Using the Model for Improvement in the Real World/Report on Baseline Data

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Have You Heard of...

Total Quality Management
Continuous Quality Improvement
Six Sigma DMAIC
Lean
The Model for Improvement
Others?
A Horse of A Different Color

W. Edwards Deming

©Deming Institute
The System of Profound Knowledge

System

Psychology

Variation

Knowledge

©Deming Institute
System of Profound Knowledge

Appreciation for a System

- View its organization in terms of many internal and external interrelated connections and interactions
- Not discrete and independent departments or processes governed by various chains of command

When all the connections and interactions are working together to accomplish a shared aim, an organization can achieve tremendous results.
System of Profound Knowledge

Knowledge of Variation

“Why did something go wrong?” “Why are results so poor?” “How can we repeat this success?”

Theory of Knowledge

test its opinions, theories, hypotheses, hunches and beliefs against data to truly understand what is going on

Psychology

understand people, and particularly what motivates them to want to do a good job

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Key Factors for Quality Improvement

- **Will**: Having the desire to change the current state to one that is better.
- **Ideas**: Developing ideas that will contribute to making processes and outcomes better.
- **Execution**: Having the capacity to apply CQI theories, tools, and techniques that enable the execution of the ideas.
Quality Improvement vs. Quality Assurance

<table>
<thead>
<tr>
<th>Quality Improvement</th>
<th>Quality Assurance</th>
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</thead>
<tbody>
<tr>
<td>Systems focused</td>
<td>Relies on Inspection</td>
</tr>
<tr>
<td>Uses proactive approach</td>
<td>Uses retrospective approach</td>
</tr>
<tr>
<td>Fallibility Recognized</td>
<td>Perfection Myth</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Solo practitioner</td>
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<tr>
<td>Errors seen as opportunities for learning</td>
<td>Errors punished</td>
</tr>
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</table>

“How can we provide better services”

“How do we provide good services”

Ward, D (2014) QA vs QI NNPHI Roundtable discussion
The Human Factor

Quality does not improve on its own

People tend to look at people when things go wrong (94% of problems are related to systems)

People tend to jump to solutions

People forget to check if their solutions worked
“Every system is perfectly designed to get the results it gets.”

- Paul Bataldin
Approaches

The Typical Approach:

- Design
- Design
- Design
- Design
- Approved

CONFERENCE ROOMS

REAL WORLD

Implement
Approaches

The Typical Approach:

CONFERENCE ROOMS

| Design | Design | Design | Design | Approved |

REAL WORLD

Applied Science Approach:

CONFERENCE ROOMS

Design

REAL WORLD

Test & Modify

Test & Modify

Test & Modify

Approved

Implement
The Model for Improvement

“This model is not magic, but it is probably the most useful single framework I have encountered in twenty years of my own work on quality improvement.”

Dr Donald M. Berwick
Former Administrator of the Centres for Medicare & Medicaid Services | Professor of Paediatrics and Health Care Policy at the Harvard Medical School

The Improvement Guide, API, 2009
A Model for Learning and Change

Model for Improvement

What are we trying to accomplish

How will we know a change is an improvement

What changes can we make that will result in improvement?

Plan

Do

Study

Act

The Improvement Guide, API, 2009
What Are We Trying to Accomplish?

Aim statement:
- What?
- For whom?
- By when?
- How much?
SMART Goal

**S**pecific
What exactly is it you want to achieve?

**M**easurable
How can you measure and track the progress of the goal?

**A**ttainable
Is it actually attainable in the given time frame?

**R**elevant
Is it something that you really want to do? Will it directly benefit you?

**T**ime Based
When do you want to achieve this goal by?
Project Aim

By July 2017, five pediatric offices will make practice-based improvements that lead to enhanced care across the delivery system and strengthen the role of the medical home within the EHDI system. The participating pediatric practices will make improvements so that:

- 97% or more of all newborns have documentation of the results of their final newborn hearing screening in their medical records by 6 weeks of age
- 97% of newborns have documentation in their medical record that the results of the newborn hearing screening were discussed with the family no later than 6 weeks of age
- 97% or more of all newborns identified to have risk factors associated with hearing loss will have documentation of those risk factors in their medical record by 6 weeks of age and will have an individualized care plan by the 4 months of age
- 100% of children who do not pass their newborn hearing screening have completed an audiological evaluation by 3 months of age and documentation will be in their medical record by 4 months of age
Our Project Aim

To improve documentation in medical record that the results of the newborn hearing screening were discussed with the family no later than 6 weeks of age.

