NATIONAL SURVEY OF AMBULATORY SURGERY

2006

REVISED PUBLIC USE DATA FILE DOCUMENTATION
See explanation of revision on the following page

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Revised May 2009

WHAT HAS CHANGED IN THE DOCUMENTATION

The Public Use Documentation now states that this is the revised May 2009 version of this document.

A discussion of the revision of the NSAS 2006 Data File is included on pages 2-4 and a comparison of data before and after the revision is included in Tables A and B on pages 5-6.

In the Medical Coding and Edits section on Page 11, the newest procedure chapter 00 is discussed and a link is provided for more information on these codes, which are included in the data set and the tables to the National Health Statistics Report on NSAS (12).

In the References Section on page 16, #12 was revised to indicate that the NSAS National Health Statistics Report was revised in September 2009.

The Data Set name has been changed in order to differentiate between the original and revised data sets. The revised Data Set Name, which is NSAS06REV0509.TXT, is noted on page 17.

In Appendix A, Definition of Terms, on pages 29-31, the procedure section has been expanded to include information on how procedures were classified as surgical or nonsurgical for the SGFLAG1-SGFLAG6 variables. Table A1 has been added to show the International Classification of Diseases, 9th Revision, Clinical Modification, procedure codes which were considered to be non-surgical. All other codes were considered to be surgical.

In Appendix D, Numbers of Visits for Selected Variables – Unweighted and Weighted Frequencies (pages 36-37), there is a note explaining that the weighted estimates may differ from those published due to masking of the data to prevent disclosure.

Bold print is used for the above additions and for other wording or editorial changes added to this version of the documentation.

DISCUSSION OF MAY, 2009, REVISIONS OF NS8;AS (NATIONAL SURVEY OF AMBULATORY SURGERY) 2006 DATA FILE (originally released on 10/22/08)

Identification of a Double Coding Issue with NSAS 2006 data set

The 2006 NSAS public use data files were released in October 2008. A researcher contacted NCHS in mid February, questioning the fact that the number of myringotomies in the 2006 NSAS was double the number of children under 15 years receiving this procedure. In the 1996 NSAS data, there was close to a one-to-one correspondence between these two estimates. The reason for the difference was that in 1996, myringotomy was coded once per record, even if the procedure was performed bilaterally; in 2006, myringotomy was coded twice if performed bilaterally. This inconsistency was unintentional.

Given this inconsistency, the entire 2006 NSAS data set was examined to see if there were other records with multiple identical procedure codes. It was determined that a total of 4,923 records (including myringotomies) of the original 52,233 records in 2006 NSAS had multiple coding (approximately 9%). Double coding was present in only 35 records of 125,000 in 1996 NSAS.

Original Coding Guidelines Followed for 2006 NSAS Data

The 1994-1996 NSAS procedure coding guidelines were based upon International Classification of Disease, Version 9, Clinical Modification (ICD-9-CM) inpatient coding guidelines that were in effect at that time. With the use of these guidelines, multiple coding rarely occurred, even if bilateral or other multiple procedures codes were listed in the record more than one time. Instead of using these ICD-9-CM inpatient coding guidelines, the 2006 NSAS used National Hospital Ambulatory Medical Care Survey (NHAMCS) procedure coding guidelines. Although NHAMCS guidelines were also based on ICD-9-CM codes, they differed in allowing double coding if the following circumstances occurred: if more than one site was specified, if a procedure was bilateral, and if an abstractor recorded a procedure multiple times. In NHAMCS, an editing process removed all double codes that were determined to be inappropriate. However, this step in the editing process was not incorporated into 2006 NSAS data production, creating the double coding issue.

Revising the NSAS Data Set and How It Affected the Data

To maintain comparability with the 1994-1996 NSAS data, since multiple codes were not included in the 1996 NSAS, all multiple procedure codes were removed from the 2006 NSAS data. As a result, the estimate for the total number of 2006 NSAS procedures fell from 57,062,000 to 53,329,000, a 6.5% decrease. Categories were differentially affected. The attached tables show the 2006 NSAS original and the 2006 NSAS revised estimates for some of the major procedure categories included in the published NSAS National Health Statistics Report. The tables also include ratios of the revised estimates to the original estimates to show relative changes. As expected, the revised estimates decreased most for bilateral and other multiple site procedures.

The procedure estimates for the following chapters were most affected by the deletion of multiple codes:

Operations on the nervous system **decreased 22%**
Largely due to multiple coding of injection of agent into spinal canal

Operations on the ear **decreased 35%**
Largely due to double coding of myringotomy with insertion of tube

Operations on the nose, mouth, and pharynx **decreased 10%**

Operations on the integumentary system **decreased 13%**
Largely due to multiple coding of excision or destruction of lesion or tissue of skin and subcutaneous tissue

Since myringotomies are a common procedure for children, estimates for both myringotomies and for overall procedures for children decreased a great deal after double coding was eliminated. The children's estimate decreased by 19% and the myringotomy estimate decreased by 44%.

Steps Taken to Improve Coding in the Future

A coding manual for the 2009 Ambulatory Surgical Center (ASC) data (now being gathered through NHAMCS) that clarifies the multiple coding issue is being prepared for coding of NHAMCS data. The differences between CPT and ICD-9-CM coding principles are discussed in the new manual along with what to do if the record contains only CPT codes. For the 2009 coding of ASC data, a crosswalk has been developed to generate ICD-9-CM codes from CPT codes. Instructions detailing how to handle duplicate codes are also included.

When the 2009 NHAMCS data are processed, the National Center for Health Statistics (NCHS) will examine all double coding and remove any codes that are found to be inappropriate.

We welcome your suggestions on how to handle multiple codes in future ASC data. Please send any suggestions to Nancy Sonnenfeld at nsonnenfeld@cdc.gov.

Steps Data Users Should Take Upon Receiving the Revised Data

Data users are advised to use the revised 2006 NSAS data set to run all analyses of procedure data, even if the procedures of interest are not listed above. Similarly, estimates obtained from the January 28, 2009, National Health Statistics Report should be checked against the revised 2006 NSAS National Health Statistics Report, which has been posted on our website at http://www.cdc.gov/nchs/nsas/nsas_products/htm.

WHAT HAS CHANGED IN THE REVISED NSAS DATA SET:

As was indicated above in the discussion of the data set revision, the estimates of some procedures (PROC1-PROC 6), particularly those which were coded multiple times, have changed. They are lower since duplicates have been deleted. The values for other variables which were derived from the procedure data had to be derived again from the newer data set. The variables affected were NUMPROC (number of procedures per visit), SGFLAG1-SGFLAG6 (flags indicating if the procedures were surgical or nonsurgical), and PD1CLASS-PD6CLASS (the Agency for Health Care Research and Quality's Procedure Class Tool variables). Because of the changes in certain estimates, standard errors for these estimates may also have changed.

Table A. Comparison of original (10/08) National Survey of Ambulatory Surgery (NSAS) 2006 and revised (05/09) NSAS 2006 procedure estimates

Estimates in thousands from Table 6 in the NSAS National Health Statistics Report (NHSR)

	Original NSAS	Revised NSAS	Revised/ Original %	Decrease	% Decrease
Total procedures	**57,062**	**53,329**	**93.5%**	**3,733**	**7%**
Age in years					
Under 15	**4,034**	**3,266**	**81.0%**	**768**	**19%**
15-44	**13,691**	**12,780**	**93.3%**	**911**	**7%**
45-64	**21,369**	**20,167**	**94.4%**	**1,202**	**6%**
65-74	**9,622**	**9,182**	**95.4%**	**440**	**5%**
75+	**8,345**	**7,934**	**95.1%**	**411**	**5%**
Sex					
Male	**24,328**	**22,681**	**93.2%**	**1,647**	**7%**
Female	**32,734**	**30,648**	**93.6%**	**2,086**	**6%**
Procedure category					
Nervous system	**4,106**	**3,198**	**77.9%**	**908**	**22%**
Eye	**7,296**	**7,085**	**97.1%**	**211**	**3%**
Ear	**1,723**	**1,114**	**64.7%**	**609**	**35%**
Nose, mouth, and pharynx	**3,179**	**2,864**	**90.1%**	**315**	**10%**
Respiratory system	**448**	**445**	**99.3%**	**3**	**1%**
Cardiovascular system	**1,395**	**1,376**	**98.6%**	**19**	**1%**
Digestive system	**14,677**	**14,414**	**98.2%**	**263**	**2%**
Urinary system	**1,799**	**1,776**	**98.7%**	**23**	**1%**
Male genital organs	**655**	**631**	**96.3%**	**24**	**4%**
Female genital organs	**2,503**	**2,497**	**99.8%**	**6**	**0.2%**
Musculoskeletal system	**8,439**	**7,944**	**94.1%**	**495**	**6%**
Integumentary system	**4,108**	**3,581**	**87.2%**	**527**	**13%**
Misc diagnostic/therapeutic and new technologies	**6,387**	**6,060**	**94.9%**	**327**	**5%**
Other (includes endocrine system, hemic and lymphatic system, and obstetrical procedures	**346**	**344**	**99.4%**	**2**	**1%**

Table B. Estimates in thousands from Table 2 in the National Health Statistics Report entitled "Ambulatory Surgery in the United States, 2006"

