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Centre for Veterinary Epidemiology
and Risk Analysis (CVERA)

Statement of Strategy 2017-20

Funded by



An Roinn
**Talmhaíochta,
Bia agus Mara**

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Introduction

The context for our strategy

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This CVERA strategy has been developed against the background of the following important internal and external factors:

The critical areas of work where CVERA is a key services provider

The work of CVERA spans the following key areas:

- Epidemiological support to the Department of Agriculture, Food and the Marine (DAFM) for regulatory animal diseases, including:
 - The national bovine tuberculosis (bTB) eradication programme, which is seeking eradication (biological extinction) of *Mycobacterium bovis* (the cause of bTB) from Ireland by 2030, and
 - Exotic disease preparedness and response (including diseases such as African Swine Fever, avian influenza, bluetongue and Lumpy Skin Disease);
- Support for Animal Health Ireland (AHI) in providing a proactive, coordinated and industry-led approach to non-regulatory animal health concerns in Ireland, including mastitis, bovine viral diarrhoea (BVD) and Johne's disease (JD); and
- Epidemiological support for a broad range of other animal health & welfare and public health issues relating to the health of companion animals and farmed fish, food safety and quality, and the welfare of farmed livestock and horses.

The increasingly complex animal health challenges in Ireland and overseas

- There are ongoing and increasing animal health threats to Ireland as a consequence of multiple global challenges, including antimicrobial resistance, climate change, geopolitical instability and the increasing movement (both controlled and otherwise) of people, animals and animal products. Transboundary animal diseases, which by definition do not respect national borders, are of increasing concern to Europe.
- There is an increasing focus on product quality, including an explicit national focus on high value products and markets. Animal health is a direct contributor to product quality, but is also important for international trade of animals and animal products. Ireland has a heavy reliance on exports, noting that approximately 85% of beef and 85% of milk and milk products are exported. The international trading environment is increasingly competitive. As a consequence of recent international events, particularly Brexit and the US elections, there is an increasingly uncertain global order, with important implications on international trade.
- Ireland is facing, and reacting to, the demand for increased agricultural output.
- There is an increasing opportunity to reduce greenhouse gas emissions, and thereby meet EU and other commitments, through increased efficiency, in terms of production per animal, brought about by improved animal health. Animal health status also directly impacts farm income and animal welfare.

The importance of science-informed policy decision-making

- There is increasing scrutiny of national policy decisions at all levels: by the Irish public, by farmers through their national farm organisations, and by the European Commission. This has been driven by requirements for transparency, open government and freedom of information, and concern about the prudent use of public funds. Consequently, there needs to be a rational and defensible basis for decision-making.
- There is an increasing awareness that a robust science base is needed to underpin decision-making when faced with complexity or uncertainty.
- Scientific publication – the transparent and independent reporting of peer-reviewed scientific research – is an important means to build credibility, both nationally and internationally. The work of CVERA reflects key national values relevant to such credibility, including scientific excellence, independence, openness, scientific innovation and international cooperation.

The ability to effectively deal with these many factors has been a key driver in planning the future goals and objectives for CVERA over the period of this plan.

There are several related documents, including DAFM's National Farmed Animal Health Strategy 2017-22 and National Animal Health Surveillance Strategy 2016-21. The CVERA strategic plan has been developed to maximise CVERA's contribution to these important national strategies.

CVERA History

Dealing with an increasing range of animal health & welfare and public health issues and related matters

The Tuberculosis Investigation Unit (TIU) was established in May 1989, to provide research support for the national bTB eradication programme. At this time, progress towards bTB eradication had stalled, with animal incidence remaining at approximately 0.5% annually.

During 1989-92, there were major changes to programme management and the start of substantial collaboration between several countries, including Ireland, that were struggling with similar constraints to bTB eradication. A key report was finalised in 1990 which recommended that the programme should focus on control at least cost, with the monies saved to be used for applied research. Further, it was recommended that the programme should be re-launched with the aim of final eradication once identified constraints could be overcome.

Given this context, the key objectives of the TIU throughout the 1990s were to identify and address constraints to bTB eradication in Ireland. The Unit was located within the Veterinary College at University College Dublin (UCD), under the direction of Professor John D. Collins.

In 2004, the Unit was renamed the Centre for Veterinary Epidemiology and Risk Analysis (CVERA), operating under the direction of Professor Simon J. More following the retirement of Professor Collins. Since this time, CVERA has broadened its remit and now provides scientific advice in support of national policy decision-making on a broad range of issues relating to animal health & welfare and public health.

