Resilience in Workflow and IT Redesign:

Modifying a CAUTI Program from a Davies Award-winning Health System
When it is Not Working in Your Hospital

Elizabeth Leskovar, MSN, RN, AGCNS-BC
Chris Nemets, MSN, RN, CNML Chief Nursing Informatics Officer
About Sparrow Health System

» Sparrow Hospital - Lansing
  » 733 beds
  » 30,000 inpatient discharges
  » Surgery: 8,162 IP, 12,776 OP
  » 4,200+ births, Level 3 RNICU
  » 117,000+ annual ED visits
  » 960+ Providers*, 6500+ Caregivers, 2300+ Volunteers

» Sparrow Specialty Hospital (LTACH)
» Sparrow Clinton, Ionia and Carson Hospitals
» Ambulatory clinics and services

*Provider = Physician, PA, NP, APRN
Sparrow Offices

» Ambulatory clinics – 60 locations, 400+ Providers
» Outpatient visits – 590,000 visits/year
» Variety of specialties and services
  • Behavioral Health
  • Cardiology, CVT Surgery
  • Diabetes/Endocrinology
  • Family Medicine
  • FastCare Retail Clinics
  • Gastroenterology
  • Geriatrics / Senior Health
  • Infusion Centers
  • Internal Medicine
  • Nephrology
  • Neurology
  • Oncology
  • OB/Gyn
  • Orthopedics
  • Pain Management
  • Pediatrics
  • Perinatal
  • Surgery
  • Urgent Care
  • Weight Management
  • Wound and Hyperbaric

• Behavioral Health
• Cardiology, CVT Surgery
• Diabetes/Endocrinology
• Family Medicine
• FastCare Retail Clinics
• Gastroenterology
• Geriatrics / Senior Health
• Infusion Centers
• Internal Medicine
• Nephrology
• Neurology
• Oncology
• OB/Gyn
• Orthopedics
• Pain Management
• Pediatrics
• Perinatal
• Surgery
• Urgent Care
• Weight Management
• Wound and Hyperbaric
Local Problem

» Catheter-associated urinary tract infection (CAUTI)
  » One of the commonest types of healthcare-associated infections (HAI)
  » 500,000 nosocomial UTIs/year; >30% of all HAIs; 13,000 deaths annually
  » Leading cause of secondary blood stream infection (BSI); ~10% mortality rate, adds 2-4 days to IP LOS, $0.4B - $0.5B annually
  » CDC recommends QI programs with interventions to identify and remove urinary catheters that are no longer medically necessary

» Sparrow had no program in place to address these issues
Local Problem

» 12/1/2012
  » Inpatient EMR go-live

» 2014
  » iPAG* reviewed data showing ↑ CAUTIs
  » Began exploring how health IT/EMR could encourage and support clinical best practices in CAUTI prevention

* iP Sparrow Physician Advisory Group
Other Driving Forces for Action

» CMS stopped reimbursing for CAUTI
» AHRQ - Rise in medication-resistant infections
» National Patient Safety Goal
Design and Implementation
Front-Line Clinicians Leading the Way

- CAUTI Champions
- Nursing Documentation Committee
- iPAG Workgroups
CAUTI Governance

- **MSEC**: Medical Staff Executive Committee
- **iPAG**: iSparrow Physician Advisory Group
- **CPOE**: Computerized-Provider Order Entry
- **CDS**: Clinical Decision Support
Framework for Improvement: Comprehensive Unit-based Safety Program (CUSP)

Focusing on Urinary Catheters Left in Place Longer Than Necessary

FOLEY RELATED URINARY TRACT INFECTIONS
Cause and Effect Diagram

PATIENT RELATED FACTORS
- Primary Risks
  - Age > 50 yrs
  - Dehydration
  - Diabetes
  - Sickle cell anemia
  - Inability to mobilize
  - Other sites of infection
  - Previous UTI
  - Incomplete emptying of bladder
  - Focal incontinence

- Secondary Risks
  - Hypoalbuminemia
  - Immobility
  - Malnutrition
  - Sepsis
  - Other methods to control incontinence not used

CAREGIVER RELATED FACTORS
- No hand washing prior to catheter manipulation
- Poor insertion techniques
- No policy and procedures
- Breaks in closed system
- Inappropriate use of catheters
- Drainage bag spigot/tube contaminated
- No antiseptic coatings bonded to catheter
- Other methods to control incontinence not used
- Foley bag raised above level of bladder
- Catheter not secured to body

