"Sense" on the Dollar: Calculating your Return on Investment (ROI)

ASTHO Accreditation Webinar Series

November 14th, 2012

Association of State and Territorial Health Officials
Acknowledgement and Disclaimer

- This webinar was supported by funds made available from the Centers for Disease Control and Prevention, Office for State, Tribal, Local and Territorial Support, under grant #5U38HM000454–05.

- The content of this webinar are those of the authors and do not necessarily represent the official position of or endorsement by the Centers for Disease Control and Prevention.
Webinar Objectives

- Provide a basic understanding of ROI definitions and approaches.
- Provide a basic understanding of how and why ROI has been used in public health.
- Explore how ROI can best be targeted within an agency setting.
- Provide case study examples of determining ROI.
- Explore the appropriate use and development of ROI within agencies.
ASTHO
Karl Ensign
Director, Evaluation
Virginia Department of Health
Josh Czarda
Performance Improvement Manager
University of Rochester Center for Community Health
Theresa Green
Director of Community Health Policy and Education
"Sense" on the Dollar: Calculating your Return on Investment (ROI)

ASTHO Accreditation Webinar Series

November 14th, 2012

Association of State and Territorial Health Officials
“If you lend someone $20, and never see that person again, it was probably worth it.”
Unknown

“Money is not the most important thing in the world. Love is. Fortunately, I love money.”
Jackie Mason

“Always borrow money from a pessimist; he doesn’t expect to be paid back.”
Unknown

“An investment in knowledge pays the best interest.”
Benjamin Franklin
Need for continuous improvement and documenting outcomes

- National focus on improving performance
  - Mandates – GPRA, ACA
  - Investments – MLC, NPHII
  - Accreditation – PHAB

- Public health facing opportunities and challenges
  - Budget battles
  - Information technology and communication advances
  - Increased need for PH
Important Context

QUALITY IMPROVEMENT

DOMAIN 9: Evaluate and continuously improve processes, programs, and interventions
ROI Defined

**ROI** ⇒ **a form of analysis**

- **With evaluation,** we compare changes at 2+ points in time
  - Knowledge
  - Status
  - Behavior
  - Function
  - Values

- **With ROI analysis,** we compare
  - Cost of an intervention with its benefits in **financial terms**
  - Yields the **net** return on investment – over time
  - Follows a business model – goal is positive return
ROI Calculated $$

- Net Benefit = Benefits – Costs

ROI = Benefits – Costs

- $5 = (\$400 + \$500 + \$300) - (\$150 + \$50)
  \[ \frac{(\$150 + \$50)}{} \]

- Or…

Hypothetical Values!!
... “a dollar spent on pediatric immunizations is estimated to save $5 in treating preventable illness”

Economic Benefits and Costs Associated With Target Vaccinations

Edward P. Armstrong, PharmD, FASHP

ABSTRACT

BACKGROUND: As a therapeutic class, vaccines are generally considered to be the health care intervention that provides the best value. In the pharma-coeconomic study of vaccines, it is common for researchers to conduct their analyses from a societal perspective, including direct medical costs as well as indirect costs.

OBJECTIVE: To discuss the data elements of pharmacoeconomic analyses of vaccines and review recently published analyses of emerging vaccines.

SUMMARY: Myriad pharmacoeconomic analyses of vaccines currently in use have been conducted with varying results. A number of products, such as the diphtheria-tetanus-acellular pertussis, hepatitis B, and varicella vaccines, have been shown to be cost-effective from a societal perspective. Yet, other products, such as the pneumococcal conjugate vaccine, have demonstrated less benefit than the cost of their respective vaccination programs. In general, these analyses can be used as a starting point to frame the benefits of specific vaccines in managed care with a balanced view of the necessary societal perspectives. To date, 6 pharmacoeconomic models have evaluated vaccination against human papillomavirus, with all demonstrating some cost benefit when the vaccine was used in female patients who fell within the indicated age range.

