

AHVLA

Science Strategy 2012-2015

‘Expertise with Impact’

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KEY MESSAGES FROM AHVLA's CHIEF SCIENTIST

I am really pleased to be able to share with you the new AHVLA Science Strategy. The strategy is the result of many months of discussion with a wide range of internal and external stakeholders and has been developed against the backdrop of a very challenging external environment. I hope it will show you how we intend to demonstrate 'Expertise with Impact' in everything we do.

The strategy recognises that the majority of our scientific activity is directed towards protecting the nation against the threat and impact of a wide variety of animal diseases and in doing so AHVLA plays a critical role in the animal and veterinary public health sector. We work in high profile areas with many of the diseases that we specialise in featuring in the Government's National Risk Register.

High quality, robust science is therefore fundamental to how we operate as an agency and must be at the heart of everything we do. A unique feature of the Agency is that we bring together so much of the nation's animal health and welfare activities into one place. Our science is fundamental to this and runs as a thread that connects and underpins the rich tapestry of the work we do at AHVLA.

Intelligence is also gathered from our international networks and partnerships. This has been recently exemplified with the Schmallerberg outbreak where we were able to look and learn from what was happening in Europe.

The evidence that we generate from our surveillance activities, intelligence gathering and research feeds into our advice that supports new policy development, which, in turn, generates and defines the field work that we deliver. This is all part of a unique cycle – with AHVLA at its hub. And throughout this cycle we have unique opportunities to interact with almost everyone in the veterinary and farming industry.

The focus of our science is outcome driven, aimed at solving important practical problems – both now and in the future. Working with fewer resources will require us to be more flexible, more efficient and more innovative by strengthening our interdisciplinary working. Therefore a key part of the strategy is to develop core capabilities that will make our science sustainable in the long term.

As a consequence, we have based our strategy around three key strategic themes that reflect the core purpose of AHVLA's scientific activities – protecting the nation against the threat and impact of a wide variety of animal diseases:

- Threat awareness
- Threat definition
- Threat mitigation

Underpinning these will be a number of key enabling themes:

- An organisational structure to underpin the effective and flexible delivery of science
- Developing the skills and capabilities of our staff
- Knowledge exchange and innovation
- Improving our ways of working
- Strategic partnerships in recognition that we can't do everything ourselves
- Facilities that are fit for purpose
- Effective communication of our science

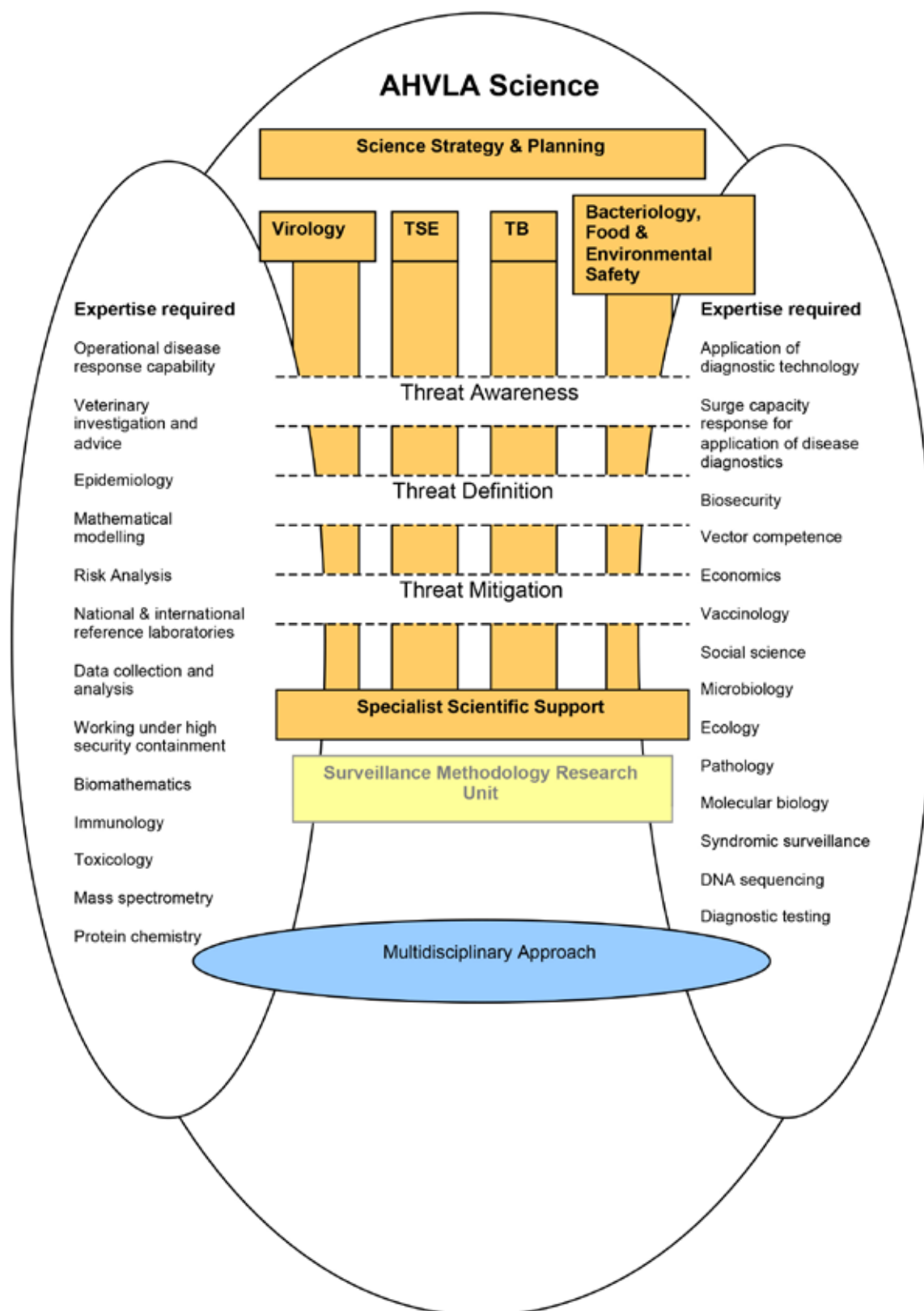
Finally, the ability to measure the impact and value of our science is an important feature of our strategy. With many competing demands on our resources, now more than ever, we really need to articulate the value of the work we do and how our work makes a difference.

