ACS NSQIP®

"Quality Improvement through Quality Data"

User Guide for the 2012 ACS NSQIP Procedure Targeted Participant Use Data File

American College of Surgeons

National Surgical Quality Improvement Program

January 2014

American College of Surgeons

Inspiring Quality:
Highest Standards, Better Outcomes

Contents

Data Update

We have identified a problem in reported results for three outcome variables that existed in the Classic program, but did not exist in Essentials, between 2011 and 2013.

As it is mandatory to report outcome variables, we have historically converted the absence of an affirmative response (i.e., missing data) to "No Complication". This otherwise appropriate procedure was mistakenly applied to three outcome variables which were dropped from Essentials beginning in 2011 (Graft failure, Coma, Peripheral Nerve Injury). This logic resulted in "No complication" being assigned to missing data coming from Essential sites where, in fact, no data was being collected for these three outcomes. For the 2013 SAR (when Classic no longer existed) this isn't much of a problem as users would clearly know that something was wrong when 100% of the cases had "No complication" (for 2014 missing values were inserted for these historical outcome variables rather than "No complication"). However for 2011 and 2012, when some sites were Essentials and some Classic, a PUF user would see a strange, precipitous, drop in event rates for these outcomes.

Because of this problem, Graft failure, Coma, and Peripheral Nerve Injury should not be considered accurate for any PUF after 2010.

1. Introduction

This document, along with the Procedure Targeted User Guide Table, is designed to accompany the 2011-2012 Procedure Targeted Participant Use Data File (PUF) available for download on the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) website (www.acsnsqip.org). The data contained in this version of the Procedure Targeted PUF covers dates of surgery from January 1, 2012 to December 31, 2012. The sections contained herein will provide the user with information on how to request the Procedure Targeted 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.

This user guide applies specifically to the 2012 Procedure Targeted PUF.

2. Merging Cases with the ACS NSQIP PUF

Using the unique CASE ID variable, target-specific variables can be merged to the main ACS NSQIP adult PUF.

3. Data Request Process

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

1. From the ACS NSQIP main page (www.acsnsqip.org) the requestor can scroll over "Program Specifics" as it appears on the banner. A drop down will appear, follow the drop down and put the mouse over "Quality Support Tools." As you are over "Quality Support Tools" you will see "Participant Use Data File" appear on the right, click on "Participant Use Data File."
2. Following a brief introduction, the requestor can click on "Request Data Set."
3. This will take the requestor to the 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. You can read the Data Use Agreement from this page or download the 3-page document. The requestor is then required to type in their first and last name and click on "Request Data File." By clicking on "Request Data File" the requestor agrees to the terms and conditions of the Data Use Agreement.

4. Requestors will then 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, as well as how the requestor plans on using the PUF data. Once all of the required fields are completed, the requestor clicks "Submit."
5. ACS NSQIP staff will review the request in a timely manner. Program contacts at participating sites will be contacted at this time to confirm the requestor's affiliation with the hospital and confirm internal approval of the PUF request.
6. Following receipt and confirmation of the information submitted, an email will be sent to the requestor containing a username and password along with the URL to download the data. The web link will be active from the time of the email for 10 full days (240 hours).
7. The file will be available in 3 different formats (Text, SPSS, SAS) and depending on the connection speed should take between 5 and 30 minutes to download.
8. 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.

4. File Description

The Procedure Targeted PUF is available in 1 of 3 different formats - Text, SAS, and SPSS.
A brief description of the different formats follows:

Vascular:

File Name	Type	File Size	Variables	Cases	Sites
PUF_TAR_AAA_2012	SAS		22	655	71
	SPSS		22	655	71
	TEXT		22	655	71
PUF_TAR_AIE_2012	SAS		21	475	30
	SPSS		21	475	30
	TEXT		21	475	30
PUF_TAR_AIO_2012	SAS		21	555	47
	SPSS		21	555	47
	TEXT		21	555	47
PUF_TAR_CAS_2012	SAS		31	117	16
	SPSS		31	117	16
	TEXT		31	117	16

PUF_TAR_CEA_2012	SAS		29	4013	78
	SPSS		29	4013	78
	TEXT		29	4013	78
PUF_TAR_EVAR_2012	SAS		26	2084	70
	SPSS		26	2084	70
	TEXT		26	2084	70
PUF_TAR_LEE_2012	SAS		22	1096	33
	SPSS		22	1096	33
	TEXT		22	1096	33
PUF_TAR_LEO_2012	SAS		22	2176	73
	SPSS		22	2176	73
	TEXT		22	2176	73

Colectomy:

File Name	Type	File Size	Variables	Cases	Sites
puf_tar_col_2012	SAS		22	16981	121
	SPSS		22	16981	121
	TEXT		22	16981	121

5. Data Collection Background and Data Quality

The ACS NSQIP collects data on over 150 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 trained and certified Surgical Clinical Reviewer (SCR) captures these data using a variety of methods including medical chart abstraction.

