Improving Patient Waiting Times in the Fluoroscopy Suite: a Curriculum based Quality Improvement Project

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Team Members

• Leaders(s)
  – Dr. Pedro Diaz
  – Dr. David Dunaway

• Participants
  – Dr. Melissa Chen
  – Pamela Eilers (Technologist)
  – Mathew Owen (Technologist)
  – Donna Scott (Nursing manager)
  – Angela Russell

• Sponsors
  – Executive Sponsor: Michael Staley
  – Physician Sponsor: Dr. Marc Willis
Recent workflow changes implemented in a busy interventional radiology department resulted in patient care disruptions for those patients undergoing lumbar punctures in the fluoroscopy suite.

Inpatient lumbar punctures were often delayed up to 48 hours and outpatient lumbar punctures were being rescheduled because of a perceived lack of manpower.

Despite 6 months of discussions in monthly departmental quality meetings, no substantive improvement had been made.
Target State: SMART Goal

- Our goal was to decrease the amount of patient must wait in the fluoroscopy room to less than 10 minutes prior to the physician’s arrival to perform the lumbar puncture
Baseline Waiting Times

Patient waiting time in the Fluoroscopic Room for Lumbar punctures

<table>
<thead>
<tr>
<th>Date</th>
<th>Time (Mins)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/7/16</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>1/19/16</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>1/25/16</td>
<td>16</td>
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<tr>
<td>2/3/16</td>
<td>65</td>
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<td>2/29/16</td>
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<td>3/25/16</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>4/1/16</td>
<td>63</td>
<td></td>
</tr>
</tbody>
</table>

2016 by Day
**Analysis**

**Equipment**
- Appropriate needles/kits readily available? ie. long needles?
- Easy consent forms available to ease process for residents/fellows?

**Process**
- Residents and fellows on the service vary from day to day.
- Variable number of neuroradiology staff available from day to day depending on vacation/conferences.
- The ability of residents/fellows to complete procedures varies. Beginning of the month more challenging as everyone is new to rotations.

**People**
- Which MD resident/fellow is responsible?
- Which MD staff is responsible?
- Are nursing staff available if intrathecal chemotherapy given?

**Material**
- Residents currently untrained on how to perform procedure.

**Environment**
- IR suite? versus fluoroscopy.
- Currently infrequent procedures performed in fluoroscopy. How comfortable is all fluoro staff assisting?

**Management**
- Expectations of residents/fellows/MD staff about who is ultimately responsible for procedure has not been set; no ownership of the patients/procedures.
Key Drivers

- No plan for which trainee or which service will perform the lumbar punctures
- No agreement on which staff member will be responsible for trainee
- No agreement on when to perform lumbar puncture in IR or fluoro

Accountability: Knowing who will be in charge of performing procedures

Education of the trainees and techs

Clear communication within the team

Ensuring all involved IR and Fluoro techs know where the procedure will take place
Interventions

**Key Drivers**

- Accountability/Knowing who will be in charge of procedures
- Education of the trainees
- Communication

**Interventions / Countermeasures**

- Schedule created with fellow/resident responsible for procedures each day
- Responsibilities outlined by the program director to trainees at the beginning of the training year.
- Fellow/staff teaching the trainees that someone on the service always knows how to do it
- Person in charge checking in with the fluoro techs during the week/daily
- Handoffs needed when persons change services, carryover of procedures to the next day
Run Chart and Interventions

Wait Time in Fluoroscopy Suite

"Hawthorne Effect"

Defined role expectations
Created schedule

Fellow orientation

2016 by Day

- Wait time
- Average
# Sustain Plan

<table>
<thead>
<tr>
<th>Activity to sustain</th>
<th>Owner</th>
<th>Sustain method and frequency</th>
<th>Report to</th>
</tr>
</thead>
<tbody>
<tr>
<td>All lumbar punctures, myelograms and intrathecal chemo (IT) to be performed in the fluoroscopy suite (2).</td>
<td>Technologist</td>
<td>Technologist will receive the orders for all lumbar punctures, IT chemo and myelograms and allot the appropriate time and space for these procedures to be performed in the fluoroscopy suite. The schedule shared with trainees and staff each morning.</td>
<td>Trainee</td>
</tr>
<tr>
<td>All lumbar punctures to be performed under the diagnostic neuro service by a trainee (resident/fellow) (1, 2, 3)</td>
<td>Rad admin assistant and Trainees</td>
<td>A specific resident or fellow will be assigned each day to cover procedures and the assignment is incorporated into the trainee calendar so all team members are informed.</td>
<td>Neuro Attending</td>
</tr>
<tr>
<td>Continuity in competency of trainees to perform procedure (1).</td>
<td>Neuro Fellow and Attending</td>
<td>Neuro Attending will ensure Neuro Fellow is trained adequately. The Fellow will train Resident on service so that he or she will be competent in also performing procedure. Neuro Attending will ensure the competency of fellow within the first week and the competency of Residents within the second week of rotation.</td>
<td>Neuro Attending</td>
</tr>
<tr>
<td>Maintain efficiency (1,3).</td>
<td>Technologist</td>
<td>Continue to document wait times as a measurement of efficiency and quarterly review the data to determine if there are inefficiencies in the process.</td>
<td>Neuro Attending</td>
</tr>
</tbody>
</table>

## Reliability Level ():

1. Individuals: Feedback, checklists, training, basic standards
2. Procedures: Embedded standard work, reminders, constraints
1. Important to have baseline measurements/data
2. Keep it simple
3. Don’t assume you know the solution before going into the project
4. Success of the project requires enlistment of all shareholders
   • Each member of the team has a unique perspective that contributes to the project
   • Creates buy-in so that the improvement can be sustained
Conclusion

• Using a team-based approach, average patient waiting times in the fluoroscopy room were reduced from 60 minutes to 6 minutes
• The clinical workload of a radiology department has increased at a rapid pace for both academic and private practice
• Despite limited resources, quality improvements that directly impact patients’ experience can be made
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