CONCLUSIONS: In general, as a therapeutic class, vaccines are extremely cost-effective agents. In addition, they are one of the few public health interventions that may directly lower medical costs. In conducting pharmaco-economic analyses for agents in this class, researchers must consider costs incurred at both the health system and societal levels, as well as cost savings realized through the prevention of disease.

KEYWORDS: Pharmacoeconomic, Cost, Cost-effective, Vaccine, HPV, Hepatitis

As a therapeutic class, vaccines are generally considered to be the health care intervention that provides the best value.\(^1\) Vaccine products are known to have provided more benefit to society than expense, and they have been estimated to save society more than $5 for each dollar spent on most routine pediatric vaccinations.\(^2\) Two vaccines that have had a remarkable impact on eliminating diseases are the polio and smallpox vaccines.\(^3\) Other serious diseases that have been prevented include diphtheria, tetanus, whooping cough, invasive \textit{Haemophilus influenzae} type b disease, rubella, mumps, and measles. In light of the success of vaccines to date, high immunization rates remain the key for society to continue to benefit from these preventive treatments.

Vaccines have had an impressive impact on decreasing disease morbidity within the United States, as evidenced by the Centers for Disease Control and Prevention’s annual morbidity estimates for a range of diseases both before the introduction of vaccines and their current estimates (Table 1).\(^4,5\) It is noted that the annual burden for these 9 diseases has either approached or exceeded a 90% reduction through the use of vaccines.\(^4,5\)

In addition to the impact of vaccines within the United States, vaccination programs have also had a worldwide effect in reducing the number of deaths from specific diseases.\(^1\) Table 2 highlights that nearly 3 million lives have been saved globally from vaccine-preventable diseases because of increased vaccine coverage.\(^1\) Ehreth\(^1\) has compiled data demonstrating the
Where has ROI by used in Public Health?

- *Programs*
- *Aggregate public health spending*
- *QI projects undertaken by agencies*
**Program Examples of ROI**

**Injury prevention:** A $14 child bicycle helmet can prevent $580 in medical expenditures on average, representing a return of $40 for every $1 invested.

A call to a poison control center costs $45; but it prevents $320 in medical spending on average -- $6 in savings for every $1 invested.

**Tobacco prevention and control programs:** State programs including smoke-free workplace rules and higher taxes on tobacco products consistently showed positive return on investment.

California’s efforts showed the highest ROI -- $50 in personal health care expenditures for every $1 spent.
Other Examples of ROI for Program Areas

- **HIV prevention:** The CDC reports that prevention programs averted 361,878 HIV infections, translating into $129.9 billion in medical savings from 1991–2006 (Farnham et al, 2010).

- **Unintended pregnancy:** Every $1 invested in family planning programs that provide a range of preventive services including contraceptives, save almost $4 in Medicaid spending (Frost, Henshaw and Sonfield, 2012).

- **Community water fluoridation:** A 1999 study of Louisiana parishes found the costs of dental treatment for Medicaid–eligible children in communities without water fluoridation were twice as high as those for children living in fluoridated communities.
Examples of ROI for Aggregate Public Health Spending

- Researchers analyzed over a decade of PH spending and mortality rates (*Health Affairs*, July 2011)

- Estimated that for each 10 percent increase in spending, there were significant decreases in:
  - Infant deaths (6.9 percent)
  - Deaths from cardiovascular disease (3.2 percent)
  - Deaths from diabetes (1.4 percent)
  - Deaths from cancer (1.1 percent)

- The study also found that the cost for combatting cardiovascular disease in a clinical setting was over 27 times higher than preventing these through funding preventive public health measures.

- A related study analyzed the impact of three strategies implemented both separately and together (*Health Affairs*, May 2011):
  - (1) expanding health insurance coverage
  - (2) delivering better preventive and chronic care
  - (3) emphasizing “protection” strategies, defined as enabling healthier behavior and safer environments.