CVERA is fully funded by the Department of Agriculture, Food and the Marine (DAFM).

CVERA Overview

The services we provide and to whom

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THE SCOPE OF CVERA:

The primary role of CVERA is to provide scientific research, applied epidemiology, scientific leadership and scientific support services across a broad canvas of issues relating to animal health & welfare and public health.

ANIMAL HEALTH & WELFARE AND PUBLIC HEALTH ISSUES:

Regulatory animal diseases

Regulatory animal disease control is overseen by DAFM.

Key areas of concern include:

- Control or eradication of endemic animal diseases, primarily bTB but also bovine spongiform encephalopathy (BSE) and bovine brucellosis. The bTB work is extremely diverse, grouped under the thematic areas of bTB in cattle, bTB epidemiology and control in wildlife, and broader national bTB policy.
- Preparedness for and response to exotic animal disease threats, including avian influenza, African Swine Fever, bluetongue and Lumpy Skin Disease.

Non-regulatory animal diseases

In recent years, CVERA has provided services in support of national programmes managed by AHI, including the eradication of BVD, JD control and improved milk quality.

Other animal health & welfare and public health issues and related matters

This includes work addressing a diverse range of issues including animal welfare (relating to cattle, horses and pigs), marine animal health (farmed salmon and oysters), on-farm antimicrobial usage, concerns relating to cadmium exposure in cattle, food safety and quality, and veterinary ethics.

CVERA Overview

The services we provide and to whom



THE SERVICES PROVIDED:

The services provided are described in detail below. Our stakeholders are listed in Appendix 3 of this plan.

Scientific research

A broad range of scientific research is conducted by CVERA on behalf of its stakeholders. Although the topics are diverse, in all cases this work is undertaken in support of national policy in animal health & welfare and public health and related matters, providing scientific information to inform policy decision-making. All scientific research assignments are carefully defined and driven by a specific research question, and the results of each project are published in international peer-reviewed journals. Most assignments are conducted in collaboration with policy colleagues. In addition, some assignments are instigated independently by CVERA staff on issues of national strategic importance.

Applied epidemiology

CVERA contributes expertise in support of a range of applied epidemiological activities. In broad terms, these relate to preparedness for and response to exotic animal disease threats and other incidents. With respect to preparedness (that is, prior to a potential or anticipated event), CVERA contributes expertise to support DAFM and other colleagues

with risk assessments. With respect to response (subsequent to such an event), CVERA contributes relevant expertise to assist with investigations and to document lessons learned.

Scientific leadership

Scientific leadership is a key task undertaken by CVERA staff. The CVERA Director contributes to the work of the European Food Safety Authority (EFSA), primarily as chair of EFSA's Animal Health and Welfare Panel. He also chairs several AHl technical working groups, is a member of the Food Safety Authority of Ireland (FSAI) scientific committee, and, with other CVERA staff, contributes to a range of DAFM committees. A CVERA staff member is currently contributing to a Commission for Agricultural Meteorology (CAgM) report of the World Meteorological Organization (WMO). In addition, the Director is deputy editor of the Irish Veterinary Journal, which has a vision to contribute substantially to the dissemination of evidence-based knowledge on animal health & welfare and public health.

Scientific support services

CVERA provides specialist scientific support to a range of organisations relevant to animal health & welfare and public health. In this role, we respond to urgent or other assignments, providing relevant specialist skills to address

veterinary epidemiological, GIS (mapping and other spatially related queries), statistics and database-related issues. CVERA provides a range of GIS support, from mapping resources and technical support through to the provision of an independent approval process and metric calculations for DAFM's Wildlife Administration Unit. Scientific support services are an important aspect of CVERA's work, drawing on the specialist skills and resources that are available in the Centre.

In delivering the above services, CVERA staff work closely with national policy-makers, both in government and industry. Staff also contribute to training in veterinary medicine, both to undergraduates and postgraduate students. All of the services of CVERA are conducted in compliance with relevant national data protection legislation.

The expertise available

In providing these services, CVERA has built up a broad range of expertise including veterinary medicine and epidemiology, database development and management, geographic information systems and statistics. The Centre is staffed by UCD and DAFM employees, and provides scientific services in support of a wide number of stakeholders working in animal health & welfare and public health.

