Resilience in Workflow and IT Redesign:

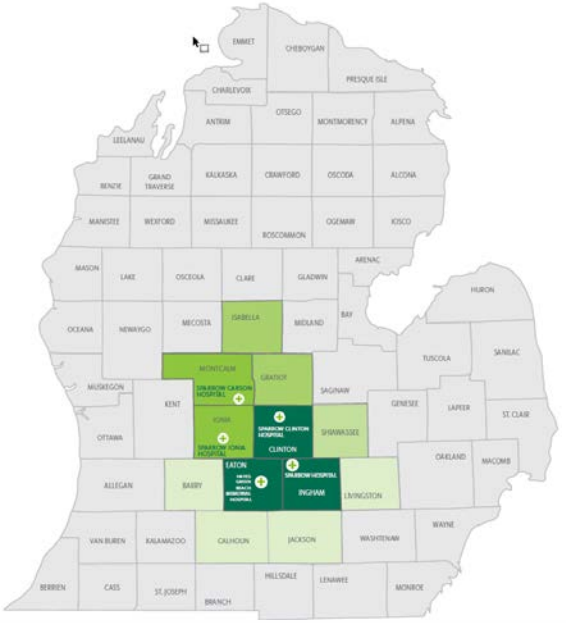
Modifying a CAUTI Program from a Davies Award-winning Health System When it is Not Working in Your Hospital

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

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Sparrow Offices

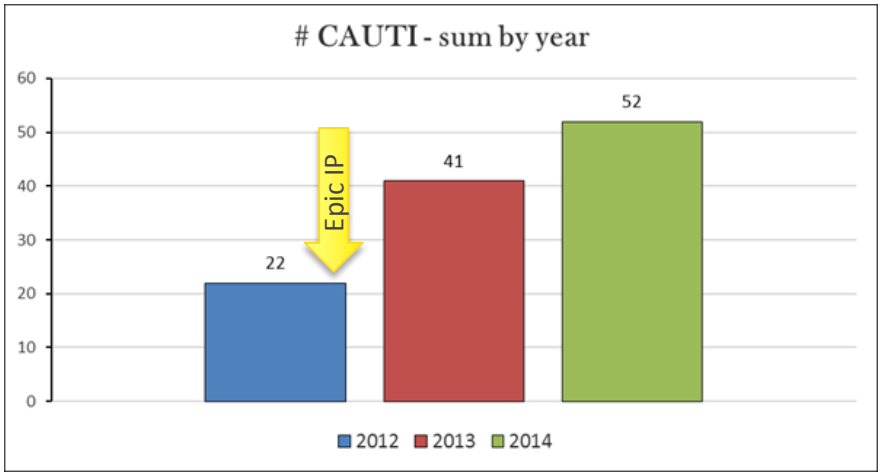
- Ambulatory clinics – 60 locations, 400+ Providers
- Outpatient visits – 590,000 visits/year
- Variety of specialties and services
  - Behavioral Health
  - Cardiology, CVT Surgery
  - Diabetes/Endocrinology
  - Family Medicine
  - FastCare Retail Clinics
  - Gastroenterology
  - Geriatrics / Senior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

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



* iSparrow Physician Advisory Group

Other Driving Forces for Action

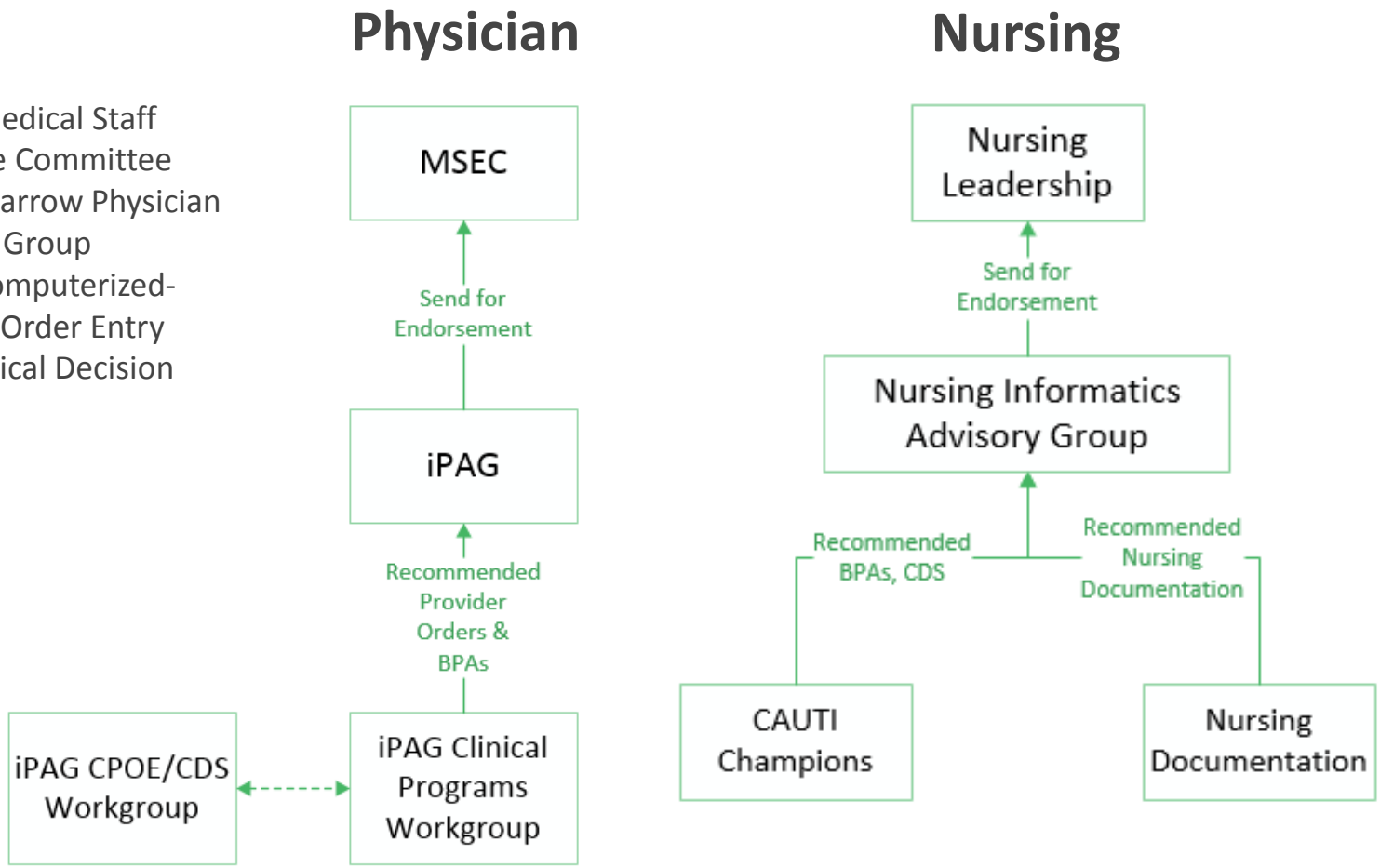
- CMS stopped reimbursing for CAUTI
- AHRQ - Rise in medication-resistant infections
- National Patient Safety Goal

Design and Implementation
Front-Line Clinicians Leading the Way

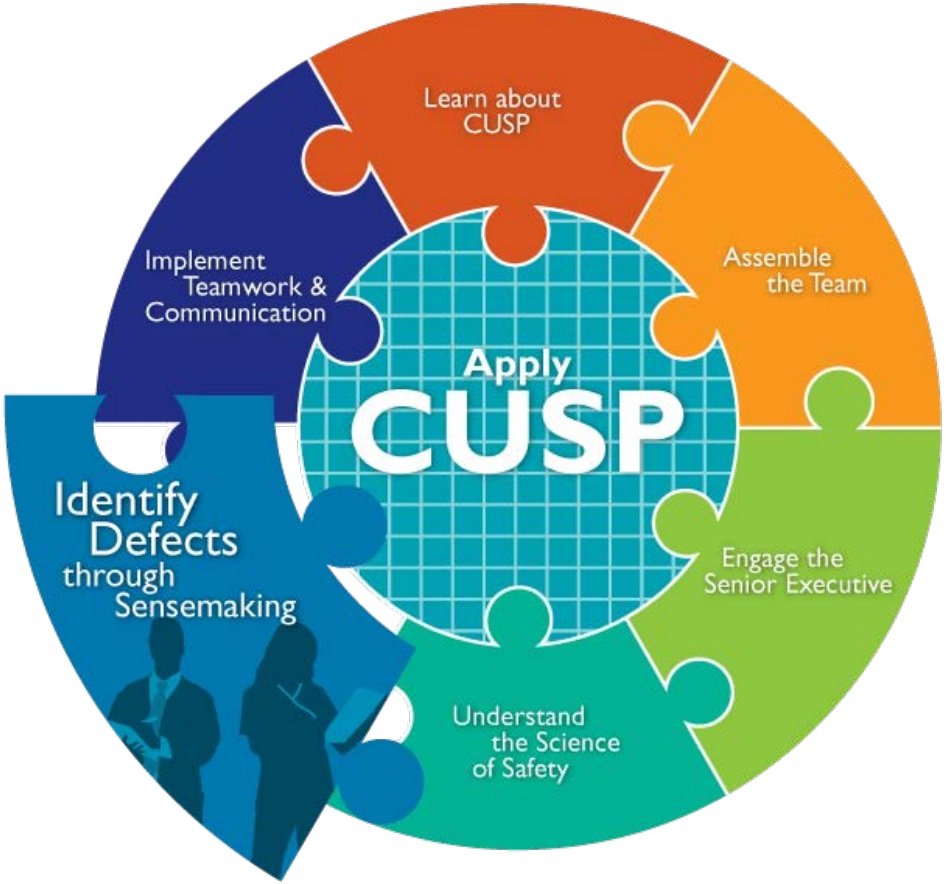
- CAUTI Champions
- Nursing Documentation Committee
- iPAG Workgroups

