

## Report on a QI Project Eligible for MOC – ABMS Part IV and AAPA PI-CME

### Outpatient Treatment Guidelines for Typical Pathogens of Community Acquired Pneumonia (typical CAP)

#### Instructions

**Determine eligibility.** Before starting to complete this report, go to the UMHS MOC website [ocpd.med.umich.edu], click on “Part IV Credit Designation,” and review sections 1 and 2. Complete and submit a “QI Project Preliminary Worksheet for Part IV Eligibility.” Staff from the UMHS Part IV MOC Program will review the worksheet with you to explain any adjustments needed to be eligible. (The approved Worksheet provides an outline to complete this report.)

**Completing the report.** The report documents completion of each phase of the QI project. (See section 3 of the website.) Final confirmation of Part IV MOC for a project occurs when the full report is submitted and approved.

An option for preliminary review (strongly recommended) is to complete a description of activities through the intervention phase and submit the partially completed report. (Complete at least items 1-20.) Staff from the UMHS Part IV MOC Program will provide a preliminary review, checking that the information is sufficiently clear, but not overly detailed. This simplifies completion and review of descriptions of remaining activities.

Questions are in bold font. Answers should be in regular font (generally immediately below or beside the questions). To check boxes, hover pointer over the box and click (usual “left” click).

For further information and to submit completed applications, contact either:

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#### Report Outline

Section	Items
<b>A. Introduction</b>	1-6. Current date, title, time frame, key individuals, participants, funding
<b>B. Plan</b>	7-10. Patient population, general goal, IOM quality dimensions, ACGME/ABMS competencies 11-13. Measures, baseline performance, specific aims 14-17. Baseline data review, underlying (root) causes, interventions, who will implement
<b>C. Do</b>	18. Intervention implementation date
<b>D. Check</b>	19-20. Post-intervention performance
<b>E. Adjust – Replan</b>	21-24. Post-intervention data review, underlying causes, adjustments, who will implement
<b>F. Redo</b>	25. Adjustment implementation date
<b>G. Recheck</b>	26-28. Post-adjustment performance, summary of individual performance
<b>H. Readjust plan</b>	29-32. Post-adjustment data review, underlying causes, further adjustments, who will implement
<b>I. Reflections &amp; plans</b>	33-37. Barriers, lessons, best practices, spread, sustain
<b>J. Participation for MOC</b>	38-40. Participation in key activities, other options, other requirements
<b>K. Sharing results</b>	41. Plans for report, presentation, publication
<b>L. Organization affiliation</b>	42. Part of UMHS, AAVA, other affiliation with UMHS

## QI Project Report for Part IV MOC Eligibility

### A. Introduction

1. **Date** (*this version of the-report*): October 8, 2017
  
2. **Title of QI effort/project** (*also insert at top of front page*): Outpatient Treatment Guidelines for Typical Pathogens of Community Acquired Pneumonia (typical CAP)
  
3. **Time frame**
  - a. **MOC participation beginning date – date that health care providers seeking MOC began participating in the documented QI project** (*e.g. date of general review of baseline data, item #14c*): November 15, 2016
  
  - b. **MOC participation end date – date that health care providers seeking MOC completed participating in the documented QI project** (*e.g., date of general review of post-adjustment data, item #29c*): August 14, 2017
  
4. **Key individuals**
  - a. **QI project leader** [*also responsible for confirming individual's participation in the project*]  
**Name:** Dr. Lindsey Long  
**Title:** Clinical instructor  
**Organizational unit:** Department of Pediatrics, Division of General Pediatrics, Michigan Medicine  
**Phone number:** 734-936-4000  
**Email address:** [lilong@med.umich.edu](mailto:lilong@med.umich.edu)  
**Mailing address:** 700 Woodland Drive East; Saline, MI 48176
  
  - b. **Clinical leader who oversees project leader regarding the project** [*responsible for overseeing/"sponsoring" the project within the specific clinical setting*]  
**Name:** Dr. Terry Bravender  
**Title:** Director of QI for the Department of Pediatrics  
**Organizational unit:** Department of Pediatrics, Division of Adolescent Medicine  
**Phone number:** 734-936-9777  
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**Mailing address:**  
Mott Children's Hospital  
Floor 6 Reception C  
1540 E Hospital Dr SPC 4234  
Ann Arbor, MI 48109-4234
  
