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How Mortality Data Saves Lives

August 2, 2018

1 Comment

Posted in: Inside Story, Public Health in Action

Public health strives to create the conditions in which we can all live healthy lives. Eventually, however, every life comes to an end. When that happens, the information captured on death certificates provides a snapshot about how we live our lives (e.g., occupation, education, and other demographic information) and what happened that led to our final moments (e.g., cause and manner of death and circumstances that lead to death).

CDC Entrepreneur in Residence Paula Braun discusses mortality data at the State and Medical Examiner/Coroner Implementer's Workgroup in May.

When viewed collectively, data from death certificates tell a broader story about the health of our country and our communities. These data are used routinely to uncover health disparities, inform policy and funding decisions, and improve outbreak and disaster response efforts. Because mortality data can help support public health strategies in so many ways, finding tools and methods to better collect that information and exchange it more easily is a priority, especially when it comes to addressing the latest public health emergency: the opioid crisis.

The Flow of Mortality Data Matters to Public Health and to The Opioid Emergency

L-r: Delton Atkinson (NCHS), Paula Braun (NCHS), Margaret Warner (NCHS), and medical examiner Greg Davis of Alabama.

To get the full picture of how death data informs public health at multiple levels, it's important to understand how that data flows from the local level to the national level and back again. Drug overdose deaths, for example, are investigated by medical examiners or coroners, who determine cause and manner of death, certify the death certificate, and send them to the local, state or territorial vital records office to register the death.

Information from death certificates showing all causes of death from across the country—about 2.6 million per year—are then collected though the National Vital Statistics System (NVSS) and processed by the Division of Vital Statistics in CDC's National Center for Health Statistics (NCHS). Experts at NCHS interpret the textual information on the death certificates to assign codes, determine the appropriate underlying cause of death, and share these codes back with the states and territories. These coded data help trigger public health actions. The NVSS also provides the basis for the NCHS to create the nation's official vital statistics, which give us a wide-scale look at what's causing deaths across the country.

Death Records Become a Rapid-Response Tool

L-r: Mac McGraw (NCHS), Chad Denlinger of Genesis Systems, Inc., and Robby Braumuller and Chris Harrison from Georgia Department of Public Health collaborate on the ideal flow of information from death certificates.

In recent years, significant progress has been made to turn state-based death registries and other collections of vital statistics data from historical repositories into more real-time data feeds that can be used to support public health surveillance and response. Death data reporting systems, including the various Electronic Death Reporting Systems (EDRS) that allow states to share death data electronically, are being upgraded and integrated. The percentage of mortality records collected by CDC electronically from states within 10 days has risen from 7 percent in 2014 to an estimated 63 percent in 2018. The time it takes for finalized death data from the NVSS to be publically available has been reduced from two years to less than a year, and this more timely data has allowed production of quarterly provisional estimates for major causes of death as well as monthly provisional counts of deaths from drug overdose.

By working with medical examiners and coroners, the quality of data has also been improved. For example, the percentage of

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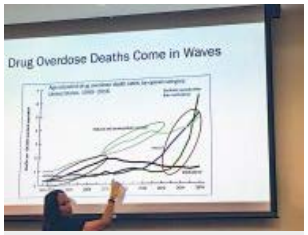
drug overdose deaths that identified the specific drugs involved has continued to increase over time, with ranges of 75–79 percent from 1999 to 2013 increasing to 85-87 percent for the first quarters of 2017.

Pushing for Further Improvements



Fulton County Chief Medical Examiner Jan Gorniak, MD. elaborates on a graph showing trends in drug overdose deaths over more than 15 years.

Even with this improved reporting, however, drug overdose deaths are more complex and present challenges to improving the overall timeliness and accuracy of NVSS mortality data. In the case of drug overdose and other traumatic deaths, determination of a cause of death may have to wait until toxicology or other lab results are finalized. This means that these types of deaths tend to have longer reporting lags. It also means more work needs be done to improve how we collect and share mortality data.

Making additional improvements in mortality data can serve two important goals: it can not only lower the burden on people working to report these deaths, it can also speed up the collection and reporting of death information—a foundational part of public health surveillance—in order to inform an impactful response. With the epidemic of opioid overdoses threatening more lives every day, exploring how to make more of these improvements is vital. That effort is the goal of the State and Medical Examiner/Coroner Implementer's Workgroup, a workgroup convened by CDC in May using funds from the Patient Centered Outcomes Research Trust Fund.

A Meaningful Collaboration of Mortality Data Minds

The State and Medical Examiner/Coroner Implementer's Workgroup brings together a community of people who work with mortality data to focus on improving the data and data flow. This workgroup includes representatives who certify and register deaths from six states (California, Florida, Georgia, Michigan, New Hampshire, and New York) as well as CDC staff from the NCHS, the National Center for Injury Control and Prevention (NCICP), the Office of Public Health Preparedness and Response (OPHPR), and the Office of Public Health Scientific Services (OPHSS). This "implementers' community" has agreed to collaborate over the next 12-18 months to make progress toward a specific goal centered on data on opioid-related fatalities: Ideally, having 90 percent of drug-related death records coded by NCHS and made available for public health surveillance and decision-making within 90 days of death. Although this is an aspirational goal, the group is comprised of nearly 40 cross-disciplinary experts that bring their skills and knowledge to the table to work to make it happen.

