

Preferred Workflows for Syndromic Surveillance Systems¹

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OBJECTIVE

Workflows are a sequence of information processing operations that people carry out to meet certain informational goals [1]. Using various user-centered design (UCD) techniques we uncovered the workflows that epidemiologists *wished* to follow when using syndromic surveillance (SS) systems.

BACKGROUND

We studied four Canadian SS system installations that are intended to detect disease outbreaks as early as possible. Their main data source, and the focus of our investigation, is emergency department (ED) visit chief complaints obtained from triage nurse data entry. ED chief complaints are the most common data source for SS systems in the US [2].

The systems we examined commonly offer different views of the data: maps, graphs, alerts, and case listings.

METHODS

Our analysis follows a user-centered design (UCD) approach, which prioritizes the users' needs and work practices in the system design process [3]. We collected data through standard UCD techniques [1,3]: epidemiologist consultations and interviews, observation of the epidemiologists as they interacted with the systems, and iterative user interface prototyping sessions. For the work presented here, we focused on uncovering the workflows the epidemiologists *wished* to follow in examining and analyzing SS data, and on determining the extent to which their current SS systems supported these preferred workflows.

RESULTS

We identified three different investigation strategies that epidemiologists would like to apply when interacting with their SS systems: 1) assessing case listing similarities, 2) analyzing geographical hotspots, and, 3) using data filters to generate disease incidence epi-curves.

For each strategy, we elaborated a preferred workflow representing the information processing

steps epidemiologists would like to follow when applying the strategy.

Epidemiologists would choose a particular preferred workflow as a function of their experience, the amount of time available for reviewing the data and alerts in the system, the volume of cases, and the particular health threat they were investigating. The workflows are not mutually exclusive and one workflow can lead into another.

We observed that the SS systems the epidemiologists were currently using did not provide the requisite user functions for them to follow all the steps in the preferred workflows. This typically resulted in the epidemiologists extracting the data from the SS systems and analyzing it with other software, and reduced productivity.

CONCLUSIONS

The preferred workflows we have documented are an embodiment of user requirements. As such they can be used to design SS systems that better meet the needs of epidemiologists and better support them in their SS activities.

We are currently building a functional user prototype SS system based on these preferred workflows. Submitting this prototype to user testing by epidemiologists, will allow us to further refine the preferred workflows.

REFERENCES

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