

Partnership, priorities and  
professionalism:

A strategy for enhancing veterinary  
surveillance in the UK

October 2003



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## Preface

BSE and Foot and Mouth disease serve as vivid reminders of the devastating impact animal disease outbreaks can have on individuals, human health, animals, the wider economy, our countryside and our rural communities. Equally, they represent drivers to us all to act to minimise the likelihood of similar outbreaks in the future. This is why Government is working in partnership with interested parties to develop a new Animal Health and Welfare Strategy. That strategy, to be launched next year, aims to improve the health and welfare of animals kept by man and to protect public health from animal disease.

One of the new initiatives in the Animal Health and Welfare Strategy relates to enhancing veterinary surveillance. This means being able to identify emerging risks faster and thus enabling preventative or remedial control action to be taken more promptly. Improved surveillance can deliver very real and sizeable benefits.

Although, veterinary surveillance conducted within reasonable costs could never be totally infallible, the UK Veterinary Surveillance Strategy provides an innovative framework within which the benefits flowing from increased speed of detection are more likely to be realised. For the first time, surveillance data and activity from many sources will be integrated in a structured way; a new IT solution, RADAR (Rapid Analysis and Detection of Animal related Risk) will help identify, analyse and track threats more rapidly; and a new system of 'profiling' diseases will help ensure surveillance activity is prioritised effectively.

This Strategy encompasses a challenging 10 year programme of work. I have been struck and encouraged by the positive manner in which all those involved have pulled together to develop this strategy to date and am confident that all concerned across the United Kingdom will continue to work constructively with us as we move to the next phase of delivering this strategy in practice.

Jim Scudamore  
Chairman of the Surveillance Group on Diseases and Infections of Animals  
22 October 2003

## Executive summary

Animal disease outbreaks can have a major impact on animal welfare, human health, farmers, the wider rural economy and the environment. Experience has also demonstrated how expensive they can prove to the taxpayer too. Veterinary surveillance is a key weapon in our armoury to protect the UK's public and animal health. It helps minimise the economic, social and environmental damage that can be inflicted by outbreaks of animal diseases.

Threats to animal health and welfare do not respect political boundaries, and therefore development of this UK Veterinary Surveillance Strategy has proceeded with strong collaboration between Defra, the Department of Agriculture and Rural Development, Northern Ireland, the Welsh Assembly Government and the Scottish Executive.

This strategy is the product of widespread engagement with and support from interested parties both within Government and beyond. It forms an integral part of the forthcoming Animal Health and Welfare Strategy, and shares its strategic outcomes:

- a clear understanding of roles and responsibilities
- a partnership approach
- promotion of animal health and welfare: prevention being better than cure
- a clearer understanding of the costs and benefits of animal health and welfare, and
- effective delivery and enforcement.

Our aim is to deliver a transformation in current veterinary surveillance practice over the next 10 years. The Veterinary Surveillance Strategy embraces a range of activities to implement an advanced surveillance service through improved collaboration; transparent and defensible prioritisation of our surveillance activity; deriving better value from existing resources, and through assuring the quality of the surveillance data from which our surveillance intelligence is drawn.

***Our shared vision is of a future where the risk of significant damage to human health, animal health and the rural economy is mitigated by the provision of faster and better informed disease control measures. A future where we are identifying emerging risks faster; because our surveillance activity is fully justified, open, transparent, effectively prioritised, and founded on surveillance data of known quality.***

No veterinary surveillance system could ever eliminate *all* risk of a major animal health problem. Whilst recognising that the circumstances surrounding every disease outbreak are likely to be different, this strategy nevertheless seeks to ensure that all types of data, which are already collected routinely, will be used to maximum effect to alert us to potential health threats at the earliest opportunity.

Working with interested parties, we will deliver:

- an improved and comprehensive network of surveillance partners;
- a new system of 'profiling' diseases as the foundation to ensure surveillance activity is prioritised effectively, based on objective, defensible analysis of risk and impact;
- an innovative IT system: RADAR (Rapid Analysis and Detection of Animal-related Risk). This system will draw together existing sources of data to provide the means by which we can identify, analyse and track animal disease-related threats more rapidly. It will also provide a channel for surveillance data which can be accessed by all interested parties, and
- better value from surveillance data by delivering improvements in data sharing and data quality.

We will work with interested parties to ensure this programme of work, and the invaluable benefits associated with it, are delivered in practice.

# 1 Introduction

## 1.1 Background

- 1.1.1 Veterinary Surveillance is the package of activities which provides early warning / prompt detection of animal health and welfare problems, together with tracking and analysis of the way they spread. This process applies not only to infectious diseases, but also to chemical contamination / toxicity, as well as to inherently new diseases. In addition, veterinary surveillance includes animal conditions, which may pose a threat to human health – either directly, or via food products - even where such conditions are inapparent in the animal itself.
- 1.1.2 This information provides crucial scientific evidence on which those charged with developing prevention or control measures can base their decisions and assess the effectiveness of existing approaches. In the context of Government, the information is vital for those devising policy on animal health and welfare, food safety, and human health protection. For the farmer, horse or pet owner, surveillance provides evidence, which they and their veterinary surgeon can use to decide how best to protect the health of their animals. Likewise, surveillance can inform those conserving wildlife about the threats those populations face with regard to health, biodiversity and in the environment.

## 1.2 Why have a Veterinary Surveillance Strategy?

- 1.2.1 The United Kingdom has had a strong track record in veterinary surveillance. However, in recent years, there have been several costly and damaging animal-associated disease problems, particularly the emergence of Bovine Spongiform Encephalopathy (BSE) in 1986, the Foot and Mouth Disease outbreak of 2001, and the E.coli O157 bacteria, which though inapparent in livestock can be highly virulent in humans. Furthermore, the huge increase in global travel, changes in livestock systems, and the issue of global warming, make it certain that other similar threats lie over the horizon.
- 1.2.2 Accordingly, Government, following the advice of independent inquiries into these events, concluded that a strategy for enhancing veterinary surveillance should be developed and implemented. The purpose of the strategy is to improve the speed and accuracy with which such threats can be identified and assessed, so that their cost and impact can be reduced, by allowing prompt and suitable intervention.



