



**Integrated Public Health Solutions**

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# **LINKS HL7 Implementation Guide**

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*Updated by LDH Immunization Program*

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Louisiana Immunization Network System (LINKS)

<https://lalinks.org/linksweb/>

## **1.0 Benefits of LINKS to the Provider**

- Real-time electronic system eliminates lag time of viewing immunization data after reporting.
- Reduces paperwork.
- Provides easy access to consolidated patient immunization records.
- Decreases the need to pull and re-file paper patient records.
- Consolidates immunizations from multiple providers into one record.
- Source for obtaining immunization histories for patients.
- Generates parental reminder notices on due, overdue or invalid immunizations.
- Supports efforts to improve immunization coverage rates.
- Supports the ability to recall vaccines based on manufacturer error.
- Prints a completed official Immunization Certificate of Compliance (Form 121).
- Reduces calls from schools and day care centers during registration.
- Provides vaccine inventory management.
- Generates doses administered and immunization assessment reports upon demand.
- Forecasting recommendations based on the ACIP/AAP schedule.
- Satisfies “Meaningful Use” Criteria for interfacing with existing EMR/EHRS.

## **2.0 Overview of IWeb Software**

IWeb is a population-based immunization registry that helps public health agencies and vaccine providers make informed decisions that improve the health of children and the entire community. IWeb is a web-based product which is used by public health officials, public health employees, and private providers by enabling:

- Vaccinators to view a child’s complete vaccination record, thus preventing over and under vaccination.
- Health officials to measure and improve vaccination rates by providing a big picture through various reports.
- Health officials to send mailings to remind parents of needed vaccinations.
- School nurses to review student vaccination records, update, and report immunization status as required by law.

## 2.1 Immunization Data Interface

The HL7 interface supports CDC standard immunization messages and is the recommended format for submitting immunization data to LINKS.

Providers should have at least 250 patients with immunizations in their EMR so that adequate technical and data quality testing can be completed prior to taking an electronic interface LIVE.

Providers need to submit a number of messages, proportionate to their patient volume, to the LINKS Test Environment that demonstrate proper HL7 grammar and good workflow before they can be considered for the move to Production.

Exchange (LaHIE), should follow the LaHIE's specifications and requirements. These providers may be able to proceed to production (LIVE) interface (NON-VFC) with one successful test data submission.

Providers are responsible for keeping their vaccination codes in their application current and ensure that staff is using the appropriate vaccinations in their EMR documentation to preserve LINKS data integrity during testing and on an ongoing basis. Provider must adhere to data requirements as described in Section 2.5.1.1

## 2.2 HL7

LINKS sends and receives HL7 immunization queries and updates. These messages conform to HL7 specification version 2.3.1/2.5.1 and the CDC's Implementation Guide for Immunization Transactions version 2.1 which can be found here:

<http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf>

### 2.2.1.1 LINKS HL7 Capabilities

- Accepts the following patient update messages: VXU
- Responds to immunization record query messages: VXQ. QBP
- Queries external registries by sending immunization record query messages: VXQ. QBP
- Sends batch updates to external registries: VXU.

### Vaccination Update (VXU) Message (2.5.1)

```
MSH|^~\&|IWeb|19454|||201411219091558||VXU|Test health-1003|P|2.5.1||AL
PID||9918^^^MR||Test^Name^F||20131120|M||2028-9^Asian^hl70005|123 main^^New
Orleans^LA^70112||7143301669|123 main^^New
PD1||Test Health Facility^^SIISCLIENT13838
NK1|1|Test^Tom^F|GRD^Guardian^HL70063
PV1|R|||||||||V02^20141121
RXA|0|1|20141121|20141121|21^Varicella^CVX|0.5|ML|00^New Immunization||Test Health
facility^^SIISCLIENT13838||||H044551|20160131|MSD^Merck \T\ Co., Inc.^MVX||||A|
RXR|IM^Intramuscular^HL70162|LD^Left Deltoid|
OBX|1|TS|29769-7^VIS Presentation Date^LN|1|20141121094736|F|||F|||
OBX|2|ST|30963-3^Vaccine purchased with^LN|Y|F|||F|||20141121094736
OBX|3|CE|64994-7^Vaccination Eligibility^LN||V02^Medicaid/Medicaid Managed^HL70064|F|||20141121
```



## **Required and Expected Fields**

Data Quality is a high priority for the immunization registry as information received is used to build a permanent vaccination record for patients. It is important that the information is accurate and as complete as possible. For this reason certain fields are required in every message (for example, patient name, date of birth) and other fields are expected to be sent (for example, patient demographics, phone number, Vaccination Administered Units and any other field LDH Immunization program deems necessary). Fields that are expected to be sent maybe empty if there is no information to send but normally should have a value.

