



SVEPM 2021 – Research sharing and networking in times of pandemic: The online Annual Conference of the Society for Veterinary Epidemiology and Preventive Medicine

The 2021 Annual Meeting of the Society for Veterinary Epidemiology and Preventive Medicine (SVEPM) was scheduled to take place in Toulouse, France, March 24–26. As restrictions on travelling and gatherings continued to be necessary to contain the pandemic of COVID-19, it was clear that we would need, once again, to plan a digital alternative to our in-person annual meeting. While in 2020 the world was caught by surprise, and the committee had only a few weeks to prepare an online programme, in 2021 we could plan an improved virtual meeting environment. Thanks to the local organising committee, chaired by Dr. Timothée Vergne, an online platform was designed offering more of what delegates most look forward to in such meetings: an opportunity to network with peers and stay up to date with the latest research in veterinary epidemiology. Young researchers, in particular, could give their work the visibility it deserved, and had the opportunity to truly become part of the Society by interacting with members through active discussions within the platform.

The committee reviewed 48 abstracts and prepared a scientific programme that included 21 oral presentations and 52 posters. To adjust to the online format, the programme was condensed into two days, with online workshops taking place the day before the main conference. Six workshops were offered to delegates: *Evaluating the epidemiological and economic impact of control options for cross-border spread of foot-and-mouth disease in EU countries using the EuFMDiS simulation model*; *Microbiome data analysis for veterinary epidemiologists*; *Mortality rate ratios: Challenges and solutions when calculating cattle mortality*; *Participatory epidemiology in veterinary medicine – powerful methods to include social aspects into research*; *Extraction of medical terms from non-structured (textual) data from online news and social media*; and *Exploring drivers of change in Antimicrobial Usage (AMU) through participatory methods*.

On March 25th, the President Dr. K. Marie McIntyre opened the conference and gave the floor to Professor John Edmunds from the London School of Hygiene & Tropical Medicine, who opened the scientific programme by talking about “*The use of mathematical models to inform policy: COVID-19 in the UK*.” The programme continued over the two conference days with the 21 oral presentations and poster viewings. Tools in the virtual meeting environment allowed delegates to interact with speakers and posters presenters, and communicate with other delegates. On Friday March 26th, Associate professor Christine Fourichon delivered the traditional Gareth Davies Lecture, closing the scientific programme with a presentation entitled “*Controlling infectious diseases: how does the interplay between field problems and epidemiological research lead to success*”.

Ten of those who delivered oral presentations at the conference chose to contribute to this special issue.

The fight against antimicrobial resistance (AMR) was highlighted by two authors. Hesp et al. (2021) assessed the accuracy of whole-genome sequencing (WGS)-based antimicrobial susceptibility testing (AST) by comparison to the traditional culture-based AST in commensal *Escherichia coli*. Both methods had high sensitivity, and this work provided the first estimation of sensitivity and specificity for WGS-based AST. As the authors state, as methodological advances and costs are reduced, WGS-based AST are expected to, at least partly replace culture-based AST. While the Hesp et al. (2021) results are useful for the design of monitoring strategies at the population-level, McLaughlin et al. (2022) (under peer-review) provided insights that will be relevant in long-term prevention of AMR. The authors modelled the results of AST by means of minimum inhibitory concentrations (MICs) in two sentinel bacterial species (*Enterococcus spp.* and *E. coli*) against data collected through questionnaires relating to farm management in 141 dairy cattle herds in two study areas. Their analyses identified a number of management areas likely to be contributing to increased MIC, and can therefore be targeted for improvement.

Dairy cattle herd health was the focus of many of the presentations, covering topics from management to policy. Santman-Berends et al. (2021) looked at the impact of adoption of data-driven tools in reducing calf mortality in Dutch dairy herds. The authors looked at four indicators of calf mortality before and after the nation-wide implementation, from 2018 onwards, of automated tools to inform farmers about their calf mortality rates and stimulate them to improve efforts. The effect of these tools could not be assessed directly due to a lack of control groups, but the results clearly indicate a reduction in calf mortality in all evaluated indicators after the period of tool implementation and associated communication and awareness actions. This and other presentations from the conference not featured in this special issue exemplify the increasing use of data-driven tools for health management monitoring, and the potential for extracting more value from data recorded at the farm-level.

