Quality Improvement in a Pediatric Clinic

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Disclosure

• I have no relevant financial relationships with the manufacturers(s) of any commercial product(s) and/or provider of commercial services discussed in this CME activity.

• I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.
Disclosure

Speakers Bureau-None
Consultant-None
Research-CAPTIN, Otsuka
Stock-No major holdings

WHY DO QI WORK?

- **MOC**
  - Lots of good resources with ready-made projects
  - AAP
  - CMH
  - NCQA

- **We Need to be Better**
  - Better for patients
  - Better for staff
  - Hopefully better for us
IHI Model

Model for Improvement

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we test that will result in an improvement?

- What changes do you/the team need to make next? When will you carry out your next PDCA cycle? What will it be?
- Complete the review/analysis of your data. Compare it to what you thought might happen. Summarize what you learn from the results.
- Some plan what they will do as a small test of change, asking themselves: What do they expect to find? When are they going to do it? Who will do it? Where will it be done?
- Carry out your plan. Remember: patient, 1 day form etc. Document problems and unexpected observations. Begin reviewing/analyzing your data.

Continuous Quality Improvement Model

Repeated use of the cycle

- Experience
- Data
- Changes that result in improvement

Hunches
Theories
Ideas

- Learn as you go
- Small tests, not necessarily small changes
Standard Work

- An agreed upon set of work procedures that establishes the best and most reliable methods and sequences for each clinical and staff member. These should translate gold standards of academic work into real work, establish workflow (decreased waste and increased efficiency) and help build a culture of continuous quality improvement.

- Customization to practice specifics after we’re heading in the same direction

W. Edward Deming
How do we start?

- **Define the Current State**
  - Go to the Gemba
  - Adopt a patient perspective – adding value for the “customer”

- **Standard Tools for Standard Work of QI**
  - LEAN
  - IHI 7 tools
    - Flow Chart need an image
    - Fishbone - need an image
    - Pareto Chart - image
    - Run Charts or SPC Charts

What We’ve Done at KUMC

- LEAN
  - Virginia Mason story
  - Toyota system of management

- Quality Academy
  - Built on Intermountain Quality Program
  - Brent James
  - About 170 people so far through it
  - Establish a common culture with a common language
  - So far one outside group
The LEAN House

**Hashin kanri**

<table>
<thead>
<tr>
<th>Just in time</th>
<th>Jidoka</th>
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<tr>
<td>people</td>
<td>takt time production</td>
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<tr>
<td>materials</td>
<td>flow production system</td>
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<tr>
<td>equipment</td>
<td>pull system production</td>
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<tr>
<td>andon &amp; availability</td>
<td>leveled production (heijunka)</td>
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- **5S**
- **MUDA - TIMWOOD**
- **Heijunka - level load the work**

- **Value stream map** - low tech but requires a considerable time investment
5S in a Pediatric Clinic
Rebecca Cleans House, or at Least the Clinic

5S in Clinic
8 Wastes in Healthcare (TIM P WOOD)

**TRANSPORTING**
Moving patients, specimens, equipment or supplies on wheels

**INVENTORY**
Stock of medical or operational supplies, patients in beds, specimens waiting for analysis

**MOTION**
People reaching, bending, searching for supplies, patients, other staff

**PEOPLE POTENTIAL**
Unused or untapped potential of our staff

**WAITING**
Patients in a waiting room; waiting for lab results

**OVERPROCESSING**
Asking patients for their information more than once; ordering more labs than needed

**OVERPRODUCING**
Creating forms “in case” you need them; producing more labs than needed

**DEFECTS**
Wrong patient, wrong procedure, redraws
**What is a Value Stream Map?**

- A diagram of a process from beginning to end at a level that people can see interactions between departments, floors and processes.
Future State - OR

Value Stream Mapping

- **Cycle time = CT**
  - The time it actually takes to complete one step in the process.

- **Lead time = LT**
  - The total time from the beginning to the end of a process, including all cycle times and wait times.

