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Review of Rural Veterinary Services

Report

Reviewer: Peter T. Frawley

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List of Acronyms

AAHL	Australian Animal Health Laboratory
ABARE	Australian Bureau of Agriculture and Resource Economics
ABS	Australian Bureau of Statistics
ACVO	Australian Chief Veterinary Officer
ACVS	Australian College of Veterinary Scientists
ADSP	Animal Disease Surveillance Programme
AFFA	Agriculture Fisheries and Forestry Australia
AHA	Animal Health Australia
APAV	Accreditation Programme for Australian Veterinarians
AQIS	Australian Quarantine Inspection Service
AVA	Australian Veterinary Association
AVBC	Australian Veterinary Boards Council
AVMA	American Veterinary Medical Association
AVMACOE	American Veterinary Medical Association Council of Education
AVR	Australian Veterinary Reserve (Proposed)
BA	Biosecurity Australia
BSE	Bovine Spongiform Encephalopathy
BTEC	Brucellosis and Tuberculosis Eradication Campaign
CCEAD	Consultative Committee on Emergency Animal Diseases
CPD	Continuing Professional Development
COAG	Council of Australian Governments
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSU	Charles Sturt University
CVE	Continuing Veterinary Education
DEST	Department of Education, Science and Training
DVO	District Veterinary Officer
EAD	Emergency Animal Diseases
EBL	Enzootic Bovine Leucosis
EMAI	Elizabeth MacArthur Agriculture Institute
EU	European Union
FMD	Foot and Mouth Disease
HECS	Higher Education Contribution Scheme
HSC	Higher School Certificate

ISO	International Standards Association
MAP	Market Assurance Programme
MLA	Meat and Livestock Australia
NAHIS	National Animal Health Information System
NAMP	National Arbovirus Monitoring Programme
NAQS	Northern Australia Quarantine Strategy
NATA	National Association of Testing Authorities
NEADMG	National Emergency Animal Disease Management Group
NGV	Non-Government Veterinarian
NOJDP	National Ovine Johne's Disease Control and Evaluation Programme
NTSESP	National Transmissible Spongiform Encephalopathy Surveillance Programme
NVE	National Veterinary Examination
NZ	New Zealand
OIE	Office International des Epizooties
OJD	Ovine Johne's Disease
PIAPH	Product Integrity Animal and Plant Health
PIHC	Primary Industries Health Committee
PIMC	Primary Industries Ministerial Council
PISC	Primary Industry Standing Committee
PTP	Professional Training Phase
QA	Quality Assurance
RCVS	Royal College of Veterinary Surgeons (UK)
RLPB	Rural Lands Protection Board
RSPCA	Royal Society for the Prevention of Cruelty to Animals
SCAHLs	Sub-Committee on Animal Health Laboratory Standards
SEAFMD	South East Asian Foot and Mouth Disease Eradication Campaign
SPS	Sanitary and Phytosanitary
TAFE	Technical and Further Education
TSE	Transmissible Spongiform Encephalopathy
UK	United Kingdom
USA	United States of America
VIAS	Victorian Institute of Agricultural Science
VSAAC	Veterinary School Accreditation Committee
VSb	Veterinary Surgeons Board
WEDPP	Australian Wildlife Exotic Disease Preparedness Programme
WTO	World Trade Organisation

Executive Summary

E.1 This Review was commissioned to address Australia's future animal health needs and the roles, availability and capabilities of rural veterinarians to meet those needs.

E.2 The Review has reached three broad conclusions.

E.3 First, Australia's animal health needs are being met on a day-to-day basis but Australia's animal health system will need to be enhanced to meet more stringent requirements for international trade in the future. The immediate priorities are the establishment of an Australian Veterinary Reserve (AVR) and the strengthening of surveillance¹.

E.4 Second, there is no current crisis in the availability of veterinarians. However, rural veterinarians have to contend with rising costs, a reluctance of producers to utilise their services, long hours, limited social opportunities and schooling for their families. These factors all impact on the willingness of veterinarians to live in rural areas, create local shortages and could lead to a chronic shortage of production animal veterinarians.

E.5 Third, the Review finds that the opportunity for the most lasting solutions is offered by policies that will build up the demand for veterinary services rather than policies which might artificially induce supply.

E.6 Most issues cannot be successfully addressed by any one sector. There is a need for all involved in rural veterinary services to make changes to their current approaches – governments, producers, veterinary practitioners and Veterinary Schools.

Australia's Animal Health System

E.7 The animal health system is complex and somewhat cumbersome. The Commonwealth has clear responsibility for meeting international trade requirements and the States for production policies and associated day-to-day disease management control. Animal Health Australia (AHA) is an important link between the Commonwealth and State governments and industries. But the system lacks clear lines of demarcation with regard to policy initiation, development of accepted plans and, most importantly, implementation. Differing priorities, legislation and resource allocation in jurisdictions and industries has led to variability in services and the acceptance of national programs.

E.8 The Review recommends a clearer definition and acceptance of responsibility and accountability of the stakeholders in animal health policy and implementation, as a matter of priority.

¹ For the purposes of this Review, the term surveillance is used to embrace both the activities of monitoring and surveillance as defined in the OIE International Animal Health Code. The OIE defines surveillance as the detection of disease and monitoring as measuring the change in occurrence of disease.

Surveillance

E.9 Australia's ability to meet certification requirements is dependent on the outcome of ongoing surveillance programs.

E.10 An efficient and effective surveillance system needs to comprise both "active" and "passive" components. Australia currently employs both systems but "passive" surveillance predominates.

E.11 Australia's capacity for surveillance depends on having skilled people in the field, an accessible and capable diagnostic infrastructure and an effective system for recording and retrieving data about animal diseases. All these elements are currently present but the Review has recommended that the system be enhanced through:

- establishment of an Australian Veterinary Reserve to be on standby in the event of an emergency disease outbreak and to participate in surveillance;
- progressive assessment of disease threats region by region;
- an enhanced Accreditation Program for Australian Veterinarians (APAV);
- more active involvement by private veterinarians in surveillance programs;
- integrated data capture and management systems to facilitate investigation and follow up;
- measures to ensure availability of suitably qualified personnel; and,
- a national plan for laboratory utilisation.

Private veterinarians

E.12 Only 20% to 30% of individual producers in livestock industries regularly engage private veterinary surgeons. In most instances, veterinarians are only called to treat an individual animal and whole herd/flock care is seldom undertaken. The explanation most frequently offered for the low utilisation is a belief by livestock owners that veterinarians are costly and do not add value. A second view is that veterinarians lack experience at selling their expertise.

E.13 The commercial returns for services typically provided by rural veterinarians to individual production animal customers are barely sufficient to maintain most rural mixed practices and their viability is generally underpinned by companion animal medicine.

E.14 The number of veterinarians in Australia increased from 3177 in 1981 to 4757 in 1991 and 6358 in 2001. The number of veterinarians located in rural Australia almost doubled between 1981 and 2001 to 2473 but the percentage fell marginally from 42% to 39% of all practising veterinarians.

E.15 Analyses of existing data reveal two additional facts, which could influence the availability of veterinarians in the future.

E.16 The first is that the percentage of females registered and practising has increased from 15% in 1981 to 39% in 2001 and will continue to rise. This has implications for practice management, to the extent that females prefer to work fixed and/or casual hours and are often reluctant to purchase practices.

E.17 The second is that although one-half to two-thirds of graduates find their first veterinary job in rural mixed practices, most of them leave over the next five years and do not return.

E.18 While the Review concludes there is no immediate shortage of veterinarians in Australia, it recognises that some rural mixed practices have difficulty attracting and retaining experienced veterinarians. If no action is taken and current trends continue, shortages could emerge, starting in remote areas with practices that have a high reliance on production animal services.

Possible approaches

E.19 The Review has considered the pros and cons of both supply and demand approaches to ensuring adequate rural veterinarian numbers. A supply approach would include measures such as scholarships, concessional entry conditions to Veterinary Schools for school leavers of rural origin and HECS concessions for recent graduates. A demand-based approach would seek to integrate rural veterinarians into provision of services that have industry and/or community wide benefit.

E.20 The Review strongly prefers a demand-based solution. The principal reason is that inducements intended to increase the number of rural veterinarians are futile without actions to lift effective demand for their services. In addition, rural veterinarians are already familiar with the proposition of providing services for government services for government programs, most recently through the TSE and other disease surveillance programs.

E.21 The Review also recommends measures to improve practice efficiency such as the removal of statutory barriers that inhibit the development of new models of professional practice, and broadening of the skills base of rural veterinarians enabling them to offer a wider range of services to producers. Both measures have the potential to increase practice income and viability.

Education and training

E.22 The four Veterinary Schools in Australia provide training that is recognised worldwide for its high standard. Nevertheless areas of concern identified by this Review relate to funding, course content and course entry conditions.

E.23 With respect to funding, the Review is concerned that resourcing constraints may put at risk the capacity of at least some of the Veterinary Schools to maintain the necessary high standard of training. While this is strictly beyond the Terms of Reference, the Review has recommended that this issue be further investigated.

E.24 Course content is largely determined by accreditation requirements that lead to graduates possessing a broad veterinary science education covering all species. However, the Review is concerned about a declining emphasis on production animal health in favour of companion animal health. It is in Australia's long-term interest to have sufficient graduating veterinarians adequately trained to treat production animals. While the Review acknowledges that the Schools are working to include more hands-on content in their courses, particularly with regard to production animals, there needs to be an assessment of the content of veterinary courses and the scope for increasing the exposure to production animal health issues at both undergraduate and postgraduate level.

E.25 Standards for entry to veterinary science are among the highest for all courses. Under current arrangements, many capable and highly motivated aspirants are excluded from entry. At the same time there are indications of emerging shortcomings in the profession's ability to fully meet the community's needs for rural veterinary services, eg well-trained veterinarians who are at ease with production animals. Without at all diminishing the academic rigour of veterinary science, alternative entry pathways might be further developed to facilitate entry by candidates with a likely focus on production animals, such as high-achieving undergraduates and graduates in animal or agricultural science disciplines.

E.26 With these considerations in mind, the Review recommends a separate review by accreditation and professional regulatory bodies of the overall scope of veterinary education and registration requirements in Australia, covering matters such as:

- entry requirements, including articulation arrangements;
- course content;
- scope for increased specialisation at either undergraduate or post graduate level; and,
- continuing professional development requirements.

Specialist skills

E.27 The rationalisation of government laboratory services, including the introduction of fee for service leading to reduced accessions for investigatory services, has limited career opportunities for veterinary "specialists".

E.28 The Review defined "specialists" as veterinarians who have completed postgraduate training – whether structured or unstructured (i.e. in house) - as well as those who are registered as specialists by the State/Territory Veterinary Surgeons Boards.

E.29 There was a 19.4% fall in veterinary specialists between 1998 and 2001. Over the same period, personnel employed at State/Territory government laboratories fell by 13%. The specialist disciplines most affected were virology, microbiology and parasitology. Moreover, it is an aging population, with most such personnel being 50 years or older.

E.30 This age distribution, together with the relatively small number of veterinarians pursuing training in specialised areas, points to a critical shortfall over the next 10 to 15 years.