Required data variables are entered via web-based data collection to the ACS NSQIP website. 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. Requestors should contact the SCR(s) at their hospital for detailed information on how the hospital collects its ACS NSQIP data.

To ensure the data collected are of the highest quality, the ACS NSQIP has developed a host of different training mechanisms for the SCRs and conducts an Inter-Rater Reliability (IRR) Audit of selected participating sites. In addition to an initial web-based training program, the ACS

NSQIP requires SCRs to complete a series of web-based training modules followed by a certification exam that must be retaken annually. The modules and certification exam 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 SCRs 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 multiple charts, some of which are selected randomly and others 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% 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 a hospital odds ratio in the ACS NSQIP Semi Annual Report and may be required to undergo an additional audit following training and education recommendations from the ACS NSQIP.

6. Sampling Process and Case Inclusion/Exclusion Criteria

Sites participating in the ACS NSQIP can do so in a variety of options that cover general/vascular surgery, or multispecialty surgery. Each participation option includes a systematic sampling process that is described below.

Systematic Sampling Process

Many hospitals are not able to capture all of the 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 SCR 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.

Case Inclusion Criteria

The following inclusion criteria were applied to cases collected in 2012. For the current inclusion/exclusion criteria please contact the ACS NSQIP Clinical Support Team at clinicalsupport@acsnsqip.org.

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

Case Exclusion Criteria

The following exclusion criteria were applied to cases collected in 2012. For the current inclusion/exclusion criteria please contact the ACS NSQIP Clinical Support Team at clinicalsupport@acsnsqip.org.

- Minor Cases (all cases that are not considered Major)
- Patients under the age of 18 years
- More than 3 inguinal herniorrhaphies in an 8-day period
- More than 3 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 Cases - 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 not on the CPT Code Inclusion List
- SCR 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 odds ratio 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 odds ratio calculations and the PUF if it fits any of the following criteria:

- 30-day follow-up rate is under 80%
- Inter-Rater Reliability Audit disagreement rate is over 5%

7. 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.

8. Contact Information

All questions about the Procedure Targeted User Guide or PUF, as well as comments and suggestions for improvements are welcome and may be directed to Brian Matel, ACS NSQIP Statistical Report Manager, via email at bmatel@facs.org.

9. 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 website.

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 odds ratios in 2012. Each record includes 295 variables. The variable name, variable label, data definition, and other pertinent information are provided in Section 10: Data Variables and Definitions.

Q: Where can I find the Procedure Targeted variables and definitions?
A: You can contact your site's SCR for the July-December 2012 Procedure Targeted Variables and Definitions.

Q: What other reference materials are available?
A: Other PUF reference materials include the ACS NSQIP Targeted Procedure Materialized Views from September 2012, also available through your site's SCR.

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. To meet these requirements, we remove all elements of dates (except quarter of admission and year) for dates directly related to an individual. 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 over 150 variables, but the database contains 295 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. In 2008, we've removed RACE variable but added RACE_NEW and ETHNICITY_HISPANIC variables to comply with the CMS standard.

Q: I am the Surgeon Champion or Surgical Clinical Reviewer from a site that has records in the PUF and would like to know which specific records are ours.
A: You may contact Brett Beemer, ACS NSQIP Application Support Specialist, via email at bbeemer@facs.org 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: 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 all surgery cases in 2012. These probabilities are derived using hierarchical regression analysis. 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 all surgical cases used in the risk-adjusted analysis in 2012 are provided. Future versions of the PUF may contain a more complete set of predictive values.

Q: Why do some of the preoperative lab values have 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 are 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 a SAS file.

