

Report on a QI Project Eligible for Part IV MOC

Improving Adherence to Evidence-Based Bronchiolitis Guidelines

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. Final confirmation of Part IV MOC for a project occurs when the full report is submitted and approved.

An option for preliminary review (recommended) is to complete a description of activities through the intervention phase and submit the partially completed report. (Complete at least items 1-16 and 27a-b.) 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 and answers should be in regular font (generally immediately below the questions). To check boxes electronically, either put an “X” in front of a box or copy and paste “☑” over the blank box.

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

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Report Outline

Section	Items
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B. Plan	7-10. General goal, patient population, IOM quality dimensions addressed, experimental design 11-12. Baseline measures of performance, specific performance objectives 13. Data review and identifying underlying (root) causes
C. Do	14-16. Intervention(s), who is involved, initiated when
D. Check	17-18. Post-intervention performance measurement, data collection, performance level
E. Adjust – Replan	19. Review, continuing/new underlying causes,
F. Redo	20. Second intervention
G. Recheck	21-22. Post-adjustment performance measurement, data collection, performance level
H. Readjust plan	23. Review, continuing/new underlying causes to address
I. Future plans	24-26. Subsequent PDCA cycles, standardize processes, “spread” to other areas
J. Physician involvement	27-30. Physician’s role, requirements, reports, reflections, participation, number
K. Project Organization	31-33. Part of larger initiative, organizational structure, resources, oversight, Part IV opportunity

QI Project Report for Part IV MOC Eligibility

A. Introduction

1. **Date** (*this version of the-report*): July 9, 2015

2. **Title of QI project**: Improving Adherence to Evidence-Based Bronchiolitis Guidelines

3. **Time frame**
 - a. **Date physicians begin participating (may be in design phase)**: November 18, 2014
 - b. **End date**: April 1, 2015

4. **Key individuals**
 - a. **QI project leader** [*also responsible for attesting to the participation of physicians in the project*]
Name: Jennifer Vredevelde, Patricia Keefer, Marisa Louie
Title: Clinical Assistant Professors and Clinical Lecturer
Organizational unit: Department of Pediatrics, Division of Hospital Medicine; Department of Emergency Medicine
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 - a. **Clinical leader to whom the project leader reports regarding the project** [*responsible for overseeing/"sponsoring" the project within the specific clinical setting*]
Name: Marie Lozon
Title: Associate Professor
Organizational unit: Department of Emergency Medicine
Phone number:
Email address: mlozon@med.umich.edu
Mailing address:

5. **Approximately how many physicians were involved in this project categorized by specialty and/or subspecialty?** Pediatric Hospital Medicine (18), Pediatric Emergency Medicine (14)

6. **Will the funding and resources for the project come only from internal UMHS sources?**
 Yes, only internal UMHS sources
 No, funding and/or resources will come in part from sources outside UMHS,
which are: _____

The Multi-Specialty Part IV MOC Program requires that projects engage in change efforts over time, including at least three cycles of data collection with feedback to physicians and review of project results. Some projects may have only three cycles while others, particularly those involving rapid cycle improvement, may have several more cycles. The items below are intended to provide some flexibility in describing project methods. If the items do not allow you to reasonably describe the methods of your specific project, please contact the UMHS Part IV MOC Program office.

B. Plan

7. General goal

a. Problem/need. What is the “gap” in quality that resulted in the development of this project?

Why is this project being undertaken? In 2014, the American Academy of Pediatrics published the revised, evidence-based bronchiolitis guidelines, again highlighting a minimalist approach to patients with bronchiolitis and avoidance of unnecessary interventions that have not been shown to be effective. Typically, unnecessary interventions include: chest X-ray (CXR), bronchodilators, oral corticosteroids, and pulse-oximetry (pulse-ox) monitoring. Under-performed interventions include identification of tobacco exposure and associated tobacco cessation counseling. University of Michigan physicians providing care to pediatric patients with bronchiolitis in the Emergency Department and to hospitalized patients over-perform unnecessary interventions and under-perform needed interventions.

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

The goal of this project is to improve the adherence to the national, evidence-based bronchiolitis guidelines. Specific areas of focus are as follows:

1. Decrease CXR use
2. Decrease routine bronchodilator use
3. Decrease use of oral corticosteroids
4. Decrease unnecessary pulse oximetry monitoring by increasing orders to discontinue continuous pulse-ox monitoring when appropriate.
5. Improve tobacco use detection
6. Improve tobacco cessation counseling

8. Patient population. What patient population does this project address? Patients 0-24 months old observed in the ED and/or hospitalized patients with bronchiolitis. Patients admitted to the Pediatric Intensive Care Unit (PICU) were excluded.