Vision, Mission & Values

The Vision, Mission and Values of CVERA will guide the implementation of its strategy for the coming years

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VISION:

Enhanced policy decision making in both government and industry in animal health & welfare and public health as a result of high quality independent epidemiological research, advice and support.

MISSION:

To provide high quality independent scientific research and advice to support evidence-based policy making in animal health & welfare and public health and related matters by the Department of Agriculture, Food and the Marine and the wider stakeholder community.

VALUES:

A commitment to serving the prioritised needs of our stakeholders for independent scientific research and advice.

A strong culture of collaboration, accountability, efficiency and transparency.

An ethos of diligence, objectivity and integrity.

The highest standards of research and analysis.

Strategic Goals, Objectives & Outcomes

What we will focus on achieving over the period of our plan



1.0

PRIORITISATION

To prioritise the scheduling and delivery of high quality independent scientific research, applied epidemiology, scientific leadership and scientific support services to effectively meet the highest needs in the national interest.



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STRATEGIC CONTEXT:

The work of CVERA is generally conducted in partnership with other individuals or organisations in response to specific project requests with CVERA often, but not always, overseeing overall project management. CVERA can be variously responsible for many or all elements of the lifecycle of each project from design through to finalisation. With 17 different project categories and more than 80 individual projects being managed at any one time, however, it has become increasingly important to have an effective infrastructure in place to meet the priority needs of our stakeholders.

STRATEGIC OBJECTIVES:

- 1.1 Deliver the optimum balance of CVERA services in accordance with the national interest
- 1.2 Provide core CVERA services whilst also building flexibility to react to priority assignment requests
- 1.3 Effectively address the needs of DAFM and other stakeholders in the face of increasing demands
- 1.4 Complement the skills of our staff with strong underlying processes and systems for enhanced quality and timeliness of CVERA's outputs

STRATEGIC OUTCOMES:

- An effective Management Board in place to provide continued guidance on emerging issues relating to animal health & welfare and public health and the resulting prioritisation of CVERA assignments required to support them
- An effective work flow process and management system, which includes the ability to 'hold' scheduled assignments, establish available team skills and resources, and take on priority assignment requests at short notice
- A communicated, understood and accepted process among stakeholders for assignment scheduling and possible priority rescheduling based on Management Board decisions
- Enhancements to the quality and timeliness of the scientific research, applied epidemiology, scientific leadership and scientific support delivered by CVERA because of excellent processes and automation in workflow management

Strategic Goals, Objectives & Outcomes

What we will focus on achieving over the period of our plan

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2.0

AWARENESS

To build awareness and understanding of the role of CVERA, its experience and expertise and the services it offers to stakeholders.



STRATEGIC CONTEXT:

With a wide range of stakeholders in a variety of locations and with increasing demands for CVERA services, building awareness of what we do and how we do it will be a prerequisite for the achievement of CVERA's strategy. Improved communication and planning is required to build this awareness and thereby foster environments where more collaboration, problem solving and creativity with our stakeholders can thrive. Communication will equally be used to resolve any potential conflicts in terms of the prioritisation of our work output with those stakeholders, all of whom are important and who ultimately work towards a common goal.

STRATEGIC OBJECTIVES:

- 2.1 Develop a structured communications plan to convey key messages to stakeholders using all available channels
- 2.2 Have clear messages in place about CVERA, its services, achievements and operations
- 2.3 Build national and international awareness of the achievements of CVERA and the value of its services, including quality independent research and analysis
- 2.4 Invest in improved communication skills among management and staff in CVERA

STRATEGIC OUTCOMES:

- A clear roadmap of what, when and how best to communicate with all identified CVERA stakeholders
- A clear understanding and acceptance among all stakeholders of the role of CVERA, its expertise and achievements and how to avail of its services
- Improved national and international awareness and understanding of CVERA
- Improved collaboration with stakeholders on animal health & welfare and public health initiatives

Strategic Goals, Objectives & Outcomes

What we will focus on achieving over the period of our plan



3.0

CAPABILITIES & CAPACITY

To enhance the structure, roles and capabilities of CVERA to deliver the current and future services required to support the needs of its stakeholders.



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STRATEGIC CONTEXT:

CVERA operates in a flat organisation structure with a small team of highly experienced staff that have expertise in a broad range of disciplines, including veterinary medicine, epidemiology, database design and management, geographic information systems, computer programming and statistics. It is of strategic and operational importance that CVERA can successfully attract new staff of the highest quality in clearly defined roles and retain the skills that have been built up over a significant period. It is equally important that a lack of succession planning is addressed to mitigate risk and widen management capacity.