To improve documentation on all newborns identified to have risk factors associated with hearing loss in their medical record by 6 weeks of age and will have an individualized care plan by the 4 months of age.

To ensure that all children who do not pass their newborn hearing screening complete an audiological evaluation by 3 months of age and documentation will be in their medical record by 4 months of age.
Our Project Aim - Summerwood

Although we have taken a very proactive approach to following up on abnormal newborn screening tests in our patients, we have identified a number of deficits primarily associated with referral services and the subsequent results and interventional dispositions. Over the next three months we would like to establish an organized system of referral and evaluation with the University Hospital ENT/Audiology Department which will provide timely appointments, evaluation summaries and communication with regards to the immediate and future interventions necessary. We will also develop a protocol for the documentation and education of parents which will be performed at our offices.
Project Aims - Centennial

1. By May 2017, 100% of all newborns will have documentation of NBHS in their medical record by 4 weeks of age.

2. By May 2017, 100% of newborns will have documentation in the medical record that results of the NBHS were discussed by 4 weeks of age.

3. By May 2017, 100% of all newborns will have risk factor assessments for late onset hearing loss. Risk factors will include family hx, NICU>5 days, maternal infection etc. Risk factor assessment will be documented by 4 weeks.
Team Time

How would you modify your aim?

Is it

Specific
Measurable
Attainable
Realistic
Time Bound?
The Aim – A Simple and Powerful Tool

- HRSA’s Aim
- AAP’s Aim
- Health System’s Aim
- One Provider’s Aim
"Which road do I take?" she asked.
"Where do you want to go?" responded the Cheshire cat.
"I don't know," Alice answered.
"Then," said the cat, "it doesn't matter."
Measurement for Improvement
A Model for Learning and Change

Model for Improvement

What are we trying to accomplish

How will we know a change is an improvement

What changes can we make that will result in improvement?

Plan
Do
Study
Act

The Improvement Guide, API, 2009
"Not everything that can be counted counts, not everything that counts can be counted.

- Albert Einstein
Quality Improvement is about changing and improving care provided to infants and their parents.

- It is **not** about measurement.
- However ......
Measurement Assumptions

• The purpose of measurement in QI is for **learning** not judgment
• All measures have limitations, but the limitations do not negate their value
• Measures are one voice of the system. Hearing the voice of the system gives us information on how to act within the system
• Measures tell a story; goals give a reference point
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Improvement</th>
<th>Accountability</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim</td>
<td>Improve care</td>
<td>Compare, reassure, spur change</td>
<td>New knowledge</td>
</tr>
<tr>
<td>Methods</td>
<td>Yes</td>
<td>N/A. Evaluate current performance</td>
<td>Test blind or controlled</td>
</tr>
<tr>
<td>Test Observable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bias</td>
<td>Accept stable bias</td>
<td>Adjust data to reduce bias</td>
<td>Design to eliminate</td>
</tr>
<tr>
<td>Sample Size</td>
<td>Just enough data, small sequential samples</td>
<td>N/A. Report 100%</td>
<td>Just in case data</td>
</tr>
<tr>
<td>Hypothesis Flexible</td>
<td>Yes. Revised as learn and test</td>
<td>No hypothesis</td>
<td>Fixed hypothesis</td>
</tr>
<tr>
<td>How to determine</td>
<td>Run or Shewhart charts</td>
<td>No focus on change</td>
<td>Hypothesis, Statistical tests: F-test, t-test, chi square, p value</td>
</tr>
<tr>
<td>improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Strategy</td>
<td>Small sequential tests</td>
<td>No tests</td>
<td>1 large test</td>
</tr>
<tr>
<td>Data confidential</td>
<td>Data used only by those involved in improvement</td>
<td>No subjects. Data is for public</td>
<td>Subjects protected</td>
</tr>
</tbody>
</table>
Measures