### 1.3 How has the strategy been developed?

- 1.3.1 Veterinary surveillance is important to a wide range of people and organisations, ranging from food consumers, animal owners, the food and livestock industries, and veterinary surgeons, through to Government policy makers, academic institutions, veterinary laboratories, animal welfare groups and wildlife organisations.
- 1.3.2 It has therefore been a guiding principle in developing the strategy that interested parties should be widely consulted and able to influence its shape and content. Accordingly, stakeholders have been invited to contribute their views and ideas on the emerging strategy through an initial full, public consultation in 2000 (MAFF Publication PB5326), and through a series of stakeholder workshops (report available at : [www.defra.gov.uk/animalh/diseases/veterinary/index.htm](http://www.defra.gov.uk/animalh/diseases/veterinary/index.htm)). Ad hoc, informal discussions with small groups of stakeholders were held before a proposed strategy for enhancing veterinary surveillance in the United Kingdom, entitled, "Partnership, Priorities and Professionalism" was published for public consultation in 2002 (Defra Publication PB7790). The responses received were summarised and reviewed in a single UK report (Defra Publication PB8296A) in 2003. This is available on line at [www.defra.gov.uk/animalh/diseases/veterinary/index.htm](http://www.defra.gov.uk/animalh/diseases/veterinary/index.htm). The individual responses for England and Wales may be viewed at the Defra library at Nobel House, Smith Square, London SW1P 3JR. Scottish consultation responses can be viewed at the Scottish Executive library, Saughton House, Broomfield Drive, Edinburgh EH11 3XD. Copies of responses to the Northern Ireland consultation are available at DARD, Animal Disease Control Branch, Room 715, Dundonald House, Upper Newtownards Road, Belfast BT4 3SB.
- 1.3.3 This strategy forms part of a coherent approach to animal health & welfare and food hygiene policy, and is a component of the developing Animal Health and Welfare Strategy for Great Britain, as well as fitting in with and taking forward strategies to support a sustainable livestock sector. The strategy will also relate to the Northern Ireland Animal Health and Welfare Strategy being developed by DARD, and will complement work being undertaken by DARD and the Department of Agriculture and Food in Dublin to develop an all-island Strategy.

### 1.4 Governance

- 1.4.1 Robust arrangements are needed to direct, shape, assess and control what this far reaching strategy delivers. These arrangements, collectively, form the *governance* of the strategy. Three phases of governance arrangements are envisaged, the first for strategy development, the second for strategy implementation, and the third phase for governing the ongoing surveillance activities once new working practices are in place.

- 1.4.2 The development of the strategy was directed by a project board, of which the Defra minister responsible for animal health was a member. (Full terms of Reference and membership are detailed in the Consultation document PB7790).
- 1.4.3 As we approach the strategy implementation phase, governance arrangements will continue to develop. These will be led by a Programme Board to direct the work, with an Advisory Board, and business assurance groups, where closely involved parties from inside and outside government will have an opportunity to influence the way the strategy is implemented.
- 1.4.4 The Programme Board will be a small group, empowered to take decisions about the budget, quality standards and target dates to which implementation work is being conducted, and will include senior officials from England, Wales, Scotland and Northern Ireland. The Advisory Board will be a larger group including specialists in veterinary, medical and public health surveillance.
- 1.4.5 The broader range of people and organisations, (including established independent advisory groups) with an interest in veterinary surveillance will be involved and kept informed about the implementation of the strategy in a number of ways. In Great Britain, the annual conference envisaged in the Animal Health and Welfare Strategy, would be one such forum.

## **1.5 Balancing costs, benefits and risks**

- 1.5.1 A central theme in this strategy is one of *delivery in partnership*.
- 1.5.2 Government resources are being provided to 'pump prime' the necessary developments to enable the new ways of working envisaged by the strategy, to be put in place.
- 1.5.3 However, there are always competing calls for the use of public resources, and there is a wide range of interests in surveillance work. Government intervention will be guided by the principles laid down in the Animal Health and Welfare Strategy, namely:
- to protect public health
  - to protect the interests of the wider economy and society
  - to secure opportunities for trade
  - to protect and promote the welfare of animals

Government recognises that there are 'public good' aspects in the prevention or rapid detection of animal diseases, infections and chemical toxicities. Clearly, Government would not expect to pay

directly, or subsidise indirectly, the costs of risks, which only affect individual farming businesses or animal owners. Nevertheless, in many cases, Government would help and facilitate mechanisms to help farmers share in the management of animal disease risks and the associated costs. For example, there are aspects of veterinary research and surveillance where Government is more able than individuals to commission work or provide information at a meaningful level or on a useful scale.

- 1.5.4 The surveillance governance arrangements will both ensure that areas of prime relevance to the national interest continue to be funded by Government and also ensure a clear focus on directing funding where it will be most valuable.
- 1.5.5 In addition, there will be opportunities for surveillance partners to use the new infrastructure and the benefits it offers. Different sectors may have different priorities, and the strategy will need to develop a process for identifying where these may be most appropriately funded from Government, from industry, or from a combination of sources.

## **1.6 What does the Veterinary Surveillance Strategy say?**

- 1.6.1 The strategy is firmly based on five strategic goals set out in the consultation document, published in December 2002 (Defra Publication PB 7790). That document contains comprehensive background information on which this strategy is based, as well as comprehensive technical observations. That consultation document is therefore commended as a Technical Annex to this strategy.
- 1.6.2 This strategy has also taken careful note of the comments received from the public during the consultation period, and these have been used in developing this document.
- 1.6.3 The following sections describe the five strategic goals and their objectives, with a concluding section defining an outline strategy delivery plan for the next ten years.