CAUTI Governance

- **MSEC**: Medical Staff Executive Committee
- **iPAG**: iSparrow Physician Advisory Group
- **CPOE**: Computerized-Provider Order Entry
- **CDS**: Clinical Decision Support

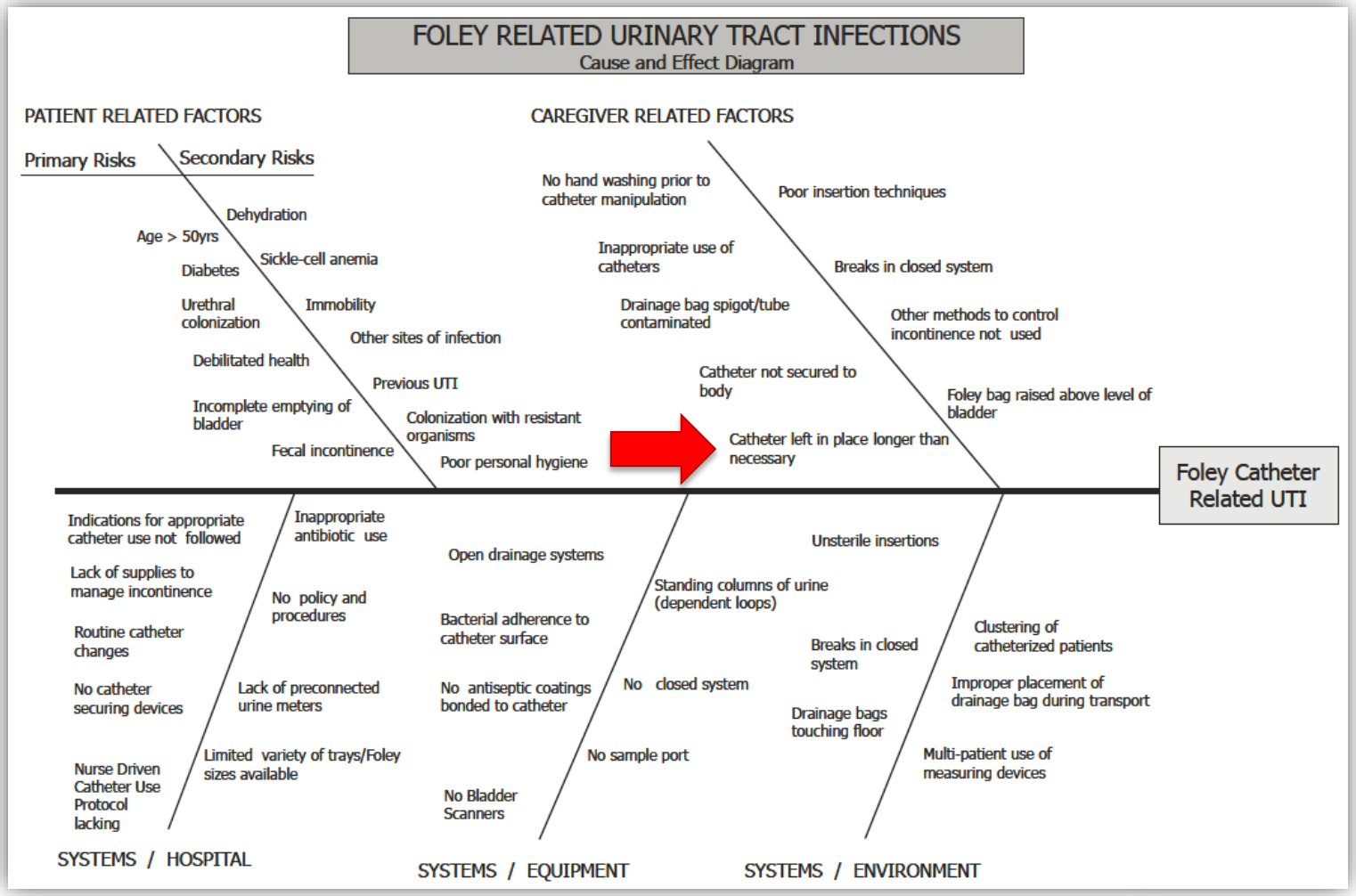


Framework for Improvement: Comprehensive Unit-based Safety Program (CUSP)



https://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/index.html

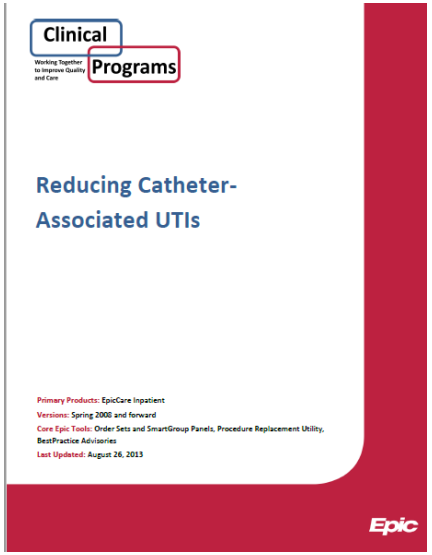
Focusing on Urinary Catheters Left in Place Longer Than Necessary



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

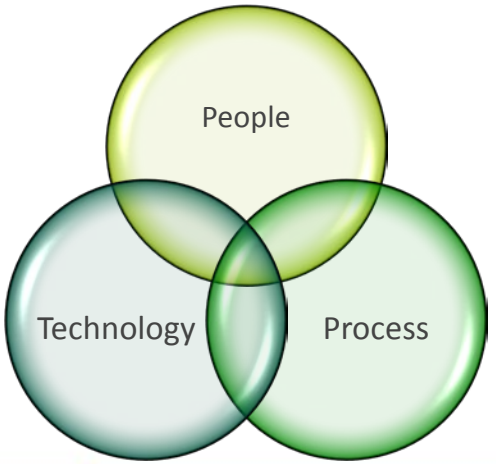
- CMS Value Based Purchasing rate (SIR)
  - <0.828
- Sparrow Goal
  - 0 preventable harm

Starting Line (2014)

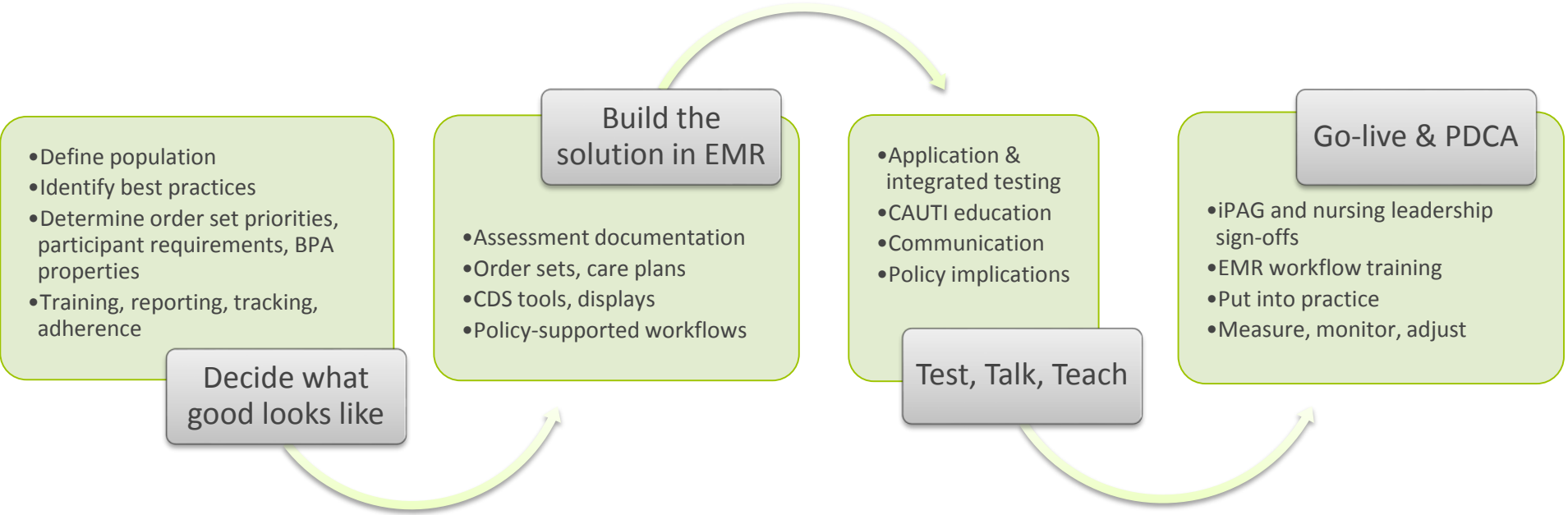
- Line days
  - 26,847
- CAUTIs
  - 52
- CAUTI SIR (CMS; Observed : Expected)
  - 1.4