Outcome

Process

Balancing
How we display our data influences how we use our data
Aggregate data

Intervention begins in January 2014

Was the improvement due to the intervention?
Time Ordered Data

Decreased mortality was not due to the new protocol, which may have had a negative effect.

2013 Avg. = 5%

Intervention begins in January

2014 Avg. = 4%

Median = 4.5
Aggregate vs. Time Ordered

- Bar chart showing percent mortality in 2013 vs. 2014.
- Line graph showing mortality over months from January to December, with a decrease in 2014.
- Note: Decreased mortality was not due to the new protocol, which may have had a negative effect.
- Intervention begins in January 2014, with a 2013 average of 5% and a 2014 average of 4%.
“You can’t fatten a cow by weighing it”

Palestinian Proverb
Pre-work Baseline Record Review

- Records should be pulled and reviewed per practice (not just physician champion records)
- Review **ALL medical records** from the immediate past 3-months (November 2016 through January 2017) for both of the following patient populations:
  - Children at least 6 weeks old identified as having a “do not pass” newborn hearing screening result
  - Children at least 4 months old identified as having a “do not pass” newborn hearing screening result
- Review **up to 20 medical records** from the immediate past 3-months (November 2016 through January 2017) for both of the following patient populations (**up to 40 records total**):
  - Children at least 6 weeks old identified as having **passed** the newborn hearing screening result
  - Children at least 4 months old who your practice identified as having **passed** the newborn hearing screening result
Measures – 6 weeks

Screening Results Received
Screening Results Reviewed with Family
Risk Factors Assessed
Risk Factors Reviewed with Family
Referred for outpatient rescreen
Referred to diagnostic – DNP only
Measures – 4 months

Risk Factors care plan created
Documentation of audiology results
Diagnostic appointment completed by 3 months
Diagnostic appointment reviewed by 4 months
Screening Results

Results Conversation

Cycle 1 (N=124)
Cycle

Goal All Practices

Goal All Practices

Percent

Percent
Outpatient Screening & Audiological Exams

Outpatient Screening Results

Referral to audiological exam

Cycle 1 (N=10)

Goal All Practices

Percent

Cycle

0.0 10.0 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100.0
Risk Factor Assessment

Risk Factors

Cycle 1
(N=124)

Risk factors conversation

Cycle 1
(N=124)

Risk Factors Care Plan

Cycle 1
(N=0)
Audiological Exam Follow-up
Moving Forward – Monthly

20 Charts

- 6 weeks
- 4 months

ALL WHO DO NOT PASS
Feedback on data collection

What went well...
Not so well...
What surprised you in your charts...
What questions do you have about the measures...
Planning for Change Using The Model for Improvement
A Model for Learning and Change

Model for Improvement

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

Plan

Do

Study

Act

The Improvement Guide, API, 2009
Where are the opportunities
Driver Diagram

Used to conceptualize an issue

Determine the components of a system that help you move towards a goal

Is the theory behind any project
What is in it

Outcome (aim)

Primary Drivers – Main components which will contribute to achieving the outcome

Secondary Drivers – Interventions, changes, and/or projects that will affect the primary driver
What Changes Can We Make?
Understanding the System

Aim: An improved system

Primary Drivers

Outcome

Secondary Drivers

Process Changes

Change 1
Change 2
Change 3

Drives

Effect

Cause
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### Aim

1. Newborn hearing screening results are reviewed with all families
2. Children with risk factors associated with delayed, late-onset, or progressive hearing loss have an individualized care plan to address each risk factor.
3. All children who do not pass their newborn hearing screening receive reliable and timely audiological evaluation and this care is co-managed with the pediatrician.
4. Engage family representation in your practice based Quality Improvement efforts.

