

Case Study 2:

Leveraging Data and Technology to Improve Surgical Site Infection Rates

Presenter

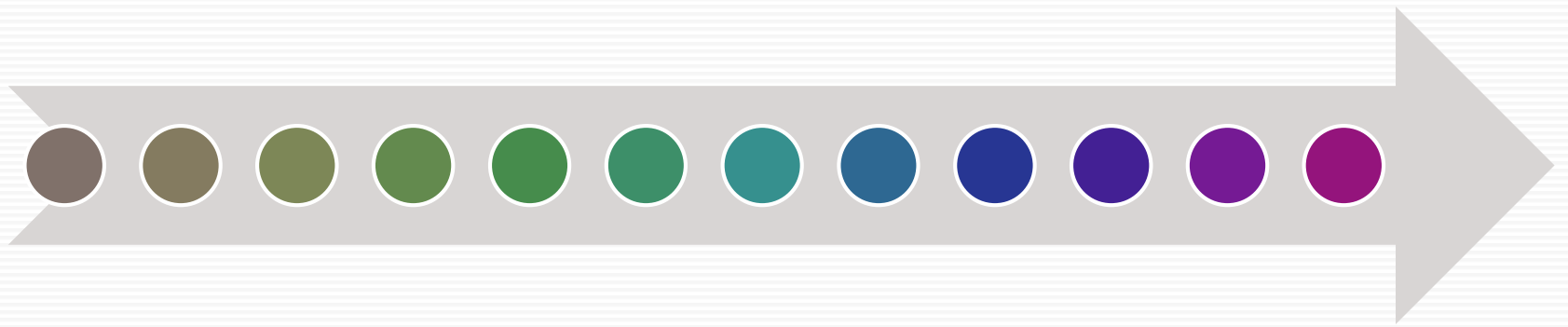
Dr. John L. Flowers, MD *Chief of Surgery*

*“To every patient, every time, we will provide the care
that we would want for our own loved ones.”*

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Local Problem (c. 2007)

Lack of standard work and availability of data lead to increased surgical site infection (SSI) rates at Greater Baltimore Medical Center.



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GBMC set goals to:

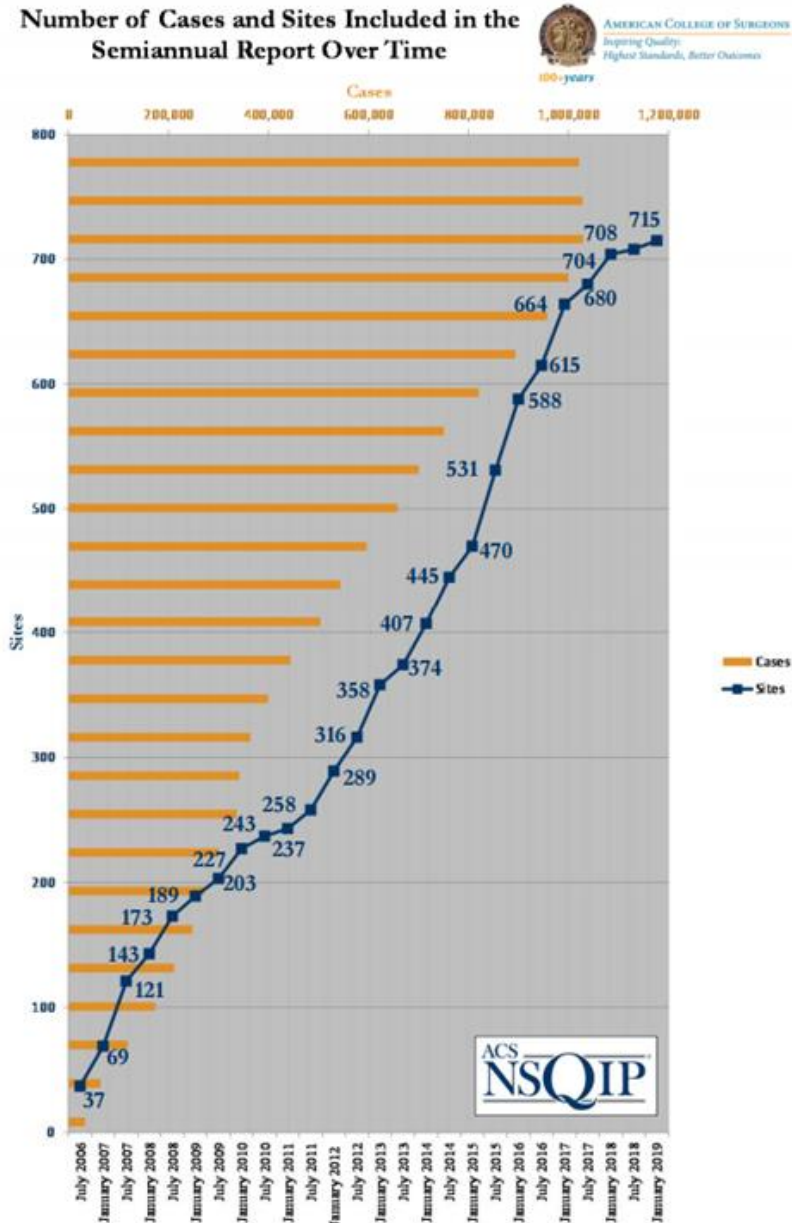
- Participate in the American College of Surgeon's National Surgical Quality Improvement Program(ACS-NSQIP).
- Use transparent availability of data and continuous comparison to national benchmarks to readily identify areas of improvement.
- Leverage repeated Plan-Do-Study-Act (PDSA) cycles to highlight problems, determine productive interventions, test them, and turn them into standard work.

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Why ACS-NSQIP?

- Aligns with GBMC Four Aims
 - Better Care
 - Better Health
 - Least Waste
 - More Joy
- NSQIP proven in the VA health system as excellent change management tool
- ACS-NSQIP has the best quality data
- ACS-NSQIP continues to show growth over time
- Growth as of January 2019
 - 715 Participating Centers
 - **>1.1 million cases**



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Baseline Data:

