Using Health IT to Optimize Quality Improvement
Getting to Quality with your Health IT Systems
• Introduction
• Review of national data and trends
• Data validation priorities/ strategies
• Explore results of validation
• Map care processes/ information flows
• Strategies for Quality Improvement
• Planning tests of change
• Sustaining improvement
The HITEQ Center is a HRSA-funded National Cooperative Agreement that collaborates with HRSA partners including Health Center Controlled Networks, Primary Care Associations and other National Cooperative Agreements to support health centers in full optimization of their EHR/Health IT systems. HITEQ identifies and disseminates resources for using health information technology (IT) to improve quality and health outcomes. HITEQ includes:

- A searchable **web-based health IT knowledgebase** with resources, toolkits, training, and a calendar of related events
- **Workshops and webinars** on health IT and QI topics
- **Technical assistance** and responsive teams of experts to work with health centers on specific challenges or needs

**email us at hiteqinfo@jsi.com!**
WHAT WOULD YOU LIKE TO COVER TODAY?

What made you sign up for this session?
Data Validation
Tools and Strategies
History with UDS

• Long JSI history working with Health Centers and UDS data
  – Collection and analysis of UDS since 2000
  – Detailed data audit/validation discussion each health center every year
  – Challenges with EHR based data collection discussed at length
    • Observation of changes in results with EHR implementation
  – Deep understanding of value of data in quality assurance and improvement
HITEQ UDS Data Analysis

• 5 Years of clinical data history (2011-2015)
• 14 Measures as of 2015
• Sample size used to determine data source per measure per year
  • < 70 Charts → Indeterminant
  • 70 Charts → Sample
  • Equals to Universe → EHR

Note: Prenatal data source cannot be assessed

• Results averaged with all Health Centers equally weighted
• Aggregated to different groups of health centers
  – Individual organizations
  – HCCNs/PCAs
  – Grant funding, PCMH, meaningful use, vendor, etc.
National Data and Trends

- Significantly lower clinical compliance measured in EHR derived data compared to sampled data
National Data and Trends

• Notable upward trend in quality for process measures (EHR & Sample)
  • EHR-Sample difference persists across years

• Rapid increase in adoption of EHR for UDS reporting
HCCN/PCA Level Analysis

- **Difference in performance between sample (red) & universe (blue)**
- **UDS measure performance over time**
- **Compare performance with peers**
HCCN/PCA Level Analysis

Clinical Performance Organization vs all others

Performance over time per measure for HCCN or PCA

Performance over time per measure for all others
Health Center Level Analysis

2015 Adult Weight Performance by Health Center

- Available by performance measure
- Size of universe
- Ranked in order of performance
Health Center Trend Analysis

Available by health center and measure

May indicate data integrity issues when EHR was first implemented

May highlight trends in health center performance over time
Data Hygiene/Validation

• Issues tested/addressed at org. level
• Output reports are a ‘black box’
• Numerator issues
  – Report not finding evidence of compliance in chart
• Denominator issues
  – Report including patients that should not be in the Universe: wrong timeframe, missing exclusions
• Clinical issues
  – Indicated service not being provided or outcome not being achieved
Data Validation Tool

• Excel-based resource to work through the data validation issues and identify underlying causes
  – One for each clinical measure (under development)

• Assists in:
  – Determining if data hygiene problem exists for measure
  – Drawing a random sample of charts
  – Abstracting ‘observable’ data without bias
  – Calculating measure requirements and results
  – Identifying discrepancies that point to underlying issues
  – Directing the discussion around needed changes
Data Validation Tool

### Statistical Difference Analysis

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year EHR Used</td>
<td>2014</td>
</tr>
<tr>
<td>Charts in Universe (per EHR) in 2014</td>
<td>5000</td>
</tr>
<tr>
<td>2014 Compliance Rate</td>
<td>31%</td>
</tr>
<tr>
<td>Sample Size in 2013</td>
<td>70</td>
</tr>
<tr>
<td>Compliance Rate in 2013</td>
<td>48%</td>
</tr>
<tr>
<td>Confidence Interval (95% CI) (+/-)</td>
<td>12%</td>
</tr>
<tr>
<td>Upper CI</td>
<td>58%</td>
</tr>
<tr>
<td>Lower CI</td>
<td>34%</td>
</tr>
<tr>
<td>2014 is Statistically Different from 2013?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Validation Sample Selection

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance Rate - Most Recent Year</td>
<td>39%</td>
</tr>
<tr>
<td>Charts to be Sampled for Data Validation</td>
<td>30</td>
</tr>
<tr>
<td>Approx. Confidence Interval (+/-)</td>
<td>17.5%</td>
</tr>
</tbody>
</table>

**Example**

![Example Chart]

Click here to draw a random sample with this number of charts.

When data entry is complete, click here to reveal sample abstract results detail.

Click here to re-hide the results detail.

Access this tool at HITEQCenter.org or email us for another specific measure.
Why data validation?

• Examining evidence of a problem
  – Drop when moving to EHR report?
    • Pattern; Recovery
    • Statistical significance
  – Below average overall performance or adverse trend

<table>
<thead>
<tr>
<th>Statistical Difference Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year EHR Used</td>
</tr>
<tr>
<td>Charts in Universe (per EHR) in 2014</td>
</tr>
<tr>
<td>2014 Compliance Rate</td>
</tr>
<tr>
<td>Sample Size in 2013</td>
</tr>
<tr>
<td>Compliance Rate in 2013</td>
</tr>
<tr>
<td>Confidence Interval (95% CI)</td>
</tr>
<tr>
<td>Upper CI</td>
</tr>
<tr>
<td>Lower CI</td>
</tr>
<tr>
<td>2014 is Statistically Different from 2013?</td>
</tr>
</tbody>
</table>
1. Examine evidence of a problem
2. Extract EHR report universe & assessment of compliance
3. Determine sample size and strategy
4. Gather blinded chart data by audit
   – Parameters and qualitative parameters
5. Reveal audit results
   – Aggregate compliance
   – Record level Universe and Compliance discrepancies in results
   – Patterns indicative of underlying causes
Data Validation Tool

• Obtain EHR chart-level universe and compliance assessment list
  – Data must come from EHR system and match UDS report & time period
  – Chart # & EHR Compliance assessment required
  – Name used to validate correct chart abstraction

• Strategies for sampling based on goal
  – From full universe
  – From non-compliant only
  – Equal samples of compliant/non-compliant

• Selecting sample size
  – Confidence/detail vs effort
  – Random sample of ## charts automatically selected from EHR derived chart list
Data Validation Tool

- Conducting chart audit sample
  - QI Manager prepares the sample but does not conduct the abstract
    - Abstracting ideally done by staff not be briefed on, or familiar with, measure requirements to avoid bias
    - Only factual data collection, no judgement applied
  - Qualitative data collected
    - Provider documenting each data component
    - Location where evidence of each component found
  - Results of chart evaluation blinded during data collection
    - Key calculated values and required service parameters
    - Aggregate compliance results
    - Universe eligibility assessment
    - EHR-derived and Validation tool-derived compliance assessment
    - Mismatches between EHR and chart abstracted results
    - Assessment of individual measure components
    - Password to unlock/reveal results
### Conducting Chart Audit

