Redesign of the National Ambulatory Medical Care Survey to support state estimates

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Abstract

The National Ambulatory Medical Care Survey (NAMCS) is an annual nationally representative sample survey of visits to about 3,000 office-based physicians, excluding anesthesiologist, radiologists, and pathologists, and 104 community health centers (CHCs). Prior to 2012, the NAMCS sample design utilized a multistage probability design involving samples of geographic primary sampling units (PSUs), physicians/CHCs within PSUs, providers within CHCs, and visits within provider practices. The survey was not designed to be representative by state and estimates by state were often unreliable. The 2012 NAMCS was redesigned to provide data according to geography, specifically Census division level estimates as well as state-level estimates for as many states as possible. The 2012 NAMCS will provide for the first time state-level estimates for 34 states with the largest populations. The redesigned sample is stratified by state and selects physicians and CHC service sites at the state level at the first stage of sampling. The total sample size is increased to15,740 physicians and 2,008 CHC sites. Data collection procedures were changed from paper and pencil to computer-assisted data collection. This paper discusses the reasons for the redesign and describes these changes in detail.

Key Words: State estimates, physicians, community health centers

1. Introduction and background

1.1 Introduction

The National Ambulatory Medical Care Survey (NAMCS) is an annual nationally representative sample survey of visits to office-based physicians and community health center providers. Prior to 2012, NAMCS estimates were designed to produce national and regional estimates; state estimates were usually unreliable due to insufficient sample size. The 2012 NAMCS underwent a major redesign to provide state-level estimates for as many states as possible. The redesign was motivated by the need for baseline state estimates of office-based care following passage of the 2010 Patient Protection and Affordable Care Act (ACA) (1). This paper explains why NAMCS was redesigned to monitor changes in ambulatory care, NAMCS's original survey design, and how the survey was changed to support policy-relevant state-level statistics and other changes.

1.2 Why NAMCS was redesigned

Passage of the ACA created the need for estimates to monitor changes in ambulatory care provided at the state-level. In 2014, when the fee schedule for Medicaid physician primary care services will be made equal to those for Medicare physicians, visits to physicians serving Medicaid patients are expected to increase. In 2008, on average physicians treating Medicaid patients were paid 72% of fees paid to physicians for a Medicare patient (2). The major ACA change is mandating health insurance coverage to the uninsured. Coverage of 19-26 year olds under their family's coverage began in 2010. In 2014, Medicaid eligibility will be expanded to 138 percent of poverty, and individual

mandates facilitated by state health insurance exchanges (1). Since both Medicaid and the health insurance exchanges are administered by the states, redesigned NAMCS will provide baseline state estimates of ambulatory care use. ACA also mandates that health insurance plans include a comprehensive range of preventive services without cost-sharing.

1.3 Previous NAMCS sample design

From 1989 to 2011, NAMCS produced annual national and regional estimates of visits made to the offices of non-federally employed physicians (excluding those in the specialties of anesthesiology, radiology, and pathology) who were classified by the American Medical Association (AMA) and the American Osteopathic Association (AOA) as providing "office-based, patient care" and to CHC providers (since 2006). The sample of CHCs included federally qualified health center (FQHC) Section 330 grantees, look-alike FQHCs, and urban Indian Health Service outpatient clinics.

