or can accomplish intervention tasks within their regular work load
- d. have staff support and other resources required for the project

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

16. The implementation plan for this antibiotic stewardship project:

- a. identifies specific roles and responsibilities
- b. clearly describes tasks and timelines
- c. includes appropriate provider/patient education
- d. acknowledges staff input and opinions

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

17. Communication will be maintained through:
- regular project meetings with the project champion and team members
 - involvement of quality management staff in project planning and implementation
 - regular feedback to clinical management on progress of project activities and resource needs
 - regular feedback to clinicians on effects of practice changes on patient care/outcomes

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

18. Progress of the project will be measured by:
- collecting feedback from patients regarding proposed/implemented changes
 - collecting feedback from staff regarding proposed/implemented changes
 - developing and distributing regular performance measures to clinical staff
 - providing a forum for presentation/discussion of results and implications for continued improvements

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

19. The following are available to make the antibiotic stewardship project work:
- staff incentives
 - equipment and materials
 - patient awareness/need
 - provider buy-in
 - project leadership team
 - evaluation protocol

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

20. Plans for evaluation and improvement of this intervention include:
- periodic outcome measurement
 - staff participation/satisfaction survey
 - patient satisfaction survey
 - dissemination plan for performance measures
 - review of results by clinical leadership

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know/Not applicable
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0
1	2	3	4	5	0

Reference

- Helfrich CD, Li Y-F, Sharp ND, Sales AE. Organizational readiness to change assessment (ORCA): development of an instrument based on the Promoting Action on Research in Health Services (PARIHS) framework. *Implement Sci.* 2009;4:38.

Figure S2 - Interview Guide

Introduction

1. How long have you been in practice?
2. How long have you been practicing at [practice name]?
 - a. How many half days of clinic a week do you do?
3. How would you describe the overall culture of your practice?
 - a. Can you describe the culture of your practice related to change? Such as related to trying to improve patient care or clinic processes?

Antibiotic stewardship intervention - general

4. Have you heard about CHOP's antibiotic stewardship quality improvement initiative?
 - a. If yes, how did you hear about it?
 - b. What is your role? (e.g. clinical director, practice champion, clinician)
5. What do you think about this initiative?
 - a. Tell me more.
6. How is the project going in your office?
 - a. Are people talking about it? What are they saying?
7. What activities related to the initiative are currently going on at your practice?
 - a. Does your clinic have a practice champion?
 - i. What are they responsible for doing? How are they doing?
 - b. Have there been any office provider meetings related to the project?
 - i. Were you able to attend?
 - ii. What was discussed?
 - c. Have you seen your individual or clinic-wide feedback reports (Qlikview)?
 - d. Has your clinic received patient education materials (handouts, posters, smartphrases for EPIC after visit summary)? How are you using them?
 - e. EPIC alert

Climate at clinic

8. Is there a need for this project at your practice? Please explain? (*Tension for Change*)
9. Has your office set goals related to the antibiotic project? (*Goals*)
 - a. What are they?
 - b. How did you come up with them?
10. Do you think the project will be effective in increasing narrow-spectrum antibiotic prescribing in your office? (*Knowledge and beliefs about the intervention*)
 - a. If yes, through what process do you think it will work?
 - b. If not, please elaborate.
 - c. If not, because you think your office is already at high levels, what do you attribute the current success of your office to?
 - a. Do you think the project will have any impact at your office? In what way?
11. How well does the project integrate with the daily operations of your office and your daily work? (*Compatibility*)
 - a. Please elaborate.
12. What other high-priority initiatives or activities are already happening in your office? How is the antibiotic stewardship initiative being balanced with these other activities? (*Relative priority*)
13. What kinds of incentives are there to help ensure that the antibiotic project is successful? (*Incentives*)
 - a. How do you feel about them?
 - b. If none, what kind of incentives would you value?
14. How has leadership in your office helped or hindered the initiative? (*Leadership engagement*)
 - a. How do you feel about that?

Antibiotic stewardship project - individual

15. Can you recall the last time you saw your individual and practice-level data?
 - a. Approximately when was that?
16. How did you access it?

17. What do you think about the information? How did it make you feel?
 - c. How useful did you find the content of the feedback? (*Advantages*)
 - i. In what way?
 - d. Do you think receiving the feedback might change your antibiotic prescribing practice? Please explain.
18. How confident are you that you will be able to successfully sustain your narrow-spectrum antibiotic prescribing? (*Self-efficacy*)
 - e. If not confident – what are the challenges you foresee?

(Show printout of individual report card)

19. What do you think? Anything surprise you? (Walk through individual numbers, then practice numbers, and relation to network numbers as well as target numbers)
 - a. Do you think you have room for improvement of your narrow-spectrum antibiotic prescribing habits? (*Individual stage of change*)

Barriers/facilitators

20. We really want to know what makes it difficult for clinicians to prescribe narrow-spectrum antibiotics. Can you talk about what you think are the challenges to narrow-spectrum prescribing at your office?
 - a. Patients and their parents
 - i. Do you think the antibiotic prescribing guidelines used by the initiative are relevant to the patients you care for? How do you think your patients will respond to implementation of these guidelines? (*Patient needs and resources*)
 - b. Your schedule/time
 - c. Behavior of other providers
 - d. Other clinical sites in your community (e.g. minute clinics)
 - i. Does the antibiotic stewardship initiative provide any advantages for your office compared to other clinics in your area? Disadvantages? Please describe. (*Peer pressure*)
21. How do you think these challenges can be addressed? Please explain.
22. Does your office have sufficient tools/resources to implement the project? (*Readiness for implementation*)
 - a. How do these resources make a difference?
 - b. What else would be beneficial?
23. How might the antibiotic stewardship initiative be altered to work more effectively in your office? Are there aspects that should not be altered? (*Adaptability*)