Back to the Basics: Building Essential Skills for Quality and Patient Safety

Azhar Ali, MD
Executive Director, Middle East Asia Regions
Frank Federico RPh
Vice President

Intensive
Monday, September 26
9:30 AM – 4:30 PM
Faculty

Frank Federico
Vice President
Sr. Safety Expert

Dr. Azhar Ali
Executive Director
Head of IHI Asia Pacific Region
Participants

- Singapore
- Australia
- Thailand
- Hong Kong
- Japan
- Malaysia
- India
- England
- United States
- New Zealand
<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period 1</td>
<td>9:30 – 10:30</td>
</tr>
<tr>
<td>Mid morning refreshments</td>
<td>10:30 – 11:00</td>
</tr>
<tr>
<td>Period 2</td>
<td>11:00 – 12:00</td>
</tr>
<tr>
<td>Lunch</td>
<td>12:00 – 13:00</td>
</tr>
<tr>
<td>Period 3</td>
<td>13:00 – 14:30</td>
</tr>
<tr>
<td>Mid afternoon refreshments</td>
<td>14:30 – 15:00</td>
</tr>
<tr>
<td>Period 3</td>
<td>15:00 – 16:30</td>
</tr>
</tbody>
</table>
IHI Background

- Founded by Don Berwick and colleagues
- Grew out of National Demonstration Project on Quality Improvement in Health Care (NDP)
- First National Forum was the NDP Summit
- Incorporated in 1991
- From 4 employees to now 120
- Office in Cambridge, Massachusetts
- Remote employees in many other locations
- Work in North America, Europe, and Africa
IHI’s Strategy to Improve Health and Health Care Worldwide

Transforming health care will require:
- Reliable systems for providing safe, harm-free, evidence-based care
- Patients and families empowered to be genuine partners in their care
- New models for high-quality, high-value care
- Building improvement capability at all levels
- Improving health, improving care, and lowering per capita cost (Triple Aim)

Creating a culture of health will require:
- Health care systems optimized for “health” and “care”
- Bridges between health care, community, and public health
- Healthy communities initiatives
- Creating enabling conditions
- Peer-to-peer supports
- New mindsets

Supporting our customers wherever they are on the journey

Working in five Focus Areas

Leveraging IHI’s Core Strengths

- **Innovating** new models and methods
- **Convening** globally to harvest, share, and spread learning
- **Partnering** with others to accelerate the pace and scale of improvement
- **Driving** measurable results worldwide within health care and across communities
Improvement requires change and not all change is improvement.
www.ihi.org
The problems that exist in the world today cannot be solved by the levels of thinking that created them.

Albert Einstein
Balancing Improvement, Planning and Control
Quality Trilogy

Joseph Juran

Quality Design (Planning)

Quality Assurance (Control)

Quality Improvement
Quality Trilogy

- **Quality Design** – purpose is to leverage all we know about providing good quality service or product to our clients – system creation

- **Quality Assurance** – purpose is to assess when we have achieved the intended quality of service or product – yes/no identification - ACCREDITATION, NATIONAL INDICATOR PROGRAM

- **Quality Improvement** – purpose is to move the system from current state of performance to a new state of performance defined by our definition of Quality
What does this mean?

- **Quality Planning**: You develop a new process using the principles of reliability from the beginning.
- **Quality Control**: You monitor the process to be certain that it is working as designed. Does it deliver the outcome you want?
- **Quality Improvement**: The process is not delivering the outcomes as designed so it must be improved.
Juran Trilogy

Need a new process

QUALITY PLANNING

Plan to control – is there proof of concept i.e. prototype and implementation plan?

Process is stable and capable

Can not control a process that is not capable

QUALITY IMPROVEMENT

QUALITY CONTROL
The Sequence

- **PLAN** - the process using a quality process to deliver the outcome you want.

- **QUALITY IMPROVEMENT** - use an improvement process to create proof of concept (‘I know that the process as planned actually creates the results we want’) and we scale up that process so that we get the same superior results everywhere.

- **QUALITY CONTROL** - monitor the process to be sure it is reliability delivering the outcome. Example: you put the process in place and you monitor the results.
A Quick Exercise

- Think of your work: list 3 processes you work with everyday.
- Where would you say you spend your time with those processes: planning, controlling or improving?
What is Quality Improvement?
Quality Improvement & The Know-Do Gap

What we know

What we do

Yesterday
Today
Tomorrow
Two Fundamental System Principles

Every system is perfectly designed to achieve the results it gets.  - Batalden

If each part of a system, considered separately, is made to operate as efficiently as possible, then the system as a whole will not operate as effectively as possible.

- Ackoff (1981)
Quality Improvement

The techniques and methods used to take us from where we are, to where we want to be
Three Necessary Ingredients for Improvement

- **Building Will**
  - Motivating health care provider organizations to think beyond the status quo and imagine a better system

- **Harvesting Ideas**
  - Finding, cultivating, or inventing new approaches for better patient care

- **Getting Results (Execution of the ideas)**
  - Providing the support, methods and tools for teams to take action

*Understanding Psychology can help us with the Will*
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
Stuck......
The Foundation for All Quality Models

Deming’s Profound Knowledge
- Understanding Systems Thinking
- Understanding Variation

CQI
- Understanding Theory
- Understanding Human Behavior (Psychology)

Juran’s Quality Trilogy
- Quality Planning
- Quality Control
- Quality Improvement
The Science of Improvement

Dr. W. Edwards Deming stressed the importance of studying four areas to become more effective in leading improvement:

• Appreciation of a system
• Understanding variation
• Theory of knowledge
• Psychology
Two Types of Knowledge

**Subject Matter Knowledge:** Knowledge basic to the things we do in life. Professional knowledge.

**Profound Knowledge:** The interaction of the theories of systems, variation, knowledge, and psychology.
Knowledge for Improvement

Improvement: Learn to combine subject matter knowledge and profound knowledge in creative ways to develop effective changes for improvement.
The system of profound knowledge provides a lens. It provides a new map of theory by which to understand and optimize our organizations. It provides an opportunity for dialogue and learning!
What insights might be obtained by looking through the Lens of Profound Knowledge?