SYSTEMS / HOSPITAL
- Indications for appropriate catheter use not followed
- Lack of supplies to manage incontinence
- Routine catheter changes
- No catheter securing devices
- Nurse Driven Catheter Use Protocol lacking
- Limited variety of trays/Foley sizes available

SYSTEMS / EQUIPMENT
- Inappropriate antibiotic use
- Open drainage systems
- Bacterial adherence to catheter surface
- No closed system
- No sample port
- No Bladder Scanners

SYSTEMS / ENVIRONMENT
- Unsterile insertions
- Standing columns of urine (dependent loops)
- Breaks in closed system
- Drainage bags touching floor
- Multi-patient use of measuring devices

Foley Catheter Related UTI

APIC (2014). URL: http://apic.org/Resource_/EliminationGuideForm/0ff6ae59-0a3a-4640-97b5-eee38b8bed5b/File/CAUTI_06.pdf
Design and Implementation

» iPAG, CAUTI Steering Committee, and Nursing Documentation Committee selected the Epic Clinical Program created by Texas Health Resources (THR)

» Rationale:
  » Proven results from a HIMSS Davies Award winner
    » “Standing on the shoulders of giants”
  » Focus on timely removal of urinary catheters
  » Easy-to-follow “recipe” to reduce CAUTIs
  » Reflected evidence-based practice
  » Straight-forward IT build, same EMR system
Project Description and Goal

Does using THR’s Clinical Program approach, using **physician-facing** standardized order sets, order panels, best practice advisories (BPAs), and nursing documentation flowsheets reduce urinary catheter line days and CAUTIs at Sparrow?

» **Process Goal** (by 12/31/2015):
  » ↓ Urinary catheter line days by 10%

» **Outcome Goal** (by 12/31/2015):
  » ↓ CAUTI (#s and NHSN SIR*) by 20% compared to baseline year (52 in 2014 and 1.4, respectively)

* NHSN SIR = National Healthcare Safety Network Standardized Infection Ratio
Benchmarks and Starting Line

Benchmarks
» CMS Value Based Purchasing rate (SIR)
  » <0.828
» Sparrow Goal
  » 0 preventable harm

Starting Line (2014)
» Line days
  » 26,847
» CAUTIs
  » 52
» CAUTI SIR (CMS; Observed : Expected)
  » 1.4
Design and Implementation

» The knowledge tools we decided to use
  » Epic’s CAUTI Clinical Program

» The IT tool we decided to use: Epic, because...
  » Existing investment with required functionality
  » Workflow integration
  » Documentation tools and decision support
  » Analytics to measure and improve (Tableau)
Design and Implementation

- Define population
- Identify best practices
- Determine order set priorities, participant requirements, BPA properties
- Training, reporting, tracking, adherence

**Decide what good looks like**

- Assessment documentation
- Order sets, care plans
- CDS tools, displays
- Policy-supported workflows

**Build the solution in EMR**

- Application & integrated testing
- CAUTI education
- Communication
- Policy implications

**Test, Talk, Teach**

- iPAG and nursing leadership sign-offs
- EMR workflow training
- Put into practice
- Measure, monitor, adjust

**Go-live & PDCA**

- iPAG and nursing leadership sign-offs
- EMR workflow training
- Put into practice
- Measure, monitor, adjust
8 Months Later...Not Improving - Why?

# OF CAUTI BY MONTH

Foley Line Days by Month: July 2013 - Dec 2014

CP Go-live
Back to the Drawing Board

» Change BPA from physician-facing to nurse-facing because...
  » Catheter management & timely removal is a high nursing priority
  » Better locus of control for documentation and action

» Need right leadership, workflows, usable IT

» Outline the big elements

» Governance structure to drive improvement

APIC (2014). URL: http://apic.org/Resource_/EliminationGuideForm/0ff6ae59-0a3a-4640-97b5-eee38b8bed5b/File/CAUTI_06.pdf
Desired Outcomes

» Process Outcomes
  » Decreased urinary catheter (Foley) line days

» Patient outcomes
  » Fewer CAUTIs
  » Lower CAUTI Standardized Infection Ratio (SIR)
How Health IT Was Used: Timeline

