TEXAS
Health and Human Services

Texas Department of State Health Services

Using THCIC Data for Emerging and Infectious Diseases

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Overview

- Texas Health Care Information Collection (THCIC)
  - Public Use Data Files (PUDFs) vs. Research Data Files (RDFs)
  - Data fields of interest for epidemiologic study
  - Limitations of the data
  - Disease Surveillance and Public Health Reporting using THCIC
- Examples of THCIC data in epidemiologic analysis
  - Coccidioidomycosis-related Hospital Visits in Texas, 2016-2021
  - Assessing Factors Associated with Illness Severity for Coccidioidomycosis, 2016-2022

Texas Health Care Information Collection (THCIC)

Background

- Texas Health Care Information Collection (THCIC) was created in 1995 by the 74th Texas Legislature to collect data and report on health care activity in state licensed hospitals and health maintenance organizations operating in Texas.
  - THCIC's primary purpose is to provide information and data that enable Texas consumers and health plan purchasers to make informed health care decisions.
- Additionally, THCIC data can be used in disease surveillance, public health reporting, and public health data analysis.

About THCIC | Texas DSHS. Accessed January 21, 2025. https://www.dshs.texas.gov/center-health-statistics/texas-health-care-information-collection/about-thcic.

THCIC Public Use Data Files

THCIC Public use data files (PUDFs) are available for inpatient, outpatient, and emergency department discharge records from reporting hospitals in the following datafiles:

Inpatient Discharge Data	• Patient-level information for patients discharged by hospitals.
Outpatient Data	• Limited to patients who receive one or more outpatient invasive/incisive surgical or one or more radiological/imaging procedures.
Emergency Department Data	• Subset of the Inpatient Discharge and Outpatient data and is determined by the reported revenue codes in the patient record.

PUDF - Available Data Tables

- All data is at the patient level and represents hospital encounters, where one encounter contains the final discharge and all related claims information for a patient.
  - Base Data Files contain:
    - Patient demographic and geographic information such as:
      - Demographic: Age group, patient sex, patient race and ethnicity
      - Geographic: Resident country, state, public health region, county, and zip code
    - Clinical information such as:
      - Patient status (i.e. discharged to home, left against medical advice, transferred, expired)
      - Length of stay in days
      - Principal and 24 other ICD-10-CM diagnosis codes and present on admission status
      - External cause of morbidity ICD-10-CM codes and present on admission status
      - Principal and 24 other ICD-10-PCS surgical or other procedure codes
      - 25 HCPCS or CPT procedure codes
      - Patient severity of illness and risk of mortality scores
  - Charges File contain:
    - The charges for each accommodation, service, or procedure performed during the hospital visit.

THCIC Research Data Files

- THCIC Research Data Files (RDFs) contain additional data fields not included in the PUDFs and can be requested for research purposes by individuals and organizations.
  - When requesting RDFs, the proposed research project, data elements required for the proposed research, and a description of the intended use of the data are submitted to THCIC for review and approval.
  - After approval by THCIC, the request is submitted to the DSHS Institutional Review Board (IRB) for scientific review, ethical review, and final approval.

RDF - Available Data Fields

- Additional data fields available for research after IRB approval:
  - Patient unique identifier
  - Patient birth date
  - Patient age in years and/or days
  - Patient resident census block/tract
  - Admission date
  - Masked/suppressed fields may be visible

Data Strengths and Limitations

Strengths

- Range of data elements (patient demographics, clinical characteristics, utilization, financial and facility information)
- Availability of multiple years (trend analyses)
- Can be used for analyses of rare conditions or population subgroups

Limitations

- Inconsistencies across providers
- Unable to deduplicate records within the PUDF
- Data quality and missing data
- Excluded populations
- Lacking clinical detailed information, such as test results
- Race and ethnicity data may be subjectively captured

Disease Surveillance and Public Health Reporting

THCIC can be used to assess hospital quality indicators such as mortality rates for select conditions or diseases.