### Primary Drivers

1. Newborn hearing screening results are shared promptly with the infants primary care provider.
2. Families receive standardized and consistent communication about hearing screening results.
3. Document conversations with families about hearing screening results in the medical record.
4. Families of children who do not pass newborn hearing screening or have risk factors demonstrate engagement in next steps for follow-up.

### Secondary Drivers

1. All children are assessed for risk factors using a systematic approach.
2. Documentation of risk factor assessment and outcomes are easily found with the infants medical record.
3. Follow up plan is created for all children with identified risk factors and this plan is communicated with the family.
4. Ensure next necessary referrals and medical appointments are made and the family understands next steps.
5. Diagnostic audiological evaluation completed no later than 3 months of age.
6. Create partnership with diagnostic providers to ensure timely transfer of information.
7. Identify family representation to inform your systems of care Quality Improvement efforts.
8. Include family representation in key decision processes to improve the system of care.
9. Utilize family experience/knowledge to identify improvement opportunities.
Driver Diagram

Show the relationship of several items to our ability to accomplish the aim

Will relate to each of your systems differently

Leads us to ideas
Ideas
But there is more than one way to...

Bake a cake

Make a bed

Drive to work
Change Concept: A general notion or approach to change that has been found to be useful in developing specific ideas for changes that lead to improvement.

**Concept**

An opportunity to create a new connection

Thought process

Specific idea A

Specific idea B
The PDSA Cycle

Four Steps: Plan, Do, Study, Act

Also known as:

- Shewhart Cycle
- Deming Cycle
- Learning and Improvement Cycle
Planning for change: PDSA cycles

SMALL (VERY SMALL) tests of change

1 family, 1 nurse, 1 infant, 1 intervention

Over and over (and over) again – same scenarios, different scenarios

Reflect on each one – adapt / adopt, real time change
Learning with the PDSA cycle: Plan

**ACT**
Select an action based on the results of the test:
- Adopt
- Adapt
- Abandon

**PLAN**
Prediction If ____ Then____
Plan to carry out the test (who, what, when?)
Plan for data collection

**DO**
Carry out the plan
Document observations – successes/unexpected issues
Begin analysis of data

**STUDY**
Compare to prediction
What did you learn
What was unexpected
What about the data
Use of the PDSA Cycle

Proposals, Theories, Ideas

Changes That Result in Improvement

PDSA’s will grow each time
Why Test?

- Increase the belief that the change will result in improvement
- Predict how much improvement can be expected from the change
- Learn how to adapt the change to conditions in the local environment
- Evaluate costs and side-effects of the change
- Minimize resistance upon implementation
Moving from Developing, to Testing, to Implementing a Change

Degree of belief that the change will result in improvement.

High

Developing a change
Testing a change cycle 1, cycle 2, ...
Implementing a change

A successful change
Change still needs further testing
Unsuccessful proposed change
Brainstorming Ideas

- Screening
- Children who do not pass
- Risk Factors Assessment
- Conversations with families
Common Hang Ups

Starting too big
Decision by committee
Implementing too quickly
Decisions without data
Spreading too quickly
Tasking not testing
Talking not doing
Team Time

Choose 1 idea you could try in the next 2 weeks
Create a plan using the PDSA worksheet
Report Out
Resources

**IHI** - http://www.ihi.org/education/IHIOpenSchool/resources/_layouts/ihi/pages/videos/ViewAll.aspx?tc=14896aaa-7504-4ba1-88f6-647b6a96de98&tcOp=Or&tt=Improvement%20Capability&TargetWebPath=/education/ihiopenschool/resources&sort=ModifiedDate%7CDescending&xchildtags=1


**Books**: 

- The Improvement Guide
- The Health Care Data Guide
- Switch
- Made to Stick
- Why Some Ideas Survive and Others Die
Thank You!
Amanda Norton
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“The secret of change is to focus all of your energy, not on fighting the old, but on building the new.”

— Socrates