**Health IT Interventions**

- 2014
  - Require Indication in Foley order
  - Physician-facing BPA
  - RN-facing BPA

- 2015
  - Physician-facing BPA switched to RN-facing

- 2016
  - Monthly report for Foley rounds
  - New care plan, patient ed template
  - Single button for peri-care & Foley care

**Clinical Process Changes**

- 2014
  - Short-term vs. Long-term

- 2015
  - New Foley Tray
  - CAUTI Reviews
  - Peri-Care/Foley Care Education

- 2016
  - Foley rounds
  - Female urinals
  - Standardized urine specimen collection
How Health IT Was Used: Timeline (2)

**Health IT Interventions**
- New Foley order set
- Updated GU assessment and Foley maintenance documentation
- Hyperlink to policy from flowsheet
- BPA for care plan and patient education
- Updated I&O flowsheet
- Require “Nursing Action” in Foley order set
- Prompt added within GU Assessment to add Foley LDA

**Clinical Process Changes**
- New Policy
- Annual LMS CAUTI Education
- Securement device
- Standardized Foley bag hooks for IV poles
How Health IT Was Used: Provider* Workflow

- Use standard processes for provider ordering and documentation
  - Short-term vs. long-term Foley
  - Required question: Indication
  - Prompts nursing action

*Provider = Physician, Physician Assistant, Nurse Practitioner, Advanced Practice RN
How Health IT Was Used: Nurse Workflow

» Use standard processes for nursing documentation (EMR flowsheets) to capture data for Foley Insertions

» LDAs, Care Plan

» Use nurse-facing BPAs to prompt care plan & patient education
How Health IT Was Used: Order Sets

MED Foley Placement & Removal  Manage My Version

▼ GENERAL

▼ Urinary Catheter Placement, Management & Removal

- Short-term Indwelling Urinary Catheter Panel: Insertion, Removal, and Management
- Long-Term Indwelling Urinary Catheter Panel; Insertion and Management
- Short Term to Long Term Foley Conversion

© 2018 Epic Systems Corporation. Used with permission.

⚠️ Reason for Short-Term Foley

- Accurate measurement of urinary output in the critically ill < 48 hours
- Acute urinary retention < 48 hours
- Peri- and/or post-operative need < 48 hours
- Requires immobilization < 48 hours
- Other: Please document Reason for Foley in Comments

⚠️ Nursing Action

- Insert and maintain Foley
- Maintain existing Foley
- Replace existing Foley and maintain new Foley

Comments:  Click to add text (F6)

© 2018 Epic Systems Corporation. Used with permission.
How Health IT Was Used: BPAs

Patient has a Foley catheter. Please add the Foley Catheter Maintenance care plan, which will also automatically add appropriate education. If the care plan has been resolved this encounter, reactivate "Foley Catheter Maintenance" template.

Evaluate and document indication/necessity for Foley Catheter. Refer to the Foley Catheter Order Panel and discontinue, if appropriate.

This patient has a short term Foley Catheter that has been documented as being in for greater than 48 hours. Discontinue orders have been written. What would you like to do?
# How Health IT Was Used: Nursing Documentation

**Urethral Catheter Indwelling Single Lumen 16 fr**

<table>
<thead>
<tr>
<th>Placement date:</th>
<th>09/25/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placement time:</td>
<td>0825</td>
</tr>
<tr>
<td>Site:</td>
<td>Indwelling Single Lumen</td>
</tr>
<tr>
<td>Inserted by:</td>
<td>TF</td>
</tr>
<tr>
<td>Urine Returned:</td>
<td>Yes</td>
</tr>
<tr>
<td>Securement Method:</td>
<td>Securement Device</td>
</tr>
<tr>
<td>Collection Container:</td>
<td>Urometer</td>
</tr>
</tbody>
</table>

**Removal date:**

<table>
<thead>
<tr>
<th>Days:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheter Balloon Size:</td>
<td>10 mL</td>
</tr>
<tr>
<td>Tube Size (Fr.):</td>
<td>16 fr</td>
</tr>
</tbody>
</table>

