ACS NSQIP

User Guide for the Participant Use Data File

American College of Surgeons National Surgical Quality Improvement Program

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Contents

1. Introduction

This document is designed to accompany the Participant Use Data File (PUF) that is now available for download on the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Web site (www.acsnsqip.org). The sections contained herein will provide the user with information on how to request the PUF, the contents of the data files, the data collection background, the inclusion and exclusion criteria for cases and hospitals, the data limitations, and the data point definitions and descriptions.

2. Data Request Process

An individual who has an official appointment at a fully enrolled site and wants to obtain a copy of the PUF can do so by visiting www.acsnsqip.org and following the steps listed below:

1. The requestor can select the "Resources" and "ACS NSQIP Data" tab that appears on the far left side of the www.acsnsqip.org homepage.
2. Following a brief introduction, the requestor will access the Participant Use Data File Data Use Agreement. This is a 3-page document that implements the data protections of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and the ACS NSQIP Hospital Participation Agreement. Delivery of the PUF is contingent on agreement to the terms and conditions specified within the Data Use Agreement.
3. Requestors will be required to complete a brief online form to provide ACS with basic information about themselves, including the participating hospital in which they are currently employed and in what capacity.
4. Following receipt and confirmation of the information submitted, an e-mail will be sent to the requestor containing the URL visit to download the data. The web link will only be active from the time of the email for 5 full days (120 hours).
5. The file will be available in 3 different formats (TXT, SPSS, SAS) and depending on the connection speed should take between 5 and 15 minutes to download.
6. Once the file has been downloaded, it will need to be unzipped (multiple free zipping programs are available online) prior to importing it into a statistical software package. Excel cannot handle this data file.
7. The requestor may be contacted to confirm receipt of the data file and allow for feedback on the delivery mechanism, data points contained, and data file format.

3. File Description

Every summer a PUF will be made available for the previous calendar year's data. The PUF is available in 1 of 3 different formats. The file contains 239 variables for each case, and a variable-by-variable description is provided starting on page 16. A brief description of the different formats follows:

File Name	Type	Compressed File Size	Uncompressed File Size	Description
ACS_NSQIP_PUF_05_06_vr1.dat	tab delimited TXT file	221MB	207 MB	Contains 239 HIPAA compliant variables on 152,490 cases submitted from 121 sites between 2005 and 2006.
ACS_NSQIP_PUF_05_06_vr1.sav	SAS 9.1 data file	38 MB	813 MB	Same information as stated above in SAS data format.
ACS_NSQIP_PUF_05_06_vr1.dat	SPSS 15.0 data file	34 MB	329 MB	Same information as stated above in SPSS data format.

4. Data Collection Background and Data Quality

The ACS NSQIP collects data on 136 variables, including preoperative risk factors, intraoperative variables, and 30-day postoperative mortality and morbidity outcomes for patients undergoing major surgical procedures in both the inpatient and outpatient setting. A site's surgical clinical nurse reviewer (SCNR) captures these data using a variety of methods including medical chart abstraction.

Required data variables are entered via web-based data collection to the www.acsnsqip.org web site. Portions of the data may be automatically populated by a software program that was developed to extract data from the participating hospital's existing information systems.

To ensure the data collected are of the highest quality, the ACS NSQIP has developed a host of different training mechanisms for the SCNRs and conducts an Inter-Rater Reliability (IRR) Audit of participating sites. In addition to an initial training program, the ACS NSQIP requires SCNRs to complete a set of 6 web-based training modules. The modules focus on the program, processes, and analysis; preoperative, intraoperative, and postoperative definitions; and case studies. These modules are complemented by a growing online decision support system that ensures the SCNRs have the knowledge and resources available to collect high-quality data.

The IRR Audit is a fundamental tool of ACS NSQIP to assess the quality of the data collected at participating sites. The process involves the review of 20 charts; some are selected randomly and others are selected based on criteria designed to identify potential reporting errors. For example: cases with 5 or more preoperative risk factors and no reported mortality or morbidity or cases with 2 or fewer preoperative risk factors and reported mortality or morbidity will be selected for chart review. Operating room logs are also audited to ensure correct sampling of cases.

The combined results of the audits completed to date revealed an overall disagreement rate of approximately 2.5% for all assessed program variables. The ACS NSQIP has determined that an IRR Audit disagreement rate of 5% or less is acceptable. Sites that have higher than a 5% disagreement rate are not provided an Observed-to-Expected ratio and may be required to undergo an additional audit following recommendations from the ACS NSQIP.

5. Sampling Process and Case Inclusion/Exclusion Criteria

Sites participating in the ACS NSQIP can do so in 1 of 2 different case submission methodologies, each of which includes 2 different volume categories: high or low volume. There is the general and vascular surgery module and multispecialty module. The systematic sampling process is described below.

Systematic Sampling Process

Many hospitals are not able to capture all of their surgical cases that meet the program's inclusion criteria. Therefore, a systematic sampling system called the 8-day cycle was developed to prevent bias in choosing cases for assessment. The SCNR uses the 8-day cycle to select completed cases from the hospital's operative log. The schedule works as follows: If the first cycle begins on a Monday, it continues through to the following Monday (an 8-day period of time). The next cycle begins on Tuesday and continues through to the following Tuesday, and so on. There are 46 8-day cycles in 1 year, and the program requires that data be submitted for 42 of those cycles. The process ensures that cases have an equal chance of being selected from each day of the week. Case selection and case mix are monitored by the program on a weekly basis to ensure that the sampling is appropriate.

Sampling Process for General and Vascular Only

- Hospitals with a high volume of general and vascular surgery cases capture the first 40 consecutive cases meeting the inclusion/exclusion criteria in the 8-day cycle for a total of 1,680 cases annually.

- Hospitals participating in the general and vascular low-volume model are required to submit all general and vascular cases that meet the inclusion/exclusion criteria collected in the 8-day cycle. A minimum of 900 cases must be submitted annually.

Sampling Process for Multispecialty

- Hospitals participating in the multispecialty high-volume model must submit approximately 20% of each of the following subspecialties: general, gynecologic, neurologic, orthopaedic, otolaryngologic, plastic, cardiac[1], thoracic, urologic, and vascular. If 20% o[1]f the hospital's surgical volume is less than 1,680 cases annually, the hospital must submit a higher percentage of cases to reach a minimum of 1,680 cases annually.
- Hospitals participating in the multispecialty low-volume model must submit the maximum number of cases that meet the inclusion/exclusion criteria with a minimum of 900 cases submitted annually. For more information on the different methods for hospitals to participate in the ACS NSQIP, please visit the program Web site (www.acsnsqip.org).

Case Inclusion Criteria

The following inclusion criteria were applied to cases collected in 2005 and 2006. For the current inclusion/exclusion criteria please visit the following website: https://acsnsqip.org/main/program_case_inclusion_exclusion.asp.
The ACS NSQIP includes all Major Cases. Major Cases are defined as:

- Cases performed under the following anesthesia types:
  General
  Spinal
  Epidural
- The following cases *regardless* of anesthesia type:
  Carotid endarterectomy
  Inguinal herniorrhaphy
  Parathyroidectomy
  Thyroidectomy
  Breast lumpectomy
  Endovascular AAA repair

[1] A site that is currently submitting data to an established cardiac database may request an exemption for the submission of cardiac subspecialty data.

Case Exclusion Criteria

The following exclusion criteria were applied to cases collected in 2005 and 2006. For the current inclusion/exclusion criteria please visit the following website: https://acsnsqip.org/main/program_case_inclusion_exclusion.asp.

- Minor Cases (all cases that are not considered Major)
- Anesthesia Types not previously mentioned, such as:
  Monitored Anesthesia Care (also known as MAC)
  Peripheral Nerve Blocks
  Local Anesthesia
- Patients under the age of 16 years
- More than 5 inguinal herniorrhaphies in an 8-day period
- More than 5 breast lumpectomies in an 8-day period
- Trauma cases – specifically: A patient who is admitted to the hospital with acute trauma and has a surgical procedure(s) for that trauma will be excluded. Any operation performed after the patient has been discharged from the trauma stay will be included.
- Transplant cases – specifically: A patient who is admitted to the hospital for a transplant and has a transplant procedure and any additional surgical procedure during the transplant hospitalization will be excluded. Any operation performed after the patient has been discharged from the transplant stay will be included.
- ASA 6 (brain-dead organ donors)
- Concurrent case – an additional operative procedure performed by a different surgical team under the same anesthetic (for example, coronary artery bypass graft procedure on a patient who is also undergoing a carotid endarterectomy). An assessment is not required on the concurrent procedure; however, additional procedures would be repeated as "concurrent" in the operative section for the assessed case.
- Cases with CPT codes on the CPT Code Exclusion List
- SCNR on vacation. Each site is allowed to assign 4 of the 8-day cycles as vacation cycles and therefore does not need to collect cases during those cycles.

Hospital Exclusion Criteria

In addition to the case inclusion/exclusion criteria, hospital inclusion/exclusion criteria are also imposed. To maintain the highest level of data quality, only cases included in the observed-versus-expected ratio (O/E) analysis are included in the PUF. These cases go through an additional level of scrutiny as they are passed from data collection to

statistical analysis. A site is excluded from the O/E calculations and the PUF if the it fits any of the following criteria:

- 30-day follow-up rate is under 80%
- Inter-Rater Reliability Audit score is over 5%
- Fewer than 200 general and vascular cases combined or multispecialty surgical cases have been submitted that are eligible for analysis in the calendar year (See Case Inclusion/Exclusion criteria above)

6. Data Limitations

While every effort has been made to make the PUF as complete as possible, the data do have certain limitations. Some of these limitations have been deliberately introduced to safeguard the privacy of patients (such as removal of absolute dates). Other limitations are due to resource constraints (such as the collection of generic surgical variables only). The following items represent the most salient limitations of the data:

- Because such a wide variety of operations are tracked, the variables are necessarily generic in nature. This limitation may pose difficulties for researchers attempting in-depth research on specific conditions or operations.

- While the sex and race distributions are reasonably representative of the national surgery patient population, only patients over the age of 16 are available for assessment, so the age distribution is somewhat truncated. Patients over the age of 90 are also grouped into a 90+ category to prevent cases from being identifiable due to unique data.

- Patients are followed after surgery for a maximum of 30 days. Complications or death after that period are not included.

- In order to comply with HIPAA requirements, all absolute dates have been removed. The most critical of these is the date of surgery, which has been reduced to year of surgery only. Some dates (hospital entry, dates of laboratory tests, and so on) have been recoded into durations e.g. Date of Admission and Date of Discharge is recoded into Hospital Length of Stay.

- In order to comply with the Hospital Participation Agreement (HPA) that is agreed to between the ACS and participating sites, facility identifiers as well as geographic information regarding the case have been removed. The HPA stipulates that the ACS does not identify participating sites. Site identification

could be possible even with blinded identifiers through advanced statistics. A stipulation of access to the PUF is completion of the Data Use Agreement that strictly prohibits attempts to identify hospitals, health care providers, or patients.

- While many risk factors are tracked, preventative measures are not recorded, which can lead to an underestimation of the risk of certain conditions when such measures are routinely taken before surgery.

