ACS NSQIP

American College of Surgeons
National Surgical Quality Improvement Program

American College of Surgeons
Inspiring Quality:
Highest Standards, Better Outcomes
100+years

Program Overview

- ACS NSQIP is a data-driven, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care.

- Reliable data helps in -
  - Identifying quality improvement targets
  - Improving patient care and outcomes
  - Decreasing institutional healthcare costs

History of the ACS NSQIP

- Originated in the Veterans Health Administration and has been operational since 1991

In 1994, the NVASRS expanded to all 128 VHA hospitals that performed surgery and became the National Surgical Quality Improvement Program (NSQIP). In 1995, a validation study was conducted to determine the validity of the risk-adjusted surgical morbidity and mortality rates as measures of quality of care. This study focused on assessing the processes and structures of care in surgical services in order to determine which sites had higher- or lower-than-expected risk-adjusted mortality and morbidity rates.

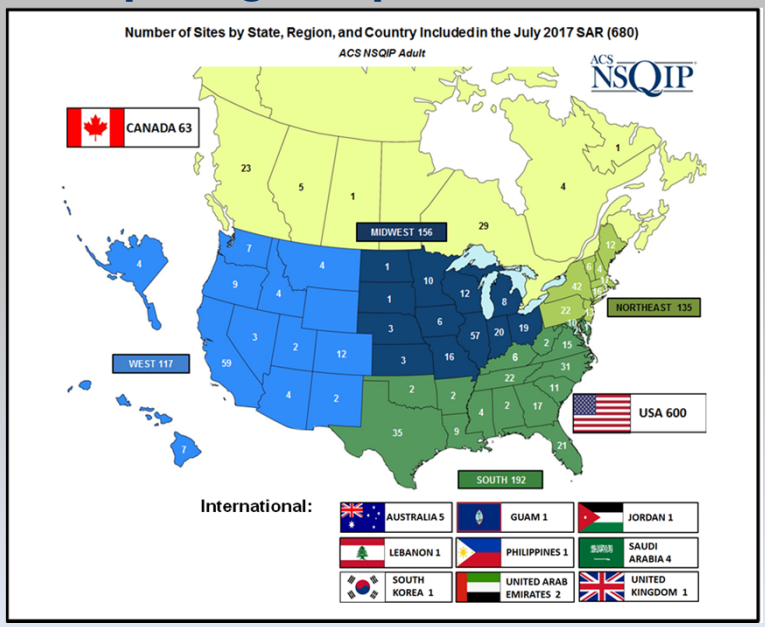
As of 2003, there were over 1.3 million major surgical cases in the VHA database. Impressive results from the NSQIP in the VHA have demonstrated a 27% decrease in 30-day surgical mortality and a 45% decrease in 30-day surgical morbidity.

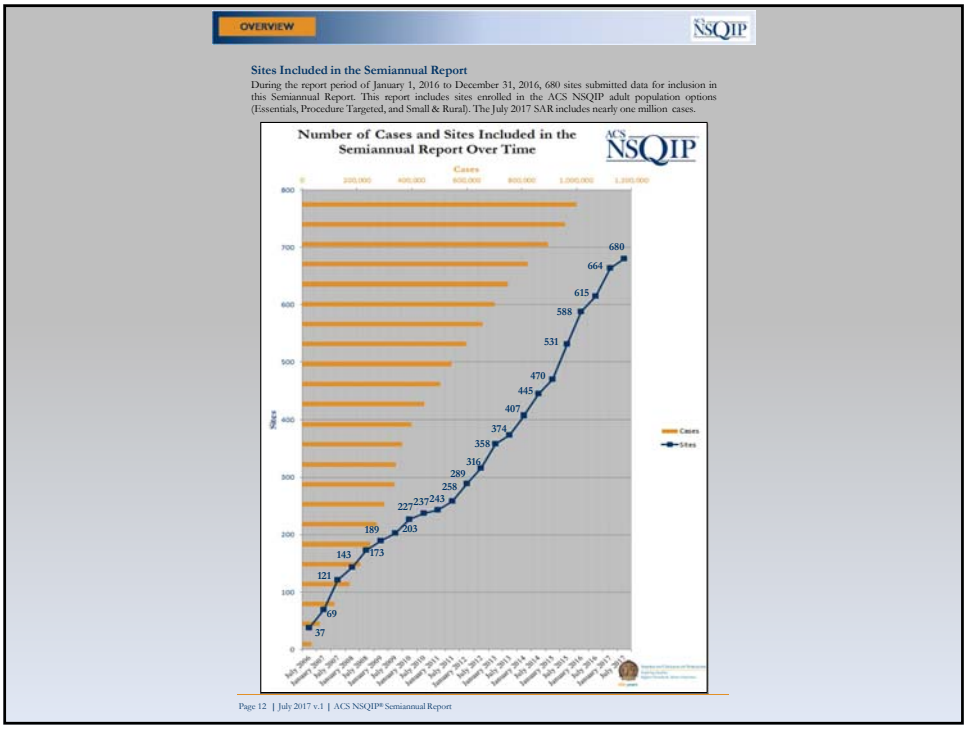
•In 2001, ACS received funding to implement NSQIP pilot program in private sector hospitals.

•In 2004, ACS expanded the program to additional private sector hospitals.

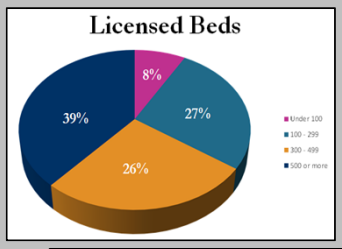
•In 2011, the ACS launched different NSQIP participation options tailored to hospital needs.

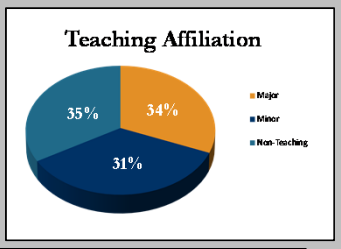
Participating Hospitals

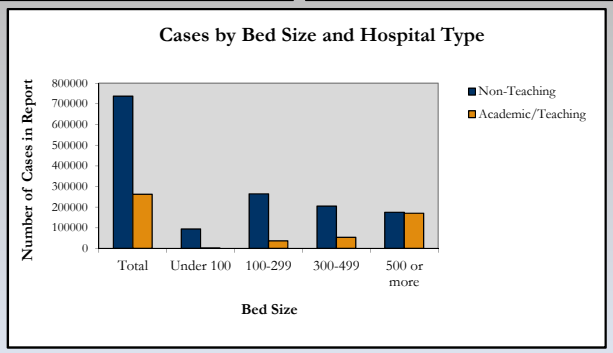




Hospital Characteristics



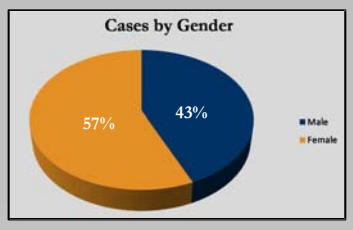


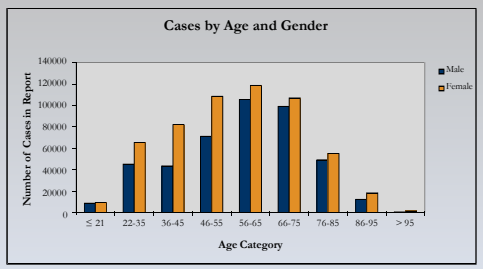


Based on U.S. hospitals with data reported to the American Hospital Association (AHA).

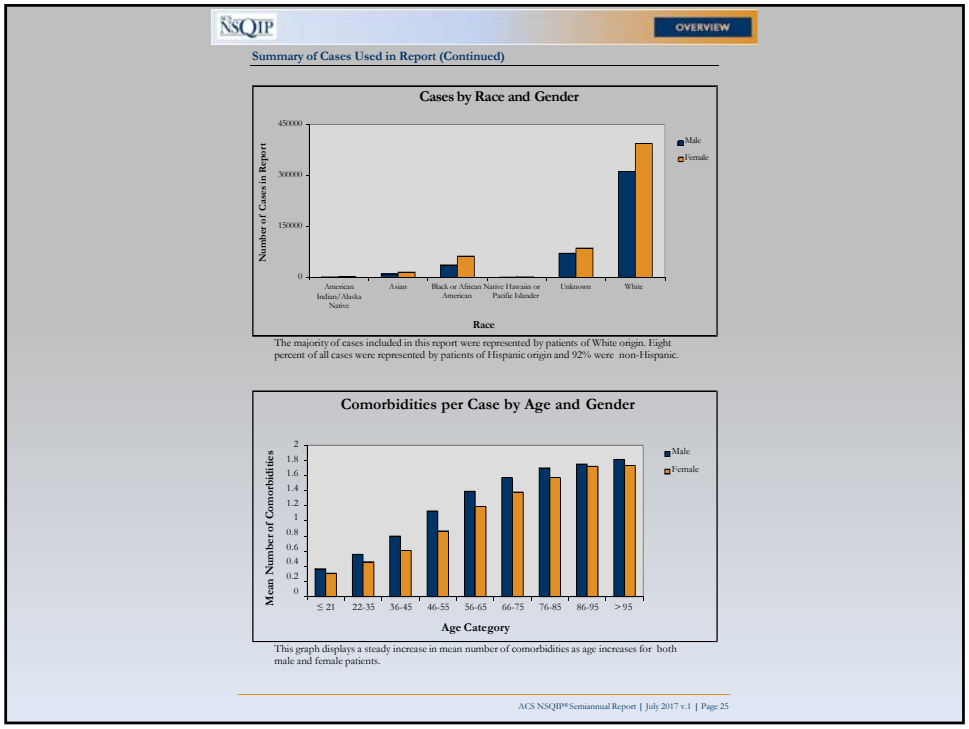
OVERVIEW

Summary of Cases Used in Report (Continued)





The age ranges of 56-65 and 66-75 represented the greatest number of cases, with approximately 224,000 and 205,000 cases, respectively.



