

Integration of a One Health mobile lab in Austrian outbreak response

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Background

Climate change is leading to the spread of arthropods such as mosquitoes and ticks, which can transmit serious diseases such as West Nile fever virus (WNV) or Crimean-Congo haemorrhagic fever virus (CCHFV). As arboviruses are becoming more common in Europe, the risk to public health is increasing. Advanced surveillance of zoonotic diseases and improved outbreak response becomes obligatory. Implementing the One Health approach, which includes surveillance of humans, animals and the environment, is crucial to managing pandemics and epidemics.

Method and Results

Every country has systems for reporting notifiable diseases to operators and authorities for disease control action. However, Austria lacks a dashboard that shows this entire process in one picture. Therefore, the communication process for WNV in Austria between the human, veterinary and environmental sectors was gathered and analysed. Gaps were also identified in order to improve data transfer and communication between the main stakeholders with a decision support system (DSS) and thus ensure rapid responses in pandemic situations.

Austrian Communication Workflow for WNV

We have identified that the communication flow between public and animal health and environmental sectors can be accelerated and made more effective by the use of a DSS. This system provides the latest disease reporting data and information on, for example, weather or traffic, that enables better disease control decisions.

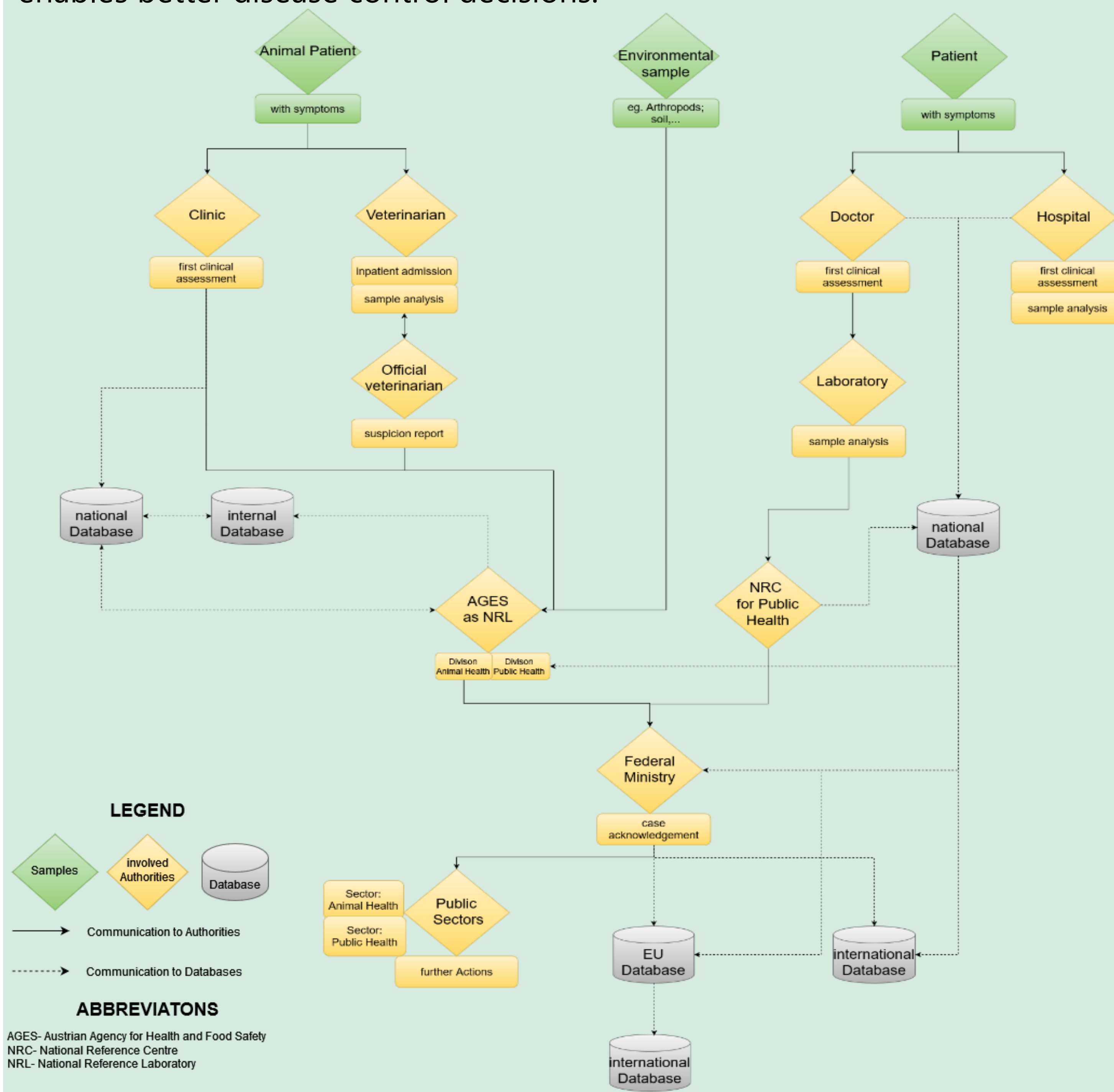


Figure 1 Current communication process for WNV cases between the public, animal health and environmental sectors

Data transfer and communication between key stakeholders are crucial for the management of notifiable diseases. Here the example for WNV is given and depending on the type of sample (human, animal or environmental), the steps taken by the involved organisations and authorities differ. However, all suspect samples are received by the National Reference Centre (NRC) or the National Reference Laboratory (NRL) and uploaded to national and international databases and will be recognised by AGES. In addition, the Federal Ministry is informed in order to implement further disease control measures with the public sectors.

