Into the Future:
Public Health Data Needs in a Changing State

Marcus Plescia, MD, MPH; Jeffrey Engel, MD

Population-based health data are the driving forces of good public health. Health surveillance, program evaluation, and research data provide the scientific basis for public health decision making at every level of the public health system, and each of the 3 core functions and 10 essential services of public health rely on these data systems to meet their objectives.[1] Recent information technology advances have improved the scope and quality of public health data sources, many of which are described in this issue of the *North Carolina Medical Journal*. As we move forward, our state faces a number of challenges and opportunities in assuring a continued strong public health data system.

Communities determine much of the North Carolina public health agenda. Community health assessments guide local health departments and community coalitions in identifying emerging health problems and in prioritizing needs. Communities want local data that can be easily understood both by public health professionals and community leaders. A web-based system is currently being developed to provide these data to communities in a highly accessible format that includes comparisons to peer counties.

One of the biggest problems facing smaller communities in developing their priorities is the lack of sufficient numbers from which we can draw conclusions. County-specific data in rural areas can present methodological challenges for certain conditions that are uncommon but highly visible (ie, infant mortality). Rates and indicators developed from statistical analyses can become unstable if the case counts are small. Where there are small denominators, one or two cases can change rates dramatically. One approach that would help with this situation is to allow specific data for small counties to be aggregated across years or geographic areas that are more meaningful to local citizens and state policymakers. For example, North Carolina's Behavioral Risk Factor Surveillance System (BRFSS) currently provides county-specific data annually by oversampling the state's 20 most populous counties. The survey could be expanded to oversample every county annually, but the expense would be considerable. Less expensive solutions include oversampling a few large counties annually and oversampling all others in staggered 4-year cycles. Alternatively, the surveillance system could oversample a larger geographic unit such as a region or legislative district.

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Our traditional definition of the local county as the population denominator for rates in public health is outdated. In a state with growing urban populations, generalized county data ore often applied to disparate groups; socioeconomic and demographic characteristics vary considerably across urban counties with individual urban neighborhood populations as large as the total

Marcus Plescia, MD, MPH, is chief of the Chronic Disease and Injury Section in the Division of Public Health, North Carolina Department of Health and Human Services. He can be reached at marcus.plescia (at) ncmail.net or 1915 Mail Service Center, Raleigh, NC 27699.

Jeffrey Engel, MD, is North Carolina state epidemiologist and chief of the Epidemiology Section in the Division of Public Health, North Carolina Department of Health and Human Services.

population of many rural counties. There are often demands for data relevant to different areas; for example planning occurs at the municipal level but also for hospitals and health facilities that serve urban and suburban neighborhoods or target only the medically underserved across multiple boundaries. Data are often available by ZIP codes or other small geographic units. Analyses within and across these arbitrary boundaries are often necessary. Geographic information systems technology presents the opportunity for focused assessments of data using multiple levels of geography to define communities and has been used increasingly to understand the needs of urban and rural areas. Geographic information systems can analyze geographic data that use addresses of locations that are frequently not included in public health datasets. In order for community health assessments to document and meet the needs of underserved and special populations, future data systems must collect address data and define protocols that allow small area analyses while protecting individual privacy. Urban health departments should include such analyses in their assessment and planning efforts.

Just as infectious diseases threatened the health and well-being of communities in the early 20th century, chronic diseases and injuries are now the greatest threat of the 21st.[3] With rapid increases in rates of childhood obesity, chronic illness also has become an urgent reality for our children and youth. The majority of chronic diseases are caused by modifiable behavioral risk factors. The North Carolina Behavioral Risk Factor Surveillance System has one of the largest sample sizes in the nation and provides the majority of information on adult health behaviors and local data for the state's most populous counties. Comparable data are needed for children and youth. North Carolina's recent implementation of a Child Health Assessment and Monitoring Program demonstration project provides surveillance data for a wide range of child health and health behavior areas and should be fully funded and expanded. Given the significance of emerging child health issues, more aggressive surveillance systems are warranted. An anonymous school-based system to measure body mass index in randomly-sampled children would provide useful information to better quantify and monitor childhood obesity patterns, guide interventions, and support research in the school-based setting. A child maltreatment surveillance system should be expanded beyond surveillance of only the most severe cases documented by the state medical examiner's office. This would provide better indicators of at-risk children and provide opportunities to track and evaluate preventive interventions.

