



# Current situation of veterinary syndromic surveillance initiatives

Anne Bronner, Céline Dupuy, Jean-Baptiste Perrin, Fernanda Dorea

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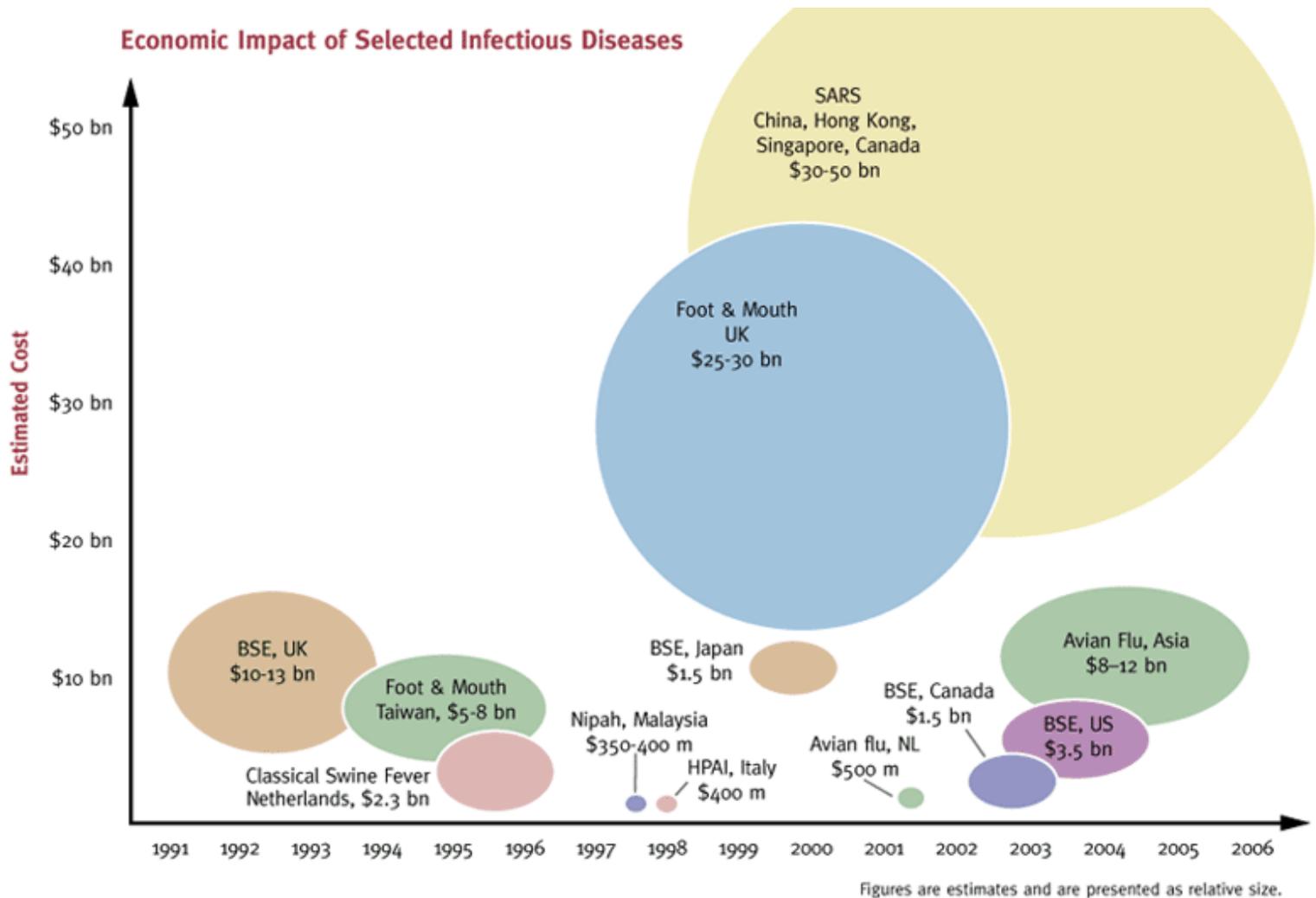
# Animal diseases

- **Potential public health impact:** 60% of all human pathogens are zoonotic

Infectious disease	Wildlife	Livestock	Companion animals	Human
Foot and mouth disease	X	X		
Aujeszky disease	X	X	X	
Avian influenza	X	X		X
Brucellosis	X	X	X	X
Rabies	X	X	X	X
...				