E.31 The impending shortage of specialists needs to be progressively addressed in the next few years and the Review recommends that:

- a strategic approach to the utilisation of diagnostic laboratory facilities be developed to provide, among other things, training opportunities and career pathways for veterinary diagnostic specialists; and,
- as part of the application of National Performance Standards, regular assessments be made of specialist numbers and any measures necessary to correct identified deficiencies.

Funding

E.32 The Commonwealth has set aside \$2 million for implementation of animal health and rural veterinarian initiatives arising out of this Review. This amount needs to be considered as a "down payment" on upgrading Australia's animal health systems to meet future needs. The Review recommends the order of priority for expenditure be:

-
- the establishment of the Australian Veterinary Reserve;
 - integration of rural veterinary practices with services which have wider community benefits; and,
 - staged integration of a new national animal health information system.

E.33 Long term funding will need to be shared between all governments and industries, on bases to be negotiated.

Recommendations

Australia's existing animal health system is unlikely to be adequate for future community and livestock industry needs.

Australia needs to act now to ensure that its animal health system maintains its current high standards, yet evolves to meet the emerging community and livestock industry needs.

Policy development and implementation

A more systemic approach is needed to streamline the existing set of cumbersome arrangements for dealing with national animal health issues. The establishment of AHA provided an important link between Governments and industry. However, a clearer definition and acceptance of responsibility and accountability of the stakeholders in animal health policy development and implementation is needed.

Recommendation 1

Governments with industry more clearly specify the roles and relationships of governments and AHA in the animal health system. An improved approach to policy development and implementation would be:

- (a) the Commonwealth to have prime policy responsibility for the national animal health system and related international negotiations, securing support from the States/Territories through the PIMC framework and from industry;**
- (b) the State/Territory governments refer proposals with national implications through PIMC; be responsible for operational aspects of the system; and initiate improvements in accordance with their powers and jurisdictions; and,**
- (c) Animal Health Australia to further develop agreed proposals; secure detailed commitments from governments and industry; and coordinate national implementation.**

System design and implementation

Some measures to improve the performance of the animal health system have been initiated and are in various stages of implementation.

Recommendation 2

In order to continue the process of improving the animal health system:

- (a) PIMC expedite the full implementation of comprehensive national performance standards, including provision for independent auditing, for the animal health system by June 2004;**

-
- (b) AHA complete the determination of competencies for government veterinary and para-professional staff by June 2003 for take-up by the relevant training bodies for integration into training and recognition frameworks; and,**
 - (c) Governments and industry implement the National Livestock Identification Scheme as soon as possible to facilitate trace back and trace forward and control of chemical residues.**

Recommendation 3

The Commonwealth, through PIMC, establish an Australian Veterinary Reserve (AVR) as a matter of priority. The purpose of the AVR is to have a veterinary capability trained and equipped to deal with animal disease emergencies and, undertake surveillance as appropriate:

- (a) the Commonwealth fund the development and establishment of the AVR and then negotiate ongoing funding arrangements; and**
- (b) once established, the AVR be managed by AHA.**

Recommendation 4

Government and industry stakeholders, through AHA, design and implement the further integration of rural veterinary practices into the provision of services that have industry and/or community wide benefits. These services be provided through an enhanced APAV and:

- (a) include participation in biosecurity programs; enhanced disease surveillance for specified animal and zoonotic diseases; and more generally the protection of wildlife and biodiversity;**
- (b) be competency based; and,**
- (c) be commissioned according to regional requirements.**

Appropriate fees for services and other financial incentives be developed through AHA. This should be a priority over the provision of direct support measures aimed at encouraging veterinarians to enter rural practice.

Recommendation 5

AHA, as an immediate priority, develop a new national animal health information/data collection and management system that provides, *inter alia*, for improved access for diagnostic laboratories and field veterinarians in both private and public sectors. The costs of the development of the new system should be shared appropriately by industry and government.

Recommendation 6

PIMC direct PISC to undertake an assessment, by December 2003, on the imperatives and scope for a more strategic and national approach to the location and utilisation of diagnostic laboratory facilities, including:

- (a) collaboration between institutions;**

-
- (b) the opportunities for co-location of Commonwealth, State, university and private laboratory facilities; and,**
 - (c) training opportunities and career prospects required to avert any potential shortage of veterinary diagnostic specialists.**

Surveillance and monitoring

The current surveillance and monitoring system is unlikely to continue to meet the increasingly stringent requirements of Australia's trading partners for assurances about disease freedom and status.

There is a need for a more integrated system of national surveillance to develop from the current combination of informal and formal programs.

Recommendation 7

Governments through AHA (with peak producer councils support), as an initial measure, enhance national surveillance and reporting of emergency and endemic diseases by:

- (a) addressing through extension programs the generally poor appreciation by producers and others handling livestock of surveillance and a disinclination to report disease anomalies;**
- (b) improving data collection and management by accessing more of the field activities of public and private practitioners, including those working in the live animal export industry and at abattoirs;**
- (c) commissioning practitioners to undertake specific surveillance activities that need strengthening in particular locations or for particular diseases;**
- (d) more effectively utilising the skills of qualified para-professionals;**
- (e) accessing data already being collected and held in private laboratories and practices, initially through a government-funded pilot program; and,**
- (f) finalising agreement of funding contributions of governments and industry towards surveillance.**

Recommendation 8

PIMC request AHA and Governments to complete by December 2004:

- (a) comprehensive national assessments of the risk of disease occurrences in terms of species, region, disease and syndrome;**
- (b) an evaluation of baseline information on production animal diseases in Australia currently available and that information actually required; and,**
- (c) the specification of surveillance regimes that need to be put in place to maintain adequate cover.**

Rural veterinary practices

The existing network of rural veterinary practices servicing production animals is unlikely to be sustained, particularly in remote areas, as practice costs rise and lifestyle and income opportunities divert new graduates to companion animal/urban practices.

While the number of veterinarians entering rural practice has been increasing, most appear to be deployed in larger centres near the coast and earn the bulk of their income from servicing companion animals.

The deployment of veterinary services *is* responsive to market signals, and the availability of new graduates from existing Veterinary Schools for rural practice will be adequate to meet community and industry needs if earnings opportunities are improved sufficiently.

The provision of HECS subsidies for graduates going to rural practice, selection criteria giving preference to rural students for entry to Veterinary Schools, and other such measures designed to encourage entry to rural practice will be much less efficient and effective than policies designed to improve practice earnings.

Recommendation 9

Through the processes of the Australasian Veterinary Boards Council, the State/Territory Veterinary Surgeons Boards adopt a uniform approach to registration and regulation and remove the statutory barriers to veterinary practice consolidation and efficiency, including:

- (a) limitations on practice ownership;**
- (b) service obligations that contribute to unsocial working conditions;**
- (c) the requirement for separate registration in each jurisdiction and the limited availability of cross-jurisdictional registration; and,**
- (d) formal recognition of the professional qualifications of veterinary nurses and the range of veterinary tasks that can be appropriately delegated (as in Western Australia, UK and USA).**

Recommendation 10

The veterinary profession through the AVA and other relevant professional organisations, including the post-graduate foundations:

- (a) develop and promote a 'best practice' model for rural mixed practice;**
- (b) develop enhanced mentoring schemes and other forms of professional assistance (such as short courses) to improve practice management and working conditions (such as after hours rostering); and,**
- (c) develop extension programs that encourage rural practitioners to broaden their skills base as a way to stimulate producer demand for their services.**

Education and training

Rising costs and reductions in real terms in both Commonwealth funding and university internal funding allocations have placed severe pressure on Veterinary Schools over the past decade. They have been able to maintain standards, staffing and facilities only by admitting full fee paying local students and overseas students who, in the main, will not be looking to careers in Australian rural mixed practice.

These adverse funding developments have not been uniform across all four Veterinary Schools but there is serious concern that at least one School may have difficulty in maintaining international accreditation. The implications of any closure of a School, declines in standards or loss of accreditation would be of serious concern to Australia's livestock industries and further jeopardise the future adequacy of rural veterinary services.

The matter of funding of veterinary science was referred by this Review to the review of the higher education sector *Higher Education at the Crossroads*.

A second matter of serious concern in relation to veterinary education in Australia is the likelihood of a shortage of specialists emerging over the next 10 years. The reasons for this shortfall include reduced job opportunities, lack of career paths and the attraction of overseas pay and conditions.

Recommendation 11

In the context of the outcomes of the *Higher Education at the Crossroads* Report, the Department of Education, Science and Training report by June 2003 to the Ministers for Education, Science and Training and Agriculture, Fisheries and Forestry on the adequacy of funding of the Veterinary Schools in terms of their ability to maintain high standards and international recognition.

Recommendation 12

As part of the application of the National Animal Health System Performance Standards, AHA undertake regular analysis and submit biennial reports to PIMC on numbers of specialists by discipline, an assessment of likely future numbers against needs, and recommendations for action to avoid shortages both nationally and within jurisdictions.

Recommendation 13

The existing Veterinary Schools are graduating sufficient students to meet current and immediate future needs and public funding of the establishment of a fifth Veterinary School in Australia is not warranted at this time.

Recommendation 14

The Australasian Veterinary Boards Council initiate a thorough review of veterinary science education and registration requirements, having regard to:

- (a) entry requirements for veterinary science courses and articulation arrangements between veterinary science and related courses;**

-
- (b) the content and balance of undergraduate veterinary science courses, particularly with respect to production animal health, aquatic species health and wildlife health, whole-of-farm issues and practice management issues;**
 - (c) the efficacy of introducing some form of post graduation training with specialisations in specific areas of animal health as a precursor to full registration;**
 - (d) the efficacy of mandating minimum levels of continuing professional development activity as a condition of maintaining registration; and,**
 - (e) the scope for collaboration between universities, and between schools within universities, in the conduct of veterinary undergraduate courses and veterinary-related postgraduate courses and research.**

Funding

The Commonwealth has announced it will provide \$2 million towards implementation of the recommendations of the Review.

Recommendation 15

The Commonwealth provide seed funding for implementation of the recommendations contained in this Report. The expenditure priorities should be:

- (a) an initial allocation for the establishment of an AVR, focused on finalisation of the concept, recruitment and training of a small start up force and testing of its capabilities in disease emergency management and surveillance;**
- (b) planning and implementation of the further integration of rural veterinary practices into services which have wider community benefits; and,**
- (c) completion of plans for a new national animal health information system.**

The Commonwealth may need to provide additional seed money, but arrangements for longer term funding can only be made on the basis of set programs and firm cost estimates. The long-term funding will need to be shared between all governments and industries on terms to be negotiated.

