

Data Exchange 101: How to Ensure Your Clinic Submits Quality Data to CAIR2



Agenda

- Data Quality
- Data Exchange (DX) Monitoring
- DX Message Types
- DX Message Structure
- How to Read and Interpret ACK Messages
- ACK Error Examples
- Using the DX 'Check Status' Feature
- Questions



How is Data Quality Defined?

- Patient Data should be *accurate*
 - User Issues Is patient info <u>entered</u> into EHR correctly?
 EHR Issues Is patient info <u>sent</u> to CAIR correctly?
- Patient Data should be <u>complete</u>
 - The more patient info CAIR2 has, the higher the probability that incoming data will be merged to the correct patient.
- Patient Data should be <u>timely</u>
 - Timely submission guarantees that data is in CAIR by next doctor visit



Maintaining Data Quality

To ensure that only high quality data is sent to CAIR2, sites sending data from EHR systems should make sure their staff:

- Enter accurate and complete patient demographic and shot information into their EHR
- Work with vendor or staff to resolve any data accuracy or integrity issues
- Monitor DE submissions to CAIR2 on an ongoing basis to ensure continuity and accuracy





Know How to Use Your EHR

- Make sure all staff are adequately trained, particularly new staff
- Make sure staff entering all relevant patient info into EHR so data sent to CAIR2 is complete
- Ensure that EHR interface is properly configured for easy and accurate use
 - Drop-down menus are useful but can be improperly used.
 For instance, a **pediatric** practice sending only **adult** Hep B doses to CAIR2 may indicate staff is selecting the wrong vaccine in an EHR drop-down menu



Work with Your EHR Vendor When Issues Arise

- Don't ignore software issues that may impact proper usage and the accuracy of your patient medical records
- Know your EHR contact and report any issues to them
 - Don't be afraid to ask for help; after all, you are paying them for their service!!
 - Work with them to resolve an EHR issues, including any impacting accurate data submission to CAIR2



Ensure that Patient Info Sent to CAIR2 Is Accurate

- Confirm data quality by:
 - Monitoring your clinic's DX message flow and proper data quality either via your EHR or through use of the 'Check Status' screen in CAIR2
 - 2. Communicate with your vendor if message flow is interrupted or excess errors occur
 - Periodically look up patients in CAIR2 to make sure the records in CAIR2 accurately reflect what your EHR has sent



Setting Up DX Monitoring in Your Practice

- 1. Determine how your practice will monitor messaging
 - Some EHRs can receive and display DX acknowledgement (ACK) messages. Consult with your vendor to see if this option is available.
 - If not available, use the DX 'Check Status' function in CAIR2 instead to monitor DX activity. Access requires 'DX Power' user or 'DX QA' user status in CAIR2.
- 2. Assign primary responsibility for DX monitoring to one of your staff members
 - Implement an ongoing DX data monitoring process, e.g. daily, weekly, randomly chosen messages, failed messages only, etc.
- 3. Periodically compare selected patient records in your EHR with the same patient records in CAIR2 to ensure that the information in CAIR2 matches the information in your EHR.



DX Message Types

- A VXU message (Vaccine Update, Unsolicited) is the HL7 message type that your EHR uses to send patient vaccinations to CAIR2.
- An **ACK** message is an 'acknowledgement' message sent back to your EHR by CAIR2 indicating the message status.





VXU Message Structure

- Multiple segments, multiple fields per segment
 - MSH (Message Info)
 - PID (Patient Info)
 - PD1 (Additional Patient Info, e.g. Disclosure, sharing status, etc.)
 - NK1 (Next of Kin Info)
 - ORC (Order Control, required with RXA)
 - RXA (Treatment/Vaccination Info)
 - RXR (Vaccine Route /Body Site Info)
 - OBX (Additional Vaccine Info, e.g. VFC eligibility, VIS date, etc.)
- Fields within segments are pipe-delimited (|), subfields are hat-delimited (^)
- Many Fields, SubFields have defined codesets (e.g. CVX, MVX)



