Syndromic Surveillance in France and Europe: the French SurSaUD Syndromic Surveillance System and the European Triple S Project

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Plan

• The French syndromic surveillance system
  – Basics
  – Focus on climate-related impacts

• The European Triple S Project led by France between 2010 and 2013
  – Overview
  – Main deliverables
The French syndromic surveillance system SurSaUD®

- Set up in July 2004 after the major 2003 heat wave
  ➞ a dramatic impact: 15,000 excess deaths (> 74 years old)

- Main objectives of the system
  - detect unexpected public health events
  - follow trends of expected events (seasonal)
  - estimate the health impact of these events

- A mature system: 10 years of data collection
ED network (OSCOUR®)

Daily standardized data from 457 ED

≈ 70 % of national attendances including overseas

GP’s emergency associations (SOS Médecins)

Daily chief complaint and diagnosis from 60 GP’s associations / 63 = 95% of all consultations

Mortality

Daily data from 3 000 cities / 36 000 = 80 % of all deaths

Data from electronic certification of death = 5%, in progress
## Ten years of syndromic surveillance in France

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<th>Climate</th>
<th>Others</th>
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<td>Bronchiolitis</td>
<td>Cold-related diseases (injuries, hypothermia, frostbite, etc.) (2009, 2012)</td>
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<td>Suicide attempts</td>
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SyS indicators and extreme weather events

Four examples

• Heat wave
• Cold spell
• Combination of unfavourable weather conditions
• Disaster: flooding, cyclone (French overseas territories)
Heat waves

- French system for heat wave and health alerts (SACS) since 2004, based on two components:
  - Met forecast and biometeorological indicators for alert
  - Health related indicators
    - to have a rapid estimation of the impact during the heatwave
    - to make an in-depth analysis of the impact after the heatwave
    - to detect an unexpected impact

⇒ SurSaUD® morbidity and mortality indicators are reported daily by InVS regional offices when biomet indicators forecasted at 3 days are above the thresholds at a local level
Assessment of a heat indicator - 2006 summer

Heat indicator: heat stroke/hyperthermia, dehydration and hyponatremia

⇒ Linear relation between increase in temperatures and increase in heat indicator

Josseran L et al., 2009
2006 heat wave, SOS Médecins Bordeaux data

2006 heat wave in France: 2,000 deaths in excess

Figure 4

Daily number of visits for heat syndromes made by SOS Médecins Bordeaux and temperatures, 1 June 2006 – 31 August 2006

Flamand C et al., 2008
2012 heat wave, OSCOUR® ED data, France

Quantitative analysis ED attendances related to heat (all ages and by age groups)

Temporal and geographical analysis

2012 was not a major heat wave in France: a low impact on morbidity and no significant impact on mortality were observed through SurSaUD® system.
What can be seen on mortality data?

Weekly fluctuations in mortality from 2003 to 2013
February 2012: cold spell (13 days long) / Start of the seasonal outbreaks / ED overcrowding / Increase in mortality data

- 6,000 deaths in excess (13% - over 85 years old)
- Start of flu outbreak in East-South of France with a higher number of flu clusters in elderly institutions

Public health impact related with the conjunction of infectious factors (circulation of different seasonal viruses), environmental factors (non direct effects of cold) and organisational factors in health care facilities (winter holidays)
2006 Asthma peaks in Ile-de-France region

Weekly number of ED visits for ASTHMA, all ages (red) and <15 years old (blue)
France, January 2006 - July 2006

(Source: InVS - OSCOUR®)

Conjunction of simultaneous environmental factors:
hot temperatures, air pollution, stormy weather with violent rain, pollinisation phenomenon ➔ osmotic shock and wide release of allergens in the air
Flooding in south french region – june 2010

- **Specific flag** to identify ED attendances related to the flooding (health impact assessment)
- Limited impact observed in ED:
  - 363 ED attendances directly linked with flooding (4.5% of total number of ED attendances)
    - slight increase in total number of attendances (only just after the event)
  - Impact on specific diagnosis: hypothermia and anxious troubles
  - No impact was observed on gastroenteritis, monoxyde poisoning or infectious diseases