	Original NSAS	Revised NSAS	Revised/Original	Decrease	% Decrease
Total procedures	**57,062**	**53,329**	**93.5%**	**3,733**	**7%**
Facility type					
Hospital based	**32,320**	**30,761**	**95.2%**	**1559**	**5%**
Freestanding	**24,742**	**22,568**	**91.2%**	**2174**	**9%**
Male hospital based	**14,051**	**13,286**	**94.6%**	**765**	**5%**
Male freestanding	**10,277**	**9,395**	**91.4%**	**882**	**9%**
Female hospital-based	**18,270**	**17,475**	**95.6%**	**795**	**4%**
Female freestanding	**14,465**	**13,173**	**91.1%**	**1292**	**9%**
Region					
Northeast	**8,551**	**8,018**	**93.8%**	**533**	**6%**
Midwest	**13,583**	**12,575**	**92.6%**	**1008**	**7%**
South	**25,509**	**24,023**	**94.2%**	**1486**	**6%**
West	**9,420**	**8,713**	**92.5%**	**707**	**8%**
Male northeast	**3,710**	**3,486**	**94.0%**	**224**	**6%**
Male midwest	**5,803**	**5,321**	**91.7%**	**482**	**8%**
Male south	**10,755**	**10,143**	**94.3%**	**612**	**6%**
Male west	**4,060**	**3,730**	**91.9%**	**330**	**8%**
Female northeast	**4,841**	**4,532**	**93.6%**	**309**	**6%**
Female midwest	**7,780**	**7,254**	**93.2%**	**526**	**7%**
Female south	**14,754**	**13,879**	**94.1%**	**875**	**6%**
Female west	**5,359**	**4,983**	**93.0%**	**376**	**7%**
Metropolitan status					
Metropolitan statistical area	**48,874**	**45,691**	**93.5%**	**3,183**	**7%**
Nonmetropolitan statistical area	**8,189**	**7,638**	**93.3%**	**551**	**7%**
Male metropolitan statistical area	**20,821**	**19,399**	**93.2%**	**1,422**	**7%**
Male nonmetropolitan statistical area	**3,507**	**3,282**	**93.6%**	**225**	**6%**
Female metropolitan statistical area	**28,053**	**26,292**	**93.7%**	**1,761**	**6%**
Female nonmetropolitan statistical area	**4,682**	**4,356**	**93.0%**	**326**	**7%**

NATIONAL SURVEY OF AMBULATORY SURGERY

2006

PUBLIC USE DATA FILE DOCUMENTATION – Revised 5/09

Abstract

This document provides information for users of the **Revised** National Survey of Ambulatory Surgery (NSAS) Public Use Data File for 2006. The NSAS is conducted periodically by the National Center for Health Statistics (NCHS) and is a principal source of information on outpatient surgical utilization in the United States.

Section I describes the survey and includes information on the history and scope of the NSAS; the methodology, including data collection and medical coding procedures; population estimates; measurement errors and sampling errors.

Section II provides technical details about the **revised** file.

Section III provides a detailed description of the contents of each data record.

Appendix A defines certain terms used in this document;
Appendix B provides information on the ICD-9-CM Addenda;
Appendix C provides population estimates to allow for the calculation of rates;
Appendix D provides unweighted and weighted frequencies for selected variables;
Appendix E includes a copy of the NSAS Medical Abstract Form.

TABLE OF CONTENTS

I. DESCRIPTION OF THE NATIONAL SURVEY OF AMBULATORY SURGERY

Introduction. This document and its appendices contain information for users of the 2006 National Survey of Ambulatory Surgery (NSAS) public use data file. This survey, conducted periodically by the National Center for Health Statistics (NCHS), covers ambulatory surgery procedures performed in hospitals and freestanding ambulatory surgery centers in the United States. A brief description of the survey design and data collection procedures is given below. A more detailed description of the 1994-1996 survey design, data collection procedures, and the estimation process has been published.[1]

History. The National Survey of Ambulatory Surgery was undertaken to obtain information about the use of ambulatory surgery. Ambulatory surgery has been increasing in the United States since the early 1980's. Two major reasons for the increase are advances in medical technology and cost containment initiatives. The medical advances include improvements in anesthesia, which enable patients to regain consciousness more quickly with fewer after effects, and better analgesics for relief of pain. In addition, minimally invasive and noninvasive procedures have been developed and are being used with increasing frequency. Examples include laser surgery, laparoscopy, and endoscopy. These medical advances have made surgery less complex and risky[2] and have allowed for many procedures to move from inpatient to ambulatory settings.[3-7]

At the same time, concern about rising health care costs led to changes in the Medicare program that encouraged the development of ambulatory surgery. In the early 1980's, the Medicare program was expanded to cover care in ambulatory surgery centers, and a prospective payment system based on diagnosis-related groups (DRG's) was adopted for hospital inpatient care that created strong financial incentives for hospitals to shift less complex surgery to outpatient settings. Many State Medicaid plans and private insurers followed the lead of the Medicare program and adopted similar policies.[8]

Additional changes in the health care system, such as the growth of managed care along with consolidation of hospitals, have furthered the growth of ambulatory surgery.[4, 9] As these changes occurred, many types of surgeries done in hospitals were increasingly performed during ambulatory visits. Both in conjunction with and as a result of these changes, the number of freestanding ambulatory surgery centers grew from 239 in 1983[10] to over 3,300 nearly two decades later[4] with approximately 300 ASCs being created each year in the early 2000s.[11] The number of procedures being performed in ASCs also increased dramatically-- 380,000 procedures in 1983, 31.5 million procedures in 1996 and **53.3 million** procedures in 2006.[6, 12, 13]

The National Hospital Discharge Survey (NHDS), which has been conducted by the NCHS every year since 1965, includes information on surgical and nonsurgical procedures performed in inpatient settings.[13-15] Although the NHDS remains a good source of data for procedures that can only be done on an inpatient basis, such as open-heart surgery or cesarean section, the NHDS estimates have become incomplete for procedures that can be performed on an ambulatory basis. The NSAS was undertaken to obtain information about ambulatory procedures. For many types of procedures, data from both the NHDS and the NSAS are now required to obtain national estimates.

SURVEY METHODOLOGY

Source of the Data. The NSAS covers ambulatory surgery procedures performed in hospitals and freestanding ambulatory surgery centers (FSASC). The hospital universe includes noninstitutional hospitals exclusive of Federal, military, and Department of Veteran's Affairs hospitals, located in the 50 States and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of less than 30 days) or those whose specialty was general (medical or surgical) or children's general were included in the survey. These hospitals must also have had six beds or more staffed for patient use. This universe definition was the same as that used for the National Hospital Discharge Survey. For the 2006 NSAS, the hospital sample frame was constructed from the products of Verispan, L.L.C., specifically their "Healthcare Market Index, Updated June 15, 2005" and their "Hospital Market Profiling Solution, Second Quarter, 2005."[16] These products were formerly known as the SMG Hospital Market Database. In 2006, the sample consisted of 224 hospitals. Of the 224 hospitals, 35 were found to be out-of-scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NSAS universe. Of the 189 in-scope (eligible) hospitals, 142 hospitals responded to the survey.

The universe of freestanding facilities included FSASCs that were regulated by the States or certified by CMS, the Centers for Medicare and Medicaid Services, for Medicare participation. The sampling frame consisted of facilities listed in the 2005 Verispan Freestanding Outpatient Surgery Center Database[17] and Medicare-certified facilities included in the CMS Provider-of-Services (POS) file.[18] Facilities specializing in dentistry, podiatry, abortion, family planning, or birthing were excluded. However, these procedures were not excluded from in-scope locations. In 1994-1996, pain block locations were also excluded; however, they were included in the 2006 NSAS. In 2006, the sample consisted of 472 freestanding ASCs. Of the 472 FSASCs, 75 were found to be out-of-scope (ineligible) because they failed to meet the criteria for the NSAS universe. Of the 397 in-scope (eligible) FSASCs, 295 FSASCs responded to the survey.

Sample design and data collection. The NSAS sampled facilities using a multi-stage probability design with facilities having varying selection probabilities. Independent samples of hospitals and freestanding ambulatory surgery centers were drawn. Unlike the 1994-1996 NSAS which used a stratified cluster design, the 2006 NSAS did not cluster facilities into geographic primary sampling units or PSUs. Facilities were stratified by facility type (hospital versus freestanding), ambulatory surgery status of hospitals (i.e. whether or not the hospital performed such surgery), facility specialty, and geographic region.

The first stage of the design consisted of selection of facilities using systematic random sampling with probabilities proportional to the annual number of ambulatory surgeries performed. For the stratum of hospitals which, according to the sampling frame data, did not have ambulatory surgery, a national sample of 25 hospitals was selected to permit estimates of surgery in hospitals that either changed their status or differed from frame data.

Within sampled facilities, a sample of ambulatory surgery visits was selected using a systematic random sampling procedure. Selection of visits within each facility was performed separately for each location where ambulatory surgery was performed. These locations included main operating rooms, dedicated ambulatory surgery units, cardiac catheterization laboratories, laser procedure rooms, endoscopy and laparoscopy rooms, etc. Locations within hospitals that specialized in or were dedicated to inpatients, dentistry, abortion, podiatry, or small procedures were excluded. However, as mentioned above, these procedures were not excluded from in-scope locations.