Introduction

Review of Australia's Rural Veterinary Services

1. From one viewpoint, the market for veterinary services is no different from the markets for most other services: supply matches demand at prevailing rates of fees and salaries. It follows that any apparent “deficiency” in the supply and location of veterinary services will be indicated by offers of higher than “normal” fees and salaries. Veterinary service providers can be expected to respond, perhaps with lags, to such market signals and, as a consequence, make good any such “deficiency”.
2. This view is obviously overly simplistic. In more detail, the market for veterinary services in Australia is not a simple market but comprised of a number of interconnected markets with differing characteristics. These markets include (but are not limited to) private rural practices servicing mainly production animals; private urban – and rural - practices servicing companion animals; public and private veterinary specialities, including laboratory-based services such as veterinary pathology; and public veterinary services deployed in the field and in government hierarchies.
3. Each of these markets has to be considered in any assessment of the adequacy of the capacity of rural veterinary services to meet the needs of Australia's livestock industries.
4. There are obvious grounds to argue that in some of the markets there are “public good” or external benefits where returns to rural industries and/or the community as a whole are generated additional to the private returns that the veterinary services generate for rural clients. Expressed slightly differently, the demand for *some* veterinary services has a public or collective dimension, as well as a private dimension.
5. For more than a century, governments have recognised this and engaged in regulation and provision of veterinary services that monitor, control and eradicate animal diseases. Well accepted principles of public policy and administration support government intervention to realise such public good externalities, which would otherwise be lost
6. An intention of this Review is to identify the nature and extent of such public good benefits attributable to rural veterinary services, and to recommend measures to ensure that they are fully realised, where warranted, for the benefit of Australia's rural industries and the wider community.
7. Another feature of the market for veterinary services is that the *supply* of these services is not a simple response to market demand; it requires examination for other potential areas of what can be termed “market failure”.
8. Veterinary services are regulated by statute. Legislation mandates the registration of practising veterinarians by Veterinary Surgeons Boards in each State and Territory in Australia. The conditions and standards, some relating to service delivery, set for registration by the Boards are recommended by professional veterinary bodies.

-
9. Veterinary services are also limited, to an extent, by the number of University Veterinary School “places” established in a largely publicly funded education system.
 10. Veterinary training up to registration standard is confined to four universities: one each in Victoria, NSW, Queensland and WA. Each school, for its graduates to become registerable, must maintain accreditation by a designated professional body
 11. Decisions about entry qualifications, numbers of entrants and the curricula in these Veterinary Schools are made by the respective academic staff, having regard to many considerations, including maintaining accreditation to registration standards, as well as career prospects for graduates.
 12. Another intention of this Review is to consider these various factors shaping the supply of veterinary services to Australia’s rural industries and interests, and to make recommendations where changes could be made to improve supply by addressing areas of market failure.
 13. Australia’s rural industries, like most of the others, operate in a market economy where the preferred role of government is to facilitate the efficient operation of markets and to limit intervention as far as possible to the realisation of ‘public good’ outcomes and the correction of other forms of ‘market failure’.
 14. The analytical framework used in this Review of Australia’s rural veterinary services relies heavily on this approach to the development of public policy.

Chapter One

Livestock Industry Needs for Veterinary Services

Overview

1.1 The needs of Australia's livestock industries for rural veterinary services can best be identified in terms of the various functions or purposes that such services have. Any deficiencies or inadequacies in the provision of veterinary services in meeting industry needs can then be described in terms of the functions or purposes.

1.2 The functions of rural veterinary services are separated here into categories that are generally well identified in public/industry discussion, including representations to this Review, and in reports of investigations that have been undertaken into different aspects of Australia's animal health system. The list includes:

- improving the productivity of commercial livestock enterprises;
- undertaking surveillance against incursions of exotic livestock diseases;
- managing endemic diseases and pathogens;
- providing a capability for responding to emergency disease incursions;
- providing international certification as to disease status and treatments for livestock and livestock products going to export;
- protecting consumers by assuring the safety of locally produced foods;
- protecting public health against diseases transmissible from animals, and from the misuse of veterinary drugs causing resistance to treatment in humans;
- providing a reasonable level of assurance to the community as to the welfare and clinical treatment of animals; and,
- protecting indigenous wildlife and biodiversity from exotic animal diseases.

1.3 Australia's livestock industries have varying levels of need for each of these functions, which are considered in some detail in this chapter.

Improving the productivity of commercial livestock

1.4 Livestock producers have some need for veterinary services to maintain and improve the productivity of their individual livestock enterprises. Such veterinary services, provided mainly by private practitioners, endeavour to enhance the productivity of agricultural livestock enterprises mainly by:

- improving herd/flock reproductivity;
- correcting nutritional deficiencies;
- planning and implementing parasite avoidance and treatment programs;

-
- planning and managing genetic improvements;
 - planning and managing quality assurance programs; and,
 - treating disease, injury and reproduction problems in individual animals.

1.5 Public veterinarians, such as those employed by the State departments of agriculture and the Rural Lands Protection Boards in NSW, also provide some of these services, but are primarily involved in managing endemic disease control programs and wider surveillance activities that involve more than individual farms.

1.6 The benefits of these services are essentially private, accruing to livestock producer clients who in general seem pretty much aware of the commercial benefits and costs of the services. To the extent that they are not – and to the extent they under-rate the value of the services – it can be argued that it is their own responsibility to decide on the optimum input of veterinary services into their livestock enterprises. (Even so, some practitioners have urged greater public and industry effort in advising producers of the prospective benefits of increased use of veterinary advice.)

1.7 In their representations to this Review, producers and producer organisations have not argued that veterinary services are inadequate for the current needs of their commercial farming operations. Indeed, as discussed in Chapter 6, the evidence is that farmers, on average, spend very little on veterinary fees. Data collected by ABARE suggests that average farm expenditure on veterinary services, even by specialist livestock operations, amounts to no more than a few hundred dollars per year. Furthermore, no upward or downward trend can be detected in the 13-year time series. While AVA disputes the ABARE figures, producers and practitioners themselves have frequently expressed the view to this Review that the capacity of ‘traditional’ veterinary services to add value in livestock enterprises is limited. The argument is that the treatment of individual production animals is uneconomic, except in exceptional circumstances, and veterinarians are not appropriately skilled to develop and manage ‘systems’ approaches to farming enterprises, for which there is greater demand.

1.8 Although exceptions can be seen in areas of intensive livestock production, rural practitioners in the main now rely upon treatment of companion animals for half or more of their income. If the income from production animal procedures such as pregnancy testing of cows and the de-worming of farm dogs is taken into account, then the other veterinary services provided to livestock producers are sparse indeed.

1.9 The obvious response, therefore, to any suggestion of a shortage of private veterinary practitioners to meet the *production* needs of livestock producers is that the use of (demand for) veterinary services by commercial livestock producers is simply insufficient to provide the commercial returns necessary to attract practitioners to rural mixed practices in greater numbers.

1.10 This response may yet be too simplistic; the existence of failures/impediments in the market for veterinary services has been argued in representations to this Review and has been investigated.

Impediments to the efficient delivery of veterinary services

1.11 Evidence presented to this Review supports the contention that owners of rural mixed practices are unable to attract experienced salaried associates to fill a large number of advertised vacancies.

1.12 The explanation for this could simply be that the remuneration offered is inadequate to attract the required staff. While the remuneration levels on offer are at Award levels and beyond,

they do not appear to this Review to be particularly attractive for talented university graduates, for the sort of work involved and career opportunities that are likely to follow.

1.13 According to the Graduate Careers Council of Australia, veterinary science starting salaries in 2002 were \$35,000, compared to \$32,000 for agriculture, \$40,000 for medicine and \$52,000 for dentistry. However, over 96% of veterinary science graduates were in full-time employment, compared to 75% for agriculture graduates.

1.14 The rejoinder to such an observation, made by many rural practitioners to this Review, is that remuneration offered is sufficient but that new graduates are culturally ill-disposed towards the lifestyle of a rural mixed practice and that their training is biased against large animal practice.

(a) Are new graduates culturally and professionally ill-disposed towards rural practice?

1.15 This contention is that if the selection criteria were changed to allow more rural students to gain places in Veterinary Schools, and the curricula were less biased towards small animal practice, then more veterinarians would be entering rural practices as a career choice.

1.16 Although the Veterinary Schools have different entry pathways for students, the curricula are similar in order to satisfy international accreditation standards requiring the comprehensive study of all animals.

1.17 A fuller discussion of this issue is to be found in Chapter 4 where possible improvements are identified, but this Review is not persuaded that inappropriate entry criteria or biased curricula *in all four Veterinary Schools* is, or can be, the primary factor impeding the flow of veterinarians into rural, production animal practices.

(b) Do new graduates lack business skills?

1.18 Both farmers and practitioners have asserted to this Review that veterinarians have been notably lacking in entrepreneurial skill and training in developing, packaging and marketing new services for livestock producers. This Review did observe that where individual practices were succeeding as businesses, they generally had developed and successfully marketed innovative programs, sometimes in partnerships with clients, for such things as parasite control programs, whole-of-farm management packages, merchandising specialisation, and genetic improvement programs.

1.19 It has been put to the Review that impediments to such entrepreneurial activity included insufficient training in business skills and insufficient quality time away from the persistent demands of running a practice. Counter arguments are that university veterinary curricula have been changed in recent years to include more business management units in the courses. Also, like many other professional groups such as dentists, pharmacists and accountants, veterinarians are able to acquire business management skills through post-graduate and other training opportunities, or to hire them.

1.20 This Review sees no reasons for rural veterinarians being less capable of running businesses except that the business operations of veterinary practitioners in some States are constrained by statutory restrictions on practice ownership

(c) Regulation of veterinarians and veterinary practices

1.21 In some jurisdictions there is a statutory requirement that only registered veterinarians can own a veterinary practice. This prevents business people and community groups in rural areas forming businesses with practitioners and bringing business skills, capital and organisational depth into practices.

1.22 This restriction was often mentioned to this Review in the context of the way veterinary practices are most often structured in rural towns. With few exceptions, practices are owned by one or two partners, sometimes with an associate or two. This means a heavy commitment to “after-hours” calls, particularly as veterinarians also have certain ethical obligations regarding treatment of injured unowned animals and wildlife. This commitment contributes to the unattractive lifestyle identified by young veterinarians as a major deterrent to rural mixed practice.

1.23 Properly structured rosters between practices for after-hours and weekend work are not anti-competitive under the Trade Practices Act and it is somewhat surprising that more use is not made of them by rural practices to ensure the availability of veterinary services and to provide appropriate breaks for practitioners.

1.24 Many practitioners concede the commercial and social merits of amalgamating practices in towns where three or four practices may operate, and indeed some interviewed in the course of this Review have tried unsuccessfully to bring about amalgamations.

1.25 The statutory restriction on ownership of practices was an issue raised by principals of small practices in NSW wishing to retire and having difficulty finding a buyer. Because only veterinarians can buy practices, the skills set and career aspirations of younger colleagues and new graduates are of particular interest to these practitioners. Many express strong concerns about the very high proportion of female graduates and their attitudes to private practice.

1.26 A high proportion of the young female associate veterinarians in rural practices interviewed in the course of this Review expressed a strong disinterest in purchasing a practice, even where they had the opportunity to do so, many wanting instead an ongoing career as an associate in a practice. Most expected to marry and wanted to be flexible in locating where their husbands were employed. Many wanted part-time employment rather than the burdens of practice ownership, and they were astutely aware of the difficulties of selling practices.

1.27 A conclusion of this Review is that statutory restrictions on ownership of practices in some jurisdictions may be unnecessarily impeding the ownership succession of some practices and the amalgamation, capitalisation and injection of business skills of others.

1.28 This issue is discussed in more detail in Chapter 5.

(d) Are government vets “crowding out” private practitioners?

1.29 Livestock producers in some States have qualified access to government veterinarians. Mostly these veterinarians are deployed on specific disease control and eradication programs and do not provide the range of services that private practitioners do.

