Policy Brief: The Relevance of Research & Development to the Veterinary Profession

Introduction

Many veterinary surgeons have a general understanding of veterinary research and development and the issues surrounding it. However, others may be less clear on the definition of veterinary research and development, the impact that it has made on clinical decision-making and outcomes for patients over many years, and where further information may be obtained. The aim of this policy brief is to provide a concise summary which will inform BVA members, other veterinary surgeons, and other individuals interested in veterinary research and development, of the principal issues relating to this subject and where further information may be accessed.
Key Facts

- Veterinary research has a pivotal role to play in our understanding of health, disease and behaviour in animals and, through comparative studies, in humans also.
- Animals are inextricably linked to human health through companionship, food production and sport.
- The explosion of global trade, travel, urbanisation in developing nations, and climate change significantly increase the risk of introduction and transmission of infectious agents between animals and humans.
- Veterinary research functions to inform and deliver:
  - New medicinal products
  - Identification of novel infectious agents
  - Surveillance for emerging and re-emerging pathogens and diseases
  - Control of disease relevant to public health
  - Preventative programmes for diseases and ‘conditions’.
  - Development of high welfare standards
  - Comparative medicine, which analyses animal models of human disease
- Veterinary research and development is conducted in UK and Irish veterinary schools, veterinary investigation laboratories, research institutes, agricultural colleges, commercial companies and, increasingly, in veterinary practice.
- Recruitment of veterinary surgeons into research and teaching posts is challenging.
- Three divisions of the BVA have a particular research focus: the Association for Veterinary Teaching and Research Work (AVT&RW), the Laboratory Animal Veterinary Association (LAVA) and the Association of Veterinarians in Industry (AVI).
- In recognition of the importance of research the Royal College of Veterinary Surgeons converted the Research Sub-committee into a full committee.
- The majority of UK veterinary research establishments have an international reputation for delivering high quality scientific research with excellent end-user relevance.
Overview of subject

“Any scientific discipline lacks credibility if it is not built on robust evidence obtained through research – and veterinary science is no exception.” (Professor Sheila Crispin¹)

Veterinary surgeons have benefited continuously from the outputs of veterinary research and development particularly since the antimicrobial revolution in the 1920s. Almost all techniques conducted by veterinary surgeons were initiated in the workplace and subsequently published in peer-reviewed journals, including the Veterinary Record, which was first published in 1888.

For veterinary research and development to be exploited, it is essential that the methodology, results and interpretation of research are peer-reviewed for quality, and then read and understood by the end-user communities to which the research is relevant. Veterinary research manuscripts are included in a very wide variety of national and international publications, some of which are specifically targeted at a veterinary audience, e.g. The Veterinary Record, The Irish Veterinary Journal, Preventive Veterinary Medicine, and The Veterinary Journal. Other manuscripts are published in journals such as Infection and Immunity, Journal of Virology, and Immunology, to name but a few.

What is Veterinary Research and Development?
Veterinary research exists to deliver the following:

- New products, such as vaccines and drugs, relating to both animal and human health
- New technologies and their application in the clinic and in the field
- Identification of novel infectious agents e.g. prions as the causal agent of transmissible spongiform encephalopathies (BSE, scrapie)
- Surveillance for emerging and re-emerging pathogens and diseases e.g. rabies, Bluetongue, and African Horse Sickness
- Food products that are safe for human consumption
- Control of diseases relevant to public health e.g. botulism, salmonellosis, in addition to new and emerging diseases e.g. severe acute respiratory syndrome (SARS)
- Preventive programmes for diseases and conditions affecting all animal species
• Development of high welfare standards for certain animal species
• Comparative medicine where animal models have informed advances in human medicine and surgery

Foot and Mouth Disease, Bluetongue and Avian Influenza are just three examples of diseases, introduced into the UK as a result of globalisation, which have both social and economic implications. Veterinary research has initiated important developments in the production of vaccines; e.g. Canine Distemper\(^2\), Intranasal Feline bordetellosis\(^3\), Bluetongue\(^4\) and technology and techniques e.g. Feline Hypertension\(^5\). Veterinary research has a pivotal role to play in understanding health, disease and behaviour in animals and through comparative studies, in humans also\(^6\).

