MICHIGAN ACUTE MYOCARDIAL INFARCTION (HEART ATTACK) HOSPITALIZATIONS

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Abstract

This dataset contains inpatient hospitalization records for Michigan residents admitted with a primary (first-listed) diagnosis of acute myocardial infarction (2001 to 2014 using ICD9-CM 410.XX; 2016 and forward using ICD10-CM I21.*-I22.*). The data are aggregated and stratified by county of residence, admission year, age group, and gender (age and gender statewide only).

All users are recommended to read and fully comprehend the metadata prior to data use. To access these data, please visit the MiTracking data portal.

Purpose

This dataset provides data for both the National Environmental Public Health Tracking Network and the Michigan Environmental Public Health Tracking Network. It is intended to provide public health professionals, researchers, and the general public with summary information on acute myocardial infarction (AMI) hospitalizations in the State of Michigan. The data include heart attack hospitalization measures for:

(1) the number of hospitalizations for AMI,

(2) the crude rate of AMI hospitalization per 10,000 population, and

(3) the age-adjusted rate of AMI hospitalization per 10,000 population.

Supplemental Information

These hospitalization data are provided by the Michigan Health and Hospital Association (MHA) to the Michigan Department of Health and Human Services (MDHHS) through a contractual agreement. MHA annually collects data for the Michigan Inpatient Database (MIDB) from patient discharge records supplied by all Michigan acute care hospitals and hospitals in contiguous areas of Ohio, Indiana, Wisconsin, and from several other states where Michigan residents were admitted. Data on Michigan residents who were in another state were included.

Hospitals included in the data file are grouped into MHA hospital IDs. Discharge records from Michigan hospitals include both Michigan residents and non-Michigan residents whereas records from out-of-state hospitals only include Michigan resident discharges.

Data provided by the hospitals were carefully checked and edited by MHA to ensure the validity of the data received. The data were further reviewed and verified by staff in the MDHHS Division of Vital Records and Health Statistics (DVRHS) using multiple sources including previous MIDB files and Michigan driver license files.

Hospitals do not report patient's county of residence. Thus, both MHA and DVRHS derived codes for county of residence from the patient's reported zip code. Because some zip codes fall into two or

more counties, "weights" were applied. The weights were created by using the percentage that a zip code fell under each county. When a zip code intersects more than one county, MHA used only the largest weight while DVRHS took into account all the weights. For example, for 100 records, if zip code "X" intersects counties A (weight = 60%) and B (weight = 40%), MHA would assign all 100 records to county A whereas DVRHS would randomly select 60 records for county A and 40 records for county B. The county field generated by DVRHS was used for this dataset.

Using the subsequent year's discharge-based dataset, the Michigan Tracking Program created an admission-based hospitalization dataset for all admissions in a year. Data for non-Michigan residents and for hospitalizations from federal facilities (such as Veterans Affairs or Indian Health Service hospitals) were excluded.

Race and ethnicity are not reported in this dataset due to issues with the quality of the data collection process at individual hospitals. Data have been de-identified to protect patient confidentiality.

Keywords

Heart failure; cardiac failure; myocardial failure; coronary; heart disease; health outcome; health effect; infarction; Ischemic heart disease; Disease of the circulatory system; cardiovascular disease; coronary artery disease; Acute Coronary Syndrome; ACS; Acute myocardial infarction

Bounding Coordinates

West Bounding Coordinate: -90.418133999999995

East Bounding Coordinate: -82.418394000000006

North Bounding Coordinate: 48.189534000000002

South Bounding Coordinate: 41.696088000000003

Other Information on Data

Level of Geographic Detail*:* State and County

Currentness Reference (when data were last updated**)***:* 9/30/2019

Frequency at which the data are updated: Annually

Data Status*:* Complete

Completeness Report

These data are based only on primary discharge diagnosis codes (ICD9-CM) 410.XX or (ICD10-CM) I21.*-I22.*. Prior to October 1, 2015, diagnosis codes were represented by ICD-9-CM codes. As of October 1, 2015, diagnosis codes are represented by ICD-10-CM codes.