1.30 However in NSW it is probable that District Veterinary Officers employed by levy-payer funded Rural Land Protection Boards at times become involved in servicing matters that would otherwise be taken up by private practitioners. While, in general, private practitioners are complimentary of the work of DVOs and the back-up support they provide, nevertheless the collectively funded DVOs will be satisfying some of the otherwise commercial demand for

veterinary services. In the absence of the DVOs it is reasonable to conclude that more private practitioners would be deployed in rural NSW. This is not to suggest that rural veterinary services overall would be improved by any such “deregulation” but the network would be different.

1.31 Comparable situations exist in Victoria and Queensland with departmental public veterinarians. One Queensland practitioner put it this way:

The QDPI (Queensland Department of Primary Industries) provides a free service for graziers when a herd problem or disease outbreaks occur. The local practitioner is usually bypassed and the QDPI becomes the primary port of call. In most cases, the situation is legitimate private practitioner work. Quite often the private vet is then asked for an opinion on the case by the QDPI person but unfortunately there is no prospect of fee or work from the case. This may sound like whingeing or sour grapes but the fact remains that a private practitioner needs ‘fee for service’ to survive.

1.32 While some servicing of production needs of livestock producers is undertaken by industry funded and government veterinarians, this Review is of the view that there is probably little displacement of private practitioners in the delivery of this service.

Comparison with other countries

1.33 One measure of the adequacy of Australia’s rural veterinary services in meeting the production requirements of livestock producers would be comparison with other countries. Professor Heath (see Chapter 5) has examined and compared the population of registered veterinarians in Australia, US, Canada and the UK and found that Australia has at least as many veterinarians per head of human population as these other countries.

1.34 While useful, such comparisons are silent about the number of veterinarians in relation to animal populations. More relevant to this Review would be the number of rural veterinarians in relation to production animal populations. The number of rural veterinarians is not readily available in those countries, but Professor Heath’s analysis suggests that the percentage of all private veterinary activity devoted to companion animals is about the same as in Australia. Accordingly, using annual meat production as a broad proxy for production animal populations, Australian livestock industries can be shown to enjoy similar levels of service as the US and Canada but considerably less than that of the UK.

Table 1.1: Veterinarians per million tonnes of meat production

Australia	1,647
USA	1,648
Canada	1,974
UK	3,563

Assessing the adequacy of existing commercial veterinary services

1.35 It is difficult to avoid the conclusion that Australia's livestock industries get the level of veterinary services *for their commercial activities* that they are prepared to pay for.

1.36 The flip side of this coin is that production animal practitioners get paid the value of the services they provide. If this is too little to make rural production animal practice an attractive career option for many veterinarians, then the explanation may be the limited capacity of most veterinarians to offer services which generate demonstrably improved returns for livestock producers.

1.37 One point of view is that Veterinary School curricula do not provide an adequate skills base for graduates to offer whole-of-farm systems approaches to improving enterprise productivity and producer returns.

1.38 Undoubtedly improvements can be made in the range of commercial services and the way in which they are provided by Australian rural veterinary practices. However, the commercial benefits accruing to individual livestock enterprises from the services provided by private practitioners provide no 'in principle' arguments for public intervention. These services are to provide private benefit to individual enterprises, not to secure any industry or public good.

1.39 Moreover, international comparisons, while inconclusive, suggest that Australia's livestock industries are no worse off than livestock industries in other developed countries in terms of access to veterinary services.

Future industry needs for veterinary services for production purposes

1.40 A wide range of views has been expressed to this Review about future demand for rural veterinary services for the purpose of improving livestock enterprise productivity.

1.41 Practitioners in particular are generally pessimistic about the likely future level of use of their services by extensive livestock producers. Many see a gradual loss to non-veterinarians of the provision of services such as artificial insemination and pregnancy testing. Trends in livestock values give practitioners little encouragement that producers will lift their use of traditional clinical services.

1.42 Producer views offer no prospect of a changing usage of veterinary services although there is concern that there be access to private practitioners, now and in future, in case the need arises. However, this concern has little to do with the availability of rural veterinary services for production purposes and much more for the network and infrastructure that they are seen to provide for disease surveillance and a response capability in case of emergencies.

1.43 Overall, this Review is of the view that if the earnings of private rural practice can be increased to more attractive levels, there are no significant obstacles to greater numbers of practitioners being attracted to, and retained in, practices in rural areas.

Surveillance for emergency animal diseases and diseases of concern to importers

1.44 Australia's livestock industries clearly have a need for a surveillance capability that detects disease incursions at the earliest possible time and triggers a response to control or eradicate the incursion.

1.45 The benefits of an adequate surveillance capability accrue to livestock industries generally and, for some diseases, the community at large. It has the classic characteristics of a "public good".

1.46 Australia's rural veterinary services provide a surveillance capability through both "active" and "passive" arrangements. The active or targeted surveillance is the product of government/industry collaboration in establishing specific testing programs. The passive or general surveillance is provided at the farm level through private and government practitioners being alert to anomalous events and providing diagnoses largely incidental to their other activities and results of tests carried out for other purposes

1.47 Government practitioners and food safety inspectors (meat inspectors) conduct ante and post mortem inspection of all livestock presented for slaughter for human consumption at abattoirs. Additionally, passive surveillance is conducted through inspection of live animals for export and in laboratory tests being conducted on a selection of these animals as part of meeting trading partners import protocols prior to export.

1.48 The main organisation for coordinating on-farm surveillance (and Australia's animal health system generally) is Animal Health Australia (AHA). Passive surveillance at abattoirs is coordinated through Australian Quarantine and Inspection Service (AQIS) and State government meat authorities and live animal export protocols determined by Agriculture, Fisheries and Forestry Australia (AFFA) and relevant industry bodies including the Australian Livestock Export Corporation (Livecorp).

(a) Targeted surveillance programs

1.49 AHA manages a program called Australia's Animal Disease Surveillance Program, which comprises a number of specific national disease surveillance programs. (AHA uses the term "surveillance" in a general sense to include the activities of monitoring and surveillance as defined in the International Animal Health Code of the Office International des Epizooties [OIE]). Most prominent of these are the National Transmissible Spongiform Encephalopathy Surveillance Program (NTSESP), the National Arbovirus Monitoring Program (NAMPP), and the AFFA managed Northern Australia Quarantine Strategy (NAQS). These programs target a relatively short list of specific diseases, some endemic to Australia.

(b) Other surveillance

1.50 A much larger list of exotic diseases are subject to less structured surveillance. Australia is recognised by the OIE and individual trading partners as historically free from most of these diseases. However, this status may be subject to increasing scrutiny with some trading partners possibly requiring stronger evidence of freedom of disease through more active surveillance approaches.

1.51 Certain endemic diseases such as anthrax, Johne's disease, enzootic bovine leucosis and ovine footrot are also monitored at varying intensities under State/Territory programs.

(c) Reporting of surveillance

1.52 The National Animal Health Information System (NAHIS) collates summary surveillance data from targeted programs and other sources, and contains summary textual information on a range of other matters relating to Australia's animal health status generally. The other main source of data collated by the NAHIS is the State veterinary laboratories, which provide data according to agreed specified criteria from diagnostic tests carried out on submissions to the laboratories.

1.53 The NAHIS information is therefore the principal mechanism for collating, and means of reporting, Australia's disease surveillance activity.

1.54 It has been argued that there is too little *systematic reporting* of observations or tests that lead to the reporting by Australia's veterinary authorities that there is no evidence of the existence of most of the diseases.

Concerns that disease surveillance has declined

1.55 Surveillance against incursion of exotic diseases and emergence of new diseases is perhaps the most important requirement of rural veterinary services in Australia, and currently this need is being met. Outbreaks of emergency animal disease have been few, and where they have occurred (e.g. Avian Influenza in poultry), they have been quickly identified and eradicated or contained. Freedom from bovine brucellosis, tuberculosis and pleuro-pneumonia has been preserved.

1.56 However, some argue this apparent success may be more fortuitous than the result of superior surveillance capabilities. Apart from the episodes of Newcastle disease and the emergence of diseases such as Hendra virus, the current surveillance arrangements have not been seriously challenged to demonstrate their adequacy.

1.57 There is little objective evidence as to what level of national surveillance is optimal, or even what the level actually is. There is little evidence of surveillance being systematically arranged or prioritised according to any calculations of risks/consequences of possible disease incursions. Where this approach has been taken, for example for TSE, then a highly specified, targeted testing program has been established. This same-targeted approach has been promoted in representations to this Review as being needed for establishing more soundly based surveillance for other diseases.

1.58 Suggestions that the risk of disease incursions is increasing (and consequently that more intensive surveillance is now necessary) have been based on such broad indicators of risk as increasing numbers of visitors to Australia (both legal and illegal), globalisation of trade, observation of the spread of diseases in other regions and demands of the OIE, rather than any comprehensive epidemiological studies of prioritised diseases. However, most recent emergency disease incidents have originated in Australia, so the dimensions of surveillance are not limited to detection of exotic disease incursions.

1.59 Representations to this Review about surveillance expressed typical views, as follow.

'The UK experience with Foot and Mouth disease (FMD) in 2001 demonstrated that early detection of such diseases depends heavily upon the alertness and competence of those in close and continual contact with livestock such as producers, agents and sale yard operators. Too little is being done in Australia to bring the capabilities of this group up to what might be regarded as adequate for industry requirements.'

In fact, media coverage of the FMD episode in the UK and Australia's recent exercise

testing preparedness of our response capacity has heightened community awareness of the nature and consequences of FMD, so that surveillance at farm and ancillary service level has probably improved. On the other hand, producer experiences with ovine Johnes disease(OJD) in NSW have reportedly caused a deepening distrust of veterinarians and reluctance to having them near their farms.

'The number of veterinarians employed in rural Australia by departments of agriculture, which have the primary responsibility for surveillance, has according to Professor Heath's research declined by over one third in the last two decades as the Brucellosis and Tuberculosis Eradication Campaign (BTEC) has wound down.'

The decline in government veterinarians has been very uneven. In NSW, for example, the number of Department of Agriculture and RLPB veterinarians has remained constant for the last 20 years (116 now compared with 113 in 1981). In Victoria and Queensland the number of frontline public veterinarians is also about the same. The decline is attributable to reductions in other States and in the closure of some diagnostic laboratories in rural areas.

In fact, the total number of veterinarians engaged both publicly and privately in rural areas has increased over the same period. However their deployment appears to be biased towards more closely settled coastal localities. For this and other reasons passive surveillance across Australia may have declined over the period.

'The closure of some veterinary diagnostic laboratories and a move to cost recovery charging for some tests in most States now deter practitioners from submitting tests that heavily under-pin disease surveillance.'

Practitioners, both public and private, report a sharp decline in the submission of samples for testing. Most argue that clients are unwilling to bear the cost of diagnostic testing unless an immediate commercial benefit can be reasonably anticipated. One possible implication is that unresolved disease events are less likely to be followed up with additional testing or attention drawn to patterns of anomalous events.

The counter arguments presented by government hierarchies is that much of the testing formerly done contributed little to effective surveillance and that consolidation of laboratories has enabled more specialised and efficient diagnostics.

The move by at least some governments to offer free testing where the tests are part of a planned surveillance program is suggestive that this obstacle to more and effective surveillance testing may be being addressed.

'The removal, from close proximity, of veterinary specialists such as pathologists employed in regional veterinary laboratories has resulted in a qualitative decline in surveillance investigations. Personal interaction between veterinarians in the field and those in laboratories is seen by some to be important to the achievement of timely, exploratory and accurate diagnoses.'