- The data are submitted from hospitals that are participating in the ACS NSQIP and do not represent a statistically valid nationally representative sample.

- Most patients do not receive all possible preoperative laboratory tests, so some of these variables have a high percentage of missing values (15% to 45%, depending on the tests). This high percentage of missing data can make it problematic to use these variables in a traditional logistic regression model as well as in many other types of analysis.

This list may not include all data limitations and additional limitations may apply in future versions of the data. Comments and suggestions for improvements are welcome and should be sent by e-mail to acsnsqip@facs.org.

7. Contact Information

Questions about the User's Guide or PUF may be directed to staff at the American College of Surgeons at acsnsqip@facs.org .

8. Frequently Asked Questions

Request Process

Q: Who has access to this file?
A: Any individual with an official appointment at a fully participating site will be given access to the file following completion of the Data Use Agreement and a short set of questions that are available on the Web site.

Q: Is the file available to individuals from nonparticipating sites?
A: At this time the data files are only available to individuals with official appointments at fully participating sites.

Q: I am at a participating site and would like to work on a research project with others from a different site that is not participating. Will I be allowed to do that?
A: No. At this time use of the file is restricted to individuals at fully participating sites.

Q: How do I obtain a copy of this file?
A: Please see the "Data Request Process" on page 1 of this document for a step-by-step approach on how to do so.

Contents of the Files

Q: What is in this file?
A: The file contains Health Insurance Portability and Accountability Act (HIPAA) de-identified data from sites participating in the ACS NSQIP that received O/E ratios in 2005 or 2006. Each record includes 239 variables. The variable name, variable label, data definition, and other pertinent information are provided in the following section (10. Data Variables and Definitions).

Q: Are site identifiers included in the database?
A: At this time we do not provide any geographic or site-specific identification. We took this approach to ensure the privacy of both the participating sites and surgeons.

Q: Are there surgeon-specific identifiers included in the database?
A: At this time we do not provide any surgeon-specific information. We took this approach to ensure the privacy of both the participating sites and surgeons.

Q: Why does the PUF exclude specific dates?
A: In order to release the PUF, certain adjustments to the data are required to ensure proper protection of patient information. The removal of all elements of date (except for year) for dates directly related to an individual is required. For more information on the 18 data elements that are required for removal, please visit http://privacyruleandresearch.nih.gov/ or (http://privacyruleandresearch.nih.gov/pdf/HIPAA_Booklet_4-14-2003.pdf).

Q: The ACS NSQIP program collects 136 variables, but the database contains 239 variables. What are the additional variables?
A: The additional variables contained in the PUF relate to computed durations. For example the admission and discharge dates are used to calculate hospital length of

stay. In addition, each complication in the ACS NSQIP requires the use of 3 different variables in the database. There are a few other data elements collected in the ACS NSQIP that require multiple variables in the database.

Q: I am the surgeon champion or surgical clinical nurse reviewer from a site that has records in the PUF and would like to know which specific records are ours.

A: You may contact the Technology Department of QCMetrix at 781-290-5900 to request a file that will contain the Case IDs from your facility.

Values in the Data

Q: For each of the following complications, Pneumonia, On Ventilator > 48 hours, Urinary Tract Infection, and Bleeding Transfusion, one case did not have a known duration from operation to complication. Why is that?

A: In each of these complications the case had an invalid date which inhibited the calculation of duration. The number of days from operation to complication variable is coded as -99 for these cases.

Q: I have obtained the Case_ID for the cases submitted from my hospital and I am trying to recreate our morbidity O/E ratio. I found a different number of cases with an observed morbidity than what was reported in the semiannual reports. Why?

A: There are three reasons why you may have found inconsistencies between the PUF and information reported in the semiannual reports. If you are performing analysis on the 2005 data and are including Organ/Space SSI complications in your observed count you will not find similar counts. Organ/Space SSI was not included in the morbidity model in 2005 because the variable was still being phased into the program. To reproduce the numbers found in the 2006 June semiannual report using the 2005 calendar year data, you will need to exclude Organ/Space SSI from your analysis.

Another reason that could account for the difference in the frequency of cases with a morbidity is that all complications that occurred more than 30 days postoperatively were excluded from the PUF. A small number of sites had been reporting complications that occurred after 30 days postoperatively. Over the 2005 to 2006 period, 97 complications (0.3% of all complications captured) were reported post 30 days and these complications effected the morbidity status of 7 cases from 6 sites in 2005 and 48 cases from 25 sites in 2006. These cases were inadvertently included in the analysis reported in the semiannual reports.

Recalculation of the sites' O/E ratio excluding the cases with complications that occurred more than 30 days postoperatively did not change any of the effected sites' outlier or non-outlier status and had a marginal effect on the O/E ratio. This issue has been resolved and will not effect future reports.

The third explanation for the discrepancy between the PUF and previously reported results relates to the SIRS, Sepsis, and Septic Shock variables. In 2005 and 2006 the SIRS, Sepsis, or Septic Shock complication that occurred closest to the date of surgery was included in the morbidity risk-adjusted analysis. So, for analysis purposes a case could only have one of the three complications and SIRS was not included in the morbidity risk-adjustment analysis due to reporting inconsistencies. Therefore in 2005 and 2006 if SIRS occurred before a Sepsis or Septic Shock complication on a case that only had a SIRS, Sepsis, or Septic Shock complication that case would not have had a morbidity for the morbidity risk-adjustment analysis. In 2007 the analysis approach towards these variables changed. Going forward the morbidity risk-adjusted analysis uses the most severe of the SIRS, Sepsis, or Septic Shock variable reported in the 30 day postoperative period. The PUF file reports whether the case experienced Sepsis or Septic Shock and these variables are not mutually exclusive. SIRS is not included in the PUF because it has shown to be inconsistently collected across sites.

If you have any questions about the above explanation please contact acsnsqip@facs.org.

Q: What are the probability scores for mortality and morbidity and how often are they calculated?

A: The probabilities of mortality and morbidity are provided in this database for general and vascular surgery cases in 2005 and 2006. These probabilities are derived using stepwise logistic regression analysis and were done so independently for the 2005 and 2006 calendar year data. They represent the probability (0 to1) that a case will experience a morbid or mortal event based on the pre-existing conditions. These probabilities are calculated every 6 months for the previous 12 months of data so the algorithm used to generate the predicted values changes over time as does the data used to create the algorithm.

Q: Which calculated probabilities of mortality and morbidity are supplied in this data set?

A: The probabilities of mortality and morbidity for general and vascular surgical cases used in the risk-adjusted analysis in 2005 and 2006 are provided. Future versions of the PUF will contain a more complete set of predictive values.

Q: Why are some general and vascular cases missing a predicted mortality and morbidity score?

A: In the June 2007 Semiannual Report, 8 hospitals received multispecialty O/E ratios. The multispecialty model used general and vascular cases that were not included in the general and vascular model due to volume restrictions. For example, a hospital participating in the multispecialty model might have had 100 general, 50 vascular and 100 other surgical cases from the other multispecialties collected. This hospital would not quality for the general and vascular O/E analysis because their general and vascular case volume was less than the minimum threshold of 200 cases. However, this hospital would be eligible for the multispeicalty O/E ratio and thus still eligible to be included in the PUF.

Q: Why doesn't the number of deaths in the PUF for 2005 match up with the number of deaths in the June 2006 Semiannual Report?

A: Some users encountered an unintentional functionality of the user interface which allowed them to update some of their cases after the lock date for the report. This action was discovered after the report had gone to print and no corrective action beyond informing the effected site was available. The data in the PUF is correct.

Q: Why do some of the preoperative lab values have a duration from lab to operation but a value of -99 for the lab value?

A: The results of the lab tests can be entered manually and thus are susceptible to data entry error. Depending on the preoperative lab variable roughly 1% of the cases had invalid values and these invalid values were set to -99 to simplify analysis. It is also possible that some cases have valid lab values but missing duration from lab to operation variable. This discrepancy is also related to a data entry error and the program continues to improve the data collection software to minimize the potential for data entry errors.

Q: When performing analysis on the five digit CPT codes in the Other and Concurrent variables how should I interpret those cases with a valid 5 digit CPT code but a CPT description set to NULL?

A: If the case has a valid 5 digit CPT code that procedure occurred and should be evaluated as such. The CPT description is a secondary variable and provided for convenience. In the processing of large amounts of data some descriptions are purposefully or inadvertently removed.

File Formats

Q: In what file formats are the data available?

A: The data files are made available in a tab delimited TXT file, an SPSS file, and an SAS file.

9. ACS NSQIP Publications

AS OF JUNE 2007

Atherly A, Fink AS, Campbell DC, et al. *Evaluating alternative risk-adjustment strategies for surgery.* Am J Surg 2004; 188(5):566-570.

Aust JB, Henderson W, Khuri S, et al. *The impact of operative complexity on patient risk factors.* Ann Surg 2005; 241(6):1024-1027; discussion 1027-1028.

Davenport DL, Bowe EA, Henderson WG, et al. *National Surgical Quality Improvement Program (NSQIP) risk factors can be used to validate American Society of Anesthesiologists physical status classification (ASA PS) levels.* Ann Surg 2006;243: 636-644.

Davenport DL, Henderson WG, Khuri SF, et al. *Preoperative risk factors and surgical complexity are more predictive of costs than postoperative complication: a case study using the National Surgical Quality Improvement Program (NSQIP) database*. Ann Surg 2005;242:463-471.

Davenport DL, Ferraris VA, Hosokawa P, et al. M*ultivariable predictors of postoperative cardiac events after general and vascular surgery: results from the Patient Safety in Surgery Study.* J Am Coll Surg 2007;204:1199-1210.

Devaney L, Rowell KS. *Improved surgical wound classification—why it matters.* AORN J 2004;80(2):208-209, 212-223.

Dimick JB, Chen SL, Taheri PA, et al. *Hospital costs associated with surgical complications: a report from the private-sector National Surgical Quality Improvement Program*. J Am Coll Surg 2004;199:531-537.

Dimick JB, Weeks WB, Karia RJ, et al. *Who pays for poor surgical quality? Building a business case for quality improvement.* J Am Coll Surg 2006;202:933-937.

El-Tamer MB, Ward BM, Schifftner T, et al. *Morbidity and mortality following breast cancer surgery in women: national benchmarks for the standards of care.* Ann Surg 2007 May;245(5):665-671.

Fink AS. *Evidence-based outcome data after hernia surgery: a possible role for the National Surgical Quality Improvement Program.* Am J Surg 2004;188(6A Suppl):30S-34S.

Fink AS, Campbell DA, Mentzer RM, et al. *The National Surgical Quality Improvement Program in non-Veterans Administration hospitals: initial demonstration of feasibility*. Ann Surg 2002;236:3:344-354.

Fink AS, Hutter MM, Campbell Jr DC, et al. *Comparison of risk-adjusted 30-day postoperative mortality and morbidity in Department of Veterans Affairs hospitals and selected university medical centers: general surgical operations in women*. J Am Coll Surg 2007;204:1127-1136.

Glasgow RE, Jackson HH, Neumayer L, et al. *Pancreatic resection in Veterans Affairs and selected university medical centers: results of the Patient Safety in Surgery Study.* J Am Coll Surg 2007;204:1252-1260.