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

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

10. What is the experimental design for the project?

- Pre-post comparisons (baseline period plus two or more follow-up measurement periods)
- Pre-post comparisons with control group
- Other: _____

11. Baseline measures of performance:**a. What measures of quality are used? If rate or %, what are the denominator and numerator?**

1. Percentage of bronchiolitis patients undergoing chest x-ray after arrival at UMHS
 - a. Numerator: bronchiolitis patients undergoing cxr at UMHS
 - b. Denominator: total number of bronchiolitis patients
2. Percentage of bronchiolitis patients receiving one or more dose of bronchodilator
 - a. Numerator: bronchiolitis patients receiving bronchodilator
 - b. Denominator: total number of bronchiolitis patients
3. Percentage of bronchiolitis patients receiving oral corticosteroids
 - a. Numerator: bronchiolitis patients receiving oral corticosteroids
 - b. Denominator: total number of bronchiolitis patients
4. Percentage of bronchiolitis patients with an order to limit continuous pulse oximetry
 - a. Numerator: bronchiolitis patients with an order to limit continuous pulse oximetry
 - b. Denominator: total number of bronchiolitis patients
5. Percentage of bronchiolitis patients who had a second hand smoke screening documented
 - a. Numerator: bronchiolitis patients with documented assessment of secondhand smoke
 - b. Denominator: total number of bronchiolitis patients
6. Percentage of bronchiolitis patients who received tobacco cessation counseling
 - a. Numerator: number of bronchiolitis patients whose family received documented tobacco cessation counseling

- b. Denominator: total number of bronchiolitis patients who had a documented positive smoke exposure

b. Are the measures nationally endorsed? If not, why were they chosen?

Yes, these are based on the AAP's 2014 Bronchiolitis Clinical Practice Guideline

c. What is the source of data for the measure (e.g., medical records, billings, patient surveys)?

Medical Records

d. What methods were used to collect the data (e.g., abstraction, data analyst)?

Data reports produced through the electronic medical record system at our institution.

e. How reliable are the data being collected for the purpose of this project?.

Very reliable

f. How are data to be analyzed over time, e.g., simple comparison of means, statistical test(s)?

The percentages for each metric will be used to generate run charts.

g. For what time period was the sample collected for baseline data?

Bronchiolitis is most prevalent in winter months (December–March) and is best studied during those months when substantial numbers of pediatric patients with bronchiolitis present in the ED or are hospitalized.

Baseline data were collected by the project leads from Jan-March 2013 and Jan-March 2014 during a national QI collaborative to improve care in patients with bronchiolitis. Data were collected for six one-month periods (Jan 2013, Feb 2013, March 2013, Jan 2014, Feb 2014, and March 2014)

12. Specific performance objectives

a. What was the overall performance level(s) at baseline? (E.g., for each measure: number of observations or denominator, numerator, percent. Can display in a data table, bar graph, run chart, or other method. Can show here or refer to attachment with data.)

Baseline data are presented in the run charts located at the end of the narrative report. (The run charts present data for the six baseline time periods, the time period following the intervention, and the time period following the adjustment)

b. Specific aim: What was the target for performance on the measure(s) and the timeframe for achieving the target?

1. Decreasing CXR use – from median baseline performance of 70.9% decrease to < 40% by March 2015
2. Decreasing routine bronchodilator use – from median baseline performance of 57.3% in ED and 29.4% on hospital floor, decrease to <30% by March 2015
** Note: As decreasing bronchodilator use in hospitalized patients with bronchiolitis has been a QI initiative previously, the baseline median performance for hospitalized patients is already at goal. The major focus for decreasing bronchodilator use will be on patients in the ED.*
3. Decrease oral corticosteroid use – from median baseline performance of 14.2%, decrease to < 5% by March 2015
4. In order to decrease unnecessary pulse oximetry monitoring, increase order to discontinue continuous pulse ox – from median baseline performance of 50.9% to > 75% by March 2015.
5. Tobacco use detection – from median baseline performance of 84.4%, improve to 100% ask by March 2015
6. Tobacco cessation counseling – from median baseline performance of 34%, improve to 100% counseled by March 2015

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

These targets were determined based on our prior work with a national QI collaborative as well as “reasonable use” expectations.

13. Data review and identifying underlying (root) causes.**a. Who was involved in reviewing the baseline data, identifying underlying (root) causes of the problem(s), and considering possible interventions (“countermeasures”) to address the causes? Briefly describe:**

- **Who was involved?** All participants were involved in each phase of the project with the exception of the collection of baseline data (this was collected by the project leads prior to the start of this project). All participants reviewed the baseline data, participated in root cause analysis, and participated in the consideration and implementation of the interventions. They were then all involved in review of the data from each cycle, analysis, and interventions.
- **How?** (*e.g., in a meeting of clinic staff*) Participation occurred in several different ways. Data was reviewed at Pediatric Hospital Medicine and Pediatric Emergency Medicine division meetings. Several sessions were also held to participate in root cause analyses of our metrics. Participants were able to participate in person or virtually (we used a virtual meeting space with virtual white board). If participants were unable to participate at the date/time of these meetings, they were able to review the root cause fishbone diagrams generated during the meetings and were required to either add to this, or identify the root causes they felt were most significant as well as identify potential interventions (this could be done either in person with one of the project leads or via email).