  - Name:** Dr. Kelly Orringer  
**Title:** Division Director and QI lead for the Division  
**Organizational unit:** Department of Pediatrics, Division of General Pediatrics  
**Phone number:** 734-232-2600  
**Email address:** [korringer@med.umich.edu](mailto:korringer@med.umich.edu)  
**Mailing address:**  
Briarwood Center for Women, Children, & Young Adults  
Building 02  
400 E Eisenhower Pkwy Ste B  
Ann Arbor, MI 48108-3302

**Name:** Dr. Alison Tribble

**Title:** Medical Director for the Antimicrobial Stewardship Program

**Organizational unit:** Department of Pediatrics, Division of Pediatric Infectious Disease

**Phone number:** 734-647-0988

**Email address:** tribblea@med.umich.edu

**Mailing address:**

Mott Children's Hospital  
 Floor 6 Reception C  
 1540 E Hospital Dr SPC 4234  
 Ann Arbor, MI 48109-4234

**5. Participants**

a. Approximately how many health care providers (by training level for physicians) participated in this QI effort (whether or not for MOC):

Profession	Number (fill in)
Practicing Physicians	40
Residents/Fellows	0
Physicians' Assistants	0
Nurses (APNP, NP, RN, LPN)	0
Other Licensed Allied Health (e.g., PT/OT, pharmacists, dieticians, social workers)	0

b. Approximately how many physicians (by specialty/subspecialty and by training level) and physicians' assistants participated for MOC?

Profession	Specialty/Subspecialty (fill in)	Number (fill in)
Practicing Physicians	Outpatient general pediatrics	27
Fellows		0
Residents		0
Physicians' Assistants	(Not applicable)	0

6. How was the QI effort funded? (Check all that apply.)

- Internal institutional funds (e.g., regular pay/work, specially allocated)
- Grant/gift from pharmaceutical or medical device manufacturer
- Grant/gift from other source (e.g., government, insurance company)
- Subscription payments by participants
- Other source (describe):

*The Multi-Specialty Part IV MOC Program requires that QI efforts include at least two linked cycles of data-guided improvement. Some projects may have only two cycles while others may have additional cycles – particularly those involving rapid cycle improvement. The items below provide some flexibility in describing project methods and activities. If the items do not allow you to reasonably describe the steps of your specific project, please contact the UMHS Part IV MOC Program Office.*

**B. Plan****7. Patient population. What patient population does this project address (e.g., age, medical condition, where seen/treated):**

Otherwise healthy, not recently hospitalized infants and children ages 6 months to 17 years without a penicillin allergy who were diagnosed with typical community acquired pneumonia seen and treated in an outpatient pediatric clinic setting.

**8. General purpose.****a. Problem with patient care (“gap” between desired state and current state)****(1) What should be occurring and why should it occur (benefits of doing this)?**

Community acquired pneumonia (CAP) is a leading cause of illness worldwide and can lead to serious sequelae if untreated, even death. The two primary forms of CAP distinguished by the causative bacterial pathogens:

- Typical CAP The most common invasive bacterial pathogen that causes typical CAP is *Streptococcus pneumoniae*. The symptoms are severe. The recommended first line treatment is Amoxicillin, a  $\beta$ -lactam antibiotic.
- Atypical CAP – Bacteria such as *Mycoplasma*, *Legionella*, and *Chlamydia*, cause atypical CAP. The symptoms are much milder than those for typical CAP. The recommended first line of treatment is Azithromycin, a macrolide antibiotic.

For both treatments, the dosing and duration are based on patient weight.

**(2) What is occurring now and why is this a concern (costs/harms)?**

This project focuses on treatment for the more frequently occurring typical CAP and use of Amoxicillin as first-line treatment. A preliminary review of prescribing practices of general pediatricians in our clinics indicate that current practice varies from treatment recommendations, potentially reducing the effectiveness and efficiency of treatment and slowing recovery in some patients.