## **2 Strategic goal 1: Strengthen collaborations**

### **2.1 Objectives**

- A functional and comprehensive network of surveillance partners
- Increased speed of early warning /detection
- Better accuracy of prediction by:
  - working in partnership, and
  - standardising / harmonising approaches to surveillance

### **2.2 The requirement for collaboration**

2.2.1 The successful strengthening of partnership between all those with an interest in veterinary surveillance is vital in its own right, but also underpins the successful delivery of the other four strategic goals of the Veterinary Surveillance Strategy.

2.2.2 There is currently a broad range of contributors to veterinary surveillance, which provides a unique blend of complementary expertise from a range of different perspectives. At the heart of any successful surveillance arrangement is the collection of a wide spectrum of information, ranging from clinical observations by animal owners or veterinary surgeons to structured studies such as those, which may be carried out by laboratories or academic institutions. Others are involved in identifying critical supporting information, for example data on livestock numbers and distribution, which enables the analysis of the surveillance information.

2.2.3 The resultant knowledge is of benefit to a wide range of interested parties who require evidence about the level of threat from a range of animal diseases and conditions, in order for them to make rational choices. In many cases the beneficiaries of the surveillance output also contribute to the initial input of information. Thus government policy makers use surveillance information as evidence to help shape disease control and prevention policy, whilst private veterinary surgeons and farmers use the information to make informed judgements about disease prevention and control measures at individual premises.

2.2.4 An important weakness in our current approach to surveillance is that the activities of this diverse range of contributors, users and beneficiaries are poorly integrated. The aim in delivering this strategic goal is to draw together all these parties as a functional network of surveillance partners and collaborators.

- 2.2.5 Stronger collaborations in veterinary surveillance will pave the way for more efficient use of available resources, with better scope for directing work to the most appropriate provider, reduced likelihood of duplication, and improved ability to detect unplanned gaps in surveillance coverage. Likewise an integrated, functional partnership will facilitate other improvements in efficiency. For example data about animal populations could be applied to many different surveillance projects, and there would be potential for using samples collected for one condition to be used to answer a different surveillance question as well.
- 2.2.6 At an operational level, delivery of this strategic goal will involve identifying the range of surveillance partners, and agreeing and establishing effective means of communication with them. Part of this will be achieved through the development of a new integrated electronic surveillance information management system RADAR (section 4), and the annual conference proposed in the outline Animal Health and Welfare Strategy (Defra publication: PB8481) will also be a valuable forum. However, a carefully considered and comprehensive approach to communication with interested parties will be pivotal to achieving this goal.
- 2.2.7 Fundamental to successful partnership is the motivation of potential partners to ensure that they remain actively engaged. An early step will be to work with surveillance partners to establish what surveillance work they currently (or could readily) carry out, identify the benefits they seek from successful delivery of this strategy, how these will be realised and the contribution they will make to this outcome. This process has already started with the creation of business assurance groups - representing a wide range of surveillance interests across the public and private sector - which are charged with reviewing and contributing to the design and delivery of the projects needed to deliver each strategic goal.
- 2.2.8 The first group is charged with considering the practicalities of delivering enhanced surveillance through partnership; a second group is reviewing how to prioritise surveillance activities in a transparent way (section 3); a third group will work on maximising the value derived from surveillance information and how to share that information more effectively (sections 4 and 5), whilst a fourth group will develop an improved approach to quality assurance of surveillance (section 6).

### **3 Strategic goal 2: Development of a prioritisation procedure**

#### **3.1 Objectives**

- A functional and functioning prioritisation system
- Increased speed of detection, enabling earlier implementation of control measures by
  - Improving surveillance approaches, including modelling of disease spread, through information in profiles
  - Reducing scope for unplanned surveillance ‘gaps’
- Transparent risk and impact based prioritisation of surveillance activity
- More efficient use of public money

#### **3.2 Developing a risk & impact based approach to prioritisation**

- 3.2.1 An important weakness that the strategy seeks to address is the lack of clarity in how areas for surveillance are identified, assessed in relation to each other, and the rationale for allocation of finite resources to selected surveillance activities.
- 3.2.2 As part of the development of the Animal Health and Welfare Strategy for Great Britain, and those developing a separate but similar strategy for Northern Ireland, we will develop a transparent and justifiable prioritisation mechanism by which diseases and conditions can be ranked for surveillance purposes. Thus the reason for the order of priority will be publicly known and decisions on Government spend transparent.
- 3.2.3 The mechanism will be based upon collation of key information about each of the diseases and conditions that are proposed for surveillance, to allow comparisons to be made on a ‘level playing field’. This will be collected into “profiles” (Morris, 2000)<sup>1</sup>, which comprise a series of tables providing specified information. In order for a disease or condition of interest to be considered for surveillance, a profile about it must be generated, so that it can be assessed in the prioritisation process.

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<sup>1</sup> Morris, R S 2000, ‘Veterinary Surveillance in 2020- What it might look like?’ Paper presented to the UK CVO’s Surveillance Strategy Group, London, 20 October 2000.

- 3.2.4 Each profile provides information to allow the various criteria by which priority is judged to be assessed, for example human health implications, animal welfare or economic impact. It is envisaged that, once constructed and validated, profiles will be grouped for consideration by specialist groups that include representatives of all those with a particular interest, including data users, data collectors, specialist Government advisory groups and other contributors of surveillance activities such as diagnostic laboratories and veterinary clinicians.
- 3.2.5 A scoring or ranking system will be developed in conjunction with interested parties to enable key aspects of a disease / syndrome to be quantified or categorised. Once this system is validated, the prioritisation groups will use it to consider the risk posed and the potential impact on them, their business or the wider community, using the information provided in the profile. This would enable them to assign a risk and impact score for the condition, viewed from their perspective. These scores would form the basis for ranking different surveillance activities.
- 3.2.6 The mechanism being developed will be applied to both targeted and scanning surveillance (see Figure 3.1). In order to prioritise scanning surveillance, where, by definition, the condition to be detected is undefined, indicator changes would be defined (e.g. increased prevalence of undiagnosed nervous disease in cattle). A profile would be constructed accordingly. Prioritisation would need to focus on impact rather than risk (which by definition could not be predicted for a new disease), perhaps by considering the animal population affected and its relative importance – e.g. in terms of human exposure or international trade or public concern.