GBMC Surgical Site Infection Data in 2007

• 3.8%

Baseline
Surgical Site
Infection Rate



• 61

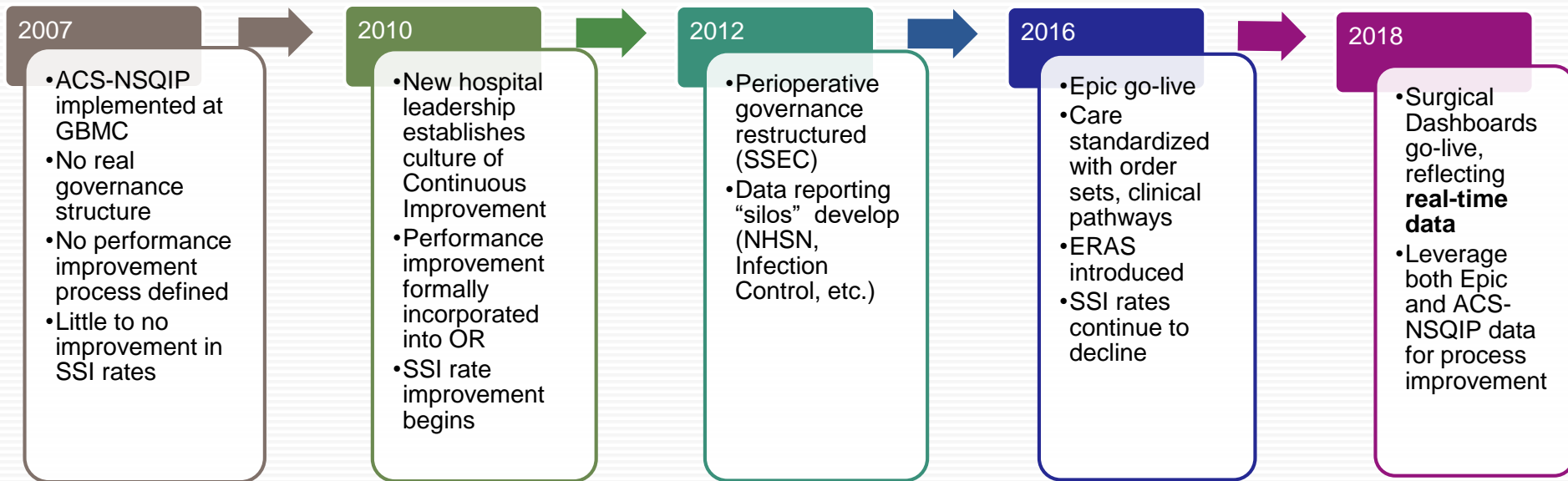
Baseline Number
of Surgical Site
Infections



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Design and Implementation Timeline

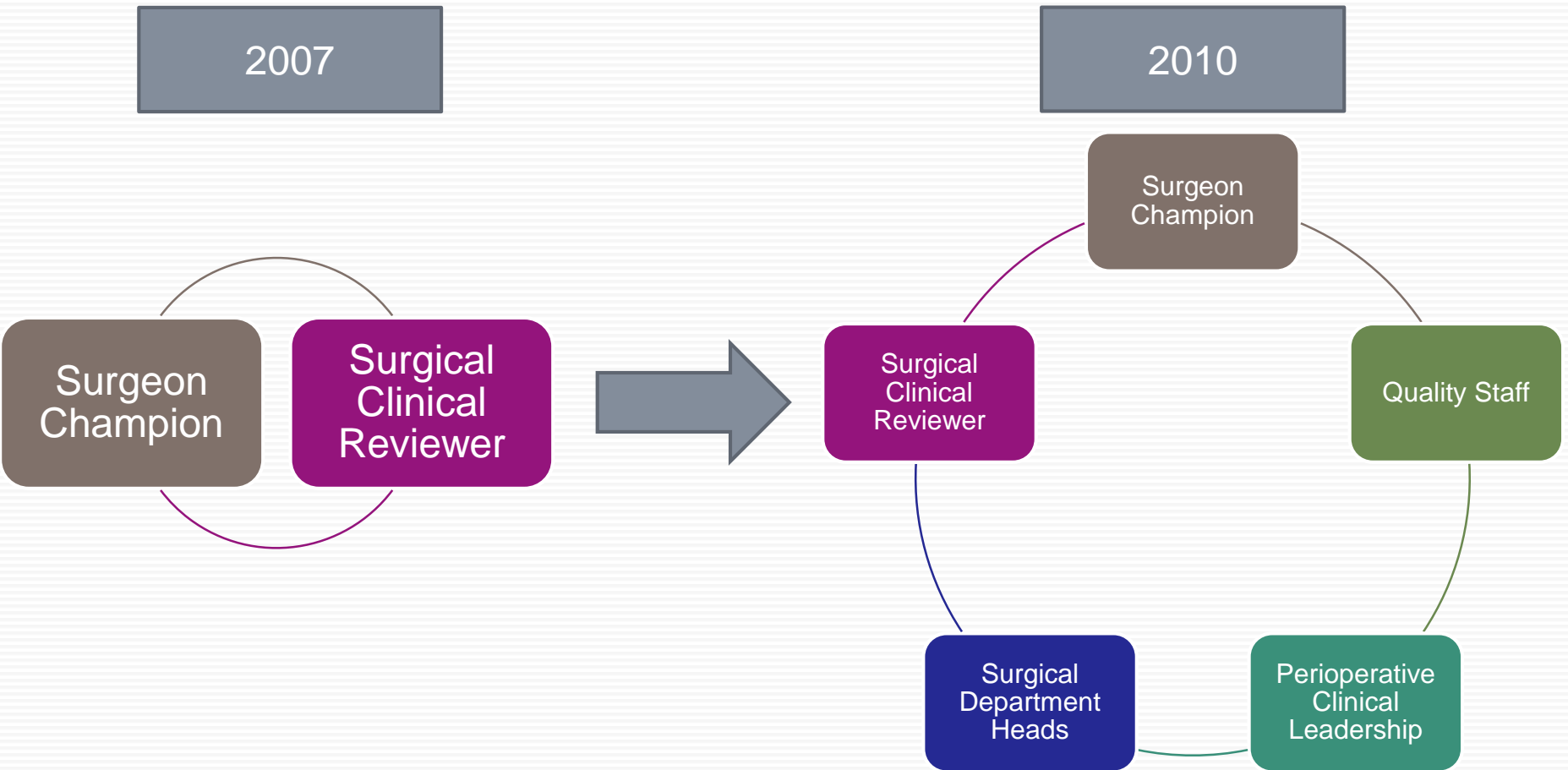


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Design and Implementation

ACS-NSQIP Governance Strategy Transition



“To every patient, every time, we will provide the care that we would want for our own loved ones.”

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Design and Implementation: Plan-Do-Study-Act

- Assemble an accountable groups with expertise and authority to act (PIT's)
- Identify opportunities for improvement based on data
- Develop a mechanism for follow-up and auditing
- Implement & disseminate “standard work” in clinical areas (ex. ERAS)



GBMC's
Model for
Improvement

“To every patient, every time, we will provide the care that we would want for our own loved ones.”

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Design and Implementation

Transparent Availability of Data

1. Average Length Of Stay, 30-day Readmission, Case Volume, Mortality Rate and Surgical Site Infection rates are visible for all surgeons
 2. Surgeons can see how their work compares to others around the nation/organization
 3. Competition is beneficial: "Public shaming is strong motivator"
 4. Surgeons with exceptional data share their best practice
 5. Standard work is developed
- ACS-NSQIP data for comparison (2007-2018)
 - Transparent availability of data via Epic Dashboards and ACS-NSQIP (2018-present)
- ❖ Intended Outcome: Improved Surgical Site Infection rates through the use of data transparency and development of standard work.