While this view is also linked to the policy shift to cost recovery, the rationalisation of laboratory diagnostic capacity into fewer specialist facilities, and increasing use of private laboratories, it is also related to inadequate information management systems linking field veterinarians and laboratories.

'An aging and declining population of veterinary specialists such as pathologists and epidemiologists is symptomatic of a rundown of surveillance capability and portends a crisis in a decade.'

As one submission points out, only 10% of veterinary pathologists are less than 35 years of age and within 10 years the bulk of trained and specialist veterinary pathologists will be retiring. Prospective entrants to these specialities are said to be deterred by poor career path prospects and concomitantly a sharply declining capability in Australian universities to offer training.

While it is argued by many that too few replacements are in training, another view is that specialists will increasingly be national and international in career orientation and are sufficient in numbers and quality to meet the future demands of Australia's disease surveillance program.

'Field activities, including observation of anomalous disease events, are not systematically recorded and consequently do not generate data on surveillance.'

While this has more to do with providing quantitative evidence of Australia's freedom from specific diseases than it has with the early detection of incursions, better information collection and management systems are widely seen to be important for strengthening the passive surveillance system and providing the basis for evaluating its effectiveness.

1.60 Notwithstanding these arguments, some carefully considered representations, including those from AHA, have argued that no conclusions about levels of surveillance required can be reached without firstly a comprehensive risk analysis being carried out.

1.61 A useful start has been made on rating the risks associated with the diseases listed in the new cost-sharing arrangements for emergency animal diseases. Further development of that assessment could lead to specification of diagnostic regimes providing adequate surveillance for each disease. The TSE Surveillance Program provides a useful model for the design of surveillance programs for some other diseases. Giving priority to high-risk diseases, targeted surveillance programs could be designed to overlay or enhance existing general surveillance so that the specified number of observations/tests could be selected or deliberately made and comprehensively recorded.

Future industry needs for disease surveillance

1.62 Australia's livestock industries look for a surveillance capability providing a very high level of assurance that exotic and new diseases will be detected early.

1.63 There is *prima facie* evidence that some components of surveillance have diminished as testing in regional veterinary laboratories has contracted but the extent of the reduction in effective surveillance that this implies is contentious. Specialisation, the introduction of new diagnostic technologies, and the need for laboratories to meet increasingly stringent standards, is likely to require *further* concentration of diagnostic analytical laboratories

1.64 The contraction in numbers of government veterinarians employed in the field in some States, and the preoccupation of private practitioners with their client's immediate commercial interests, support the contention that surveillance has declined.

1.65 Further, surveillance for most diseases is passive, relying heavily on the interest, alertness, expertise and coverage of veterinarians and others deployed in the field and there are no measures of the intensity or coverage of that surveillance.

1.66 At the same time the need for more intensive surveillance is increasing.

1.67 The Review strongly suggests that without comprehensive assessment of risk and consequence for livestock enterprises, the "optimum" level of surveillance cannot, in any case,

be known. Clearer specification of the level/coverage of surveillance needed for Australia must be given higher priority by government and industry.

1.68 Because the benefits of surveillance are widely dispersed, responsibility for the burden of surveillance cannot be left to the private veterinary practitioner and his commercial client. The lack of incentives for field veterinarians to engage in surveillance testing and recording of observations is a serious deficiency in current arrangements.

1.69 A greater role for private practitioners in the delivery of targeted programs, overlaying passive surveillance programs, with appropriate financial incentives, is seen by this Review to warrant further consideration.

Management of endemic diseases and pathogens

1.70 The requirement for this service is partly for private benefit and partly for public and industry benefit.

1.71 The private benefit is that individual livestock enterprises are able to manage diseases in ways that maximises earnings and avoid losses. These requirements, typified by systematic monitoring of internal parasites and the recommendation of control programs, are mainly serviced by private veterinary practitioners. Rural stock and station agencies may be playing an increasing role in the provision of this sort of advice, along with merchandising the veterinary chemicals used in the treatments. Private diagnostic laboratories as well as those operated by government agencies on a fee for service basis are also involved.

1.72 The public requirement for this service is in averting epidemics and in the management and potential eradication of diseases that may be confined to particular localities or regions. Examples of this type of service, mainly directed by the veterinary services of departments of agriculture and agencies such as the NSW RLPBs, include the OJD, foot rot and cattle tick programs.

1.73 Despite the current intense controversy over OJD policy in NSW, industry comment is that rural veterinary services for monitoring and managing endemic diseases and pathogens, including chemical residues and antibiotics, are generally adequate. It is also recognised that the demand for these services, mainly to satisfy regulatory and food company concern with enhanced food safety, is increasing.

1.74 Industry comment did not go so far as to identify the NSW RLPB structure as providing a commendable model for adoption by other States. Public agencies in other States pointed to its attraction as a future model, but powers to impose levies at a State level on producers are said to be lacking.

1.75 State agencies, particularly in Tasmania and South Australia, are actively progressing schemes to promote the engagement of private practitioners in this monitoring role and surveillance more generally.

Responding to incursions of emergency animal diseases

1.76 The adequacy of Australia's surveillance capacity to quickly locate and identify any disease incursion has already been considered. The capacity needed to deal with an incursion once detected will depend upon many influences, not least the type of disease and the nature/extent of the incursion.

1.77 Australia's animal industries look to government and their own resources to provide a capability for quickly and effectively responding to any incursion of emergency animal diseases.

1.78 The threat of most concern currently is from FMD because of the awareness of the devastation it caused in the UK in 2001, its virulence and prevalence as evidenced by incursions in the UK, Japan, Korea, Argentina and Uruguay in the last two years, and the enormous economic and social cost it would have for Australia's livestock industries. The threat of TSEs, particularly BSE, was of foremost concern in the late 1990s and followed episodes of chemical residue contaminations dating from the late 1980s. These episodes required substantial adjustments to response capabilities, particularly diagnostic capability, at very short notice.

(a) Preparedness and organisational skills

1.79 Australia's capability in responding to an FMD incursion has recently been trailed with Exercise Minotaur (September 2002). At the same time capacity is being built up, for example, with a doubling of diagnostic capacity at the Australian Animal Health Laboratory (AAHL). It is widely recognised that state of preparedness and skill/organisation in responding to an incursion are issues that have to be considered, along with any consideration of extent/size of capacity of rural veterinary services. The UK experience found fault with competence in management and organisational capacity, although technical veterinary capacity was also found to be deficient.

1.80 It is beyond the brief of this Review to examine in much detail the *state of preparedness* of Australia's institutions and personnel for responding to disease incursions and bio-terrorism, other than to comment on the additional complexity created by multiple jurisdictions caused by a federal system of government.

(b) Deployment of skilled veterinarians

1.81 General concern has been expressed to this Review that Australia would have too few skilled veterinary personnel in the field to deal adequately with many disease incursion scenarios.

1.82 Contrary and more sceptical views have been expressed. Even a substantial increase in the existing number of rural veterinarians would represent a very small component of the resources needed to deal adequately with a crisis of the magnitude of the UK FMD incursion. Australia, as the UK experience demonstrated, would have to relocate rural veterinarians to emergency locations, mobilise urban veterinarians and bring in veterinarians from overseas if an incursion became as wide spread as it did in the UK. As a number of submissions pointed out, Australia simply could not afford to have a standing capability waiting for a disease incursion.

1.83 Nevertheless a core group of veterinarians, probably employed by governments, skilled in emergency disease management and capable of providing leadership in the event of a crisis will be needed.

(c) Australian Veterinary Reserve

1.84 The Review is aware that a proposal for the establishment of an Australian Veterinary Reserve (AVR) is being canvassed at government level and with industry. The AVR concept would provide for suitably trained and accredited private veterinarians to undertake certain roles in an animal disease emergency that would normally be undertaken by government personnel. Such roles might include field surveillance or carrying out vaccinations if required.

1.85 Similar programs offering private practitioner involvement in animal disease control activities are already in place under the Accreditation Program for Australian Veterinarians

(APAV). This proposal is understood to have the general support of government and industry and would appear to be an effective means of mobilising skilled veterinary personnel in an emergency.

1.86 Significantly, an AVR would also provide a pool of competent and trained private practitioners for additional passive surveillance for emergency animal diseases carried out during 'peacetime'.

(d) Other personnel in response capacity

1.87 Personnel with para-veterinary training and experience, such as stock inspectors and meat inspectors, would be drawn into dealing with an incursion, particularly in operational management roles. Representations to this Review referred to the array of skills available in and to rural localities for dealing with other emergencies, such as bush fires. Governments and communities have made considerable investments in the organisation and training of skilled volunteer groups such as the various State Emergency Services. Key personnel from such groups can have outstanding managerial capabilities and knowledge of local conditions and resources.

1.88 Some submissions to this Review pointed out that under various pieces of legislation, there are a range of animal-related activities that may only be carried out by registered veterinarians.

(e) Diagnostic laboratory capacity

1.89 The capacity and expertise of veterinary diagnostic laboratories is also a critical component of response capabilities. Concern has been expressed about the closure of some laboratories and the run-down in diagnostic staff.

1.90 Requirements for Australia's likely challenges need to have some regard to our past experience and performance, notwithstanding the need for a comprehensive assessment of future risks. One submission to this Review makes the point::

Is it appropriate to be continuously prepared for a 'major' outbreak or should preparedness be directed towards adaptability of the system to cope with a wide variety of relatively small emergencies and the occasional moderately sized outbreak which has been Australia's experience over the past 100 years? Preparedness for large outbreaks assumes a change in our risk profile for such outbreaks and there is little evidence for this, despite the UK FMD epidemic.

1.91 Submissions to this Review express the view that surges in demand for laboratory and analytical facilities of the order of 50 per cent could be handled fairly comfortably within existing capabilities.

1.92 Some assessments of the adequacy of laboratory capacity have a State perspective that is increasingly outmoded if advantage is to be fully taken of expensive technology and equipment and other efficiencies associated with scale and specialisation. Capability should more appropriately be assessed from a national perspective, requiring close collaboration of State agencies.

1.93 Other representations have pointed out the much greater capacity of Australia's medical laboratories to undertake, very rapidly, a range of diagnostic testing, although they lack the skills of veterinary specialists. Some of these laboratories are already engaged in veterinary testing and employ small numbers of veterinary staff. Examples of human and animal health laboratories working together have been cited to this Review.

1.94 The livestock industries' requirements for high security diagnostic laboratory capabilities rely largely upon the Australian Animal Health Laboratory (AAHL). The AAHL is an

outstanding facility on a world scale. This laboratory reported to the Review some difficulties in recruiting veterinary specialists and expressed concern about the drop in training of prospective replacements for aging incumbents at AAHL.

1.95 AAHL recently received additional funding to expand its capacity to handle an FMD crisis and now could test 10,000 samples per day if required. This number of tests is up to the requirements of most FMD scenarios suggested for Australia. AAHL also has an extensive program of R&D in diagnostic technology and equipment for other diseases, including TSEs.

1.96 The increasingly national and international approach to diagnostic training and specialisation is illustrated at AAHL, with collaborative programs involving veterinary specialists from Canada, Japan and NZ, as well as State agencies. In similar vein, a submission from a private Australian company employing five veterinarians with post-graduate qualifications in epidemiology indicates it is providing disease surveillance and control programs in Australia and South East Asia, primarily in the livestock sector but also to aquaculture, plant industries and in public health.

