

Call for Proposals for Using Linked Hospital and Mortality Data to address the Opioid Crisis

Overview

The National Center for Health Statistics (NCHS) is seeking proposals for research projects that utilize the linked 2016 National Hospital Care Survey (NHCS) and 2016 & 2017 National Death Index (NDI) file enhanced with the Drug-Involved Mortality (DIM) file outcomes and identification of opioid-involved hospital inpatient and emergency department visits. This research would add further context to the treatment of opioid use disorder in hospital-based settings and on opioid overdose mortality in relation to recent hospital visits. Examples of potential research questions are below:

- Who dies of fentanyl overdose? What hospital care did they receive in the months prior to overdose death? Are they different from people who die of heroin overdose or the same?
- Following discharge from a hospital emergency department for substance use, what kinds of patients more likely to die of fentanyl or heroin overdose?
- Are there patterns of hospital utilization for specific conditions that can be used to identify people at highest risk for fentanyl overdose death?

Introduction

In 2018, 69.5% of the 67,367 drug overdose deaths in the United States involved an opioid (1, 2). Drug and opioid overdoses also add burden to hospital emergency departments (EDs). From 2005 to 2014, it is estimated that the rate of ED visits due to opioid use increased 99.4%, from 89.1 per 100,000 population in 2005 to 177.7 per 100,000 population in 2014 (3). ED data complement mortality data by capturing non-fatal overdoses (4). In addition, ED data provide critical information on opioid use-related treatments, such as opioid use disorder treatment, detoxification for safe opioid withdrawal, and management of adverse effects (5). The data collected in the NHCS can be used to research characteristics of ED visits and hospitalizations due to opioid overdoses, as well as other opioid-related morbidity and mortality measures.

Data Sources

NCHS is the Nation's principal health statistics agency, providing data to identify and address health issues. NCHS compiles statistical information to help guide public health and health policy decisions, including data on hospital care and utilization collected from hospital UB-04 Claims or Electronic Health Records (EHR) and detailed mortality data collected from death certificates. These restricted access datasets are available in the NCHS and Federal Research Data Centers (RDCs). Refer to the following webpage for more information on NCHS and Federal RDCs: <https://www.cdc.gov/rdc/>.

NHCS collects up to 12 months of UB-04 administrative claims or Electronic Health Records (EHR) data from a sample of non-institutional, non-Federal hospitals with six or more staffed beds. NHCS is designed to produce estimates of the characteristics of inpatient hospitalizations and ED encounters including length of stay of inpatient encounters, diagnoses, surgical and non-surgical procedures, and discharge status. The goal of NHCS is to assess the health of the population through the collection of information on health care utilization as well as the demographic characteristics, medical conditions, and treatment of patients who use hospitals for inpatient and ambulatory medical care. NHCS collects patient Personally Identifiable Information (PII) (e.g., patient name and patient address), which allows both a patient to be followed across hospital settings and linkage to external data sources such as the NDI. The 2016 NHCS data in the RDC contain information on 44.5 million hospitals

encounters collected from 150 hospitals. The 2016 NHCS data are not nationally representative due to low hospital response rates. To improve the identification of opioid-involved visits and opioid overdoses in the NHCS data, NCHS developed an enhanced algorithm that utilizes all data collected, including the EHR clinical notes. In addition to identifying opioid-involved visits and overdoses in NHCS, the enhanced methodology also identifies the specific mentions of the following opioids: Buprenorphine, Codeine, Fentanyl/Fentanyl Analogs, Heroin, Hydrocodone, Hydromorphone, Levorphanol, Meperidine, Methadone, Morphine, Oxycodone, Oxymorphone, Tramadol, Unspecified Opioid, Naltrexone, and Naloxone. The 2016 NHCS in the RDC contains information on opioid-involved hospital visits, opioid overdoses, and the specific opioids mentioned in the data.

The NDI is a centralized database of death record information on file in state vital statistics offices. In collaboration with the states, NCHS established the NDI as a resource for epidemiological follow-up studies and other types of health and medical research that require determination of the mortality status of study subjects. These mortality data are provided by the U.S. states under contract agreements with NCHS that specify how these data may be used, for what purposes, and at what cost. Currently, the NDI contains about 95 million records from 1979 through 2016 from all 50 states, the District of Columbia, New York City, Puerto Rico, and the U.S. Virgin Islands. Working with these state offices, NCHS established the NDI as a resource to aid epidemiologists and other health and medical investigators with their mortality ascertainment activities. Through its data linkage program, NCHS has expanded the analytic utility of NHCS by linking it with mortality data from the NDI.