Design and Implementation

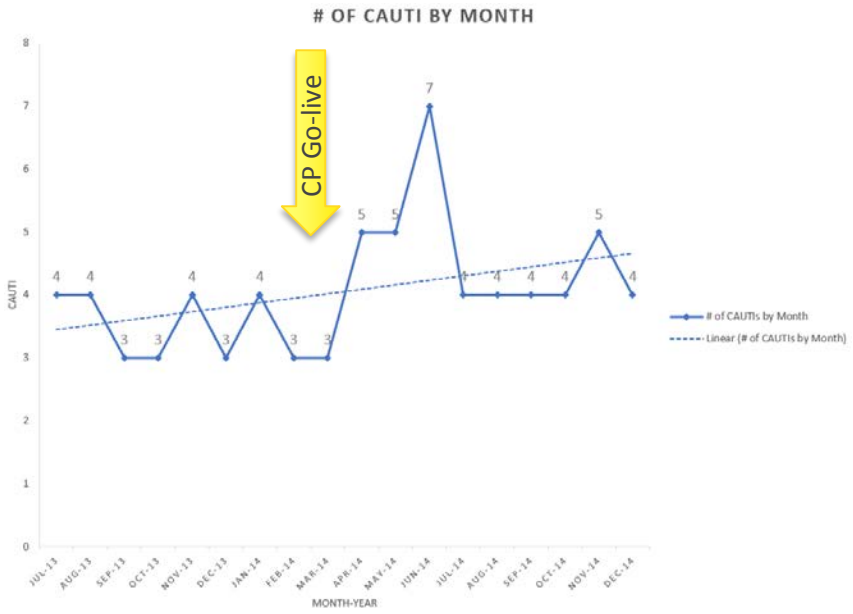
- The knowledge tools we decided to use
  - How-to guide: Prevent catheter-associated urinary tract infections. Institute for Healthcare Improvement (2011).
  - APIC implementation guide: Guide to preventing catheter-associated urinary tract infections (2014).
  - Epic's CAUTI Clinical Program
- The 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)

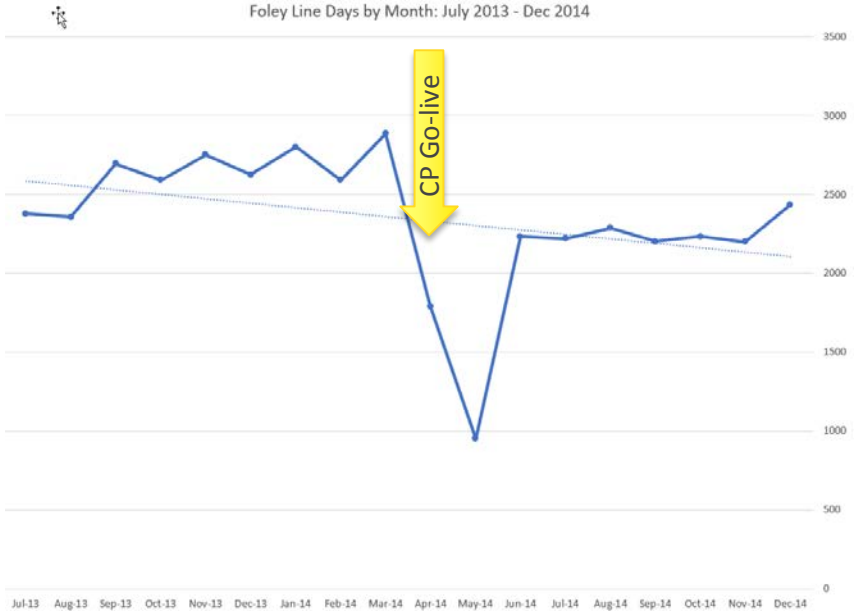


Design and Implementation



8 Months Later…Not Improving - Why?





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	2015	2016
• Require Indication in Foley order • Physician-facing BPA • RN-facing BPA	• Physician-facing BPA switched to RN-facing	• Monthly report for Foley rounds • New care plan, patient ed template • Single button for peri-care & Foley care

Clinical Process Changes

2014	2015	2016
• Short-term vs. Long-term	• New Foley Tray • CAUTI Reviews • Peri-Care/Foley Care Education	• Foley rounds • Female urinals • Standardized urine specimen collection

How Health IT Was Used: Timeline (2)

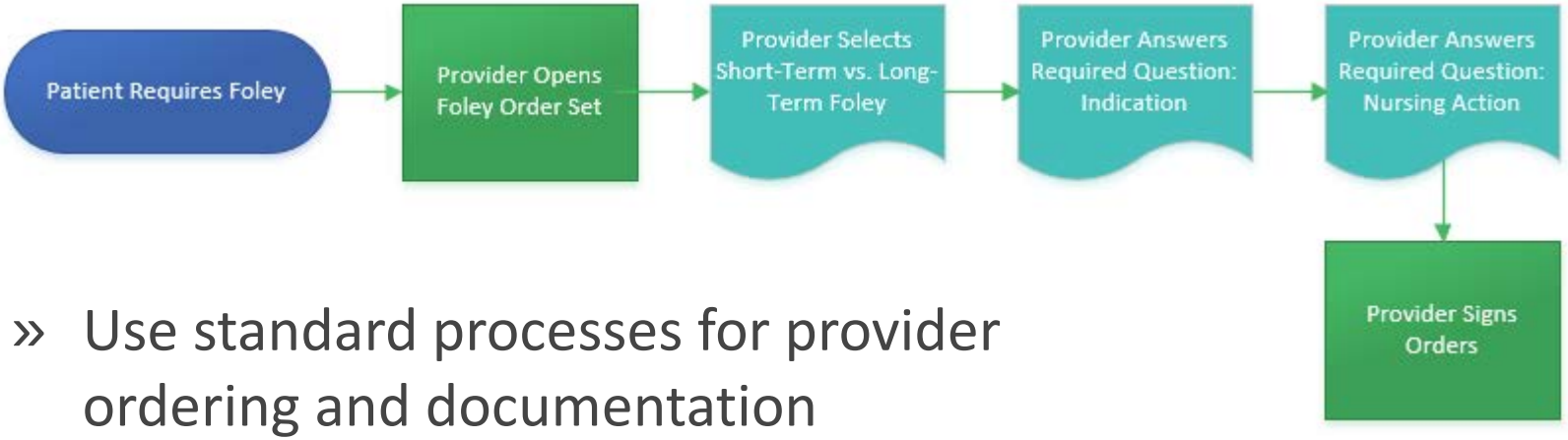
Health IT Interventions

2017	2018
• 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

2017	2018
• New Policy • Annual LMS CAUTI Education	• Securement device • Standardized Foley bag hooks for IV poles

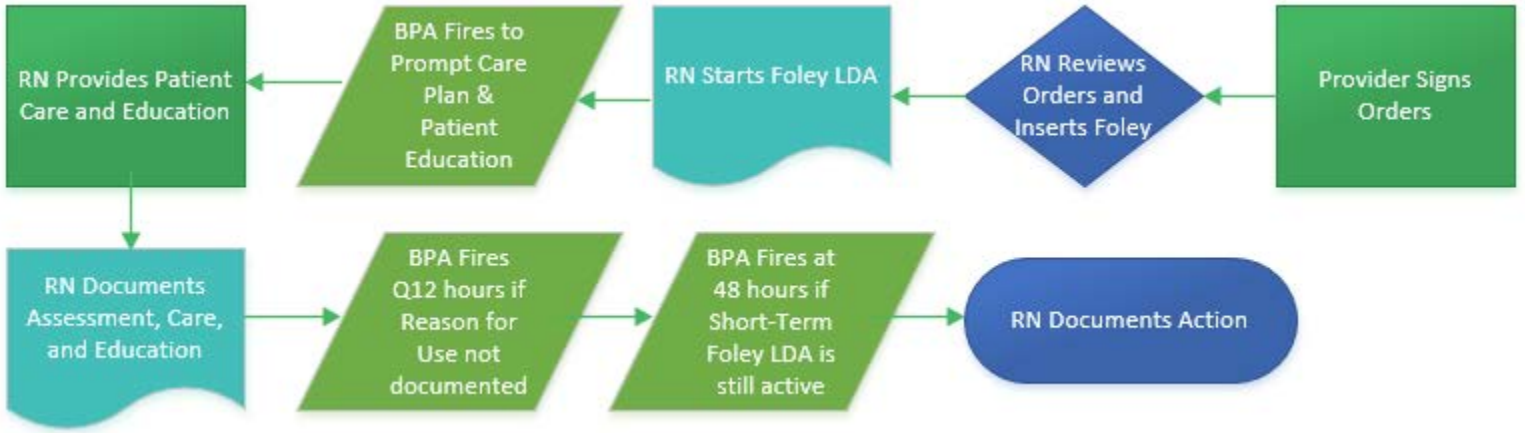
How Health IT Was Used: Provider* Workflow