Hall BL, Campbell Jr DA, Phillips LRS, et al. *Evaluating individual surgeons based on total hospital costs: evidence for variation in both total costs and volatility of costs.* J Am Coll Surg 2006;202:565-576.

Hall BL, Hirbe M, Yan Y, et al. *Thyroid and parathyroid operations in Veterans Affairs and selected university medical centers: results of the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1222-1234.

Hall, BL, Hamilton, BH. *New information technology systems and a Bayesian hierarchical bivariate probit model for profiling surgeon quality at a large hospital.* Quarterly Review of Economics and Finance 2004; 44: 410-429.

Henderson WG, Khuri SF, Mosca C, et al. *Comparison of risk-adjusted 30-day postoperative mortality and morbidity in Department of Veterans Affairs hospitals and selected university medical centers: general surgical operations in men*. J Am Coll Surg 2007;214:1103-1114.

Hua HT, Cambria RP, Chuang SK, et al. *Early outcomes of endovascular versus open abdominal aortic aneurysm repair in the NSQIP—Private Sector*. J Vasc Surg 2005;41:382-389.

Hutter MM, Randall S, Khuri SF, et al. *Laparoscopic versus open gastric bypass for morbid obesity: a multicenter, prospective, risk-adjusted analysis from the National Surgical Quality Improvement Program.* Ann Surg 2006;243:657-662; discussion 662-666.

Hutter MM, Lancaster RT, Henderson WG, et al. *Comparison of risk-adjusted 30-day postoperative mortality and morbidity in Department of Veterans Affairs hospitals and selected university medical centers: vascular surgical operations in men.* J Am Coll Surg 2007;204:1115-1126.

Johnson RG, Wittgen CM, Hutter MM, et al. *Comparison of risk-adjusted 30-day postoperative mortality and morbidity in Department of Veterans Affairs hospitals and selected university medical centers: vascular surgical operations in women*. J Am Coll Surg 2007;204:1137-1146.

Johnson RG, Arozullah AM, Neumayer L, et al. *Multivariable predictors of postoperative respiratory failure after general and vascular surgery: results from the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1188-1198.

Jones RS, Brown C, Opelka F. *Surgeon compensation: "pay for performance," the American College of Surgeons National Surgical Quality Improvement Program, the Surgical Care Improvement Program, and other considerations.* Surgery 2005;138:829-836.

Khuri SF, Henderson WG. *The Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1087-1088.

Khuri SF, Henderson WG, Daley J, et al. *The Patient Safety in Surgery Study background, study design, and patient populations*. J Am Coll Surg 2007;204:1089-1102.

Khuri SF, Henderson WG, Daley J, et al. *Successful implementation of the Department of Veterans Affairs' NSQIP in the private sector: the Patient Safety in Surgery Study.* N Engl J Med (submitted).

Kim L, Mabry C, Klimberg VS. *Quality of benchmarks for assessment of care will influence outcome*. Ann Surg 2007 ;245(5):642-643.

Lancaster RT, Tanabe KK, Schifftner TL, et al. *Liver resection in Veterans Affairs and selected university medical centers: results of the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1242-1251.

Lautz DB, Jackson TD, Clancy KA, et al. *Bariatric operations in Veterans Affairs and selected university medical centers: results of the Patient Safety in Surgery Study.* J Am Coll Surg 2007;204:1261-1272.

Main DS, Cavender TA, Nowels CT, et al. *Relationship of processes and structures of care in general surgery to postoperative outcomes: a qualitative analysis*. J Am Coll Surg 2007;204:1147-1156.

Main DS, Cavender TA, Pratte K, et al. *Relationship of processes and structures of care in general surgery to postoperative outcomes: a descriptive analysis*. J Am Coll Surg 2007;204:1157-1165.

Neumayer L, Hosokawa P, Itani K, et al. *Multivariable predictors of postoperative surgical site infection after general and vascular surgery: results from the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1178-1187.

Neumayer L, Schifftner TL, Henderson WG, et al. *Breast cancer surgery in Veterans Affairs and selected university medical center: results of the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1235-1241.

Rogers SO, Kilaru RK, Hosokawa P, et al. *Multivariable predictors of postoperative venous thromboembolic events after general and vascular surgery: results from the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1211-1221.

Rowell KS, Turrentine FE, Hutter MM, et al. *Use of National Surgical Quality Improvement Program data as a catalyst for quality improvement*. J Am Coll Surg 2007;204:1293-1300.

Schifftner TL, Grunwald GK, Henderson WG, et al. *Relationship of processes and structures of care in general surgery to postoperative outcomes: a hierarchical analysis*. J Am Coll Surg 2007;204:1166-1177.

Stoner MC, Abbott WM, Wong DR, et al. *Defining the high-risk patient for carotid endarterectomy: an analysis of the prospective National Surgical Quality Improvement Program database*. J Vasc Surg 2006;43:285-296.

Turrentine FE, Henderson WG, Khuri SF, et al. *Andrenalectomy in Veterans Affairs and selected university medical centers: results of the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1273-1283.

Virani S, Michaelson JS, Hutter MM, et al. *Morbidity and mortality after liver resection: results from the Patient Safety in Surgery Study*. J Am Coll Surg 2007;204:1284-1292.

10. Data Variables and Definitions

The tables on the following page provide information on the variable position, variable name, data type (numeric or character), length of data field, variable label, variable definition, variable options at entry when appropriate, and comments. The comments column provides a description of what -99 or NULL represents for each variable as there is some slight variation. All complication variables or death variables refer to whether the patient developed the complication or died within 30 days post operation.

