MEASUREMENT FOR IMPROVEMENT

Pat Waniewski, RN, MS
“In God we trust. All others bring data.”

W. E. Deming
Learning Objectives

• Identify the purpose and general principles of measurement for quality improvement
• Prepare to use measurement to assess improvements in care at your practice sites
• Review tools to help integrate data collection and reporting into your daily work
  • Use data measurement plan
  • Collect data
  • Report measures
Model For Improvement

Use Data to understand progress toward the team’s aim

Use Data to answer the questions posed on in the plan for each PDSA cycle
Measuring for Improvement

• Not research

• Not judgment or comparison

• Not evaluation

• But to monitor improvement *over time*
## Aims and Methods for Measurement

<table>
<thead>
<tr>
<th>Spreading Innovation</th>
<th>Publishing Research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aim:</strong> Improvement</td>
<td><strong>Aim:</strong> New knowledge</td>
</tr>
<tr>
<td><strong>Methods:</strong></td>
<td><strong>Methods:</strong></td>
</tr>
<tr>
<td>Test observable</td>
<td>Test blinded</td>
</tr>
<tr>
<td>Accept stable bias</td>
<td>Design to eliminate bias</td>
</tr>
<tr>
<td>Just enough data, small sequential samples</td>
<td>“Just in case” data</td>
</tr>
<tr>
<td>Hypothesis flexible, changes as learning takes place</td>
<td>Fixed hypothesis</td>
</tr>
<tr>
<td>Sequential tests</td>
<td>One large test</td>
</tr>
<tr>
<td>Run charts used by those involved in the improvement</td>
<td>Significance tests</td>
</tr>
</tbody>
</table>

Measurement for Improvement

• The purpose of measurement is for learning, not judgment.
• All measures have limitations, but the limitations do not negate all value. Don’t let perfect be the enemy of the good.
• Measures are one voice of the patient and system. Information gained from measurement gives us feedback on how to act within the system.
• Measures tell a story (especially as a family); goals give a reference point.
I will not get thinner because I measure my weight every day.

But...I won’t know if I have lost weight unless I measure it.
Family of Measures

**Outcome** = Voice of the customer/patient:

- Are we achieving our Aim? What is the result?
- How is the health of the patient affected? (ED/hospitalization, quality of life)

**Process** = Voice of the workings of the system:

- Are the parts/steps in the system performing as planned?
- Are key changes being implemented in the system? (Example: Documentation severity and control)

**Balancing** = Looking at a system from different directions/dimensions

- What happened to the system as we improved the outcome and process measures?
- Are we improving some parts of the system at the expense of others? Side effects? (Example: patient wait time)
## Sample Set of Measures for Asthma Improvement

<table>
<thead>
<tr>
<th>Aim</th>
<th>Outcome Measures</th>
<th>Process Measures</th>
<th>Balancing Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance asthma management at Smith Pediatrics by using The Chronic</td>
<td>There is decrease in asthma ER visits</td>
<td>Asthma Action Plan in chart</td>
<td>- Volume of asthma patients</td>
</tr>
<tr>
<td>Care Model as an organizational approach to caring for the population</td>
<td>There is a decrease in asthma hospitalization</td>
<td>Patient with persistent asthma have current prescription for control medications</td>
<td>- Staff satisfaction results</td>
</tr>
<tr>
<td>of patients with asthma, so that:</td>
<td>There is an increase in symptom-free days among patients with asthma</td>
<td>Patients with asthma are evaluated for environmental triggers</td>
<td>- Financial/budget (cost of making changes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patients who smoke receive smoking cessation counseling</td>
<td></td>
</tr>
</tbody>
</table>


## Well Defined Measures and Data Collection Plan

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Data Collection Method and Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documented Level of Asthma Control at the last visit</td>
<td>The percentage of patients with asthma in the population of focus with a documented level of asthma control</td>
<td>Number of patients with asthma in the population of focus with a documented level of asthma control</td>
<td>Total number of patients with asthma in the population of focus</td>
<td>Method: Chart Audit or Registry Extraction For chart audit: random sample of 50 charts (or all charts for those practices with less than 50 in the population of focus)</td>
</tr>
</tbody>
</table>
Integrate Data Collection for Measures in Daily Work

