Epidemiology for COVID-19 Emergency Medical Service Providers: What You Need to Know

Product (EMS21A) Purpose
This document provides an overview of epidemiology for emergency medical service (EMS) providers from all types of EMS systems.

Developed By
The Federal Healthcare Resilience Task Force (HRTF) is leading the development of a comprehensive strategy for the U.S. healthcare system to facilitate resiliency and responsiveness to the threats posed by COVID-19. The Task Force's EMS/Pre-Hospital Team is comprised of public and private-sector Emergency Medical Service (EMS) and 911 experts from a wide variety of agencies and focuses on responding to the needs of the pre-hospital community. This Team is composed of subject matter experts from NHTSA Office of EMS, CDC, FEMA, USFA, US Army, USCG, and non-federal partners representing stakeholder groups and areas of expertise. Through collaboration with experts in related fields, the team develops practical resources for field providers, supervisors, administrators, medical directors and associations to better respond to the COVID-19 pandemic.

Intended Audience
Federal, as well as State, Local, Tribal, and Territorial Government's (SLTTs) EMS and 911 agencies.

Expected Distribution Mechanism
EMS.gov webpage, EMS/911 GOVdelivery, USFA webpage, USFA GOVdelivery and USFA social media, Stakeholder Calls, EMS stakeholder organization's membership distribution, Email mechanisms, Social Media

USG Agency/ Program Consulted During Drafting
Members of the team were from FEMA, OEMS, USFA and CDC

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Emergency Medical Services (EMS) Prehospital Team

Epidemiology for COVID-19 Emergency Medical Service Providers:

What You Need to Know

1. <u>Purpose</u>: This document provides an overview of epidemiology for emergency medical service (EMS) providers from all types of EMS systems.

2. <u>Overview of Epidemiology</u>: Epidemiology is the basic science of public health. It is the study of patterns of disease in specific populations and the interventions used to address public health problems. Epidemiology investigates the distribution (i.e. frequency and pattern) and determinants (i.e. causes or risk factors) of a disease in a population. It is a quantitative science that relies on sound research methods, thoughtful statistical analysis, and provides a scientific basis for design and implementation of public health interventions. Epidemiological studies are used by public health officials, medical directors, healthcare providers, policymakers, and elected leaders to make evidence-based decisions regarding the prevention and control of a disease.

3. <u>The Epidemiologic Approach</u>: As with all scientific endeavors, the practice of epidemiology relies on a systematic and reproducible approach. In very simple terms, the epidemiologist: *counts* cases (i.e. laboratory-confirmed diagnosis) or health events (i.e. suspected cases), and describes them in terms of time (i.e. seasonal variation), place (i.e. geographic differences), and person (i.e. age, sex, social economic status, race/ethnicity); *divides* the number of cases by an appropriate denominator (i.e. the total population) to calculate rates; and then *compares* these rates over time or between different groups of people.

4. <u>Epidemiology Evaluation Tips</u>:
   a. When it comes to sample size (n), usually bigger is better. Large and diverse (similar to the population of interest) samples are more likely to accurately reflect the population.
   b. Assess the source of information: Findings published in peer-reviewed journals are more likely to have more accurate results than anecdotal stories published by media outlets.
   c. Assess the variation: The real world varies unpredictably. Science is mostly about discovering what causes the patterns we see. The main challenge of research is identifying whether variation is caused by the study process, a true pattern, or normal variation due to chance.
   d. Assess the measurement error: Practically all measurements have some error. Results should be presented with a precision that is appropriate for the associated error to avoid implying an unjustified degree of accuracy.
   e. Assess the bias: The ideal experiment is double-blind: neither the participants nor those collecting the data know who received what intervention. This might be possible in drug trials, but it is impossible for many social studies. All studies should include a discussion of their limitations and possible sources of bias. This is very important for the reader to look for and evaluate.

5. <u>Research References</u>:
   a. CDC: https://www.cdc.gov/csels/dsepd/ss1978/lesson1/summary.html
   b. Nature: https://www.nature.com/news/policy-twenty-tips-for-interpreting-scientific-claims-1.14183*

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*This document contains weblinks to non-Federal websites and webpages. Linking to a non-Federal website does not constitute an endorsement by the U.S. government, or any of its employees, of the information and/or products presented on that site.

This guidance applies to all EMS delivery models including but not limited to; free standing, municipal third-service; fire-based, hospital-based, private, independent, volunteer, and related emergency medical service providers.

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