**b. Project goal. What general outcome regarding the problem should result from this project?**

*(State general goal here. Specific aims/performance targets are addressed in #13.)*

To improve first line treatment, dose, and duration for typical CAP in general outpatient pediatric patients throughout the U of M Health System

**9. Which Institute of Medicine Quality Dimensions are addressed? [Check all that apply.]**

<http://www.nationalacademies.org/hmd/~media/Files/Report%20Files/2001/Crossing-the-Quality-Chasm/Quality%20Chasm%202001%20%20report%20brief.pdf> )

- |   |  |  |
|---|--|--|
| <input checked="" type="checkbox"/> Effectiveness | <input type="checkbox"/> Equity                          | <input checked="" type="checkbox"/> Safety     |
| <input checked="" type="checkbox"/> Efficiency    | <input checked="" type="checkbox"/> Patient-Centeredness | <input checked="" type="checkbox"/> Timeliness |

**10. Which ACGME/ABMS core competencies are addressed? (Check all that apply.)**

<http://www.abms.org/board-certification/a-trusted-credential/based-on-core-competencies/> )

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Patient Care and Procedural Skills      | <input checked="" type="checkbox"/> Medical Knowledge           |
| <input checked="" type="checkbox"/> Practice-Based Learning and Improvement | <input type="checkbox"/> Interpersonal and Communication Skills |
| <input type="checkbox"/> Professionalism                                    | <input checked="" type="checkbox"/> Systems-Based Practice      |

**11. Describe the measure(s) of performance: (QI efforts must have at least one measure that is tracked across the two cycles for the three measurement periods: baseline, post-intervention, and post-adjustment. If more than two measures are tracked, copy and paste the section for a measure and describe the additional measures.)**

Measure 1

**Name of measure** (e.g., *Percent of . . .*, *Mean of . . .*, *Frequency of . . .*): % of typical CAP patients prescribed appropriate medication (Amoxicillin)

- **Measure components** – *describe the:*
  - Numerator: Number of patients with typical CAP who were treated with Amoxicillin
  - Denominator: All patients diagnosed with typical CAP and who were treated with antibiotics
  
- **The source of the measure is:**
  - An external organization/agency, which is (*name the source*):
  - Internal to our organization and it was chosen because (*describe rationale*): UMHS guidelines based on a national guideline for treatment
  
- **This is a measure of:**
  - Process – activities of delivering health care to patients
  - Outcome – health state of a patient resulting from health care

Measure 2

**Name of measure** (e.g., *Percent of . . .*, *Mean of . . .*, *Frequency of . . .*): % of typical CAP patients prescribed Amoxicillin who were under-dosed, appropriately dosed, or over-dosed

- **Measure components** – *describe the:*
  - Numerator: number of patients in the respective category – see table
  - Denominator: All patients with typical CAP and treated with Amoxicillin

	Under Dose	Correct Dose	Overdose
Weight ≤44.4 kg	<45 mg/kg/dose PO BID	45 mg/kg/dose PO BID	>45 mg/kg/dose PO BID
Weight >44.4 kg	<2 g PO BID	2 g PO BID	>2 g PO BID

- **The source of the measure is:**
  - An external organization/agency, which is (*name the source*):
  - Internal to our organization and it was chosen because (*describe rationale*): UMHS guidelines based on a national guideline for treatment
  
- **This is a measure of:**
  - Process – activities of delivering health care to patients
  - Outcome – health state of a patient resulting from health care

Measure 3

**Name of measure** (e.g., *Percent of . . .*, *Mean of . . .*, *Frequency of . . .*): % of typical CAP patients prescribed Amoxicillin whose prescription duration was too short, appropriate, or too long.

- **Measure components** – *describe the:*
  - Numerator: Number of participants whose prescription duration was <7 days (too short), 7 days (appropriate), >7 days (too long)
  - Denominator: All patients with typical CAP and treated with Amoxicillin

- **The source of the measure is:**
  - An external organization/agency, which is (*name the source*):
  - Internal to our organization and it was chosen because (*describe rationale*): UMHS guidelines based on a national guideline for treatment
- **This is a measure of:**
  - Process – activities of delivering health care to patients
  - Outcome – health state of a patient resulting from health care

**12. Baseline performance**

**a. What were the beginning and end dates for the time period for baseline data on the measure(s)?** August 1, 2016 – November 14, 2016

