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

Hospital Medicine Safety (HMS) Consortium Peripherally Inserted Central Catheter (PICC) Quality Improvement Project: Overall Report

Instructions

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.

Items highlighted in yellow, have been pre-filled in as these are consistent across all participating hospitals seeking MOC credit. Items left blank are to be completed by the QI project lead at each participating hospital seeking MOC credit. Several items have been removed from the report and will be completed by the HMS Coordinating Center.

An option for preliminary review (strongly recommended) is to complete a description of activities through the intervention phase and submit the partially completed report by May 26, 2017. (Complete at least items 1-20.) Staff from the HMS Coordinating Center 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.

In order to receive MOC credit, the QI effort must be sustained, involving at least two or more linked cycles of performance review and improvement effort. The post-intervention data and review from one cycle become the baseline data and planning for the next cycle. As an example, see the report outline below where "Adjust" at the end of the first cycle is also "Plan" at the beginning of the second cycle.

Please contact the HMS Coordinating Center regarding resources for interventions related to your selected PICC quality improvement project.

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:
Elizabeth McLaughlin, RN, MS 734-936-0354, emcnair@umich.edu

Report Outline

Section	Items	
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B. Plan	7-8.	Patient population, general goal
	11-13.	Measures, baseline performance, specific aims
	14-17.	Baseline data review, underlying (root) causes, interventions, who will implement
C. Do	18.	Intervention implementation date
D. Check	19-20.	Post-intervention performance
E. Adjust – Replan	21-24.	Post-intervention data review, underlying causes, adjustments, who will implement
F. Redo	25.	Adjustment implementation date
G. Recheck	26-27.	Post-adjustment performance
H. Readjust plan	29-32.	Post-adjustment data review, underlying causes, further adjustments, who will implement
I. Reflections & plans	33-37.	Barriers, lessons, best practices, spread, sustain
J. Participation for MOC	38.	Participation in key activities

QI Project Report for Part IV MOC Eligibility

A. Introduction

1. Date *(this version of the-report):* 03/27/18

2. Title of QI effort/project *(also insert at top of front page)***:** HMS Peripherally Inserted Central Catheter (PICC) Quality Improvement Project

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)**:*** January 15, 2017

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)*: February 28, 2018

4. Key individuals

a. QI project leader *[also responsible for confirming individual's participation in the project]*
Name: Elizabeth McLaughlin
Title: HMS Project Manager
Organizational unit: Internal Medicine Division of General Medicine
Phone number: 734-936-0354
Email address: emcnair@med.umich.edu
Mailing address: 2800 Plymouth Road, 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: Scott A. Flanders, MD
Title: HMS Project Director
Organizational unit: Internal Medicine Division of Hospital Medicine
Phone number: 734-647-2892
Email address: flanders@umich.edu
Mailing address: 1500 E. Medical Center Drive, 3119F

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	14
Residents/Fellows	
Physicians' Assistants	1
Nurses (APNP, NP, RN, LPN)	14
Other Licensed Allied Health (e.g., PT/OT, pharmacists, dieticians, social workers)	3

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

Profession	**Specialty/Subspecialty** *(fill in)*	**Number** *(fill in)*
Practicing Physicians	Emergency Medicine Internal Medicine/: Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology Radiology: Interventional Radiology	14
Fellows		
Residents		
Physicians' Assistants	*(Not applicable)*	1

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

- ☐ Internal institutional funds
- ☐ Grant/gift from pharmaceutical or medical device manufacturer
- ☒ Grant/gift from other source (e.g., government, insurance company)
- ☐ Subscription payments by participants
- ☐ Other *(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)***:**

Adult patients admitted to a medicine service who had a Peripherally Inserted Central Catheter (PICC) inserted at one of the Michigan Hospital Medicine Safety (HMS) Consortium participating sites that do not meet any of the following exclusion criteria:
- Patient was pregnant
- Patient was under the age of 18
- Patient was admitted for palliative care
- Patient was admitted to a surgical service
- Patient has a Left Ventricular Assist Device (LVAD) at the time of PICC placement or the documentation indicates that one will be implanted during the hospitalization

The participating hospitals are:

- McLaren Lapeer
- McLaren Northern
- Michigan Medicine

8. General goal

a. Problem/need. What is the problem ("gap") in quality that resulted in the development of this project? Why is important to address this problem?