Targeted Vascular

Targeted CEA (Carotid Endarterectomy)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	CEA_PROC	CHAR	Procedure	Carotid Endarterectomy
				Carotid Endarterectomy w/ patch angioplasty
				Carotid Endarterectomy w/ patch angioplasty & shunt
				Carotid Endarterectomy w/ shunt
				Eversion Carotid Endarterectomy
				Not documented
3	CEA_SYMPT	CHAR	Symptomatology	Amaurosis fugax or TMB, ipsilateral
				Asymptomatic
				Not documented
				Stroke, ipsilateral
				Transient ischemic attack, ipsilateral
4	CEA_MODRANKIN	CHAR	Modified Rankin Scale	0-No symptoms
				1-No significant disability
				2-Slight disability
				3-Moderate disability
				4-Moderately severe disability
				5-Severe disability
				NULL=missing
				No Rankin Scale given
5	CEA_HRF_PHYS	CHAR	High Risk Factors, Physiologic	No
				Unknown
				Yes
6	CEA_HRF_ANAT	CHAR	High Risk Factors, Anatomic	No
				Unknown
				Yes
7	CEA_PREMED_ASPIRIN	CHAR	Pre-procedural Medication-Aspirin/Clopidogrel	No
				Unknown
				Yes
8	CEA_PREMED_STATIN	CHAR	Pre-procedural Medication-Statin	No
				Unknown
				Yes
9	CEA_PREMED_BETAB	CHAR	Pre-procedural Medication-Beta Blocker	No
				Unknown
				Yes
10	CEA_BS_IPSICA	CHAR	Baseline Doppler Ultrasound or Angiogram, ipsilateral ICA stenosis	Mild or no stenosis (estimate of <50%)
				Moderate stenosis (estimate of 50%-79%)
				Not performed
				Severe stenosis (estimate of 80% to 99%)
				Total occlusion (estimate of 100%)
11	CEA_BS_CONICA	CHAR	Baseline Doppler Ultrasound or Angiogram, contralateral ICA stenosis	Mild or no stenosis (estimate of <50%)
				Moderate stenosis (estimate of 50%-79%)
				Not performed
				Severe stenosis (estimate of 80% to 99%)
				Total occlusion (estimate of 100%)
12	CEA_ACUTEREV	CHAR	Acute Occlusion/Technical Defects Requiring Revision	No
				Yes
13	CEA_DACUTEREV	NUM	Days from operation until Acute Occlusion/Technical Defects Requiring Revision	-99=missing
14	CEA_CNI	CHAR	Cranial Nerve Injury	No
				Yes
15	CEA_DCNI	NUM	Days from operation until Cranial Nerve Injury	-99=missing
16	CEA_MIA	CHAR	MI / Arrhythmia	No
				Yes
17	CEA_DMIA	NUM	Days from operation until MI/Arrhythmia	-99=missing
18	CEA_STROKE	CHAR	Stroke	No
				Yes
19	CEA_DSTROKE	NUM	Days from operation until Stroke	-99=missing
20	CEA_RANKIN	CHAR	Rankin Scale	0-No symptoms
				1-No significant disability

				2-Slight disability
				3-Moderate disability
				4-Moderately severe disability
				5-Severe disability
				6-Dead
				NULL=missing
				No Rankin Scale given
21	CEA_TIA	CHAR	TIA/Amaurosis Fugax/TMB	No
				Yes
22	CEA_DTIA	NUM	Days from operation until TIA/Amaurosis Fugax/TMB	-99=missing
23	CEA_RESTENOSIS	CHAR	Restenosis	No
				Yes
24	CEA_DRESTENOSIS	NUM	Days from operation until Restenosis	-99=missing
25	CEA_DISTEMB	CHAR	Distal Embolization	No
				Yes
26	CEA_DDISTEMB	NUM	Days from operation until Distal Embolization	-99=missing
27	CEA_MOSTSEVOUTCOME	CHAR	Most Severe Clinical Outcome	NULL=missing
28	CEA_FUP_IPSICA	CHAR	Follow-up Doppler Ultrasound or Angiogram, ipsilateral ICA stenosis	Mild or no stenosis (estimate of <50%)
				Moderate stenosis (estimate of 50%-79%)
				Not performed
				Severe stenosis (estimate of 80% to 99%)
				Total occlusion (estimate of 100%)
29	CEA_LESREVASC	CHAR	Target Lesion Revascularization	No
				Yes

Targeted CAS (Carotid Artery Stenting)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	CAS_PROC	CHAR	Procedure	Multiple stents
				Multiple stents with CPD
				Single straight stent
				Single straight stent with cerebral protection device (CPD)
				Single tapered stent
				Single tapered stent with CPD
3	CAS_SYMPT	CHAR	Symptomatology	Amaurosis fugax or TMB, ipsilateral
				Asymptomatic
				Not documented
				Stroke, ipsilateral
				Transient ischemic attack, ipsilateral
4	CAS_MODRANKIN	CHAR	Modified Rankin Scale	0-No symptoms
				1-No significant disability
				2-Slight disability
				3-Moderate disability
				4-Moderately severe disability
				NULL=missing
				No Rankin Scale given
5	CAS_HRF_PHYS	CHAR	High Risk Factors, Physiologic	No
				Unknown
				Yes
6	CAS_HRF_ANAT	CHAR	High Risk Factors, Anatomic	No
				Unknown
				Yes
7	CAS_PREMED_ASPIRIN	CHAR	Pre-procedural Medication-Aspirin/Clopidogrel	No
				Yes
8	CAS_PREMED_STATIN	CHAR	Pre-procedural Medication-Statin	No
				Yes
9	CAS_PREMED_BETAB	CHAR	Pre-procedural Medication-Beta Blocker	No
				Unknown
				Yes
10	CAS_BS_IPSICA	CHAR	Baseline Doppler Ultrasound or Angiogram, ipsilateral ICA stenosis	Mild or no stenosis (estimate of <50%)
				Moderate stenosis (estimate of 50%-79%)
				Not performed
				Severe stenosis (estimate of 80% to 99%)
				Total occlusion (estimate of 100%)
11	CAS_BS_CONICA	CHAR	Baseline Doppler Ultrasound or Angiogram, contralateral ICA stenosis	Mild or no stenosis (estimate of <50%)
				Moderate stenosis (estimate of 50%-79%)
				Not performed
				Severe stenosis (estimate of 80% to 99%)
				Total occlusion (estimate of 100%)
12	CAS_EMBOLIZ	CHAR	Embolization	No
13	CAS_DEMBOLIZ	NUM	Days from operation until Embolization	-99=missing
14	CAS_THROMB	CHAR	Thrombosis/Occlusive dissection/Vessel Closure	No
				Yes
15	CAS_DTHROMB	NUM	Days from operation until Thrombosis/Occlusive dissection/Vessel Closure	-99=missing
16	CAS_MIA	CHAR	MI / Arrhythmia	No
				Yes
17	CAS_DMIA	NUM	Days from operation until MI/Arrhythmia	-99=missing
18	CAS_STROKE	CHAR	Stroke	No
				Yes
19	CAS_DSTROKE	NUM	Days from operation until Stroke	-99=missing
20	CAS_RANKIN	CHAR	Rankin Scale	1-No significant disability
				3-Moderate disability
				NULL=missing
				No Rankin Scale given
21	CAS_TIA	CHAR	TIA/Amaurosis Fugax/TMB	No
				Yes