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
1	CaseID	Num	8	Identification Number	Each case or record in the database has a unique CaseID number.		
2	SEX	Char	6	Gender	Gender	Male; Female	NULL = Unknown
3	RACE	Char	32	Race	Race	Hispanic, White	
						Hispanic, Black	
						Hispanic, Color Unknown	
						Black, not of Hispanic Origin	
						White, not of Hispanic Origin	
						American Indian or Alaska Native	
						Asian or Pacific Islander	
						Unknown	
4	PRNCPTX	Char	64	Principal operative procedure CPT code description	The principal operative procedure is the most complex of all the procedures performed by the primary operating team during the trip to the operating room. Additional procedures requiring separate CPT codes and/or concurrent procedures will be entered separately in the “Other Procedures” or “Concurrent Procedures” categories.		
5	CPT	Char	5	CPT Code	The CPT code of the principal operative procedure.		
6	WORKRVU	Num	8	Work Relative Value Unit	Work Relative Value Unit		-99 = Unknown
7	INOUT	Char	10	Inpatient/outpatient	The hospital’s definition of inpatient and outpatient status.	Outpatient; Inpatient	
8	TRANST	Char	27	Transfer status	The patient's transfer status which includes the following options: Admitted directly from home (Includes patients arriving from another hospital's emergency department); If the patient was transferred from another facility and was considered an inpatient at that facility Acute Care Hospital, VA Acute Care Hospital, Chronic Care Facility, and VA Chronic Care Facility are acceptable. If the kind of facility could not be determined ‘Other’ is entered.	Admitted directly from home	
						Acute Care Hospital	
						VA Acute Care Hospital	
						Chronic Care Facility	
						VA Chronic Care Facility	
						Other	
9	Age	Char	4	Age of patient with patients over 89 coded as 90+	Age of patient with patients over 89 coded as 90+. No patients under 15 are included.		-99 = Unknown
10	AdmYR	Num	8	Year of Hospital Admission	Year of admission to the hospital		
11	AdmSYR	Num	8	Year of Admission to Surgery	Year of admission to the surgical service		
12	OperYR	Num	8	Year of Operation	Year the surgical procedure is performed		
13	ANESTHES	Char	25	Principal anesthesia technique	The principal anesthesia technique used. General anesthesia takes precedence over all other forms of anesthesia.	General	
						Epidural	
						Spinal	
						Regional	
						Local	
						Monitored anesthesia care (MAC)	
						Other	
						None	
14	ATTEND	Char	40	Level of Residency Supervision	Highest level of supervision provided by the attending staff surgeon for the case. Attending alone: Staff practitioner performed the procedure; resident not present; Attending in OR: Staff practitioner is scrubbed and present in the procedure/operating room; Attending in OR Suite: Staff practitioner is present in the procedural/surgical suite and available for consultation; Attending Not Present, but Available: Staff practitioner is not present, but immediately available on campus.	Attending Alone	
						Attending in OR	
						Attending in OR Suite	
						Attending Not Present, but Available	
						Not entered	
15	SURGSPEC	Char	20	Surgical Specialty	The surgical specialty of the primary surgeon performing the procedure.	General Surgery	
						Vascular	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
						Thoracic Orthopedics Neurosurgery Urology Otolaryngology (ENT) Plastics Ophthalmology Oral Surgery Podiatry Gynecology	
16	HEIGHT	Num	8	Height	The patient's most recent height documented in the medical record in inches (in).		-99 = Unknown
17	WEIGHT	Num	8	Weight	The patient's most recent weight documented in the medical record in pounds (lbs).		-99 = Unknown
18	DIABETES	Char	7	Diabetes mellitus with oral agents or insulin	The treatment regimen of the patient's chronic, long-term management. Diabetes mellitus is a metabolic disorder of the pancreas whereby the individual requires daily dosages of exogenous parenteral insulin or an oral hypoglycemic agent to prevent a hyperglycemia/metabolic acidosis. A patient is not included if diabetes is controlled by diet alone. No: no diagnosis of diabetes or diabetes controlled by diet alone; Oral: a diagnosis of diabetes requiring therapy with an oral hypoglycemic agent; Insulin: a diagnosis of diabetes requiring daily insulin therapy.	No; Oral; Insulin	
19	SMOKE	Char	3	Current smoker within one year	If the patient has smoked cigarettes in the year prior to admission for surgery "YES" entered. Patients who smoke cigars or pipes or use chewing tobacco are not included.	Yes; No	
20	PACKS	Num	8	Pack-years of smoking	If the patient has ever been a smoker, the total number of pack/years of smoking for this patient is provided. Pack-years are defined as the number of packs of cigarettes smoked per day times the number of years the patient has smoked. If the patient has never been a smoker, "0" is entered. If pack-years are > 200, 200 is entered. If smoking history cannot be determined, "-99" is entered. The possible range for number of pack-years is 0 to 200. If the chart documents differing values for pack year cigarette history or ranges for either packs per day or number of years patient has smoked, the highest value is documented.		
21	ETOH	Char	3	EtOH > 2 drinks/day in 2 wks before admission	"YES" is entered if 2 drinks per day in the two weeks prior to admission: The patient admits to drinking >2 ounces of hard liquor or > two 12 oz. cans of beer or > two 6 oz. glasses of wine per day in the two weeks prior to admission. If the patient is a binge drinker, the numbers of drinks during the binge are divided by seven days and then the definition is applied.	Yes; No	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
22	DYSPNEA	Char	17	Dyspnea	"YES" is entered if the patient described difficult, painful, or labored breathing. Dyspnea may be symptomatic of numerous disorders that interfere with adequate ventilation or perfusion of the blood with oxygen. The dyspneic patient is subjectively aware of difficulty with breathing. One of the following categories are selected that best indicates the patient's subjective experience coupled with objective assessment: The time frame is at the time the patient is being considered as a candidate for surgery (which is no longer than 30 days prior to surgery). If the patient's dyspnea status worsens prior to surgery, most severe is reported.	No; Moderate exertion; At rest	
23	DNR	Char	3	Do not resuscitate (DNR) status	"YES" is entered if the patient has had a Do-Not-Resuscitate (DNR) order written in the physician's order sheet of the patient's chart and it has been signed or co-signed by an attending physician in the 30 days prior to surgery. If the DNR order as defined above was rescinded immediately prior to surgery in order to operate on the patient, "YES" is entered. "NO" is entered if DNR discussions are documented in the progress note, but no official DNR order has been written in the physician order sheet or if the attending physician has not signed the official order.	Yes; No	
24	FNSTATUS1	Char	19	Functional health status Prior to Current Illness	This variable focuses on the patient's abilities to perform activities of daily living (ADLs) in the 30 days prior to surgery. Activities of daily living are defined as 'the activities usually performed in the course of a normal day in a person's life'. ADLs include: bathing, feeding, dressing, toileting, and mobility. The corresponding level of self-care for activities of daily living demonstrated by the patient for the following two time points are reported: (a) prior to the current illness, and (b) at the time the patient is being considered as a candidate for surgery (which is no longer than 30 days prior to surgery). If the patient's status changes prior to surgery, the change is reflected in the assessment of (b). For each of these time points, the level of functional health status as defined by the following criteria is reported. All patients with psychiatric illnesses are evaluated for their ability to function with or without assistance with ADLs just as the non-psychiatric patient. For instance, if a patient with schizophrenia is able to care for him/herself without the assistance of nursing care, he/she is considered independent. Independent: The patient does not require assistance from another person for any activities of daily living. This includes a person who is able to function independently with prosthetics, equipment, or devices; Partially dependent: The patient requires some assistance from another person for activities of daily living. This includes a person who utilizes prosthetics, equipment, or devices but still requires some assistance from another person for ADLs; Totally dependent: The patient requires total assistance for all activities of daily living.	Independent Partially dependent Totally dependent	NULL = Unknown
25	FNSTATUS2	Char	19	Functional health status Prior to Surgery	Refer to "Functional health status Prior to Current Illness" Definition		
26	VENTILAT	Char	3	Ventilator dependent	"YES" is entered if a preoperative patient required ventilator-assisted respiration at any time during the 48 hours preceding surgery. This does not include the treatment of sleep apnea with CPAP.	Yes; No	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
27	HXCOPD	Char	3	History of severe COPD	"YES" is entered for patients with chronic obstructive pulmonary disease (such as emphysema and/or chronic bronchitis) resulting in any one or more of the following: -Functional disability from COPD (e.g., dyspnea, inability to perform ADLs) -Hospitalization in the past for treatment of COPD -Requires chronic bronchodilator therapy with oral or inhaled agents. -An FEV_1 of <75% of predicted on pulmonary function testing. Patients are not included whose only pulmonary disease is asthma, an acute and chronic inflammatory disease of the airways resulting in bronchospasm. Patients are not included with diffuse interstitial fibrosis or sarcoidosis.	Yes; No	
28	CPNEUMON	Char	3	Current pneumonia	"YES" is entered for patients who have evidence of pneumonia at the time the patient is brought to the OR. Patients with pneumonia must meet ONE of the following two criteria: **Criterion 1.** Rales or dullness to percussion on physical examination of chest AND any of the following: a. New onset of purulent sputum or change in character of sputum b. Organism isolated from blood culture c. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing, or biopsy **OR Criterion 2.** Chest radiographic examination shows new or progressive infiltrate, consolidation, cavitation, or pleural effusion AND any of the following: a. New onset of purulent sputum or change in character of sputum b. Organism isolated from blood culture c. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing, or biopsy d. Isolation of virus or detection of viral antigen in respiratory secretions. e. Diagnostic single antibody titer (IgM) or fourfold increase in paired serum samples (IgG) for pathogen f. Histopathologic evidence of pneumonia.	Yes; No	
29	ASCITES	Char	3	Ascites	"YES" is entered for patients with the presence of fluid accumulation in the peritoneal cavity noted on physical examination, abdominal ultrasound, or abdominal CT/MRI within 30 days prior to the operation.	Yes; No	
30	ESOVAR	Char	3	Esophageal varices	"YES" is entered for patients with esophageal varices present preoperatively and documented on an EGD or CT scan performed within 6 months prior to the surgical procedure. Esophageal varices are engorged collateral veins in the esophagus that bypass a scarred liver to carry portal blood to the superior vena cava. A sustained increase in portal pressure results in esophageal varices that are most frequently demonstrated by direct visualization at esophagoscopy.	Yes; No	
31	HXCHF	Char	3	Congestive heart failure (CHF) in 30 days before surgery	"YES" is entered in patients with congestive heart failure. Congestive heart failure is the inability of the heart to pump a sufficient quantity of blood to meet the metabolic needs of the body or can do so only at increased ventricular filling pressure. Only newly diagnosed CHF within the previous 30 days or a diagnosis of chronic CHF with new signs or symptoms in the 30 days prior to surgery fulfills this definition. Common manifestations are: -Abnormal limitation in exercise tolerance due to dyspnea or fatigue -Orthopnea (dyspnea on lying supine) -Paroxysmal nocturnal dyspnea (PND-awakening from sleep with dyspnea) -Increased jugular venous pressure -Pulmonary rales on physical examination -Cardiomegaly -Pulmonary vascular engorgement.	Yes; No	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
32	HXMI	Char	3	History of myocardial infarction 6 mos prior to surgery	"Yes" is entered for patients with a history of a non-Q wave or a Q wave infarct in the six months prior to surgery as diagnosed in the patient's medical record.	Yes; No	
33	PRVPCI	Char	3	Previous PCI	"YES" is entered for patient who have undergone percutaneous coronary intervention (PCI) at any time (including any attempted PCI). This includes either balloon dilatation or stent placement. This does not include valvuloplasty procedures.	Yes; No	
34	PRVPCS	Char	3	Previous cardiac surgery	"YES" is entered if the patient has had any major cardiac surgical procedures (performed either as an 'off-pump' repair or utilizing cardiopulmonary bypass). This includes coronary artery bypass graft surgery, valve replacement or repair, repair of atrial or ventricular septal defects, great thoracic vessel repair, cardiac transplant, left ventricular aneurysmectomy, insertion of left ventricular assist devices (LVAD), etc. Not include are pacemaker insertions or automatic implantable cardioverter defibrillator (AICD) insertions.	Yes; No	
35	HXANGINA	Char	3	History of angina in 1 month before surgery	"YES" is entered if patient reports pain or discomfort between the diaphragm and the mandible resulting from myocardial ischemia. Typically angina is a dull, diffuse (fist-sized or larger) substernal chest discomfort precipitated by exertion or emotion and relieved by rest or nitroglycerine. Radiation to the arms and shoulders often occurs, and occasionally to the neck, jaw (mandible, not maxilla), or interscapular region. For patients on anti-anginal medications, 'YES' is entered only if the patient has had angina at any time within one month prior to surgery.	Yes; No	
36	HYPERMED	Char	3	Hypertension requiring medication	"YES" is entered for patients with a persistent elevation of systolic blood pressure > 140 mm Hg or a diastolic blood pressure > 90 mm Hg or requires an antihypertensive treatment (e.g., diuretics, beta blockers, ACE inhibitors, calcium channel blockers) at the time the patient is being considered as a candidate for surgery (which should be no longer than 30 days prior to surgery).	Yes; No	
37	HXPVD	Char	3	History of revascularization/amputation for periph. vascular disease	"YES" is entered for a patient with any type of angioplasty (including stent placement) or revascularization procedure for atherosclerotic peripheral vascular disease (PVD) (e.g., aorta-femoral, femoral-femoral, femoral-popliteal) or a patient who has had any type of amputation procedure for PVD (e.g., toe amputations, transmetatarsal amputations, below the knee or above the knee amputations). Patients who have had amputation for trauma or a resection of abdominal aortic aneurysms should not be included.	Yes; No	
38	RESTPAIN	Char	3	Rest pain/gangrene	"YES" is entered for a patient with rest pain or Gangrene. Rest pain is a more severe form of ischemic pain due to occlusive disease, which occurs at rest and is manifested as a severe, unrelenting pain aggravated by elevation and often preventing sleep. Gangrene is a marked skin discoloration and disruption indicative of death and decay of tissues in the extremities due to severe and prolonged ischemia. Patients included with ischemic ulceration and/or tissue loss related to peripheral vascular disease. Fournier's gangrene are not included.	Yes; No	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
39	RENAFAIL	Char	3	Acute renal failure	"YES" is entered if the patient has the clinical condition associated with rapid, steadily increasing azotemia (increase in BUN) and a rising creatinine of above 3 mg/dl. Acute renal failure should be noted within 24 hours prior to surgery.	Yes; No	
40	DIALYSIS	Char	3	Currently on dialysis (pre-op)	"YES" is entered if the patient has acute or chronic renal failure requiring treatment with peritoneal dialysis, hemodialysis, hemofiltration, hemodiafiltration, or ultrafiltration within 2 weeks prior to surgery.	Yes; No	
41	IMPSENS	Char	3	Impaired sensorium	"YES" is entered if patient is acutely confused and/or delirious and responds to verbal and/or mild tactile stimulation. Patients is noted to have developed an impaired sensorium if they have mental status changes, and/or delirium in the context of the current illness. Patients with chronic or long-standing mental status changes secondary to chronic mental illness (e.g., schizophrenia) or chronic dementing illnesses (e.g., multi-infarct dementia, senile dementia of the Alzheimer's type) are not included. This assessment of the patient's mental status is within 48 hours prior to the surgical procedure. Example: A patient is admitted to the orthopedics service after a fall with a fractured hip. The patient is also noted to be dehydrated and febrile. He is disoriented to place and time and seems confused. His family reports that he has been oriented and alert prior to the fall. This patient has an impaired sensorium on the basis of his confusion and disorientation.	Yes; No	
42	COMA	Char	3	Coma >24 hours	"YES" is entered if patient is unconscious, or postures to painful stimuli, or is unresponsive to all stimuli entering surgery. This does not include drug-induced coma.	Yes; No	
43	HEMI	Char	3	Hemiplegia	"YES" is entered if patient has sustained acute or chronic neuromuscular injury resulting in total or partial paralysis or paresis (weakness) of one side of the body. 'YES' is entered if the patient has hemiplegia/hemiparesis (that has not recovered or been rehabilitated) upon arrival to the OR. "YES" is entered, if there is hemiplegia or hemiparesis associated with a CVA/Stroke also.	Yes; No	
44	HXTIA	Char	3	History of transient ischemic attacks (TIA)	"YES" is entered if patient has transient ischemic attacks (TIAs). TIAs are focal neurologic deficits (e.g. numbness of an arm or amaurosis fugax) of sudden onset and brief duration (usually <30 minutes) that usually reflects dysfunction in a cerebral vascular distribution. These attacks may be recurrent and, at times, may precede a stroke.	Yes; No	
45	CVA	Char	3	CVA/Stroke with neurological deficit	"YES" is entered if patient has a history of a cerebrovascular accident (embolic, thrombotic, or hemorrhagic) with persistent residual motor, sensory, or cognitive dysfunction. (e.g., hemiplegia, hemiparesis, aphasia, sensory deficit, impaired memory). If the neurological deficit is hemiplegia/hemiparesis, 'YES' is entered to Hemiplegia/Hemiparesis in addition to CVA/Stroke.	Yes; No	
46	CVANO	Char	3	CVA/Stroke with no neurological deficit	"YES" is entered if the patient has a history of a cerebrovascular accident (embolic, thrombotic, or hemorrhagic) with neurologic deficit(s) lasting at least 30 minutes, but no current residual neurologic dysfunction or deficit.	Yes; No	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
47	TUMORCNS	Char	3	Tumor involving CNS	"YES" is entered if patient has a space-occupying tumor of the brain or spinal cord, which may be benign (e.g., meningiomas, ependymoma, oligodendroglioma) or primary (e.g., astrocytoma, glioma, glioblastoma multiform) or secondary malignancies (e.g., metastatic lung, breast, malignant melanoma). Other tumors that may involve the CNS include lymphomas and sarcomas. "YES" is entered even if the tumor was not treated.	Yes; No	
48	Para	Char	3	Paraplegia	"YES" is entered if the patient has sustained acute or chronic neuromuscular injury resulting in total or partial paralysis or paresis (weakness) of the lower extremities.	Yes; No	
49	QUAD	Char	3	Quadriplegia	"YES" is entered if the patient has sustained acute or chronic neuromuscular injury resulting in total or partial paralysis or paresis (weakness) of all four extremities.	Yes; No	
50	DISCANCR	Char	3	Disseminated cancer	"YES" is entered for patients who have cancer that: (1) Has spread to one site or more sites in addition to the primary site AND (2) In whom the presence of multiple metastases indicates the cancer is widespread, fulminant, or near terminal. The following are reported as Disseminated Cancer: Acute Lymphocytic Leukemia (ALL), Acute Myelogenous Leukemia (AML), and Stage IV Lymphoma. The following are not reported as Disseminated Cancer: Chronic Lymphocytic Leukemia (CLL), Chronic Myelogenous Leukemia (CML), Stages I through III Lymphomas or Multiple Myeloma. Example: A patient with a primary breast cancer with positive nodes in the axilla does NOT qualify for this definition. She has spread of the tumor to a site other than the primary site, but does not have widespread metastases. A patient with primary breast cancer with positive nodes in the axilla AND liver metastases does qualify, because she has both spread of the tumor to the axilla and other major organs.	Yes; No	
51	WNDINF	Char	3	Open wound/wound infection	"YES" is entered for patietns with evidence of an open wound that communicates to the air by direct exposure, with or without cellulitis or purulent exudate. This does not include osteomyelitis or localized abscesses.	Yes; No	
52	STEROID	Char	3	Steroid use for chronic condition	"YES" is entered for patient who required regular administration of oral or parenteral **corticosteroid** medications (e.g., Prednisone, Decadron) in the 30 days prior to surgery for a chronic medical condition (e.g., COPD, asthma, rheumatologic disease, rheumatoid arthritis, inflammatory bowel disease). Topical corticosteroids applied to the skin or corticosteroids administered by inhalation or rectally are not included. Patients who only receive short course steroids (duration 10 days or less) in the 30 days prior to surgery are not included.	Yes; No	
53	WTLOSS	Char	3	>10% loss body weight in last 6 months	"YES" is entered for patients with a greater than 10% decrease in body weight in the six month interval immediately preceding surgery as manifested by serial weights in the chart, as reported by the patient, or as evidenced by change in clothing size or severe cachexia. Patients who have intentionally lost weight as part of a weight reduction program do not qualify.	Yes; No	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
54	BLEEDDIS	Char	3	Bleeding disorders	"YES" is entered for patients with any condition that places the patient at risk for excessive bleeding requiring hospitalization due to a deficiency of blood clotting elements (e.g., vitamin K deficiency, hemophilias, thrombocytopenia, chronic anticoagulation therapy that has not been discontinued prior to surgery) Patients not included who are on chronic aspirin therapy. If there is **no** documentation of **discontinuation** of medication, "YES" is entered for bleeding disorder.	Yes; No	
55	TRANSFUS	Char	3	Transfusion >4 units PRBCs in 72 hours before surgery	"YES" is entered for patients with preoperative loss of blood necessitating a minimum of 5 units of whole blood/packed red cells transfused during the 72 hours prior to surgery including any blood transfused in the emergency room.	Yes; No	
56	CHEMO	Char	3	Chemotherapy for malignancy in <= 30 days pre-op	"YES" entered if the patient had any chemotherapy treatment for cancer in the 30 days prior to surgery. Chemotherapy may include, but is not restricted to, oral and parenteral treatment with chemotherapeutic agents for malignancies such as colon, breast, lung, head and neck, and gastrointestinal solid tumors as well as lymphatic and hematopoietic malignancies such as lymphomas, leukemia, and multiple myeloma. Patient is not included if treatment consists solely of hormonal therapy.	Yes; No	
57	RADIO	Char	3	Radiotherapy for malignancy in last 90 days	"YES" entered if the patient had any radiotherapy treatment for cancer in the 90 days prior to surgery. Count If the patient had radiation seeds implanted and the implantation was within 90 days prior to the operation.	Yes; No	
58	PRSEPIS	Char	12	Preoperative Systemic Sepsis	Sepsis is a vast clinical entity that takes a variety of forms. The spectrum of disorders spans from relatively mild physiologic abnormalities to septic shock. The most significant level is reported using the following criteria: **SIRS** (Systemic Inflammatory Response Syndrome): SIRS is a widespread inflammatory response to a variety of severe clinical insults. This syndrome is clinically recognized by the presence of two or more of the following within the same time frame: Temp >38 degrees C or <36 degrees C HR >90 bpm RR >20 breaths/min or PaCO2 <32 mmHg(<4.3 kPa) WBC >12,000 cell/mm3, <4000 cells/mm3, or >10% immature (band) forms Anion gap acidosis: this is defined by either: [Na + K] – [CL + HCO3 (or serum CO2]. If this number is greater than 16, then an anion gap acidosis is present. Na – [CL + HCO3 (or serum CO2].	SIRS; Sepsis; Sever Sepsis/Septic Shock; None	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
					If this number is greater than 12, then An anion gap acidosis is present. **Sepsis**: Sepsis is the systemic response to infection. This variable reported if the patient has clinical signs and symptoms of SIRS listed above and one of the following: . Positive blood culture. Clinical documentation of purulence or positive culture from any site thought to be causative; **Severe Sepsis/Septic Shock**: Sepsis is considered severe when it is associated with organ and/or circulatory dysfunction. This variable reported if the patient has the clinical signs and symptoms of SIRS or sepsis AND documented organ and/or circulatory dysfunction. Examples of organ dysfunction include: oliguria, acute alteration in mental status, acute respiratory distress. Examples of circulatory dysfunction include: hypotension, requirement of inotropic or vasopressor agents.		
59	Pregnancy	Char	7	Pregnancy	"YES" entered if pregnant. Pregnancy is determined by one of the following: . Administration of a blood or urine pregnancy test with a positive result . Visualization of the fetus by ultrasound . Indication of fetal heart rate by ultrasound or fetal heart monitoring Pregnancy takes approximately 40 weeks between the time of the last menstrual cycle and delivery.	Yes; No; Unknown	NULL = Not applicable or not documented because variable was added in July 2006
60	PrOper30	Char	4	Prior Operation within 30 days	"YES" entered if the patient has had any major surgical procedure performed within 30 days prior to the assessed operation that would meet the following NSQIP criteria: Operation was performed utilizing general, spinal, or epidural anesthesia or operation performed included any of the following: carotid endarterectomy, inguinal hernia repair, parathyroidectomy, thyroidectomy, breast lumpectomy, or endovascular AAA repair Operation was not listed on the NSQIP CPT Exclusion list. Also **included** are any transplant procedures or trauma procedures if performed within 30 days prior to the assessed operation.	Yes; No	NULL = Not applicable or not documented because variable was added in July 2006
61	DPRNA	Num	8	Days from Na Preoperative Labs to Operation	Days from Na Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
62	DPRBUN	Num	8	Days from BUN Preoperative Labs to Operation	Days from BUN Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
63	DPRCREAT	Num	8	Days from Creatinine Preoperative Labs to Operation	Days from Creatinine Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
64	DPRALBUM	Num	8	Days from Albumin Preoperative Labs to Operation	Days from Albumin Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
65	DPRBILI	Num	8	Days from Bilirubin Preoperative Labs to Operation	Days from Bilirubin Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
66	DPRSGOT	Num	8	Days from SGOT Preoperative Labs to Operation	Days from SGOT Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
67	DPRALKPH	Num	8	Days from ALKPHOS Preoperative Labs to Operation	Days from ALKPHOS Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
68	DPRWBC	Num	8	Days from WBC Preoperative Labs to Operation	Days from WBC Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
69	DPRHCT	Num	8	Days from HCT Preoperative Labs to Operation	Days from HCT Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
70	DPRPLATE	Num	8	Days from PlateCount Preoperative Labs to Operation	Days from PlateCount Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
71	DPRPTT	Num	8	Days from PTT Preoperative Labs to Operation	Days from PTT Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
72	DPRPT	Num	8	Days from PT Preoperative Labs to Operation	Days from PT Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
73	DPRINR	Num	8	Days from INR Preoperative Labs to Operation	Days from INR Preoperative Labs to Operation		-99 = Lab value not obtained or Unknown
74	PRSODM	Num	8	Pre-operative serum sodium	Pre-operative serum sodium		-99 = Lab value not obtained or Unknown
75	PRBUN	Num	8	Pre-operative BUN	Pre-operative BUN		-99 = Lab value not obtained or Unknown
76	PRCREAT	Num	8	Pre-operative serum creatinine	Pre-operative serum creatinine		-99 = Lab value not obtained or Unknown
77	PRALBUM	Num	8	Pre-operative serum albumin	Pre-operative serum albumin		-99 = Lab value not obtained or Unknown
78	PRBILI	Num	8	Pre-operative total bilirubin	Pre-operative total bilirubin		-99 = Lab value not obtained or Unknown
79	PRSGOT	Num	8	Pre-operative SGOT	Pre-operative SGOT		-99 = Lab value not obtained or Unknown
80	PRALKPH	Num	8	Pre-operative alkaline phosphatase	Pre-operative alkaline phosphatase		-99 = Lab value not obtained or Unknown
81	PRWBC	Num	8	Pre-operative WBC	Pre-operative WBC		-99 = Lab value not obtained or Unknown
82	PRHCT	Num	8	Pre-operative hematocrit	Pre-operative hematocrit		-99 = Lab value not obtained or Unknown
83	PRPLATE	Num	8	Pre-operative platelet count	Pre-operative platelet count		-99 = Lab value not obtained or Unknown
84	PRPTT	Num	8	Pre-operative PTT	Pre-operative PTT		-99 = Lab value not obtained or Unknown
85	PRINR	Num	8	Pre-operative International Normalized Ratio (INR) of PT values	Pre-operative International Normalized Ratio (INR) of PT values		-99 = Lab value not obtained or Unknown
86	PRPT	Num	8	Pre-operative PT	Pre-operative PT		-99 = Lab value not obtained or Unknown
87	OTHERPROC1	Char	128	Other Procedure 1	An additional operative procedure performed by the **same surgical team** (i.e., the same specialty/service) **under the same anesthetic** which has a CPT code different from that of the Principal Operative Procedure (e.g., a splenectomy performed in the course of a cholecystectomy). **ALL additional procedures/CPT codes for the OR visit are reported.**		NULL = No Procedure
88	OTHERCPT1	Char	5	Other CPT Code 1	CPT Code		NULL = No Procedure
89	OTHERWRVU1	Num	8	Other Work Relative Value Unit 1	Other Work Relative Value Unit 1		-99 = No Procedure/Unknown
90	OTHERPROC2	Char	128	Other Procedure 2	See 'Other Procedure 1'		NULL = No Procedure
91	OTHERCPT2	Char	5	Other CPT Code 2	CPT Code		NULL = No Procedure
92	OTHERWRVU2	Num	8	Other Work Relative Value Unit 2	Other Work Relative Value Unit 2		-99 = No Procedure/Unknown

