How to design and implement a syndromic surveillance system in animal health? Guidelines by the Triple-S project

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The European Triple-S project (2010–2013)

Aimed **to increase the European capacity for real-time syndromic surveillance (SyS)** and for monitoring the health burden of expected and unexpected health-related events.

Involved more than 20 **human health and animal health experts**.

Specificities of the guidelines

Common for human and animal health sectors.

Practical and **pragmatic** with a lot of examples from several European SyS systems.

Comprehensive by providing recommendations to implement each component of a SyS system (data collection; preparation and provision; data analysis; communication; evaluation).
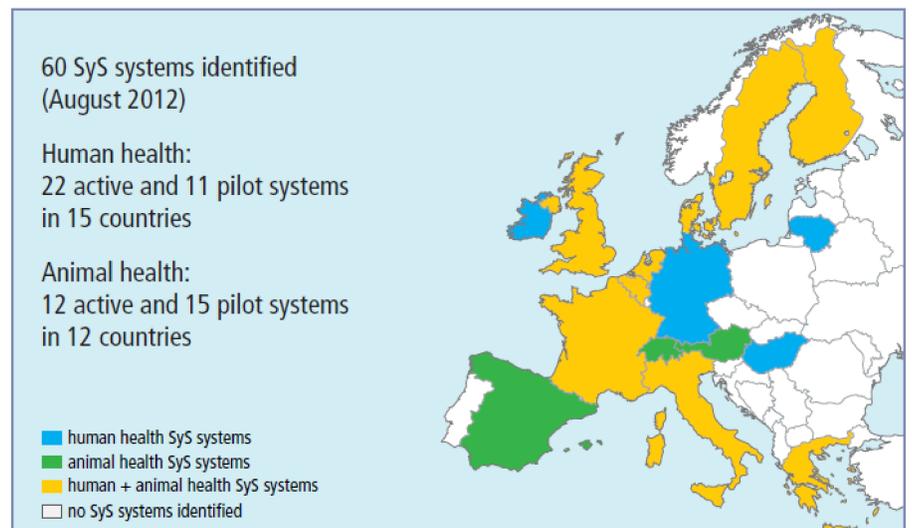
Understandable without any statistical knowledge.

Usefulness of the guidelines

For epidemiologists and public health professionals: to develop or improve SyS systems.

For decision makers: to identify advantages and limits of SyS systems, and implications of their implementation in terms of scentific, technical, financial and human resources issues.

European countries where SyS were identified (based on an inventory, see: http://www.syndromicsurveillance.eu/).
These systems are used to illustrate the guidelines.

60 SyS systems identified (August 2012)

Human health:
22 active and 11 pilot systems in 15 countries

Animal health:
12 active and 15 pilot systems in 12 countries

- ■ human health SyS systems
- ■ animal health SyS systems
- ■ human + animal health SyS systems
- □ no SyS systems identified

Key outcomes of the guidelines

In animal health: timeliness is perceived more as an objective, often not reached, rather than an inherent characterictic of SyS systems.

In human health: standardization of syndromic definitions is often facilitated by international diagnostic coding systems, that do not exist in animal health.

In both fields:

-unspecified clinical data (mortality, attendances in Emergency Department, …) and proxy measures (drug sales or web queries) can be used.

-the sensitivity and specificity of the SyS system depend on the data source and syndrom under survey, the unit of temporal and geographical aggregations and the threshold above which a statistical alert will be raised.

Examples of data sources in human health and animal health fields

Blue box: human health examples

**System: Scottish Syndromic Surveillance System**
Country: UK (Scotland)
Data source: Electronic prescription data
Status: Active (2009)
The NHS ePharmacy Programme introduced the 'Electronic Transmission of Prescriptions' and supports improvements in the end-to-end prescribing, dispensing and payment processing of prescriptions. The electronical prescription data is also used in syndromic surveillance: during the Influenza pandemic antiviral prescription for all Scotland was analysed to monitor the trend of the pandemic.
Figure 3-7: Antiviral prescriptions (Oseltamivir and Zanamivir) Scotland (April 2008 – January 2009). Graph taken from the Report on the Health Protection Response Pandemic of Influenza A(H1N1) Infection in Scotland 2009-2010 by the Health Protection Scotland (HPS).

Further information:
http://www.hps.scot.nhs.uk/resp/publicationsdetail.aspx?id=48690
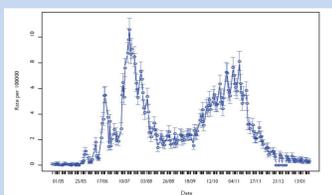
### Green box: animal health examples

System: VETSTAT
Country: Denmark
Data source: Drug sales
Status: Active (1997)

All data on the purchase of medicines (antimicrobials and vaccines) for livestock are collected in Denmark. Data can easily be merged to look at the usage for, for example, specific animal species/disease syndromes/specific antimicrobials/some geographical areas or the entire country. The objective is to control the use of antimicrobials.
Figure 3-11: An example of outputs provided to farmers. Each farmer can compare his/her antimicrobial use to the use at the region and land levels (Nomenclature of Territorial Units for Statistics codes 2 and 3 for Denmark).
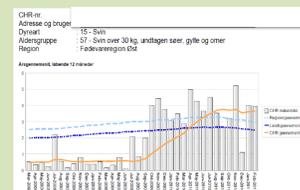
Further information:
http://www.vet.dtu.dk/Dyrlaegens_indgang/Generel_info/Antibiotika/VetStat.aspx

TRIPLE·S
Syndromic Surveillance Systems in Europe

Guidelines can be found here (freely accessible): **www.syndromicsurveillance.eu**

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