**Appreciation for a System**
- Interdependence, dynamism
- World is not deterministic
- Optimization, interactions
- System must have an aim
- Whole is greater than sum of the parts

**Theory of Knowledge**
- Prediction
- Learning from theory, experience
- Operational definitions
- PDSA for learning and improvement

**Psychology**
- Interaction between people
- Intrinsic motivation, movement
- Beliefs, assumptions
- Will to change

**Understanding Variation**
- Variation is to be expected
- Common or special causes
- Ranking, tampering
- Potential mistakes
On using the System of Profound Knowledge

Common Trap – a technique does not work, and so the method is discounted/blamed
Organizational Transformation Requires….

A Vision and Bold Aims Coupled with Relentless Execution of Small, Repeated Tests of Large Changes
Engaging Others

Teamwork and Clinician Involvement
- People understand the need to change
- People are equipped with the right tools
- People are empowered to take action
- People change their behaviors
Why Improvement Projects Fail

- Lack of senior leader engagement
  - Know improvement, align strategy, mentor teams
- Loss of improvement expert
- Lack of capability at the front line
- Lack of useful data or analysis of data
- No formal system to hardwire new process
  - Fall back to what they know

Why Improvement Projects Fail

- We do not get to the root of the problem
- We do not understand human factors and engineer systems to deal with the human condition
- We do not simplify
- We add steps to the processes that result in increased complexity

Frank Federico’s Observations
There is no substitute for knowledge
Management is prediction, any plan is a prediction.
Prediction is based on theory
Operational definitions - put communicable meaning to a concept.
Analytic vs. Enumerative Studies
All Roads Lead To…

A set of processes that need designing, redesigning, and improving.
Exercise

- What improvement methods have you used?
- What has been the success rate of your efforts?
- Why do you think you succeeded or failed?
The Sequence

- Set as an aim
- Plan measures you will use – process, outcome, balancing?
- Plan tests of change (as many as needed)
- Design a PDSA
Making Sense of the Tools in the Toolkit
Which Method to Use?
AIM

Spread and Diffusion

Lean Methods

Reliability

Rapid Improvement Model

IDEO

Tool Box

KP Patient Safety U
## Ranking Continuous Improvement Methods

<table>
<thead>
<tr>
<th>Continuous Improvement Method Implemented</th>
<th>Percentage Of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean manufacturing</td>
<td>40.5%</td>
</tr>
<tr>
<td>Lean and Six Sigma</td>
<td>12.4%</td>
</tr>
<tr>
<td>Total quality management</td>
<td>9.9%</td>
</tr>
<tr>
<td>Agile manufacturing</td>
<td>3.8%</td>
</tr>
<tr>
<td>Toyota Production System</td>
<td>3.1%</td>
</tr>
<tr>
<td>Six Sigma</td>
<td>3.1%</td>
</tr>
<tr>
<td>Theory of Constraints</td>
<td>3.0%</td>
</tr>
<tr>
<td>Other</td>
<td>5.2%</td>
</tr>
<tr>
<td>No Methodology</td>
<td>19.1%</td>
</tr>
</tbody>
</table>

http://www.industryweek.com/PrintArticle.aspx?ArticleID=13941
The Aim Should Drive the Method Used
Are the Approaches Really Different?

- Appear to be different because of their historical development and labeling
- The differentiating factors are a matter of emphasis on the core concepts of
  - Variation
  - Flow
  - Customer focus
Can We All Agree That No Matter the Methodology These Questions Must Be Answered?

- What are we trying to improve?
- How will we know the change is an improvement?
- What changes will we make to improve?
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?
Question #1: 
What are We Trying to Accomplish?

Developing the improvement team’s Aim Statement
Today’s Problems are Yesterday’s Solutions

- Complex areas such as variance reduction, patient readmissions, or flow forecast accuracy are not a quick fix
- One question to reflect upon is "How long did it take us to get into this situation?"
Constructing an Aim Statement

- **Boundaries**: the *system* to be improved (scope, patient population, processes to address, providers, beginning & end, etc.)
- Specific **numerical goals** for **outcomes**
  - Ambitious but achievable
- Includes **timeframe** *(How good by when?)*
- Provides **guidance** on sponsor, resources, strategies, barriers, interim & process goals
Constructing an Aim Statement

- **Involve senior leaders**
  - Obtain sponsorship (geared to the project’s complexity)
  - Provide frequent and **brief** updates (practice the 2 minute elevator speech)

- **Focus on issues that are important to your organization**
  - Connect the team Aim Statement to the Strategic Plan
  - Build on the work of others (steal shamelessly!)
Aims

- Improvement relies on **intention** to improve
  - Senior leaders set & align aim with strategic goals.
  - Middle management understand – and can translate the project work to the strategic goals.
  - Agreement on aim is critical
- Aim should be **unambiguous**...**clear, specific, numerical, measurable**
  - Strong message in **stretch** goal
- Avoid aim “drift”
Guidance to Develop an Aim Statement

- What is your measurable goal?
  - What is the improvement area (and why is it important)?
  - What is the numerical goal? (e.g. baseline and improvement position)

- What is the scope of your project?
  - Target population or patient group?
  - Geographical or provider based scope?
  - Specific process start and end points?

- When do you want to achieve this? (i.e. by when)
  - Time frame?
Example #1 of an Aim Statement

Aim Statement for the IHI Hospital Acquired Infections Community:

Overall, to reduce infections from MRSA, VRE and *C. diff* by 30% within 12 months.

**How good? By When?**

**Hope is not a plan!**
Example #2 of an Aim Statement

In a pilot population, our hospital will decrease peri-operative harm by 25% within 1 year by focusing on prevention of surgical site infection (SSI) and implementation of pre-procedural briefings in orthopedic and vascular surgery.

Team:
- Leadership: VPMM
- Technical: Orthopedic surgeon
- Day-to-day: OR manager, surgical technician
- Additional members: Safety specialist, nursing

- **System:** perioperative harm in pilot population
- **Goal:** 25% reduction
- **Timeframe:** 1 year
- **Guidance:** Team membership
In the pilot units, we will reduce the incidence of Ventilator Acquired Pneumonia by 50% within 3 months and to zero within 1 year. Within one year, reduce VAP incidence by 50% system-wide, and to zero within 2 years.

We will ensure that our work contributes to a sustainable QI infrastructure to support future projects.

