

Ambulatory and Hospital Care Statistics Branch

Report to the Board of Scientific Counselors
and Review Panel

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SECTION 1: OVERVIEW OF THE AMBULATORY CARE AND HOSPITAL STATISTICS BRANCH

The role of the Ambulatory and Hospital Care Statistics Branch

The Ambulatory and Hospital Care Statistics Branch (AHCSB) is one of the three branches within the Division of Health Care Statistics (DHCS), which is one of four Divisions within the National Center for Health Statistics (NCHS) (See **Appendix A**). NCHS is a component of the Centers for Disease Control and Prevention (CDC), serving as the Nation's principal health statistics agency. The mission of NCHS is to provide statistical information that will guide actions and policies to improve the health of the American people. The mission of DHCS is to collect, analyze, and disseminate data on access to and use, quality, and cost of U.S. health care and on the health-care organizations and professionals who deliver that care. DHCS conducts the National Health Care Surveys, a family of nationally representative surveys of encounters and health-care providers in different settings. Data and analyses from these general purpose surveys address topics of interest to providers, policy makers, and researchers, such as the quality and disparities of care among populations, epidemiology of specific medical conditions, diffusion of technologies, effects of policies, and monitoring of changes over time. The National Health Care Surveys share certain design features. Each nationally representative survey samples health-care providers and collects data from encounters sampled within each provider.

The mission of AHCSB is to collect, analyze, and disseminate accurate, relevant, and timely survey data on some key organizations and providers that supply health care in the United States, the services rendered, and the patients they serve. Each of the surveys conducted by AHCSB focuses on a particular type of medical care: National Ambulatory Medical Care Survey (NAMCS) focuses on non-federal physicians based in offices and community health centers who are engaged in direct patient care; National Hospital Ambulatory Medical Care Survey (NHAMCS) focuses on emergency, outpatient and ambulatory surgery departments in short-stay non-federal hospitals (and includes a component on free-standing ambulatory surgery centers); and the National Hospital Discharge Survey (NHDS) focuses on inpatient visits in non-federal short-stay hospitals. NAMCS and NHAMCS are currently annual surveys. NHDS, the longest continuously operating survey conducted by the Branch, is ending after 2010 data are processed and disseminated.

Plans are currently underway to create a new survey, the National Hospital Care Survey (NHCS), which will essentially combine NHDS and NHAMCS, but with some important changes and augmentations described in the next section of this report. In addition, the Branch conducts two surveys that track the adoption of electronic health records in the United States, and is preparing a survey on health care delivered in state prisons, the National Survey of Prison Healthcare. Altogether, AHCSB is responsible for one of the most ambitious production and dissemination workloads within NCHS.

DHCS includes two other branches. The Long-Term Care Statistics Branch (LTCSB) efforts have centered on the following surveys:

- National Nursing Home Survey (NNHS)
- National Home and Hospice Care Survey (NHHCS)
- National Survey of Residential Care Facilities (NSRCF)
- National Survey of Long-Term Care Providers (NSLTCP)

Also, the Technical Services Branch (TSB) provides critical statistical and programming support for surveys across the Division.

Organization of the Branch

AHCSB consists of 23 full-time staff members, a part-time SCEP (Student Career Experience Program), and several contractors. Besides the Branch Chief and a program assistant, staff members belong to one of three teams: the Ambulatory Care Team, the Hospital Care Team, and the Dissemination Team (See **Appendix B**). The structure of the Branch is relatively new. In late 2007, two branches (the Ambulatory Care Statistics Branch and the Hospital Care Statistics Branch) were merged to meet staff size requirements of CDC. The new branch, AHCSB, was then divided into teams responsible for major components of its overall mission. The Ambulatory Care Team is responsible for carrying out NAMCS, NHAMCS, and supplements related to these surveys. The Hospital Care Team is responsible for NHDS and NSPH. The Ambulatory and Hospital Care Teams are currently collaborating on the NHCS. The Dissemination Team is responsible for ensuring timely processing and release of data and analyses across surveys.

The team structure is intentionally flexible, allowing staff members to work on assignments across team lines. In reality, staff members generally have responsibilities related to both survey production and data dissemination. The boundary between production and dissemination is at times rather artificial; all staff members are expected to contribute to both operations and publications. The team structure is administratively useful, however, allowing staff members to work in fairly small groups with those whose daily work tasks are most similar to their own.

Staff background, skills, and vacancies

AHCBS staff members come from a variety of training backgrounds. Although the majority have degrees in public health, others have formal training in statistics, public policy, social science, medicine, and even theoretical physics. The Branch Chief, two of the three Team Leads, and four other staff members hold doctorates, and two staff members are physicians. One staff member is a pharmacist. The Branch currently includes a mix of relatively new and seasoned staff: seven staff members have arrived within the past two years, but an equal number have been on board for over a decade. The leadership team is relatively new, with the Branch Chief and Team Leaders having

held their positions for less than three years (although two of the three team leaders had been on staff for a number of years prior to that).

The Branch currently has two active vacancies: one to replace a Medical Officer who left the Branch in 2010, and a new Associate Service Fellow to support several supplements conducted through interagency agreements. The Branch also anticipates the imminent recruitment of three new professional staff members, two on the Ambulatory Care Team and one on the Hospital Care Team, to assist with additional assignments and to improve the timeliness of data releases. The Branch also faces the likely retirement of three long-term staff members during the next few years.

In summary, AHCSB consists of a very talented group of professionals with a mix of skills that matches its mission quite well. However, the Branch has a very ambitious production and dissemination workload. This workload has been growing steadily, with several surveys and supplements having been initiated in the last few years; significant expansion, enhancements, and redesign efforts on current surveys; and definite pressure to produce datasets faster. AHCSB has a strong record of accomplishments, but has been under considerable strain to handle its workload. This is a useful point in the Branch's evolution to review its activities, priorities and procedures, and evaluate them relative to available resources.

SECTION 2: PRIMARY DATA COLLECTION ACTIVITIES

As originally designed, AHCSB was primarily responsible for conducting four surveys: NAMCS, NHAMCS, NHDS, and the National Survey of Ambulatory Surgery (NSAS). Public-use data sets, described more fully in the next section, are currently available from NAMCS and NHAMCS through 2008 and NHDS through 2009. NSAS was last conducted as a stand-alone survey in 2006, and beginning in 2009 its content has been incorporated into NHAMCS.

In the last several years, several new surveys have been initiated. Two of these are technically supplements to NAMCS. The NAMCS Electronic Health Records (EHR) Supplement was originally designed to improve estimates of EHR adoption among office-based physicians. Beginning in 2010, the supplement was greatly expanded, permitting state-based estimates of EHR adoption independent of the core NAMCS sample. Beginning in 2011, a follow-up Physician Workflow Supplement was added to provide more in-depth information about perceived costs and benefits of EHR adoption.

In addition, plans are underway to launch the National Hospital Care Survey (NHCS), combining elements of NHAMCS and NHDS; and the National Survey of Prison Healthcare (NSPH).

Below, we describe in turn:

NAMCS

Electronic Health Records and Physician Workflow Supplements

NHAMCS

NHDS, as implemented through 2010

NHCS, as intended for implementation beginning in 2011

NSPH

National Ambulatory Medical Care Survey (NAMCS)

Purpose of NAMCS

NAMCS is a nationally representative sample survey of visits to office-based physicians in the United States. It was inaugurated in 1973, was conducted annually through 1981, was fielded again in 1985, and has been an annual survey since 1989.

NAMCS was designed to provide data concerning the utilization of ambulatory medical care services. Among their many uses, these data can be used to study trends in services and treatments of patients, to assess the kind and magnitude of effects associated with changes in the health care system, and to compare use of ambulatory services among different groups of the population over time.

Scope/Frame of NAMCS

The sampling frame for NAMCS is traditionally composed of all physicians contained in the master files of the American Medical Association (AMA) and the American Osteopathic Association (AOA), at a point roughly six months prior to the start of the survey year, who are office based (as defined by the AMA and AOA); engaged principally in patient care activities; non-federally employed; and not in specialties of anesthesiology, pathology, or radiology.

The sample has been supplemented several times in recent years to allow for additional precision of estimates for clinicians practicing in certain specialties (e.g., oncology) and environments. The sample was expanded beginning in 2006 to include 104 community health centers (CHCs), to better cover care delivered especially to poor and disadvantaged populations.

General sample design of NAMCS

The general design of NAMCS utilizes a multistage probability sample that involves primary sampling units (PSUs), physician practices within PSUs, and patient visits within practices. The sample design has been slightly modified since the survey began in 1973, but the current design has been in use since 1989.

The first-stage of the sample consists of 112 PSUs that comprised a probability subsample of the PSUs used in the 1985-94 National Health Interview Survey (NHIS). The NHIS PSU sample was selected from approximately 1,900 geographically defined PSUs that covered the 50 States and the District of Columbia.

Typically, the second stage consists of a probability sample of practicing physicians selected from the master files maintained by AMA and AOA. Within each PSU, all eligible physicians are stratified into 15 specialty groups: general and family practice, osteopathy, internal medicine, pediatrics, general surgery, obstetrics and gynecology, orthopedic surgery, cardiovascular diseases, dermatology, urology, psychiatry, neurology, ophthalmology, otolaryngology, and all other specialties. (The procedure is somewhat different in community health centers, in which up to three physicians, physician assistants, nurse midwives, or nurse practitioners are sampled.)

The final stage of sampling is the selection of patient visits within the practices of sample physicians. The total physician sample is divided into 52 random subsamples, and each subsample is randomly assigned to 1 of the 52 weeks in the survey year. A systematic random sample of visits is selected for each physician during the assigned week. Contacts by telephone and visits outside the office (e.g., house calls and visits to hospitals or other institutions), and visits to physicians' offices that are made for administrative purposes only (e.g., to leave a specimen or pay a bill) are not included in the sample.

Key data elements in NAMCS

NAMCS collects information on characteristics of clinicians, practices, patients, and the management of their care. The survey instruments are updated periodically to reflect changing data needs, although a core of basic items has remained on the forms since the survey's inception in 1973.

Information on sampled physicians is collected through a Physician Induction Interview (PII) which includes questions pertaining to their practices, such as practice size, staffing, specialty, ownership, employment status of physician, types of services performed onsite, frequency of home and hospital visits, frequency of telephone and internet/email consults, use of electronic health records systems, characteristics of practice revenue and managed care contracts, acceptance of new patients, difficulty in referring patients to other specialists, and provider demographic information.

Information on sampled visits is collected through a Patient Record Form (PRF), which includes items on patient characteristics (age, sex, race, ethnicity, ZIP code), patient behaviors (tobacco use), and visit characteristics (patient's expressed reason for the visit, whether visit is injury related, continuity of care, vital signs, provider's diagnosis, diagnostic and therapeutic services ordered or provided including the names of medications, expected source of payment, time spent with provider, types of providers seen, and visit disposition).

A full summary of NAMCS content from 1973-2006 can be found in **Appendix C**, also available at http://www.cdc.gov/nchs/data/ahcd/body_NAMCSOPD_072406.pdf

Data collection methods in NAMCS

The U.S. Census Bureau is the data collection agent for NAMCS. Sampled physicians first receive a letter from the Director of NCHS, along with letters from professional medical societies which endorse NAMCS. Next a Census Field Representative (FR) telephones the physician to establish basic eligibility and schedule an appointment for a face-to-face induction interview.

Following induction into NAMCS, physicians and their staffs are given instruction on compiling a daily listing of all patient visits during the assigned reporting week, which serves as a sampling frame.

Data for sampled visits are recorded on Patient Record Forms (PRFs). The forms are preferably completed by the physician and his/her office staff. However, if the physician prefers, Census Bureau FRs can perform the abstraction, and that occurred for approximately 50% of NAMCS PRFs in recent years.

Recent developments regarding NAMCS

Expansion of 2012 sample

The “core” sample of NAMCS has traditionally consisted of 3,000 physicians, which does not include 312 physicians in CHCs, and sometimes a few hundred additional physicians paid for through interagency agreements (the highest recent NAMCS sample has been 3,712 physicians).

This sample size has been sufficient to produce national and regional estimates, but in recent years there has been increased interest in producing state-based estimates. Due to the importance of monitoring the effects of changes in the health care system, funds from the Affordable Care Act (ACA) have been allocated to expand the NAMCS sample for at least calendar year 2012. As of April 2011, the final sample size is still being determined, but is estimated that funding should support a sample of at least 12,000 physicians. It is unclear whether funding to expand the sample will continue beyond 2012.

Development of a “lookback” module

One disadvantage of NAMCS’ cross-sectional design is a limited ability to evaluate quality and outcomes of care. In an attempt to address this limitation, NAMCS is developing its first supplement with a longitudinal component. The supplement’s objective is to gather data that describes physician management of cardiovascular disease (specifically ischemic heart disease, congestive heart failure, and prior stroke) and its risk factors (including hypertension, hyperlipidemia, and diabetes). The most logical way to incorporate this into NAMCS is to collect the data retrospectively. Data from the original sampled visit will be used to identify patients with cardiovascular disease or its risk factors. Selected data will then be obtained for all visits by sampled patient to the sampled physician during the previous 12 months.

The module will be incorporated into NAMCS beginning with 2012 data collection. To the extent that the module is successful in providing high quality data, it may serve as a model for additional longitudinal efforts.

Computerization of data collection

Since its inception, NAMCS has been conducted on paper. This is obviously inefficient given the availability of computer-assisted data collection, which would eliminate the need for subsequent data entry, make it possible to perform many data edits and consistency checks during the data collection process, and eliminate the shipping of data forms to various processing facilities. Unfortunately, the costs of moving to computer-assisted data collection had been prohibitive for many years.

However, moving to computer-assisted data collection was seen as essential for implementing the proposed increases in sample size. Furthermore, a paper version of the lookback module (describe above) would multiply the number of forms to be managed within a physician office, exacerbate tracking systems that are already strained, and threaten response rates. Converting to computer-assisted data collection was deemed essential for the implementation of these changes, and a portion of ACA funding was allocated to that task.

The Census Bureau has been creating a computer-assisted data system for NAMCS, to be operational for 2012 data collection. The induction interview will be conducted on a laptop computer, and FRs will also abstract PRF data directly into the computer. It could be difficult for physicians and office staff members to abstract records through a system designed for Census FR use, and various alternatives are still under consideration for their portion of abstraction.

Collection of laboratory test results

Beginning in 2009, the Division of Heart Disease and Stroke Prevention, NCCDPHP, CDC funded research to assess the feasibility of collecting laboratory values in NAMCS, including total cholesterol, high density lipoprotein, low density lipoprotein, triglycerides, glycohemoglobin A1c, and fasting blood glucose. The purpose of collecting these data is to improve our understanding of how physicians manage hyperlipidemia and diabetes.

Following successful pilot and pre-tests, these items were incorporated onto NAMCS beginning with 2010 data collection. The data are collected from physicians who are most likely to order these tests, including those specializing in internal medicine, cardiovascular disease, general/family practice, obstetrics and gynecology, pediatrics, and oncology, and also physicians in community health centers.

Asthma Management supplement

The purpose of the NAMCS Asthma Management supplement is to collect information about physician clinical decision making about asthma management for patients in ambulatory care settings. The supplement will be fielded in 2012. The supplement is sponsored by a collection of federal agencies collaborating on implementing the National Asthma Education and Prevention Program Guidelines for the Diagnosis and Management of Asthma.

The goals of the Asthma Management supplement are to 1) evaluate physician agreement with core elements of the Guidelines, 2) assess self-reported competency in providing Guideline-compliant care, 3) determine which elements of the Guidelines doctors provide, and 4) assess perceived barriers to providing the core elements of asthma management to patient populations. These data will be used to develop interventions to better educate and equip physicians to fully

implement the Guidelines. The supplement will be administered to generalists and specialists who provide asthma care, with a supplemental sample in specialties such as allergy, immunology, and pulmonology. The supplement will also be administered through NHAMCS to physicians who provide asthma care through outpatient departments.

Questions on complementary and alternative medicine attitudes and practices

Acceptance of complementary and alternative therapies (CAM), including acupuncture, dietary supplements, and chiropractic manipulation, is growing in the general population, and use is particularly high among individuals with one or more health complaints. But whereas we know a great deal about the prevalence, expectations, costs, and satisfaction from the patient's point of view, we know relatively little about physician attitudes and practices regarding CAM. The National Center for Complementary and Alternative Medicine (NCCAM), NIH, is sponsoring a short module to be added to the NAMCS physician induction interview to improve data on which CAM therapies physicians recommend to patients, and perceptions of benefits and barriers of each. The questions will be fielded on the 2012 NAMCS.

Cervical Cancer Screening Supplement and additional sample of primary care physicians

Beginning in 2006, CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) sponsored a Cervical Cancer Screening Supplement. The supplement is given to all sampled physicians in general and family practice, internal medicine, obstetrics and gynecology, and those working in CHCs. The questionnaire covers use of cervical cancer screening methods, colposcopy, and human papillomavirus (HPV) DNA tests; reasons for not using HPV DNA tests; and follow-up of abnormal and normal test results. This supplement was funded through 2010.

As part of the same agreement, NCCDPHP funded an additional sample of 200 primary care physicians per year (including those in general and family practice, internal medicine, pediatrics, and obstetrics-gynecology), also through 2010.

Additional sample of oncologists

To better understand oncology practice patterns, NCCDPHP funded an additional stratum of 200 oncologists in 2010 and will fund an additional stratum of 400 oncologists in 2012. Also, details regarding cancer stage were added to the patient record form.

Electronic Health Records and Physician Workflow Supplements

Electronic Health Records Supplement

The Electronic Health Records (EHR) Supplement is a special mail survey that was conducted in parallel with NAMCS starting in 2008. Sponsored by the Office of the National Coordinator for Health Information Technology (ONC) of the Department of Health and Human Services, this supplement is mailed to an additional panel of physicians who are eligible for, but not selected to be in, the traditional NAMCS sample. The purpose of the supplement is to collect information about the adoption of electronic health records by office-based physicians. The items on the EHR mail survey support the goal of having most Americans have access to an interoperable EHR by 2014.

The addition of a supplementary sample of physicians to the traditional NAMCS allows more reliable single-year estimates on the use and adoption of EHR systems by private office-based physicians. In 2008 and 2009, 2000 physicians were sampled each year in the EHR supplement. Starting in 2010, ONC sponsored an increase in the sample from 2,000 physicians to 10,302 physicians annually. This increase was necessary for measuring adoption rates at the state level, in order to better evaluate and understand the impact of key Health Information Technology for Economic and Clinical Health (HITECH) programs. The increase in sample size also allows ONC to obtain state baseline estimates that can be used to develop programs and approaches to support providers becoming meaningful users of electronic health records in 2011 and beyond. With the expansion of the EHR supplement, state-based estimates could be produced without relying upon traditional NAMCS.

SRA International serves as the contractor responsible for data collection and data entry. Each sampled physician receives up to three mailings of the questionnaire, and a reminder/thank-you postcard between mailings. Two weeks after the third mailing, SRA makes telephone calls to non-respondents to collect responses by phone if possible, or at a minimum to secure information about eligibility status. Through the combined mail and telephone approach, we achieved unweighted response rates of 68% in 2010 and 74% in 2009, which are very respectable for a survey conducted predominately by mail.

Key data elements

The questions used in the EHR supplement are similar to the EHR questions asked in the traditional NAMCS PII. The EHR supplement collects information on physicians (e.g., specialty, employment status, frequency of home and hospital visits, frequency of telephone and internet/email consults), practices (e.g., practice size, staffing, ownership, practice revenue), and EHR related topics (e.g., use of EHR systems, adoption of computerized functionalities, and plans to apply for meaningful use incentives). NCHS work closely with ONC to update the survey instrument annually to reflect changing data needs.

Physician Workflow Supplement

The new Physician Workflow Supplement is a follow-up data collection initiative sponsored by ONC to provide better understanding of physician experiences with adoption and use of EHRs. The base sample for the survey will be respondents to the 2011 EHR supplement described above. Those respondents identified as not having adopted an EHR system will receive one questionnaire version, and those at some level of adoption will receive an alternative questionnaire version. Respondents will be followed annually for a three year period, beginning in 2011 and running through 2013. The main purpose of the survey is to obtain information related to the costs, benefits, and barriers related to the use of EHR systems at various stages of adoption. This information will help ONC target and refine the strategies of its grantees, understand the experiences of adopters, and measure progress towards the Health Information Technology for Economic and Clinical Health Act (HITECH) program goals, such as advancing a nationwide health information technology infrastructure to improve efficiency and quality of health care delivery. Data will also help to guide policymaking surrounding “meaningful use” criteria of EHR that have been established to help create a private and secure 21st century electronic health information system. Together with data from the EHR supplement, responses will help to develop criteria for successive stages of meaningful use.

