The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.
Session Objectives

At the end of the program participants will be able to:

- Apply rapid cycle improvement techniques to facilitate change
  - Identify a goal
  - Plan a test of change
  - Study if the change made an improvement
- Make quality improvement part of everyday work
Introductions & Icebreaker

*Table Share and Pair Share*

- Facilitator Introductions
- Participant Introductions

**Table Share** - introduce yourself to everyone else at your table

**Icebreaker – Pair Share**

- Think back to your traditional learning experiences in elementary, middle, high school, or college
- Think of a place you feel like you enjoyed learning better than the traditional setting (camp, sports teams etc.)
“At the heart of a learning organization is a shift of mind from seeing ourselves as separate from the world to connected to the world, from seeing problems as caused by someone else or something “out there” to seeing how our own actions create the problems we experience”

Peter Senge
The Fifth Discipline
What is Quality?

“I don’t know, but I know when I see it!”

Anonymous
Don’t believe everything you think
Quality Improvement or Alphabet Soup?
The Deming Chain Reaction

Improve quality...
Costs decrease...
Productivity improves...
Capture market with better quality/lower price..
Stay in business and grow...
Provide more benefit to society...

W E Deming Out of the Crises 1986
### Evolution of Quality (in healthcare)

<table>
<thead>
<tr>
<th>Period</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910-1950</td>
<td>American College of Surgeons/Donebedian (1918)</td>
</tr>
<tr>
<td></td>
<td>First Quality Manual Published (18 pages!) (1926)</td>
</tr>
<tr>
<td></td>
<td>Deming and Juran become prominent figures in the field of quality management in industry (1945)</td>
</tr>
<tr>
<td>1950-1990</td>
<td>JCAHO (1951)</td>
</tr>
<tr>
<td></td>
<td>JCAHO Medical Audit &amp; Performance Evaluation (1972)</td>
</tr>
<tr>
<td></td>
<td>JCAHO Agenda for Change Announced—Use of Clinical Indicators (1986)</td>
</tr>
<tr>
<td>1990-Present</td>
<td>Institute for Healthcare Improvement Founded (1991)</td>
</tr>
<tr>
<td></td>
<td>A Variety of Methodologies for Improvement Emerged</td>
</tr>
<tr>
<td></td>
<td>NICHQ Founded &amp; IOM publishes “To Err is Human” (1999)</td>
</tr>
<tr>
<td></td>
<td>IOM publishes Crossing the Quality Chasm (2001)</td>
</tr>
<tr>
<td></td>
<td>IHI launches Improvement Campaigns (2004)</td>
</tr>
</tbody>
</table>
Similarities in Approach

1. Organizational commitment to quality
2. Focus on the customer
3. Fix systems (processes)
4. Foster teamwork and group problem solving
5. Base improvement decisions on data
6. Continuously improve (as long as you live)
7. No quick fixes
Scale of Formality of Approach for Improvement Efforts

- Improve the family's shopping experience
- Improve a process in a hospital
- Design a new service line
- Redesign a national system (e.g., Medicare)

- Improve service in a clinic
- Redesign the medication system
- Reorganize an health care system

Least formal and complex

Formality, documentation, tools, time, group interaction, measurement, etc.

More formal and complex

Less required

More required
Change

The Model for Improvement (MFI) is a method to help increase the odds that the changes we make are an improvement.
Model for Improvement
3 Fundamental Questions

- **Aim**
  - What are we trying to accomplish?

- **Measures**
  - How will we know that changes are an improvement?

- **Ideas – PDSA cycles**
  - What changes can we make that will result in an improvement?
What Are We Trying to Accomplish?

**Aim:** A written statement of the accomplishments expected from each improvement effort; similar to SMART objectives

**Key components:**

- Should answer, “what are we trying to accomplish?”
- Identify specific target system or patient population to be improved

We add:

- Some guidance for carrying out the work
- Numeric goals

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Why an Aim Statement?