When? Pediatric Hospital and Emergency Medicine Division meetings occurred on Nov 18 and Dec 4, 2014, respectively. Meetings to identify root causes occurred on Dec 9 and 12, 2014.

b. What were the primary underlying/root causes for the problem(s) that the project can address? (*Causes may be aspects of people, processes, information infrastructure, equipment, environment, etc. List each primary cause separately. How the intervention(s) address each primary underlying cause will be explained in #14.c.*)

For each measure, the identified main underlying causes are noted below. Causes that are to be addressed by interventions are underlined. *Causes that are not addressed are in italics.*

Metric 1: Decrease use of CXR

People:

- **Physicians:** Lack of knowledge regarding the guidelines/evidence, lack of comfort with waiting to obtain a CXR, Concern about missing an alternative diagnosis (want reassurance), *perception re: expectations of families and PCPs, concern re: meeting admission criteria.*
- *Patients: Presentation is atypical, there are focal findings on exam, or patient has severe hypoxia or severe respiratory distress.*
- Learners/Trainees often order x-rays before staffing with attendings and may be less confident in their diagnosis (lack of knowledge). *Want to maintain some autonomy for learners in this environment.*

Metric 2: Bronchodilator Use

People:

- **Physicians:** Lack of knowledge re: the guidelines/evidence, lack of comfort with minimalistic approach, perceived improvement/anecdotal experience resulting in decreased belief that the guidelines are correct.

- *Patients: Previously used albuterol/at high risk for asthma (a very small subset where bronchodilator use may be appropriate).*
- *Parents: **Lack of knowledge** re: the guidelines/evidence and confusion re: similarity to asthma, **lack of comfort** with the minimalistic approach (want to do something), past perceived improvement (prior bronchodilator use likely confounded effect of humidified O2 resulting in some improvement).*
- Nursing: **Lack of knowledge** re: the guidelines/evidence, **lack of comfort** with the minimalistic approach.

Process:

- Bronchodilators are often given in the ED by nursing prior to any assessment by an MD due to asthma protocols that are well established in the ED (wheezing/asthma protocol being misinterpreted to include bronchiolitic patients).
- *Lack of objective measures for improvement. Respiratory scoring inconsistently used. Providers often not available to do pre/post assessments of patients.*

Environment:

- *Physicians often unable to reassess patients due to other clinical duties.*
- *Multiple hand-offs.*
- *Difference in staffing during day/night (more resident autonomy at night; often with **less comfort** with a minimalistic approach)*

Equipment:

- *When respiratory scoring (an objective measure for improvement) is done, it's difficult to find in the medical record.*

Metric 3: Corticosteroid use

People:

- Physicians: **Lack of knowledge** re: the guidelines/evidence, **lack of comfort** with the minimalistic approach.
- *Patients: Symptoms overlapping with other diseases where steroid use is appropriate (ie, croup), patients have previously been started on steroids, patient has very high risk for asthma.*

Process:

- *Using diagnosis of bronchiolitis when an alternative diagnosis is more appropriate.*
- *Giving autonomy to learners with **lack of knowledge/comfort** with the guidelines/evidence.*

Metric 4: Limiting continuous pulse ox

People:

- Physicians: **Lack of knowledge** re: the guidelines/evidence, **lack of comfort** with the minimalistic approach, perceived expectations of nursing/parents, **lack of communication** with other providers
- Parents: **Lack of knowledge** re: the guidelines/evidence, **lack of comfort** and fear of less monitoring.
- Nursing: **Lack of knowledge** re: the guidelines/evidence, **lack of comfort** and fear with less monitoring.

Process:

- **Lack of communication** amongst providers.
- *Continuous pulse ox often restarted overnight due to increased **lack of comfort** with the minimalistic approach when parents are not awake and monitoring the patient as well as differences in day/night staffing*

Environment:

- **Lack of comfort** due to decreased nursing to patient ratios, distance from patient rooms to nursing stations, distance between patients in new hospital.

Equipment:

- Accuracy of alarms. Alarms create alarm and decrease comfort level of decreasing level of monitoring.

Metric 5: Second-hand smoke exposure*People:*

- Physicians: **Lack of knowledge** re: the importance of eliminating second-hand smoke exposure in bronchiolitis patients, physicians forget to inquire about tobacco exposure.

