

Data Exchange Error Report Guide

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Data Exchange Basics

Data exchange (DX) is the system-to-system sharing of patient information between an Electronic Health Record (EHR) system, used by a healthcare provider, and an [Immunization Information Systems \(IIS\)](#). The Oregon Immunization Program (OIP) uses data exchange to electronically receive immunization information entered into the electronic health record by the provider organization to create or update an ALERT IIS patient record. Electronic health record systems can also electronically request data for a patient and ALERT IIS then returns messages which include the full patient history and/or any recommended vaccines that may be needed in real time.

Data exchange operates in the form of a conversation between systems connected using defined standards and specification of the Health Level Seven, or [HL7](#) messaging language. HL7 messages are the format of data used by organizations for immunization data exchange. Messages received by ALERT IIS with incomplete or incorrect HL7 formatted information will trigger errors that ALERT IIS will communicate back to the sending system.

Data exchange is important because it allows for more complete, timely and accurate immunization reporting while reducing the need for clinic staff to enter immunization records in multiple systems. OIP maintains ALERT IIS and collaborates with electronic health record partners to ensure Oregon immunization data is as accurate, complete, and timely as it can be.

Data Exchange Error Report Overview

The Data exchange error report provides valuable insight to clinic staff about the quality of data submitted to ALERT IIS by partner organizations. The data exchange report evaluates messages received through data exchange via an electronic health record system and summarizes any errors in an easy-to-read format. Errors are organized into three levels of severity. Errors of the highest level of severity indicate that the message was rejected due to missing and/or incorrectly formatted data, or the message violated IIS business rules that are essential to the accurate reporting of immunization data. Messages with errors of a lower-level severity may be accepted by ALERT IIS but might include discrepancies that require more investigation and follow up to correct.

In instances where vaccine inventory discrepancies are the reason for an error, using the Ad Hoc List report as a tool for further investigation is recommended. To learn more about using both reports together as tools for managing data quality, view the emodule entitled “ALERT IIS “Data Monitoring””. Links to the emodule and additional resources on the Ad Hoc List Report can be found at the end of this document under the Resources section.

How to Run a Data Exchange Error Report

Clinic staff with an ALERT IIS user role of either Super User or Standard User can access the report. Organizations without access to an error report via their EHR or HL7 response messaging from their EHR are recommended to run this report weekly to ensure that there are no data exchange issues preventing accurate and valid submissions from entering ALERT IIS. Other organizations are recommended to run this report as needed or as an investigative tool. Organizations that submit large amounts of data to the ALERT IIS may wish to run this report on a more frequent schedule.

In ALERT IIS, click ‘data exchange report’ under the Reports section of the left menu panel. This will bring you to the Data Exchange Report Request screen.



data exchange report
check dx report status

Create the report by doing the following:

1. Enter Report Date Range (from/to).
2. Select the organization(s) to include in report from the left Organization Name list box. Click on the name of the organization from the list and then ‘Add’ to move into Selected Organization(s) box.
3. Click ‘Generate’ to run the report for all desired organizations. Individual reports will be created for each organizations selected.

*Please note, the larger the time-period selected and/or the more organizations added, will increase the amount of time for the report to be created.

Data Exchange Report Request

This report summarizes data exchange activity over a period of time. Please enter a data submission date range, i.e. analyze data submitted from 05/03/2018 to 05/31/2018.

Report Date Range: * From * To 09/08/2023

Run Individual Reports for Selected Organization(s)

Organization Name: Oregon Immunization Program

Selected Organization(s):

Buttons: Add >, Add All >>, < Remove, << Remove All

Buttons: Generate, Cancel

- The report is ready when the name is displayed as a hyperlink and the status column has reached 100%. The report status percentage doesn't automatically update when the report is complete and ready to download. Click 'Refresh' to see updated status.

Data Exchange Report Status			Refresh
Report Name	Started	Completed	Status
Oregon Immunization Program	09/01/2023 11:38:30 AM	09/01/2023 11:38:33 AM	100%

- Click the hyperlinked report name to download to your computer. A pop-up window will open with the option to "Open the file" will display. The report will open in a new window of your browser in Excel.

How to Read a Data Exchange Error Report

All reports ran in the last 7 days will be available and listed on the Data Exchange Report Status page in a table format with the following column headers:

Data Exchange Report Status			Refresh
Report Name	Started	Completed	Status
Oregon Immunization Program	09/01/2023 11:38:30 AM	09/01/2023 11:38:33 AM	100%

1. Report Name column - displays the name of the organization.
2. Started column - displays the date and time of the report began processing.
3. Completed column - displays the date and time the report completed processing.
4. Status column - displays the progress of the report as a percentage (%).
 - a. 100% means the report is complete and ready for download.
 - b. A status of failed means that the report was not able to be generated.