#### Input during Chart Audit

<table>
<thead>
<tr>
<th>Medical Record #</th>
<th>Date of Last Medical Visit in 2016 or before (or &quot;0&quot; if none)</th>
<th>Date Last Visit in 2016</th>
<th>Provider at Last Visit in 2016</th>
<th>Date Height &amp; Weight Last Documented (or &quot;0&quot; if none)</th>
<th>Height (in inches)</th>
<th>Weight (in lbs)</th>
<th>BMI noted in chart or part of EHR standard template?</th>
<th>Site where Height/Weight Documented</th>
<th>Provider Documenting Last Height/Weight</th>
<th>Height/Weight info found where?</th>
<th>Pregnant when Height/Weight Documented</th>
</tr>
</thead>
<tbody>
<tr>
<td>1386724896</td>
<td>CHIN 3/11/1997</td>
<td>11/15/2015</td>
<td>Hess PA</td>
<td>11/15/2015</td>
<td>62.5</td>
<td>117</td>
<td>Yes</td>
<td>Main St Clinic</td>
<td>Traci</td>
<td>Notes/Text Entry</td>
<td>No</td>
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<tr>
<td>1318263600</td>
<td>ROBERTS 10/17/1990</td>
<td>8/15/2015</td>
<td>Janelle CHA</td>
<td>8/15/2015</td>
<td>57</td>
<td>175</td>
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<td>Southside Clinic</td>
<td>Janelle CHA</td>
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<td>1609655036</td>
<td>GOLTRA 8/15/1969</td>
<td>11/12/2015</td>
<td>Melody CHA</td>
<td>11/12/2015</td>
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<td>218</td>
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<td>Main St Clinic</td>
<td>Melody CHA</td>
<td>Notes/Text Entry</td>
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<tr>
<td>1255321923</td>
<td>WEINSTEIN 1/20/1944</td>
<td>12/27/2016</td>
<td>Matthew PA</td>
<td>12/27/2016</td>
<td>53</td>
<td>226</td>
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<td>Jefferson</td>
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<td>1134255440</td>
<td>CARBAJAL 4/26/1990</td>
<td>8/30/2015</td>
<td>Connie CHP</td>
<td>8/30/2015</td>
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<td>185</td>
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<td>Connie CHP</td>
<td>Notes/Text Entry</td>
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<tr>
<td>1861408452</td>
<td>MEHTA 10/25/1999</td>
<td>12/2/2016</td>
<td>Rachel CHP</td>
<td>5/20/2016</td>
<td>82</td>
<td>152</td>
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<td>Rachel CHP</td>
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<tr>
<td>1368575771</td>
<td>HUNT 3/14/1953</td>
<td>10/4/2016</td>
<td>Rachel CHP</td>
<td>10/10/2016</td>
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<td>251</td>
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<td>Rachel CHP</td>
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<td>1862443523</td>
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<td>12/26/2016</td>
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<td>12/26/2016</td>
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<td>LEE 12/23/1974</td>
<td>11/28/2015</td>
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<td>11/28/2015</td>
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<td>Laurens CHA</td>
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<td>11/14/2016</td>
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<td>Norma Shorty</td>
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<tr>
<td>1518069988</td>
<td>PHILLIPS 12/25/1993</td>
<td>9/30/2016</td>
<td>Mattie CHP</td>
<td>9/30/2016</td>
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<td>161</td>
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<td>184915407</td>
<td>POULIN 3/6/1984</td>
<td>8/23/2016</td>
<td>Angela PA</td>
<td>8/23/2016</td>
<td>86.5</td>
<td>179</td>
<td>Yes</td>
<td>Mountain Rd Clinic</td>
<td>Angela PA</td>
<td>Notes/Text Entry</td>
<td>No</td>
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<tr>
<td>1548230756</td>
<td>PRYOR 5/30/1962</td>
<td>12/6/2015</td>
<td>Jeanne PA</td>
<td>12/6/2015</td>
<td>51</td>
<td>187</td>
<td>Yes</td>
<td>Mountain Rd Clinic</td>
<td>Jeanne PA</td>
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<td>12/7/2016</td>
<td>Pauline PA</td>
<td>12/7/2016</td>
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<td>98</td>
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<td>Mountain Rd Clinic</td>
<td>Pauline PA</td>
<td>Notes/Text Entry</td>
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<tr>
<td>1589448650</td>
<td>MARKS 12/11/1989</td>
<td>9/25/2016</td>
<td>Sandra PA</td>
<td>9/25/2016</td>
<td>53</td>
<td>0</td>
<td>No</td>
<td>Mountain Rd Clinic</td>
<td>Sandra PA</td>
<td>Notes/Text Entry</td>
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<tr>
<td>1043368214</td>
<td>PERENCEVICH 1/20/1995</td>
<td>10/28/2016</td>
<td>Wodi PA</td>
<td>10/28/2016</td>
<td>56</td>
<td>116</td>
<td>Yes</td>
<td>Mountain Rd Clinic</td>
<td>Emily CHP</td>
<td>Notes/Text Entry</td>
<td>No</td>
</tr>
</tbody>
</table>
Data Validation Tool

• Examining the results (Code: HITEQvalid)
  – Compliance rate of sample
    • Statistical comparison to most recent EHR result
  – Universe or compliance discrepancies with the EHR flagged
    • Any differences with EHR are important
    • Counts of discrepancies
    • Individual chart findings by measure component
    • Patterns in qualitative values for discrepancy charts
    • If causes not obvious, issue may be in report logic
### Examining Results

When Data Entry is Complete
Click here to REVEAL SAMPLE ABSTRACT RESULTS DETAIL

<table>
<thead>
<tr>
<th>Results Analysis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Pulled</td>
<td>30</td>
</tr>
<tr>
<td>Sample Charts Abstracted</td>
<td>28</td>
</tr>
<tr>
<td>Sample Charts Not Abstracted/Complete</td>
<td>2</td>
</tr>
<tr>
<td>Abstracted Charts Compliant</td>
<td>12</td>
</tr>
<tr>
<td>Compliant %</td>
<td>42.9%</td>
</tr>
<tr>
<td>Compliant % Confidence Interval (+/-)</td>
<td>18.3%</td>
</tr>
<tr>
<td>Compliance Rate - Upper Ci</td>
<td>100.0%</td>
</tr>
<tr>
<td>Compliance Rate - Lower Ci</td>
<td>24.5%</td>
</tr>
<tr>
<td>Sampled Rate Statistically Different from Most Recent Year?</td>
<td>No</td>
</tr>
<tr>
<td>Universe Discrepancies Identified</td>
<td>6</td>
</tr>
<tr>
<td>Compliance Discrepancies Identified</td>
<td>17</td>
</tr>
</tbody>
</table>
### Examining Results

