The OASIS Project: Novel Approaches to Using STD Surveillance Data

Nicholas H. Gaffga, MD, MPH[a]
Michael C. Samuel, DrPH, MPH[b]
Mark R. Stenger, MA[c]
Jeffrey A. Stover, MPH[d,e]
Lori M. Newman, MD[a]

This supplemental issue of *Public Health Reports* presents a selection of innovative strategies designed and implemented between 1998 and 2005 to enhance the ability of public health officials to use surveillance data to monitor and respond to the epidemic of sexually transmitted diseases (STDs) in the United States. These strategies reflect the collaborative efforts of the Outcome Assessment through Systems of Integrated Surveillance (OASIS) Project workgroup, a group of public health STD epidemiologists from local and state health departments and the Centers for Disease Control and Prevention (CDC). Many of the challenges encountered in the surveillance of STDs are similar to those encountered in the surveillance and investigation of other diseases, and many of the solutions presented in this supplemental issue are generalizable to the public health practice of epidemiologists working with other diseases.

THE OASIS PROJECT

OASIS was formed in 1998 as a group of CDC-funded demonstration projects dedicated to the promotion of integrated interpretation and use of surveillance data to improve planning and evaluation of public health programs with a specific focus on the prevention of STDs, human immunodeficiency virus (HIV), tuberculosis (TB), and associated reproductive health outcomes. Since its inception, the OASIS workgroup has collaborated with state and local health departments and with community partners to plan disease prevention efforts in several major areas related to the surveillance of STDs. A primary area of activity is the collection of detailed information on behavioral and clinical characteristics associated with disease to identify populations with comorbidities and high-risk behaviors. Another area of activity is the increased use of technological advancements—in particular, geographic information systems (GIS) and

[a]Division of STD Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, GA

[b]STD Control Branch, Division of Communicable Disease Control, California Department of Public Health, Richmond, CA

[c]Infectious Disease & Reproductive Health Assessment Unit, Washington State Department of Health, Olympia, WA

[d]Division of Disease Prevention, Virginia Department of Health, Richmond, VA

[e]Department of Epidemiology and Community Health, School of Medicine, Virginia Commonwealth University, Richmond, VA

Address correspondence to: Nicholas H. Gaffga, MD, MPH, Epidemiology and Surveillance Branch, Division of STD Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, 1600 Clifton Rd. NE, MS E-02, Atlanta, GA 30333; tel. 404-639-6136; fax 404-639-8610; e-mail <ngaffga@cdc.gov>.

geocoding—to improve the public health assessment of disease in the community and to enhance the analysis, visualization, and reporting of surveillance data.

After funding through CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention ended in 2005, many OASIS participants continued to meet voluntarily, with the goal of further developing and promoting innovative STD strategies that translate surveillance data into action. Descriptions of various activities carried out by OASIS members have been published in peer-reviewed journals and presented at local, national, and international conferences;[1–9] other activities are being described for the first time in this supplemental issue. Some of the most important aspects of OASIS, however, are not easily described in the form of a presentation or publication. For example, OASIS provides a forum in which issues relevant to the day-to-day operations of health departments can be informally discussed with a group of experienced epidemiologists and data managers. This collaboration has evolved into a collegial network that fosters collective ideas, insights, and understanding from numerous STD programs across the U.S. Furthermore, OASIS functions as a conduit for communication among CDC and state and local health departments to promote the understanding of different perspectives on disease surveillance.

INTEGRATION OF SURVEILLANCE DATA

In recent years, there has been renewed interest at the local, state, and national level in the integration of surveillance data for different diseases and from different sources.[10–12] Integrating these data can make it possible to identify populations that are particularly vulnerable to co-infection, that have similar risk behaviors, or that experience correlated occurrences of disease transmission and progression. Identifying these populations allows public health officials to more appropriately allocate scarce resources to reach people at increased risk for acquiring or transmitting disease.

In their feature article, "Practical Considerations for Matching STD and HIV Surveillance Data with Data from Other Sources,"[13] Newman et al. discuss the utility of matching record-level data from disparate disease registries or surveillance datasets. The authors present comparisons of matching methods and give specific examples of how they can be applied in a variety of settings. Two articles, "Trends in *Neisseria gonorrhoeae* Incidence Among HIV-Negative and HIV-Positive Men in Washington State, 1996–2007"[14] and "Assessment of the Association of *Chlamydia trachomatis* Infection and Adverse Perinatal Outcomes with the Use of Population-Based Chlamydia Case Report Registries and Birth Records,"[15] provide specific examples of how record-level matching of databases can reveal significant cofactors of disease transmission not obvious in either of the independent databases. Both are examples of data analysis and interpretation that can be used directly to guide public health interventions and disease prevention activities.