Following selection of ambulatory surgery visits, data were abstracted from the medical record for each visit. The Medical Abstract Form used in data collection contained items relating to the personal characteristics of the patient, including birth date or age, sex, race, ZIP Code, but not name and address; administrative information, including the date of the surgery, and disposition of the patient; principal and other additional expected sources of payment; medical information, including diagnoses and surgical and nonsurgical procedures performed, as well as types of anesthesia administered and by whom; and information on follow-up with the patient. Patient date of birth and ZIP Code are confidential information and are not available to the public.
In addition, region of the country was removed from the public use file in order to maintain the confidentiality of the responding facilities and their patients. Data files containing these variables are only available through the NCHS Research Data Center.

Medical Coding and Edits. The medical information that was recorded on the sample patient abstracts was coded by NCHS **contract** staff. A maximum of seven diagnostic codes was assigned for each sample abstract. In addition, a maximum of six codes was assigned when the medical information included surgical or nonsurgical procedures. The system currently used for coding the diagnoses and procedures on the medical abstract forms is the *International Classification of Diseases, 9th Revision, Clinical Modification,* or ICD-9-CM.[19] **In 2002, the ICD-9-CM Coordination and Maintenance Committee, cosponsored by the National Center for Health Statistics and the Centers for Medicare and Medicaid Services (CMS), both parts of the U.S. Department of Health and Human Services, created a new procedure chapter, Chapter 00 – Procedures and Interventions, Not Elsewhere Classified, as a way of handling space limitations in the existing hierarchical structure and alleviating inappropriate categorization of new procedures. For more information about the categorization of the 00 codes in published reports please see the following report:**

http://www.cdc.gov/nchs/data/nhsr/nhsr005.pdf

More information about the ICD-9-CM can be found at http://www.cdc.gov/nchs/icd9.htm.

Following conversion of the data on the medical abstract to a computer file, a final medical edit was accomplished by computer inspection and by a manual review of rejected records. Priority was given to medical information in the editing decision.

Users of the National Survey of Ambulatory Surgery (NSAS) diagnostic and/or procedure data, which is coded to the ICD-9-CM, must take into account the annual ICD-9-CM addendum. The addendum lists new codes, new fourth or fifth digits to existing codes, as well as other modifications. Changes go into effect October 1 of the calendar year. Coding of the 2006 data is consistent with the ICD-9-CM and the addendum which became effective October 1, 2005. Addendum changes for 1986 through 2006 can be found in the documentation for the 2006 NHDS public use file:
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHDS/NHDS_2006_Documentation.pdf.

The 2006 NSAS includes six variables that were based on the Procedure Class tool from the Agency for Health Care Research and Quality (AHRQ). ICD-9-CM procedure codes were categorized into four broad categories- Minor Diagnostic, Minor Therapeutic, Major Diagnostic, and Major Therapeutic. **Major procedures are those considered by the DRG classification scheme to be valid operating room (OR) procedures, defined as procedures that require the**

use of an operating room (as determined by physician panels that classified all procedure codes based on whether the procedure would be performed in an operating room in most hospitals). More information can be found at

http://www.hcup-us.ahrq.gov/toolssoftware/procedure/procedure.jsp.

Population Estimates. Estimates of the civilian population of the United States as of July 1, 2006 are presented in Appendix C. These estimates were provided by the U.S. Census Bureau, and are based on the 2000 Census.

Confidentiality. Persons using the public use file agree to abide by the confidentiality restrictions that accompany use of the data. Specifically, they agree that, in the event of inadvertent discovery of the identity of any individual or establishment, then: (a) no use will be made of this knowledge; (b) the director of NCHS will be advised of the incident; (c) the information that would identify the individual or establishment will be safe-guarded or destroyed, as requested by NCHS; and (d) no one else will be informed of the discovered identity.

Maintaining the confidentiality of survey respondents, whether individuals or establishments, is a responsibility of NCHS as described in section 308(d) of the Public Health Service Act. As such it may be necessary for NCHS to block the release of data or modify variables that may, because of their unique nature, lead to inadvertent disclosure of the identity of a participating facility or respondent. In addition, legislation covering confidentiality is provided according to section 513 of the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) (PL-107-347) which provide for a felony conviction and/or fine of up to $250,000 if this confidentiality is breached.

Measurement Errors. As in any survey, results are subject to nonsampling or measurement errors, which include errors due to hospital nonresponse, missing abstracts, information incompletely or inaccurately recorded on abstract forms, and processing errors. A very small proportion (less than one percent) of the records failed to include the sex, age, or date of birth of the patient. If the record did not state either the age or sex of patient, it was imputed by assigning an age or sex value according to **specifications available upon request**. In a very few cases (less than two percent of the records), the age or sex was edited because it was inconsistent with the diagnosis. Approximately fifty percent of the records were missing a value for race of the patient. No attempt was made to impute these missing values. Race and ethnicity were excluded from the public use file due to the large amount of missing data.

The determination of whether an ambulatory surgery facility was a hospital or a freestanding center was based on the Verispan universe from which the facility was selected. In most cases it was apparent whether a facility was a hospital or a freestanding ambulatory surgery center, but some facilities were not easily classified. For example, a "freestanding" facility may have been owned by a hospital but located some distance away. If such a facility was separately listed in the 2005 Verispan Freestanding Outpatient Surgery Center Database and was selected into the NSAS sample from this universe, it was considered a freestanding facility.

The distinction between ambulatory and inpatient surgery was not always clear. According to the 2006 NSAS, an estimated 0.83 (n=329 unweighted records) percent of ambulatory surgery visits were for patients subsequently admitted to the hospital as inpatients. Some of these patients had procedures which were performed exclusively on inpatients, such as coronary artery bypass graft, in addition to diagnostic procedures such as cardiac catheterization. These visits and their suspected "inpatient" procedures were not eliminated from the data file because they were operationally part of the survey design. It is left to the prerogative of the researcher whether or

not to include these procedures in an analysis. However, in NCHS publications for the 1994 and 2006 NSAS, patients discharged to inpatient status were included in estimates of visits and procedures. For the 1995 and 1996 NSAS, these visits were excluded from all published tabulations.

Sampling errors and rounding of numbers. Statistics from the NSAS were derived by a multistage estimation procedure that produced essentially unbiased estimates. The estimation procedure had three basic components: (a) inflation by reciprocals of the probabilities of sample selection, (b) adjustment for nonresponse, and (c) population weighting ratio adjustments.

The standard error is primarily a measure of sampling variability that occurs by chance because only a sample rather than the entire universe is surveyed. The relative standard error of the estimate is obtained by dividing the standard error by the estimate itself. The resulting value is multiplied by 100, so the relative standard error is expressed as a percent of the estimate. Estimates of sampling variability were calculated with SUDAAN software, which computes standard errors by using a first-order Taylor series approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses was published by Bieler and Williams.[20]

The 2006 NSAS public use file contains masked multi-stage design variables which protect the confidentiality of the responding facilities and also allow users to estimate variance with software such as SUDAAN's full sample without replacement design option. The standard errors produced with computer software like SUDAAN using masked design variables will not always be as accurate as those produced using unmasked data. However, data files containing unmasked variables are confidential and are only available through the NCHS Research Data Center.

Examples using Stata and SUDAAN's WOR (without replacement) design option are below:

Stata

Stata 9: svyset facility [pweight=weight], strata(strata) fpc(popfac) || _n, strata(psudolog)

SUDAAN WOR option

The program below provides a without replacement estimate of standard errors for a cross-tabulation.

```
PROC CROSSTAB   DATA=NSAS   DESIGN=WOR   FILETYPE=SAS;
NEST   STRATA FACILITY PSUDOLOG   /  MISSUNIT;
TOTCNT   POPFAC   _ZERO_   POPVIS;
```

Presentation of Estimates. Publication of estimates for the NSAS is based on the relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size). Estimates are not presented in NCHS reports unless a reasonable assumption regarding the probability distribution of the sampling error is possible.

Based on consideration of the complex sample design of the NSAS, the following guidelines are used for presenting the NSAS estimates:

If the sample size is less than 30, the value of the estimate is not reported.

If the sample size is 30-59, the value of the estimate is reported but should not be assumed reliable.

If the sample size is 60 or more and the relative standard error is less than 30 percent, the estimate is reported.

If the relative standard error of any estimate is over 30 percent, the estimate is considered to be unreliable. It is left to the author to decide whether or not to present it. However, if the author chooses to present the unreliable estimate, the consumer of the statistic must be informed that the statistic is not reliable.

Monthly and Seasonal Estimates. A nonresponding facility was one which failed to provide at least half of the expected number of records for at least half of the months for which it was in-scope. In this case, weights of discharges from facilities similar to the nonresponding facility were inflated to account for discharges of the nonrespondent facility. This adjustment was performed just once, after the close out of the survey for the year.