I hope you enjoy reading this strategy - I think that it provides a fresh approach to how we will develop our science over the coming years. If you have any questions or comments on it then please feel free to contact me.



Professor Glyn Hewinson

AHVLA Chief Scientist



INTRODUCTION

The majority of our scientific activity is directed towards protecting the nation against the threat and impact of a wide variety of animal diseases. In so doing, we make a significant contribution to securing a sustainable food supply for the nation, we protect the public against zoonotic diseases, we improve the health and welfare of animals and in doing so help to reduce the national carbon footprint and we support international trade and the nation's wider economy. The world class scientific expertise and international networks that we have built in a number of areas influences animal disease control at a global level and helps to reduce the risk and consequences of disease incursion into the United Kingdom.

This is the first science strategy for the merged AHVLA. The strategy acknowledges that science is fundamental to everything we do, as is our commitment to delivering high quality science-based evidence for policy development.

The strategy outlines how we will ensure that science is embedded across the new agency and is the foundation for the evidence and trusted expert advice that we provide to our policy customers. It will also ensure that our science underpins our outbreak capability by delivering science-based advice in real time to enable good disease control decision making.

We work in high profile areas. The risks associated with animal disease, particularly those that can be transmitted naturally between animals and humans (zoonoses) feature highly on the UK Government's radar. The National Risk Register, published in January 2012, lists pandemic influenza as one of its highest priority risks – scoring the highest impact score with a relative likelihood of it occurring in the next five years of 1:20 to

1:2. No other risk features higher.

The threats posed by other zoonotic animal disease and non-zoonotic animal disease follow closely behind with a lower overall relative impact (of course higher for zoonotic than non zoonotic) but still with a relative likelihood of between 1 in 200

and 1 in 20 reflecting that our national herds of livestock and flocks of sheep and poultry are constantly vulnerable to exotic diseases through increased trade and movement of livestock and livestock products. The nature of these threats is constantly changing as pathogens evolve and climate change increases the risk of introducing exotic vector borne diseases into the UK as was observed in the recent outbreaks of bluetongue and Schmallenberg virus.

Our science strategy takes account of the fact that AHVLA will play a key role in mitigating these risks on behalf of Defra, the Welsh Government and the Scottish Government. These risks play out in a complex and economically challenging environment and we will need to work hard and smart to make sure that we can meet the wide range of challenges in a long term, sustainable way. We will have to target our resources, manage risks and of course measure impacts.

Working in partnership on shared issues will be important. This not only covers our work with industry, private veterinary surgeons, vet schools, research institutes, academia, the international scientific community, the World Organisation for Animal Health (OIE) and the European Food Safety Authority (EFSA). on the animal health side but also extends to our work with opposite numbers in the human health field on zoonotic disease. This demonstrates our commitment to the global One Health initiative.

Vision for AHVLA Scientists for 2015

'We will create a community of scientists that is lively, cooperative, critical, challenging, innovative and fundamentally curious. Our scientists will understand the role of science within the Agency, its drivers and impact. They will ensure that their science delivers maximum benefit across the Agency to achieve the goal of disease control in animals. They will be effective communicators able to convey the purpose, outcomes, impact and implications of their science effectively to a wide range of stakeholders including their peers, policy makers, funding bodies, influential organisations, vets, farmers and the general public'.

WHAT DOES THIS STRATEGY DO?

This strategy shows how we will use our science and evidence to meet the challenges of delivering animal and public health policy over the next five years. It sets out a strategic framework underpinned by strategic and enabling themes.

It focuses on high-level themes. It does not list everything we do – the detail will feature in underpinning department and discipline strategies.

OUR CUSTOMERS AND THEIR REQUIREMENTS

Our science is delivered to a wide range of customers both in the UK and worldwide. By far our largest customers by income are our Government policy customers with lesser amounts coming from the EU and direct from industry.

Through discussion with them we have defined their requirements and identified a number of opportunities where we can increase the impact of our science:

- Expertise and capability (including containment laboratories) to deal with a wide range of known disease threats.
- Expertise and capability to deal with an emergency response to unexpected outbreaks and incidents of animal disease (including provision of surge diagnostic capability and containment laboratories) and the skills and capabilities to deal with new and emerging diseases.
- Robust, impartial, soundly based science to underpin policy development
- A strong network of collaborators world-wide that provide effective partnerships to deliver customer needs in the most cost effective way.
- Expert consultancy and advice.

