



# SnapShots

Immunization Information System News From the American Immunization Registry Association

Welcome to SnapShots, the American Immunization Registry Association's newsletter about the progress, best practices, and accomplishments of immunization information systems across the country. We invite you to share news about your registry. Email us at [aira@immregistries.org](mailto:aira@immregistries.org) or call us at (212) 676-2325 with information about a successful programmatic or technical innovation, major accomplishment, or milestone that your registry has reached. SnapShots is sent to subscribers quarterly and posted on AIRA's web site: [www.immregistries.org](http://www.immregistries.org).

## TABLE OF CONTENTS

President's Report.....	1
IIS Linkages Increasing.....	2
IIS Communication across State Borders.....	2
Integration of IIS and Electronic Medical Record (EMR) Systems.....	3
Immunization Data Exchange between State IIS and the Indian Health Service's Resource Patient Management Software.....	3
New York Citywide Immunization Registry and Lead Registry.....	4
VAERS Integration Project.....	5
MCIR's All Hazards Module.....	5
VFC and Early Hearing Detection and Intervention Integration into New Jersey IIS.....	5
KIDSNET and Rhode Island's Statewide Health Information Exchange.....	6
MCIR/School Immunization Recordkeeping System Project.....	6
Public Health Informatics Institute Launches Business Case Model for Integration of Child Health Information Systems.....	7

## PRESIDENT'S REPORT

This issue of SnapShots highlights integration and interoperability activities of Immunization Information Systems (IIS) across the country. Activity that involves multiple states as well as individual activity underway within projects of key interest is highlighted.

Today IIS are collecting and displaying more than immunization information. The ability to track antibiotics and antivirals are being added to IIS in preparation for all hazard planning. Vaccine inventories are being enhanced to monitor the Strategic National Stockpile containers that will be shipped to states during an emergency. IIS are displaying results for newborn screening, newborn hearing, and lead tests for the healthcare community.

In order for IIS to exchange data with other systems, the use of standard messaging languages is required. AIRA is proud of the work that the Data Exchange Standards Workgroups have accomplished in promoting use of these standards. These three workgroups, Messaging, Data Definitions and Transport Layer, under the guidance of the Data Exchange Standards Steering, meet on a monthly basis and continue to provide expertise and technical support to IIS across the country.

In partnership with the HL7 Organization, the Public Health Data Standards Consortium (PHDSC), and the Centers for Disease Control and Prevention (CDC) National Center for Immunization and Respiratory Diseases (NCIRD), AIRA has facilitated capacity building, standards development and information sharing that allows IIS to be partners with state, regional and local health information networks. Registries have become Immunization Information Systems (IIS) for a new era!

*Therese Hoyle (MI), AIRA President*

**IIS LINKAGES INCREASING**

The CDC 2005 Immunization Information Systems Annual Report (IISAR) surveys grantees in 50 states, five cities, the District of Columbia, and Territories that receive funding under section 317b of the Public Health Service Act. The IISAR gathers data on the number of children <6 years, adolescents, and adults participating in an IIS, health-care provider participation, and other programmatic functions. The report also collects information on IIS technical functions such as linkages with other health information systems, IIS data use, and vaccine inventory management.

The following tables include data from the 50 states, five cities, and the District of Columbia, comparing information obtained from the IISAR 2000 to 2005 regarding linkages. For this report, “linkage” is defined as the ability of users in other health information systems to access IIS data either by read-only or read/update and record/data exchange capabilities. In 2005, 97% of these grantees reported linkages between an IIS and other information system or entity. An analysis of the 2000 and 2005 IISAR data indicate a significant increase in the number of linkages between IIS and other health information systems or entities.

