Long-term follow-up of newborn screening patients

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Abstract: New technology in newborn screening permits clinicians to approach strategies for defining optimal treatments for newborn-screened conditions. The Health Resources and Services Administration Maternal and Child Health Bureau, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, and the Centers for Disease Control and Prevention have all established initiatives for long-term follow-up assessment of children identified after newborn screening. In October 2008, an inaugural meeting of the National Institute of Child Health and Human Development-sponsored National Coordinating Center Long-Term Follow-Up Data Collection Work Group brought together partners from Health Resources and Services Administration-sponsored Regional Genetics Collaboratives to review pilot projects undertaken to promote systematic long-term follow-up for children with inborn errors of metabolism identified by newborn bloodspot screening. Beginning with these projects, the goal of this meeting was to provide a foundation for national planning for a common data set to be used for long-term follow-up. This supplement summarizes these initial projects. ***Genet Med* 2010:12(12):S267–S268.**

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Enhanced by new technology, newborn bloodspot screening (NBS) for rare inborn errors of metabolism and other genetic and congenital disorders has significantly accelerated. This provides a unique opportunity for clinicians involved in the care of individuals identified by NBS to improve their outcomes, evaluate treatments, and more fully understand the clinical course of many of the disorders identified through NBS. Because the conditions identified by this means are rare, to this point, there have been limited means to acquire the type of population required for defining optimal strategies for treatment. With the intersection of emerging information technologies and advanced screening, genetics and metabolic practitioners in the United States now have the opportunity to approach the development of management strategies for NBS-identified diseases.

In October 2004, the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA) established a new nationwide network of genetics and newborn screening service collaboratives with a National Coordinating Center housed at the American College of Medical Genetics. Designed to improve the quality of care for families whose children are affected with these conditions, these Regional Collaboratives also have provided a new forum for conversation by genetics practitioners responsible for this care. This has provided an unanticipated benefit: genetics practitioners for the first time have enough sustained contact to support collaborative efforts in improving management for individuals with conditions such as inborn errors of metabolism. At the same time, substantial interest in research endeavors to improve this care has also emerged. The Eunice Kennedy Shriver National Institute of Child Health and Human Development has established translation research in the arena of NBS as a national priority for research activity. Finally, the Centers for Disease Control and Prevention (CDC) has also established an initiative in long-term follow-up after NBS as an essential surveillance activity. The confluence of these interests should now permit comprehensive planning for a systematic approach to long-term follow-up and evolution of evidence-based strategies for management for the first time for children identified by NBS. All three federal partners see the confluence of improved NBS and subsequent management, surveillance, quality assurance, and advancing research as a common means for undertaking this action.

To this end, each of these federal agencies has provided new support for advancing the agenda to improve long-term follow-up and management. HRSA/MCHB initiated this process by establishing an initiative with the Regional Collaboratives for newborn screening patient follow-up activity ("Priority 2" funding, awarded in June 2007). HRSA/MCHB encouraged the creation and use of regional and national information systems to monitor health outcomes of infants and children identified with heritable disorders in NBS programs. They strongly promoted collaborative activity between public health NBS programs and the service delivery system. In September 2008, the National Institute of Child Health and Human Development awarded a contract to the American College of Medical Genetics to establish a National Center to coordinate a Newborn Screening Translational Research Network. The National Center will (1) develop an organized system in which NBS programs and laboratories performing the screening tests, clinical centers involved in diagnosis, management, treatment, and follow-up, with the broader research community are able to identify resources to support research, and clinical investigation related to conditions in newborn screening and conditions that are candidates for addition to newborn screening programs and (2) create a strong evidence base that results from having aggregated as many patients as possible with the diseases under consideration to provide statistical power needed to understand clinical histories and outcomes of treated patients. Finally, CDC's National Center on Birth Defects and Developmental Disabilities offered funding to develop and implement collaborative pilot projects with population-based surveillance and tracking of confirmed newborn screening conditions using already established newborn screening of birth defects surveillance programs.

All partners in these initiatives agree that our mutual mission should be improving the outcomes and access for care for children identified by NBS. To accomplish this mission, partners in public health, spearheaded by state Departments of Health, HRSA/MCHB, CDC, expert clinicians in the management of inborn errors of metabolism and other conditions related to NBS, and programs of the NIH now need to come together. Improved screening methodologies and test algorithms, including unified definitions for parameters of accept-

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able laboratory performance for screening and confirmatory testing need to be established. Public health surveillance and instituting long-term follow-up monitoring and assurance strategies provides an opportunity for establishing the utility of this important public health intervention. Expert clinicians, primary care providers, and researchers need to collaborate to establish an agenda for optimizing outcomes based on carefully gathered clinical history data and ensuring the availability of program resources that support both service delivery and a broader research agenda. The outcomes of these observations and interventions need to be made public through contributions to the scientific literature and other means of medical communication. Ultimately, these anticipated changes in management would need to be established in medical homes, made available in emergency settings, and improve care coordination for affected individuals.

Planning for coordinated activities across an intersecting network of federal agencies, state departments of health, academic institutions with expert endocrine, hemoglobinopathy, and metabolic disease clinicians, primary care providers, family support organizations, and other important support mechanisms for families is a daunting task. Nonetheless, for sustained improvement in long-term outcomes, all partners in this care network will need to work together. For this reason, it will be important that principles of collaboration with well-established mutual expectations and knowledge of mutual responsibilities are agreed on by all parties. Because these efforts will necessarily be dependent on a comprehensive health care service delivery infrastructure for NBS programs and well-established surveillance and research activities, the multiple stakeholders will need to create policies for many activities through a collaborative process. Work to facilitate common consent processes for engagement in research activities will be a fundamental aspect of successful outcome for these projects. Establishing a common data set for long-term follow-up will be essential to long-term performance of any health care service, surveillance or research activity in assuring treatment and care, understanding disease, improving outcomes, and establishing new research treatment plans.

On October 29–30, 2008, the National Coordinating Center held an inaugural meeting of their Long-Term Follow-Up Data Collection Work Group. This brought together partners from each Regional Genetics Collaborative to review current progress on their "Priority 2" projects or other ongoing data collection efforts that were being undertaken. Participants also learned about data platforms already in use for following data on a longitudinal basis. Together, the group began defining some of the principles of collaboration, establishing a means for defining a common data set, and agreed that establishing defined parameters for acceptable laboratory and clinical performance for screening, confirmatory, and follow-up testing would be a necessary aspect of this process. The group noted that defining both short-term and long-term follow-up data sets would be necessary to underpin an electronic system to support both service delivery and surveillance activities and the establishment of a research platform for new interventions. Establishing a comprehensive means for data entry that is sustainable, user-friendly, and that will allow appropriate access for both service delivery and surveillance and research endeavors will be critical to the success of this mission.

This supplement brings together reports on the progress of these projects as a first communication for our community regarding this ambitious and essential collaboration.