For partially responding facilities, one or both of two adjustments were made. If the facility provided at least half, but not all, of the expected number of abstracts for a given month, the weights of the abstracts actually collected for that month were inflated to account for the missing abstracts. If fewer than half of the expected number of abstracts were provided, the weights of the abstracts provided were inflated by a factor of two, and then a second adjustment was made to account for the excess nonresponse. In the second adjustment, the weights of the discharges in the facility's respondent months were inflated by ratios that varied by category of first-listed ICD-9-CM diagnostic code. This adjustment ratio was based on the facility's month(s) of nonresponse and the month-by-month distributions of first-listed diagnostic groups among discharges from facilities which responded for all twelve months. The ratio accounts for the seasonality in the occurrence of the first-listed diagnostic groups for annual statistics, but not for partial year estimates. As a result monthly and seasonal estimates may be skewed. While the effect is believed to be small, it is recommended that partial year estimates NOT be produced. In the 2006 NSAS, 85 percent of the 437 responding hospitals provided data for all twelve months, and 89 percent provided at least nine months of data.

How to Use the Data File. The NSAS records are weighted to allow inflation to national or regional estimates. The weight applied to each record is called WEIGHT. To produce an estimate of the number of discharges, the weights for the desired records must be summed.

Appendix D contains weighted and unweighted frequencies for selected variables. These may be used as a cross-check when processing NSAS data.

Questions. Questions concerning NSAS data should be directed to:

Centers for Disease Control and Prevention
National Center for Health Statistics
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References

1. Dennison C, Pokras R. Design and operation of the National Hospital Discharge Survey: 1988 redesign. *Vital & Health Statistics - Series 1: Programs & Collection Procedures.* Dec 2000(39):1-42.

2. Warner MA, Shields SE, Chute CG. Major morbidity and mortality within 1 month of ambulatory surgery and anesthesia. *JAMA.* Sep 22-29 1993;270(12):1437-1441.

3. Lumsdon K, Anderson HJ, Burke M. New surgical technologies reshape hospital strategies. *Hospitals.* 40-2, 1992 May 5;66(9):30-36.

4. Winter A. Comparing the mix of patients in various outpatient surgery settings. *Health Affairs.* Nov-Dec 2003;22(6):68-75.

5. Hall MJ, Lawrence L. Ambulatory surgery in the United States, 1995. *Advance Data.* Dec 24 1997(296):1-15.

6. Hall MJ, Lawrence L. Ambulatory surgery in the United States, 1996. *Advance Data.* Aug 12 1998(300):1-16.

7. Kozak LJ, Hall MJ, Pokras R, Lawrence L. Ambulatory surgery in the United States, 1994. *Advance Data.* Mar 14 1997(283):1-15.

8. Leader S, Moon M. Medicare trends in ambulatory surgery. *Health Affairs.* 1989;8(1):158-170.

9. Cuellar AE, Gertler PJ. Trends in hospital consolidation: the formation of local systems. *Health Affairs.* Nov-Dec 2003;22(6):77-87.

10. Durant G. Ambulatory surgery centers: surviving, thriving into the 1990's. *Medical Group Management Journal.* 1989;36(2):16-18, 20.

11. Casalino LP, Devers KJ, Brewster LR. Focused factories? Physician-owned specialty facilities. *Health Affairs.* Nov-Dec 2003;22(6):56-67.

12. Cullen KA, Hall MJ, Golosinskiy A. Ambulatory surgery in the United States, 2006. *National Health Statistics Report.*11, Originally published January 2008. **Revised in September 2009.**

13. Pokras R, Kozak LJ, McCarthy E, Graves EJ. Trends in hospital utilization, 1965-86. *American Journal of Public Health.* Apr 1990;80(4):488-490.

14. Gillum BS, Graves EJ, Kozak LJ. Trends in hospital utilization: United States, 1988-92. *Vital & Health Statistics - Series 13: Data from the National Health Survey.* Jun 1996(124):1-71.

15. DeFrances CJ, Hall MJ. 2005 National Hospital Discharge Survey. *Advance Data.* Jul 12 2007(385):1-19.

16. Verispan LLC. Healthcare Market Index, Updated May 15, 2005. *Hospital Market Profiling Solution, Second Quarter, 2005*.

17. Verispan LLC. Freestanding Outpatient Surgery Centers Database. Chicago: Healthcare Information Specialists; 2005.

18. Centers for Medicare and Medicaid Services. Provider of Services File. Baltimore; 2005.

19. U.S. Department of Health and Human Services, National Center for Health Statistics, Centers for Medicare and Medicaid Services. International Classification of Diseases, Ninth Revision, Clinical Modification. Washington: Public Health Service; 2004.

20. Bieler GS, Williams RL. *Analyzing Survey Data using SUDAAN Release 7.5.* Research Triangle Institute: Research Triangle Park, NC; 1997.

II. TECHNICAL DESCRIPTION OF DATA FILE

Data Set Name	**NSAS06REV0509.TXT**
Record Length	252
Number of Records	52,233

III. RECORD LAYOUT: Location and Coding of Data Elements

This section provides detailed information for each sampled record on the file, with a description of each item included on the record. Data elements are arranged sequentially according to their physical location on the file. Unless otherwise stated in the Item Description, the data are derived from the abstract form. The SMG Hospital Market Database file, Verispan's data products, and the hospital interview are alternate sources of data; some other items are computer generated.

Item Name	Location	Number of Positions	Item Description	Code Description
FACILITY	1-4	4	Facility Number	0001-0433 = valid range
DMONTH	5-6	2	Month of Surgery	01 = January 02 = February 03 = March 04 = April 05 = May 06 = June 07 = July 08 = August 09 = September 10 = October 11 = November 12 = December
DYEAR	7-10	4	Year of Surgery	2006 = Year 2006
SEX	11	1	Sex	1 = Male 2 = Female
STATDISP	12	1	Status/ Disposition of Patient	1 = Routine discharge to customary residence 2 = Discharge to observation status 3 = Discharge to post-surgical/recovery care facility 4 = Admitted to hospital as inpatient 5 = Surgery cancelled or terminated 6 = Other 7 = Status/disposition not stated
ESOP1	13-14	2	Principal Source of Payment	1 = Medicare 2 = Medicaid 3 = TRICARE 4 = Workers comp 5 = Other government 6 = Private or commercial insurance 7 = Self pay 8 = Charity care/ write off 9 = No charge 10 = Other

Item Name	Location	Number of Positions	Item Description	Code Description
ESOP2	15-16	2	Other Sources of Payment	1 = Medicare 2 = Medicaid 3 = TRICARE 4 = Workers comp 5 = Other government 6 = Private or commercial insurance 7 = Self pay 8 = Charity care/ write off 9 = No charge 10 = Other
ESOP3	17-18	2	Other Sources of Payment 2	1 = Medicare 2 = Medicaid 3 = TRICARE 4 = Workers comp 5 = Other government 6 = Private or commercial ins 7 = Self pay 8 = Charity care/ write off 9 = No charge 10 = Other
TYPMCARE	19	1	Type of Medicare Insurance	1 = Fee for Service 2 = HMO 3 = PPO 9 = missing
TYPMCAID	20	1	Type of Medicaid Insurance	1 = Fee for Service 2 = HMO 3 = PPO 9 = missing
TYPPRIV	21	1	Type of Private Insurance	1 = Fee for Service 2 = HMO 3 = PPO 9 = missing
TYPOTH	22	1	Type of Self Pay	1 = Not covered 2 = Had no health insurance 9 = missing
NOSOP	23	1	No source of payment indicated	1 = Box is marked 2 = Box is not marked
TOTCHRGS	24-28	5	Total Charges Amount	00001-99999 = valid range
NOCHRGS	29	1	Total Charges not available	1 = Box is marked 2 = Box is not marked

Item Name	Location	Number of Positions	Item Description	Code Description
INOPR	30-34	5	Time into Operating Room	00001-86400 = valid range
INOPRAP	35	1	Time in Operating Room: AM/PM	1 = AM 2 = PM
INOPRNA	36	1	Time in Operating Room not available	1 = Box is marked 2 = Box is not marked
SURGBEG	37-41	5	Time Surgery Began	00001-86400 = valid range
SURGAP	42	1	Time surgery Began: AM/PM	1 = AM 2 = PM
SURGNA	43	1	Time Surgery Began not available	1 = Box is marked 2 = Box is not marked
SURGEND	44-48	5	Time Surgery Ended	00001-86400 = valid range
ENDAP	49	1	Time Surgery Ended: AM/PM	1 = AM 2 = PM 9 = blank
ENDNA	50	1	Time Surgery **Ended** not available	1 = Box is marked 2 = Box is not marked
OUTOPR	51-55	5	Time out of Operating Room	00001-86400 = valid range
OUTAP	56	1	Time out of Operating Room: AM/PM	1 = AM 2 = PM
OUTNA	57	1	Time out of Operating Room not available	1 = Box is marked 2 = Box is not marked
INPO	58-62	5	Time in to Postoperative care	00001-86400 = valid range
INPOAP	63	1	Time in to Postoperative care: AM/PM	1 = AM 2 = PM 9 = blank
INPONA	64	1	Time in to Postoperative care not available	1 = Box is marked 2 = Box is not marked
OUTPO	65-69	5	Time out of Postoperative care	00001-86400 = valid range