  The combined impact of all three strategies was significant:
  - In 10 years -- 90 percent more lives could be saved; costs reduced by 30 percent.
  - In 25 years -- 142 percent life increase and 62 percent cost savings.
An investment of $10 per person per year in programs proven to increase physical activity, improve nutrition, and prevent smoking and other tobacco use could save the country more than $2.8 billion annually in health care costs alone within 1 – 2 years. Beyond this timeframe, savings continued to accrue, rising to more than $16 billion annually within 5 years, and nearly $18 billion annually in 10 – 20 years.

This is a return of $2 for every $1 invested within the first 1 – 2 years, $5.60 within 5 years, and $6.20 within 10 – 20 years.
Case Study Examples of ROI on QI Projects

PERFORMANCE MANAGEMENT SYSTEM

PERFORMANCE STANDARDS
- Identify relevant standards
- Select indicators
- Set goals and targets
- Communicate expectations

PERFORMANCE MEASUREMENT
- Refine indicators and define measures
- Develop data systems
- Collect data

REPORTING OF PROGRESS
- Analyze data
- Feed data back to managers, staff, policy makers, and constituents
- Develop a regular reporting cycle

QUALITY IMPROVEMENT PROCESS
- Use data for decisions to improve policies, programs and outcomes
- Manage changes
- Create a learning organization

Plan
Study
Do
Act
Why use ROI?

- ROI is one way of measuring and communicating public health effectiveness in a manner that can be particularly salient for policymakers, funders, administrators and the general public.
Challenges from an Agency Perspective

- An investment may take years to produce benefits.

- Benefits may be difficult to link back to a specific public health function or QI project.

- Benefits may accrue outside the agency.

- New data may need to be collected.
ROI of QI
-- Advantages & Disadvantages

- Tends to be narrower in scope, so ROI is more modest
- ROI is more immediate, timeframe is shorter
- ROI accrues more directly to the agency
Reductions in standard operating costs – Greater efficiencies realized (paperwork automation, data sharing)

Revenue enhancements – Increasing cost reimbursement (fees recouped, Medicaid reimbursement)

Increased productivity of agency functions – Increasing service encounters (better targeting or disbursement of immunizations, inspections)

Decreased time to produce outputs – Reducing cycle time process (field data entry allows inspections to be completed more efficiently)
Funding from the Prevention and Public Health Fund, ACA

ASTHO led workgroup from
  ◦ CDC
  ◦ State and local health agencies
  ◦ Foundations
  ◦ Academia

Developed tool for health agencies to measure ROI for QI projects such as those undertaken through National Public Health Improvement Initiative (NPHII).

No other such tool is known to exist in the public health field.

Expertise of Glen Mays, University of Kentucky, secured.

Currently being beta-tested by several members of the workgroup.
Personnel and non-personnel costs
- Incurred in the *planning and development phase* of the strategy
- Incurred to support the *on-going operation* of the strategy

Routine operating costs of the unit where the strategy is implemented,
- *Before and after implementation*

Output and/or outcome measures to be affected by the strategy, including measures of:
- Units of service delivered
- Production time required to deliver services
- Reach to the target population
- Other outcomes where applicable and available.
Appropriate Use & Development of ROI within Agencies

- **ROI is one tool of several to be used for decision-making purposes**
- **Build evaluation methods – including ROI – into program inception**
- **Clearly specify the intended purpose and use of ROI**
- **Conduct ROI through a transparent process**
- **Conduct ROI through an inclusive process**
• Centralized System
• 3,759 Employees
• $621,074,928 Budget
• Population 8 Million
### Projects & Tools – Basic Dashboard Tracking