STRATEGIC FRAMEWORK

Within the national science community, AHVLA operates in the space between universities and Research Council Institutes on the one hand and users of scientific services and evidence on the other (be they government departments, commercial customers or international agencies). Thus AHVLA's science is predominantly applied, translational and customer focussed. This means that our science is focussed on **solving practical problems**. That does not mean that we will steer clear of fundamental research when it is required but rather that we resolve science problems only if they have a clear application rather than simply acquiring knowledge for knowledge's sake.

In 2011, Defra produced an update to their Evidence and Innovation Strategy (EIS) 2010-2013 and beyond, which covers England and Wales. This sets out their plans and approaches to evidence gathering in a complex environment, a world where public expenditure is under pressure and value for money is increasingly scrutinised. The EIS emphasises the need to develop clear links between evidence activities and policy objectives and as part of this each policy programme has developed its own evidence plan to clarify the linkage. Defra's Veterinary Science Team has recently distilled this information into a high level requirement for science evidence with an indication of the current reliance on AHVLA for that capability (see Annex 1 and 2).

Annex 1 shows that the current funding allocations produce the highest spend on bovine TB, exotic diseases, TSEs and new and re-emerging disease (although the majority of spend on the latter is for surveillance). Maintaining and developing expertise in these areas is therefore important as is the ability to apply scientific methodology and understanding to topics outside these areas so that we can provide independent critical assessment of scientific evidence provided by others.

Aside from providing direct evidence, it is also generally recognised that the Agency's work as a national and international reference laboratory, and involvement in international bodies such as OIE,

EFSA and the Food and Agriculture Organisation (FAO), enhances the capability of our scientists to provide horizon scanning intelligence back to policy makers, to influence science at an international level and to further the Agency's reputation.

We have steered clear of developing a strategy focussed around disease priorities, which tend to ebb and flow in the short term depending on policy customer requirements at any one time. Instead our strategic framework is based on developing **long term core capabilities** that we can bring to bear on any animal and public health risk situation. To make this happen we will need to shift from short term, project orientated funding to a more strategic funding model that will ensure that we are able to take a strategic approach to **developing and sustaining core capabilities for the future**. We will work with our policy customers to demonstrate the long term benefits that this approach will deliver and to develop a suitable model.

A key capability for us is our ability to synthesise surveillance and research evidence and deliver as one agency. This combined with our wide reach to the veterinary and farming industry, makes AHVLA truly unique. We will look at how we can improve this further as a merged agency and enrich it by adopting a multidisciplinary approach to science delivery based around **dealing with known and unknown disease threats**.

STRATEGIC THEMES

To help deliver the strategic framework we have focussed our science delivery around the theme of minimising the impact of animal disease by dealing with the threat it poses in three stages: **threat awareness, threat definition and threat mitigation**. Listed below are the core activities, expertise and capabilities required in dealing with the threat of animal disease under these three categories.

Threat Awareness

Definition: A general understanding and awareness of the threats – usually these are via bacteria, viruses, parasites, fungi, prions and intoxications – that are likely to impact on animal and public health in the UK – both now and in the future.

The Challenge

We need to make sure that we have the most appropriate mechanisms, organisational structure and governance in place so that we remain aware of the threats that face us and are as prepared as we can be to deal with those threats. The core capabilities required and mechanisms employed to ensure effective horizon scanning and preparedness for threats of disease incursion include:

- Veterinary surveillance nationally and with links internationally via the reference laboratories
- A network of experts working collaboratively both within and outside the Agency
- Expert species groups that include external membership
- D2R2 – Disease Briefing, Decision support, Ranking and Risk assessment
- Epidemiology
- Risk analysis
- Outbreak preparedness and contingency planning
- Expert skills in pathology, epidemiology, mathematical modelling, data collection and analysis, diagnostics, risk analysis, microbiology, virology, parasitology, veterinary science

Threat Definition

Definition: Identification of the disease, disease agent, chemical or change in risk factors e.g. a change in husbandry or the environment; that poses a danger to animal and public health and welfare; and the level of threat that it presents.

The Challenge

A multidisciplinary approach to threat definition is required to be able to identify the causative agent(s) of disease, to understand the nature of its threat to animal and human health, to determine the mechanism of transmission and speed of spread. Discipline specific excellence is vital to this multidisciplinary approach and so we will create a cadre of 'discipline champions' to look across the Agency to ensure that our professional disciplines remain future facing and in touch with developments in their specialist fields.

Key disciplines are:

- Epidemiology
- Virology
- Bacteriology
- Pathology
- Parasitology
- Biomathematics
- Molecular biology
- Immunology

Expertise will also be required in:

- Veterinary science
- Reference laboratories
- Vaccinology
- Pathogenesis studies including host species susceptibility
- Syndromic surveillance for new and emerging diseases
- Use of animal models in disease research
- Working under high security containment
- Biosecurity

- Determinative Microbiology
- DNA sequencing and analysis
- Strain typing and population genetics
- Diagnostic test development, validation and application
- Data collection and analysis
- Mathematical modelling
- Risk analysis
- Toxicology
- Mass spectrometry
- Protein chemistry
- Ecology
- Social science
- Science communication

Threat Mitigation

Definition: A systematic reduction in the extent of exposure to the threat and/or the likelihood of its occurrence.