Texas Health Care Information Collection

Pneumonia Mortality Rate, 2022

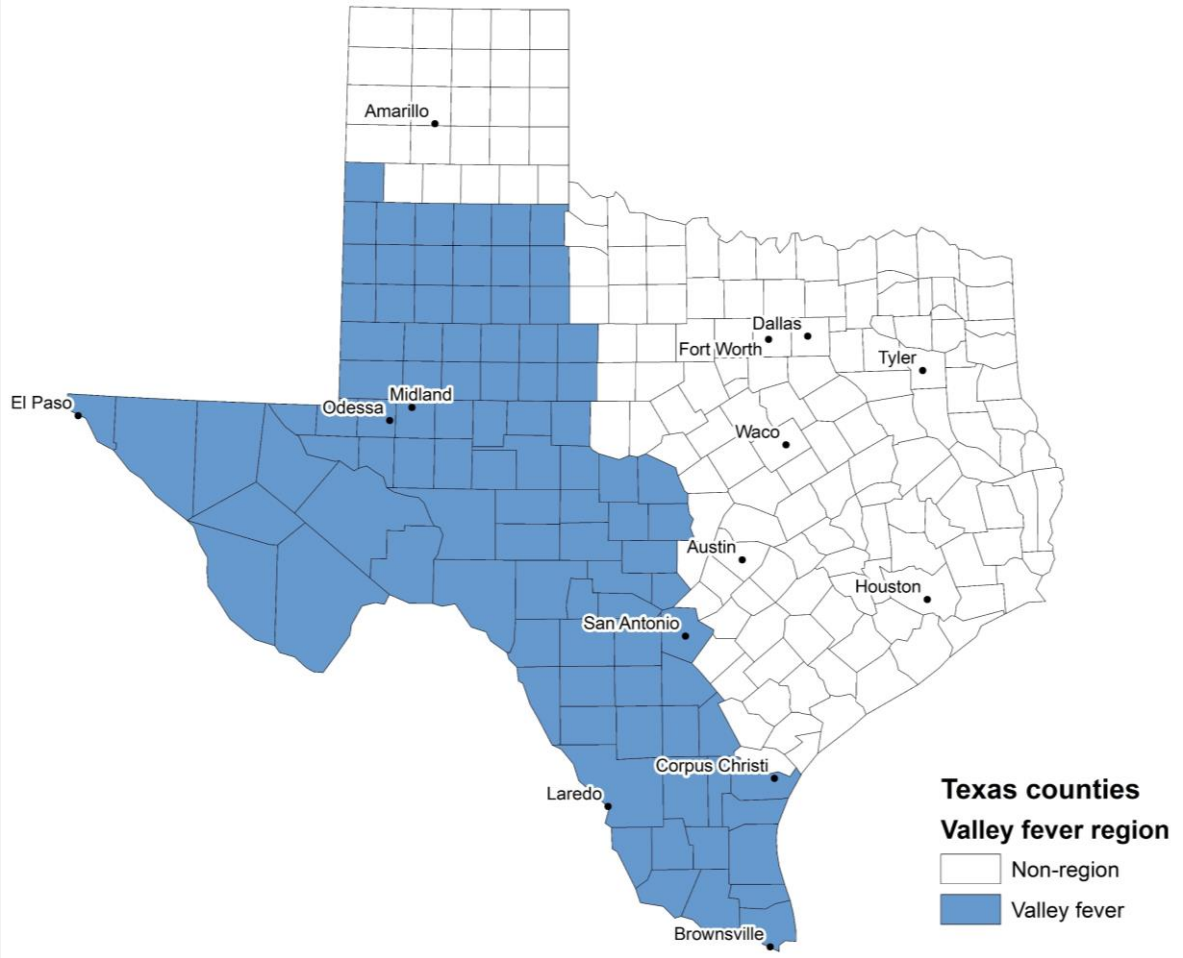
Metropolitan Statistical Area (MSA)	Hospital	Cases	Number of Deaths	Observed Mortality Rate	Expected Mortality Rate	Risk-Adjusted Mortality Rate (RAMR)	95% Confidence Interval for RAMR	Average Charges per Case
STATE OF TEXAS	STATE OF TEXAS	90,524	5,161	5.70%	9.39%	3.97%	(3.85%, 4.09%)	$101,012
				0.00% 5.00% Observed Mortality Rate	5.00% 10.00% Expected Mortality Rate	2.00% 4.00% Risk-Adjusted Mortality Rate	95% Confidence Interval	$0 $50,000 Average Charges per Case