**Agency & District Dashboard**

**Select a Health District:** Chesterfield

#### Immunization

<table>
<thead>
<tr>
<th>Health</th>
<th>Prior Result</th>
<th>Current Result</th>
<th>Trend</th>
<th>YTD Avg</th>
<th>All Districts</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Cohort: Immunization Rates for Children 2 Years Old</td>
<td>93%</td>
<td>85%</td>
<td>-7%</td>
<td>89%</td>
<td>40%</td>
<td>80%</td>
</tr>
<tr>
<td>Entire Cohort VUS: Immunization Rates for Children 2 Years Old</td>
<td>19%</td>
<td>21%</td>
<td>2%</td>
<td>19%</td>
<td>26%</td>
<td>80%</td>
</tr>
<tr>
<td>Percent of Children (Age 11-17 Years) Adequately Immunized with Tuberculin Test</td>
<td>92%</td>
<td>92%</td>
<td>0%</td>
<td>92%</td>
<td>92%</td>
<td>80%</td>
</tr>
<tr>
<td>Number of Organizations Enrolled in VUS Program</td>
<td>84</td>
<td>85</td>
<td>1</td>
<td>83</td>
<td>2967</td>
<td>107</td>
</tr>
<tr>
<td>Percent of Eligibles Served with Folic Acid Counseling</td>
<td>27%</td>
<td>38%</td>
<td>11%</td>
<td>28%</td>
<td>29%</td>
<td>50%</td>
</tr>
<tr>
<td>Percent of Eligibles Served with 100-Day Supply of Multivitamins with Folic Acid</td>
<td>24%</td>
<td>28%</td>
<td>4%</td>
<td>25%</td>
<td>15%</td>
<td>50%</td>
</tr>
<tr>
<td>Percent of Eligibles Served in Plan First</td>
<td>63%</td>
<td>69%</td>
<td>6%</td>
<td>65%</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Percent of Eligibles Served in NIC</td>
<td>113%</td>
<td>113%</td>
<td>0%</td>
<td>112%</td>
<td>76%</td>
<td>100%</td>
</tr>
</tbody>
</table>

#### Readiness & Capacity

<table>
<thead>
<tr>
<th>Health</th>
<th>Prior Result</th>
<th>Current Result</th>
<th>Trend</th>
<th>YTD Avg</th>
<th>All Districts</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Risk Factors Discovered at Restaurant Inspection that are Corrected Within 10 Days After Inspection</td>
<td>33%</td>
<td>48%</td>
<td>13%</td>
<td>44%</td>
<td>42%</td>
<td>70%</td>
</tr>
<tr>
<td>Percent of Restaurant Inspections that are Conducted Within Required Timelines</td>
<td>95%</td>
<td>94%</td>
<td>1%</td>
<td>95%</td>
<td>63%</td>
<td>70%</td>
</tr>
<tr>
<td>Percent of Failing Online Sewage Disposal Systems that are Corrected Within 50 Days After LHD is Notified</td>
<td>18%</td>
<td>22%</td>
<td>4%</td>
<td>21%</td>
<td>21%</td>
<td>80%</td>
</tr>
</tbody>
</table>

#### Administration

<table>
<thead>
<tr>
<th>Health</th>
<th>Prior Result</th>
<th>Current Result</th>
<th>Trend</th>
<th>YTD Avg</th>
<th>All Districts</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Time to Fill a Vacant Position (in days)</td>
<td>44</td>
<td>59</td>
<td>8%</td>
<td>57</td>
<td>85</td>
<td>50</td>
</tr>
<tr>
<td>Percent of Systematic Issues Identified Through Complaints and Grievances Addressed Through Corrective Actions</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>60%</td>
</tr>
<tr>
<td>Number of Processes/Forms Automated</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>

#### District Comparison to All Districts

**Note:** Metrics may be based on different time periods. Click on metric links as necessary.

- **District Cohort: Immunization Rates for Children 2 Years Old** served at LHD:
  - Prior: 93%
  - Current: 85%
  - Trend: -7%
  - YTD Avg: 89%
  - All Districts: 40%
  - Goal: 80%

- **Percent of Eligibles Given Folic Acid Counseling**:
  - Prior: 27%
  - Current: 38%
  - Trend: 11%
  - YTD Avg: 28%
  - All Districts: 29%
  - Goal: 50%

- **Percent of Eligibles Receiving Folic Acid**:
  - Prior: 24%
  - Current: 38%
  - Trend: 14%
  - YTD Avg: 32%
  - All Districts: 25%
  - Goal: 50%

- **Percent of Risk Factors Discovered at Restaurant Inspection that are Corrected at the Time of Inspection**:
  - Prior: 55%
  - Current: 68%
  - Trend: 13%
  - YTD Avg: 64%
  - All Districts: 44%
  - Goal: 70%