Item Name	Location	Number of Positions	Item Description	Code Description
OUTPOAP	70	1	Time out of Postoperative care: AM/PM	1 = AM 2 = PM
OUTPONA	71	1	Time out of Postoperative Care not available	1 = Box is marked 2 = Box is not marked
TOPICAL	72	1	Anesthesia: Topical/ Local	1 = Box is marked 2 = Box is not marked
IV	73	1	Anesthesia: IV Sedation	1 = Box is marked 2 = Box is not marked
MAC	74	1	Anesthesia: MAC (Monitored Anesthesia Care)	1 = Box is marked 2 = Box is not marked
EPIDURA	75	1	Anesthesia: Regional Epidural	1 = Box is marked 2 = Box is not marked
SPINAL	76	1	Anesthesia: Regional Spinal	1 = Box is marked 2 = Box is not marked
RETROBUL	77	1	Anesthesia: Regional Retrobulbar Block	1 = Box is marked 2 = Box is not marked
PERIBULB	78	1	Anesthesia: Regional Peribulbar Block	1 = Box is marked 2 = Box is not marked
BLOCK	79	1	Anesthesia: Regional Block	1 = Box is marked 2 = Box is not marked
GENERAL	80	1	Anesthesia: General	1 = Box is marked 2 = Box is not marked
OTHER	81	1	Anesthesia: Other	1 = Box is marked 2 = Box is not marked
NONSPC	82	1	Anesthesia: None specified	1 = Box is marked 2 = Box is not marked
ANESTH	83	1	Anesthesia by: Anesthesiologist	1 = Box is marked 2 = Box is not marked
CRNA	84	1	Anesthesia by: CRNA (Certified Registered Nurse Anesthetist)	1 = Box is marked 2 = Box is not marked

Item Name	Location	Number of Positions	Item Description	Code Description
SURGPHYS	85	1	Anesthesia by: Surgeon/ Other physician	1 = Box is marked 2 = Box is not marked
NOTSPEC	86	1	Anesthesia by: not stated/ specified	1 = Box is marked 2 = Box is not marked
DIAG1	87-91	5	First listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range
DIAG2	92-96	5	Second listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range E0100-E9999 = valid range
DIAG3	97-101	5	Third listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range E0100-E9999 = valid range
DIAG4	102-106	5	Fourth listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range E0100-E9999 = valid range
DIAG5	107-111	5	Fifth listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range E0100-E9999 = valid range
DIAG6	112-116	5	Sixth listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range E0100-E9999 = valid range
DIAG7	117-121	5	Seventh listed diagnosis	00100-99999 = valid range V0100-V9999 = valid range E0100-E9999 = valid range
PROC1	122-125	4	First listed surgical or diagnostic procedure	0001-9999 = valid range
PROC2	126-129	4	Second listed surgical or diagnostic procedure	0001-9999 = valid range
PROC3	130-133	4	Third listed surgical or diagnostic procedure	0001-9999 = valid range
PROC4	134-137	4	Fourth listed surgical or diagnostic procedure	0001-9999 = valid range
PROC5	138-141	4	Fifth listed surgical or diagnostic procedure	0001-9999 = valid range

Item Name	Location	Number of Positions	Item Description	Code Description
PROC6	142-145	4	Sixth listed surgical or diagnostic procedure	0001-9999 = valid range
NOPROC	146	1	No procedure listed	1 = Box is marked 2 = Box is not marked
LACPUNC	147	1	Symptom: Accidental laceration, puncture or perforation	1 = Yes 2 = No
AIROBST	148	1	Symptom: Airway obstruction	1 = Yes 2 = No
APNEA	149	1	Symptom: Apnea	1 = Yes 2 = No
BLEED	150	1	Symptom: Bleeding/ hemorrhage	1 = Yes 2 = No
BLDTRANS	151	1	Symptom: Blood transfusion needed	1 = Yes 2 = No
ARREST	152	1	Symptom: Cardiac arrest	1 = Yes 2 = No
DIFFWAK	153	1	Symptom: Difficulty waking up	1 = Yes 2 = No
DYSRHY	154	1	Symptom: Dysrhythmia/ arrhythmia	1 = Yes 2 = No
EMBOL	155	1	Symptom: Embolism	1 = Yes 2 = No
FAINT	156	1	Symptom: Fainting/ Vasovagal syncope	1 = Yes 2 = No
FISTULA	157	1	Symptom: Fistula	1 = Yes 2 = No
HYPERT	158	1	Symptom: High blood pressure/ hypertension	1 = Yes 2 = No
HYPOXIA	159	1	Symptom: Hypoxia	1 = Yes 2 = No

Item Name	Location	Number of Positions	Item Description	Code Description
INCONT	160	1	Symptom: Incontinence	1 = Yes 2 = No
HYPOT	161	1	Symptom: Low blood pressure/ hypotension	1 = Yes 2 = No
MALIGN	162	1	Symptom: Malignant hyperthermia	1 = Yes 2 = No
NAUSEA	163	1	Symptom: Nausea	1 = Yes 2 = No
BURN	164	1	Symptom: Peripheral site burn	1 = Yes 2 = No
SHOCK	165	1	Symptom: Shock	1 = Yes 2 = No
VOMIT	166	1	Symptom: Vomiting	1 = Yes 2 = No
OTH	167	1	Symptom: Other	1 = Yes 2 = No
NONE	168	1	Symptom: None indicated	1 = None is marked 2 = None is not marked
FOLLOWUP	169	1	Did someone attempt to follow up	1 = Yes 2 = No 3 = Unknown 9 = blank
REACH	170	1	Did they reach the patient	1 = Yes 2 = No 3 = Unknown 9 = blank
QUESTION	171	1	Patient had a question	1 = Yes 2 = No
NOPROB	172	1	Patient had no problems	1 = Yes 2 = No
PROB	173	1	Patient had problems	1 = Yes 2 = No
CALLDR	174	1	Patient called doctor	1 = Yes 2 = No

Item Name	Location	Number of Positions	Item Description	Code Description
WENTDR	175	1	Patient went to doctor	1 = Yes 2 = No
CALLASC	176	1	Patient called ASC	1 = Yes 2 = No
CAMEASC	177	1	Patient came back to ASC	1 = Yes 2 = No
CALLED	178	1	Patient called ED	1 = Yes 2 = No
WENTED	179	1	Patient went to ED	1 = Yes 2 = No
ADMITTED	180	1	Patient admitted to hospital	1 = Yes 2 = No
OTHRPROB	181	1	Patient had problems: other	1 = Yes 2 = No
NOTHING	182	1	Nothing learned from follow up	1 = Yes 2 = No
UNKNOWN	183	1	Unknown from follow up	1 = Yes 2 = No
MENTION	184	1	Problems were mentioned by patient	1= Yes 2 = No
RECNUM	185-190	6	Record Number	001001 - 433149
AGEFLAG	191	1	Flag indicating age was imputed	1 = Value was imputed 2 = Value was not imputed
AGEINYRS	192-194	3	Recoded age in years	000-099 = valid range
AGER4	195	1	Recoded age into 4 categories	1 = Under 15 2 = 15-44 3 = 45-64 4 = 65 & up
AGER5	196	1	Recoded age into 5 categories	1 = Under 15 2 = 15-44 3 = 45-64 4 = 65-74 5 = 75 & up

Item Name	Location	Number of Positions	Item Description	Code Description
AGER10	197-198	2	Recoded age into 10 categories	01 = Under 1 year 02 = 1-4 years 03 = 5-14 years 04 = 15-24 years 05 = 25-34 years 06 = 35-44 years 07 = 45-54 years 08 = 55-64 years 09 = 65-74 years 10 = 75 years and older
SEXFLAG	199	1	Flag indicating sex was imputed	1 = Value was imputed 2 = Value was not imputed
SURGTIME	200-203	4	Length of surgery (in minutes)	0 - 761 = valid range
ORTIME	204-207	4	Length of time in operating room (in minutes)	0 - 937 = valid range
POTIME	208-211	4	Length of time in post-op (in minutes)	0 - 1310 = valid range
TOTTIME	212-215	4	Total time (in minutes)	1 - 1346 = valid range
NUMDIAG	216	1	Number of Diagnosis codes	1-7 = valid range
NUMPROC	217	1	Number of Procedure codes	0 - 6 = valid range
SYMPTOMS	218	1	Symptoms present	0 = No symptoms listed 1 = At least one symptom listed
NUMSYMP	219-220	2	Number of symptoms	0 - 21 = valid range
SGFLAG1	221	1	Flag indicating if Procedure #1 is surgical or not	0 = No Procedure 1 = Surgical Procedure 2 = Non-Surgical Procedure
SGFLAG2	222	1	Flag indicating if Procedure #2 is surgical or not	0 = No Procedure 1 = Surgical Procedure 2 = Non-Surgical Procedure
SGFLAG3	223	1	Flag indicating if Procedure #3 is surgical or not	0 = No Procedure 1 = Surgical Procedure 2 = Non-Surgical Procedure