The Physician Workflow Surveys for 2011 was developed by NCHS in collaboration with ONC and feedback from a diverse panel of experts. The data collection methods are very similar to those of the EHR survey, with multiple mailings followed by a telephone component. As of this writing, the questionnaire has just been mailed to early responders of the 2011 EHR survey, and mailings will continue to be made on a flow basis as new eligible respondents are identified. Data collection will conclude this summer, with first release of results in late 2011.

Key data elements

The questions on this survey are logical extensions of questions on the EHR supplement, with a focus on measuring progress towards (HITECH) program goals and providing insight into where resources should be devoted to help physicians achieve various states of “meaningful use” of certified EHR technology. Specific key data elements involve items that describe physician characteristics (e.g., year completed residency), physician EHR characteristics (e.g., years having used an EHR system, EHR financing), EHR adoption (e.g., current adoption/implementation status), physician attitudes (e.g., perceived barriers, perceived benefits), and outcomes (e.g., alerted to a potential medication error). In 2012 and 2013, questions similar to the EHR supplement and NAMCS PII would be asked to collect updated information on the physician cohort. NCHS work closely with ONC and expert panel to update the Physician Workflow instruments for 2012 and 2013 to reflect changing data needs.

National Hospital Ambulatory Medical Care Survey (NHAMCS)

Purpose of NHAMCS

NHAMCS employs a nationally representative sample survey of visits to emergency departments (EDs), outpatient departments (OPDs), and more recently, ambulatory surgery centers (ASCs) of non-federal, short-stay and general hospitals in the United States. As of 2010, the sample also includes a nationally representative sample of free-standing ASCs. NHAMCS was launched in December 1991 and has continued as an annual survey since that time. It provides data concerning the utilization of hospital-based ambulatory medical care services.

Although the largest proportion of ambulatory care occurs in physicians' offices, visits to hospital EDs and OPDs represent the second largest segment of ambulatory medical care. Hospital ambulatory patients differ from office patients in their demographic characteristics and may differ in medical aspects as well.

Scope/Frame of NHAMCS

NHAMCS is a national probability sample of visits to the emergency and outpatient departments of non-institutional, non-federal general and short-stay hospitals, located in the 50 states and the District of Columbia. NHAMCS was designed to provide estimates based on the following priority of survey objectives: United States, region, emergency and outpatient departments, and type of ownership.

The sampling frame for NHAMCS was constructed from data products of the SMG Hospital Market Database. In 1991, the Database was used to develop a fixed panel of hospitals for NHAMCS, described in more detail below. Hospitals with an average length of stay for all patients of fewer than 30 days (short-stay) or hospitals whose specialty was general (medical or surgical) or children's general were eligible for inclusion. Excluded were federal hospitals, hospital units of institutions, and hospitals with fewer than six beds staffed for patient use.

A fixed panel of 600 hospitals was selected for the NHAMCS sample; 550 hospitals had an ED and/or an OPD and 50 hospitals had neither an ED nor an OPD. To preclude hospitals participating during the same time period each year, the sample of 600 hospitals was randomly divided into 16 subsets of approximately equal size. Each subset was assigned to 1 of the 16 4-week reporting periods, beginning December 2, 1991, which continue to rotate across each survey year. Therefore, the entire sample does not participate in a given year, and each hospital is inducted approximately once every 15 months.

The sampling frame is updated every three years to account for facilities no longer eligible or existent, most recently in 2010.

The universe of freestanding ambulatory surgery centers was based on a frame developed for the 2006 National Survey of Ambulatory Surgery. This frame included those that were State-regulated or certified by the Centers for Medicare and Medicaid Services (CMS) for Medicare participation. Facilities specializing in dentistry, podiatry, abortion, family planning, or birthing were excluded. However, these procedures were not excluded from in-scope locations.

Sample design of NHAMCS

The hospital-based component of NHAMCS (ED, OPD, and ASC) uses a four-stage probability design based on PSUs, hospitals within PSUs, clinics/emergency service areas within outpatient/emergency departments, and patient visits within clinics/emergency service areas.

The first-stage sample consists of the 112 PSUs that were sampled for NAMCS. These PSUs comprise a probability subsample of the PSUs used in the National Health Interview Survey (NHIS) from 1985-1994.

The second stage sample was drawn from a population of 6,249 hospitals in the PSUs who met eligibility criteria described above. Hospitals were classified into four groups: those with only an ED; those with an ED and an OPD; those with only an OPD; and those with neither an ED nor an OPD. Hospitals in the last class were considered as a separate stratum, and a small sample (50 hospitals) was selected from this stratum to allow for estimation to the total universe of eligible hospitals and the opening and closing of EDs and OPDs in the sample hospitals.

The overall participation rate of hospitals has remained high. For example, in 2006, a total of 486 hospitals were selected for NHAMCS. Of the sampled hospitals, 57 were found to be ineligible due to closing or other reasons. Of the 429 hospitals that were in scope, 389 participated, for an unweighted hospital response rate of 90.7 percent.

The third stage sample is of outpatient clinics, emergency service areas, and ambulatory surgery centers within the hospital. If there are five or fewer clinics, then all are included in the sample. If an outpatient department has more than five clinics, the clinics are assigned into one of six specialty groups: general medicine, surgery, pediatrics, obstetrics/gynecology, substance abuse, and other. Within these specialty groups, clinics are grouped into clinic sampling units. A clinic sampling unit is generally one clinic, except when a clinic expects fewer than 30 visits, in which case it is grouped with other clinics. ASC locations within hospitals dedicated exclusively to abortion, birthing, dentistry, podiatry, or small procedures (sometimes referred to as “lump and bump” rooms) were not included, although these procedures were not excluded from in-scope locations.

The fourth stage sample is of patient visits. Visits are systematically selected over a randomly assigned 4-week reporting period. A visit is defined as a direct, personal exchange between a patient and a physician, or a staff member acting under a physician's

direction, for the purpose of seeking care and rendering health services. Visits solely for administrative purposes, such as payment of a bill, and visits in which no medical care was provided, such as visits to deliver a specimen, are out of scope.

Free-standing ASCs are sampled through a different mechanism. In the first stage, ASCs were drawn from a list sample with probabilities proportional to the annual number of ambulatory surgeries performed, and stratified by facility specialty and geographic region. In the second stage, ambulatory surgery visits was drawn from each in-scope location, including main or general operating rooms; all dedicated ambulatory surgery rooms; cystoscopy, endoscopy and laparoscopy units; cardiac catheterization labs; pain block rooms; and laser procedure rooms. In the third stage, visits are sampled using the same procedures as the sample of patient visits for hospital-based ASCs.

Key data elements in NHAMCS

NHAMCS collects information on characteristics of hospitals, outpatient and emergency departments, patients, and their visits. The survey instruments are updated periodically to reflect changing data needs, although a core of basic items has remained on the forms since the survey's inception in 1992.

Information on sampled hospitals and their emergency and outpatient departments is collected through induction interviews, where hospital staff members are asked a wide range of questions about their facilities, including ownership, teaching hospital status, trauma level, receipt of Medicaid Disproportionate Share Program funds, funding for hospital preparedness, and participation in internal mass casualty drills. Information is also collected on the hospital's emergency and outpatient departments' use of electronic health records, along with additional information pertaining to the emergency department (triage system, staffing and capacity, and ambulance diversion).

Information on sampled visits is collected through one page Patient Record Forms (PRFs), respectively designed for outpatient department (OPD), emergency department (ED) visits, and ambulatory surgery center visits (ASC). The OPD-PRF form is nearly identical to the NAMCS-PRF form, while the ED and ASC versions have been designed to reflect the types of care provided in those setting.

Information collected on recent OPD-PRF included items on patient characteristics (age, sex, race, ethnicity, ZIP code) patient behaviors (tobacco use) and visit characteristics (patient's expressed reason for the visit, whether visit is injury related, continuity of care, vital signs, provider's diagnosis, diagnostic and therapeutic services ordered or provided, including the names of medications, expected source of payment, time spent with provider, types of providers seen, and visit disposition).

Information collected on recent ED forms include items on patient characteristics (age, sex, race, ethnicity, ZIP code, residence) and visit characteristics (mode of arrival; time of arrival; time seen by physician; time of discharge; expected source of payment; vital

signs; immediacy with which patient should be seen; presenting level of pain; previous care; patient's expressed reason for visit; whether visit is work related; whether visit is injury related, and if so, intentionality and cause of injury; physician's diagnosis; diagnostic and screening services ordered or provided; procedures provided; medications and immunizations given at visit or prescribed at discharge; providers seen; and visit disposition.) For patients admitted to the hospital, additional items addressed the unit to which the patient was admitted, the length of stay, the discharge diagnosis, and discharge status.

Information collected on recent ASC forms include items on patient characteristics (age, sex, race, ethnicity, ZIP code, residence) surgery times (time surgery began, time in operating room, time in postoperative care), and visit characteristics (final diagnosis, procedures performed, medications and anesthetics given, type of anesthesia, provider of anesthesia, symptoms during and after procedure, disposition, and follow-up information.)

A full summary of NHAMCS content from 1992-2006 can be found in **Appendix C**, also available at http://www.cdc.gov/nchs/data/ahcd/body_NAMCSOPD_072406.pdf

Recent developments in NHAMCS

The most significant upcoming to change to NHAMCS is that it will be incorporated into a larger survey, the National Hospital Care Survey. That effort is described in more detail in the following section.

- **Inclusion of ambulatory surgery centers beginning in 2009**

NHAMCS traditionally excluded both hospital-based and freestanding ambulatory surgery centers (ASCs) from its scope, and they were covered by the National Survey of Ambulatory Surgery (NSAS). NSAS was conducted in 1994-96 and again in 2006.

As noted above, hospital-based ASCs were added to the 2009 NHAMCS, and free-standing ASCs were added in 2010. The cost of adding ASCs to NHAMCS is significantly lower than the cost of conducting the full-scale NSAS.

- **Computerization of data collection**

Computerization of NHAMCS is being performed in parallel to NAMCS computerization, and will be implemented in the field in 2012. For further details, see the description in the NAMCS section, above.

- **Collection of laboratory test results beginning in 2010**

To better understand the management of hyperlipidemia and diabetes in OPDs, and to improve comparisons of patient morbidity and treatment between OPDs

and physician offices, NHAMCS began collecting laboratory values in 2010 including total cholesterol, high density lipoprotein, low density lipoprotein, triglycerides, glycohemoglobin A1c, and fasting blood glucose. These data were also collected on NAMCS beginning in 2010.

- **Colonoscopy module**

In 2010 and 2011, CDC's NCCDPHP and the National Cancer Institute collaboratively funded the development of a colonoscopy supplement to be fielded at ASCs. The objective of the project is to develop a module that provides insight into the appropriate use of colonoscopy and the quality of colonoscopy services delivered. Module development includes convening a workgroup to identify needed data elements, and conducting pilot and pre-test activities. A pilot test is to be carried out in 2011.

- **Additional panel of children's hospitals selected in 2006**

For 2006, a supplemental sample of children's general hospitals was added in conjunction with the Emergency Pediatric Services and Equipment Supplement, described below.

Supplements using the main NHAMCS sample

- **Hospital Capacity Card (2003-2004)**

Because hospital personnel frequently report that lack of inpatient beds is a key reason for ED overcrowding, this supplement was designed to obtain better inpatient bed counts through an alternative data collection mechanism.

- **ED Staffing and Capacity and Ambulance Diversion (SCAD) Supplement (2003-2004)**

The purpose of this supplement was to obtain data on ED crowding. It included items about ED triage, the number of available treatment spaces, physician staffing, and the availability of on-call specialists.

- **Ambulance Diversion Log (2003-2004)**

The purpose of this supplement was to obtain data on reasons for ambulance diversion. Prior to this effort, there were no national estimates on diversion frequency and no information comparing types of cases seen in EDs while they were on diversion.

- **Bioterrorism and Mass Casualty Preparedness Supplement (2003-2004)**

This supplement, sponsored by ASPE, DHHS, assessed hospitals' preparedness for events involving bioterrorism and other events that could produce mass casualties, including the detection and surveillance of bio-terror related diseases, and training hospital staff members have received since September 11, 2001.

- **Emergency Pediatric Services and Equipment Supplement (2002, 2003, 2006)**

This supplement was sponsored by the Health Resources and Services Administration (HRSA) to assess how well hospitals were prepared to provide emergency pediatric services. In 2006 only, an additional sample of children's general hospitals was added to make separate estimates from such hospitals.

- **Cervical Cancer Screening Supplement (2006-2010)**

This supplement is comparable to the Cervical Cancer Screening Supplement on NAMCS, and is also sponsored by NCCDPHP, CDC. Like the NAMCS supplement, it covers use of cervical cancer screening methods, colposcopy, and human papillomavirus (HPV) DNA tests; reasons for not using HPV DNA tests, and follow-up of abnormal and normal test results. This supplement has been funded through the year 2010.

- **Pandemic and Emergency Response Planning Supplement (2008)**

The Pandemic and Emergency Response Planning Supplement was added to the 2008 NHAMCS at the request of ASPE. The supplement is designed to gain information on the content of the hospitals' emergency response plan, staff training, participation in mass casualty drills, and hospitals' resources and capabilities for emergency response. In doing so, it also assesses the ability of hospitals to deal with naturally occurring diseases, epidemics, and pandemics.

Data collection methods in NHAMCS

The U.S. Census Bureau is the data collection agent for NHAMCS. Approximately three months prior to the hospital's assigned reporting period, an introductory letter is sent from the Director of NCHS to the hospital administrator or chief executive officer of each sampled hospital. NCHS also sends letters from survey endorsers (Emergency Nurses Association, Society for Emergency Academic Medicine, American College of Emergency Physicians, American College of Osteopathic Emergency Physicians) and the U.S. Surgeon General to emphasize the importance of the study to the medical community.

Subsequent calls are made by Census FRs to verify hospital eligibility and to arrange for an induction interview for the survey. FRs also train hospital staff members to perform most of the data collection operations.

In 2006, 35 percent of ED records and 36 percent of OPD records were abstracted by Census personnel rather than hospital staffs.

National Hospital Discharge Survey (NHDS)

Purpose of NHDS

The National Hospital Discharge Survey (NHDS) has been conducted continuously from 1965 to 2010. The survey is being discontinued at the conclusion of 2010 data collection, although some of the same data will be collected in the forthcoming National Hospital Care Survey, described in the next section.

NHDS is a national probability survey designed to gather information on inpatients discharged from non-federal, short-stay hospitals in the United States. It produces nationally representative estimates of the characteristics of discharges, lengths of stay, diagnoses, surgical and non-surgical procedures, and patterns of use of care in hospitals in various regions of the country. Data collected through NHDS are used to evaluate the health status of the population, to plan programs and policy for improving the health of the U.S. population, for studying trends in morbidity, and for a variety of other health research initiatives.

Scope/Frame

The NHDS universe consists of non-institutional, non-federal hospitals in the 50 States and the District of Columbia which have six or more beds staffed for inpatient use and are a general hospital or have an average length of stay for all patients of fewer than 30 days.

From 1988 until 2003, the hospital sampling frame for the current NHDS design was constructed from the SMG Hospital Market Database. Beginning in 2003, the sample frame was constructed from the products of Verispan, L.L.C., specifically its “Healthcare Market Index” and its “Hospital Market Profiling Solution” (formerly known as the SMG Hospital Market Database).

The 1987 sample was selected from the 1987 SMG data file. The frame was updated in 1991 with hospitals which were NHDS-eligible at that time, but had not been in 1987. Hospitals which were no longer NHDS-eligible were deleted. The same updating process was used in 1994, 1997, 2000, 2003 and 2006. The 2006 sampling frame included 6,101 NHDS-eligible hospitals.

Sample design

Since 1988, NHDS has used a modified three-stage sample design. The first stage consists of 112 primary sampling units (PSUs) that comprise a probability subsample of

PSUs used in the 1985-94 National Health Interview Survey (NHIS). These are the same PSUs used in NAMCS and NHAMCS.

Hospitals were selected in the second stage. Within each sampled PSU, hospitals were stratified based on whether or not they subscribed to a commercial abstracting service; within strata, hospitals were arrayed by number of beds and type of services provided in the facilities. Within these strata and arrays, a systematic sampling scheme with probability proportional to the annual number of discharges was used to select hospitals.

The third stage consists of a systematic random sample of discharges from each hospital. For hospitals not using a commercial abstracting service, hospital staff members or Census FRs sample discharges. For hospitals using commercial abstracting services, NCHS selects the sample discharges from computerized discharge files obtained from abstracting service organizations and state data systems. Before systematically sampling them, the records are sorted on the first two digits of the ICD-9-CM code of the first-listed diagnosis, patient age group at time of admission (under 1 year, 1-14 years, 15-44 years, 45-64 years, 65-74 years, 75-84 years, 85 years and over, and age unknown), sex, and date of discharge.

Annually, NHDS collects a sample of approximately 300,000 inpatient records acquired from a national sample of about 500 hospitals. As of 2007, the sample included a total of 501 hospitals from the 6,101 listed in the sampling frame. Of these, 24 were found to be out-of-scope because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 477 in-scope (eligible) hospitals, 422 hospitals responded to the survey, for an unweighted response rate of 88 percent. The weighted response rate was 82 percent.

Beginning in 2008, the sample size was reduced for budgetary reasons to 239 hospitals (103 hospitals in which data were collected through computer systems, and 136 hospitals in which data were manually abstracted). Of these, 1 was found to be out-of-scope because it went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 238 in-scope (eligible) hospitals, 205 hospitals responded to the survey, for an unweighted response rate of 86 percent. The weighted response rate was 79 percent. The reduced sample was designed to remain representative at the regional level, and to preserve the sampling strata described above.

Key data elements

The Medical Abstract Form and the automated files include birth date, gender, race, and marital status. It also contains admission and discharge dates, discharge status, diagnoses, and surgical and non-surgical operations or procedures. Since 1977, patient ZIP Code, expected source of payment, and dates of surgery have also been collected. Since 2001, type and source of admission have been collected. Since 2007, admitting diagnosis and indicators present on admission indicators have been collected. Patient ZIP

Code, date of birth, and exact dates of admission and discharge are considered confidential information and are not available to the public.

Data collection methods

When the sample is updated to replace hospitals whose eligibility status has changed, or that closed or merged with others, hospitals receive an introductory letter from the Team Leader of the Hospital Care Team of AHCSB. Subsequent field activities are conducted by Census FRs. Through phone calls or visits, the hospital is inducted into the survey and the Hospital Interview Questionnaire is administered. FRs periodically review survey procedures with hospital staff and update information about the hospital.

Two data collection procedures are used for the survey. The first is a manual system of sample selection and data abstraction, used for approximately 52 percent of the responding hospitals in 2009. The second was an automated method, used for approximately 48 percent of the responding hospitals in 2009. The automated method involves the purchase of computerized data files from abstracting service organizations, state data systems, or from the hospitals themselves.

For the manual procedures, discharge data are collected throughout the year. For the automated procedures (in-house tape and abstract service), files containing medical record data are purchased from the hospital approximately every six months or annually.

National Hospital Care Survey (NHCS)

The National Hospital Care Survey (NHCS) is a new data collection effort that will essentially combine the NHDS and NHAMCS into one survey. NHCS will begin this year with recruitment of a new national probability sample of 500 hospitals and will be fully implemented by 2013.

Rationale for the new survey

Although the NHDS, described in the previous section, has served the country well for over 40 years by providing national data on inpatient care, significant changes have occurred in the role of inpatient care and in the data sources available to understand the characteristics of inpatient care. Data on hospital care needs to reflect the types of care and services now offered in the nation's hospitals. For example, the average length of hospital stay has declined nearly 40 percent from 1970 to 2007. Many conditions for which, only a decade ago, a patient would have been admitted to a hospital and observed for a day or two are now, at least for patients with some types of insurance, admitted as "observation" patients, a designation that precludes their incorporation into an "inpatient only" database.

It also became clear that analyses beyond the capabilities of the current NHDS would have great value. Currently, there is no way to track patients as they move within hospital

units (e.g., from the ED to inpatient status, or from inpatient status to follow-up care in OPDs) or beyond (e.g. through the National Death Index). However, the collection of personal identifiers would allow NCHS to link episodes of care provided to the same patient in the ED and/or OPD and as an inpatient, as well as link sampled cases to the National Death Index to measure post-discharge mortality. Also, sampling of ED and OPD visits within the same hospitals would make it possible to examine the care of patients admitted to the hospital through those departments.

