Simulation

You Learn a Lot Learn by Doing the Work

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Seattle Children’s Hospital: Overview
Seattle Children’s Hospital

- Serving a four-state region (23% of US land mass):
  - Washington
  - Alaska
  - Montana
  - Idaho
- 47% of patients come from outside King County
- Licensed beds – total: 371
Leader in Pediatric Care

• 2016 *U.S. News & World Report* survey results:
  • #5 in *U.S. News* Honor Roll
  • Honored for the 24\textsuperscript{rd} consecutive year
  • Honored in all specialty service lines
• UW Department of Pediatrics ranked # 5
• Ranked 5\textsuperscript{th} on NIH list of children’s hospitals
• Children’s awarded Magnet status nursing excellence in 2013
Knowing The Unknowable

How do you know the unknowable?
What is Simulation?

**simulation**

*noun* sim·u·la·tion \\ˌsim-yə-ˈlā-shən\*

3): a: the imitative representation of the functioning of a system or process especially so that it can be studied or used to train people

“Simple Definition”: something that is made to look, feel, or behave like something else especially so that it can be studied or used to train people.

http://www.merriam-webster.com/dictionary
Simulation in Education

Jan Spruijt – Dutch Education Simulation Game Expert & University Professor

When simulation is integrated into an educational curriculum:

+ 21% in student core satisfaction
+ 14% in engagement with literature
+ 46% in time spent
+ 19% industry interaction
+ 30% in first time pass rate
What’s the Big Idea?

Simulation

Rapid Learning

Change Mgmt.

Risk Mitigation
Bedside Report

Bedside Report = Nurse Shift Change at the Bedside

in Our Region:
• Evergreen Hospital Medical Center
• Mary Bridge Children’s Hospital
• Overlake Hospital Medical Center
• Swedish Hospital
• University of Washington
• Virginia Mason Medical Center
• Seattle Children’s Hospital
Bedside Report Design

3 days
Nurses from all areas
Family involvement
Design content and process
Small test of change → Simulation
Plan for implementation and go-live
Go-live – July 20th
Shift Change Logistical Challenge

Imagine the environment...many providers, nurses, families, potential for waste.

Each colored arrow represents a pair of RN’s handing-off patients in the current process.
What Nurses Told us:

- Patients and families want to know that nurse hand-off includes all pertinent care information.

- Oncoming nurse needs clear understanding of patient’s clinical picture (i.e. IV drips, tubes/drains, incisions/wounds, supplies in the room).

- Nurses prefer not to hear negative things about a patient or family, causing preconceived judgments before even meeting them.

Bedside Report Opportunities:

- Communicate with patients and families by including them in the plan of care.

- Visualize and respond to patient needs.

- Improve nurse satisfaction by improving the quality and relevancy of the information communicated.
Simulation Planning

Considerations:
• Housewide Launch • Housewide participation • Compressed timeline

Objectives:
• Learn Quickly • Identify Risks • Gain Confidence • Develop Content

Setting:
• Actual Patient Room Environment • Electronic documentation • Representative patient and family characteristics

Evaluation Criteria:
• Time • Survey • Design Principles
Design Principles

Safety

Simple & Repeatable

Minimize Waste

Quality of Care
Simulation Scenario Development Timeline

- **Key Questions?**
  - Event Pre-work
    - Families
    - Nurses
    - Interactive Groups
    - Survey RNs
  - Simulation Development

- **Can we do it?**
  - Design Event
    - Families
    - Nurses
    - Simulation
    - Standard work to be piloted

- **Is it repeatable?**
  - Pilot
    - Trial on influential units
    - Design event champions
    - Road shows
    - Audits/observations
    - Family feedback

- **How do we Implement it?**
  - PDCA Simulation
    - Review Pilot audits/observations
    - Improvement opportunities
    - Simulate to develop
      - Standard work
      - Implementation Planning

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**Timeline:**
- **April**
- **May**
- **May - July**
Simulation Cycles of Failure and Learning

Can we do it?

**Day 1 Sim**
- Return Pt. w/ straight forward presentation
- First time inpatient
- New Diagnosis unknown to Family
- Patient’s father – Level 1 Sex Offender

**Key Learnings**
- Application of existing visual standards
- Family Interruptions
- Communication approach and pathway
- Staff Safety and Appropriate Communication

**Day 2 Sim**
- Isolation protocols
- Simulate with real families
- Timeout Protocol Development and Simulation
- Timeout Protocol Development and Simulation
Did it Make a Difference?