When Data Entry is Complete
Click here to REVEAL SAMPLE ABSTRACT RESULTS DETAIL

<table>
<thead>
<tr>
<th>#</th>
<th>Medical Record # and/or plan</th>
<th>Patient Name</th>
<th>Notes</th>
<th>Key Fields Completed</th>
<th>EHR Derived Compliance Result</th>
<th>Universe Eligibility Cal</th>
<th>Compliant</th>
<th>Determination Difference for Universe</th>
<th>Determination Difference for Compliance</th>
<th>18y during 2016</th>
<th>Visit During 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13607248996</td>
<td>CHN</td>
<td>HWY found in results review tab</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>1355847406</td>
<td>ERSENG</td>
<td>Hep B found in &quot;diagnosis&quot; tab</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>13102963800</td>
<td>ROBERTS</td>
<td>Plan found in a letter written by Galway for abnormal cholesterol result.</td>
<td>TRUE</td>
<td>Yes</td>
<td>Eligible</td>
<td>Non-Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>18098578838</td>
<td>GOLTRA</td>
<td>COPD dx found in &quot;diagnosis&quot; tab. BMI not noted for last visit, but can be found for previous encounter on chart. It is noted in chart that pt refused further education regarding DM2.</td>
<td>TRUE</td>
<td>No</td>
<td>ineligible</td>
<td>Non-Compliant</td>
<td>Disagree</td>
<td>OK</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>1253321923</td>
<td>WEINSTEIN</td>
<td>Last 2016 visit did not have vitals or weight taken, states that pt &quot;deferred&quot;</td>
<td>TRUE</td>
<td>No</td>
<td>ineligible</td>
<td>Non-Compliant</td>
<td>Disagree</td>
<td>OK</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>11342555490</td>
<td>CARBAJAL</td>
<td>Last 2016 visit did not have vitals or weight taken, states that pt deferred</td>
<td>TRUE</td>
<td>No</td>
<td>ineligible</td>
<td>Non-Compliant</td>
<td>Disagree</td>
<td>OK</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>7</td>
<td>1861430542</td>
<td>MEHTA</td>
<td>Last BMI recorded 6/23/16</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>#DIV/0</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>1356575771</td>
<td>HUNT</td>
<td>Height not documented during this visit, weight only</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>1902431323</td>
<td>POLLAK</td>
<td>Review of diet/nutrition plan found in DC summary for this date. Pt has multiple diet plans and follow up over last 3 years.</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Non-Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>1407320555</td>
<td>LEE</td>
<td>Discharge instructions contain inappropriate information.</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>1510198370</td>
<td>O'LEARY</td>
<td>Discharge instructions follow prior PA visit</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>1513088968</td>
<td>PHILLIPS</td>
<td>Discharge instructions contain inappropriate information.</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>1184915407</td>
<td>POULIN</td>
<td>Discharge instructions contain inappropriate information.</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>1548230768</td>
<td>PRYOR</td>
<td>Pt has dx of obesity, was counseled on &quot;healthy diet&quot; by provider</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>1295529459</td>
<td>HONG</td>
<td>No weight entered during visit, height only</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Non-Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>1585445545</td>
<td>MARKS</td>
<td>Diet instructions in discharge papers for diet relating to abdominal pain complaint. Temp diet</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>17</td>
<td>104336214</td>
<td>PERENICHEN</td>
<td>Pt had BMI taken at previous visit 3/16, there was a &quot;nutrition risk assessment done at this visit, CHA charted no risk</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Non-Compliant</td>
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<td>Disagree</td>
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<td>Yes</td>
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<td>18</td>
<td>1912013239</td>
<td>ZDE</td>
<td>No weight entered during visit, height only</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Non-Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>19</td>
<td>1912013239</td>
<td>ZDE</td>
<td>No weight entered during visit, height only</td>
<td>TRUE</td>
<td>No</td>
<td>Eligible</td>
<td>Non-Compliant</td>
<td>OK</td>
<td>Disagree</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
DEMONSTRATION OF DATA VALIDATION TOOL
OUTCOMES AND PATHS FORWARD
Other Strategies

Data validation tool is obviously labor intensive and relies on having access to certain data (such as, is a chart compliant?). There are other options that can assist.

- **Opportunities**
  - Other Health IT Tools
    - Comparing EHR results to data from other Health IT tools (i.e. Azara, i2i, etc.)
  - Engage with vendor

- **Challenges**
  - With many types of issues, the underlying issue will cause the same issues in both, so the data will match, but the issue will persist.
Stratifying Data for Insight

- Consider the importance of looking at data by various dimensions or into cohorts wherever possible, to best identify drivers of data:
  - By site
  - By homelessness status
  - By provider or care team
  - By insurance
  - By racial/ethnic identity
  - By co-morbidities
Three Outcomes of Validation

Numerator issues
Report not finding evidence of compliance in chart

Denominator issues
Report including patients that should not be in the Universe: wrong timeframe, missing exclusions

Clinical issues
Indicated service not being provided or outcome not being achieved
Path Forward

Numerator issues
- Workflow
- Structured data
- EHR Report programming
- Vendor engagement

Denominator issues
- Structured data
- EHR report programming
- Vendor engagement

Clinical issues
- Policy/ protocols
- Clinical decision support
- Referral data
- Training
A Guide to Health IT-Enabled Quality Improvement
This section highlights tools and strategies presented in detail in the *Guide to Improving Care Processes and Outcomes in Health Centers*.  
- Freely available at [HITEQCenter.org](http://HITEQCenter.org)  
- Developed with Dr. Jerry Osheroff of [TMIT Consulting, LLC](http://TMITConsulting.com)  

There is an overview webinar available on the HITEQ site that you can access [here](http://HITEQCenter.org).
Warm Up

• How well does your team understand the care processes and information flows driving results on important metrics?
  – Very well! We have clear policies/ processes in place, monitor closely, and act on any changes that we see.
  – Pretty well. We are monitoring, but either have some questions about the underlying data or are not sure what is driving observed changes.
  – We could be doing better. We are trying to get our arms around it, but no robust process is in place yet.
  – We don’t even know where we would start with this!
What are we talking about here?

• The **concept** of Health IT Enabled QI.
• A **framework** for approaching Health IT Enabled Quality Improvement.
• Learning about **tools** available to underpin this framework.
• Using the **essential CDS/QI worksheet**, a 3 page Word document that helps you map specific processes with your team, to document current and ideal workflows.
Check/ Reinforce Foundations: Tools and Approaches
Poll: Data Integrity

- Where is your organization on the path to producing data that everyone trusts and can act on?
  - Working on it, long way to go
  - Making good headway
  - Good shape; focusing on using the data

This idea, that the data produced from your care processes and information processes—training, systems, etc.—can be trusted is the foundation on which everything else is built.
Accessing your Data

Questions to consider with your Electronic Health Record (EHR) Vendor

Initial Steps
Before Contacting your Vendor

- Decide what patient data or information you need and why you need it (e.g., quality reporting/comparing against benchmarks/risk stratification/provider feedback/motivation).
- Identify how information about the patient gets to you (e.g., direct data entry/health information exchange [HIE]/unidirectional or bidirectional queries with other applications).
- Determine where your data lives (practice management software, billing systems, public health interfaces, electronic health record [EHR] data tables).
- Gather background information about your EHR:
  - Was data migrated over from another system? If so, when?
  - Do you have a cloud-based system or a locally hosted server-based system?
  - What potential data access issues exist (cost, on-demand access, staff skill and experience, timeliness)?
  - How are data stored?

Questions to Consider for your EHR Vendor

EHR and Local System

- Is your current network/hardware sufficient for running reports?
- Do you need any additional software/hardware/applications to run reports or extract and view data (e.g., Java, Flash, Adobe Reader, SQL)?
- Can you access data from any location at any time, including reports?
  - If no, what are the limitations (where and when can you access data and reports)?

Training

- What type of support or training can you receive related to accessing data, using a data dashboard, or running reports?
- Is the training online or in-person?
- Is there a training site (i.e., online resources to assist with learning the EHR)?
- Are training resources and report documentation readily available and updated?

Resulting Data

- How are the data stored (e.g., in-office, vendor server, web-based)?
- Are you able to pull data from various data entry sources (e.g., dictation, provider notes)?
- Are you able to trend results over time?
- Do you have access to:
  - Benchmark clinical/financial indicators
  - Predictive Analytics
  - Research
  - Accountable Care Organization Reporting
  - Population Health
  - Health Information Exchange
- How are clinical content changes disseminated so you know to examine potential impact to your reporting?

