Report on a QI Project Eligible for Part IV MOC

Notifying Patients of Sleep Study Results

Instructions

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

Completing the report. The report documents completion of each phase of the QI project. Final confirmation of Part IV MOC for a project occurs when the full report is submitted and approved.

An option for preliminary review (recommended) is to complete a description of activities through the intervention phase and submit the partially completed report. (Complete at least items 1-16 and 27a-b.) Staff from the UMHS Part IV MOC Program will provide a preliminary review, checking that the information is sufficiently clear, but not overly detailed. This simplifies completion and review of descriptions of remaining activities.

Questions are in bold font and answers should be in regular font (generally immediately below the questions). To check boxes electronically, either put an “X” in front of a box or copy and paste "✓" over the blank box.

For further information and to submit completed applications, contact either:
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QI Project Report for Part IV MOC Eligibility

A. Introduction

1. Date (this version of the report): 7/5/2016

2. Title of QI project: Notifying patients of Sleep Study Results

3. Time frame  
   a. Date physicians begin participating (may be in design phase): 11/2/2015  
   b. End date: 3/9/2016

4. Key individuals: Christopher J. Allen, MD (QI Project Leader), Aiman Mahmood, MD, Talha Memon, MD, Chandra Cherukuri, MD, Afifa Uzzaman, MD (Project Supervisor).
   a. QI project leader  
      Name: Christopher J. Allen, MD  
      Title: Fellow  
      Organizational unit: Sleep Medicine  
      Phone number: 734-763-9063  
      Email address: iamstamy@med.umich.edu  
      Mailing address: University of Michigan Sleep Disorders Center  
                      C728 Med Inn Bldg.  
                      1500 E. Medical Center Drive  
                      Ann Arbor, MI 48109-584
   
   a. Clinical leader to whom the project leader reports regarding the project  
      Name: Afifa Uzzaman, MD  
      Title: Assistant Professor  
      Organizational unit: Sleep Medicine  
      Phone number: 734-763-9063  
      Email address: afifa@med.umich.edu  
      Mailing address: University of Michigan Sleep Disorders Center  
                      C728 Med Inn Bldg.  
                      1500 E. Medical Center Drive  
                      Ann Arbor, MI 48109-584

5. Approximately how many physicians were involved in this project categorized by specialty and/or subspecialty? Five

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

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

B. Plan
7. General goal

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

Patients are not notified of their study results in a timely manner and there is a delay in ordering equipment and following up on the study. This subsequently leads to a delay in treatment, delay in notification, poor patient satisfaction, and reduction in staff productivity.

b. Physician’s role. What is the physician’s role related to this problem?

Sleep Medicine fellows are responsible for notifying patient of the results by sending a letter through Mi-Chart and also ordering equipment.

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

Improve the timing of initiation of sending letter and placing orders.

8. Patient population. What patient population does this project address.

Patients with suspected sleep disorders who are being tested using an “in lab” technician supervised polysomnogram.

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

- Effectiveness
- Efficiency
- Patient-Centeredness
- Timeliness

10. What is the experimental design for the project?

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

11. Baseline measures of performance:

a. What measures of quality are used? If rate or %, what are the denominator and numerator?

1. Total “waiting” time (delay) per fellow for all cases from completing staffing and initiating orders and letters (for cases staffed on catch-up days/Wednesdays)
   Denominator – Number of fellows
   Numerator – Total amount of time for all cases waiting from completion of staffing to initiating orders and letters

2. Mean “processing” time per case from initiating to completing orders and letters (on catch-up days/Wednesdays)
   Denominator – Number of cases
   Numerator – Total amount of processing time from initiating to completing orders and letters

3. Mean number of cases on “catch-up days,” which are Wednesdays
   Denominator – Number of catch-up days/Wednesdays
   Numerator – Total number of cases across catch-up days/Wednesdays

b. Are the measures nationally endorsed? If not, why were they chosen? No

   The measures were developed locally to reflect the performance problems of initiating and completing orders and letters.