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Workflow and How Health Information Technology is Utilized

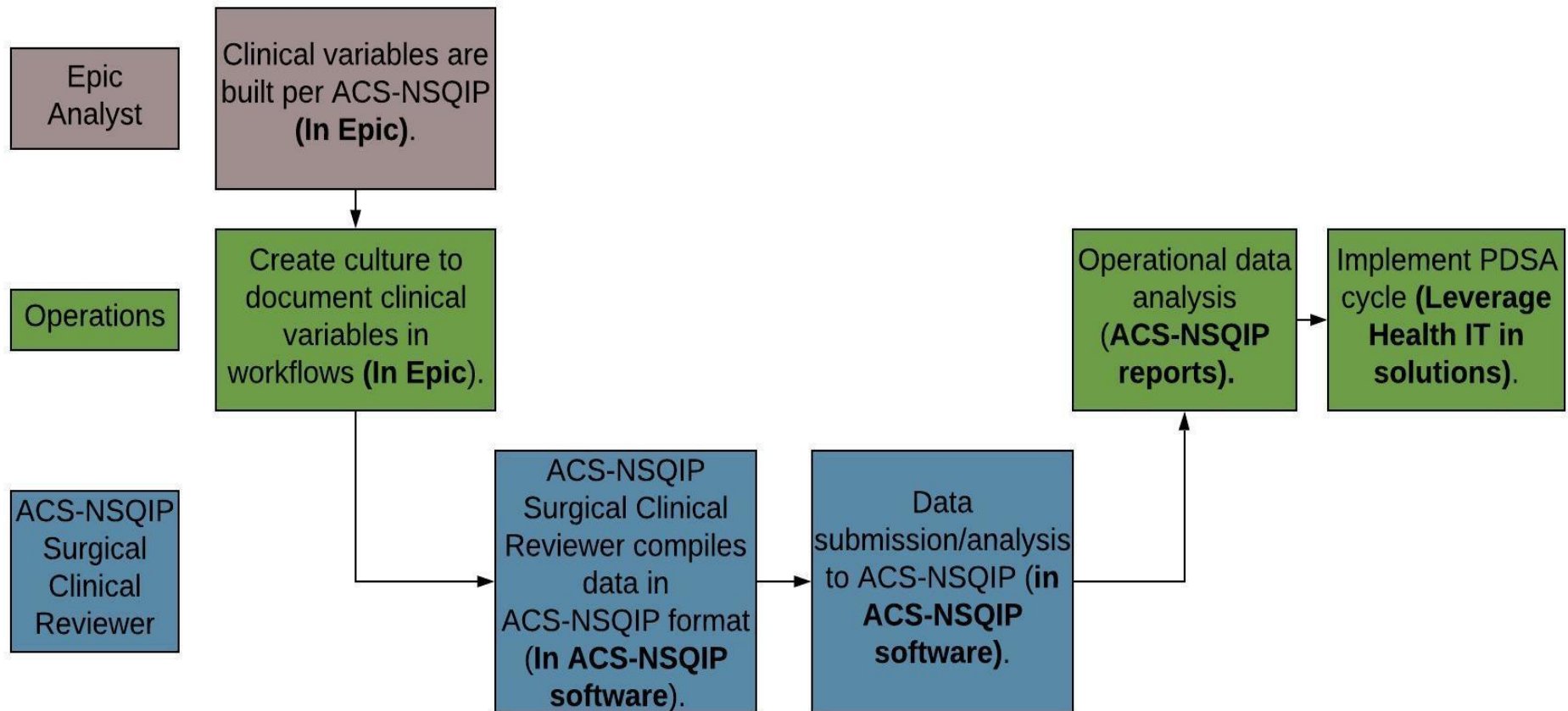
- The ACS-NSQIP workflow



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Points in Workflow where Health Information Technology is Utilized



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Data Abstraction Summary in Epic

- Collaboration with Epic to develop a more automated workflow
- Epic compiles ACS-NSQIP required data elements for abstraction
- Bi-directional feeding of data
- Oversight needed, but no longer manual
- Repurposed 1 FTE

Summary

NSQIP Abstraction Summary | Index | Active Orders | Patient Care Timeline | Delivery | Encounter Summary | Meds | Phy index | Event Log | Intake/Output

Operative Information

ASA status: not recorded

Pre-op Risks

Weights (last 14 days)
None

Diagnosis	Date	Comment	Source
Anxiety			Provider
Chronic pain disorder			Provider
Depression			Provider
Diabetes mellitus			Provider
GI (gastrointestinal bleed)			Provider
Hypertension			Provider
Obesity			Provider
Risk for falls		per patient bp drops sounds like orthostatic bp	Provider
Sleep apnea		cpap at night	Provider
Ulcerative colitis			Provider

Medical History

Social History

Tobacco History

Smoking Status	Smoking Frequency	Smoking Tobacco Type
Former Smoker	1 pack/day	Cigarettes
Smokeless Tobacco Use		
Never Used		
Tobacco Comment 37 year hx , quit 6 years ago		

Pre-op Labs

All Component Based Labs

	08/21/19	08/21/19	08/20/19	08/19/19
Antibody Screen (IAT)	1759	0620	0547	1540
ABO and Rh				
Anion Gap		7.4	8.6	
Anisocytosis				Mild !

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Success & Change Management Strategy for Workflow Improvements/PDSA

Performance Improvement Team

- Weekly meetings
- Reports up to Surgical Service Executive Committee

Surgical Service Executive Committee

- Reports up to Board Quality Committee

Board Quality Committee

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Using the EMR to Create Standard Work: Evidenced-Based Order Sets

Order Sets

Orders

Order Sets

Preoperative General Orders (Pre-op) ⌵

▼ Interventions and Assessments

▼ Nursing

- Weigh patient on standing scale and document weight
Routine, Once, First occurrence today at 0946
Pre-op, Sign & Hold
- Apply Chlorhexidine wipes to patient's body
Daily (0600), First occurrence now, Pre-op
- Insert peripheral IV
Pre-op

▼ IV Fluids

▼ IV Fluid Infusions

- lactated Ringer's infusion
0-20 mL/hr, intravenous, Continuous, Pre-op, Run at a rate to KVO (keep vein open)
- sodium chloride 0.9 % infusion - Only for patients with renal disease
0-20 mL/hr, intravenous, Continuous, Pre-op, Run at a rate to KVO (keep vein open). Use for patients with renal disease

▼ Medications

▼ Non-Antibiotic Medications

- Acetaminophen
- Celecoxib
- Gabapentin
- Lidocaine Patch / Diazepam
- Tranexamic Acid / Heparin
- Scopolamine / Aprepitant (PONV)