Environment:

- Physicians are often busy with other clinical duties, distracting them from writing the H&P with paying particular attention to the social history section of the note.

Process/Equipment:

- After asking about second-hand smoke exposure, this needs to be written in the history and physical note. The H&P pulls in social history from elsewhere in the medical record and physicians forget to edit this or look to see if any information was pulled in (if not previously put into the EMR, this section will be left blank). EMR is relatively new and physicians forget to edit this part of the note. The social history area of the EMR asks questions that are pertinent to adult patients and fails to ask questions pertinent to pediatric patients.

Metric 6: Smoking cessation counseling*People:*

- Physicians: **Lack of knowledge** re: the importance of eliminating second-hand smoke exposure in bronchiolitis patients. Concern that the tobacco cessation team is not staffed to handle additional consults.
- Parents: Refusal of smoking cessation counseling.

Process:

- Parental refusal of tobacco cessation counseling not well documented.
- Ordering smoking cessation is not a part of the electronic order set for bronchiolitis

C. Do**14. Intervention(s).****a. Describe the interventions implemented as part of the project.**

The interventions were educational activities to address directly areas of health care provider's lack of knowledge. Secondarily, health care providers who are better informed can address some areas of parent's lack of knowledge.

1. Physician education. Educational power point was presented to the Pediatric Hospitalists and Pediatric Emergency Medicine attendings on November 18 and December 4, respectively. These educational experiences outlined evidence for current guidelines as well as expectations for participating physicians to decrease use of CXR, bronchodilators, continuous pulse ox, and steroids as well as increase tobacco exposure screening and counseling when applicable.

2. Resident education. An educational power point presentation was given to the Pediatric Residents on December 16. This included a similar outline of current evidence and expectations for care of bronchiolitis patients in addition to a plan to address need (or lack thereof) for continuous pulse-ox daily during family centered rounds.

3. ER nursing leadership. A project lead met with ER nursing leadership to outline the project, discuss evidence, and discuss aims/interventions on December 8. This included clarification of the ER wheezing/asthma protocol and its exclusion of patients less than 2.

4. Hospital nursing leadership. Nursing leadership from the floors where bronchiolitis patients are most often admitted was presented an education power point re: this project on December 9 and 11. This included plan to discuss need for continuous pulse-ox daily during patient and family centered rounds.

15. Who was involved in carrying out the intervention(s) and what were their roles?

The project leads were responsible for the educational presentations. The presentations were prepared by Jen Vredevelde. The PHM faculty presentation was done by Jen Vredevelde and Tricia Keefer. The PEM faculty presentation and discussions with EM nursing were done by Marisa Louie. The resident presentation was done by Jen Vredevelde. The floor nursing presentations were done by Tricia Keefer (physician lead for 12E) and Kerry Mychaliska (team member and physician lead for 12W) The attending physicians were then ultimately responsible for carrying out the goals of the project (as indicated above) as they oversee the treatment team. However, these efforts were truly carried out by multiple groups as described below.

The ER nurses were expected to exclude patients under 2 years of age from nursing asthma/wheezing protocols in order to decrease use of bronchodilators before patients were evaluated by physicians.

The inpatient nurses were expected to actively participate in discussions during daily patient and family centered rounds re: the ongoing necessity of continuous pulse ox monitoring. They were expected to initiate this conversation if not done so by the physician team. They were also expected to remain informed about current guidelines re: care of patients with bronchiolitis so as to better answer parental questions that may arise.

The residents are typically the primary caregivers of patients in the ER and hospital and as such, were expected to be primarily responsible for decreasing use of CXR, bronchodilators, steroids and pulse ox while caring for patients diagnosed with bronchiolitis. They were also expected to ask and document second hand smoke exposure and refer parents for counseling to quit when appropriate.

The attending physicians (participants in this project) were expected to oversee residents, educating them and guiding their medical decision making to better adhere to guidelines. If CXR, bronchodilators, steroids, or continuous pulse ox were proposed in the care of these patients, the attending physician was to question the resident as to whether these treatments were truly indicated for the patient and minimize these therapies whenever possible. Additionally, they were to ensure tobacco screening and cessation counseling were done and documented by the residents.

16. The intervention was initiated when? (For multiple interventions, initiation date for each.)

The educational sessions occurred in November and December 2014:

November 18-20 for Pediatric Hospitalist Education.

December 4-5 for ED physician education.

December 8 for ED nursing education

December 11 for 12E nursing education

December 9 for 12W nursing education

December 16 for Pediatric Resident education

D. Check

17. Post-intervention performance measurement. Did this data collection follow the same procedures as the initial collection of data described in #11: population, measure(s), and data source(s)?