Sample VXU

MSH|^~\&|MyEMR|DE-000001| |CAIRLO|20160701123030-0700||VXU^V04^VXU_V04|CA0001|P|2.5.1|||ER|AL|||||Z22^CDCPHINVS|DE-000001 PID(1)(PA123456^^^MYEMR^MR)(JONES^GEORGE^M^JR^^^L)MILLER^MARTHA^G^^^M)(20140227)M)(2106-3[^]WHITE[^]CDCREC|1234 W FIRST ST[^]BEVERLY HILLS^CA^90210^^H||^PRN^PH^^555^5555555||ENG^English^HL70296|||||||2186-5^not Hispanic or Latino[^]CDCREC||Y|2 PD1||||||||02^REMINDER/RECALL – ANY METHOD^HL70215|N|20140730|||A|20140730| NK1|1|JONES^MARTHA^^^^L|MTH^MOTHER^HL70063|1234 W FIRST ST^BEVERLY HILLS^CA^90210^^H|^PRN^PH^^^555^5555555 ORC|RE||197023^CMC|||||||^Clark^Dave||^Smith^Janet^^^^^L^^^AMD||||| RXA|0|1|20140730||08^HEPB-PEDIATRIC/ADOLESCENT^CVX|.5|mL^mL^UCUM||00^NEW IMMUNIZATION RECORD^NIP001|1245319599^Smith^Janet^^^^CMS^^^NPI^^^AAAAAAAMD |^^^DE-000001||||0039F|20200531|MSD^MERCK^MVX|||CP|A RXR C28161^INTRAMUSCULAR^NCIT LA^LEFT ARM^HL70163 OBX 1 CE 64994-7 Vaccine funding program eligibility category LN 1 V03 VFC eligibility -Uninsured^HL70064||||||F|||20110701140500



ACK Message Structure

• Three Segments

- MSH (Message Header segment)
- MSA (Acknowledgment segment)
 - MSA-1 (Ack Code)
 - 'AA' (Accepted)
 - 'AE' (Error)
 - 'AR' (Error, Rejected)
 - MSA-2 (Message Control ID)
 - Also in VXU (MSH-10)
- ERR (Error segment there may be several of these)
 - ERR-2 (Error Location, e.g. Segment, field)
 - ERR-3 (HL7 Error Code, see Table HL7 0357)
 - ERR-4 (Severity: "E" > "W" > "I")
 - ERR-5 (Application Error Code, see Table HL7 0533)
 - ERR-8 (User Message) Description of error and outcome



How to Read/Interpret Your ACK Messages

- If an ACK message has no 'ERR' segment, message/data was accepted by CAIR2
- If ACK has ERR segment, determine:
 - Error location in message (ERR-2 field)
 - Error severity (ERR-4 field, is it 'E'>'W'>'I'?)
 - Error description (ERR-8 field)
- Report errors/send failed messages to vendor, particularly if:
 - A high percentage of messages have errors (>5%)
 - There are distinct error patterns (multiple messages with the same error)



How to Read ACK ERR-2 (Error Location) Field



So this VXU's error is located in RXA-5.1 (RXA-5 field, 1st position)



ACK Error Example #1

1. Invalid Vaccine Code (ERR-2 = 'RXA-5.1', ERR-4='E', ERR-8= 'RXA IGNOREDinvalid code')

ACK

MSH|^~\&|CAIR IIS2.0.0.0|CAIR IIS||DE-007957|20161128||ACK^V04^ACK|420122|P|2.5.1|||||||||||CAIR IIS|DE-007957 MSA|**AE**|420122

ERR||RXA^1^5^1^1|102^Data type error^HL70357|E|4^Invalid value^HL70533|||RXA IGNORED - 368 is an invalid CVX code

VXU

MSHI^~-{&|TESTAPP|DE-007957|IMMUM|CAIR2|20161128||VXU^V04^VXU_V04|420122|P|2.5.1|||NE|AL||||||DE-007957| PID|1||20130399^^HLN^MR||Short^Keith^^^L||20040501|M||2054-5^African American^HL70005|1096 Lazy Drive^^New Deal^CA^94607-4944^USA||^PRN^PH^^555^7077279|||||||||2186-5^not Hispanic^CDCREC PD1|||^^^NNG|160000000^Mean Joe^Greene^^^^NNG^^NP|||||||N|20161001 NK1|1|Howard^Natalie^^^L|MTH^Mom^HL70063|4038 Mozart Drive^^EI Sobrante^CA^94803^L ORC|RE||||||||1595^Carpio^Francisco^^^^NNG||1417991407^Carpio^Francisco^Camaclang^^^NNG^^NP RXA|0|1|20161001|20161001|368^meningococcal MMVC4^CVX^^0|0.500|mL^Milliliters^UCUM||00^New immunization record^NIP001|1417991407^SMITH^JOHN^^^NG^^^XX|43GARDNERSC^^^||||M15167-vfc|20171031|SKB^GlaxoSmithKline^MVX|||CP|A RXR|IM^Intramuscular^HL70162|LD^Left Deltoid^HL70163 OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V02^VFC eligible - Medi-Cal/Medi-Cal Managed^HL70064|||||F|||20161001104000|||VXC40^Eligibility captured at the immunization level^CDCPHINVS OBX|2|TS|29768-9^Date vaccine information statement published^LN|2|20111014||||||F