**Figure 3.1 Categories of surveillance**

<b>Targeted</b>	To answer a specific question about <ul style="list-style-type: none"> <li>• a defined disease or condition to be detected</li> <li>• using agreed mechanisms for detection</li> </ul>
<b>Scanning</b>	To monitor animal populations of concern, to detect <ul style="list-style-type: none"> <li>• the undefined</li> <li>• the unexpected</li> </ul>

- 3.2.7 Governance arrangements for commissioning of surveillance projects will be reviewed once the new prioritisation mechanism starts to be piloted. However it is proposed that the prioritisation should be examined and confirmed by a new UK Surveillance Advisory Committee. Once a prioritisation mechanism has been adopted, the specialist groups described in 3.2.4 above would recommend priorities within their area of expertise. After government resources have been

allocated to the various surveillance topics, there would be an opportunity for others with an interest to contribute resources to areas of particular concern to their sector, so broadening or adding to the surveillance carried out.

- 3.2.8 As surveillance is carried out the information gathered may change the estimated risk of particular events, or may stimulate research, for example to develop new diagnostic tools, or to clarify the aetiology of a particular condition. Feedback from reviewed risk assessments or new research may change relative priorities, thus prioritisation is likely to be an iterative process.
- 3.2.9 The frequency of review of priorities in different sectors, and of profiles, will need to be established as the system is developed. Particular consideration will be given to enabling the system to be flexible and respond rapidly to a change in animal health status, either in the UK or overseas, that poses an imminent threat to human or animal health, and so requires urgent review of existing priorities and distribution of resources.



## **4 Strategic goal 3: Derive better value from surveillance information and activities**

### **4.1 Objectives**

- A flexible and functioning range of approaches to data collation, integration and analysis
- Standardised surveillance mechanisms and denominator data used by stakeholders
- Increased likelihood of detecting patterns of disease behaviour

### **4.2 Surveillance information and activities**

- 4.2.1 There are many types of information which can contribute to surveillance, ranging from clinical observations by farmers and veterinary surgeons, to post-mortem observations at the abattoir or diagnostic facility, to laboratory test results, as well as supporting information enabling analysis e.g. on animal populations, or weather patterns. For clarity of description, all these types of information are referred to as 'data' in this document.
- 4.2.2 Surveillance depends upon the collection of relevant data in a structured way (mechanism) such that it can be analysed to provide an informative output. The concept is illustrated in Figure 4.1, which shows the Surveillance information pyramid. The selection of the data source(s) and mechanisms depends on the type and depth of knowledge required.
- 4.2.3 Deriving better value and improving the chances of detecting patterns of change depends on consolidating and expanding the base of the surveillance pyramid, and developing mechanisms to collate and analyse the resultant data. There is potential to make much better use of the information held by animal owners or keepers (farmers, for example) and their veterinary surgeons, by establishing data capture systems which can feed into an integrated information management system. Such information can be translated into knowledge by analysing it in association with related data from other sources, and with information about the animal populations at risk.

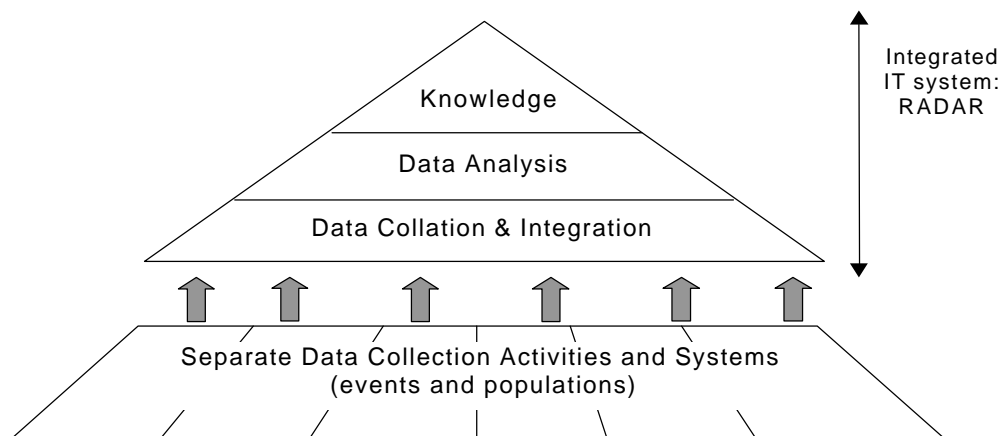


Figure 4.1. The Surveillance Information Pyramid

4.2.4 The prioritisation process (see Section 3) will define the conditions and populations to be kept under surveillance and all associated data sources (both for events and populations) will be explored. This will allow a portfolio of data sources to be established with a standardised and structured approach to data capture.

4.2.5 'Better value' can only be derived if the data is validated and of a known quality, so that it is analysed and interpreted in an appropriate context. Part of the process of validation will incorporate feedback of summary data and conclusions to data suppliers. For livestock data this could usefully integrate with farm health plans or assurance schemes, so providing direct as well as indirect benefit to the participants.

