**An Roinn Talmhaíochta,
Bia agus Mara**
Department of Agriculture,
Food and the Marine

Animal Health
Surveillance Strategy
2023-2028

Foreword by the Minister

I am delighted to launch our Animal Health Surveillance Strategy (2023-2028), which forms an important part of my Department's wider National Farmed Animal Health Strategy. Responding to commitments in the Programme for Government: Our Shared Future (2020), this strategy builds on my Department's work on the previous Animal Health Surveillance Strategy (2016 – 2021), reaffirming our commitment to animal health surveillance for the future and reinforcing the key recommendations and achievements already accomplished by it.

Animal health surveillance data are an invaluable resource which help to optimise the monitoring and control of diseases known to be present throughout the country's animal populations. Furthermore, such data help us prepare for, and thus minimise the impact of, any exotic, new or previously unknown disease outbreak were it to occur. It helps to safeguard not only animal health and welfare, but also public health and food safety. On the international stage, Ireland continues to build on its excellent reputation as a country that actively promotes and safeguards animal health, and our credibility with international trading partners is strengthened by the reliable animal health surveillance systems we have in place.

Since the global Covid-19 pandemic in 2020, the importance of a *One Health* approach to achieving optimal health outcomes by recognizing the interconnections amongst humans, animals, and the environment has never been more pertinent. My Department has a long history of supporting the *One Health* approach, and is committed to adopting a collaborative and multidisciplinary approach with colleagues, both within the Department of Health and the Department of the Environment, Climate and Communications, to ensure this critical work continues.

Effective animal health surveillance is crucial to this *One Health* approach, and we will continue to review and enhance our passive and active surveillance systems – not only for farmed animals, including equines, but extending to include companion animals and wildlife also. My Department will support excellence in research, innovation, and education, expanding and strengthening our existing relationships with relevant industry and academic stakeholders and contributors. Furthermore, we will also build upon the existing cooperation and collaboration with colleagues in Northern Ireland, which currently includes the annual publication of an All-island Animal Surveillance Report.

This new strategy is underpinned by the principles of robust governance, science and evidence-led policy making and consistent adaptation to emerging disease threats and trends.

I look forward to building on our strong foundations, developing deeper cooperation and partnerships with farmers, veterinary practitioners, laboratory services and all those who own or care for aquatic or terrestrial animals in any capacity, to ensure these goals can be achieved in the coming years.

Charlie McConalogue, TD
Minister for Agriculture, Food and the Marine

EXECUTIVE SUMMARY

The importance of robust Animal Health Surveillance systems was extensively outlined in Ireland's first Animal Health Surveillance Strategy (2016-2021). This follow-on strategy builds upon all the groundwork that has been established. Through more focused and specific objectives and SMART KPIs, the strategy aims to create an even more comprehensive strategic vision which will ensure Ireland's reputation as a world leader in high animal health status is protected. The strategy highlights the challenges of the global climate crisis and zoonoses, as reflected in the recent Covid-19 pandemic, ensuring such threats are prioritised and tackled. Finally, it aims to ensure that all aspects of ever-evolving animal health legislation are implemented with care, efficiency, and minimal disruption to the country's thriving agri-food sector.

We therefore propose three new strategic pillars – **DEVELOPMENT**, **EVOLUTION**, and **INTEGRATION** – each with key goals which we will focus on for the duration of this strategy over the next five years.

DEVELOPMENT

Goal 1   Ensure the **appropriate legal framework** for all surveillance activities

Goal 2   Produce guidelines to ensure all surveillance activities **comply with GDPR requirements**

Goal 3   Further **develop the use of data from** all relevant, including recently established (e.g. AM/PM, NVPS), **DAFM databases** for surveillance purposes

Goal 4   Detail how **artificial intelligence / machine learning** can be applied to surveillance data from existing DAFM data flows **to enhance surveillance activities**

Goal 5   Create **species-specific surveillance platforms**, including for those species that currently have a lesser surveillance footprint

Goal 6   Develop and implement **syndromic surveillance systems** for Irish livestock and companion animals

Goal 7   Develop public/private partnerships to **access surveillance data** from private veterinary laboratories, private veterinary practitioners, farmers, and stockpersons to **enhance the quality of surveillance activities**

Goal 8   Carry out **animal health surveillance prioritisation exercises** once every two years, but more frequently should a species-specific need arise in the interim

Goal 9   Create additional capacity in **disease risk anticipation and assessment**

Goal 10   Further develop **proactive, informative and engaging communication** with relevant stakeholders through new and existing communication channels such as:

- Continued development of the animal health surveillance website;
- Use of DAFM social media channels for the dissemination of pertinent information to a wider audience;
- Animal Health Awareness Week;
- Convening of the Animal Health Surveillance Forum.