▶ Cardiac

▶ Thoracic

▶ Appendectomy

▶ Biliary Tract

▶ Colorectal

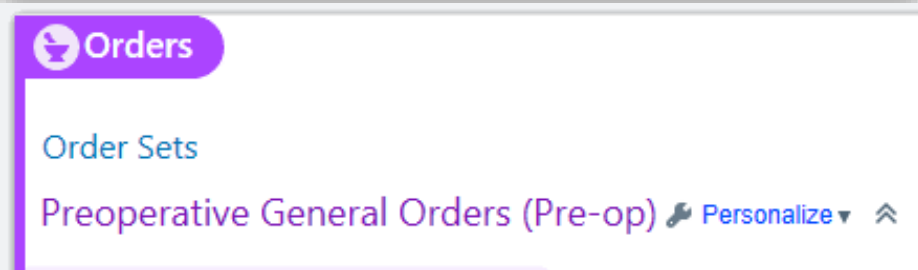


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Using the EMR to Optimize Clinical Choices:

Pre-op Antibiotic/Vancomycin Administration



- EMR allows transparent data availability
- Surgeons can order pre-op antibiotics the night before surgery
- Pharmacy can pre-mix antibiotics
- Infection control can review patients for OR the next day and order appropriate antibiotics



The screenshot shows a list of 'Order Sets' under the 'Medications' category. The 'Neurosurgery' section is highlighted with a red box and contains the following options:

- ▼ Neurosurgery
 - Elective craniotomy and cerebrospinal fluid-shunting procedures
 - Implantation of intrathecal pumps
 - Pt weight less than 120 kg: ceFAZolin (ANCEF) 1 g in D5W (premix) x 2
 - Pt greater than or equal to 120 kg: ceFAZolin (ANCEF) injection 3g 3 g, intravenous, Once, Pre-op
 - Pt with beta-lactam allergy: 20 mg/kg - vancomycin IV 20 mg/kg, intravenous, Once, Pre-op

Other order sets listed include Cardiac, Thoracic, Appendectomy, Biliary Tract, Colorectal, Gastroduodenal, Hernia Repair, Small Intestine (Non-obstructed), Small Intestine (Obstructed), Cesarean Delivery, Hysterectomy, Head and Neck (Clean), Head and Neck (Clean-Contaminated), Ophthalmic (Pre-op), Orthopedic, Plastic, Urologic (Clean WITHOUT entry into urinary tract), Urologic (Lower tract or clean WITH entry into urinary tract), and Urologic (Clean-contaminated).

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Improved Dosing and Redosing of Antibiotic Prophylaxis

- ▶ Cardiac
- ▼ Thoracic
 - Non-cardiac procedures, including lobectomy, pneumonectomy, lung resection, and thoracotomy
 - Video-assisted thoracoscopic surgery
 - Pt weight less than 120 kg: ceFAZolin (ANCEF) 1 g in D5W (premix) x 2
 - Pt greater than or equal to 120 kg: ceFAZolin (ANCEF) injection 3g
3 g, intravenous, Once, Pre-op
 - Pt with beta-lactam allergy: 20 mg/kg - vancomycin IV
20 mg/kg, intravenous, Once, Pre-op
- ▶ Appendectomy
- ▼ Biliary Tract
 - Open procedure
 - Laproscopic procedure
 - Pt weight less than 120 kg: ceFAZolin (ANCEF) 1 g in D5W (premix) x 2
 - Pt greater than or equal to 120 kg: ceFAZolin (ANCEF) injection 3g
3 g, intravenous, Once, Pre-op
 - Penicillin Allergic Regimen (< 60 kg): Metronidazole 500mg IV + Gentamicin 300mg IV
 - Penicillin Allergic Regimen (>= 60 kg): Metronidazole 500mg IV + Gentamicin 400mg IV
- ▼ Colorectal
 - Large bowel/rectal dissection procedures
 - Pt less than 120 kg: ceFAZolin (ANCEF) 2 g IV + metroNIDAZOLE 500 mg IV once
 - Pt greater than or equal to 120 kg: ceFAZolin (ANCEF) 3 g IV + metroNIDAZOLE 500 mg IV once
 - Penicillin Allergic Regimen (< 60 kg): Metronidazole 500mg IV + Gentamicin 300mg IV
 - Penicillin Allergic Regimen (>= 60 kg): Metronidazole 500mg IV + Gentamicin 400mg IV
- ▼ Gastroduodenal
 - Procedures involving entry into lumen of gastrointestinal tract (bariatric, pancertaicoduodenectomy)
 - Procedures without entry into gastrointestinal tract (antireflux, highly selective vagotomy) for high-risk patients
 - Percutaneous endoscopic gastrostomy (PEG)
 - Pt weight less than 120 kg: ceFAZolin (ANCEF) 1 g in D5W (premix) x 2
 - Pt greater than or equal to 120 kg: ceFAZolin (ANCEF) injection 3g
3 g, intravenous, Once, Pre-op
 - Penicillin Allergic Regimen (< 60 kg): Clindamycin 900mg IV + Gentamicin 300mg IV
 - Penicillin Allergic Regimen (>= 60 kg): Clindamycin 900mg IV + Gentamicin 400mg IV
- ▶ Hernia Repair
- ▶ Small Intestine (Non-obstructed)
- ▶ Small Intestine (Obstructed)

- EMR prompts staff to re-dose, even in the OR



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CHG Wipes added to Pre-Op Order Set

- EMR allows rapid change to introduce “Best Practices”

The screenshot displays the 'Order Sets' configuration page in an EMR system. The left sidebar shows a tree view under 'Preoperative General Orders (Pre-op)'. The 'Interventions and Assessments' section is expanded, showing 'Nursing' with two checked items: 'Weigh patient on standing scale and document weight' and 'Apply Chlorhexidine wipes to patient's body'. The 'Medications' section is also expanded, showing 'Non-Antibiotic Medications' with several unchecked items.

The main pane shows the configuration for the 'Apply Chlorhexidine wipes to patient's body' order. The configuration includes:

- Priority: Routine
- Frequency: Daily
- For: Occurrences
- Starting: 8/15/2019
- First Occurrence: Today 1324
- Scheduled Times: 08/15/19 1324
- Comments: Add Comments (F6)
- Add-on: No specimen type selected



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Introduction of Separate Closing Set Intra-Operatively

- EMR encourages use of standard work & creates auditing tool



Intra-Op Direct to OR

PRE-INCISION

- Summary Report
- Transport In
- Staff
- Timeout
- Counts
- Pre-op Skin
- Site Prep
- Positioning
- Lines/Drains
- LDA Avatar

PROCEDURE

- Procedures
- Cosmetic Info
- Supplies
- Equipment
- Instruments
- Intra-op Meds
- Implants
- Specimens

Procedures

✓ Panel 1: Left LAPAROSCOPIC ASSISTED COLON RESECTION with Joel A Turner, MD

Sign-Out

Preparation before Patient leaves the OR

Initiated by circulating nurse

Procedure confirmed?	<input type="button" value="Yes"/>	
Counts correct?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Specimens labeled?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Cavity Sweep?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Equipment problems to be addressed?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Post-op diagnosis reviewed?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Special recovery considerations?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Recovery plan reviewed?	<input type="button" value="Yes"/>	<input type="button" value="N/A"/>
Was a closure set used?	<input type="button" value="Yes"/>	<input type="button" value="No"/>

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Enhanced Recovery After Surgery (ERAS) Program

The screenshot displays a patient summary page with several key sections:

- BestPractice Advisories:** A yellow banner with a link to view active advisories.
- ERAS Patient (Enhanced Recovery After Surgery):** A pink banner highlighting the patient's status.
- Moderate Fall Risk:** An orange banner indicating the patient's risk level.
- Orders to be Acknowledged:** A section showing no orders from admission onward.
- Specimen Collection Needed:** A section showing no specimens needed.
- Medical Problems:** A section with a 'Comment' button and a 'Treatment' icon.