In addition, the new survey will collect more information at the hospital level. This includes, but is not limited to, the hospital's infrastructure for health information technology and volume of care provided by facility. Thus, analyses of the effect of the facility characteristics on the quality of care provided can be conducted.

Also, UB-04 claims data will be collected for all patients, not just a sample. By taking all the UB-04s from the hospital, the new NHCS will be able to sample hospital discharges with specific diagnoses and procedures for special studies that use medical record abstraction to collect more clinically relevant data. Discharges will be selected from the hospitals by ICD-9-CM codes appearing on the UB-04 and medical records abstractors will abstract data from the medical records that are specific to the needs of the study.

Quality of care, including patient safety, is and will continue to be a critical issue in health services research and policy. The new survey will capture whether diagnoses existed on admission, an important determinant in differentiating between adverse situations that led to hospitalization and complications that resulted from the care provided. In addition a key focus will be to understand the degree to which processes of care are consistent with recognized quality standards and practice guidelines.

Plan for implementation

A new sample of 500 hospitals will be inducted this year. During the first two years of the survey, hospitals will be asked to provide facility level data collected through a facility questionnaire, as well as data on all patients directly from their UB-04 administrative database, transmitted electronically. Collecting data from all patients, and doing so electronically, are major changes from NHDS data collection methods.

NCHS plans to move toward greater collection of health-care data by electronic means as soon as participating hospitals are able to provide such electronic data. In 2011 the UB-04s will be electronically transferred to NCHS. As hospitals adopt electronic health records (EHRs), NCHS should be poised to accept electronic files from hospital medical records. Our current surveys are tracking on a national basis the adoption of health information technology (HIT) by health care providers.

Starting in 2013, the sampled hospitals will be asked to provide data on the utilization of health care provided in their emergency and outpatient departments (ED and OPD) and ambulatory surgery centers (ASCs). A supplemental sample of freestanding ASCs (FS-

ASCs) will also be recruited and inducted, thus fully integrating all components of NHAMCS into the new survey. Once this process is complete, NHCS will replace both NHDS and NHAMCS, and continue to provide nationally representative data on utilization of hospital care and general purpose health-care statistics on inpatient care as well as care delivered in EDs, OPDs, and ASCs.

Key data elements

The following facility-level data will be collected from hospitals, some of which are needed to make national estimates: survey eligibility criteria, service characteristics, financial descriptors, and the utilization of information technology. Discharge-level data to be collected will include data elements on the UB-04 form. These include patient demographics, diagnoses and procedures, source of payment information, charges, and information related to revenue codes.

The new NHCS inpatient data will collect protected health information (PHI), also referred to as Information in Identifiable Form (IIF). One example of the value of PHI is that it will allow linkage to the National Death Index, providing better information on outcomes of hospitalization. In its approval, the NCHS Research Ethics Review Board agreed that this research could not be conducted practicably without access to and use of PHI. The list of requested IIF includes the following on patient discharges:

1. Patient name
2. Address
3. ZIP Code
4. Dates of admission and discharge
5. Procedure dates
6. Social security number (if available)
7. Medical record number (if available)
8. Medicare health insurance benefit/claim number
9. Birth date
10. National Provider Identifier (NPI)

Data will be transferred from participating institutions to the CDC network through a secure data network (SDN) connection. The SDN is a secure data transfer service offered by CDC, and provides a strong suite of security controls to host applications and exchange data between CDC programs and public health partners while providing a high level of data integrity, confidentiality, reliability, and security.

Data collection plans for EDs, OPDs, and ASCs are still under development, but will closely match data collection procedures currently used in NHAMCS. Similarly, key data elements are expected to be similar to those in current NHAMCS, especially at first. Over time, it is our ambition to move to more direct electronic transmission of data, as will be the case with inpatient data.

NHCS as a platform for special studies

By taking all the UB-04s from the hospital, the new NHCS will be able to sample hospital discharges with specific diagnoses and procedures for special studies that use medical record abstraction to collect more clinically relevant data. Discharges will be selected from the hospitals by ICD-9-CM codes appearing on the UB-04 and medical records abstractors will abstract data from the medical records that are specific to the needs of the study.

A pretest of such a special study will be conducted with the 2011 NHCS data. A supplement on acute coronary syndrome, sponsored by the National Heart Lung and Blood Institute will be conducted in a convenience sample of 32 hospitals recruited on the East coast. These discharges will be identified from the UB-04 by ICD-9-CM codes for a diagnosis of acute coronary syndrome. Data collection for the supplement will be accomplished by abstracting relevant data from the medical record.

National Survey of Prison Healthcare (NSPH)

In partnership with Bureau of Justice Statistics (BJS), NCHS is preparing to conduct the National Survey of Prison Healthcare (NSPH). The purpose of this survey is to provide an overall picture of the global structure of healthcare services in prisons in the United States; close gaps in available information about availability, location and capacity of healthcare services provided to inmates; and identify extent to which electronic health records are utilized within the correctional healthcare system. The survey expands the traditional focus of AHCSB surveys to an institutional population, and establishes next steps for the routine collection of data on prison health care.

Overall Plan for Administration of NSPH

NSPH is a new data collection and required a significant amount of developmental work before a questionnaire was drafted. First, NCHS recognized the need to involve stakeholders when determining the content and feasibility of a national survey of prison health care. In summer of 2010, NCHS convened a panel of experts to identify the most salient issues in prison healthcare delivery, availability of data, and the obstacles to collecting such data. Other developmental activities included conducting a site visit to a prison intake facility, leading a roundtable discussion at a correctional conference to receive feedback from additional experts, and circulating a draft of the data collection instrument among expert meeting attendees for their feedback.

NSPH will be conducted in-house at NCHS and will gather information from the universe of Department of Corrections (DOC) and Federal Bureau of Prisons (BOP). In spring 2011, an NCHS staff member will contact DOCs and BOP to identify the appropriate prison official the survey will be sent to. In addition, a small pilot test of the questionnaire with 9 prison officials will be conducted to ensure questions are clear and feasible to respondents. In early 2012, NSPH will be mailed to all 51 respondents. The

survey will seek facility-level information on the capacity of prison facilities to deliver medical and mental health services; the types and quantity of services delivered; and the mechanisms used to deliver these services to prisoners. Following the mailing, an NCHS staff member will conduct follow-up calls to clarify questions and fill in any gaps in information provided. In spring/summer 2012, NCHS will prepare a public use file of the data as well as a joint report with BJS that will summarize the findings of this data collection.

Key Data Elements:

NSPH will collect data on healthcare services including the extent to which services are contracted; staffing; locations (i.e., on- or off-site) of healthcare services and specialty healthcare services; and the types of medical, dental, mental health, and pharmaceutical services provided to inmates. The survey will collect data on intake physical and mental health assessments practices for inmates; credentials of staff performing screenings; vaccinations against major infectious diseases; and smoking allowances. Discharge planning data collected includes the availability of bridge medications, Medicaid re-enrollment processes, and the number of inmates with mental illness linked to housing prior to release. NSPH will also collect data on how DOCs and BOP maintain health records including the format (paper and/or electronic) of specific types of health records.

SECTION 3: PRODUCTS AND DISSEMINATION

This section highlights the major products of the ambulatory and hospital surveys and ways these products are disseminated to serve different types of data users. Many of these products are geared toward sophisticated researchers who perform their own analyses—for example, data files available on-line. Other resources for researchers include a listserv, technical assistance, and procedures for making restricted files available to users who need access to confidential data for particular analyses.

In addition, AHCSB produces various reports and data tables, created for the purpose of disseminating key statistics to a wider group of users who would not necessarily conduct independent statistical analysis. These include comprehensive data tables on the web, as well as hard-copy reports. For written reports, AHCSB has started to produce concise Data Briefs that highlight key findings and relevant data from surveys, rather than larger written reports with an extensive set of data tables. Data Briefs are available both in hard-copy and on line. In addition, a web-based tool designed to provide specific data to non-analysts is under development.

Production of data files

Data from all of the surveys, whether collected by paper and pencil or electronically, undergo edit and consistency checks, imputation of missing data for selected survey items, and application of weighting and estimation algorithms. In addition, survey documentation is prepared (for example, a data dictionary that defines and characterizes survey variables). Staff members from the Technical Services Branch (TSB) collaborate on tasks such as weighting and non-response adjustments, with assistance from staff from the Office of Research and Methodology (ORM).

Following final checks of accuracy and consistency, in-house data files are created. In-house files include design variables that are necessary to produce variance estimates, but that could also potentially identify hospitals and clinicians participating in the surveys; the file also contains information that could potentially identify individuals. The use of this file is therefore restricted to use by AHCSB staff. With approvals, these files may be used by other NCHS researchers, and under certain circumstances may be made available to external researchers through the Research Data Center (RDC) and Designated Agent agreements, as described later.

To produce a file suitable for public use, certain variables are removed, and files are subjected to a rigorous disclosure review process developed by staff of ACHSB and TSB, with assistance from ORM. After processing the files, results of a disclosure risk analysis are presented to the NCHS Disclosure Review Board, which must approve the files for public release.

In an effort to continue to improve the public-use data, several changes have been introduced in recent years:

- Richer sociodemographic information has been added to NAMCS/NHAMCS. Selected variables based on ZIP Code were obtained from the U.S. Bureau of the Census and added to each record starting in 2006. These include quartile categories for poverty, education, and median household income; extensive analysis was performed to ensure that such variables did not pose a disclosure risk.
- Researchers may now produce provider level estimates of ambulatory care. Beginning in 2005, additional weighting variables were added to NAMCS and NHAMCS public-use files. Previously, each record contained a single weight to produce visit estimates. The new variables, added in response to requests from the health services research community, allow users to produce estimates at the provider level.
- Researchers may now produce accurate variance estimates from NAMCS/NHAMCS. Starting with the 2000 survey year, public-use data files were released with masked design variables, making it possible to analyze NAMCS and NHAMCS data using software that takes the surveys' complex sample design into account. This allows for much better variance estimation and more sophisticated analysis. Also, public-use data files for 1993-1999 were re-released to include masked design variables; work continues to add these variables to previous years of data as time and resources permit.
- Researchers may more easily examine trends in hospital discharges. Beginning in 1993, the layout of NHDS public-use files was changed to be compatible with that of multiyear files. A set of NHDS multi-year files was created with data from 1979 to 2007. Unlike files from single years, the multiyear files separate records for newborn infants.

Time required to produce files varies. The 2009 public-use files for NAMCS and NHAMCS are expected to be released in May of this year, a little over a year after the conclusion of data collection. The 2009 NHDS public use file was released in April 2011, only 6 months after finalization of data collection. Release times are expected to improve considerably in future years due to computerized data collection, which will greatly simplify editing and processing of data. In addition, NAMCS and NHAMCS will begin producing some 6-month estimates using 2011 data, and some quarterly estimates from 2012 data, for even more timely release.

Public-use data available on the web

The most recent public use files for NAMCS and NHAMCS can be found on the Ambulatory Care Data web site: <http://www.cdc.gov/nchs/ahcd.htm>

The most recent public use files for NHDS can be found at the National Hospital Discharge Survey web site: <http://www.cdc.gov/nchs/nhds.htm>.

Both sites include downloadable public-use files, survey forms and documentation, publication lists, and detailed data tables.

Longer-term data are also available through these web sites. NAMCS public-use files and documentation are downloadable for all survey years from 1973 through 2008, with the exception of 1974, for which data were never released. NHAMCS public-use files and documentation are available for all survey years from 1992-2008.

In addition, NHDS public-use files and documentation are downloadable for all survey years from 1996-2009. NSAS public-use files and documentation are downloadable for all years that NSAS was conducted (1994-1996, and 2006).

Public-use data available on CD-ROM

Prior to the availability of data for download via the web, public-use data were primarily available through CD-ROM, in several formats. Some researchers are unable to use standard public-use data files, either through a lack of programming expertise or lack of available software. The Statistical Export and Tabulation System (SETS) is data-retrieval software developed within NCHS that presents an alternative for non-programmers. It features a menu-driven point-and-click system that allows one to create basic tables with either raw or weighted data, browse and search data files, and save and export data to numerous formats. SETS files contain most of the data from the public-use files (design variables are not included because SETS cannot perform variance estimation), and complete file documentation.

These CD-ROMs are no longer being produced, but some copies are still available. SETS files are available on CD-ROM for NAMCS (1990-2005), NHAMCS (1992-2005), and NSAS (1994-1996). In addition, ASCII files are available for some earlier years—back to 1973 for NAMCS and 1970 for NHDS.

Listserves for data users

Subscribers to the Ambulatory Health Care Data (ACLIST) listserv receive notifications of new products pertaining to NAMCS and NHAMCS, including reports, press releases, and public use files. Similarly, subscribers to the Hospital Discharge and Ambulatory Surgery Data (HDAS-DATA) listserv receive comparable notices regarding NHDS and NSAS. Vacancy announcements for jobs related to the surveys are also posted on the site, along with other announcements of general interest. Subscribers may also use the listservs as forums to post questions or comments about the surveys.

At present there are about 2,755 subscribers to ACLIST and 1,371 subscribers to HDAS-DATA. The subscribers include individuals in professional associations, private research firms, educational institutions, health care settings, and government. The number of subscribers has continued to increase modestly over the last two years.

Requests for specific survey information and technical support

AHCSB staff members receive requests for assistance through various means. Users often use data inquiry telephone lines to request information. The telephone number for NHDS/NSAS is 301-458-4321, and the telephone number for NAMCS/NHAMCS is 301-458-4600. Data inquiries are also received through CDC-INFO, CDC's central web-based query system, and the NCHS Public Affairs telephone line. CDC-INFO staff members obtain pertinent data and respond to data requests, but forward more difficult requests to the appropriate program.

The protocol for AHCSB data inquiries includes an initial contact with the requestor within 24 hours. AHCSB maintains a database of users and types of inquiries received for each month, which is used to identify patterns of information requested and to suggest potential data analyses of specific variables.

In the first quarter of 2011, more than 200 data inquiries were received for AHCSB data through CDC-INFO, calls to the AHCSB general information lines, direct staff contacts, or the NCHS Public Affairs line. Data requests came from broadcast and print media personnel, individuals in the federal government, private industry, students, and academic researchers. Information requests come from researchers and analysts. Some common themes have included:

- Public-use file availability, access, download, and use
- Software programming (SAS, SUDAAN, STATA, SPSS)
- Survey documentation (questionnaires, data dictionaries)
- Methodological issues (e.g., questions about variable construction, sampling details)

AHCSB also responds to requests for specific point estimates from AHCSB surveys. Some typical requests include the number of office visits by physician specialty, average length of emergency department visits by selected visit characteristics, and the number of various health events and outcomes in a particular year.

Requests through the Research Data Center

Users who need access to restricted files in order to answer particular research questions may request access to files through the NCHS Research Data Center (RDC). For example, some researchers need use of geographic variables that are not released to the public due to confidentiality concerns.

In the last two years, 24 proposals involving AHCSB data have been submitted on a variety of topics (see **Appendix D** for some recent examples). This is currently about 8.5% of the total RDC project load, and the number and percent have been rising in recent years. Proposals are reviewed by AHCSB and RDC staff members. If a proposal is approved, AHCSB staff members construct data files for use within the RDC, incorporating the specific data elements needed for a study.

Designated agent agreements within the federal government

Under certain circumstances, in-house data files may be shared with researchers in the federal government, most commonly in other parts of CDC, through a protocol developed by the NCHS Confidentiality Officer. AHCSB staff have reviewed proposals and executed various data use agreements. Sometimes designated agent agreements make it possible for our sponsors from other agencies to perform their own analyses of our data (for example, such an agreement was executed through the Office of the National Coordinator for Health Information Technology, ONC, regarding the Electronic Health Records Supplement. More commonly, such agreements are drawn up with researchers who have an interest in our data but are not direct collaborators with us. See **Appendix E** for example of recent agreements.

Assistance to other federal programs

AHCSB is sometimes asked to perform analyses or provide technical assistance to other federal programs inside and outside of CDC. For example, AHCSB staff members have provided data used to produce government publications, such as *Health, United States* and *Statistical Abstract of the United States*. AHCSB data have also been used to produce data sites, such as NCHS Healthy Data Interactive and Trends in Health and Aging.

In addition, AHCSB staff members have produced data reports for the Government Accountability Office, in support of its investigation of over-crowding in hospital emergency departments. These analyses are the basis of the GAO report *Hospital Emergency Departments: Crowding Continues to Occur, and Some Patients Wait Longer than Recommended Time Frames*: <http://www.gao.gov/products/GAO-09-347>.

Data reports/tables and journal articles produced by AHCSB staff

As noted at the beginning of this section, many of AHCSB staff efforts are devoted toward production of data files for researchers. This section describes various publications, including reports and journal articles, written by AHCSB staff that make use of our data and are disseminated to a wide variety of researchers, experts, and stakeholders.

NCHS publishes several different types of reports that highlight key statistics and are usable to interested parties who do not necessarily have statistical expertise. As noted above, AHCSB has recently emphasized the production of short Data Briefs highlighting key survey findings, supplemented by more comprehensive data tables on the web. For example, Data Briefs produced using 2008 data include:

- Hing E, Uddin S. Visits to primary care delivery sites: United States, 2008. NCHS Data Brief, No. 47. <http://www.cdc.gov/nchs/data/databriefs/db47.pdf>
- Cherry D, Lucas C, Decker SL. Population aging and the use of office-based physician services. NCHS Data Brief, No 41. <http://www.cdc.gov/nchs/data/databriefs/db41.pdf>
- Bhuiya F, Pitts SR, McCaig LF. Acuity in adult emergency department visits for chest pain and abdominal pain: United States, 1999-2008. NCHS Data Brief, No. 43. <http://www.cdc.gov/nchs/data/databriefs/db43.pdf>

Other publications include National Health Statistics Reports (formerly known as Advance Data Reports), which provide key statistical tables but take some time to produce. Ambulatory survey reports used this format in 2007 and prior years, and reports from the NHDS continue to be issued in that format. Series 13 Reports offer an even more comprehensive sets of tables, but take longer to produce. Quick Stats reported in CDC's Morbidity and Mortality Weekly Report, and Health E-Stat reports posted on the web highlight particular statistics likely to be of interest to a wide audience.

The "Publications Using NAMCS and NHAMCS Data" webpage http://www.cdc.gov/nchs/ahcd/ahcd_products.htm contains links to selected NCHS reports and data tables, as well as presentations about NAMCS and NHAMCS. A supplemental webpage http://www.cdc.gov/nchs/ahcd/ahcd_publications.htm includes links to selected data tables on physician office visits, hospital outpatient department and emergency department visits, and ambulatory care data from the report *Health, United States, 2010*.

The "National Hospital Discharge Survey Results and Products" webpage http://www.cdc.gov/nchs/nhds/nhds_products.htm, similarly includes links to reports, data tables, and presentations related to NHDS and NSAS. Materials on the website include news releases on trends in hospital care, as well as links to selected data tables on hospital births and inpatient deaths; data about number and rates of discharges; and data on average lengths of stay, by various diagnoses and patient characteristics.

A variety of reports organized by topic and intended for a broad range of users are also available on-line. For example, the "Fast-Stats A to Z" web pages present a series of statistics organized alphabetically according to topic (<http://www.cdc.gov/nchs/fastats/>). Data from AHCSB surveys are included in 47 of the topical web pages.

Also, NCHS has recently developed a prototype web-based tool designed to make data more quickly and easily accessible to non-analysts. If successful, the tool will enable users to produce answers to queries related to ambulatory hospital care without detailed

statistical knowledge. A prototype has been developed using NHAMCS ED data, and will hopefully be released for general use and expanded to support all NCHS survey data.

AHCSB staff members also produce a considerable volume of research based on the ambulatory and hospital surveys that is published in peer-reviewed journals. These articles cover a variety of issues, including quality of care, disparities in care across subgroups of the population, use of resources to manage health conditions, patterns of diseases and other health conditions, diffusion of health care technology, and adoption of electronic health records.

See **Appendix F** for a list of recent publications by AHCSB staff, including both journal articles and government statistical reports.

AHCSB presentations

Conference presentations are useful for publicizing data releases and for informing users with a wide variety of backgrounds and skill levels about available products. AHCSB produces a number of overview presentations and hands-on sessions at the NCHS Data Users Conference, which takes place every two years, mostly recently in 2010.

Sessions on AHCSB surveys and data have also been held at dozens of medical, methodological, and statistical conferences in recent years, including AcademyHealth, the Ambulatory Surgery Center Association (ASCA), American Academy of Family Physicians, American College of Emergency Medicine, American College of Preventive Medicine, American Health Information Community (AHIC), American Psychiatric Association, American Public Health Association, American Society of Preventive Oncology, American Sociological Association, Association of American Medical Colleges Physician Workforce, Association of Community Health Centers, Infectious Diseases Society of America, International Conference on Emerging Infectious Diseases, International Workshop on Business Data Collection Methodology, Joint Statistical Meetings, National Association of Health Data Organizations, (NAHDO), Society for Ambulatory Anesthesia (SAMBA), and Society for Academic Emergency Medicine.