EVOLUTION

Goal 11 Continue to build upon Ireland's **commitment** to the **importance of the *One Health* initiative** by:

- Increasing and broadening surveillance across farmed, domestic, and wild animal species;
- Strengthening working relationships with colleagues in public and environmental health;
- Supporting wider climate action targets.

INTEGRATION

Goal 12 Ensure the implementation of the provisions of the Animal Health Law and enhance the efficacy of animal health surveillance programmes in Ireland, by:

- Clarifying the role operators have to play in surveillance;
- Fostering open communication between operators and the competent authority;
- Increasing awareness and education around relevant animal health and biosecurity matters.

Goal 13 Further develop more effective and robust synergies incorporating all aspects of *One Health* with relevant stakeholders and authorities to combat antimicrobial resistance. This includes measures such as:

- Enhancing surveillance of antibiotic resistance and antibiotic use;
- Reducing the spread of infection and disease;
- Optimising the use of antimicrobials in human and animal health;
- Improving awareness and knowledge;
- Promoting research and sustainable investment in new medicines, diagnostic tools, vaccines etc.

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Chapter 1:
INTRODUCTION

1.1 Context

This Animal Health Surveillance Strategy (2023-2028) complements the National Farmed Animal Biosecurity Strategy (2021-2024) and falls under the Department's National Farmed Animal Health Strategy (2023-2028), underpinning exotic disease preparedness, sustainable livestock production, market access and trade for livestock produce and a variety of *One Health* initiatives. Animal health is a strategically important element of livestock production and sustainability, but is inevitably faced with challenges and risks for which industry must anticipate and be prepared for. Animal health surveillance therefore has a key role in safeguarding animal health more broadly, helping to inform policy on issues such as biosecurity and use of veterinary medicinal products etc. in a more objective and comprehensive way.

This strategy builds on the Animal Health Surveillance Strategy 2016-2021, the aim of the which was to ensure Ireland maintained its international reputation of having a high animal health status whilst improving national on-farm productivity. It set about a framework to enable effective and optimum monitoring and control of existing diseases in the country, whilst minimising the potential impact of any exotic disease outbreak that might occur.

The 2016-2021 strategy took account of a number of national and international drivers of change in animal health including: globalisation, climate change, EU policy initiatives, geo-political instability and new technologies. National drivers of change identified at that time included intensification, reduced veterinary presence on farms, increased animal movement and national policy initiatives such as Food Wise 2025, which evolved into Food Vision 2030 during the lifetime of the first animal health surveillance strategy. Other key policies like the European Union's Farm to Fork Strategy (2020) and Ireland's Climate Action Plan (2021) were also launched during this time. In addition, sustainable livestock production, the threat of an emerging zoonotic disease (acutely highlighted by the Covid-19 pandemic) and the supply of medicines have assumed a greater importance in the intervening period.

The four key goals identified as essential elements underlying the previous strategy were:

1 Improving the governance of animal health surveillance in Ireland;

2 Delivering a high-quality surveillance system;

3 Prioritisation of surveillance activities;

4 Improving communication of surveillance activities.

These four key goals gave rise to 13 recommendations, which are set out in Appendix I.

This new Animal Health Surveillance Strategy for 2023-2028 does not set out to replace these recommendations, but rather aims to build meaningfully upon the foundations created by them, in order to develop an even more comprehensive, cohesive, and robust animal health surveillance strategy going forward. This will revolve around three key strategic principles:

DEVELOPMENT of the recommendations originally laid down in the 2016-2021 strategy and the inclusion of non-livestock species.

EVOLUTION of the strategy to account for the changes that have occurred, such as the global Covid-19 pandemic and the worsening worldwide climate emergency.

INTEGRATION of recently introduced legislation pertaining to key aspects of animal health.

1.2 The Importance and Purpose of Animal Health Surveillance

Animal health surveillance can be defined as 'the systemic (continuous or repeated) collection, collation, analysis, interpretation and timely dissemination of animal health and welfare data from defined populations' (Hoinville *et al.*, 2013). Such information is essential for describing health-hazards and for contributing to the planning, implementation and evaluation of strategic interventions and risk-mitigation options.

