Interdisciplinary Team-based Population Management of Patients with Poorly Controlled Diabetes

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Goal

Describe a QI project in which a new process of care is created
Diabetes Care in GIM at BMC

According to most recent data available:

– 20% of diabetics with A1C $\geq 9$
– True number likely $> 20\%$
Strategies for improving diabetes care:

“Care should be aligned with components of the Chronic Care Model to ensure productive interactions between a prepared proactive practice team and an informed activated patient. (A)

“When feasible, care systems should support team-based care, community involvement, patient registries, and embedded decision support tools to meet patient needs. (B)
Approach

• A3 used to structure the beginning of the project
• Created a new process for population management
  - Piloted team care/outreach
  - Mapped processes of diabetes care
Population Management

- Target population:
  - patients with A1Cs $\geq 9$
- Data: “PCMH registry”
  - Patient demographics, A1C dates/values, date of last PCP visit
- Series of meetings beginning in Fall 2012 facilitated by Jim Danielson to map current processes of care and future processes of care
Intervention

- Created DM care teams (piloted with 3 PCPs, call center staff, RN, pharmD/CDE, endo NP/MD/navigator)
  - Role redesign
  - Correlation with level of team functioning and outcomes
  - Discuss and documented barriers for each patient, brainstorm solutions

- Team roles
  - Call center call patients to come in for overdue tests/appts
Team roles, cont.

- Call center links patients to DM resources: navigator, RD, NP, RN, pharmacist
- Diabetes “intensive care”
  - RNs coordinate care of high-risk patients
- Endo MD/NP/pharmacist provide expert advice re medication management
- PCP provides patient summary at beginning, but has no work to do outside of team meeting
GIM patients diagnosed with Diabetes Mellitus having an A1c value superior or equal to 9

Pre and Post Comparison of HbA1c for selected GIM patients
For Diabetics patients with HbA1c value superior or equal to 9 at pre-intervention (February 2013 - June 2013)

Overall comparison shows a statistically significant improvement from pre-intervention (10.61) to post-intervention (10.17) t (1,104) = 3.11, p = .0024

Note: The above patients are matched in both pre and post intervention
Pre and Post Comparison of HbA1c for selected GIM patients
For Diabetes patients with HbA1c value superior or equal to 9 at pre-intervention
(February 2013 - September 2013)

Average of Pre-intervention (Feb) A1C
Average of Post-intervention (Jun) A1C

Note: The above patients are matched in both pre and post intervention
Pre and Post Comparison of HbA1c for selected GIM patients

For Diabetes patients with HbA1c value superior or equal to 9 at pre-intervention

(Feb 2013 - Sept 2013)

Note: The above patients are matched in both pre and post intervention
Other outcomes

• Team building/formation of relationships
• Cross-cultural interchange
• PCP feels less “alone” with most challenging patients (e.g. hoarders, patients on opioids)
Challenges

• Need for “protected time” when care teams can meet
• Union issues with role redesign (MAs did not participate)
• Not all PCPs are open to this approach
Challenges, cont.

Spread/sustainability/availability of resources

• need 1 hour per month of PCP, call center staff, pharmacist/endo MD/endo NP (one of three), RN

• Patient navigator may lose funding end of December

• Need “planned care coordinator” to schedule meetings, print registries, ensure accountability of team members
Next steps

- Map resources
- Spreading to two PCPs who do 8 sessions/week, and to resident teams
- Identifying aspects of intervention that are most effective (e.g. call center and endo MD/NP or pharmacist) seem key
- Meet in person only for discussion of new patients (discuss four per hour)?
- Focus on patients with A1C 9-12?
Other issues

• Is this approach sufficient to manage a population of 1000 diabetics with A1C > 9?
• How to track data going forward
Lessons learned

• Value of having a process improvement specialist and using the A3
• Bottom-up approach
Completing an A3
1. Fill in the Header bar
2. Record the Team members
3. Select the review team (team that will support the A3 team with relevant knowledge & guidance)
4. Change circle number to green or red as each section/box is completed (green) or still in progress (red)

A Typical A3 life cycle is 12 months!
Box 1 – Reason for Action

- Chief Complaint
- Problem Statement
- Proactive Approach – Future Opportunity
- Clarify and then define the problem.
- Combine the answers from the following questions into one statement:
  - What - part or object, what is the deviation (the Gap)
  - Where - in the process; the Point of Cause
  - When - did it first occur, occur since…
  - How - many items effected…
  - Who - has/is affected by the problem

Standardization of the use of sedation in critically ill patients at BMC is currently effected by adherence to a standard sedation scoring system, the Riker Score; the policy targets a score of 3-4. This is generally achieved by placing patients on a continuous infusion of sedating medicines with a titration range. These medications are titrated by nurses to achieve the desired sedation.