Future industry needs for an emergency disease response capability

1.97 Any conceptualisation of a minimum or optimum structure for Australia's veterinary services for the purpose of responding to emergency disease clearly also has to take into account the performance of the structure. A well exercised and effectively performing structure will obviously require less scale and resourcing than a poorly performing structure.

1.98 There will be minima to various dimensions of Australia's veterinary services, below which capacity to respond will be seriously impaired. This includes the deployment and skills of front-line veterinarians in the field, skill sets and experience of specialists in laboratories, as well as testing capacity. Whether Australia's veterinary services are currently approaching, are at or below any of these minima cannot be assessed without much more comprehensive study. However, the structural changes occurring in rural veterinary services have been interpreted by many as having resulted in a weakening of response capacity, and that Australia's capacity to respond effectively to a major emergency is doubtful.

1.99 Some of this assessment is too simplistic – and is not shared by this Review. Structural changes, particularly to laboratory diagnostic capacity, will continue to be necessary to improve effectiveness and reduce unit costs. Some government veterinarians were clearly redundant once the BTEC program was successfully completed. However, some overall calculus of structure and performance for minimum/optimum response capacity is surely required before governments withdraw further from rural veterinary services.

1.100 The difficulty of such an assessment is well recognised and governments and industry may find it expedient and more achievable to focus on evaluating changes at the margin to existing structures. Taking this approach will allow consideration of such questions as the benefit/cost of policies to encourage more veterinarians to locate to rural localities, appointing more specialists to agency facilities, and so on.

Providing the international certification for exports

1.101 Australia's meat and livestock industry exports approach \$15 billion per year and rely heavily on international recognition of the certification provided by AQIS about Australia's freedom from many livestock diseases.

1.102 Australia's livestock industries expect to be able to continue to rely on the acceptability of this certification to all our trading partners.

1.103 The status of livestock diseases in Australia is formally established internationally by regular submissions of data and other information to the world organisation for animal health, the OIE. Most of this information is collected through NAHIS which in turn collates data from surveillance activities of Australia's rural veterinary services, as described above in paragraph 1.52.

1.104 Australian government veterinarians in AQIS issue certificates for export shipments of livestock and livestock products certifying, to the best of their knowledge, the absence from Australia of a variety of diseases.

(a) Adequacy of data in support of claims

1.105 A number of concerns have been expressed to this Review about the adequacy of data supporting Australia's disease status claims.

1.106 One concern is that Australia's surveillance and reporting is failing to keep pace with market expectations and the trend towards more rigorous assessments and scrutiny of information provided to verify animal disease status. Consumer driven demands for better information on products offered for consumption and scientific advances in diagnostic technology and information management are some of the influences said to be driving these trends.

1.107 In the fiercely competitive international market place Australia has enjoyed an advantage over other suppliers in many important markets, and the livestock industries look to ensuring that competitive advantage is not eroded.

1.108 Australia's animal disease status claims are being subject to increasing scrutiny and this may require additional assurances. However, one submission noted that at present "area disease certification is increasingly based on absence of knowledge of disease rather than knowledge of absence of disease". In similar vein another submission states:

Assertions of disease freedom that rely on statements such as 'no evidence of disease x' are increasingly recognised as providing little comfort to importers, especially those who are familiar with Australian livestock production systems, the scarcity of qualified observers and the low level of veterinary input. Such customers appreciate that such claims are in fact a declaration that the country making them may not be capable of determining its status with respect to the particular disease.

1.109 The response that Australia's surveillance and information system is as good or better than nearly all other countries is not likely to continue to meet industry and international expectations, particularly as importing countries move to more rigorous requirements.

(b) Animal health information systems

1.110 Australia's surveillance system, in fact, is better than the scope of the data collected by NAHIS indicates. The current system fails to capture most of the data associated with passive surveillance activities of field veterinarians. One submission states that improvements in data collection and management using modern technology offer the potential to capture much more of the surveillance data that is currently lost. The use of electronic data capture systems in the field, as well as routine capture of more existing data from laboratories, livestock industries and private veterinary practices would be a means to this end.

1.111 Such improvements offer greater opportunity than simply the capture of existing or potentially existing data. There is a need to further develop nationally standard operating procedures and performance standards. Incentives for private practitioners and laboratories to participate and contribute would need to be provided.

1.112 In November 2001 the Primary Industry Standing Committee (PISC) asked AHA to develop a proposal that addresses the needs of a consistent reporting and monitoring “interface” across information systems to:

- facilitate quick and effective responses to animal disease emergencies and thereby minimise risk to exports; and,
- enhance Australia’s international reporting to bodies such as the OIE and international trading partners.

1.113 This Review understands that Commonwealth, State/Territory and industry representatives have yet to agree on a process to develop specifications and a guide to the likely investment needed for such a national information system.

1.114 Essentially, a national information system would need to be able to facilitate the effective and efficient processing of field and laboratory data, whether responding to an emergency or in the course of routine surveillance.

(c) Other opportunities to improve freedom claims

1.115 Resource limitations as well as efficiency considerations would also require prioritisation of surveillance activities. This should be based on the analysis of risk and consequence, and the complexity of this will be considerable. AHA has recognised the potential for developing improved technologies for demonstrating “freedom from disease using new and novel approaches to the combination of multiple data sources to provide quantifiable probabilistic estimates. These have the potential to maximise the use of existing data and dramatically decrease the cost of providing quantitative evidence of freedom from disease”.

Future industry needs for export certification

1.116 By most accounts Australia’s surveillance and data presentation in support of its claims about disease status will need to be increased if Australia is to continue to meet trading partner import certification requirements. The acceptance of the data and information filed with the OIE, while adequate, is aided by the reputation for competence and integrity of our veterinary services

1.117 Passive surveillance which provides so little data in support of freedom claims, must be enabled to contribute and strengthen the basis of Australia’s claims. If the TSE surveillance program is a model for demonstrating freedom from TSEs, then similar programs could be devised to achieve the same result for other diseases. A national assessment of the quantum of diagnoses and confirmatory tests required for each other (prioritised) disease is probably required.

1.118 In this way as many cases/events as is needed from amongst the multitude comprising passive surveillance could be selected and further investigated, and the data captured. The cases so identified would in effect become elements of targeted surveillance programs for specific diseases. The claims Australia is able to make about the absence of animal diseases could thus be substantiated in quantitative terms.

Protecting consumers by assuring the safety of food

1.119 Consumers, food marketing companies and regulatory authorities along the production chain are becoming increasingly particular about the safety of food products. This includes pathogens such as Salmonella and E.coli, chemical residues and antibiotic resistant bacteria.

1.120 Australia's livestock industries wish to see their products retain a reputation for safety and wholesomeness. Rural veterinary services have a role in supporting effective on-farm quality assurance (QA) programs that minimise disease in, and prevent chemical residue contamination of, livestock and livestock products. Veterinarians can advise producers about withholding periods and export slaughter intervals, and can provide certification of compliance if required.

1.121 The livestock industries rely heavily on veterinary services to provide an inspection capability at point of slaughter for export product and to oversight company-based inspection for most domestic product. The cost of this inspection – reflecting both public and private benefits – is shared between government and industry.

1.122 The purpose of these activities is to ensure that food is wholesome and safe to eat.

1.123 Few submissions make much reference to this particular function of Australia's rural veterinary services. Increasingly food safety is regarded as a responsibility of individual enterprises and therefore a private benefit and cost. The part that rural veterinary services, both public and private, play will depend on the value-adding that these services can offer to individual enterprises and the various QA programs that are being developed and widely adopted.

1.124 Increasingly, public responsibilities in this area will contract to appropriate legislation to support the registration and control of use of agricultural and veterinary chemicals, and the setting of food safety standards.

Protecting public health against zoonotic diseases

1.125 This is a function that obviously delivers a wide public benefit.

1.126 Seventy per cent of emerging human diseases in the last 10 years are said to have crossed from domestic and wild animal populations. Veterinarians and veterinary specialists have been credited with the diagnosis of many of these diseases, including Australian bat lyssavirus and Hendra virus in Australia and West Nile virus in the US.

1.127 Only a few submissions to this Review made reference to the contribution that rural veterinary services make in this regard. Nevertheless, rural veterinary services are implicitly expected by the community to play a significant part in surveillance and diagnosis of such diseases.

1.128 The adequacy of Australia's rural veterinary services for this function is not of direct relevance to this Review except insofar as it needs to be taken into account in assessing the overall 'set' of public and private benefits in maintaining a network of competent and viable rural veterinary services. Explicit recognition of this public good contribution by rurally deployed veterinary services, through some form of funding, would of course improve the commercial viability of rural practices.

1.129 The Review contends that any public funding obligations in support of this function – and there are in principle – reside with the public health portfolios and not agriculture in the various jurisdictions. This is not an explicit need of Australia's livestock industries.

Providing the community with assurance as to animal welfare

1.130 The welfare of their animals is an obvious concern of livestock producers. They recognise that the productivity of livestock is closely related to well being. However, the use that producers make of rural veterinary services for the purpose of verifying acceptable standards of welfare for their animals is minimal. The future needs for this purpose may well change but not in the short term.

1.131 In Europe it is increasingly evident that food marketers and consumers are looking for assurances that the animals, from which food products are derived, have been humanely treated. The definition of what these requirements are will undoubtedly change but rural veterinarians will have the opportunity to provide certification of claims about the way animals have been reared, fed and otherwise treated.

1.132 Such consumer movements have hardly begun in Australia and veterinarians will not be the only “authority” providing welfare assurances.

1.133 The expectations of the community generally are expressed in the prevention of cruelty to animals legislation of the States and Territories. The Royal Society for the Prevention of Cruelty to Animals, Australia (RSPCAA) is an important non-government organisation representing the interests of a broad section of the community regarding animal welfare. This organisation has a network of inspectors located in urban as well as rural areas alert for animals in pain and suffering. Inspectors in rural areas may engage veterinarians for professional opinions in relation to particular incidents and situations.

1.134 Representations from the RSPCAA report no particular shortage of rural veterinarians, although there is judged to be a lack of experience amongst veterinarians in giving expert advice to inspectors for the purposes of taking legal action under the prevention of cruelty to animal legislation. The RSPCAA further reports that where there are well-qualified veterinarians, both public and private, there can be difficulties in engaging their services in any legal action because of conflicts of interest with clients.

Protecting indigenous wildlife and biodiversity

1.135 The main submission making reference to this function comes from the Australian Wildlife Health Network. This network is a national initiative funded and supported by the Australian Wildlife Exotic Disease Preparedness Program (WEDPP) which is administered by AFFA. The Zoological Parks Board of NSW and NSW Agriculture have undertaken to support and host the national network.

1.136 The submission asserts that there must be an improvement in the overall ability of Australia’s rural veterinarians to manage wildlife health issues as they relate to exotic disease preparedness, emerging diseases of wildlife, diseases of livestock and public health significance, and diseases which impact on biodiversity, tourism and trade.

1.137 Major shortfalls in the current system as it relates to wild animal health issues are identified as:

- lack of personnel trained in wildlife health issues;
- lack of targeted surveillance for wild animal diseases;
- no long term strategy for wild animal health management in rural areas; and,
- lack of funding and commitment.

1.138 Recommendations for dealing with these shortcomings include a structured approach to wildlife health and disease surveillance, involving veterinarians; training and education of veterinarians; and core funding for laboratories for wildlife work.