**Left in for continued treatment?:**

Yes

**Assessments**

<table>
<thead>
<tr>
<th>Reason for Foley</th>
<th>09/25/18 1500</th>
<th>09/25/18 1346</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Short-Term-)Peri-and/or post-operative need &lt;48 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site Assessment Status</th>
<th>Clean;Intact</th>
<th>Clean;Intact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open to gravity drainage</td>
<td>Open to gravity drainage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collection Bag Type</th>
<th>Metered</th>
<th>Metered</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Securement Method</th>
<th>Securement Device</th>
<th>Securement Device</th>
</tr>
</thead>
</table>

| CAUTI Prevention Bundle in place | Yes |

© 2018 Epic Systems Corporation. Used with permission.
How Health IT Was Used: Policy

Sparrow Health System Policy

Title: System Policy - Urinary Catheter Care

Category: Genitourinary

Replaces: PCG - Urinary Catheter Care (Sparrow Hospital) Effective Date: April 27, 2016

1.0 Policy: Indwelling urinary catheters (Foleys) will be used only when medically as long as medically necessary, and only after alternatives have been attempted.

2.0 Resources:

Utilize Nursing Reference Center Plus online for the following procedures (list below listed first):

- Bladder Irrigation: Closed Intermittent - Performing
- Bladder Irrigation: Continuous - Performing
- Bladder Irrigation: Open Manual - Performing
- Bladder Retraining
- Cystoscopy Catheter: Appling
- Cystoscopy Catheter: Removing
- Diagnost: Bladder: Ultrasound - Performing
- Patient Education: Home Care - Teaching Intermittent Self-Catheterization
- Patient Education: Home Care - Teaching Intermittent Self-Catheterization
- Personal Care, Male Female - Performing
- Suprapubic Catheter: Performing
- Urinary Catheter: Care
- Urinary Catheter (Cystoscopy): Inserting in the Male Adult Patient
- Urinary Catheter: Indwelling ( Foley): Inserting in the Female Adult Patient
- Urinary Catheter: Indwelling ( Foley): Inserting in the Female Pediatric Patient
- Urinary Catheter: Indwelling ( Foley): Inserting in the Male Adult Patient
- Urinary Catheter: Indwelling ( Foley): Inserting in the Male Pediatric Patient
- Urinary Catheter: Retraining
- Urinary Catheter: Intermittent (Straight): Inserting in Female Children
- Urinary Catheter: Intermittent (Straight): Inserting in Female Adult Patient
- Urinary Catheter: Intermittent (Straight): Inserting in Male Children
- Urinary Catheter: Intermittent (Straight): Inserting in Male Adult Patient
- Urinary Catheter: Intermittent (Straight): Inserting in Male Pediatric Patient
- Urinary Catheter: Obtaining for Laboratory Testing - Intermittent Urinary Catheter
- Urine Specimen: Obtaining for Laboratory Testing - Intermittent Urinary Catheter
- Urine Specimen: Obtaining for Laboratory Testing - Pediatric Urinary Catheter
- Urine Specimen: Obtaining Midstream (Clean, Untimed) Urine

3.0 Scope: Sparrow Health System; patient care areas using EPIC

4.0 Definitions:

Term: Catheter-
Associated Urinary Tract Infection (CAUTI)

Definition: A urinary tract infection (UTI) attributable to an indwelling catheter.

Sparrow Health System Policy

Addendum I

Urine “8” Bundle

Eight Interventions to Reduce Catheter-Associated Urinary Tract Infections (CAUTIs)

- Proper hand hygiene and Standard Precautions
- Wear clean gloves and perform hand hygiene before and after any manipulation of the Foley catheter system
- Insert Foley catheters only when necessary
- Attempt alternatives: incontinence aids, urinary incontinence pads, condom catheters, intermittent straight catheters, etc.
- Ensure criteria for insertion is met and documented (Addendum II)
- Select smallest-size Foley catheter possible
- Insert using aseptic technique

Peri-care and Foley care

Peri-care is performed daily, after all episodes of incontinence, prior to Foley catheter insertion, and after the Foley catheter removal

- Foley care is performed following peri-care for all Foley catheterized patients
- Change gloves and wash hands between peri-care and Foley care
- Package peri-care supplies in cloths, bag in bag, and no-rinse ointments for the performance of peri-care and Foley care