Participants' backgrounds and insights cover a wide range of roles in the mortality reporting spectrum, including medical examiners and coroners who certify drug overdose deaths, personnel from state vital records offices that register the deaths, CDC staff who produce official national statistics, IT experts, mortality data users, and other stakeholders. During the May kick off meeting facilitated by Paula Braun, CDC's first Entrepreneur-in-Residence, participants came together with the additional collaboration of partners from the *Georgia Tech Research Institute*, who hosted the group in their space.

"I was so pleased to participate in the Implementer's Community to discuss how technology can be used to support timelier mortality data," said Christine Mattson, a health scientist in the Division of Unintentional Injury Prevention who oversees activities for State Unintentional Drug Overdose Reporting System (SUDORS), part of CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program. "What we discussed has the potential to inform several CDC data collections, including SUDORS, and uses information from forensic toxicology tests and medical examiner and coroner reports to inform prevention and response efforts. It was exciting to hear and see how committed everyone is to using data and cutting-edge IT developments to inform our response to the opioid overdose epidemic."

While the initial focus is on drug-related deaths, the implementers are committed to developing solutions that are adaptable to other public health and public safety priorities. "This work is critically important," said Delton Atkinson, director of the NCHS Division of Vital Statistics, who addressed the workgroup during the kick off meeting. "Think about how increasing the timeliness of data will impact what we are able to do with mortality data, from public health programs to drug enforcement to making critical programmatic policy decisions. Delivering these vital statistics in a more efficient way can play a crucial role in making that information count where it's needed most."

Bringing Together Experts and Technology

During the workgroup's initial three-day, in-person collaboration, participants mapped out how mortality data flow step-by-step from the point the death occurs, to the point the death record is certified and registered, to when it is coded by NCHS and sent back to state vital records offices. This discussion allowed stakeholders to learn from each other, understand different perspectives, and explore new approaches to connecting data and sharing information. Hearing from the people behind the process also gave the group a richer sense of how mortality data collection fits into real-world workflows.

Technology experts also came to collaborate and educate the group about innovations that could contribute to reaching the 90 percent within 90 days goal. Thanks to the widespread adoption of solutions such as application programming interfaces (APIs) and API-based data standards such

as Health Level Seven (HL7) Fast Healthcare Interoperability Resources (FHIR), new innovations are possible with death data. The workgroup has committed to developing these standards further and to testing API-based solutions that will help move public health data flow into a new era.

The Work Continues, with Additional Partners In Tow

While the kickoff meeting held in May encouraged new connections, new knowledge, and new ways of thinking, the work has not stopped there. After the event ended, the group's IT experts have continued to make progress and demonstrated some of their tools at the National Association for Public Health Statistics and Information Systems annual meeting on June 6. A subset of the IT experts also attended the HL7 FHIR DevDays event June 19-21 to collaborate with the FHIR community and learn ways to simplify the mortality data are collected and exchanged in their states.

Word of this approach spread fast, and leadership from forensic toxicology and forensic pathology organizations asked to contribute. In response, the Division of Vital Statistics held a one-day listening session at NCHS headquarters in Hyattsville, MD, on June 22 that helped attendees get a better understanding of what can be done to improve the timeliness and accuracy of data on drug related deaths from the perspectives of data providers (i.e., forensic toxicologists and forensic pathologists) as well as data requestors (i.e., epidemiologists, public health and public safety stakeholders). Representatives from the American Society of Crime Lab Directors, Society of Forensic Toxicologists, National Association of Medical Examiners, and Association of Public Health Laboratories attended.

Representatives from multiple government agencies also took part, including the Department of Justice, (e.g., Drug Enforcement Administration), Department of Transportation (e.g., National Highway Traffic Safety Administration), and the Department of Homeland Security (e.g., Customs and Border Protection). In addition, participants came from state and local crime labs, state and local medical examiner's offices, a High-Intensity Drug Trafficking Area, and from other critical partners, such as the Forensic Science Center of Excellence and a national toxicology lab. CDC attendees included representatives from NCHS, NCIPC, and NCEH's Lab Response Network.

"We remain committed to this great work," said Matthew Gamette, the current president of the American Society of Crime Lab Directors. "The nation's forensic science laboratories and medical examiner/coroner offices generate the vast majority of the data that federal agencies need to be able to make educated policy and funding decisions. The better coordinated we are with our federal partners, such as CDC, the easier it is for our members to provide this data and get back helpful information from epidemiologists, researchers, and statisticians to shape our state and local operations, policies, and statutes."

He also emphasized how important mortality data is to the current epidemic of drug deaths. "We have learned through the opioid crisis how dependent federal law makers and policy makers are on the data being generated in state and local labs and medical examiner/coroner offices. We have also learned how critical data sharing is in making and enforcing law, death investigation, interdiction, and treatment strategies. Forensic science service providers are a critical component in this process and are extremely grateful to the CDC for their interest in improving these data systems. We look forward to even more collaboration on this initiative."

Moving forward, the workgroup will continue to focus on reaching its strategic goal, which can better arm public health with the data it needs to impact the opioid crisis—and, potentially, even more public health challenges.

For more information about the Implementers' Workgroup or HL7 FHIR, please contact Paula Braun.

Links to learn more:

- Medical examiners can now upload death certificates via – what else? – an app
- Fulton's new medical examiner has handled a death that drew world's attention
- Modernizing Death Reporting
- Nosologists: What Do They Do and Why Is It Important?
- e-Books Replace 1,000-Page Manuals

This *Inside Story* by Paula Braun and Amanda Dobbs

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