Yes No – If no, describe how this data collection

18. Performance following the intervention.

a. The collection of the sample of performance data following the intervention occurred for the time period: December 17, 2014 - January 13, 2015

b. What was post-intervention performance level? (*E.g., for each measure: number of observations or denominator, numerator, percent. Can display in a data table, bar graph, run chart, or other method. Can show here or refer to attachment with data.*)

Post-intervention data are presented in the run charts located at the end of the narrative report. The post-intervention data are the next-to-last point on the charts. (The run charts present data for the six baseline time periods, the time period following the intervention, and the time period following the adjustment.)

c. Did the intervention produce the expected improvement toward meeting the project's specific aim (item 12.b)?

Goal was achieved for:

Bronchodilator use; goal < 30%. Bronchodilator use decreased in both the ED and on the floor, both of which meeting our set targets.

Tobacco cessation counseling; goal 100%. Goal was met (however, N was only 1 patient and result is likely not stable).

Performance improved, but did not reach goal for:

CXR use; Goal < 40%. CXR use decreased below baseline median.

Performance was worse for:

Corticosteroid use; goal < 5%. Corticosteroid use increased slightly from baseline median.

Continuous pulse-ox monitoring; goal >75% with order to stop continuous pulse-ox prior to discharge. Post-intervention showed a decrease from baseline median in discontinuation of continuous pulse-ox.

Tobacco use detection; goal 100%. Tobacco screening appreciably declined below baseline median.

E. Adjust – Replan

19. Review of post-intervention data and identifying continuing/new underlying causes.

a. Who was involved in reviewing the post-intervention data, identifying underlying (root) causes of the continuing/new problem(s), and considering possible adjustments to interventions (“countermeasures”) to address the causes? Briefly describe:

- **Who was involved?** All participants were involved in reviewing cycle 1 data, discussing root causes, and considering possible adjustments to the interventions.
- **How?** (*e.g., in a meeting of clinic staff*) Cycle 1 data was discussed during the EM divisional meeting on Jan 22 as well as during a meeting for all participants on Jan 26. We again used the virtual meeting place and virtual whiteboard to accommodate those who were not available to be present at the meeting in person. Additionally, there was an option for those who were not available on that date/time to review the data, contribute to the root cause discussion as well as identify next steps.
- **When?** Jan 22 and 26, 2015.

- b. **What were the primary underlying/root causes for the continuing/new problem(s) that the project can address?** (*Causes may be aspects of people, processes, information infrastructure, equipment, environment, etc. List each primary cause separately. How the intervention(s) address each primary underlying cause will be explained in #20.c.)*

For each measure, the continuing main underlying causes are noted below. Causes that are to be addressed by interventions are underlined. *Causes that are not addressed are in italics.*

Metric 1: Decrease use of CXR

People:

- Physicians: Continued lack of Comfort.
- Patients:
 - *Atypical presentations, and severe hypoxia or respiratory distress.*
 - *Focal exam findings.*
 - *Patient population: Initially had planned to exclude patients with chronic lung disease and complex genetic disorders (as had been done with baseline data), but difficulties with data collection made this difficult.*

Metric 2: Bronchodilator Use.

People:

- Physicians:
 - Lack of comfort.
 - *Perceived improvement/anecdotal experience.*
- *Patients with previous use of albuterol/high risk for asthma*
 - *Patient population: Initially had planned to exclude patients with chronic lung disease and complex genetic disorders (as had been done with baseline data), but difficulties with data collection made this difficult.*
- Parents:
 - *Lack of comfort*
 - *perceived improvement*
- Nursing:
 - *Lack of knowledge/comfort.*

Process:

- Bronchodilators given inappropriately via nursing driven protocols.
- *Lack of objective measures for improvement.*

Environment:

- Physicians often unable to reassess patients due to other clinical duties.
- Multiple hand-offs
- Difference in day/night resident staffing.

Equipment:

- *When respiratory scoring (an objective measure for improvement) is done, it's difficult to find in the medical record.*

Metric 3: Corticosteroid use. Continued problems with the following were noted:

People:

- Physicians:
 - Lack of knowledge/comfort
- Patients:
 - *Symptoms overlapping with other diseases where steroid use is appropriate*
 - *Patients have previously been started on steroids*
 - *Patient has very high risk for asthma*
 - *Patient population: Initially had planned to exclude patients with chronic lung disease and complex genetic disorders (as had been done with baseline data), but difficulties with data collection made this difficult.*

Process:

- *Using diagnosis of bronchiolitis when an alternative diagnosis is more appropriate*

Metric 4: Limiting continuous pulse ox

People:

- Physicians:
 - Lack of knowledge/comfort.
 - Lack of communication.
 - *Perceived expectations.*
- Parents: *Lack of knowledge/comfort.*
- Nursing: Lack of knowledge/comfort.