Source: Texas Health Data; https://healthdata.dshs.texas.gov/dashboard/hospitals/quality-indicators/inpatient-quality-indicators

Epidemiologic Studies Using THCIC Data

Coccidioidomycosis in Texas

- Our team wanted to assess hospital utilization related to coccidioidomycosis and used the diagnosis codes to identify hospital visits related to the disease.
- Using THCIC inpatient and outpatient public use data files, we estimated the prevalence of hospital visits related to coccidioidomycosis and assessed factors related to illness severity for inpatient hospitalizations in two analysis projects.



Hospital Utilization Study Overview

Obtain 2016-2021 THCIC Inpatient and Outpatient PUDF Data

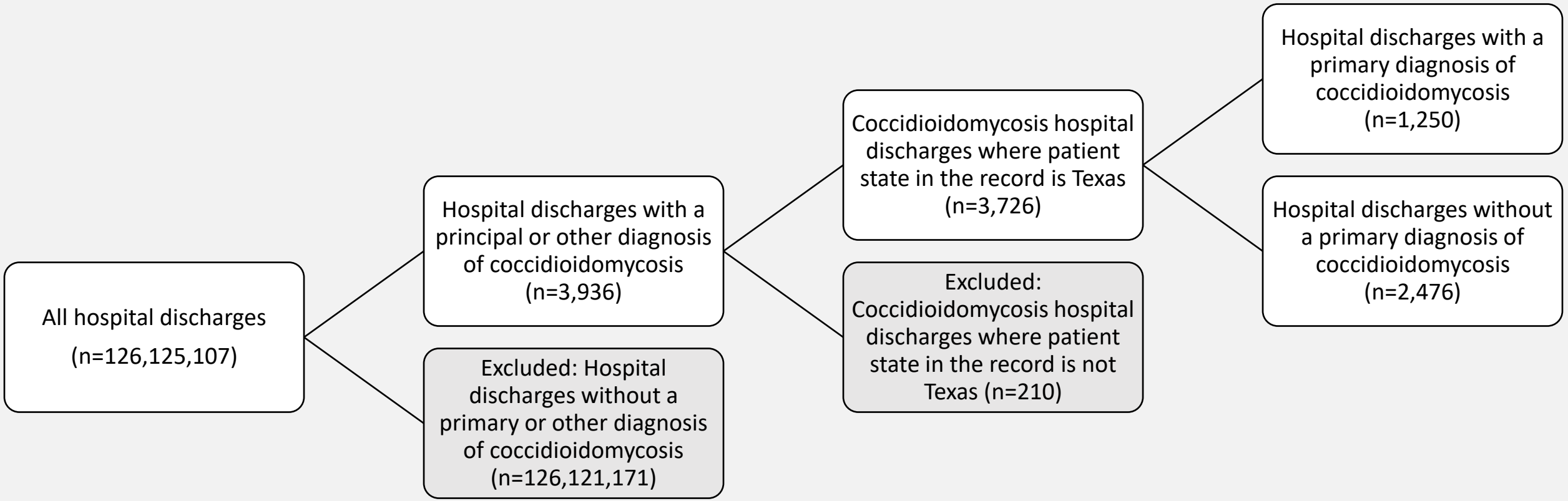
Identify coccidioidomycosis-related hospital visits using International Classification of Diseases (ICD-10-CM) from diagnosis fields

Generate geographic indicators for endemic region status using patient resident county

Use negative binomial regression to calculate prevalence ratios of hospital visits by demographic and geographic groups.