STRATEGIC OBJECTIVES:

- 3.1 Have an organisation structure in CVERA that allows for succession planning, career development, clear role definition and effective delegation
- 3.2 Support the personal development of CVERA staff, specifically to increase the broader capacity of CVERA in meeting stakeholder needs, both now and into the future
- 3.3 Plan for future staff recruitment, induction and retention
- 3.4 Develop new roles in CVERA to enhance its future service offering

STRATEGIC OUTCOMES:

- The creation of a deputy CVERA director role
- Clear organisation structure and increased delegation in the management of ongoing operations
- Clarity around staff contracts and career opportunities
- Defined secondment opportunities to work with CVERA in areas of special interest
- A personal development plan for each staff-member, with a focus on the capability required within CVERA to deliver services in support of stakeholder needs, both currently and into the future
- Reduced delays in replacing key roles following departure and continuous supplementary training for improved staff retention
- New skills in animal health modelling being established in conjunction with our national and overseas partners, resulting in the availability of a valuable resource to support policy decisions in the national interest

Strategic Goals, Objectives & Outcomes

What we will focus on achieving over the period of our plan

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4.0

QUALITY & EXCELLENCE

To maintain and increase the standards of work produced by CVERA to support policy decision-making through its credibility and relevance as an independent centre for scientific research, applied epidemiology, scientific leadership and scientific support.



STRATEGIC CONTEXT:

Quality and excellence will be key attributes for CVERA in the successful implementation of this strategy. This means implementing and continuously improving the quality of our internal work practices to meet the service demands of our many stakeholders. It also means pushing the quality of our work through a desire for excellence which is embedded in the culture of CVERA. Focussing on both elements will improve our credibility, relevance and sustainability as an independent scientific research and risk analysis centre whose services are actively sought and valued.

STRATEGIC OBJECTIVES:

- 4.1 Gain increased national and international recognition of the quality of scientific outputs from CVERA
- 4.2 Continue a tradition of independent scientific research in animal health & welfare and public health
- 4.3 Maintain CVERA's contribution to national and international animal health issues through scientific leadership and advice
- 4.4 Further develop CVERA's roles in providing science-based training, education and advice
- 4.5 Achieve 'Academic Centre' status in University College Dublin

STRATEGIC OUTCOMES:

- Increased recognition by the scientific and policy communities, both nationally and internationally, of the quality of CVERA's output
- Increased recognition of the quality and independence of CVERA's outputs
- An enhanced national and international recognition of CVERA's leadership role in national and international scientific committees
- Strengthened relationships with DAFM as our funder and key stakeholder and with University College Dublin as CVERA's host and benefactor
- An enhanced international reputation of the scientific independence and credibility of CVERA's work and continued strong relationship with University College Dublin

Strategic Actions & Key Performance Indicators

Our tactical actions and measurements to achieve our objectives



1.0

PRIORITISATION

To prioritise the scheduling and delivery of high quality independent scientific research, applied epidemiology, scientific leadership and scientific support services to effectively meet the highest needs in the national interest.



STRATEGIC OBJECTIVES:

- 1.1 Deliver the optimum balance of CVERA services in accordance with the national interest
- 1.2 Provide core CVERA services whilst also building flexibility to react to priority assignment requests
- 1.3 Effectively address the needs of DAFM and other stakeholders in the face of increasing demands
- 1.4 Complement the skills of our staff with strong underlying processes and systems for enhanced quality and timeliness of CVERA's outputs

ACTIONS:

- Collaborate in a structured manner with DAFM and other stakeholders to determine the priority for assignments in the areas of scientific research, applied epidemiology, scientific leadership and scientific support
- Implement an effective workflow process and management system, including the ability to cater for the rescheduling of assignments based on priority requests
- Engagement with all stakeholders to promote the services available in CVERA and the process by which assignments are approved and delivered
- Train staff in the correct use of the agreed new workflow management system and ensure that this is embraced to enhance the quality of CVERA output

STRATEGIC OUTCOMES:

- An effective Management Board in place to provide continued guidance on emerging issues relating to animal health & welfare and public health and the resulting prioritisation of CVERA assignments required to support them
- An effective workflow process and management system, which includes the ability to 'hold' scheduled assignments, establish available team skills and resources, and take on priority assignment requests at short notice
- A communicated, understood and accepted process among stakeholders for assignment scheduling and possible priority rescheduling based on Management Board decisions
- Enhancements to the quality and timeliness of the scientific research, applied epidemiology, scientific leadership and scientific support delivered by CVERA because of excellent process and automation in workflow management