- **Value added ratio = (sum of cycle times)/ LT**
  - The value added time in the process (from the patient’s perspective) divided by the total lead time.
**KaiZen workshop**

- Assemble the right team and a whole lot of sticky notes
- Team goes to the gemba and observes a workflow
- Team reassembles and builds the value stream map of current state
- Determine the value-added time in the process
- Identify the value-less time in the process
- Build your ideal future state, minimizing the value-less time
- Gap analysis between current and future state
- Start the PDSA process

**Lean summary**

- Base is most important
- Much of the columns and rooms are related to system interactions that may not be much of a concern in contained practice
- Goal – increase value
- Methodology – reduce waste
- Tools are simple, the cost is time
- Lean is really a cultural change and thus requires commitment from all
IHI Standard Tools of QI

- Fishbone Diagram
- The 5 Whys
- Flow Diagrams
- Where to intervene
- Pareto Charts
- Bang for the buck
- SPC charts
- Is the process under control

Flow Diagram or Process Map
Fishbone or Ishikawa – the 5 Whys

Ishikawa Diagram for m-CHAT Project

- Skills
- Patients
- Staff
- Environment
- Process
- System

At every 18 and 24 month Visit, a completed and scored m-CHAT will be discussed with Parents and appropriate Referrals completed

Pareto Chart

Types of Errors Discovered During Surgical Setup

- Wrong Supplier
- Excess Count
- Too Few Count
- Wrong Size
- Wrong Sterile Instrument Set
- Missing Item
- Damaged Item
- Other

Frequency

0 10 20 30 40 50 60 70 80 90 100

Wrong Supplier 67 46.5%
Excess Count 24 16.2%
Too Few Count 17 7.0%
Wrong Size 10 6.9%
Wrong Sterile Instrument Set 10 6.9%
Missing Item 8 5.4%
Damaged Item 6 4.0%
Other 2 1.3%

Statistical Process Control (SPC)

- SPC is a practical statistical approach to resolving problems. If you do any type of measurement to help gather information and find a solution, this is the tool you should use.

https://www.youtube.com/watch?v=0GfBSuwhUwl
Stop tampering!

Patient LL: warfarin anticoagulation  process capability = 94%

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<td>2.5</td>
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courtesy of Dr. Larry Staker
We’ve defined the problem – What’s next?

- Go small
- Pick some easy victories
- Accept that there is a certain amount of process to medical care

IHI Model
Bad Mistakes I’ve Made a Few

- Too big of scope
- Reduce readmission rates by 50% in the next 6 months
- Reduce the wait time in the KU ED by *** minutes
- We will improve the outcome of VAD patients.
- “first we get a CT scanner”
- Better – small steps 10% improvements in 1-2 months
- Too few team members
- “Nursing staff will ....”
- Declare victory and move on to the next project
A Few Examples

- Referrals to ITS
- Concussion process
- Outpatient ASQs at 9 and 18 months
- Inpatient asthma action plans at time of discharge
- Starting standardized IV Fluid therapy AAP VIP network project
- Outpatient fail - rapid strep screening at time of rooming
- Outpatient fail reduce parent perception of vaccine pain
Summary

- Lean and IHI/CQI are two approaches to QI work
  - Lean is a more industry-based feel
  - CQI may be a bit more academic
  - Which one works best for you depends on your situation

- Common Points
  - You have to understand the system you are working in
  - You have to have the right team
  - Go small
  - Law of unintended consequence
  - Your biggest enemy is entropy

Conclusion

- Good news is that QI is a low-tech process
  - Post-its, pens and paper will suffice
  - Bad news is that it’s a fair amount of work, mainly time

- Use standard tools in a standard work flow to get things done
- You have to REALLY understand the current state – Gemba
- Hardest task is fighting friction and entropy.
bibliography

- Institute for Healthcare Improvement website  www.ihi.org
- The Deming Institute  www.deming.org
- www.virginiamasoninstitute.org
- Understanding Variation: the key to managing chaos by Donald Wheeler
- The Toyota Way to Healthcare Excellence by John Black
- YouTube has good videos on SPC charts

Final Thoughts
FOCUS-PDSA

* **Focus** – Find an opportunity to improve
* **Organize** a team
* **Clarify** understanding of process needing improvement
* **Understand** variation, root causes, and barriers
* **Select** an opportunity and strategy
* **Plan** intervention
* **Do** intervention
* **Study** the results
* **Act** to hold the gains or continue to improve

PDSA---When you don't have years and 10 million dollars… (This Ain’t Research)

Model for improvement

- What are we trying to accomplish?
- How will we know that the change is an improvement?
- What changes can we make that will result in improvement?

- **Act**
- **Plan** a change
- **Study** its effects
- **Do** it in a small test

* guidelines may contain too many changes; therefore, select one or two to focus on at a time