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

   Sleep medicine fellows recorded the time it takes to initiate and to complete orders and letters.
d. What methods were used to collect the data (e.g., abstraction, data analyst)?
Team members assembled the data collected by individual fellows.

e. For what time period was the sample collected for baseline data?
2 catch-up days/Wednesdays from 11/16/2015 – 11/30/2015

12. Specific performance objectives

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

<table>
<thead>
<tr>
<th>Measures</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 Wednesdays</td>
</tr>
<tr>
<td></td>
<td>11/16/15 – 11/30/15</td>
</tr>
<tr>
<td>Number of fellows</td>
<td>4</td>
</tr>
<tr>
<td>Number of cases</td>
<td>100</td>
</tr>
<tr>
<td>Total waiting time (delay) per fellow between completing staffing a case and initiating orders and letters for the case</td>
<td>65 hours</td>
</tr>
<tr>
<td>Mean processing time per case from initiating orders and letters to completing them</td>
<td>1.05 hours</td>
</tr>
<tr>
<td>Mean number of cases per Wednesday</td>
<td>50</td>
</tr>
</tbody>
</table>

b. Specific aim: What was the target for performance on the measure(s) and the timeframe for achieving the target?
By the end of the second cycle (March 2016):
- Reduce the total waiting time (delay) per fellow between completing staffing a case and initiating orders and letters for the case from a total of 65 hours to 32.5 hours (50%).
- Reduce the mean processing time per case from initiating orders and letters to completing them from 1.05 hours to 0.5 hours (50%).
- Reduce the mean number of cases per Wednesday from 50 to 45 (10%).

b. How were the performance targets determined, e.g., regional or national benchmarks?
No national benchmarks exist. Team members developed targets based on reasonable expectations for the potential for change.

13. Data review and identifying underlying (root) causes.

a. Who was involved in reviewing the baseline data, identifying underlying (root) causes of the problem(s), and considering possible interventions (“countermeasures”) to address the causes? Briefly describe:
- **Who was involved?** Dr. Uzzaman and the fellow team members Allen, Mahmood, Memon, and Cherukuri.

- **How?** After hours meeting was held in which participating team members (4 fellows including Team Leader) reviewed baseline data procured from the survey logs data collectively at semimonthly clinical meetings and off-campus follow up.
• When? 12/14/15 and 1/4/16

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

Structure of workflow: On catch-up day all studies are read before the process of initiating orders and sending letters to patients is initiated. This results in:

• Substantial time delays between a study being read and initiating orders and letters. If the fellow does not have time to get to initiating orders and letters for all read studies, initiating orders and letters may be delayed to another day.

• Additional time to complete orders and letters. During the delay between reading a study and initiating orders and letters for the study, the fellow forgets some of the details of the study and has to take time to review the study results before initiating orders and letters.

C. Do

14. Intervention(s). Describe the interventions implemented as part of the project.

Switch from “batch” processing to “one piece flow.” To address the delay in sending letters/orders during our “catch up day” (Wednesday), a “one piece flow model” was implemented. After staffing a sleep study is completed with the attending, the sleep medicine fellow prepares the letter and sends the order. (The plan was to implement one-piece flow for at least 10 studies and do the remaining studies as a batch. However, almost all studies were processed using the one-piece flow system.)

15. Who was involved in carrying out the intervention(s) and what were their roles?
All 5 participants (Drs. Uzzaman, Allen, Mahmood, Memon, and Cherukuri). All participants involved in creating draft for the first intervention with team leader (Dr. Allen) also doing the power point presentation. Fellows were taking turns into implementing the intervention.

16. When was the intervention initiated? (For multiple interventions, initiation date for each.)
1/13/16

D. Check

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

☒ Yes ☐ No – If no, describe how this data collection

18. Performance following the intervention.

a. The collection of the sample of performance data following the intervention occurred for the time period:
4 catch-up days/Wednesdays from 1/13/2016- 2/3/2016
b. What was post-intervention performance level? (E.g., for each measure: number of observations or denominator, numerator, percent. Can display in a data table, bar graph, run chart, or other method. Can show here or refer to attachment with data.)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Baseline</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 Wednesdays</td>
<td>4 Wednesdays</td>
</tr>
<tr>
<td></td>
<td>11/16/15 – 11/30/15</td>
<td>1/13/16 – 2/3/16</td>
</tr>
<tr>
<td>Number of fellows</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Number of cases</td>
<td>100</td>
<td>208</td>
</tr>
<tr>
<td>Total waiting time (delay) per fellow between completing staffing a case and initiating orders and letters for the case</td>
<td>65 hours</td>
<td>0 hours</td>
</tr>
<tr>
<td>Mean processing time per case from initiating orders and letters to completing them</td>
<td>1.05 hours</td>
<td>0.5 hours</td>
</tr>
<tr>
<td>Mean number of cases per Wednesday</td>
<td>50</td>
<td>52</td>
</tr>
</tbody>
</table>

E. Adjust – Replan


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

   - **Who was involved?** All 5 participants (Drs. Uzzaman, Allen, Mahmood, Memon, and Cherukuri).
   - **How?** After hours meeting was held in which participating team members (4 fellows including Team Leader) reviewed baseline data procured from the survey logs data collectively at semimonthly clinical meetings and off-campus follow up.
   - **When?** 2/8/2016

   - **Reduce the total waiting time (delay) per fellow between completing staffing a case and initiating orders and letters for the case from a total of 65 hours to 32.5 hours (50%).**
     Yes, this aim was met and surpassed since all (rather than some) studies were processed using one piece flow.