In the article "Integration of Surveillance for STDs, HIV, Hepatitis, and TB: A Survey of U.S. STD Control Programs,"[16] Dowell et al. describe the extent to which integration is occurring in STD control programs in the U.S. and identify some barriers to the sharing of surveillance data across different programs. In "Identifying Challenges to the Integration of Computer-Based Surveillance Information Systems in a Large City Health Department: A Case Study,"[17] Jennings et al. describe the level of integration of information systems found in a large municipal health department and identify particular features that promote and restrict integration within their program.

SPATIAL DATA ANALYSIS

In 1854, the English physician John Snow used mapping techniques to plot the residences of people who had become ill with cholera in the Soho area of London. Armed with this visual representation of cases across the landscape, he demonstrated that ill people shared a common water source, and a new, more empirical approach to control the outbreak of cholera in London became possible.[18] More than 150 years later, modern epidemiologists follow in Snow's footsteps, striving to increase their ability to spatially track and analyze the occurrence of illnesses in populations and develop evidence-based interventions. Many OASIS participants have been active in the use and promotion of GIS, including geocoding, mapping, and spatial analysis techniques that enhance the practice of public health surveillance.

In the article "Charting a Path to Location Intelligence for STD Control,"[19] Gerber et al. describe how the New York State Department of Health developed a versatile geocoding data store that allows the integration of location, morbidity, and other program operations data to inform everyday STD control activities. In "Assessment of Geographic Information Systems and Data Confidentiality Guidelines in STD Programs,"[20] Bissette et al. describe the findings from a national survey of STD programs to improve understanding of existing GIS capacity, use of GIS tools, and the statistical disclosure methods employed when presenting STD data. In the article "Improving Surveillance of Sexually

Transmitted Diseases Through Geocoded Morbidity Assignment,"[21] Stover et al. provide a salient example of the value of geocoding to enhance surveillance data accuracy and the subsequent impact on epidemiologic reporting. Together, the manuscripts in this section demonstrate how an understanding of the geographic characteristics of disease, including geographic clustering of infected people, can give public health officials a better understanding of disease transmission in the communities they serve.

IMPROVING DISEASE SURVEILLANCE

Beyond these areas of data integration and spatial analysis of data, OASIS has been active in improving other aspects of disease surveillance. In the article "Here Comes the SSuN—Early Experiences with the STD Surveillance Network,"[22] Rietmeijer et al. describe a surveillance network that grew out of the activities and lessons learned from the OASIS workgroup. The authors share some of the early experiences of the STD Surveillance Network (SSuN) and its efforts to improve the capacity of local, state, and national STD programs to detect, monitor, and respond to emerging trends in STDs and related risk behaviors. In "Providing Mailing Cost Reimbursements: The Effect on Reporting Timeliness of Sexually Transmitted Diseases in Virginia,"[23] Vasiliu et al. describe an innovative effort by the Virginia Department of Health to use monetary incentives to improve the timeliness of STD reporting.

In "California Gonorrhea Surveillance System: Methodologic Aspects and Key Results of a Sample-Based System,"[24] Samuel et al. describe the California Department of Public Health's implementation of a sample-based surveillance system for collecting detailed demographic, behavioral, and clinical data from gonorrhea cases, thereby improving the ability of the department to effectively develop programs and allocate resources. This supplemental issue concludes with "Use of a Business Approach to Improve Disease Surveillance Data Management Systems and Information Technology Process in Florida's Bureau of STD Prevention and Control."[25] In this article, Shiver et al. describe an approach by the Florida Bureau of STD Prevention and Control to use a business model to reorganize the collection, entry, storage, and utilization of STD surveillance data with the goal of improving the efficiency and cost-effectiveness of everyday operations.

CONCLUSION

In our current environment of decreasing resources and changing characteristics of the STD epidemic, public health officials are faced with an increasing need to more efficiently collect detailed and accurate information on disease transmission. This supplemental issue describes efforts by the OASIS workgroup to enhance the public health value of surveillance data by integrating activities among previously unlinked surveillance systems, to use spatial data to improve understanding of disease transmission within communities, and to promote various other innovative means of improving disease monitoring and evaluation activities. These examples underscore the value of ongoing collaboration and innovation across program areas for the benefit of improving public health.

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