Surveillance data are collected for several reasons including:

1. To achieve early detection of the incursion of an exotic disease;

2. To achieve early detection of newly emerging or re-emerging diseases;

3. To monitor endemic diseases and establish baseline prevalence;

4. To demonstrate freedom from a disease within a population;

5. To detect chemical hazards that may arise due to exposure in the environment, feed chain or other routes;

6. To evaluate the effectiveness of a control or an eradication programme.

The purpose of surveillance is to provide information for action; and as such the design of a surveillance system should be shaped by the information requirements (surveillance system outputs) of those responsible for taking the control and preventative action that is to be informed by the system.

1.3 Vision

Ireland is committed to building a world class animal health surveillance system to support farmers, producers, and industry which will protect and enhance Ireland's superior animal health status. Such a system will help to:

Ensure the detection of the incursion of an exotic disease agent with minimum delay

Provide timely information to relevant stakeholders to allow them to make informed decisions to optimise the health of their animals

Provide assurance to consumers and trade partners of Ireland's high standards of animal health

DEVELOPMENT

Chapter 2:
DEVELOPMENT

The four strategic pillars detailed in the 2016-2021 strategy were firmly anchored during those five years. The next phase of the Animal Health Surveillance Strategy aims to develop each of them further as follows:

2.1 Governance

In the area of governance, the Department of Agriculture Food and the Marine (DAFM) will establish a new Animal Health Surveillance Steering Group to ensure that the surveillance initiatives devised, and their subsequent implementation, are both compatible and cohesive. (Details of suggested membership and terms of reference are set out in Appendix II).

Specific new goals in the area governance include:

Goal 1
Ensure the appropriate legal framework for all surveillance activities.

Goal 2
Produce guidelines to ensure all surveillance activities comply with GDPR requirements.

2.2 Surveillance Quality

The Department of Agriculture Food and the Marine has a wide variety of databases. These databases were generally designed for a specific regulatory purpose, but the data they are recording also have a surveillance value. There is therefore an opportunity to add value to these existing resources by interrogating them more systematically for surveillance purposes.

Currently, specialist production systems such as those seen in the pig and poultry industries have a limited interaction with DAFM veterinary surveillance. These production systems tend to be very intensive, and any exotic disease outbreak would likely have devastating consequences.

Likewise, there are limited surveillance data available on non-livestock species such as equine and companion animals. There is a high volume of international movement among the sport and thoroughbred horse populations and companion animal movement is ever-increasing. The risk of disease occurrence in these species is therefore a realistic threat. Furthermore, due to the close contact these animals tend to have with their owners, the risk of zoonoses from these species merits greater focus.

Surveillance activities for aquatic animals are currently managed by the Marine Institute and are largely conducted independently of terrestrial animal surveillance. However, going forward, greater co-ordination between the two would be desirable in certain areas.

In recent years, there has been an increased awareness of the importance of and demand for good laboratory diagnostic data in informing treatment decisions that veterinary practitioners make. There has been an increase in private providers of veterinary laboratory services, and DAFM may not have access to these data sources. Similarly, private veterinary practitioners also have vast amounts of surveillance disease intelligence which is not being fully captured or utilised in our current animal health surveillance system.

Excellence in research and education in the area of animal health surveillance is key, and pivots around a close working relationship with colleagues throughout industry and academia. Whilst strong working relationships already exist between DAFM and such stakeholders, there is scope to deepen these relationships further.

Specific new goals in surveillance quality therefore include:

Goal 3

Further develop the use of data from all relevant, including recently established (AM/PM, NVPS), DAFM databases for surveillance purposes.

Goal 4

Detail how artificial intelligence/machine learning can be applied to surveillance data from existing DAFM data flows to enhance surveillance activities.

Goal 5

Create species-specific surveillance platforms, including for those species that currently have a lesser surveillance footprint.

Goal 6

Develop and implement syndromic surveillance systems for Irish livestock and companion animals.

Goal 7

Develop public/private partnerships to access surveillance data from private veterinary laboratories, private veterinary practitioners, farmers, and stockpersons to enhance the quality of surveillance activities.

2.3 Prioritisation

As a result of the prioritisation tool for animal health surveillance activities devised by Clarke *et al*. (2020), there now exists a defined method by which prioritisation exercises can be carried out. It is proposed that such an exercise should be carried out at a determined frequency. Furthermore, risk anticipation and risk assessment are an important part of disease preparedness and have been identified as a key area requiring increased national capacity. This can be best achieved by building people capability in this area, through development of highly skilled staff within the Department as well as input from outside organisations.