1.139 Australia's livestock industries clearly have an interest in wildlife as a source of disease affecting production livestock, and therefore in the monitoring, management and containment of diseases from this source. The wider community has a far greater public interest in protecting wildlife health and biodiversity.

1.140 It follows that public funding and not industry funding is the appropriate means of employing the resources required for this objective.

1.141 Rural veterinarians offer a skilled capability well located for this purpose. If public funding were to be provided to improve the viability of rural veterinary practices, then the Australian livestock industries could be expected to lend support, but it could not be identified as being a need of the industries.

Summary

1.142 The needs of Australia's livestock industries are for animal health services that provide benefits to individual producers, industries and the community.

1.143 Industry concerns that the provision of private benefits in the form of clinical and other commercial veterinary services to producer clients is being distorted by influences impeding the deployment of veterinarians into rural practice are not well founded. The principal impediment to veterinarians moving into rural practice is the generally low returns to be earned from servicing livestock producers. These issues are explored more fully in following chapters of this report

1.144 Although some influences adversely impacting rural practice warrant remedy (for example, restrictions on practice ownership), if returns improved the number of veterinarians attracted to rural practice would increase.

1.145 The adequacy of rural veterinary services to provide acceptable levels of industry wide and public benefits is far more problematic. The primary needs of Australia's livestock industries are for sufficient surveillance to detect the incursion of new and exotic diseases, a response capability to manage an animal disease emergency, and a credible basis for certification of exports to increasingly sensitive importing countries.

1.146 Other interests shared with the community generally include the protection of public health from diseases transmissible from animals, assuring the safety of foods, maintaining reasonable levels of animal welfare, and protecting wildlife and biodiversity.

1.147 Despite their demonstrably creditable performance to date, the future needs of livestock producers and the community are unlikely to be fully met with the current level and deployment of rural veterinary services. In particular, the deployment of veterinarians in public service and private practice across the nation appears inadequate in some regions for future surveillance needs. Emerging weaknesses appear to be in providing specialist diagnostic capability and in front line observation and reporting of anomalous disease events.

1.148 A comprehensive risk based assessment of future surveillance needs is required for the design and implementation of an enhanced surveillance system. This will require much more systematic integration of private practitioners into surveillance and a sharing by

governments and industry of the necessary additional funding. Responsibility for enhancing the provision of the other, wider public benefits such as surveillance and diagnosis of zoonotic diseases, and protection of wildlife and biodiversity, will sit more squarely with governments.

1.149 These are issues investigated in following chapters of this report.

Chapter Two

Australia's Animal Health System

Overview

2.1 There is a broad understanding of the structure of the animal health system but, with the exception of those directly involved, little detailed knowledge of the roles and activities of individual institutions in their day-to-day activities. There is, however, a general consensus that while the current system works and a lot has been achieved (such as the new government/industry cost-sharing agreement for emergency animal diseases), there remain a number of shortcomings, including:

- failure to reach timely consensus on issues and subsequent implementation by the relevant party;
- too many reports completed and not acted upon; and,
- emphasis on user pays which is inappropriate for some services.

Components of the system

2.2 As Australia is a federation, its animal health system is complex and works at several tiers involving the Commonwealth, the States and Territories through to the livestock industries and individual owners of livestock.

2.3 In basic terms, the Commonwealth is responsible for coordination of national policy, contribution to national programs, quarantine and international matters such as disease reporting, export certification and trade negotiation. State and Territory governments are responsible for animal health matters within their own jurisdictions, such as disease management and identification, and control and eradication of disease outbreaks.

2.4 For the purposes of this Review the principal components/participants in the animal health system are:

- governments (Commonwealth, State and Territory);
- livestock industries;
- veterinary practitioners and para-professionals; and,
- laboratories and research facilities; and,
- University Veterinary Schools.

Coordination between governments

2.5 The most senior level of co-ordination occurs through the Primary Industries Ministerial Council (PIMC) which comprises the Ministers of Agriculture / Primary Industries from the Commonwealth, all Australian States and Territories and New Zealand. This Council aims, *inter alia*, to set animal health policies and programs which are consistent within the overall agricultural objectives for Australia and New Zealand. PIMC is serviced by the Primary Industries Standing Committee (PISC), which in turn is serviced by a number of standing committees, including the Primary Industries Health Committee (PIHC). The Animal Health Committee, which reports to PIHC, covers animal health, emergency animal diseases, animal welfare, and animal industries/public health.

2.6 In June 2001, the Council of Australian Governments (COAG) sought a review and revision of national whole-of-government frameworks for the prevention, preparedness and management of major emergency disease outbreaks. A new framework has been developed during 2002 to enhance decision-making in animal disease emergencies. At the national level, the Commonwealth now chairs new high-level management and recovery groups that oversight national whole-of-government responses to disease control and social/economic recovery. The Commonwealth Quarantine Act was amended in 2002, allowing the Commonwealth to exercise enhanced emergency response powers in the event of a major animal disease outbreak.

2.7 These new overarching arrangements augment the current arrangement within the respective Commonwealth and State/Territory agencies. Needless to say, the effectiveness and coverage is yet to be proven.

2.8 Considerable work has been undertaken in the last ten years by the States and Territories to achieve consistency in animal health legislation. Despite these efforts, some submissions to the Review stated that the lack of uniform animal health legislation has resulted in State/Territory services focusing on serving the needs of that jurisdiction and not necessarily national interest issues. Others argued that sufficient consistency does exist in relation to the key elements of the animal health system.

2.9 The Review believes that the ideal would be common legislation and structures across all jurisdictions. In the interim, existing efforts to maximise coordination, including the recently established Commonwealth leadership of national whole-of-government response groups, should be maintained.

Coordination between governments and industry

2.10 Coordination on animal health matters occurs through a range of organisations and levels. These include the PIMC/PISC framework described above, Animal Health Australia, the National Consultative Committee on Animal Welfare and, for aquatic animal health issues, the Fish Health Management Committee, which also operates under PIMC.

(a) Animal Health Australia

2.11 Animal Health Australia (AHA) is an organisation dedicated to advancing issues of collective interest to stakeholders associated with the health of livestock. It is a company limited by guarantee whose Members are:

- governments: Commonwealth, States and Territory;

- industry associations: chicken, dairy, egg, horse (racing and companion), cattle (raising and feeding), pork, sheep (wool and sheep meat), goats and honeybees; and,
- service providers: CSIRO, Australian Veterinary Association (AVA).

2.12 AHA has the capacity to manage national animal health related programs for all, or a subset, of Members. Programs that have a collective benefit for Members are funded from Members' subscriptions. There are three major subscription-funded programs:

- ***Animal Health Services***, which aims to improve the national capability, standards and performance of Australia's animal health system;
- ***Animal Disease Surveillance***, which provides a nationally integrated, innovative surveillance system to underpin trade and,
- ***Emergency Animal Disease Preparedness***, which enhances management approaches to respond to animal disease emergencies.

Programs of interest to a limited number of Members, such as the National Johne's Disease Control Program, are funded directly by the primary beneficiaries.

2.13 The AVA's involvement in AHA, as a service provider/non-program participant, provides a link to rural veterinarians. In particular, there is scope for specific account to be taken of rural veterinarians' interests when animal specific health and disease surveillance programs are being formulated.

(b) Emergency animal disease responses

2.14 Under the new government/industry emergency animal disease cost-sharing agreement, the National Emergency Animal Disease Management Group (NEADMG) is responsible for key decisions on disease eradication/control policy matters in an outbreak. The Consultative Committee on Emergency Animal Diseases (CCEAD) provides technical advice to NEADMG. Both these groups have government and industry representatives.

Commonwealth

2.15 The Commonwealth is responsible for quarantine and international animal health matters, including international disease reporting, export certification and trade negotiation. It also provides advice and coordination of national government policy, and in some circumstances, financial assistance for national disease control programs.

2.16 The Department of Agriculture, Fisheries and Forestry - Australia (AFFA) manages the Commonwealth's input into the animal health system. The areas within AFFA that are principally involved in work related to animal health are Biosecurity Australia, the Australian Quarantine and Inspection Service (AQIS), and Product Integrity, Animal and Plant Health (PIAPH). The Australian Chief Veterinary Officer (ACVO) is Australia's principal veterinary representative in international forums, including the OIE.

2.17 PIAPH is responsible for national coordination in the event of an animal health emergency. It also leads the Department's contribution to the development of international animal health and food policy and standards. PIAPH is Australia's contact point for the Office International des Epizooties (OIE) – the international animal health organisation.

2.18 Biosecurity Australia is responsible for developing new biosecurity policies and reviewing existing policies for the safe importation of live animals and plants, and animal and

plant products. In addition, it conducts negotiations to develop new export markets and maintain existing market access.

2.19 AQIS has an operational role and is responsible for quarantine controls at the border and conducts inspections of international passengers, cargo, mail, aircraft and other vessels entering Australia. It also negotiates export conditions for livestock and livestock products and certifies that they meet the requirements of importing countries.

States and Territories

2.20 State and Territory governments have the constitutional authority for the animal health system within their boundaries. In particular, the States and Territories administer relevant Acts and regulations associated with disease surveillance, diagnosis, reporting and control of notifiable diseases, chemical residues and other programs. These responsibilities require the maintenance of close links with livestock producers, private veterinarians, para-professionals and others associated with livestock and livestock products industries.

2.21 Structures vary between States/Territories but the common theme is centrally based policy personnel with district veterinary officers (qualified veterinarians), specialists and support staff located in and responsible for particular regions.

2.22 All State and Territory governments maintain registration requirements under which veterinarians must register in order to practise within that jurisdiction (see Chapter 5). While mutual recognition requirements provide for automatic acceptance in other jurisdictions, there are differences between States, particularly with regard to costs and minimum periods of registration. These latter requirements are especially relevant to the short turn engagement of overseas graduates to work as locums in Australia practices. The desirability of a national registration and accreditation arrangement is well recognised.

Summary of Policy and Operational Responsibilities for Governments and Animal Health Australia
(adapted from a 1999 AHA report 'Constituency Roles and Responsibilities')

Program area	Commonwealth	States/Territories	Animal Health Australia
Consumer protection	Represent Australia's interests in development of international standards and coordinate national standards to reflect international agreements on diseases, residues etc.	Develop strategies to ensure consumers have clean, wholesome, safe food (eg preventing access to market of diseased animals). Ensure views are included in national policies.	Broker funding and management of programs that enhance consumer protection through agreed national animal health programs.
International services	Represent Australia's animal health and welfare interests. Fulfill international reporting obligations. Certify exports. Promote and maintain market access.	Provide information on disease occurrence to meet national reporting requirements. Support international technical cooperation in respect of systems and delivery expertise.	Manage National Animal Health Information System (NAHIS) to support certification requirements. Ensure agreed programs meet international requirements.
National services (inc EAD responses)	Coordinate national policies and programs through PIMC/PISC and their subcommittees (eg Veterinary Committee). Provide technical/scientific/economic advice on matters of national significance.	Disease surveillance and reporting. Endemic and exotic disease control/eradication. Property and animal identification and tracking. Diagnostic capacity and quality control.	Broker and develop systems and performance standards for national disease and surveillance programs, EAD preparedness, training. Management of agreed national programs, surveillance, emergency animal disease preparedness, Johnes disease, etc. Manage APAV.
Barrier assurance	Establish appropriate import/export risk assessment systems. Develop and manage barrier control systems.	Contribute to policy and protocol development. Implement nationally agreed responses to exotic disease outbreaks.	