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
93	OTHERPROC3	Char	128	Other Procedure 3	See 'Other Procedure 1'		NULL = No Procedure
94	OTHERCPT3	Char	5	Other CPT Code 3	CPT Code		NULL = No Procedure
95	OTHERWRVU3	Num	8	Other Work Relative Value Unit 3	Other Work Relative Value Unit 3		-99 = No Procedure/Unknown
96	OTHERPROC4	Char	128	Other Procedure 4	See 'Other Procedure 1'		NULL = No Procedure
97	OTHERCPT4	Char	5	Other CPT Code 4	CPT Code		NULL = No Procedure
98	OTHERWRVU4	Num	8	Other Work Relative Value Unit 4	Other Work Relative Value Unit 4		-99 = No Procedure/Unknown
99	OTHERPROC5	Char	128	Other Procedure 5	See 'Other Procedure 1'		NULL = No Procedure
100	OTHERCPT5	Char	5	Other CPT Code 5	CPT Code		NULL = No Procedure
101	OTHERWRVU5	Num	8	Other Work Relative Value Unit 5	Other Work Relative Value Unit 5		-99 = No Procedure/Unknown
102	OTHERPROC6	Char	128	Other Procedure 6	See 'Other Procedure 1'		NULL = No Procedure
103	OTHERCPT6	Char	5	Other CPT Code 6	CPT Code		NULL = No Procedure
104	OTHERWRVU6	Num	8	Other Work Relative Value Unit 6	Other Work Relative Value Unit 6		-99 = No Procedure/Unknown
105	OTHERPROC7	Char	128	Other Procedure 7	See 'Other Procedure 1'		NULL = No Procedure
106	OTHERCPT7	Char	5	Other CPT Code 7	CPT Code		NULL = No Procedure
107	OTHERWRVU7	Num	8	Other Work Relative Value Unit 7	Other Work Relative Value Unit 7		-99 = No Procedure/Unknown
108	OTHERPROC8	Char	128	Other Procedure 8	See 'Other Procedure 1'		NULL = No Procedure
109	OTHERCPT8	Char	5	Other CPT Code 8	CPT Code		NULL = No Procedure
110	OTHERWRVU8	Num	8	Other Work Relative Value Unit 8	Other Work Relative Value Unit 8		-99 = No Procedure/Unknown
111	OTHERPROC9	Char	128	Other Procedure 9	See 'Other Procedure 1'		NULL = No Procedure
112	OTHERCPT9	Char	5	Other CPT Code 9	CPT Code		NULL = No Procedure
113	OTHERWRVU9	Num	8	Other Work Relative Value Unit 9	Other Work Relative Value Unit 9		-99 = No Procedure/Unknown
114	OTHERPROC10	Char	128	Other Procedure 10	See 'Other Procedure 1'		NULL = No Procedure
115	OTHERCPT10	Char	5	Other CPT Code 10	CPT Code		NULL = No Procedure
116	OTHERWRVU10	Num	8	Other Work Relative Value Unit 10	Other Work Relative Value Unit 10		-99 = No Procedure/Unknown
117	CONCURR1	Char	128	Concurrent Procedure 1	An additional operative procedure performed by a **different surgical team** (i.e., a different specialty/service) **under the same anesthetic** which has a CPT code different from that of the Principal Operative Procedure (e.g., Coronary Artery Bypass Graft procedure on a patient who is also undergoing a Carotid Endarterectomy).		NULL = No Procedure
118	CONCPT1	Char	5	Concurrent CPT 1	Concurrent CPT 2		NULL = No Procedure
119	CONWRVU1	Num	8	Concurrent Work Relative Value Unit 1	Concurrent Work Relative Value Unit 2		-99 = No Procedure/Unknown
120	CONCURR2	Char	128	Concurrent Procedure 2	Concurrent Procedure 3		NULL = No Procedure
121	CONCPT2	Char	5	Concurrent CPT 2	Concurrent CPT 3		NULL = No Procedure
122	CONWRVU2	Num	8	Concurrent Work Relative Value Unit 2	Concurrent Work Relative Value Unit 3		-99 = No Procedure/Unknown
123	CONCURR3	Char	128	Concurrent Procedure 3	Concurrent Procedure 4		NULL = No Procedure
124	CONCPT3	Char	5	Concurrent CPT 3	Concurrent CPT 4		NULL = No Procedure
125	CONWRVU3	Num	8	Concurrent Work Relative Value Unit 3	Concurrent Work Relative Value Unit 4		-99 = No Procedure/Unknown
126	CONCURR4	Char	128	Concurrent Procedure 4	Concurrent Procedure 5		NULL = No Procedure