Process:

- Lack of communication amongst providers.

Environment:

- *Decreased nursing to patient ratios*
- *Distance from patient rooms to nursing stations*
- *Distance between patients in new hospital*

Equipment:

- *Accuracy of alarms*
- *New electronic medical record implemented between baseline data and this cycle.*

Metric 5: Second-hand smoke exposure**People:**

- Physicians:
 - Lack of knowledge.
 - Physicians forgetting to inquire about tobacco exposure.

Environment:

- *Physicians too busy*

Process/Equipment:

- *New medical record system implemented between end of baseline data and 1st cycle.*
- *Incomplete social history populating into electronic medical record.*
- *Social History in EMR built for adult patients*

Metric 6: Smoking cessation counseling**People:**

- Physicians: Lack of knowledge.
- Parents: *Refusal of smoking cessation counseling.*

Process:

- *Poor documentation of parental refusal of tobacco cessation counseling.*
- *Ordering smoking cessation is not a part of the electronic order set for bronchiolitis*

Note: We have small numbers for tobacco use in parents, making our N for this metric small.

F. Redo**20. Second intervention.**

- a. The second intervention was initiated when?** (For multiple interventions, initiation date for each.)

January 26 and February 1, 2015

- b. What interventions were implemented?**

An additional educational interventions targeted problems of faculty and residents regarding knowledge, comfort, and forgetfulness.

- A second educational power point was presented to faculty in Pediatric Hospital Medicine, Pediatric Emergency Medicine, as well as all Pediatric residents. Again focus was on current state, national recommendations, and goals for improving care in bronchiolitis patients as outlined previously. There was an expectation to continue or improve upon the above mentioned goals for clinical care (see item #15)
- Repetitive feedback on performance was provided by posting the run charts with baseline and cycle 1 data in all team rooms. Residents were reminded of the project and our goals upon

posting of these data as well as routinely by the attending physician with whom they were rounding.

- Data review by the attending physicians participating in the project with attention focused on high yield, attainable goals (non-EMR related) including additional oversight/education of residents, particularly with the identification and counseling of patients with secondhand smoke exposure.
- The expectations listed in item #15 continued for the nurses and physicians involved.
- There was a lot of discussion about changes to the new medical record system as this was not highlighted as a potential root cause during our initial RCA sessions. However, these changes cannot be made in a timely fashion and were therefore tabled for this intervention cycle. We began working on making some of these changes for next year by identifying key players who would be involved in making these changes to the EMR (more detail below)

G. Recheck

21. Post-second intervention performance measurement. Did this data collection follow the same procedures as the initial collection of data described in #11: population, measure(s), and data source(s)?

Yes No – If no, describe how this data collection

22. Performance following the second intervention.

a. The collection of the sample of performance data following the intervention(s) occurred for the time period:

February 1- March 9, 2015

b. What was the performance level? (E.g., for each measure: number of observations or denominator, numerator, percent. Can display in a data table, bar graph, run chart, or other method. Can show here or refer to attachment with data.)

Post-adjustment (second intervention) data are presented in the run charts located at the end of the narrative report. The post-adjustment data are the last point on the charts. (The run charts present data for the six baseline time periods, the time period following the intervention, and the time period following the adjustment.)

c. Did the second intervention produce the expected improvement toward meeting the project's specific aim (item 12.b)?

Goal continued to be achieved for:

Bronchodilator use; goal < 30%. Bronchodilator use continued to exceed goal for reduced use in both the ED and on the floor. However, there was a slight uptrend in use.

Performance improved over post-intervention period and was above baseline, but did not reach goal for:

CXR use; Goal < 40%. While CXR use decreased from the previous cycle, it did not quite meet our goal.

Corticosteroid use; goal < 5%. Corticosteroid use decreased, almost meeting our goal.

Performance decreased from post-intervention period, but continued above median baseline level.

Tobacco cessation counseling; goal 100%. Tobacco cessation counseling declined. (However, N from the post-intervention cycle was only 1 and N from the adjustment cycle was 6.

Performance improved, but due to worsening performance following the intervention, the improvement did not bring performance beyond baseline level.

Continuous pulse-ox monitoring; goal >75% with order to stop continuous pulse-ox prior to discharge. Due to the previous decrease, the improvement only brought performance back to baseline levels.

Tobacco use detection; goal 100%. Tobacco screening improved, but due to the previous worsening performance, the improvement did not bring performance beyond median baseline level.