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

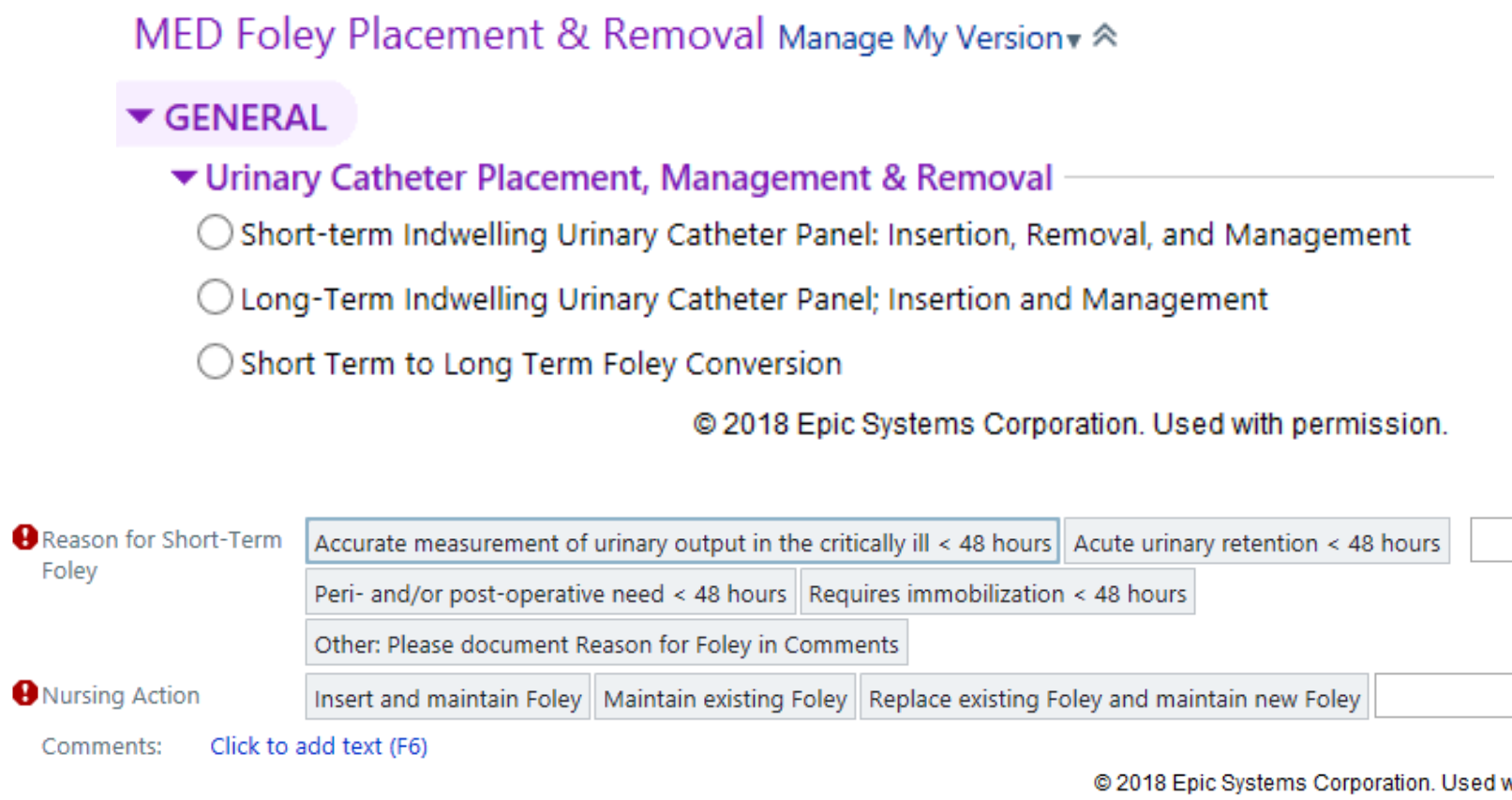
*Provider = Physician, Physician Assistant, Nurse Practitioner, Advanced Practice RN

How Health IT Was Used: Nurse Workflow

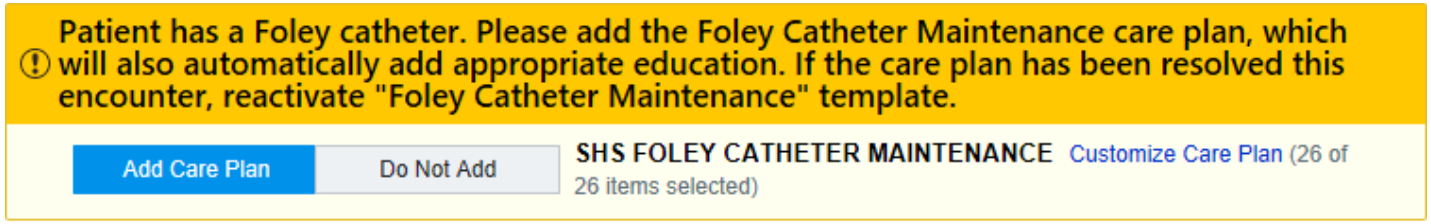


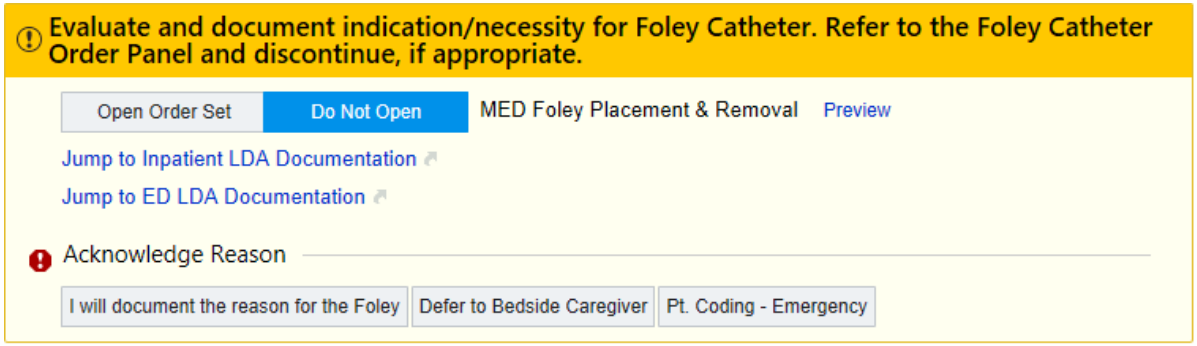
- Use standard processes for nursing documentation (EMR flowsheets) to capture data for Foley Insertions
  - LDAs, Care Plan
- Use nurse-facing BPAs to prompt care plan & patient education

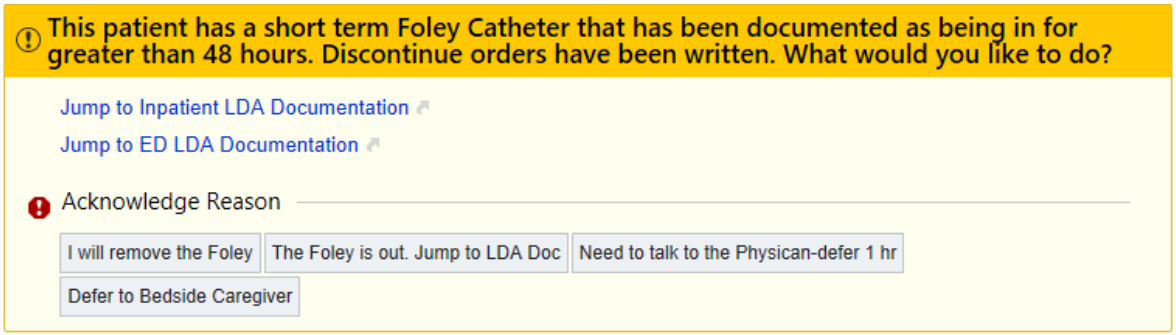
How Health IT Was Used: Order Sets



How Health IT Was Used: BPAs







How Health IT Was Used: Nursing Documentation

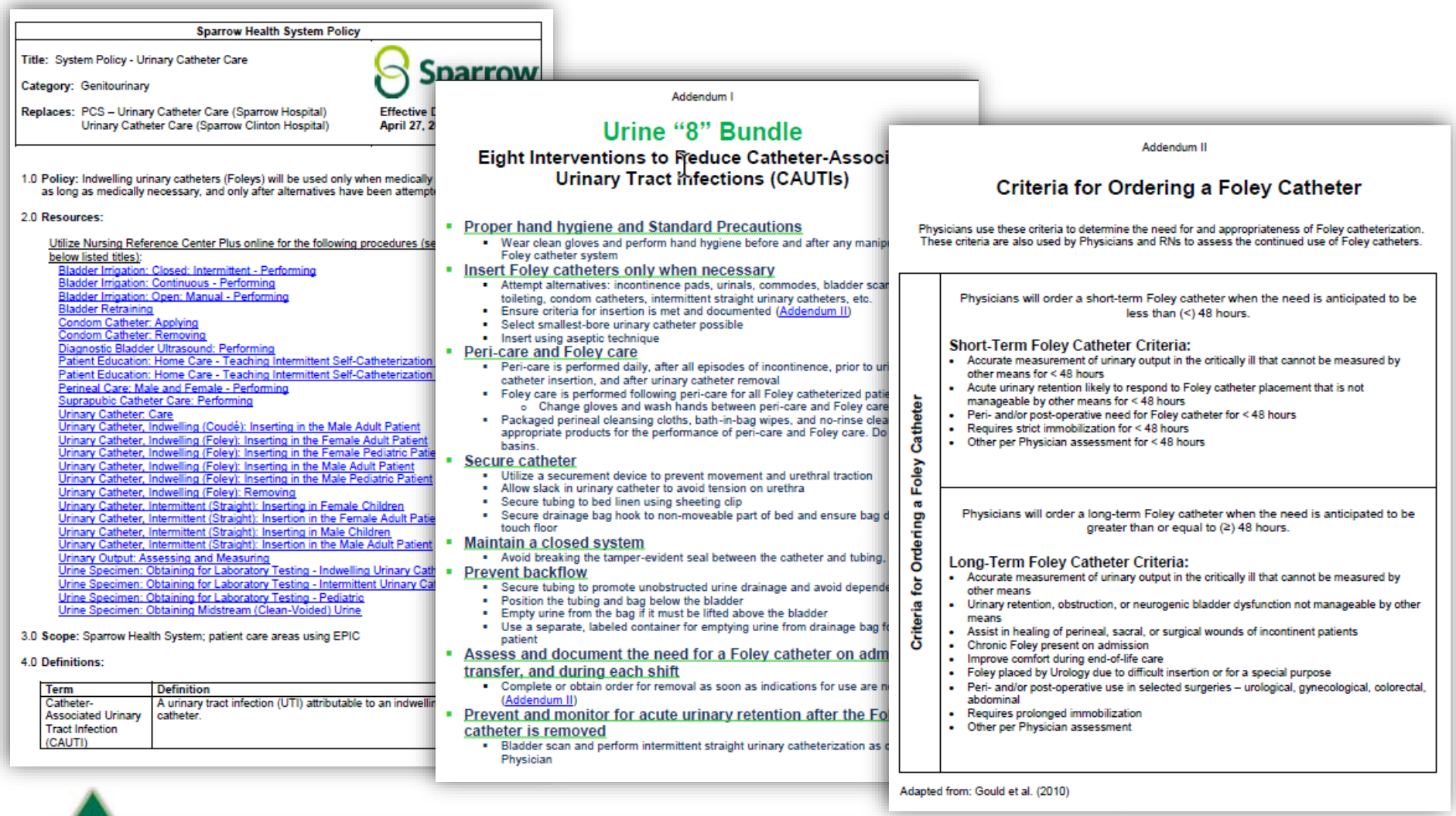
Urethral Catheter Indwelling Single Lumen 16 fr

