Tools & Resources for QI Success
Pediatric Hospital Medicine National Conference

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Introductions

• Please introduce yourself to others at your table
  – Tertiary vs Community Setting
  – Clinical vs Administrative roles
  – Self Identify level of QI experience

• Share one current QI initiative you are working on or want to work on with the table.
Disclosures

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

• We do not intend to discuss an unapproved/investigative use of a commercial product/device in our presentation

Learning Objectives

• Discuss when to use specific QI tools to overcome common barriers

• Application and practice of utilizing QI tools

• Review several models of Quality Improvement Science
Before we start, what challenges are you facing?

Common Barriers with Solutions

Creating your team
- Team design
- SIPOC
- Stakeholder Analysis

Defining the scope/timeline
- Project Charter
- AIM Statement
- Gantt Chart

Identifying the problem/barriers
- Process Mapping
- Fishbone Analysis
- Key Driver Diagram
Think back to your QI initiatives. As a table, select 1 initiative to work on collectively.

Who are the members you want on your team?

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**Lead Team**
- Composition
- Project leads
- QI facilitator
- Role
- Assemble team
- Create Project Charter
- Clearly defines team roles

**Core Team**
- Composition
- Multidisciplinary
- Front line staff
- Local leadership
- Role
- Define Process
- Identify barriers
- Design new process

**Executive Sponsors**
- Composition
- "C-suite" partner
- Role
- Removes hospital level barriers
- Facilitates networking at the administrator level
Nurse orders fall precautions
Patient deemed fall risk
Nurse completes Fall Prevention Education in AST
Nurse completes Fall Risk Assessment in Admission Screening Tool (AST)

Scope of Project
From: Patient admit
To: Patient discharge

Start here
What does Multidisciplinary look like?

Suppliers
Input
Process

Patient
Parent
LIP
EMR
Admitting
Nurse
Environmental / Central Supply

Ill Child
GRAF-PIP Assessment
Fall risk Prompt
Nursing skillset / knowledge
LCH Fall Prevention
LIP Evaluation
Page / Call LIP
Documentation
Well child

Patient is admitted to LC19
Nurse completes Fall Prevention Education in AST
Nurse orders fall precautions
Best Practice initiated
Injury sustained
LIP, Nurse
Volunteer
Patient Safety Team
Leadership

Sustains injury; no injury
Timely communication and response
Appropriate level of care
Documentation of Event
SERS reported
Optimal patient outcome

Patients
Parents
LIP, Nurse
Volunteer
Patient Safety Team
Leadership

Can also be volume!
Meet their needs
Key Player
Less important
Show consideration

Power/Influence
Interest
Think again about your team you just built.

Let’s try again using our new tools!

Did the tools help you identify missing team members?

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Common Barriers with Solutions

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**Identifying the problem/barriers**
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Background

- Nationally, the urinary tract is the most common site of serious bacterial infection in infants/young children. Prevalence of UTI in febrile infants is 5-7%, up to 20% in uncircumcised males
- Clinical presentation is nonspecific – must rely on urinalysis and culture to make diagnosis
- Potential for serious long term complications
  - Renal scaring, hypertension, impaired renal function

Problem Statement

- The management and care of children with urinary tract infections is hampered by knowledge gaps among providers regarding diagnosis, variability in antibiotic prescriptive practices, unwarranted variation in clinical imaging, and lack of standardized discharge criteria and care coordination.

Project Charter Example: Patients with febrile UTI
Project Charter Example: Patients with febrile UTI

**Scope**
- All Patients seen in our Emergency Department, Convenient Care, Observation Unit and General Pediatric services from 2 months to 24 months with symptoms of a febrile Urinary tract infection
- Excluding patients with complex GU diagnoses

**Constraints**
- Identification of our cohort is difficult using administrative coding
- Chart reviews for identification of baseline data is time consuming
- Care is different for the different locations in our scope

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**What makes an AIM SMART?**

- **Specific**: Well-defined and clear.
- **Measurable**: Objectives should have a benchmark and target.
- **Attainable**: Something that can actually be reached.
- **Relevant**: Relevant to your program’s mission, vision, and goals, and is agreed-upon by stakeholders.
- **Time Bound**: Set time-frame to be met
What makes an AIM SMART?

Develop a standardized protocol for diagnosis and treatment of febrile urinary tract infection in children aged 2 to 24 months in the domains of **antibiotic stewardship**, **diagnosis with urine testing**, and **imaging and follow up**

Objectives should have a benchmark and target.

Something that can actually be reached.

Relevant to your program’s mission, vision, and goals, and is agreed-upon by stakeholders.

Set time-frame to be met
What makes an AIM SMART?

Develop a standardized protocol for diagnosis and treatment of febrile urinary tract infection in children aged 2 to 24 months in the domains of antibiotic stewardship, diagnosis with urine testing, and imaging and follow up.

...increase compliance with the entire protocol from 0 to 50%.