Specific new goals in surveillance prioritization therefore include:

Goal 8

Carry out animal health surveillance prioritisation exercises once every two years, but more frequently should a species-specific need arise in the interim.

Goal 9

Create additional capacity in disease risk anticipation and assessment.

2.4 Communication

Effective communication between all relevant stakeholders remains a core factor that determines the success of any animal health surveillance system. Such communication must be meaningful, reciprocal, and ongoing. The Animal Health Surveillance Forum which was hosted by DAFM in 2016 provided a meaningful interface for all the relevant stakeholders to contribute to surveillance policy formation. It is proposed that this forum should be convened again. Furthermore, as emphasised in the previous strategy, the importance of stakeholder awareness as a tool in the early detection of an emerging disease cannot be underestimated. This has been exemplified well by the successful introduction of the 'Avian Check' application in 2021, through which members of the public can report the locations of dead wild birds for avian influenza surveillance. It is especially important to remind stakeholders what good animal health looks like so that they recognise the occurrence of a novel disease or increased incidence of what has been considered a common disease. This maintenance of a high level of awareness is challenging and requires diligence to achieve.
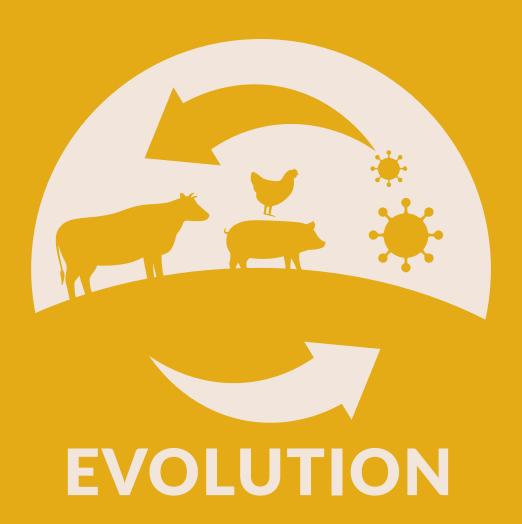
The Department of Agriculture Food and the Marine commits to ensuring that its outreach is proactive, and that mechanisms for informing stakeholders on relevant topics relating to animal health and disease surveillance are being continuously improved and refined.

Specific goals in communication therefore include:

Goal 10

Further develop proactive, informative, and engaging communication with relevant stakeholders through new and existing communication channels such as:

- Continued development of the animal health surveillance website;
- Use of DAFM social media channels for the dissemination of pertinent information to a wider audience;
- Animal Health Awareness Week;
- Convening of the Animal Health Surveillance Forum.

EVOLUTION

Chapter 3:
EVOLUTION

3.1 The Covid-19 Pandemic

When the Animal Health Surveillance Strategy 2016-2021 was written, it was not anticipated that during this time there would be a pandemic that would cause severe illness and the death of millions of people worldwide. On 11th March 2020, the WHO declared a global Covid-19 pandemic, caused by a novel coronavirus (SARS-CoV-2) which had first emerged in Wuhan in China in December 2019.

Whilst the origins of the SARS-CoV-2 virus have yet to be definitively established, the WHO-convened Global Study of Origins of SARS-CoV-2 (WHO, 2021) discussed the likelihood of the origins of the virus under the following scenarios:

1. Direct zoonotic transmission (also termed 'spill-over');

2. Introduction through an intermediate host followed by zoonotic transmission;

3. Introduction through the cold/food chain;

4. Introduction through a laboratory incident.

The likelihood of each of these scenarios was summarised as follows:

1. The zoonotic introduction scenario was listed as **possible to likely**;

2. The scenario including introduction through an intermediary host was considered to be **likely to very likely**;

3. The potential for SARS-CoV-2 introduction via cold/ food chain products was considered **possible**;

4. A laboratory origin of the pandemic was considered to be **extremely unlikely**.

As the Covid-19 pandemic progressed throughout 2020 and beyond, several animal species were detected as being infected with SARS-CoV-2, thought to be linked with human exposure. As detailed by Hale *et al.* (2022) and Korath *et al.* (2022), most of these reported cases were either in domestic animals (cats, dogs, and ferrets), or else pertained to wildlife animals (big cats, otters, gorillas or mink) living under human care or thought to have escaped from captive environments. However, more recently, a significant number of free ranging white-tailed deer were found to be positive for the virus in Ohio in the USA, showing that the virus can be transmitted to susceptible 'true' wildlife populations, which may pose new routes for virus evolution in the future (Hale *et al.*, 2022).