Secure catheter

- Utilize a securement device to prevent movement and urethral traction
- Allow slack in catheter to avoid tension on urethra
- Secure catheter to bed using sheathing clips
- Secure drainage bag hook to non-moveable part of bed and ensure bag at floor level

Maintain a closed system

- Avoid breaking the tamper-evident seal between the catheter and tubing
- Prevent backflow
- Secure tubing to promote unobstructed urine drainage and avoid dependent positioning of the tubing and bag below the bladder
- Empty urine from the bag if it must be lifted above the bladder
- Use a separate, labeled container for emptying urine from drainage bags

Assess and document the need for a Foley catheter on admission, transfer, and during each shift

- Complete or obtain order for removal as soon as indications for use are no longer present

Prevent and monitor for acute urinary retention after the Foley catheter is removed

- Bladder scan and perform intermittent straight catheterization as physician

Addendum II

Criteria for Ordering a Foley Catheter

Physicians use these criteria to determine the need for and appropriateness of Foley catheterization. These criteria are also used by Physicians and RNs to assess the continued use of Foley catheters.

Short-Term Foley Catheter Criteria:

- Accurate measurement of urinary output in the critically ill that cannot be measured by other means for <48 hours
- Acute urinary retention likely to respond to Foley catheter placement that is not manageable by other means for <48 hours
- Peri- and/or post-operative need for Foley catheter for <48 hours
- Requires strict immobilization for <48 hours
- Other per Physician assessment for <48 hours

Physicians will order a short-term Foley catheter when the need is anticipated to be less than (<) 48 hours.

Long-Term Foley Catheter Criteria:

- Accurate measurement of urinary output in the critically ill that cannot be measured by other means
- Urinary retention, obstruction, or neurogenic bladder dysfunction not manageable by other means
- Assist in healing of perineal, sacral, or surgical wounds of incisional patients
- Chronic Foley present on admission
- Improve comfort during end-of-life care
- Foley placed by Urology due to difficult insertion or for a special purpose
- Peri- and/or post-operative use in selected surgeries – urological, gynecological, colorectal, abdominal
- Requires prolonged immobilization
- Other per Physician assessment

Adapted from: Gould et al. (2013)
How Health IT Was Used: Tableau Unit-Level Reports for RN Managers
How Health IT Was Used: Coaching & Praising

To coach

<table>
<thead>
<tr>
<th>Caregiver</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasons</td>
<td></td>
</tr>
<tr>
<td>Defer to Bedside Caregiver</td>
<td>40</td>
</tr>
<tr>
<td>I will document the reason for the Foley</td>
<td>2</td>
</tr>
</tbody>
</table>

To praise

<table>
<thead>
<tr>
<th>Caregiver</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasons</td>
<td></td>
</tr>
<tr>
<td>I will document the reason for the Foley</td>
<td>26</td>
</tr>
<tr>
<td>Defer to Bedside Caregiver</td>
<td>1</td>
</tr>
</tbody>
</table>
Value Derived - Process Outcome: Urinary Catheter Line Days

<table>
<thead>
<tr>
<th>Year</th>
<th>Foley Line Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>26847</td>
</tr>
<tr>
<td>2015</td>
<td>26091</td>
</tr>
<tr>
<td>2016</td>
<td>24590</td>
</tr>
<tr>
<td>2017</td>
<td>24666</td>
</tr>
</tbody>
</table>

% reduction from 2014 base year:
- 2015: 2.8%
- 2016: 8.4%
- 2017: 8.1%
Value Derived - Patient Outcomes: Number of CAUTIs

<table>
<thead>
<tr>
<th>Year</th>
<th># of CAUTIs</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>35</td>
<td>33%</td>
</tr>
<tr>
<td>2016</td>
<td>14</td>
<td>73%</td>
</tr>
<tr>
<td>2017</td>
<td>20</td>
<td>62%</td>
</tr>
<tr>
<td>2018*</td>
<td>10</td>
<td>81%</td>
</tr>
</tbody>
</table>

*Projected based on YTD data*
Value Derived - Patient Outcomes: CAUTI SIR Sparrow Observed vs. Expected (O:E)

<table>
<thead>
<tr>
<th>Year</th>
<th>CAUTI SIR</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1.401</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>0.640</td>
<td>54%</td>
</tr>
<tr>
<td>2016</td>
<td>0.376</td>
<td>73%</td>
</tr>
<tr>
<td>2017</td>
<td>0.497</td>
<td>65%</td>
</tr>
</tbody>
</table>