- Answers and clarifies “What are we trying to accomplish?"
- Creates a shared language and shared methods
- Facilitates organizational conversations and understanding
- Supports accountability for team leaders
Developing the Aim Statement

- Align with strategic goals of the organization
- Use numerical goals consistent with your project plan
- Write a clear and concise statement indicating "who, what, when, and where"
  - **Who** will undertake the work, and who will be affected by it
  - **What** does the team intend to do
  - by **When** will the aim be accomplished
  - **Where** - define pilot site and spread site(s)
SMAART Aims (Objectives)

- **Specific**: Understandable, unambiguous
- **Measurable**: Numeric goals
- **Actionable**: Who, what, where, when
- **Achievable** (but a stretch)
- **Relevant** to stakeholders and organization
  - Strategic, Compelling, Important
- **Timely**: with a specific timeframe
Institute of Medicine
Definition of Quality (2001)

"The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."
IOM - 6 Dimensions of Quality

- Effective
- Safe
- Patient-centered
- Efficient
- Timely
- Equitable
We will maximize the satisfaction, health, and well-being of our patient population by eliminating disparities in health care. By providing extraordinarily timely, efficient, patient-centered, and culturally responsive care, we will also benefit our staff, clinicians, and leadership and eliminating waste in our system. We will achieve this by implementing the following improvements by December 2014:

1) 90% of all front line and managerial staff will complete culturally responsive care training.

2) 80% of all clinical staff (all disciplines) will complete a training on how to work with interpreters.

3) 100% of all project teams and improvement efforts chartered to reduce disparities, will have visible leadership support, and adequate resources.
I will improve my state of physical and mental health by working over the next 3 months to improve my diet, increase my exercise, and learn a new activity. I will accomplish this by:

1) **Eating at least 4 servings of fruit and veggies/day**
2) **Limiting red meat to 3 servings a week**
3) **Walking 10,000 steps a day measured with my pedometer**
4) **Taking a course on “how to knit” and knitting one item**
AIM Exercise

- Write an AIM statement for either a work project or a personal project
- Share it with a partner
Model for Improvement
3 Fundamental Questions

- **Aim**: What are we trying to accomplish?

- **Measures**: How will we know that changes are an improvement?

- **Ideas – PDSA cycles**: What changes can we make that will result in an improvement?
How do we know that a Change is an Improvement?

Improvement efforts should focus on developing and making changes, not measurement.

But measurement plays an important role:

- Key measures are required to assess progress on the team’s aim
- Specific measures are required for learning during PDSA cycles
- Balancing measures are needed to assess whether the system as a whole is being improved
- Data from the system (including from patients and staff) can be used to focus improvement and refine changes
Measures – How do we know we are moving towards successfully achieving our goals?

Process Measures
1. % staff and managers who have completed culturally responsive care training.
2. % of all clinical staff (all disciplines) who have completed a training on how to work with interpreters.
3. % of teams and improvement efforts chartered to reduce disparities
4. % teams in #3 who have an actively engaged leader and budgeted resources

Outcome Measures
1. 20% improvement on patient satisfaction scores on survey
2. 10% increase in market share

Balancing Measure
1. % increase in manager and staff turnover
Run Chart Example
Access and Flow

3rd Next Avail. Appt. for a New Routine Referral

Days
0.0 5.0 10.0 15.0 20.0 25.0 30.0

Pat Heinrich RN, MSN email: Pat@heinrichllc.com
Sample Run Chart
Capacity - % Open Next Four Weeks
Cycle Time Results for Units 1, 2 and 3
### 3 Faces of Measurement

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Improvement</th>
<th>Accountability</th>
<th>Clinical Research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aim:</strong></td>
<td>Improvement of care</td>
<td>Comparison, choice, reassurance, spur for change</td>
<td>New knowledge</td>
</tr>
<tr>
<td><strong>Methods:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test observability</td>
<td>Test observable</td>
<td>No test, evaluate current performance</td>
<td>Test blinded</td>
</tr>
<tr>
<td>Bias</td>
<td>Accept consistent bias</td>
<td>Measure and adjust to reduce bias</td>
<td>Design to eliminate bias</td>
</tr>
<tr>
<td>Sample size</td>
<td>“Just enough” data, small sequential samples</td>
<td>Obtain 100% of available, relevant, data</td>
<td>“Just in case” data</td>
</tr>
<tr>
<td>Flexibility of hypothesis</td>
<td>Hypothesis flexible, changes as learning takes place</td>
<td>No hypothesis</td>
<td>Fixed hypothesis</td>
</tr>
<tr>
<td>Testing strategy</td>
<td>Sequential tests</td>
<td>No tests</td>
<td>One large test</td>
</tr>
<tr>
<td>Confidentiality of data</td>
<td>Data used only by those involved in the improvement</td>
<td>Data available for public consumption</td>
<td>Research subjects’ identities protected</td>
</tr>
</tbody>
</table>