**TABLE: Percentage of 56 grantee IIS that linked to other information sources, by type, United States, 2000 and 2005**

SYSTEM	2000 %	2005 %	TREND INCREASE %
Hospital	48	68	20
MMIS	11	50	39
WIC	43	68	25
Schools	29	68	39
Military	5	16	11
IHS	2	38	36
Health Plans	34	52	18

OTHER SYSTEMS	2000 %	2005 %
Migrant health clinics	48	N/A
Public billing systems	39	N/A
Private billing systems	21	N/A
Correctional facilities	N/A	45
STD clinics	N/A	48
Long-term care facilities	N/A	23
Colleges & universities	N/A	38
Veterans Administration	N/A	5

The most significant increase in type of linkage with IIS has been with Medicaid Management Information Systems (MMIS) (39%) and elementary schools (39%), followed closely by linkages with the Indian Health Service (IHS) (36%). As IIS continue to mature and expand to collect immunization data on adolescent and adult populations, there has been an emphasis on linking to systems that serve these same populations. For example, in 2005, 48% of IIS had established linkages with STD clinics, 45% with correctional facilities, 38% with colleges and universities, 23% with long-term care facilities and 5% with Veterans Administration facilities.

*Contributed by Bobby Rasulnia and Amanda Bryant, CDC/NCIRD/ISD/IISB*

**IIS COMMUNICATION ACROSS STATE BORDERS**

As IIS continue to evolve and expand, access across state borders is both possible and necessary. Patients and families can be transient, moving not only between providers but also between states, and many patients/families live in border communities where medical services are shared across state lines. Also, people displaced by natural disasters, disease epidemics/pandemics, or bioterrorism will need to gain access to immunization data to re-establish themselves with schools, child care, and medical providers in new communities.

To address these needs, immunization programs require interstate record search and retrieval capabilities. Through the use of the HL7 standard protocol as the preferred language for health

messaging and for communication compatibility between IIS, interstate search and retrieval are now a reality. Further, through the use of state-specific data sharing agreements and backend security audits, patient confidentiality and state-specific legislative mandates can be maintained.

In 2004, Washington (CPIR) and Idaho (IRIS) were the first states to begin successfully exchanging queries between two statewide IIS (registries). At present, Arizona (ASIIS) is in the final phases of establishing a connection with Washington, and Wyoming (WyIR) is awaiting final approval from the State Office of the Attorney General to establish a connection with both Washington and Idaho. As a result of Hurricane Katrina response efforts, the Louisiana statewide registry (LINKS) was successfully linked and queried by Washington, Idaho, Arizona, Wyoming, Indiana, Maryland, West Virginia, Houston and Ohio. Indiana (CHIRP) and West Virginia (WVSIIS) are also in the planning phase of establishing links with regionally located states.

In the process of establishing state-to-state search and retrieval capabilities, some challenges needed to be addressed. They included the legal technicalities of information sharing, state and federal privacy and confidentiality legislation, connectivity issues, and support for data exchange standards such as HL7.

States beginning to work on interstate data sharing need to review their state legislation, ensure that the registry supports HL7, and find another state or regional registry partner.

*Contributed by Danielle Reader-Jolley, STC*

## **INTEGRATION OF IIS AND ELECTRONIC MEDICAL RECORD (EMR) SYSTEMS**

A growing number of private physicians, and clinicians working in hospitals and community health centers, are using their own Electronic Medical Record (EMR) systems to report to IIS across the United States. These clinicians enter immunizations only once, into their own systems, and then send data to their local IIS using HIPAA-compliant data transfer technologies. These integration efforts are making it easier and more cost-effective for providers to participate in IIS.

In several regions, real-time, two-way data exchange between EMR and IIS, enabling

clinicians to instantly retrieve immunizations and decision support (i.e., immunizations DUE NOW), is under development and nearing completion. AIRA is promoting this work nationwide by convening workgroups of IIS managers and EMR vendors to reach consensus on data exchange standards.

The integration of EMR with IIS is currently operational or under development in California (Contra Costa County and San Diego), Chicago, Colorado, Idaho, Michigan, Minnesota, Missouri, New Jersey, New York City, Ohio, Rhode Island, Texas (Houston/Harris County), Washington, Wisconsin, and other states.

As one example, over 20 New York City private practices using a common EMR system are automatically sending batch files of immunization data to the New York Citywide Immunization Registry (CIR) on a biweekly schedule. On the public side, the 11 hospitals and six diagnostic and treatment facilities of the New York City Health and Hospitals Corporation report the immunizations they administer to all patients under age 19 from their own clinical information system directly to the CIR. This reporting is fully automated, with no duplicate data entry or manual intervention required. A pilot project is currently underway with one large community health center to enable real-time data exchange between the center's EMR system and the CIR. Once completed, the CIR will make this real-time data exchange capability available to clinicians across the city.