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
127	CONCPT4	Char	5	Concurrent CPT 4	Concurrent CPT 5		NULL = No Procedure
128	CONWRVU4	Num	8	Concurrent Work Relative Value Unit 4	Concurrent Work Relative Value Unit 5		-99 = No Procedure/Unknown
129	CONCURR5	Char	128	Concurrent Procedure 5	Concurrent Procedure 6		NULL = No Procedure
130	CONCPT5	Char	5	Concurrent CPT 5	Concurrent CPT 6		NULL = No Procedure
131	CONWRVU5	Num	8	Concurrent Work Relative Value Unit 5	Concurrent Work Relative Value Unit 6		-99 = No Procedure/Unknown
132	CONCURR6	Char	128	Concurrent Procedure 6	Concurrent Procedure 7		NULL = No Procedure
133	CONCPT6	Char	5	Concurrent CPT 6	Concurrent CPT 7		NULL = No Procedure
134	CONWRVU6	Num	8	Concurrent Work Relative Value Unit 6	Concurrent Work Relative Value Unit 7		-99 = No Procedure/Unknown
135	CONCURR7	Char	128	Concurrent Procedure 7	Concurrent Procedure 8		NULL = No Procedure
136	CONCPT7	Char	5	Concurrent CPT 7	Concurrent CPT 8		NULL = No Procedure
137	CONWRVU7	Num	8	Concurrent Work Relative Value Unit 7	Concurrent Work Relative Value Unit 8		-99 = No Procedure/Unknown
138	CONCURR8	Char	128	Concurrent Procedure 8	Concurrent Procedure 9		NULL = No Procedure
139	CONCPT8	Char	5	Concurrent CPT 8	Concurrent CPT 9		NULL = No Procedure
140	CONWRVU8	Num	8	Concurrent Work Relative Value Unit 8	Concurrent Work Relative Value Unit 9		-99 = No Procedure/Unknown
141	CONCURR9	Char	128	Concurrent Procedure 9	Concurrent Procedure 10		NULL = No Procedure
142	CONCPT9	Char	5	Concurrent CPT 9	Concurrent CPT 10		NULL = No Procedure
143	CONWRVU9	Num	8	Concurrent Work Relative Value Unit 9	Concurrent Work Relative Value Unit 10		-99 = No Procedure/Unknown
144	CONCURR10	Char	128	Concurrent Procedure 10	Concurrent Procedure 11		NULL = No Procedure
145	CONCPT10	Char	5	Concurrent CPT 10	Concurrent CPT 11		NULL = No Procedure
146	CONWRVU10	Num	8	Concurrent Work Relative Value Unit 10	Concurrent Work Relative Value Unit 11		-99 = No Procedure/Unknown
147	OPNOTE	Char	13	Surgeon who dictated the operative note.	Surgeon who dictated the operative note.	Attending Resident Not Available	NULL = Unknown
148	PGY	Num	8	Highest Level of Resident Surgeon	Report the highest Post-Graduate Year (PGY) of the resident(s) who scrubbed for the surgical procedure. Choose from 1 – 10. Enter '0' if there is no resident scrubbed on the surgical procedure.	0-10	-99 = Unknown
149	EMERGNCY	Char	3	Emergency case	"YES" if the surgeon and anesthesiologist report the case as emergent. An emergency case is usually performed as soon as possible and no later than 12 hours after the patient has been admitted to the hospital or after the onset of related preoperative symptomatology.	Yes; No	
150	WNDCLAS	Char	20	Wound classification	Indicates whether the primary surgeon has classified the wound as: (1)**Clean:** An uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tract is not entered. In addition, clean wounds are primarily closed and, if necessary, drained with closed drainage. Operative incisional wounds that follow nonpenetrating (blunt) trauma should be included in this category if they meet the criteria. (2) **Clean/Contaminated:** An operative wound in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.	1-Clean 2-Clean/Contaminated 3-Contaminated 4-Dirty/Infected	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
					(3) Contaminated: Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered including necrotic tissue without evidence of purulent drainage (e.g. dry gangrene) are included in this category.**(4) Dirty/Infected**: Old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation.		
151	ASACLAS	Char	16	ASA classification	The American Society of Anesthesiology (ASA) Physical Status Classification of the patient's present physical condition on a scale from 1-5 as it appears on the anesthesia record. The classifications are as follows: **ASA 1** -Normal healthy patient **ASA 2** -Patient with mild systemic disease **ASA 3** -Patient with severe systemic disease **ASA 4** -Patient with severe systemic disease that is a constant threat to life **ASA 5** -Moribund patient who is not expected to survive without the operation.	1 -No Disturb 2 -Mild Disturb 3 -Severe Disturb 4 -Life Threat 5 -Moribund	
152	AIRTRA	Char	31	Airway trauma	The code corresponding to trauma resulting from the endotracheal intubation process is entered.	None Lip laceration or hematoma Tooth chipped, loosened or lost Tongue laceration or hematoma Pharyngeal laceration Laryngeal laceration Failure to intubate	NULL = Unknown
153	MALLAMP	Num	3	Mallampati scale	The Mallampati classification relates tongue size to pharyngeal size. This test is performed with the patient in sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. The subsequent classification is assigned based upon the pharyngeal structures that are visible: **Class I** – visualization of the soft palate, fauces, uvula, and anterior and posterior pillars. **Class II** – visualization of the soft palate, fauces, and uvula. **Class III** – visualization of the soft palate and the base of the uvula. **Class IV** – soft palate is not visible at all.	1; 2; 3; 4	-99 = Unknown
154	RBC	Num	8	Number of RBC units given intraoperative	The number of packed or whole red blood cells given during the operative procedure as it appears on the anesthesia record. The amount of blood reinfused from the cell saver is also noted. For a cell saver, every 500 cc's of fluid will equal 1 unit of packed cells. If there is less than 250 cc of fluid, 0 is entered.		-99 = Unknown
155	ANESURG	Num	8	Duration from Anesthsia start to Surgery start	Duration from Anesthsia start to Surgery start in minutes		-99 = Unknown
156	SURGANE	Num	8	Duration from Surgery stop to Anesthia Stop	Duration from Surgery stop to Anesthia Stop in minutes		-99 = Unknown
157	DPATRM	Num	8	Duration patient is in Room	Duration patient is in Room in minutes		-99 = Unknown
158	ANETIME	Num	8	Duration of Anesthesia	Duration of Anesthesia in minutes		-99 = Unknown
159	OPTIME	Num	8	Total operation time	Total operation time in minutes		-99 = Unknown
160	TYPEINTOC	Char	28	Type of Intraoperative Occurrence	One of the three following intraoperative occurrences can be selected. Cardiac Arrest Requiring CPR is defined as the absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of consciousness requiring the initiation	Cardiac Arrest Requiring CPR Myocardial Infarction Unplanned Intubation	NULL = None of the three occurred