Possible improvement via MOBILISE lab of the communication workflow

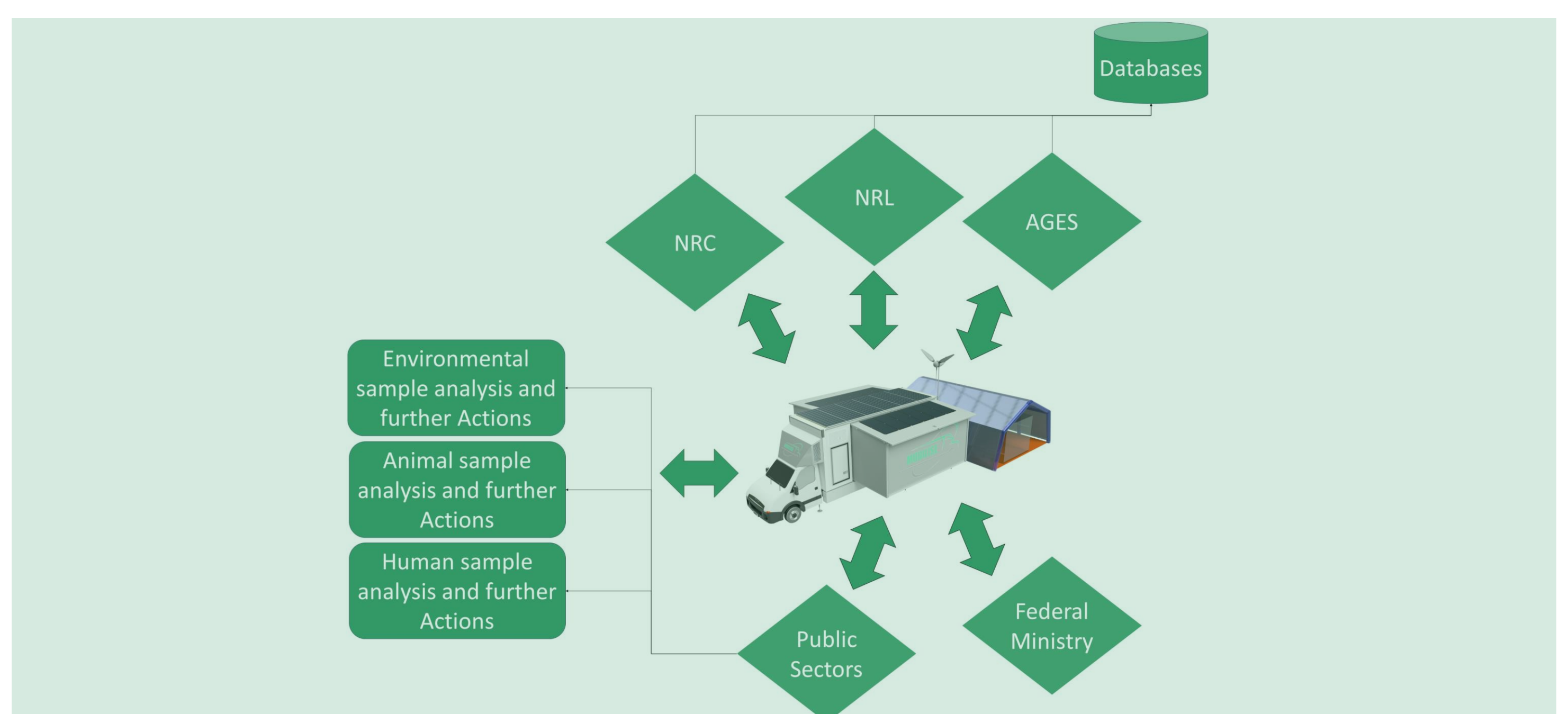


Figure 2 MOBILISE with DSS platform can improve real-time interaction between authorities and support active work in the field

In addition, the MOBILISE mobile laboratory with the implemented DSS is designed to handle pathogens up to risk group 4 within the One Health concept, as it is able to analyse samples from humans, veterinary and the environmental field. These may improve the disease response or recognition in Austria since the mobile laboratory can support the diagnostic field work and provides active and real time dialogue with all involved authorities and databases.

Discussion and Conclusion

Due to climate change, EU countries will be confronted with the emergence of diseases in the upcoming decades. Establishing communication procedures for notifiable diseases is of high importance in order to be able to respond quickly in the event of disease outbreaks. Currently, there exists no precise One Health communication workflow for all diseases caused by invasive pathogens. The described workflow for WNV is a first step towards elaborating the accurate data and communication channels for current or invasive diseases such as CCHFV. In addition, the developed DSS can support decision makers in taking further actions by providing real-time data reports and communication exchange. This system will be analysed in combination with the mobile laboratory in field operations to gain deeper insights into the possibilities to improve response time.