- **System**: ventilator care in pilot units, all hospitals – (all drivers?)
- **Goal**: Reduce VAP “by 50%”, “to zero”
- **Timeframe**: 3 months, 1 year, 2 years
- **Guidance**: Build QI infrastructure
Examine These Aims

Surgical
Achieve 100% compliance with appropriate selection and timing of prophylactic antibiotic administration

Diabetes- Chronic Disease
Reduce diabetic patient admissions by 75 percent within 11 months

Heart Failure- Outpatient
Patients with HF recognize deterioration and call the office within 10 months.
Checking on Our Aim

• How do we know we have the right aim?
  • Relative versus absolute
  • How much by when

• What will be people’s concerns about the aim?
  • Is it strategic?
  • Does it align with priorities?
  • Been there, done that.
Scenario 1

- You have been late for work three times in the last two weeks.
- Set an aim to improve your on-time arrival at work.
Scenario 2

- You are the manager of a delivery company. Customers are complaining that the packages are not arriving on time. You want to work with your team of employees to improve on-time delivery.
- Develop an aim statement
Scenario 3

- Your team wants to ensure that patients receive medications on time.
- Develop an aim statement
Do Not Negotiate the Ambition of the Aim

- Negotiate time to get to the aim
- Think about using half-lives
- Remind folks that we will get there through a program of testing and spread
- Keep the ‘hard red goal line’ on every graph
- Consider relative (50% improvement) versus absolute goal (2% infection rate)
Exercise

- Work alone or together in a small group
- Choose an improvement effort / topic of common interest & relevance to the group
- Develop a strong, clear aim statement to guide improvement work on this topic
- Discuss how you would set the goal in this aim statement
Measurement for Improvement

Dr. Azhar Ali

September 2016
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
## The Three Faces of Performance Measurement

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Improvement</th>
<th>Accountability</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aim</strong></td>
<td>Improvement of care (efficiency &amp; effectiveness)</td>
<td>Comparison, choice, reassurance, motivation for change</td>
<td>New knowledge (efficacy)</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 or controlled</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>Flexible hypotheses, changes as learning takes place</td>
<td>No hypothesis</td>
<td>Fixed hypothesis (null hypothesis)</td>
</tr>
<tr>
<td>• Testing Strategy</td>
<td>Sequential tests</td>
<td>No tests</td>
<td>One large test</td>
</tr>
<tr>
<td>• Determining if a change is an improvement</td>
<td>Run charts or Shewhart control charts (statistical process control)</td>
<td>No change focus (maybe compute a percent change or rank order the results)</td>
<td>Hypothesis, statistical tests (t-test, F-test, chi square), p-values</td>
</tr>
<tr>
<td>• Confidentiality of the data</td>
<td>Data used only by those involved with improvement</td>
<td>Data available for public consumption and review</td>
<td>Research subjects’ identities protected</td>
</tr>
</tbody>
</table>

You can’t fatten a cow by measuring it…..but you can’t reach your goal without measurement

Commitment to data that is

• Simple (set of core measures) that everyone uses, has high value
• Easy to collect and report
• Tracks intermediate and outcome metrics
• “real time”, accurate, complete
• Transparent/observable
• accountable
Three ways to get better numbers

1. Improve the system.
2. Distort the system.
3. Distort the numbers.

Brian Joiner, Ph.D., statistician, founder of Joiner Associates, Kevin’s boss, teacher and friend. He sketched his "better numbers" analysis 30 years ago.

Source: Kevin Little
Distorting the system & the numbers

Measurement Use: Judge schools and students as successful based on the scores from a competency test.

"Unless fifty-eight per cent of students passed the math portion of the test and sixty-seven per cent passed in language arts, the state could shut down the school."

Source: Kevin Little

www.newyorker.com/magazine/2014/07/21/wrong-answer
Data Grief

5 Stages of Grief

Denial

Anger

Bargaining

Depression

Acceptance
System of Feedback

Source: Brandon Bennett, Improvement Science Consulting
PDSA Measures
Guide Learning about our testing.

Process Measures
Guide Learning about how our testing is improving reliability of the process.

Outcome Measures
Guide Learning about how the reliability of the process is achieving our aim.
<table>
<thead>
<tr>
<th>Types of Measures</th>
<th>Description</th>
<th>The Surgical Sight Infection FOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
<td>The voice of the customer or patient. How is the system performing? What is the result? Is our improvement work making a meaningful impact?</td>
<td>Surgical Sight Infection Rate</td>
</tr>
<tr>
<td>Process</td>
<td>The voice of the workings of the process. Are the parts or steps in the system performing as planned. Are we on track to improve?</td>
<td>Percentage of appropriate prophylactic antibiotic selection. Percentage of on time administration of prophylactic antibiotics. Percentage of a safety climate score greater than 4.</td>
</tr>
<tr>
<td>Balancing</td>
<td>Looking at a system from different directions or dimensions. What happened to the system as we improved the outcome and improvement measures? Are we producing perverse unintended consequences in our efforts to improve? What other factors may be affecting results?</td>
<td>Patient satisfaction Cost per case</td>
</tr>
</tbody>
</table>
An Operational Definition...

... is a description, in quantifiable terms, of what to measure and the steps to follow to measure it consistently.

- It gives communicable meaning to a concept
- Is clear and unambiguous
- Specifies measurement methods and equipment
- Identifies criteria

Operational Definition

**AIM**

- a) Decrease stillbirths by 40%
- b) decrease birth asphyxia by 30%
- c) decrease newborn mortality due to birth asphyxia by 30% over 18 months in all participating hospitals

**OUTCOME MEASURES**

- Fresh Stillbirth rate
- Incidence of birth asphyxia
- Proportion of newborn deaths due to birth asphyxia
- Caesarean section as a proportion of total deliveries

**OPERATIONAL DEFINITION**

- No. of fresh still birth in facility during month/ Total No. of births (live birth + still birth) in facility
- No. of babies born with birth asphyxia in facility during month/ Total No. of live births in facility
- No. of newborn deaths due to birth asphyxia in babies born in the facility during month/ Total No. of newborn deaths in facility
- No. of caesarean section in the facility during month/ Total No. of deliveries (vaginal + caesarean) in facility

**DETAILS**

- Need to identify fresh still birth
- Need to define birth asphyxia
- Need to define birth asphyxia
# Process Measures

<table>
<thead>
<tr>
<th>AIM</th>
<th>PROCESS MEASURES</th>
<th>OPERATIONAL DEFINITION</th>
<th>TOOL TO MEASURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Decrease stillbirths by 40% (b) decrease birth asphyxia by 30% (c) decrease newborn mortality due to birth asphyxia by 30% (d) Establish C-section rate of minimum 5% over 18 months in all participating hospitals</td>
<td>All women in labor will be assessed for risk identification</td>
<td>If oxytocin is used for augmentation of labor, the SOP on Oxytocin administration will be followed</td>
<td></td>
</tr>
<tr>
<td>All women in labor will have a partogram completed correctly</td>
<td>All high risk deliveries attended by a personnel receiving regular drills on newborn resuscitation</td>
<td>Pre-delivery checklist used before all high risk deliveries to prepare for newborn resuscitation</td>
<td></td>
</tr>
<tr>
<td>Babies with birth asphyxia given AMBU bag and mask within first golden minute (1 minute) of life</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Variation

- What is variation?
  - The act, process or result of varying
  - The extent or degree to which something varies

- Synonyms:
  - difference
  - disparity
  - dissimilarity
Understanding Variation

If we don’t understand the variation in our data, we may...