Placement date:	09/25/18	Removal date:	
Placement time:	0825	Removal time:	
Site:	Indwelling Single Lumen	Days:	1
Inserted by:	TF	Catheter Balloon Size:	10 mL
Urine Returned:	Yes	Tube Size (Fr.):	16 fr
Securement Method:	Securement Device	Left in for continued treatment?:	Yes
Collection Container:	Urometer		

Assessments

	09/25/18 1500	09/25/18 1346
Reason for Foley	(Short-Term-)-Peri-and/or post-operative need <48 hours	
Site Assessment	Clean;Intact	Clean;Intact
Status	Open to gravity drainage	Open to gravity drainage
Collection Bag Type	Metered	Metered
Securement Method	Securement Device	Securement Device
CAUTI Prevention Bundle in place	Yes	

How Health IT Was Used: Policy



Sparrow Health System Policy

Title: System Policy - Urinary Catheter Care

Category: Genitourinary

Replaces: PCS – Urinary Catheter Care (Sparrow Hospital)
Urinary Catheter Care (Sparrow Clinton Hospital)

Effective D
April 27, 2

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

2.0 **Resources:**

Utilize Nursing Reference Center Plus online for the following procedures (se
below listed titles):

- Bladder Irrigation: Closed: Intermittent - Performing
- Bladder Irrigation: Continuous - Performing
- Bladder Irrigation: Open: Manual - Performing
- Bladder Retraining
- Condom Catheter: Applying
- Condom Catheter: Removing
- Diagnostic Bladder Ultrasound: Performing
- Patient Education: Home Care - Teaching Intermittent Self-Catheterization
- Patient Education: Home Care - Teaching Intermittent Self-Catheterization
- Perineal Care: Male and Female - Performing
- Suprapubic Catheter Care: Performing
- Urinary Catheter: Care
- Urinary Catheter, Indwelling (Coudé): 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 Patie
- Urinary Catheter, Indwelling (Foley): Inserting in the Male Adult Patient
- Urinary Catheter, Indwelling (Foley): Inserting in the Male Pediatric Patient
- Urinary Catheter, Indwelling (Foley): Removing
- Urinary Catheter, Intermittent (Straight): Inserting in Female Children
- Urinary Catheter, Intermittent (Straight): Insertion in the Female Adult Patie
- Urinary Catheter, Intermittent (Straight): Inserting in Male Children
- Urinary Catheter, Intermittent (Straight): Insertion in the Male Adult Patient
- Urinary Output: Assessing and Measuring
- Urine Specimen: Obtaining for Laboratory Testing - Indwelling Urinary Cath
- Urine Specimen: Obtaining for Laboratory Testing - Intermittent Urinary Ca
- Urine Specimen: Obtaining for Laboratory Testing - Pediatric
- Urine Specimen: Obtaining Midstream (Clean-Voided) Urine

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

4.0 **Definitions:**

Term	Definition
Catheter-Associated Urinary Tract Infection (CAUTI)	A urinary tract infection (UTI) attributable to an indwellin catheter.

Addendum I

Urine "8" Bundle

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

- **Proper hand hygiene and Standard Precautions**
  - Wear clean gloves and perform hand hygiene before and after any manip Foley catheter system
- **Insert Foley catheters only when necessary**
  - Attempt alternatives: incontinence pads, urinals, commodes, bladder scar toileting, condom catheters, intermittent straight urinary catheters, etc.
  - Ensure criteria for insertion is met and documented (Addendum II)
  - Select smallest-bore urinary catheter possible
  - Insert using aseptic technique
- **Peri-care and Foley care**
  - Peri-care is performed daily, after all episodes of incontinence, prior to ur catheter insertion, and after urinary catheter removal
  - Foley care is performed following peri-care for all Foley catheterized patie
    - Change gloves and wash hands between peri-care and Foley care
  - Packaged perineal cleansing cloths, bath-in-bag wipes, and no-rinse clea appropriate products for the performance of peri-care and Foley care. Do basins.
- **Secure catheter**
  - Utilize a securement device to prevent movement and urethral traction
  - Allow slack in urinary catheter to avoid tension on urethra
  - Secure tubing to bed linen using sheeting clip
  - Secure drainage bag hook to non-moveable part of bed and ensure bag d touch floor
- **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 depende
  - Position 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 bag fo patient
- **Assess and document the need for a Foley catheter on adm transfer, and during each shift**
  - Complete or obtain order for removal as soon as indications for use are n (Addendum II)
- **Prevent and monitor for acute urinary retention after the Fo catheter is removed**
  - Bladder scan and perform intermittent straight urinary catheterization as c 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.

Criteria for Ordering a Foley Catheter

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

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

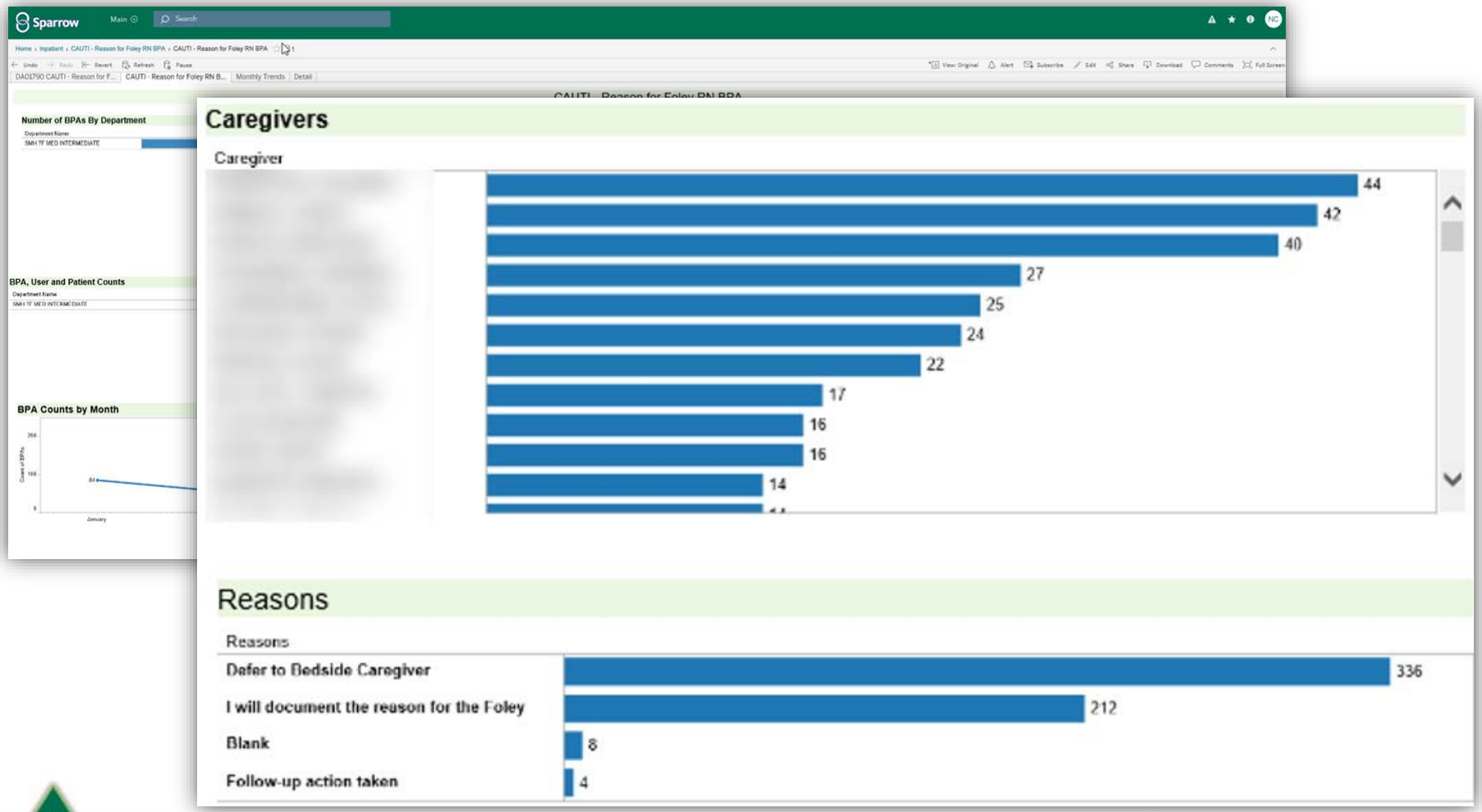
Physicians will order a long-term Foley catheter when the need is anticipated to be greater than or equal to (≥) 48 hours.