4.2.6 Data collation and analysis is key to detecting changes, and standardised integration of surveillance data will provide the following benefits:

- earlier detection of changes through collation of data from multiple sources;
- more accurate measurement of the disease burden;
- a single point of access to comprehensive data on veterinary surveillance in the UK;
- improved efficiency: data is collected only once and may be used in several analyses, and
- reduced error by concentrating resources on maintaining quality.

### 4.3 Opportunities for development: RADAR

4.3.1 Essential to the objective of establishing a flexible and functioning range of approaches to data collation and analysis described in section 4.2 is the development of a new, integrated information management system to support veterinary surveillance activities, which we propose to call **RADAR** (Rapid Analysis and Detection of Animal-related Risks).

- 4.3.2 A small-scale prototype has been developed by Defra as an aid to visualising the potential of this approach, and to provide ‘proof of concept’ for the technical approach. Over the last few months, this has been demonstrated to groups of interested parties across the United Kingdom.
- 4.3.3 An important new benefit of RADAR will be the ability to collate data on animal health or welfare problems that are detected by different data sources, for example, by those working with live animals on farm, and those conducting post mortem examinations in abattoirs. We plan to work with the major sources of veterinary data to establish common or cross-collatable case definitions for syndromes that may be detected by the different sources. For example, if farmers report increasing lameness and there is an increased level of condemnation due to joint problems at the abattoir, programming that identifies these as potentially associated will enable RADAR to generate an ‘alert’ and so initiate investigation.
- 4.3.4 RADAR will act as the central, managing hub of surveillance related information in the UK. It will not be a live, transactional system. The main component will be a data warehouse which automatically loads pre-defined extracts of validated information on a regular basis from various animal health operational systems in the UK, and brings it together in a format which supports data analysis for surveillance purposes. It is important that RADAR also remains flexible enough to access new data sources as they arise. Examples of the types of data that could potentially feed into RADAR include:
- agricultural holdings, land and livestock data from UK government corporate databases;
  - animal health data from private veterinary surgeons and animal owners;
  - companion animal data, including that collected by the PETS travel scheme, and horse passport registrations;
  - information on carcass condemnations and throughputs from abattoirs;
  - diagnostic data from veterinary laboratories;
  - information on the numbers of fallen stock consigned for destruction, and
  - meteorological information.
- 4.3.5 The quality of information in RADAR is dependent on the quality of information loaded. The loading process will include verification and data cleansing, but will not overcome all quality issues. Data quality issues in RADAR will be included and addressed as part of the overarching Quality Framework, which will be fundamental to the delivery of strategic goal 5 (described in section 6). Such issues will include the need to ‘flag’ the quality of data, and to define the necessary level of quality needed for particular analyses.

## 5 Strategic goal 4: Sharing information more widely

### 5.1 Objectives

- A user-friendly and widely used system that produces structured and ad-hoc surveillance reports
- Surveillance information is disseminated rapidly to target audiences
- Improved awareness of current animal health status in the UK
- Collation and use of information on animal health and welfare problems to forewarn of potential public health problems
- Researchers have increased access to surveillance data

### 5.2 Realising the benefits of sharing information

- 5.2.1 An important new benefit of the strategy will be the ability to collate data not only on animal health or welfare problems that are detected by different data sources but also information on potential human health problems. The sharing of data held in different source systems and its subsequent integration into an easily accessible environment for analysis, will allow expert users to produce and distribute meaningful reports to stakeholders in a much more effective and efficient way. The net effect will be to deliver a step-change in evidence-based policy making in this area, with benefits delivered to a wide range of stakeholders. For example, we will be better able to target surveillance activities and disease control measures, and be better able to justify statements about UK disease status.
- 5.2.2 The key technical solution to this is the development of a new, integrated IT system to support veterinary surveillance – **RADAR** (Rapid Analysis and Detection of Animal-related Risks) with the objective of establishing a widely used, user-friendly system from which a broad range of both structured and ad-hoc reports can be produced.
- 5.2.3 The levels of RADAR functionality and reports available to users and stakeholders will depend on the skill level and the security permissions of the individual. 'Expert' users will have enhanced functionality with powerful query and Geographical Information System (GIS) tools loaded onto their desktop PC to allow the sophisticated analysis of raw surveillance data. Other users and stakeholders will be able to access published, quality assured reports over the Internet, so providing a single point of access to comprehensive data on veterinary surveillance in the UK.

- 5.2.4 To facilitate this, RADAR will have a user friendly, dedicated web portal, which will be accessible to stakeholders in the UK and abroad. From the website, depending on their level of access and the stage of RADAR development work, users will be able to:
- download or view published, quality assured, predefined reports;
  - interrogate interactive maps displaying worldwide surveillance data from a UK perspective;
  - view information from peer reviewed surveillance profiles (described in chapter 3);
  - interact with RADAR directly to run pre-defined queries and reports, and
  - download data from RADAR directly for use with their own applications and analytical tools (data access will be limited depending on security permissions).
- 5.2.5 For stakeholders without access to the Internet, or for added dimensions in communication, 'expert' users will use RADAR to produce hard copy reports, which may be distributed appropriately, or published in the media, in scientific/veterinary journals or used in presentations at meetings/conferences.

### **5.3 Compatibility with data sharing initiatives and legislation**

- 5.3.1 The sharing of information in this way is very dependent on the strengthening of collaborative surveillance links as described in Chapter 2 and raises many data protection issues. RADAR will comply with the rules and legislation governing data confidentiality (including the Data Protection Act 1998, the Code of Practice on Access to Government Information and the Freedom of Information Act 2000). It will have mechanisms to prevent the unauthorised processing of data by utilising privacy enhancing technologies, which are designed to protect individuals and groups, and restrict the ability of users to retrieve or publish information.
- 5.3.2 In addition a data sharing protocol will be developed in conjunction with both contributors and beneficiaries of data to govern the use and management of information within RADAR. It will outline the principles by which information can be accessed, used and published without compromising data integrity or confidentiality.
- 5.3.3 A balanced approach is needed which encourages contributors to share data, by reassuring them that it will be kept secure and used appropriately, whilst also offering the benefits of improved access to information through an open and transparent system.