All novel medicines and biologicals such as vaccines are required to undergo extensive assessment for safety and efficacy prior to registration of products. This used to be under UK legislation but now is commonly regulated by the EU. These tests require research to be conducted by commercial companies in conjunction with institutes and other research facilities worldwide and with veterinary surgeons in practice: thus many BVA members and veterinary surgeons in general play a critical role in the development and assessment of many commercial products and other outputs of veterinary research.
The role of the BVA in Veterinary Research and Development

Research and development is of relevance to all of BVA’s specialist divisions e.g. BSAVA, BCVA, BEVA etc. and these divisions are a valuable resource of individuals with specialised knowledge and experience in certain research subjects. The journals of the BVA’s specialist divisions carry articles of direct relevance to veterinary surgeons in practice. Three specialist divisions of the BVA have a particular research focus; these are the Association for Veterinary Teaching and Research Work (AVT&RW), the Laboratory Animal Veterinary Association (LAVA) and the Association of Veterinarians in Industry (AVI). AVT&RW membership comprises of veterinary and other graduates involved in research and teaching at the UK veterinary schools and research institutes while LAVA membership reflects the impact of veterinary graduates in research establishments where laboratory animals are used to benefit both human and animal health. Indeed, both associations include general veterinary practitioners among their membership. The AVI has among its members many which specialise in clinical research for the development of new veterinary medicinal products.

Research and development continues be a topic of interest to the BVA’s various Committees including the Veterinary Policy Group (VPG) and the Ethics and Welfare Group (EWG). These committees have a particular concern over maintaining the ongoing investment into veterinary research and the useful exploitation of that research and development. It is of particular importance to continue to involve the profession in research at practice level.

The role of RCVS in Veterinary Research and Development

The RCVS has traditionally played a role in assessing the impact of veterinary research and development in contributing to the training of undergraduate students in UK veterinary schools. The RCVS accredits universities to assess the skills of postgraduate students undertaking Certificates awarded by the RCVS, and these often have a significant research component. In 2002, the RCVS created the RCVS Research sub-committee, initially under the Chairmanship of Dr Judy McArthur-Clark, in recognition of the critical role of veterinary research and development to the wider veterinary profession, and in order to establish an independent committee who could speak on behalf of the UK research community.

In 2005 the Chairmanship of the sub-committee passed to Professor Quintin McKellar and the committee was then formally recognised as a full committee of the RCVS. The
committee is comprised of a number of veterinary scientists from different backgrounds and affiliations. Nominations for committee membership are sought from individuals, not on representation of organisations. The principal funding bodies of veterinary research are represented through observers, thus providing the first committee where the funders and deliverers of veterinary research and development may have regular meetings on the current and future strategy in the UK.

Further information on the outputs of the RCVS Research sub-committee and RCVS Research committee can be seen on their website, where a number of documents and presentations arising from the committee’s activities are posted.

Where is Veterinary Research and Development conducted?
Veterinary Research and Development is conducted in the UK and Irish veterinary schools, in universities, in institutes, in commercial companies and in practice.

Veterinary Schools
Veterinary undergraduate and postgraduate training is undertaken at the Royal Veterinary College in London, and at the Universities of Cambridge, Bristol, Liverpool, Edinburgh, Glasgow, Nottingham and University College Dublin. The subjects researched at the different schools tend to reflect the interests of previous or existing staff, and the availability of the animal species under investigation. Research strategies and programmes can be found on the websites of individual schools.

Universities
Numerous universities are recipients of funding for veterinary research and development and the research focus depends on the interests of individual scientists of groups of scientists. Information on veterinary research and development within universities without a veterinary school can be found either through university websites or through funding body websites, which usually include lists of funded research.

Institutes
Veterinary research and development is undertaken at the Institute for Animal Health’s Pirbright and Compton sites, at the Veterinary Laboratory Agency Weybridge and Lasswade, the Central Veterinary Laboratory York, the Moredun Research Institute in Edinburgh and at Agri-foods and Bioscience Institute (AFBI) Stormont, Belfast, among others. In general terms, the research undertaken within the institutes tends towards

December 2008
longer term strategic research, often with policy-relevant outputs. The application of research within the institutes is clearly focussed on commercialisation in many cases.

Practice
Practice based research provides a number of benefits for both practitioners and the research community. It allows for real world testing and observation of new treatments and conditions, shortens the gap between research and practice, and provides ongoing education for the veterinarians so often on the front-line of animal welfare and disease control.