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 incontinent 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. (2010)

How Health IT Was Used: Tableau Unit-Level Reports for RN Managers



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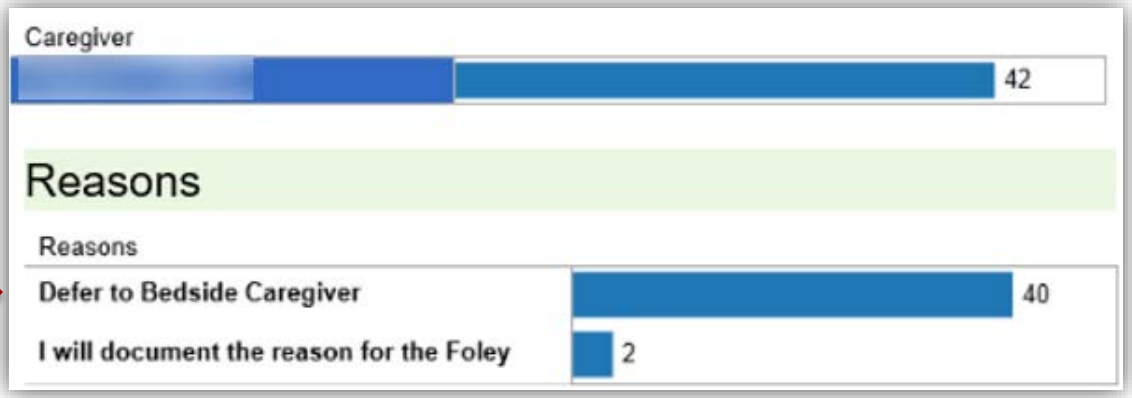
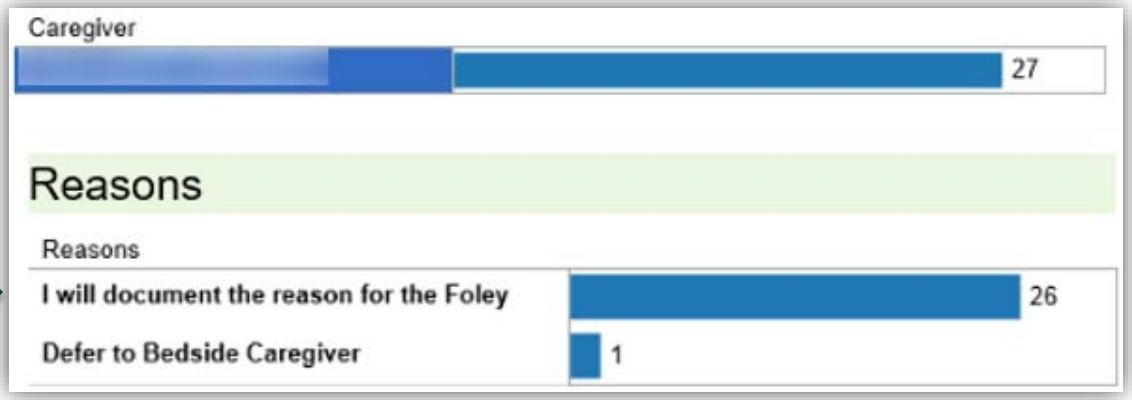
How Health IT Was Used: Coaching & Praising