- There is tremendous variability from nurse to nurse and shift to shift in the level of sedation patients receive.
- An important tool in limiting this variability is the use of a daily interruption of sedation (aka sedation vacations or SV).
- After initial success with a sedation vacation pilot in one ICU we have been unable to sustain the routine use of this practice
- The current use of this well established and endorsed Best Practice (SV) across our ICU’s is effectively zero.
- While there is anecdotal use of this protocol in our institution it is ad hoc, highly sporadic, and currently untrackable.

In Scope: Patients receiving mecahnical ventilation and continuous infusions of sedatives in theHAC MICU’s
Out of Scope: All other ICU patients, All other adult ICU’s, Spontaneous breathing trials
Start: Patient in ICU and requires Mecahnical Ventilation
End: Patient no longer needs Mecahnical Ventilation or leaves the ICU
**Box 2 – The Initial State**

- **What is happening now?**
- **Express the situation in time and units**
- **Use data that can later ‘prove the case’**
- **Process map Initial state**

### Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Initial State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of eligible opportunities for a daily sedation vacation performed</td>
<td>0%</td>
</tr>
<tr>
<td>5E MICU mean vent days</td>
<td>10.2</td>
</tr>
<tr>
<td>5W MICU mean vent days</td>
<td>7.2</td>
</tr>
<tr>
<td>HAC MICU Self Extubation rate</td>
<td>TBD</td>
</tr>
</tbody>
</table>

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![Process map image]
Box 3 – The Target State

- Expressed in same terms as the initial state
- Be sure to record required target not what we ‘think’ we can achieve
- Wherever possible use voice-of-the-customer
- Process map the Target state

Metrics
Percent of eligible opportunities for a daily sedation vacation performed

<table>
<thead>
<tr>
<th>Metric</th>
<th>Target State</th>
</tr>
</thead>
<tbody>
<tr>
<td>5E MICU mean vent days</td>
<td>9.7</td>
</tr>
<tr>
<td>5W MICU mean vent days</td>
<td>6.7</td>
</tr>
<tr>
<td>HAC MICU Self Extubation rate</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Legend
- Value Added (Red)
- Non Value Added (Blue)

Sedation Vacation Target State Mapping: 10.11.12

Process:
1. Patient in ICU and receiving sedation
2. Automatic order for SBT
3. Medical team assesses patient
4. Decision made by patient and family
5. SBT ordered and placed
6. SBT stopped
7. Decision made to extend SBT
8. SBT removed
9. SBT prescribed
10. Patient discharged from ICU

Be Exceptional
Boston Medical Center’s Strategic Plan
Box 4 – Gap Analysis

Fishbone

- Identify all possible causes for the situation
- Cause and Effect Diagrams help here
- Conduct investigations find ‘root cause’
- Written as a problem statement

Affinity Diagram
Box 5 – Solution Approach

- Use the “If we did this Then we would achieve this” approach to possible solutions
- Each solution should tie back to a metric from the target state

<table>
<thead>
<tr>
<th>Priority</th>
<th>If we do this…</th>
<th>Then we expect this…</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Change the time of vent rounds to accommodate RN attendance</td>
<td>Have a better time to communicate with each other</td>
</tr>
<tr>
<td>2</td>
<td>Provide education of relevant providers</td>
<td>Have the correct information on how to do the procedures</td>
</tr>
<tr>
<td>3</td>
<td>Provide on-going house staff education</td>
<td>Keep staff informed of correct procedures and information</td>
</tr>
<tr>
<td>4</td>
<td>Have daily communication and coordination to mobilize all resources</td>
<td>Keep everyone informed of patient and staff needs</td>
</tr>
<tr>
<td>5</td>
<td>Do a monthly review of data and distribution to each ICU</td>
<td>Keep everyone informed of current metrics and level of compliance</td>
</tr>
<tr>
<td>6</td>
<td>Add of target Riker score in each continuous infusion order</td>
<td>By clearly defining an endpoint, we will make it easier for the nurse to titrate the sedative</td>
</tr>
<tr>
<td>7</td>
<td>Standardize sedation vacation procedure</td>
<td>Everyone will do it the same way</td>
</tr>
<tr>
<td>8</td>
<td>Consolidate all sedative medications into an order set and the creation of a daily sedation vacation assessment task on the eMAR</td>
<td>Make it easier to order sedative medications and ensure that the sedation vacation is ordered for all appropriate patients</td>
</tr>
</tbody>
</table>
Box 6 – Rapid Experiments

- What happened when we tried stuff? Did it work?
- Conclusion?
- Sytop Its – Any tasks that need to be stopped as a result of new tasks?