An 'Order Sets' pop-up window is overlaid on the right, showing the following configuration:

- Order Sets:** Colorectal Surgery - Post-Op Admission - Enhanced Recovery After Surgery (ERAS) Ⓜ
- General:**
 - Admission:**
 - Admit to inpatient (ADT-Sign)
 - Place in Observation (ADT-Sign)
 - Code Status:**
 - Isolation:**
 - Standard Precautions (Routine, Continuous, starting today at 1553, Until Specified) (ADT-Sign, Sign)
- Diet:**
 - General Diet (Post-op)
 - NPO Diet (Post-op)
 - Heart Healthy Diet (Post-op)
 - Diabetic Diet (Post-op)
 - NPO Diet, then Advance as Specified
 - Clear Liquid Diet, then Advance As Tolerated
 - Clear Liquid Diet With Toast and Crackers, then Advance As Tolerated
- Advance As Tolerated - Complex Advancement:**
 - Advance As Tolerated - Clear -> Full -> T&C -> Low Fiber -> General
 - Advance As Tolerated - Clear -> Low Fiber -> General

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Surgical Site Infection Education

Automatically adds to every patient when a surgical site is documented. Nurse provides teaching.

EMR:

- Corrects discharge education deficiency
- standardizes work
- provides teaching tool for nursing staff



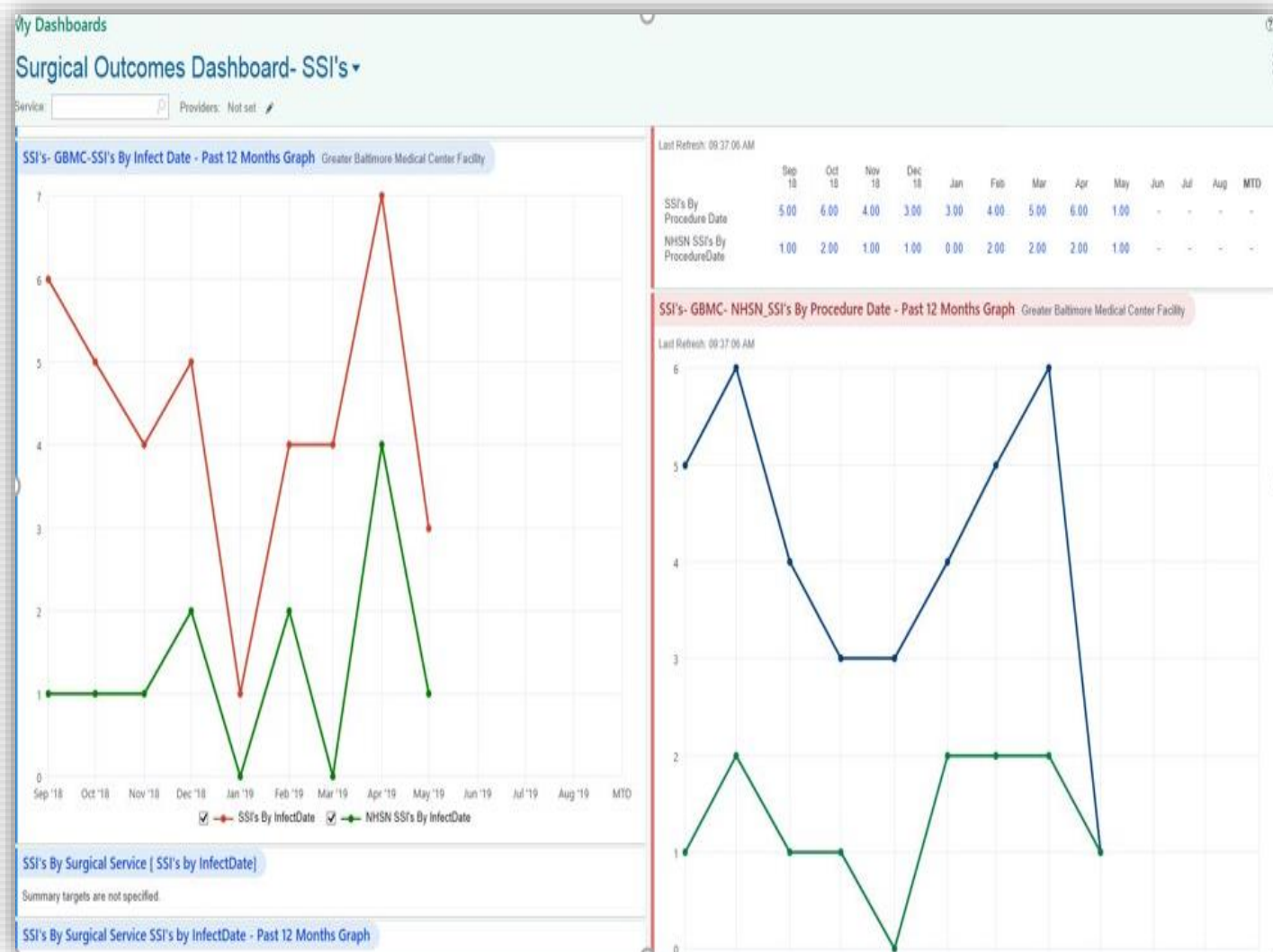
The screenshot shows the 'Education' module in an EMR system. On the left, under 'Inpatient' > 'Misc Nursing', the option 'Surgical site infection prevention (SSI)' is selected and highlighted with a red box. An arrow points from this box to the 'Patient Handouts' section on the right, which displays a document titled 'Surgical Site Infections Handout' from GBMC Healthcare. The document content includes the title 'Preventing Surgical Site Infections', an introduction, and sections for 'What Causes Surgical Site Infections?' and 'What Are the Risk Factors for Surgical Site Infections?'. The risk factors listed are: being an older adult, having a weakened immune system, smoking, certain types of operations, being malnourished, being very overweight, and having a wound that is left open.