- Deny the data (It doesn’t fit my view of reality!)
- See trends where there are no trends
- Try to explain natural variation as special events
- Blame and give credit to people for things over which they have no control
- Distort the process that produced the data
- Kill the messenger!
- Miss opportunities for improvement
Sources of Variation

- **Common Causes**—those causes inherent in the process over time, affect everyone working in the process, and affect all outcomes of the process. Can be seen as random variation with multiple causes or due to multiple variables.

- **Special Causes**—those causes *not* part of the process all the time or do not affect everyone, but arise because of specific circumstances. Assignable.
Types of Variation

**Common Cause Variation**
- Is not ‘good variation’
- Is stable and predictable
- Due to the design of the process
- Does not mean that the variation is acceptable

**Special Cause Variation**
- Is not ‘bad variation’
- Unstable and unpredictable
- Due to irregular or unnatural causes - intentional or unintentional
- Does not mean that the variation is acceptable
Your Drive to Work....

- How much time does it usually take at 7:30 on a Monday morning?
- On Tuesday night at 10 PM?
- Is this special or common cause variation?
Variation: Improvement Strategies

**SPECIAL CAUSE**
Investigate the special cause, find out what’s different and then seek to manage the special cause

**COMMON CAUSE**
Take action on the system as a whole by reducing the variation in the variables within the process
Variation Quiz: 2x2 table

<table>
<thead>
<tr>
<th>YES or NO ?</th>
<th>Common Cause</th>
<th>Special Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the Process or System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigate the Cause</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES or NO?</td>
<td>Common Cause</td>
<td>Special Cause</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Change the Process or System</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Investigate the Cause</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>
Data display and Run Charts

Dr. Azhar Ali

September 2016
Azhar’s Correct Spelling on Slides

93%
Azhar’s Correct Spelling on Slides

Last week: 94%

Yesterday: 93%
Azhar’s Correct Spelling on Slides
Azhar’s Correct Spelling on Slides
Run Charts

- Power of data graphed over time
  - Allows you to “see” variation
  - Useful tool for identifying whether special causes are present
    - Is the process “in control” i.e. predictable

- Easy to interpret
Pepper ... And Salt
THE WALL STREET JOURNAL

"I wouldn't celebrate quite yet, the graph is sideways."
In the Improvement world we are trying to introduce special cause (change) and then make it common cause (sustainable) over time – a new process.
Variation Speaks

Run Charts

- A **run chart**, also known as a **run-sequence plot** is a graph that displays observed data in a time sequence.
- No calculations required
- Median

Run Chart Rules
  - Shift
  - Trend
  - Astronomical point
Elements of a Run Chart

The centerline (CL) on a Run Chart is the Median

\[ \bar{X} (CL) \]
Three (3) simple rules that indicate if something is not typical random variation. Only one rule needs to be present.

**Rule 1**

Shift: the purpose of this test is to identify a shift in the process. A run containing 6 or more consecutive data points all above or all below the median indicates a non-random pattern in your data which should be investigated. This non-random pattern may be a signal of improvement or of process degradation. (The IHI extranet)

**Rule 2**

Trend: The purpose of this test is to identify a low-probability trend in the data set. A trend is defined as 5 or more consecutive points constantly increasing or 5 or more consecutive points decreasing. If a trend is detected it indicates a non-random pattern in your data which should be investigated. (The IHI extranet definition)

**Rule 3**

**Astronomical Point(s)**

An astronomical point is one that is obviously and blatantly much higher or lower than all the other points on the chart. On a run chart this rule is not determined statistically but rather by judgment or consensus. (The IHI extranet definition)
Analysis of Run Charts

Special Cause Rule Number 1: Shifts
Six or more consecutive points either above or below the center line (mean or median). Values on the center line are ignored, they do not break a run, nor are they counted as points in the run.

SERUM GENTAMICIN LEVELS - TROUGH

Mean = 2.0
Analysis of Run Charts

Special Cause Rule Number 2: Patterns
Any non-random pattern may be an indication of a special cause variation. A general rule is to investigate any non-random pattern that recurs five or more consecutive times.

DIASTOLIC BLOOD PRESSURE

Mean = 94.32
Analysis of Run Charts

Special Cause Rule Number 3: Points Outside Limits
A point or points outside control limits is/are evidence of special cause. Control limits are calculated based on data from the process.

TEST FOLLOW-UP PROCESS
Medication Administration Process

SHIFT DOWN

Mean = 22.5

Elapsed Time to Administer Medication in Minutes

Medication Sequence
Process for Obtaining a Stat Consult

SHIFT UP

Median = 3.75
Process for Admitting from Outpatient Clinic

Median = 3.0
Test Follow-up Process

Random Variation

Median = 35
Coronary Artery Bypass Graft

Mortality Rate (%)

Jan 13: 5.9%
Jan 14: 1.1%
Coronary Artery Bypass Graft

CABG Mortality Rate: Clinic I
Coronary Artery Bypass Graft

CABG Mortality Rate: Clinic II
Coronary Artery Bypass Graft

CABG Mortality Rate: Clinic III
There are two ways to view data

**STATIC VIEW**
- Descriptive Statistics
  - Mean, Median & Mode
  - Minimum/Maximum/Range
  - Standard Deviation
- Bar graphs/Pie charts

**DYNAMIC VIEW**
- Line Chart
- Run Chart
- Control Chart
- Statistical Process Control (SPC)
Improvement uses static and dynamic data

- Static views are suited to assess variation \textit{at a point in time}
- Dynamic views are best for measuring \textit{changes in data variation}
Decrease in Delay Time (Hours)

Before Change (Week 4) | After Change (Week 11)
8 | 3

How confident are you that the change, implemented in week 7, has led to an improvement?