Physicians, IIS personnel, and EMR vendors interested in learning more are encouraged to visit AIRA's Web site at [www.immregistries.org](http://www.immregistries.org).

*Submitted by Amy Metroka, New York City CIR*

## **IMMUNIZATION DATA EXCHANGE BETWEEN STATE IIS AND THE INDIAN HEALTH SERVICE'S RESOURCE PATIENT MANAGEMENT SOFTWARE (RPMS)**

The Indian Health Service (IHS) has been working with state IIS to develop an automated, bi-directional electronic exchange of immunization information (batch files or real time) between the RPMS and state IIS, using HL7 Version 2.4. The software conforms to the standards set by the CDC in the "Implementation Guide for Immunization Data Transactions" using Version 2.3.1 of the HL7

Standard Protocol.

[http://www.cdc.gov/nip/registry/st\\_terr/tech/stds/hl7guide.pdf](http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7guide.pdf)

IHS is currently making some enhancements to the data exchange software. The new version of the data exchange software is undergoing beta testing, and will be available to all IHS and tribal sites by October of 2006. IHS has also purchased an HL7 communications bridge product to automate the sending of files to the state IIS. The bridge is installed at all of the participating sites in Arizona, three sites in Washington, one site in Wyoming, and testing is underway in New Mexico.

**Arizona** – Two-way data exchange is up and running at 15 of the 23 IHS and tribal sites in the state of Arizona. When the Arizona Immunization Information System (ASIIS) receives a file from an IHS/tribal site, a response file with immunizations that the facility did not have for their patients is generated and sent back to the site for inclusion in the RPMS. ASIIS is currently testing an upgrade to their system that will assist in automatically generating the response files.

**Minnesota** – Two IHS sites are sending data electronically to the Minnesota registry. Two-way exchange is being tested.

**New Mexico** – In New Mexico (NM), one site is sending data to ASIIS, as it sees many Arizona patients. Pilot testing is also underway at two IHS sites in NM to exchange data with the NM Statewide Immunization Information System (NMSIIS). Once this is functioning, additional sites in NM will begin exchanging data with the NMSIIS.

**Washington** – In Washington state, 16 IHS and tribal sites are submitting data to the IIS – eight enter the data directly into the system, while eight have been sending their data to the state IIS electronically. Three of the sites sending data electronically have installed the communications bridge to automate the process. Testing of the two-way exchange is expected to begin in late 2006.

**Wisconsin** – Thirteen tribal sites are submitting data to the Wisconsin Immunization Registry (WIR). Four utilize the electronic exchange, while the other nine enter the data directly into the WIR. Two-way exchange is set up at the four tribal sites currently exchanging data electronically.

**Wyoming** – In Wyoming, the IHS site is currently sending data electronically to the IIS using the communications bridge. Two-way exchange expected to begin testing in 2007.

Finally, an IHS Registry Coordinator position has been created. An overview of the IHS Immunization Data Exchange project can be found on the IHS website at:

[http://www.ihs.gov/medicalprograms/epi/health\\_issues/vaccine/IZ\\_Data\\_Exchange\\_FAQ.doc](http://www.ihs.gov/medicalprograms/epi/health_issues/vaccine/IZ_Data_Exchange_FAQ.doc)

*Contributed by Amy Groom, IHS Immunization Program Manager*

### NYC CITYWIDE IMMUNIZATION REGISTRY (CIR) AND LEAD REGISTRY

In February of 2004, the New York City (NYC) Department of Health and Mental Hygiene (DOHMH) completed the integration of its childhood immunization and blood lead test registry databases, each containing over 2 million children. A modular approach was used to build a separate integrated system, called Master Child Index (MCI), to include all children in both the immunization and lead test registries. The principal challenge of this integration was to properly align records so that a child represented in one database is matched with the same child in the other database. To accomplish this task, as well as to identify internal duplicate records within each system, an artificial intelligence record linkage system was created.