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This highlights the need for increased and ongoing surveillance in both farmed and wildlife animal populations. The threat of another pandemic emerging from animals and the unstable geopolitical and socioeconomic situation that would create (Delardas *et al.*, 2022), emphasises the importance of horizon scanning and risk analysis for future potential pandemics and epizootics.

Given that approximately 60% of human infections are thought to have an animal origin, and 75% of new and emerging human pathogens originate in animals (UNEP and ILRI, 2020), there is value in continued support of the *One Health* concept and increased interaction with the medical profession in Ireland and abroad, specifically Public Health and Infectious Disease specialists, as well as colleagues in the National Parks and Wildlife Service (NPWS) in respect to wildlife.

3.2 Sustainable Livestock Farming

At the COP 26 in November 2021, it was recognized that while livestock management systems are vulnerable to climate change, improving sustainable production and animal health can contribute to reducing greenhouse gas emissions, by enhancing carbon sinks on pasture and grazing lands. At COP 27 in November 2022, these principles were reiterated once again, and the Food and Agriculture Organisation of the United Nations announced its intention to launch a defined plan by the end of 2023 to show how the farming and food industries can work more symbiotically to align with the goal of capping global warming at 1.5 degrees Celsius (El Safty and Jessop, 2022).

At a national level, Food Vision 2030 sets out the concept of a more sustainable livestock industry. Furthermore, the government's 2021 Climate Action Plan, set out a target of a 25% decrease in greenhouse gas emissions from the agricultural sector by 2030.

Disease surveillance systems play an important role in monitoring animal health. They are hugely important in providing baseline health data and information, and documenting improvements in animal health and consequential livestock production efficiency. These outcomes are fundamentally necessary to meet the target of sustainable agriculture. It is reported that intensive farming practices have the potential for creating new wildlife-domestic species interfaces which could lead to spill over and amplification of emerging zoonotic diseases (Magouras *et al.*, 2020). Therefore, smart surveillance strategies that a) target locations where spill over is most likely to occur and b) co-ordinate surveillance of 'true'wildlife, farmed wildlife, and domestic species, as well as people that have close contact with animals will therefore form a crucial part of this process (Keusch *et al.*, 2022). This highlights the complex multifaceted role effective animal health surveillance must play within the broader scope of the *One Health* concept, and its importance cannot be underestimated (ILRI, 2022).

The key goal of this strategy in relation to sustainable livestock farming is therefore:

Goal 11

Continue to build upon Ireland's **commitment** to the **importance of the *One Health* initiative** by:

- Increasing and broadening surveillance across farmed, domestic, and wild animal species;
- Strengthening working relationships with colleagues in public and environmental health;
- Supporting wider climate action targets.

INTEGRATION

Chapter 4:
INTEGRATION

Since the Animal Health Surveillance Strategy 2016-2021 was written, new European legislation which will have a notable effect on animal health and welfare has been introduced. It is therefore imperative that this new strategy reflects on these changes and incorporates them into its provisions.

4.1 The Animal Health Law

The Animal Health Law (AHL), Regulation (EU) 2016/429, came into effect on April 21st 2021. It was part of a package of measures proposed by the European Commission in May 2013 to strengthen the enforcement of health and safety standards for the whole agri-food chain, by streamlining several legal acts into a single law. It includes a list of regulated diseases of terrestrial and aquatic animals and lists of susceptible species. Following on from this, a specific regulation on disease surveillance, disease eradication and disease freedom was enacted (Commission Delegated Regulation (EU) 2020/689).

The AHL places a number of responsibilities on operators – this includes surveillance responsibilities. It also places an onus on operators to notify the competent authority when there are reasons to suspect the presence of one of the listed diseases on their establishment or when there are abnormal mortalities or signs of serious disease e.g. decreased production rates with no determined cause. As part of the farm surveillance requirements, the Regulation includes a requirement for animal health visits to farms, to provide advice on biosecurity and other animal health related matters.

