EDITORIAL

ARE THERE 'NEW' AND 'OLD' WAYS TO TRACK INFECTIOUS DISEASES HAZARDS AND OUTBREAKS?

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In May 2005 the World Health Assembly approved an innovative and ambitious revision of the International Health Regulations, known as IHR(2005), in order to detect and control, in a timely manner, all public health events that may have a serious international impact. It represents a dramatic move from administrative notification by Member States (MS) to the World Health Organization (WHO) of cases of a limited list of diseases to a systematic analysis of health events of international concern, infectious or not [1]. The analysis of the public health events will take into account severity, unexpectedness, potential for international spread, and interference with international movement of people and goods. National focal points are to be identified in each MS to interact with WHO. The philosophy behind the new IHR is to promote early dialogue between MS and WHO, leading early mutual risk assessment of events which may not necessarily have to be notified, depending on the results of the assessment and measures taken. WHO can also use informal sources to detect earlier events of international concern and then, together with the national focal point, conduct verification, risk assessment and implement appropriate measures.

To be successful, IHR(2005) will need to rely on sufficient public health capacity at all levels within the MS, with a strong core surveillance function that can be summarised as the efficient management of health data and response from the first line health practitioner (eg, clinician, biologist) to local, regional and national public health structures. The key issues are the capacity and performance of the public health system and its ability to communicate and interact within its different sectors and with decision makers in a timely, authoritative and transparent way [1]. IHR(2005) add challenges and responsibilities for MS that may need to adjust their national public health infrastructure, often without the help of extra resources. Several events in recent years, such as SARS, avian influenza and the threat of bioterrorism, have served as an early introduction to the concept of IHR(2005). The experience of implementing a weekly early warning committee at the National Institute for Public Health and the Environment in the Netherlands [2] illustrates how some MS are already organised in this respect. The European Early Warning and Response System (EWRS) which has linked MS and the European Commission through an electronic real time secured system since 1998 (and the European Centre for Disease Prevention and Control since 2005) has shown added European value for sharing early validated information on health threats between national public health institutes and authorities and is certainly an experience that can and will be built on [3].

While IHR(2005) were being developed, there was growing interest and investment in real time monitoring of health 'signals' from every possible source, including symptoms, syndromes, crude mortality, drug sales, rumours and media reports. The assumption, which has probably not been sufficiently challenged from a research perspective, is that by using rapidly available but less specific information through automated systems, health threats of the future will (or may) be detected earlier [4]. Although the debate on 'non-specific surveillance' is not new, there are at least two reasons for this development: the information technology now available allows real time technical access to health related databases; and fears about emerging infections and bioterrorism have created social and political demand for faster and more sensitive health information systems.

There is a need for more evidence-based research on the performance, management, effectiveness, cost-effectiveness and added value of non-specific surveillance and new sources of health signals

Indeed, media reports have proven helpful for bringing to light undetected and/or uncontrolled serious outbreaks of international potential, such as SARS [4]. But can we be sure that media reports will detect a future emerging epidemic as effectively, and should we consider media reports as important as the signals generated by surveillance systems? We should recognise that many large or diffuse outbreaks in the recent past have not been detected more quickly because of media reports. However, the way in which the media report a health event or outbreak does give other important and useful information, particularly on its social and political perception. This added social dimension is argument enough for the integration of media monitoring into surveillance schemes.