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
					of any component of basic and/or advanced cardiac life support. Patients with automatic implantable cardioverter defibrillator that fire but the patient has no loss of consciousness should be excluded. Myocardial Infarction is defined as a new transmural acute myocardial infarction occurring during surgery as manifested by nnew Q-waves on ECG. Unplanned Intubatino for Respirator/Cardiac Failure is defined as a patient requiring placement of an endotracheal tube and mechanical or assisted ventilation because of the onset of respiratory or cardiac failure manifested by severe respiratory distress, hypoxia, hypercarbia, or respiratory acidosis.		
161	SDISDT	Num	8	Year discharged/transferred from surgical service	Year discharged/transferred from surgical service		
162	HDISDT	Num	8	Hospital discharge Year	Hospital discharge Year		
163	YRDEATH	Num	8	Year of death	Year of death		-99 = Patient alive at 30 days
164	TOTHLOS	Num	8	Length of total hospital stay	Length of total hospital stay		
165	AdmQtr	Num	8	Quarter of Admission	Quarter of Admission	1; 2; 3; 4	
166	HtoODay	Num	8	Days from Hospital Admission to Operation	Days from Hospital Admission to Operation		-99 = Unknown
167	StoODay	Num	8	Days from Surgical Admission to Operation	Days from Surgical Admission to Operation		-99 = Unknown
168	TOTSLOS	Num	8	Length of total surgical stay	Length of total surgical stay		
169	NSUPINFEC	Num	8	Number of Superficial Wound Infections	Number of Superficial Wound Infections		
170	SUPINFEC	Char	50	Superficial surgical site infection	Superficial incisional SSI is an infection that occurs within 30 days after the operation 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. -At least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat AND superficial incision is deliberately opened by the surgeon, unless incision is culture-negative. -Diagnosis of superficial incisional SSI by the surgeon or attending physician. Do not report the following conditions as SSI: -Stitch abscess (minimal inflammation and discharge confined to the points of suture penetration). -Infected burn wound. -Incisional SSI that extends into the fascial and muscle layers (see deep incisional SSI).	No Complication; Superficial Incisional SSI	
171	DSUPINFEC	Num	8	Days from Operation until Superficial Incisional SSI Complication	Days from Operation until Superficial Incisional SSI Complication		-99 = Patient did not experience this complication at or before 30 days post operation
172	NWNDINFD	Num	8	Number of Deep Incisional SSI Complications	Number of Deep Incisional SSI Complications		

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
173	WNDINFD	Char	50	Deep Incisional SSI	Deep Incision SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and infection involved deep soft tissues (e.g., fascial and muscle layers) of the incision and at least one of the following: -Purulent drainage from the deep incision but not from the organ/space component of the surgical site. -A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (> 38 C), localized pain, or tenderness, unless site is culture-negative. -An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination. -Diagnosis of a deep incision SSI by a surgeon or attending physician. Note: -Infection that involves both superficial and deep incision sites is reported as deep incisional SSI. -An organ/space SSI that drains through the incision is reported as a deep incisional SSI.	Deep Incisional; No Complication	
174	DWNDINFD	Num	8	Days from Operation until Deep Incisional SSI Complication	Days from Operation until Deep Incisional SSI Complication		-99 = Patient did not experience this complication at or before 30 days post operation
175	NORGSPCSSI	Num	8	Number of Organ/Space SSI Complications	Number of Organ/Space SSI Complications		
176	ORGSPCSSI	Char	50	Organ Space SSI	Organ/Space SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and the infection involves any part of the anatomy (e.g., organs or spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following: -Purulent drainage from a drain that is placed through a stab wound into the organ/space. -Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space. -An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination. -Diagnosis of an organ/space SSI by a surgeon or attending physician.	Organ/Space SSI; No Complication	
177	DORGSPCSSI	Num	8	Days from Operation until Organ/Space SSI Complication	Days from Operation until Organ/Space SSI Complication		-99 = Patient did not experience this complication at or before 30 days post operation
178	NDEHIS	Num	8	Number of Wound Disruption Complications	Number of Wound Disruption Complications		
179	DEHIS	Char	50	Wound Disruption	Separation of the layers of a surgical wound, which may be partial or complete, with disruption of the fascia within 30 days of the operation.	Wound Disruption; No complication	
180	DDEHIS	Num	8	Days from Operation until Wound Disruption Complication	Days from Operation until Wound Disruption Complication		-99 = Patient did not experience this complication at or before 30 days post operation
181	NOUPNEUMO	Num	8	Number of Pneumonia Complications	Number of Pneumonia Complications		

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
182	OUPNEUMO	Char	50	Pneumonia	Inflammation of the lungs caused primarily by bacteria, viruses, and/or chemical irritants, usually manifested by chills, fever, pain in the chest, cough, purulent, bloody sputum within 30 days of the operation. The patient has pneumonia if their symptoms meet the definition of pneumonia below AND pneumonia is not present preoperatively. Pneumonia must meet one of the following TWO criteria: Criterion 1: Rales or dullness to percussion on physical examination of chest AND any of the following: a. New onset of purulent sputum or change in character of sputum b. Organism isolated from blood culture c. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing, or biopsy OR Criterion 2: Chest radiographic examination shows new or progressive infiltrate, consolidation, cavitation, or pleural effusion AND any of the following: a. New onset of purulent sputum or change in character of sputum b. Organism isolated from blood culture c. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing, or biopsy d. Isolation of virus or detection of viral antigen in respiratory secretions e. Diagnostic single antibody titer (IgM) or fourfold increase in paired serum samples (IgG) for pathogen f. Histopathologic evidence of pneumonia	Pneumonia; No complication	
183	DOUPNEUMO	Num	8	Days from Operation until Pneumonia Complication	Days from Operation until Pneumonia Complication		-99 = Patient did not experience this complication at or before 30 days post operation (One case with a pneumonia complication had an unknown date within 30 days and thus the duration was set to -99)
184	NREINTUB	Num	8	Number of Unplanned Intubation Complications	Number of Unplanned Intubation Complications		
185	REINTUB	Char	50	Unplanned Intubation	Patient required placement of an endotracheal tube and mechanical or assisted ventilation because of the onset of respiratory or cardiac failure manifested by severe respiratory distress, hypoxia, hypercarbia, or respiratory acidosis within 30 days of the operation. In patients who were intubated for their surgery, unplanned intubation occurs after they have been extubated after surgery. In patients who were not intubated during surgery, intubation at any time after their surgery is considered unplanned.	Unplanned Intubation; No Complication	
186	DREINTUB	Num	8	Days from Operation until Unplanned Intubation Complication	Days from Operation until Unplanned Intubation Complication		-99 = Patient did not experience this complication at or before 30 days post operation
187	NPULEMBOL	Num	8	Number of Pulmonary Embolism Complications	Number of Pulmonary Embolism Complications		

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
188	PULEMBOL	Char	50	Pulmonary Embolism	Lodging of a blood clot in a pulmonary artery with subsequent obstruction of blood supply to the lung parenchyma. The blood clots usually originate from the deep leg veins or the pelvic venous system within 30 days of the operation. PE documented if the patient has a V-Q scan interpreted as high probability of pulmonary embolism or a positive CT spiral exam, pulmonary arteriogram or CT angiogram. Treatment usually consists of: -Initiation of anticoagulation therapy -Placement of mechanical interruption (e.g. Greenfield Filter), for patients whom anticoagulation is contraindicated or already instituted.	Pulmonary Embolism; No Complication	
189	DPULEMBOL	Num	8	Days from Operation until Pulmonary Embolism Complication	Days from Operation until Pulmonary Embolism Complication		-99 = Patient did not experience this complication at or before 30 days post operation
190	NFAILWEAN	Num	8	Number of On Ventilator > 48 Hours Complications	Number of On Ventilator > 48 Hours Complications		
191	FAILWEAN	Char	50	Ventilator > 48Hours	Total duration of ventilator-assisted respirations during postoperative hospitalization was greater than 48 hours. This can occur at any time during the 30-day period postoperatively. This time assessment is CUMULATIVE, not necessarily consecutive. Ventilator-assisted respirations can be via endotracheal tube, nasotracheal tube, or tracheostomy tube.	On Ventilator > 48 Hours; No Complication	
192	DFAILWEAN	Num	8	Days from Operation until On Ventilator > 48 Hours Complication	Days from Operation until On Ventilator > 48 Hours Complication		-99 = Patient did not experience this complication at or before 30 days post operation (One case with a fail to wean complication had an unknown date within 30 days and thus the duration was set to -99)
193	NRENAINSF	Num	8	Number of Progressive Renal Insufficiency Complications	Number of Progressive Renal Insufficiency Complications		
194	RENAINSF	Char	50	Progressive Renal Insufficiency	The reduced capacity of the kidney to perform its function as evidenced by a rise in creatinine of >2 mg/dl from preoperative value, but with no requirement for dialysis within 30 days of the operation.	Progressive Renal Insufficiency; No Complication	
195	DRENAINSF	Num	8	Days from Operation until Progressive Renal Insufficiency Complication	Days from Operation until Progressive Renal Insufficiency Complication		-99 = Patient did not experience this complication at or before 30 days post operation
196	NOPRENAFL	Num	8	Number of Acute Renal Failure Complications	Number of Acute Renal Failure Complications		
197	OPRENAFL	Char	50	Acute Renal Failure	In a patient who did not require dialysis preoperatively, worsening of renal dysfunction postoperatively requiring hemodialysis, peritoneal dialysis, hemofiltration, hemodiafiltration,or ultrafiltration within 30 days of the operation.	Acute Renal Fail; No Complication	
198	DOPRENAFL	Num	8	Days from Operation until Acute Renal Failure Complication	Days from Operation until Acute Renal Failure Complication		-99 = Patient did not experience this complication at or before 30 days post operation

