Demonstration Projects of the National Hospital Care Survey: Pneumonia

Presented by the National Center for Health Statistics

January 30, 2019
Webinar Essentials

- To preserve confidentiality of hospitals in the sample, please use your first name only when identifying yourself in the webinar discussion today.
- When you are not speaking, please mute your phone to keep background noise to a minimum.
Speakers

• **Carol DeFrances, PhD**
  Chief
  Ambulatory and Hospital Care Statistics Branch, NCHS

• **Sonja Williams, MPH**
  Health Scientist
  Hospital Care Team, NCHS
Webinar Overview

1. The National Center for Health Statistics
2. Overview of the National Hospital Care Survey (NHCS)
3. Highlights from a CDC pneumonia report
4. Participation Benefits
5. How to participate
The National Center for Health Statistics
What is the National Center for Health Statistics (NCHS)?

• NCHS is part of the Centers for Disease Control and Prevention (CDC).

• NCHS monitors the health of the Nation by providing data on:
  – Health care trends
  – Health status of the population
  – Impact of health policy decisions on programs

• NCHS collects data from health care settings, including:
  – Ambulatory care
  – Hospital-based care
  – Long-term care
Confidentiality

• NCHS and its contractors take the protection of your hospital’s data very seriously. All survey staff must complete confidentiality training annually and are governed by the rules listed on this slide. Willful unauthorized disclosure can result in fines or imprisonment.

• We will not release the name of your hospital to anyone nor will we release any data that could identify your hospital or your patients. Any data released in a public use file will only include de-identified, aggregate data.

• For more information, please visit our Confidentiality page:
  – https://www.cdc.gov/nchs/nhcs/confidentiality.htm
Overview of the National Hospital Care Survey (NHCS)
Goal and Objectives of the NHCS

• Goal:
  – Provide reliable and timely healthcare utilization data for hospital-based settings.

• Objectives:
  – Move toward electronic data collection.
  – Provide benchmark data for comparison to national data.
  – Link episodes of care across hospital units as well as link to other data sources such as the National Death Index (NDI).
NHCS Sample Design

• Hospitals are randomly selected to provide nationally representative data on hospital utilization.
• Each hospital selected for the survey uniquely represents facilities of similar size, service type, and/or geographic location and cannot be replaced.
• The 2018 NHCS sample consists of 598 non-institutional, non-federal hospitals with six or more staffed inpatient beds.
• Participation is voluntary and there is no penalty for not participating.
• The success of the study depends on the willingness of health care professionals to provide information on current health care services in the United States.
NHCS Data Coverage and Sources

Data coverage:
- All inpatient discharges and emergency department (ED) visits for up to a 12-month period.
- Outpatient department (OPD) data may be requested in future.

Data sources:
- UB-04 administrative claims
- Electronic health record (EHR) data
- State files
## Data Elements by Source

<table>
<thead>
<tr>
<th>UB-04:</th>
<th>EHR:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Personally identifiable</td>
<td>• Personally identifiable information (PII)</td>
</tr>
<tr>
<td>information (PII)</td>
<td>• Demographic information</td>
</tr>
<tr>
<td>• Demographic information</td>
<td>• Encounter dates</td>
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<tr>
<td>• Encounter dates</td>
<td>• Diagnoses and procedures</td>
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<tr>
<td>• Diagnoses and procedures</td>
<td>• Procedure outcomes</td>
</tr>
<tr>
<td>• Revenue codes</td>
<td>• Lab tests and results</td>
</tr>
<tr>
<td></td>
<td>• Medications</td>
</tr>
<tr>
<td></td>
<td>• Vital signs</td>
</tr>
<tr>
<td></td>
<td>• Clinical notes (for ED visits only)</td>
</tr>
</tbody>
</table>

UB-04: UB-04 (Uniform Billing Form) is a healthcare billing form used in the United States to bill insurance companies for services rendered.

EHR: EHR (Electronic Health Record) is a digital record of patient health information.
Features of NHCS Data

Data volume
- NHCS collects all patient encounters at the sampled hospital resulting in a large volume of data collected.
- In 2016, the volume of records collected was 2.5M inpatient discharges, 6.9M ED visits, and 35.6M OPD visits.
- Allows for the study of rare conditions and new procedures

Data Linkage
- The records are at the encounter-level and contain PII.
- The inclusion of PII allows users to:
  - Follow episodes of care across hospital settings;
  - Measure repeat visits; and
  - Link to external data sources such as the NDI.
Highlights from a CDC pneumonia report

*Unweighted data; not nationally representative*
Demonstration of NHCS - pneumonia

- National Hospital Care Survey Demonstration Projects: Pneumonia Inpatient Hospitalizations and Emergency Department Visits
- Report published August 2018
- Authors: Sonja Williams, Sarah Gousen, and Carol DeFrances
Background

• Pneumonia is:
  – an infection of the lung
  – listed as a potentially avoidable inpatient hospitalization

• 1.1M inpatient hospitalizations for pneumonia in 2010 (National Hospital Discharge Survey, 2010)

• 1.5M emergency department visits for pneumonia in 2014 (National Hospital Ambulatory Medical Care Survey, 2014)