22	CAS_DTIA	NUM	Days from operation until TIA/Amaurosis Fugax/TMB	-99=missing
23	CAS_PUNCTURE	CHAR	Puncture Site	No
				Yes
24	CAS_DPUNCTURE	NUM	Days from operation until Puncture Site	-99=missing
25	CAS_RESTENOSIS	CHAR	Restenosis	No
26	CAS_DRESTENOSIS	NUM	Days from operation until Restenosis	-99=missing
27	CAS_DISTEMB	CHAR	Distal Embolization	No
				Yes
28	CAS_DDISTEMB	NUM	Days from operation until Distal Embolization	-99=missing
29	CAS_MOSTSEVOUTCOME	CHAR	Most Severe Clinical Outcome	NULL=missing
30	CAS_FUP_IPSICA	CHAR	Follow-up Doppler Ultrasound or Angiogram, ipsilateral ICA stenosis	Mild or no stenosis (estimate of <50%)
				Moderate stenosis (estimate of 50%-79%)
				Not performed
				Severe stenosis (estimate of 80% to 99%)
31	CAS_LESREVASC	CHAR	Target Lesion Revascularization	No

Targeted AAA(Abdominal Aortic Aneurysm

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	AAA_SURGIND	CHAR	Indication for Surgery	Diameter
				Dissection
				Embolization
				Non-ruptured symptomatic
				Not documented
				Prior endovascular intervention w/ unsatisfactory result
				Prior open intervention w/ unsatisfactory result
				Rupture w/ hypotension or use of pressors
				Rupture w/out hypotension
				Thrombosis
3	AAA_ANDIAM	NUM	Aneurysm Diameter	
4	AAA_ANDIAM_UNK	NUM	Aneurysm Diameter Unknown	-99=missing
5	AAA_PAAS	CHAR	Prior Open Abdominal Surgery	No
				Unknown
				Yes
6	AAA_SURGAP	CHAR	Surgical Approach	Not documented
				Retroperitoneal
				Transperitoneal-midline
				Transperitoneal-transverse
7	AAA_PCL	CHAR	Proximal Clamp Location	Above one renal
				Between SMA & renals
				Infrarenal
				Not documented
				Supraceliac
8	AAA_PAE	CHAR	Proximal Aneurysm Extent	Infrarenal
				Juxtarenal
				Not documented
				Pararenal
				Supra-renal
				Type IV Thoracoabdominal aneurysm
9	AAA_DISTEXT	CHAR	Distal Extent	Aortic
				Common iliac
				External iliac
				Internal iliac
				Not documented
10	AAA_MIMA	CHAR	Management of Inferior Mesenteric Artery	Chronically occluded
				Implanted
				Ligated
				Not documented
11	AAA_CP_RENREVASC	CHAR	Renal Revascularization	No
				Yes
12	AAA_CP_VISCREVASC	CHAR	Visceral (SMA & celiac) Revascularization	No
				Yes
13	AAA_CP_LER	CHAR	Lower Extremity Revascularization (LER)	No
				Yes
14	AAA_CP_ARE	CHAR	Abdominal, non-arterial repair or excision	No
				Yes
15	AAA_COLITIS	CHAR	Ischemic Colitis	No
				Yes
16	AAA_DCOLITIS	NUM	Days from operation to Ischemic Colitis	-99=missing
17	AAA_COLITIIS_TREAT	CHAR	Ischemic Colitis Treatment	Medical treatment
				NULL=missing
				Not documented
				Surgical treatment
18	AAA_LEI	CHAR	Lower Extremity Ischemia	No
				Yes
19	AAA_DLEI	NUM	Days from operation to Lower Extremity Ischemia	-99=missing
20	AAA_ROA	CHAR	Rupture of Aneurysm	No
				Yes
21	AAA_DROA	NUM	Days from operation to Rupture of Aneurysm	-99=missing
22	AAA_ICULOS	CHAR	Intensive Care Unit LOS	