**b. What was (were) the performance level(s) at baseline?** *Display in a data table, bar graph, or run chart (line graph). Can show baseline data only here or refer to a display of data for all time periods attached at end of report. Show baseline time period, measure names, number of observations for each measure, and performance level for each measure.*

Measures	Baseline (8/1/16 – 11/14/16)	Goal
<u>Antibiotic Choice</u> (Amoxicillin)		
N patients Amox appropriate	59	
% patients prescribed Amox	58%	75%
<u>Amoxicillin Dosing</u>		
N patients prescribed Amox	34	
% under-dosed	44%	
% appropriate dose	56%	75%
% over-dosed	0%	
<u>Amoxicillin Duration</u>		
N patients prescribed Amox	34	
% too short (≤ 7 days)	0%	
% adequate (7 days)	9%	50%
% too long (> 7 days)	91%	

**13. Specific performance aim(s)/objective(s)**

**a. What is the specific aim of the QI effort?** *“The Aim Statement should include: (1) a specific and measurable improvement goal, (2) a specific target population, and (3) a specific target date/time period. For example: We will [improve, increase, decrease] the [number, amount percent of [the process/outcome] from [baseline measure] to [goal measure] by [date].”*

By the end of two cycles of data-guided improvement effort (Aug. 14, 2017), we will improve:

- percent of patients with typical CAP treated with appropriate antibiotic choice (Amoxicillin) from our baseline of 58% to 75%,
- percent of those treated with Amoxicillin at the recommended dose from our baseline of 56% to 75%,

- percent of those treated with Amoxicillin for the recommended duration from our baseline of 9% to 50%.

**b. How were the performance targets determined, e.g., regional or national benchmarks?**

Internally derived, based on project leaders' assessment of feasibility.

**14. Baseline data review and planning. Who was involved in reviewing the baseline data, identifying underlying (root) causes of problem(s) resulting in these data, and considering possible interventions ("countermeasures") to address the causes? (Briefly describe the following.)**

- a. **Who was involved?** (e.g., by profession or role) Dr. Alison Tribble, Medical Director for the Antimicrobial Stewardship Program in the Division of Pediatric Infectious Disease as well as the division of general pediatrics' physicians (including the MOC physician participants)
- b. **How?** (e.g., in a meeting of clinic staff) Division staff meeting for General Pediatrics
- c. **When?** (e.g., date(s) when baseline data were reviewed and discussed) November 15, 2016

**Use the following table to outline the plan that was developed: #15 the primary causes, #16 the intervention(s) that addressed each cause, and #17 who carried out each intervention.** This is a simplified presentation of the logic diagram for structured problem solving explained at <http://ocpd.med.umich.edu/moc/process-having-part-iv-credit-designation> in section 2a. As background, some summary examples of common causes and interventions to address them are:

<b>Common Causes</b>	<b>Common Relevant Interventions</b>
<i>Individuals: Are not aware of, don't understand.</i>	<i>Education about evidence and importance of goal.</i>
<i>Individuals: Believe performance is OK.</i>	<i>Feedback of performance data.</i>
<i>Individuals: Cannot remember.</i>	<i>Checklists, reminders.</i>
<i>Team: Individuals vary in how work is done.</i>	<i>Develop standard work processes.</i>
<i>Workload: Not enough time.</i>	<i>Reallocate roles and work, review work priorities.</i>
<i>Suppliers: Problems with provided information/materials.</i>	<i>Work with suppliers to address problems there.</i>

<b>15. What were the primary underlying/root causes for the <u>problem(s) at baseline</u> that the project can address?</b>	<b>16. What intervention(s) addressed this cause?</b>	<b>17. Who was involved in carrying out each intervention? (List the professions/roles involved.)</b>
Individuals: Are not aware of the guidelines for prescribing Amoxicillin as the recommended treatment for typical CAP as well as the recommended pattern for therapeutic dosing and duration of treatment	Education about evidence for appropriate drug prescribing, dosing, and length of treatment, and also about importance of the goal, was provided by Dr. Alison Tribble, the Medical Director for the Antimicrobial Stewardship Program in the Division of Infectious Disease. .	Dr. Tribble reviewed the medical literature with the Division of General Pediatrics group to improve understanding of the recommendations for antibiotic choice, dosing, and duration