**Hypothermia**: 24 ED visits on the 15 and the 16 of June (versus 6 in the Var department during the previous 3 months)

**Anxious troubles**: an average of 13 daily ED visits observed during the week just after flooding (vs 8 expected for the period)
Dumile cyclone in La Réunion Island – 3rd of January 2013

Weekly number of ED attendances coded gastroenteritis, La Réunion hospitals, dec 2012 – feb 2013

Seasonal outbreak

Cyclone

Caillère et al, 2013
Conclusion

Syndromic surveillance:
- a useful tool for health impact assessment of climatic event
- fruitful sources with large amount of information (ICD10 diagnosis)
- a young data source in progress: electronic certification of death (in-depth analysis of winter mortality)
- A ten years historical database: a way to explore mid- and long term trends related to climate change
Plan

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The European project **TRIPLE-S**

**Syndromic Surveillance Systems, Assessment towards guidelines for Europe**

- **Coordination**: French Institute for Public Health Surveillance (InVS)
- **3-year project**: from Sept. 2010 to December 2013
- **Covers both human and veterinary syndromic surveillance systems**
  - Limited to morbidity for human systems
  - Morbidity and mortality for veterinary systems
- **Involves 24 partners**
  - 13 associated partners
  - 7 collaborating partners
  - 5 members in the Advisory board
    - ISDS, ECDC, OMS, DgSanco, SVA
  - 1 consultant: Duncan Cooper

- **Co-funded by the European Executive Agency** for Health and Consumers (EAHC) Grant No. 20091112
Final purposes of the project Triple-S

What the project will bring to Europe and to the Member States for the future?

• An overview of the Syndromic surveillance (SyS) activities in Europe

For Member States:

- Provide practical tools to support the implementation/improvement of their own SyS system(s)
- Encourage synergy between human and animal surveillance in the country
- Be included in an expert network in SyS to exchange and share experiences

At a European level:

- Support SyS systems in EU countries with harmonized results
- Identify the minimum requirements in each country for reporting comparable results between MS
- Propose a strategy for SyS at a European level
- Constitute an expert network for surveillance of cross-border public health threats

Finally: increase the EU capacity to monitor the health burden of events for the population
Concrete actions of the project

What the project has done to reach these purposes?

• **Conduct an inventory** of existing, past and planned syndromic surveillance systems in the EU Member States (MS)

• **Facilitate exchanges and knowledge transfer** across experts on SyS, through 8 site visits and dissemination activities

• **Ensure exchanges between the animal and human SyS systems**

• **Support the implementation of SyS systems** in the MS through various documentations:
  - Guidelines for the implementation of SyS in a MS
  - Fact sheets summarizing each step of implementation of SyS system
  - Proposal for a European strategy for SyS
1. Guidelines for implementing syndromic surveillance (SyS) systems in member state (MS)

Who are these guidelines for?
Local / regional / national professionals who do public-health human and animal surveillance

Objectives:
- To support the design and to provide practical recommendations at each step of the set-up, use and assessment of a SyS system in a country (or region).
- Illustrated with various examples of initiatives from European countries
- Include minimum requirements for developing SyS systems and reporting surveillance findings

Content of the Guidelines:
• Objectives and reasons for implementing a SyS system in a country or region
• How to collect data? Which data sources? How to manage the data?
• How to analyse data?
• How to communicate the results?
• How to evaluate the SyS system?
2. Proposal of a European strategy for SyS

- **Target audiences:** European, Local/national public-health authorities and public-health professionals (both human and veterinary)
- **Objective:** propose a strategy for enabling comparability at the European level of reporting from national/regional SyS systems
- Three progressive models for a European Syndromic surveillance

**Model 1**
Incorporation of syndromic-surveillance results into existing public-health surveillance and response systems in MS

**Model 2**
Standardised syndromic-surveillance reports at EU level

**Model 3**
Pooled syndromic surveillance-analysis and reporting at EU level
Acknowledgments

- All data providers included in the SurSaUD® surveillance system
- All Triple S partners
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- The French Institute for Public Health Surveillance regional offices
To go further

• Related to climate aspects
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• Related to Triple S Project
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  – Triple S web site : http://syndromicsurveillance.eu/

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• Related to mass gathering events
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Publication related to Syndromic surveillance system SurSaUD


Publication related to environmental surveillance