The Challenge

We need to establish the most appropriate way of mitigating the threat. This may be through prevention via vaccination, biosecurity, education and social science and may also involve collaboration with international networks for early identification of possible disease incursions.

If a threat cannot be prevented we will act in partnership with Defra, other administrations, the Health Protection Agency, the Food Standards Agency and others to mitigate against the threat by ensuring effective outbreak response plans are in place. Scientific aspects of this response include early detection, availability of diagnostic tests, the use of mathematical modelling, economics and social science to identify optimum, cost effective, socially acceptable control options, data collection to track the spread of disease and to feed into the mathematical models to help monitor progress of disease control and support epidemiological analysis.

Expertise will also be required in:

- Operational disease response capability
- Veterinary investigation and advice
- Epidemiology
- Mathematical modelling
- Risk analysis
- National and international reference laboratories
- Data collection
- Application of diagnostic technologies
- Surge capacity response for application of disease diagnosis
- Bio security
- Vector competence
- Economics
- Vaccinology
- Social science
- Microbiology
- Working under high security containment

It is clear from the above analysis that a multidisciplinary approach is required for disease control and that there are a number of core disciplines and capabilities that we need to maintain, develop or gain access to via effective collaborative partnerships. A key priority for us is to work closely with our policy customers and evidence partners to prioritise and quantify the capabilities that they require and to ensure adequate resource is available to develop and sustain these core capabilities.

ENABLING THEMES

Organisational Structure

The organisational structure must underpin the effective delivery of science and must facilitate a quick and flexible response to changes in demand and priorities.

Key Priorities

- Realign our Science Directorate into four departments to better reflect our main threat categories:
 - Bacteriology, food and environmental safety
 - Bovine tuberculosis
 - TSE
 - Virology
- Create a Surveillance Methodology Research Unit embedded with the Epidemiology Group, a Science Strategy and Planning Unit to coordinate the scientific activities across the Agency and a Specialist Scientific Support Department to provide critical mass in cross cutting areas of scientific activity.
- Establish each Department using a multidisciplinary approach, headed by a lead scientist, to create more opportunities for cutting edge, relevant, high impact research and professional development as well as facilitating improved customer focus and alignment. In creating multidisciplinary teams we recognise that many of the most exciting and important scientific advances will occur at the interfaces with other disciplines.
- Task lead scientists with responsibility for ensuring that their multi-disciplinary networks produce high quality, high impact, highly relevant science that shapes and meets the needs of our customers.
- Support the Science Departments via a Specialist Scientific Support Department that encompasses a wide range of support functions, such as biological products, reagent production, technology transfer, animal services, pathology, bioinformatics, statistics, mathematical modelling and sequencing. This provides efficiencies in terms of equipment and skills as well as the standardisation of processes across the Departments.
- Establish a new Science Strategy and Planning Unit to manage the capability and skills portfolio of the science departments to ensure they are able to meet the challenge of delivering science across the whole Agency. The unit will be responsible for developing science strategy, our scientific relationships with key external bodies like universities, managing our seedcorn and PhD programmes, and also providing professional leadership, career development and coordination to our network of discipline champions.
- Appoint Discipline Champions to develop capabilities in pathology, biomathematics, immunology, molecular biology, parasitology, epidemiology, virology and bacteriology.
- Bring epidemiology together into one team in recognition that it is fundamental to veterinary surveillance, disease prevention and control and general scientific thinking. Part of this team will form the Surveillance Methodology Research Unit, while other specialist epidemiologists will be embedded back within the Science Departments as 'epidemiology associates' to ensure that their skills contribute to the multidisciplinary approach.
- Review and implement a strategy for pathology.
- Establish a new external science advisory board to challenge the development and delivery of the Agency's science and research capability.

Knowledge Exchange, Innovation and Skills

Developing our scientists and technical support and developing a culture and environment in which they can operate effectively, will be crucial to the delivery of our strategy.

Key Priorities

- Identify the key disciplines and expertise required in house and maintain/develop as appropriate
- Drive culture change to measure, deliver and articulate the impact of our science
- Drive a culture of publication throughout our scientific community.
- Develop ways to recognize, reward and disseminate the impact of our science.
- Accelerate the translation of research into practice including science relevant to policy and regulation.
- Address skills shortages in areas of specialist research expertise (e.g. mathematical modelling, bacteriology).
- Stimulate wider use of multidisciplinary approaches to problems.
- Strengthen the wider skills of scientists at all levels and explore opportunities for spending time outside research learning about policy development, laboratory testing and field delivery.
- Strengthen the scientific review of field evidence to assess the objectives of the policies that we deliver. This will enable us to help our customers review and enhance their policies.
- Strengthen the ability of our scientists to convey the purpose, outcomes, impact and implications of their science effectively to a wide range of stakeholders.
- Develop a better, more defined career track for scientists within the agency.

ENABLING THEMES

Ways of Working

We need to establish accepted ways of working and standardised practices based on the identification and dissemination of best practice.