<p>Individuals: Believe prescribing performance for CAP patients was OK. and prescribing patterns were appropriately meeting guidelines</p>	<p>Education with introduction of CAP Clinical Practice Guidelines (CPG) Feedback on Division performance</p>	<p>Dr. Long provided division level performance data to Division of General Pediatrics Physicians, including MOC physician participants</p>
<p>Team: Individuals vary in how work is done and do not feel prescribing patterns are problematic at their specific clinic site/location</p>	<p>CPG reviewed to standardize prescribing patterns which could be printed and posted in the clinic setting.</p>	<p>Division of General Pediatrics Physicians, including MOC physician participants, reviewed and agreed upon CPG recommendations; initiated gathering site-specific data on prescribing patterns</p>

Note: If additional causes were identified that are to be addressed, insert additional rows.

**C. Do**

**18. By what date was (were) the intervention(s) initiated?** *(If multiple interventions, date by when all were initiated.)*

Discussed the new outpatient clinical practice guideline (CPG) at the division meeting on 11/15/16. This guideline went beyond the scope of this project (included PCN allergic patients, those who are un- or underimmunized, and those with atypical pathogens,) however, reviewed data supporting a 7 (rather than 10 or 14) day course of Amoxicillin at doses much higher than most were aware (45 mg/kg/dose PO BID up to 2 g per dose.)

**D. Check**

**19. Post-intervention performance measurement. Are the population and measures the same as those for the collection of baseline data (see items 10 and 11)?**

Yes       No – If no, describe how the population or measures differ:

**20. Post-intervention performance**

**a. What were the beginning and end dates for the time period for post-intervention data on the measure(s)?**    November 15, 2016 – February 20, 2017

**b. What was (were) the overall performance level(s) post-intervention?** *Add post-intervention data to the data table, bar graph, or run chart (line graph) that displays baseline data. Can show baseline and post-intervention data incrementally here or refer to a display of data for all time periods attached at end of report. Show baseline and post-intervention time periods and measure names and for each time period and measure show number of observations and performance level.*

Measures	Baseline (8/1/16 – 11/14/16)	Post-Intervention (11/15/16 – 2/20/17)	Goal
<u>Antibiotic Choice</u> (Amoxicillin)			
N patients Amox appropriate	59	113	
% patients prescribed Amox	58%	90%	75%
<u>Amoxicillin Dosing</u>			
N patients prescribed Amox	34	102	
% under-dosed	44%	25%	
% appropriate dose	56%	74%	75%
% over-dosed	0%	1%	
<u>Amoxicillin Duration</u>			
N patients prescribed Amox	34	102	
% too short ( $\leq 7$ days)	0%	0%	
% adequate (7 days)	9%	37%	50%
% too long ( $> 7$ days)	91%	63%	

- c. **Did the intervention(s) produce the expected improvement toward meeting the project’s specific aim (item 13.a)?** Performance improved on all three measures. The goal of 75% was surpassed (90%) for the usage of Amoxicillin for first line treatment in those with typical CAP whom are not allergic to penicillin. The goal of 75% was almost reached (74%) for appropriate dosing of amoxicillin. The goal for adequate duration of treatment improved from 9% to 37%, but did not reach the goal of 50%.

**E. Adjust – Replan**

**21. Post-intervention data review and further planning. Who was involved in reviewing the post-intervention data, identifying underlying (root) causes of problem(s) resulting in these new data, and considering possible interventions (“countermeasures”) to address the causes? (Briefly describe the following.)**

a. **Who was involved?** (e.g., by profession or role)

- Same as #14?     Different than #14 (describe):

b. **How?** (e.g., in a meeting of clinic staff)

- Same as #14?     Different than #14 (describe):

c. **When?** (e.g., date(s) when post-intervention data were reviewed and discussed)

February 21, 2017

**Use the following table to outline the next plan that was developed: #22 the primary causes, #23 the adjustments(s)/second intervention(s) that addressed each cause, and #24 who carried out each intervention. This is a simplified presentation of the logic diagram for structured problem solving explained at <http://ocpd.med.umich.edu/moc/process-having-part-iv-credit-designation> in section 2a.**

*Note: Initial intervention(s) occasionally result in performance achieving the targeted specific aims and the review of post-intervention data identifies no further causes that are feasible or cost/effective to address. If so, the plan for the second cycle should be to*