Three papers [5-7] in this issue of Eurosurveillance report the recent implementation of non-specific surveillance schemes designed for the early detection of health threats. All conclude that the systems were helpful because they were able either to accurately reproduce data generated by existing specific systems or to document excess mortality following an already identified risk. However, none demonstrated a real added capacity to detect events that would otherwise have been missed! In France, real time syndromic surveillance by emergency departments was able to track seasonal influenza as successfully as a network of sentinel general practitioners. It also provided early estimates of the health impact of the July 2006 heat wave [5]. Real time monitoring of the number of deaths also documented a moderate increase of crude mortality during the April 2005 flu outbreak, and of the 2006 heat wave [5]. In order to detect bioterrorist attacks early in the United Kingdom, data on 11 key symptoms/syndromes are received electronically from all National Health System direct call centres covering England and Wales and analysed using automated detection statistical algorithms [6]. The system has indicated many sudden rises in syndromes but their careful analysis has found no evidence of a biological or chemical attack. The system is most suited to detect widespread rises in syndromes in the community, but is currently unlikely to detect more localised outbreaks, such as a cryptosporidiosis outbreak [8]. As shown in France, the benefits were early tracking of rises of community morbidity of already identified risks (eg, influenza-like illness, heat-related deaths following the July 2006 heat wave). It also provided a social added value by reassuring decision makers that widespread disease was not occurring, despite a perceived high health risk [6]. Denmark, with similar goals to the UK, applies a detection algorithm on ambulance dispatch data [7]. The system can implement reactive symptom surveillance in case of an alert. Its evaluation found that decreasing the outbreak detection sensitivity reduced the time to detection moderately, but diminished the number of false alerts considerably. Although the system was able to detect an increased activity related to seasonal influenza in a timely fashion, the authors recognised that small outbreaks occurring over a number of weeks, like the American anthrax outbreak in 2001, would be difficult to detect with ambulance dispatch surveillance.

Enhanced surveillance at mass gatherings has previously been conducted on many occasions [9,10]. Although syndrome based surveillance has been undertaken at several previous mass gatherings, it is not clear whether, for regions with a well-functioning surveillance system, it actually provides more information than that identified through the strengthening of routine surveillance [9]. After

careful consideration of the available evidence and consultation with state health departments, the Robert Koch-Institute concluded that enhancing the German mandatory notification surveillance system would be sufficient for the 2006 World Cup in Germany [9] and decided not to implement syndrome based surveillance. Their experience shows that enhancing the existing system accelerated data transmission and intensified communication and action-orientated cooperation between players of the German public health system. Enhancing surveillance at mass gatherings is, certainly a valuable and cost effective communication and networking exercise of public health structures to face future critical health-related events [8]. An enhanced, but more intensive system than the German example given above was set up in the French region of Hautes-Alpes near the Italian border for the 2006 Olympic Winter Games in Torino [10]. As in Italy, and in most similar experiences previously, it detected no particular health events of high public health concern.

Notification of unusual health events from daily healthcare practice (eg, clinicians, microbiologists, emergency services, hospitals) to public health structures is a valid source of hazard or outbreak detection if the capacity for verification and analysis of the public health system is timely and efficient. Event notification that complements surveillance activities in an effective way is much more likely to work if there is a proactive networking activity of health professionals by those who run the surveillance and public health system. Without a mutual understanding of the usefulness and public health added value of notification and interactive communication between healthcare professionals (in particular clinicians and microbiologists) and public health structures, the challenges and the high social expectations of health security will not easily be met and no automated data collection system will be able to replace it. In this context, the paper by Paquet et al [4] presents an integrated management model of sources of information with a filtering process, with risk assessment linked to decision making and action.

Based on the recent scientific literature and the papers published in this issue, there is a need for more evidence-based research on the performance, management, effectiveness, cost-effectiveness and added value of non-specific surveillance and new sources of health signals. This is important given the cost of implementation and the concurrent needs for disease specific surveillance and other, equally important, public health programmes such as prevention or health promotion. Recent experience has shown that a strong laboratory capacity is necessary at all stages of diagnosis, surveillance and signal assessment and should, therefore, be more clearly integrated and supported. Modelling the spread of a new or epidemic infectious disease, based on available data and reasonable scenarios, is another key element of risk assessment, particularly at national and supranational levels, and should be developed further. Some generic activities such as epidemic intelligence that searches for international health signals would gain in cost-effectiveness if developed and pooled at European level. All of the 'emerging' tools discussed in this issue are of potential interest and may be considered by national authorities to complement gaps in existing national systems based on priority, public health needs and the requirements of IHR(2005). However, their effectiveness cannot be assumed without thorough analysis.

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