

Preferred Workflows for Syndromic Surveillance Systems

Glenn Guthrie MSc¹, Norman G. Vinson PhD²,
Kieran Moore MD¹

¹KFL&A Public Health, Kingston, Ontario, Canada

²National Research Council, Canada,
Institute for Information Technology, Ottawa, Ontario



Overview

- Objective
 - Determine the sequence of information processing operations that ***epis would like to follow*** when using a syndromic surveillance system.
- Slides
 - What are Workflows?
 - Systems & Sites Examined
 - Preferred Workflows
 - Epi-curve exploration
 - Hot-spot analysis
 - Case listing similarities
 - Conclusions & Next Steps
 - Prototype
 - Collaboration

What are Workflows?

- Workflow definition
 - Sequence of information processing operations
 - Using views and filters to examine the data
 - Carried out to meet a specific goal
 - Situational awareness
 - Carried out by **people**
- Which workflows?
 - Workflows epidemiologists **wished** they could follow when using a syndromic surveillance system.
 - Workflows feed into each other.
 - Workflows specified through User-Centred Design (UCD) techniques
 - Interviews
 - Observations

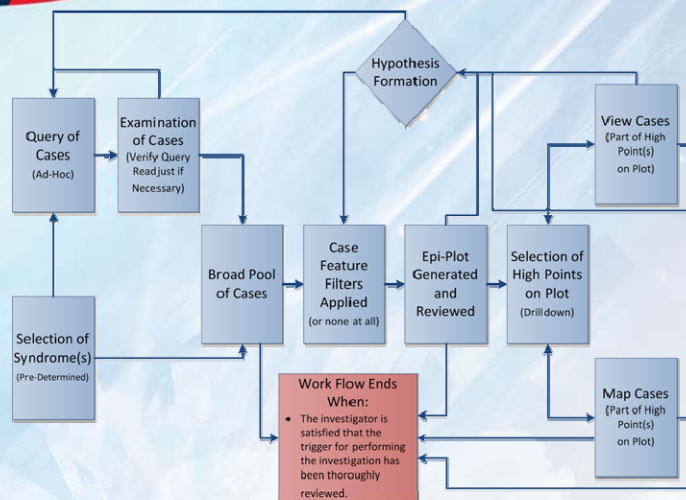
Systems & Installations Examined

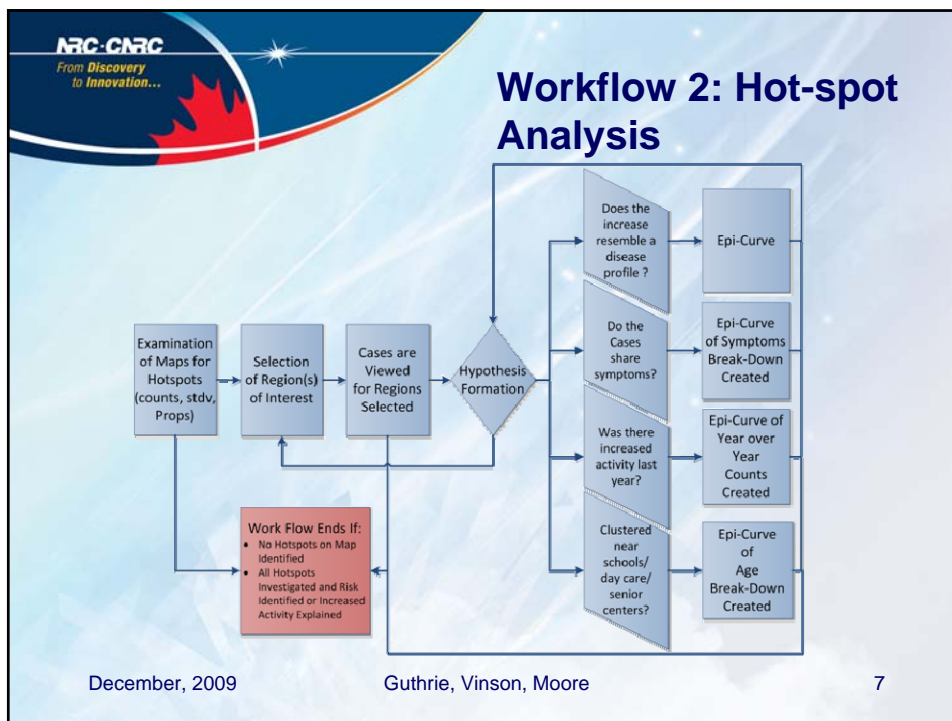
- Syndromic surveillance systems examined
 - Small number (4 installations , 3 systems)
 - Main data source: ED chief complaints
 - Small population
- Main analysis UI components/functions
 - Views of the data
 - Case Line Listings (i.e. age, gender, chief complaint(s), zip code digits)
 - Epi-curves/ epi-plots (case counts graphed over time)
 - Maps (showing a variety of descriptive stats – raw counts, stdvs, props)
 - Data Filters
 - E.g. age, date
 - determine the data each view contains