*continue the interventions initiated in the first cycle and check that performance level(s) are stable and sustained through the next observation period.*

<p><b>22. What were the primary underlying/root causes for the <u>problem(s) following the intervention(s)</u> that the project can address?</b></p>	<p><b>23. What adjustments/second intervention(s) addressed this cause?</b></p>	<p><b>24. Who was involved in carrying out each adjustment/second intervention? (List the professions/roles involved.)</b></p>
<p>Individuals: Believe performance at their site is OK and prescribing patterns were meeting guidelines in terms of use of Amoxicillin as the first line treatment in typical CAP <u>and</u> the appropriate dosing and duration of treatment with Amoxicillin</p>	<p>Feedback of site specific performance data on prescribing patterns compared to other general pediatric clinic sites throughout Michigan Medicine</p>	<p><b>Lindsey Long</b> – Lead for MOC Project; formulating graphs for data interpretation for presentation; reviewing site specific data  <b>Alison Tribble</b> – Medical Director for the Antimicrobial Stewardship Program in the Division of Pediatric Infectious Disease; gathering the names/MRNs of charts which meet criteria of the outlined parameters using pertinent diagnosis codes during this time interval  <b>MOC physician participants</b>                      – Gathering data from individual chart review (each participant responsible for a subset of patients though not necessarily from their own clinic site);                      - Attending division meeting where data were reviewed</p>
<p>Individuals: Cannot remember the CAP clinical practice guideline.</p>	<p>Reiterated/reinforced routine use of CPG when treating CAP; encouraged printing and posting CPG at individual clinic sites as a memory aid</p>	<p><b>Division physicians, including MOC physician participants</b>                      – Group review of data during the division meeting</p>

*Note: If additional causes were identified that are to be addressed, insert additional rows.*

**F. Redo**

25. **By what date was (were) the adjustment(s)/second intervention(s) initiated?** *(If multiple interventions, date by when all were initiated.)*  
 February 21, 2017

**G. Recheck**

26. **Post-adjustment performance measurement. Are the population and measures the same as indicated for the collection of post-intervention data (item #21)?**

Yes     No – If no, describe how the population or measures differ:

**27. Post-adjustment performance**

- a. **What were the beginning and end dates for the time period for post-adjustment data on the measure(s)?** February 21, 2017 – May 9, 2017

- b. **What was (were) the overall performance level(s) post-adjustment?** *Add post-adjustment data to the data table, bar graph, or run chart (line graph) that displays baseline and post-intervention data. Can show here or refer to a display of data for all time periods attached at end of report. Show time periods and measure names and for each time period and measure show the number of observations and performance level.*

Measures	Baseline (8/1/16 – 11/14/16)	Post-Intervention (11/15/16 – 2/20/17)	Post-Adjustment (2/21/17 – 5/9/17)	Goal
<u>Antibiotic Choice</u> (Amoxicillin)				
N patients Amox appropriate	59	113	80	
% patients prescribed Amox	58%	90%	91%	75%
<u>Amoxicillin Dosing</u>				
N patients prescribed Amox	34	102	73	
% under-dosed	44%	25%	16%	
% appropriate dose	56%	74%	82%	75%
% over-dosed	0%	1%	2%	
<u>Amoxicillin Duration</u>				
N patients prescribed Amox	34	102	73	
% too short (≤ 7 days)	0%	0%	0%	
% adequate (7 days)	9%	37%	75%	50%
% too long (> 7 days)	91%	63%	25%	

- c. **Did the adjustment(s) produce the expected improvement toward meeting the project’s specific aim (item 13.a)?** Yes, in all measures.

**28. Summary of individual performance**

- a. **Were data collected at the level of individual providers so that an individual’s performance on target measures could be calculated and reported?**

Yes     No – go to item 29

**H. Readjust**

**29. Post-adjustment data review and further planning. Who was involved in reviewing the post-adjustment data, identifying underlying (root) causes of problem(s) resulting in these new data, and considering possible interventions (“countermeasures”) to address the causes? (Briefly describe the following.)**

**a. Who was involved?** (e.g., by profession or role)

Same as #21?     Different than #21 (describe):

**b. How?** (e.g., in a meeting of clinic staff)

Same as #21?     Different than #21 (describe): Email communication to the division of general pediatrics sending updated data on continued progress as a whole as well as separated out by clinic site. Feedback response to the data was required of all MOC participants.

