Clearing the reporting pipeline

Facilitator: Lura Daussat, MPH, Public Health Informatics Institute | May 19, 2021
Finding your way around Zoom

• The audience is muted.
• Type your questions into the chat or use reactions to communicate with presenters.
Early Warning for Electronic Lab Report Pipeline Faults Using Python

Presented by Samuel Steakley
Co-Authors: Wesley McNeely, Biru Yang, Marlene McNeese
May 19, 2021
PROBLEM

Delays in identifying ELR pipeline failures
Data Flow

Query ELR Data -> Statistical Analysis -> DECISION Alert Informatics Staff?

SQL:

HHD MAVEN
Our Statistical Approach

1. We analyze ELRs by their **interarrival times**

2. We exclude “bursts” of ELRs

3. A simple distribution-free analysis can give strong results
Histogram: ELR Interarrival Times

Majority of interarrival times

Outlying interarrival times

Sender: DSHS
All 2020 data
Total # = 919
Histogram: ELR Interarrival Times

Sender: GCRBC
All 2020 data
Total # = 315

Unusual distribution structure
Should we alert?

Test value (3.25 days)

Histogram: ELR Interarrival Times

Sender: GCRBC
All 2020 data
Total # = 315

Should we alert?
Test value (3.25 days)

Alert at 99th percentile?
Histogram: ELR Interarrival Times

Test value (3.25 days)

Alert at 99th percentile?
Next Steps

- Build out full implementation and go live
- Enrich statistical approach
- Analyze different subsets of ELRs
- Share code on Github
Key Terms

• Interarrival time
• Counting process
• Percentile rank method
• Heuristic approach
Acknowledgements

Samuel Steakley, Informaticist
Wesley McNeely, Informatics Supervisor
Biru Yang, Informatics Manager
Marlene McNeese, Assistant Director, Disease Prevention and Control
Questions?

Samuel Steakley, Informaticist

Contact Us:
Samuel.Steakley@houstontx.gov
Paving Effective Data Collection Pathways During a Pandemic

Kelly White, MPH, CPH
Director, NBS/Surveillance & TB/Refugee Health
May 19, 2021
Background

- COVID-19 pandemic demonstrated need for centralized team to conduct surveillance and data collection
- Team built from scratch using grant funding
- Minimal staff early on = making systems work for us!
- Need for rapid development of various data collection systems
  - Transparency of data at public display level
Lab Reporting Pathways

• HL7
  • Gold standard, but labor-intensive

• Modified CSV files
  • Drop into SFTP site
  • Heavily used for COVID

• Faxing of results
  • Development of NBS data entry team to keep up with this
Point-of-Care Testing for COVID-19

• Explosion of COVID-19 point-of-care testing in fall of 2020
• Variety of partners utilizing these
  • Homeless shelters
  • Jails
  • Long-term care facilities
  • Rural clinics
  • Hospitals
• Lack of data entry/IT support built in
  • Traditional ELR pathways not an option
Considerations for Development

• Who is reporting?
  • Do we collect data already from this partner?
  • How IT savvy are they?
• How often will they report?
• What data MUST we collect?
• How much staff time will be needed for maintenance?
• How quickly do we need this implemented?
  • Yesterday!
• What can we copy and reuse?
• How will we detect and correct errors?
Point-of-Care Testing REDCap

- Simple, web-based form with no login needed
- Enrollment is quick and easy
- Ability to transform data en masse using API and R to modified CSV for consumption into state surveillance system
- Understandable for a variety of users
- As of May 2020:
  - Almost 1,600 facilities enrolled
  - Average >5,000 results submitted and processed/day
### Laboratory Test Information