- **Percent of Failing Online Sewage Disposal Systems that are Corrected within 50 Days after LHD is Notified**:
  - Prior: 10%
  - Current: 12%
  - Trend: 2%
  - YTD Avg: 11%
  - All Districts: 9%
  - Goal: 10%

**PIP Tracking**

- **Baseline Data**
- **PI Metrics**
- **ROI Analysis**
PIP Tracking – Calculating ROI On IT Savings

Baseline Data

Current Unit Costs

Current Process Cost

Total Cost Baseline

PIP Metrics

Revised Unit Cost

Revised Process Cost

Project Cost

New Cost

ROI Analysis

Unit Cost Variation

Process Cost Variation

Project Cost

ROI

Annual ROI
PIP # 1 – Current State: HR-14 Employee Separation Process

Process Summary

<table>
<thead>
<tr>
<th>Role</th>
<th>Process</th>
<th>Total P/T</th>
<th>Total LT</th>
<th>Lead Time to System Start</th>
<th>Lead Time to System Start</th>
<th>Total Time (Incl. Call summoned only)</th>
<th>Total Time (Incl. Call summoned only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor</td>
<td>6</td>
<td>45 min</td>
<td>45 min</td>
<td>45 min</td>
<td>16 hr</td>
<td>16 hr</td>
<td>16 hr</td>
</tr>
<tr>
<td>Originator</td>
<td>3</td>
<td>25 min</td>
<td>25 min</td>
<td>25 min</td>
<td>4 hr</td>
<td>4 hr</td>
<td>4 hr</td>
</tr>
<tr>
<td>OPM</td>
<td>1</td>
<td>12 hr</td>
<td>12 hr</td>
<td>12 hr</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OEB</td>
<td>4</td>
<td>7 hr</td>
<td>7 hr</td>
<td>7 hr</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OHR</td>
<td>2</td>
<td>36 days</td>
<td>36 days</td>
<td>36 days</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ORC</td>
<td>1</td>
<td>3 hr</td>
<td>3 hr</td>
<td>3 hr</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OPES</td>
<td>4</td>
<td>2 days</td>
<td>2 days</td>
<td>2 days</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OPIS</td>
<td>2</td>
<td>35 min</td>
<td>35 min</td>
<td>35 min</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>16 days</td>
<td>16 days</td>
<td>16 days</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Full-Time Employees Only**

- P/T Process Time: The time it takes to complete a task if you could work uninterrupted.
- LT Lead Time: The elapsed time from when the work is made available until it is passed onto the next person.
- CAA Complete & Accurate: A product that does not need correction, clarification, or retrieval of missing data.
How Much Is The Separation Process Costing VDH?

The HR-14 process currently costs VDH at least $139,855.88 per year, not including the cost of COV accounts that were never requested to be deactivated, and hidden costs like excessive paper and printing costs, lower staff morale, etc.

<table>
<thead>
<tr>
<th></th>
<th>Current State</th>
<th>Future State</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Complete</td>
<td>30+ days</td>
<td>1-2 days</td>
<td>28+ days (93%)</td>
</tr>
<tr>
<td>Cost/yr</td>
<td>$139,855.88</td>
<td>$71,833.65</td>
<td>$68,022.23 (49%)</td>
</tr>
<tr>
<td>Major Steps</td>
<td>40</td>
<td>12</td>
<td>28 (70%)</td>
</tr>
<tr>
<td>Personnel</td>
<td>20</td>
<td>3</td>
<td>17 (85%)</td>
</tr>
</tbody>
</table>

Future State Efforts

1. Mapping all Systems & Permissions Level Required
2. Shifting Simple System Sign Offs to Help Desk
3. Establishing Systematic Audit Process of Systems for Quality Control
PIP Example #2 – IT Cost Reduction

IT Costs account for $18.5 million a year, Costs have increased 28% in the last year.
Implementing Changes and Challenges Realizing ROI