As a result of the integration, immunizations and lead test histories of children are available individually, and in aggregated form, to providers, managed care organizations, Women, Infants and Children program (WIC), schools, parents, and legal guardians or custodians. Of particular relevance is the ability for providers to look up both lead screening history and immunization history for their patients over the Web using the Online Registry. Access to this information helps reduce missed opportunities to immunize and screen for lead and avoid unnecessary lead tests, and supports outreach and follow-up by providers and agencies to children needing both immunizations and lead screening.

*Contributed by Paul Schaeffer, New York City CIR*

## VAERS INTEGRATION PROJECT

MCIR (Michigan Care Improvement Registry) is piloting a VAERS integration project with CDC that allows users to fill out a VAERS form and transmit the information via HL7. Providers will be able to access the patient's information within MCIR as well as the VAERS form. This form will be pre-populated with the known patient/provider information. The provider then only has to fill out the remaining VAERS-specific information and submit the form.

After the provider submits the form, it is then translated into an HL7 ORU message for transmission to VAERS using PHIN MS. A response from VAERS is returned after parsing and validating the message. VAERS then returns a message, which includes all appropriate error messages, and if the submission has been accepted, an E-Report identifier. The MCIR system associates this identifier and the original VAERS document transmitted to the patient for later retrieval, if needed.

*Contributed by Kevin Garnett, President Crystal Lightning, LLC, MCIR Contractor*

## MCIR'S ALL HAZARDS MODULE

The Michigan Care Improvement Registry (MCIR), through legislative change, became a lifespan registry in April 2006. This opened the door for the Michigan Department of Community Health through its Emergency Preparedness, specifically the pandemic influenza preparedness activities, to develop an All Hazards module in MCIR for the purpose of collecting and reporting aggregate data required for the Countermeasure and Response Administration (CRA) System in the event of a public health emergency.

MCIR's All Hazards initiative involves three phases. Phase 1, which is complete, included adding antivirals and the CDC age requirements for doses administered. Phase 2 includes adding links to AERS and VAERS, and adding influenza to the State, County and clinic profile assessments. Phase 3 will add a breakthrough disease field that would trigger an HL7 message to the Michigan Disease Surveillance System (MDSS) allowing for the pre-population of MDSS with MCIR data. This would provide the local health department with the ability to respond to the reported case.

Once Phase 2 and 3 activities are completed, the Michigan Department of Community Health will turn its attention toward adding the Category A diseases that could be used as Bio-Weapons to the Michigan Care Improvement Registry.

*Contributed by Pat Bragg, Region 1 MCIR Supervisor and MDCH All Hazards Planning Coordinator*

## VFC AND EARLY HEARING DETECTION AND INTERVENTION INTEGRATION INTO NJIIS

In 2004, the Vaccines For Children (VFC) Program was integrated into the New Jersey Immunization Information System (NJIIS), a well established Web-enabled statewide registry. At that time, VFC order processing and vaccine accountability was supported by Automated Health Systems in Pittsburgh, Pennsylvania. The VFC process was all manual and based on paper forms submitted by providers via fax or mail. At Automated Health Systems, data entry clerks entered the orders into VACMAN and accountability forms into AS-400 based system. The systems integration allowed NJIIS to track patient VFC eligibility and provider inventory that was distributed under the VFC funding source, and established an electronic interface between NJIIS and Automated Health Systems, making all VFC forms available online.

In May 2005, the vaccine order processing operation was relocated to the New Jersey Department of Health and Senior Services Vaccine Preventable Disease Program (VPDP) and now all vaccine orders are processed in-house by DHSS staff. During the transition period, NJIIS vaccine accountability functionality was extended to accommodate more than 1200 VFC providers and new reports for the VFC Program and its enrolled providers were developed. In 2006, the VPDP continued to implement the Vaccines For Children Program into the NJIIS application. A new Inventory Management, Order and Distribution System (IMODS) was developed to allow providers to place and track their VFC orders via online user interface, and to allow VFC order processing management to place a new order for providers, and review and track existing orders. IMODS is fully compatible with VMBIP requirements. It will have interfaces with VACMAN 4 and the distribution warehouse, and will go into production during the

implementation of the Vaccine Management Business Improvement Plan (VMBIP).