As a direct result of this change, there are nearly five times as many diagnosis codes in ICD-10-CM than in ICD-9-CM, allowing further expansion than was possible with ICD-9-CM. This coding change impacts

information classifications for hospital discharge, emergency department, and outpatient records for administrative and financial transactions in all healthcare settings.

Since the coding change took effect on October 1, 2015, this means that the first three quarters of data year 2015 are coded in ICD-9-CM, and the last quarter of 2015 is coded in ICD-10-CM. Because of this coding change, hospitalizations on the MiTracking portal are separated into two indicators (2001-2014 and 2016-present). Data from 2015 are not presented.

- Hospitalizations before 2015 are not directly comparable to hospitalizations for 2016 or later.
- Differences between counts and rates in years prior to 2015 compared with years after 2015 could be a result of this coding change and not an actual difference in the number of events.
- This means that 2015 cannot be compared to any other year and, for some measures, is not reliable on its own

These data include inpatient hospitalizations of Michigan residents discharged from non-federal acute care hospitals by year of admission. These data do not include hospitalizations from Veteran Affairs, Indian Health Service, or other federal facilities or hospitals.

Race and ethnicity are not reported in the dataset due to issues with the quality of the data collection process at individual hospitals.

Data Processing Description

The dataset was processed and created using data from the Michigan Inpatient Hospital Database (MIDB) provided by the Michigan Health and Hospitalization Association (MHA) according to the instructions found in the Centers for Disease Control and Prevention Standards for Nationally Consistent Data and Measures within the Environmental Public Health Tracking Network, version 3.0, pg. 30-34 (http://ephtracking.cdc.gov/docs/CDC_NCDM_v3.pdf). The MIDB is an inpatient hospitalization dataset based on date of discharge, but a hospitalization dataset based on date of admission was created using the year of interest and subsequent year of data.

- All hospital admissions for one year with a primary diagnosis of AMI were included in the new dataset which was cleaned and processed using SAS 9.3/9.4 to exclude non-Michigan residents and recode values of the county field to a 5-digit (the first two digits were 26 [the state FIPS code] and the three remaining digits were the appropriate county FIPS code). For example, the County field value for a resident of Wayne County would be "26163."
- Values for the gender field were also re-assigned ("1" to "M", "2" to "F", and "0" to "U"). Note: unknown genders are not filterable in the data query. Transfers were identified (using primary diagnosis code, unique patient identifier, admission date, and discharge date) and excluded from the data. Patients were assigned into one of 19 five-year age groups (1 for 0-4 years, 2 for 5-9 years, ..., 17 for 80-84 years, 18 for 85+ years, and 19 for Unknown) based on their age at the time of hospitalization.
- Counts of inpatient hospitalizations for AMI were aggregated by admission year, county, age group, and sex.

- Rates were calculated using vintage bridged-race population estimates available through the National Vital Statistics System (NVSS) for years in between each census (e.g. 2001-2009) and U.S. census bureau population data for census year 2010.

Access Constraints

There are no access constraints for data available through the Michigan Environmental Public Health Tracking program public portal. Where applicable, restricted data will only be released to users after a written request detailing the purpose of the request, intended use for the data, and specifics on the security and privacy measures to be taken to safeguard patient privacy and prevent unauthorized access to or use of the data. Such requests are reviewed and approved by MHASC. The Michigan Tracking Program will review each request to certify that the purposes described are reasonably calculated to promote public health or promote the efficient, effective delivery of healthcare in Michigan before forwarding the request to the DVRHS for review and further consideration. Please contact the Michigan Tracking Program for more information.