Key Priorities

- Ensure that all scientific work involving animals undertaken by AHVLA scientists complies with the highest ethical standards possible.'
- Continually improve and reinforce a strong Health and Safety management culture
- Develop ways of assuring the robustness of scientific evidence across the Agency including creating a culture of constructive challenge: 'Drive Excellence through Challenge!'
- Define requirements of quality assurance for our science and then deliver to these standards
- Create a network of disease and test consultants and ensure best practice is applied
- Increase funding streams to support maintenance of expertise and capability. In order to achieve this we will develop a co-ordinated and strategic response to research calls and provide training and support to applicants.
- Forward plan our science activities to deliver cost reduction targets required for 2012-2015
- Develop a Bioinformatics and IT strategy for science that: exploits the 'data deluge' to facilitate information rich research, ensures computational hardware and software solutions are accessible to and used by a wide range of scientists, develops skills and capacity necessary to exploit the new tools and approaches and establishes preferred partnerships to help develop new tools and optimise the exploitation of our data.
- Develop key relationships with industry to facilitate the translation of research into practice thereby increasing the impact of our science.

ENABLING THEMES

Developing our Staff

Our science depends on the skills and capabilities of our staff. Given the pressures on the UK science skill base, we need to have clear roles and recognition for our scientists if we are to sustain their development, progression and succession.

We recognise that we need to develop clearer career pathways for scientists and a more effective mechanism to recognise and reward scientific achievement. We will therefore establish a working group to define career pathways for our scientists along with the skills, experiences and levels of achievement that we will expect along a career pathway. In addition we will develop a programme of talent management that will include an active mentoring programme and succession plan to underpin our core areas of science.

Developing a multidisciplinary, flexible workforce is crucial to the implementation of our science strategy and the working group will be tasked with identifying how this may best be achieved. Discipline champions will be tasked with sharing knowledge, building scientific communities and leading on career development within their discipline. We will ensure that key areas have exposure to both policy and field work so that there is strong linkage between evidence generation in the research laboratory and the development of policy and then delivery in the field. It is particularly important that early career scientists develop a broad range of skills and we will drive culture change to support career development and encourage movement between different areas of science within the Agency. The strategy will ensure that AHVLA provides Continuing Professional Development with sustainable and rewarding career pathways for its scientists and places its consultants in a position of influence.

Research training

Training of research scientists is important for developing the R&D skills base at AHVLA and to provide a dynamic pool of research scientists some of who will become the research and scientific leaders of the future. The Academic Board will continue to develop our PhD studentship programme, to an agreed ceiling, which serves our ambitions to develop and maintain the quality of our research, improve our interface with academia and attract additional funding from sources other than Defra to support key areas of our science in which we wish to place emphasis for investment. High quality hypothesis driven science will be a key driver but must be conducted clearly within the framework of policy and customer requirements.

Post-doctoral science

Previous independent science reviews have recognized a gap between acknowledged experts/consultants and emerging younger scientists and veterinarians especially in our research activities. Although we have made good progress in addressing this issue in number of areas, we recognize that our post-doctoral level science base needs strengthening if we are to secure succession. We will therefore review and invigorate our Fellowship Scheme (Fellows will be appointed to develop and enhance skills in areas considered business critical) and target our seedcorn funding to strengthen our post-doctoral cadre of scientists.

ENABLING THEMES

Partnership Working

We cannot deliver our science alone. In economically challenging times it is particularly important that we build strong and effective partnerships to help us deliver our customer requirements and increase the impact and quality of our science. We already collaborate with a large number of scientific organisations, research institutes, vet schools, universities and commercial companies nationally and internationally in order to increase the pool of professional knowledge, skills and facilities available to our customers. A number of formal collaborative agreements have been signed and we also maintain a wider network of individual informal collaborative activities.

We are part of an extended national network of public sector research establishments (PSREs) via the Interlab Forum. Together with the Health Protection Agency, the Food and Environmental Research Agency (FERA), the Centre for Environment, Fisheries and Aquaculture Science (CEFAS), the Defence Science and Technology Laboratory (Dstl), the Health and Safety Laboratory (HSL), we will work together to promote knowledge sharing across the PSREs particularly in the areas of emergency response and disease control.

We work closely with the Institute for Animal Health (IAH) and the Roslin Institute in areas of mutual interest and benefit to Government and the animal health industry.

Internationally we are a member of CoVetLab a European communication and collaboration network consisting of five national veterinary and public health institutes; as well as operating as a national, EU, FAO, OIE and WHO reference laboratory for a wide range of infectious and non-infectious diseases in farm animals.

Human and animal health are inextricably linked. The One Health agenda recognises this and proposes that a holistic approach is needed to understand, to protect, and to promote the health of all species. Whether it is emerging infectious diseases, antibiotic resistance, globalisation, natural disasters, or climate change, human and veterinary medical communities must work

together to combat the serious health threats of the 21st century. We have a long track record in working with the medical community specifically through collaboration with the Health Protection Agency (HPA). Most recent examples include the H1N1 pandemic and VTEC outbreaks in open farms. We also provide diagnostic services to HPA for certain zoonotic diseases e.g. rabies and brucella.

With increasing globalisation and pressures on funding we will continue to improve communication and collaboration between veterinarians, physicians, environmental scientists and public health professionals to find multidisciplinary solutions to our shared challenges.