The Data Exchange Error Report does not include all HL7 Acknowledgment statements (also known as an 'ACK') created by the ALERT IIS as the response to an organization's received data. Instead, the report only provides detailed information about reported vaccine (VXUs submission) which have generated an error, warning, or informational messages. These submissions should be considered high priority for review.

The report is output as an Excel document with four tabs.

The first tab is the summary, which contains a synopsis of the data presented in the report, including the following:

IMMUNIZATION COUNTS		PATIENT COUNTS	
Accepted/Administered	276	Accepted	307
Accepted/Historical	28	Pending	1
Pending	1	Rejected	5
Rejected	5		
Deleted	3		
Deducted	273		

QUERY COUNTS	
Queries Sent	101
Single Match	98
Multiple Match	1
No Match	2

- All vaccine submissions that occurred during the specified timeframe which resulted with message types: error, warning, or informational.
- The number of patient and vaccination records accepted, pending, or rejected by ALERT IIS. Accepted immunizations are further divided into two types; Administered (immunizations given by the clinic), and Historical (immunization reported by the clinic but not given by the clinic).
- Totals for ALERT IIS queries, including if queries resulted in single, multiple, or no match found. The report does not include error notifications for queries.
- Detailed count of information on problem submissions divided by message type; Errors (E), Warnings (W), or Info Only (I).

The additional three tabs, labeled 'Errors', 'Warning', and 'Info only' are individual sheets listing details for every error in that category type. Including a description of the HL7 segment where in the message the error was found, appropriate follow-up action, and the name and date of birth of the patient associated with each error message.

The three categories indicate the level of severity of the error and are defined as follows:

- **E (error) level category** – This level indicates that one or several required and essential data elements in the received HL7 message were either missing, not formatted correctly, or violated an IIS business rule. Messages are rejected entirely by ALERT IIS and data is not added to the patient record. Errors are commonly triggered by HL7 code formation that doesn't comply with ALERT IIS specifications for the part of the message that identifies the patient or describes the vaccine details.

For example, the CVX code for the vaccine doesn't match the English language description of the vaccine. These errors are typically addressed by the technical support team for the EHR. In addition, some technical errors need both the EHR technical support team and the ALERT Data Exchange to work together. Clinic staff are encouraged to report these messages to their EHR technical support team for follow up and resolution.

An example of an error that can be corrected by clinic staff would be an immunization reported as given on a future date. Clinic staff can correct and resend message immediately without the need for technical assistance.

- **W (warning) level category** – Warning errors indicate an issue with a non-essential element in the message, usually due to inaccurate or missing data or the HL7 message format not complying with ALERT IIS specifications. Data in the messages are usually successfully consumed by ALERT IIS, but the messaging format should be addressed for future reporting, if possible.

An example of a warning errors that can be corrected by clinic staff would be "Invalid SSN. SSN either starts with 000 or ends with 0000." This warning indicates that the Social Security Number, which is not considered an essential data element, is inaccurate within the message sent to ALERT IIS.

- **I (Informational) level category** – Informational errors are the least serious notification and describe where data is inaccurate or could be improved upon. Portions of the data may be ignored but the overall message is consumed by ALERT IIS.

Many of these notifications are related to discrepancies between the vaccine lot number and the vaccine inventory in ALERT IIS. This can result in vaccine doses not deducting from the ALERT IIS inventory as expected. These messages are meaningful for clinics that participate in Oregon's state-supplied vaccine programs and thus use the ALERT IIS inventory for managing state-supplied vaccine as required by the program. Clinic staff can use these informational messages to correct their ALERT IIS inventory as directed by the message.

Definitions of Terms Used in Data Exchange Error Report:

Data Exchange Summary Section	
Immunization Counts and Patient Counts	
Term	Definition
Accepted / Administered	Total number of accepted administered immunization submitted by the organization that reported and gave the immunization to the patient during the selected time frame.
Accepted / Historical	Total number of accepted historical immunization messages submitted by an organization that reported but did not give the vaccination to the patient during the selected time frame.
Pending	Total number of pending immunizations during the selected time frame. Pending status describes immunization records that are waiting for human review before being added to a patient record in ALERT IIS. Records that are a possible match for more than one patient in ALERT IIS are subject to human review before being accepted by ALERT IIS.
Rejected	Total number of rejected immunizations during the selected time frame.
Deleted	Total number of immunizations deleted during the selected time frame.
Deducted	Total number of immunizations that were deducted from inventory.
Accepted Patients	Total count of accepted patients. The sum of the 'Accepted' patients from the Job Detail screen under the 'check status' menu item. Note: This is not a unique count.
Pending	Total number of patients pending.
Rejected	Total number of patients rejected.
Query Counts	
Queries Sent	The number of patient immunization records requested from ALERT IIS.
Single Match	Total of single patient matches found.
Multiple Match	Total of multiple patient matches found.
No Match	Total of no patient matches found.
Error Counts Immunizations & Patient	
ERR 4 (Severity)	This section counts all error messages within each severity category with their percentage. <ul style="list-style-type: none"> E (error) – Transaction was not successful or rejected. The application rejected the entire message because it was either missing data elements required by ALERT IIS, or it contained data elements that contradict other elements in the message. W (warning) – Transaction successful, but there are issues with message formatting. These may include missing data elements or formatting errors with potential for loss of data identified as essential to the integrity of the immunization record. I (Informational) – Transaction was successful but includes returned information.
Counts	Total Counts for each Severity category with a hyperlink to details for the actual records that errored. You can also select the corresponding tab from the report summary worksheet to get the drill-down data.