Sandy Murray, Institute for Healthcare Improvement
Scenario One

Sandy Murray, Institute for Healthcare Improvement
Scenario Two

Sandy Murray, Institute for Healthcare Improvement
Scenario Three

ACTION
Scenario Four
Example: Results of New CHF Protocol (static)

- New CHF Protocol Introduced
- Readmission Reduced from 30% to 24%
- Best Practice Spread to entire Region!
Same data … dynamic view

90 Day CHF Readmissions

New CHF Protocol Introduced

Working Example from Kaiser Permanente Improvement Institute
How will we know that a change is an improvement?

1. By **understanding the variation** that lives within your data

2. By **making good management decisions** on this variation (i.e. don’t overreact to a special cause and don’t think that random movement of your data up and down is a signal of improvement)
Change vs. Improvement

Of all changes I’ve observed, about 5% were improvements, the rest, at best, were illusions of progress.

W. Edwards Deming

- We must become masters of improvement
- We must learn how to improve rapidly
- We must learn to discern the difference between improvement and illusions of progress
LUNCH
Driver Diagrams

Frank Federico, RPh

31 August 2016
Theory of Change

What do you have to do to achieve the aim?

Example: Improve flow through the hospital by freeing up X number of beds by DATE.
A driver diagram depicts the relationship between the aim, the primary drivers that contribute directly to achieving the aim, and the secondary drivers that are necessary to achieve the primary drivers.

A driver diagram represents the team members’ current theories of “cause and effect” in the system – what changes will likely cause the desired effects.
Components of Driver Diagrams

The **Driver Diagram**: tells us everything in the system that we need to work on to reach our aim.

**Primary Drivers**: tells us the BIG categories of work needed to reach our aim.

**Secondary Drivers**: the changes we need to make to complete the Primary Driver.

**Change Package**: what we actually have to do to make the changes work.
What Changes Can We Make?
Understanding the System for Weight Loss

Primary Drivers
- Calories In
  - Limit daily intake
  - Substitute low calorie foods
  - Avoid alcohol
  - Work out 5 days
  - Walk to errands

Secondary Drivers
- Outcome

“Every system is perfectly designed to achieve the results that it gets”

Source: Richard Scoville, Improvement Advisor
WORKSTREAM 1 (conception to 1 year)

Theory of what drivers infant mortality

Aim

Reduce infant mortality

Post-birth actions

Social Issues

Pre-birth maternal health

Detailed Aim:
To reduce by 15% the rates of stillbirth & infant mortality by 2015

1°

1°

Poverty

Housing

Domestic Abuse & Violence

Attachment

Health

Parenting skills

Maternal smoking

Maternal drinking

Maternal misuse of drugs

Maternal Obesity

Maternal mental health

2°

Improved teamwork, communication and collaboration

Improved uptake of benefits

Increase rate of breastfed babies

Quicker diagnoses of Neonatal Abstinence Syndrome

Improved leadership & culture

Improved family centred response

Improved stability / permanence for LAC

Improved identification

Increase referrals

Improved management of care

Improved sharing of information

Improved planning

Identification & reasons for current resilience
VTE Prevention

Risk assessment

Appropriate prophylaxis

Patient and Family Engagement

Aim

Detailed Aim: how much by when

Theory of what drivers prevent VTE

Theory of what actions will prevent VTE
Getting Started

1. Agree on the project “aim” (what will be improved, by how much, for whom, by when).

2. Brainstorm all of the system elements, or drivers, that team members feel are necessary to achieve the aim or are likely to affect it. Don’t worry about whether drivers are “primary” or “secondary” at this point.

3. Logically group the drivers, and define high-level “headers” that summarize the groups. The headers will be the primary drivers. The grouped items will be the secondary drivers associated with each primary driver.
Getting Started

4. Check the drivers for duplicates, clarity, missing elements, and team consensus.

5. You can now draw connecting arrows showing the cause-and-effect relationships (if secondary drivers have multiple arrows to more than one primary driver, then the grouping may need to be adjusted; most secondary drivers should align under one primary driver each).
6. You are now ready to define the interventions or strategies (the “hows”) that you will use to have an impact on the various drivers.

7. You can also define project measures for tracking progress, to test and modify your theories for improvement, and to monitor for overall project effectiveness.
Can you develop Driver Diagrams for Everything Improvement Effort?
Driver diagram informs testing, testing refines theory / FIGURE 3

Outcome

Primary drivers
- Primary driver 1
- Primary driver 2
- Primary driver 3

Secondary drivers
- Secondary driver 1
- Secondary driver 2
- Secondary driver 3
- Secondary driver 4
- Secondary driver 5

Specific change ideas
1 2 3 4 5 6 7 8 9 . . . N

Change concepts
- Concept 1
- Concept 2
- Concept 3
- Concept 4
- Concept 5
- Concept 6

Model for improvement

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

Key leverage points in the system

Specific ideas, concepts and bundles that could generate the desired state

Act
Plan
Study
Do
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
The PDSA Cycle

**Plan**
- Objective
- Questions & predictions
- Plan to carry out: Who? When? How? Where?

**Do**
- Carry out plan
- Document problems
- Begin data analysis

**Act**
- Ready to implement?
- Try something else?
- Next cycle

**Study**
- Complete data analysis
- Compare to predictions
- Summarize

What’s next? Did it work? Let’s try it! What will happen if we try something different?
Plan, Do, Study, Act Cycle

Plan:
- Objective
- Questions and predictions (why)
- Plan to carry out the cycle (who, what, where, when)

Act

Do

Study
Plan, Do, Study, Act Cycle

- **Act**: Carry out the plan
- **Plan**: Document problems and unexpected observations
- **Study**: Begin analysis of the data
- **Do**:
Plan, Do, **Study**, Act Cycle

- **Plan**
- **Do**
- **Study**
- **Act**

**Study**
- Complete the analysis of the data
- Compare data to predictions
- Summarise what was learned

**Act**

**Do**

**Plan**
Plan, Do, Study, **Act** Cycle

- **Act**: What changes are to be made? Next cycle?
- **Plan**
- **Study**
- **Do**
WON'T LEARNING FROM YOUR MISTAKES ONLY MAKE YOU BETTER AT DOING THINGS WRONG?
The PDSA Cycle