In addition, workshops and overviews have been presented by special invitation to AcademyHealth, the DHHS Data Council, DHHS National Committee on Vital and Health Statistics, Johns Hopkins University's Bloomberg School of Public Health, and the University of Pittsburgh's Medical Center/Center for Bio-security.

SECTION 4: STAKEHOLDERS, DATA USERS, AND THEIR NEEDS

AHCSB routinely engages in activities to identify our stakeholders and evaluate their information needs. This section describes activities we routinely undertake to ensure the relevance of our work as well as special activities to understand more about our users. One of the most important of these activities is direct collaboration with individuals and organizations to plan and implement our surveys. The resulting data support the needs of a wide-ranging group of users. This section provides an overview of those who are connected with AHCSB surveys, assisting our efforts through guidance as collaborators and feedback as users.

Outreach and collaboration

AHCSB routinely identifies and conducts outreach to potential collaborators who may contribute to the development and enhancement of our surveys. From 2006 through 2008, we conducted outreach to approximately 50 organizations within the federal government, non-profit, and private sectors to talk about our work and ensure its quality and relevance. These contacts included discussions with subject matter experts in a variety of professional settings who contributed to development and enhancement of surveys; government agencies who also provided such expertise, and in some cases, funding; and professional associations who have provided letters of support to solicit cooperation from sampled physicians and hospitals.

External funding and support

As reflected in the large number of sponsored supplements described above, a number of federal agencies have offered funding to support data collection through AHCSB on a number of their priorities. Others offer expertise regarding particular aspects of data collection as needed, or have invested in survey development or data linkage activities to enhance the long-term usefulness of the surveys. Some examples follow.

- Department of Health and Human Services funds deriving from the Affordable Care Act of 2010 (ACA) are being used to produce some state-based estimates in NAMCS, and to improve our understanding of physician practices related to the management of cardiovascular disease and its risk factors in NAMCS and NHAMCS, beginning in 2012.
- The Assistant Secretary for Preparedness Response (ASPR) provided funds to NHAMCS in 2010 to monitor the role of the emergency department (ED) under health reform. Working collaboratively with ASPR, NCHS is undertaking a process to identify the most important aspects of ED care to monitor prior to and after various ACA provisions are implemented. NCHS will analyze existing NHAMCS data to address as many key issues as possible, and will evaluate the potential for enhancements to NHAMCS to fill essential data gaps. A workgroup meeting of health care providers, academic

researchers, and federal experts convened in January 2011 to provide input into this process. Work will continue through 2012.

- In 2010, the Assistant Secretary for Planning and Evaluation (ASPE) provided DHCS with funding to geo-code NAMCS/NHAMCS data to allow for linkages with other policy-relevant data. As part of this project, an analysis is being undertaken in 2011 to ascertain whether distance from a community health center (CHC) influences the probability that an ED visit was for a potentially avoidable condition.
- In 2009, the Division of Heart Disease and Stroke Prevention, NCCDPHP, CDC, funded research to assess the feasibility of collecting laboratory-based values. This initial investment has yielded the ongoing data collection of these data elements to describe physician management of hyperlipidemia and diabetes in both NAMCS/NHAMCS, as discussed above.
- Recognizing that ambulatory surgery centers (ASCs) are an important and growing part of the health care sector, CDC's Coordinating Center for Infectious Diseases provided funding in 2007 to test the feasibility of including ASCs routinely in NHAMCS. AHRQ provided funds in 2008 to study indicators of the quality of ambulatory surgery centers, which were added to NHAMCS starting in 2009.
- ONC, DHHS, has funded a supplemental mail survey of office-based physicians regarding the adoption of EHRs to supplement the core NAMCS in 2008 and 2009, and provided funding to expand this to a state-based survey in 2010 and 2011. DHHS is using these data to monitor the adoption of EHR systems by office-based physicians.
- ASPE, DHHS, provided funds for the 2008 Pandemic and Emergency Response Preparedness Supplement to NHAMCS.
- HRSA and the Indian Health Service assisted in the development of a sampling frame for a new panel of community health centers, first deployed in 2006.
- In 2005, ASPE funded new items in the NAMCS Physician Induction Interview concerning external research projects being conducted by the physician and IRB involvement.
- HRSA also provided funding for the Emergency Pediatric Services and Equipment Survey, a supplement to NHAMCS in 2002, 2003, and 2006.

NAMCS, NHAMCS, NHDS, and NSAS collaborators also include medical care experts who have participated as consultants regarding various aspects of data collection instruments. Experts from federal and state government agencies, academia, provider

organizations, professional associations, and private research organizations provide suggestions on current survey instruments. These experts help to ensure that the most appropriate data elements are selected to support general data collection goals.

Professional endorsements

A variety of professional associations have been strong and continuous supporters of the surveys over many years. These organizations have provided endorsement letters in support of NAMCS, NHAMCS, NHDS, and/or NSAS. These letters are included with the initial package that is sent to the sampled providers as a way to enhance cooperation. Their acknowledgment that our data are relevant provides reassurance. Ongoing outreach provides opportunities for the association leaders to comment on specific content and broad data collection goals as well. A list of professional associations that have supported us follows.

- American Academy of Ambulatory Care Nursing
- American Academy of Dermatology
- American Academy of Family Physicians
- American Academy of Neurology
- American Academy of Ophthalmology
- American Academy of Orthopedic Surgeons
- American Academy of Otolaryngology – Head and Neck Surgery, Inc
- American Academy of Pediatrics
- American Academy of Physical Medicine and Rehabilitation
- American Association of Ambulatory Surgery Centers
- American College of Cardiology
- American College of Emergency Physicians
- American College of Hospital Administrators
- American College of Osteopathic Emergency Physicians
- American College of Obstetricians and Gynecologists
- American College of Physicians
- American College of Preventive Medicine
- American College of Surgeons
- American Health Information Management Association
- American Hospital Association
- American Osteopathic Association
- American Psychiatric Association
- American Society of Clinical Oncology
- American Society of Plastic Surgeons
- American Urological Association
- Association of American Medical Colleges
- Emergency Nurses Association
- Federated Ambulatory Surgery Association
- Federation of American Hospitals

- National Association of Community Health Centers
- National Association of Public Hospitals and Health Systems
- Society for Academic Emergency Medicine
- Society for Ambulatory Anesthesia

Workshops to define new goals

Outreach activities are especially important in helping to identify emerging opportunities and define goals for the future. In 2007, ASPE provided funding for DHCS to hold a workshop with key stakeholders to explore the potential for electronic health records to enhance the nation's health care statistics capabilities and to identify ideas for further research and development. More than 50 participants from government, health care, informatics, and non-profit associations provided insights. The main idea developed was that DHCS should gain more experience extracting survey data from EHR systems by partnering with large health systems. A list of workshop participants is included in **Appendix G**.

Three Expert Panel Meetings have been conducted in the past year to help prepare for new projects. These have included:

Correctional Health and Healthcare: Identifying and Prioritizing Data Needs Expert Panel Working Group Meeting

The Bureau of Justice Statistics (BJS), in partnership with NCHS is preparing to conduct the National Survey of Prison Healthcare (NSPH). The main focus of the NSPH will be to collect system-level data on health service availability and utilization. The survey will be administered to a respondent at each of the state departments of corrections (DOC) and the Federal Bureau of Prisons (BOP). BJS/NCHS recognized the need to involve stakeholders when determining the content and feasibility of a national survey of correctional healthcare. As a first step, in June 2010, NCHS convened a panel of experts to identify the most salient issues in prison healthcare delivery, the data availability, and the obstacles to collecting such data. The meeting was also intended to help determine the content of NSPH. The list of participants is included in **Appendix H**.

Physician Workflow Expert Panel Working Group Meeting

This working group, convened in October 2010 in collaboration between ONC and NCHS, was an important early step in the development of the Physician Workflow Survey. The sessions of this meeting were organized around the major areas of interest for the survey: barriers, physician attitudes, and the intent to adopt, associated benefits, associated costs, and survey implementation. Group members provided insight into the various factors to be covered on the survey, and laid the groundwork for survey development by helping to form consensus on data needs and discussing previously conducted research. The list of participants is included in **Appendix I**.

Monitoring Colonoscopy Use in the United States

An expert panel meeting convened in October 2010 to support a collaborative effort between the National Cancer Institute (NCI), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) and NCHS. Together, these agencies are working to design a supplement to NHAMCS for monitoring colonoscopy use. The purpose of the project is to determine the feasibility of collecting more detailed data on NHAMCS that could inform decisions related to allocation of resources to optimize use of colonoscopy and improve its quality. The expert panel was first asked to identify the most needed data elements. Second, panelists were asked to assess the feasibility of each data element and to identify measures to provide information for the identified data element. At the conclusion of this process, the expert panelists were then asked to priority rank the data elements for inclusion in the NHAMCS supplement. The list of participants is included in **Appendix J**.

Routine monitoring of publications, media, and website use

Another routine mechanism to identify users and evaluate their interests and needs is through tracking of publications, media, and website use.

Publications

Tracking the various publications that use AHCSB data is useful for identifying our users and assessing their needs, and may also lead to exchange of information and collaboration. By routinely tracking published reports and journal articles that use NAMCS, NHAMCS, NHDS, and NSAS data, we know that they are used extensively for health care research, planning, and public policymaking. Data are used by government agencies, medical associations, universities and medical schools, private researchers, nonprofit organizations, scientific bodies, health care consultants, health economists, medical research laboratories, pharmaceutical and medical supply manufacturers, publishing houses, market research groups, insurance companies, and broadcast and print media.

The following are examples of published reports and web-based data sources produced by other parts of NCHS and other government agencies which have used NAMCS, NHAMCS and NHDS data.

- In 2011, the Assistant Secretary for Planning and Evaluation (ASPE) included measures of depression screening and adoption of electronic health records from NAMCS in their ACA Dashboard, designed to describe the U.S. health care system before and after the implementation of health reform.
- In 2011, the Department of Health and Human Services released a Health Indicators Warehouse of national, state, and local data on health and health care. Data from NAMCS, NHAMCS, and NHDS were included.

- NHAMCS and NHDS data on childhood asthma have been included in the Environmental Protection Agency’s “America’s Children and the Environment, Third Edition (ACE3),” now in preparation.
- In 2009, the Government Accountability Office (GAO), made substantial use of NHAMCS data to re-assess the problem of crowding in EDs. These analyses were the basis of the GAO report *Hospital Emergency Departments: Crowding Continues to Occur, and Some Patients Wait Longer than Recommended Time Frames*: <http://www.gao.gov/products/GAO-09-347>. This report was a follow-up to the 2006 Institute of Medicine (IOM) report, *Hospital-Based Emergency Care: At the Breaking Point*, and a 2003 GAO report, both of which made substantial use of NHAMCS data to describe the seriously overcrowded conditions of many U.S. emergency departments and trauma centers.
- AHRQ uses NAMCS, NHAMCS, and NHDS data to estimate medical care services used and quality of medical care provided for its annual *National Healthcare Disparities Report* and *National Healthcare Quality Report*.
- The U.S. Census Bureau uses NAMCS, NHAMCS, and NHDS data on characteristics of visits and leading diagnoses by age group in its annual *Statistical Abstract of the United States*.
- *Health, United States*, the congressionally mandated annual report on the health status of the Nation prepared by NCHS and submitted by the Secretary of DHHS to the President and the Congress, includes NAMCS, NHAMCS, and NHDS data in each edition. (<http://www.cdc.gov/nchs/data/hus/hus10.pdf>).
- NHDS, NAMCS and NHAMCS data are used by DHHS in the development and monitoring of goals for the *Year 2020 Health Objectives* for the United States.
- NAMCS, NHAMCS, and NHDS data are provided to the American Heart Association for their annual publication, *Heart and Stroke Statistics*.
- The National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention use NHDS data to provide national estimates of hospital utilization for patients discharged with human immunodeficiency virus (HIV).
- The National Center for Injury Prevention and Control, CDC, uses NHDS data as a measure of hospitalizations due to injury.
- NHLBI requests yearly updates of selected coronary diagnoses and procedures to monitor trends in coronary conditions.
- NCI uses NHDS data to assist in measuring the incidence of uterine and prostate cancer.

- The Department of Defense and the Department of Veterans Affairs use NHDS data to compare inpatient care provided in their hospitals with care provided in civilian hospitals.
- The American Lung Association requests NHDS estimates of hospitalizations for chronic obstructive pulmonary disease (COPD), asthma, pneumonia, and influenza, usually by sex, age, race and geographic region.
- A special report on “Research on Patients Conducted by Office-Based Physicians Not Requiring IRB Review” was prepared as part of an interagency agreement between NCHS and ASPE.

Many other researchers in government, academia and elsewhere make extensive use of AHCSB data as well. Each year, between 50 and 100 original research articles are published in peer-reviewed journals. A comprehensive list of publications using NAMCS and NHAMCS data can be found on this web site:

<http://www.cdc.gov/nchs/data/ahcd/publist9-10-10.pdf>.

A comparable list of publications using NHDS and NSAS data can be found on this web site: <http://www.cdc.gov/nchs/data/nhds/NHDSNovember2010article.pdf>.

Media tracking

Another way to monitor the use of AHCSB data is through media tracking. When reports using AHCSB data are released, media coverage generally follows. Several media reports mentioned the Data Briefs and National Health Statistics Reports that were released last year on the ambulatory care surveys. Examples include a USA Today article and a WebMD Health News article citing Data Brief No. 43 on emergency department visits (Bhuiya, Pitts, and McCaig), an American Medical News article citing Data Brief No. 41 on aging and office-based physician care (Cherry, Lucas and Decker), and a New York Times article on emergency department care citing NHSR No. 26 (Niska, Bhuiya, and Xu). The extent of coverage is one indicator of public interest in the data that we produce.

Links to these articles can be found at:

http://www.usatoday.com/yourlife/health/healthcare/hospitals/2010-09-09-ER09_ST_N.htm

http://www.webmd.com/heart-disease/news/20100908/er-visits-and-imaging?src=RSS_PUBLIC

<http://www.ama-assn.org/amednews/2010/09/13/bisc0915.htm>

http://www.nytimes.com/2010/08/17/health/17stats.html?_r=1

Web site tracking

Tracking web page usage is also helpful for evaluating the use of AHCSB data, and to understand how the public likes to access these data. NCHS collects statistics on the number of times that individual web pages have been visited in the previous year. AHCSB web pages describing survey methods and providing data sets, documents, and survey forms were visited approximately 400,000 times in 2010. Division web pages that may have routed users to AHCSB publications and reports were visited approximately 150,000 times in 2010. In addition, “Fast Stats” pages containing statistics associated with a particular topic area and including data from NAMCS, NHAMCS, or NHDS were viewed more than 500,000 times. These statistics emphasize how integral the web has become to AHCSB dissemination processes, and public interest in topically oriented web pages.

Other activities identifying data users and their needs

To obtain more information about data users and their needs, the Division conducted a series of consumer surveys in the summer and fall of 2008. We were interested in learning more about reasons for using data, users' evaluation of the web site and products downloaded from it, and perceived gaps in our products and services.

Survey participants were recruited from a convenience sample responding to surveys of three target audiences: the 2008 NCHS Data Users Conference (DUC), DHCS listservs, and the NCHS web site (Table 4.1). Users were defined by their recent use of data or information from one or more of the National Health Care Surveys or by attending a DUC session specific to one of these surveys. Other users were considered to be general NCHS Users. Although we distinguished among users of ambulatory and hospital care surveys and long-term care surveys, the results were very similar across these groups. Therefore, the results reported below are combined for users of any of the National Health Care Surveys. See Tables 4.2 and 4.3 and Figure 4.1 for selected results.

Table 4.1 Sources of Respondents to Consumer Surveys, August-November 2008

	Total Number	Health care surveys users Number (%)	General NCHS users Number (%)
Total	648	342	306
Data Users Conference	153	116 (33.9)	37 (12.1)
Listsers respondents	120	112 (32.7)	8 (2.6)
Website users	375	114 (33.3)	261 (85.3)

Health care survey users had more technical occupations than general users, with a higher percentage of researchers and market researchers and a lower percentage of students and other occupations. The most common organizational affiliations reported by both health care statistics and general users were academic/research institution, health care facility or service delivery, and government. Health care survey users and general users both used NCHS data most commonly for academic research or school projects. Health care surveys users were significantly more likely to use NCHS data for planning or evaluation, policy or legislation, or product development.

Many of the survey respondents used the Internet routinely. More than one-third of health care survey users and more than one-quarter of general users used the NCHS website at least 6 times in the past year. Figure 4.1 summarizes the evaluation of those who had used the NCHS website at least once in the past 12 months. The majority of health care survey users agreed or strongly agreed that information found on the web site was relevant, accurate, easy to interpret, easy to find, and timely. General users were equally likely to strongly agree or agree that information found on the web was relevant and timely, but were less likely to agree the information was easy to find.

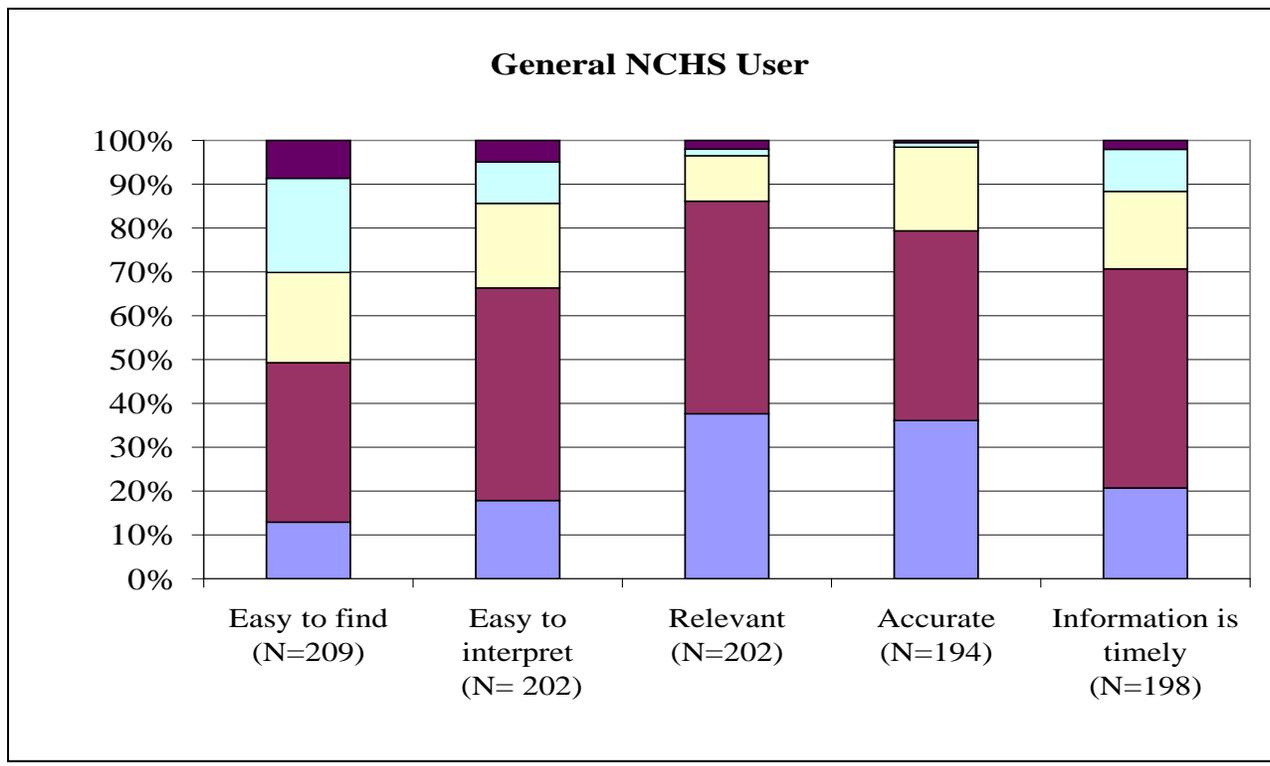
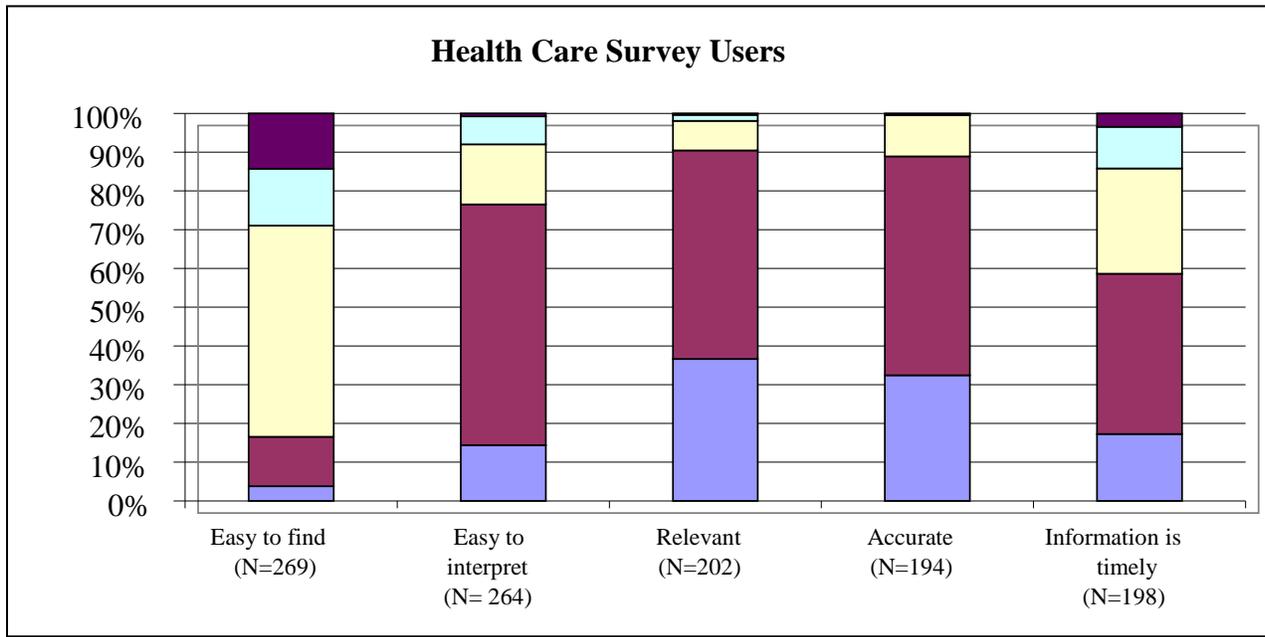
Table 4.2 Selected Responses to Consumer Surveys, August-November 2008