Potential Annual Savings

Annual Savings Realized

Process Changes Can Take Significant Time to Fully Realize

Potential Annual Savings:
- DASD Storage: $677,004.00
- PC Inventory: $214,332.00

Annual Savings Realized:
- DASD Storage: $420,880.00
- PC Inventory: $96,269.00
PIP Example #3 – Increase Enrollment in Plan First (A Medicaid Family Planning Program)

**Individuals**
- Birth Control
- STD Testing
- Other – Family Planning
- WIC Clinic
- Post Partum

**Providers**

**Enrollment Process**
- Registraton on WebVisio
- System Understanding & Function
  - Demographics
  - Age, Income, Insurance
  - Possible – Prompt for Plan First. Clerk still must know parameters
  - Ask Questions to Determine Eligibility
  - If eligible – fill out application/ self populates some fields

**Eligibility**
- Application Process/Form Length
  - No
  - More Needed
  - Eligible

**Service**
- Service Provided

**Billing**
- Tracking & Notification
  - Medicaid

**Knowledge**
- LHD

**Auto-Enrollment & Payment**
- External Provider

**Tracking & Follow Up Capability**
- LHD Submitted Form to DSC
  - Individual Follows Up

**Eligibility Levels**
- Not Interested
- Application Given to Individual
- Interested Individual Signs & Dates

**Post Partum Birth Control**

**Other – Family Planning**

**STD Testing**

**WIC Clinic**

**Application Process/ Form Length**

**Service**

**Billing**

**Tracking & Notification**

**Knowledge**

**Auto-Enrollment & Payment**

**External Provider**

**Eligibility Levels**

**Application Process/ Form Length**

**Service**

**Billing**

**Tracking & Notification**

**Knowledge**

**Auto-Enrollment & Payment**

**External Provider**

**Eligibility Levels**

**Application Process/ Form Length**

**Service**

**Billing**

**Tracking & Notification**

**Knowledge**

**Auto-Enrollment & Payment**

**External Provider**

**Eligibility Levels**

**Application Process/ Form Length**

**Service**

**Billing**

**Tracking & Notification**

**Knowledge**

**Auto-Enrollment & Payment**

**External Provider**

**Eligibility Levels**

**Application Process/ Form Length**

**Service**

**Billing**

**Tracking & Notification**
Implementing Changes and Greater Challenges Realizing Health Outcome ROI

Plan First Enrollment
(Medicaid Family Planning Program)
The Easy Part = Over $1,000,000 In New Billing Revenue for Local Health Districts Since Project Inception

The Hard Part = ROI From Health Outcomes

Challenges = Analyzing Pregnancy Rate Variation Infant Mortality Variation

Cost Per Pregnancy Cost Per Infant Mortality

Data & Time
Control Group
Causal Relation
Internal vs. External

Baseline Data

Current Unit Costs

Current Process Cost

New Cost

ROI Analysis

Unit Cost Variation

Process Cost Variation

Project Cost

ROI

Annual ROI

Total Cost Baseline

PIP Metrics

Revised Unit Cost

Revised Process Cost

Project Cost
Lessons Learned

- ROI Analyses Must be Dynamic
  - PI Projects vary in complexity and metrics
  - ROI Tools must be flexible
  - Amortization of project costs can be challenging as change processes fluctuate
- Illustrating & Showing ROI is Critical to Drive & Promote Continuous PI
- Measuring Health Outcome ROI Remains A Critical Challenge
  - ROI for public health remains un-quantified for Public Health
  - A National Standardized Cost Analyses Calculating Cost Per Incident/Unit should be established
Measuring ROI in Local Public Health: Efficiency through Continuous Quality Improvement

Theresa Green, AA-C, MBA, PhD Student
Director of Community Health Policy and Education
University of Rochester Center for Community Health
Policy: The Berrien County Health Department will incorporate total quality management (TQM) philosophy into strategic planning, goal setting, program implementation and assessment. TQM involves both continuous quality improvement and quality assurance.