%	Percentage of messages in each severity category as a fraction of all error messages during the reporting time frame.
ERR 8 (Description)	Displays the error description.

Drill-Down Worksheets - ERRORS \ WARNINGS \ INFO ONLY tabs	
Errors (E)	Lists all the "E" Rejection Errors and Action Needed.
Warnings (W)	Lists all the "W" Warning Errors and Action Needed.
Informational (I)	Lists all the "I" Informational Errors and Action Needed.

Explanation of Common Data Exchange Error Report Issues

The Data Exchange Error Report should be used as a guide to the errors that have been generated by data exchange submissions within a given time frame, and not a checklist of errors that are currently present in the data.

Corrected error still showing	<p>Issue – Information was corrected after initial data exchange error report.</p> <p>Explanation - The Data Exchange Report summarizes errors in messages as they were initially sent through electronic data exchange. If a new message is sent to correct an error from a previous message, the corrected message will not generate an error but the original message that generated the error is not removed from ALERT IIS.</p>
Missing fields creating error	<p>Issue - error messages generated for some missing fields and not others.</p> <p>Explanation - The Data Exchange Error Report only generate errors regarding missing data for required data elements. If non-required data elements are missing, this will not be shown on the report. However, data present in non-required fields may still generate errors. The Data Exchange Report should be used in conjunction with the Ad Hoc list report to evaluate overall data quality.</p>
Error showing on accurate information	<p>Issue – error message given on information that is accurate in EHR.</p> <p>Explanation - ALERT IIS cannot distinguish between errors in vaccination reporting (i.e. – clinic staff enters the wrong date of vaccination), clinical practice errors (i.e. – clinic staff gives a dose of vaccine on the wrong date but reports the date given accurately) , and valid events (i.e. - vaccines given at the right time for a patient’s medical history and reported accurately but outside of the standard</p>

	<p>vaccination schedule timeframe) that deviate from what is expected by the ALERT IIS algorithms that calculate the recommended vaccination schedule. Submissions that are accurate but that generate an error message should not be changed and should always reflect the vaccination event as it actually occurred, regardless of whether the report generated an error message.</p>
<p>Error message on correct lot number</p>	<p>Issue – Lot number sent is correct but still get error message.</p> <p>Explanation - If your organization participates in state-supplied vaccine programs, ALERT IIS expects that any vaccine you report will have a lot number that corresponds with a lot number in the ALERT IIS inventory module. If you report a vaccine lot number that is not entered in the ALERT IIS inventory module, or if the lot number you report is associated with a vaccine inventory item that is at zero doses or is set to an inactive status in the inventory module, an informational level error message will be triggered. When the vaccine event is submitted to the ALERT IIS, it compares the lot number provided against lot numbers in the ALERT IIS inventory module. If there isn't a match to the lot number in the inventory, an informational level error message will be generated to call attention to the fact that no vaccine inventory exists in ALERT IIS for that lot number.</p> <p>ALERT IIS inventory management is required for all organizations that use state-supplied vaccine and real-time inventory management webinar trainings are available on the ALERT IIS training web pages.</p>
<p>Accepted submission problems</p>	<p>Issue – ALERT IIS accepted the submission but still has problems.</p> <p>Explanation - Message submissions accepted by ALERT IIS may still include errors that render the data incomplete or degrade the quality and function of ALERT IIS data. For this reason, all error, warning, and informational messages should be reviewed and addressed.</p>

Resources

eModule and training documents

1. [ALERT IIS Data Monitoring emodule](#)
2. [Data Exchange 101](#)
3. [Data Exchange Error Report: FAQs](#)
4. [ALERT IIS: Ad Hoc Report overview](#)
5. [ALERT IIS: Manage your Active Patient population](#)

Support

The Oregon Immunization Program has a Data Exchange Team to provide support to Electronic Health Record and clinical provider partners. For additional information please review the Data Exchange Webpage or contact the team directly at the email address below:

Webpage:

https://www.oregon.gov/oha/PH/PREVENTIONWELLNESS/VACCINESIMMUNIZATION/ALERT/Pages/electronic_data.aspx

Email: ALERT_DataExchange@odhsoha.oregon.gov