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Surgical Site Infection Dashboard

- Improves data transparency and dissemination
- Moves performance improvement closer to “real time”
- Allows limited resources to concentrate on performance improvement, not data collection
- Tool for clinical engagement and culture change



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Dashboard Drill Down and Display

- Can drill down to different lengths of time
- Can display in table view or graph view



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Average Length of Stay and 30 Day Readmission Rate Dashboard

Surgical Outcomes Dashboard- ALOS+ 30 Day Readmission Rate

Surgical Outcomes Dashboard- Message Board

Dashboard Announcements

None at this time.

Fri 8/28 10:35 AM - Carla Barresi

External Websites

Last Refresh: 03:20:06 PM

- CMS
- ACS National Surgical Quality Improvement Program
- American Society for Enhanced Recovery

ERAS Anesthesia

- RW-ERAS Pre-Op Checklist- General/Colorectal Reports
- GC ERAS Pre-Op Checklist Daily Report- General/Colorectal
- GC ERAS Pre-Op Checklist - Monthly Report- General/Colorectal
- GC ERAS Pre-Op Checklist Yearly Report-General/Colorectal

- Crystal Reports- ERAS Data Elements- General/Colorectal
- ERAS Report- Colorectal (Monthly)
- ERAS Report- Colorectal (Yearly)

- RW- ERAS Pre-Op Checklist- Orthopedics
- GC ERAS Pre-Op Checklist Daily Report- Orthopedics
- GC ERAS Pre-Op Checklist Monthly Report- Orthopedics
- GC ERAS Pre-Op Checklist Yearly Report-Orthopedics

GC Surgical Outcomes Dashboard Links

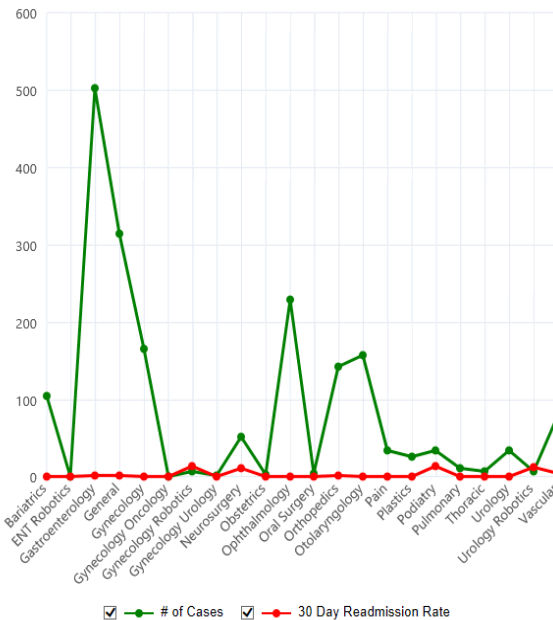
Last Refresh: 03:20:06 PM

- Surgical Outcomes Dashboard: ALOS+ 30 Day Hospital Readmission
- Surgical Outcomes Dashboard: Case Volume+Mortality
- Surgical Outcomes Dashboard: SSI's
- Surgical Outcomes Dashboard: Complications

Average LOS By Service- Monthly

30 Day Readmission Rate by Service(Monthly)

Report completed: Fri 8/9 03:21 PM



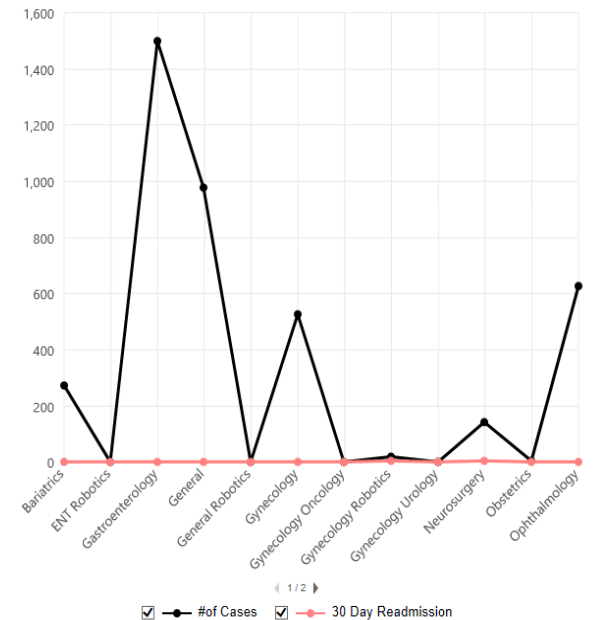
30 Day Readmission Rate By Provider (Monthly)

Report completed: Fri 8/9 03:21 PM

Service	# of Cases	30 Day Readmission Rate
▼ Bariatrics	105	0.95 %
Elizabeth A Dovec, Md [1149]	50	0.00 %
Gustavo E Bello, Md [1152]	40	2.50 %
Mingwei Ni, Md [13855]	6	0.00 %

30 Day Readmission Rate by Service(Quarterly)

Report completed: Fri 8/9 03:27 PM



30 Day Readmission Rate By Provider (Quarterly)

Report completed: Fri 8/9 03:27 PM

Service	# of Cases	30 Day Readmission Rate
▼ Bariatrics	273	1.47 %
Elizabeth A Dovec, Md [1149]	103	0.00 %
Gustavo E Bello, Md [1152]	114	1.75 %
Mingwei Ni, Md [13855]	17	5.88 %

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Case Volume and Mortality Rate Dashboard

Surgical Outcomes Dashboard- Case Volume+ Mortality Rate

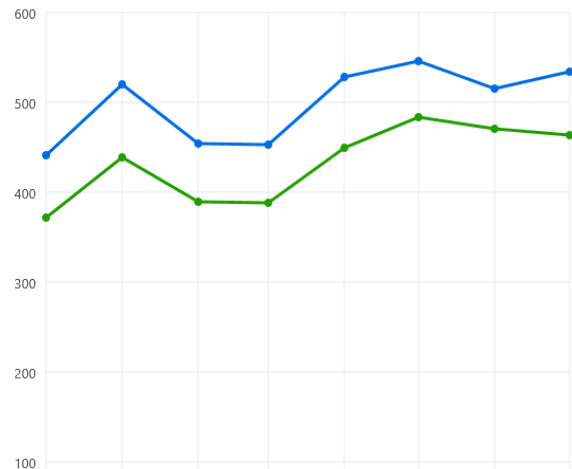
Surgical Volume - IP Cases	3	2	-	1	2	2	2
Surgical Volume - OP Cases	34	-	-	15	15	17	21