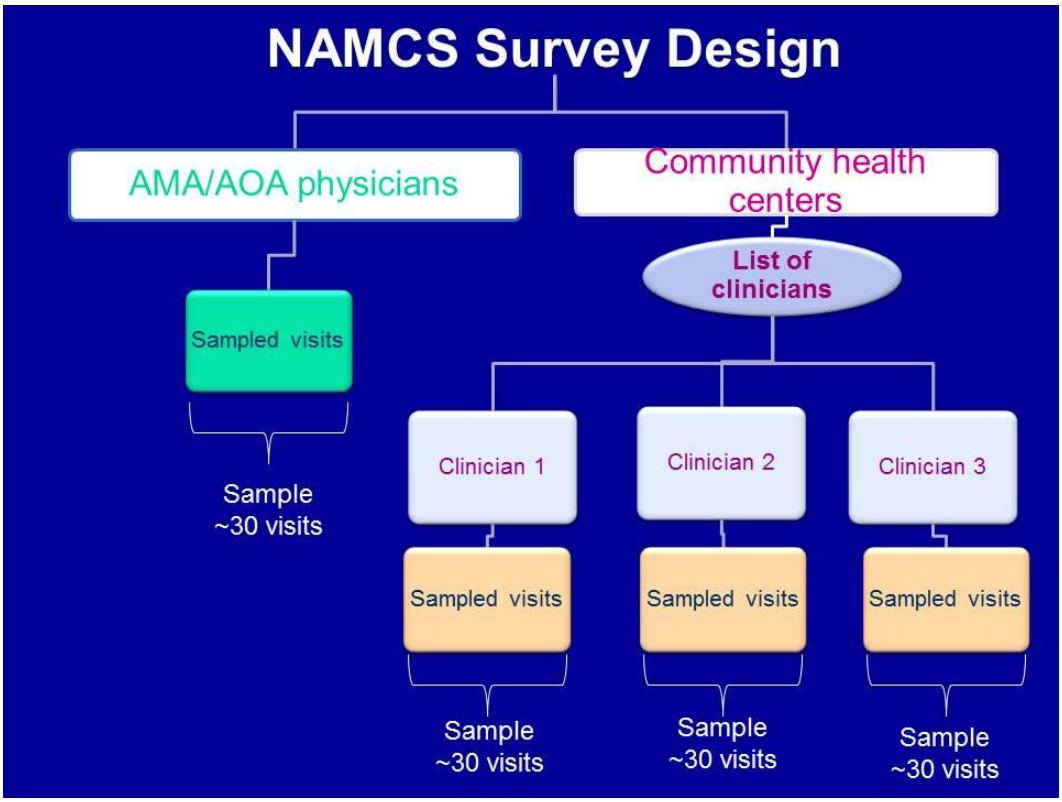

Figure 1. Previous NAMCS Survey Design.

The previous NAMCS sample design did not support state estimates because the multistage dual-frame sample of physicians and community health centers (CHCs) were selected from a sample of 112 geographic primary sampling units (PSUs). Within sampled CHCs, up to three sampled clinicians (physicians, physician assistants, nurse practitioners, or nurse midwives) were selected (Figure 1). For each eligible sample physician or CHC clinician, a systematic random sample of approximately 30 office visits occurring during a randomly assigned 1-week reporting period was selected. In 2010, 31,229 visits were sampled from about 1,492 physicians (3).

1.4 Previous NAMCS data collection, processing and data release procedures

NAMCS data collection included an induction interview with providers, followed by collection of data from sampled visits to that provider during a random week of the year. U.S Census Bureau field representatives (FRs) conducted the NAMCS interviews. The Physician Induction Interview (PII) form was used to determine eligibility for the survey, collect physician and practice characteristics, and select sample visits during the provider's reporting week. Patient record forms (PRFs) were completed for the sample visits by abstracting data from the sampled patients' medical records. Data collection was conducted during the entire calendar year.

Until 2012, all data were collected with paper forms. Once completed, FRs performed completeness checks and mailed forms to headquarters. Detailed manual edits, data processing, and medical coding were then performed. Final editing, weighting and imputation procedures were conducted by NCHS staff. Final estimates were typically released 1-2 years after data collection ended.

2. Survey Design Changes

2.1 Survey design changes

This section describes how the sample design, data collection instruments and procedures, content, and survey operations were redesigned.