Targeted EVAR (Endovascular Aneurysm Repair)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	EVAR_SURGIND	CHAR	Indication for Surgery	Diameter
				Dissection
				Embolization
				Non-ruptured symptomatic
				Not documented
				Prior endovascular intervention w/ unsatisfactory result
				Prior open intervention w/ unsatisfactory result
				Rupture w/ hypotension or use of pressors
				Rupture w/out hypotension
				Thrombosis
3	EVAR_ANDIAM	NUM	Aneurysm Diameter ("cm")	
4	EVAR_ANDIAM_UNK	NUM	Unknown	-99=missing
5	EVAR_PAAS	CHAR	Prior Abdominal Aortic Surgery	No
				Unknown
				Yes
6	EVAR_ACCESS	CHAR	Access	Attempted percutaneous access converted to open cutdown
				Bilateral groin cutdown
				Not documented
				One groin cutdown
				Percutaneous bilateral
7	EVAR_MBD	CHAR	Main Body Device	Cook Zenith
				Cook Zenith Fenestrated
				Cook Zenith Renu
				Endologix Powerlink
				Gore Excluder
				Medtronic AneuRx
				Medtronic Endurant
				Medtronic TALENT
				Not documented
				Other
				TriVascular Ovation
8	EVAR_ACOP	CHAR	Acute Conversion to Open Procedure	No
				Unknown
				Yes
9	EVAR_PAE	CHAR	Proximal Aneurysm Extent	Infrarenal
				Juxtarenal
				Not documented
				Pararenal
				Supra-renal
				Type IV Thoracoabdominal aneurysm
10	EVAR_DISTEXT	CHAR	Distal Extent	Aortic
				Common iliac
				External iliac
				Internal iliac
				Not documented
11	EVAR_CP_ACCESS	CHAR	Access Vessels (Conduit, Repair)	No
				Yes
12	EVAR_CP_RENALSTENT	CHAR	Renal Stent	No
				Yes
13	EVAR_CP_HYPOEMB	CHAR	Hypogastric Embolization	No
				Yes
14	EVAR_CP_HYPOREVASC	CHAR	Hypogastric Revascularization	No
				Yes
15	EVAR_CP_LEREVASC	CHAR	Lower Extremity Revascularization	No
				Yes
16	EVAR_CP_ILIACBD	CHAR	Iliac Branched Device	No
				Yes
17	EVAR_CP_AORTICSTENT	CHAR	Aortic (Bare Metal) Stent	No
				Yes
18	EVAR_CP_ILIACSTENT	CHAR	Iliac (Bare Metal) Stent	No
				Yes
19	EVAR_COLITIS	CHAR	Ischemic Colitis	No
				Yes
20	EVAR_DCOLITIS	NUM	Days from operation until Ischemic Colitis	-99=missing

21	EVAR_COLITIIS_TREAT	CHAR	Ischemic Colitis Treatment	Medical treatment
				NULL=missing
				Not documented
				Surgical treatment
22	EVAR_LEI	CHAR	Lower Extremity Ischemia	No
				Yes
23	EVAR_DLEI	NUM	Days from operation until Low Extremity Ischemic	-99=missing
24	EVAR_ROA	CHAR	Rupture of Aneurysm	No
				Yes
25	EVAR_DROA	NUM	Days from operation until Rupture of Aneurysm	-99=missing
26	EVAR_ICULOS	CHAR	Intensive Care Unit LOS	

Targeted AIO (Aortoiliac open)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	AIO_PROC	CHAR	Procedure	Aortobifemoral bypass
				Aortobiliac bypass
				Aortoiliac bypass
				Ilio-femoral or Femoral-femoral bypass
				NULL=missing
				Not documented
3	AIO_SYMPT	CHAR	Symptomatology	Asymptomatic
				Claudication
				Critical limb ischemia: rest pain
				Critical limb ischemia: tissue loss
				NULL=missing
				Not documented
4	AIO_HRF_PHYS	CHAR	High Risk Factors, Physiologic	NULL=missing
				No
				Unknown
				Yes
5	AIO_HRF_ANAT	CHAR	High Risk Factors, Anatomic	NULL=missing
				None/Not documented
				Prior abdominal surgery
				Prior ipsilateral bypass involving currently treated segment
				Prior ipsilateral percutaneous intervention involving currently treated segment
6	AIO_PREMED_ASPIRIN	CHAR	Pre-procedural Medication-Aspirin/Clopidogrel	NULL=missing
				No
				Unknown
				Yes
7	AIO_PREMED_STATIN	CHAR	Pre-procedural Medication-Statin	NULL=missing
				No
				Unknown
				Yes
8	AIO_PREMED_BETAB	CHAR	Pre-procedural Medication-Beta Blocker	NULL=missing
				No
				Unknown
				Yes
9	AIO_PREHEMO	CHAR	Preprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				NULL=missing
				Not documented
10	AIO_ULP	CHAR	Untreated Loss of Patency	NULL=missing
				No
				Yes
11	AIO_DULP	NUM	Days from operation until Untreated Loss of Petency	-99=missing
12	AIO_BLEEDING	CHAR	Bleeding Requiring Transfusion or Secondary Procedure	NULL=missing
				No
				Yes
13	AIO_DBLEEDING	NUM	Days from operation until Bleeding Requiring Transfusion or Secondary Procedure	-99=missing
14	AIO_MI_STROKE	CHAR	Myocardial Infarction or Stroke	NULL=missing
				No
				Yes
15	AIO_DMI_STROKE	NUM	Days from operation until Myocardial Infarction or Stroke	-99=missing
16	AIO_WOUND	CHAR	Wound Infection/Complication	NULL=missing

