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

Improving Accuracy of Average Volume Assured Pressure Support (AVAPS) Titration Studies

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	
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B. Plan	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
C. Do	16.	Intervention implementation date
D. Check	17-18.	Post-intervention performance
E. Adjust – Replan	19-22.	Post-intervention data review, underlying causes, adjustments, who will implement
F. Redo	23.	Adjustment implementation date
G. Recheck	24-26.	Post-adjustment performance, summary of individual performance
H. Readjust plan	27-30.	Post-adjustment data review, underlying causes, further adjustments, who will implement
I. Participation for MOC	31-33.	Participation in key activities, other options, other requirements
J. Sharing results	34.	Plans for report, presentation, publication
K. Organization affiliation	35.	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):* 4/22/19

2. **Title of QI effort/project** *(also insert at top of front page)***:** Improving accuracy of AVAPS titration studies

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):* Review of baseline data: 2/1/19 and 2/8/19

   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 #27c)*: 4/5/19

4. **Key individuals**

   a. **QI project leader** *[also responsible for confirming individual's participation in the project]*
   Name: Lisa Matlen
   Title: Sleep Medicine Fellow
   Organizational unit: Department of Neurology, Division of Sleep Medicine
   Phone number: 734-936-9068
   Email address: lmatlen@med.umich.edu
   Mailing address: 1500 E. Medical Center Dr., SPC 5845; Ann Arbor, MI 48109-5845

   b. **Clinical leader who oversees project leader regarding the project** *[responsible for overseeing/"sponsoring" the project within the specific clinical setting]*
   Name: Anita Shelgikar
   Title: Sleep Medicine Fellowship Program Director
   Organizational unit: Department of Neurology, Division of Sleep Medicine
   Phone number: 734-936-9068
   Email address: avalanju@med.umich.edu
   Mailing address: 1500 E. Medical Center Dr., SPC 5845; Ann Arbor, MI 48109-5845

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 Anita Shelgikar	Neurology	Sleep Medicine	1
Residents/Fellows Grace Wang (Pediatrics) Lauren Goldman (Pediatrics) Amara Emenike (Internal Medicine) Gita Gupta (Med-Peds) Sonia Malik (Family Medicine)	Pediatrics: 2 Internal Medicine: 1 Internal Medicine + Pediatrics: 1 Family Medicine: 2 Pediatric Neurology: 1	Sleep Medicine Fellowship: 7	7

Ronald Gavidia-Romero (Family Medicine) Lisa Matlen (Pediatric Neurology)			
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 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)***:**

Adults who have hypoventilation and are managed at the University of Michigan Sleep Disorders Centers.

8. General purpose.

a. Problem with patient care ("gap" between desired state and current state)

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

AVAPS is performed for treatment of this rare sleep disorder, hypoventilation. To optimize safety and effectiveness of hypoventilation treatment, parameters need to be adjusted correctly during studies titrating average volume assured pressure support (AVAPS). This is performed in patients who tend to have many medical co-morbidities. Studies are challenging to perform, with many potential parameters on which to intervene. The appropriate order of possible interventions and adjustments is commonly unclear. Many patients require repeat titrations due to failed original titration studies for these reasons.

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

Currently, the Sleep Center has no clear, agreed-to guideline on how to run AVAPS titrations, including critical outcomes (e.g., goal TCO2 values) and how to manipulate parameters. Fewer than 50% of Sleep Disorders Center Staff correctly adjust parameters pertinent to AVAPS titration.

Repercussions of incomplete or failed AVAPS titrations can be severe, as they are performed in medically complex patients. Unclear AVAPS orders and protocols can lead to an array of risks and inefficiencies:

- incomplete AVAPS titrations
- a higher number of re-titration studies with accompanying increased cost
- delays in patient care, which may increase the risk of medical complications
- decreased patient satisfaction
- decreased provider and technical staff satisfaction.

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 general goal is to increase provider knowledge of AVAPS through creation of a standard workflow.

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

Measure 1

- **Name of measure** *(e.g., Percent of . . ., Mean of . . ., Frequency of . . .)*:
  The percent of respondents who correctly answered each of 4 quiz questions.

Measure (per **quiz question**)
1. The parameters to be set during a AVAPS-PC mode titration are: Numerator: No. of correct responses Denominator: Total responses
2. Complete the following sentence: "Target CO2 during sleep should be…" Numerator: No. of correct responses Denominator: Total responses
3. In what order should you modify parameter(s) to achieve goal tidal volume before changing the set tidal volume? Numerator: No. of correct responses Denominator: Total responses
4. In a patient with obstructive sleep apnea and hypoventilation secondary to muscular dystrophy, obstructive apneas and hypopneas have resolved at CPAP 15 cm of water. The target tidal volume of 500 ml is not being met. What is the next best step? Numerator: No. of correct responses Denominator: Total responses

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

  Denominator *(e.g., for percent, often the number of patients eligible for the measure)*:
  The total number of respondents. At baseline the N was 25, including sleep fellows, sleep faculty, and technicians

  Numerator *(e.g., for percent, often the number of those in the denominator who also meet the performance expectation)*:
  The number of respondents who correctly answered each quiz question.

- **The source of the measure is:**
  - ☐ An external organization/agency, which is *(name the source, e.g., HEDIS)*:
  - ☒ Internal to our organization

- **This is a measure of:**
  - ☒ Process – activities of delivering health care to patients
  - ☐ Outcome – health state of a patient resulting from health care

10. Baseline performance

a. What were the beginning and end dates for the time period for <u>baseline</u> data on the measure(s)? 1/29/2019 – 2/1/2019

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 "Percent correct" in "Baseline" column in the table below.