## 2.4. LINKS Required Data Fields

**Table 1.1 Data Fields**

\* = % correctly populated during testing

<b>FIELD</b>	<b>REQUIRED BY LINKS, RECOMMENDED BY LINKS</b>	<b>ACCEPTANCE THRESHOLD *</b>	<b>HL7</b>
<b>NEXT OF KIN FIELDS</b>			
Name First	✓ Required (will consider guarantor in lieu of guardian)	100%	NK1-2.2
Name Last			
Name Middle			NK1-2.3
Phone			NK1-5
Relationship	✓ Required		NK1-3
Social Security Number			NK1-33
<b>PATIENT FIELDS</b>			
Address City	✓ Required	100%	PID-11.3
Address Parish			PID-11.9
Address State	✓ Required	100%	PID-11.4
Address Street1	✓ Required	100%	PID-11.1
Address Street2			PID-11.1
Address Zip	✓ Required	100%	PID-11.5
Alias First			PID-9
Alias Last			PID-9
Birth Country			PID-11.6
Birth Date	✓ Required	100%	PID-7
Birth File Number			PID-3



Birth Multiple	Recommended (multiple births)		PID-24
Birth Order	Recommended (multiple births)		PID-25
Birth State			PID-11.4
Comment			
Deceased			PID-30
Patient Eligible VFC			
Ethnicity	✓ Required	100%	PID-22
Facility Address City			
Facility Address State			
Facility Address Street 1			
Facility Address Street 2			
Facility Address Zip			
Facility Email			
Facility Fax			
Facility Phone			
Facility Health District			
Gender	✓ Required	100%	PID-8
Facility Id Remote	✓ Required	100%	PD1-3
Facility Name	✓ Required	100%	PD1-3
Health District			
Immunization Registry			PD1-16
Inactive Code			PD1-16
Medicaid Number	✓ Recommended		PID-3
Mother Maiden Name	✓ Recommended		PID-6

Patient Name First	✓ Required	100%	PID-5.2
Patient Name Last	✓ Required	100%	PID-5.1
Name Middle	✓ Recommended ✓ Required if EMR is capable	80%	PID-5.3
Name Suffix			PID-5.4
Patient External Id (Medical Record Number)	✓ Required	100%	PID-3
Patient Internal Id			PID-3
Phone	✓ Required	100%	PID-13.1
Physical Address Street 1			PID-11.1
Physician Bomex Number			PD1-4
Physician Id Local			PD1-4
Physician Id Remote			PD1-4
Physician Name First			PD1-4
Physician Name Last			PD1-4
Physician Name Middle			PD1-4
Physician Name Suffix			PD1-4
Physician SSN			PD1-4
Primary Language			PID-15
Publicity Code			PD1-11
Race	✓ Required	100%	PID-10
Race 2			PID-10
Race 3			PID-10
Race 4			PID-10
Race 5			PID-10
Social Security Number	✓ Recommended if EMR is capable	80%	PID-3
VACCINATION FIELDS			
Action Code	✓		RXA-21

Administered Amount	✓ Recommended		RXA-6
Administered Amount	✓ Recommended		RXA-7
Comment			RXA-9
Contraindication			OBX-3 & OBX-5
Dose			RXA-2
FacilityAddressCity			RXA-11
FacilityAddressState			RXA-11
Facility Address Street 1			RXA-11
Facility Address Street 2			RXA-11
Facility Address Zip			RXA-11
Facility Email			
Facility Fax			
Facility Id Local	✓ 100% Required	100%	RXA-11.1 (2.3.1) or RXA-11.4 (2.5.1)
Facility Id Remote			RXA-11
Facility Name			RXA-11
Facility Phone			
Form VIS Given Date	✓ Required	100%	OBX-29769-7
Historical	✓ Required for all historical doses. Not required for administered doses.		RXA-9
Indication			RXA-19
Induration TB			
Physician Bomex Number			RXA-10
Vaccinator ID			RXA-10
Physician Id Remote			RXA-10
Physician Name First			RXA-10