## **6 Strategic goal 5: Enhance the quality assurance of outputs**

### **6.1 Objectives**

- Surveillance reports are better matched to users' needs
- Users of surveillance reports understand their significance better
- Users are more confident in the reliability of surveillance information
- Better use is made of surveillance information for:
  - Defining disease control measures and
  - Improving targeting of further surveillance activities

### **6.2 Defining the quality of surveillance outputs**

- 6.2.1 It is fundamental to the success of working in partnership to deliver veterinary surveillance that users and beneficiaries of surveillance outputs are confident in the quality and intelligibility of the data and information they receive.
- 6.2.2 One aim of the strategy is therefore that all surveillance outputs should be “flagged” with a quality statement. This in turn implies that the quality of all inputs should be understood. In order to derive maximum value from available data sources, information of varying nature and reliability will be used. This could range from highly precise, accurate validated laboratory test results through to qualitative impressions of an ill-defined syndrome from the field or at a slaughterhouse. Both types of information can be very useful under appropriate circumstances, but for maximum value to be derived, their level of reliability must be stated.
- 6.2.3 The reliability of input data is commonly compromised by selection bias. Owners may choose not to consult a veterinary surgeon over a sick animal; veterinary surgeons may choose not to record a diagnosis or submit samples for laboratory investigation. The strategy, alongside the Animal Health and Welfare Strategy, seeks to ensure that significant disease events are brought to the attention of a veterinary surgeon, investigated and recorded in a consistent manner. Quality standards are therefore required to standardise and define “intervention levels” and recording of clinical events.

- 6.2.4 Interpretation of surveillance information requires an assessment of whether the information is representative of the animal population concerned. The numbers and distribution of animals therefore need to be known, and this data included in surveillance outputs wherever possible.
- 6.2.5 An important principle in quality assurance of surveillance is to ensure that data providers receive feedback relating to the inputs they provide. Ideally, this would be in the form of useful knowledge, which they can apply. In this way there would be an incentive for providers to improve on shortcomings in data input, because such remedial action would result in improved quality of outputs of interest to them. Practising veterinary surgeons have a key role both in the “sifting” and reporting of surveillance data, and in interpreting the implications of surveillance outputs for their clients.
- 6.2.6 Quality assurance thus includes an important element of education and communication. Veterinary education needs to include training in epidemiology and surveillance techniques; animal owners need to be kept abreast of current animal health issues, and to be aware of the importance of consulting a veterinary surgeon over disease conditions they do not confidently recognise. In relation to disease diagnoses, in many circumstances it will be necessary for disease diagnoses to be made according to agreed case definitions.
- 6.2.7 The communication needs to be two-way to maintain the quality of outputs. In other words, the recipients of the outputs need to be able to report back on the usefulness of the outputs to them.
- 6.2.8 In the context of information technology, it is vital that the ownership of particular data fields is established and respected, and that common, standardised definitions are applied to define the data recorded in any given field. IT software will be subject to periodic validation to confirm that it works correctly i.e. that any data transformation which it performs is consistent, repeatable and in accordance with the description of that function. There may be conflicts between the needs of data confidentiality and freedom of information; the strategy will address these conflicts and establish mechanisms to ensure these conflicts do not introduce unexpected bias into the data.
- 6.2.9 In some circumstances independent third party laboratory accreditation of tests will be a requirement. On the one hand, this can comprise ISO 9001/2000 (or equivalent) certification, which defines the methods used in a laboratory or office environment, and provides verification that these methods are consistently adhered to. At the other extreme, in circumstances such as the confirmation of the first case of a major exotic disease, other types of independent accreditation may be appropriate. For example, ISO 17025 (or equivalent) certification provides assurance that tests are validated, repeatable, performed by trained personnel using suitable equipment and reagents and that a full audit trail linking samples to test results is maintained.

- 6.2.10 Another important component of quality is whether the information is up to date. The quality flag should therefore include a “date stamp”. The usefulness of outputs is frequently dependent upon their timeliness – so it is important to ensure that outputs can be produced rapidly from current data when necessary.
- 6.2.11 However, the cost of highly accurate information may limit the range and depth of data available. Quality assurance must therefore address affordability and “value for money” so as to make best use of available resource. There may be instances where the quality of certain information is better than required and that best value for money could be achieved by decreasing quality in this area!
- 6.2.12 A vital element in achieving quality assurance will be the development of a formal Quality Framework, under the guidance of a Business Assurance group, which takes account of the needs of the key stakeholders. This framework will include definition of audit schedules – both internal and independent – to verify whether procedures and/or surveillance projects have been carried out in a way which met their objectives and fulfilled quality, cost and time targets.



## **7 Implementation: The delivery plan**

### **7.1. Veterinary Surveillance Strategy within the wider animal health framework**

7.1.1 The Veterinary Surveillance Strategy is a key component of a wider Government drive to improve the health and welfare of animals kept by man and to protect public health from animal disease. Government's strategic approach for animal health and welfare policy includes the need for policies to be risk-based and to focus on prevention as a cost-effective policy approach, including horizon scanning for new threats. A planned programme of enhanced veterinary surveillance is one element through which we will deliver in this strategic area.

### **7.2. Strategic outcomes and objectives**

7.2.1. The Veterinary Surveillance Strategy aims to deliver the following outcomes:

- earlier warning and more rapid detection of threats;
- open, transparent and defensible prioritisation of surveillance activities;
- clear, well defined evidence base for all surveillance activities and reports,

all of which will facilitate faster, better targeted disease prevention and control measures.