# Animal diseases

- Potential economic impact



# Veterinary surveillance systems

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- Aims
  - Estimate disease importance
  - Assess impact of control and biosecurity programs
  - Detect early disease events
- Traditional surveillance systems
  - Clinical: mandatory notification of suspected cases
  - Active : regular screening of animal populations



Essential but disease-specific and low sensitivity (under-reporting)

# Syndromic surveillance

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- Triple-S SyS definition



“Syndromic Surveillance is the real-time (or near real-time) collection, analysis, interpretation, and dissemination of health-related data to enable the early identification of the impact (or absence of impact) of potential human or veterinary public-health threats which require effective public health action”

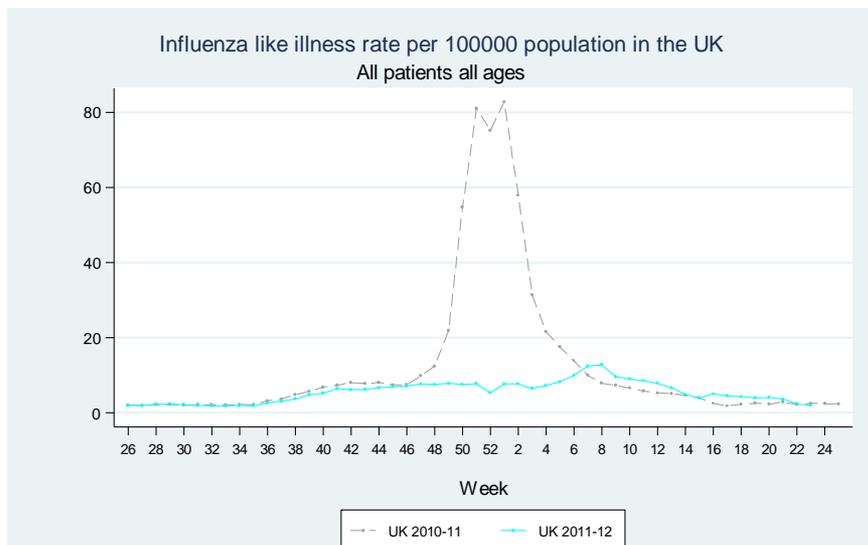
(Triple-S project, 2011, Lancet)

# Syndromic surveillance

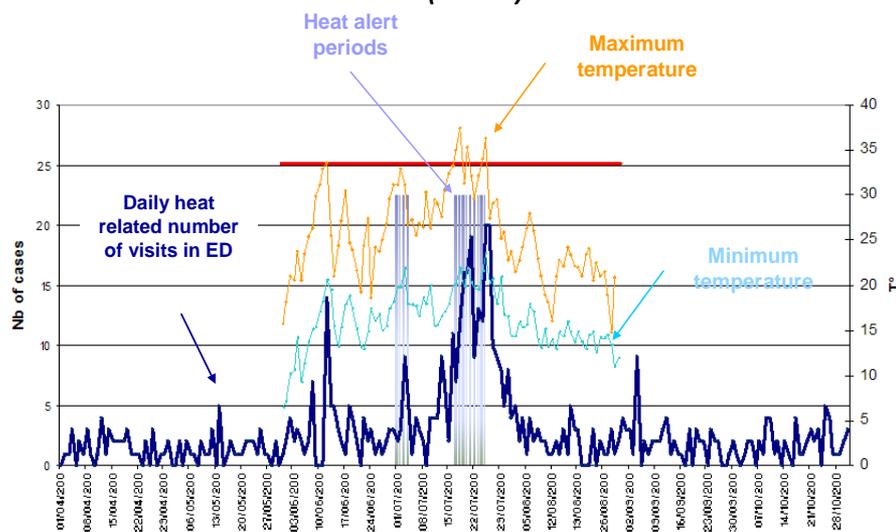
- Examples

GP consultations for influenza-like illness to identify seasonal outbreaks of influenza