Racial and ethnic health disparities have emerged as a public health and civil rights priority issue at the national and state level.[4] African Americans comprise more than 20% of North Carolina's population,[5] and in the last census decade, the Latino population in North Carolina grew 394%, from 76 726 in 1990 to 378 963 in 2000.[6] State surveillance of health disparities is primarily limited to birth, death, and behavior survey data. The North Carolina Minority Health Report Card depends solely on these limited datasets. It is well-established that quality of health care services plays a significant role in health disparities.[4] Self-reported race and ethnicity data are accurate and reproducible, and a number of states have mandated hospital reporting of these data. Medicaid, Medicare, and the State Children's Health Insurance Program collect race and ethnicity data from enrollees. North Carolina data on health care utilization among racial and ethnic minorities are limited. Only 55% of North Carolina hospital discharge data currently have complete race and ethnicity fields. With the exception of Medicaid and Medicare, North Carolina insurers do not routinely collect data on enrollees' race and ethnicity. Race and ethnicity reporting must be improved among all North Carolina health care providers and the Minority Health Report Card should be expanded to include utilization and quality of care indicators.

Individual medical records are rapidly moving from being paper-based to electronic and are an important emerging source of public health surveillance data. Electronic health records (EHRs) represent an interconnected system of electronic health care information encompassing medical records of care from multiple provider networks. EHRs contain data essential for public health practice such as notifiable diseases and conditions, chronic disease management, and preventive measures such as immunizations. Exchange of health information between the electronic health record and public health systems such as cancer registries, immunization registries, and reportable disease surveillance systems offers the potential for rapid and synchronized reporting of public health events. This has obvious implications for emergency preparedness and response as well as for improving mandated reporting of routine conditions such as sexually transmitted diseases and lead poisoning.

Robust health information exchange between public health entities and electronic health records requires some unified set of policies to guide information managing organizations; currently the federal government is promoting this coordination through regional health information organizations (RHIOs). Confidentiality, use of a limited data set with patient identifiers, and sharing of health data among entities that are normally in competition are the main reasons regional health information organizations need authority granted to them by elected officials. Many states have enacted or are considering legislation to establish separate authority for public-private collaboration and regional health information organization formation.[7] Public health plays a leadership role in health information exchange initiatives with the private health care sector and could serve as a neutral party in the oversight and governance of North Carolina's emerging electronic health data systems.[8]

In addition to the challenges of governance over health information exchange, an unprecedented need exists to enhance the skills of the public health workforce in the area of informatics and emerging public health data systems. It is estimated that the immediate (2008) demand for skilled public health informaticians is 1000 positions nationwide.[9] Unique skills are needed to manage public health information systems, to turn complex data into useful information, and to develop the business plans and systems needed to assure financial sustainability. New systems such as the applications of a Public Health Information Network (including disease and laboratory reporting systems, immunization registries, and

health alert systems) will require sophisticated expertise to manage the systems, and those who use these systems at the local level will require informatics training to facilitate usage. Undergraduate, graduate, and certificate training programs in the new science of public health informatics should be established at North Carolina educational institutions.

North Carolina is fortunate to have a strong system for health surveillance and health assessment at the state and local level. The last decade has brought significant increases in public health data, technology, and emerging public health issues. Federal resources have helped meet a number of these demands, but the state must implement new policies and expand data systems to remain a public health leader as we move into the future. **NCMJ**

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