

## Report on a QI Project Eligible for MOC – ABMS IHHC and NCCPA PI-CME

### MEDIC Individual ED Physician Selected QI – 2022: Reducing Overutilization of CT Scans for Minor Head Injury and Chest X-Rays for Common Respiratory Illness

#### Instructions

**Determine eligibility.** Before starting to complete this report, go to the Michigan Medicine MOC website [<http://www.med.umich.edu/moc-qi/index.html>], 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 Michigan Medicine 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 1-18.) Staff from the Michigan Medicine 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>	7-8. Patient population, general goal 9-11. Measures, baseline performance, specific aims 12-15. Baseline data review, underlying (root) causes, interventions, who will implement
<b>C. Do</b>	16. Intervention implementation date
<b>D. Check</b>	17-18. Post-intervention performance
<b>E. Adjust – Replan</b>	19-23. Post-intervention data review, underlying causes, adjustments, who will implement
<b>F. Participation for MOC</b>	24-26. Participation in key activities, other options, other requirements
<b>G. Sharing results</b>	27. Plans for report, presentation, publication
<b>H. Organization affiliation</b>	28. 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*): 2/2/2023

2. **Title of QI effort/project** (*also insert at top of front page*):

MEDIC individual ED physician selected QI – 2022: Reducing Overutilization of CT Scans for Minor Head Injury and Chest X-Rays for Common Respiratory Illness

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 #12c*): 01/01/2022

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 #26c*): 10/31/2022

4. **Key individuals**

a. **QI project leader** [*also responsible for confirming individual's participation in the project*]

**Name:** Michele M. Nypaver, MD

**Title:** Professor, Dept. of Emergency Medicine (EM) & Pediatrics, Co-Director, Michigan Emergency Department Improvement Collaborative (MEDIC)

**Organizational unit:** Dept. of EM/ Division of Children's Emergency Services

**Phone number:** 734.763.9299 (Nypaver direct office)/ Admin: Heidi Zayan 734.763.9849

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

**Mailing address:** CW 2-737 / 1540 E. Hospital Drive. SPC 4260/ Ann Arbor, MI 48109

b. **Clinical leader who oversees project leader regarding the project** [*responsible for overseeing/"sponsoring" the project within the specific clinical setting*]

**Name:** Keith Kocher MD MPH

**Title:** MEDIC Director

**Organizational unit:** Michigan Medicine Dept. of EM

**Phone number:** 734.232.6845

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

**Mailing address:** 2800 Plymouth Rd, NCRC Bldg 14, Ann Arbor, MI 48109

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

Participating for MOC	Primary Specialty	Subspecialty, if any	Number
Practicing physicians	Pediatrics/Pediatric EM		40
Residents/Fellows	Pediatric EM		10
Physicians' Assistants	(N/A)	(N/A)	

**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 platform for the MEDIC program is funded by the BLUE CROSS BLUE SHIELD OF MICHIGAN (BCBSM) Value Partnerships Collaborative Quality Improvement (CQI) program.

*The Multi-Specialty Part IV MOC Program requires that QI efforts include one complete cycle of data-guided improvement. Some projects may have only one cycle 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):** Children < 18 years old visiting MEDIC member Emergency Departments eligible to be included in any MEDIC defined pediatric quality measures.

**a) Children < 18 years presenting to a MEDIC ED with minor head injury defined by Pediatric Emergency Care Research Network (PECARN) intermediate risk criteria.**

**b) Children < 18 years presenting to a MEDIC ED with asthma, bronchiolitis and croup.**

**8. General purpose.**

**a. Problem with patient care (“gap” between desired state and current state)**

This project will allow individual emergency department (ED) physicians at every member MEDIC hospital to self-select one pediatric quality measure and design a personal/individual improvement plan to be measured using standard metrics in one cycle using individual performance reporting to the MEDIC Coordinating Center. The following measures represent the two options individual physicians may select to design their individual improvement plan (and their answers to Q1 and Q2).

**(1) What should be occurring and why should it occur (benefits of doing this)?**

i) Children visiting emergency departments with minor head injuries meeting national guidelines for risk criteria as outlined in PECARN may be safely managed with observation vs. immediate CT imaging. Most children will improve quickly or during short periods of observation, mitigating the need for further imaging, preventing exposure to unnecessary radiation, and cost.

ii) Children visiting emergency departments with very common respiratory illnesses such as asthma, bronchiolitis and croup do not need CXR imaging to direct management, yet often receive this imaging most commonly to rule out a pneumonia, however this diagnosis is rare and evidence is available to determine those children needing more investigation.

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

i) Despite the existence of evidence based guidelines for over ten years that have been validated multiple times, overuse of CT scans in children with minor head injuries continues with wide

variation in practice among MEDIC hospitals. Balancing measures to determine rates of missed severe head injuries within MEDIC continues to be rare (and aligned with balancing measures published in national studies).

ii) CXR imaging accounted for almost 9M\$ in the state of Michigan in 2016 for these diagnoses yet few cases result in pneumonia, and most of pneumonia cases are viral, requiring only supportive care. In the MEDIC registry, approximately 35% of children with the diagnosis of asthma bronchiolitis and croup receive CXRs during their ED visit, with wide variation by site and diagnosis (sometimes up to 85%). Reducing use of CXR through evidence based practice mitigates cost, length of ED stays, radiation exposure as well as variation in interpretations of radiographs that often leads to secondary problems such as wide use of unnecessary antibiotics given most cases are viral in cause.