**Plan**
- Objective
- Questions & predictions
- Plan to carry out: Who? When? How? Where?

**Do**
- Carry out plan
- Document problems
- Begin data analysis

**Study**
- Complete data analysis
- Compare to predictions
- Summarize

**Act**
- Ready to implement?
- Try something else?
- Next cycle

**What's next?**
- Did it work?
- Let's try it!

**What will happen if we try something different?**
The Sequence of Improvement

1. **Develop a change**
   - Prerequisites for change
   - Test a change
     - Test under a variety of conditions
     - Implement a change
     - Embed in daily operations
   - Spread throughout the system

Confidence that change is effective

Institute for Healthcare Improvement
# Think About the Size and Scope of a Test

<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></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost of failure large</strong></td>
<td>Very Small Scale Test</td>
<td>Very Small Scale Test</td>
<td>Very Small Scale Test</td>
</tr>
<tr>
<td><strong>Cost of failure small</strong></td>
<td>Very Small Scale Test</td>
<td>Very Small Scale Test</td>
<td>Small Scale Test</td>
</tr>
<tr>
<td>High Confidence that current change idea will lead to Improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost of failure large</strong></td>
<td>Very Small Scale Test</td>
<td>Small Scale Test</td>
<td>Large Scale Test</td>
</tr>
<tr>
<td><strong>Cost of failure small</strong></td>
<td>Small Scale Test</td>
<td>Large Scale Test</td>
<td>Implement</td>
</tr>
</tbody>
</table>
Why Test?

- Increase belief that the change will result in improvement in your environment.
- Predict how much improvement can be expected from the change.
- Learn how to adapt the change to conditions in the local environment.
- Minimize resistance upon implementation.
To be Considered a Real Test

- Test was planned, including a plan for collecting data.
- Plan was carried out and data was collected.
- Time was set aside to analyze data and study the results.
- Action was based on what was learned.
Objective
Test to spin a coin for the longest amount of time in 15 minutes

Materials
Any Singaporean Coin
PDSA Tracker Form
Run Chart
Smartphone timer
# PDSA Tracker

<table>
<thead>
<tr>
<th>#</th>
<th>Plan</th>
<th>Do</th>
<th>Study</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Large coins last longer</td>
<td>2p = 10 seconds</td>
<td>Started to wobble. Time = 7</td>
<td>No, Three seconds short. Large Size/weight</td>
</tr>
<tr>
<td>2</td>
<td>10p will spin longer</td>
<td>10p = 10 seconds</td>
<td>Started to lose spin fast. Time = 8</td>
<td>Two seconds short. Size may be more important</td>
</tr>
</tbody>
</table>

Data Collection on a Run Chart
<table>
<thead>
<tr>
<th>#</th>
<th>Plan</th>
<th>Do</th>
<th>Study</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data Collection on a Run Chart**
Repeated Use of the PDSA Cycle

Model for Improvement

<table>
<thead>
<tr>
<th>What are we trying to accomplish?</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will we know that a change is an improvement?</td>
</tr>
<tr>
<td>What change can we make that will result in improvement?</td>
</tr>
</tbody>
</table>

Hunches
Theories
Ideas

Very Small Scale Test
Follow-up Tests
Wide-Scale Tests of Change

Changes That Result in Improvement

Sequential building of knowledge under a wide range of conditions

Spread
Implementation of Change

DATA
About Predictions…

- Most often unstated but powerful influence.
- It is your theory behind the changes you choose and tests that you run.
- Without a theory, change are just independent elements that don’t add up.
- Allows you learn and delve deeper: bundle example.
PDSA Cycle for Learning & Improvement

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

**Plan**
- Objective
- Questions & predictions (What will happen and why?)
- Plan to carry out the cycle (Who, what, where, when?)

**Study**
- Complete analysis of the data
  - Compare data to predictions
  - Summarize what was learned

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

- In-service education
- Make a form
- Determining whether email or phone call works best with physician notification of problem
- Posting data
- Newsletter to physicians about project
- Team meeting
WORKSHEET FOR A SMALL TEST OF CHANGE

TEAM: ___________ Date: ________________

Question you want answered with this test:

<table>
<thead>
<tr>
<th>Describe your first (or next) test of change</th>
<th>Person Responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan

<table>
<thead>
<tr>
<th>List the tasks needed to set up this test of change</th>
<th>Person Responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predict what will happen as a result of this test</th>
<th>What measures will help evaluate results compared to prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-</td>
</tr>
<tr>
<td></td>
<td>2-</td>
</tr>
</tbody>
</table>

...at this point. You have planned your test and will not be able to complete the Do-Study-Act portion until you run the test.
Decrease the Time Frame for a PDSA Test Cycle

- Years
- Quarters
- Months
- Weeks
- Days
- Hours
- Minutes

Drop down next “two levels” to plan Test Cycle!
Change Concepts
A general idea or theory - grounded in science, experience, or logic - that can stimulate specific ideas for changes that will lead to improvement.

Change concepts can be derived from:

- Evidence; scientific results
- Critical thinking or observation of current system
- Creative thinking
- Hunches
- Mental leaps...extrapolating from other situations
Complete List of Change Concepts

Eliminate Waste
1. Eliminate things that are not used
2. Eliminate multiple entry
3. Reduce or eliminate overkill
4. Reduce controls on the system
5. Recycle or reuse
6. Use substitution
7. Reduce classifications
8. Remove intermediaries
9. Match the amount to the need
10. Use Sampling
11. Change targets or set points

Improve Work Flow
12. Synchronize
13. Schedule into multiple processes
14. Minimize handoffs
15. Move steps in the process close together
16. Find and remove bottlenecks
17. Use automation
18. Smooth workflow
19. Do tasks in parallel
20. Consider people as in the same system
21. Use multiple processing units
22. Adjust to peak demand

Optimize Inventory
23. Match inventory to predicted demand
24. Use pull systems
25. Reduce choice of features
26. Reduce multiple brands of same item

Eliminate Waste
1. Eliminate things that are not used
2. Eliminate multiple entry
3. Reduce or eliminate overkill
4. Reduce controls on the system
5. Recycle or reuse
6. Use substitution
7. Reduce classifications
8. Remove intermediaries
9. Match the amount to the need
10. Use Sampling
11. Change targets or set points

Change the Work Environment
27. Give people access to information
28. Use Proper Measurements
29. Take Care of basics
30. Reduce de-motivating aspects of pay system
31. Conduct training
32. Implement cross-training
33. Invest more resources in improvement
34. Focus on core process and purpose
35. Share risks
36. Emphasize natural and logical consequences
37. Develop alliances/cooperative relationships