Measures Exercise

- How will you know your changes are an improvement?
- Plan a “Family of Measures” for your professional or personal project
  - Identify one or more **Outcome Measure(s)**
  - Identify one or more **Process Measure(s)**
  - Identify a **Balancing Measure**
- Share with your partner
Let’s have a little fun......

**Marshmallow Spaghetti Tower**

- **Objective:** To construct a tower as high as possible using spaghetti and marshmallows

- **Rule:** Use only materials provided

- **Try it!**
Model for Improvement
3 Fundamental Questions

What are we trying to accomplish?

How will we know that changes are an improvement?

What changes can we make that will result in an improvement?

- Aim
- Measures
- Ideas
The PDSA Cycle: 4 Steps

Act  Plan

Study  Do
The PDSA Cycle for Learning and Improvement

Small scale test
Series of tests
Wide-scale tests
Implementation spread

**Act**
- What changes are to be made?
- Next cycle?

---

**Plan**
- Objective
- Questions and predictions (why)
- Plan to carry out the cycle (who, what, where, when)
- Plan for data collection

---

**Do**
- Carry out the plan
- Document problems and unexpected observations
- Begin analysis of the data

---

**Study**
- Complete the analysis of the data
- Compare data to predictions
- Summarize what was learned
To Be Considered a PDSA Cycle

- The test or observation was **Planned** (including a plan for collecting data).
- The plan was attempted (**Do** the plan).
- Time was set aside to analyze the data and **Study** the results.
- **Action** was rationally based on what was learned.
Repeated Use of the PDSA Cycle

Changes That Result in Improvement

Implementation of Change

Wide-Scale Tests of Change - designed to predict and prevent failures

Follow-up Tests - over a variety of conditions to identify weaknesses

Very Small Scale Test – simple and designed to succeed

Hunches
Theories
Ideas

Process measures and feedback on Cycle questions

DATA
Repeated Use of the PDSA Cycle for my Personal Project

Hunches Theories Ideas:
Walking to and from work will help me reach my 10,000 step goal

Changes That Result in Improvement
Implementation of Change – every day ongoing
Wide-Scale Tests of Change - designed to predict and prevent failures – walk everyday even busy days at work
Follow-up Tests - over a variety of conditions to identify weaknesses – walk sun or rain
Very Small Scale Test – simple and designed to succeed – walk to work tomorrow

Pat Heinrich RN, MSN email: Pat@heinrichllc.com
Successful Cycles to Test Changes

- Plan multiple cycles for a test of a change
- Think a couple of cycles ahead
- Initially, scale down size of test (# of patients, clinicians, locations)
- Test with volunteers
- Do NOT try to get buy-in or consensus for test cycles
- Be innovative to make test feasible
- Collect useful data during each test
- In latter cycles, test over range of conditions
PDSA Examples

- The “Rocket Boys”
  - Count the PDSA cycles
Project Scoping: Where should we start our work?

- Do we have targets (SMART objectives)?
- Do we have ideas that will achieve these targets?
- What is our degree of belief that these ideas will give us the desired results in all the target settings?

  *High* degree of belief → adapt and spread ideas

  *Moderate* degree of belief → test ideas

  *Low* degree of belief → generate new ideas
Choosing Better Ideas: Where to start?

Degree of belief that the change will result in improvement:

- High
- Moderate
- Low

Prototype

Pilot

Adapt & Spread

A successful change

Change still needs further testing. There is a risk of implementing at this stage.