ACK Error Example #2

2. Missing OBX-3, leading to RXA rejection (ERR-2 field ='OBX-3, RXA-0', ERR-4 field ='E', ERR-8 field = 'RXA rejected because of invalid OBX')

ACK

MSH|^~\&|CAIR IIS2.0.0.0|CAIR IIS||DE-007957|20161125||ACK^V04^ACK|410103|P|2.5.1|||||||||||CAIR IIS|DE-007957 MSA|AE|410103

ERR|1|**OBX^1^3^0**|101^Required field missing^HL70357|**E**|6^Required observation missing^HL70533|||INACCURATE OR MISSING OBSERVATION VALUE. NO VALUE STORED.

ERR|2|**OBX^1^3^0**|101^Required field missing^HL70357|**W**|6^Required observation missing^HL70533|||**OBX #1 IGNORED -REQUIRED FIELD OBX-3 MISSING.**

ERR|3|**RXA^1^^0**|102^Data type error^HL70357|**E**|6^Required observation missing^HL70533|||**RXA #1 rejected because of invalid OBX**

VXU

MSH|^~\&|TESTAPP|DE-007957|IMMUM|CAIR2|20161125||VXU^V04^VXU_V04|410103|P|2.5.1|||NE|AL||||||DE-007957| PID|1||20130396^^^HLN^MR||Mitchell/Sophie^^^^L|20060501|M||2076-8^Hawaiian^HL70005|2622 Crystal Swalel^^Semiahmoo^CA^990415-8494^USA||^PRN^PH^^555^5132338||||||||2186-5^not Hispanic^CDCREC PD1|||^^^^NG|1500000000^Shatner^William^^^NG^^NNP|||||||N|20161001 NK1|1|Bower^Katherine^^^^L|MTH^Mom^HL70063|324 Warwick Ave^^Oakland^CA^94610^L ORC|RE|||||||1595^Carpio^Francisco^^^NNG||1417991407^Carpio^Francisco^Camaclang^^^NNG^^NNP RXA|0|1|20161001|20161001|168^meningococcal MVC4^CVX^^0[0.500|mL^Milliliters^UCUM||00^New immunization record^NIP001|1417991407^SMITH^JOHN^^^NG^^^XX|43GARDNERSC^^^|||M15167-vfc|20171031|SKB^GlaxoSmithKline^MVX|||CP|A RXR|IM^Intramuscular^HL70162|LD^Left Deltoid^HL70163 OBX|1|CE|???|1|V02^VFC eligible - Medi-Cal/Medi-Cal Managed^HL70064||||||F|||20161001104000|||VXC40^Eligibility captured at the immunization level^CDCPHINVS OBX|2|TS|29768-9^Date vaccine information statement published^LN|2|20111014|||||F

ACK Error Example #3

3. MSH-11 - Incorrect Processing ID Type (MSA-1 field ='AR', ERR-2 field ='MSH-11', ERR-4 field ='E', ERR-8 field = 'MESSAGE REJECTED. INVALID PROCESSING ID. MUST BE P)

ACK

MSH|^~\&|CAIR IIS2.0.0.0|CAIR IIS||DE-007957|20161130||ACK^V04^ACK|420182|P|2.5.1||||||||||||CAIR IIS|DE-007957

MSA|AR|420182

ERR||**MSH^1^11**|202^Unsupported processing ID^HL70357|**E**|4^Invalid value^HL70533|||**MESSAGE REJECTED. INVALID PROCESSING ID. MUST BE ;P;.**

ERR||**MSH^1^11**|103^Table value not found^HL70357|W|5^Table value not found^HL70533|||**Informational Error - If supplied, MSH-11** should match constraint listed in spec