Peripherally Inserted Central Catheters (PICC) are extremely important in providing intravenous delivery of medications. However, PICCs are associated with both major and minor complications including, blood stream infections, venous thromboembolism, catheter occlusions, etc. PICC selection and management can reduce these harms by:

- Reducing short term use. Recently published guidelines (Chopra, et al) recommend against utilizing PICCs for 5 days or less due to the risks of these major and minor complications.
- Using only when needed. Published literature recommends limited use of PICCs for patients with an eGFR less than 45 to preserve veins for the potential need for life saving treatment (hemodialysis). Maintaining vessel integrity is essential to provide future dialysis access for these patients.
- Limiting the number of lumens. PICC lines can damage vessels and render them unusable for dialysis. The number of peripherally inserted central catheter (PICC) lumens is associated with thrombotic and infectious complications. Because multi-lumen PICCs are not necessary in all patients, policies that limit their use may improve safety and healthcare costs.

The problem is that these three practices to reduce harms associated with PICCS are not routinely followed in hospitals in Michigan. This increases patients' risk of complications.

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.)*

The consortium's goal is to reduce complications associated with PICCs by improving their appropriate utilization through limiting reducing short term use, using only when needed, and using single lumens when more lumens are not needed.

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)*

☒ Effectiveness ☐ Equity ☒ Safety
☐ Efficiency ☒ Patient-Centeredness ☐ 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/)

☒ Patient Care and Procedural Skills ☒ Medical Knowledge
☒ Practice-Based Learning and Improvement ☐ Interpersonal and Communication Skills
☐ Professionalism ☒ 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.)*

Sampling Strategy: Every 2 weeks hospitals submit information on 17 PICC insertions completed at their local hospital. If a hospital has more than 17 PICC insertions during the 2-week period, 17 are randomly sampled to submit. If a hospital has fewer than 17 PICC insertions during the 2-week period, all PICC's inserted are entered.

Measure 1

- **Name of measure** *(e.g., Percent of . . ., Mean of . . ., Frequency of . . .)***:** Percent of PICCs in for ≤ 5 Days (excluding deaths)

- **Measure components** – *describe the:*

Denominator *(e.g., for percent, often the number of patients eligible for the measure)*:
All sampled PICC cases, which are entered in the HMS database.

Numerator *(e.g., for percent, often the number of those in the denominator who also meet the performance expectation)*:
Cases with PICCs in for less than or equal to 5 days

- **The source of the measure is:**
  - ☒ An external organization/agency, which is *(name the source)*: Michigan Hospital Medicine Safety Consortium
  - ☐ 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 . . .)***:**
  Percent of PICCs in patients with eGFR < 45 (without nephrology approval)

- **Measure components** – *describe the:*

  Denominator *(e.g., for percent, often the number of patients eligible for the measure)*:
  All PICC cases entered in the HMS database.

  Numerator *(e.g., for percent, often the number of those in the denominator who also meet the performance expectation)*:
  Cases with PICCs in patients with an eGFR of less than 45

- **The source of the measure is:**
  - ☒ An external organization/agency, which is *(name the source)*: Michigan Hospital Medicine Safety Consortium
  - ☐ 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 3

- **Name of measure** *(e.g., Percent of . . ., Mean of . . ., Frequency of . . .)***:**
  Percent of single lumen PICCs

- **Measure components** – *describe the:*

  Denominator *(e.g., for percent, often the number of patients eligible for the measure)*:
  All PICC cases entered in the HMS database.

  Numerator *(e.g., for percent, often the number of those in the denominator who also meet the performance expectation)*:
  PICC cases with single lumen PICC

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

☐ An external organization/agency, which is *(name the source)*: Michigan Hospital Medicine Safety Consortium

☐ 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

12. Baseline performance

a. What were the beginning and end dates for the time period for <u>baseline</u> data on the measure(s)? October 1, 2016 through December 31, 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.*

See Appendix A

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]."*

The following goals were determined by the Michigan Hospital Medicine Safety (HMS) Consortium which is comprised of 43 hospitals across the State of Michigan. The initial targets were determined by using the 25th percentile (or 75th percentile depending on the measure) across all 43 hospitals. Selected hospitals participating in this MOC project met one or two of the three goal(s) at baseline. The HMS collaborative goals, as well as additional, higher performance goals established for hospitals that achieved the collaborative-wide goal, at baseline are identified below.

PICCs in for ≤ 5 days

- *Collaborative Goal*: Reduce the number of PICCs inserted in medical patients for 5 days or less from baseline to less than or equal to 20% of PICC cases entered.
- *Additional Performance Goal*: Reduce the number of PICCs inserted in medical patients for 5 days or less from baseline to less than or equal to 10% of PICC cases entered.