Key Priorities

- The Agency's science partnerships will be subject to review during 2012/13 and a new Science Partnership Strategy established. This will focus on fewer, deeper, more long-term partnerships to underpin core strategic areas.
- We will review our interfaces with our sister Defra Agencies to ensure integration and value for money across the Defra family.
- We will forge new strategic partnerships with Defra, other administrations, sister Agencies, key universities, vet schools and research institutes for co-delivery of mutual priorities on specific issues e.g. economics, social science, bioinformatics.
- We will strengthen links and explore opportunities for joint working with international partners.
- We will maintain and develop our network of experts to enable horizon scanning and ensure we are aware of global threats to the nation's animal health.
- We will review the diagnostic and consultancy services provided by AHVLA and HPA with a view to identifying areas of rationalisation.
- We will strengthen our links with the commercial sector to enable translation of our research into practice and to provide additional funding in high priority areas of research.

Maintaining and Developing our Facilities

The laboratories and animal facilities in which AHVLA scientists work are key resources that ensure delivery of our science and our working practices are safe, biosecure and in full compliance with legislation. As an agency of Defra, we must be a model organisation for safe and biosecure working practices, working to a level by which other establishments are judged. One of our key priorities in this area will be to review and implement a strategy for our Animal Sciences Unit.

Over the next five years we will develop an estates strategy to ensure that our containment facilities are of suitable size and configuration to match current and future needs, including those associated with the consequences of climate change and our responsibilities for emergency preparedness and response. We envisage that this will require rationalisation of the Weybridge site to allow reinvestment to develop fit for purpose facilities for the future. We will make sure that our planned development fits appropriately within the wider UK arena and reflects our national responsibilities and aspirations. We will also fully exploit opportunities to share resources with scientists at other establishments, by harmonising research, working in others' facilities and in making our own available (e.g. through membership of the National CL4 Containment Group), so as to ensure maximum utilisation and cost effectiveness of the limited containment facilities within the UK. We will continue to develop contacts with other institutes, especially in Europe, to provide contingency laboratory cover.

We will continue to provide a well-equipped laboratory environment, designed with maximum cost effectiveness and environmental efficiency in mind, to carry out scientific activities through a planned programme of capital investment in new and replacement specialist scientific equipment and key underpinning technologies.

ENABLING THEMES

Communicating our Science

By communicating our science and its impact in an effective manner we will provide our stakeholders with a reliable evidence base for the development of sound policies for animal disease control strategies.

We will utilise a number of different approaches to ensure effective knowledge transfer. These include participation in influential fora such as EFSA, OIE national and international working groups; attendance at appropriate scientific conferences; production of high impact peer reviewed scientific papers and more general review articles which are addressed to the veterinary, farming or public health press, contribution to joint reports, scientific opinions, codes of practice and training courses etc. We will work collaboratively with many partners internationally to secure the best outcomes from our research work and utilise our web sites and other electronic communication methods to put information and protocols into the public domain.

Customer feedback suggests that our scientific reports and briefing documents are highly variable in their ability to communicate the outcomes of our science in a way that can be translated into policy. To maximise the impact of our scientific findings we will identify best practice in scientific communication and provide training to our current and potential project leaders in communicating science to policy customers and in writing annual and final reports in a way that highlights the importance of the outputs to policy development along with the uncertainties and constraints around the findings.

MEASURING THE IMPACT OF OUR SCIENCE

A key priority for our science strategy is to develop ways to measure the socio-economic impact and value of the science we do. By doing so we will be able to articulate the value of the work we do, improve our understanding of the ways that our science helps to make a difference in order to focus our activities more effectively and to be able to measure meaningful outputs of our science.

Over the next year we will develop a value scorecard for the Agency. This will include:

- An impact assessment of our scientific publications through Researcher ID and other tools.
- The development of an analytical framework to determine the socio-economic impact of our work. This will be done in collaboration with Defra colleagues, the National Physics Laboratories who have already developed their own value scorecard and Brookdale Consulting who have a track record in measuring the economic and social impact for a wide range of Research Institutes including IAH, John Innes Centre, Scottish Government, Institute of Food Research, the Moredun Research Institute and the Institute for Biological, Environmental and Rural Science.
- The development of an analytical framework to determine the impact of our science on policy decisions and the impact of those policy decisions on disease control and animal health and welfare.
- In consultation with our customers we will develop a value scorecard for AHVLA science that incorporates a number of factors including reputation, economic, knowledge, influence and capability.

IMPLEMENTING THE STRATEGY

To ensure delivery of this strategy we will develop a delivery plan that identifies critical success factors and sets key performance indicators to measure our success.