<table>
<thead>
<tr>
<th>Experiment</th>
<th>How</th>
<th>Who</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the time of vent rounds to accommodate RN attendance</td>
<td>Consider moving education conference to 7:30am and vent rounds to 8:00am</td>
<td>James</td>
<td>In consideration</td>
</tr>
<tr>
<td>Education of relevant providers</td>
<td>1:1 education of RNs; education of RTs; notification of house staff</td>
<td>James, Janet, Eduarda, Julie</td>
<td>See Action Items</td>
</tr>
<tr>
<td>On-going house staff education</td>
<td>Change Kevin's sedation lecture to the first week of the house staff's rotation, as opposed to the last</td>
<td>Kevin</td>
<td>In progress - Allan Walkey notified to update lecture calendar</td>
</tr>
<tr>
<td>Daily communication and coordination to mobilize all resources</td>
<td>Write &quot;SV&quot; on white board next to patient's name to highlight the need to conduct a sedation vacation</td>
<td>Lynn, Janet, Eduarda</td>
<td>Needs to be discussed during 1:1 education</td>
</tr>
<tr>
<td>Monthly review of data</td>
<td>Will present all metrics on a monthly basis at the MICU multidisciplinary meeting; nurse champions to email RN staff to share data with those unable to attend monthly meetings</td>
<td>James, Alfie</td>
<td>See Action Items</td>
</tr>
<tr>
<td>Distribution of data to each ICU</td>
<td>Installation of placard holders on each computer terminal; this will be a means to communicate important ICU-specific info on a rotating basis</td>
<td>James, Katrese</td>
<td>See Action Items</td>
</tr>
<tr>
<td>Addition of target Riker score in each continuous infusion order</td>
<td>Add “Titrate to Riker 3-4” in the titration field of each continuous infusion order</td>
<td>Kevin</td>
<td>In progress - notified IT</td>
</tr>
<tr>
<td>Standardization of sedation vacation procedure</td>
<td>Created a standardized algorithm to assess and administer a sedation vacation</td>
<td>All</td>
<td>None</td>
</tr>
<tr>
<td>Consolidation of all sedative medications into an order set and the creation of a daily sedation vacation assessment task on the eMAR</td>
<td>Create a sedation vacation order that gets linked with propofol, midazolam, and lorazepam; sedation vacation order will generate a daily task on the eMAR to empower the RN to independently assess the patient for eligibility and conduct the sedation vacation if appropriate</td>
<td>All</td>
<td>None</td>
</tr>
</tbody>
</table>
Box 7 – Action Items

- List Activities by Projects, Events, Do-its, and stop-its
- List ‘What, Who and When’ and track progress

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>When</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAT Assessment design</td>
<td>Jenn</td>
<td>9/13/2013</td>
<td>In process</td>
</tr>
<tr>
<td>&quot;Comment&quot; sheet design</td>
<td>Julie &amp; Kathy</td>
<td>9/13/2013</td>
<td>In process</td>
</tr>
<tr>
<td>Pharmacy to stock an adequate supply of phenobarbital IV and Lorazepam syringes</td>
<td>Kevin</td>
<td>TBD</td>
<td>In process</td>
</tr>
<tr>
<td>Update on order set request from IT</td>
<td>James</td>
<td>9/13/2013</td>
<td>In process</td>
</tr>
<tr>
<td>Confirm feasibility of dispensing Lorazepam 60 mg/30 mL syringes for the protocol</td>
<td>Kevin &amp; Farnaz</td>
<td>9/13/2013</td>
<td>In process</td>
</tr>
<tr>
<td>Notify House Officeers of new order set if approved</td>
<td>James</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>Educate staff on new protocols</td>
<td>Eduarda &amp; Janet</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>Hang &quot;Comments&quot; sheet folders on the floor</td>
<td>Julie</td>
<td>TBD</td>
<td></td>
</tr>
</tbody>
</table>
Box 8 – Confirmed State

- Relates all the way back to target condition.
- Have we achieved and close the gap? Does box 8 = box 3?
Confirmed State for Sustainment
- Verify Solution and Share Learning

- Track the effect of solution against target on a graph
- Determine a “statistically significant” sustainment period and confirm no REPEAT CONCERNS for this period
- Follow and audit sustainment process to check the new solution is working/remains in place over time

Track and Verify the Solution is working!
### Box 9 – Lesson

**Lessons Learned / breakthroughs / reflections**

- What new things have we learned?

<table>
<thead>
<tr>
<th>What went well / Plus…</th>
<th>What could be improved / Delta…</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pilot in one unit</em></td>
<td><em>Secure more bedside nurses to participate in the process</em></td>
</tr>
<tr>
<td><em>Involvement of bedside nurses</em></td>
<td></td>
</tr>
<tr>
<td><em>Discussing potential barriers with large multidisciplinary group</em></td>
<td></td>
</tr>
<tr>
<td><em>Breaking up in groups to develop solutions</em></td>
<td></td>
</tr>
<tr>
<td><em>Defining specific, measurable metrics</em></td>
<td></td>
</tr>
<tr>
<td><em>Having a leader from the Quality Department (Jim Danielson) to guide us through the process</em></td>
<td></td>
</tr>
</tbody>
</table>