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MSHI^~\&|TESTAPP|DE-007957|IMMUM|CAIR2|20161128||VXU^V04^VXU_V04|20182|**Z**|2.5.1|||NE|AL||||||DE-007957| PID|1||20130399^^^HLN^MR||Short^Keith^^^L||20040501|M||2054-5^African American^HL70005|1096 Lazy Drive^^New Deal^CA^94607-4944^USA||^PRN^PH^^555^7077279||||||||2186-5^not Hispanic^CDCREC||| PD1|||^^^NG|160000000^Mean Joe^Greene^^^NG^^NP|||||||N|20161001|||| NK11|Howard^Natalie^^^L|MTH^Mom^HL70063|4038 Mozart Drive^EI Sobrante^CA^94803^L ORC|RE|||||||1595^Carpio^Francisco^^^NNG||1417991407^Carpio^Francisco^Camaclang^^^NG^^NP RXA|0|1|20161001|20161001|168^meningococcal MVC4^CVX^^]0.500|mL^Milliliters^UCUM||00^New immunization record^NIP001|1417991407^SMITH^JOHN^^NG^^XX|43GARDNERSC^^^||||M15167-vfc|20171031|SKB^GlaxoSmithKline^MVX|||CP|A RXR|IM^Intramuscular^HL70162|LD^Left Deltoid^HL70163 OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V02^VFC eligible - Medi-Cal/Medi-Cal Managed^HL70064||||||F|||20161001104000|||VXC40^Eligibility captured at the immunization level^CDCPHINVS OBX|2|TS|29768-9^Date vaccine information statement published^LN|2|20111014||||||F



- Available to Regular, Power, and 'DX QA' users
- Login using your CAIR ID, Username, and Password

CAIR2	California Immunization Registry							
	HOME	USER RESOURCES	RELATED LINKS	TRAINING				
TRN	Hot Topics			<u>HT-1</u>				
Org Code: Username:	Welcome to the California Immunization Registry, CAIR ! Posted on 08/19/2015 If you are an authorized user, please login using your unique combination of Organization Code, Username, and Password. Posted on 08/19/2015							
Password:	If you are a new user, please visit the training tab above to access training options. If you are from an organization requesting access for the first time, go to the <u>CAIR Enrolment</u> page to enroll. For additional information, contact the CAIR Help Desk at 800-578-7889 or <u>CAIRHelpDesk@cdph.ca.gov</u> . Hours are 8:00 a.m 5:00 p.m. Monday through Friday, excluding government holidays. This site will work optimally for users logging in with Internet Explorer browsers versions 8 or higher, as well as Chrome, Safari or Firefox. If you are using alternate browsers and experience display issues, please consider switching to one of the supported browsers. About The California Immunization Registry Disclaimer Copyright © 1999 - 2016 State of Wisconsin. All rights reserved.							
DO NOT ATTEMPT TO LOG ON UNLESS YOU ARE AN AUTHORIZED USER. 								



 Click 'Check status' under Data Exchange

AIR7 PRD 2.8.3.8 Patients patient search manage patient status Reports reminder / recall check reminder status cocasa extract afix reports check request status ad hoc list report ad hoc count report ad hoc report status vaccine eligibility assessment report check assessment benchmark report check benchmark manage custom letters group patients check group status check reminder list check vaccine elig status accountability report request check vaccine accountability state supplied flu report state supplied vaccine report Inventory doses administered Data Exchange check status



release notes:

06/27/2021 ~ <u>Release Version 2.7.5</u> California Immunization Registry more release notes

Vaccine Order/Transfer Notification ...

Туре	Shipped	Awaiting Return Shipment	Rejected
Order(s)		No Order Notification	
Transfer(s)		No Transfer Notification	

Active Inventory that is Going to Expire or Expired Lots with a Quantity ...

Site Name	Trade Name	Lot Number	Funding Source	On Hand	Exp Date
No vaccines are currently set to	expire.				

Inventory that is Running Low by Vaccine Group ...

Vaccine Group	Funding Source	Quantity On Hand	
No vaccine groups have a low inventory.			

Inventory that is Running Low by Trade Name ...

Trade Name	Funding Source	Quantity On Hand
In the design of the second second second second		

No trade names have a low inventory.