Workflows

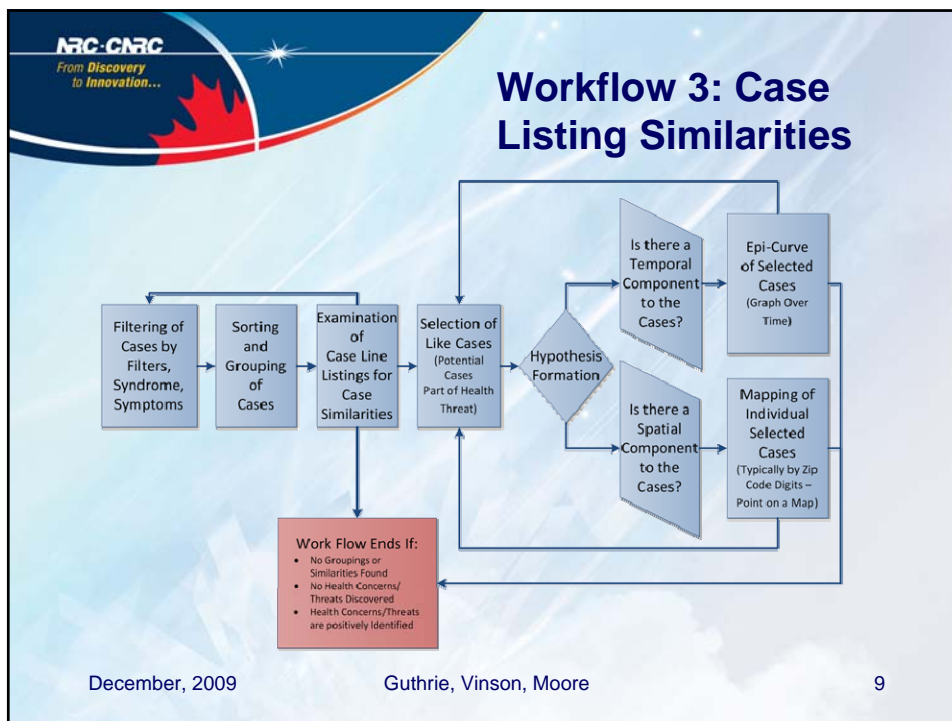
- Epi-curve exploration
- Hot-spot analysis
- Case listing similarities
- Common triggers
 - Syndromic surveillance system alerts
 - Environmental factors (heat, rain, cold)
 - Outbreak elsewhere
 - Case reports (from doctors, institutions)

Workflow 1: Epi-curve Exploration





- NRC-CMRC**
From Discovery to Innovation...
- ## Workflow 3: Case Listing Similarities
- Cases grouped into syndromes.
 - Question: But are the symptoms similar?
 - E.g.
 - Vomiting -> GI
 - Diarrhea -> GI
 - Abdominal Pain -> GI
 - Similar symptoms suggest common etiology.
 - Dissimilar symptoms suggest different etiologies.
 - Systems examined had limited symptom analysis tools
 - Data exported to Excel
 - Only performed on a smallish number of cases.
- December, 2009 Guthrie, Vinson, Moore 8



- NRC-CMRC**
From Discovery to Innovation...
- ## Conclusions & Next Steps
- Conclusions
 - View silos are very limiting
 - Preferred workflows link to each other
 - Preferred workflows involve switching directly from one view (e.g. map) to another (e.g. epi-curve) while preserving case selection.
 - Symptom query & analysis tools are lacking
 - Epis export data into excel
 - Next Steps
 - Prototype
 - Developing a prototype that allows these workflows to be accomplished quickly and easily.
 - Collecting expressions of interest to support development.
 - Collaboration
 - Help us improve and expand our workflows.
- December, 2009 Guthrie, Vinson, Moore 10

Support Acknowledgment

- This work was supported by CRTI (Chemical, Biological, Radiological-Nuclear, and Explosives (CBRNE) Research and Technology Initiative) grant #06-0234TA
- See
 - <http://www.css.drdc-rddc.gc.ca/crti/about-sujet/index-eng.asp>

Contact Us

Norman G. Vinson



norm.vinson@nrc-cnrc.gc.ca
<http://normvinson.wordpress.com/>

Glenn Guthrie

glenn.guthrie@glenncross.ca

Kieran Moore

Queen's Public Health Informatics (Q-PHI)



kmoore@kflapublichealth.ca



<http://www.kflapublichealth.ca/>