Redfern et al. (2021) looked specifically at the transition period (three weeks before and after calving) in dairy cows, and interviewed veterinarians and non-veterinarian advisors to understand their engagement in efforts to address the greater risk of metabolic disease during this period. A perceived lack of focussed transition management advice provided by advisors was a common theme, and this qualitative research unveiled some of the reasons for this. The findings highlight the importance of considering what the authors called “people factors” on cow health, such as the advisor-farmer relationship and communication between stakeholders.

A long-term temporal analysis of cow-level risk factors for survival of

Dutch dairy cows was provided by Kulkarni et al. (2021), who assessed the impact of specific perturbations due to national policy changes. Starting in 2009, the authors evaluated the period before and after milk quota abolishment in 2015, and the period after the enforcement of phosphate regulations in 2017. While these policy changes were shown to result in differences in survival of Dutch dairy cows (with a successive reduction across the three periods), the association of cow-level risk factors for culling was consistent across the evaluated policy periods.

Policy conformity was also the theme behind Brock et al. (2021) large-scale epidemiological model of bovine herpesvirus type 1 (BoHV-1) spread in the Irish cattle population. The authors presented a new modelling framework for evaluation of national control and surveillance programmes planned in-line with the European Animal Health Law for livestock diseases. The model, which also provided an innovative herd typing method, was used to support decision-making when designing the structure and implementation of a potential national BoHV-1 eradication programme in Ireland.

Ezanno et al. (2022) also used modelling in support of decision-making. Their individual-based between-herd epidemiological model aimed to assess whether promoting risk-based movements can contribute to the control of regional spread of *Mycobacterium avium* subsp. *paratuberculosis* (MAP) in France. As the low sensitivity of diagnostic tests represents a challenge to preventing the introduction of MAP when purchasing cattle, this work highlights the impact of cattle movement between high and low-risk herds, providing insights for the further development of tools to assist cattle owners in assessing the risks associated with cattle purchases.

Focusing on ducks, Bauzile et al. (2022) also modelled French animal movements, building a multilayer network analyses model including both direct and indirect contacts between duck farms between 2016 and 2018, a study period which included the most intense phase of a Highly Pathogenic Avian Influenza (HPAI) epidemic (H5N8, 2016–2018) in the country. The authors demonstrated that despite the substantial impact of the epidemic in the network, both the direct and indirect contact networks have returned to their pre-epidemic topologies. Their results also showed that the transport truck network formed a larger cluster than the network formed by the exchange of live ducks, highlighting this as an important vector of disease transmission, and therefore an important target for control. Finally, they showed that contacts between farms through live-animal movements are efficient ways of spreading the virus but that they have been effectively controlled to limit the dissemination of the virus during the HPAI epidemic that happened in France in 2016–2017.

While many authors discussed the implication of their results for decision-making at the farm level, the work of Rawlins et al. (2022) brings to this issue an explicit financial evaluation of the costs of disease against the costs of prevention measures. The authors developed production and economic stochastic models to assess the financial impact of sheep and goat pox (SGP) and the effect of vaccination to sedentary and pastoralistic farmers in Northern Nigeria. Their results showed the high cost-effectiveness of regional vaccination programmes over a 3-year period, assessed under varying levels of government subsidies. This work represents an important step to support advocacy for such vaccination programmes.

In the only article of this special issue focused on companion animals, Taylor et al. (2021) evaluated the spatio-temporal distribution of canine leptospirosis in Great Britain. The authors also explored the associations between agroecological risk factors and the distribution of different canine leptospirosis serogroups, and generated a probability map for the disease. Uncovering spatial and temporal patterns of disease occurrence, the authors provide important information to guide clinical care and population surveillance.

These ten articles are an excellent representation of the quality and diversity of the 21 oral presentations held online in 2021 during the SVEPM conference.

Last year, we concluded this preface with a special thanks to the local

organising committee who had to deal with the unexpected consequences of the COVID-19 pandemic, and to the SVEPM members and conference delegates, who overwhelmingly showed their support to the society. This year, as the pandemic continues, the committee is once more deeply thankful to all of those who made this initiative possible under the strained circumstances we continued to face. Entering the second year of the pandemic, we found ourselves more than ever seeking opportunities to meet our peers, discuss our views, and feel part of a community of liked-minded individuals. We thank Dr. Timothée Vergne and the Toulouse team for providing a forum to do just that, and we thank the 232 delegates who joined us at the conference, in particular the keynote speakers, the oral presenters, and the authors who chose to contribute to this special issue.

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