PICCs in Patients with eGFR < 45 (without Nephrology approval)

- *Collaborative Goal*: Reduce the number of PICCs inserted in medical patients with a *eGFR* less than 45 from a baseline of 14% (average across institutions) to less than or equal to 10% of PICC cases entered.
- *No Additional performance goal as all hospitals participating in the PICC MOC project were not at goal at baseline*.

Use of Single Lumen PICCs

- *Collaborative Goal*: Increase the number of single lumen PICCs inserted in medical patients (vs. double or triple lumen PICCs) from a baseline to greater than or equal to 25% of the PICC cases entered.

- *Additional Performance Goal*: Increase the number of single lumen PICCs inserted in medical patients (vs. double or triple lumen PICCs) from a baseline to greater than or equal to 85% of the PICC cases entered.

c. **How were the performance targets determined, e.g., regional or national benchmarks?** The performance targets are based on the Michigan Hospital Medicine Safety (HMS) Consortiums performance thresholds which were determined by the 25th percentile (or 75th percentile depending on the measure) of hospitals participating (see details above). Higher performing hospitals were given more challenging goals than the collaborative-wide goals.

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)*
Providers: Emergency Medicine, Internal Medicine Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology, Infectious Disease
Other roles: Pharmacist, Vascular Access Nurse, HMS data abstractor, Vice President of Medical Affairs

b. How? *Michigan Hospital Medicine Safety (HMS) Consortium Collaborative Wide Meetings and local PICC meetings*

c. **When?** *(e.g., date(s) when baseline data were reviewed and discussed)*
January 2017-February 2017

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:*

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

Below are the most frequently chosen interventions that address the common causes of problems in meeting the goals.

PICCs in for ≤ 5 days		
15. What were the primary underlying/root causes for the problem(s) at baseline that the project can address?	**16. What intervention(s) addressed this cause?**	**17. Who was involved in carrying out each intervention?** *(List the professions/roles involved.)*
Hospitalists not aware of the adverse effects of PICCs in for <5 days	Education for hospitalists regarding the adverse effects of PICCs and potential alternative options for	Emergency Medicine, Vice President of Medical Affairs, Hospitalist,

	patients with short term vascular access needs.	Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Providers have limited options for vascular access for short term durations	Implementation of a Midline program to provide an additional option for short term vascular access.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
PICCs in Patients with eGFR < 45 (without Nephrology approval)		
15. What were the primary underlying/root causes for the <u>problem(s) at baseline</u> that the project can address?	**16. What intervention(s) addressed this cause?**	**17. Who was involved in carrying out each intervention?** *(List the professions/roles involved.)*
Hospitalists have a lack of knowledge regarding the recommendations to avoid PICC's in patients with chronic kidney disease	Education for hospitalists related to the risk for loss of useable upper-extremity veins and central venous stenosis with PICCs in patients with CKD.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Providers (hospitalists, vascular access, etc) vary in practice related to the ordering of PICCs in patients with chronic kidney disease	Education provided to all clinical staff, vascular access teams, and nephrologist related to the risk for loss of useable upper-extremity veins and central venous stenosis with PICCs in patients with CKD.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Use of Single Lumen PICCs		
15. What were the primary underlying/root causes for the <u>problem(s) at baseline</u> that the project can address?	**16. What intervention(s) addressed this cause?**	**17. Who was involved in carrying out each intervention?** *(List the professions/roles involved.)*

Hospitalists not aware of the potential adverse effects of multiple lumen PICCs	Education provided to hospitalists related to the adverse effects of multiple lumens and the reasons for when multiple lumens are appropriate.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor

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.)* March 1, 2017

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 <u>post-intervention</u> data on the measure(s)?

PICC Insertions: March 2017-May 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.*

See Appendix A

c. Did the intervention(s) produce the expected improvement toward meeting the project's specific aim (item 13.a)? Improvement was variable across participating sites - See Reflections

PICCs in for ≤ 5 days

- All three participating hospitals improved performance. Two hospitals met the collaborative wide goal (and the additional goal) post intervention. One hospital met the collaborative wide goal post intervention.

PICCs in Patients with eGFR < 45 (without Nephrology approval)

- One of three participating hospitals showed improvement and met the collaborative wide goal. One hospital's performance was unchanged, and one got worse post intervention.

Use of Single Lumen PICCs

- All three sites were above the collaborative goal at baseline so an adjusted goal was utilized. One hospital remained unchanged in its performance. Two hospitals decreased in performance post intervention.

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)*

July 2017- August 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.

Below are the most frequently chosen interventions that address the common causes of problems in meeting the goals.

