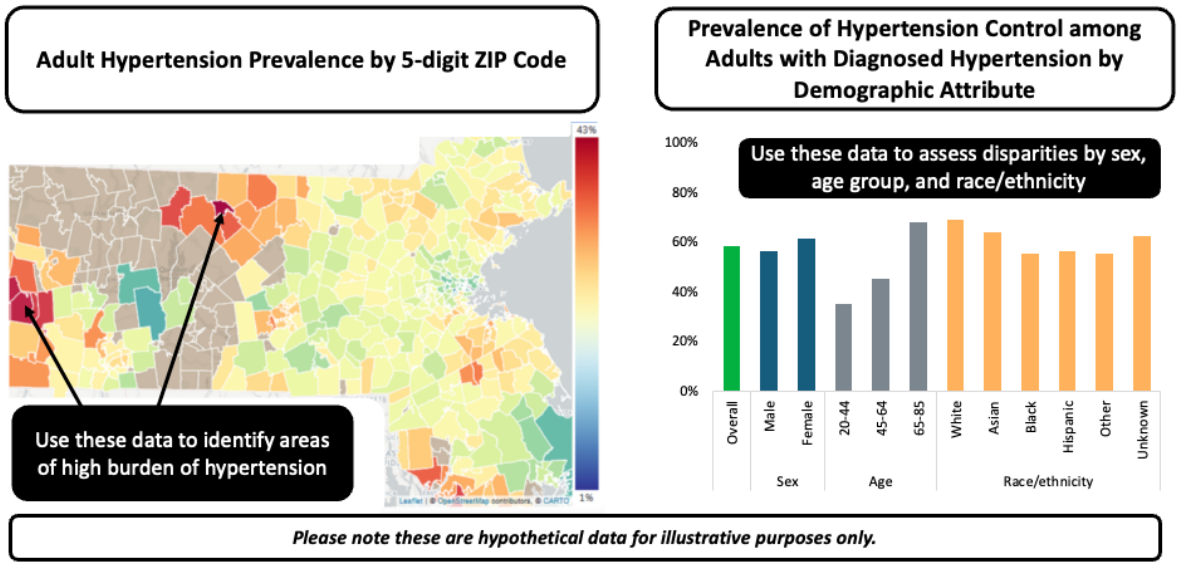
Transforming Clinical Data for Hypertension Surveillance: A Use Case of the Multi-State EHR-Based Network for Disease Surveillance

Rationale Public health departments have limited surveillance data to describe the epidemiology of hypertension in the population. Survey data can offer a hypertension prevalence estimate but rarely in a timely fashion or with sufficient power for local estimates. Further, self-reported surveys do not offer insights into hypertension control, a key indicator that requires clinical measurement, and national surveys that measure hypertension control do not provide local estimates. The purpose of this document is to describe the hypertension surveillance data produced by the Multi-state EHR-based Network for Disease Surveillance (MENDS) pilot project and potential uses of these data for public health departments.

What is MENDS? MENDS is a pilot distributed data network that leverages clinical data from electronic health records (EHRs) from multiple sites across the country to generate timely chronic disease surveillance data at national, state, and local levels. MENDS can be accessed by participating health departments and other authorized users for monitoring trends, informing policies, planning programs, and evaluating outcomes to improve the health of the population. More information about MENDS.

What type of hypertension data does MENDS provide? From clinical data, MENDS extracts blood pressure measurements, hypertension diagnostic codes, and antihypertensive medication prescriptions to estimate hypertension prevalence (including undiagnosed hypertension). Among those with diagnosed hypertension, MENDS estimates rates of hypertension control. Hypertension estimates are available by geographic (state, county, and 5-digit ZIP code) and demographic subgroup (See Figure). More information about how MENDS operationalizes the case definition for hypertension prevalence and control can be found in the hypertension algorithm documentation.



How are EHR-based hypertension estimates used? MENDS hypertension estimates for state or local public health departments have several potential applications. Public health departments can use MENDS hypertension data to 1) quantify the proportion of adults who have hypertension in their community; 2) compare hypertension prevalence between geographic and demographic groups and track disparities over time (i.e., trends); 3) among adults with hypertension, measure the proportion who have controlled hypertension; 4) compare hypertension control patterns by demographic group; and 5) identify communities with high risk (high hypertension prevalence and/or low hypertension control) who may benefit from additional programs or services.

Example Public Health Actions that Can Be Supported Using MENDS Data

Health department staff, including program staff, epidemiologists, evaluators, and other public health professionals, could use MENDS data to inform chronic disease efforts through the following example actions:

- Share hypertension prevalence and control data with state and local public health leadership to drive chronic disease decision making and inform program planning
- Develop maps of hypertension prevalence and control to highlight areas with the greatest burden of hypertension and lowest rates of control
- Disseminate hypertension surveillance information to healthcare professionals and payers (e.g., via hypertension collaboratives) to support population health efforts
- Incorporate MENDS hypertension prevalence and control estimates into community health assessments
- Describe how hypertension prevalence and control vary by social determinants of health
- In communities where hypertension prevalence is high or control is low:
    - Engage local clinical and community partners to understand the factors driving disparities
    - Implement targeted programming such as community education about self-measured blood pressure monitoring[1]
    - Monitor the population-level impact of hypertension prevalence and control programming

Conclusions This MENDS use case demonstrates how EHR-based prevalence estimates can be used by a public health department. EHR-based data can provide timely and robust surveillance estimates that complement prevalence estimates from traditional surveillance data sources. EHR data can also add value by providing surveillance data on indicators such as hypertension control and undiagnosed hypertension that are actionable but have been historically hard to measure with surveys. Health department staff focused on chronic disease can take several meaningful actions using these data in support of measures to improve the health of the communities they serve.

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[1] https://millionhearts.hhs.gov/about-million-hearts/optimizing-care/smbp.html