Surgical Case Volume Monthly- ENDO GBMC ENDO

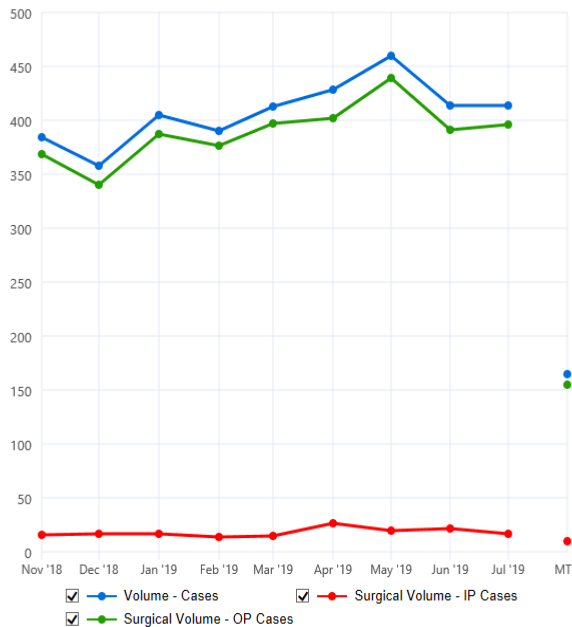
Last Refresh: 03:23:36 PM

	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Jan	Feb	Mar	Apr
Volume - Cases	535	484	539	499	441	520	454	453	52
Surgical Volume - OP Cases	453	407	462	431	372	439	390	388	45
Surgical Volume - IP Cases	82	77	77	68	69	81	64	65	7

Surgical Case Volume Monthly- Endo Graph GBMC ENDO



Surgical Case Volume Monthly- WOSC (Graph) GBMC WOSC



Mortality Rate By Provider (Monthly)

Report completed: Fri 8/9 03:21 PM

Service	# of Cases	# Of Patient Deaths Within 30 Days of Surgery
Bariatrics	105	0.00 %
Elizabeth A Dovec, Md [1149]	50	0.00 %
Gustavo E Bello, Md [1152]	40	0.00 %
Mingwei Ni, Md [13855]	6	0.00 %
Timothy J Edson, Md [11401]	0	0.00 %

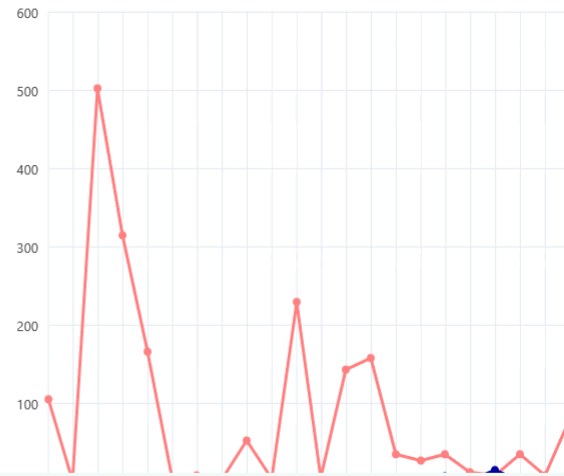
GOR	450	471	450	420	447	400	407	471	450
GBMC WOSC	317	381	369	341	388	377	398	402	440
GBMC ENDO	407	462	431	372	439	390	388	450	484

Inpatient Surgeries Volume-Fiscal Year

	Sep 18	Oct 18	Nov 18	Dec 18	Jan	Feb	Mar	Apr	May	Jun	Jul	MTD
GBMC GOR	322	387	309	336	337	317	318	335	325	332	338	
GBMC WOSC	19	12	16	17	17	14	15	27	20	22	17	
GBMC ENDO	77	77	68	69	81	64	65	79	62	45	70	

Mortality Rate- Monthly

Report completed: Fri 8/9 03:21 PM



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ERAS Dashboard

My Dashboards

Enhanced Recovery After Surgery (ERAS) ▾

ERAS Message Board

Last Refresh: 02:13:51 PM

There are no posts to show.

ERAS Website Links

External Website URLs

[American Society for Enhanced Recovery](#)

Hyperspace Activities

Last Refresh: 02:13:52 PM

[Open Case](#)

[Open Chart](#)

[Open Snapboard](#)

[Open Staff Schedule](#)

ERAS Anesthesia Type By Provider- Daily

Last Refresh: 02:14:05 PM

Report completed: Mon 7/15 02:13 PM

3 Total # of ERAS Cases

Anesthesia Type	Total # of ERAS Cases
<ul style="list-style-type: none"> ▼ general ETT <li style="padding-left: 20px;">KING, VICTOR F 	1
<ul style="list-style-type: none"> ▼ general ETT;regional block <li style="padding-left: 20px;">AMIN, FARID B 	1
<ul style="list-style-type: none"> ▼ spinal <li style="padding-left: 20px;">KESSLER, DAN D 	1
Count unique values	3

ERAS Anesthesia- Number Carb Drinks- Daily

Last Refresh: 02:13:55 PM

Report completed: Mon 7/15 02:13 PM

ERAS Inpatient Clinical Indicators

Reporting Workbench Reports

[GC IP ERAS Nursing Flowsheets_Discharged Patients](#)

[GC IP ERAS Nursing Flowsheets_CurrentPatients](#)

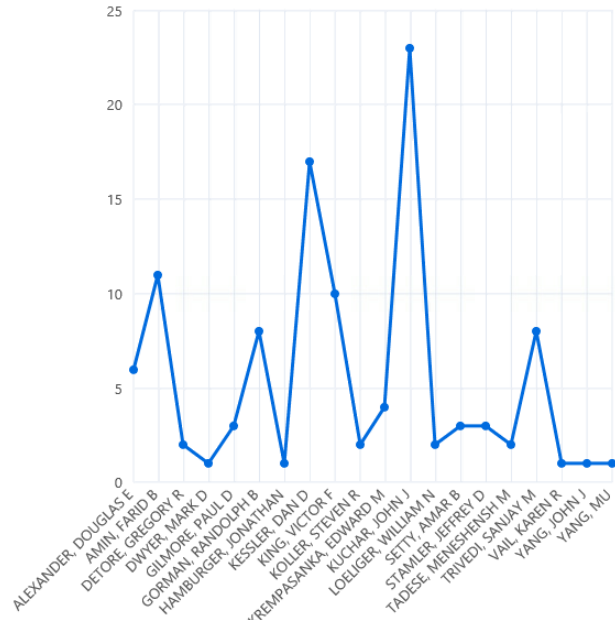
Clarity Reports

[GC IP ERAS Foley Cath Measure](#)

ERAS Anesthesia- Case Per Anesthesiologist -Monthly

Last Refresh: 02:14:12 PM

Report completed: Mon 7/15 02:14 PM



ERAS Anesthesia

[RW-ERAS Pre-Op Checklist- General/Colorectal Reports](#)

[GC ERAS Pre-Op Checklist Daily Report- General/Colorectal](#)

[GC ERAS Pre-Op Checklist - Monthly Report- General/Colorectal](#)

[GC ERAS Pre-Op Checklist Yearly Report-General/Colorectal](#)

[Crystal Reports- ERAS Data Elements- General/Colorectal](#)

[ERAS Report- Colorectal \(Monthly\)](#)

[ERAS Report- Colorectal \(Yearly\)](#)