PICCs in for ≤ 5 days		
22. What were the primary underlying/root causes for the problem(s) following the intervention(s) that the project can address?	**23. What adjustments/second intervention(s) addressed this cause?**	**24. Who was involved in carrying out each adjustment/second intervention?** *(List the professions/roles involved.)*
New hospitalists not aware of the adverse effects of PICCs in for <5 days	Education for new hospitalists regarding the adverse effects of PICCs and potential alternative options for patients with short term vascular access needs.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS

		data abstractor/HMS project lead
Providers vary in PICC ordering practices.	Updated the EMR to include indications for PICC placement	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, IT, Infectious Disease Physician), HMS data abstractor/HMS project lead
PICCs in Patients with eGFR < 45 (without Nephrology approval)		
22. What were the primary underlying/root causes for the problem(s) following the intervention(s) that the project can address?	**23. What adjustments/second intervention(s) addressed this cause?**	**24. Who was involved in carrying out each adjustment/second intervention?** *(List the professions/roles involved.)*
New hospitalists have a lack of knowledge regarding the recommendations to avoid PICC's in patients with chronic kidney disease	Education for new hospitalists related to the risk for loss of useable upper-extremity veins and central venous stenosis with PICCs in patients with CKD.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Providers vary in work processes related to ordering of PICCs in patients with chronic kidney disease	Updated EMR for PICC placement to include a notation that if the eGFR <45 nephrology approval is required.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Increase Use of Single Lumen PICCs		
22. What were the primary underlying/root causes for the problem(s) following the intervention(s) that the project can address?	**23. What adjustments/second intervention(s) addressed this cause?**	**24. Who was involved in carrying out each adjustment/second intervention?** *(List the professions/roles involved.)*
New Hospitalists not aware of the potential adverse effects of multiple lumen PICCs	Education provided to new hospitalists related to the adverse effects of multiple lumens and the	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care,

	reasons for when multiple lumens are appropriate.	Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Providers vary in work processes related to the ordering practices of single, double and triple lumen PICCs	Defaulted PICC orders in the EMR to single lumen.	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead

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?
September 1, 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 <u>post-adjustment</u> data on the measure(s)?

PICC Insertions: September 2017- November 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.*

See Appendix A

c. Did the adjustment(s) produce the expected improvement toward meeting the project's specific aim (item 13.a)? Improvement was variable across sites and across measures:

PICCs in for ≤ 5 days

- All three hospitals met the collaborative wide goal post adjustment. One hospital met the alternative goal post adjustment. One hospital remained consistent compared to baseline and the other hospital improved compared to baseline.

PICCs in Patients with eGFR < 45 (without Nephrology approval)

- None of the three hospitals met the collaborative wide goal of less than or equal to 10%.

Use of Single Lumen PICCs

- All three hospitals met the collaborative wide goal of greater than or equal to 25% and improved compared to baseline. One of the hospitals met the alternative goal of greater than or equal to 85%.

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):*

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

December 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.

Below are the most frequently chosen interventions that address the common causes of problems in meeting the goals.

PICCs in for ≤ 5 days		
30. What were the primary underlying/root causes for the problem(s) following the	**31. What further adjustments/ intervention(s) might address this cause?**	**32. Who would be involved in carrying out each further adjustment/intervention?** *(List the professions/roles involved.)*

adjustment(s) that the project can address?		
Continued influx of new hospitalist/ providers ordering PICCS.	Continued provider education and monitoring of interventions implemented via the EMR	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
PICCs in Patients with eGFR < 45 (without Nephrology approval)		
30. What were the primary underlying/root causes for the problem(s) following the adjustment(s) that the project can address?	**31. What further adjustments/ intervention(s) might address this cause?**	**32. Who would be involved in carrying out each further adjustment/intervention?** *(List the professions/roles involved.)*
Providers unaware of intravascular complications of PICCs in relation to patients with chronic kidney disease	Continued provider education and monitoring of interventions implemented via the EMR	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead
Use of Single Lumen PICCs		
30. What were the primary underlying/root causes for the problem(s) following the adjustment(s) that the project can address?	**31. What further adjustments/ intervention(s) might address this cause?**	**32. Who would be involved in carrying out each further adjustment/intervention?** *(List the professions/roles involved.)*
New hospitalists/providers ordering multi-lumen PICCs	Continued provider education and monitoring of interventions implemented via the EMR	Emergency Medicine, Vice President of Medical Affairs, Hospitalist, Pulmonary/Critical Care, Hematology, Nephrology, Interventional Radiology Pharmacist, Vascular Access Nurse, Infectious Disease Physician), HMS data abstractor/HMS project lead

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:*

These three institutions are part of the Michigan Hospital Medicine Safety (HMS) consortium and will continue to assess performance and implement interventions as necessary.