New Jersey Law (P.L. 2001, ch. 373) requires the Department of Health and Senior Services to “establish a central registry of newborns identified as having or being at risk of developing a hearing loss, for the purposes of compiling statistical information and providing follow-up counseling, intervention and educational services to the parents of the newborns listed in the registry.” Oversight for implementation of this legislation is the responsibility of the New Jersey Early Hearing Detection and Intervention (EHDI) Program. The EHDI Program has partnered with the NJIIS for monitoring and reporting of newborn hearing testing. The objectives of this partnership are to use this web-based immunization information system to allow primary care providers to view information about their patients’ hearing screening and follow-up status; and to allow audiologists and other providers who perform outpatient audiologic evaluation to report results electronically and efficiently to the EHDI program. Prior to this partnership, the EHDI program received inpatient hearing screening results from the Electronic Birth Certificate (EBC), and outpatient exams were reported on paper forms and keyed into an EHDI-created database. The NJIIS-EHDI interface was rolled-out in September 2006. The NJIIS application, already using the EBC to populate their system, was extended to include the EHDI-related fields from the EBC, allowing providers to view the inpatient hearing screening results. Audiologists are given system access to submit outpatient follow-up reports via on-line interface. This provides the data to the EHDI program and also allows immediate viewing of the results by the primary care provider.

*Contributed by Zina Kleyman, NJIIS Project Manager; Office of Information Technology Services, and Kathryn P. Aveni, NJ Special Child Health and Early Intervention Services Division of Family Health Services*

### **KIDSNET AND RHODE ISLAND’S STATEWIDE HEALTH INFORMATION EXCHANGE**

KIDSNET, Rhode Island’s integrated child registry for preventive services, houses the State’s immunization registry as well as child data from ten other public health programs. As such, KIDSNET is a key participant in Rhode Island’s efforts to

develop a Statewide Health Information Exchange. In 2004, the Rhode Island Department of Health was one of the six states awarded a \$5 million, five-year contract from the Agency For HealthCare Research and Quality (AHRQ) to connect health information systems that will put the right information into the hands of the clinicians and their patients when and where it is needed. The Rhode Island Health Information Exchange (HIE) initiative is a public-private effort. The Rhode Island Department of Health is working in partnership with the Rhode Island Quality Institute (RIQI), a collaboration of hospitals and other providers, insurers, businesses, consumers, academe, and state government, which is serving as the governing entity for these efforts (a defacto RHIO). Senior state officials involved in the HIE initiative continue to leverage the state’s investment in KIDSNET.

KIDSNET is participating in Rhode Island’s Health Information Exchange in three key areas of its development:

- First the public health database has been identified as a future data-sharing partner and the potential ongoing statewide repository of some key data such as immunizations.
- Second, as part of Rhode Island’s efforts to promote health information technology and interoperable health information exchange, KIDSNET staff are chairing a standards-sub committee for immunizations transactions. This group is developing and adopting an HL7 implementation guide that will be utilized by both KIDSNET and future HIE data exchanges for immunizations.
- Third, KIDSNET has also been asked to work with the HIE project in identifying current business practices for a proposed scenario under the Health Information, Security and Privacy Collaborative.

*Contributed by Kim Salisbury-Keith, KIDSNET*

### **MCIR/SCHOOL IMMUNIZATION RECORDKEEPING SYSTEM (SIRS) PROJECT**

In Michigan, school and childcare immunization reporting had been done using a DOS based computer program called School Immunization

Record-Keeping System (SIRS). During the course of many years, program updates would occur due to changes and/or additions to school or child care immunization reporting requirements. This practice became very costly and labor intensive over time. Programming challenges as well as computer technology forced the Michigan Department of Community Health's Division of Immunizations to look at other technologic advances and available computer programs.

The Michigan Childhood Immunization Registry (MCIR) was designed and developed for practical use by 1998. With increasing use, MCIR data became more reliable as a measuring tool for local health departments. With this in mind, the idea of health care provider data availability for school reporting in MCIR became evident and work began to create a SIRS program allowing access to MCIR data for school immunization reporting purposes. Thus the MCIR/SIRS program was developed. As a MCIR/SIRS user, clinical, demographic and program reporting immunization assessment information is made available to registered users. Any missing student immunization data from MCIR can be entered by the school or childcare in the MCIR/SIRS program to make the student complete for immunization compliance. Student rosters are developed for immunization reporting and local health departments can view the facility's aggregate data without paper submission. However, MCIR/SIRS immunization data cannot be viewed by a health care provider. Thus, separating school immunization data from health care immunization data meets HIPPA and FERPA requirements.