Improve Work Flow
12. Synchronize
13. Schedule into multiple processes
14. Minimize handoffs
15. Move steps in the process close together
16. Find and remove bottlenecks
17. Use automation
18. Smooth workflow
19. Do tasks in parallel
20. Consider people as in the same system
21. Use multiple processing units
22. Adjust to peak demand

Optimize Inventory
23. Match inventory to predicted demand
24. Use pull systems
25. Reduce choice of features
26. Reduce multiple brands of same item

Manage Variation
51. Standardization (Create a Formal Process)
52. Stop tampering
53. Develop operation definitions
54. Improve predictions
55. Develop contingency plans
56. Sort product into grades
57. Desensitize
58. Exploit variation

Design Systems to avoid mistakes
59. Use reminders
60. Use differentiation
61. Use constraints
62. Use affordances

Focus on the product or service
63. Mass customize
64. Offer product/service anytime
65. Offer product/service anyplace
66. Emphasize intangibles
67. Influence or take advantage of fashion trends
68. Reduce the number of components
69. Disguise defects or problems
70. Differentiate product using quality dimensions

Manage Time
46. Reduce setup or startup time
47. Set up timing to use discounts
48. Optimize maintenance
49. Extend specialist’s time
50. Reduce wait time

Enhance the Producer/customer relationship
38. Listen to customers
39. Coach customer to use product/service
40. Focus on the outcome to a customer
41. Use a coordinator
42. Reach agreement on expectations
43. Outsource for “Free”
44. Optimize level of inspection
45. Work with suppliers

Focus on the product or service
63. Mass customize
64. Offer product/service anytime
65. Offer product/service anyplace
66. Emphasize intangibles
67. Influence or take advantage of fashion trends
68. Reduce the number of components
69. Disguise defects or problems
70. Differentiate product using quality dimensions

Enhance the Producer/customer relationship
38. Listen to customers
39. Coach customer to use product/service
40. Focus on the outcome to a customer
41. Use a coordinator
42. Reach agreement on expectations
43. Outsource for “Free”
44. Optimize level of inspection
45. Work with suppliers

Manage Time
46. Reduce setup or startup time
47. Set up timing to use discounts
48. Optimize maintenance
49. Extend specialist’s time
50. Reduce wait time

Focus on the product or service
63. Mass customize
64. Offer product/service anytime
65. Offer product/service anyplace
66. Emphasize intangibles
67. Influence or take advantage of fashion trends
68. Reduce the number of components
69. Disguise defects or problems
70. Differentiate product using quality dimensions

Selecting Changes

- Copy: use the literature, experience of others, hunches and theories: “This is what they did at Dr. Grays. I don’t know if it will work here but let’s see what we can learn from it.”

- Avoid low impact changes:
  - “Let’s put up a poster.”;
  - “Let’s have an education session.”;
  - “Let’s send out reminders.”
Selecting Concepts

- Avoid technical slow-downs: “We will build a computer programme to do this…”

- Be strategic: set priorities based on the aim, known problems, and feasibility, “Let’s see if we can get the multi-disciplinary team together for one round.”
Change Concepts for System Redesign

- Do tasks in parallel (rescuing deteriorating patients: call system, availability of juniors…)
- Minimize handoffs (Hospital At Night)
- Synchronize to a common point in time (knife to skin)
- Use pull systems (discharge appointments)
- Move steps closer together (central line insertion cart)
Now You Practice... Selecting Change Concepts and Planning a Test

- Continue, in small groups, with the same aim and measures.
- Select one of the generic change concepts that is relevant to your improvement effort or identify an “original” concept or theory for change that you want to test.
Engaging teams in improvement

Dr. Azhar Ali

September 2016
Who needs to know what?

- Many People
  - (Staff, Supervisors, UBT lead triad)
- Few People
  - Operational Leaders (Executives)
  - Experts (Improvement Advisors)
  - Unit Based Teams
    - Change Agents
      - (Middle Managers, Stewards, Project leads)

A key operating assumption of building capacity is that different groups of people will have different levels of need for PI knowledge and skill.

Our approach will be to make sure that each group receives the knowledge and skill sets they need when they need them and in the appropriate amounts.

Source: Kaiser Permanente & IHI, 2008

Continuum of PI Knowledge and Skills

- Shared Knowledge
- Deep Knowledge
Pocket QI commenced in October 2015. Aim to reach 200 people by Dec 2016. All staff receive intro to QI at induction.

480 people have undertaken the ISIA so far. Wave 5 = Luton/Beds (Sept 2016 – Feb 2017).


Currently have 6 improvement advisors, with 4 wte deployed to QI. To increase to 8 IA’s in 2016/17 (6 wte).

Most Executives will have undertaken the ISIA. Annual Board session with IHI & regular Board development discussions on QI.

Bespoke QI learning sessions for service users and carers. Over 60 attended in 2015. Build into recovery college syllabus, along with confidence-building, presentation skills etc.
Improvement Teams

- Who make good team members
  - Project leader with authority to execute the project
  - Day-to-day operational and clinical leaders
  - Subject matter experts

- Committed to aim of the project work

- Must have senior leaders sponsor

- Must have the time allotted to do improvement work
Project Selection

• The project you propose should be important for your organization. For example:
  – Problems with patient safety, service or outcomes
  – A need to reduce costs
  – Responding to quality issues

• 3-9 months

• Baseline data exists and potential measures have been identified

• You have control over the drivers of improvement

• The project has a sponsor
What We Have Here
Is a Failure to...Engage?

How Often Have You Felt / Heard?

- My Board is not engaged...
- If only my manager was more engaged...
- My team members aren’t interested in trying new things...
- Our patients are not engaged in their own care...

What do you mean?
Getting Results Framework

- **Will** - to improve,
- **Ideas** - about alternatives to the status quo, and
- **Execution / Getting Results** - you have to make it real
Discussion

What have been your biggest challenges in engaging leaders/middle managers/physicians/nurses and others in QI and Safety?

– Is it lack of WILL?
– Is it lack of IDEAS?
– Is it GETTING RESULTS/EXECUTION?
Questions
To Guide Your Discussion

1. Are the three factors that are contributing to this problem at the _____ level, mostly related to ideas, will, or execution?