Available here on HITEQCenter.org
## Data Analysis Checklist

**CHECKLIST FOR ANALYZING PERFORMANCE MEASURE DATA**

Provided courtesy of: **TMIT CONSULTING, LLC**

[www.tmitconsulting.com](http://www.tmitconsulting.com)

[www.hiteqcenter.org](http://www.hiteqcenter.org)

### ARE THE NUMBERS RIGHT? (IS THERE DATA INTEGRITY?)

<table>
<thead>
<tr>
<th>Data Integrity Category</th>
<th>Definition</th>
<th>What to Look for</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Verifiable</strong></td>
<td>The same result can be generated from calculating the measure or numerator/denominator using different data sources.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Is the measure result (e.g., BP control rate) the same from EHR registry vs. population management software?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ When you do a chart sample from the reported data, do the numbers in individual patient records match those reported?</td>
<td></td>
</tr>
<tr>
<td><strong>Accurate/Reliable</strong></td>
<td>Numerators and denominators are correct, and based on the measure specifications; consistent results</td>
<td>Documentation Issues</td>
</tr>
<tr>
<td></td>
<td>□ Are data entered into proper EHR fields (e.g., are staff documenting systolic BP in the correct sequence or field vs. diastolic BP)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Are EHR data fields, free of text elements, consistent in the correct sequence and field?</td>
<td></td>
</tr>
</tbody>
</table>

Available [here](http://www.hiteqcenter.org) on HITEQCenter.org
Data Checklist
Validity + Meaning

VALIDITY
• Verifiable
• Accurate/Reliable
• Retrievable
• Complete

MEANING
• Looking for:
  – Parameter measurement
  – Patient follow-up
  – Progress fully measured
  – Progress drivers (e.g., med use)
  – Plans implemented/followed
  – Reasons for failures
Population Health Management

• If you have a population health management system or an integrated data system, you can also use that to check your data.

example

If you use your PHM system to pull diabetic patients who have not received a test, are you getting the same number shown in your EHR?

example

Use your PHM system to identify characteristics of those who are being excluded or are not receiving appropriate services.
Data Sources

• What data sources are you currently drawing on?
  – Behavioral health, case management
  – Partner organizations?
  – Homeless information systems?

• Is data integrated?

• How are you using data?
Understand Health IT-Enabled QI: Framework
Adopt an Health IT-enabled, continuous improvement approach to care delivery.

Remember, QI is not aspirational!
Focus: People, Process, and Health IT

In That Order!

- Site selection
- Win-win-win/Incentives
- Stakeholder Engagement
- Improvement Culture
- Learning/Sharing

- Analyze workflow, improvement opportunities
- Consider best practices
- Design/implement key changes (PDSA cycles)
- Monitor progress toward goals
- Continually improve clinical and QI work

- EHR, PHR, HIE, Smart devices
- Registries, dashboards, data warehouse
- Collaboration tools
Clinical Decision Support (CDS) Definition:
A *process* for enhancing health-related decisions and actions with pertinent clinical knowledge and patient information to improve health and healthcare delivery. *Improving outcomes with CDS, 2nd Ed. HIMSS 2012*

- Very broad: way beyond alerts, order sets; invites more creative use of data/Health IT
- Includes many things health centers are already doing (though perhaps not optimally)
Use CDS 5 Rights Framework

To improve targeted care processes/outcomes, get:

- the right **information**
  - evidence-based, actionable... [what]
- to the right **people**
  - clinicians and patients... [who]
- in the right **formats**
  - Registry reports, documentation tools, data display, care plans... [how]
- through the right **channels**
  - EHR, patient portal, smartphones, home monitoring, HIE ... [where]
- at the right **times**
  - key decision/action, prior to visits ... [when]

Select Target(s); Initiate QI Project: Tools and Concepts
Poll: Priority Metrics

• What metric are you currently focusing the most QI energy on?
  – Hypertension
  – Diabetes
  – Immunizations
  – Cancer Screenings (cervical, colorectal)
  – Other Screenings (depression, tobacco)
  – Something else
  – We don’t have QI energy right now!
Poll: Selecting Target

• Why did you choose that particular target?
  – Low performance
  – Quality Awards
  – Payer priority (CMS or private)
  – PCMH recognition
  – Other incentive in place
  – Other reason
  – We haven’t chosen a target
What target should be selected?

• **Business imperatives**, such as value-based payment initiatives or awards (such as HRSA Quality Leader or Technology awards).

• Seek **QI synergies** with pertinent initiatives such as PCMH recognition and [HRSA Health Center Quality Improvement Grant Awards](https://www.hrsa.gov/grants/health-center-quality-improvement-grant/).

• **Operational initiatives** such as:
  – Behavioral health integration
  – Oral health integration
  – Sexual orientation/ gender identity data
  – Social determinants of health data
Dashboarding/ Monitoring

- Monitoring data allows you to identify issues as they arise, and act quickly to implement quality improvement activities.

Available here on HITEQCenter.org
Frameworks for Prioritizing


Available [here](https://HITEQCenter.org) on HITEQCenter.org
Activity: Prioritization Matrix

- List potential targets in **first column**
- Rate each possible target according to the scale provided.
  - You can also leave a column blank if you don’t find it relevant, just be sure to leave it blank for all possible targets.
- Next, add all columns together.
  - Those potential enhancements that have the highest score (\(=\) *external requirement* + *cost* + *difficulty* + *impact*) may be the best enhancements to try first.
Document/Analyze Flows; Identify Improvements: Tools and Implementation
QI Worksheet Activity

1. Overview of Essential CDS/QI Worksheet
2. Group work
3. Report out on high level takeaways
4. Review change packages and case examples
5. Discuss potential improvements
3 Key HIT/QI Questions

Regarding target-focused workflow/info flow:

What *should* we be doing to produce better processes and results?

What are we currently doing? What are we trying to improve and what is the baseline?

What changes might we make to produce better processes and results?
CDS/QI Worksheet Versions

• The CDS/QI Worksheet comes in 2 types:
  – **Essential version** designed for initial efforts to understand and improve target-focused care processes
  – **Enhanced version** for deeper analysis and change implementation
    • *I will show this, but we won’t use this version today.*

• We’ll discuss some examples related to understanding/improving hypertension care processes and outcomes
  – Approach can be applied to many other targets/settings
### CDS/QI Worksheet: First Section of Essential Version

**What Are We Trying To Improve? How Are We Doing Today?**

<table>
<thead>
<tr>
<th>Target</th>
<th>Increase to 75% the portion of clinic patients 18-85 years old with hypertension whose blood pressure is controlled to &lt;140/90 (NQF 0018) within one year of starting the HTN quality improvement project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Performance on Target</td>
<td>BP control rate at start of project is 65%</td>
</tr>
</tbody>
</table>

Be sure this is accurate! Use data validation tools!

- **Document improvement target detail**
  - Include specific quality measure when possible
  - Note targeted performance level (75%), time period, population
  - Set goals collaboratively

- **List current performance under target**
  - If doing this across multiple sites, it may be helpful to do this by site AND on the whole.
Workflow/info flow driving performance on target:

- Activity categories driving performance on target:
  1. Orange Stripe = Interactions with Individual Patients
  2. Blue Stripe = Population-oriented activities
  3. Green Stripe = Foundational Work; keys for success on 1 and 2
Orange Stripe: Individual Patient Supports

- The flow diagram includes interactions with each patient before, during, and after their encounters with health center.

