

Evolution of surveillance in wildlife when an outbreak is resolved: when should we stop active surveillance ?

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The evolution of classical swine fever (CSF) surveillance in France following an outbreak in wild boar (*sus scrofa*) is here presented, as well as the difficulties encountered in stopping active surveillance and in coordinating the surveillance performed between countries, when a forest spread between two countries is concerned.

Context

A first case of CSF was declared in April 2003 in the Vosges du Nord massif (northeastern France) (Fig. 1) on a hunted wild boar. The strain isolated (Uelzen-like) confirmed a link with the outbreak detected in Rhenanie-Palatinat (Germany) in 2001, and had been isolated during the 1990'S in the same area (Simon et al 2013). An infection zone (IZ) was set up in accordance with Directive 2001/89/CE. This zone was progressively extended, because of the virus spread from 2003 to 2004, and was finally delimited by two physical barriers: the A4 highway and the Sarre river. French authorities decided to limit this infected zone by an observation zone (OZ, 5km around the IZ). Because of the difficulties encountered to eradicate the outbreak and to limit the progression of the disease, a strategy based on oral mass vaccination was adopted from August 2004 (Decision 2004/832/CE). No more viropositive wild boar had been found since 2007 although the surveillance included on all hunted and found dead wild boars (Rossi et al. 2010). However, a active surveillance has been maintained to confirm CSF eradication.

Organisation of the surveillance and its evolution

The classical organisation implemented in the management of this outbreak of CSF in wildlife is the following:

Policy makers use both the results of surveillance (epidemiological follow-up of the wild population, additional field studies) and the outputs of the risk evaluation agency to adapt surveillance modalities. The whole set-up is submitted to the Commission (CSF data basis, CVADAAA presentations) and the evolutions presented to other EU countries. A system of regional meetings was organised at the beginning of the outbreak with the countries concerned by the outbreak.

Germany Belgium Bulgaria, ...



Commission (CPVADAAA)

CSF UE database

Management / Policy

Field epidemiology

FRANCE

Risk evaluation



Figure 1: Location of the surveillance zones defined at the beginning of the outbreak in 2004 (IZ in yellow, OZ in green)

Milestones

- 2003: 1st wild boar hunted CSF positive Mandatory active surveillance (serology and virology) on all hunted and dead wild boars
- 2007: Last wild boar found viropositive
- June 2010: Risk assessment and completion of the oral mass vaccination
- Nov 2011: Lifting of the infected zone after a risk assessment by Anses, completion of the active surveillance in the OZ
- 2014: New risk assessment (previous one, change in the test scheme performed (smaller area, young animals only). active surveillance still on-going. Towards the end of this surveillance while passive surveillance is reinforced?

Risk assessment

- 2008, EFSA: scientific advice on the efficacy of the available surveillance, hunting and vaccination measures to control and eradicate CSF in feral pig populations
- 2010, ANSES: Oral vaccination of wild boars can be stopped, but surveillance should be maintained at least 3 years after the end of vaccination
- 2014, ANSES: sanitary situation positive, low risk of re-emergence, necessity to improve surveillance by combining active surveillance on animals <24 months on risky areas, and passive surveillance on dead animals

Study of the individual antibodies kinetic

Persisting maternal antibodies or active sero-conversion of the piglets by CSF virus contact ?



Figure 3: Follow-up of the antibodies kinetic and of the virus in one at-risk area. Protocol of the capture-mark, recapture study performed in 2013-2014 (Rossi et al. 2014)

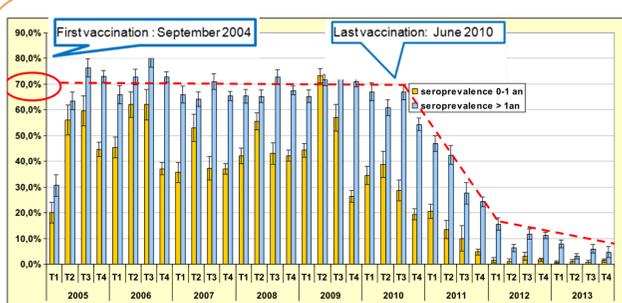


Figure 2: Evolution of the mean CSF seroprevalence in wild boars above and below 1 year of age, before and after oral vaccination was stopped

Difficulties encountered

This classical system is confronted to limits when it comes to end a planned surveillance programme following an outbreak spread on several countries:

- Cost/benefit of implementing active surveillance versus passive surveillance
- Continuous adjustment of the surveillance programme and its consequences on field actors
- How to foreseen the sampling of dead and sick animals in natural populations ?
- How to coordinating action in a border area ?
- Logistics difficulties when it comes to wildlife
- Hunters warning that it will be really difficult to organize field organization again (sampling, transport to the laboratory, data record, etc.) if it is stopped

Currently, a reinforcement of the passive surveillance is performed in France, while the stop of the planned surveillance is questioned, after an international coordination of the surveillance of CSF.

→ With an absence of CSF cases since more than 7 years, the reactivation of an international coordination of the surveillance seems to be the best option to evolve concurrently, while knowing exactly what is going on on both sides of the border.

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References: Simon et al 2013. *Veterinary microbiology*, 166, 631-638
 Rossi et al 2010. *Veterinary microbiology*, 142, 99-107
 Rossi et al 2014. EWDA congress, Edinburg August 2014