**c. When?** (e.g., date(s) when post-adjustment data were reviewed and discussed)

August 24, 2017

**Use the following table to outline the next plan that was developed: #30 the primary causes, #31 the adjustments(s)/second intervention(s) that addressed each cause, and #32 who would carry out each intervention. This is a simplified presentation of the logic diagram for structured problem solving explained at <http://ocpd.med.umich.edu/moc/process-having-part-iv-credit-designation> in section 2a.**

*Note: Adjustments(s) may result in performance achieving the targeted specific aims and the review of post-adjustment data identifies no further causes that are feasible or cost/effective to address. If so, the plan for a next cycle could be to continue the interventions/adjustments currently implemented and check that performance level(s) are stable and sustained through the next observation period.*

<p><b>30. What were the primary underlying/root causes for the <u>problem(s)</u> following the <u>adjustment(s)</u> that the project can address?</b></p>	<p><b>31. What further adjustments/ intervention(s) might address this cause?</b></p>	<p><b>32. Who would be involved in carrying out each further adjustment/intervention? (List the professions/roles involved.)</b></p>
<p>Individuals: Though improved, division physicians still do not always select the correct antibiotic, or remember the appropriate dose and duration</p>	<p>Development, implementation and utilization of a “Smartset” ordering panel in our electronic medical record system MiChart to “error proof” prescribing patterns and to sustain improvement</p>	<p><b>Alison Tribble</b> - Medical Director for the Antimicrobial Stewardship Program in the Division of Pediatric Infectious Disease; provided content expertise in formulating the Smartset for maximum accuracy and ease of use   <b>Kelly Orringer</b> - Division Director and QI lead for the Division; and <b>Sharon Kileny</b>, Associate Director for Clinical Services in General Pediatrics worked closely with Dr. Tribble to represent users</p>

		in formulating the Smartset for maximum accuracy and ease of use <b>Division of General Pediatrics Physicians including MOC physician participants – will use the Smartset ordering panel</b>
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Note: If additional causes were identified that are to be addressed, insert additional rows.

33. Are additional PDCA cycles to occur for this specific performance effort?

- No further cycles will occur.
- Further cycles will occur, but will not be documented for MOC. *If checked, summarize plans: Review data following implementation of the CAP Smartset (go live on 5/9/17)*
- Further cycles will occur and are to be documented for MOC. *If checked, contact the UM Part IV MOC Program to determine how the project's additional cycles can be documented most practically.*

**I. Reflections and Future Actions**

**33. Describe any barriers to change (i.e. problems in implementing interventions listed in #16 and #23) that were encountered during this QI effort and how they were addressed.**

No significant difficulties. Attendance at division meetings is high and our general outpatient pediatric physicians (both those who were involved and those who were not involved with the project) were very engaged and responsive to the interventions as presented. It did take a commitment of time and effort to work with IT to build the SmartSet into MiChart.

**34. Describe any key lessons that were learned as a result of the QI effort.**

Multiple, reinforcing tactics may be needed to achieve and sustain the desired level of improvement. For this initiative, establishment of an evidence-based standard in the form of a practice guideline, educating providers on the guideline, and providing feedback on site performance all worked together improve rates of all measured outcomes.

**35. Describe any best practices that came out of the QI effort.**

The importance of having a CPG, an education module, and feedback and reinforcement over time. Introduction of a Smartset to make the right treatment patterns the easy thing to do.

**36. Describe any plans for spreading improvements, best practices, and key lessons.**

A poster for this project has recently been approved and will be presented at the 2017 Quality Month Poster Session at UMHS on October 24, 2017. We are also in the process of authoring a manuscript in the next few months with a goal of publication.

**37. Describe any plans for sustaining the changes that were made.**

We will plan to review the data post-Smartset introduction, likely in late August or early September 2017, and plan to discuss the findings with the division of general outpatient pediatrics at our upcoming division meeting on September 19, 2017.