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- The Exchange Data Status screen will automatically default the Job Date to Today's Date and will display all messages. Edit the Job Start/End Date, Job Status, Mode, Message Type, Job Time Start/End, and or Job Action as needed.
- Users can also search by the Message Control ID (MSH-10) if known

CAIR2	organization	ome 🗼 manage .	access/account	forms related link	s logout help	desk 🐳		
	Exchange Data Status							
PRD 2.8.3.8	Job Date		Jo	b Status	Mode	Message Ty	pe	
Patients	Start Date 03/21/2023	End 03 Date	3/21/2023 🖪 A	II. ~	Realtime	✓ All	~	Search
patient search manage patient status	Job Time		M	SH-10 Search		Job Action		
Reports reminder / recall check reminder status cocasa extract	Start Time 12:00	End Time 11:5	9 (PM *	MSH-10 search will not re	turn result prior to 09-19	All		~
check request status afix reports ad hoc list report	Results Returned 1 - 2 of	2						Page 1 of 1
ad hoc count report ad hoc report status	Job Name	Job Type	Exchange Data Date	Process Start Date	Process End Date	Message Type	Job Status	Job Action
vaccine eligibility assessment report check assessment	Realtime 03/21/2023 12:42:58	Realtime	03/21/2023 12:42:58	03/21/2023 12:42:58	03/21/2023 12:42:58	VXU	Complete	Message Accepted - Error Correction Requested
benchmark report check benchmark	Realtime 03/21/2023 12:40:15	Realtime	03/21/2023 12:40:15	03/21/2023 12:40:15	03/21/2023 12:40:15	VXU	Complete	Message Accepted - Error Correction Requested
manage custom letters group patients								Batch Response
Data Exchange check status								

- The Job Name lists each messages received by CAIR2 from your Site during the period shown
- The status of messages that are COMPLETE can be viewed by clicking on the Job Name hyperlink

h	nome manage	access/account	forms related line	(S logout help	desk 🛛 🍑		
organization		•	user •	role			
Exchange Data Status	3						
Job Date		J	ob Status	Mode	Message Ty	/pe	
Start 03/21/2023 Date	End Date	03/21/2023	All 🗸	Realtime	✓ All	~	Search
Job Time		N	ISH-10 Search		Job Action		
Start Time 12:00	End Time 11:	59			All		~
💿 ам 🔿 рм	○ AM	PM	*MSH-10 search will not re	eturn result prior to 09-1	9-2021.		
Results Returned 1 - 2 o	of 2						Page 1 of 1
Job Name	Job Type	Exchange Data Date	Process Start Date	Process End Date	Message Type	Job Status	Job Action
Realtime 03/21/2023 12:42:58	Realtime	03/21/2023 12:42:58	03/21/2023 12:42:58	03/21/2023 12:42:58	VXU	Complete	Message Accepted - Error Correction Requested
Realtime 03/21/2023 12:40:15	Realtime	03/21/2023 12:40:15	03/21/2023 12:40:15	03/21/2023 12:40:15	VXU	Complete	Message Accepted - Error Correction Requested
							Reteb Deenenee



Patients

Reports

request

report Inventory

doses administered

Data Exchange check status

- The Summary • Information table reveals whether the patient record has been updated and what information was added or updated.
- Both the submitted • HL7 VXU message ('Inbound HL7 251 File') and the HL7 ACK ('HL7 251 Response') sent back to the submitter can be viewed.



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Set Up A Schedule to Monitor DX!

- Choose at least one day per week to monitor messages
- Randomly choose 10 messages and review their status
- If 2 or more (>20%) have failed (message is rejected), open a handful more and determine if the failed messages show a consistent pattern.
- Communicate findings to your EHR vendor for review and correction.



To Request A New Account

Go to CDPH.ca.gov/CAIR

Update

Hover over CAIR Users and select Account



Home | Programs | Center for Infectious Diseases | Division of Communicable Disease Control | CAIR | California Immunization Registry

CALIFORNIA IMMUNIZATION REGISTRY

CAIR Sign In

Account Update

CAIR User FAQs

CAIR Help Desk

CAIR2 User Group

Coverage Levels (COCASA)

CAIR Join CAIR

CAIR Users

Data Exchange Training & Resources **Finding Records**

Hours:

9am-4pm Monday to

Thursday

10am–4pm Friday

CAIRHelpdesk@cdph.ca.gov Phone: 800-578-7889 Fax: 888-436-8320

Welcome to the CAIR Information Website



The California Immunization Registry (CAIR2) is a secure, confidential, statewide computerized immunization information system for California residents.

CAIR2 School User Access Is Still Available

Questions?

- <u>CAIRDataExchange@cdph.ca.gov</u>
- <u>CAIRDataQuality@cdph.ca.gov</u>