Quality Improvement Process

1. Hospitals abstract data.
2. Data are analyzed by ACS NSQIP.
3. Data are reported back to hospitals.
4. Hospitals act on their data.
5. Hospitals monitor interventions with data.

ACS NSQIP Case Selection

Systematic Sampling Process

- 8-day cycle eliminates bias due to day of week as associated with surgeon operative schedules
- Cases are selected based on the inclusion/exclusion criteria of the hospital's selected participation option

Inclusion/Exclusion Criteria

- Inclusion based on CPT® codes of major cases and is updated annually
- Exclusion criteria:
  - Under age 18
  - Trauma and Transplant
  - ASA class 6

Program Overview

- Includes general and vascular surgery cases as well as subspecialties and targeted procedures
- Program uses clinical data, not administrative data
- Outcomes assessed at 30 days after index surgery (inpatient or outpatient)
- Highly standardized and validated data definitions
- SCR training/certification and hospital audits insure data quality
- Advanced data analytics provide risk adjustment and smoothing (reliability adjustment for small sample sizes)
- Provides data-driven tools for clinical decision making

	Essentials	Small & Rural	Procedure Targeted
Who is Eligible	Any hospital	Small and rural hospitals (Small defined as under 1680 cases per year or RUCA definition for rural)	Any hospital
Best Suited For	Those wanting to collect only the essential elements for QI Purposes	Small and rural hospitals	Larger hospitals; Those w/ CPT codes available w/in the hospital
Number of Variables	Approx. 46 "Clinical" Variables	Approx. 46 "Clinical" Variables (Same as Essentials)	"Core" set of approx. 46 "Clinical" variables + Procedure specific variables ("Core" set is the same as Essentials)
Versions Available	General/Vascular Multispecialty	Multispecialty	General/Vascular Multispecialty
Case Volume Requirements	G/V = 1680 cases per year or all cases if less than 1680 Multi = 20% total case volume by specialty (minimum 1680 cases or all cases if less than 1680)	Maximum =1680 cases per year	Minimum =1680 cases per year (Exact volume dependent on the # of targeted procedures selected and hospital volume for each of these procedures)
Sampling	G/V = 40 cases per 8 day cycle Multi= May be more than 40 cases per 8 day cycle - dependent on volume	All cases (100% capture)	15 "Core Cases" per 8 day cycle (use NSQIP standard sampling methodology to select cases) 25 "Procedure Targeted" Cases per 8 day cycle (or more if additional FTEs available)
FTE Requirements	1 FTE May be more for Multispecialty based on case volume. 40 cases a cycle =1 FTE	¼ FTE for up to 400 cases ½ FTE for up to 800 cases ¾ FTE for up to 1200 cases 1 FTE for up to 1680 cases	1 FTE (Minimum) May be more if hospital chooses to collect more than 1,000 "Targeted" procedures per year

Data Collection

<u>Preoperative data</u>

- Demographics
- Clinical laboratory variables

<u>Intraoperative data</u>

- Surgical Profile
- Clinical variables and complications

<u>Postoperative data</u>

- 30-day outcomes (inpatient and outpatient)
- Complications and discharge variables

<u>Custom fields</u>

- Allows sites to create their own variables for internal tracking and evaluation

Data Available to Hospitals

Workstation Reports
- Permits immediate evaluation on non-risk adjusted data and comparisons to similar types of hospitals
- Hospitals can download case details for selected cases
- Custom reports are available upon request

On-demand Benchmarking
- Risk-adjusted and smoothed rates and comparison to the average ACS NSQIP hospital
- Monitor performance changes over time
- Quality estimates for unique groups of patients

Semiannual Reports (SARs)
- Risk-adjusted and smoothed odds ratios and comparison to the average ACS NSQIP - modeled for a single data year using gold-standard methodology

Participant Use Files (PUFs)
- Research file contains all cases reported from 2005 to date

ACS NSQIP Overview Hospital engagement

- Surgeon Champion:
- Dedicated Surgical Clinical Reviewer(s):

Costs

- Program registration $20,000.
- Wages SCR
- Time and commitment

Data Collection

Data Collection is standardised with strict definitions for every occurrence.

Example – Surgical Site Infection

Variable Name: Superficial Incisional SSI
Program Legend: E,S-R,T

Intent of Variable: To capture the occurrence of infection that does not meet the more severe criteria of deep incisional SSI or organ/space SSI.

Definition: Superficial incisional SSI is an infection that involves only skin or subcutaneous tissue of the surgical incision.

Criteria: An infection that occurs within 30 days after the principal operative procedure **AND** the infection involves
only skin or subcutaneous tissue of the incision **AND** at least **ONE** of the following:

Purulent drainage, with or without laboratory confirmation, from the superficial incision

Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision

Superficial incision is deliberately opened by the surgeon (see note below)
AND

At least one of the following signs or symptoms of infection:
pain or tenderness
localized swelling
redness
Heat

If the patient meets criterion C and the surgical incision is cultured, a negative culture result would exclude the assignment of Superficial SSI based on criterion C only.