**J. Minimum Participation for MOC**

**38. Participating directly in providing patient care.**

**a. Did any individuals seeking MOC participate directly in providing care to the patient population?**

Yes     No *If “No,” go to item #39.*

**b. Did these individuals participate in the following five key activities over the two cycles of data-guided improvement?**

- Reviewing and interpreting baseline data, considering underlying causes, and planning intervention as described in item #14.
- Implementing interventions described in item #16.
- Reviewing and interpreting post-intervention data, considering underlying causes, and planning intervention as described in item #21.
- Implementing adjustments/second interventions described in item #23.
- Reviewing and interpreting post-adjustment data, considering underlying causes, and planning intervention as described in item #29.

Yes     No *If “Yes,” individuals are eligible for MOC unless other requirements also apply and must be met – see item # 40.*

**39. Not participating directly in providing patient care.**

**a. Did any individuals seeking MOC not participate directly in providing care to the patient population?**

Yes     No *If “No,” go to item 40.*

**b. Were the individual(s) involved in the conceptualization, design, implementation, and assessment/evaluation of the cycles of improvement? (E.g., a supervisor or consultant who is involved in all phases, but does not provide direct care to the patient population.)**

Yes     No *If “Yes,” individuals are eligible for MOC unless other requirements also apply and must be met – see item # 40. If “No,” continue to #39c.*

**c. Did the individual(s) supervising residents or fellows throughout their performing the entire QI effort?**

Yes     No *If “Yes,” individuals are eligible for MOC unless other requirements also apply and must be met – see item # 40.*

**40. Did this specific QI effort have any additional participation requirement for MOC? (E.g., participants required to collect data regarding their patients.)**

Yes     No *If “Yes,” describe: Participants each conducted chart reviews of a subset of patient charts from UofM clinic sites.*

*Individuals who want their participation documented for MOC must additionally complete an attestation form, confirming that they met/worked with others as described in this report and reflecting on the impact of the QI initiative on their practice or organizational role. Following approval of this report, the UMHS QI MOC Program will send to participants an email message with a link to the online attestation form.*

**K. Sharing Results**

**41. Are you planning to present this QI project and its results in a:**

- Yes     No Formal report to clinical leaders?
- Yes     No Presentation (verbal or poster) at a regional or national meeting?
- Yes     No Manuscript for publication?

**L. Project Organizational Role and Structure**

42. **UMHS QI/Part IV MOC oversight – indicate whether this project occurs within UMHS, AAVA, or an affiliated organization and provide the requested information.**

**University of Michigan Health System**

• **Overseen by what UMHS Unit/Group? (name):** Division of General Pediatrics

• **Is the activity part of a larger UMHS institutional or departmental initiative?**

No     Yes – the initiative is (name or describe): Antimicrobial Stewardship Initiative

**Veterans Administration Ann Arbor Healthcare System**

• **Overseen by what AAVA Unit/Group? (name):**

• **Is the activity part of a larger AAVA institutional or departmental initiative?**

No     Yes – the initiative is:

**An organization affiliated with UMHS to improve clinical care**

• **The organization is (name):**

• **The type of affiliation with UMHS is:**

**Accountable Care Organization (specify which member institution):**

**BCBSM funded, UMHS lead state-wide Collaborative Quality Initiative (specify which):**

**Other (specify):**

**TABLE. Performance on Appropriate Selection, Dosing, and Duration of Antibiotic Prescriptions for Typical Community Acquired Pneumonia over Two Linked Cycles of Data-Guided Improvement Effort**

<b>Measures</b>	<b>Baseline</b> (8/1/16 – 11/14/16)	<b>Post-Intervention</b> (11/15/16 – 2/20/17)	<b>Post-Adjustment</b> (2/21/17 – 5/9/17)	<b>Goal</b>
<u>Antibiotic Choice</u> (Amoxicillin)				
N patients Amox appropriate	59	113	80	
% patients prescribed Amox	58%	90%	91%	75%
<u>Amoxicillin Dosing</u>				
N patients prescribed Amox	34	102	73	
% under-dosed	44%	25%	16%	
% appropriate dose	56%	74%	82%	75%
% over-dosed	0%	1%	2%	
<u>Amoxicillin Duration</u>				
N patients prescribed Amox	34	102	73	
% too short ( $\leq 7$ days)	0%	0%	0%	
% adequate (7 days)	9%	37%	75%	50%
% too long ( $> 7$ days)	91%	63%	25%	