Mayfield H, Davila V, Penedo E. Coccidioidomycosis-Related Hospital Visits, Texas, USA, 2016–2021. Emerging Infectious Diseases. 2024;30(5):882-889. doi:10.3201/eid3005.231624.

Hospital Utilization Study Population



Texas Hospital Inpatient Discharge Public Use Data File, 2016–2021. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas.
Texas Outpatient Public Use Data File, 2016–2021. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas.
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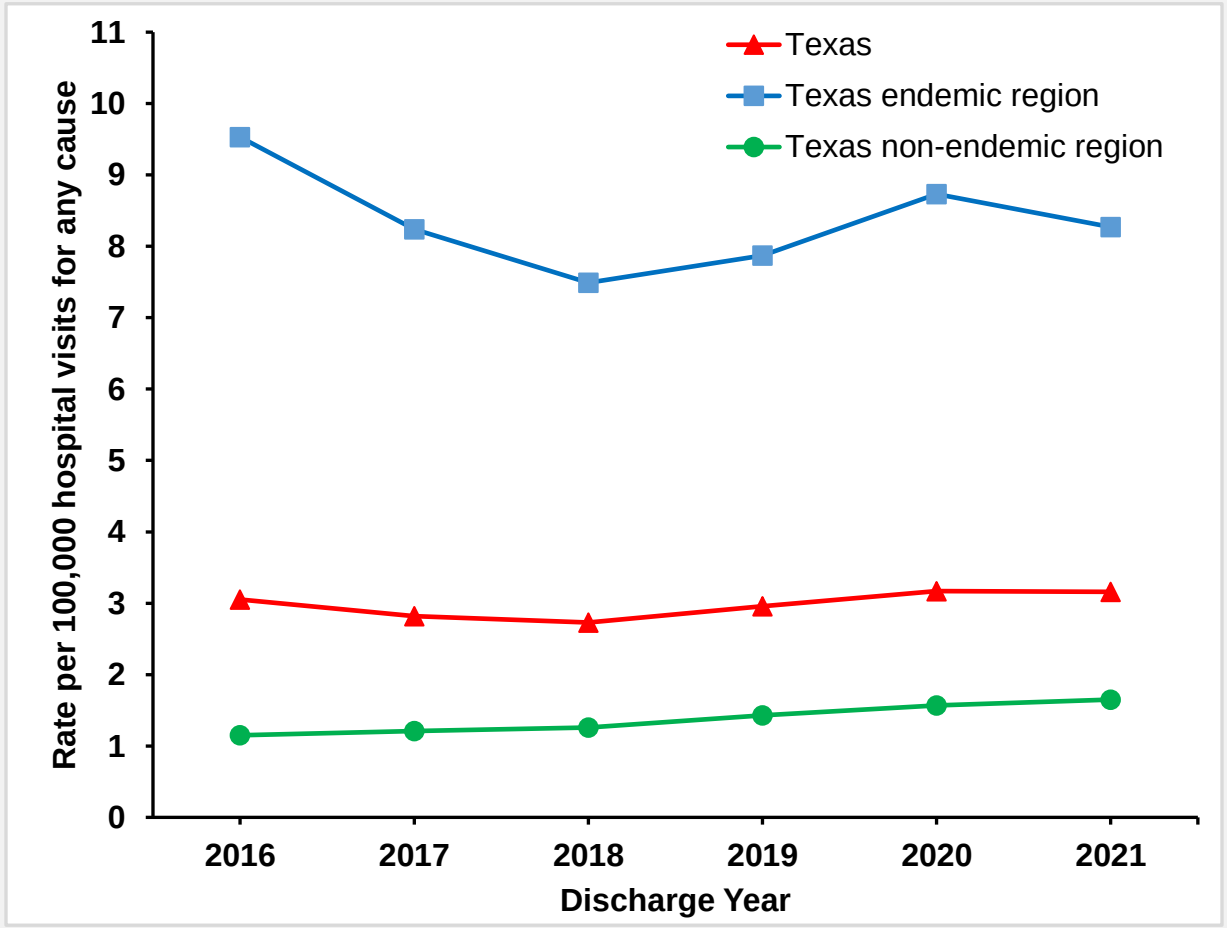
Hospital Utilization Study Results