7.2.2. We have the following goal-related objectives:

- a functional and comprehensive network of surveillance partners who collaborate over provision and use of resources;
- a functional and functioning prioritisation system;
- a flexible and functioning range of approaches to data collation and analysis;
- a widely used, user-friendly system that produces a broad range of both structured and ad hoc reports, and
- quality assured surveillance outputs, which meet the needs of the users.

## 7.3. Benefits

7.3.1 The benefits from attaining this vision are potentially vast. The strategy supports a structured approach to surveillance that identifies the major risks and examines all potential mechanisms for their surveillance. For example, an important area that the strategy will develop is the value derived from data collected at abattoirs. The strategy seeks to ensure that this type of indicator of potential health problems, which involves data that is already collected routinely, is fully used to identify such changes, and trigger appropriate follow-up enquiries.

7.3.2 The strategy will help deliver a range of benefits, including:

- Improved and earlier detection of new and emerging diseases and syndromes
- An improved chance of earlier intervention in a disease incident leading to a reduced adverse impact on human and animal populations and rural economies
- An improved chance of detecting links between human and animal disease, and the ability to use animal health data as an indicator of potential human health problems
- A more accurate measure of the distribution and level of disease facilitates increased understanding of it and enables the effective targeting of resources for surveillance and control, and informed decisions to be made about disease management and risk.
- Improved surveillance of the usual diseases of domestic animals will better define which have the greatest economic or welfare impact, guiding the pharmaceutical industry in the development of products for better prevention (e.g. vaccines) or treatment. Animal health and welfare will thereby both be improved, and for production animals this should provide an economic return
- Policy making based on improved evidence of disease risk and impact
- More credible evidence to support our international certification of health status and facilitate trade through more robust surveillance activities
- Gains in efficiency through utilising farm visits, laboratory sample banks and data, etc. to support a variety of surveillance needs.
- Better informed stakeholders receiving stronger feedback and communication on surveillance issues, and therefore better able to identify and communicate possible health threats
- Collaboration with stakeholders leads to improved data quality

- Open and transparent Government policy making

## **7.4. Making it happen**

- 7.4.1. These outcomes, objectives and benefits will be secured by focusing on a range of activities brigaded under the 5 strategic goals. These activities are captured in the delivery plan on pages 24 to 28, together with an overview of the benefits the activities will help deliver.
- 7.4.2. This plan will need to change both in the light of ongoing discussions with interested parties, and also depending on whether current legal provisions need to be changed (for example on data sharing). The timetable is also heavily dependent on successfully securing the required funding in future years.

Strategic Goal	Objectives & Benefits to be realised through the deliverables	March 2004	March 2005	March 2006	April 2006 to March 2013
<b>1. To strengthen collaboration</b>	<ul style="list-style-type: none"> <li>• A functional and comprehensive network of surveillance partners.</li> <li>• Increased speed of detection and accuracy of prediction by improving communication between stakeholders, and standardisation decision processes</li> </ul>	<ul style="list-style-type: none"> <li>• Identify key stakeholders for all veterinary surveillance and create 1<sup>st</sup> draft 'contacts list'</li> <li>• Communication and engagement strategy constructed and applied</li> <li>• Mechanism designed for enhancing linkages between commissioning procedures for research and surveillance projects</li> <li>• Phase 1 (farm animal diseases) stakeholders fully engaged</li> </ul>	<ul style="list-style-type: none"> <li>• Mechanism for integrating research and surveillance piloted and implemented for list A diseases and scanning surveillance</li> <li>• Consultation on using samples for more than one purpose</li> <li>• Mechanism for integrating research and surveillance piloted</li> <li>• Options and recommendations for collaborative funding prepared</li> <li>• Phase 2 (companion animals) stakeholders fully engaged</li> </ul>	<ul style="list-style-type: none"> <li>• Key stakeholders directing and prioritising surveillance</li> <li>• Pilot collaborative approach to funding implemented</li> <li>• Phase 3 (wildlife) stakeholders fully engaged</li> <li>• Agreement secured on using samples for more than one purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborative mechanisms operational for all stakeholder groups</li> <li>• Comprehensive surveillance partner 'contacts list' maintained</li> <li>• All relevant research and development projects integrated with surveillance</li> <li>• Phase 4 (all remaining) stakeholders fully engaged</li> </ul>

Strategic Goal	Objectives & Benefits to be realised through the deliverables	March 2004	March 2005	March 2006	April 2006 to March 2013
<b>2. To develop a Prioritisation process</b>	<ul style="list-style-type: none"> <li>• A functional and functioning prioritisation system</li> <li>• Increased speed of detection by:               <ul style="list-style-type: none"> <li>- improving scenario analysis modelling and surveillance approaches through profiling;</li> <li>- reducing scope for surveillance 'gaps'</li> </ul> </li> <li>• Enabling earlier implementation of control measures</li> <li>• Transparent risk and impact based prioritisation of surveillance activity</li> <li>• More efficient use of public money</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritisation criteria designed, including confirmation of profile criteria</li> <li>• Human health, wider socio-economic, trade and welfare implications of 10 List A diseases &amp; major zoonoses profiled</li> <li>• Profile for livestock scanning surveillance drafted</li> </ul>	<ul style="list-style-type: none"> <li>• Most economically important endemic disease in each livestock sector profiled</li> <li>• Profile review system designed</li> <li>• Risk impact quantitative prioritisation method designed</li> <li>• Initial profiles reviewed and validated</li> <li>• Profiles drafted for major non-disease indicators and remaining Notifiable / zoonoses</li> <li>• Options for the new prioritisation system piloted and evaluated</li> </ul>	<ul style="list-style-type: none"> <li>• New prioritisation system selected</li> <li>• Prioritisation implemented within Government</li> </ul>	<ul style="list-style-type: none"> <li>• All Government funded surveillance activities based on profiles and prioritised in a quantitative, open and transparent way</li> <li>• Refined quantitative prioritisation system in regular use</li> <li>• Surveillance funding implemented under new prioritisation system</li> <li>• Other veterinary surveillance activities also included if key stakeholders wish</li> </ul>