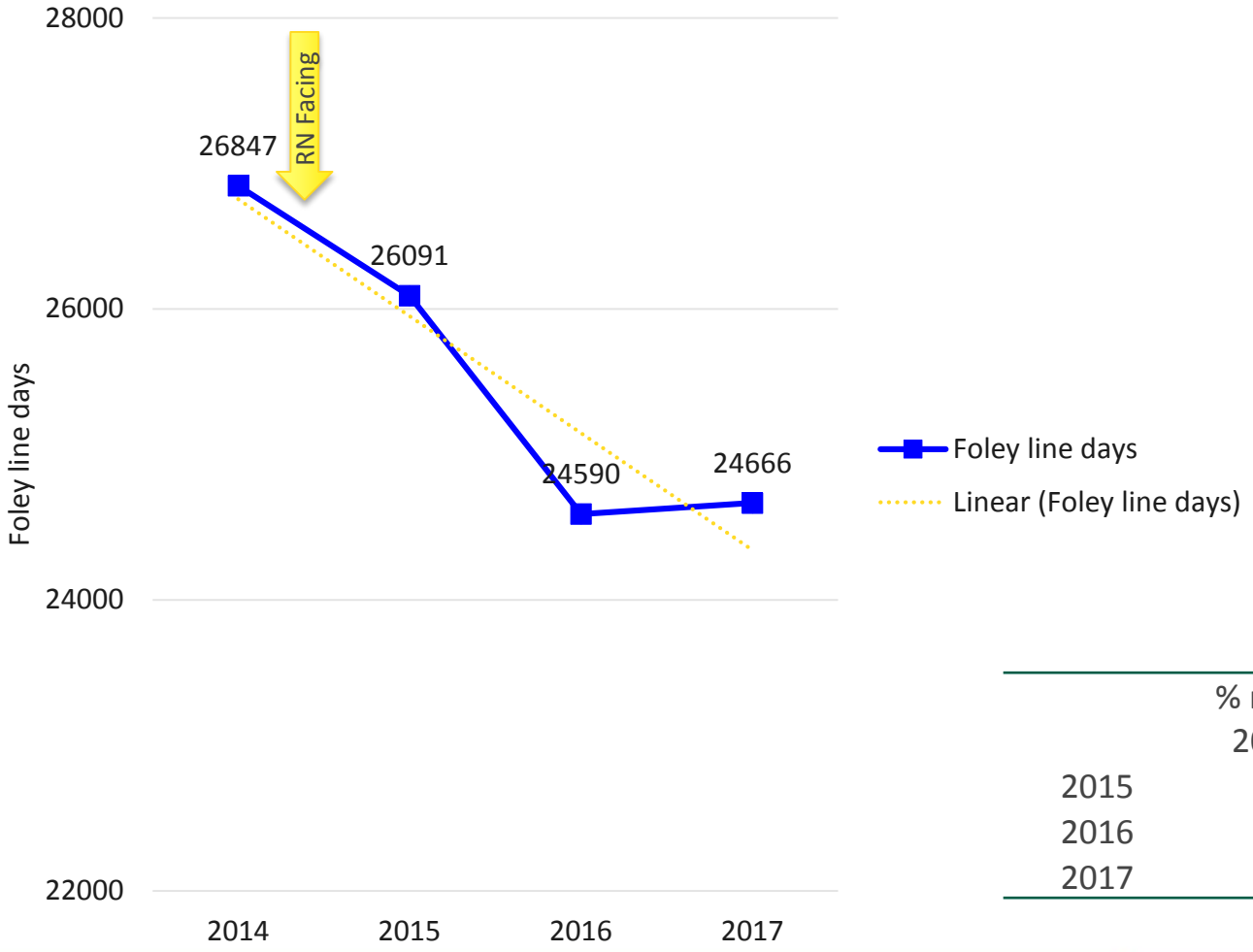
To coach



To praise

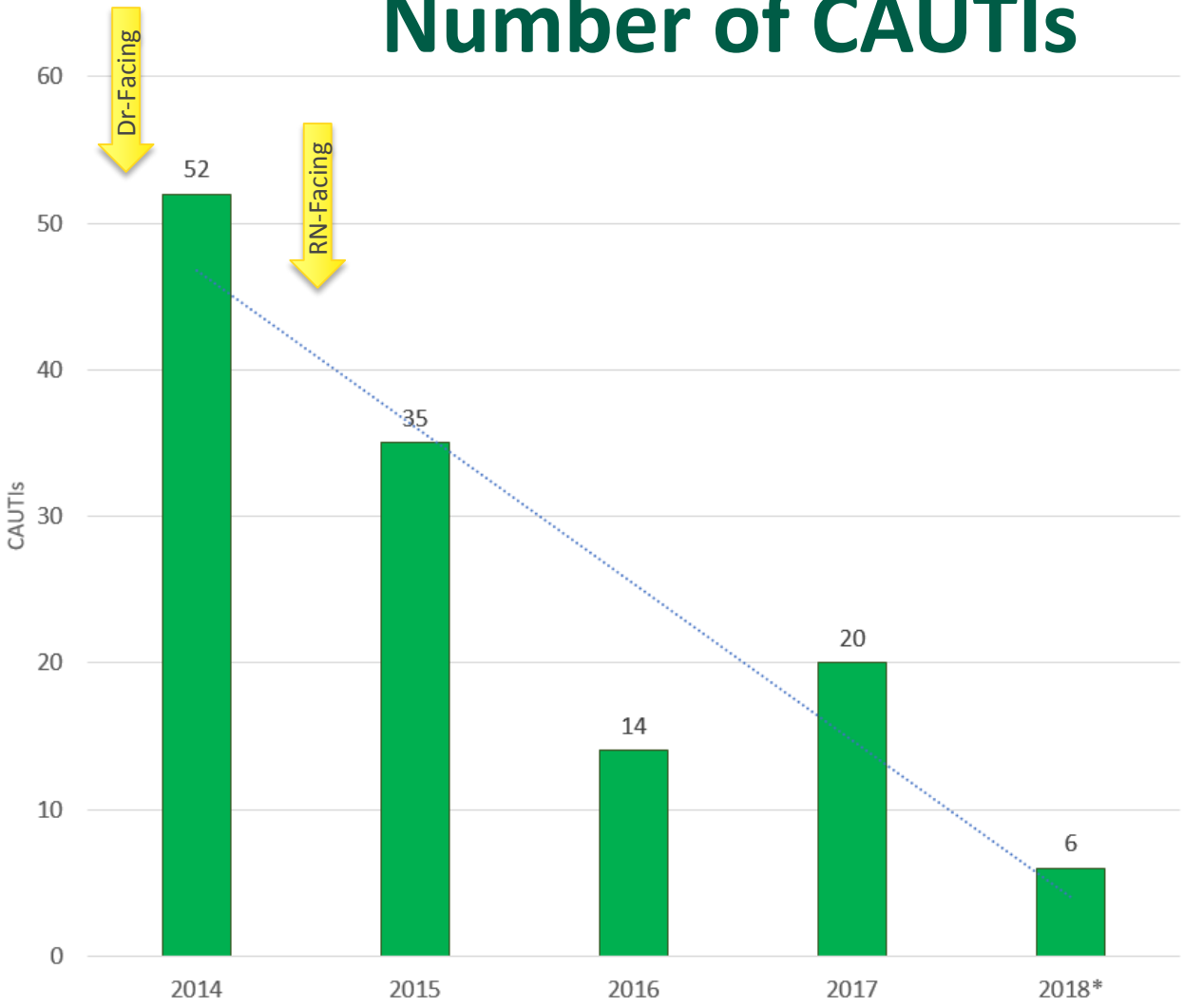


Value Derived - Process Outcome: Urinary Catheter Line Days



	% reduction from 2014 base year
2015	2.8%
2016	8.4%
2017	8.1%

Value Derived - Patient Outcomes: Number of CAUTIs



	# of CAUTIs	% Reduction
2014	52	
2015	35	33%
2016	14	73%
2017	20	62%
*2018**	*10*	*81%*

**Projected based on YTD data)*

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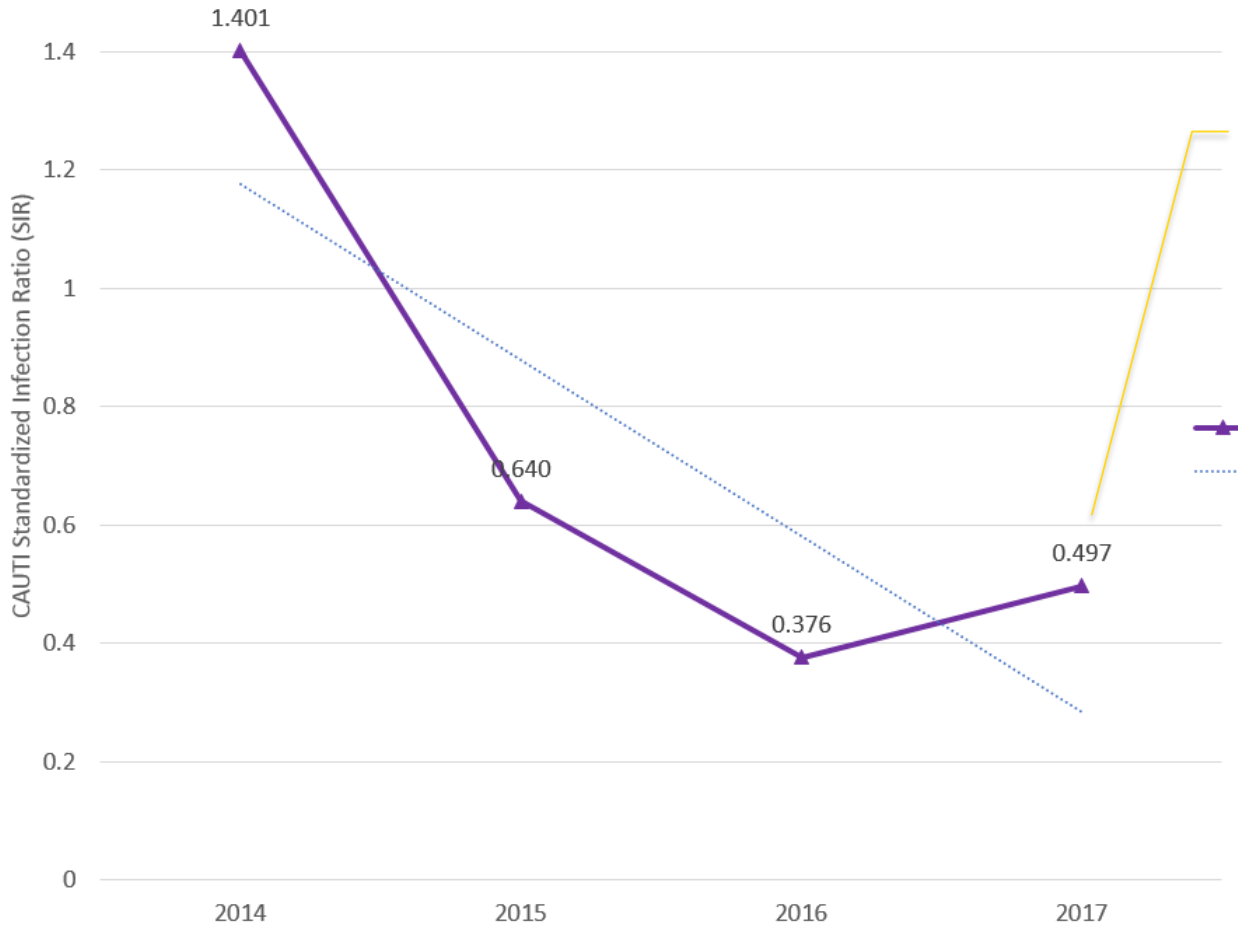
Value Derived - Patient Outcomes: CAUTI SIR Sparrow Observed vs. Expected (O:E)



Action Plan for 2017 increase:

- FTF CAUTI reviews w/ unit leaders & Inf Prevention
- Weekly Foley chart audits w/ feedback to unit leaders

	CAUTI SIR	% Reduction
2014	1.401	
2015	0.640	54%
2016	0.376	73%
2017	0.497	65%

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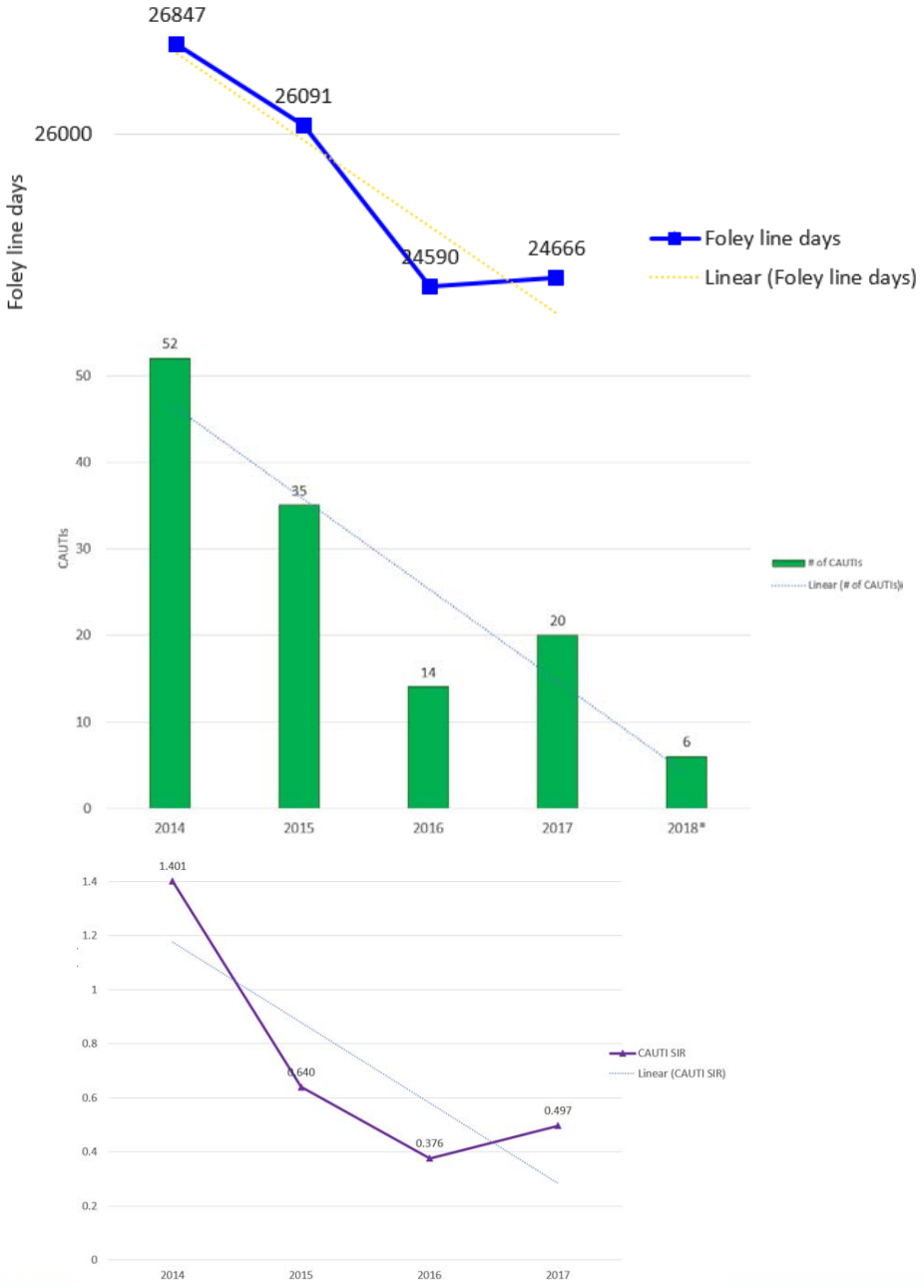
Correlation of Improved Processes with Improved Patient Outcomes