...then increase compliance around all three domains by 5% every three months until a control of 95%... Why: Perfection not expected. ...

Relevant to your program’s mission, vision, and goals, and is agreed-upon by stakeholders.

Set time-frame to be met.

Problem statement derived by utilization of Key Driver Diagrams;
Corporate Goal: Streamlining care with the use of Clinical Care Guidelines.

Set time-frame to be met.
What makes an AIM SMART?

- **Specific**
  - Develop a standardized protocol for diagnosis and treatment of febrile urinary tract infection in children aged 2 to 24 months in the domains of antibiotic stewardship, diagnosis with urine testing, and imaging and follow up

- **Measurable**
  - ...increase compliance with the entire protocol from 0 to 50%

- **Attainable**
  - ...then increase compliance around all three domains by 5% every three months until a control of 95%...

- **Relevant**
  - Problem statement derived by utilization of Key Driver Diagrams;

- **Time Bound**
  - Corporate Goal: Streamlining care with the use of Clinical Care Guidelines

  by June 2016

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Project Charter Example: Patients with febrile UTI

- **AIM Statement**
  - Develop a standardized protocol for diagnosis and treatment of febrile urinary tract infection in children aged 2 to 24 months in the domains of antibiotic stewardship, diagnosis with urine testing, and imaging and follow up by June 2016. The goal will be to increase compliance with the entire protocol from **0 to 50% by June 2016** and then increase compliance around all three domains by 5% every three months until a control of 95% and sustain that level indefinitely or until Evidence Based Medicine suggests the need for a new protocol.

- **Team Members**
  - Multidisciplinary Core Team
  - Lead Team
  - Executive Sponsors
Think back to your QI initiative. As a table, select 1 initiative to work on collectively (can be different from the prior example).

Time to work on your Project Charter and AIM statement!
Common Barriers with Solutions

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Process Mapping

Empiric Therapy*
PO: Cefdinir
PO: Cefixime for outpatient use only (non-formulary)
IV: Ceftriaxone
*If known to be GPCs, use Ampicillin/Amoxicillin
*If Cephalosporin allergy, use IV Gentamicin or PO Cipro
*If known to have a history of drug resistant bacteria, choose antibiotics consistent with past sensitivities

Febrile UTI Clinical Care Guidelines

Does the patient have an abnormal Urine Dip or UA (+Le, +Nitrites or >5Wbc) AND fit in the Inclusion Criteria*?

YES

Consider discharge home with PO Empiric Therapy*, instructions and follow-up care (Urology FU, Renal US, etc)

NO

Start Empiric Therapy*
How to Read a Process Map

- **Begin**
- **Decision 1**
  - **Yes** → **Process 1b** → **Waiting/Prep** → **Process 2** → **End**
  - **No** → **Process 1a**

Possible QI!

- **Identifying the problem**
- **Process Mapping**
- **Fishbone**
- **Key Driver**

Swim Lanes:

- But note all the yellow stars indicating areas for improvement!
Process Mapping Example

- **Patient Ready for Discharge**
  - Discharge Meds Needed
    - Yes: Order Home Medications and Discharge from Unit
    - No: Possible QI!
      - Order Discharge From Unit
  - Possible QI!

- **Pharmacy Hours:** 8a-8p
  - Tel. Number: 312-555-1234
  - Fax Number: 312-555-4321

- **Pharmacy**
  - Fills prescription
  - Delivers Medication to Bedside
  - Possible QI!

- **Patient Leaves Unit**

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**Swim Lanes**
- Current/Intended Process
- Multiple Input Providers
- Highlights Transitions
- Identify Opportunities

**No Swim Lanes**
- Current/Intended Process
- 1-2 Input Providers
- Overall Process View
- Identify Opportunities

**Algorithm**
- New Process
  - Examples
    - Clinical Decision Support
    - Care Pathway
    - Pharmacy Roadmap
    - ID banding
Think back to your QI initiative. As a table, select 1 initiative to work on collectively (can be different from the prior example).

Time to work on your Process Map!

Fishbone

Influencing and Contributing Factors

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Process</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Secondary cause

Primary cause

<table>
<thead>
<tr>
<th>Materials</th>
<th>Environment</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Problem/Area under review

State the problem

5 Whys?
### Fishbone

**Environment**
- Cramped Pharm environment
- Only 2 IV hoods
- RN lack of proximity to unit log book
- Distance from bedside to med room
- IV room on different floor
- Lack of sorting space in 211

**Process**
- Time changing
- Lack of just-in-time runs
- Insufficient runs
- Phone reliability
- Message queue reliability
- Paper log cumbersome
- No real-time notification of admin change
- No notification to RN that med present
- Multiple phone calls from unit to Pharm

**Personnel**
- No point person for med triangle
- Shortage of Pharm personnel on nights
- Pharmacy backfilling on nights
- 4 LOAs

### Key Driver Diagram

**Local Aim**
To increase the % of pre-existing IV antimicrobial agents that are present in PICU and 2C at least 1 Hour prior to the Scheduled admin time By 25% by 12/31/17