The introduction of the AHL also saw the launch of a new EU disease notification system called the Animal Disease Information System (ADIS). This system facilitates the rapid exchange of information on outbreaks of certain selected contagious animal diseases between Member States, and allows coordination and monitoring of disease outbreaks. This enables EU countries and the EU Commission to take immediate measures to prevent the spread of the disease in question. This system also facilitates information exchange between it and the World Animal Health Information System (WAHIS) portal, fulfilling the obligation of countries to submit information on their national animal health situation to the World Organisation for Animal Health (WOAH).

The AHL therefore creates an opportunity to enhance animal health surveillance in Ireland, as it lays down the rules for surveillance for the listed (see Appendix III) and emerging diseases. It includes:

- The design of the surveillance system, including the targeted animal population and the diagnostic methods;
- Disease confirmation and the case definition;
- EU-wide surveillance programmes.

The key goal in relation to the Animal Health Law legislation is therefore:

Goal 12

Ensure the implementation of the provisions of the Animal Health Law and enhance the efficacy of animal health surveillance programmes in Ireland, by:

- Clarifying the role operators have to play in surveillance;
- Fostering open communication between operators and the competent authority;
- Increasing awareness and education around relevant animal health and biosecurity matters.

4.2 Veterinary Medicinal Products

New legislation on veterinary medicinal products (Regulation (EU) 2019/6) came into force from January 28th 2022, modernising the veterinary medicines legislation across the EU. There are now a series of measures included in the legislation to ensure prudent and responsible medicine usage, particularly to avoid the development of antimicrobial resistance. These will require more informed and prudent prescribing practices, which in turn needs more diagnostic data that can be interrogated to ensure any resistance issues are promptly identified.

Ireland's Second One Health National Action Plan on Antimicrobial Resistance 2021-2025 (iNAP-2) is now in place and aims to build further on the successes and progress made by its predecessor, by continuing to tackle the complex issue of antimicrobial resistance using a *One Health* approach. The core principles of decreasing antimicrobial usage whilst simultaneously working to improve overall animal health through disease control programmes, increased biosecurity measures and improved animal health awareness and early intervention remain central to this next phase. The synergies between human, animal and environmental health initiatives to tackle antimicrobial resistance need to become more refined and ambitious than ever, with each of these three pillars given adequate consideration into how they feed into addressing the overall problem.

This need for an integrated and holistic approach to the problem cannot be over emphasised, as to date, environmental, aquatic and wildlife aspects are often inadequately considered (White and Hughes, 2019). Wildlife ecosystems are potentially important reservoirs for resistant organisms and genes, and wildlife populations can serve as sentinels for resistance that has arisen from environmental contamination, human use, and livestock use (White and Hughes, 2019). It is therefore key that this next phase of the animal health surveillance strategy incorporates these aspects, so that a more comprehensive and effective approach to mitigating the antimicrobial resistance crisis can be implemented.

The key goal in relation to veterinary medicinal products control is therefore:

Goal 13

Further develop more effective and robust synergies incorporating all aspects of *One Health* with relevant stakeholders and authorities to combat antimicrobial resistance. This includes measures such as:

- Enhancing surveillance of antibiotic resistance and antibiotic use;
- Reducing the spread of infection and disease;
- Optimising the use of antimicrobials in human and animal health;
- Improving awareness and knowledge;
- Promoting research and sustainable investment in new medicines, diagnostic tools, vaccines etc.

Conclusion

As foreseen in the 2016-2021 strategy, the area of animal health surveillance has become more important and visible during those years, and the momentum and progress made in this area must be progressed further.

Development of the strategy to ensure there is legal clarity on GDPR related issues is important in the area of governance. The approach to surveillance must be broadened and expanded to include the full spectrum of terrestrial and aquatic animals in the country, including companion animals and wildlife. Furthermore, more consideration must be given to the development of smarter, more comprehensive surveillance systems and thereafter how the data they provide are analysed and used to best effect.

Given the often rapidly changing vista of what disease threats are most present or concerning, use of the tools now available to help surveillance prioritisation is key. Increased capacity in risk anticipation and risk assessment must also be sought both within the Department and the wider industry as well.

The importance of ongoing functional and informative communication between the Department and all relevant stakeholders in the area of animal health surveillance cannot be understated. The Department therefore commits to playing a leading role in this respect, facilitating improved and more effective communication.

The Covid-19 pandemic highlighted clearly how this next phase of the strategy must evolve to commit in a very serious way to the *One Health* approach to animal health surveillance. There is scope, and indeed an imperative, for forging new relationships with colleagues not only in the animal health sector, but importantly with human public health and environmental health colleagues as well.