H. Readjust

23. Review of post-second intervention data and identifying continuing/new underlying causes.

a. Who was involved in reviewing the data, identifying underlying (root) causes of the continuing/new problem(s), and considering additional possible adjustments to interventions (“countermeasures”) to address the causes? Briefly describe:

- **Who was involved?** All participants in the MOC project.
- **How?** (e.g., in a meeting of clinic staff) Data was reviewed at a staff meeting. Participants were able to participate in person at the meeting, virtually via email correspondence with the project leads, or in person outside of the meeting with one of the project leads.
- **When?** There was an in person meeting on 3/16/15 to review the data. Participants who were unable to attend this meeting reviewed the data virtually and corresponded with the project leads (virtually or in person) over the following week.

b. What were the primary underlying/root causes for the continuing/new problem(s) that the project can address? (Causes may be aspects of people, processes, information infrastructure, equipment, environment, etc. List each primary cause separately.)

Areas to be addressed are underlined. Those that will not be addressed are in italics.

Metric 1: Decrease use of CXR.

People:

- Physicians: Continued lack of Comfort.
- Patients:
 - *Atypical presentations, and severe hypoxia or respiratory distress.*
 - *Focal exam findings.*
 - Patient population: Initially had planned to exclude patients with chronic lung disease and complex genetic disorders (as had been done with baseline data), but difficulties with data collection made this difficult. However, this likely accounted for a small number of patients only.

Metric 2: Bronchodilator Use.

People:

- Physicians:
 - Lack of comfort.
 - *Perceived improvement/anecdotal experience.*
- Patients with previous use of albuterol/high risk for asthma
 - Patient population: Initially had planned to exclude patients with chronic lung disease and complex genetic disorders (as had been done with baseline data), but difficulties with data collection made this difficult.
- Parents:
 - *Lack of comfort*
 - perceived improvement
- Nursing:

- Lack of knowledge/comfort.

Process:

- Bronchodilators given inappropriately via nursing driven protocols.
- Lack of objective measures for improvement.

Environment:

- *Physicians often unable to reassess patients due to other clinical duties.*
- *Multiple hand-offs*
- *Difference in day/night resident staffing.*

Equipment:

- When respiratory scoring (an objective measure for improvement) is done, it's difficult to find in the medical record.

Metric 3: Corticosteroid use. Continued problems with the following were noted:*People:*

- Physicians:
 - Lack of knowledge/comfort
- Patients:
 - *Symptoms overlapping with other diseases where steroid use is appropriate*
 - *Patients have previously been started on steroids*
 - *Patient has very high risk for asthma*
 - Patient population: Initially had planned to exclude patients with chronic lung disease and complex genetic disorders (as had been done with baseline data), but difficulties with data collection made this difficult.

Process:

- *Using diagnosis of bronchiolitis when an alternative diagnosis is more appropriate*

Metric 4: Limiting continuous pulse ox*People:*

- Physicians:
 - Lack of knowledge/comfort.
 - Lack of communication.
 - *Perceived expectations.*
- Parents: *Lack of knowledge/comfort.*
- Nursing: Lack of knowledge/comfort.

Process:

- Lack of communication amongst providers.

Environment:

- *Decreased nursing to patient ratios*
- *Distance from patient rooms to nursing stations*
- *Distance between patients in new hospital*

Equipment:

- *Accuracy of alarms*
- *New electronic medical record*

Metric 5: Second-hand smoke exposure*People:*

- Physicians:
 - Lack of knowledge.
 - physicians forgetting to inquire about tobacco exposure.

Environment:

- *Physicians too busy*

Process/Equipment:

- Incomplete social history populating into electronic medical record.
- Social History in EMR built for adult patients
- *New electronic medical record.*

Metric 6: Smoking cessation counseling*People:*

- Physicians: Lack of knowledge.
- Parents: *Refusal of smoking cessation counseling*

Process:

- Poor documentation of parental refusal of tobacco cessation counseling.
- Ordering smoking cessation is not a part of the electronic order set for bronchiolitis
- *New electronic medical record*.

If no additional cycles of adjustment are to be documented for the project for Part IV credit, go to item #24.

If a few additional cycles of adjustments, data collection, and review are to be documented as part of the project to be documented, document items #20 – #23 for each subsequent cycle. Copy the set of items #20 – #23 and paste them following the last item #23 and provide the information. When the project to be documented for Part IV credit has no additional adjustment cycles, go to item #24.

If several more cycles are included in the project for Part IV credit, contact the UM Part IV MOC Program to determine how the project can be documented most practically.

I. Future Plans

24. How many subsequent PDCA cycles are to occur, but will not be documented as part of the “project” for which Part IV credit is designated?

Plan is to do 1-3 more PDCA cycles during the next bronchiolitis season (December 2015 – March 2016)

25. How will the project sustain processes to maintain improvements?

Continued PDCA cycles and interventions will initially help maintain improvements. Eventually, the goal is to make changes in practice/culture to sustain changes long-term.