Coccidioidomycosis-related Hospital Visits in Texas, 2016-2021

- The percentage of coccidioidomycosis hospital visits was highest among those 45-64 years of age (40.8%), male (56.3%), and Hispanic (47.5%).
- The 96-county Valley fever region in Texas only accounts for approximately 24.0% of the state's population but had 63.4% of coccidioidomycosis-related hospital visits.
- Inpatient hospital visits constituted the largest (56.7%) percentage of coccidioidomycosis-related visits.
- Results suggest that geographic region, sex, and race/ethnicity are associated with increased rates of hospital visits for coccidioidomycosis.



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Illness Severity Study Overview

Obtain 2016-2022 THCIC Inpatient PUDF Data

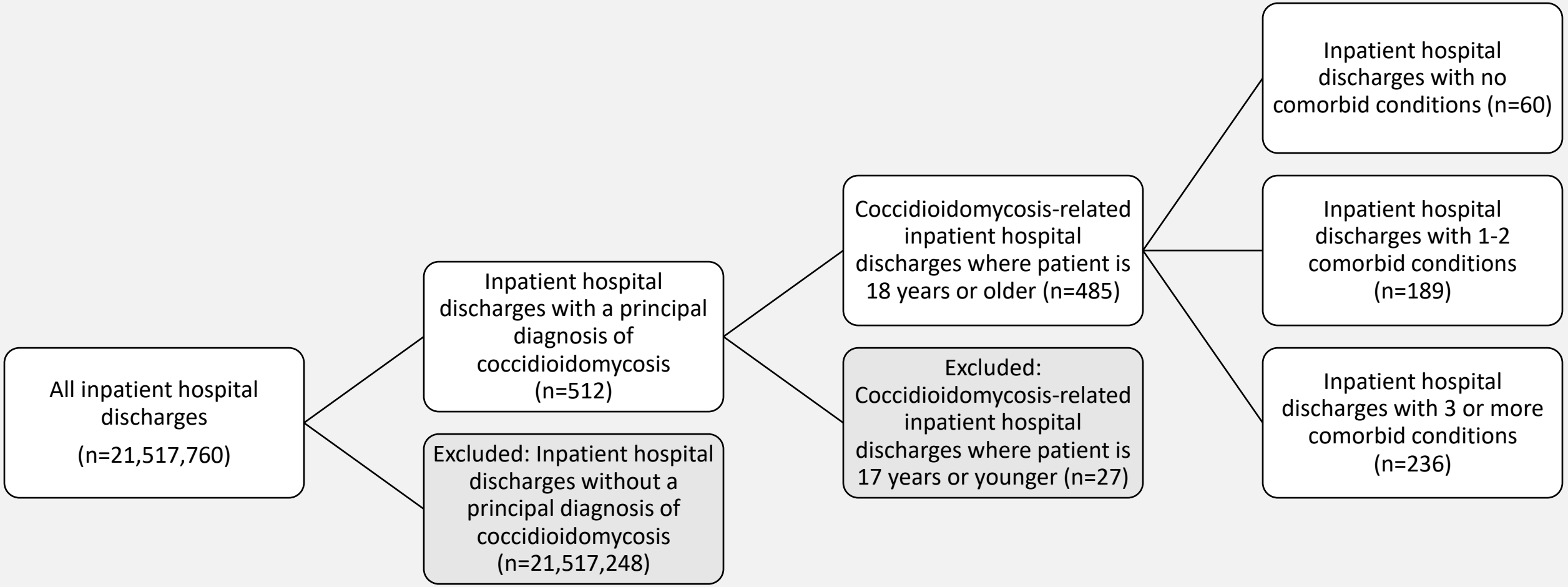
Identify hospitalized patients aged 18 years and older with a principal diagnosis of coccidioidomycosis using International Classification of Diseases (ICD-10-CM) from diagnosis fields

Identify co-morbid conditions present on admission using a modified Elixhauser Comorbidity Index Refined for ICD-10-CM

Use ordinal logistic regression to assess sociodemographic factors and comorbid conditions associated with four levels of illness severity recorded for the patient.