Much useful research has originated in veterinary practice through original observation of novel aspects of animal health and disease e.g. the initial recognition of BSE in cattle, and through subsequent investigation and interventions. Many veterinary practitioners take an active role in research either through participation in clinical trials, where they act on behalf of commercial companies or through conducting their own research, either individually or often in collaboration with staff based at veterinary schools, universities or institutes.

Recently there has been increasing interest in gaining the necessary skills to conduct good projects from a practice base and this was recognised as a priority for funding under the Veterinary Training and Research Initiative (VTRI) which supported training courses for veterinary practitioners through the Cambridge Veterinary School Infectious Diseases Consortium (CIDC).

Practitioners should be aware of the need for a robust study design and data analysis and the legalities of conducting research in the field. In veterinary schools, universities and commercial companies, all research using animals is controlled by legislation under the Animals (Scientific Procedures) Act, 1986, under the care of a Named Veterinary Surgeon (NVS). In a practice situation, veterinary surgeons may only perform procedures for clinical purposes and if their research requires invasive procedures, such as blood sampling, this may requires licensing by the Home Office. Veterinary surgeons are advised to seek advice prior to undertaking research in practice and the RCVS and the CIDC should be consulted.

December 2008
Who funds Veterinary Research and Development?

There is a very wide variety of funding bodies that support veterinary research and development; these can be broadly divided into government bodies, charities, commercial companies and others. Links to these bodies are available under Additional Contacts. Websites such as the RCVS also provide a comprehensive list of funding opportunities.

**Government bodies.**
The principal sources of funding for veterinary research are:

- Department for the Environment, Food and Agriculture (Defra)
- Scottish Government’s Rural and Environment Research and Analysis Directorate (RERAD)

Funding is also provided by the Biotechnology and Biological Sciences Research Council (BBSRC) which, as a research council rather than government department, has a broader funding remit.

**Defra** provides support for veterinary research mainly through its Sustainable Farming and Food scheme. Awards are made to individuals or establishments and can be solely funded by Defra or co-funded by industry through LINK grants.

**RERAD** provides funding for veterinary research and knowledge transfer relevant to development of Scottish policy principally to the Scottish Research Institute; the Moredun Research Institute, and to the Scottish Agricultural Colleges, and competitively to the research community through its Contract Research Fund. The funding supports research and surveillance on significant endemic diseases of livestock and on zoonoses (both companion and production animals) and food-borne pathogens relevant to Scotland and beyond.

**BBSRC** provide support for basic sciences that underpin the understanding of biological systems relevant to veterinary science. Funding is available through applications to the BBSRC research committees. Recently a major initiative on combating endemic diseases of livestock was supported by the provision of £8.7M to research into improvements in the health and welfare of animals farmed for food production in the UK and how those improvements would enhance the sustainability of those industries.

December 2008
Charities
Lists of registered charities that may provide support for veterinary research and development are available in each devolved country, with the exception of Northern Ireland, which does not have a register of charities. The following list is not exhaustive, but highlights a number of charities that have supported veterinary research significantly over a number of years, including:

- The Wellcome Trust
- The Nuffield Foundation
- The Horse Trust
- The BVA Animal Welfare Foundation
- Petsavers
- The Dogs Trust
- RCVS Trust Fund
- The Moredun Foundation
- The Animal Health Trust

The Wellcome Trust is a major funder of biomedical and veterinary research, and supports individual research projects and wider programmes focusing on veterinary research, in addition to funding the development of veterinary graduates in research careers.

The Nuffield Foundation provides support for smaller research projects and has been particularly active in developing relationships with the UK veterinary schools to encourage future veterinary researchers through gaining experience in research projects conducted during their vacations.

The Horse Trust accepts applications for equine research projects from all UK veterinary schools, institutions and specialist private referral practices. The Trust awards four main types of grants:

- Scientific research projects
- Clinical training scholarships
- Clinical awards
- Clinical facility or equipment awards

Research must be non-invasive, ethically approved and must present a welfare case to The Trust’s Scientific Committee. Examples of research projects which have been

December 2008
supported for Strangles, Colic, Ragwort Poisoning, Grass Sickness, Cardiology, Equine Herpesvirus, Farriery, and Laminitis.

The BVA’s Animal Welfare Foundation (AWF) considers applications for funding for projects that will have a clear and practical impact on animal welfare. Examples include animal welfare lectureships at the universities of Bristol, Glasgow and Liverpool, supporting the Bat Conservation Trust (BCT) Workshop and a study entitled “Quantitative Assessment of Pain in Laminitic Horses”.