(<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/RealtimeSyndromicSurveillance/>)



ED visits for malaise, desydratation in order to identify early the impact of a heat wave (InVS)



Heat indicator : Malaise, dehydration, hyperthermia and hyponatremia

# Two inventories of veterinary SyS

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- Inventory of veterinary SyS in Europe

(Dupuy et al., 2013)

- In the framework of the Triple-S project
- Questionnaire sent to formal and informal contacts from each European Member states
- Based on the definition of SyS by Triple-S



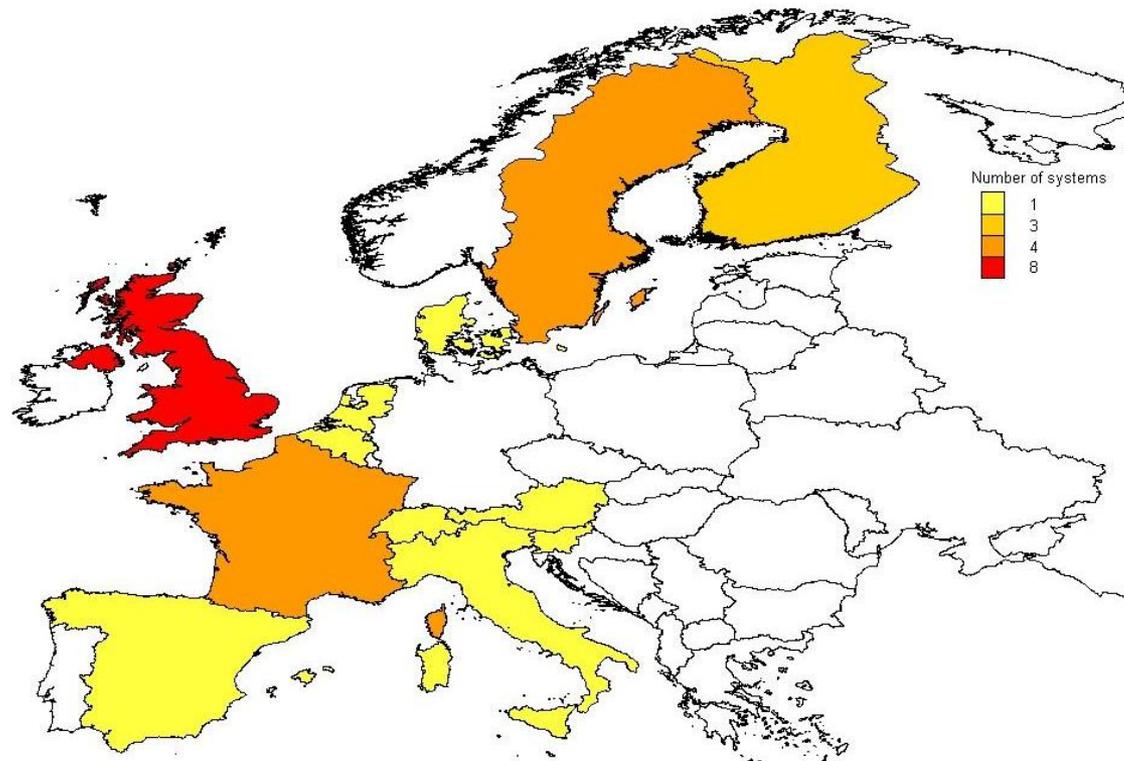
- Inventory of veterinary SyS worldwide

(Dorea et al., 2011)

- Review of published work
- SyS defined as the systematic monitoring of animal population data to detect outbreak

# Results

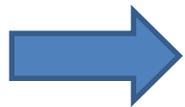
- Inventory of veterinarian SyS in Europe (Dupuy et al., 2013)
  - 27 systems in 12 countries