Evidence needs and allocations 2011/2012

| Evidence Plan | Evidence need stated in EIS | Key 'asks' | Relative Priority | 2011/12 evidence allocation ¹ ; total (AHVLA) ² | Reliance on AHVLA | Other comments |
|---|-----------------------------|--|-------------------|---|-------------------|---|
| Animal welfare | decreasing | 1. Statutory inspections, discretionary surveillance 2. Consultancy 3. Small R&D programme | low/med | R&D – £2.22m (nil) Non R&D – (£52k) (Contract D) | low/med | Evidence need for AW on surveillance only, little/no R&D. Other data supplied from statutory work |
| Bovine TB | continuing | 1. Statutory testing 2. Large R&D programme 3. Consultancy | high | R&D – £7.72m (£5.15m) Non R&D – (£3.92m) (Contract L) | high | AHVLA carry out R&D both as sole supplier and often in collaboration with other contractors (as AHVLA hold test data) |
| Exotic diseases | continuing but review | 1. Statutory and discretionary surveillance 2. National Reference Laboratory (NRL) function 3. Large R&D programme 4. Consultancy | high | R&D – £7.84m (£2.5m) Non R&D – (£3.2m) (Contracts C and F) | med/high | AHVLA carry out bulk of exotic R&D and surveillance on direct commission (with IAH picking up majority of remaining budget) |
| New, re-emerging and endemic diseases | continuing but review | 1. Discretionary scanning surveillance 2. NRL function 3. Small R&D programme 4. Consultancy | med | R&D – £1.6m (£0.70m) Non R&D – (£7.3m) (Contract A and G) | med | Majority of evidence spend for this programme is with AHVLA on scanning and methodology surveillance contracts |
| TSE and animal by-products | decreasing | 1. Statutory surveillance 2. NRL function 3. Large R&D programme 4. Consultancy 5. Archive | low/med | R&D – £6.79m (£3.7m) Non R&D – (£2.1m) (Contract E) | med/high | Evidence spend is decreasing but statutory requirements and need to maintain expertise and capability remains |
| Veterinary medicines and anti-microbial resistance | <i>not stated</i> | 1. Statutory surveillance 2. R&D 3. Consultancy 4. <i>NRL function?</i> | med | R&D – £2.16m (£0.61m) Non R&D – (£0.31m) | low/med | VMD responsible for evidence spend for this programme and contract directly with AHVLA |
| Aquatic animal health | continuing | None – evidence for this programme is mostly supplied through CEFAS | low/med | R&D – £0.3m ³ (nil) Non R&D – (nil) | low | AHVLA do not contribute to the evidence need for aquatic animal health |
| Disease mitigation and control (zoonotics) | <i>not stated</i> | 1. Statutory and discretionary surveillance 2. R&D programme 3. NRL function 4. Consultancy | med/high | R&D – £2.35m (£1.37m) Non R&D – (£3.78m) (Contract B) | med/high | R&D mainly carries out by direct commission but contracts also awarded to AHVLA following open tender |

¹ The evidence allocations are not static from year to year, these are indicative estimate figures only, the Defra animal health and welfare budget is decreasing over the period of the Spending Review

² Evidence spend does not include statutory inspections for welfare, TSEs, APBs, statutory TB testing etc carried out by AHVLA under operational Service Level Agreements,

³ These figures refer to Veterinary Science Team evidence spend and do not include Marine programme commitments

ANNEX 2

Evidence priorities and reliance on AHVLA

| Policy area/ evidence plan | Evidence needs identified as priority in current evidence plans | Reliance on AHVLA |
|-------------------------------|--|--|
| Animal welfare | <p>Research</p> <ul style="list-style-type: none"> -social science re better communication of evidence and behavioural change -impact of climate change on animal welfare, including adaptation and mitigation strategies -welfare needs of additional species -effect of intensive farming methods, policy to improve food supply <p>Diagnostics</p> <ul style="list-style-type: none"> -welfare measurement -welfare indicators <p>Surveillance</p> <ul style="list-style-type: none"> -knowledge of new and emerging problems on farm, at transport and at slaughter -statutory inspections on farm, at transport and at slaughter -provision of data for analysis | <p>Research – low</p> <p>Diagnostics – low</p> <p>Surveillance – medium</p> <p>AHVLA provide welfare surveillance through Contract D, provide input on on-farm issues, carry out statutory inspections, provision of data</p> |
| Bovine tuberculosis | <p>Research</p> <ul style="list-style-type: none"> -achieve efficacious, licensed vaccine for use in cattle and licensed oral badger vaccine. Cattle vaccine that does not sensitise to skin test is long term goal -better understanding of epidemiology of the disease and interactions between cattle and badgers -improved genetic analysis of isolates -genetics of resistance in cattle -social science aspects on uptake of tools/ research/farmer behaviour and attitude/building of relationships/communication <p>Diagnostics</p> <ul style="list-style-type: none"> -more sensitive and specific tests for cattle (DIVA test high priority) -non-invasive tests to identify infected badgers <p>Surveillance</p> <ul style="list-style-type: none"> -identification of infected herds (statutory) -provision of data for epidemiological analysis | <p>Research – high</p> <p>AHVLA work ongoing to develop vaccines, build and maintain models, look at genetic basis for resistance and molecular basis of phenotypic variation of host response, geographical location of <i>M.bovis</i></p> <p>Diagnostics – high</p> <p>AHVLA work ongoing to improve tests available,</p> <p>Surveillance – high</p> <p>AHVLA provide advice, consultancy, delivery of control tools, post mortem capacity through Contract L, advise on management of tuberculin, provide lab capacity for gamma interferon testing and carry out statutory on-farm inspections.</p> <p>AHVLA hold the inspection data. AHVLA holds the marketing authorisation for badger vaccine</p> |
| Exotic disease | <p>Research</p> <ul style="list-style-type: none"> - individual projects on various diseases, maintaining capability -FMD vaccines and epidemiology, diagnostics -improved control methods for influenza and cross species work -epidemiology and control of orbiviruses, capability for vector borne diseases - social research on promotion of best practice/ behaviour change <p>Diagnostics</p> <ul style="list-style-type: none"> -funding through the R&D and surveillance programmes maintains and improves diagnostic capability across a broad spectrum of statutory diseases <p>Surveillance</p> <ul style="list-style-type: none"> -statutory surveillance for certain diseases eg Bluetongue, avian influenza -surveillance on all major exotic diseases -maintenance of UK capability to respond to animal health emergencies | <p>Research – high</p> <p>AHVLA have research projects on avian virology (avian influenza and New Castle disease), rabies (and other lyssaviruses), classical swine fever, exotic mycoplasmas and some funding on vector borne disease diagnostics.</p> <p>Diagnostics – high</p> <p>Ongoing AHVLA programme under Contract C for testing and validation</p> <p>Surveillance – high</p> <p>AHVLA undertake surveillance and international trade screening for large number of exotic diseases under Contract C and F. Some in contained facilities</p> |