• Bedside Report impact to Family Experience Survey scores
  ✔ Nurses treated w/courtesy and respect + 11%
  ✔ Nurses explain in a way you understand + 8%

• End of shift overtime – decreased
  • Before bedside report ~ 712 hours
  • After implementation ~ 684 hours

• Staff satisfaction – improved
  • My questions were answered
  • Patient condition matches report
  • Shift-to-shift report gives me pertinent information
Key Takeaways

• Have a bias for action
• You learn a lot from just doing the work
• Participants who experience simulation feel engaged and become your biggest advocates
• Simulation supports consensus
Crossing the Chasm: Getting From Here to There

- New Processes
- New Customers
- New Staff
- New Expectations

- Processed food
- Batch production
- Scheduled delivery
- Patients Only

- Whole, fresh food
- Pull production
- On Demand Delivery
- Patients, Families, and Staff
Forest Kitchen: High Level Value Stream

“Nourishing our community to thrive, each and every life”
Identify Burning Questions of the Team

- How can patient pay? Cash? Credit Card?
- Where and how will tickets be printed?
- How will we manage complex formulas?
- Should families pay on delivery or prior to delivery?
- How will we handle gluten-free items?
- Can formula orders be delivered on the same cart as food?
Identify High Risk and Common Processes to Simulate

<table>
<thead>
<tr>
<th>Process Designation</th>
<th>Formula Production</th>
<th>Meal Production</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Risk</strong></td>
<td>Complex Formula (Liquid or Powder)</td>
<td>Severe allergy ticket - able to be prepared safely in the U Large quantity of tickets and maintaining FIFO Running of cell during low times vs. high times Synchronizing of inner and outer U Synchronizing of multiple meals wanted for same delivery (assuming orders at the same time) Special Diet Order Synchronizing of multiple meals wanted for same delivery Separate production for allergy</td>
</tr>
<tr>
<td><strong>Common</strong></td>
<td>Mom drops off during middle of production Breastmilk order pushed by batch production Breastmilk order pulled by nurse Sending fortifier to the floor Breastmilk with no fortifiers Breastmilk with fortifiers How best to deliver formula and breastmilk from the holding fridge to the patient Pump room maintenance Interface between orders and recipes: Standardized Recipe: Custom Recipe Simple Powder Formula Creation Simple Formula Liquid</td>
<td>10 minute or full 'cart delivery' Product replenishment at Point of Use cart delivery strategy (zone definition etc) Layout of inner u - are things in the correct location High volume vs. low volume production Amount of food and time for changeover between breakfast/lunch? Knowing which cart to put tray on Synchronizing of how cold and hot part of cell work Scan and auto 'bump-off' Expedited food order Location and timing of printing Content of what is printed where</td>
</tr>
</tbody>
</table>
Designing Simulation Scenarios: Key Components

- Identify Type of Risk
  - Is this a high risk or common process?

- Define the Scenario
  - What conditions are being tested?

- Develop the Boundaries
  - What is the starting and ending point of the test?

- Develop the Simulation Plan
  - What are the key process steps for running the test?

- Develop Evaluation Criteria
  - How will we determine if the design passes?

- Capture Burning Questions
  - What questions do you want to answer?

- Define Logistics
  - What equipment/supplies/people will be needed to do the test?

- Clarify Roles
  - Who needs to involved? Down to the role detail!

Execute!
## Simulation Scenarios Examples

<table>
<thead>
<tr>
<th>Type</th>
<th>Scenario Definition</th>
<th>Starting Point</th>
<th>Ending Point</th>
<th>Test Plan</th>
<th>Evaluation Criteria</th>
<th>Questions You Want To Answer</th>
<th>What equipment will be needed at the mockup?</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Location and timing of printing</td>
<td>Ticket prints to U and order appears on screen in U</td>
<td>Meal item is passed off to next operator w/ ticket and order 'bumped off' screen</td>
<td>See standard work</td>
<td>the workflow of Outer and Inner U workers are in sync</td>
<td>Timing, specific handoff step to reduce risk of dropping, burns, mixup of specific items</td>
<td>Spigot for water, gram scale, jugs/bottles for mixing and delivery, whisks, gloves</td>
</tr>
</tbody>
</table>
| H    | Complex Formula (Liquid or Powder) | Product Label printed | Complete formula is placed in holding fridge | Matt : Pull from Standard Work document | Is there appropriate process to complete a double check? | *Is the double check adequate for the most complex formulas (ie, salt)?*  
*Do we need independent verification?*  
Where is the holding fridge? | |

### Rapid Learning

- [Simulation Scenarios Examples](#)
Simulate! Learn! Pivot! Repeat!

Simulation
Rapid Learning
Change Mgmt.
Risk Mitigation
In Process Picture of the Forest Kitchen
Benefits and Key Learnings

• If you create the environment and space for people to voice their concerns, they will speak up…and *if you don’t know their concerns, how can you address them?*

• Standard work is the basis for improvement. As you simulate, *change your standard work!*

• Anxiety decreased as staff and leaders practiced in new environment and *this practice enabled the leaders to actually lead the change.*

• Simulation makes waste (*painfully*) visible

• *Failure is not a worst case scenario* while simulating, it’s actually the best case scenario. Fail when the stakes are low!
Simulate to Know The Unknowable

- Simulation
- Rapid Learning
- Change Mgmt.
- Risk Mitigation
Final Thoughts…

“ I never teach my pupils, I only provide the conditions in which they can learn”

Albert Einstein
1879-1955