   - **Reduce the mean processing time per case from initiating orders and letters to completing them from 1.05 hours to 0.5 hours (50%).**
     Yes, not having to look back for study details reduced the time to the goal.

   - **Reduce the mean number of cases per Wednesday from 50 to 45 (10%).**
     No, causes for this aim were not addressed in the initial cycle.
b. What were the primary underlying/root causes for the continuing/new problem(s) that the project can address? (Causes may be aspects of people, processes, information infrastructure, equipment, environment, etc. List each primary cause separately.)

The large number of cases with studies to be read on Wednesday results from inadequate time to read studies on Monday, Tuesday, Thursday, and Friday. The lack of time to read studies on days other than Wednesday results in the accumulation of studies to be addressed on catch-up day/Wednesday. The large number of studies to be read on Wednesdays can result in some studies not being staffed and read even on Wednesdays, further delaying care for these patients.

F. Redo

20. Second intervention. What additional interventions/changes were implemented?

Changes to work responsibilities on Mondays. To increase the number of studies read before catch-up day/Wednesday, changes were made to work responsibilities on Monday. A half day of administration (protected) time was designated to one fellow. Monday was selected because all fellows are present reading sleep studies. The fellow with administration time was responsible for:

- Reading 1 priority study; or 3 Home studies.
- Responding to patient calls regarding results, modifying orders, etc…

All remaining fellows were responsible for reading minimum of 6 studies each.

All participants involved in creating draft for the second intervention with team leader (Dr. Allen) also doing the power point presentation. Fellows were taking turns into implementing the 2nd intervention while continuing the 1st intervention.

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

Monday, 2/10/2016

G. Recheck

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

☑ Yes ☐ No – If no, describe how this data collection

23. Performance following the second intervention.

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

3 catch-up days/Wednesdays from 2/10/16 – 2/24/16
b. What was the performance level? *(E.g., for each measure: number of observations or denominator, numerator, percent. Can display in a data table, bar graph, run chart, or other method. Can show here or refer to attachment with data.)*

<table>
<thead>
<tr>
<th>Measures</th>
<th>Baseline 3 Wednesdays</th>
<th>Post-Intervention 4 Wednesdays</th>
<th>Post-Adjustment 3 Wednesdays</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11/18/15 – 12/2/15</td>
<td>1/13/16 – 2/3/16</td>
<td>2/10/16 – 2/24/16</td>
</tr>
<tr>
<td>Number of fellows</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Number of cases</td>
<td>100</td>
<td>208</td>
<td>168</td>
</tr>
<tr>
<td>Total waiting time (delay) per fellow between</td>
<td>65 hours</td>
<td>0 hours</td>
<td>0 hours</td>
</tr>
<tr>
<td>completing staffing a case and initiating orders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and letters for the case</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean processing time per case from initiating</td>
<td>1.05 hours</td>
<td>0.5 hours</td>
<td>0.5 hours</td>
</tr>
<tr>
<td>orders and letters to completing them</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean number of cases per Wednesday</td>
<td>50</td>
<td>52</td>
<td>56</td>
</tr>
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</table>

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

- Reduce the total waiting time (delay) per fellow between completing staffing a case and initiating orders and letters for the case from a total of 65 hours to 32.5 hours (50%).
  The initial intervention was continued and the reduction to 0 hours was sustained. The second intervention did not address this aim.

- Reduce the mean processing time per case from initiating orders and letters to completing them from 1.05 hours to 0.5 hours (50%).
  The initial intervention was continued and the reduction to 0.5 hours was sustained. The second intervention did not address this aim.

- Reduce the mean number of cases per Wednesday from 50 to 45 (10%).
  No, the second intervention, adding administrative time on Mondays to read studies, did not reduce the high number of studies to be read on Wednesdays.

H. Readjust


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

  - **Who was involved?** All 5 participants (Drs. Uzzaman, Allen, Mahmood, Memon, and Cherukuri). All participants involved in data analysis using the information gained from the table above regarding performance level metrics.