| Policy area/ evidence plan | Evidence needs identified as priority in current evidence plans | Reliance on AHVLA |
|---|---|---|
| New and re-emerging diseases, endemic diseases and enhanced surveillance methodology | <p>Research</p> <ul style="list-style-type: none"> -understanding of character of pathogens/disease and potential control measures -underpinning of disease control programmes -development of more efficient surveillance systems -endemic diseases (major infectious diseases of poultry, pigs, cattle, sheep, viral, bacterial and parasitic) and specific emerging disease findings (may be short notice) -maintenance of expertise <p>Diagnostics</p> <ul style="list-style-type: none"> -covered within the R&D projects <p>Surveillance</p> <ul style="list-style-type: none"> -need for ongoing scanning surveillance as continuous emergence/evolution of diseases -ability to source expertise rapidly | <p>Research – low</p> <p>AHVLA actively involved in surveillance methodology and new and emerging diseases</p> <p>Diagnostics – medium</p> <p>Surveillance – medium</p> <p>AHVLA have network of surveillance laboratories, provide expertise and consultancy (Contract A)</p> |
| TSE and animal by products (ABP's) | <p>Research</p> <ul style="list-style-type: none"> -maintenance of core capacity, capability, expertise and preparedness -use of surveillance data to support EU regulatory change -develop further knowledge on prion diseases -investigation of control methods for prion diseases -prion diseases in other species -development of existing technology and new methods for dealing with APBs -assessment of change in risk to human/animal health if deregulation of APB controls -several long term projects in place due to long incubation period of prion disease <p>Diagnostics</p> <ul style="list-style-type: none"> -development of better detection methods for known and new prion diseases -improvement in speed, cost, sensitivity of current diagnostic methods <p>Surveillance</p> <ul style="list-style-type: none"> -compliance with EU statutory requirements, sampling and testing -inspections to monitor compliance with ban on animal protein feed | <p>Research – high</p> <p>Support AHVLA as national reference laboratory. Use of category 2 and 3 large animal containment facilities</p> <p>Diagnostics – med/high</p> <ul style="list-style-type: none"> -AHVLA maintain archive of TSE tissues (discretionary activity) <p>Surveillance – med/high</p> <p>AHVLA carry out surveillance and official controls, Contract E</p> |
| Veterinary medicines and anti-microbial resistance (AMR) | <p>Research</p> <ul style="list-style-type: none"> -focus on types of AMR and micro-organisms of potential high impact, how AMR develops, spread of AMR genes/host bacteria -options for control of AMR -effect of different farming practices on AMR -medicine residue testing, effect on environment, reduction in animal testing, understanding long term effects <p>Diagnostics</p> <ul style="list-style-type: none"> -development of analytical methods in support of surveillance -development of tools to detect AMR <p>Surveillance</p> <ul style="list-style-type: none"> -limited target and surveillance data on AMR -assessment of implementation of control measures AMR -statutory surveillance for residues | <p>Research – low/med</p> <p>AHVLA scientific capabilities maintained, carry out research to VMD requirements</p> <p>Surveillance – low/med</p> <p>AHVLA identify new and emerging AMR from scanning surveillance programme</p> <p>AHVLA is a reference lab for residue testing and AMR</p> |

ANNEX 2 continued

| Policy area/ evidence plan | Evidence needs identified as priority in current evidence plans | Reliance on AHVLA |
|--|---|---|
| Aquatic animal health | Research -characterise notifiable diseases -prevention and control of aquatic disease, transmission and susceptibility studies -improved methodologies for surveillance Diagnostics -development of validated diagnostic tests Surveillance -horizon scanning project on surveillance for emerging diseases -statutory surveillance for specific diseases | Research - low Diagnostics - low Surveillance - low Majority of the work and provision of expertise is provided by CEFAS, which is also a National Reference Laboratory |
| Disease mitigation and control (public protection/zoonoses control) | Research -on various pathogens – salmonella, campylobacter, VTEC, brucella – to support EU negotiations, identify interventions, investigate new strains, understand risks of infection, behaviour change -interventions in pig husbandry re salmonella control Diagnostics -improvement of sensitivity/specificity of assays, development of molecular detection and typing technologies -salmonella pig vaccine Surveillance -statutory and non-statutory surveillance and monitoring of zoonotic pathogens (eg salmonella, listeria, toxoplasma, echinococcus, trichinella) -confirmation of disease freedom (eg brucella) -baseline surveys (campylobacter, salmonella) -detection of new and re-emerging pathogens -improve surveillance re control of campylobacter | Research – med/high AHVLA scientific/expert disease consultant capabilities maintained Diagnostics – med/high AHVLA as NRL for diagnostic test capability Surveillance – med/high AHVLA carry out surveillance/monitoring (Contract B). AHVLA implement National Control Plans, sampling, disease investigations |



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