Petsavers funds clinical studies and clinical training programmes. Petsavers clinical studies research pets’ illnesses with the goal of improving diagnosis and treatment to improve pets' health and welfare. Petsavers training programmes develop the skills of vets so that they can apply the results of the clinical studies and their expertise to pets.

The Dogs Trust provides funding for canine non-invasive canine welfare research via its Canine Welfare Grants Committee.

RCVS Trust Fund provides a range of funding for research. This includes:
- ‘Blue Sky’ funding for high risk research that might otherwise have difficulty securing funding.
- vacation research scholarships for graduates.
- small grants for Advancement of veterinary science Animal care and welfare or Veterinary education and/or professional development.
- equipment grants for education.
- travel scholarships.

The Moredun Foundation is a registered charity that promotes the highest possible standards for animal health and welfare through research and education. The foundation supports a broad range of research within the Moredun Research Institute on disease control and improving methods of husbandry.

The Animal Health Trust conducts research aimed at developing better means of diagnosing and treating diseases of companion animals.

Commercial companies
Worldwide, there are many sources of funding for veterinary research and development from commercial companies, which may include pharmaceutical, animal
health, diagnostic, environmental control industries, and food and feedstuff manufacturers.

Currently, the principal commercial funders of veterinary research and development are the largest animal health companies worldwide and include Pfizer Animal Health, Merial, Schering-Plough, Novartis, Janssen Animal Health, Fort Dodge Animal Health, Boehringer-Ingelheim, and Vetoquinol.

The focus of veterinary research for individual companies tends to relate to existing product ranges and relevant animal species. Some companies are keen to fund the development of new molecules for therapeutic purposes, while others focus on biological interventions such as vaccines. The development of new veterinary medicines obviously depends on the economic viability of that product. As a result the availability of medicines for use in minor species or medicines for rare conditions (minor use) remains an issue of concern due the financial viability of developing new medicines and technology in these categories.

**Issues relating to veterinary research funding**

For many years it has been recognised that there is a lack of funding for veterinary research in all areas of science, but particularly in veterinary clinical research. This stimulated a committee of enquiry into veterinary research chaired by Lord Selborne and others, who produced a report in 1997. In addition to making fourteen recommendations, Lord Selborne estimated that an investment of approximately £250M was required to address the issues that the committee had identified.

In 2002 as part of the response to the FMD report, the Government committed an additional £25M over a five-year period to veterinary teaching and research needs. This funding was matched by the Welcome Trust. While this was a significant investment, it provided only a small proportion of the input recommended in the Selborne Report. The Comparative Clinical Science Foundation (CCSF), which aims to attract investment in the important interface between human and animal science, especially although not solely, in the companion animal area, has also been poorly funded.

Currently there is considerable concern about the continued reduction in funding for animal health and welfare research, generally. In recent years the value of Defra funded research contracts has reduced which reflects the shift in Government...
research priorities from animal health and welfare to climate change and environmental research. The 2007 FMD outbreak, associated with the BBSRC Pirbright site, may reflect chronic under-funding of specialist facilities, which are essential for a disease research and emergency response.

Defra funding for veterinary research and development under the umbrella of their Sustainable Farming and Food scheme has remained static, and in some cases decreased. Even areas in which funding has been maintained at existing levels have in effect been cut back in real terms as the operational costs of research and development grow.

Nigel Gibbens, Chief Veterinary Officer, noted at the July 2008 Council meeting that pressure on budgets meant only core research and development responsibilities would be upheld. Research would be funded only if it was for the public good.

Training and Careers in Veterinary Research and Development

Information on training opportunities and funding to support this is available on the RCVS website. Most of the veterinary schools, institutes and companies in this briefing paper will also be a good source of advice and guidance.

Career development for veterinary researchers has been recognised for a long time as a real issue. The number of veterinary-trained scientists in veterinary schools and research institutes has been progressively reducing and recruitment of veterinary scientists into research and teaching posts in veterinary schools and in universities is challenging.