				No
				Yes
17	AIO_DWOUND	NUM	Days from operation until Wound Infection/Complication	-99=missing
18	AIO_POSTHEMO	CHAR	Postprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed w/in 30 days; evidence of patient clinically well
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				NULL=missing
				None/Not documented
19	AIO_MOSTSEVOUTCOME	CHAR	Most Severe Procedural Outcome	Death
				Image-proven treated arterial segment thrombosis or clinically evident thrombosis with no planned intervention
				Major Amputation
				NULL=missing
				New bypass in the treated arterial segment
				Not documented
				Patent treated arterial segment with stenosis
				Patent treated arterial segment, no stenosis
				Reintervened treated arterial segment with no stenosis
				Reintervened treated arterial segment with stenosis
20	AIO_MRTAS	CHAR	Major Reintervention of Treated Arterial Segment	NULL=missing
				No
				Yes
21	AIO_AMPUTATION	CHAR	Major Amputation (Transtibial or Proximal)	NULL=missing
				No
				Yes

Targeted AIE (Aortoiliac endo)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	AIE_PROC	CHAR	Procedure	Aortic angioplasty/stenting
				Bilateral common iliac (kissing) angioplasty/stenting
				Common and external iliac angioplasty/stenting
				Common iliac angioplasty/stenting
				External iliac angioplasty/stenting
				Not documented
3	AIE_SYMPT	CHAR	Symptomatology	Asymptomatic
				Claudication
				Critical limb ischemia: rest pain
				Critical limb ischemia: tissue loss
				Not documented
4	AIE_HRF_PHYS	CHAR	High Risk Factors, Physiologic	No
				Unknown
				Yes
5	AIE_HRF_ANAT	CHAR	High Risk Factors, Anatomic	None/Not documented
				Prior ipsilateral bypass involving currently treated segment
				Prior ipsilateral percutaneous intervention involving currently treated segment
6	AIE_PREMED_ASPIRIN	CHAR	Pre-procedural Medication-Aspirin/Clopidogrel	No
				Unknown
				Yes
7	AIE_PREMED_STATIN	CHAR	Pre-procedural Medication-Statin	No
				Unknown
				Yes
8	AIE_PREMED_BETAB	CHAR	Pre-procedural Medication-Beta Blocker	No
				Unknown
				Yes
9	AIE_PREHEMO	CHAR	Preprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				Not documented
10	AIE_ULP	CHAR	Untreated Loss of Patency	No
				Yes
11	AIE_DULP	NUM	Days from operation until Untreated Loss of Petency	-99=missing
12	AIE_BLEEDING	CHAR	Bleeding Requiring Transfusion or Secondary Procedure	No
				Yes
13	AIE_DBLEEDING	NUM	Days from operation until Bleeding Requiring Transfusion or Secondary Procedure	-99=missing
14	AIE_MI_STROKE	CHAR	Myocardial Infarction or Stroke	No
				Yes
15	AIE_DMI_STROKE	NUM	Days from operation until Myocardial Infarction or Stroke	-99=missing
16	AIE_WOUND	CHAR	Wound Infection/Complication	No
				Yes
17	AIE_DWOUND	NUM	Days from operation until Wound Infection/Complication	-99=missing
18	AIE_POSTHEMO	CHAR	Postprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg

				ABI not performed w/in 30 days; evidence of patient clinically well
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				None/Not documented
19	AIE_MOSTSEVOUTCOME	CHAR	Most Severe Procedural Outcome	Death
				Major Amputation
				New bypass in the treated arterial segment
				Not documented
				Patent treated arterial segment with stenosis
				Patent treated arterial segment, no stenosis
				Reintervened treated arterial segment with no stenosis
				Reintervened treated arterial segment with stenosis
				Thrombosis with no planned intervention
20	AIE_MRTAS	CHAR	Major Reintervention of Treated Arterial Segment	No
				Yes
21	AIE_AMPUTATION	CHAR	Major Amputation (Transtibial or Proximal)	No
				Yes