**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 #11.)

The goal of this project is to allow individual ED physicians from each MEDIC member hospital to self-select one MEDIC Pediatric quality measure (head CT use or CXR use for respiratory conditions) to design their own improvement plan (with intervention) and be measured at baseline and again at two follow up points (allowing two months of work between periods).

**9. Describe the measure(s) of performance:** (QI efforts must have at least one measure that is tracked across the baseline and post-intervention periods. 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 . . . ): **Head CT Utilization in children with minor head injury with target goal  $\leq 19\%$**

- **Measure components** – describe the:

Denominator = # of children < 18 yr. in MEDIC registry Head CT utilization intermediate risk cohort that have ICD10 code for minor head injury.

Numerator = # of children < 18 yr. in MEDIC registry Head CT utilization intermediate risk cohort (have ICD10 code for minor head injury) who met MEDIC eligibility and received CT imaging

- **The source of the measure is:**

- ☐ An external organization/agency, which is (name the source, e.g., HEDIS):
- ☒ Internal to our organization and it was chosen because (describe rationale):

- **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 . . . ): **Chest X-Ray Utilization in children with Asthma, Bronchiolitis, and Croup**

- **Measure components** – describe the:

Denominator = # of children < 18 yr. in MEDIC registry CXR utilization cohort that have ICD10 code asthma, bronchiolitis and croup.

Numerator = # of children < 18 yr. in MEDIC registry CXR utilization cohort that have ICD10 code for asthma, bronchiolitis and croup who met MEDIC eligibility and received CXR imaging

• **The source of the measure is:**

- ☐ An external organization/agency, which is (name the source, e.g., HEDIS):
- ☒ Internal to our organization and it was chosen because (describe rationale):

• **This is a measure of:**

- ☒ Process – activities of delivering health care to patients
- ☐ Outcome – health state of a patient resulting from health care

(If more than two measures are tracked, copy and paste the section for a measure and describe the additional measures.)

**10. Baseline performance**

a. **What were the beginning and end dates for the time period for baseline data on the measure(s)?** 01/01/2022 – 3/31/2022

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.

Measure	Baseline N	Baseline %
	<b>01/01/2022 - 3/31/2022</b>	
Head CT utilization in children with minor head injury with target goal $\leq 19\%$	218/1097	19.9%
CXR utilization in children with asthma, bronchiolitis and croup with target goal $\leq 25\%$	881/4044	21.8%

**11. 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].”

Measure 1: The MEDIC Collaborative will decrease intermediate Head CT utilization in children with minor head injury with target goal  $\leq 18\%$  by 10/31/2022.

Measure 2: The MEDIC Collaborative will decrease CXR utilization in children with asthma, bronchiolitis and croup with a target goal of  $\leq 25\%$  by 10/31/2022.

Individual sites and clinicians will use these overall targets as a site and individual clinician improvement goal.

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

Performance targets within the MEDIC collaborative are based upon literature using Achievable Benchmarks of Care (ABC) methodology. Note, MEDIC target setting also adjusts ABC targets for continuing growth of the MEDIC collaborative (e.g. increasing number of sites and providers adding

data to the registry) inducing fluctuation in overall performance measurement. Starting with using ABC methodology, adjustments are then proposed through analysis of actual registry data, and final consensus on target setting made with the MEDIC executive committee.

**12. 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)**

MEDIC EM physicians (MD, DO) at each site will email and discuss this project at meetings. MEDIC nurse abstractors will assist the physician clinical staff as necessary with data from the MEDIC registry.

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

Email and unit meetings

**c. When? (e.g., date(s) when baseline data were reviewed and discussed)** Review of baseline data was performed by July 31, 2022

**Use the following table to outline the plan that was developed: #13 the primary causes, #14 the intervention(s) that addressed each cause, and #15 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 actual group/individual 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>13. What were the primary underlying/root causes for the problem(s) at baseline that the project can address?</b>	<b>14. What intervention(s) addressed this cause?</b>	<b>15. Who was involved in carrying out each intervention? (List the professions/roles involved.)</b>
Many providers were not able to self-monitor, get complete reports and view all of their site's data	Physicians were required to login to Tableau, access at their data, view/ print the reports and discuss with providers  Clinical champions have admin rights to view, distribute, discuss and remind clinicians with data from their sites	Local QI team of clinical champion, abstractor, QI personnel & IT personnel + participating ED physicians at participating sites.
Some of the providers could not see the current practice patterns	MEDIC has increased the distribution for collaborative & institutional data via e-mail	Local QI team of clinical champion, abstractor, QI personnel & IT personnel + participating ED physicians