D. Diagnosis of superficial incisional SSI by the surgeon or attending physician

Results

Semi annual report

Smoothed results

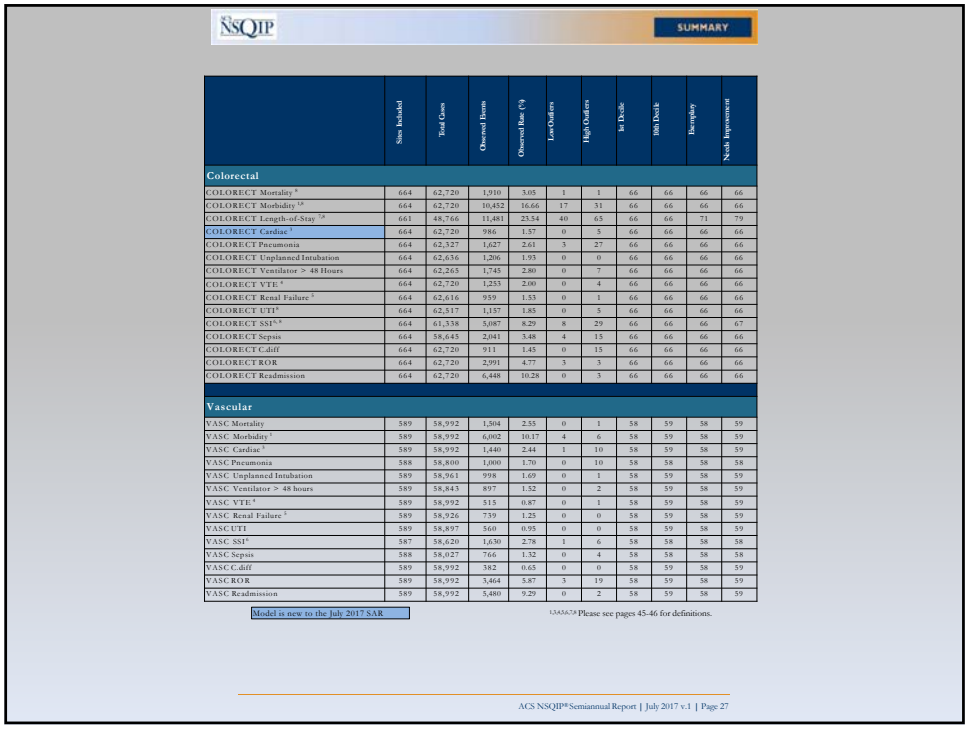
Individual Hospital

Collaborative report

How are the results generated

	Sites Included	Total Cases	Observed Events	Observed Rate (%)	Low Outliers	High Outliers	1st Decile	10th Decile	Benchplay	Needs Improvement
Measure										
MEASURE DSM [2]	680	999,597	67,099	6.71	97	125	68	68	101	129
MEASURE Elderly DSM [2]	679	364,968	34,917	9.57	52	72	67	68	77	81
MEASURE Colon DSM [2,9]	663	56,341	8,781	15.59	4	11	66	66	66	66
MEASURE Colon SSI	663	56,341	4,361	7.74	3	36	66	66	66	66
MEASURE Deep / OS SSI	680	999,597	11,829	1.18	25	88	68	68	69	92
MEASURE UTI [11]	680	940,273	8,738	0.93	43	102	68	68	71	104
MEASURE LEB DSM [10, 12]	474	9,572	846	8.84	1	0	47	47	47	47
All Cases										
ALLCASES Mortality	680	999,597	9,781	0.98	19	34	68	68	68	68
ALLCASES Morbidity [1]	680	999,597	59,455	5.95	123	145	68	68	125	149
ALLCASES Cardiac [3]	680	999,597	6,375	0.64	8	46	68	68	68	70
ALLCASES Pneumonia	680	997,279	9,497	0.95	45	93	68	68	73	99
ALLCASES Unplanned Intubation	680	999,303	6,620	0.66	7	28	68	68	68	68
ALLCASES Ventilator > 48 Hours	680	997,673	6,935	0.70	19	68	68	68	68	78
ALLCASES VTE [4]	680	999,597	8,020	0.80	9	48	68	68	68	71
ALLCASES Renal Failure [5]	680	999,145	4,530	0.45	3	17	68	68	68	68
ALLCASES UTI	680	997,746	10,309	1.03	48	102	68	68	70	103
ALLCASES SSI [6]	680	992,866	24,077	2.42	65	132	68	68	77	134
ALLCASES Sepsis	680	984,691	9,083	0.92	26	77	68	68	68	81
ALLCASES C.diff	680	999,597	4,058	0.41	5	40	68	68	68	70
ALLCASES ROR	680	999,597	22,951	2.30	42	61	68	68	69	72
ALLCASES Readmission	680	999,597	49,585	4.96	39	63	68	68	70	72

[1,2,3,4,5,6,9,10,11,12] Please see pages 45-46 for definitions.

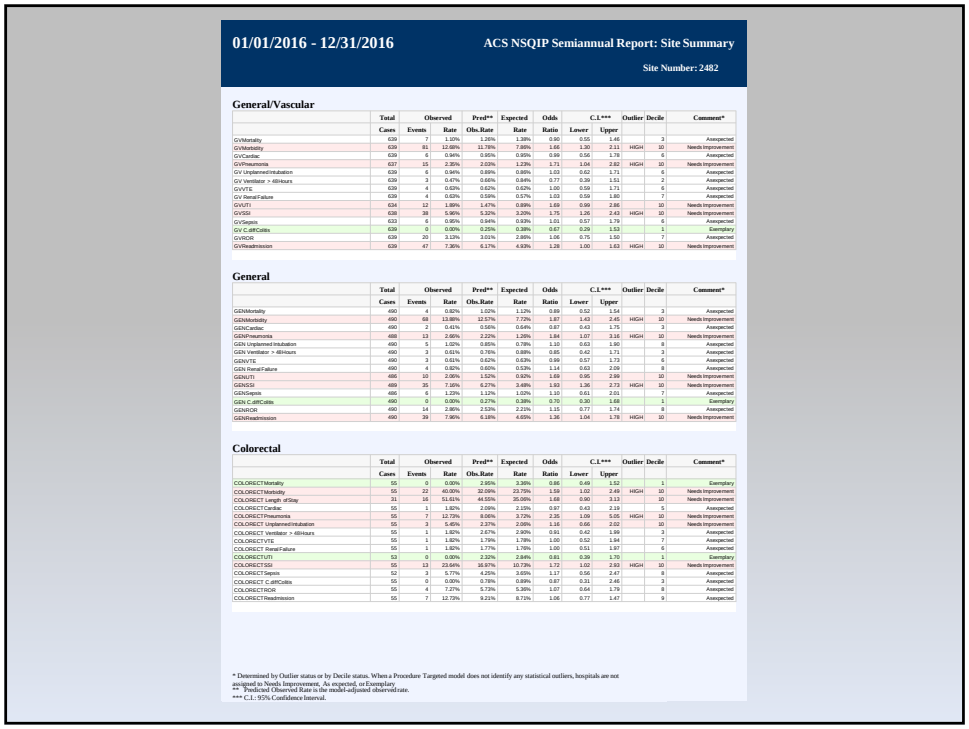


NSQIP SUMMARY

	Sites Included	Total Cases	Observed Events	Observed Rate (%)	Low Outliers	High Outliers	1st Decile	10th Decile	Exemplary	Needs Improvement
Colorectal										
COLORECT Mortality [6]	664	62,720	1,910	3.05	1	1	66	66	66	66
COLORECT Morbidity [1,6]	664	62,720	10,452	16.66	17	31	66	66	66	66
COLORECT Length-of-Stay [7,6]	661	48,766	11,481	23.54	40	65	66	66	71	79
COLORECT Cardiac [3]	664	62,720	986	1.57	0	5	66	66	66	66
COLORECT Pneumonia	664	62,327	1,627	2.61	3	27	66	66	66	66
COLORECT Unplanned Intubation	664	62,636	1,206	1.93	0	0	66	66	66	66
COLORECT Ventilator > 48 Hours	664	62,263	1,745	2.80	0	7	66	66	66	66
COLORECT VTE [4]	664	62,720	1,253	2.00	0	4	66	66	66	66
COLORECT Renal Failure [5]	664	62,616	959	1.53	0	1	66	66	66	66
COLORECT UTI [2]	664	62,517	1,157	1.85	0	5	66	66	66	66
COLORECT SSI [6]	664	61,338	5,087	8.29	8	29	66	66	66	67
COLORECT Sepsis	664	58,645	2,041	3.48	4	13	66	66	66	66
COLORECT C.diff	664	62,720	911	1.45	0	13	66	66	66	66
COLORECT ROR	664	62,720	2,991	4.77	3	3	66	66	66	66
COLORECT Readmission	664	62,720	6,448	10.28	0	3	66	66	66	66
Vascular										
VASC Mortality	589	58,992	1,504	2.55	0	1	58	59	58	59
VASC Morbidity [1]	589	58,992	6,002	10.17	4	6	58	59	58	59
VASC Cardiac [3]	589	58,992	1,440	2.44	1	10	58	59	58	59
VASC Pneumonia	588	58,800	1,000	1.70	0	10	58	58	58	58
VASC Unplanned Intubation	589	58,961	998	1.69	0	1	58	59	58	59
VASC Ventilator > 48 hours	589	58,843	897	1.52	0	2	58	59	58	59
VASC VTE [4]	589	58,992	515	0.87	0	1	58	59	58	59
VASC Renal Failure [5]	589	58,926	739	1.25	0	0	58	59	58	59
VASC UTI	589	58,897	560	0.95	0	0	58	59	58	59
VASC SSI [6]	587	58,620	1,630	2.78	1	6	58	58	58	58
VASC Sepsis	588	58,027	766	1.32	0	4	58	58	58	58
VASC C.diff	589	58,992	382	0.65	0	0	58	59	58	59
VASC ROR	589	58,992	3,464	5.87	3	19	58	59	58	59
VASC Readmission	589	58,992	5,480	9.29	0	2	58	59	58	59

Model is new to the July 2017 SAR

[1,3,4,5,6,7,8] Please see pages 45-46 for definitions.