The severity of the global climate crisis has never been more apparent. It is therefore undeniable that livestock production must become more sustainable. Improvements in overall animal health, informed by comprehensive surveillance systems will help achieve this. This will in turn lead to a reduced requirement for antimicrobial usage, hence reducing the development of antimicrobial resistance, as well as improving animal welfare, a further matter of significant societal concern. Furthermore, more sustainable animal production systems will help decrease the threat of zoonotic disease outbreaks and spread in future.

Finally, with new EU legislation now governing multiple aspects of animal health and welfare, it gives a unique opportunity to reflect on how historic practices were carried out, and scope to improve upon them by adhering to and implementing all the provisions these new pieces of legislation lay down.

Whilst these endeavours will take a lot of hard work and commitment by the Department and all the relevant stakeholders, the drive and initiative to achieve these goals has never been stronger. Implementation of the recommendations laid out in this strategy will continue to help achieve a world class surveillance system which will ensure optimal health and welfare for Ireland's animals, supporting farm families and rural communities, protecting public and environmental health and supporting continued access to global markets for Irish livestock and agri-products.

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APPENDICES

Appendix I: Recommendations from the Animal Health Surveillance Strategy 2016-2021

1. Governance

Recommendation 1

As part of its leadership role, DAFM should ensure active participation of stakeholders in the development of policy and in the implementation of animal health surveillance programmes.

Recommendation 2

The governance structure of animal health surveillance in Ireland should be reviewed on an ongoing basis and updated, as necessary.

Recommendation 3

Funding mechanisms for animal health surveillance should be explored in line with principles set out in the Animal Health Strategy produced by DAFM. DAFM should promote a clearer understanding of the private and public benefits accruing from animal health surveillance programmes and this should be reflected in the funding of those programmes.

Recommendation 4

An economic assessment should be an integral component in the development of any new animal health surveillance programme.

2. Surveillance quality

Recommendation 5

A working group should be set up to develop an appropriate mix of early warning surveillance activities and to carry out an ongoing review of the information gathered from the different early warning surveillance activities. Key performance indicators should be set for each activity based on clearly defined goals.

Recommendation 6

With regard to scanning surveillance, the possibility of the DAFM Laboratory Services using an alternative integrated approach, along the lines set out below, should be investigated:

- Provision of a dedicated telephone help desk for PVPs, manned by clinical specialists;
- Refinement of the RVL fee structure to attract carcasses and clinical samples of high surveillance value;
- Use of a dedicated animal collection service to ensure that animals of surveillance value from a wide geographical distribution are delivered to an RVL;
- Setting up of designated centres of specialist competence in particular species or sectors;

Recommendation 7

The Animal Health Surveillance Steering Group should monitor surveillance quality through the ongoing examination of particular surveillance programmes using specific sets of criteria and using the evaluation tools available for this purpose.

3. Prioritisation

Recommendation 8

DAFM should develop a prioritisation process for animal health surveillance activities and establish criteria by setting up a working group with stakeholders. The priorities should be reviewed annually.

4. Communication

Recommendation 9

Based on agreed priorities, DAFM should set up a working group to review what needs to be done to get optimum value in the area of animal health surveillance from its existing databases, particularly the LIMS, AIM, AHCS and AFIT systems. The working group should also develop procedures for making data available to relevant stakeholders.

Recommendation 10

Current systems for disseminating animal health surveillance information to stakeholders, including the general public and policy makers, should be reviewed and updated with a view to ensuring that the most appropriate methods are used and that newly developed technologies are fully utilised.

Recommendation 11

DAFM should continue to develop and maintain the national animal health surveillance website and ensure that it is kept up-to-date.

Recommendation 12

DAFM should continue to develop links with third level institutions with a view to ensuring that animal health surveillance is promoted among students.

Recommendation 13

DAFM should encourage the *One Health* concept by expanding links with other Departments and agencies involved in animal and human health surveillance and environmental sustainability.

Appendix II: Proposed Animal Health Surveillance Steering Group and Associated Structures

1. The Animal Health Surveillance Steering Group

The Animal Health Surveillance Steering Group will be co-chaired by the Chief Veterinary Officer and the Director of the DAFM Laboratories. It's membership will be comprised of representatives from:

- DAFM's Laboratory Service;
- DAFM's National Disease Control Centre;
- DAFM's Seafood and Marine section;
- UCD's Centre for Veterinary Epidemiology and Risk Analysis (CVERA);
- DAERA-NI.