2.1.1 Redesign of 2012 NAMCS sample to support state estimates

To support state-level estimates, the 2012 NAMCS sample design switched from a PSU area sample to a list sample of physicians and CHCs. The revised sampling strata are the 34 most populous states and groups of the remaining 16 states and the District of Columbia within Census Divisions. The revised sampling strata permit reliable estimates of the 34 targeted states as well as by Census Divisions. Table 1 presents the 34 states that will have state estimates. Within each state/Census Division stratum, physicians were further stratified by primary care/non-primary care speciality before selection.

Table 1. States targeted in the 2012 NAMCS by population size order.

State	State
California	Missouri
Texas	Maryland
New York	Wisconsin
Florida	Minnesota
Illinois	Colorado
Pennsylvania	Alabama
Ohio	South Carolina
Michigan	Louisiana
New Jersey	Kentucky
Georgia	Oregon
North Carolina	Oklahoma
Virginia	Connecticut
Washington	Iowa
Massachusetts	Mississippi
Indiana	Arkansas
Arizona	Kansas
Tennessee	Utah

The CHC sample in the dual frame NAMCS also increased. However, instead of sampling 104 CHC administrative headquarters within PSUs, as was done from 2006-2011, the 2012 NAMCS sampled 2,008 CHC individual service delivery sites within the state/Census Division strata. Within CHC delivery sites, samples of up to three clinicians were selected. Random samples of about 30 visits occurring during the provider's randomly assigned 1-week reporting period were selected for both physicians and CHC providers. The target number of sampled physicians and CHC sites was 383 and 54 per state, respectively. In total, 14,590 physicians and up to 6,024 CHC providers (three per CHC delivery site) were selected.

2.1.2 Survey Instruments and Data Collection Procedures

The expanded sample and increased number of records required converting data collection instruments from paper and pencil to computerized instruments. The computerized PII and PRF instruments were developed by the Census Bureau using Blaise software for the laptop-based instrument and Centurion for the web-based instrument. The instruments were pretested in April 2011. To support the increased work load, 500 additional FRs were added. Interviewer training occurred in October and November 2011.

The computerization of 2012 NAMCS data collection was a major methodological change from procedures used prior to 2012. Starting in 2012, the induction interview was conducted using a computer-assisted instrument. PRF visit data were entered into the computerized instrument by FRs only, rather than relying on the physician or their staff to complete paper PRFs. The automated data collection instruments will reduce data entry errors, improve data quality through built-in skip patterns and edits, and reduce processing time. If physicians prefer to complete PRFs themselves, they will use a web-based tool developed and provided by Census.

With a few exceptions, the Lookback Module and supplemental studies, the content of the computerized 2012 PII and PRF instruments are the same as the 2011 survey. That is,

the PII collects physician practice characteristics (size, ownership, revenue sources), use of and functionalities of electronic health record systems, access measures (accepts new patients, same day appointments, work hours) and physician characteristics. The PRF collects patient demographic characteristics as well as characteristics of the medical encounter (reason for visit, diagnoses, vital signs, services ordered or provided, medications ordered or provided, selected lab results, providers seen, and outcome).

2.1.3 Lookback Module

The Lookback Module of the 2012 NAMCS was designed to monitor and evaluate preventive measures for patients at risk for heart disease and stroke. Visits to physicians in family or general practice, internal medicine, cardiology, endocrinology, geriatrics, obstetrics or gynecology, nephrology, and neurology are eligible for this module. Among these specialities, visits with all of the following criteria trigger additional "Lookback" data abstraction: non-pregnant adults 18 years and older, 1 or more of the following chronic conditions: cerebrovascular disease/history of stroke or transient ischemic attack, congestive heart failure, diabetes, hyperlipidemia, hypertension, or ischemic heart disease, and 1 or more visits to the sampled physician during the past 12 months. Data collected on each prior visit includes many of the items collected for the sample visit, such as vital signs, chronic conditions, services provided, medications, and lab results for cholesterol, HDL, LDL, triglycerides, HgbA1c, and fasting blood glucose. The Lookback module also collects new items on family history of coronary heart disease, and the physician's assessment and treatment plans for managing blood pressure, cholesterol, and blood glucose (Table 2).

