Swine Global Surveillance Project: update and future steps

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Key points

- It is a public, private and academic partnership to implement a system for near real time global surveillance of swine diseases
- The output of the system is a report of hazards identified and subsequently scored that may represent a risk for the US pork industry
- Developing systems to provide situational awareness to stakeholders in near-real time can facilitate the coordination between government agencies and the industry with the ultimate objective of preventing or mitigating the impact of diseases epidemics
- The reports are available at: https://z.umn.edu/SwineDiseaseSurveillance

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The recent epidemics in the swine population of the US has demonstrated, once again, the importance of developing systems to provide situational awareness to stakeholders in near-real time in order to coordinate actions between government agencies and the industry with the ultimate objective of preventing or mitigating the impact of diseases epidemics. The swine industry is vulnerable to the introduction of pathogens, and their variants which the US is currently free from. The goal of this project is the development of a surveillance system for near real time identification of hazards that will contribute to the mission of assessing risks to the industry. Ultimately, the system should contribute to the identification and early detection or even prevention of the introduction of foreign pathogens into the US.

The Center for Animal Health and Food Safety has partnered with the University of Minnesota Swine Group and the Swine Health Information Center (SHIC) to develop and implement the system of near real time global surveillance of swine diseases based on an online application. The developed components of the app will simplify each step of the process described below, delivering sustainability and scalability to the entire project. Initially it has focused on three main potential threats, Classical Swine Fever (CSF), African Swine Fever (ASF), and Foot and Mouth Disease (FMD) at a global scale. The expansion of the search to other exotic swine diseases in the US is in process. The output of the system is a report that is distributed on a monthly basis by SHIC. The report includes a list of identified hazards that are subsequently scored using a step-wise procedure of screening to select those that may represent a risk for the US.

Building phases

Screening/Filtering phase: Multiple official data sources such as government and international organization websites international cooperation programs and soft data sources like newspapers and unstructured electronic information[1] are systematically screened to build a raw repository. After that, an Include/exclude process is undertaken under a crowdsourcing model. In this phase, a first filter based on a novelty criterion is applied. As output of this phase, a clean list of events is obtained which is the input of the next phase.

Scoring phase: A multi-criteria rubric was built based on: credibility, scale and speed of the outbreak, connectedness, local capacity to respond and potential financial impact on the US market. Each event is score independently by a group of experts. The average scores are calculated for each event jointly with the link to the original source. Consistency and level of dispersion of the scores are assessed before publication.

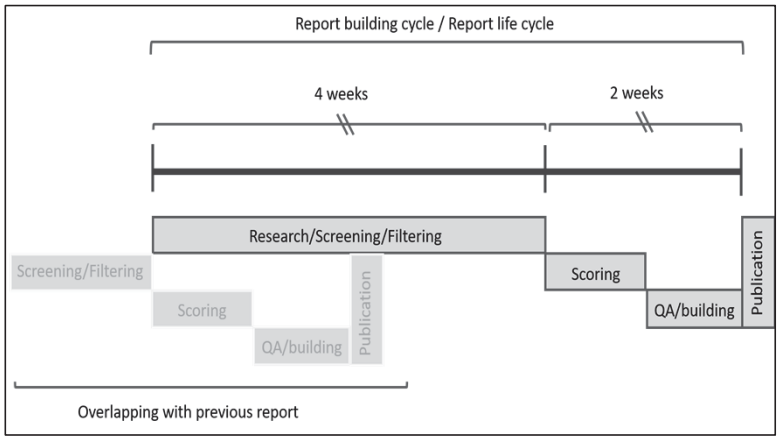

Figure: phases of the report building process.

Quality assurance (QA)/building: The projects includes a Quality Assurance component. Its aim being to ensure that the design, operation, and monitoring of processes/systems will comply with the principles of data integrity including control over intentional and unintentional changes to information. The monthly report is put into a PDF document automatically from the app after the scoring process is finalized. At last, assembly of figures and proofreading is done before sending it to SHIC for monthly publication.

Next steps

- Complete automation of event capture into the database
- Expansion of the list of diseases in the report
- Shrinking the gap between *Search-Filter phase* and *Final Publication* – (1 week)
- Expanding scoring experts panel
- Process documentation – Quality assurance compliance

Beginning in early March the tool will be available for reporting by stakeholders such as producers and practitioners both overseas and in the United States. This final stage of individual reporting is intended to increase the sensitivity and coverage of the reporting system.

References
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