Targeted LEO (Lower Extremity open)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	LEO_PROC	CHAR	Procedure	Femoral distal bypass w/ prosthetic/spliced vein/composite
				Femoral distal bypass w/ single segment saphenous vein
				Femoral endarterectomy
				Femoropopliteal bypass w/ single segment saphenous vein
				Femoropopliteal bypass w/prosthetic/spliced vein/composite
				Not documented or Other
				Popliteal distal bypass w/ prosthetic/spliced vein/composite or non-saphenous conduit
				Popliteal distal w/ single segment saphenous vein
3	LEO_SYMPT	CHAR	Symptomatology	Asymptomatic
				Claudication
				Critical limb ischemia: rest pain
				Critical limb ischemia: tissue loss
				Not documented
4	LEO_HRF_PHYS	CHAR	High Risk Factors, Physiologic	No
				Unknown
				Yes
5	LEO_HRF_ANAT	CHAR	High Risk Factors, Anatomic	None/Not documented
				Prior ipsilateral bypass involving currently treated segment
				Prior ipsilateral percutaneous intervention involving currently treated segment
6	LEO_PREMED_ASPIRIN	CHAR	Pre-procedural Medication-Aspirin/Clopidogrel	No
				Unknown
				Yes
7	LEO_PREMED_STATIN	CHAR	Pre-procedural Medication-Statin	No
				Unknown
				Yes
8	LEO_PREMED_BETAB	CHAR	Pre-procedural Medication-Beta Blocker	No
				Unknown
				Yes
9	LEO_PREHEMO	CHAR	Preprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure < 30 mm Hg
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				None/Not documented
10	LEO_ULP	CHAR	Untreated Loss of Patency	No
				Yes
11	LEO_DULP	NUM	Days from operation until Untreated Loss of Patency	-99=missing
12	LEO_BLEEDING	CHAR	Bleeding Requiring Transfusion or Secondary Procedure	No
				Yes
13	LEO_DBLEEDING	NUM	Days from operation until Bleeding Requiring Transfusion or Secondary Procedure	-99=missing
14	LEO_MI_STROKE	CHAR	Myocardial Infarction or Stroke	No
				Yes
15	LEO_DMI_STROKE	NUM	Days from operation until Myocardial Infarction or Stroke	-99=missing
16	LEO_WOUND	CHAR	Wound Infection/Complication	No
				Yes

17	LEO_DWOUND	NUM	Days from operation until Wound Infection/Complication	-99=missing
18	LEO_POSTHEMO	CHAR	Postprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure < 30 mm Hg
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed w/in 30 days; evidence of patient clinically well
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				None/Not documented
19	LEO_MOSTSEVOUTCOME	CHAR	Most Severe Procedural Outcome	Clinically Patent Graft
				Death
				Image-proven graft thrombosis or clinically evident thrombosis with no planned intervention
				Major Amputation
				New bypass in the treated arterial segment
				Not documented
				Other
				Patent graft with stenosis
				Patent graft, no stenosis
				Revised graft with stenosis
				Revised graft, no current stenosis
20	LEO_DMOSTSEVOUTCOME	NUM	LEO_DMOSTSEVOUTCOME	-99=missing
21	LEO_MRB	CHAR	Major reintervention on the bypass	No
				Yes
22	LEO_AMPUTATIONE	CHAR	LEO_AMPUTATIONE	No
				Yes

Targeted LEE (Lower Extremity endo)

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	LEE_PROC	CHAR	Procedure	Femoropopliteal angioplasty/stenting/atherectomy
				Not documented
				Tibial angioplasty/stenting
3	LEE_SYMPT	CHAR	Symptomatology	Asymptomatic
				Claudication
				Critical limb ischemia: rest pain
				Critical limb ischemia: tissue loss
				Not documented
4	LEE_HRF_PHYS	CHAR	High Risk Factors, Physiologic	No
				Unknown
				Yes
5	LEE_HRF_ANAT	CHAR	High Risk Factors, Anatomic	None/Not documented
				Prior ipsilateral bypass involving currently treated segment
				Prior ipsilateral percutaneous intervention involving currently treated segment
6	LEE_PREMED_ASPIRIN	CHAR	Pre-procedural Medication-Aspirin/Clopidogrel	No
				Unknown
				Yes
7	LEE_PREMED_STATIN	CHAR	Pre-procedural Medication-Statin	No
				Unknown
				Yes
8	LEE_PREMED_BETAB	CHAR	Pre-procedural Medication-Beta Blocker	No
				Unknown
				Yes
9	LEE_PREHEMO	CHAR	Preprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure < 30 mm Hg
				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				None/Not documented
10	LEE_ULP	CHAR	Untreated Loss of Patency	No
				Yes
11	LEE_DULP	NUM	Days from operation until Untreated Loss of Patency	-99=missing
12	LEE_BLEEDING	CHAR	Bleeding Requiring Transfusion or Secondary Procedure	No
				Yes
13	LEE_DBLEEDING	NUM	Days from operation until Bleeding Requiring Transfusion or Secondary Procedure	-99=missing
14	LEE_MI_STROKE	CHAR	Myocardial Infarction or Stroke	No
				Yes
15	LEE_DMI_STROKE	NUM	Days from operation until Myocardial Infarction or Stroke	-99=missing
16	LEE_WOUND	CHAR	Wound Infection/Complication	No
				Yes
17	LEE_DWOUND	NUM	Days from operation until Wound Infection/Complication	-99=missing
18	LEE_POSTHEMO	CHAR	Postprocedural Hemodynamics of Treated Leg	ABI 0.40 - 0.89
				ABI 0.90 - 1.29
				ABI <= 0.39
				ABI >= 1.30; arteries "noncompressible", no toe pressure taken
				ABI >= 1.30; arteries "noncompressible", toe pressure < 30 mm Hg