• Include the collection of data with another current work activity.
• Develop an easy-to-use data collection form or make Information Systems input and output easy for administrative staff and clinicians (ex: chart audit tool).
• Clearly define roles and responsibilities for ongoing data collection.
• Set aside time to review data with those that collect it, the process owners and end-users.
Monthly Data Collection Process

Practice/Project Site:
Perform chart audit on 50 charts using Chart Audit Tool

Practice/Project Site:
Enter data from chart audit to the PRACTICE Data Collection worksheet

Coalition Partner:
Receive data from each of the practices/project sites and enter (de-identified) data into the Extranet Measures Report

OR

Practice/Project Site:
Enter (de-identified) data into the Extranet Measures Report
Monthly Data Collection Process

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Value</th>
<th>Number of individuals with an AAP (at home, school, daycare, PCP) that has been developed or updated and documented/on record within the past 6 months, per asthma project</th>
<th>Total number of targeted individuals in the asthma project</th>
<th>Annotation Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 - 2012</td>
<td>32.14</td>
<td>18</td>
<td>55</td>
<td>None</td>
</tr>
<tr>
<td>10 - 2012</td>
<td>32.31</td>
<td>21</td>
<td>62</td>
<td>None</td>
</tr>
<tr>
<td>11 - 2012</td>
<td>36.76</td>
<td>25</td>
<td>68</td>
<td>None</td>
</tr>
<tr>
<td>12 - 2012</td>
<td>57.38</td>
<td>35</td>
<td>61</td>
<td>None</td>
</tr>
<tr>
<td>1 - 2013</td>
<td>76.56</td>
<td>49</td>
<td>64</td>
<td>None</td>
</tr>
<tr>
<td>2 - 2013</td>
<td>83.08</td>
<td>54</td>
<td>65</td>
<td>None</td>
</tr>
<tr>
<td>3 - 2013</td>
<td>87.69</td>
<td>57</td>
<td>69</td>
<td>None</td>
</tr>
<tr>
<td>4 - 2013</td>
<td>93.75</td>
<td>60</td>
<td>64</td>
<td>None</td>
</tr>
<tr>
<td>5 - 2013</td>
<td>93.75</td>
<td>60</td>
<td>64</td>
<td>None</td>
</tr>
<tr>
<td>6 - 2013</td>
<td>93.85</td>
<td>61</td>
<td>65</td>
<td>None</td>
</tr>
<tr>
<td>7 - 2013</td>
<td>93.85</td>
<td>61</td>
<td>65</td>
<td>None</td>
</tr>
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</table>
Plotting Data in Time Order

• In improvement efforts, changes are not fixed, but are adapted over time.

• Summary statistics hide information (patterns, outliers).

• Time series graphs annotated with changes and other events provide evidence of sustained improvement.

• Will help generate support for your efforts.
We have 2 quarterly data points - is this an improvement?
Are we assuming something like this?
But it could be like this ...
Annotated Run Chart

- Plot small samples frequently over time

<table>
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<th>Time Order (e.g., Month)</th>
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<tbody>
<tr>
<td>Observed Data Value</td>
</tr>
<tr>
<td>(e.g., Infection Rate)</td>
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</table>

- Change 1 tested
- Change 2 tested
The “Story”

• Measurement tells the STORY of your improvement actions

• Trended data (3 or more data points) reveal:
  • Variation in the system
  • Impact of your changes
  • If changes are leading to improvement
  • Feedback on system
Reporting Progress

• Share the data
• Convert it into useable information
• Create clear, easy to read report designs
• Know your audience
• Provide context for the report
• Determine reporting frequency
Important Considerations for Measuring Improvement

• Focus on trending performance over time
• Balance measurement with improvement (test changes and measure!)
• Turn data into information quickly
• Put it into a form your audience can use
• Communication—share data liberally with everyone—feedback is key to improvement
• Enable improvement at multiple levels
From Charles Darwin:

“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.”
References


