

COVID-19 electronic reporting and data quality in Oklahoma



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CATEGORY: **Epidemiology and Laboratory Capacity (ELC)**

CATEGORY: **Laboratory Data Exchange**

With the onslaught of laboratory reporting due to COVID-19, Oklahoma State Department of Health (OSDH) needed to address issues with data quality and completeness. They shifted the burden back to the reporters and implemented validations into the OSDH Laboratory Reporting System (OLRS) that checked for a core set of fields and notified reporters of reports that needed to be fixed and resubmitted. This greatly improved data quality and completeness for COVID-19 reports and OSDH plans to implement this for other conditions as well.

The “What”

Like many public health agencies during the pandemic, the Oklahoma State Department of Health (OSDH) struggled with the volume and quality of COVID-19 lab reports. There was a need to quickly establish electronic lab report (ELR) feeds to minimize the burden of fax reporting for both internal staff and external partners as well as to ensure the quality and completeness of the ELR data so investigators had all required information to conduct their case investigations. The OSDH contracted with a vendor to develop the

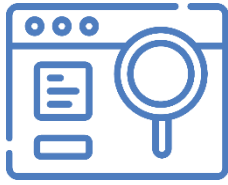
OSDH Laboratory Reporting System, OLRS, which allowed for manual entry, comma-separated values (CSV) file, or Health Level Seven (HL7) file submission of COVID-19 lab results to OSDH; thus, enabling healthcare providers of all technologic capability to establish “electronic” reporting.

To address data quality and completeness, the OSDH wanted to use COVID-19 as an opportunity to shift the burden of obtaining required information on incomplete lab reports from internal staff back to reporters. The Infectious Disease Systems and Collaboration (IDSC) Informatics Program met with internal stakeholders to determine the minimum dataset needed by case investigators for COVID-19 lab reporting. Validations were then implemented in OLRS to ensure that manual entries and CSV file uploads could only be submitted once all required data fields were complete; otherwise, a listing of missing fields was displayed to the submitter with a notice to complete. HL7 validation proved more difficult since quality checks would have to occur after upload or transmission via the representational state transfer application programming interface (REST API), but feedback would still need to be transmitted to the laboratory point-of-contact for correction. The OSDH worked with their vendor to implement a missing field check for the designated minimum dataset on all HL7 v2.5.1 COVID-19 records and provide notice to the designated laboratory point-of-contacts



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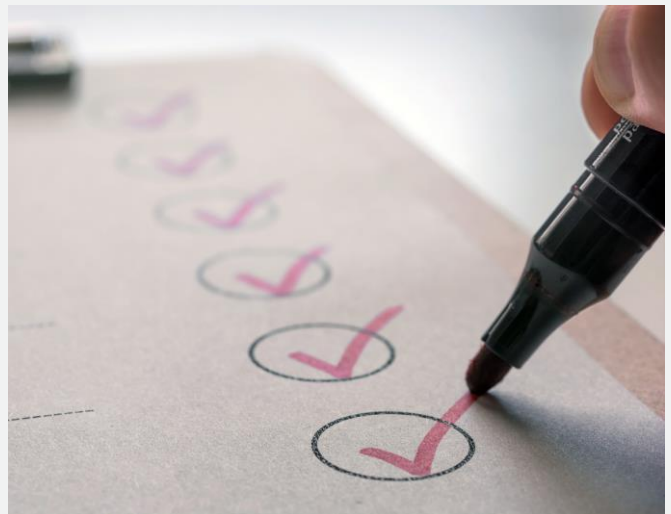


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via a secure email. Prior to go-live of the HL7 checks, the informatics team reached out to all laboratories reporting via this mechanism to explain the new process, determine the designated points-of-contact who would be responsible for error correction, and address any concerns. It was an additional opportunity to explain why laboratories need to collect this minimum information from patients at the time of testing and the impact it plays on public health action.

The “So What”

Since implementation in August 2021, the validation process has identified over 7,500 ELR files with missing information and provided the records back to the laboratory for correction and resubmission. Through continued collaboration and education with laboratories, the number of files with incomplete data has steadily declined and the number of incomplete reports per file has also decreased. This has resulted in more complete data reporting, less time spent by staff manually following up on missing patient data, and increased availability of data for public health surveillance and investigation.




The “Now What”

Plans are being developed to expand this validation to ELRs for other laboratory reports besides COVID-19 to improve data quality and completeness for all OSDH reportable infectious diseases. The Informatics team is also exploring the possibility of incorporating this information not only

into emails to laboratories, but also as comprehensive quality reports for them that will summarize all identified quality issues, the frequency of occurrence, and comparison to other laboratories in the region.

Key contributors to this project include the OSDH Infectious Disease Systems and Collaboration (IDSC), our contracted system vendor, SpringML, and the health care providers and laboratories across the State of Oklahoma as well as the OSDH Infectious Disease Prevention and Response program.

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