	Total	Health care surveys users Number (%)	General NCHS users Number (%)
Occupation	648	342	306
Health researcher, scientist, social scientist	183	123 (36.0)	60 (19.6)
Health/public health professional	130	67 (19.6)	63 (20.6)
Health care provider	75	41 (12.0)	34 (11.1)
Market researcher, analyst, or consultant	39	33 (9.6)	6 (2.0)
Student	96	28 (8.2)	68 (22.2)
Policy-maker, analyst, or advocate	36	23 (6.7)	13 (4.2)
Other	68	19 (5.6)	49 (19.0)
Missing	12	8 (2.3)	4 (1.3)
Affiliation	648	342	306
Academic/research institution	228	109 (35.2)	119 (31.9)
Health care facility/health services delivery	151	87 (23.3)	64 (25.4)
Government	112	54 (17.3)	58 (15.8)
Medical drug or device industry or health care consulting	43	29 (6.6)	14 (8.5)
Non-profit advocacy or policy organization	30	19 (4.6)	11 (5.6)
Other	66	31 (9.1)	38 (9.1)
Missing	15	13 (3.8)	2 (2.8)
Uses of data or information*	648	342	306
Academic research/school project	371	190 (55.6)	181 (59.2)
Health program planning, administration or evaluation	195	125 (36.5)	70 (22.9)
To inform/develop policy or legislation	130	87 (25.4)	43 (14.1)
Market research/product development	67	52 (15.2)	15 (4.9)
Personal interest	102	49 (14.3)	53 (17.3)
Media/journalism	24	15 (4.4)	9 (2.9)
Other	18	10 (2.9)	8 (2.6)
Frequency of web site use	648	342	306
Never	76	15 (4.4)	61 (19.9)
1 time	152	63 (18.4)	89 (29.1)
2-5 times	127	90 (26.3)	37 (12.1)
6-11 times	98	60 (17.5)	38 (12.4)
12 times or more	111	66 (19.3)	45 (14.7)
Missing	84	48 (14.0)	36 (11.8)
Reason for most recent visit to web site*[†]	269	116	153
To obtain information about a specific health topic	223	101 (44.7)	122 (45.4)
To download a specific report, publication, or table	241	125 (55.3)	116 (43.1)
To download public use micro-data files or obtain information about these files	98	61 (27.0)	37 (13.8)
To identify survey methods or data collections to apply to your own research	94	39 (17.3)	55 (20.4)
Other	45	14 (6.2)	31 (11.5)

*Respondents were permitted to check all that apply. Totals do not sum to 100%.

[†]The survey from the NCHS Data Users Conference did not contain this question.

Figure 4.1. Percent Distribution of Respondents' Opinions Regarding Information Found on Web Site, NCHS Consumer Surveys, August-November 2008



■ Strongly agree
 ■ Agree
 ■ Neutral
 ■ Disagree
 ■ Strongly disagree

Respondents were given the opportunity to offer information about gaps in data and other services in free-text fields. One question specifically asked for “any important gaps in the information or data that NCHS provides.” The second asked for general comments. These fields have been combined because they offered overlapping pictures. Table 4-3 summarizes these results for health care survey users. Themes with fewer than 10 respondents were not included.

Table 4.3. Common Themes Reported in Free-Text by Health Care Surveys Users, NCHS Consumer Surveys, August-November 2008

Topic of Comment	Number (%)
No comment	250 (73)
Positive comments about the data, web site, staff, or other NCHS products and services	25 (27%)
More information desired in specific content areas	27 (29%)
Improvements to web navigation, especially in finding specific health topics	22 (24%)
Better technical information about the surveys, survey design, or survey weights, or generally noted the technical complexity of working with data	14 (15%)
More web tools to assist non-analysts	10 (11%)
More timely data	10 (11%)

This set of consumer surveys was based on a convenience sample representing only the small fraction of website users, listserv members, and DUC attendees who chose to respond. Moreover, the responses omit entirely those potential stakeholders who do not use our web site, belong to our listservs, or attend our DUC, possibly because they do not know we exist. As in any convenience sample, we anticipate that respondents hold stronger opinions, either positive or negative than the general public at large. However, since stakeholders are by definition those who care about what we do, it is appropriate to consider the opinions offered by these select respondents. These respondents provide broader feedback than we receive from our collaborators, and more detail than we obtain through routine tracking activities.

These consumer survey results confirm our general impressions about the nature of our users and how they use our data. The majority of the respondents were researchers, health care or public health professionals, or health care providers. They represent They use data to conduct academic research, perform health program planning, administration, or evaluation, inform or develop policy or legislation, and conduct research for marketing and product development.

These consumer surveys also provide some insight into users of our web-based products and their needs. Web-based data must be organized to serve the variety of users’ needs, including the need to download prepared reports and publications, search for information on specific health topics, and analyze raw micro-data. The majority were satisfied with most aspects of the products and services received, and satisfied with survey content given their needs. However, results indicated room for improvement in terms of making data easier to find and interpret (particularly for non-analysts) and more timely.

SECTION 5: CHALLENGES AND OPPORTUNITIES

The challenges faced by the AHCSB are largely interrelated. Our greatest challenge is to maximize the relevance and timeliness of our surveys for health care policy and research. Second, as electronic health records rapidly become a fundamental component of health care, AHCSB needs to develop the expertise to be able to use electronic information systems to meet our mission of data collection. Improving data quality and maintaining high response rates are continuing challenges for the surveys. The budgetary challenge remaining for the AHCSB surveys is to be able to attain sustainable funding, a difficult task when the federal budget is being reduced. Critical to the ability to accomplish any of our goals, we face the challenge of hiring and retaining exceptional people while fostering a culture of innovation among the current dedicated staff. This section considers each of these challenges, and identifies some current opportunities for addressing them.

Challenge: Keeping Surveys Relevant and Timely for Policy and Research

Health care delivery systems and patterns of utilization are constantly changing, as are the sciences of medicine, epidemiology, health services research, and health care policy. Our surveys must be flexible to adapt to these changes in order to provide relevant data to researchers, industry, and policymakers in a timely manner.

Improving the timeliness of our surveys is critical in order to evaluate the effects of these changes. Improving the timeliness of our data is a function of several dimensions. The first is adding survey content. NAMCS and NHAMCS have historically been fairly flexible, with survey content routinely changing to reflect emerging developments, such as the availability of new health care services, use of electronic health records, and emergency room crowding. NHDS has been less flexible because its design has been linked to standard administrative records. The new NHCS will greatly improve that situation, as it will receive administrative claims data electronically and be able to sample these records for special studies that require medical record abstraction. The second dimension to getting the data collected in a timely fashion is the data collection period. All of our surveys are annual and the data are collected on a flow basis, which permits annual estimates after editing and processing a year of data. The third dimension is getting the data in a usable form for analysis as soon as possible after data collection. Moving from paper and pencil data collection to computer assisted data collection will eliminate data entry and incorporate many of the data edits and consistency checks into the data collection process.

Opportunities

A great upsurge of interest in our hospital and ambulatory surveys has occurred as efforts surrounding health and health care reform have intensified. Ongoing efforts reflect both new and continuing sponsorships from other agencies, and represent directly the data and analyses that policymakers consider of greatest importance.

The Health Information Technology for Economic and Clinical Health (HITECH) Act promotes the adoption of electronic health record systems by health care providers. AHCSB ambulatory

surveys have been collecting data on the adoption of EHR systems in physician offices and hospitals ambulatory care units since 2001. To track adoption by office based physicians, the Office of the National Coordinator for Health Information Technology (ONC) has funded a mail survey supplement to NAMCS since 2008, and for 2010 and 2011, substantially expanded the funding to support state-specific estimates. In addition, ONC funded NCHS to launch in 2011 a follow-up survey of physicians' workflow to provide more information about the perceived costs and benefits of implementing EHRs in physicians' offices.

Funding from the Patient Protection and Affordable Care Act (ACA) will permit better monitoring and evaluation of the effects of increased prevention activities. In 2012, we will institute a lookback module in NAMCS and NHAMCS, to document clinical management to prevent heart disease and stroke during the prior year's visits. Increasing the NAMCS sample of clinicians will permit state-specific estimates, e.g., of blood pressure control at visits with hypertensive patients. Moving to computer assisted data collection for NAMCS, to be operational in 2012, is essential to implement these improvements.

We are undertaking an early release program for our ambulatory surveys. For example, estimates for key variables based on the first 6 months of a calendar year's data collection will be released much earlier than the full annual data file.

We have added questions on the mail survey to address physicians' acceptance of new patients by expected source of payment. State-specific data will first be available for 2011, and permit subsequent tracking as health reform is implemented.

The Office of the Assistant Secretary for Preparedness and Response (ASPR) provided funds in 2010 for NHAMCS to monitor the role of the ED under health reform. In collaboration with ASPR, NCHS convened a working group, and is evaluating possible enhancements to NHAMCS to identify important aspects of ED care to monitor as health reform proceeds.

The annual NAMCS does not collect information on the amounts of payments to physicians. ASPE has provided funds for NCHS to study the feasibility of collecting Current Procedural Terminology (CPT) codes and instituting survey-wide collection of CPT codes in NAMCS and possibly NHAMCS. This enhancement would permit tracking payments to physicians by patient characteristic, including age, gender, race, and poverty level of ZIP Code as health reform is implemented.

Challenges: Electronic Health Records

As health care providers are transitioning from paper records to EHR systems, health care surveys must obtain data from both paper and electronic records, sometimes within the same organization. In 2010, about 51% of office-based physicians reported using an EHR system. Only about 25%, however, reported having a system with basic features, which included patient history and demographics, physicians' clinical notes, current medications, computerized orders for prescriptions, and viewing laboratory and imaging results.

Dealing with mixed data sources during this transitional period poses problems. Our field representatives have reported that abstracting data at hospitals and physicians' offices with EHR systems may take longer than at establishments without EHRs. To obtain all the survey data, they may have to navigate separate electronic systems in addition to a paper record. Important issues for the longer run are whether and how health care surveys can extract required data of good quality from EHR systems.

Opportunities

AHCSB continues to monitor EHR adoption by physician offices and hospitals through NAMCS and NHAMCS.

NHCS is being built on electronic data collection. In the ongoing pilot, hospitals are sending electronic files of their UB-04 data from their administrative databases to NCHS over a secure data network. Next month we will begin the national survey involving 500 nationally-representative hospitals that will be providing data on all inpatients directly to NCHS. In addition, there are plans for evaluating the electronic health record capabilities of each hospital during the first year. We then plan to work with a subset of hospitals to arrange electronic transfer of data according to the capability and willingness of each hospital. Administrative data from the Uniform Bill (UB) followed by data on payments received, laboratory values, and medications dispensed are the most likely elements to be available. This strategy will tailor data collection to the situation in each hospital, and expand the data collected electronically as a hospital's capability permits.

Increasingly gearing data collection to electronic means recognizes the reality of providers' increasing reliance on EHR systems. Using electronic methods also has the potential to reduce the time to data release, because we would eliminate the steps required for field representatives to abstract data on paper forms, review the forms for completeness and accuracy, and key the data elements into electronic files. Depending on providers' capabilities, electronic approaches could also lower the burden on respondents and improve response rates. Data quality may benefit as well, since data might be transferred almost directly from provider to data set, eliminating abstractor interpretations that may result in errors. On the other hand, these systems raise issues regarding the comparability and standardization of coding across providers, and confidentiality of providers and patients. We will continue to explore these issues in our ongoing work.

Challenge: Data Quality

Although we go to great effort to ensure data quality, there are always additional initiatives that could be pursued.

New content for AHCSB surveys has generally been reviewed by staff to ensure consistency with data goals and feasibility for administration. Pretests have been conducted in the field to assess basic functionality. However, new content has generally not been subjected to systematic testing through cognitive interviewing or similar evaluation methods. Although methods for testing establishment surveys are arguably less developed than those for household surveys—and

the staff of the Questionnaire Design Research Laboratory (QDRL) at NCHS has relatively little experience with establishment surveys, much more could be done to test newly proposed questions. Cognitive interviewing can also be used as a tool to evaluate existing survey content, for example, providing insight into how informants are identified and how appropriate records are found for abstraction. Such testing could provide insight into data quality of various survey items, and indicate where changes or additional research are most warranted.

Response rates for NHAMCS and NHDS have remained high, with overall rates above 90%. There have been larger drops in the NAMCS unweighted response rates, which have changed from 73% in the early 1990s to 62% in 2009. Some of this decline may be due to overreliance upon the same PSUs for long periods of time; some NAMCS physicians are pulled back into the sample every three years, especially in smaller PSUs.

Opportunities

We are working with the QDRL to develop new approaches to improve data quality, both in terms of more rigorous design and testing of questionnaire content, and methodological research and evaluation activities. Recently we conducted two studies with the QDRL: the NAMCS and NHAMCS Patient Record Evaluation Study and the Physician Workflow Project.

Additional research should be conducted to assess both the reliability and validity of data. An important step along these lines is the incorporation of a re-abstraction component into the surveys. In past years, re-abstraction was more commonly applied to the surveys, but was dropped due to budgetary constraints. These practices are being re-incorporated into NAMCS and NHAMCS, and all of the surveys could be subjected to further investigations regarding quality of measurement, both at a facility and patient level. Developing a longer-term methodological agenda is also a high priority for the Branch.

Maintaining response rates remains a challenge and a priority. In future years we hope to conduct additional non-response follow-up studies, and expand research on decision processes involved in survey participation. Other possibilities for improving response rates include expanding sponsorships and endorsements, making stronger cases to potential respondents about the usefulness of data, and conducting additional training conferences for FRs. As discussed earlier, FR training conferences have the potential to improve skills in soliciting cooperation of clinicians and hospitals, and boost FR confidence and enthusiasm. We are increasing the frequency and scope of these training beginning in fall 2011 for the 2012 data collection.

The new NHCS provides a few incentives for participation including a one-time \$500 set-up fee for hospitals to apply for a digital certificate and develop the processes and procedures necessary to be able to transmit data to NCHS through the secure data network. In addition, we are offering \$500 to hospitals at the end of each year of data collection. A continuing education program was developed for health information management professionals to obtain continuing education credits from their professional organization for learning about the survey.

Challenges: Sustainable Funding

For many years, limitations in financial resources have required numerous sacrifices for the hospital and ambulatory surveys. These limitations have affected sample size, training, data quality, and efficiency of data release. Sample sizes for NAMCS and NHAMCS have generally required two years of data for detailed estimates. It has also been difficult to support training necessary to ensure state-of-the-art data collection. Training conferences for NAMCS, NHAMCS, and NHDS field representatives were held in 2001 and 2008, although our goal has been to hold them every 2-3 years. Given budget constraints, in interim years we have substituted live training with a self study on NAMCS and NHAMCS. Although this is of some value, it does not permit interaction and discussion between field representatives and AHCSB staff, which we believe makes a significant contribution to data quality, field representatives' motivation, and eventual response rates. Budget constraints have also made it difficult to enact additional quality-control procedures in the field, such as data monitoring to identify sources of inconsistencies or incomplete data. The surveys have had to rely upon paper and pencil for data collection, when far more efficient computer-assisted methods could make it possible to consolidate several editing and data entry steps, improving both timeliness and quality.

Opportunities

In recent years, the Division has substantially increased the support received for the ambulatory and hospital surveys from other agencies. In association with enhanced outreach activities, from fiscal year (FY) 2006 to FY 2007, funds available to the program from other agencies tripled, from about \$0.5 million to \$1.8 million, primarily for developmental work associated with NHDS. Such support increased to \$2.5 million in FY 2008, and declined to \$1.8 million in FY 2009. External funding available to the program swelled to \$16.9 million in FY 2010. Of that total, \$10 million came from prevention funds under ACA. Also in FY 2010, other agencies--ONC, ASPR, AHRQ, NCI, ASPE, CDC's National Center for Chronic Disease Prevention and Health Promotion, and an asthma consortium including others, such as the Environmental Protection Agency, National Heart, Lung and Blood Institute, National Institute of Child Health & Development, National Institute of Environmental Health Sciences, and CDC's National Center for Environmental Health and National Institute for Occupational Safety and Health--contributed sizable amounts.

ACA funds have had a substantial impact on the fortunes of the ambulatory surveys, as this funding is supporting dramatic increases in the NAMCS sample for 2012 to permit state-specific estimates and making it possible to convert to computer-assisted data collection for NAMCS and NHAMCS from 2012. These improvements in data collection methods, in turn, are required to realize the underlying goal of ACA funding, to improve information on appropriate clinical management to prevent heart disease and stroke, such as the information that the lookback module will obtain. The longer-term challenge is to sustain these critical improvements. The diversity of funding sources for the hospital and ambulatory surveys, especially during the past year, indicates that policy interest in these surveys as vehicles for monitoring and evaluation is widespread. Continuing efforts will be required to fulfill these obligations and sustain support in the future.

Challenges: Hiring and Retaining Staff

Staff vacancies have greatly handicapped AHCSB operations and analysis. Although the Center has approved the addition of four permanent staff members, we are not currently cleared to recruit two of them. At the same time, the workload resulting from moving to computerization has been considerable, and the Branch is under considerable pressure to release data more quickly. The workload has been a strain and has adversely affected staff morale.

Members of the Hospital Care Statistics Team are heavily involved in the launch of the NHCS, and are also concluding data collection and production for the current NHDS. Although the staff has made remarkable progress toward catching up with NHDS data releases (2009 data were released in April 2011), the last several years of data were released later than desirable. NAMCS and NHAMCS staff members are also stretched thin as they face the added pressure of supporting activities to computerize future data collection while they process and analyze routine data. In the long run, the move to computer assisted data collection should alleviate the workload of many staff members. In the short run, however, many staff members have been performing double duties.

Vacancies in other parts of DHCS also have implications for AHCSB. The Technical Services Branch, which provides essential computer programming and mathematical statistical support, currently has four vacancies. In addition, a key methodologist position is vacant, and the Division Director plans to depart from her position this summer.

Recruiting strong candidates will be challenging even when hiring authority is granted. The desired skill set for staff members includes strong quantitative skills, experience with national surveys, and familiarity with health care. In addition, CDC hiring processes are particularly time-consuming. Strong candidates often find other job possibilities during this process.