☐ 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.
A barrier that is common across all hospitals participating in this QI effort is providing education to all hospitalists/clinical staff especially as new providers join the team. To address this barrier, multiple forms of communication were utilized (direct feedback, email, etc).

34. Describe any key lessons that were learned as a result of the QI effort.
Continued education for hospitalists and persistent communication works to achieve better performance. Particularly important was raising awareness that multiple lumens in PICC lines led to more complications.

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

- Using the EHR to give providers timely reminders of best practices in PICC decision-making.
- Requiring nephrology approval for use of PICC in patients with an eGFR<45.
- Creating and promoting options such as midlines for short term antibiotic needs.

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

- Continue monitoring of data and sharing of data with the hospitalist group/ID providers who order PICCs.
- Sharing all of the data collected hospital wide not just at PICC/vascular access meetings.
- Provide continuing education to frontline clinical staff with the CLOT tool including proper flushing techniques. The CLOT tool can be used to prevent catheter occlusion. There are four main areas to prevent catheter occlusion (catheter flushing utilizing the SASH method, reducing the number of lumens, optimal access in the right arm and ensuring proper tip verification).

37. Describe any plans for sustaining the changes that were made.
Maintain current order sets, policies and processes that are in place and continue education as problems arise and new providers join the team.

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:*

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):*

- **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)***:**
- **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):* Michigan Hospital Medicine Safety (HMS) Consortium

  ☐ **Other** *(specify):*

Appendix A

PICCs in for ≤ 5 days							
Site	**Baseline** PICC Insertions: 09/01/16- 11/30/16 Data Entered: 10/01/16-12/31/16		**Post- Intervention** PICC Insertions: 03/01/17- 05/31/17 Data Entered: 04/01/17-06/30/17		**Post- Adjustment** PICC Insertions: 09/01/17-11/30/17 Data Entered: 10/1/17-12/31/17		**Goal**
	N Patients	% with PICCs in for ≤ 5 days	N Patients	% with PICCs in for ≤ 5 days	N Patients	% with PICCs in for ≤ 5 days	*Collaborative*: ≤20% *Alternative*: ≤10%
Michigan Medicine	89	25% (n=22)	79	6% (n=5)	88	7% (n=6)	
McLaren -	22	14% (n=3)	25	4% (n=1)	22	14% (n=3)	
McLaren -	54	19% (n=10)	41	15% (n=6)	54	15% (n=8)	
PICCs in Patients with eGFR < 45 (without Nephrology approval)							
Site	**Baseline** PICC Insertions: 09/01/16- 11/30/16 Data Entered: 10/01/16-12/31/16		**Post- Intervention** PICC Insertions: 03/01/17- 05/31/17 Data Entered: 04/01/17-06/30/17		**Post- Adjustment** PICC Insertions: 09/01/17-11/30/17 Data Entered: 10/1/17-12/31/17		**Goal**
	N Patients	% with PICCs in patients with eGFR <45	N Patients	% with PICCs in patients with eGFR <45	N Patients	% with PICCs in patients with eGFR <45	*Collaborative*: ≤10% *Alternative*: None
Michigan Medicine	89	11% (n=10)	79	5% (n=4)	88	13% (n=11)	
McLaren -	22	14% (n=3)	27	15% (n=4)	22	14% (n=3)	
McLaren -	54	17% (n=9)	44	39% (n=17)	54	25% (n=13)	
Use of Single Lumen PICCs							
Site	**Baseline** PICC Insertions: 09/01/16- 11/30/16 Data Entered: 10/01/16-12/31/16		**Post- Intervention** PICC Insertions: 03/01/17- 05/31/17 Data Entered: 04/01/17-06/30/17		**Post- Adjustment** PICC Insertions: 09/01/17-11/30/17 Data Entered: 10/1/17-12/31/17		**Goal**
	N Patients	% with PICCs with single lumens	N Patients	% with PICCs with single lumens	N Patients	% with PICCs with single lumens	*Collaborative*: ≥25% *Alternative*: ≥85%
Michigan Medicine	89	47% (n=42)	79	47% (n=37)	88	52% (n=45)	
McLaren -	22	82% (n=18)	27	74% (n=20)	22	95% (n=20)	
McLaren -	54	56% (n=30)	44	26% (n=13)	54	60% (n=32)	