

Health Service Applications

Using an Internet-Based Registry to Link School Immunization Records with Community Records

Edna O'Halloran DeVries, Mary Jo Knobloch, Wendy Garlitz, Robert Gruber, Jason Wolfe, Roxie Kenitzer, Julie Willems Van Dijk, Thomas Berg

Vaccination provides an efficient and cost-effective public health intervention for preventing childhood diseases. The Centers for Disease Control and Prevention (CDC) ranks vaccination as the number one public health intervention of the 20th century.¹ Though current vaccination coverage rates for young children remain at or near a record high, gaps in coverage continue.² A recent report indicated 25% of children receive vaccinations through a combination of public and private providers.³ This fragmentation of immunization care leads to over-immunization and under-immunization of children due to inaccurate records.

Centralized population-based immunization registries provide a way to link records from multiple providers to increase accuracy of data. Immunization registries are confidential, population-based, computerized information systems that collect vaccination data about all children within a geographic region. In a 2001 document, CDC reported that 32 states use various levels of registries. However, approximately one-half of the estimated 11.4 million children under age six still need to be included in an immunization registry.⁴ If these children are not included in a registry before they start school, a school-based registry may simplify the school's role of acting as a vaccination safety net. A registry can monitor overall vaccination coverage and dose accuracy once children start school.

THE SCHOOL LINK

Public health efforts to increase immunization rates began with focusing on school children. Introduction of mandatory school immunization laws in the 1970s provided the first comprehensive community step taken

to ensure all children receive the vaccines they need.⁵ While recent efforts focused on increasing infant and toddler immunization rates, schools remain an important component for ensuring vaccine coverage for all children. Most children enter a public or private school system at some point in their childhood, so schools offer the best source for universal screening. With the introduction of new vaccines, such as Varicella and Hepatitis B, schools provide an excellent venue to include older children in the vaccination process.

From a public health perspective, mandatory school immunization laws proved effective in protecting the public's health and ensuring a safe educational environment by reducing the danger of vaccine-preventable diseases. However, maintaining accurate school immunization records involves a laborious process for parents, immunization providers, and school health officials.

RECIN NETWORK

In 1994, Marshfield Clinic, located in central Wisconsin, began development of the Regional Early Childhood Immunization Network (RECIN), a real-time, Internet-based immunization registry. RECIN includes a centralized database for recording and displaying immunization information for a defined population. Currently, the regional registry contains more than 3 million immunization records; 65 private facilities, 15 public health departments, 14 school districts, eight hospitals, and eight day care centers and retirement facilities.

Development of RECIN involved a unique collaborative effort between public and private providers in central Wisconsin. Five central Wisconsin counties participated in the pilot phase of RECIN. One pilot county, Marathon County, engaged all 14 immunization-providing facilities in partnerships to increase immunization rates. Therefore, the staff expanded RECIN's capacity to include a school module, because schools provided the missing link to increasing accuracy of immunization records and reducing data input time for all 14 facilities.

A work group, formed in 1999 to design a school-specific module of RECIN, consisted of information technology professionals from RECIN, a Marathon County Health Department representative, a local pediatrician, and representatives from three public and private school districts. The work group met every other week for design specification purposes. Pilot schools provided

Edna O'Halloran DeVries, MD, (devries.edna@marshfieldclinic.org), Pediatrician and Medical Director; Mary Jo Knobloch, MPH, (knobloch.maryjo@marshfieldclinic.org), Program Manager; Wendy Garlitz, BS, (garlitz.wendy@marshfieldclinic.org), RECIN System Coordinator; Robert Gruber, BS, (gruber.robert@marshfieldclinic.org), Senior Programmer Analyst; Jason Wolfe, BS, (wolfe.jason@marshfieldclinic.org), Programmer/Analyst; and Thomas Berg, BS, (berg.thomas@marshfieldclinic.org), RECIN Project Director, Marshfield Clinic, 1000 N. Oak Ave., Marshfield, WI 54449; and Roxie Kenitzer, BSN, (rkenitzer@dce.k12.wi.us), District School Nurse, D.C. Everest Area Schools, 6300 Alderson St., Weston, WI 54476-3908; and Julie Willems Van Dijk, BSN, MSN, (jawvd@mail.co.marathon.wi.us), Health Officer, Marathon County Health Dept., 1200 Lake View Drive, Room 200, Wausau, WI 54403. This article was submitted September 27, 2002, and revised and accepted for publication March 28, 2003.

feedback to RECIN staff regarding features needed to collect information such as name of school district, school building name, student grade level, and admission date. All immunization providers in Marathon County were using RECIN to record and update immunizations, so data entry for school personnel was minimal.

Schools began testing the new school module in 2000. A demographic integration program links student names to RECIN from a file created from the schools' existing databases. To prevent duplication, the integration program can identify student names already in RECIN. In addition, the program acquires essential information about each student including school, grade level, and admission date. At this point, school personnel enter immunization data for each student. After all data are entered, RECIN's programming logic determines the immunization status of each student and generates a concise report identifying overdue students. This report eliminates the need for school personnel to view every student immunization record.

During the implementation phase, school personnel documented the time dedicated to immunization record-keeping procedures. Pilot schools reported a decrease in time spent to generate the first legal notice from an average of 90 hours to less than three hours. The decrease in time occurred largely due to RECIN's ability to automatically identify overdue students. In addition, RECIN provides the standard Wisconsin Department of Health and Family Services' documents as templates for legal notices, and reports to local health departments and district attorneys. Contact the first author for further information about the process to determine RECIN features and the states' standard document templates.

In addition to saving time, school personnel reported an increase in accuracy due to less duplication of data entry and programmed immunization scheduling logic. School nurses no longer had to decipher the complicated distinctions between school immunization rules and the standard immunization schedule. With elimination of a manual records review, school personnel could focus on the proper intervals between doses, rather than just counting numbers of doses. The immunization scheduling logic also enabled school personnel to identify students needing a booster dose.

The staff offers five recommendations for linking school records with community registries: 1) become involved in the design process of the registry system; 2) if purchasing software, work with school district IT professionals to ensure the system meets the needs of school health staff, including flexibility and easy integration of data; 3) find registry staff who will provide onsite analyses of work flow, and staff who will listen to current needs in making necessary modifications; 4)

include key players such as school nurses, school administrators, IT staff, physicians or other private providers, and public health representatives; and 5) consider technical factors such as network compatibility, firewalls, system integration, printer capabilities, print drivers, and network security.

IMPLICATIONS

Not all immunization records reported by parents prove reliable, and school personnel entering data may not be trained to recognize discrepancies in records. As a result, RECIN visibly denotes parent-reported information by the letter "p" after the date given. Therefore, providers can easily recognize the source of data and determine reliability. If the provider determines the information to be inaccurate, a protocol verifies this information.

Linking school immunization records with community provider information yields increased community vaccine coverage and highly accurate immunization records. Schools benefit from data entry work already completed by public and private providers, and providers benefit from accurate and timely reporting by schools. Time saving generated by this circular linking creates an opportunity for school and health providers to focus on health improvement, such as identifying and vaccinating under-immunized children, rather than duplicative administrative activities.

While saving personnel time and money may provide a motivating factor for schools to link to a community or regional registry system, the prevailing incentive may be the potential for schools to play an active role in preventing disease in school-aged children and communities as a whole. Other child-oriented organizations that track immunization data, such as Head Start, WIC, or day care centers, may want to join the registry in the future. ■

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