Berrien County Health Dept
• About 90 employees
• 3 general service areas with 3 administrative divisions
• County population of 140,000
• Annual budget of $8 million
Does CQI Improve Efficiency?
Robert Wood Johnson Foundation Opportunity

2 Service Areas
- Children’s Special Health Care Services (CSHCS)
- Environmental Health Food Services

CQI Tools
- Brainstorming, 5 Whys, Fishbone Diagrams, Process Mapping, Strategic Planning, Run Charts

Baseline set by Accreditation Standards

Measured by Accreditation Standards
Children’s Special Health Care Services (CSHCS)

• Problems:
  – Slow to respond to client calls
  – Manager was receiving client complaints
  – Staff overwhelmed and can’t get to client care since they are busy with administrative work
  – Not able to generate billable service hours (and therefore fees) to sustain the program
Increase the number of CSHCS (billable) client encounters by 20% while improving the level of current customer satisfaction by March 31, 2011

Measures of change:
- Customer satisfaction survey
- Response times (return call and service)
- Client encounters; billable and nonbillable
- Revenue
PDSA Key Quality Improvements

- Started tracking and analyzing data;
- Began meeting each week to coordinate efforts;
- Implemented a new billing charge slip that standardizes tracking, billing and response;
- Delegated billing and tracking duties to non-frontline staff to free clinical personnel;
- More effectively batch non-billable to billable;
- Changed phone message and maintain accurate in-house data base;
- Improve membership renewal process
<table>
<thead>
<tr>
<th>Month</th>
<th>Days for Completing</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>2.80</td>
</tr>
<tr>
<td>March</td>
<td>1.70</td>
</tr>
<tr>
<td>April</td>
<td>2.28</td>
</tr>
<tr>
<td>May</td>
<td>1.49</td>
</tr>
<tr>
<td>June</td>
<td>0.55</td>
</tr>
<tr>
<td>July</td>
<td>0.26</td>
</tr>
<tr>
<td>August</td>
<td>0.32</td>
</tr>
<tr>
<td>September</td>
<td>0.19</td>
</tr>
<tr>
<td>October</td>
<td>0.28</td>
</tr>
</tbody>
</table>

**Average Days Return Calls**

- Monday meetings
- Delegating Non-Clinical Tasks
- Examination of outliers

**New Charge Slips**

**Annual Leave**
Trend in Billable/Non-Billable Time
Evaluation Findings: Increased Encounters (Goal 20%)

Service Encounters

- **Purposeful Tracking**
- **CQI Started**
- **Delegating Non-Clinical Tasks**
- **Monday meetings**
- **New Charge Slips**
- **Transition planning, Summer increase, examination of outliers**
- **Pro-active renewal requests up to date**
- **Vacations**

Legend:
- Billable (x5)
- Non-Billable
Evaluation Findings: Increase Revenue Goal 20% Increase ($1,712.40)

76% increase!
Qualitative Assessment

- Quarterly and year-end reports are much quicker. Only took 3 hours to review 3 months worth of billing, otherwise would have taken 3 days. Only found 2 errors in 2400 encounters.

- Staff have more time for clients because they get to spend less time doing clerical work

- Change from meeting once/month for 2 hours, to once/week for 30 minutes. Much more effective, great for brainstorming and communication on clients

  - Increased opportunities for billable events were discovered

  - Other counties have called about using the billing slip because they had heard about it from state leadership.
Demonstrated Efficiency Improvements

• During the “DO” phase CSHCS collected $15,694.16 over baseline

• Shifted clerical and billing duties from CSHCS nurse to administrative assistant: 5 hours/week x 52 weeks x $14.03 difference = $3,647.80

• Audit difference from 3 days to 3 hours – staff time Supervisor difference and representative = $509.83 per incident
Problems:
- Difficulty coordinating inspections of restaurants with critical violations;
- Inconsistency among sanitarians;
- Slow to re-inspect restaurants with critical violations;
- Too many critical violations, especially among repeat offenders.
Food: AIM Statement

• Decrease the occurrence of fixed restaurants with critical violations (total number and duration) in any given month by 20% by Mar 31, 2011 without increasing staff time or expense