We are currently working on changes to our new electronic medical record to help reinforce some of these changes. These include the following:

1. We have a bronchiolitis order set currently that does not include smoking cessation assessment or counseling. We are working on changing this order set to include smoking cessation assessment. If there is a positive screen, then tobacco cessation consult will be pre-selected.
2. We are working to change our H&P templates to include smoking cessation assessment for all patients.
3. We continue to work with RT to do (and document in a specific, easy to find, area of the chart) respiratory scoring in order to give an objective measure for improvement with use of bronchodilators.

26. Do other parts of the organization(s) face a similar problem? If so, how will the project be conducted so that improvement processes can be communicated to others for “spread” across applicable areas?

Outpatient pediatrics and family medicine both face similar problems. We will consider involving these groups in our future PDCA cycles.

26a. What lessons (positive or negative) were learned through the improvement effort that can be used to prevent future failures and mishaps or reinforce a positive result?

1. Working together across divisions was an immensely positive experience and brought about great discussions, collaboration, and better understanding of the challenges our colleagues face in caring for similar patients in different areas of the healthcare arena.
2. Obtaining data from our EMR can be quite challenging. Either data requests need to be made significantly prior to when they are needed or we need to train more people to retrieve data from our system (we are currently working on the latter).

3. Making changes to the EMR is not timely. In our initial root cause analysis as well as during our adjustment analysis, we identified areas of improvement for our EMR. However, these changes are more difficult to implement than expected and often require 6 months to a year. The hope is that this will get easier as we all get more accustomed to our new EMR.

J. Physician Involvement

Note: To receive Part IV MOC a physician must both:

- a. *Be actively involved in the QI effort, including at a minimum:*
 - *Work with care team members to plan and implement interventions*
 - *Interpret performance data to assess the impact of the interventions*
 - *Make appropriate course corrections in the improvement project*
- b. *Be active in the project for the minimum duration required by the project*

27. Physician's role. What were the minimum requirements for physicians to be actively involved in this QI effort? *(What were physicians to do to meet each of the basic requirements listed below? If this project had additional requirements for participation, also list those requirements and what physicians had to do to meet them.)*

- a. Interpreting baseline data and planning intervention: Reviewing data and participating in meetings (Nov 18 – Dec 12, 2014, depending on group) either in person or via a virtual meeting place or review data outside of meeting times and provide meaningful feedback via conversations with the project leads.
- b. Implementing intervention: Participating in educational interventions and passing lessons learned along to residents and/or PAs (Nov 18 – Dec 16, 2014, depending on group. It was also expected that physicians carry out the project goals in the day to day care of bronchiolitis patients (please refer to more detailed expectations in item #15)
- c. Interpreting post-intervention data and planning changes: Participating in meetings (Jan 22 and 26, 2015) to discuss data and plan for changes or review of data and conversations with one of the project leads.
- d. Implementing further intervention/adjustments: Participating in educational interventions and continue to educate and guide medical decision making of learners in order to improve tobacco screening/cessation counseling as well as minimize use of unnecessary cxr, bronchodilators, and steroids in day to day clinical practice (Jan 26 and Feb 1, 2015, item #20b).
- e. Interpreting post-adjustment data and planning changes: Participating in meeting (March 16, 2015) or review data virtually and have conversations (via email or in person) with project leads outside of that meeting time.

28. How were reflections of individual physicians about the project utilized to improve the overall project?

All physicians participated in root causes and planning of interventions.

29. How did the project ensure meaningful participation by physicians who subsequently request credit for Part IV MOC participation?

The project leads took attendance at all meetings and made note of those physicians that participated outside of the designated meeting times.

K. Project Organizational Role and Structure

30. UMHS QI/Part IV MOC oversight – this project occurs within:

University of Michigan Health System

• **Overseen by what UMHS Unit/Group?**

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

No Yes – the initiative is:

Veterans Administration Ann Arbor Healthcare System

• **Overseen by what AAVA Unit/Group?**

• **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:**

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

Accountable Care Organization type (*specify which*):

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

Other (*specify*):

Performance on Measures of Care for Pediatric Patients with Bronchiolitis

The following run charts show performance over time on the following measures:

- A. Chest X-ray (CXR) use
- B. Bronchodilator use – administered in ED
- C. Bronchodilator use – administered on hospital floor
- D. Oral corticosteroid use
- E. Pulse oximetry monitoring
- F. Tobacco use/exposure detection
- G. Tobacco cessation counseling

For each measure, its run chart shows performance goal (green line) at:

Baseline: six cycles, dates noted on chart, and the median performance across time periods (red line)

Post-intervention: one time period from December 17, 2014 - January 13, 2015

Post-adjustment: one time period from February 1- March 9, 2015

Trends in performance change across the measures are summarized in:

- Item #18c for change from baseline median to post-intervention period
- Item #22c for change from post-intervention to post-adjustment (second intervention)