- It also includes a ‘Not Visit Related’ item that reminds teams to consider decisions and actions that patients make unrelated to any visit.
  - For example, information seeking behavior, actions when they’re in the kitchen or grocery store, doing things that have as much to do with whether their blood pressure is controlled as what happens when they’re in the clinic.
  - This item helps teams consider how to best support critical activities and decisions during patient’s daily routine.
Blue Stripe:
Population-oriented Activities

• For example, looking across all patients to identify and address those individuals needing additional attention to ensure appropriate blood pressure control
  – e.g., using registries or population health management tools to identify patients with hypertension whose last office blood pressure wasn’t controlled or haven’t returned for timely follow-up, and taking appropriate steps to address these gaps

• Presenting performance data to teams for comparison and benchmarking
  – e.g., presenting dashboards with this information to spur quality improvement efforts to reduce care gaps

• Monitoring by population characteristics
Green Stripe: Foundational Work

- Underpin all activities related to target:
  - Staff training including frequency, modality, etc.
  - Organizational/leadership goals, mission, structure
  - Policies and protocols; related documentation/training
  - Configuration (mapping, integration, etc.) of health IT tools such as EHR templates or workflows, data aggregation or pop. health management systems, health information exchange (HIE), etc.
- Meeting structures/timing/frequency, etc.
- Internal communication plan, modalities, etc.
### CDS/QI Approach Details

#### Section 1: Activities that occur with specific patients (note: population management activities, e.g. Registry use, belong in Section 2)

*These activities occur when the patient is not in the office (see below for after office visit)*

<table>
<thead>
<tr>
<th>Not Visit Related</th>
<th>Description: Not related to a patient's visit to the office/clinic or just before or after that visit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Information flow</td>
<td>o</td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td>o</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Before Patient Comes to Office</th>
<th>Description: After a patient has an office visit scheduled but before they arrive for that appointment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Information flow</td>
<td>o</td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td>o</td>
</tr>
</tbody>
</table>

*These activities occur when the patient is in the office*

<table>
<thead>
<tr>
<th>Daily Care Team Huddle</th>
<th>Description: Provider team preparations for all patient visits scheduled for the day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Information flow</td>
<td>o</td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td>o</td>
</tr>
</tbody>
</table>
### Approach Detail Tables

#### Fourth Section of Essential Version (excerpt)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-in/Waiting Rooming</td>
<td><strong>Description:</strong> After patient checks in, before encounter with clinical team</td>
</tr>
<tr>
<td>Current Information flow</td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
</tr>
<tr>
<td>Provider Encounter</td>
<td><strong>Description:</strong> Main encounter with Provider</td>
</tr>
<tr>
<td>Current Information flow</td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
</tr>
<tr>
<td>Encounter Closing</td>
<td><strong>Description:</strong> After main provider encounter, but before patient leaves the office</td>
</tr>
<tr>
<td>Current Information flow</td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
</tr>
</tbody>
</table>

*These activities occur after a patient leaves the office*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Patient Leaves Office</td>
<td><strong>Description:</strong> The particular encounter has concluded and the patient is no longer in the office</td>
</tr>
<tr>
<td>Current Information flow</td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
</tr>
</tbody>
</table>
### Section 2: Activities that relate to population management

<table>
<thead>
<tr>
<th>Population Management</th>
<th>Description: Activities focused across the patient panel, e.g., using registries to identify and address care gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Information flow</td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
</tr>
</tbody>
</table>

### Section 3: Foundational Activities for Practice to Address Target

<table>
<thead>
<tr>
<th>Foundational Work</th>
<th>Description: Practice activities that are foundational for planned enhancements e.g. staff training, policy and protocol development, refining EHR and other practice tools, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Activities</td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
</tr>
</tbody>
</table>
Collaboration Time!

- Just start with the first line, **Current Flow**
  - Patient-oriented/ orange, population management/ blue, or foundational/ green
  - **Just start with the first line ‘Current Flow’**
- Document what you are currently doing—data/ information flows and clinical flows (if possible)
  - **Answer as it relates to the 5 Rights**
- If there are instances where you do not know what is currently done, note a need for follow up
  - **Be specific— who? what?**
CDS/QI Approach Summary (What is/could be here?)

This table contains an overview of details documented on subsequent pages in worksheet.

<table>
<thead>
<tr>
<th>Current Information flow</th>
<th>Not Visit Related</th>
<th>Before Patient Comes to Office</th>
<th>Daily Care Team Huddle</th>
<th>Check-in/Waiting/Rooming</th>
<th>Provider Encounter</th>
<th>Encounter Closing</th>
<th>After Patient Leaves Office</th>
<th>Population Management</th>
<th>Foundational Work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Enhancements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Find here in the Guide to Improving Care Processes and Outcomes in Health Centers.
Approach Summary Table

• **Filled in from the completion of the Detail Tables**
• Table summarizes target/ metric-related information flow and workflow in each of the 3 care activity categories (*Patient-specific, Population management, and Foundational*)
  – These terms are listed in table’s header
• The top blank row summarizes ‘current state’ – what is currently done to support target-related decisions, actions, and communications
  – Document/discuss details with quality and clinical teams
  – This structured view is intended to highlight strengths/limitations of current processes and any existing gaps or inconsistencies
• **Summarize potential enhancements in second blank row**
  – Data for summary table comes from the detail tables that follow
  – Identified from change packages and case studies
What *should* be?

- Cells or sections where the current flow is not known
- Instances where stakeholders are not aligned on processes (i.e. different providers do different things)
- Instances where no policy is in place
- Instances where the 5 Rights are not well orchestrated; i.e. the right information is not available at the right time through the right channels
- Instances where policies and workflows are in place, but outcomes are still suboptimal— are there population factors?

Opportunities for Change

So then, what changes should we make?
Hypertension Control Change Package: What should we be doing (for HTN)

- Change Packages help answer question what should we be doing
- Some are organized by the same 3 performance drivers as the CDS/QI Worksheet
  - Individual Patient Supports
  - Population Management
  - Foundations
- Find this change package [here](https://www.cdc.gov/millionhearts/)

### Table 1. Hypertension Control Change Package—Key Foundations (continued)

<table>
<thead>
<tr>
<th>Change Concepts</th>
<th>Change Ideas</th>
<th>Tools and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a Registry to Identify, Track, and Manage Patients with HTN</td>
<td>Implement a HTN registry to identify patients with elevated BP and without an HTN diagnostic/diagnose HTN as appropriate.</td>
<td>American Medical Group Association, Registry Used to Track Hypertension Patients: <a href="http://www.amanet.org">http://www.amanet.org</a></td>
</tr>
<tr>
<td>Use Clinician Managed Protocols for Medication Adjustments and Lifestyle Recommendations</td>
<td>Use protocols to cover proactive outreach driven by registry and response to patient-submitted home BP readings.</td>
<td>Redwood Community Health Coalition, Hypertension Recall Instructions for Physicians: <a href="https://redwood.org">https://redwood.org</a></td>
</tr>
<tr>
<td>Use Practice Data to Drive Improvement</td>
<td>Determine HTN control metrics for this practice.</td>
<td>Washington State Department of Health, Improving the Screening, Prevention, and Management of Hypertension—An Implementation Tool for Clinicians: <a href="https://www.hivexchange.org">https://www.hivexchange.org</a></td>
</tr>
</tbody>
</table>