KEY PERFORMANCE INDICATORS:

- Established Management Board
- Terms of reference in place
- Agreed assignment approval and scheduling process
- Regular activity reporting
- Transparent system of reporting and highlighting assignment schedules and available CVERA resources
- Authorisation process in place for reprioritisation of existing assignments
- Clear stakeholder communication of assignment rescheduling
- Regular reporting of current CVERA assignments and delivery schedules
- Strong stakeholder understanding and satisfaction
- CVERA's assignments and initiatives are aligned in support of DAFM strategies
- Comprehensive scheduling and reporting information available to support CVERA's achievements in the areas of scientific research, applied epidemiology, scientific leadership and scientific support

Strategic Actions & Key Performance Indicators

Our tactical actions and measurements to achieve our objectives

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2.0

AWARENESS

To build awareness and understanding of the role of CVERA, its experience and expertise and the services it offers to stakeholders.



STRATEGIC OBJECTIVES:

- 2.1 Develop a structured communications plan to convey key messages to stakeholders using all available channels
- 2.2 Have clear messages in place about CVERA, its services, achievements and operations
- 2.3 Build national and international awareness of the achievements of CVERA and the value of its services, including quality independent research and analysis
- 2.4 Invest in improved communication skills among management and staff in CVERA

ACTIONS:

- Develop a comprehensive communications plan for implementation over the period of the CVERA Strategy
- Create key messages about CVERA in relation to every aspect of its expertise, services, achievements and other important information to communicate in support of its strategy
- Promote awareness of CVERA through its website and social media channels, conferences and similar events, and through regular updates in a newsletter and other formats
- Utilise available UCD training courses in communication skills if appropriate or retain an external communications coach if specifically required

STRATEGIC OUTCOMES:

- A clear roadmap of what, when and how best to communicate with all identified CVERA stakeholders
- A clear understanding and acceptance among all stakeholders of the role of CVERA, its expertise and achievements and how to avail of its services
- Improved national and international awareness and understanding of CVERA
- Improved collaboration with stakeholders on animal health & welfare and public health initiatives

KEY PERFORMANCE INDICATORS:

- Consistent scheduled communication keeping stakeholders informed about a wide range of agreed matters in relation to CVERA
- Regularly reviewed key messages
- Consistent use internally and externally
- Increased understanding about CVERA
- Regular newsletters
- New website in place with tracking metrics
- Increased social media posts and followers
- Increased presence at relevant events
- Improved stakeholder satisfaction with CVERA services

Strategic Actions & Key Performance Indicators

Our tactical actions and measurements to achieve our objectives



3.0

CAPABILITIES & CAPACITY

To enhance the structure, roles and capabilities of CVERA to deliver the current and future services required to support the needs of its stakeholders.



STRATEGIC OBJECTIVES:

- 3.1 Have an organisation structure in CVERA that allows for succession planning, career development, clear role definition and effective delegation
- 3.2 Support the personal development of CVERA staff, specifically to increase the broader capacity of CVERA in meeting stakeholder needs, both now and into the future
- 3.3 Plan for future staff recruitment, induction and retention
- 3.4 Develop new roles in CVERA to enhance its future service offering

ACTIONS:

- Review role profiles for existing staff, and update where necessary
- Create new role profiles where required
- Agree an organisation structure for CVERA incorporating all roles, clear reporting lines and agreed funding requirements
- Development of personal development plans for each staff member, to increase their effectiveness within the broader CVERA team
- Review induction and training courses available in UCD and DAFM for use by CVERA staff
- Work closely with DAFM and Helmholtz Centre for Environmental Research - UFZ to identify and train an expert in animal health modelling who will ultimately fulfil that role within CVERA

STRATEGIC OUTCOMES:

- The creation of a deputy CVERA director role
- Clear organisation structure and increased delegation in the management of ongoing operations
- Clarity around staff contracts and career opportunities
- Defined secondment opportunities to work with CVERA in areas of special interest
- A personal development plan for each staff-member, with a focus on the capability required within CVERA to deliver services in support of stakeholder needs, both currently and into the future
- Reduced delays in replacing key roles following departure and continuous supplementary training for improved staff retention
- New skills in animal health modelling being established in conjunction with our national and overseas partners, resulting in the availability of a valuable resource to support policy decisions in the national interest