• 50,000 deaths caused by pneumonia in the U.S. in 2014 (National Vital Statistics System, 2014)
Methods

• This study analyzed 2014 NHCS data.
• 2014 NHCS data included:
  – 94 hospitals with inpatient data
  – 88 hospitals with ambulatory (emergency and outpatient department) data
• Unweighted total number of encounters in 2014:
  – 1.7M inpatient discharges
  – 4.5M ED visits
• First-listed diagnosis of pneumonia:
  – 30,705 inpatient discharges
  – 24,711 ED-only visits
Age distribution of encounters with first-listed diagnosis of pneumonia in inpatient and emergency department settings: National Hospital Care Survey, 2014

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Inpatient</th>
<th>Emergency Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15</td>
<td>20.7%</td>
<td>21.0%</td>
</tr>
<tr>
<td>15-44</td>
<td>10.0%</td>
<td>19.0%</td>
</tr>
<tr>
<td>45-64</td>
<td>22.6%</td>
<td>13.9%</td>
</tr>
<tr>
<td>65+</td>
<td>46.7%</td>
<td>46.1%</td>
</tr>
</tbody>
</table>

NOTE: Inpatient, n = 30,705; Emergency Department, n = 24,711. Data are not nationally representative.
SOURCE: NCHS, National Hospital Care Survey, 2014
Average length of stay for inpatients hospitalized with first-listed pneumonia, by ICU usage: National Hospital Care Survey, 2014

NOTE: Inpatient, n = 30,705. Data are not nationally representative.
SOURCE: NCHS, National Hospital Care Survey, 2014
The relationship between first-listed pneumonia inpatient discharges, first-listed pneumonia inpatient patients, and patient deaths in 2014 and 2015: National Hospital Care Survey 2014

DISCHARGES

30,705
Number of discharges with a first listed diagnosis of pneumonia

29,005 (100%)
Number of unique individuals discharged with a first listed diagnosis of pneumonia

PATIENTS

6,183 (21.3%)
Number of patients matched in NDI

22,822 (78.7%)
Number of patients NOT in NDI

NOTES: Personally Identifiable Information (PII) is personal information that could possibly identify a person and includes variables such as social security number, first name, last name, and date of birth. Data are not nationally representative.

SOURCE: NCHS, National Hospital Care Survey, 2014; National Death Index 2014-2015
Top ten underlying causes of death for those who died within 30 days of their inpatient hospitalization for first-listed pneumonia: National Hospital Care Survey, 2014

- Malignant neoplasm of unspecified part of bronchus or lung: 14.1%
- Chronic obstructive pulmonary disease: 8.2%
- Pneumonia, unspecified organism: 5.0%
- Atherosclerotic heart disease of native coronary artery: 4.9%
- Unspecified dementia: 3.8%
- Chronic obstructive pulmonary disease with acute lower respiratory infection: 3.6%
- Acute myocardial infarction, unspecified: 2.3%
- Heart failure: 2.2%
- Sepsis, unspecified organism (septicemia NOS): 2.0%
- Other interstitial pulmonary diseases with fibrosis: 1.9%

NOTE: Inpatient (excluding those who died in the hospital), n= 1,199; Septicemia NOS is septicemia not otherwise specified. Data are not nationally representative.
SOURCE: NCHS, National Hospital Care Survey, 2014
Discussion and Conclusions

- Although not yet nationally representative, the large volume of records collected through NHCS allows for unique analyses.
- Data now available on Intensive Care Unit (ICU) stays allow for deeper analyses of the sickest hospitalizations.
- Collection of PII allows for linkage to outside data sources, particularly the NDI.
Participation Benefits
Participation Benefits

- Improve quality of care and other health benchmarks
- Access to your data via the Hospital Data Reporting Portal (coming soon)
- Promoting Interoperability (formerly MU) credit
- Community Health Benefit
- Continuing Education Units credits
- Access to NCHS created reports and analytic papers
- Payment of $500 for a test file and $500 for 12 months of data
- For more information on these benefits, please visit: https://www.cdc.gov/nchs/nhcs/why_participate.htm
How to Participate
What does participation in the NHCS involve?

- Brief interview to determine eligibility
- Electronic submission of data
  - EHR, UB-04 administrative claims, or state files
- Annual Hospital Interview
- When you agree to participate, login credentials will be provided to you to facilitate submitting your data to the secure network.
Future webinars and data availability

• Please stay tuned for additional webinars on demonstration cases of the hospital care survey (e.g., hospitalizations for stroke and for Alzheimer Disease).

• Email blast invitation with call-in information will be sent on monthly basis.

• NHCS data (and files linked to NDI data) are available in the NCHS Research Data Center. For more information on how to submit a proposal, please visit:
  — https://www.cdc.gov/nchs/nhcs/nhcs_questionnaires.htm
Stay updated

• NHCS has a listserv (NHCS-DATA@cdc.gov) for those interested in receiving updates on the availability of data files and the release of reports and presentations. To join the listserv, please visit:
  — https://www.cdc.gov/nchs/dhcs/hdas_listserv.htm

• You can also stay updated via our Data Uses page:
  — https://www.cdc.gov/nchs/nhcs/data_uses.htm
Questions?

Contact Information:

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THANK YOU!