TRIPLE···S
Syndromic Surveillance Systems in Europe
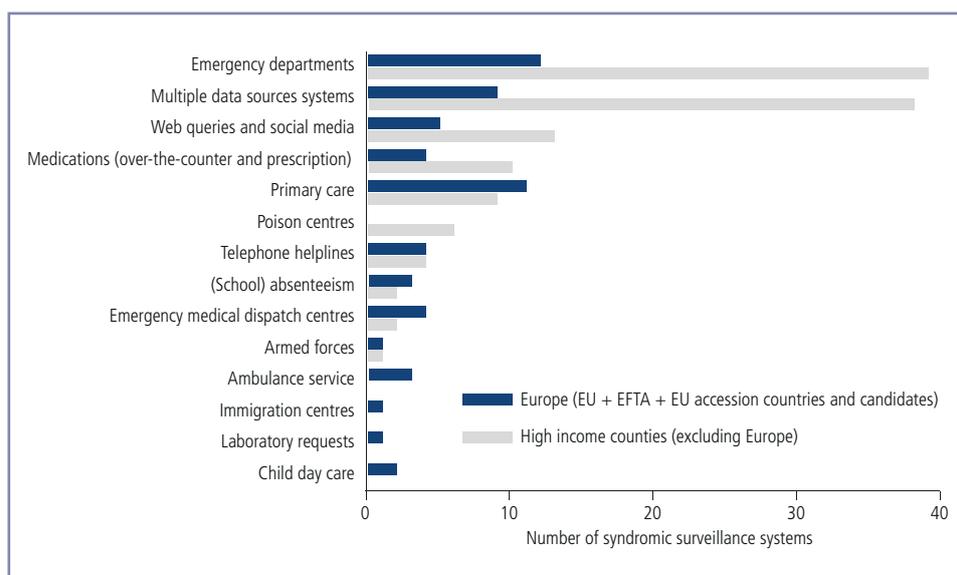
About data sources for syndromic surveillance

Choice of data source can affect the performance of the system

Syndromic surveillance (SyS) systems usually make opportunistic use of existing data sources that are readily available. They do not employ data designed and collected especially for this function, and data fields and formats can rarely be modified for the sake of surveillance. Users of SyS systems should therefore understand what type of information a particular data source can provide, and how that information will affect the focus or performance of the system (see overleaf for aspects to be taken in account when selecting a data source).

Which data sources are used for syndromic surveillance?

While a variety of data sources are used, the majority are related to health care service utilisation, particularly patient records from emergency departments and primary care. Many syndromic surveillance systems analyse information from multiple data sources in order to cross-check signals and to get a broader coverage of possible health threats, varying severity of cases or different population strata.

Data sources used for syndromic surveillance in Europe and high-income countries in the world (excluding Europe)

Legend:
- Europe (EU + EFTA + EU accession countries and candidates)
- High income counties (excluding Europe)

x-axis: Number of syndromic surveillance systems

Categories (top to bottom): Emergency departments; Multiple data sources systems; Web queries and social media; Medications (over-the-counter and prescription); Primary care; Poison centres; Telephone helplines; (School) absenteeism; Emergency medical dispatch centres; Armed forces; Ambulance service; Immigration centres; Laboratory requests; Child day care

## Which data sources are used for which purpose?

Many syndromic surveillance systems focus on communicable diseases, such as influenza-like and gastrointestinal illnesses. For example, for surveillance of influenza-like illness in Europe: eleven systems use primary health care data, nine systems use emergency department data, four systems web queries and social media, and four systems use multiple data sources.

Wider applications of syndromic surveillance

The Triple-S project also revealed the growing importance of other areas of application for syndromic surveillance findings: risk assessment or reassurance of lack of health impact during various potentially health threatening events, such as extreme weather or mass gathering events.

SyS data sources for risk assessment and reassurance
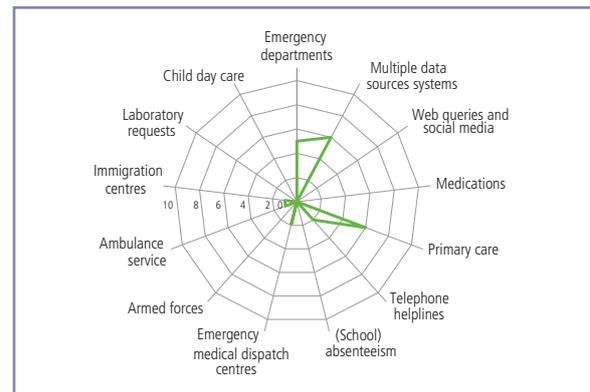
Aspects to be taken into account when choosing a data source

- *Targeted population*
  Sources should be selected according to the treatment-seeking behaviour of the target population. Mild illness cases can be measured using, for example, routine clinical information sources such as primary care visits, while more severe illness is better monitored using data from, for example, ambulance services.

- *Targeted health threat*
  Common or seasonal infectious diseases, such as influenza, are best measured by data sources covering a large part of the population, for example, telephone helplines or primary care. Certain health threats are particularly indicated by a specific data source, for example, intoxications from poison control centre data.

- *Timeliness*
  Over-the-counter medication sales or nurse helpline calls, for example, are likely to indicate cases earlier in the course of illness than, say, emergency department visits and thus potentially contain earlier signals of health events.

- *Availability, accessibility and quality of data*
  Not every data source is available in every country; access to data is legally impeded, for example, by privacy regulations; data quality is influenced by data collection behaviour and principles such as manual data collection and variations in coding systems.

- *Generic advantages and disadvantages of a data source*
  As an example, school absenteeism data are unspecific as they are usually limited to all-cause absentee counts. Furthermore, data are not collected at weekends or in school holidays. However, absenteeism data may contain information on youth-group specific outbreaks and enable tracking of early transmission of communicable diseases. Another advantage relative to some other data sources is that school enrolment figures are usually available as a reliable denominator.

For more information on syndromic surveillance data sources please consult the Triple-S report *Guidelines for Assessment of Data Sources* on the Triple-S website.

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