The role of the Animal Health Surveillance Steering Group will be:

- To develop policy in the area of animal health surveillance
- To set up the necessary structures, including Working Groups, to implement the agreed policy;
- To monitor implementation in the area of animal health surveillance, including the approval of reports produced by Working Groups;
- To develop a strategic plan for animal health surveillance in Ireland and to direct the implementation of that plan including policy formulation and priority setting;
- To approve the animal health surveillance component of the annual work plan drawn up by the National Disease Control Centre and to monitor progress in the implementation of that work plan;
- To ensure resources are provided as appropriate.

2. Working Groups

Working Groups will be established to address specific issues or undertake specific projects. Each Working Group will be set up by the Steering Group following an application by a DAFM Division or on the initiative of the Steering Group itself. The application contains, at a minimum, a rationale for carrying out the work, clear Terms of Reference (TORs) and a deadline for completing the work. The Steering Group has the final say in relation to the TORS and deadlines.

The role of Working Groups will be to address a specific issue relating to animal health surveillance within specific terms of reference and with a specified deadline. The output will normally be in the form of reports, but could also include other types of outputs, e.g. surveillance platforms. A Working Group should consult, as necessary, other relevant Divisions in relation to the specific task that they have been assigned to do.

A Working Group should consist of people with suitable skills and expertise for the specific task being undertaken. It can have members from a range of DAFM divisions, and from outside DAFM (e.g. CVERA). It is envisaged that the NDCC will coordinate the activities of each Working Group. Members of each Working Group will be appointed by the Steering Group, who will also designate a Chairperson.

Appendix III: The List of Animal Diseases as referred to in Article 9(1) of Regulation (EU) 2016/429

- Infection with rinderpest virus
- Infection with Rift Valley fever virus
- Infection with *Brucella abortus*, *B. melitensis* and *B. suis*
- Infection with Mycobacterium tuberculosis complex (*M. bovis*, *M. caprae* and *M. tuberculosis*)
- Infection with rabies virus
- Infection with bluetongue virus (serotypes 1-24)
- Infestation with *Echinococcus multilocularis*
- Infection with epizootic haemorrhagic disease virus
- Anthrax
- Surra (*Trypanosoma evansi*)
- Ebola virus disease
- Paratuberculosis
- Japanese encephalitis
- West Nile fever
- Q fever
- Infection with lumpy skin disease virus
- Infection with *Mycoplasma mycoides subsp. mycoides* SC (Contagious bovine pleuropneumonia)
- Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis
- Bovine viral diarrhoea
- Bovine genital campylobacteriosis
- Trichomonosis
- Enzootic bovine leukosis
- Sheep pox and goat pox
- Infection with peste des petits ruminants virus
- Contagious caprine pleuropneumonia
- Ovine epididymitis (*Brucella ovis*)
- Infection with *Burkholderia mallei* (Glanders)
- Infection with equine arteritis virus
- Equine infectious anaemia
- Dourine
- Venezuelan equine encephalomyelitis
- Contagious equine metritis
- Equine encephalomyelitis (Eastern and Western)
- Infection with Aujeszky's disease virus
- Infection with porcine reproductive and respiratory syndrome virus
- Infection with Newcastle disease virus
- Avian mycoplasmosis (*Mycoplasma gallisepticum* and *M. meleagridis*)
- Infection with *Salmonella* Pullorum, *S. Gallinarum* and *S. arizonae*
- Infection with low pathogenic avian influenza viruses
- Avian chlamydiosis
- Infestation with *Varroa* spp. (Varroosis)

- Infestation with *Aethina tumida* (Small hive beetle)
- American foulbrood
- Infestation with *Tropilaelaps* spp.
- Infection with *Batrachochytrium salamandrivorans*
- Epizootic haematopoietic necrosis
- Viral haemorrhagic septicaemia
- Infectious haematopoietic necrosis
- Infection with highly polymorphic region (HPR) deleted infectious salmon anaemia virus
- Koi herpes virus disease
- Infection with *Mikrocytos mackini*
- Infection with *Perkinsus marinus*
- Infection with *Bonamia ostreae*
- Infection with *Bonamia exitiosa*
- Infection with *Marteilia refringens*
- Infection with Taura syndrome virus
- Infection with yellow head virus
- Infection with white spot syndrome virus