Elixhauser Comorbidity Software Refined for ICD-10-CM. https://hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/comorbidity_icd10.jsp

Illness Severity Study Population

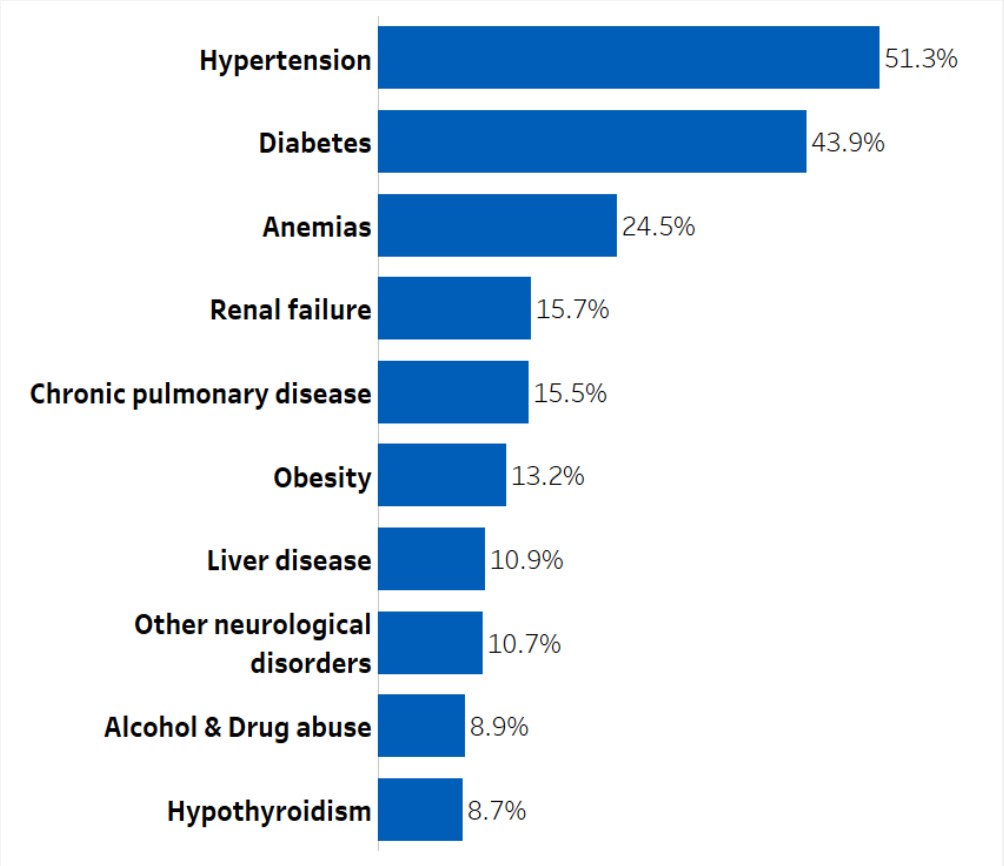


Texas Hospital Inpatient Discharge Public Use Data File, 2016–2021. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas.

Illness Severity Study Results

Assessing Factors Associated with Illness Severity for Coccidioidomycosis Hospitalizations in Texas, 2016-2022

- A total of 485 hospitalized patients were included in the study sample.
- Overall, more than half of the study sample were male (58.4%) and Hispanic (54.6%).
- The largest age group in the study sample was 45-64 years old (44.9%) and almost half had 3 or more comorbidities present on admission (48.7%).
- Most of the study sample had an illness severity score of Moderate (34.6%), Major (38.1%) or Extreme (20.0%).
- Results suggest that age, sex, and comorbidity group were associated with illness severity.



Thank you!

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