



In this CVERA e-zine, we provide a brief overview of some of the recent work conducted by CVERA staff in collaboration with a wide range of national and international institutions. More in-depth information can be found at <http://www.ucd.ie/cvera/>, noting the role of CVERA to provide high quality independent scientific research and advice to support national evidence-based policy-making in animal health & welfare and public health and related matters.

Can Ingoing Contact Chains and other cattle movement network metrics help predict herd-level bovine tuberculosis in Irish cattle herds?

Over many years, CVERA has conducted research to investigate the role played by cattle with residual (but undetected) infection in the recurrence of bovine tuberculosis (bTB) in herds, and also in ongoing spread due to cattle movement. Many studies have shown an association between inward cattle movements and bTB risk in Irish herds. This study uses novel methods to consider this relationship in greater detail, calculating Ingoing Contact Chains (ICCs), which, in addition to direct moves into the herd, account for all other herds that an animal has passed through during its life. The bTB status of each herd in the ICC was also recorded, to assess whether the number of bTB positive herds in the ICC offered better predictive power for bTB in the case herd, compared to the number of all herds in the ICC, irrespective of their bTB status. This study found that cattle movements directly into the herd were risk

factors for subsequent bTB restrictions, with the number of herds from which animals were derived being the most important of these. The number of source herds with bTB was a better predictor of bTB in the case herds than was the total number of source herds (irrespective of bTB status), but only when future test results of the source herds, after the animals had moved into the case herd, were taken into account. The results suggest that in many cases bTB infected animals are moving out of herds before being identified through testing; therefore, risk-based trading approaches should not rely solely on the previous test history of source herds as a proxy for future risk. This study was led by Jamie Tratalos in CVERA in collaboration with CVERA colleagues and Helen Fielding in The Epidemiology, Economics and Risk Assessment (EERA) Group in The Roslin Institute and is published in [*Preventive Veterinary Medicine* 211, 105816](#) (2023).

Highly Pathogenic Avian Influenza (HPAI) mapper

Highly Pathogenic Avian Influenza (HPAI) is currently circulating in certain species of wild bird populations in Ireland. The 2022/2023 winter season has also seen 2 HPAI outbreaks in commercial flocks. The Department of Agriculture, Food and the Marine (DAFM) offer up-to-date advice to farmers and to the general public (<https://www.gov.ie/en/publication/50ce4-avian-influenza-bird-flu/>). CVERA provides mapping supports to DAFM to aid in the management of outbreaks in commercial flocks. A component of research in CVERA facilitates the mapping of HPAI positive cases in wild birds and non-commercial captive birds through a public-facing mapping interface which can be viewed at <https://arcg.is/19zHrf0>.

Contributing to the COVID-19 scientific knowledge base

Since the start of the COVID-19 pandemic, CVERA colleagues have continued to contribute to the scientific knowledge base. Recent examples include:

Assessing pandemic era stadium events and infections using mobile phone-based population mobility data: An exploratory study from Ireland, 2021

Mass gathering events (MGEs) presented particular challenges during the coronavirus disease 2019 (COVID-19) pandemic, and sporting, religious, music and other cultural events held during the early months of the pandemic, without social distancing or other safeguards, have been regarded as so-called ‘super spreader’ events. This study explores

associations between MGE attendance and local COVID-19 infections during the five weeks subsequent to a series of six sporting MGEs, ‘the All-Ireland Finals’, which were held in the Republic of Ireland’s largest stadium, Croke Park in Dublin, during August-September 2021. The study draws on a high-resolution human population mobility dataset to quantify journeys to/from the stadium area on MGE days by destination. The anonymised, aggregated, data used is based on mobile phone usage, and consists of a series of fine-grained geographical origin-destination matrices presenting daily estimates of area-to-area journey numbers. No evidence was found of association between attendance at any of the six 2021 All-Ireland MGEs and COVID-19 infections over subsequent five-week periods. This finding contrasts with studies of comparable MGEs in 2020 which may point to the effectiveness of transmission mitigation policies and behaviours. This study was led by Aidan Condrón in the Central Statistics Office (CSO) in association with staff from UCD CVERA and is published in [*Statistical Journal of the IAOS* 38, 1143-1157 \(2022\)](#).

Risk factors for SARS-CoV-2 infection in Healthcare Workers following an identified nosocomial COVID-19 exposure during Waves 1-3 of the pandemic in Ireland

Healthcare workers (HCWs) have increased exposure and subsequent risk of infection with severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). This case-control study was conducted to investigate the contemporaneous risks associated with confirmed SARS-CoV-2 infection

amongst HCWs following in-work exposure to a confirmed coronavirus disease-2019 (COVID-19) case. We demonstrate that male sex, Eastern European nationality, exposure location, PPE use and vaccination status all impact the likelihood of SARS-CoV-2 infection following nosocomial SARS-CoV-2 exposure. The findings draw attention to the need for continuing emphasis on PPE use and its persisting benefit in the era of COVID-19 vaccinations. We suggest that non-work-related factors may influence infection risk seen in certain ethnic groups and that infection risk in high-risk HCW roles (e.g., nursing) may be the result of repeated exposures rather than risks inherent to a single event. This study was led by Jonathan McGrath and colleagues in St. James's Hospital in association with staff from the UCD Veterinary Sciences Centre and UCD CVERA and is published in [Epidemiology & Infection 150, e186](#) (2022).

A qualitative exploration of challenges and opportunities for dog welfare in Ireland post COVID-19, as perceived by dog welfare organisations

This study is part of a larger project investigating the owned dog population in Ireland. Here, we report on challenges and opportunities to improve dog welfare

in Ireland, as perceived by dog welfare organisations (DWOs), which are a previously underutilised stakeholder. The DWOs perceived poor public awareness of appropriate dog-husbandry, inadequate legislation enforcement, negative impact of puppy farms, and increased financial and volunteer burden. The DWOs perceived an increased numbers of households acquiring dogs, difficulties in rehoming, and financial challenges as threatening their viability as organisations and Irish dog welfare. Greater enforcement of legislation, greater communication between organisations and the government, and more media awareness were seen as helpful by the DWOs to improve dog welfare standards and their organisations. This study was led by Blain Murphy from the Institute for Global Food Security in Queens University Belfast, in association with colleagues from the Department of Agriculture, Food and the Marine (DAFM), the UCD Veterinary Sciences Centre, UCD CVERA, and Animal Health Ireland (AHI) and is published in [Animals 12, 3289](#) (2022).

This e-zine, and recent news items, can be found at: <http://www.ucd.ie/cvera/news/>

Simon More

Professor of Veterinary Epidemiology and Risk Analysis

Director of the Centre for Veterinary Epidemiology and Risk Analysis

UCD School of Veterinary Medicine, University College Dublin,

<http://www.ucd.ie/cvera>

+353 (0)1 716 6144

@UCD_CVERA