Item Name	Location	Number of Positions	Item Description	Code Description
SGFLAG4	224	1	Flag indicating if Procedure #4 is surgical or not	0 = No Procedure 1 = Surgical Procedure 2 = Non-Surgical Procedure
SGFLAG5	225	1	Flag indicating if Procedure #5 is surgical or not	0 = No Procedure 1 = Surgical Procedure 2 = Non-Surgical Procedure
SGFLAG6	226	1	Flag indicating if Procedure #6 is surgical or not	0 = No Procedure 1 = Surgical Procedure 2 = Non-Surgical Procedure
PD1CLASS	227	1	Procedure #1 recode using AHRQ's classification	1 = Minor Diagnostic 2 = Minor Therapeutic 3 = Major Diagnostic 4 = Major Therapeutic
PD2CLASS	228	1	Procedure #2 recode using AHRQ's classification	1 = Minor Diagnostic 2 = Minor Therapeutic 3 = Major Diagnostic 4 = Major Therapeutic
PD3CLASS	229	1	Procedure #3 recode using AHRQ's classification	1 = Minor Diagnostic 2 = Minor Therapeutic 3 = Major Diagnostic 4 = Major Therapeutic
PD4CLASS	230	1	Procedure #4 recode using AHRQ's classification	1 = Minor Diagnostic 2 = Minor Therapeutic 3 = Major Diagnostic 4 = Major Therapeutic
PD5CLASS	231	1	Procedure #5 recode using AHRQ's classification	1 = Minor Diagnostic 2 = Minor Therapeutic 3 = Major Diagnostic 4 = Major Therapeutic
PD6CLASS	232	1	Procedure #6 recode using AHRQ's classification	1 = Minor Diagnostic 2 = Minor Therapeutic 3 = Major Diagnostic 4 = Major Therapeutic
FACTYPE	233	1	Facility Type	1 = Hospital-based 2 = Freestanding
MSA	234	1	Metropolitan Status (2 categories)	1=MSA 2=non-MSA

Item Name	Location	Number of Positions	Item Description	Code Description
SURVEYYR	235-238	4	Survey Year	2006
WEIGHT	239-242	4	Final Adjusted Analysis Weight	2 - 6500 = valid range
STRATA	243-244	2	Survey design variable	1 - 73 = valid range
POPFAC	245-248	4	Survey design variable	1 - 1220 = valid range
POPVIS	249-250	2	Survey design variable	-1 = valid range
PSUDOLOG	251-252	2	Survey design variable	1 - 21 = valid range

*Diagnosis and procedure codes are in compliance with the *International Classification of Diseases, 9th Revision, Clinical Modification, (ICD-9-CM).* For **diagnosis** codes, there is an implied decimal between positions 3 and 4. For E-codes, the implied decimal is between the 4th and 5th position. For inapplicable 4th or 5th digits, a dash is inserted. For **procedure** codes, there is an implied decimal between positions 2 and 3. For inapplicable 3rd or 4th digits, a dash is inserted.

APPENDIX A

DEFINITION OF TERMS

Terms relating to hospitals and hospitalization

Hospitals: Short stay hospitals or hospitals whose specialty is general (medical or surgical), or children's general. Hospitals must have 6 beds or more staffed for patients use. Federal hospitals and hospital units of institutions are not included.

Freestanding Ambulatory Surgery Centers: Facilities listed in the 2005 Freestanding Outpatient Surgery Center Database and Medicare-certified facilities included in the CMS Provider-of-Services (POS) file. Facilities specializing in dentistry, podiatry, abortion, family planning, or birthing were excluded.

Ambulatory Surgery: Scheduled outpatient surgery performed in any of the following locations: general or main operating room, satellite operating room, cystoscopy room, endoscopy room, cardiac catheterization lab, laser procedures room, pain block room.

Terms relating to diagnoses and procedures

Discharge diagnoses: One or more diseases or injuries (or some factor that influences health status and contact with health services that is not itself a current illness or injury) listed by the attending physician on the medical record of a patient. In the NSAS, discharge (or final) diagnoses listed on the face sheet (summary sheet) of the medical record are transcribed in the order listed. Each sample discharge is assigned a maximum of seven five-digit codes according to ICD-9-CM.[19]

Principal diagnosis: The condition established after study to be chiefly responsible for the admission of the patient to the hospital for care.

First-listed diagnosis: The coded diagnosis identified as the principal diagnosis or listed first on the face sheet of the medical record if the principal diagnosis cannot be identified. The number of first-listed diagnoses is equivalent to the number of ambulatory surgery visits.

Procedure: Surgical or nonsurgical operations, procedures, or special treatments listed by the physician on the medical record. In the NSAS, all terms listed on the face sheet (summary sheet) of the medical record under the caption "operation," "operative procedures," "operations and/or special treatment," and the like were transcribed in the order listed. A maximum of six procedures was coded. **The procedures classified as nonsurgical in this data set are listed in Table A1 by ICD–9–CM code numbers (19). All other procedures were considered surgical. This surgical/nonsurgical classification began in 1979 for the presentation of National Hospital Discharge Survey data and still remains an important distinction. However, the development of minimally invasive and noninvasive procedures has resulted in less difference between surgical and nonsurgical procedures with regard to operative or anesthetic risk and requirements for highly trained personnel or special equipment.**

Table A1. Code numbers for procedures considered nonsurgical in the National Survey of Ambulatory Surgery Data, by ICD–9–CM category, 2006

[Procedure categories and code numbers are based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM)]

Procedure category and ICD–9–CM code		Nonsurgical codes
Operations on the nervous system	01-05	01.18–01.19,03.31,03.39,04.19,05.19
Operations on the endocrine system	06-07	06.19,07.19
Operations on the eye	08-16	08.19,09.19,09.41–9.44,09.49,10.29,11.29,12.29,14.19,15.09,16.21,16.29
Operations on the ear	18-20	18.01,18.11,18.19,20.31,20.39
Operations on the nose, mouth, and pharynx	21-29	21.00–21.02,21.21,21.29,22.19,24.19,25.09,26.19,27.29,28.19,29.11,29.19
Operations on the respiratory system	30-34	31.41–31.42,31.48–31.49,33.21–33.23,33.29,34.21–34.22,34.28–34.29
Operations on the cardiovascular system	35-39	37.26–37.28,37.29,38.29,39.95
Operations on the hemic and lymphatic system	40-41	40.19,41.38–41.39
Operations on the digestive system	42-54	42.22–42.23,42.29,44.11–44.13,44.19,44.32,45.11–45.13,45.19,45.21–45.24, 45.28-45.29, 48.21–48.23,48.29,49.21,49.29,50.19,51.10–51.11,51.19,52.19, 54.21, 54.29
Operations on the urinary system	55-59	55.21–55.22,55.29,56.31,56.35,56.39,57.31–57.32,57.39,57.94–57.95, 58.21–58.22,58.29,59.29
Operations on the male genital organs	60-64	60.18–60.19,61.19,62.19,63.09,64.19,64.94
Operations on the female genital organs	65-71	65.19,66.19,67.19,68.11,68.19,69.92,70.21–70.22,70.29,71.19
Obstetrical procedures	72-75	73.4–73.59,73.91–73.92,75.31–75.32,75.34–75.35,75.38,75.94
Operations on the musculoskeletal system	76-84	76.19,78.80–78.89,80.20–80.29,81.98,83.29,84.41–84.43,84.45–84.47
Operations on the integumentary system	85-86	85.19,86.19,86.92
Miscellaneous diagnostic and therapeutic procedures and new technologies	87-99,00	87.01–99.99,00.01–00.03, 00.09, 00.11-00.15, 00.17-00.18

Rate of procedures: The ratio of the number of procedures during a year to the number of persons in the civilian population on July 1 of that year.

Demographic terms

Age: Refers to the age of the patient on the birthday prior to the date of surgery.

Population: Civilian population is the resident population excluding members of the Armed Forces.

APPENDIX B

Diagnosis and Procedure Coding Addenda

The *International Classification of Diseases, 9th Revision, Clinical Modification* has been used for coding NCHS data since 1979. The classification system undergoes annual updating, which involves the assignment of new diagnostic and procedure codes, fourth or fifth digit expansion of existing codes, as well as code deletions. Changes are contained in addenda developed by the ICD-9-CM Coordination and Maintenance Committee and approved by the Director of NCHS and the Administrator of the Centers for Medicare and Medicaid Services (formerly HCFA). Addenda to the ICD-9-CM become effective on October 1 of the calendar year and have been released for 1986 through 2006, except for 1999 when there was no addendum due to concerns about possible complications for instituting coding changes prior to the millennium crossover.

In order to assist users, a conversion table is provided which shows the date of introduction of each new code and the previously assigned code equivalent, which had been used for reporting the selected diagnosis or procedure prior to issuance of the new code. This conversion table can be obtained online at the following location: http://www.cdc.gov/nchs/icd9.htm.

APPENDIX C

This appendix provides estimates of the civilian population of the United States as of July 1, 2006. These figures are based on the results of the 2000 Census and were obtained from the U.S. Bureau of the Census, Population Division. All estimates are rounded to thousands, so each total may not equal the sum of the parts.

Two tables are provided:

TABLE **C**1: Civilian population of the United States, by sex, selected age groups, and geographic region

TABLE **C**2: Civilian population of the United States, by sex, 5-year age groups, and geographic region

TABLE **C**1: Civilian population of the United States, by sex, selected age groups, and geographic region:
July 1, 2006. Source: U.S. Bureau of the Census, Population Division.

