

# Oregon: Streamlining the Laboratory's Approach to Surveillance Reporting

## Innovations in Informatics: Laboratory Success Stories

Contributor: Marjorie Yungclas, LIMS Administrator, Oregon State Public Health Laboratory

Public health laboratories report data to state and federal programs for surveillance and analysis. The Oregon State Public Health Laboratory (OSPHL) designed and implemented a single data feed to manage all public health reporting, replacing a patchwork of data feeds. The solution reduced the effort to maintain the feed while making it far easier to add new conditions and respond to new reporting needs.

### The situation

Public health laboratories report results to many agencies and programs at the state and federal level, each with distinct requirements. OSPHL managed these dataflows through a hodgepodge of solutions. The surveillance reporting logic was stored in three applications: 1) the laboratory information management system (LIMS), 2) desktop proprietary scripts and 3) the Rhapsody integration engine. A single update could require cascading changes across applications. The reliance on vendor support to make changes to existing interfaces or create interfaces often resulted in complicated workarounds and routine manual intervention for staff. The decade-old LIMS required multiple point-to-point connections and did not innately support critical capabilities, such as version control, the ability to monitor logs or automated alerting for intermittent failures. This cumbersome model limited OSPHL's ability to quickly respond to changing reporting mandates and emerging health threats.

### The solution

OSPHL designed a Surveillance Reporting Solution that combines a SQL database with Rhapsody's enterprise architecture and web services to enable a unified pathway for data exchange. A single interface that sends unsolicited results to Rhapsody replaces all legacy data feeds. The solution evaluates reporting eligibility, then prepares and sends to the appropriate recipient. For example, flu results are flagged for electronic laboratory reporting (ELR) to the state and for PHLIP to the CDC Influenza Division. Rhapsody parses, validates, standardizes and transforms results into the appropriate format for each program based on configurable logic and performs error handling. The solution monitors data exchange trends in real-time and captures and reports data quality issues. If needed, OSPHL can search and send historical surveillance data.

### Impact

- Agile response to emerging public health situations
- Staff hours saved
- Consolidation of IT solutions
- Extensible to future technologies like FHIR

More than 100,000 tests are conducted annually in the OSPHL communicable disease laboratory. The Surveillance Reporting Solution streamlined reporting requirements for these tests by utilizing a single mechanism to manage all outgoing public health reporting. The solution is live for PHLIP, ARLN, LRN and ELR data, with thousands of messages transmitted to date. The solution is:

1. **Robust:** It can accommodate multiple HL7 formats and quickly change to accommodate new tests or workflows or requirements for sharing data.
2. **LIMS-agnostic:** It can seamlessly adapt to a new LIMS application.
3. **Scalable:** It allows OSPHL to nimbly respond to new outbreaks, changing reporting mandates and new testing needs.

**This solution strengthens OSPHL's ability to respond to emerging public health threats, evolving reporting requirements and the ever-changing landscape of available resources and funding.**

# Oregon: Streamlining Surveillance Reporting

## Reflections

### Collaboration

This project required sponsorship by OSPHL leadership; active participation by the OSPHL Informatics team, including the interoperability coordinator and the LIMS administrator; LIMS vendor support to create the interface for unsolicited results; and the work of J Michael Consulting (JMC) as an independent contractor to build and validate the solution. Once the solution was built, OSPHL worked with program staff within the Oregon Health Authority and CDC to validate the many data flows that transitioned to the new solution. The investment of time and resources and the management of a complicated validation schedule were worth the eventual outcomes of higher quality, more consistent data with more automated monitoring and faster troubleshooting.

### Challenges

The collaborative nature of this project was perhaps its biggest challenge. OSPHL's implementation and go-live schedule was dependent on the availability of the LIMS vendor, JMC and the program teams that would receive the data.

To add another layer of complexity, as this solution was being built, OSPHL leadership intended to launch a LIMS replacement project within the next one to two years. OSPHL did not want to operationalize a solution that would become obsolete as soon as the new LIMS was deployed, yet the details of this LIMS replacement were very much unknown at this stage. The team therefore had the added challenge of designing a solution that would be LIMS-agnostic to work seamlessly with both the legacy system and its eventual replacement.

Data Modernization and associated initiatives like TEFCAs were (and still are) causing paradigmatic changes across the public health landscape. OSPHL originally intended the solution to manage electronic test orders and results (ETOR). With the initiation of the AIMS ETOR Trusted Intermediary (i.e., Detor), OSPHL pivoted to designing a solution for surveillance reporting. While this reorientation caused delays, the project was ultimately successful.

### Suggestions for Others

OSPHL was committed to creating a robust solution that would deliver an immediate return on investment, yet still position OSPHL for the future—knowing that OSPHL still has a long way to go on its modernization journey. The solution took into account the uncertainty of staffing and funding levels and the imminent possibility of a new LIMS implementation.

## Up next

OSPHL is expanding the Surveillance Reporting interface to other reportable conditions and data feeds. OSPHL would like to build a dashboard to present the Rhapsody validation and monitoring data in a visual format. OSPHL is investigating the possibility of managing provider and facility information in the SQL database across multiple LIMS and extending the interface to support FHIR-based functionality.

**Built for now—and for the future.**

## Share your laboratories' success stories!

Help us reveal what the public health community stands to lose without dedicated and long-term support. Share your story with APHL by scanning the QR code or visiting [bit.ly/Lab-Informatics](https://bit.ly/Lab-Informatics).



The *Innovations in Informatics: Laboratory Success Stories* series from the Association of Public Health Laboratories (APHL) showcases innovations and enhancements in informatics. It highlights the critical need for ongoing, targeted and sustainable informatics funding, while celebrating the progress that has been made.