### Table 2. Hypertension Control Change Package—Population Health Management

<table>
<thead>
<tr>
<th>Change Concepts</th>
<th>Change Ideas</th>
<th>Tools and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a Registry to Identify, Track, and Manage Patients with HTN</td>
<td>Implement a HTN registry to identify patients with elevated BP and without an HTN diagnostic/diagnose HTN as appropriate.</td>
<td>Health Center Network of New York, Undiagnosed Hypertension Registry: <a href="http://www.hcnny.org">http://www.hcnny.org</a></td>
</tr>
<tr>
<td>Use Clinician Managed Protocols for Medication Adjustments and Lifestyle Recommendations</td>
<td>Use protocols to cover proactive outreach driven by registry and response to patient-submitted home BP readings.</td>
<td>National Heart Association, Heart Health: An Online Tool for Patients to Track and Manage Their Heart Health and Share Information: <a href="http://www.mayoclinic.org/heart-health">http://www.mayoclinic.org/heart-health</a></td>
</tr>
<tr>
<td>Use Practice Data to Drive Improvement</td>
<td>Determine HTN control metrics for this practice.</td>
<td>Minnesota Board of Nursing, FAQ: Use of Condition-Specific Protocols: <a href="https://www.boardofnursing.com">https://www.boardofnursing.com</a></td>
</tr>
<tr>
<td>Use AEMs (Automated External Defibrillators) and Other Community Devices to Save Lives</td>
<td>Use Automated External Defibrillators and other community devices to save lives.</td>
<td>Kaiser Permanente, Protocol for Uncalculated Hypertension: <a href="https://www.kp.org">https://www.kp.org</a></td>
</tr>
<tr>
<td>Use AEMs (Automated External Defibrillators) and Other Community Devices to Save Lives</td>
<td>Use Automated External Defibrillators and other community devices to save lives.</td>
<td>UHC Health Care Contract Standing Order: Antihypertensive Initiation and Titration: <a href="https://www.uhc.com">https://www.uhc.com</a></td>
</tr>
<tr>
<td>Use AEMs (Automated External Defibrillators) and Other Community Devices to Save Lives</td>
<td>Use Automated External Defibrillators and other community devices to save lives.</td>
<td>Agency for Healthcare Research and Quality, Blood Pressure Titration Protocol for Diabetic Patients: <a href="https://www.fda.gov">https://www.fda.gov</a></td>
</tr>
<tr>
<td>Use AEMs (Automated External Defibrillators) and Other Community Devices to Save Lives</td>
<td>Use Automated External Defibrillators and other community devices to save lives.</td>
<td>Mercy Clinics, Inc., Hypertension Standing Orders: <a href="http://www.mercycare.org">http://www.mercycare.org</a></td>
</tr>
</tbody>
</table>
Overview of Contents for Each Performance Driver

**Note:** though this change package is mostly specific to hypertension, the concepts, ideas and tools can be adapted to other targets.

**Change Concepts**
- General notions that are useful in the development of more specific ideas for changes

**Change Ideas**
- Actionable, specific ideas for changing a process

**Tools & Resources**
- Can be adapted by or adopted in a health care setting

---

**Table 2. Hypertension Control Change Package—Population Health Management**

<table>
<thead>
<tr>
<th>Change Concepts</th>
<th>Change Ideas</th>
<th>Tools and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use a Registry to Identify, Track, and Manage Patients with HTN</strong></td>
<td>Implement a HTN registry</td>
<td>- American Medical Group Association. Registry Used to Track Hypertension Patients: <a href="http://bit.ly/13k9MT1">http://bit.ly/13k9MT1</a></td>
</tr>
<tr>
<td>Identify patients with elevated BP yet without a HTN diagnosis; diagnose HTN as appropriate</td>
<td></td>
<td>- Health Center Network of New York. Undiagnosed Hypertension Registry: <a href="http://bit.ly/1sUmOPG">http://bit.ly/1sUmOPG</a></td>
</tr>
<tr>
<td>Use a defined process for outreach (e.g., via phone, mail, email, text message) to patients with uncontrolled HTN and those otherwise needing follow-up</td>
<td></td>
<td>- Redwood Community Health Coalition. Hypertension Recall Instructions: see Appendix B.</td>
</tr>
<tr>
<td>Other Change ‘Inspiration’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colorectal Cancer Screening</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Package from NACHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tobacco Screening</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Improvement Case Study from Miramont Family Medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Improving Diabetes Care in Health Center Sites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from IHI</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quality Vignettes</strong>, implementation examples (e.g., patient portal, PHM, and collection of SDoH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transportation</strong> quality improvement toolkit from Health Outreach Partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protocol Development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Samples for hypertension, tobacco, cholesterol from Million Hearts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Protocol Development Tools

Protocol for Identifying and Treating Patients Who Use Tobacco

Name of Practice
No level of smoking or tobacco use is safe. Smoking and tobacco use are a chronic illness, often requiring multiple quit attempts for a user to become tobacco free. There are effective, evidence-based, brief clinical interventions available to help patients who smoke. The intervention protocol below can be integrated into the tobacco use identification and intervention clinical workflow for every patient aged 13 years and older. This protocol can also serve as a model to build clinical decision support into the electronic health record (EHR) to achieve tobacco use intervention goals. In terms of the core components of a clinical tobacco cessation intervention, all patients can benefit from behavioral counseling. All patients 13 and older, with the exception of pregnant women, adolescents, light smokers, and smokeless tobacco users (due to insufficient evidence), can benefit from medication. The combination of counseling and medication is most effective, and both should form the foundation of a brief cessation intervention. It is important to monitor patients during their quit attempt for behavioral and medication adherence, efficacy, and side-effects, to provide support, and to offer continued assistance in the case of slips or relapses to tobacco use.

Tobacco Cessation Brief Clinical Intervention Protocol

Ask
Do you currently use tobacco? *Current use is defined as any tobacco use (i.e., in the past 30 days)'

Yes
ADVISE to quit Assess willingness to quit
The most important thing you can do to improve your health is to quit smoking, and it can help Are you willing to quit within the next 30 days?' Or your own scripting.

No
Provide brief motivational message such as, 'I feel so strongly about tobacco use and its impact on your health, that I will ask you about it when I see you next.' Or your own scripting.

Arrange follow-up Schedule a telephone or in-person follow-up appointment 'Before you leave today, we are going to schedule a follow-up appointment (phone or in-person) around your quit date. We will check to see if your quit attempt is going well. If you have any questions, or if there are ways we can support your quit attempt, please contact us at any time.' Or your own scripting.

ICD-10 Diagnostic Codes for Nicotine Dependence
Effective October 1, 2015

F17 Nicotine dependence
F17.20 Nicotine dependence, unspecified
F17.21 Nicotine dependence, smoking
F17.22 Nicotine dependence, other forms

Counseling and Medical Advice Services, Not Elsewhere Classified (Z71.6, Z72.0)
Z71 Persons encountering health services for counseling and medical advice, not elsewhere classified
Z71.6 Tobacco abuse counseling

Use additional code for nicotine dependence (F17.2)

F17.30 Nicotine dependence, smoking
F17.32 Nicotine dependence, other forms

History of (noncurrent) Nicotine Dependence (Z87.891)
Z87 History of other diseases and conditions
Z87.8 Personal history of other specified conditions
Z87.891 Personal history of nicotine dependence

Exclusive: Current nicotine dependence (F17.2)

Fillable PDF forms for creating protocol that meets measurement requirements. From Million Hearts®
Tailoring Guidance

• For patients experiencing homelessness, particularly long-term, best practices likely need to be tailored to those circumstances.

  - Effective communication: address/phone number Likely to Change, etc.
  - Optimizing case management or multi-disciplinary teams to effect change
  - Creating time, space, and wherewithal to comply with treatment or heal
  - Maximizing data sources, such as CBOs or Homeless Information Systems
  - Financial implications: patients may not have means to pay, cash flow
  - Building trust: miscommunication or misinformation can be costly
Embed Evidence-Based Guidelines into Workflows and Enhancements

- Review guidelines and select the best one(s) for your clinical setting. Make sure they are based on the best medical evidence.
  - Identify existing guidelines. *done in the previous steps!
  - Have providers review and discuss guidelines to develop consensus.
  - Customize guidelines as needed, within the boundaries of the evidence.
  - Review and update guidelines and agreed upon workflows for care regularly.