Table 2. "Lookback" Module data items.

Data items
Blood pressure measurement
Height & weight to calculate body mass index
Medications and medication changes
Managing medication contraindications
Lab results
Health education and counseling
Family history of coronary heart disease
Physician assessment and treatment plan for:
Blood pressure
Cholesterol
Blood glucose
Referral plans

2.2 Piggy-backed supplemental studies

Typically, NAMCS includes special supplements for emerging needs. The 2012 NAMCS is no exception; it includes three supplements that piggy-back the main survey to permit more detailed analysis of asthma services, the use of complementary and alternative medicine (CAM), and the provision of oncological services. A combined total of 1,150 additional physicians were included in the 2012 sample to support the supplements. Including the supplemental sample of physicians, 15,740 physicians were sampled in the 2012 NAMCS.

The Asthma Supplement was funded by a consortium of sponsors (Centers for Disease Control and Prevention, National Institutes of Health, Environmental Protection Agency,

Agency for Healthcare Research and Quality, American Academy of Allergy, Asthma and Immunology, Merck Childhood Asthma Network). The Supplement measures acceptance of the the National Asthma Education and Prevention Program (NAEPP) Guidelines for the Diagnosis and Management of Asthma and barriers to their implementation by health care providers. The supplement is administered to primary care physicians and physicians likely to see asthma patients. To increase the number of physicians eligible for the Asthma Supplement, an additional 350 allergists and 350 pulmonologists were included in the sample. The Asthma Supplement is the only self-administered paper questionnaire administered in 2012. In addition to the Supplement, the computerized PRF instrument included questions on asthma severity and control assessment, and whether an asthma action plan was provided.

The CAM Supplement was sponsored by the National Center for Complementary and Alternative Medicine, and was administered for all sampled NAMCS visits since CAM questions are included in the PII instrument. The CAM questions collect information on the frequency of referrals for CAM and use of CAM by conventional providers. Because the majority of providers who use CAM do so in conjunction with conventional medicine, the supplement measures the extent to which conventional providers integrate CAM into their patient treatment plans.

Finally, to increase the precision of stage of cancer estimates included in NAMCS, 400 additional oncologists were included in the 2012 sample for the Oncology Supplement. ---

2.3 Evaluation of NAMCS Data Quality and Feasibility Study for new data item.

To evaluate data quality of the NAMCS data collection, a re-abstraction study will be conducted by experienced FRs to compare patient visit information recorded in the survey with medical record entries. The re-abstraction study involves 500 physicians (250 primary care and 250 specialist physicians) spread proportionately across Census regional offices. The re-abstraction will be conducted by a different FR who abstracts a sample of 10 visit records using the same procedures as in the original abstraction. Low agreement between re-abstracted items will indicate the need for additional training, modification of instructions, or changes to the instrument.

As new items are added to NAMCS they require testing. The 2012 NAMCS is testing the feasibility of including Current Procedural Terminology (CPT) codes in NAMCS. The feasibility of collecting up to 15 CPT codes per visit will be tested among 50 AMA physicians. If successful, CPT codes will be collected for the first time in 2013. These billing codes will be used to measure the relative costliness of the provided services during sampled visits.

2.4 Data Release and Dissemination plans

The 2012 NAMCS data collection began on January 2 and will end on December 30, 2012.

The 2012 NAMCS computerized instruments will permit earlier release of survey data. Six-month estimates are planned for release in January 2013. Complete annual estimates should be available in the summer of 2013. The data will be released in Data Brief reports, Web tables, and as a public use file.

3. Conclusions

This paper describes the continuing efforts of NAMCS survey designers to produce more timely policy-relevant statistics. The major changes to NAMCS were threefold: expanding the sample size to support state-level estimates, computerizing the data collection instruments, and introducing a retrospective longitudinal component for visits made by patients at risk for heart disease and stroke. These changes expand the survey's ability to monitor ACA effects on ambulatory care.

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