Action Plan for 2017 increase:
- FTF CAUTI reviews w/ unit leaders & Inf Prevention
- Weekly Foley chart audits w/ feedback to unit leaders
Correlation of Improved Processes with Improved Patient Outcomes

- Fewer Foley line days
- Fewer CAUTIs
- Lower CAUTI SIR
Value Derived: Patient Outcomes by Severity of Illness – ICU vs. Non-ICU

CAUTIs: ICU vs. Non-ICU Patients

Year: 2014 – 2018

ICU

2014: 35
2015: 17
2016: 7
2017: 12
2018: 3

Non-ICU

2014: 17
2015: 18
2016: 7
2017: 8
2018: 2
## Value Derived: CAUTI Cost Avoidance

<table>
<thead>
<tr>
<th>Year</th>
<th># of CAUTIs (non-ICU)</th>
<th># of CAUTIs (ICU)</th>
<th>#CAUTI vs. 2014 (non-ICU)</th>
<th>#CAUTI vs. 2014 (ICU)</th>
<th>Costs avoided (non-ICU) @ $1,479/CAUTI*</th>
<th>Costs avoided (ICU) @ $10,197/CAUTI*</th>
<th>Total Costs Avoided</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>17</td>
<td>35</td>
<td></td>
<td></td>
<td>$ (1,479)</td>
<td>$ 183,546</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>18</td>
<td>17</td>
<td>1</td>
<td>-18</td>
<td>$ 14,790</td>
<td>$ 285,516</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>7</td>
<td>7</td>
<td>-10</td>
<td>-28</td>
<td>$ 7,395</td>
<td>$ 275,319</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>12</td>
<td>8</td>
<td>-5</td>
<td>-27</td>
<td>$ 20,706</td>
<td>$ 336,501</td>
<td></td>
</tr>
<tr>
<td>2018**</td>
<td>3</td>
<td>2</td>
<td>-14</td>
<td>-33</td>
<td>$ 20,706</td>
<td>$ 744,381</td>
<td>$ 765,087</td>
</tr>
<tr>
<td>Total 2014-17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 20,706</td>
<td>$ 744,381</td>
<td>$ 765,087</td>
</tr>
<tr>
<td>Total 2014-18**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 41,412</td>
<td>$ 1,080,882</td>
<td>$ 1,122,294</td>
</tr>
</tbody>
</table>

** Through July 2018
External Recognition for Our Results and Collaboration
Recognition for Our CAUTI Program: The Hospitalist

Are you getting the most out of your EHR?

Work with IT, early adopters, and vendors to maximize your electronic health record system

Publish date: March 10, 2017
Author(s): Thomas R. Collins

Sparrow Health System in Lansing, Mich., went live with its electronic health record (EHR) system at its main hospital on Dec. 1, 2012. For a year and a half, the system was untapped, innovation-wise. Very few features were turned on, and it sat relatively idle with regard to quality improvement. Hospitalists and others used the EHR, but not ambitiously.
# Capital and Operational Expenses

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Pre-implementation</th>
<th>Modification</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenses</td>
<td>$ 0</td>
<td>$ 0</td>
<td>$ 0</td>
</tr>
<tr>
<td>Operational expenses</td>
<td>$ 18,120</td>
<td>$ 10,035</td>
<td>$ 28,155</td>
</tr>
<tr>
<td>Analyst time</td>
<td>$ 2,170</td>
<td>$ 700</td>
<td>$ 2,870</td>
</tr>
<tr>
<td>Physician time</td>
<td>$ 3,750</td>
<td>$ 1,875</td>
<td>$ 5,625</td>
</tr>
<tr>
<td>RN time</td>
<td>$ 11,200</td>
<td>$ 5,460</td>
<td>$ 16,660</td>
</tr>
<tr>
<td>Training time</td>
<td>$1,000</td>
<td>$ 2,000</td>
<td>$ 3,000</td>
</tr>
</tbody>
</table>
Lessons Learned

» When you are stuck, think & look outside the box

» Carefully select the most appropriate end-user to see and take action on the BPA

» Carefully plan your data needs before implementation

» Ongoing, collaborative PDCA is key to sustainability
References