[RW- ERAS Pre-Op Checklist- Orthopedics](#)

[GC ERAS Pre-Op Checklist Daily Report- Orthopedics](#)

[GC ERAS Pre-Op Checklist Monthly Report- Orthopedics](#)

[GC ERAS Pre-Op Checklist Yearly Report-Orthopedics](#)

ERAS- Cases Per Anesthesiologist- Yearly

Running - 44 %

Report: GC ERAS DATA (YEARLY)

ERAS Anesthesia- Number of Carb Drinks- Yearly

Running - 44 %

Report: GC ERAS DATA (YEARLY)

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Value Derived



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Surgical Site Infection Totals and Rate by Year

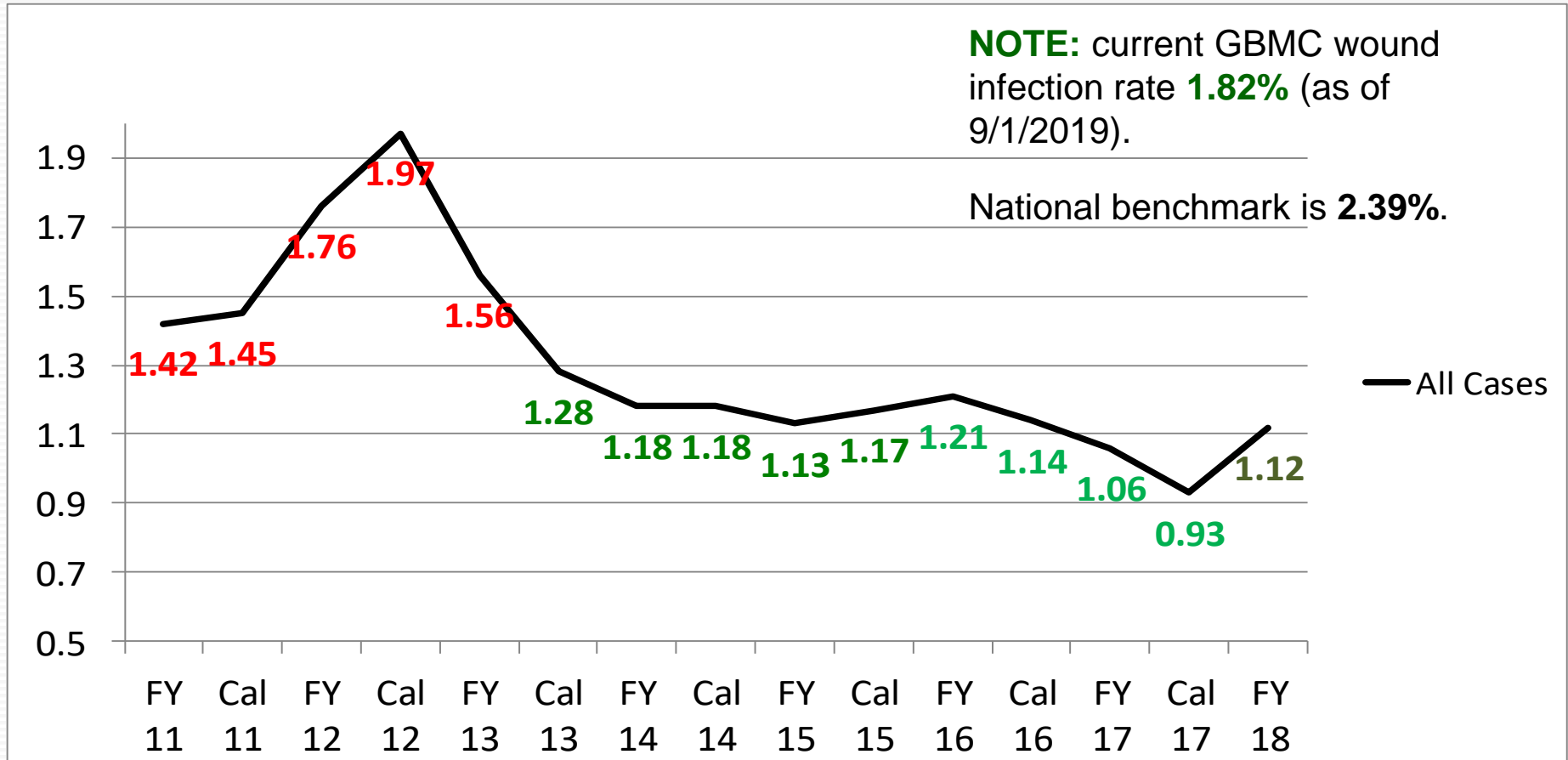
Calendar Year	Total # Infections	SSI Rate (%)
2007	61	3.8%
2008	72	4.3%
2009	53	3.5%
2010	68	4.6%
2011	70	4.2%
2012	86	3.0%
2013	62	2.1%
2014	31	1.9%
2015	55	2.1%
2016	44	1.85%
2017	34	1.47%
2018	47	2.12%

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GBMC Surgical Site Infection Rates

July 2010- June 2018



Data based on July 2019 NSQIP SAR

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Return On Investment- Cost Avoidance

- Increased costs from SSI's are driven by:
 - Increased Length of Stay
 - Emergency Department visits
 - Readmissions
- On average, an SSI extends hospital Length of Stay by:
 - 9.7 days²
- Increases the cost of hospitalization by:
 - More than \$20,000 per admission²
- GBMC's highest number of surgical site infections in one year was 86 (2012), and most recently have decreased to 34, which equals a cost avoidance of:
 - **More than \$1.04M per year.**

2. American College of Surgeons and Surgical Infection Society: Surgical Site Infection Guidelines, 2016 Update

"To every patient, every time, we will provide the care that we would want for our own loved ones."

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Soft Return On Investment- Clinical

- Increased clinical costs from SSI's are driven by:
 - Increased Length of Stay
 - Emergency Department visits
 - Readmissions
 - Polypharmacy- antibiotics, anti-inflammatories, pain medicine
 - Iatrogenic injuries
 - Nosocomial infections
- Significant increase in morbidity and mortality for patients
- Per CDC in January 2019, SSI's were:
 - Leading cause of readmission for post-op patients
 - 3% mortality, 75% all deaths in SSI patients attributed to the SSI; 2.2 x RR of death with SSI
 - SSI is most costly Hospital Acquired Infection (\$3.3 billion annual cost)
 - SSI accounts for >1 million additional annual inpatient days

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Keys to Success

- Data alone will not cause change. Organizational infrastructure, culture, and information technology are all necessary.
- Empower staff to engage in performance improvement
- Leverage technology
 - Use of Epic for real time data
 - ACS-NSQIP for National benchmarking
- ACS-NSQIP is a long-term commitment by our organization and our process improvement strategy
 - Must realize the secondary benefits of a rigorous program on our culture of safety, ownership, and using data to drive outcomes
 - Incremental improvement over time continues with persistent IT work

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