- Fewer Foley line days
- Fewer CAUTIs
- Lower CAUTI SIR



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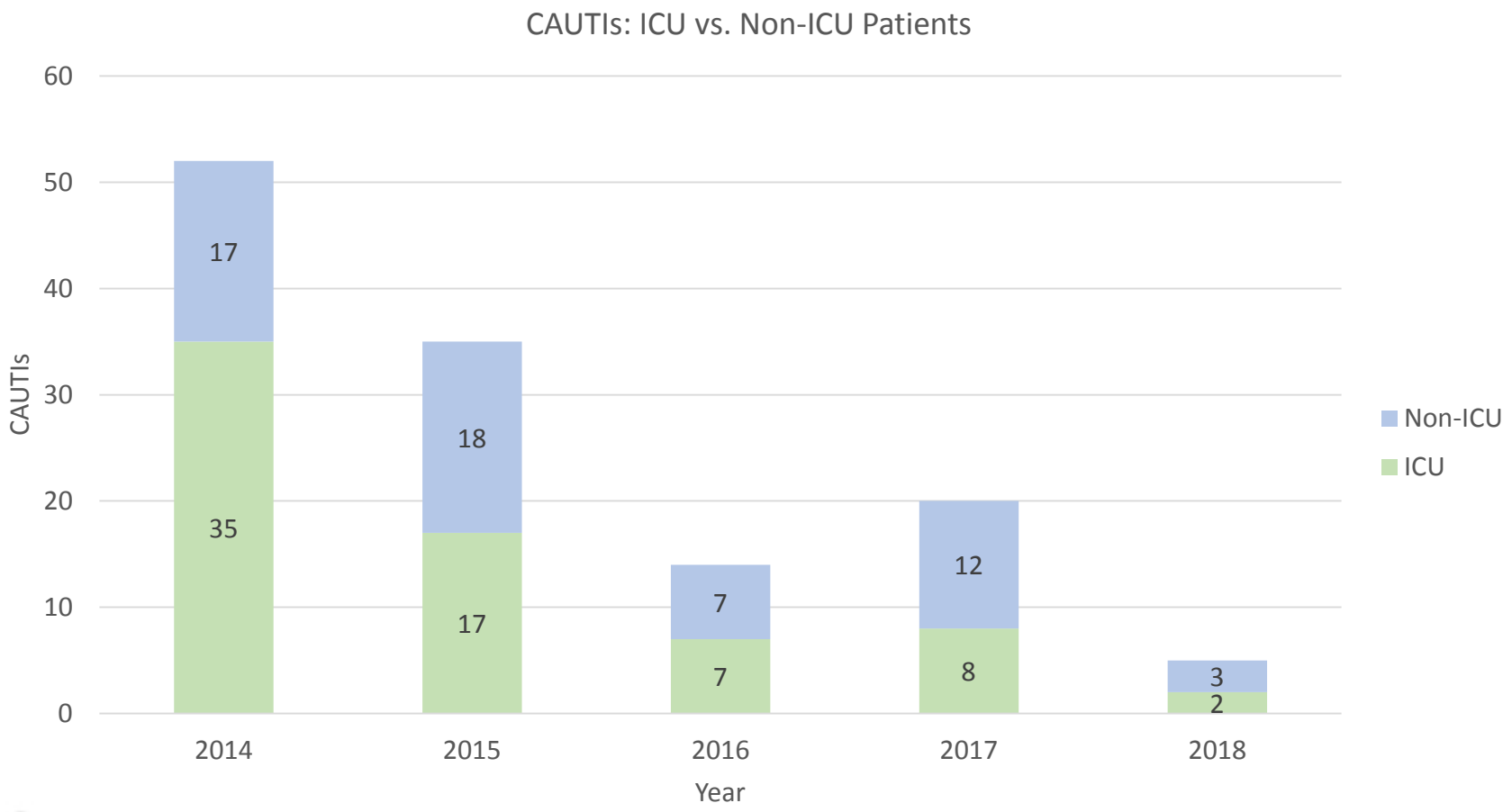
Value Derived: Patient Outcomes by Severity of Illness – ICU vs. Non-ICU



Value Derived:
CAUTI Cost Avoidance

	# of CAUTIs (non-ICU)	# of CAUTIs (ICU)	#CAUTI vs. 2014 (non-ICU)	#CAUTI vs. 2014 (ICU)	Costs avoided (non-ICU) @ $1,479/CAUTI*	Costs avoided (ICU) @ $10,197/CAUTI*	Total Costs Avoided
2014	17	35					
2015	18	17	1	-18	$ (1,479)	$ 183,546	
2016	7	7	-10	-28	$ 14,790	$ 285,516	
2017	12	8	-5	-27	$ 7,395	$ 275,319	
2018**	3	2	-14	-33	$ 20,706	$ 336,501	
Total 2014-17	54	67	-14	-73	$ 20,706	$ 744,381	**$ 765,087**
Total 2014-18**	*57*	*69*	*-28*	*-106*	*$ 41,412*	*$ 1,080,882*	***$ 1,122,294***

* Hollenbeak CS, Shilling AL Am J Infect Control, 2018; 46:751.
** Through July 2018

External Recognition for Our Results and Collaboration

success at SEVEN

Sparrow

Vol. 4 Issue 5

The Power of the Peer Group

In 2011, Texas Health Resources kicked off a catheter-associated UTI initiative that reduced catheter line days by 26%, garnered industry awards, and became an Epic Clinical Program. Fast forward to 2016, and that Clinical Program has traveled 1,000 miles north to Lansing, Michigan, where Sparrow Health System installed a program based on what they learned from Texas Health.

Sparrow made Texas Health's physician-driven program into a nurse-driven one, and they've added some serious reporting to the mix.

One thing that hasn't changed? The results. Sparrow reduced catheter line days by 20%, increased the percentage of catheter lines removed within 48 hours by 22%, and reported just one CAUTI diagnosis in the first quarter of 2016 compared to 7 during the same quarter of 2015.

Cross-Country Collaboration

"We built CAUTI according to Epic's Texas Health cookbook, and of course we tweaked it based on some of the nuances of Sparrow," says CNIO Chris Nemets.

Texas Health's recipe—the build, implementation details, and training—is outlined in its Clinical Program, which Sparrow followed almost exactly.

The recipe calls for BestPractice Advisories, Order Sets, and documentation tools that, when combined, remind clinicians to regularly evaluate patients' catheters and remove them within 48 hours.

One other key ingredient, according to Nemets, was collaboration with Texas Health.

"One of the advantages of Clinical Programs is another organization has already done this well, so don't hesitate to call them up and steal shamelessly," Nemets says. "You shouldn't have to do this by yourself."

"One of the advantages of Clinical Programs is another organization has already done this well. You shouldn't have to do this by yourself."

Nemets worked with nurse educators, a clinical decision support analyst, and performance improvement nurses at Texas Health to learn more about their experience with the CAUTI program.

"They shared their lessons learned and also some of the struggles they had with the program and adherence," Nemets says. "The collaboration was very helpful."

Improving Quality, One Program at a Time

The CAUTI Clinical Program was the first of many that Sparrow has implemented with the support of its very own Clinical Programs workgroup.

"CMIO Michael Zarouhian and I formed the workgroup when we wanted to start developing quality initiatives. We wanted programs to impact core measures and pay-for-performance, and I knew Epic had Clinical Programs," says Nemets.

The workgroup meets on a monthly basis and "we look at Epic's programs, we bring the recommendations back to our team, we look through the programs, and we decide which programs are right for us."

Epic

Recognition for Our CAUTI Program: The Hospitalist

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PRACTICE MANAGEMENT

Are you getting the most out of your EHR?

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

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Author(s): Thomas R. Collins

SHARE

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

Expenses	Pre-implementation	Modification	TOTAL
Capital expenses	**$ 0**	**$ 0**	**$ 0**
Operational expenses	**$ 18,120**	**$ 10,035**	**$ 28,155**
Analyst time	$ 2,170	$ 700	$ 2,870
Physician time	$ 3,750	$ 1,875	$ 5,625
RN time	$ 11,200	$5,460	$ 16,660
Training time	$1,000	$ 2,000	$ 3,000

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

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