KEY PERFORMANCE INDICATORS:

- Agreed roles in place for all staff
- Wider management capability
- Secondment opportunities, replacement and new hires in place
- Increased time for analysis and decision-making in relation to CVERA activities
- Personal development plans agreed and in place
- Replacement and new positions agreed, induction and training courses identified
- Agreement to the provision of this service within CVERA and the mechanism to put this in place
- Resource identified and in place

Strategic Actions & Key Performance Indicators

Our tactical actions and measurements to achieve our objectives

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4.0

QUALITY & EXCELLENCE

To maintain and increase the standards of work produced by CVERA to support policy decision-making through its credibility and relevance as an independent centre for scientific research, applied epidemiology, scientific leadership and scientific support.



STRATEGIC OBJECTIVES:

- 4.1 Gain increased national and international recognition of the quality of scientific outputs from CVERA
- 4.2 Continue a tradition of independent scientific research in animal health & welfare and public health
- 4.3 Maintain CVERA's contribution to national and international animal health issues through scientific leadership and advice
- 4.4 Further develop CVERA's roles in providing science-based training, education and advice
- 4.5 Achieve 'Academic Centre' status in University College Dublin

ACTIONS:

- Continue CVERA's commitment to scientific publication in international peer-reviewed journals, using an 'open access' format where possible
- Maintain a portfolio of scientific research projects in animal health & welfare and public health, independent of the direct/immediate needs of external stakeholders, guided by the principles of scientific excellence, policy relevance, anticipated strategic importance, and relevance to the public good
- Continue CVERA's contribution to chairing and membership roles on scientific committees, with priority given to activities with strategic national and international importance
- Build greater awareness of the role that CVERA can play in this important area and how that service can be accessed
- Complete and submit an application to UCD for designation as an Academic Centre

STRATEGIC OUTCOMES:

- Increased recognition by the scientific and policy communities, both nationally and internationally, of the quality of CVERA's output
- Increased recognition of the quality and independence of CVERA's outputs
- An enhanced national and international recognition of CVERA's leadership role in national and international scientific committees
- Strengthened relationships with DAFM as our funder and key stakeholder and with University College Dublin as CVERA's host and benefactor
- An enhanced international reputation of the scientific independence and credibility of CVERA's work and continued strong relationship with University College Dublin

KEY PERFORMANCE INDICATORS:

- A target number of international peer-reviewed publications in research-relevant, high quality journals in place and being met
- Maintaining the number of CVERA-led and senior author peer-review publications
- Increased emphasis on 'open access' publications where possible
- All published papers uploaded to the UCD Institutional Repository in a format suited to each journal's archiving policy
- A target number of independent studies completed and published each year
- Ongoing contribution to chairing and membership roles of international and national scientific committees
- Ongoing requests for CVERA services in the provision of science-based training, education and advice
- Academic Centre status granted and awareness of this generated among all stakeholders

Appendix 1 – Current CVERA Programme of Work

The project categories and number of individual projects within each category



CVERA PROJECT CATEGORIES:	ACTIVE PROJECTS: (including those finalised in 2017)	DESCRIPTION:
Bovine tuberculosis - cattle	9	Conducting research towards improved understanding of factors contributing to cattle-to-cattle transmission and of additional measures to mitigate risk
Bovine tuberculosis - badgers	7	Evaluating badger infection control strategies and their impact on efforts towards national bTB eradication
Bovine tuberculosis - policy	12	Ongoing evaluation of aspects of the national policy, with emphasis on quality control in the programme and of international comparisons in limiting the duration, severity and recurrence of bTB restrictions
Johne's disease	3	Conducting research to support the national voluntary JD control programme
Bovine viral diarrhoea	7	Conducting research to support the national BVD eradication programme, with emphasis on PI retention and Trojan dams
Infectious bovine rhinotracheitis	1	Conducting research to support national efforts towards IBR control
Milk quality	5	Conducting research to support national efforts towards improved milk quality, with emphasis on the impact of regulation on milk quality and intramammary antimicrobial usage
Fertility	1	Conducting research to support objective assessment of fertility in the national herd
Emergency preparedness and response	5	Contributing to national preparedness for and response to emergency disease incursions
Animal welfare	1	Identifying factors contributing to animal welfare concerns, and exploring potential solutions
Bovine spongiform encephalopathy	2	Contributing to BSE case investigation and clarifying factors influencing BSE sample quality
Schmallenberg virus	3	Clarifying aspects of the epidemiology of SBV in Ireland, including introduction and persistence
Other farm ruminant health issues	9	Conducting research to address other issues of regional or national importance, including cadmium exposure, bovine respiratory disease, bovine babesiosis and liver fluke
Veterinary ethics	3	Supporting research on the range of ethical issues facing Irish veterinarians
Marine animal health	4	Contributing to improved understanding of both internal and external biosecurity challenges facing the Irish farmed salmon industry
Food safety and quality	4	Conducting research to support national efforts towards improved food safety and quality
Miscellaneous	6	Conducting research in support of additional issues in the national interest that relate to animal health & welfare and public health