Opportunities

Survey operations will remain the priority for ambulatory and hospital surveys. This prioritization will ensure that data are processed and files available for public use as soon as possible, but will most likely delay some routine reports and other analyses. We have partially compensated for delays in CDC hiring processes by hiring some new staff as Service Fellows, which can be filled more quickly and are comparable to regular civil service positions in pay and benefits. We are recruiting for a physician who has health services research or statistical experience, an addition that will greatly enrich the expertise of the staff.

AHCSB and the Technical Services Branch are also in the process of hiring several contractors. This mechanism will enable us to add staff in a shorter time and help to bridge the gaps in staffing until permanent positions can be filled.

Staff may take advantage of training programs, both long and short term. Such training has the potential to improve staff members' skills and retain highly capable people. A team was nominated and approved for leadership training conducted by the Leadership Management Institute (LMI). The team includes the Division Deputy Director, three members of the AHCSB leadership, the Branch Chief and 2 Team Leads, and a senior member of the TSB staff.

Challenge: Fostering a Culture of Innovation

The Division's strategic planning process in 2009 identified a culture of innovation as one of five critical strategic issues to address in the next 5-10 years. The focus on this issue then was especially prescient. The ambulatory surveys have routinely updated their annual content, and inpatient data collection was then undergoing developmental work. The magnitude and scope of the changes that have arisen since, however, were not predicted. The challenge of developing a working environment that encourages creativity and openness to new ways of accomplishing our mission, values thinking outside the box, and supports efforts to integrate innovative ideas is even more valuable.

Opportunities

The goal of the culture of innovation action plan is to develop processes that foster an environment of creative thinking, idea exchange, and cooperative efforts to improve our productivity and efficiency. A working group has developed a Division-wide survey to measure employee perception of the Division as an environment of innovation. The working group uses the monthly lunchtime sessions on "Issues in Health Care Statistics" and other occasions to introduce and support innovative ideas. These activities have helped to create a climate that encourages staff in all areas to develop and implement improvements. Staff have been very supportive of the ongoing improvements in data collection, for example, and have initiated automated edits that reduce time to process and release data. Maintaining this atmosphere will be critically important as the changes in the pipeline are brought to fruition and implemented.

Appendices

Appendix A: NCHS Organizational Chart

Appendix B: AHCSB Staffing Composition

Appendix C: Content and Changes to NAMCS/NHAMCS, 1973-2006

Appendix D: Recent RDC Proposals Involving AHCSB Data

Appendix E: Recent CDC Data-Use Agreements Involving AHCSB Data

Appendix F: Recent AHCSB Staff Publications

Appendix G: Participants List for Physician Workflow Expert Working Group Meeting

Appendix H: Participants in Correctional Health and Healthcare: Identifying and Prioritizing Data Needs Expert Panel Working Group Meeting

Appendix I: Participants in the Workshop on Improving Health-Care Statistics Through Electronic Medical Records and Health Information Exchange

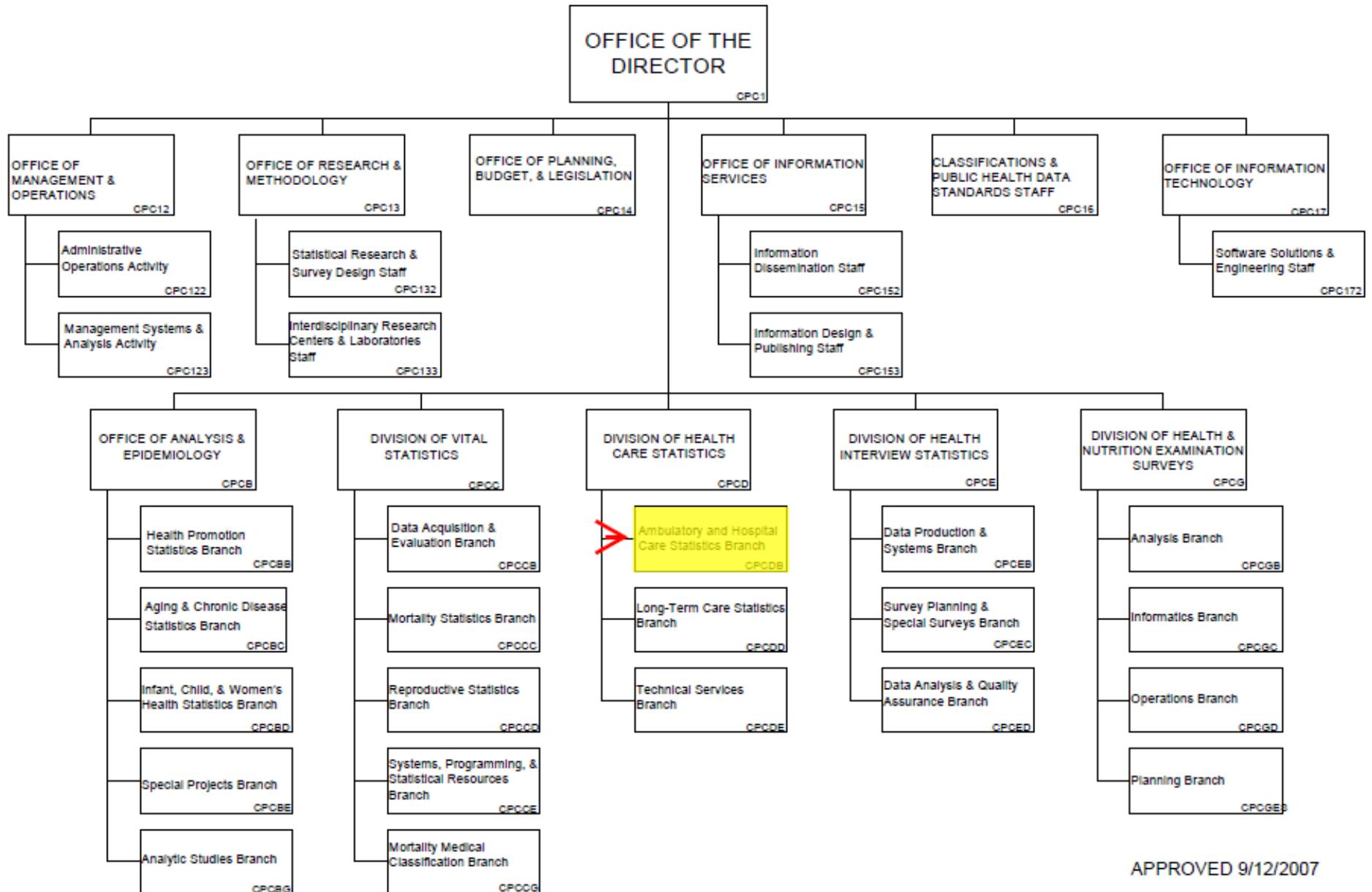
Appendix J: Participants List for Monitoring Colonoscopy Use in the United States Expert Panel Working Group Meeting

Appendix A.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

COORDINATING CENTER FOR HEALTH INFORMATION AND SERVICE (CP)

NATIONAL CENTER FOR HEALTH STATISTICS (CPC)



Appendix B: Ambulatory Hospital Care Statistics Branch Staffing Composition

Last Name	First Name	Pay Plan	Series	Grade	Position Title
BEATTY	PAUL	GS	101	15	CHIEF
ASHMAN	JILL	GS	1530	14	LEAD STATISTICIAN
DEFRANCES	CAROL	GS	1530	14	LEAD STATISTICIAN (HEALTH)
WOODWELL	DAVID	GS	1530	14	LEAD STATISTICIAN (HEALTH)
SCHAPPERT	SUSAN	GS	1530	14	STATISTICIAN (HEALTH)
MCCAIG	LINDA	GS	601	14	HEALTH SCIENTIST
CHERRY	DONALD	GS	1530	13	STATISTICIAN (HEALTH)
HALL	MARGARET	GS	1530	13	STATISTICIAN (HEALTH)
HING	ESTHER	GS	1530	13	SURVEY STATISTICIAN
OWINGS	MARIA	GS	1530	13	STATISTICIAN (HEALTH)
WOLFORD	MONICA	GS	1530	13	SURVEY STATISTICIAN
LUCAS	CHRISTINE	GS	1530	12	SURVEY STATISTICIAN
BHUIYA	FARIDA	GS	301	12	HEALTH SCIENTIST
PARK	MELISSA	GS	301	12	HEALTH SCIENTIST
BERESOVSKY	VLADISLAV	GS	1530	11	SURVEY STATISTICIAN
PATZER	SHALEAH	GS	1599	9	STUDENT TRAINEE (STATISTICIAN)
PRIDE	ROBINETTE	GS	303	7	PROG OPERATIONS ASST
NISKA	RICHARD	CC	602	6	MEDICAL OFFICER IV
WATTS	JOHN	CC	660	3	STAFF PHARMACIST
SIMON	ALAN	AD	602		SENIOR SERVICE FELLOW
UDDIN	SAYEEDHA	AD	602		SENIOR SERVICE FELLOW
ANAND	KARISHMA	AD	601		ASSOCIATE SERVICE FELLOW
HSAIO	CHUN-JU	AD	601		SENIOR SERVICE FELLOW
JAMOOM	ERIC	AD	601		ASSOCIATE SERVICE FELLOW
WILLIAMS	SONJA	AD	601		ASSOCIATE SERVICE FELLOW
AKINSEYE	AKINTUNDE				CONTRACTOR
CHEN	LU				STUDENT VOLUNTEER
LAWERENCE	LINDA				CONTRACTOR
MCLEMORE	HAROLD				CONTRACTOR

Appendix C: Content and Changes to NAMCS/NHAMCS, 1973-2006

Survey Content for the National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

Preface

Interested in analyzing data from the National Ambulatory Medical Care Survey (NAMCS) or National Hospital Ambulatory Medical Care Survey (NHAMCS)? This brochure contains a list of all of the publicly available data items arranged by ambulatory care setting and year. It will enable identification of which variables were used in each year and how they have changed (or remained the same) over time.

Both surveys are conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS). The NAMCS, which began in 1973, was inaugurated to gather, analyze, and disseminate information about the health care provided by office-based physicians. Ambulatory medical care is the predominant method of providing health care services in the United States and occurs in a wide range of settings. The largest proportion of ambulatory care services occurs in physician offices. The NAMCS is complemented by the NHAMCS, which was inaugurated in 1992 to expand the scope of data collection to the medical services provided by hospital outpatient departments (OPD) and emergency departments (ED). Together, NAMCS and NHAMCS data provide an important tool for tracking ambulatory health care utilization in the United States. The NAMCS and NHAMCS are conducted within the Division of Health Care Statistics and components of the National Health Care Survey (NHCS), a family of surveys that measure health care utilization across various types of providers (e.g., nursing homes, hospitals, and ambulatory surgery centers).

This brochure is organized with survey content in mind. The first section of the brochure presents items from the NAMCS and NHAMCS-OPD data collection instruments (Patient Record forms). The NAMCS and NHAMCS-OPD Patient Record forms are nearly identical. Exceptions include the use of different categories for the "Providers Seen" item and the omission of the item, "Time spent with the physician" on the OPD form. It should also be kept in mind that the NAMCS began in 1973, and the NHAMCS began in 1992. Therefore, any data item prior to 1992 was only collected in the NAMCS. The ED component of the NHAMCS comprises the second section of the brochure.

The success of the NAMCS and NHAMCS is due in part to NCHS' extensive efforts to protect respondent confidentiality. For this reason, there are a number of variables each year that are not available on the public-use files, but which have great analytic potential. Researchers may be able to obtain access to many of these variables through the NCHS Research Data Center (RDC). Research proposals are reviewed and approved by NCHS staff and fees apply. A list of such variables can be found on the NAMCS and NHAMCS website listed below under the section "Additional NAMCS and NHAMCS Data Available at the Research Data Center."

Corrections and updates to this document will be made when needed with the most recent version on the NAMCS and NHAMCS website listed below.

Please visit:

www.cdc.gov/nchs/nhcs/htm for more about the NHCS;
www.cdc.gov/nchs/namcs.htm for more about the NAMCS or NHAMCS; and
www.cdc.gov/nchs/r&d/rdc.htm for more about the RDC.

More information on the NAMCS and NHAMCS can also be obtained by calling 301-458-4600.

Survey Content of the NAMCS and NHAMCS-OPD

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Patient date of visit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	From 1973-81 only the month and year are given. In 1985, the 2-digit day is also provided. Starting in 1999, day of week is given instead of specific date.
Patient ZIP code ⁴						X		X		X	X	X	X	X		
Patient date of birth	X	X	X	X						X						Only the month and year are given.
Patient age					X	X	X	X	X	X	X	X	X	X		
Patient sex	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Is patient pregnant?											X				X	
If yes, gestation week or last menstrual cycle															X	
Patient race															Prior to 1999, only one race could be selected.	
White	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Black or African American										X	X	X	X	X	X	
Black			X	X	X	X	X	X	X							
Negro/black	X	X														
Asian										X	X	X	X	X		
Asian or Pacific Islander			X	X	X	X	X	X	X							
Native Hawaiian or other Pacific Islander										X	X	X	X	X		
American Indian/ Eskimo/Aleut						X	X	X	X							
American Indian/ Alaska Native			X	X	X					X	X	X	X	X		
Other	X	X														
Unknown	X	X														
Patient ethnicity																
Hispanic origin			X	X	X	X	X	X	X							
Not Hispanic			X	X	X	X	X	X	X							
Hispanic or Latino										X	X	X	X	X		
Not Hispanic or Latino										X	X	X	X	X		
Does patient smoke cigarettes?																
						X	X	X				X	X			
Tobacco use																
Not current														X	X	
Never														X	X	
Former														X	X	
Current														X	X	
Unknown														X	X	

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-98	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Was authorization required for care										X	X					
Is this a capitated visit										X	X					
Expected source(s) of payment for this visit																
Preferred provider option									X							
Insured, fee-for-service									X							
HMO/other prepaid ⁴							X	X	X							
HMO/prepaid plan ⁵					X											
Prepaid plan/HMO/PPO ⁶						X										
Self-pay					X	X			X	X	X	X	X	X	X	
Patient paid							X	X								
No charge/charity											X	X	X	X	X	
No charge					X	X	X	X	X	X						
Private/commercial							X	X								
Other government							X	X								
Blue Cross/Blue Shield					X	X			X							
Other commercial insurance																
Other private insurance									X							
Private Insurance										X	X	X	X	X	X	
Medicare					X	X	X	X	X	X	X	X	X	X	X	
Medicaid					X	X	X	X	X	X	X					
Medicaid/SCHIP ⁷												X	X	X	X	
Worker's compensation									X	X	X	X	X	X	X	
Other					X	X	X	X	X	X	X	X	X	X	X	
Unknown									X	X	X	X	X	X	X	
Does patient belong to an HMO⁸?										X	X					
Patient reason for visit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	In 1973-90, up to two reasons collected; in 1991-2006, up to three reasons collected and coded to Reason for Visit Classification.
Reason for this visit																
Accidental injury			X													
Product related illness			X													
Neither of the above			X													
Describe all objects, products, or substances involved in the accident or product related illness			X													

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes		
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06	
Describe all objects, products, or substances involved in the accident or product related illness			X														
Location of accident or exposure to product			X														
Private residence			X														
Elsewhere			X														
Unknown			X														
Was patient at work, job or business when accident or exposure occurred			X														
Was patient previously treated for this condition			X														
No			X														
Yes																	
Hospital emergency room			X														
Private physician's office			X														
Physician elsewhere			X														
Place unknown			X														
Unknown			X														
Seriousness of physicians's diagnosis																	
Very serious	X	X															
Serious	X	X															
Slightly serious	X	X															
Not serious	X	X															
Time since onset of complaint/symptom																	
Less than 1 day		X															
1-6 days		X															
1-3 weeks		X															
1-3 months		X															
More than 3 months		X															
Not applicable		X															
Are you the patient's primary care physician/provider?																	
									X	X	X	X	X	X			
Was patient referred for this visit by another physician?	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Question was updated to "Was patient referred by another physician or by a health plan for this visit?" in 1997.

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Has the patient been seen in your practice before?	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	In 1973-76, "Have you ever seen this patient before?" In 1977, "Have you seen patient before?" In 1997-2000, "Have you or anyone in your practice/department seen patient before?"
If yes, how many past visits in the last 12 months?												X	X	X	X	Ranges are "none," "1-2," "3-5," and "6+."
If yes, for primary diagnosis?	X	X	X	X	X	X	X	X	X							
Major reason for this visit																
Acute problem	X		X	X						X	X	X	X	X		
New problem															X	
Acute problem, follow-up	X															
Chronic problem, routine	X		X	X					X	X	X	X	X	X	X	
Chronic problem, flare-up	X		X	X					X	X	X	X	X	X	X	
Prenatal care	X															
Postnatal care	X															
Pre-/post-surgery												X	X	X	X	
Post surgery/injury			X													
Pre- or post-surgery/injury follow-up									X	X						
Post surgery/post injury				X												
Postoperative care	X															
Well adult/child exam	X															
Family planning	X															
Counseling/advice	X															
Immunization	X															
Referred by other physician/agency	X															
Administrative purpose	X															
Non-illness care			X	X					X	X						
Preventive care											X	X	X	X		
Other	X															
Episode of care																
Initial visit for problem											X	X	X			
Follow-up visit for problem											X	X	X			
Unknown											X	X	X			
Do other physicians share patient's care for this problem or diagnosis?											X	X	X			

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-78	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-04 ²	1995-06	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Is this visit related to any of the following?																
Unintentional injury/poisoning																X
Intentional injury/poisoning																X
Adverse effect of medical/surgical care or adverse effect of medicinal drug																X
None of the above																X
Unknown																X
Is this visit injury related?							X	X	X							
Is this visit related to an injury or poisoning?										X	X					
Is this visit related to an injury, or poisoning, or adverse effect of medical treatment?												X	X	X		
If yes, cause of injury									X	X	X	X	X	X		Up to three causes of injury could be entered. Coded to the Supplemental Chapter of the ICD-9-CM.
If yes, cause of injury (verbatim text)										X	X	X	X	X		In 2001-04, "if yes, cause of injury, poisoning, or adverse effect" (verbatim text) was used.
If yes, place of occurrence																
Residence									X	X	X					In 1995-98, "home" was used.
Recreation/sports area									X	X	X					In 1995-98, "sports or athletics area" was used.
Street or highway									X	X	X					
School									X	X	X					
Other public building										X	X					
Industrial places										X	X					
Other									X	X	X					
Unknown									X	X	X					
If yes, is this injury intentional?																
Yes, self-inflicted										X	X					
Yes, assault										X	X					
No, unintentional										X	X					
Unknown										X	X					
If yes, if this injury work related?									X	X	X					

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1980-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Physician's diagnosis	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Up to three diagnoses could be entered. Coded to ICD-9-CM.
Is diagnosis probable, questionable, or rule out?									X	X	X	X	X	X	X	
Does patient now have															In 2005, "Regardless of the diagnoses [written in 5a], does patient now have?" was used.	
Artherosclerosis									X							
Arthritis									X						X	
Asthma								X							X	
Cancer															X	
In situ															X	In 2006 only.
Local															X	In 2006 only.
Regional															X	In 2006 only.
Distant															X	In 2006 only.
Unknown															X	In 2006 only.
Cerebrovascular disease															X	
CHF ⁴															X	
Chronic renal failure									X						X	
COPD ⁵									X						X	
Depression							X		X						X	
Diabetes								X	X						X	
HIV ⁶								X	X							In 1995-96, "HIV/AIDS" was used. ^{7, 8}
Hyperactivity(ADD) ⁹									X							
Hypercholesterolemia							X									
Hyperlipidemia															X	
Hypertension							X		X						X	
Ischemic heart disease															X	
Obesity							X	X	X						X	
Osteoporosis								X							X	
Glucose tests this visit																
None					X											
Blood					X											
Urine					X											
Oral					X											
Ambulatory surgical procedures																
Number collected	0	0	0	0	0	0	2	8	2	2	2	2	2	2	2	
Scheduled							X									
Ordered								X								C - 9

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Ordered/scheduled												X	X	X		
Performed						X	X					X	X	X		
Local anesthesia						X										
Regional anesthesia						X										
General anesthesia						X										

**Diagnostic/
screening services**

Exams

Breast exam					X	X			X	X	X				X	In 1989-90, "breast palpation" was used.
General history/exam	X	X	X	X												
General medical exam												X	X	X		
Glaucoma exam									X	X						
Limited history/exam	X	X	X	X												
Mental status exam			X	X			X		X						X	In 2005-06, "depression screening" was used.
Neurologic exam																
Other exam-specify site											X	X	X			
Pelvic exam					X	X			X	X	X				X	
Rectal exam					X	X			X	X	X				X	In 1989-90, "digital rectal exam" was used.
Skin exam									X	X					X	
Stool blood exam						X										

Blood tests

Blood chemistry					X											
Blood lead levels									X	X	X					
CBC (complete blood count)												X	X	X	X	
Cholesterol test						X	X		X	X	X	X	X			
Electrolytes														X	X	
Glucose test					X	X								X	X	In 1989-90, "oral glucose tolerance" was used.
Hematocrit/hemoglobin									X	X	X	X	X			
Hematology					X											
HgbA1C (glycohemoglobin)														X	X	
HIV serology ¹⁰						X	X	X	X	X	X					
Lipids/cholesterol														X	X	
Other blood test						X		X	X	X	X	X	X	X	X	

Imaging

Bone mineral density															X	
CAT scan ¹³								X	X	X						

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-98	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
CAT scan/MRI ^{13,14}									X							
Chest X-ray					X	X	X				X					
Mammogram							X	X		X	X	X	X	X	X	In 2001-06, "mammography" was used.
MRI ¹⁴									X		X					
MRI/CT/PET ^{14,15,16}																X
Other imaging												X	X	X	X	
Other radiology					X											
Other radiology							X									
Ultrasound					X				X	X	X	X				X
X-ray	X	X	X	X					X	X	X	X	X	X	X	X

Diagnostic tests

Blood pressure							X	X	X	X	X	X	X	X	X	
Cervical/urethral culture												X		X		
Chlamydia test															X	
Culture (e.g. throat)-specify												X	X			
EKG ¹⁷	X	X	X	X	X				X	X						
EKG/ECG ^{17,18}												X	X	X	X	
EKG-exercise ¹⁷							X									
EKG-resting ¹⁷							X									
Endoscopy	X	X	X	X								X				
Hearing test	X						X		X	X						
Other lab test							X									
PSA ¹⁹								X	X	X	X	X	X	X	X	
Spirometry							X	X								
Spirometry/pulmonary function test																X
Stool culture												X		X		
Strep throat test							X		X	X						
TB skin test ²⁰								X								
Throat/rapid strep test												X		X		In 2003-04, "throat culture/rapid strep test" was used.
Urinalysis					X	X	X	X	X	X	X	X	X	X	X	
Urine culture												X		X		
Vision test	X	X	X	X	X	X	X		X	X	X					In 1985, 1989-92 and 1995-2000, "vision acuity" was used.