# Results

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- Inventory of veterinarian SyS in Europe (Dupuy et al., 2013)
  - 27 systems in 12 countries
- Inventory of veterinarian SyS worldwide (Dorea et al., 2011)
  - 4 systems in 3 European countries
  - 9 systems in 4 non-European countries: United States, New Zealand, Canada, Australia

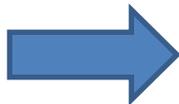


Many SyS systems are not made public

# Results

- **Status of the European SyS systems** (Dupuy et al., 2013)

Status	Number of SyS systems (n=27)
Active	12
Pilot phase	10
Explorative projects	4
Completed	1



Different level of implementation

# Results

- Data sources

		In Europe	Outside Europe
Species	Livestock	23	8
	Companion animals	6	4
	Wildlife	7	0
	Horses	2	0
Data providers	Veterinary clinics or schools	14	6
	Laboratories	11	2
	Farms, professional organizations	10	1
	Veterinary services	13	0
	Slaughterhouse, rendering plant	12	0
	Poison centers, telephone helpline, websites	3	0
	Drug producers or pharmacies	2	0

# Results

- Data collection

- Type of data

	In Europe	Outside Europe
Clinical signs or lesions (mortality included)	12	7
Laboratory test submissions	7	2
Production indicators	5	0
Other indicators	5	0
Drug prescriptions	4	0
Website hits / Help line calls	2	0

- Timeliness

30% of European SyS systems collect data less often than daily

# Results

- Data collection

		In Europe	Outside Europe
Data already collected	Mandatory data	13	0
	Private data	0	4
Data collected specifically for the SyS system	Interest for output	12	0
	Financial compensation	2	1
	Software providing	0	2
	Other motivation (such as an investigation network)	9	2

# Results

- Two kinds of SyS in Europe
  - Results of a multiple factor analysis (MFA) (Dupuy et al., 2013)

- ✓ Livestock animals
- ✓ Mandatory data collected by highly-regulated data providers
- ✓ Surveillance of particular health threats
- ✓ Exploratory stage

- ✓ Companion animals, horses and wildlife
- ✓ Private data providers
- ✓ Outbreak detection, general health surveillance
- ✓ Advanced stage

# Discussion

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- SyS systems: not based on real time data collection and analysis (Buehler et al., 2004; Triple S, 2011 )
  - An objective rather than an inclusion criteria
- $\geq 50\%$  SyS systems: explorative projects rather than operational systems
  - Need for more research

# Discussion

- ≈ 50% SyS systems based on specific data collection  
→ Need to develop SyS based on data already collected ?

	<b>Mandatory data</b>	<b>Private data</b>
Data	Livestock++ Mortality, abattoir condemnation, calving intervals	Clinical data (companion animals++), laboratory data
Access	Easy	Based on willingness
Data quality	Robust Exhaustive Data quality requirements	Disease variations Part of the population Lack of coding

# Conclusion

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- Great interest of veterinarians in SyS systems
  - Need for more research
    - Role of Triple-S guidelines
    - Role of interactions with human health sector
- « One health »



# Coming today and in the future...

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- 2 active SyS

- Laboratory data: Fernanda Dorea



- Mortality data (OMAR): Jean-Baptiste Perrin



- 2 initiatives of SyS

- Abattoir condemnation: Céline Dupuy



- Calving intervals: Anne Bronner



# References

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- Dorea, F.C., Sanchez, J., Revie, C.W., 2011. Veterinary syndromic surveillance: Current initiatives and potential for development. *Prev Vet Med* 101, 1-17.
- Dupuy C., Bronner A., Hendrikx P., Wuyckhuise-Sjouke L., Watson E., Reist M., Fouillet A., Perrin JB. - Inventory of veterinary syndromic surveillance systems in Europe (Triple-S project): current situation and perspectives. *Prev Vet Med*, 2013.
- Dupuy, C., Perrin, J.-B., Bronner, A., Calavas, D., Hendrikx, P., Fouillet, A., 2013. Synergy between human and animal health syndromic surveillance: Triple-S outputs. *Online Journal of Public Health Informatics* 5, 68.
- <http://www.syndromicsurveillance.eu>





Thank you for your attention