Physician Name Last			RXA-10
Physician Name Middle			RXA-10
Physician Name Suffix			RXA-10
Physician SSN			RXA-10
Publication Date VIS 1			OBX-3 & OBX-5
Publication Date VIS 2			
Publication Date VIS 3			
Publication Date VIS 4			
Route	✓ required	100%	RXR-1
Site	✓ required	100%	RXR-2
Vaccination Date	✓ Required	100%	RXA-3
Vaccinator			RXA-10
Vaccine Code CPT			RXA-5
Vaccine Code CVX	✓ required	100%	RXA-5
Vaccine Code PCI			RXA-5
Vaccine Eligible Status	✓ required	100%	OBX-3 & OBX-5
Vaccine Lot Number	✓ required	100%	RXA-15
Vaccine Manufacturer	✓ required	100%	RXA-17
Vaccine Manufacturer Code	✓ required	100%	RXA-17
Vaccine Name	✓ required	100%	RXA-5
Vaccine Funding Source	✓ required	100%	OBX-3 & OBX-5

QUERY FIELDS			
Father Name First			QRF-5
Father Name Last			QRF-5
Father Social Security Number			QRF-5
Mother Name First			QRF-5
Mother Name Last			QRF-5
Mother Name Maiden			QRF-5
Mother Social Security Number			QRF-5
Patient Address 1 City	✓ Required	100%	QRF-5
Patient Address 1 State	✓ Required	100%	QRF-5
Patient Address 1 Street 1	✓ Required	100%	QRF-5
Patient Address 1 Zip	✓ Required	100%	QRF-5
Patient Birth Date	✓ Required	100%	QRF-5
Patient Id (MRN)	✓ Recommended ✓ Required if EMR is capable		QRD-8
Patient Medicaid Number			QRF-5
Patient Name First	✓ Required	100%	QRD-8
Patient Name Id Type Code			QRD-8
Patient Name Last	✓ Required	100%	QRD-8
Patient Name Middle	✓ Recommended		QRD-8
Patient Name Suffix			QRD-8
Patient Phone Number	✓ Required	100%	QRF-5
Patient Social Security Number			QRF-5
Quantity Limit			QRF-7
What Subject Filter			QRD-9
When Date End			QRF-2
When Date Start			QRF-3

Patient Internal Id (SIIS ID)			QRD-8
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## 2.5 Submitting HL7 Data

HL7 message files may be uploaded automatically via HTTPS.

Request: When the sending application sends LINKS an HL7 message via an HTTPS POST command, it must have the following fields:

- USERID - Assigned by the LINKS administrator.
- PASSWORD - Assigned by the LINKS administrator.
- MESSAGEDATA - The HL7 message(s).

Response: LINKS always returns responses in HL7 format. Response configuration is based on the account's LINKS settings. The response configurations available are Always, Never, On Error (only for those messages are not accepted) or Determined by Message (Incoming request message indicates in the MSH segment whether to always, never or only on error).

The HL7 response can indicate any one of the following things:

- Authentication error - username and password are incorrect or account does not have permission to accept HL7
- Message parsing error – incoming messages do not conform to HL7 standards
- Message content error – incoming message is missing or incorrect information
- Message processing exception – incoming message has an unexpected problem
- Message accepted - data has been accepted and has been sent to deduplication
- Response to query – LINKS responds to query with query results

## 3.0 Resources

This immunization registry conforms to standards published by the CDC and the state of Louisiana standards. For the latest code sets and standards please see:

<http://www2a.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cvx>

<https://repository.immregistries.org/resource/hl7-version-2-5-1-implementation-guide-for-immunization-messaging-release-1-5-1/>

For more detailed information about how IWeb processes HL7 data, please see the *IWeb HL7 Interface Specification Guide*.