Counseling/education

Alcohol abuse							X									
Asthma												X	X	X	X	
Breast self-exam							X		X	X						
Cholesterol reduction							X	X	X	X						
Diet/nutrition									X	X	X	X	X	X	X	

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Diet						X		X								
Drug abuse						X										
Exercise						X	X	X	X	X	X	X	X	X	X	
Family planning						X										
Family planning/ contraception						X			X	X						
Family/social				X		X										In 1991-92, "family/social counseling/education" was used.
Growth/development						X	X	X	X	X	X	X	X	X	X	
HIV transmission ¹⁰						X		X	X	X	X					In 1997-98, "HIV/STD transmission" was used. ^{10, 11}
Injury prevention							X	X	X	X					X	
Medical counseling	X	X	X	X												In 1973-74, "medical counseling/advice" was used.
Mental health/stress management												X	X	X		
Mental health								X	X	X						
Other counseling (i.e., not diet)				X								X	X	X		
Other counseling/advice					X		X	X						X	X	
Other mental health counseling															X	
Skin cancer prevention						X			X	X						
Smoking cessation					X	X	X									
Stress management						X			X	X						X
Tobacco use/exposure								X	X	X	X	X	X	X	X	
Weight reduction					X	X	X	X				X	X	X	X	
Vital signs																
Blood pressure														X	X	Actual measurements recorded.
Height															X	Actual measurements recorded.
Temperature														X	X	Actual measurements recorded.
Weight															X	Actual measurements recorded.
Procedures																
Biopsy												X			X	
Cystoscopy												X				
Excision of tissue															X	In 2006, "excision" was used.

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Orthopedic care															X	
Other non-surgical procedures-specify															X	
Other surgical procedures-specify															X	
Proct/sigmoidoscopy						X										
Scope procedure (e.g., endoscopy)-specify												X	X	X	X	
Sigmoidoscopy/colonoscopy												X				
Wound care															X	

Other

Clinical lab test	X	X	X	X												In 1973-74, "lab procedure/test" was used.
Pap test ²¹		X	X	X	X	X	X			X	X	X	X	X		
Pap test/cervical cytology ²¹															X	2005 only.
Pap test-conventional ²¹															X	2006 only.
Pap test-liquid-based ²¹															X	2006 only.
Pap test-unspecified ²¹															X	2006 only.
HPV DNA test ^{22, 23}															X	2006 only.
Other lab test					X											
Pregnancy test										X	X	X				
Allergy testing							X	X								
Injection	X		X													
Immunization/desensitization	X	X	X													
Prescription drug	X		X													
Nonprescription drug	X		X													
Drugs (prescription/nonprescription)		X														
Office surgery	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	In 1973-74, "office surgical treatment" was used. In 1985 and 1989-90, "ambulatory surgery" was used. Specific procedures were collected in 1991-2006 and coded to ICD-9-CM vol.3.
Physiotherapy	X	X	X	X	X	X	X		X	X	X	X	X	X	X	In 2005-06, "physical therapy" was used.
Other service-specify												X	X	X	X	In 2005-06, "other test/service" was used.
Radiation therapy					X										X	2006 only.
Corrective lenses					X	X	X		X							
Psychotherapy/therapeutic listening	X	X	X	X							X					
Psycho-pharmacotherapy										X	X					

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Psychotherapy				X	X	X			X	X	X	X	X	X	X	
Hearing aid																
Family planning		X	X	X	X											
Complementary alternative medicine (CAM)																X
Durable medical equipment																X
Home health care																X
Hospice care																X
Physical therapy																X
Speech/occupational therapy																X

Medications²⁴

Were medications ordered/ provided				X	X	X	X	X	X	X	X	X	X	X	X	X	Was there at least one medication recorded on the form?
Number of medications ²⁵				X	X	X	X	X	X	X	X	X	X	X	X	X	
Entry status				X	X	X	X										
Medications ²⁶	0	0	0	8	5	5	5	5	6	6	6	6	6	8	8		
Drug entry name				X	X	X	X	X	X	X	X	X	X	X	X		
Generic name code				X	X	X	X	X	X	X	X	X	X	X	X		
Prescription status code				X	X	X	X	X	X	X	X	X	X	X	X		
Controlled substance code				X	X	X	X	X	X	X	X	X	X	X	X		
Therapeutic class					X	X	X	X	X	X	X	X	X	X	X		In 1985 and 1989-92, 2-digit NDC codes were used; 4-digits were used thereafter. Starting in 2002, each medication could have up to three therapeutic classes.
Ingredient code (up to 5)				X	X	X	X	X	X	X	X	X	X	X	X		
Is this a new medication				X	X	X	X									X	
Is this a continued medication																	
Is medication for primary diagnosis				X	X	X											
Was medication from formulary list									X	X							
Total number of medications prescribed or provided this visit												X	X	X			

Providers seen (NAMCS)²⁷

LPN ²⁸									X	X	X	X	X	X			
Medical/nursing assistant										X	X	X	X	X			
Medical assistant									X								

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Medical technician/technologist												X	X	X		
Nurse midwife									X	X						
Nurse practitioner								X	X	X						
Nurse practitioner/midwife											X	X	X	X		
Other								X	X	X	X	X	X	X	X	
Physician								X	X	X	X	X	X	X	X	
Physician assistant								X	X	X	X	X	X	X	X	
RN ²⁰								X	X	X	X	X	X	X		
RN/LPN ^{20, 28}															X	
Providers seen (OPD)²⁷																
Resident/Intern							X	X	X	X	X	X	X	X		
Physician															X	
Staff physician							X	X	X	X	X	X	X	X		
Other physician							X	X	X	X	X	X	X	X		
Physician assistant							X	X	X	X	X	X	X	X	X	
Physician assistant/nurse practitioner								X								
Nurse practitioner							X		X	X						
Nurse midwife									X	X						
Nurse practitioner/midwife											X	X	X	X		
Registered nurse							X	X	X	X	X	X	X	X		RN was used in 1995 and later.
Licensed practical nurse							X	X	X	X	X	X	X	X		LPN was used in 1995 and later.
RN/LPN ^{20, 28}															X	
Medical assistant								X								
Medical/nursing assistant									X	X	X	X	X			
Medical technician/technologist											X	X	X			
Nurse's aide							X	X								
Other							X	X	X	X	X	X	X	X	X	
Duration of this visit³⁰	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	In 1997, title was changed to "time spent with physician."
Disposition this visit																
No follow-up planned	X	X	X	X	X	X	X	X			X	X	X	X	X	
Return at specified time	X	X	X	X	X	X	X	X			X	X	X	X	X	
Return if needed, P.R.N.	X	X	X	X	X	X	X	X			X	X	X	X	X	
Telephone follow-up planned	X	X	X	X	X	X	X	X			X	X	X	X	X	
Referred to other physician/agency	X	X	X	X	X	X	X				X	X	X	X	X	In 1997, title was changed to "referred to other physician." C - 15

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Returned to referring physician	X	X	X	X	X	X	X				X					
Admit to hospital	X	X	X	X	X	X	X	X			X	X	X	X	X	
Refer to emergency department															X	
Other	X	X	X	X	X	X	X	X			X	X	X	X	X	

Imputed variables

Patient date of visit								X	X	X						
Patient birth year						X	X	X	X	X	X	X	X	X	X	
Patient sex						X	X	X	X	X	X	X	X	X	X	
Patient race							X	X	X	X	X	X	X	X	X	
Patient ethnicity							X	X	X					X	X	
Referral						X	X	X	X							
Seen patient before						X	X	X	X					X	X	
If yes, for primary diagnosis						X	X	X	X							
Past visits														X	X	
Disposition						X	X	X	X							
Duration						X	X	X	X					X	X	
Providers seen						X			X							
Time spent with physician										X	X	X	X	X	X	

Practice characteristics³¹

Physician's specialty	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Patient visit weight	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Physician weight															X	Used to make provider level estimates.
Geographical region	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Metropolitan statistical area (MSA) status	X	X	X	X	X		X	X	X	X	X	X	X	X	X	
Patient code							X	X	X	X	X	X	X	X	X	
Physician code							X	X	X	X	X	X	X	X	X	
Race recode								X	X	X	X	X	X	X	X	
Age recode									X	X	X	X	X	X	X	
Cause of injury recode										X	X	X	X	X		
Physician's diagnosis recode										X	X	X	X	X	X	
Other diagnostic services recode										X	X	X	X	X	X	
Other procedure recode										X	X	X	X	X	X	
Intentionality of injury recode												X	X	X	X	
Age in days (patients under 1 year)									X	X	X	X	X	X	X	

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
Survey year												X	X	X	X	
Who completed patient record form?											X	X	X	X	X	
Setting type												X	X	X	X	
Masked sample design variables												X	X			
Masked, clustered design variables														X	X	
Type of physician (M.D. or D.O.)				X	X	X	X	X	X	X	X	X	X	X	X	
Type of practice	X	X	X	X	X											
Type of office setting										X	X	X	X	X	X	
Solo practice										X	X	X	X	X	X	
Employment status of physician										X	X	X	X	X	X	
Who owns office?										X	X	X	X	X	X	
Is lab testing performed at this office?										X	X	X	X	X	X	
Does physician make home visits?												X	X	X	X	
Does physician make hospital visits?												X	X	X	X	
Does physician do telephone consults?												X	X	X	X	
Does physician do e-mail consults?												X	X	X	X	
Does this practice use electronic medical records?														X	X	
Does this practice submit claims electronically?														X	X	
What percent of your practice revenue from patient care comes from Medicare?														X	X	
What percent of your practice revenue from patient care comes from Medicaid?														X	X	
What percent of your practice revenue from patient care comes from private insurance?														X	X	
What percent of your practice revenue from patient care comes from other sources?														X	X	
How many managed care contracts does this practice have such as HMOs, PPOs, IPAs ^{4, 10?}														X	X	

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

	Survey year(s)														Notes	
	1973-76	1977-78	1979	1980-81	1985	1989-90	1991-92	1993-94 ²	1995-96	1997-98	1999-2000	2001 ³	2002	2003-04		2005-06
What percent of the patient care revenue received by this practice comes from these managed care contracts?														X	X	
Are you currently accepting new patients into your practice?														X	X	
From those new patients, do you accept capitated private insurance?														X	X	
From those new patients, do you accept non-capitated private insurance?														X	X	
From those new patients, do you accept Medicare?														X	X	
From those new patients, do you accept Medicaid?														X	X	
From those new patients, do you accept worker compensation?														X	X	
From those new patients, do you accept self-pay?														X	X	
From those new patients, do you accept no charge?														X	X	
In the past 12 months, has your practice experienced difficulty in referring patients with Medicaid?														X	X	
In the past 12 months, has your practice experienced difficulty in referring patients with Medicare?														X	X	
In the past 12 months, has your practice experienced difficulty in referring patients with private insurance?														X	X	
In the past 12 months, has your practice experienced difficulty in referring patients that are uninsured?														X	X	

¹The Outpatient Department (OPD) component of the National Hospital Ambulatory Medical Care Survey (NHAMCS) is combined with the National Ambulatory Medical Care Survey (NAMCS) due to the fact that the survey content is almost identical in each year. NHAMCS was initiated in 1992.

²In 1993-94, only six tests or therapies were listed as check boxes, but space to write-in eight tests, therapies, ambulatory procedures, or surgeries were provided. A separate item for counseling or education and medication or injections was provided.

³In 2001, two different versions of the survey instrument were used (long and short Patient Record forms). Only those variables available on the public use file are shown, additional variables may be available using NCHS' Research Data Center (RDC).

⁴Patient's ZIP code is not available on public use file; must access via NCHS' Research Data Center.

⁵HMO is health maintenance organization.

⁶PPO is paid provider organization.

NAMCS and NHAMCS-OPD Survey Content, by Year of Data Collection¹

⁷SCHIP is State Children's Health Insurance Program.

⁸CHF is congestive heart failure.

⁹COPD is chronic obstructive pulmonary disease.

¹⁰HIV is human immunodeficiency virus.

¹¹AIDS is acquired immune deficiency.

¹²ADD is attention deficit disorder.

¹³CAT is computed axial tomography.

¹⁴MRI is magnetic resonance imaging.

¹⁵CT is computed tomography.

¹⁷EKG is electrocardiogram.

¹⁸ECG is electrocardiogram.

¹⁹PSA is prostate-specific antigen.

²⁰TB is tuberculosis.

²¹PAP is Papanicolaou test.

²²HPV is human papilloma virus.

²³DNA is deoxyribonucleic acid.

²⁴From 1980-91, a separate drug file was created. Each medication on each Patient Record form was equal to a row on this file.

²⁵This represents the number of medications recorded on the Patient Record form by the respondent.

²⁶The number in this cell is equal to the maximum number of medications that could have been reported on the Patient Record form.

²⁷The listed categories of "providers seen" can differ on the OPD survey as compared to the NAMCS.

²⁸LPN is licensed practical nurse.

²⁹RN is registered nurse.

³⁰Duration of this visit" or "time spent with physician/provider" is not collected on the OPD survey.

³¹Refer to the ED section for the hospital characteristics as it related to the OPD survey.

³²IPA is individual practice association.

Survey Content of the NHAMCS-ED

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)							Notes	
	1992	1993-04	1995-96	1997-98	1999-2000	2001-02	2003-04		2005-06
Patient date of visit	X	X	X	X	X	X	X	X	
Patient ZIP code²			X		X	X	X	X	
Patient age	X	X	X	X	X	X	X	X	
Patient sex	X	X	X	X	X	X	X	X	
Is patient pregnant?				X	X				
Patient race									
	Prior to 1999, only one race could be selected.								
White	X	X	X	X	X	X	X	X	
Black	X	X	X	X					
Black/African American					X	X	X	X	
Asian					X	X	X	X	
Asian/Pacific Islander	X	X	X	X					
Native Hawaiian/other Pacific Islander					X	X	X	X	
American Indian/Eskimo/Aleut	X	X	X	X					
American Indian/Alaska Native					X	X	X	X	
Patient ethnicity									
Hispanic	X								
Hispanic origin		X	X	X					
Hispanic or Latino					X	X	X	X	
Not Hispanic	X	X	X	X					
Not Hispanic or Latino					X	X	X	X	
Does patient smoke cigarettes?			X						
Time of visit			X	X	X	X	X	X	
Waiting time to see physician				X	X		X	X	
Not seen by physician				X	X	X	X	X	In 1997-2000, "not seen by physician or unknown" was used.
Length of visit						X	X	X	
Patient residence									
Private residence								X	
Nursing home								X	
Other institution								X	
Other residence								X	
Homeless								X	
Unknown								X	
Does patient reside in a nursing home or other institution						X	X		

NHAMCS-ED Survey Content, by year of data collection¹

Mode of arrival	Survey year(s)							Notes	
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04		2005-06
Ambulance (air/ground)				X	X		X	X	
Public service (nonambulance, e.g., police, social services)				X	X		X	X	
Walk-in				X	X		X	X	
Unknown				X	X		X	X	

Expected source(s) of payment for visit	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	2005-06	Notes
Preferred provider option			X						
Insured, fee-for-service			X						
HMO/other prepaid ³	X	X	X						
Self-pay	X	X	X	X	X	X	X	X	In 1992-94, "patient paid" was used.
No charge	X	X	X	X	X				
No charge/charity						X	X	X	
Other insurance			X						
Private/commercial	X	X							
Other government	X	X							
Blue Cross/Blue Shield			X						
Other private insurance			X						
Private insurance				X	X	X	X	X	
Medicare	X	X	X	X	X	X	X	X	
Medicaid	X	X	X	X	X				
Medicaid/SCHIP ⁴						X	X	X	
Worker's compensation			X	X	X	X	X	X	
Other	X	X	X	X	X	X	X	X	
Unknown			X	X	X	X	X	X	
Does patient belong to an HMO ³				X	X				

Triage	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	2005-06	Notes
Temperature						X	X	X	Actual measurements recorded.
Pulse						X	X	X	Actual measurements recorded.
Blood pressure						X	X	X	Actual measurements recorded.
Patient oriented x 3							X	X	
Immediacy with which patient should be seen									
Immediate								X	
1-14 minutes								X	
Less than 15 minutes				X	X	X	X		
15-60 minutes				X	X	X	X	X	
> 1 hour-2 hours				X	X	X	X	X	
> 2 hours-24 hours				X	X	X	X	X	

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)							Notes
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	
Unknown/no triage				X	X	X	X	
No triage								X
Unknown								X
Presenting level of pain								
None				X	X		X	X
Mild				X	X		X	X
Moderate				X	X		X	X
Severe				X	X		X	X
Unknown				X	X		X	X
Urgency of visit								
Urgent/emergent	X	X	X					
Non-urgent	X	X	X					
Major reason for visit								
Injury, first visit	X							
Injury, follow-up	X							
Illness, first visit	X							
Illness, follow-up	X							
Other reason	X							
Episode of care								
Initial visit for problem						X	X	
Follow-up visit for problem						X	X	
Unknown						X	X	
Patient seen in ED within 72 hours						X	X	X
Discharged from any hospital within 7 days								X
Patient reason for visit	X	X	X	X	X	X	X	X
Work-related visit?							X	X
Alcohol-related visit?								
Yes, patient's use						X	X	
Yes, other person's use						X	X	
No						X	X	
Unknown						X	X	

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)							Notes
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	
Alcohol- or drug-related visit?								
Alcohol-related	X	X	X					
Drug-related	X	X	X					
Both	X	X	X					
Neither	X	X	X					
Unknown		X	X					
Does patient now have								
Depression			X					
HIV/AIDS ^{5,6}			X					
Injury-related visit								
			X	X	X	X	X	
Injury/poisoning place of occurrence								
Work		X						
Residence		X	X	X	X			In 1993-96, "home" was used.
Recreation/sports area			X	X	X			In 1995-96, "sports or athletics area" was used.
Street or highway		X	X	X	X			
School/day care		X						
School			X	X	X			
Other public building				X	X			
Industrial places				X	X			
Other		X	X	X	X			
Unknown			X	X	X			
Is injury intentional?								
Beginning in 2001, "Is this injury/poisoning intentional?" was used.								
Yes (self-inflicted)			X	X	X	X	X	
Yes (assault)			X	X	X	X	X	
No, unintentional			X	X	X	X	X	
Unknown			X	X	X	X	X	
Work-related injury								
Beginning in 2001, "Is this injury/poisoning work related?" was used.								
		X	X	X	X			
Cause of injury (ICD-9-CM codes)								
	X	X	X	X	X	X	X	
Cause of injury (verbatim text)								
Beginning in 2001, "cause of injury, poisoning, or adverse effect" was used.								
			X	X	X	X	X	
Firearm-related injury								
		X						