01/01/2016 - 12/31/2016

ACS NSQIP Semiannual Report: Site Summary

Site Number: 2482

General/Vascular

	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
GVMortality	639	7	1.10%	1.26%	1.39%	0.80	0.55	1.46		3	Asexpected
GVMorbidity	639	81	12.68%	11.78%	7.86%	1.66	1.30	2.11	HIGH	10	Needs Improvement
GVCardiac	639	6	0.94%	0.85%	0.95%	0.89	0.56	1.78		6	Asexpected
GVPneumonia	637	15	2.35%	2.03%	1.23%	1.71	1.04	2.82	HIGH	10	Needs Improvement
GV Unplanned Intubation	639	6	0.94%	0.88%	0.88%	1.03	0.62	1.71		6	Asexpected
GV Ventilator > 48Hours	639	3	0.47%	0.66%	0.84%	0.77	0.39	1.51		2	Asexpected
GVVTE	639	4	0.63%	0.62%	0.62%	1.00	0.59	1.71		6	Asexpected
GV RenalFailure	639	4	0.63%	0.59%	0.57%	1.03	0.59	1.80		7	Asexpected
GVUTI	634	12	1.89%	1.47%	0.89%	1.69	0.99	2.86		10	Needs Improvement
GVSSI	638	38	5.96%	5.32%	3.20%	1.75	1.26	2.43	HIGH	10	Needs Improvement
GVSepsis	633	6	0.95%	0.94%	0.93%	1.01	0.57	1.79		6	Asexpected
GV C.diffColitis	639	0	0.00%	0.25%	0.38%	0.67	0.29	1.53		1	Exemplary
GVROR	639	20	3.13%	3.01%	2.86%	1.06	0.75	1.50		7	Asexpected
GVReadmission	639	47	7.36%	6.17%	4.93%	1.28	1.00	1.63	HIGH	10	Needs Improvement

General

	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
GENMortality	490	4	0.82%	1.02%	1.12%	0.88	0.52	1.54		3	Asexpected
GENMorbidity	490	68	13.88%	12.57%	7.72%	1.87	1.43	2.45	HIGH	10	Needs Improvement
GENCardiac	490	2	0.41%	0.56%	0.64%	0.87	0.43	1.75		3	Asexpected
GENPneumonia	488	13	2.66%	2.22%	1.26%	1.84	1.07	3.16	HIGH	10	Needs Improvement
GEN Unplanned Intubation	490	5	1.02%	0.85%	0.78%	1.10	0.63	1.90		8	Asexpected
GEN Ventilator > 48Hours	490	3	0.61%	0.76%	0.88%	0.85	0.42	1.71		3	Asexpected
GENVTE	490	3	0.61%	0.62%	0.63%	0.99	0.57	1.73		6	Asexpected
GEN RenalFailure	490	4	0.82%	0.65%	0.53%	1.14	0.63	2.09		8	Asexpected
GENUTI	486	10	2.06%	1.52%	0.92%	1.69	0.95	2.99		10	Needs Improvement
GENSSI	489	35	7.16%	6.27%	3.48%	1.93	1.36	2.73	HIGH	10	Needs Improvement
GENSepsis	486	6	1.23%	1.12%	1.02%	1.10	0.61	2.01		7	Asexpected
GEN C.diffColitis	490	0	0.00%	0.27%	0.38%	0.70	0.30	1.68		1	Exemplary
GENROR	490	14	2.86%	2.53%	2.21%	1.15	0.77	1.74		8	Asexpected
GENReadmission	490	39	7.96%	6.18%	4.65%	1.36	1.04	1.78	HIGH	10	Needs Improvement

Colorectal

	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
COLORECTMortality	55	0	0.00%	2.95%	3.36%	0.86	0.49	1.52		1	Exemplary
COLORECTMorbidity	55	22	40.00%	32.09%	23.75%	1.59	1.02	2.49	HIGH	10	Needs Improvement
COLORECT Length of Stay	31	16	51.61%	44.55%	26.06%	1.68	0.90	3.13		10	Needs Improvement
COLORECTCardiac	55	1	1.82%	2.09%	2.15%	0.97	0.43	2.19		5	Asexpected
COLORECTPneumonia	55	7	12.73%	8.06%	3.72%	2.35	1.09	5.05	HIGH	10	Needs Improvement
COLORECT Unplanned Intubation	55	3	5.45%	2.37%	2.06%	1.16	0.66	2.02		10	Needs Improvement
COLORECT Ventilator > 48Hours	55	1	1.82%	2.67%	2.90%	0.91	0.42	1.99		3	Asexpected
COLORECTVTE	55	1	1.82%	1.79%	1.78%	1.00	0.52	1.94		7	Asexpected
COLORECT RenalFailure	55	1	1.82%	1.77%	1.76%	1.00	0.51	1.97		6	Asexpected
COLORECTUTI	53	0	0.00%	2.32%	2.84%	0.81	0.39	1.70		1	Exemplary
COLORECTSSI	55	13	23.64%	16.97%	10.73%	1.72	1.02	2.93	HIGH	10	Needs Improvement
COLORECTSepsis	52	3	5.77%	4.25%	3.65%	1.17	0.56	2.47		8	Asexpected
COLORECT C.diffColitis	55	0	0.00%	0.78%	0.89%	0.87	0.31	2.46		3	Asexpected
COLORECTROR	55	4	7.27%	5.73%	5.36%	1.07	0.64	1.79		8	Asexpected
COLORECTReadmission	55	7	12.73%	9.21%	8.71%	1.06	0.77	1.47		9	Asexpected

* Determined by Outlier status or by Decile status. When a Procedure Targeted model does not identify any statistical outliers, hospitals are not assigned to Needs Improvement, As expected, or Exemplary
** Predicted Observed Rate is the model-adjusted observed rate.
*** C.I.: 95% Confidence Interval.

Site Number: 2482

Page 2

Vascular

	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
VASCMortality	149	3	2.01%	1.94%	1.79%	1.03	0.58	1.81		7	Asexpected
VASCMorbidity	149	13	8.72%	8.20%	7.83%	1.05	0.71	1.56		7	Asexpected
VASCCardiac	149	4	2.68%	2.21%	1.96%	1.13	0.58	2.21		8	Asexpected
VASCPneumonia	149	2	1.34%	1.12%	1.04%	1.08	0.48	2.46		8	Asexpected
VASC Unplanned Intubation	149	1	0.67%	0.61%	0.83%	0.98	0.52	1.83		6	Asexpected
VASC Ventilator > 48Hours	149	0	0.00%	0.64%	0.73%	0.86	0.41	1.80		2	Asexpected
VASCVTE	149	1	0.67%	0.45%	0.43%	1.05	0.50	2.21		8	Asexpected
VASC Renal Failure	149	0	0.00%	0.77%	0.86%	0.89	0.49	1.62		1	Exemplary
VASCUTI	148	2	1.35%	0.86%	0.79%	1.09	0.58	2.03		9	Asexpected
VASCSSI	149	3	2.01%	2.40%	2.57%	0.93	0.52	1.67		3	Asexpected
VASCSepsis	147	0	0.00%	0.55%	0.62%	0.89	0.43	1.81		2	Asexpected
VASC C.diffColitis	149	0	0.00%	0.39%	0.39%	0.90	0.39	2.07		2	Asexpected
VASCROR	149	6	4.03%	4.53%	4.94%	0.91	0.54	1.53		3	Asexpected
VASCReadmission	149	8	5.37%	5.16%	5.13%	1.01	0.74	1.39		6	Asexpected

Measure

	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
MEASURE:DSM	1488	132	8.87%	8.58%	8.80%	1.32	1.10	1.58	HIGH	10	Needs Improvement
MEASURE: Elderly:DSM	785	91	11.59%	10.93%	8.22%	1.41	1.14	1.74	HIGH	10	Needs Improvement
MEASURE: Colon:DSM	54	16	29.63%	21.71%	17.37%	1.35	0.89	2.05		10	Needs Improvement
MEASURE: Colon:SSI	54	12	22.22%	14.78%	7.69%	2.12	1.19	3.77	HIGH	10	Needs Improvement
MEASURE: DeepD/S:SSI	1488	18	1.21%	1.07%	0.79%	1.36	0.90	2.07		9	Asexpected
MEASURE:UTI	1326	26	1.96%	1.75%	0.99%	2.01	1.37	2.96	HIGH	10	Needs Improvement
MEASURE: LEIBDSM	9	0	0.00%	5.37%	5.64%	0.95	0.50	1.79		3	Asexpected

All Cases

	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
ALLCASES:Mortality	1488	16	1.08%	1.09%	1.10%	0.98	0.66	1.48		5	Asexpected
ALLCASES:Morbidity	1488	141	9.48%	9.13%	5.69%	1.68	1.40	2.03	HIGH	10	Needs Improvement
ALLCASES:Cardiac	1488	9	0.60%	0.65%	0.72%	0.89	0.53	1.49		4	Asexpected
ALLCASES:Pneumonia	1484	21	1.42%	1.30%	0.90%	1.47	0.97	2.24		9	Asexpected
ALLCASES: Unplanned Intubation	1488	6	0.40%	0.45%	0.49%	0.93	0.57	1.51		4	Asexpected
ALLCASES: Ventilator > 48Hours	1488	4	0.27%	0.36%	0.47%	0.74	0.39	1.41		2	Asexpected
ALLCASES:VTE	1488	14	0.94%	0.83%	0.70%	1.19	0.78	1.82		8	Asexpected
ALLCASES: Renal Failure	1488	6	0.40%	0.41%	0.41%	0.99	0.59	1.67		6	Asexpected
ALLCASES:UTI	1474	33	2.24%	2.09%	1.25%	1.70	1.20	2.41	HIGH	9	Needs Improvement
ALLCASES:SSI	1486	63	4.24%	3.93%	2.01%	2.07	1.59	2.70	HIGH	10	Needs Improvement
ALLCASES:Sepsis	1480	11	0.74%	0.71%	0.66%	1.08	0.66	1.77		7	Asexpected
ALLCASES: C.diffColitis	1488	0	0.00%	0.17%	0.29%	0.58	0.28	1.21		1	Exemplary
ALLCASES:ROR	1488	35	2.35%	2.28%	2.15%	1.07	0.80	1.41		7	Asexpected
ALLCASES:Readmission	1488	84	5.65%	5.11%	4.00%	1.30	1.07	1.59	HIGH	10	Needs Improvement