Unsuccessful proposed change
<table>
<thead>
<tr>
<th>Current Situation</th>
<th>Resistant</th>
<th>Indifferent</th>
<th>Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Confidence that current change idea will lead to Improvement</td>
<td>Cost of failure large</td>
<td>Very Small Scale Test</td>
<td>Very Small Scale Test</td>
</tr>
<tr>
<td></td>
<td>Cost of failure small</td>
<td>Very Small Scale Test</td>
<td>Very Small Scale Test</td>
</tr>
<tr>
<td>High Confidence that current change idea will lead to Improvement</td>
<td>Cost of failure large</td>
<td>Very Small Scale Test</td>
<td>Small Scale Test</td>
</tr>
<tr>
<td></td>
<td>Cost of failure small</td>
<td>Small Scale Test</td>
<td>Large Scale Test</td>
</tr>
</tbody>
</table>
Roger’s Attributes of the Change that Affect the Rate of Adoption

- **Relative advantage**
  (evidence from testing)
- **Compatibility** with current system
  (structure, values, practices)
- **Simplicity** of the change and transition
- **Testability** of the change
- **Observable** - ability to observe the change and its impact
Types of Adopters

- Innovators: 2%
- Early Adopters: 13%
- Early Majority: 35%
- Late Majority: 35%
- Traditionalists: 15%
The “Tipping Point”

“The name given to that one dramatic moment in an epidemic when everything can change all at once.”

- M. Gladwell

“The part of the diffusion curve from about 10 percent to 20 percent adoption is the heart of the diffusion process. After that point, it is often impossible to stop the further diffusion of a new idea, even if one wished to do so.”

- E. Rogers
Experience: The Sequence Exercise

- What are we trying to accomplish?
- How do we know the change (your choices) are improvements (make you money)
- How can we accelerate learning (be the first to win!)
Simulation: Learn the sequence

- What is the rule or theory that predicts the sequence of numbers?
- Question: how can I use theory or prediction to accelerate learning and improvement?

- Each team will test their rule or theory.
- When you know the rule, you may implement.
What are we trying to accomplish?

We found a new technology represented by a sequence of numbers that can help our health centers improve health care. We want to discover the rule (or theory) that generated this sequence.

Each health center team should run tests to determine the rule. When they are sure that they have the rule (based on enough tests), then implement the technology in their clinic.
How will we know that a change is an improvement?

- Correct predictions of results of PDSA tests
- A statement of the correct rule upon implementation
Sequence Exercise (*if time permits*)

Accelerate improvement by:

– Doing more testing
– Understanding the difference between testing and implementation
– Using measurement for learning
– Using PDSA cycles for learning
– Team Practice Skills
Teams start with $50,000

Purpose of the exercise is to predict the number sequence

Teams have three options for their plan:

1. Collect data or develop a change
2. Test a change
3. Implement a change

You are bankrupt if your losses exceed $50,000!
## Prediction Sequence Exercise

<table>
<thead>
<tr>
<th>Options for Plan:</th>
<th>Cost</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop a change or collect data</td>
<td>$1,000</td>
<td></td>
</tr>
<tr>
<td>(gather more information)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Test a change</td>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>(Predict the next number)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If prediction is <em>correct</em>,</td>
<td></td>
<td>$6,000</td>
</tr>
<tr>
<td>If prediction is off by 1,</td>
<td></td>
<td>($3,000)</td>
</tr>
<tr>
<td>If prediction is off by &gt; 1,</td>
<td></td>
<td>($6,000)</td>
</tr>
<tr>
<td>3. Implement a change</td>
<td>$5,000</td>
<td></td>
</tr>
<tr>
<td>(Predict all numbers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If prediction is <em>correct</em>,</td>
<td></td>
<td>$40,000</td>
</tr>
<tr>
<td>If prediction is wrong,</td>
<td></td>
<td>($40,000)</td>
</tr>
</tbody>
</table>
Remember

- Steal shamelessly and share seamlessly
- And…..
  - Some is not a number
  - Soon is not a time
  - Hope is not a plan
References

- Attewell, P. Technology Diffusion and Organizational Learning, *Organizational Science*, February, 1992
References

- Fraser S. Spreading good practice; how to prepare the ground, *Health Management*, June 2000.