Two information dissemination approaches for public health decision makers: encyclopaedia and fire alarm

Ideally, information gathered from research and surveillance is summarised into evidence, which is then disseminated to decision makers to help develop programmes and policies for prevention and control activities. Two information dissemination approaches are identified: encyclopaedia and fire alarm.

The traditional way of disseminating research and surveillance findings to decision makers is the "encyclopaedia approach". An encyclopaedia is a book of knowledge, a work that contains information on all branches of knowledge usually in articles arranged alphabetically, often by subject. Thus in a public health context, there are reports, atlases, web sites, and other media of communication to describe and explain disease burden, economic burden, risk factors, and other pertinent information.

In this era of knowledge explosion, public health decision makers are overwhelmed by the amount of information available. Research findings and surveillance reports are published every day. Thus there is a need to summarise the information from research and surveillance for use in decision making. However, even summary reports are themselves voluminous; full of text, tables, graphs, and appendices.

There is a need to explore new ways of information dissemination, one of which is the "fire alarm approach". To decision makers who often use the phrase "putting out fires" to describe their job, the fire alarm system would seem like a great help. Instead of presenting them with all the information, they are selectively given the information about specific problems.

Modern high rise buildings are designed with ventilation, heating, and cooling systems. They also have a surveillance system with a control room that monitors and keeps continuous records of the air flow, air quality, and room and furnace temperatures. These records are in real time, and are voluminous. No one actually looks at the data, unless the instruments at a particular location at a particular time register readings that are outside the normal range. An alarm is then activated, and a response team will be dispatched to resolve the problem.

In terms of evidence based public health, there is a fundamental difference in the two approaches. With the encyclopaedia approach, decision makers are given all the relevant information (mortality, morbidity, disability, risk factors, determinants, etc). With the fire alarm approach, decision makers are given information only if any of the selected indicators falls outside the normal range and indicates a potential problem. In the first case, more news is good news; whereas in the second case, no news is good news.

While there is a need to maintain the traditional encyclopaedia approach of information dissemination, it is time to conduct more research to further develop the fire alarm methodology. For example, how would the fire alarm approach help public health decision makers develop public health policy regarding, say, obesity? A further difficulty is when an adverse outcome is stable, but too high—no alarms go off, but people may still die. The normal range does not mean there is not a problem, only that the burden is not getting worse. While the fire alarm approach is well suited for a classic infectious disease epidemic curve, how can it be applied for temporal surveillance for chronic diseases, where epidemics take decades to unfold, and where timeliness is not of the same importance?

The fire alarm approach is informatics based, and focuses on describing a problem in terms of an object model, taking into account perspectives of various stakeholders. The object model includes (1) the ways information will be used to tackle the problem by stakeholders (use cases), (2) data types needed to support these use cases, (3) data flow and work flow available or needed to support collection of these data, (4) indicators needed for early warning, and (5) information technology applications needed to allow stakeholders to receive information of adequate quality in a timely fashion.

During the past decade the business community has successfully implemented knowledge management practices. It is time for public health practitioners to move to knowledge management practices from the traditional data management routine. The overarching theme is we need to begin to translate science and health data into a business practice or methodology to allow for better interpretation of the data, uses, outcomes and forecasting. Informatics, an emerging science of organising, processing and utilising data, information and knowledge, can provide a methodological basis for this effort.

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