Strategic Goal	Objectives & Benefits to be realised through the deliverables	March 2004	March 2005	March 2006	April 2006 to March 2013
<b>3. To derive better value from surveillance information and activities</b>	<ul style="list-style-type: none"> <li>• Flexible and functioning range of approaches to data collation, integration and analysis</li> <li>• Standardised surveillance mechanisms and denominator data amongst stakeholders</li> <li>• Increased likelihood of detecting patterns of disease behaviour</li> </ul>	<ul style="list-style-type: none"> <li>• RADAR prototype complete</li> <li>• Pilot begun to capture new surveillance data from private vets</li> <li>• Phase 1 RADAR begun (build of: data warehouse, reporting tool, GIS, basic content manager, metadata manager, data catalogue and web portal)</li> <li>• Mechanism developed to add and remove data sources from RADAR</li> <li>• Analysis and load of phase 1 data sources</li> <li>• Work with FSA and MHS to define abattoir data that can be recorded and fed back to farmers to improve animal health &amp; welfare and the safety of the human food chain</li> </ul>	<ul style="list-style-type: none"> <li>• Phase 1 RADAR and data sources implemented and live</li> <li>• Pilot to capture data from private vets completed</li> <li>• Phase 2 RADAR begun (development of profiles database, advanced functionality of content manager, metadata manager, data catalogue and web portal added)</li> <li>• Analysis and load of phase 2 data sources</li> <li>• Further pilots begun to capture information on new and emerging diseases, potential risks and hazards, and access information from veterinary practitioners</li> <li>• Profiles database functioning and populated with all available profiles</li> </ul>	<ul style="list-style-type: none"> <li>• Phase 2 RADAR and data sources implemented and live</li> <li>• Phase 3 RADAR begun (build of system to support prioritisation, capture data on potential risks and hazards and refinement of profiles database)</li> <li>• Data from pilots loaded into RADAR</li> <li>• Analysis and load of phase 3 data sources</li> </ul>	<ul style="list-style-type: none"> <li>• Phase 3 RADAR and data sources implemented and live</li> <li>• RADAR phase 4 begun (links to new Defra corporate registers developed)</li> <li>• Further pilots to capture additional new data undertaken</li> <li>• RADAR continues to identify and link into additional data sources</li> <li>• Pilot on collaborative financial management system implemented</li> <li>• Estimates of disease prevalence for prioritised endemic diseases published</li> </ul> <p>RADAR populated with all 'high priority' target profile and denominator data sets</p>

Strategic Goal	Objectives & Benefits to be realised through the deliverables	March 2004	March 2005	March 2006	April 2006 to March 2013
<b>4. To share information more widely</b>	<ul style="list-style-type: none"> <li>• User-friendly and widely used system that produces structured and ad-hoc surveillance reports</li> <li>• Surveillance information disseminated rapidly to target audiences</li> <li>• Improved awareness of current animal health status in the UK</li> <li>• Collation of information on animal health and welfare problems and related potential public health problems</li> <li>• Researchers have increased access to surveillance data</li> </ul>	<ul style="list-style-type: none"> <li>• Information sharing requirements gathered</li> <li>• First surveillance report formats defined</li> <li>• Begin to define data standards and definitions, including metadata standards</li> <li>• Current legal basis for surveillance and data sharing determined. Identification of data, which can be shared at this stage.</li> <li>• Draft data sharing protocol published</li> <li>• Government website on veterinary surveillance launched</li> <li>• Identification of RADAR 'power users'</li> </ul>	<ul style="list-style-type: none"> <li>• Data sharing protocol finalised and published</li> <li>• RADAR 'Power users' analysing data and producing surveillance reports</li> <li>• Restricted direct access to data on RADAR to authorised users</li> <li>• First surveillance reports published on the internet, in media and journals</li> <li>• First data extracts published to academic researchers</li> <li>• Consultation on changes required to legislation on data sharing begun (if required)</li> <li>• Website updated with information from profiles</li> </ul>	<ul style="list-style-type: none"> <li>• Format of surveillance reports refined and revised</li> <li>• Mechanism for 'alerting' target audiences developed</li> <li>• Further publication channels identified</li> <li>• Increased publication of surveillance outputs</li> <li>• Requirements for new legislation on data sharing identified and agreed</li> </ul>	<ul style="list-style-type: none"> <li>• New legislation permitting further data sharing in place</li> <li>• Fully functional system for sharing surveillance outputs in user friendly, flexible formats</li> </ul>

Strategic Goal	Objectives & Benefits to be realised through the deliverables	March 2004	March 2005	March 2006	April 2006 to March 2013
<b>5. To enhance quality assurance of outputs</b>	<ul style="list-style-type: none"> <li>• Quality statements on surveillance outputs</li> <li>• Improved accuracy of analysis by:</li> <li>• Increased confidence of users in reliability of information</li> <li>• Information on data quality fed back to providers</li> <li>• Standardised content of specific data fields</li> <li>• Validated data fields</li> <li>• Independent accreditation</li> <li>• Audits to verify methods for recording and processing information</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of information contributing to draft profiles defined</li> <li>• Approach to quality flagging of data defined</li> <li>• Pilot 'education programme' defined – to enhance stakeholder (especially farmer) participation</li> <li>• Working links with overseas surveillance established</li> </ul>	<ul style="list-style-type: none"> <li>• Quality criteria and processes defined</li> <li>• Pilot Education programme completed</li> <li>• Data audit schedule developed</li> <li>• Government contracted laboratories operating to agreed quality standards</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of information contributing to draft profiles agreed and standardised</li> <li>• Quality of data in RADAR flagged</li> </ul>	<ul style="list-style-type: none"> <li>• Education programme fully operational</li> <li>• Independent accreditation more widely introduced</li> </ul>