• Measures of change
  – # of restaurants with critical violations
  – # of days til re-inspection of a critical
PDSA Key Quality Improvements

- Initiated monthly meetings of food staff;
- Track and analyze data for benchmarking;
- Consistent reminder system for re-inspections initiated;
- Implement call backs in re-inspection;
- Examine and correct outliers thru 5 whys;
- Developed a newsletter to educate restaurants;
- Promote standardized inspections with team leaders.
Evaluation Findings: Average Days until Re-inspection

- Reviewing the Process and CQI
- Consistent reminder system
- Phone Call Re-inspections
- Begin monthly meetings
- Discussing data & benchmarking
- Examination of Outliers

Days until Reinspection

- Monthly Average Days til Reinspect
- Median
Percent of Criticals NOT Re-inspected before 14 Days

Jan-10: 50.0%
Feb-10: 43.0%
Mar-10: 41.0%
Apr-10: 17.0%
May-10: 14.0%
Jun-10: 14.0%
Jul-10: 14.0%
Aug-0: 13.0%
Sep-10: 7.0%
Oct-10: 10.0%
Nov-10: 10.0%
Dec-10: 7.0%

Percent of Restaurants
Qualitative Evaluation Findings

- David who is often targeted as ‘slow’ was found to do much more inspections than others.
- Brian has started using the computer during inspections on his own.
- Manager has noticed broader improvement than were targeted, such as *better* SWORD reports and *quality* inspections.
- Staff have realized that CQI extends right into accreditation.
Demonstrated Efficiency Improvements

- Using computer during on-site inspection decreases staff and travel time: 1.5 hour x 200 inspections per year x $24.12/hour = $7236.00 per inspector
  - Travel average to and from restaurant = 15 miles x $0.50/mile x # insp/year = $1500
- Manager time tracking late inspections = Gary x 1 hour/wk x 52 weeks = $1677.52
- Resource costs for averted foodborne outbreaks saved – difficult to quantify
### Berrien County Health Department Strategic Plan
#### Objectives 2011

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Objective Focus</th>
<th>Problem</th>
<th>Objective</th>
<th>Measure</th>
<th>Baseline</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATS Treatment</td>
<td><strong>Increase Group Sessions</strong> - Goal #3 Increase Efficiencies</td>
<td>Need for increased services with decreased state funding.</td>
<td>Increase efficiency in treatment service delivery by moving some of the total number of clients attending individual sessions to attending</td>
<td>Percent of total clients receiving group treatment</td>
<td>Total 09/10 - 128/1000 (12.8%)</td>
<td>Total 10/11 - 350/1000 (35%)</td>
</tr>
<tr>
<td>CCHS Family Planning</td>
<td><strong>BCCCP target population</strong> - Goal #4 Decrease Disparity</td>
<td>State has mandated that client shift must occur to serve more women in the 50-64 year demographic</td>
<td>Increase the number of 50-64 year old women who receive BCCCP services to 75% of caseload by September 2011</td>
<td>Percent of BCCCP clients per month who are 50-64 years old</td>
<td>FY 09 = 135/304 (44%) FY10 = 159/300 (53%)</td>
<td>75% Currently 76%</td>
</tr>
<tr>
<td>CCHS Sexually Transmitted Disease</td>
<td><strong>STD turnaway rates</strong> - Goal #1 Provide Exceptional Service</td>
<td>with the addition of Rapid HIV testing, immunizations and decreases in staffing, the number of clients turned away daily at the STD clinic has increased</td>
<td>Decrease the number of patient turnaways in STD clinics</td>
<td>Total number of clients turned away per month (Niles + BH) on a three month average</td>
<td>58</td>
<td>no more than 2 clients per scheduled clinic. (20 x 2) Currently 23/month</td>
</tr>
</tbody>
</table>

Each service area and administration area set at least one objective. There are a total of 14 Key Objectives (x $20,000).
Questions & discussion
THANK YOU!!

For further information, you can contact: Denise Pavletic at dpavletic@astho.org