Subspecialties

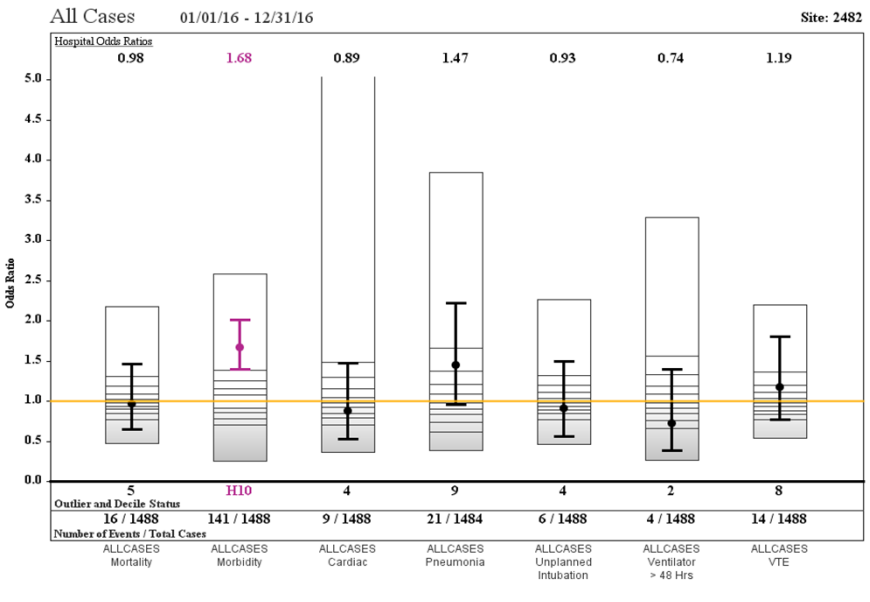
	Total	Observed		Pred**	Expected	Odds	C.I.***		Outlier	Decile	Comment*
	Cases	Events	Rate	Obs.Rate	Rate	Ratio	Lower	Upper			
SS Gynecology:Morbidity	112	10	8.93%	7.55%	5.74%	1.35	0.78	2.34		9	Asexpected
SS Gynecology:VTE	112	0	0.00%	0.27%	0.29%	0.94	0.41	2.15		3	Asexpected
SS Gynecology:UTI	111	3	2.70%	2.66%	2.62%	1.02	0.45	2.28		6	Asexpected
SS Gynecology:SSI	112	7	6.25%	3.89%	2.25%	1.78	0.90	3.52		10	Needs Improvement
SS Gynecology:Sepsis	112	0	0.00%	0.38%	0.43%	0.92	0.39	2.15		2	Asexpected
SS Gynecology: C.diffColitis	112	0	0.00%	0.08%	0.08%	0.97	0.34	2.81		5	Asexpected
SS Gynecology:ROR	112	3	2.68%	1.67%	1.49%	1.12	0.63	1.99		9	Asexpected

* Determined by Outlier status or by Decile status. When a Procedure Targeted model does not identify any statistical outliers, hospitals are not assigned to Needs Improvement, As expected, or Exemplary

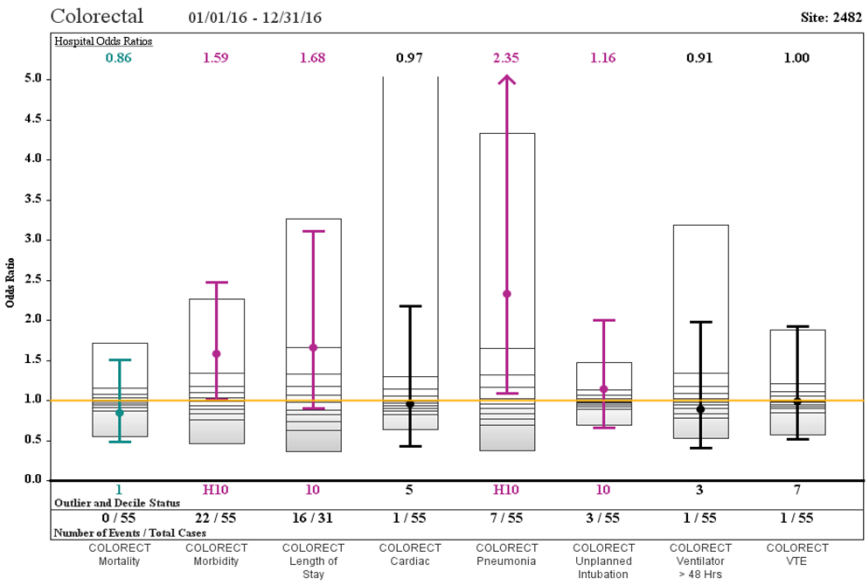
** Predicted Observed Rate is the model-adjusted observed rate.