- Consider conducting a baseline chart audit to benchmark your current practice against agreed upon guidelines.
  - Agree before the audit which patients to include. Do NOT omit charts because a randomly selected chart is not that of a "typical" patient. *part of data validation

- Use a standardized assessment to diagnose and determine disease control and risk for complications to guide management for all patients. Be sure that this information is included in accordance with the 5 Rights.

- Use flowsheets, pathways, or checklists to embed enhancements/ protocols into daily practice. Link guidelines to the information system to provide prompts.

- Remove barriers identified with any previous guidelines or workflows.

From IHI
Implement and Evaluate Changes
Project Approach

Check/Reinforce Foundations
Understand Health IT Enabled QI
Select Target(s); Initiate QI Project
Document/Analyze Flows; Identify Improvements
Implement and Evaluate Changes
Harvest/Spread Results

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From Guide to Improving Care Processes and Outcomes in Health Centers.
Preparing to Test Changes

1. What more information would you like to have before you make changes?
   - Social determinants of patient population
   - Specific patient experience
   - Specific provider experience
   - Technology assets and needs
   - Communication assets
   - Community assets
   - Environmental scan

2. What are some changes/improvements that you might test?
   - Change in policy/protocol
   - Change in workflow
   - Making needed information available differently (i.e. dashboards, huddles)
   - Feedback loop
   - Capturing additional patient information
Selecting a Potential Enhancement

► Of those enhancements identified with the worksheet, now it should be narrowed to **one enhancement** to test.

– Use similar frameworks to selecting the target, such as prioritization matrix.
## Prioritization Matrix

### Frameworks for Prioritizing

**Target requiring improvement:**

<table>
<thead>
<tr>
<th>What do you think can be done to improve this target(s)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate each idea by level of external requirement, cost, difficulty, and impact.</td>
</tr>
</tbody>
</table>

### Opportunities to improve target performance

Activities or changes you are considering testing to determine if they improve target.

<table>
<thead>
<tr>
<th>Opportunities to improve target performance</th>
<th>A. External Requirement (Required=3, wanted=2 or not needed=1)</th>
<th>B. Cost (low cost=3, mid cost=2 or high cost=1)</th>
<th>C. Difficulty (low=3, medium=2 or high difficulty=1)</th>
<th>D. Impact (high impact =3, medium=2 or low impact=1)</th>
<th>Rating (Add together; A + B + C + D = Rating)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Creating the Plan

• Using a QI methodology such as PDSA cycles, engage frontline staff and all key stakeholders in care processes and results to design, implement and evaluate the selected enhancements.

Be sure to do this work with all the stakeholders and not to them (i.e., seek and act on team member and patient input and feedback throughout the process).
• The implementation/evaluation plan describes how you will translate the proposed enhancement into action.
  – Describes what change you will make to see if the enhancement results in an improvement and what you learned from the test
  – Answers a series of key questions that are needed for successful test of enhancement
### Key Questions for a Plan

<table>
<thead>
<tr>
<th>What enhancement are you testing?</th>
<th>[e.g. We are creating a new protocol and workflow to identify and follow-up with diabetic patients who have not had an HbA1c in the past year. Also include evidence base, if possible.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>What staff is involved in this test?</td>
<td>[Be specific– which exact position, e.g. site leadership, QI staff, medical assistants, nurses]</td>
</tr>
<tr>
<td>What do these staff need to know or do differently?</td>
<td>[fill in response]</td>
</tr>
<tr>
<td>How will we provide this instruction?</td>
<td>[include what materials are needed, who will be responsible for creating and monitoring instruction and materials, etc.]</td>
</tr>
</tbody>
</table>
## Key Questions for a Plan (cont’d)

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When/ where will we conduct our test of this enhancement?</strong></td>
<td>[fill in response; include days/ dates as well as sites/ locations/groups, and why you believe this is a representative sample.]</td>
</tr>
<tr>
<td><strong>Data Collection Plan</strong></td>
<td>[fill in response; include what data will be collected and why as well as where/ how that data will be collected. e.g., We will use an excel document to track those patients identified, follow up conducted, responses generated from follow up, and scheduled appts.]</td>
</tr>
<tr>
<td><strong>How will you know if the enhancement is successful?</strong></td>
<td>[fill in response]</td>
</tr>
</tbody>
</table>
Considerations

• When creating your plan, consider the following:

Don’t overcommit!

• Limit the scope of the test of your enhancement to one site, day, or care team.

• Limit the time frame and number of patients impacted, but be sure it is representative.

• Remember this test is not the only option.

• **Key:** Do not completely embed the enhancement before we know if it works with a representative sample (i.e., don’t make expensive health IT changes yet!).
Communication is a key to success.

- While the scope of the test should be limited, broader communication is likely needed.
- Communicate with everyone necessary that a new process or plan is being tested out but will not be rolled out broadly until you are sure that it works.

**Keys:** Be sure to clearly outline the plan, scope, and responsibilities for those involved; Allow and encourage feedback from those involved.
Considerations

Define success in terms of your target and goal [from QI worksheet].

• Define success as a team, including input from those who will be doing.

• Avoid target drift or scope creep.
  – Often a function of defining success on what is easiest to measure rather than what we truly care about.

• Consider external barriers.

• **Keys:** Success may include multiple facets (i.e. change in key metric + increased staff satisfaction or knowledge), and must be measurable in the time available.
Considerations

Collect data related to your target

• Identify process measures and other related data to be collected to determine if enhancement is effective.

• Consider whether data should/ needs to be collected separately (i.e. outside of your EHR) for the test of the enhancement.

• Be sure that data can and will be collected in the time allowed.

• **Key:** Ensure that measures and metrics used **directly relate** to both the set target and the enhancement you are testing.
# Collecting Related Data

## Data Collection Plan

### Issue
(Explain for what specific issue you are collecting data.)

### Questions
(What are you hoping to learn from this data?)
1.
2.
3.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Measure type</th>
<th>Baseline</th>
<th>Sample size</th>
<th>Who</th>
<th>How/Where</th>
<th>By when</th>
<th>How often</th>
<th>Reporting Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Characteristic, numerator/denominator)</td>
<td>(Process, outcome, patient experience)</td>
<td>(Current or historical levels)</td>
<td>(n=?)</td>
<td>(Responsible team members)</td>
<td>(Method/source)</td>
<td>(Specific deadline)</td>
<td>(Frequency of collection)</td>
<td>(Approach to communicating/sharing)</td>
</tr>
<tr>
<td>1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Review Dates
(Date results are discussed with team)

What does the data tell us? Did our questions get answered? What information do we still need?

What worked well?

What could be improved?
What do we do once our test is complete?
Study

Collect and analyze qualitative and quantitative data.

Compare data to predictions and goal; seek to understand experiences of those involved.

Did the enhancement work?

Did it have the intended effect? Did it progress you toward your goal? Did it do so without driving those involved crazy?
Act

ADAPT
- When the test resulted in some positive outcomes, or some improvement, but not exactly the goal
- Tweak the tested enhancement and test again

ABANDON
- When the test did not result in desired outcomes
- Discontinue the change tested; ensure that it has not remained embedded in systems or processes
Act

Initial Test
- Act
- Plan
- Study
- Do

Adopt
Expand test, scale up!