**Global Aim**
To ensure that the Correct medications Are administered Within the appropriate time frame

<table>
<thead>
<tr>
<th>Key Drivers</th>
<th>Secondary Drivers</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Effective 2-way communication</td>
<td>Pharmacy alerts RNs when meds on unit</td>
</tr>
<tr>
<td>Environment</td>
<td>Message queue management</td>
<td>Real-time notification of admin changes</td>
</tr>
<tr>
<td>Culture</td>
<td>Sufficient space for sorting meds</td>
<td>Point-person for queue triage</td>
</tr>
<tr>
<td>Process</td>
<td>Consolidation of all Processes into one Efficient space</td>
<td>Completion and utilization of all new Pharmacy capabilities</td>
</tr>
<tr>
<td></td>
<td>Understanding of Pharmacy &amp; RN processes</td>
<td>Blame-free reporting</td>
</tr>
<tr>
<td></td>
<td>Adequate tech runs</td>
<td>Collaborative meetings</td>
</tr>
<tr>
<td></td>
<td>Timely arrival of meds on unit</td>
<td>Tech runs every 6 hours when fully operational</td>
</tr>
<tr>
<td></td>
<td>Automated compounding process</td>
<td>Meds arrive on unit by 8am</td>
</tr>
<tr>
<td></td>
<td>Knowledge of med Re-timing</td>
<td>Tube up missing meds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compound meds by workflow manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Re-timing guide</td>
</tr>
</tbody>
</table>
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Time to work on your Fishbone or Key Driver!

Take Away: Common Barriers with Solutions

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Identifying the problem/barriers
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Review several models of Quality Improvement Science
Science of Improvement

- Forming the Team
- Model for Improvement
- Implementing Changes
- Spreading Changes

Model for Improvement

- Setting Aims
- Establishing Measures
- Selecting Changes
- Testing Changes

DMAIC
Lean
Example: CLABSI Reduction

AIM: Decrease Potentially Preventable Central Line Associated Blood Stream Infections

Metrics: Potentially Preventable Infections
Risk factor identified for CLABSI
# of non preventable CLABSI

Selecting our Change: New Template for CLABSI reviews detailing risks and preventable infections

Testing Changes

Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act
Plan
Study
Do

A step by step methodology used to solve problems by identifying and addressing the root causes of a problem

DEFINE
What is the problem or improvement opportunity? Who does the problem affect and what are their expectations?

MEASURE
How is the process currently measured and what is your performance?

ANALYZE
What are the root causes of poor performance and can they be prioritized?

IMPROVE
What solutions / improvements can be developed to eliminate or reduce poor performance?

CONTROL
How do we sustain improved performance?
**Model for Improvement**

**DMAIC**

**Lean**

**DEFINE**
Identify the problem and goal

**MEASURE**
Baseline current performance

**ANALYZE**
Validate key drivers or error

**IMPROVE**
Fix the key drivers of error

**CONTROL**
Sustain improvement

**Or in even fewer words...**

**Example: Handwashing Initiative**

**DEFINE**
Hospital Acquired Infections are prevalent in many centers leading to longer length of stay and higher cost. Improved handwashing has been shown to decrease HAIs, specifically MRSA.

**MEASURE**
Our current MRSA rate on our acute care medical floor is X. Direct observation of handwashing compliance is at 50%.

**ANALYZE**
Factors leading to our baseline metrics:
Placement of dispensers/empty dispensers and staff knowledge of importance

**IMPROVE**
Reposition hand dispensers and put in place a maintenance schedule so they are more likely to be filled. Education to all staff with signs above dispensers regarding importance.

**CONTROL**
Create dashboards that are placed in high traffic areas. Creation of a control team.
Lean Methodology

Provide what is needed, when it is needed, using the minimum amount of resources by reducing waste and improving flow.

The Ways we Waste

Lean Methodology
- Over production
- Over processing
- Waiting
- Inventory
- Motion
- Rework
- Transportation
- Staff potential
The value stream includes all actions—both value added and non-value added—that are required to bring a product/service from start to completion.

**Steps in Process**
- MD places order: 1 min
- Order awaits RN acknowledgment: 10 min
- RN releases order: 1 min
- Order received by Pharmacy: 1 min
- Order awaits action: 10 min
- Dose verified by Pharmacist: 2 min
- Placed in Queue: 15 min
- Order filled by technician: 5 min
- Order double checked by Pharmacist: 2 min
- Medication dispensed to floor: 5 min
- Medication awaits RN acknowledgment: 8 min
- RN scans medication: 1 min
- RN administers medication: 1 min

Focus on Minimizing Non-Value Add Time (Waste)
Think back to your QI initiative. As a table, select 1 initiative to work on collectively (can be different from the prior example).

Which model would fit best?

Thank You

“Individual talents get magnified many times over through the collective lens of an effective team.”

Dalal Haldeman