A number of recent initiatives have provided additional funding to help recruit and retain veterinary scientists in the UK e.g. VTRI (funded by Defra) and the recent announcement of £10M initiative to boost veterinary research training to be carried out in partnership with the seven UK Veterinary Schools (The Wellcome Trust). Some veterinary schools have also taken a lead by developing a BSc in Bioveterinary science; these degrees are designed for people with an interest in a career in veterinary science but they obviously preclude the graduate from working as a veterinary surgeon.
BVA Contacts

Main Contacts:
British Veterinary Association HQ:
Nicky Paull - President
Nick Blayney - Past President
Bill Reilly – President Elect

BVA Policy
T: 0207 636 6541
E: policy@bva.co.uk

BVA Press Office:
Chrissie Nicholls
E: chrissien@bva.co.uk
Nadin Sajakow
E: nadins@bva.co.uk
Helena Cotton
E: helenac@bva.co.uk
T: 0207 636 6541
Out of hours: 07810 433 730
07929 620 325

Useful references


3 Intranasal Vaccine against feline bordetellosis. The Veterinary Record: Williams et al. 150 (14): 439 2002

4 DEFRA orders 22·5 million doses of bluetongue vaccine The Veterinary Record 162 (1): 2. (2008)


December 2008
Additional contacts

Royal College of Veterinary Surgeons (RCVS)

Biotechnology and Biological Science Research Council (BBSRC)
www.bbsrc.ac.uk/

Association of Veterinary Teachers and Research Workers (AVT&RW)
http://avtrw.mri.sari.ac.uk/

Laboratory Animal Veterinary Association (LAVA)
www.lava.uk.net/

Department for Environment, Food and Rural affairs (DEFRA)
www.defra.gov.uk

Scottish Government’s Rural and Environment Research and Analysis Directorate (RERAD)
http://www.scotland.gov.uk/Topics/Research/15597

Charities

The Wellcome Trust
www.wellcome.ac.uk/funding/index.html

The Nuffield Foundation
www.nuffieldfoundation.org/

The Horse Trust
www.homeofrestforhorses.co.uk/

RSPCA
www.rspca.org.uk

Animal Welfare Foundation
www.bva-awf.org.uk/grants/projects/

Petsavers
www.petsavers.uk.com

The Moredun Foundation
www.foundation.mri.sari.ac.uk

The Animal Health Trust
www.aht.org.uk

The Dogs Trust
www.dogstrust.org.uk
Charity Registers
England and Wales Charity Commission
www.charity-commission.gov.uk/
Office of the Scottish Charity Register
www.oscr.org.uk/

Pharmaceutical
Pfizer Animal Health
Merial
www.merial.com/
Janssen Animal Health
www.janssenpharmaceutica.com/jah/
Fort Dodge Animal Health
www.wyeth.com/divisions/fort_dodge.asp
Schering-Plough
www.spah.co.uk/home1.html
Novartis Animal Health
www.novartis.co.uk/consumer_health/animal_health.shtml
Boehringer-Ingelheim
www.boehringer-ingelheim.co.uk/
Vetoquinol
www.vetoquinol.co.uk/

Universities
Bristol University School of Veterinary Science
www.vetschool.bris.ac.uk/
Royal Veterinary College
www.rvc.ac.uk/
The Royal (Dick) School of Veterinary Studies
www.vet.ed.ac.uk/
The University of Nottingham School of Veterinary Medicine and Science
www.nottingham.ac.uk/vet/
University College Dublin
www.ucd.ie/vetmed/
University of Cambridge Veterinary School
www.vet.cam.ac.uk/
University of Glasgow Faculty of Veterinary Medicine
www.gla.ac.uk/vet/
University of Liverpool Veterinary School
www.liv.ac.uk/vets/

Laboratories and Institutes
Institute for Animal Health’s Pirbright and Compton Laboratories
www.iah.bbsrc.ac.uk/info/labs.HTM
Veterinary Laboratory Agency
www.defra.gov.uk/corporate/vla/
Moredun Research Institute
www.mri.sari.ac.uk/
Agri-food and Biosciences Institute (AFBI)
www.afbini.gov.uk/index.htm
Cambridge Veterinary School Infectious Diseases Consortium
www.vet.cam.ac.uk/cidc/about/

Funding Initiatives
Wellcome Trust - £10.7 million initiative to boost veterinary research training
www.wellcome.ac.uk/doc_WTX041214.html
Defra Farming and Food Science Link Programme
www.defrafarmingandfoodscience.csl.gov.uk/linkprogrammeoverview.cfm
BBSRC Research Committees Funding
www.bbsrc.ac.uk/science/areas/Welcome.html.