Measure (per quiz question)	Baseline (1/29/19-2/1/19)	Post-Intervention (3/8/19-3/15/19)	Post-Adjustment (4/2/19-4/5/19)
1. The parameters to be set during a AVAPS-PC mode titration are:			
No. of responses	25	13	15
Percent correct responses	32%	100%	100%
2. Complete the following sentence: "Target CO2 during sleep should be…"			
No. of responses	25	13	15
Percent correct	44%	69%	100%
3. In what order should you modify parameter(s) to achieve goal tidal volume before changing the set tidal volume?			
No. of responses	25	13	15
Percent correct	20%	69%	53%
4. In a patient with obstructive sleep apnea and hypoventilation secondary to muscular dystrophy, obstructive apneas and hypopneas have resolved at CPAP 15 cm of water. The target tidal volume of 500 ml is not being met. What is the next best step?			
No. of responses	25	13	15
Percent correct	72%	31%	73%

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]."*

We will improve the percent of correct responses for all 4 quiz questions to above 50% by February 1, 2019.

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

The performance targets were determined by the project team, based on their judgement of a minimally acceptable percent of correct responses and in light of current performance and potential to effect change through two rapid quality improvement cycles.

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)*
The sleep fellows and our faculty project leader reviewed the baseline data and underlying root cause, then designed the intervention. Additional expert faculty members contributed to the countermeasures.

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

c. **When?** *(e.g., date(s) when baseline data were reviewed and discussed)*
2/1/2019 and 2/8/2019

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:*

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.*

13. What were the primary underlying/root causes for the <u>problem(s) at baseline</u> that the project can address?	**14. What intervention(s) addressed this cause?**	**15. Who was involved in carrying out each intervention?** *(List the professions/roles involved.)*
No clear standard at Sleep Disorders Center for conducting an AVAPS titration, including order of titration steps and goal TCO2 values	Creation of a standard	Sleep fellows, expert faculty members
Only a few people get formal training in managing AVAPS	Creation of a survey to assess knowledge base, with future potential plans to target educational interventions as needed	Sleep fellows, expert faculty members created the survey Sleep fellows, all providers associated with the sleep disorders center, and all technicians were invited to take the survey

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 initiate*d.) 2/27/2019

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)? 3/8/2019 – 3/15/2019

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 "Percent correct" in "Post-Intervention" column in the table above.

c. Did the intervention(s) produce the expected improvement toward meeting the project's specific aim (item 11.a)?
The first countermeasure achieved mixed results. The rate of correct responses to the first three questions did improve. The rate of correct responses for question 4 decreased. After the first cycle, a second gap was identified, leading to creation of the second countermeasure.

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)*
3/15/2019

Use the following table to outline the next plan that was developed: #20 the primary causes, #21 the adjustments(s)/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 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.

20. What were the primary underlying/root causes for the problem(s) following the intervention(s) that the project can address?	**21. What adjustments/second intervention(s) addressed this cause?**	**22. Who was involved in carrying out each adjustment/second intervention?** *(List the professions/roles involved.)*
The created standard may have been unclear or lacked detail	An interactive tutorial was created with the goal of clarifying the concepts specifically of how to optimize tidal volume once obstructive sleep apnea has been treated in a patient with hypoventilation and obstructive sleep apnea The survey was provided again after this tutorial was administered	Sleep fellows created the tutorial with some input from expert faculty members All providers and sleep lab technicians were given the interactive tutorial

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

F. Redo

23. By what date was (were) the adjustment(s)/second intervention(s) initiated? *(If multiple interventions, date by when all were initiated.)* 3/26/2019

G. Recheck

24. Post-adjustment performance measurement. Are the population and measures the same as indicated for the collection of post-intervention data (item #19)?

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

25. Post-adjustment performance

a. What were the beginning and end dates for the time period for post-adjustment data on the measure(s)? 4/2/2019 –4/5/2019

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" Percent correct" in "Post-Adjustment" column in the table above.

c. Did the adjustment(s) produce the expected improvement toward meeting the project's specific aim (item 11.a)?
Yes, responses to all four questions exceeded the 50% target; the percentage of correct responses significantly increased for question #4, as represented above

H. Readjust

26. 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 #19? ☐ Different than #19 *(describe):*

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

☒ Same as #19? ☐ Different than #19 *(describe):*

c. **When?** *(e.g., date(s) when post-adjustment data were reviewed and discussed)* 4/5/19

Use the following table to outline the next plan that was developed: #27 the primary causes, #28 the adjustments(s)/second intervention(s) that addressed each cause, and #29 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.

27. What were the primary underlying/root causes for the problem(s) following the adjustment(s) that the project can address?	**28. What further adjustments/ intervention(s) might address this cause?**	**29. Who would be involved in carrying out each further adjustment/intervention?** *(List the professions/roles involved.)*
Lab references are not aligned	Incorporation of new recommendations into the lab manual	Lab director, lab supervisors, fellows
Some minor errors in countermeasure #2 (the interactive tutorial)	Adjust countermeasure	Fellows, technologists, faculty

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

30. 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:*

I. Minimum Participation for MOC

31. 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 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 #12.
- Implementing interventions described in item #14.
- Reviewing and interpreting post-intervention data, considering underlying causes, and planning intervention as described in item #19.
- Implementing adjustments/second interventions described in item #21.
- Reviewing and interpreting post-adjustment data, considering underlying causes, and planning intervention as described in item #26.

☒ Yes ☐ No *If "Yes," individuals are eligible for MOC unless other requirements also apply and must be met – see item # 38.*

32. 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 33.*

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 # 38. If "No," continue to #37c.*

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 # 33.*

33. 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.

J. Sharing Results

34. 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?

K. Project Organizational Role and Structure

35. 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):* Neurology Department
- **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):*

☐ **Other** *(specify):*