The DIM data include information on specific drugs, drug classes, and non-specific references to drugs mentioned in the literal text on the death certificate. Identification of the specific drugs involved in a death is based on the Drug Mentioned with Involvement (DMI) methodology, which was developed collaboratively by NCHS and the U.S. Food and Drug Administration (FDA). A brief description of the DMI methodology is provided below; however researchers are encouraged to read the more detailed description at: https://www.cdc.gov/nchs/data/nvsr/nvsr65/nvsr65_09.pdf. Only those NHCS patient records that were eligible for and successfully linked to the 2016 & 2017 NDI can be linked to the 2016 & 2017 DIM files. Linked NHCS/NDI records are linked to the 2016 & 2017 DIM files using an exact match on the NHCS patient ID and a unique ID generated from the year of death, jurisdiction of death, and death certificate number.

Proposal Submission Process

NCHS has funding to provide researchers with access to NCHS or Federal RDCs to produce articles for peer reviewed journals using the linked 2016 NHCS and 2016 & 2017 NDI file with enhanced DIM outcomes. The proposed research must use the NHCS opioid data or the linked NHCS and NDI data with DIM outcomes. There are three NCHS RDC locations that can be accessed by non-Federal employees: two in Maryland (Hyattsville and Rockville), and one in Atlanta, GA (<https://www.cdc.gov/rdc/leftbrch/locaterdc.htm>). There are thirty Federal RDCs located throughout the U.S. For more information on the location of Federal RDCs refer to this page: <https://www.census.gov/about/adrm/fsrdc/locations.html>. NCHS will provide up to \$12,000 for access to the RDC, which includes \$1,800 for a background check (if necessary). In addition, up to \$5,000 dollars will be provided for travel and lodging to visit the RDC site. Payment of travel and lodging will be managed using the Federal Travel system. The travel requestor will be required to take the mandatory Federal travel training and abide by all RDC data use protocols and polices.

Proposals must follow the NCHS RDC proposal format guidelines. Those guidelines can be found here: <https://www.cdc.gov/rdc/b3prosal/PP300.htm>. All proposals must include a data dictionary with that includes

all intended variables needed for the project. The RDC data dictionaries for each of datasets can be found at links below:

- 2016 NHCS: https://www.cdc.gov/rdc/data/b1/2016_NHCS_DATA-DICTIONARY.pdf
- 2016 & 2017 NDI: <https://www.cdc.gov/nchs/data-linkage/nhcs-ndi.htm>
- 2016 & 2017 DIM: <https://www.cdc.gov/nchs/data/nhcs/Task-3-Doc-508.pdf>

All submissions must be sent by email to gjackson@cdc.gov and bwward@cdc.gov with the subject line “Hospital Opioid Research Proposal”.

All submissions are due by Friday, 10/1/2021 11:59 PM EST. Submissions received after the deadline will not be considered. All submissions received by the deadline will receive an email notification that their submission was received within 24 hours of submission (Monday – Friday).

Proposals will be evaluated on the understanding of the research topic, feasibility, appropriateness of proposed statistical methods, and uniqueness of research topic. Preference will be given to projects that can have a draft manuscript completed within 6 to 8 months of RDC access and submitted to a refereed journal.

Between four to six weeks after the deadline all submitters will be notified if their proposal was accepted. Successful applicants must then submit an NCHS RDC proposal within two weeks of being notified that their proposal was accepted. Information on submitting an RDC proposal can be found here: <https://www.cdc.gov/rdc/b3prosal/PP300.htm>

Accepted proposals will be expected to start work on the project in the RDC within 12 weeks after acceptance of the RDC proposal. Additionally, proof of project progress updates are expected to be sent to NHCS every six months until the project is completed. The project may be delayed or canceled due to RDC availability.

References

1. Hedegaard H, Miniño AM, Warner M. Drug overdose deaths in the United States, 1999–2018. NCHS Data Brief, no 356. Hyattsville, MD: National Center for Health Statistics. 2020.
2. Ahmad FB, Rossen LM, Sutton P. Provisional drug overdose death counts. National Center for Health Statistics. 2020.
3. Weiss AJ, Elixhauser A, Barrett ML, et al. Opioid-Related Inpatient Stays and Emergency Department Visits by State, 2009-2014. HCUP Statistical Brief #219. Rockville, MD: Agency for Healthcare Research and Quality. 2016.
4. Hasegawa K, Espinola JA, Brown DFM, Camargo Jr CA. Trends in U.S. Emergency Department Visits for Opioid Overdose, 1993-2010. *Pain Medicine* 15(10): 1765-1770. 2014
5. Crane EH. Emergency Department Visits Involving Buprenorphine. 2013 Jan 29. In: *The CBHSQ Report*. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); 2013-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK384655/>