Many of the providers did not remember the endorsed practice decisions and rules at the time of the patient's evaluation	Additional placards placed in prominent positions in ED environment, exam rooms and near work spaces for easy review	Local QI team of clinical champion, abstractor, QI personnel & IT personnel + participating ED physicians
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*Note: If additional causes were identified that are to be addressed, insert additional rows.*

### C. Do

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

Each physician will select their own intervention and report this to their clinical champion as well as the coordinating center by July 31, 2022

### D. Check

**17. Post-intervention performance measurement. Are the population and measures the same as those for the collection of baseline data (see item 9)?**

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

**18. Post-intervention performance**

**a. What were the beginning and end dates for the time period for post-intervention data on the measure(s)?**

Begin post intervention: August 1, 2022

End post intervention: October 31, 2022

**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. Show baseline and post-intervention time periods and measure names and for each time period and measure show number of observations and performance level.*

Measure	Baseline N	Baseline %	Post-Intervention N	Post-intervention %
	<b>01/01/2022 - 3/31/2022</b>		<b>08/01/2022 - 10/31/2022</b>	
Head CT utilization in children with minor head injury with target goal $\leq$ 19%	218	19.9%	120/684	17.5%
CXR utilization in children with asthma, bronchiolitis and croup with target goal $\leq$ 25%	881	21.8%	777/2985	26%

**c. Did the intervention(s) produce the expected improvement toward meeting the project's specific aim (item 11.a)?**



The intervention did improve for the Head injury measure but did not improve performance in terms of aggregated data at the Collaborative Wide level for the CXR measure. However, for both measures, the performance of the grouped children's hospitals and the individual clinicians within them was still below the MEDIC target for the collaborative (e.g. acceptable). These data may also represent effects of the 2022 ED pediatric volume surge due to pediatric respiratory illness in patterns distinctly different than prior to the COVID pandemic during the period of time measured in this analysis. However, acceptable performance was achieved at the larger collaborative level for the MEDIC Collaborative Wide measurement year (e.g. November 1, 2021 – October 31, 2022). Variation in performance among general hospitals, children's hospitals and individual pediatric EM clinician level represent ongoing opportunities for further planning of interventions and leadership/mentorship for general ED sites (see #23 below).

## E. Adjust – Replan

**19. 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 #12? ☐ Different than #12 (describe):

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

☒ Same as #12? ☐ Different than #12 (describe):

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

October 31, 2022

**Use the following table to outline the next plan that was developed: #20 the primary causes, #21 the adjustments/second intervention(s) that addressed each cause, and #22 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 adjustments should be to continue the interventions initiated in intervention.*

<b>20. What were the primary underlying/root causes for the <u>problem(s)</u> following the <u>intervention(s)</u> that the project can address?</b>	<b>21. What adjustments/second intervention(s) addressed this cause?</b>	<b>22. Who was involved in carrying out each adjustment/second intervention? (List the professions/roles involved.)</b>
Physicians do not routinely check personal performance on the MEDIC reporting platform	Placards were prominently displayed throughout work areas, distributed & discussed in meetings and physicians are incentivized to check their performance on the MEDIC platform	Physicians, Nurses, abstractors, residents, managers, other parties
Physicians may not be immediately aware of the	Discussed in breakout sessions at the collaborative-wide meetings, during departmental meetings	MEDIC coordinating staff, individual ED clinical



goals of the intervention at the time of ED clinical care	and practiced accessing the MEDIC portal of performance reporting (including goals)	champions, and site abstractors.
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*Note: If additional causes were identified that are to be addressed, insert additional rows.*

**23. 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:*

For the year 2023, the MEDIC collaborative, including all sites within this report in addition to general EDs, we have set up a program called "All in for kids" whereby incentives will be directed for all sites to improve and / or reduce variation on these measures.

## F. Minimum Participation for MOC

**24. 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 #32.*

**b. Did these individuals participate in the following key activities over the one cycle of data-guided improvement?**

1. Identify and/or acknowledge a gap(s) in outcomes or in care delivery as described in #8.
  2. Identify and/or review data related to the gap(s) as described in #9-10.
  3. Identify or acknowledge appropriate intervention(s) designed to improve the gap(s), OR participate in the planning and selection of intervention(s) designed to improve the gap(s) as described in #11-15.
  4. Implement intervention(s) for a timeframe appropriate to addressing the gap(s), OR monitor and manage implementation of intervention(s) for a timeframe appropriate to addressing the gap(s) as described in #16.
  5. Review post-intervention data related to the gap(s) as described in #17-22.
  6. Reflect on outcomes to determine whether the intervention(s) resulted in improvement. If no improvement occurs after an intervention, participants must reflect on why no improvement occurred (this will take place during the attestation process).
- ☒ Yes ☐ No *If "Yes," individuals are eligible for MOC unless other requirements also apply and must be met – see item # 33.*

**25. 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 26.*

**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 # 26. If "No," continue to #25c.*

**c. Did the individual(s) supervise 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 # 26.*

**26. 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:*

*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.*

## G. Sharing Results

**27. 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?

## H. Project Organizational Role and Structure

**28. 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):**

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

- ☐ No    ☐ Yes – the initiative is (name or describe):

☐ **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):** MEDIC

• **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):**  
MEDIC

☐ **Other (specify):**