Abandon
Identify new enhancement to test

Adapt
Make changes to enhancement based on study and retest.

New Test
- Act
- Plan
- Study
- Do
How do we sustain changes?
Embedding Change

- Standardize what makes sense
- Ensure accountability
- Visual management
- Have problem solving tools
- Escalating problems
- Integration across organization

Principles Driving Sustained Improvement

STANDARDIZE WHAT MAKES SENSE
Improvement become part of standard work, and standard workflow exists and updated for all those positions impacted.

ENSURE ACCOUNTABILITY
Accountability for standardization is ensured through systems of routine review across every level of org.

VISUAL MANAGEMENT
Visual sharing of status of improvement.

Principles Driving Sustained Improvement

**PROBLEM SOLVING TOOLS** Staff (particularly front line) have tools and bandwidth for addressing problems.

**ESCALATING PROBLEMS** Protocols exist for problems that cannot be solved at the front line to be escalated to the right level in the right time frame.

**INTEGRATION** Alignment across levels/sites/depts around goals and systems.

Escalation, if needed: If problem cannot be solved at the front lines, then staff should report it to their supervisor and email IT staff at IT@sample.org. If no response is received, staff should email COO and Clinic Manager.

Putting Principles into Policy

Standardized workflow created, posted and added to training.

[specific staff] will audit workflow and results on the first Thursday of each month.

Results generated are used to create updated monthly dashboard, and posted in admin area and internal meeting room. Visuals will also be distributed at weekly clinical meeting, with notable changes highlighted.

If problems are identified during regular audit, then staff will present those issues to QI team, as well as to care team or providers involved, using template.
Feedback Loops

Evidence
Relevance
Consequence
Action
Why do feedback loops work?

“...giving individuals a clear goal and a means to evaluate their progress toward that goal greatly increased the likelihood that they would achieve it.”

“The true power of feedback loops is not to control people but to give them control.”

Radar speed signs do not provide any information that is not freely available to the driver (all cars have speedometers!), but these signs have been shown to decrease speed for miles ahead.

Raise your hand if you jump on your brakes when you see this.

Leveraging Feedback Loops

**EVIDENCE** Data must be measured, captured, and stored.

**RELEVANCE** Information must be relayed to stakeholders, not in raw data form, but in context that makes it resonant.

**CONSEQUENCE** The information must illuminate one or more paths forward.

**ACTION** There must be a clear moment when the stakeholders can recalibrate a behavior, make a choice, and act.

### Feedback Loops or Intuitively Meaningful Displays of Information

#### Component Results

<table>
<thead>
<tr>
<th>Component</th>
<th>Your Value</th>
<th>Standard Range</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC Count</td>
<td>5.2</td>
<td>4.0 - 10.0</td>
<td>K/MM3</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>15.8</td>
<td>13.5 - 17.0</td>
<td>g/dl</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>44.7</td>
<td>40.0 - 50.0</td>
<td>%</td>
</tr>
<tr>
<td>Platelet Count</td>
<td>145</td>
<td>150 - 400</td>
<td>K/MM3</td>
</tr>
<tr>
<td>RBC Count</td>
<td>4.71</td>
<td>4.40 - 5.70</td>
<td>M/MM3</td>
</tr>
<tr>
<td>Mean Corpuscular Volume</td>
<td>94.9</td>
<td>79.0 - 99.0</td>
<td>fl</td>
</tr>
<tr>
<td>Mean Corpuscular Hgb</td>
<td>33.5</td>
<td>27.0 - 32.0</td>
<td>pg</td>
</tr>
<tr>
<td>Mean Corpuscular Hgb Conc.</td>
<td>35.3</td>
<td>32.0 - 35.0</td>
<td>G/DL</td>
</tr>
<tr>
<td>Red Cell Distribution Width</td>
<td>11.7</td>
<td>11.5 - 15.0</td>
<td>%</td>
</tr>
<tr>
<td>Mean Platelet Volume</td>
<td>11.1</td>
<td>9.0 - 12.2</td>
<td>fl</td>
</tr>
</tbody>
</table>

#### Section K - Colorectal Cancer Screening

<table>
<thead>
<tr>
<th>S.No</th>
<th>Colorectal Cancer Screening</th>
<th>Total Patients Aged 50 through 75 (a)</th>
<th>Charts Sampled or EHR Total (b)</th>
<th>Number of Patients with Appropriate Screening for Colorectal Cancer (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>MEASURE: Percentage of patients 50 through 75 years of age who had appropriate screening for colorectal cancer</td>
<td>4,902</td>
<td>4,902</td>
<td>1,517</td>
</tr>
</tbody>
</table>

## Feedback Loops or Intuitively Meaningful Displays of Information


<table>
<thead>
<tr>
<th>Test</th>
<th>Your Result</th>
<th>Standard Range</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet Count (PLT)</td>
<td>135</td>
<td>150-400</td>
<td>x10⁹/L</td>
</tr>
</tbody>
</table>

### Table: Measure Name

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>CY (Rating: Not Rated)</th>
<th>PY (Rating: Acceptable)</th>
<th>% Change</th>
<th>CY - PY</th>
<th>PY National Avg</th>
<th>PY State Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section K, Line 19: Colorectal Cancer Screening</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure based upon full universe (potential EHR), 80% Option or sample</td>
<td>Universe</td>
<td>Universe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of patients in colorectal cancer screening universe</td>
<td>4,902</td>
<td>4,518</td>
<td>8.50%</td>
<td>384</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated number of medical patients age 50-75</td>
<td>4,517</td>
<td>4,455</td>
<td>1.39%</td>
<td>62</td>
<td>98.02%</td>
<td>93.72%</td>
</tr>
<tr>
<td>Number of patients age 50-75 (from 3A)</td>
<td>6,081</td>
<td>6,014</td>
<td>1.11%</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universe as a percent of estimated medical patients age 50-75</td>
<td>108.52%</td>
<td>101.41%</td>
<td>7.01%</td>
<td>7.11%</td>
<td>98.02%</td>
<td>93.72%</td>
</tr>
<tr>
<td>Colorectal cancer screening compliance rate</td>
<td>30.95%</td>
<td>30.57%</td>
<td>1.24%</td>
<td>0.38%</td>
<td>38.08%</td>
<td>44.83%</td>
</tr>
</tbody>
</table>
Feedback Loops or Intuitively Meaningful Displays of Information

Feedback Loops or Intuitively Meaningful Displays of Information

Colorectal Cancer Screening

State Avg | National Avg | Site A | Site B | Site C | organization

- State Avg: 45.00%
- National Avg: 35.00%
- Site A: 20.00%
- Site B: 40.00%
- Site C: 5.00%
- organization: 30.00%
Colororectal Cancer Performance Compared to Goal and Average

- **Goal**: National Average
- **State Avg**: State Average
- **National Avg**: National Average

**Comparison**:
- **Site A**: 23%
- **Site B**: 42%
- **Site C**: 7%
- **Organization-Wide**: 31%

**Textual Content**:

Nearly 7 out of 10 of our patients have not had their needed colorectal cancer screening.
Goal

Build systems and tools that support decision making, and action that supports what works by using standardization and feedback loops.
Discussion/Conclusion

Q&A

• What value do you see in the things that we have discussed?
• How might you use it?
• What more would you like to see?

Reach me:
Jillian Maccini | hiteqinfo@jsi.com
• In addition to the Health IT QI tools and guide discussed, HITEQ has several other resource sets on health center priority topics.

• For additional information see HITEQcenter.org or contact HITEQ here.

• If you are interested in hosting a workshop or training with your health centers around these tools, please reach out to us!