

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 intervention and early childhood services. This evaluation follows a cohort of children with developmental disabilities 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. **(Upcoming)**

2011 Activities: The project intervention including the implementation of the Ages and Stages Questionnaire to identify developmental concerns, display of data for physicians, and tracking of screened patients within CHICA is fully implemented. The team completed all the baseline evaluations of developmental screenings and is reviewing the second and third rounds of screenings. 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 identified referrals as well as developmental screening rates. Because developmental screening is universal at three different stages in life, this study may be powered to look at secondary outcomes such as the rates of confirmation, diagnosis, and intervention.

At the end of 2011, the research team was working on the recruitment of children and their parents to follow as a cohort and evaluate the effects of developmental screening. This recruitment process will continue in 2012. Training of research assistants who will be surveying parents was completed, and in 2012, the research team plans to recruit 20 parents per clinic.

As part of the evaluation, CHICA assembled a report card for physicians to provide feedback on their assessment and management of patients with developmental disorders. In 2011, these scorecards were distributed on a periodic basis to allow multiple rounds of feedback. Providers discuss CHICA general issues on what is working well and what needs to be improved at regularly held meetings. By sharing the feedback reports at these meetings, the research team and providers can discuss what each report says. Currently, the reports are designed to be part of the research process only.

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. As part of the research process, the research team proposed CHICA provider user groups as a mechanism to field requests for changes to the system. Recently, the principal investigator decided to select a group of more engaged pediatricians to meet once a month separately from the original provider group. They are able to engage these pediatricians in a more informed way and receive substantive feedback on how to improve CHICA.

Target Population: Pediatric*: Age 0-5, 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.*