

Computer Automated Developmental Surveillance and Screening

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Summary: Developmental disabilities affect between 12 and 16 percent of the pediatric population in the United States. ‘Best practices’ guidelines require that children receive appropriate and timely screening and treatment for these disabilities. Electronic computer decision support strategies offer a promising aid for implementing a standardized approach to developmental surveillance and screening.

Prior to this grant, researchers at Indiana University developed an electronic computer decision support system for pediatric practices called CHICA—Child Health Improvement through Computer Automation—to deliver appropriate guidelines to physicians during patient visits. CHICA was modified to incorporate developmental surveillance and screening within the existing practice workflow without requiring additional time of the physician or other office staff. The CHICA system includes: 1) pediatric guidelines encoded in Arden Syntax, a common computer language representing medical conditions and recommendations; 2) a dynamic scan form interface for the user; and 3) a Health Level 7-compliant interface to existing medical record systems.

This project extends the CHICA software by incorporating the 2006 American Academy of Pediatrics (AAP) guidelines into the surveillance and screening algorithm, and evaluates the effect of the CHICA system on developmental surveillance, screening, referral, and early childhood intervention services. This evaluation follows a cohort of children with developmental disabilities through age 5 to compare the proportion of children who undergo developmental screening at 9-, 18-, and 30-month visits at four practice sites, two of which have implemented the CHICA system and two of which have not. This evaluation will identify how implementation of the AAP recommendations into CHICA affects adherence to clinical guidelines. In addition, documentation of long-term outcomes will contribute to knowledge about the impact of early surveillance and screening on child health. Qualitative aspects of child screening surveillance will also be explored. These include elements of the child’s management plan such as family involvement in treatment decisions and planning; treatment that is based on the initial assessment versus treatment that is continuously modified using data-driven decisionmaking; and whether management strategies build on the strengths of the child.

Specific Aims:

- Expand and modify an existing computer-based decision support system (CHICA) to include the 2006 AAP developmental surveillance and screening algorithm. **(Achieved)**
- Evaluate the effect of the CHICA system on the developmental surveillance and screening practices of four pediatric clinics. **(Ongoing)**
- Evaluate the effect of the CHICA system on referrals for developmental and medical evaluations,

and for early developmental intervention and early childhood services. **(Ongoing)**

- Develop and follow a cohort of children with identified developmental disabilities to look at the end results and effects of developmental screening. **(Ongoing)**

2012 Activities: The project team completed the data collection for the second and third aims of the research study. The data collection phase included a chart review at intervention practices to identify rates of diagnosis and referral for services. At the control practices, chart reviews using the Autism Screening Questionnaire identified referrals as well as developmental screening rates. The project team biostatisticians began cleaning and analyzing the data from the chart reviews.

In order to examine the effects of developmental screening, the grantee is recruiting parents of children who have confirmed developmental disabilities for participation in telephone interviews to discuss their experience with the referral process and the child's care plan in detail. In addition to the group being interviewed, a larger cohort is being analyzed to assess the result of screening through data draws from the electronic medical record. The identification and recruitment of parents required additional time because the rate of diagnosis of children with developmental disabilities was lower than was expected. There was also some difficulty recruiting patients at the control practices because the language used to communicate a diagnosis of developmental delay was inconsistent. Parents may have been told their child is not meeting developmental milestones or is slow to meet milestones. For this reason, parents may not respond to a request to participate in an interview for a child with developmental delay because that is not how they understand their child's condition.

The research team continued to hold meetings with providers to receive feedback on potential process improvements to CHICA. They recruited one physician from each of the four participating clinics. By recruiting CHICA-resistant physicians the team received helpful suggestions and improved physician engagement. The project also has listservs for each clinic to communicate weekly updates to physicians and staff. They are continuing the feedback reports at the two intervention sites through the no-cost extension (NCE) period. They will continue these as long as providers wish to receive the reports and the data from their research demonstrates that the feedback reports improve the rate of developmental screening.

The 1-year NCE period has been used to extend enrollment of children and families with confirmed developmental delay in the cohort analysis and qualitative interviews. As mentioned above, the identification of these children has been difficult because the rate of diagnosis is low.

Preliminary Impact and Findings: The team originally planned auto scanning and scoring of the Autism Screening Questionnaire but found that providers prefer to score the screening tool themselves. Qualitatively, they have been looking at the factors that contribute to use of the CHICA system, such as practice type and provider characteristics. In general, they are finding that younger physicians are quicker to adopt the system.

Target Population: Pediatric*, Children with Special Health Care Needs

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation

** This target population is one of AHRQ's priority populations.*