Estimates in thousands

	Total	Male	Female
All ages	298,219	146,511	151,708
Northeast	54,683	26,557	28,126
Midwest	66,133	32,539	33,594
South	108,410	53,013	55,398
West	68,992	34,402	34,590
Under 15 years	60,755	31,082	29,673
Under 1 year	4,130	2,113	2,017
1 to 4 years	16,287	8,329	7,959
5 to 14 years	40,337	20,640	19,697
Northeast	10,304	5,270	5,035
Midwest	13,310	6,810	6,500
South	22,352	11,429	10,923
West	14,789	7,574	7,215
15 to 44 years	125,399	63,310	62,089
15 to 24 years	41,989	21,471	20,519
25 to 34 years	40,003	20,215	19,787
35 to 44 years	43,407	21,624	21,783
Northeast	22,594	11,308	11,286
Midwest	27,466	13,906	13,560
South	45,456	22,795	22,660
West	29,883	15,301	14,582
45 to 64 years	74,804	36,462	38,342
45 to 54 years	43,223	21,243	21,980
55 to 64 years	31,581	15,219	16,362
Northeast	14,337	6,932	7,405
Midwest	16,884	8,294	8,590
South	27,013	13,076	13,937
West	16,572	8,161	8,411
65 to 74 years	18,917	8,670	10,247
Northeast	3,637	1,644	1,993
Midwest	4,220	1,941	2,280
South	7,072	3,223	3,850
West	3,987	1,862	2,125
75 years and over	18,344	6,986	11,357
75 to 84 years	13,047	5,298	7,748
85 years and over	5,297	1,688	3,609
Northeast	3,811	1,404	2,407
Midwest	4,253	1,589	2,665
South	6,518	2,489	4,028
West	3,762	1,505	2,257

TABLE **C**2: Civilian population of the United States by sex, 5-year age groups, and geographic region: July 1, 2006.
Source: U.S. Bureau of the Census, Population Division.

	United States			**Northeast**			**Midwest**			**South**			**West**		
Age	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
All	298,219	146,511	151,708	54,683	26,557	28,126	66,133	32,539	33,594	108,410	53,013	55,398	68,992	34,402	34,590
0-4	20,418	10,442	9,976	3,333	1,704	1,629	4,381	2,243	2,138	7,650	3,910	3,741	5,053	2,585	2,468
5-9	19,710	10,077	9,633	3,342	1,708	1,634	4,344	2,219	2,125	7,261	3,712	3,549	4,763	2,439	2,324
10-14	20,627	10,563	10,065	3,629	1,857	1,772	4,585	2,348	2,237	7,441	3,808	3,633	4,973	2,550	2,423
15-19	21,245	10,869	10,376	3,879	1,979	1,900	4,772	2,445	2,327	7,603	3,887	3,716	4,991	2,558	2,433
20-24	20,744	10,602	10,142	3,689	1,870	1,819	4,690	2,399	2,291	7,411	3,766	3,645	4,954	2,567	2,388
25-29	20,463	10,378	10,085	3,368	1,695	1,673	4,452	2,269	2,183	7,572	3,800	3,772	5,071	2,614	2,457
30-34	19,540	9,837	9,703	3,427	1,708	1,719	4,151	2,095	2,056	7,164	3,576	3,588	4,798	2,459	2,339
35-39	21,030	10,514	10,516	3,928	1,939	1,989	4,498	2,257	2,241	7,615	3,778	3,837	4,989	2,540	2,449
40-44	22,377	11,110	11,267	4,303	2,117	2,186	4,904	2,441	2,463	8,091	3,989	4,102	5,079	2,563	2,516
45-49	22,756	11,226	11,530	4,374	2,144	2,230	5,169	2,559	2,609	8,124	3,985	4,139	5,088	2,538	2,551
50-54	20,467	10,017	10,450	3,907	1,903	2,004	4,677	2,311	2,367	7,300	3,542	3,758	4,584	2,261	2,322
55-59	18,220	8,841	9,379	3,498	1,680	1,817	4,094	2,007	2,087	6,613	3,185	3,427	4,016	1,969	2,047
60-64	13,362	6,378	6,984	2,558	1,205	1,353	2,944	1,417	1,527	4,976	2,363	2,613	2,884	1,393	1,491
65-59	10,376	4,839	5,537	1,972	908	1,064	2,311	1,084	1,228	3,890	1,804	2,087	2,202	1,043	1,159
70-74	8,541	3,831	4,710	1,665	736	929	1,909	857	1,052	3,182	1,419	1,763	1,785	819	966
75-79	7,381	3,119	4,262	1,500	621	880	1,680	708	972	2,681	1,129	1,552	1,519	662	858
80-84	5,666	2,179	3,486	1,177	438	739	1,307	497	810	2,009	772	1,237	1,172	472	701
0-14	60,755	31,082	29,673	10,304	5,270	5,035	13,310	6,810	6,500	22,352	11,429	10,923	14,789	7,574	7,215
15-44	125,399	63,310	62,089	22,594	11,308	11,286	27,466	13,906	13,560	45,456	22,795	22,660	29,883	15,301	14,582
45-64	74,804	36,462	38,342	14,337	6,932	7,405	16,884	8,294	8,590	27,013	13,076	13,937	16,572	8,161	8,411
15+	237,464	115,429	122,035	44,379	21,288	23,091	52,824	25,729	27,094	86,058	41,584	44,475	54,203	26,828	27,375
45+	112,065	52,119	59,946	21,785	9,980	11,805	25,358	11,823	13,534	40,603	18,788	21,814	24,320	11,527	12,792
65+	37,260	15,657	21,603	7,448	3,048	4,400	8,474	3,529	4,945	13,590	5,712	7,878	7,748	3,367	4,381
75+	18,344	6,987	11,357	3,811	1,404	2,407	4,253	1,589	2,665	6,518	2,489	4,028	3,762	1,505	2,257
85+	5,297	1,688	3,609	1,133	345	788	1,266	384	882	1,827	588	1,239	1,070	371	699

APPENDIX D

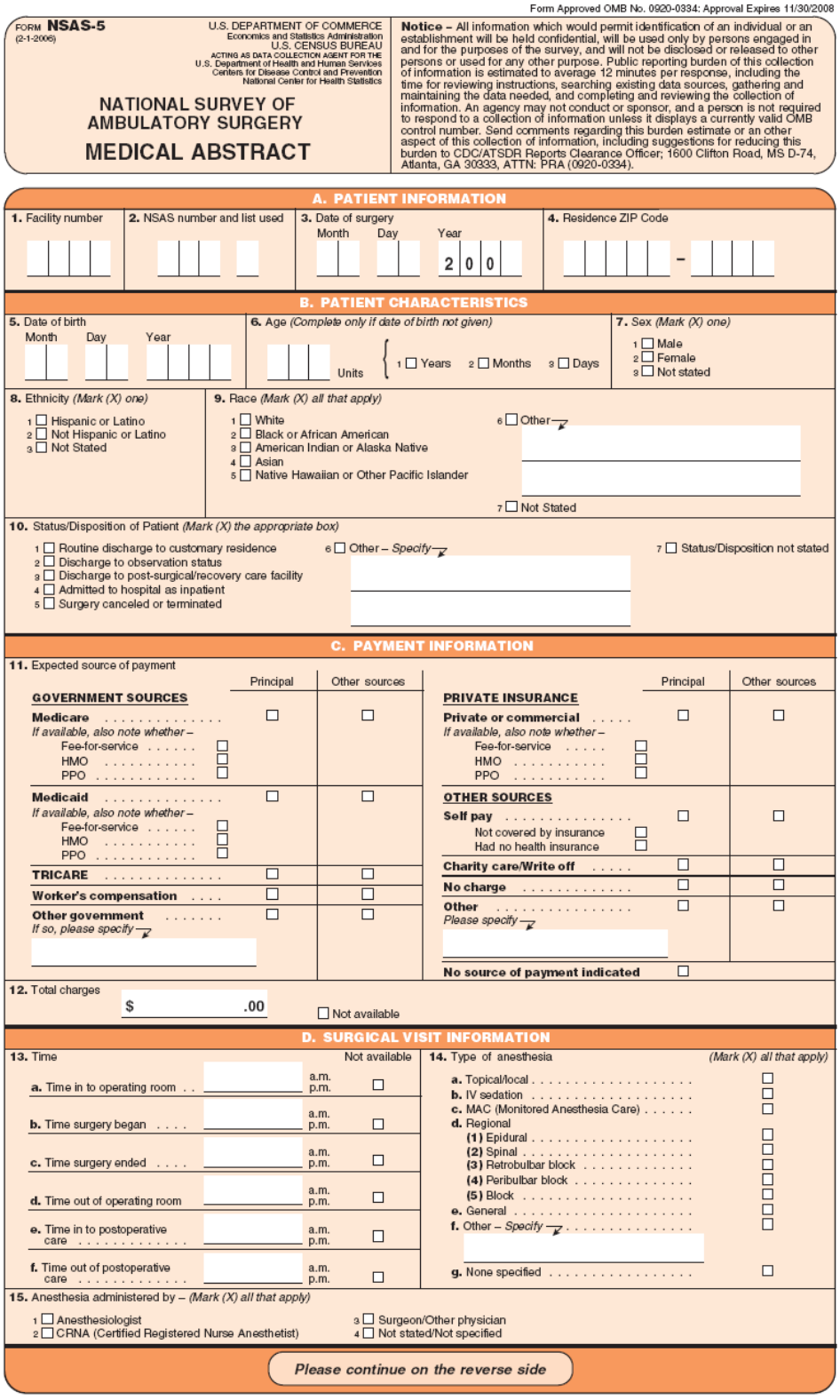
NUMBERS OF VISITS FOR SELECTED VARIABLES - UNWEIGHTED AND WEIGHTED FREQUENCIES, 2006