Includes all projects with CVERA involvement, either as lead or collaborator. Correct as of March 2017.

Appendix 2 – Project List

Ongoing or complete projects, March 2017

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Bovine tuberculosis – cattle

- Evaluation of the methodological quality of studies of the performance of diagnostic tests for bovine tuberculosis using QUADAS adapted for the veterinary field
- Future risk of single intradermal test positive animals in high risk herds
- Meta-analyses of the sensitivity and specificity of ante-mortem and post-mortem diagnostic tests for bovine tuberculosis in the UK and Ireland
- Methodology and results from a systematic literature review of ante-mortem and post-mortem diagnostic tests for bovine tuberculosis
- Monitoring the relative effectiveness of Irish factories in the surveillance of slaughtered cattle for visible lesions of tuberculosis: An update for years 2008-2010
- Risk of bovine tuberculosis at the animal level in Ireland
- Simulating the impact of potential changes to meat inspection on the sensitivity of abattoir surveillance for bovine tuberculosis in Ireland
- The performance of the interferon gamma assay when used as a diagnostic or quality assurance test in *Mycobacterium bovis* infected herds
- The temporal and spatial distribution of Singleton reactors in Ireland: exploring the spatial variation in specificity of the TB test

Bovine tuberculosis – badgers

- Characterizing transmission in a *Mycobacterium bovis* multi-host system
- Counts of badgers *Meles meles* in their territories in Wicklow
- County Laois targeted badger removal study: revisited
- Oral vaccination of free-living badgers (*Meles meles*) with Bacille Calmette Guérin (BCG) vaccine confers protection against tuberculosis
- Quantification of *Mycobacterium bovis* transmission in a badger vaccine field trial
- Seasonal variation in the biotic and abiotic influences on bodyweight of a seasonal mammal, the European badger (*Meles meles*)
- Weather influences trapping success for tuberculosis management in European badgers (*Meles meles*)

Bovine tuberculosis – policy

- Application of the ER13A form - a critical review of progress
- Cattle movements in Ireland, spatial, temporal and international comparisons
- Further evaluation of bovine tuberculosis trends in the UK and the Republic of Ireland, 1995-2015
- Further improvements in bovine tuberculosis recurrence in Irish herds
- Investigation of the north Sligo bTB outbreak
- Movement analysis: are there risks associated with purchasing of animals from high-density bovine tuberculosis breakdown areas?
- Movement in the national herd
- Quality control in the Irish bTB programme
- Risk factors for large bTB breakdowns
- Spatial structure of farms in Ireland
- Temporal and seasonal trends in bovine tuberculosis in Ireland since 1993
- The role of cattle importation in bovine tuberculosis breakdowns in Scotland

Johne's disease

- Associations between paratuberculosis ELISA results and test-day records of cows enrolled in the Irish Johne's Disease Control Program
- Johne's disease in the eyes of Irish cattle farmers: a qualitative narrative research approach to understanding implications for disease management
- Risk factors for probability of infection for herds involved in the Animal Health Ireland national Johne's Disease Control Programme

Bovine viral diarrhoea

- Eradicating BVD, reviewing Irish programme data and model predictions to support prospective decision making
- Evaluating the potential infection control benefit of measures to reduce the movement of Trojan dams in the national BVD eradication programme in Ireland
- Further evaluation of tissue tagging versus serology in the BVD eradication programme
- Patterns of calving and young stock movement in Ireland and their implications for BVD serosurveillance
- Potential costs of serological testing versus tag testing for BVDv
- Quantifying the role of Trojan dams in the spread of BVDv in Ireland
- STOC-Free: Surveillance Tool for Outcome-based Comparison of FREEdom from infection