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
199	NURNINFEC	Num	8	Number of Urinary Tract infection Complications	Number of Urinary Tract infection Complications		
200	URNINFEC	Char	50	Urinary Tract Infection	Postoperative symptomatic urinary tract infection must meet one of the following TWO criteria within 30 days of the operation: 1. One of the following: . fever (>38 degrees C) . urgency . frequency . dysuria . suprapubic tenderness AND a urine culture of > 10^5 colonies/ml urine with no more than two species of organisms **OR** 2. Two of the following: . fever (>38 degrees C) . urgency . frequency . dysuria . suprapubic tenderness AND any of the following: -Dipstick test positive for leukocyte esterase and/or nitrate -Pyuria (>10 WBCs/cc or > 3 WBC/hpf of unspun urine) -Organisms seen on Gram stain of unspun urine -Two urine cultures with repeated isolation of the same uropathogen with >10^2 colonies/ml urine in non-voided specimen -Urine culture with < 10^5 colonies/ml urine of single uropathogen in patient being treated with appropriate antimicrobial therapy -Physician's diagnosis -Physician institutes appropriate antimicrobial therapy.	Urinary Tract Infection; No Complication	
201	DURNINFEC	Num	8	Days from Operation until Urinary Tract Infection Complication	Days from Operation until Urinary Tract Infection Complication		-99 = Patient did not experience this complication at or before 30 days post operation (One case with a UTI complication had an unknown date within 30 days and thus the duration was set to -99)
202	NCNSCVA	Num	8	Number of Stroke/CVA Complications	Number of Stroke/CVA Complications		
203	CNSCVA	Char	50	Stroke/CVA with neurological deficit	Patient develops an embolic, thrombotic, or hemorrhagic vascular accident or stroke with motor, sensory, or cognitive dysfunction (e.g., hemiplegia, hemiparesis, aphasia, sensory deficit, impaired memory) that persists for 24 or more hours within 30 days of the operation.	CVA/Stroke; No Complication	
204	DCNSCVA	Num	8	Days from Operation until Stroke/CVA Complication	Days from Operation until Stroke/CVA Complication		-99 = Patient did not experience this complication at or before 30 days post operation
205	NCNSCOMA	Num	8	Number of Coma > 24 Hours Complications	Number of Coma > 24 Hours Complications		
206	CNSCOMA	Char	50	Coma >24 hours	Patient is unconscious, or postures to painful stimuli, or is unresponsive to all stimuli (exclude transient disorientation or psychosis) for greater than 24 hours. Drug-induced coma (e.g. Propofol drips) are not entered within 30 days of the operation.	Coma >24 hours; No Complication	
207	DCNSCOMA	Num	8	Days from Operation until Coma > 24 Hours Complication	Days from Operation until Coma > 24 Hours Complication		-99 = Patient did not experience this complication at or before 30 days post operation
208	NNEURODEF	Num	8	Number of Peripheral Nerve Injury Complications	Number of Peripheral Nerve Injury Complications		

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
209	NEURODEF	Char	50	Peripheral Nerve Injury	Peripheral nerve damage may result from damage to the nerve fibers, cell body, or myelin sheath during surgery. Peripheral nerve injuries which result in motor deficits to the cervical plexus, brachial plexus, ulnar plexus, lumbar-sacral plexus (sciatic nerve), peroneal nerve, and/or the femoral nerve should be included.	Peripheral nerve damage; No Complication	
210	DNEURODEF	Num	8	Days from Operation until Peripheral Nerve Injury Complication	Days from Operation until Peripheral Nerve Injury Complication		-99 = Patient did not experience this complication at or before 30 days post operation
211	NCDARREST	Num	8	Number of Cardiac Arrest Requiring CPR Complications	Number of Cardiac Arrest Requiring CPR Complications		
212	CDARREST	Char	50	Cardiac Arrest Requiring CPR	The absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of consciousness requiring the initiation of any component of basic and/or advanced cardiac life support within 30 days of the operation. Patients with automatic implantable cardioverter defibrillator (AICD) that fire but the patient has no loss of consciousness should be excluded.	Cardiac Arrest; No Complication	
213	DCDARREST	Num	8	Days from Operation until Cardiac Arrest Requiring CPR Complication	Days from Operation until Cardiac Arrest Requiring CPR Complication		-99 = Patient did not experience this complication at or before 30 days post operation
214	NCDMI	Num	8	Number of Myocardial Infarction Complications	Number of Myocardial Infarction Complications		
215	CDMI	Char	50	Myocardial Infarction	A new transmural acute myocardial infarction occurring during surgery or within 30 days as manifested by new Q-waves on ECG.	Myocardial Infarction; No Complication	
216	DCDMI	Num	8	Days from Operation until Myocardial Infarction Complication	Days from Operation until Myocardial Infarction Complication		-99 = Patient did not experience this complication at or before 30 days post operation
217	NOTHBLEED	Num	8	Number of Bleeding Transfusions Complications	Number of Bleeding Transfusions Complications		
218	OTHBLEED	Char	50	Bleeding Transfusions	Any transfusion (including autologous) of packed red blood cells or whole blood given from the time the patient leaves the operating room up to and including 72 hours postoperatively. Bleeding Transfusion entered for five or more units of packed red blood cell units in the postoperative period including hanging blood from the OR that is finished outside of the OR. If the patient receives shed blood, autologous blood, cell saver blood or pleurovac postoperatively, this is counted if greater than four units. The blood may be given for any reason.	Bleeding Transfusions; No Complication	

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
219	DOTHBLEED	Num	8	Days from Operation until Bleeding Transfusions Complication	Days from Operation until Bleeding Transfusions Complication		-99 = Patient did not experience this complication at or before 30 days post operation (One case which had a Bleeding Transfusion complication had an unknown date and thus the duration was set to -99)
220	NOTHGRAFL	Num	8	Number of Graft/Prosthesis/Flap Failure Complications	Number of Graft/Prosthesis/Flap Failure Complications		
221	OTHGRAFL	Char	50	Graft/Prosthesis/FF	Mechanical failure of an extracardiac graft or prosthesis including myocutaneous flaps and skin grafts requiring return to the operating room, interventional radiology, or a balloon angioplasty within 30 days of the operation.	Graft Prosthesis FF; No Complication	
222	DOTHGRAFL	Num	8	Days from Operation until Graft/Prosthesis/Flap Failure Complication	Days from Operation until Graft/Prosthesis/Flap Failure Complication		-99 = Patient did not experience this complication at or before 30 days post operation
223	NOTHDVT	Num	8	Number of DVT/Thrombophlebitis Complications	Number of DVT/Thrombophlebitis Complications		
224	OTHDVT	Char	50	DVT/Thrombophlebitis	The identification of a new blood clot or thrombus within the venous system, which may be coupled with inflammation wihtin 30 days of the operation. This diagnosis is confirmed by a duplex, venogram or CT scan. The patient must be treated with anticoagulation therapy and/or placement of a vena cava filter or clipping of the vena cava.	DVT/Thrombophlebitis; No Complication	
225	DOTHDVT	Num	8	Days from Operation until DVT/Thrombophlebitis Complication	Days from Operation until DVT/Thrombophlebitis Complication		-99 = Patient did not experience this complication at or before 30 days post operation
226	NOTHSYSEP	Num	8	Number of Sepsis Complications	Number of Sepsis Complications		
227	OTHSYSEP	Char	50	Sepsis	For Sepsis and Septic Shock within 30 days of the operation, please report the most significant level using the criteria that follow. Sepsis is the systemic response to infection. Report this variable if the patient has has two of the following clinical signs and symptoms of SIRS: - Temp >38 degrees C or <36 degrees C - HR >90 bpm - RR >20 breaths/min or PaCO2 <32 mmHg(<4.3 kPa) WBC >12,000 cell/mm3, <4000 cells/mm3, or >10% immature (band) forms - Anion gap acidosis: this is defined by either: - [Na + K] – [CL + HCO3 (or serum CO2]. If this number is greater than16, then an anion gap acidosis is present. - Na – [CL + HCO3 (or serum CO2]. If this number is greater than 12, then an anion gap acidosis is present. **AND** one of the following: positive blood culture - clinical documentation of purulence or positive culture from any site thought to be causative.	Sepsis; No Complication	
228	DOTHSYSEP	Num	8	Days from Operation until Sepsis Complication	Days from Operation until Sepsis Complication		-99 = Patient did not experience this complication at or before 30 days post operation

Position #	Variable Name	Data Type	Length	Variable Label	Variable Definition	Variable Options at Entry	Comments
229	NOTHSESHOCK	Num	8	Number of Septic Shock Complications	Number of Septic Shock Complications		
230	OTHSESHOCK	Char	50	Septic Shock	For Sepsis and Septic Shock within 30 days of the operation, please report the most significant level using the criteria that follow. Severe Sepsis/Septic Shock: Sepsis is considered severe when it is associated with organ and/or circulatory dysfunction. Report this variable if the patient has the clinical signs and symptoms of SIRS or sepsis **AND** documented organ and/or circulatory dysfunction. Examples of organ dysfunction include: oliguria, acute alteration in mental status, acute respiratory distress. Examples of circulatory dysfunction include: hypotension, requirement of inotropic or vasopressor agents. For the patient that had sepsis preoperatively, worsening of any of the above signs postoperatively would be reported as a postoperative sepsis.	Septic Shock; No Complication	
231	DOTHSESHOCK	Num	8	Days from Operation until Septic Shock Complication	Days from Operation until Septic Shock Complication		-99 = Patient did not experience this complication at or before 30 days post operation
232	PODIAG	Char	10	Post-op diagnosis from MAS package (ICD 9)	The appropriate ICD-9-CM code corresponding to the condition noted as the postoperative diagnosis in the brief operative note, operative report, and/or after the return of the pathology reports are entered.		
233	PODIAGTX	Char	200	Post-op Diagnosis text	Post-op Diagnosis text		
234	RETURNOR	Char	3	Return to OR	Returns to the operating room within 30 days include all major surgical procedures that required the patient to be taken to the surgical operating room for intervention of any kind. “Major surgical procedures” are defined as those cases in any and all surgical subspecialties that meet Program criteria for inclusion.	Yes; No	
235	DSDtoHD	Num	8	Days from Surgical Discharge to Hospital Discharge	Days from Surgical Discharge to Hospital Discharge		
236	DOpertoD	Num	8	Days from Operation to Death	Days from Operation to Death		-99 = Patient did not die at or before 30 days
237	DOptoDis	Num	8	Days from Operation to Discharge	Days from Operation to Discharge		-99 = Unknown
238	MORBPROB	Num	8	Probability of Morbidity	Probability of morbidity is developed for general and vascular surgical cases based on a logistic regresion analysis using the patient's preopeartive characteristics as the independent or predictive variables. The analysis is performed independently on the 2005 calendar year data and the 2006 calendar year data. Only the general and vascular cases used in the logistic regression analysis will have the associated probabilities of morbidity.		System missing = case was not included in the logistic regression analysis
239	MORTPROB	Num	8	Probability of Mortality	Probability of mortality is developed for general and vascular surgical cases based on a logistic regresion analysis using the patient's preopeartive characteristics as the independent or predictive variables. The analysis is performed independently on the 2005 calendar year data and the 2006 calendar year data. Only general and vascular cases used in the logistic regression analysis will have the associated probabilities of mortality.		System missing = case was not included in the logistic regression analysis

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