	UNWEIGHTED N	WEIGHTED ESTIMATE
SURVEY YEAR		
2006	52,233	34,738,440
FACILITY TYPE		
HOSPITAL-BASED	16,673	19,869,342
FREESTANDING	35,560	14,869,098
AGE		
UNDER 15 YEARS	4,516	2,468,814
15-44 YEARS	12,307	8,353,579
45-64 YEARS	18,177	12,948,559
65-74 YEARS	8,746	5,886,777
75 YEARS & UP	8,487	5,080,711
SEX		
MALE	22,419	14,705,105
FEMALE	29,814	20,033,335
DISCHARGE STATUS		
ROUTINE	48,128	32,364,288
OBSERVATION STATUS	492	400,247
RECOVERY CARE FACILITY	228	55,795
INPATIENT ADMISSION	329	285,749
SURGERY CANCELLED	85	79,125
OTHER	1,175	617,061
STATUS NOT STATED	1,796	936,175
MONTH OF SURGERY		
JANUARY	4,435	2,992,288
FEBRUARY	4,373	2,980,435
MARCH	4,928	3,305,442
APRIL	4,390	2,927,783
MAY	4,866	3,193,387
JUNE	4,760	3,201,980
JULY	3,920	2,675,844
AUGUST	4,497	3,010,563
SEPTEMBER	3,889	2,563,556
OCTOBER	4,252	2,792,950

NOVEMBER	4,088	2,618,330
DECEMBER	3,835	2,475,882
PRINCIPAL EXPECTED SOURCE OF PAYMENT		
MEDICARE	16,470	10,994,262
MEDICAID	2,880	2,177,649
TRICARE	414	423,755
WORKERS COMP	1,666	627,176
OTHER GOVT	392	308,665
PRIVATE	25,433	18,019,082
SELF PAY	2,855	1,217,479
CHARITY/WRITE OFF	119	30,688
NO CHARGE	0	0
OTHER	409	327,816
MISSING	1595	611,868

APPENDIX E

Medical abstract form



Form Approved OMB No. 0920-0334: Approval Expires 11/30/2008

FORM **NSAS-5** (2-1-2006)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU
ACTING AS DATA COLLECTION AGENT FOR THE
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
National Center for Health Statistics

NATIONAL SURVEY OF AMBULATORY SURGERY

MEDICAL ABSTRACT

Notice – All information which would permit identification of an individual or an establishment will be held confidential, will be used only by persons engaged in and for the purposes of the survey, and will not be disclosed or released to other persons or used for any other purpose. Public reporting burden of this collection of information is estimated to average 12 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or an other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer; 1600 Clifton Road, MS D-74, Atlanta, GA 30333, ATTN: PRA (0920-0334).

A. PATIENT INFORMATION

1. Facility number
2. NSAS number and list used
3. Date of surgery — Month / Day / Year 2 0 0
4. Residence ZIP Code –

B. PATIENT CHARACTERISTICS

5. Date of birth — Month / Day / Year
6. Age *(Complete only if date of birth not given)* — Units: 1 ☐ Years 2 ☐ Months 3 ☐ Days
7. Sex *(Mark (X) one)*
   1 ☐ Male
   2 ☐ Female
   3 ☐ Not stated
8. Ethnicity *(Mark (X) one)*
   1 ☐ Hispanic or Latino
   2 ☐ Not Hispanic or Latino
   3 ☐ Not Stated
9. Race *(Mark (X) all that apply)*
   1 ☐ White
   2 ☐ Black or African American
   3 ☐ American Indian or Alaska Native
   4 ☐ Asian
   5 ☐ Native Hawaiian or Other Pacific Islander
   6 ☐ Other →
   7 ☐ Not Stated
10. Status/Disposition of Patient *(Mark (X) the appropriate box)*
    1 ☐ Routine discharge to customary residence
    2 ☐ Discharge to observation status
    3 ☐ Discharge to post-surgical/recovery care facility
    4 ☐ Admitted to hospital as inpatient
    5 ☐ Surgery canceled or terminated
    6 ☐ Other – *Specify* →
    7 ☐ Status/Disposition not stated

C. PAYMENT INFORMATION

11. Expected source of payment

	Principal	Other sources
GOVERNMENT SOURCES		
Medicare	☐	☐
If available, also note whether –		
Fee-for-service	☐	
HMO	☐	
PPO	☐	
Medicaid	☐	☐
If available, also note whether –		
Fee-for-service	☐	
HMO	☐	
PPO	☐	
TRICARE	☐	☐
Worker's compensation	☐	☐
Other government	☐	☐
If so, please specify →		
PRIVATE INSURANCE		
Private or commercial	☐	☐
If available, also note whether –		
Fee-for-service	☐	
HMO	☐	
PPO	☐	
OTHER SOURCES		
Self pay	☐	☐
Not covered by insurance	☐	
Had no health insurance	☐	
Charity care/Write off	☐	☐
No charge	☐	☐
Other	☐	☐
Please specify →		
No source of payment indicated	☐	

12. Total charges $ .00 ☐ Not available

D. SURGICAL VISIT INFORMATION

13. Time

	a.m. / p.m.	Not available
a. Time in to operating room		☐
b. Time surgery began		☐
c. Time surgery ended		☐
d. Time out of operating room		☐
e. Time in to postoperative care		☐
f. Time out of postoperative care		☐

14. Type of anesthesia *(Mark (X) all that apply)*
    a. Topical/local ☐
    b. IV sedation ☐
    c. MAC (Monitored Anesthesia Care) ☐
    d. Regional
    (1) Epidural ☐
    (2) Spinal ☐
    (3) Retrobulbar block ☐
    (4) Peribulbar block ☐
    (5) Block ☐
    e. General ☐
    f. Other – *Specify* → ☐
    g. None specified ☐

15. Anesthesia administered by – *(Mark (X) all that apply)*
    1 ☐ Anesthesiologist
    2 ☐ CRNA (Certified Registered Nurse Anesthetist)
    3 ☐ Surgeon/Other physician
    4 ☐ Not stated/Not specified

Please continue on the reverse side

E. MEDICAL INFORMATION

16. FINAL DIAGNOSES (including E-code diagnoses) – Narrative description — Optional – ICD-9-CM Codes

Principal 1.
Other/ Additional 2.
3.
4.
5.
6.
7.

17. Surgical and diagnostic procedures – Narrative description — Optional – CPT-4 Codes — Optional – ICD-9-CM Codes

Principal 1.
Other/ Additional 2.
3.
4.
5.
6.

☐ None

18. Symptoms present during or after surgery. *(Mark (X) all that apply)*

1 ☐ Accidental laceration, puncture or perforation
2 ☐ Airway obstruction
3 ☐ Apnea
4 ☐ Bleeding/hemorrhage
5 ☐ Blood transfusion needed
6 ☐ Cardiac arrest
7 ☐ Difficulty waking up
8 ☐ Dysrhythmia/arrhythmia
9 ☐ Embolism
10 ☐ Fainting/vasovagal syncope
11 ☐ Fistula
12 ☐ High blood pressure/hypertension
13 ☐ Hypoxia
14 ☐ Incontinence
15 ☐ Low blood pressure/hypotension
16 ☐ Malignant hyperthermia
17 ☐ Nausea
18 ☐ Peripheral site burn
19 ☐ Shock
20 ☐ Vomiting
21 ☐ Other – *Please specify*
22 ☐ None Indicated

F. FOLLOW-UP INFORMATION

	Yes	No	Unknown
19a. Did someone attempt to follow-up with the patient within 24 hours after the surgery?	1 ☐	2 ☐	3 ☐
b. Did they reach the patient? *If yes,*	1 ☐	2 ☐	3 ☐

(1) What was learned from this follow-up? *(Mark (X) all that apply)*

1 ☐ Patient had a question
2 ☐ Patient had no problems
3 ☐ Patient had problem(s) and –
- 1 ☐ Called his/her doctor
- 2 ☐ Went to the doctor
- 3 ☐ Called the ambulatory surgery center
- 4 ☐ Came back to the ambulatory surgery center
- 5 ☐ Called the emergency department
- 6 ☐ Went to an emergency department
- 7 ☐ Was admitted to the hospital
- 8 ☐ Other – *Please specify*

4 ☐ Nothing
5 ☐ Unknown

(2) What problem(s) did the patient mention (e.g., site drainage, temperature, pain, nausea) **?**

20. Completed by	**21.** Date	**OFFICE USE ONLY**	FR code

FORM NSAS-5 (2-1-2006)