Infectious bovine rhinotracheitis

- Patterns of exposure to two bovine herpesviruses in Irish cattle

Milk quality

- Mapping milk production in Ireland
- Temporal changes in bulk tank SCC and milk volume around the time of herd suspension: insights into control measures taken in Ireland during 2013
- The impact of removal of the seasonality formula on the eligibility of Irish herds to supply raw milk for processing of dairy products
- The importance of the physiological increase at the start and the end of lactation
- The use of national-level data to describe trends in intramammary antimicrobial usage on Irish dairy farms during 2003-15

Fertility

- Constraints on reproductive performance in seasonal calving dairy herds in Ireland

Emergency preparedness and response

- An assessment of the possible increased risk of infection of H5N8 HPAI virus in poultry subsequent to an exit of the existent poultry confinement
- Develop a contingency plan for predicting and identifying the locations of farms contaminated following a nuclear accident event
- Development of high resolution local scale Foot and Mouth Disease (FMD) dispersion model
- Enhancement of the current national FMD spread model
- Epidemiological investigation of the 2014/15 FMD outbreak in Korea

Animal welfare

- A study of factors contributing to reduced animal welfare in Irish marts

Bovine spongiform encephalopathy

- Factors which influence the quality of BSE samples from fallen cattle in Ireland
- Using an epidemiological template to investigate classical BSE cases: an example from the BSE case in Ireland in 2015

Schmallenberg virus

- Characterising the 2012 introduction of Schmallenberg virus into Ireland using two complementary analyses
- Quantifying the impact of Schmallenberg virus infection on dairy production in Ireland
- Schmallenberg virus bulk milk sample survey

Other farm ruminant health issues

- Association between rumen fluke and liver fluke prevalence in ruminants in Ireland
- Co-infection study within EU-funded PARAGONE (H2020) project
- Epidemiological studies on besnoitiosis in Ireland
- Pathogens, patterns of pneumonia, and epidemiologic risk factors associated with respiratory disease in recently weaned cattle in Ireland
- Risk factors for 6 BRD pathogens among weanlings
- Spatial variation in treatment failure with commonly used anthelmintics on Irish sheep farms
- The bovine paranasal sinuses: bacterial flora, epithelial expression of nitric oxide and potential role in the in-herd persistence of respiratory disease pathogens
- The prevalence and risk factors for antibodies to *Coxiella burnetii* (Q fever) in bulk tank milk samples from Irish dairy cattle herds
- Transition environments and disease vectors: a geographical perspective on ticks in Ireland and the associated disease risk

Veterinary ethics

- Challenges facing the veterinary profession in Ireland: 1. Clinical veterinary services
- Veterinary Ethical Challenges in Ireland: 2. On-farm use of veterinary antimicrobials
- Veterinary Ethical Challenges in Ireland: 3. Emergency and casualty slaughter

Marine animal health

- Assessment of the risk of introduction and spread into Ireland of infectious salmon anemia through consignments of Atlantic salmon fertilized eggs and milt
- Evaluation of the biosecurity practices in salmonid farms in Ireland
- Mortality in *Crassostrea gigas* oysters in Ireland during 2012
- Risk ranking of salmonid farms in Ireland

Food safety and quality

- An outbreak of *Salmonella* Enteritidis in broiler chickens in Ireland, 2015
- Efficacy of washing and disinfection in cattle markets in Ireland
- Measurement of the presence of *Salmonella* at processing plants using different methods
- Private animal health and welfare standards in quality assurance programmes: a review and proposed framework for critical evaluation

Miscellaneous

- An investigative framework to facilitate epidemiological thinking during herd problem-solving
- Farm mineral maps
- Multi-criteria decision analysis to model *Ixodes ricinus* habitat suitability
- Research impact in animal health and welfare: examples from Ireland
- Risk assessment of pesticides and other stressors in bees: Principles, data gaps and perspectives from the European Food Safety Authority
- Understanding the context for pet feeding and exercising behaviour among pet owners in Ireland

Appendix 3 – Principal CVERA Stakeholders

Those to whom we provide our range of services



DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE



The government department overseeing the agriculture and food sectors in Ireland, including responsibility for animal health & welfare and public health.

www.agriculture.gov.ie

UNIVERSITY COLLEGE DUBLIN



Ireland's largest university, with a diversity of disciplines including veterinary medicine.

www.ucd.ie

ANIMAL HEALTH IRELAND



A private-public partnership organisation coordinating national control programmes for non-regulated diseases of livestock.

www.animalhealthireland.ie

MARINE INSTITUTE



The state agency with responsibility for marine research and development, including fish health.

www.marine.ie



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