*** C.I.: 95% Confidence Interval.

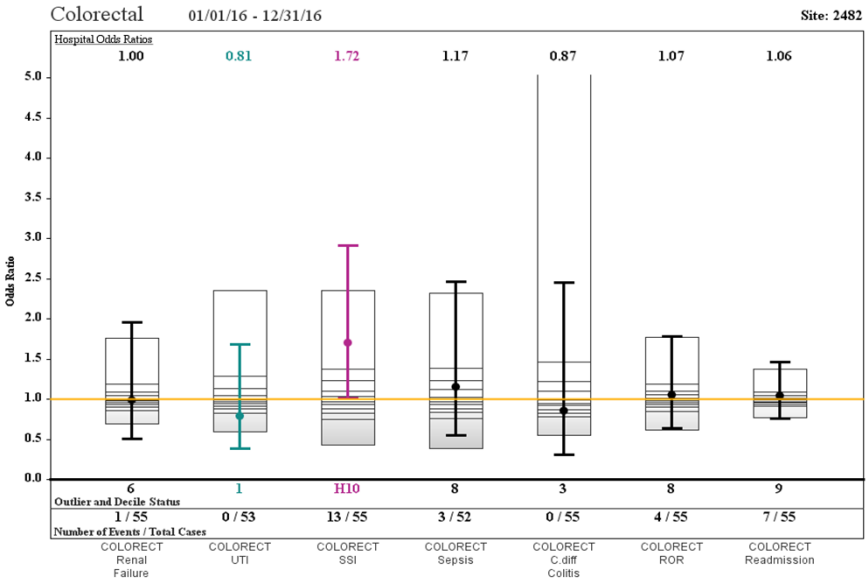
All Cases



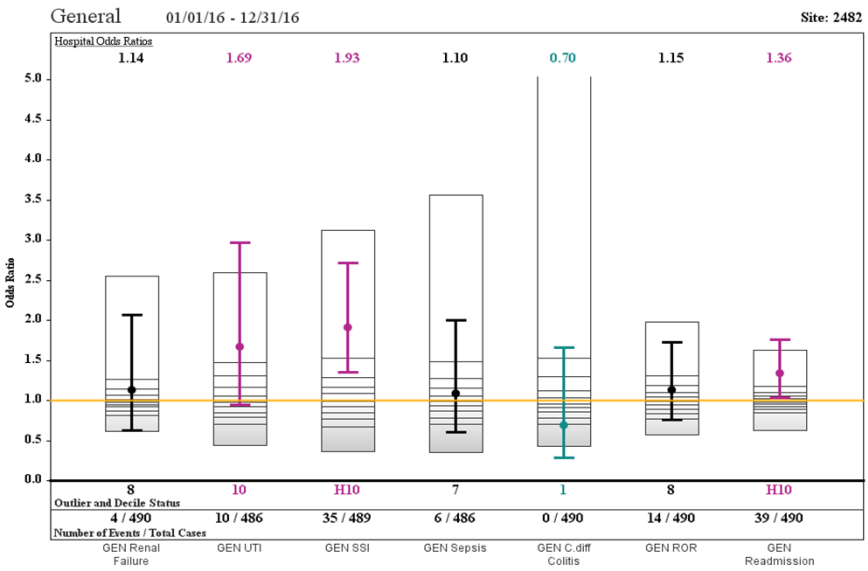
Colorectal



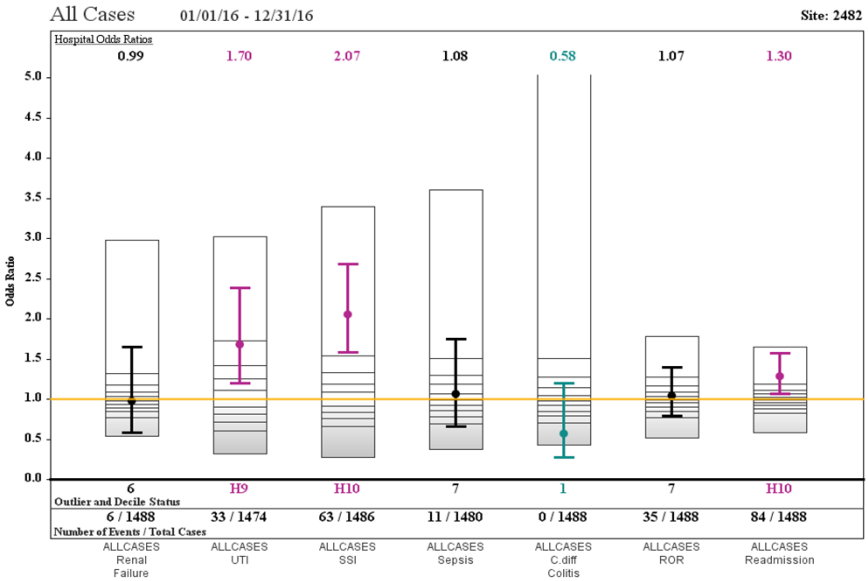
Colorectal



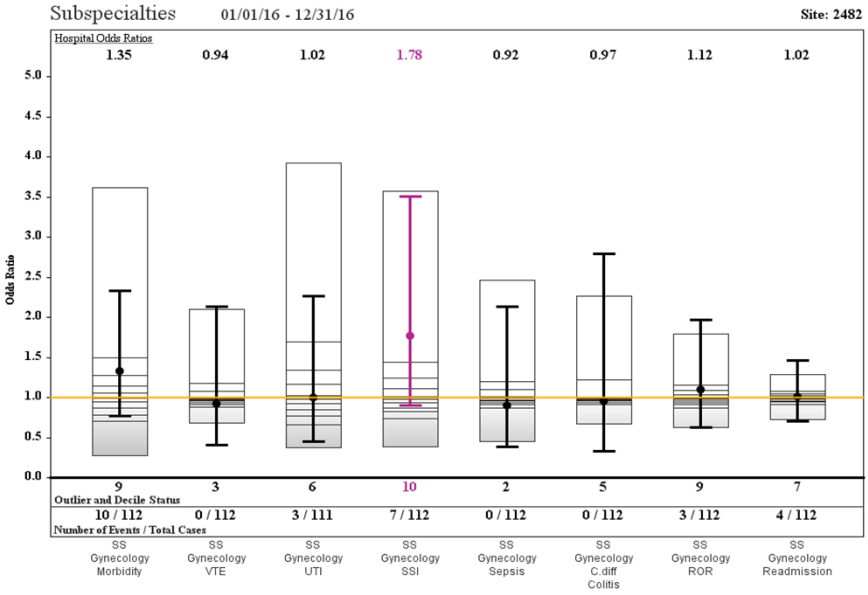
General



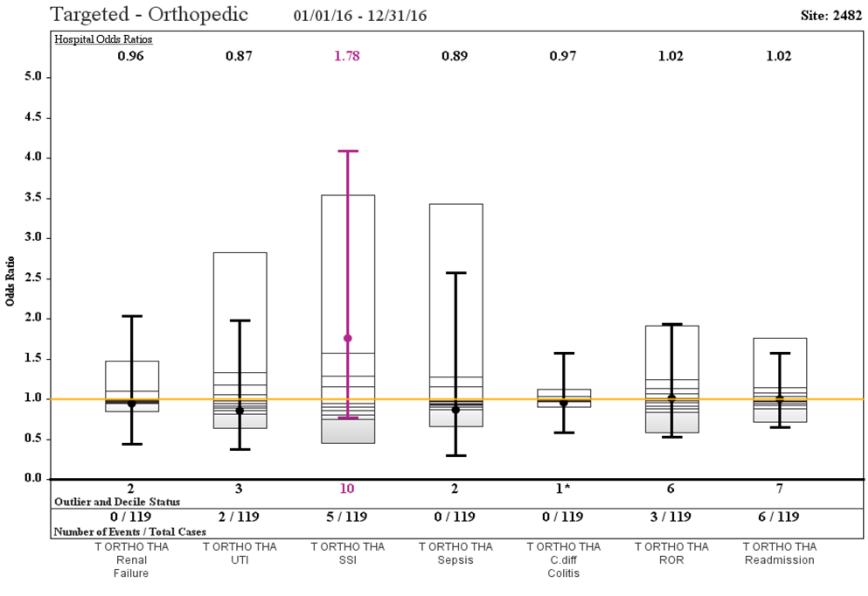
All Cases



Subspecialties



Targeted - Orthopedic



Port Macquarie Base Hospital Site Number: 2482

ACS NSQIP Semiannual Report: Site Summary OverTime

Page 6

General/Vascular*

	07/11-06/12	01/12-12/12	07/12-06/13	01/13-12/13	07/13-06/14	01/14-12/14	07/14-06/15	01/15-12/15	07/15-06/16	01/16-12/16
GVMortality								0.96	0.98	0.90
GVMorbidity								1.26	1.69H	1.66H
GVCardiac								1.12	1.33	0.99
GVPneumonia								1.27	1.49	1.71H
GV UnplannedIntubation								0.88	0.76	1.03
GV Ventilator > 48Hours								0.94	0.77	0.77
GVVTE								0.92	0.93	1.00
GV RenalFailure								1.02	0.91	1.03
GVUTI								1.10	1.31	1.69
GVSSI								1.46	2.09H	1.75H
GVSepsis								1.06	1.03	1.01
GV C.diffColitis									0.73	0.67
GVROR								1.29	1.25	1.06
GVReadmission								0.89	1.00	1.28H

General*

	07/11-06/12	01/12-12/12	07/12-06/13	01/13-12/13	07/13-06/14	01/14-12/14	07/14-06/15	01/15-12/15	07/15-06/16	01/16-12/16
GENMortality								0.99	0.97	0.89
GENMorbidity								1.22	1.75H	1.87H
GENCardiac								1.22	1.33	0.87
GENPneumonia								1.17	1.39	1.84H
GEN Unplanned Intubation								0.90	0.82	1.10
GEN Ventilator > 48Hours								0.97	0.84	0.85
GENVTE								0.93	0.98	0.99
GEN RenalFailure								1.06	0.98	1.14
GENUTI								0.99	1.20	1.69
GENSSI								1.36	2.24H	1.93H
GENSepsis								0.97	1.04	1.10
GEN C.diffColitis									0.77	0.70
GENROR								1.25	1.41	1.15
GENReadmission								0.91	1.11	1.39H

Colorectal*

	07/11-06/12	01/12-12/12	07/12-06/13	01/13-12/13	07/13-06/14	01/14-12/14	07/14-06/15	01/15-12/15	07/15-06/16	01/16-12/16
COLORECTMortality								0.99	0.91	0.86
COLORECTMorbidity								1.20	1.64H	1.59H
COLORECT Length ofStay								1.27	1.27	1.68
COLORECTCardiac										0.97
COLORECTPneumonia								0.94	1.52	2.35H
COLORECT UnplannedIntubation								0.99	0.95	1.16
COLORECT Ventilator > 48Hours								0.98	0.86	0.91
COLORECTVTE								0.98	0.93	1.00
COLORECT RenalFailure								0.98	0.93	1.00
COLORECTUTI								1.08	0.99	0.81
COLORECTSSI								1.52	2.42H	1.72H
COLORECTSepsis								0.94	1.07	1.17
COLORECT C.diffColitis									0.90	0.87
COLORECTROR								1.05	1.02	1.07
COLORECTReadmission								1.02	1.12	1.06

Vascular*

	07/11-06/12	01/12-12/12	07/12-06/13	01/13-12/13	07/13-06/14	01/14-12/14	07/14-06/15	01/15-12/15	07/15-06/16	01/16-12/16
VASCMortality								0.98	1.07	1.03
VASCMorbidity								1.11	1.25	1.05
VASCCardiac								0.94	1.39	1.13

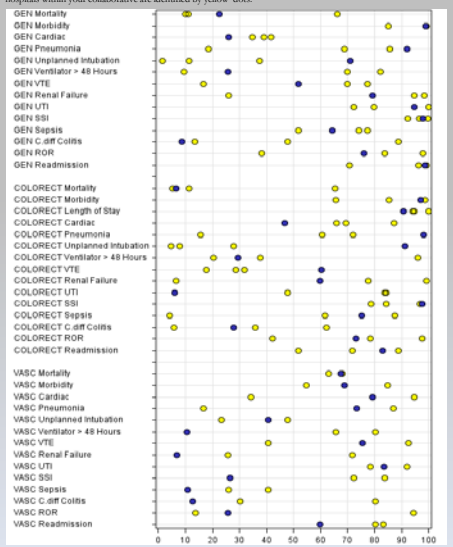
*For the "over time" report, only outlier status is addressed in color codes. Values prior to 07/11 are O/E ratios rather than odds ratios.