Use Constraints

It is recommended that all users read and fully comprehend the metadata prior to data use. Efforts have been made to assure the accuracy of the data. These data are supplied by MHA to MDHHS for submission to the National Environmental Public Health Tracking Network. The data are also being used to establish a Michigan Tracking Network to compile, integrate, and disseminate environmental hazard, exposure, and health effects data pursuant to criteria and requirements set forth by the CDC. MHA and MDHHS specifically disclaim responsibility for any analyses, interpretations, or conclusions made by those who access this information.

These data remain the property of MHA and cannot be used for commercial purposes and shall not be used to engage in any method, act, or practice which constitutes the solicitation or advertisement of goods, services, or real estate to Michigan consumers.

Data users are prohibited from attempting to learn the identity of any person included in the data and from linking these data with any other data for the purpose of matching records to identify individuals or entities (such as hospitals).

Usage rights: Portions of these data are taken from a proprietary database owned and maintained by the Michigan Health & Hospital Association Service Corporation (MHASC). All rights reserved. These data may not be used for commercial purposes without first obtaining written permission from the MHASC. Contact MHASC at datakoala@mha.org for more information.

Data Limitations

Hospitalization data, by definition, do not include AMI among individuals who do not receive medical care or who are not hospitalized, including those who die in emergency rooms, in nursing homes, or at home without being admitted to a hospital, and those treated in outpatient settings.

Differences in rates over time or by area may reflect differences or changes in diagnostic techniques and criteria and in the coding of heart attacks. Note: The US transitioned from ICD-9-

CM to ICD-10-CM for coding conditions at hospitals on October 1, 2015. Differences in results before 2015, and after 2015 could be due to this particular coding change and not an actual difference in the number of events.

Reporting rates at the state and/or county level will not show the true AMI burden at a more local level (e.g., neighborhood).

Reporting rates at the state and/or county level will not be geographically resolved enough to be linked with many types of environmental data.

Differences in rates by area may be due to different socio-demographic characteristics and associated behaviors. When comparing rates across geographic areas, a variety of non-environmental factors, such as access to medical care, can impact the likelihood of persons being hospitalized for heart attack.

Data Suppression

The Michigan Environmental Public Health Tracking Program and its data partners have applied appropriate cell suppression rules imposed by the data providers and/or using guidance from the CDC. Even at the county level it can be expected that the measures generated will often be based upon numbers too small to report or present without violating state and federal privacy guidelines and regulations.

Staff have adhered to the cell suppression rules by suppressing all counts greater than 0 and less than 6 (the corresponding rates based on these small counts have also been suppressed). Complementary suppression has also been completed to prevent any back calculation of suppressed cells. For some data, it was necessary to increase cell sizes by combining data across time (e.g., years) and geographic areas (statewide instead of county-level data).

Security Handling Description

If data are distributed, the use constraints specified in this metadata apply to all recipients of the data.

Distribution Liability

The Michigan Public Health Tracking Network is maintained, managed, and operated by the Division of Environmental Health (DEH) within MDHHS. In preparation of these data, every effort has been made to offer the most current, correct, complete, and clearly expressed information possible. Nevertheless, some errors in the data may exist. In particular, but without limiting anything here, MDHHS disclaims any responsibility for source data, compilation and typographical errors and accuracy of the information that may be contained in these data.

These data do not represent the official legal version of source documents or data used to compile these data. MDHHS further reserves the right to make changes to this data at any time without notice.

It is strongly recommended that careful attention be paid to the contents of the metadata file associated with these data to evaluate dataset limitations, restrictions, or intended uses. MDHHS

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If errors or otherwise inappropriate information is brought to our attention, a reasonable effort will be made to fix or remove it. Such concerns should be addressed to the Michigan Tracking Program according to the contact information listed below.

Custom Order Process

For access to national and multi-state unrestricted or public use data, please see:
http://ephtracking.cdc.gov

For access to unrestricted or public use Michigan-specific data, please contact the Michigan Health & Hospital Association Service Corporation (MHASC) at datakoala@mha.org for more information.

Contact Information

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