<table>
<thead>
<tr>
<th>Specimen Collection Date</th>
<th>Specimen Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>* must provide value</td>
<td>Nasal</td>
</tr>
<tr>
<td></td>
<td>Nasopharyngeal</td>
</tr>
<tr>
<td></td>
<td>Throat</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
</tr>
<tr>
<td></td>
<td>Saliva</td>
</tr>
<tr>
<td></td>
<td>Serum</td>
</tr>
<tr>
<td></td>
<td>Whole Blood</td>
</tr>
<tr>
<td></td>
<td>Plasma</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Performed</th>
<th>SARS coronavirus 2 RNA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SARS coronavirus 2 Antigen</td>
</tr>
<tr>
<td></td>
<td>SARS coronavirus 2 Antibody</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device Type:</th>
<th>ABBOTT ID NOW COVID-19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BD SARS-CoV-2 Reagents for BD MAX System</td>
</tr>
<tr>
<td></td>
<td>BioFire</td>
</tr>
<tr>
<td></td>
<td>Cepheid GeneXpert Xpress System</td>
</tr>
<tr>
<td></td>
<td>Roche cobas Liat System</td>
</tr>
<tr>
<td></td>
<td>Cue COVID-19 Test</td>
</tr>
</tbody>
</table>

| Result | * must provide value |
K-12 School Reporting Portal

- Decision to distribute BINAX testing cards to K-12 schools
- Existing K-12 school portal for reporting cases
  - Internally developed
  - Two accounts per school
  - Ability to upload Excel line lists
- Added BINAX reporting tab to existing portal
  - Heavier lift of our teams
  - Easier for schools
Long-Term Care REDCap

• Capture COVID-19 case reports from LTC facilities
  • Built outside of surveillance team
• Easy to collect – hard to validate!
• Difficulty matching data to ELR and surveillance system data
• Weekly load via API into surveillance systems
  • Manual weekly data follow-up
  • Changing of form to improve data quality
Lessons Learned

• Keep it simple!
• Think about long-term sustainability
• How will data entry errors be corrected? By whom?
• Bring different backgrounds to the development table
  • Informatics
  • Epidemiology
  • Data entry
  • End users
Questions?

Kelly White, MPH, CPH
KeWhite@isdh.in.gov
317-473-7745
Thank you!
Leveraging Networks and Services to Facilitate Surveillance Data Collection

Public Health Informatics Institute
Data Modernization Workshop: Building on Shared Services and Enterprise Technologies

May 19, 2021
Utilization considerations

• Connections between each public health entity and each reporting institution
• Time-intensive
• Resource-intensive
New and Emerging Tools and Networks

Association of Public Health Laboratories’ Informatics Messaging Service (AIMS) Platform

United States Digital Service ReportStream

Health information Exchanges (HIEs)
AIMS Platform

Utilization considerations
• Single point of connection for laboratories and other reporters
• Uses the Reportable Condition Knowledge Management System (RCKMS) for electronic case reporting (eCR)
• Flexibility in routing data to appropriate jurisdictions
• Uses national data standards
  • eCR is still being implemented by providers/EHR vendors
  • 2021 IPPS Draft Rule require eCR reporting
• Transition plan needed to support migration
• Legal agreements
Utilization considerations

• Supports submission of test data
• Can support home-based testing
• Translates data into HL7
• Supports ask-at-order entry questions
• Can notify patient of status
• Not permanent record
Health Information Exchanges (HIEs)

Utilization considerations
- Opportunity to augment data
- Direct test results to both public health and care provider
- Reduced investment by laboratories
- Reduced number of connections for providers
- Services can include connectivity, translation and message enhancement
- Costs and privacy need to be addressed
Other Considerations

- Support for (and by) federal Promoting Interoperability program requirements
- Advanced services such as geocoding information
- Notification services
- Service Level Agreements
- Patient privacy
- Data security
- Data governance
- Analytics services
Questions/Thank You/Contact

Questions?

Thank You!

Contact
Steve Eichner
Health Information Technology Lead
Texas Department of State Health Services
steve.eichner@dshs.texas.gov
Ph: 512.221.5632
Next Steps

• Continue the discussion on the message board (link provided in the chat)

• Ten-minute break: 2:15– 2:25 PM EST

• Next session: 2:25 – 3:25 PM EST
  • Planning for the future of the informatics workforce
Thank you.