ACS NSQIP

ACI NSW Percentile Rank of Collaborative Hospitals **July 2017 SAR**

Site 02482 **Surgery Dates January 1, 2016 to December 31, 2016**

The following graph displays the percentile rank of the collaborative hospitals amongst all NSQIP hospitals in the selected models from the most recent SAR. Your specific hospital is identified by a blue dot, while the remaining hospitals within your collaborative are identified by yellow dots.



Lower rankings indicate lower ORs, while higher rankings indicate higher ORs.

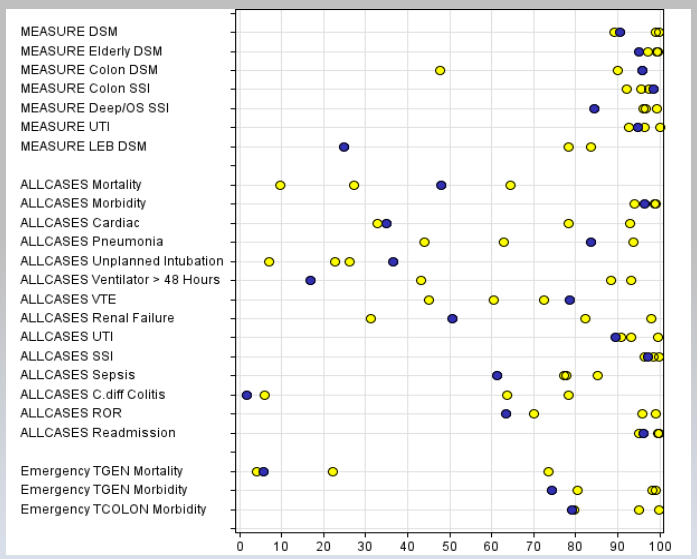
3
4

ACS NSQIP

July 2017 SAR

ACI NSW Percentile Rank of Collaborative Hospitals
Site 02482

Surgery Dates January 1, 2016 to December 31, 2016



Lower rankings indicate lower ORs, while higher rankings indicate higher ORs.

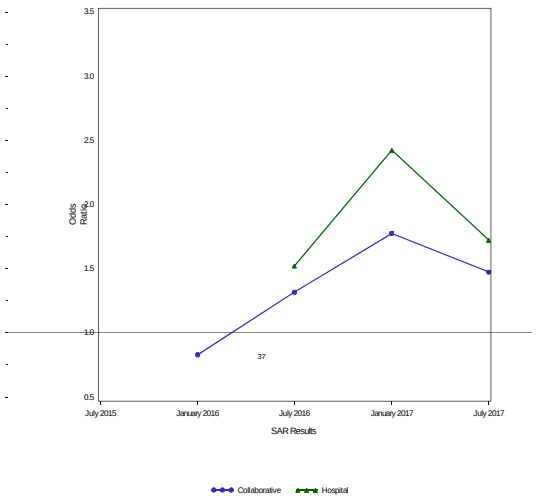
3
5

Commonest highlighted problems

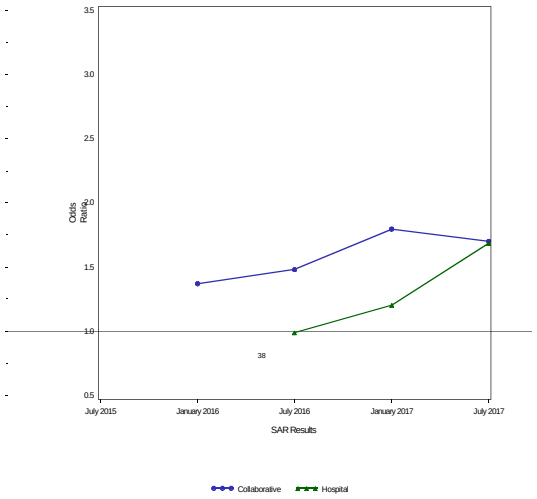
UTI

SSI

ACS NSQIP
ACI NSW
Site 02482
SAR Model=39 Model Name=COLORECT SSI



ACS NSQIP
ACI NSW
Site 02482
SAR Model=23 Model Name=GENUTI



We have the data – now what?

Collect data for at least 12 months

Engage with the surgeons– need to own the data

Expect the stages of Grief – denial, anger, bargaining, depression and acceptance

Identify an area to focus on with achievable goals

Utilizing Hospital Outcomes for Quality Improvement

- All hospitals have an opportunity to improve care.
  - Even hospitals with "Exemplary" or "As Expected" outcomes can benefit from quality improvement efforts.
- Quality improvement is a multi-disciplinary effort.
  - Collaboration with quality management, hospital administration, and clinical providers from all specialties promotes success.

ORIGINAL ARTICLE

Improved Surgical Outcomes for ACS NSQIP Hospitals Over Time

Evaluation of Hospital Cohorts With up to 8 Years of Participation

Mark E. Cohen, PhD, Yaoming Liu, PhD,* Clifford Y. Ko, MD, MS, MSHS, FACS,*†‡ and Bruce L. Hall, MD, PhD, MBA, FACS*§||¶*

Annals of Surgery • Volume 263, Number 2, February 2016

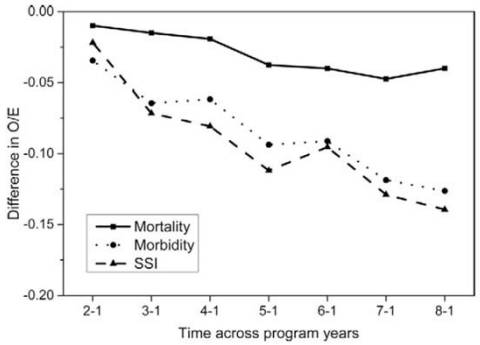
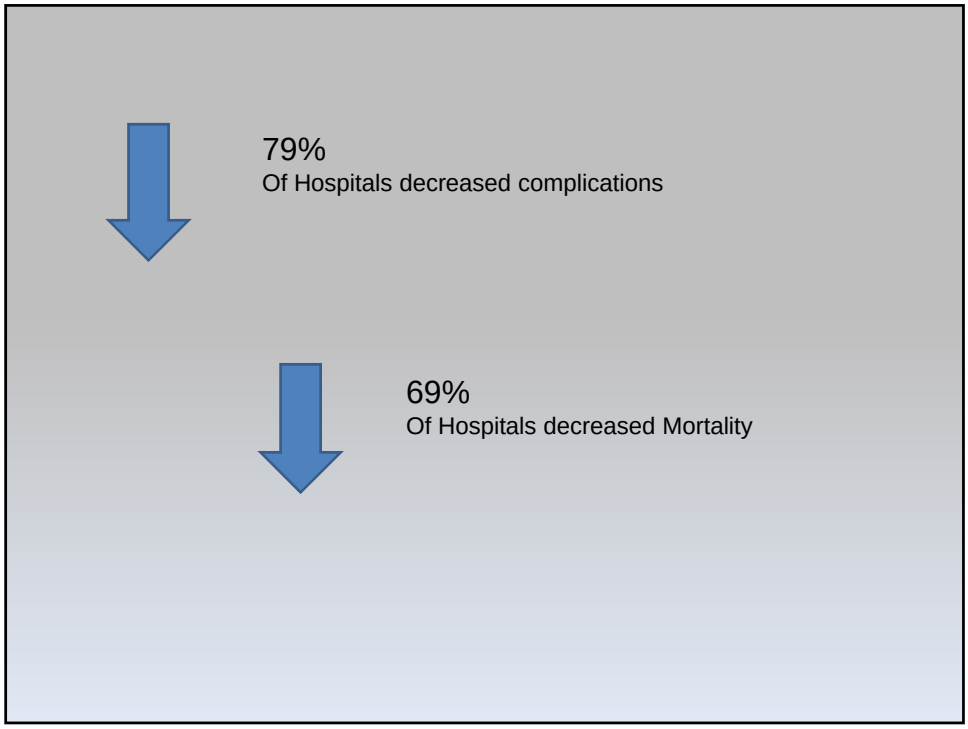
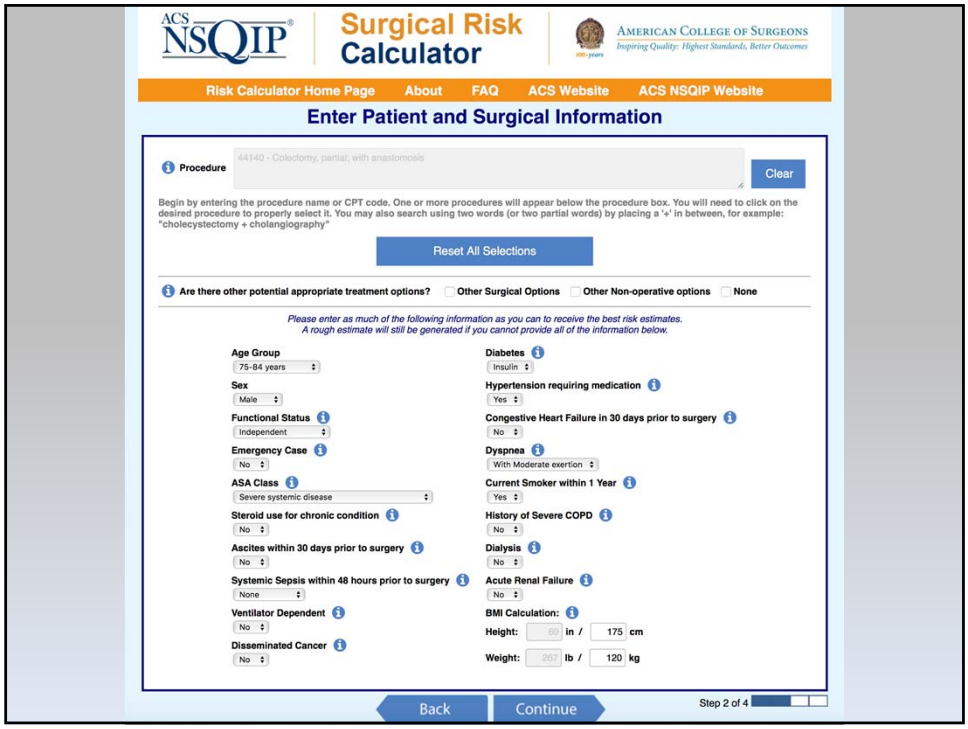