  - **How?** After hours meeting was held in which participating team members (4 fellows including Team Leader) reviewed baseline data procured from the survey logs data collectively at semimonthly clinical meetings and off-campus follow up

  - **When?** 3/4/2016
b. What were the primary underlying/root causes for the continuing/new problem(s) that the project can address? (Causes may be aspects of people, processes, information infrastructure, equipment, environment, etc. List each primary cause separately.)

Structure of work across the week. Fellows have many other assigned responsibilities on days other than Wednesdays (e.g., didactic lectures, return visit clinic, protocoling sleep studies). The time available for fellows to read studies on days other than Wednesday is not adequate for studies to be read on the day that results are available. This delays the reading of studies until the allocated catch-up time on Wednesdays. A simple change in providing administrative/protected time for fellow on one-half day a week is not sufficient to change the number of studies that are deferred until catch-up day/Wednesday.

If no additional cycles of adjustment are to be documented for the project for Part IV credit, go to item #25.

If a few additional cycles of adjustments, data collection, and review are to be documented as part of the project to be documented, document items #20 – #24 for each subsequent cycle. Copy the set of items #20 – #24 and paste them following the last item #24 and provide the information. When the project to be documented for Part IV credit has no additional adjustment cycles, go to item #25.

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

I. Future Plans

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

Subsequent PDCA cycles: Will not be done by this group of participants. Next year’s sleep medicine fellows will assess implementing the one-piece flow and adding admin time to all fellows for continuing to address this problem compared to other issues they can address.

26. How will the project sustain processes to maintain improvements?
The new fellows will have the choice to add one-piece flow while the do studies on “catch up” day.

27. Do other parts of the organization(s) face a similar problem? If so, how will the project be conducted so that improvement processes can be communicated to others for “spread” across applicable areas?
This process is unique to sleep medicine given the polysomnogram.

28. What lessons (positive or negative) were learned through the improvement effort that can be used to prevent future failures and mishaps or reinforce a positive result?
The one-piece model was only worked when there were less than 15 sleep studies to read on catch up day.

J. Physician Involvement

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

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

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

   a. Interpreting baseline data, considering underlying causes, and planning intervention.
Attend meetings on 12/14/15 and 1/4/16 to analyze data, consider underlying causes, and formulate relevant interventions.

b. Implementing intervention.
   Help draft the format for the Intervention #1, implement one-piece flow for at least 10 studies and the remaining studies to be done as a batch.

c. Interpreting post-intervention data, considering underlying causes, and planning changes.
   Attend meeting on 2/8/16 to review data, consider underlying causes, and formulate subsequent interventions.

d. Implementing further intervention/adjustments.
   Participated in adding administration time to a fellow’s schedule to improve the timeliness in which patients are notified and orders placed without affecting overall workload.

e. Interpreting post-adjustment data, considering underlying causes, and planning changes.
   Attend meeting on 3/4/2016 to review data, consider underlying causes, and formulate subsequent interventions.

30. How were reflections of individual physicians about the project utilized to improve the overall project?
    The formal team meetings and informal interactions among team members provided opportunities for all participants to share ideas, enabling the team to consider and act on reflections from all team members. Noteworthy for this group were the complementary backgrounds and experiences that helped the team improve the project from multiple perspectives:
    • Dr Uzzaman helped trouble shoot technical and practical problems at multiple stages of the project implementation.
    • Each one of the participating fellows took turns in implementing both interventions and give valuable feedback on their personal experience with the changes applied.

31. How did the project ensure meaningful participation by physicians who subsequently request credit for Part IV MOC participation?
    The faculty advisor (Dr. Uzzaman) and the team lead (Dr. Allen) directly oversaw the participation of all team members in each step of the project.

K. Sharing Results

32. 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

33. UMHS QI/Part IV MOC oversight – this project occurs within:
    ☑ University of Michigan Health System
      • Overseen by what UMHS Unit/Group?

      • Is the activity part of a larger UMHS institutional or departmental initiative?
        ☑ No  ☐ Yes – the initiative is:
☐ Veterans Administration Ann Arbor Healthcare System
  • Overseen by what AAVA Unit/Group?

  • Is the activity part of a larger AAVA institutional or departmental initiative?
    ☐ No  ☐ Yes – the initiative is:

☐ An organization affiliated with UMHS to improve clinical care
  • The organization is:

  • The type of affiliation with UMHS is:
    ☐ Accountable Care Organization type (specify which):

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

    ☐ Other (specify):