2. What hasn’t worked with respect to our current engagement strategy with this group?

3. How might we more effectively engage this group?
Engaging Patients

- Engaged in their own care
- Engaged in an improvement team
- Engaged in governance/committees
Engaging Physicians

6. Adopt an Engaging Style:
   6.1 Involve physicians from the beginning
   6.2 Work with the real leaders, early adopters
   6.3 Choose messages and messengers carefully
   6.4 Make physician involvement visible
   6.5 Build trust within each quality initiative
   6.6 Communicate candidly, often
   6.7 Value physicians’ time with your time

1. Discover Common Purpose:
   1.1 Improve patient outcomes
   1.2 Reduce hassles and wasted time
   1.3 Understand the organization’s culture
   1.4 Understand the legal opportunities and barriers

2. Reframe Values and Beliefs:
   2.1 Make physicians partners, not customers
   2.2 Promote both system and individual responsibility for quality

3. Segment the Engagement Plan:
   3.1 Use the 20/80 rule
   3.2 Identify and activate champions
   3.3 Educate and inform structural leaders
   3.4 Develop project management skills
   3.5 Identify and work with “laggards”

5. Show Courage:
   5.1 Provide backup all the way to the board

4. Use “Engaging” Improvement Methods:
   4.1 Standardize what is standardizable, no more
   4.2 Generate light, not heat, with data (use data sensibly)
   4.3 Make the right thing easy to try
   4.4 Make the right thing easy to do
How is a paradigm formed?
Every time a monkey went up the ladder, the scientists soaked the rest of the monkeys with cold water.
After a while, every time a monkey went up the ladder, the others beat up the one on the ladder.
After some time, no monkey dared to go up the ladder regardless of the temptation.
Scientists then decided to substitute one of the monkeys. The first thing this new monkey did was to go up the ladder. Immediately the other monkeys beat him up.

After several beatings, the new member learned not to climb the ladder even though it never knew why.
A second monkey was substituted and the same occurred. The first monkey participated on the beating for the second monkey. A third monkey was changed and the same was repeated (beating). The fourth was substituted and the beating was repeated and finally the fifth monkey was replaced.
What was left was a group of five monkeys that even though never received a cold shower, continued to beat up any monkey who attempted to climb the ladder.
If it was possible to ask the monkeys why they would beat up all those who attempted to go up the ladder..... I bet you the answer would be... "I don’t know – that’s how things are done around here”

Does it sounds familiar?
Methods for Spread and Scale Up

- Natural diffusion
- Executive mandates (and training).
- Extension agents - spread ideas and best practices.
- Emergency mobilization – rapid efficient assembly of plans, materials, supplies.
- Affinity group - develop superior model, then dissemination to other sites in the system.

Methods for Spread and Scale Up

• Collaborative (physical or virtual) – networked structured learning and exchange around shared aims, measures, and goals.

• Wave sequence - systematic spread within integrated multi-level systems

• Campaigns - shared, quantitative aim connected to a targeted social system (evidence-based intervention, measurement, communications, and distributed field operations).

• Hybrid approaches, where combined elements from different approaches form a new approach.

How Can We Foster the Adoption of Successful Change Ideas?

The Traditional Approaches

Memo
Date: February 2012
To: All Staff
From: Management

Starting next Monday, all staff will be expected to implement the new procedure we just tested in the 3 West med/surg unit.

It worked there so in order to save time, everyone will now start doing the new procedure like 3 West.

Thank you for your cooperation.
An Early Adopter
Will this be one of your team members?
Clarify “Where” We Spread

What is your level of our ambition?

- Every unit or ward in a hospital?
- Every service line (clinical & operations)?
- Every hospital in a system or region?
- All primary care clinics?
- All inpatient and outpatient mental health?
- All levels of care across a population?
Roger’s Adopter Categories

The Seven *Spreadly* Sins
(If you do these things, spread efforts will fail!)

Step #1  Start with large pilots

Step #2  Find one person willing to do it all

Step #3  Expect vigilance and hard work to solve the problem

Step #4  If a pilot works then spread the pilot unchanged

Step #5  Require the person and team who drove the pilot to be responsible for system-wide spread

Step #6  Look at process and outcome measures on a quarterly basis

Step #7  Early on expect marked improvement in outcomes without attention to process reliability
## Key Contacts

- Bill Nicholl
- Liz Armour
- SG&R - Fiona Gibson

## Perth & Kinross CHP - Spread Plan

**Date:** November 07  
**Completed by:**

### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hand Hygiene</th>
<th>Safety Briefings</th>
<th>SBAR</th>
<th>Medicines Reconciliation</th>
<th>Anti Coag Management</th>
<th>Trigger Tool</th>
<th>Daily Goals</th>
<th>SEWS</th>
<th>PVC Bundle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical/Practice Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tay Ward PRI</td>
<td>November</td>
<td>November</td>
<td>November</td>
<td>November</td>
<td>November</td>
<td>November</td>
<td>November</td>
<td>November</td>
<td>November</td>
</tr>
<tr>
<td>Earn Ward PRI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehab Stroke Unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simpson Day Hospital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Legend

- **T** Testing
- **F** Fully Implemented
- **S** Spreading
- **NM** Not yet Measuring
- **NP** Not Yet in Place
- **NA** Not Applicable

**Tests Carried Out**

**Challenges**

**Successes**

**Plans for Spread**
## Tracking the Spread of Specific Ideas Across Multiple Sites

<table>
<thead>
<tr>
<th></th>
<th>Pilot 1</th>
<th>Pilot 2</th>
<th>Spread 1</th>
<th>Spread 2</th>
<th>Spread 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Progress Score</strong></td>
<td>3.5</td>
<td>3.0</td>
<td>2.0</td>
<td>3.0</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Legend</strong></td>
<td>A= Planning</td>
<td>B= Start</td>
<td>C= In Progress</td>
<td>D= Fully Implemented</td>
<td></td>
</tr>
<tr>
<td>VTE Prophylaxis</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Sepsis</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Unit Briefings</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>VAP</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>Hazard Drug/Area #1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Early Warning System</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reconciliation</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Pressure ulcers</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Central lines</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Patient Involvement</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Simulation</td>
<td>x</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td><strong>Legend</strong></td>
<td>x</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>
Don’t be a slave to the plan!

- You will learn a lot that may require a change to your plan

- Don’t be frustrated by having to back up and reevaluate - just don’t take forever!
  - Change takes longer than you thought!
  - Some units want the change NOW!
  - Some never want it!
“Quality improvement begins with love and vision. Love of your patients. Love of your work. If you begin with technique, improvement won’t be achieved.”

A. Donabedian, M.D
References

- IHI.org

Questions and Discussion