*Contributed by Kevin Czubachowski, MDCH  
Immunization Field Representative*

### PHII LAUNCHES BUSINESS CASE MODEL FOR INTEGRATION OF CHILD HEALTH INFORMATION SYSTEMS

Immunization information systems have been at the forefront of public health's move toward interoperability with private healthcare providers. Now, as increasing numbers of public health agencies across the country begin to integrate the information systems serving their various programs, the established immunization information system often plays the lead role as the core system in coordinating, populating, or warehousing information.

Everyone seems to agree in principle that integrated child health systems will provide immediate and long-term benefits to individuals, families, providers, and society. It stands to reason that benefits will be seen as fewer children "fall through the cracks." But frustration arises when agencies try to quantify those benefits – or are mandated by their agency or legislature to do so. Agencies need a sound, rational, and defensible *business case* to justify the level of funding required for undertaking such enormous change.

In 2005, the Public Health Informatics Institute (PHII), with support from HRSA/MCHB and the Robert Wood Johnson Foundation (RWJF), started developing a business case for integrated child health information systems. The essential, high-level goal was to provide rationale, facts, and figures that would demonstrate the benefits and costs of integrating child health information systems.

To meet the needs of public health agencies nationwide, the Institute contracted with health economist Tim Dall of The Lewin Group to create a tool that would help agencies make a strong business case to present to key stakeholders. The resulting tool, called the *Business Case Model*, is a powerful Excel-based program designed to provide a detailed picture of the specific costs and benefits related to the integration of child health information systems. The model allows agencies to create various scenarios for potential integration, modifying inputs such as which systems will be integrated (e.g., immunizations, lead, and WIC), the timeframe for achieving full effectiveness, and expected expenses.

Developing the business case for integrated child health information systems has some complexities beyond those of most other programs. The business case must:

1. Develop estimates of the costs and benefits of *integrated* child health information systems – not the costs and benefits of *individual* information systems.
2. Demonstrate the value of integration to society, providers, parents, and public health programs.
3. Reflect the fact that the benefits may accrue to a stakeholder (e.g., the child/family) different from the

stakeholder that bears the costs (e.g., the government).

4. Reflect the fact that, in the program areas being addressed by this project, the benefits may not accrue until some time in the future whereas the costs are borne in the present.

With a clear business case scenario in hand, public health practitioners can present the systems integration proposal to funders, decision-makers, and other stakeholders to stimulate discussion and generate buy-in based on facts and figures. The model can also be used to make adjustments to a project's scope before committing resources.

The model comes pre-loaded with most of the readily available data for individual states. This allows the user to develop a business case scenario specific to the state's unique situation, and estimate current and future benefits of integration under alternative user-defined scenarios. Benefits are stated in terms of dollars saved, missed opportunities avoided, and reductions in illnesses.

For more information, visit the Institute's Business Case Model page online at [www.phii.org/BusinessCase.html](http://www.phii.org/BusinessCase.html), or contact Project Manager Jim Mootrey at [jmootrey@phii.org](mailto:jmootrey@phii.org).

*Contributed by John Kiely, Communications Manager, PHII*

---

**SnapShots is produced quarterly by the AIRA Education Committee.**

**Editor: Katie Reed, NY**

**DISCLAIMER**

**This special edition of SnapShots was published by AIRA, an organization founded in July 1999 to advocate for the support of immunization registries.**

**Production of this publication was supported by the Cooperative Agreement Number U38/CCU222349 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the American Immunization Registry Association (AIRA) and do not necessarily represent the official views of the CDC.**



**American Immunization Registry Association**  
c/o Citywide Immunization Registry, NYCDOHMH  
125 Worth Street, CN 64R  
New York, New York 10013

**212-676-2325**

**<http://www.immregistries.org/>**

**[info@immregistries.org](mailto:info@immregistries.org)**