## HIMSS 2011 IHE Immunization Story Board

### Starting State

At the beginning of the scenario, it is assumed that the patient has already had some immunizations, and that they are recorded in the Immunization Information System (IIS), in the HIE’s document repository, and in some provider EHR systems. Patient identifiers from all systems already having immunization records for the patient are registered with the Health Information Exchange’s (HIE’s) Master Person Index using the Identity Cross-Reference Service (IXS). In one variation, this is done using Integrating the Healthcare Enterprise’s (IHE’s) Patient Identifier Cross-Referencing (PIX) profile. In particular, the Immunization Information System (IIS) and the HIE must register their identifiers.

### Patient Goes for a Well-Child Visit

The 4-year-old patient and the parent visit the provider, who uses an Electronic Health Record (her) system. The patient is new to the provider. The EHR queries the HIE for the patient’s immunization history and care plan (sometimes called “vaccine forecast”). The HIE returns the immunization history and care plan to the EHR. The provider reviews the immunizations and the vaccine recommendation. The provider administers vaccines and enters the records in his EHR.

The HIE provides the immunization history and care plan by a combination of calls to the Identity Cross-Reference Service (IXS), the Retrieve, Locate and Update Service (RLUS), the Decision Support Service (DSS).

In one variation,

* The IXS request for identifiers is implemented using IHE’s Patient Demographics Query (PDQ) profile.
* The RLUS request for immunization history is implemented using IHE’s XDS.b profile, returning an Immunization Content (IC) document. The IC document is a (CDA) structured document, which is both human-readable and structured for import into the EHR.
* The IC document was created earlier by a request for immunization history to either the Immunization Information System (IIS) or to an IIS “edge server” in the HIE, followed by a request for care plan to the DSS. The results are compiled into an IC document and stored in the HIE.

In another variation,

* The IXS request for identifiers is implemented using IHE’s PIX profiles.
* The RLUS request for immunization history is implemented using IHE’s On Demand Document (ODD) profile. ODD creates the IC document upon request by querying the Immunization Information System (IIS) and formatting the results as CDA.
* The care plan is provided by the EHR system.

The first scenario is optimized for read performance. The second scenario provides a way to query a source of immunization information that might have changed since the last immunization history was submitted to the HIE.

### The Provider EHR Submits New Immunizations to the HIE and IIS

The EHR uses IXS and RLUS to send an immunization history to the HIE. The HIE simultaneously:

* Creates a new Immunization Content document to update its store of immunization information.
* Updates the immunization registry (IIS) using HL7 Version 2
* Updates the surveillance system.

In one variation:

* The IXS and RLUS submissions of the immunization history is implemented using IHE’s XDS.b profile, with an IC document.
* The HIE translates the immunization history in the IC into HL7 Version 2 for submission to the IIS.
* The HIE translates the immunization history in the IHE’s XDR profile, with an IC document, for submission to the surveillance system.
* The HIE requests the remaining immunization history from the IIS or the HIE IIS edge server.
* The HIE requests the new care plan using DSS.
* The HIE creates a new IC document with the updated care plan and stores it in the HIE document repository.

In a second variation:

* The IXS and RLUS submissions of the immunization history is implemented using IHE’s ODD profile, with an IC document.
* The HIE translates the immunization history in the IC into HL7 Version 2 for submission to the IIS.
* The HIE creates a new on-demand IC document and stores it in the HIE document repository.

### The Child Receives an Additional Immunization

In getting the child ready for school, the parent uses notices from his PHR that one vaccine is missing. In a rush, the parent makes an appointment at a different clinic. The provider’s EHR repeats the process of “Patient Goes to a Well-Child Visit” above, getting the up-to-date vaccines from the previous provider, and the up-to-date recommendation.

### Actors:

* Clinician
* Patient
* Parent
* Electronic Health Record (EHR) system
* Immunization Information System (IIS)
* Health Information Exchange (HIE)
* Surveillance system
* Identity Cross-Reference Service (IXS)
* Retrieve, Locate and Update Service (RLUS)
* Decision Support Service (DSS)

### Actions/Interactions:

* Register patient identifiers
* Request patient identifiers
* Submit immunization history
* Request immunization history
* Request decision support