				ABI >= 1.30; arteries "noncompressible", toe pressure >= 30 mm Hg
				ABI not performed w/in 30 days; evidence of patient clinically well
				ABI not performed; "not palpable"
				ABI not performed; ipsilateral pedal pulse "palpable"
				None/Not documented
19	LEE_MOSTSEVOUTCOME	CHAR	Most Severe Procedural Outcome	Clinically Patent Graft
				Death
				Image-proven treated arterial segment thrombosis or clinically evident thrombosis with no planned intervention
				Major Amputation
				New bypass in the treated arterial segment
				Not documented
				Other
				Patent treated arterial segment with stenosis
				Patent treated arterial segment, no stenosis
				Reintervened treated arterial segment with no current stenosis
				Reintervened treated arterial segment with stenosis
20	LEE_DMOSTSEVOUTCOME	NUM	LEE_DMOSTSEVOUTCOME	-99=missing
21	LEE_MRTAS	CHAR	Major Reintervention of Treated Arterial Segment	No
				Yes
22	LEE_AMPUTATION	CHAR	Major Amputation (Transtibial or Proximal)	No
				Yes

Targeted Colectomy

Position #	Variable Name	Data Type	Variable Label	Variable Options
1	CASEID	NUM	CASEID	You need this unique CASEID to merge with regular PUF dataset.
2	COL_STEROID	CHAR	Steroid/Immunosuppressant Use for Inflammatory Bowel Disease	NULL=missing
				No
				Yes
3	COL_STEROID_UNK	NUM	Steroid/Immunosuppressant Use Unknown	-99=missing
4	COL_MECH_BOWEL_PREP	CHAR	Preoperative Mechanical Bowel Prep	NULL=missing
				No
				Yes
5	COL_MECH_BOWEL_PREP_UNK	NUM	Preoperative Mechanical Bowel Prep Unknown	-99=missing
6	COL_ORAL_ANTIBIOTIC	CHAR	Preoperative Oral Antibiotic Prep	NULL=missing
				No
				Yes
7	COL_ORAL_ANTIBIOTIC_UNK	NUM	Preoperative Oral Antibiotic Prep Unknown	-99=missing
8	COL_CHEMO	CHAR	Chemotherapy within 90 Days	NULL=missing
				No
				Yes
9	COL_CHEMO_UNK	NUM	Chemotherapy within 90 Days Unknown	-99=missing
10	COL_INDICATION	CHAR	Primary Indication for Surgery	Acute diverticulitis
				Bleeding
				Chronic diverticular disease
				Colon cancer
				Colon cancer w/ obstruction
				Crohn's Disease
				Enterocolitis (e.g. C. Difficile)
				Non-malignant polyp
				Other-Enter ICD-9 for diagnosis
				Ulcerative colitis
				Unknown
				Volvulus
11	COL_ICD9_INDICATION	CHAR	ICD9 for Indication	ICD9 code, NULL=missing
12	COL_EMERGENT	CHAR	Indication for Surgery if Emergent	Bleeding
				NULL=missing
				Obstruction
				Other (enter ICD-9 code)
				Perforation
				Toxic colitis (Toxic Megacolon, C. diff w/out perforation, Ischemic Colitis)
				Unknown
13	COL_ICD9_EMERGENT	CHAR	ICD9 for Emergent Surgery	ICD9 code, NULL=missing
14	COL_APPROACH	CHAR	Operative Approach	Laparoscopic
				Laparoscopic Hand Assisted
				Laparoscopic w/ open assist
				Laparoscopic w/ unplanned conversion to Open
				Laparoscopic w/ unplanned conversion to open
				Open
				Open (planned)
				Robotic w/ unplanned conversion to open
				Unknown
15	COL_MARGINS	CHAR	Positive Margins	N/A
				NULL=missing
				No
				Yes
16	COL_MARGINS_UNK	NUM	Positive Margins Unknown	-99=missing
17	COL_MALIGNANCYT	CHAR	If Malignancy, Pathologic T Stage	N/A
				T1
				T2
				T3
				T4
				T4b
				Unknown
18	COL_MALIGNANCYN	CHAR	If Malignancy, Pathologic N Stage	N/A
				N0
				N1
				N1a

				N1b
				N2
				Unknown
19	COL_MALIGNANCYM	CHAR	If Malignancy, Pathologic M Stage	M0
				M0/Mx
				M1
				N/A
				Unknown
20	COL_ANASTOMOTIC	CHAR	Anastomotic Leak	No
				Unknown
				Yes-no intervention required
				Yes-percutaneous intervention
				Yes-reoperation
21	COL_ILEUS	CHAR	Prolonged Postoperative Ileus	NULL=missing
				No
				Yes
22	COL_ILEUS_UNK	NUM	Prolonged Postoperative Ileus Unknown	-99=missing

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