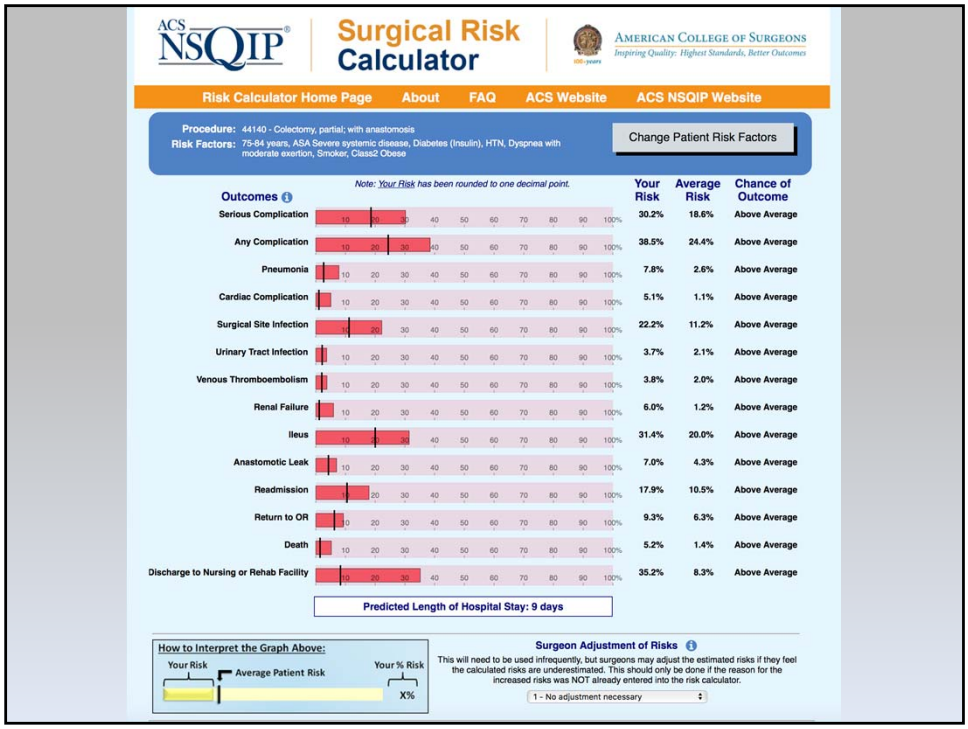
FIGURE 4. Mean differences in O/E ratios as a function of years in ACS NSQIP for mortality, morbidity, and SSI.



Utilizing Hospital Outcomes for Quality Improvement

- Utilize resources available from the ACS NSQIP secure website
  - Best Practices Guidelines
    - Prevention of Postoperative Pulmonary Complications
    - Prevention of Catheter-Associated Urinary Tract Infections
    - Prevention and Treatment of Venous Thromboembolism
    - Prevention and Assessment of Intravascular Catheter-Related Bloodstream Infections
    - Prevention of Surgical Site Infections
    - Prevention of Ventilator-Associated Pneumonia
  - Quality Improvement Primers
    - Leading and Managing Organizational Change
    - Statistical Process Control Charts
  - Best Practices Case Studies
- Monitor the impact of quality improvement initiatives and disseminate those achievements.
  - All of health care benefits when best practices are identified and shared
- Use the online ACS NSQIP Online Forum to share and discuss quality improvement initiatives with others


ACS NSQIP
Surgical Risk Calculator
American College of Surgeons
Inspiring Quality: Highest Standards, Better Outcomes
Risk Calculator Home Page
About
FAQ
ACS Website
ACS NSQIP Website
Enter Patient and Surgical Information
Procedure
44140 - Colectomy, partial; with anastomosis
Clear
Begin by entering the procedure name or CPT code. One or more procedures will appear below the procedure box. You will need to click on the desired procedure to properly select it. You may also search using two words (or two partial words) by placing a '+' in between, for example: "cholecystectomy + cholangiography"
Reset All Selections
Are there other potential appropriate treatment options?
Other Surgical Options
Other Non-operative options
None
Please enter as much of the following information as you can to receive the best risk estimates.
A rough estimate will still be generated if you cannot provide all of the information below.
Age Group
75-84 years
Sex
Male
Functional Status
Independent
Emergency Case
No
ASA Class
Severe systemic disease
Steroid use for chronic condition
No
Ascites within 30 days prior to surgery
No
Systemic Sepsis within 48 hours prior to surgery
None
Ventilator Dependent
No
Disseminated Cancer
No
Diabetes
Insulin
Hypertension requiring medication
Yes
Congestive Heart Failure in 30 days prior to surgery
No
Dyspnea
With Moderate exertion
Current Smoker within 1 Year
Yes
History of Severe COPD
No
Dialysis
No
Acute Renal Failure
No
BMI Calculation:
Height: in / 175 cm
Weight: lb / 120 kg
Back
Continue
Step 2 of 4


ACS NSQIP
Surgical Risk Calculator
American College of Surgeons
Inspiring Quality: Highest Standards, Better Outcomes
Risk Calculator Home Page
About
FAQ
ACS Website
ACS NSQIP Website
Procedure: 44140 - Colectomy, partial; with anastomosis
Risk Factors: 75-84 years, ASA Severe systemic disease, Diabetes (Insulin), HTN, Dyspnea with moderate exertion, Smoker, Class2 Obese
Change Patient Risk Factors
Note: Your Risk has been rounded to one decimal point.
Outcomes
Your Risk
Average Risk
Chance of Outcome
Serious Complication 30.2% 18.6% Above Average
Any Complication 38.5% 24.4% Above Average
Pneumonia 7.8% 2.6% Above Average
Cardiac Complication 5.1% 1.1% Above Average
Surgical Site Infection 22.2% 11.2% Above Average
Urinary Tract Infection 3.7% 2.1% Above Average
Venous Thromboembolism 3.8% 2.0% Above Average
Renal Failure 6.0% 1.2% Above Average
Ileus 31.4% 20.0% Above Average
Anastomotic Leak 7.0% 4.3% Above Average
Readmission 17.9% 10.5% Above Average
Return to OR 9.3% 6.3% Above Average
Death 5.2% 1.4% Above Average
Discharge to Nursing or Rehab Facility 35.2% 8.3% Above Average
Predicted Length of Hospital Stay: 9 days
How to Interpret the Graph Above:
Your Risk
Average Patient Risk
Your % Risk
X%
Surgeon Adjustment of Risks
This will need to be used infrequently, but surgeons may adjust the estimated risks if they feel the calculated risks are underestimated. This should only be done if the reason for the increased risks was NOT already entered into the risk calculator.
1 - No adjustment necessary

Summary

This is just one tool for the process of quality improvement.

Assessment of Clinical outcomes v Administrative data

It is a system analysis – surgical outcomes are dependent on the whole process

Over time there will be more data on individual surgeons