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)							Notes
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	
Violence-related injury								
No			X					
Yes (suicide/suicide attempt)			X					
Yes (interpersonal violence/assault)			X					
If yes, interpersonal violence/assault, person who caused the injury is the patient's								
Spouse			X					
Other intimate partner			X					
Parent			X					
Other family			X					
Caretaker			X					
Friend/acquaintance			X					
Stranger			X					
Unknown			X					
Other			X					
Adverse drug event related visit								
If yes, name of drug (up to 2)						X		
						X		
Physician's diagnosis								
Is diagnosis probable, questionable, or rule out?	X	X	X	X	X	X	X	X
				X	X	X	X	X
Diagnostic/screening services								
Medical screening exam						X	X	
Mental status exam	X		X	X	X	X	X	
Blood tests								
CBC (complete blood count)				X	X	X	X	X
BUN/creatinine ⁷								X
BUN (blood urea nitrogen)						X	X	
Creatinine						X	X	
Lipids/Cholesterol							X	
Cholesterol						X		
Glucose						X	X	X
HgbA1C (glycohemoglobin)						X	X	
Cardiac enzymes								X
Electrolytes							X	X
Liver function								X
Arterial blood gases								X
Blood alcohol concentration			X	X	X	X	X	X
HIV serology ⁸	X	X	X	X	X	X	X	X

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)							Notes	
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04		2005-06
Other STD test ⁸				X	X				
Other blood test	X		X	X	X	X	X	X	In 2001, "other blood chemistry" was used.
Imaging									
CT scan ⁹								X	
CAT scan ¹⁰			X	X	X				
CT scan/MR ^{9, 11}	X								
MRI/CAT scan ^{11, 10}						X	X		
Chest X ray	X	X	X	X	X	X	X		
Extremity X ray	X	X	X	X	X	X	X		
Other X ray			X	X	X	X	X		
MRI ¹¹			X	X	X			X	
Other diagnostic imaging	X	X	X	X	X	X	X	X	
Ultrasound			X	X	X	X	X	X	
X ray								X	
Diagnostic tests									
Blood pressure	X	X	X	X	X	X	X	X	
EKG ¹²	X	X	X	X	X				
EKG/ECG ^{12, 13}						X	X	X	
Cardiac monitor			X	X	X	X	X	X	
EEG(electroencephalogram)						X	X		
Pulse oximetry			X	X	X	X	X	X	2006 includes pulse oximetry percentage.
Pregnancy test			X	X	X	X	X	X	
Urinalysis	X	X	X	X	X	X	X	X	
Other	X	X	X	X	X			X	In 2005-06, "other test/service" was used.
Other diagnostic services	X	X	X	X	X				
Blood culture						X	X		
Cervical/urethral culture						X	X		
Stool culture						X	X		
Throat/rapid strep test						X	X		
Urine culture						X	X		
Total number of diagnostic/screening services				X	X	X	X		
Procedures									
Thrombolytic therapy						X	X	X	
Endotracheal intubation	X	X	X	X	X	X	X	X	
Eye/ENT care ¹⁴	X	X	X	X	X	X	X		
CPR ¹⁵	X	X	X	X	X	X	X	X	
Orthopedic care	X	X	X	X	X	X	X	X	
IV fluids ¹⁶	X	X	X	X	X	X	X	X	
Lumbar puncture	X	X	X	X	X				
NG tube/gastric lavage ¹⁷	X	X	X	X	X	X	X	X	

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)								Notes
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	2005-06	
Bladder catheter	X	X	X	X	X	X	X	X	
OB/GYN care ¹⁸			X	X	X	X	X	X	
Nebulizer therapy								X	
Wound care	X	X	X	X	X	X	X	X	
Other	X	X	X	X	X	X	X	X	
Other procedures	X	X	X	X	X				
Total number of procedures				X	X	X	X		
Total number of diagnostic services and procedures			X						

Medications

Were medications ordered/provided	X	X	X	X	X	X	X	X	
Number of medications ¹⁹	X	X	X	X	X	X	X	X	
Medications ²⁰	5	5	6	6	6	6	8	8	
Was medication given in ED								X	
Generic name code	X	X	X	X	X	X	X	X	
Prescription status code	X	X	X	X	X	X	X	X	
Controlled substance code	X	X	X	X	X	X	X	X	
Therapeutic class	X	X	X	X	X	X	X	X	Starting in 2002, each medication could have up to 3 therapeutic classes.
Ingredient code (up to 5)	X	X	X	X	X	X	X	X	

Providers

Staff physician	X	X	X	X	X	X	X		
ED attending physician								X	
Resident/Intern	X	X	X	X	X	X	X	X	
Other physician	X	X	X	X	X	X	X		
On call attending physician/fellow								X	
RN/LPN ^{21, 22}								X	
Registered nurse	X	X	X	X	X	X	X		
Licensed practical nurse	X	X	X	X	X	X	X		
Nurse's aide	X	X							
Nurse practitioner	X		X	X	X	X	X	X	
Physician assistant	X		X	X	X	X	X	X	
Physician assistant/nurse practitioner		X							
EMT ²³				X	X	X	X	X	
Other technician						X	X		
Medical assistant			X						
Medical/nursing assistant				X	X				
Other		X	X	X	X	X	X	X	
Specify other		X	X						

Disposition

No follow-up planned	X	X	X	X	X	X	X	X	
Return to ED PRN ²⁴	X	X							

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)							Notes	
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04		2005-06
Return to ED, appointment	X	X							
Return to ED, PRN/appointment ²⁴			X	X	X				
Return if needed, PRN/appointment ²⁴						X	X	X	
Return to referring physician	X	X	X	X	X	X	X		
Refer to other physician/clinic	X	X	X						
Refer to other physician/clinic for follow-up				X	X	X	X		
Return/refer to physician/clinic for follow-up								X	
Refer out from triage without treatment				X	X	X	X		
Refer to alcohol/drug treatment program						X	X		
Return to non-physician treatment/support						X	X		
Refer to social services			X	X	X			X	
Left AMA ²⁵	X					X	X	X	
Left before being seen			X	X	X	X	X	X	In 2006, "left without being seen" was used.
DOA/died in ED ²⁵	X	X	X	X	X	X	X	X	
Transfer to other facility	X	X	X	X	X	X	X	X	In 2006, "transfer to different hospital" was used.
Reason for transfer								X	
Admit for 23 hour observation						X			
Admit to ED for observation unit							X	X	
Admit to ICU/CCU ^{27, 28}			X	X	X	X	X		
Admit to hospital	X	X	X	X	X	X	X	X	
Other	X	X	X	X	X	X	X	X	
Specify other	X	X	X		X				

Hospital admission

Admitted to critical care unit								X	
Admitted to OR/cath lab ^{29, 30}								X	
Admitted to other bed/unit								X	
Unknown								X	
Admission time								X	
Hospital discharge date								X	
Principal discharge diagnosis								X	
Hospital discharge status								X	

Imputations

Patient visit date			X	X					
Visit time			X	X					
Patient's birth year		X	X	X	X	X	X	X	
Patient sex		X	X	X	X	X	X	X	
Patient race		X	X	X	X	X	X	X	
Patient ethnicity		X	X				X	X	
Immediacy			X	X	X	X	X	X	

NHAMCS-ED Survey Content, by year of data collection¹

	Survey year(s)								Notes
	1992	1993-94	1995-96	1997-98	1999-2000	2001-02	2003-04	2005-06	
Urgency of visit		X	X						
Alcohol/drug related visit		X	X						
Disposition		X	X						
Providers seen		X	X						
Hospital and miscellaneous variables									
Patient visit weight	X	X	X	X	X	X	X	X	
Emergency department weight								X	Used to make provider level estimates.
Geographical region	X	X	X	X	X	X	X	X	
Metropolitan statistical area (MSA) status	X	X	X	X	X	X	X	X	
Hospital ownership	X	X	X	X	X	X	X	X	
Hospital code	X	X	X	X	X	X	X	X	
Patient code		X	X	X	X	X	X	X	
Race recode		X	X	X	X	X	X	X	
Age recode				X	X	X	X	X	
Cause of injury recode				X	X	X	X	X	
Physician's diagnosis recode				X	X	X	X	X	
Other diagnostic services recode				X	X				
Other procedure recode				X	X				
Intentionality of injury recode					X	X	X	X	
Age in days (patients less than 1 year)				X	X	X	X	X	
Survey year	X	X	X	X	X	X	X	X	
Who completed patient record form					X	X	X	X	
Setting type		X	X	X	X	X	X	X	
Masked sample design variables	X	X	X	X	X	X			
Masked, clustered design variables							X	X	
Electronic medical record use								X	

¹The Emergency Department (ED) is a component of the National Hospital Ambulatory Medical Care Survey (NHAMCS). NHAMCS was initiated in 1992.

²Patient's ZIP code is not available on Public Use File; must access via NCHS' Research Data Center.

³HMO is health maintenance organization.

⁴SCHIP is State Children's Health Insurance Program.

⁵HIV is human immunodeficiency virus.

⁶AIDS is acquired immune deficiency syndrome.

⁷BUN is blood urea nitrogen.

⁸STD is sexually transmitted disease.

⁹CT is computed tomography.

¹⁰CAT is computed axial tomography.

¹¹MRI is magnetic resonance imaging.

¹²EKG is electrocardiogram.

¹³ECG is electrocardiogram.

¹⁴ENT is ears, nose and throat.

¹⁵CPR is cardiopulmonary resuscitation.

¹⁶IV is intravenous.

¹⁷NG is nasogastric.

NHAMCS-ED Survey Content, by year of data collection¹

¹⁸OBI/GYN is obsetrics and gynecology.

¹⁹This represents the number of medications recorded on the Patient Record form by the respondent.

²⁰The number in this cell is equal to the maximum number of medications that could have been reported on the Patient Record form.

²¹RN is registered nurse.

²²LPN is licensed practical nurse.

²³EMT is emergency medical technician.

²⁴PRN is "if needed."

²⁵AMA is against medical advice.

²⁶DOA is dead on arrival.

²⁷ICU is intensive care unit.

²⁸CCU is critical care unit.

²⁹OR is operating room.

³⁰CATH is catheterization.



Appendix D: Recent RDC Proposals Involving AHCSB Data

Title of Project	Data Requested
CT Utilization in the Emergency Department: A Comparative Study between the United States and Ontario	
Medical Malpractice Liability and Physician Referrals	
Racial and Rural Differences in Cervical Cancer	
The Effect of Third Party Payment on Demand Inducement	
In-Office Ancillary Services: Measuring Their Prevalence and Determinants of Use	
Malpractice Standard of Care and Regional Variations in Health Care Utilization and Expenditure	NHDS 1988 – 2005
Malpractice Reform and Physician Behavior	Not Available
Disparities in the receipt of cardiac revascularization procedures between Blacks and Whites: an analysis of secular trends	Not Available
The Health Care Safety Net and Crowd-Out of Private Health Insurance	Not Available
Characterization of Digoxin Toxicity Using NHDS	NHDS 1990 -2004
Rural Emergency Department Preparedness in Pediatric Care	2002 and 2003 NHAMCS EPSES supplement files, for which additional geographic variables from external files were merged based on provider ZIP code
The Effect of Travel Distances on Access to Obstetric Care and Birth Outcomes in Rural Communities	Multiple years of NAMCS and NHAMCS non-masked visit files with additional geographic variables
Trends and Variation in Prenatal Care	Multiple years of NAMCS non-masked visit data
Characteristics of patient visits to international medical graduates (IMGs) in physician office based practice in the United States	Multiple years of NAMCS non-masked visit data with additional provider variables
Racial Disparities in the Outpatient Setting: The Contribution of Physician-Patient	Multiple years of NAMCS non-masked visit data with additional provider variables

Concordance	
Examining Patient Flow Among A Nationally Representative Sample of Hospital Emergency Departments	Multiple years of NHAMCS data merged with external data on weather patterns according to geographic codes
The Quality of Emergency Department Care and Physician Specialty Training	Multiple years of NHAMCS visit data merged with data from NHAMCS supplements on bioterrorism and mass casualty preparedness, ambulance diversions, and staffing and capacity

An Examination of Off-label Prescription of Anticonvulsant Drugs	Multiple years of NAMCS and NHAMCS non-masked visit data with additional provider characteristics
Trends in the Mental Health Treatment of Youth in US Emergency Departments	Multiple years of NHAMCS data with additional geographic variables and merged data from an external data source provided by requestor
Effect of Patient Insurance Characteristics on Physician Drug Prescribing	Multiple years of non-masked NAMCS and NHAMCS visit files
Investigating Racial/Ethnic Disparities in Practice Setting Context and Quality of Care	Multiple years of NAMCS data with additional provider and geographic variables

Appendix E: Recent CDC Data-Use Agreements Involving AHCSB Data

CDC Center	Purpose of Data Request	Data Requested
National Center for Chronic Disease Prevention and Health Promotion	Trends in Ambulatory Care Sensitive Conditions related to Cardiovascular Disease	
National Center for Injury Prevention and Control	Trends in Traumatic Brain Injury Hospitalizations in the United States	NHDS Confidential Variance Files 1996-2007
Center for Drug Evaluation and Research	Characterization of Acetaminophen Overdose and related Hepatotoxicity	
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention	Hospital Diagnoses Among HIV-infected Patients Aged \geq 13 years, United States	NHDS Confidential Variance Files 1996-2006
CDC/NCHS/Office of Analysis and Epidemiology (OAE)	Asthma Surveillance	1993-2004 NAMCS and NHAMCS non-masked visit files
CDC/NCHS/OAE	Health US tables and Data Brief on the Near Elderly	1994-1996 and 2006 non-masked NAMCS and NHAMCS visit files
CDC/NCHS/OAE	Childhood Asthma Surveillance	2006 NAMCS and NHAMCS non-masked visit files
CDC/NCHS/OAE	Health Data Interactive (HDI) website	1992-2006 NAMCS and NHAMCS non-masked visit files
National Center for Chronic Disease Prevention and Health Promotion, Division of Reproductive Health	Calculate prevalence of and trends in hospitalizations relating to maternal and infant health	NHDS Confidential Variance Files 1988-2006
National Center for Immunization and Respiratory Diseases, Division of Viral Diseases	Epidemiology of viral diseases associated with acute gastroenteritis, acute respiratory infection and viral vaccine preventable diseases	NHDS Confidential Variance Files 1988-2006
National Center for Immunization and Respiratory Diseases, Immunization Services Division	Compare hospitalization rates for vaccine preventable diseases; assess impact of vaccines	NHDS Confidential Variance Files 1988-2006
National Center for Chronic	Ongoing research of specific	NHDS Confidential

Disease Prevention and Health Promotion, Division of Adult and Community Health	topics	Variance Files 1988-2006
National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation	Calculate trends on lower extremity amputation by diabetes status	NHDS Confidential Variance Files 1988-2006

Appendix F: Recent AHCSB Staff Publications

- R Niska, I Shimizu.** Hospital preparedness for emergency response: United States, 2008. N National health statistics reports; no 37. Hyattsville, MD: National Center for Health Statistics. 2011.
- V Buie, M Owings, C DeFrances, A Golosinskiy.** National Hospital Discharge Survey: 2006 summary. National Center for Health Statistics. Vital Health Stat 13(168). 2010.
http://www.cdc.gov/nchs/data/series/sr_13/sr13_168.pdf
- J Hsiao, E Hing, T Socey, B Cai.** Electronic Medical Record/Electronic Health Record Systems of Office-based Physicians: United States, 2009, and Preliminary 2010 State Estimates. NCHS Health E-Stat. December 8, 2010.
- E Hing, R Hooker, J Ashman.** Primary Health Care in Community Health Centers and Comparison with Office-Based Practice. J Community Health. 2010 Nov 3. [Epub ahead of print]
- M Hall, J Marsteller, M Owings .** Factors influencing rural residents' utilization of urban hospitals. National health statistics reports; no 31. Hyattsville, MD: National Center for Health Statistics. 2010.
- S Uddin, M Hall, C DeFrances.** (October 2010 MMWR). Outpatient Colonoscopy Procedure Rates, by Age Group –National Survey of Ambulatory Surgery, United States, 1996 and 2006.
- M Hall, C DeFrances, S Williams, A Golosinskiy, A Schwartzman.** National Hospital Discharge Survey: 2007 Summary. National health statistics reports; no 29. Hyattsville, MD: National Center for Health Statistics. 2010. <http://www.cdc.gov/nchs/data/nhsr/nhsr029.pdf>
- E Hing, S Uddin.** Visits to primary care delivery sites: United States, 2008. NCHS Data Brief, No. 47, October 2010.
- E Hing, M Hall, J Ashman, J Xu.** National Hospital Ambulatory Medical Care Survey: 2007 Outpatient Department Summary. National health statistics reports; no 28. Hyattsville, MD: National Center for Health Statistics. 2010. <http://www.cdc.gov/nchs/data/nhsr/nhsr028.pdf>
- C Lucas, S Patzer.** Annual rates of hospitalization with a diagnosis of HIV/AIDS among persons aged 45 years and older, by sex: National Hospital Discharge Survey, United States, 1997-2007. MMWR 59:38, Centers for Disease Control and Prevention (Quick Stat).
- R Niska, F Bhuiya, J Xu.** National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary. National Health Statistics Reports, No. 26. Hyattsville, MD: National Center for Health Statistics. 2010. <http://www.cdc.gov/nchs/data/nhsr/nhsr026.pdf>
- D Cherry, C Lucas, SL Decker.** Population aging and the use of office-based physician services. NCHS data brief, no 41. Hyattsville, MD: National Center for Health Statistics. 2010.
<http://www.cdc.gov/nchs/data/databriefs/db41.pdf>
- F Bhuiya, SR Pitts, L McCaig.** 2008 NHAMCS ED Data Brief: Acuity in adult emergency department visits for chest pain and abdominal pain: United States, 1999-2008.
<http://www.cdc.gov/nchs/data/databriefs/db43.htm>

- S Uddin, M Hall, C DeFrances.** Outpatient Colonoscopy Procedure Rates, by Age Group—National Survey of Ambulatory Surgery, United States, 1996 and 2006. MMWR 59:33, Centers for Disease Control and Prevention (Quick Stat).
- S Williams, C DeFrances, M Hall.** Hospitalization rates for patients 65 and over with septicemia and sepsis: National Hospital Discharge Survey, United States, 2000-2007. MMWR 59:34, Centers for Disease Control and Prevention (Quick Stat).
- M Saraiya, **L McCaig**, D Ekwueme. Pap tests, abnormal Pap tests, and colposcopies at ambulatory care settings in the United States. *Am J Man Care* 2010;16(6):e137-e144
- E Hing, M Hall, J Ashman.** Use of electronic medical records by ambulatory care providers: United States, 2006. National Health Statistics Reports, no. 22. Hyattsville, MD; National Center for Health Statistics. 2010.
- E Hing, J Hsiao.** Electronic medical record use by office-based physicians and their practices: United States, 2007. National Health Statistics Reports, no. 23. Hyattsville, MD; National Center for Health Statistics. 2010.
- S Decker, **S Schappert**, J Sisk. Use of medical care for chronic conditions. *Health Aff (Millwood)*. 2009 Jan-Feb;28 (1) :26-35.
- N Sonnenfeld, **S Schappert**, S Lin. Racial and ethnic differences in delivery of tobacco-cessation services, *Am J Prev Med*. 2009 Jan; 36(1):21-8. Epub November 2008
- S Stokley, **K Cullen**, A Kennedy, BH Bardenheier. Adult vaccination coverage levels among users of complementary/alternative medicine—results from the 2002 National Health Interview Survey (NHIS), *BMC Complement Altern Med*. 2008 February 22;8:6.
- R Niska, C Burt.** Hospital collaboration with public safety organizations on bioterrorism response, *Prehosp Emerg Care*. 2008 January-March; 12(1):12-7.
- K Middleton, C Burt.** Factors associated with ability to treat pediatric emergencies in US, *Pediatric Emerg Care*. 2007 October; 23(10):681-9.
- R Niska, C Burt.** Terrorism Preparedness: Have office based physicians been trained?, *Fam Med*. May 2007; 39(5):357-65.
- C Burt, E Hing.** Making Patient-Level Estimates from Medical Encounter Records Using a Multiplicity Estimator, *Stat Med*. 2007 April 15; 26(8):1762-74.
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Appendix H: Participants in Correctional Health and Healthcare: Identifying and Prioritizing Data Needs Expert Panel Working Group Meeting

June 28-29, 2010

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