Other animal health components

2.23 The other components of the animal health system outlined in paragraphs 2.2 to 2.4 are described in detail in separate chapters in this Report. A brief background is provided below.

(a) Laboratories and research facilities

2.24 Traditionally Australian governments have built and staffed laboratories, which provide pathological analysis of blood and tissue samples (see Chapter 7). This arrangement originated from a combination of factors, including the very high relative importance of agricultural production (both economically and politically), the impact of the Brucellosis and Tuberculosis Eradication Campaign between the mid sixties and mid nineties, and the limited transportation arrangements for moving samples from farms to laboratories.

2.25 In the 1990s, a number of structural changes occurred in the provision of laboratory services. The changes included closure of some laboratories by governments, outsourcing to private laboratories of routine analysis of samples from production animals and the introduction of fees for certain services.

2.26 In addition, there are veterinary diagnostic laboratories associated with each of Australia's four Veterinary Schools. These are primarily teaching and research facilities.

(b) Veterinary Schools

2.27 Four universities offer undergraduate and postgraduate veterinary science degrees in Australia (see Chapter 4). Collectively they have over 1400 undergraduate students and graduate some 300 Bachelors of Veterinary Science each year.

2.28 The undergraduate courses offered by all four universities have been accredited by the Royal College of Veterinary Surgeons in the UK. This accreditation enables or facilitates Australian graduates to practise in a number of overseas countries.

(c) Veterinarians

2.29 Veterinarians are engaged within the animal health system in many roles (see Chapter 5). The most common is as private practitioners, at city locations in companion animal practice and in mixed practices in rural areas. The actual mix varies between practices and, in turn, between types of rural industries, locations, catchment population and competition from other practices. Some private veterinarians provide herd health consultancy services, for example to the equine, pigs and poultry industries.

2.30 The other major roles for veterinarians are in governments and universities. Their roles within Commonwealth, State and Territory governments are outlined above. In addition, government veterinarians are active in policy work relating to all of the responsibilities outlined above – disease prevention, diagnosis, treatment, inspection, certification and related administration. In universities, veterinarians are active in teaching and research. Both Commonwealth and State governments also sponsor research related to animal health.

2.31 Finally there is an active para-professional group working within Australia's animal health system such as veterinary nurses and stock inspectors. Details of the numbers of veterinarians employed in government, universities and private practices published by Animal Health Australia is set out below.

Veterinarians	2001
Government	591
Laboratories, Universities etc	378
Private Practitioners	6005
Other veterinarians	553
Total	7527

(d) Livestock / Producers

2.32 Producers are responsible for raising their animals within established health and disease management standards, to report and act on suspected disease incidents and to satisfy animal welfare requirements (see Chapter 6).

2.33 An indication of changes in the overall size of the producer market for veterinary services can be gauged from the following ABARE figures. The total number of agricultural establishments has fallen from 175,000 in 1980-81 to about 111,000 in 1999-00. In the same period there has been a general deterioration in farmers' terms of trade (an index of the ratio of prices received to prices paid).

2.34 Beef cattle numbers have risen since 1980-81 (from 22.4 million to 25.4 million in 2000-01), dairy cow numbers have risen from 2.8 million to 3.4 million, while sheep numbers were 131 million in 1980-81, peaked at 173 million in 1989-90 then fell to 120 million in 2000-01.

2.35 Pig numbers have remained relatively stable at around 2.7 million, while poultry slaughtering have risen from 295 million in 1992 to 400 million in 2000.

Summary

2.36 The long term investment of governments in animal disease control by way of infrastructure, skills and collaborative working arrangements has been a major strength of the existing animal health system. Consistent with its Terms of Reference, the Review is not undertaking an in-depth analysis of the system. Most stakeholders consulted during the Review considered that generally these structures have well served individual State and national needs.

2.37 Nevertheless, the Review believes that there is a clear need to define more clearly the roles and responsibilities of the partners within the animal health system. The present arrangements are based largely on historical precedent and appear to be affecting the responsiveness and capability of the system to address challenges. The system is to a large extent the product of independent processes involving a large number of players. Differing priorities, legislation and resource allocation in jurisdictions and industries can lead to variability in the level of servicing and in perceived needs of national programs. At the grass roots level, closer working relationships between governments and private veterinary practitioners, and between governments and industry, need to be fully explored and developed.

2.38 Some of the examples suggested to the Review as potential and existing problem areas with the current arrangements were:

- decision-making in forums such as NEADMG and CCEAD is consensus-based – while this has not caused major problems to date, there is a serious potential for decisions in an emergency to be delayed if all parties are unable to reach agreement; and
- in the absence of a clear policy from governments on how they will contribute services in the future, there is likely to be little motivation for private sector providers to participate in wider livestock disease matters, as the business risks are too great.

2.39 The Review therefore believes for national animal health policy development and implementation, the process should be for:

- the Commonwealth to become the primary driver for policy issues (but not necessarily *initiate* them) and secure support from the States/Territories and industry, and contribute to international standards development and risk assessments;
- the State/Territory governments to be responsible for operational aspects of the system; and
- Animal Health Australia to manage and coordinate the system under guidance of its members.

2.40 The Review acknowledges that this process is already well advanced through the Animal Health Committee of PISC, the evolving role of Animal Health Australia and the recent COAG interest in biosecurity.

Chapter Three

Government Veterinary Services

Overview

3.1 The manner in which governments interact with other elements of the animal health system was outlined in chapter 2. This chapter describes the provision of certain government rural veterinary services that are relevant to the Review. It does not attempt to canvass the full range of animal health services that governments provide. Laboratory and other specialist government veterinary services are covered in chapter 7.

Meeting OIE and trading partner requirements

3.2 The evolving application and interpretation of the Sanitary and Phytosanitary (SPS) arrangements introduced by the World Trade Organisation (WTO) has increased the need to be able to provide assurances of Australia's animal health status. The codes and standards developed by the OIE constitute the official reference of the WTO for animal health and aquatic animal health matters, including developing guidelines for trading standards for these commodities. These include disease surveillance standards and the level of scientific proof to support claims of disease status.

3.3 The objectives of the OIE are, *inter alia*, to guarantee the transparency of animal disease status worldwide; and to guarantee the sanitary safety of world trade by developing rules for international trade in animals and animal products.

3.4 The OIE International Animal Health Code is under continuous development and subject to pressure for change. Australia maintains a strong influence and input into OIE matters, especially within the region. Australia is actively participating in OIE standard-setting processes with a view to ensuring that the latest scientific knowledge is incorporated into international standards. One change that is receiving wide support is that evidence for the absence for disease should be quantifiable.

3.5 Countries can now apply to OIE to have an assessment made of their BSE status. In mid-2002, Australia lodged a detailed submission with the OIE for this purpose and expects to receive the OIE assessment early in 2003. A BSE-free assessment outcome would be an important recognition of Australia's favourable animal health status and have positive trade advantages.

3.6 The changes in May 2002 to OIE's FMD chapter provide countries a wider choice of strategies at the national level to combat the disease, including vaccination. However, concomitant with these strategies will be the need for countries – including Australia – to have in place effective surveillance and diagnostic programs in order to fulfil the necessary conditions for OIE recognition of FMD-freedom status.

3.7 Trading partners such as the European Union (EU) have unilaterally conducted their own country assessment processes for trade in meat and animal products. The EU is to apply a new five level BSE risk classification system to Member States and third countries. This will

replace the older four level system under which Australia currently enjoys the most favourable Level 1 rating. Australia has lodged a comprehensive data set to allow a re-evaluation of its current BSE risk. Should Australia not be assigned a favourable BSE risk country rating, additional measures will need to be taken to allow continued trade in meat and animal products with EU countries.

3.8 Following requests, Australia has also lodged submissions on BSE with other trading partners, including Japan and Indonesia.

3.9 Since 1988 there have been a number of outbreaks of virulent Newcastle disease (ND) in poultry. In each case temporary restrictions by importers on poultry and poultry products occurred while eradication measures were undertaken. The EU, concerned over Australia's ND epidemiological situation, imposed demanding serological surveillance requirements for the resumption of imports. A visit by EU officials to review the situation is expected early in 2003. Australia had been due to regain its ND free status under OIE rules in November 2002 when a further outbreak occurred in October.

3.10 With regard to meat inspection, AQIS only provides a presence in an establishment if the country importing the product requires it. The vast majority of Australia's trading partners require that on-plant veterinary officers and food safety officers be employed by a government authority that they recognise, to ensure the officers are independent from the company that owns the goods. In November 2001 AQIS moved from 100% cost recovery system to 60% fee for service.

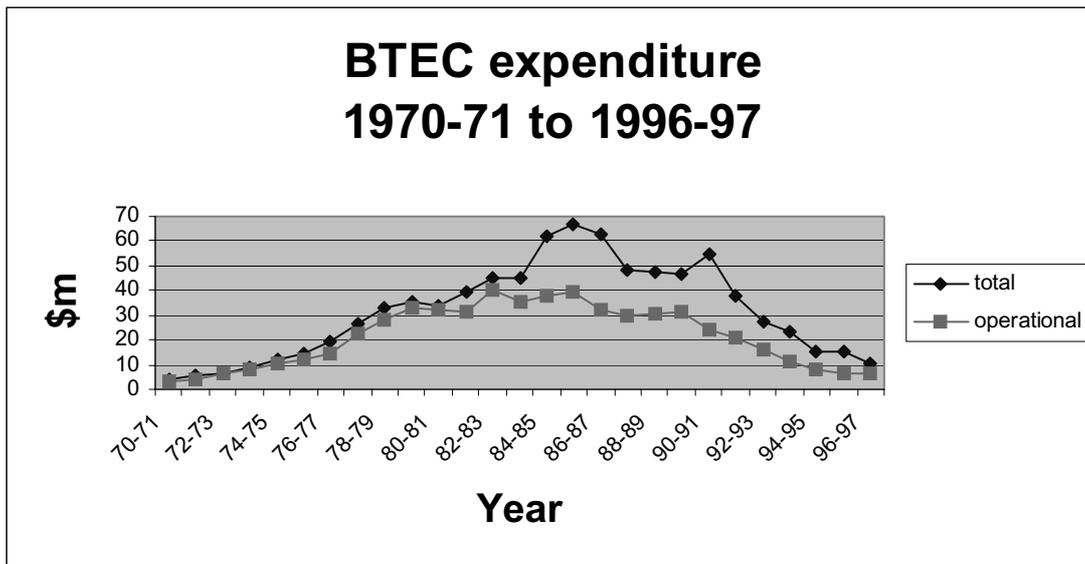
Government funded veterinarians

(a) The BTEC era

3.11 The Brucellosis and Tuberculosis Eradication Campaign (BTEC), which ran from 1970 to 1997, is an example of a successful program in developing a cooperative approach between government and industry, at both funding and management levels. BTEC had two major outcomes. First, it succeeded in achieving internationally recognised free status for the two diseases. Second, it was instrumental in the expansion of government veterinary field and laboratory services and was a major source of work opportunities and income for the veterinary profession.

3.12 Expenditure under the BTEC scheme is shown in Figure 1. Operational expenditure excludes compensation payments and other assistance measures and provides a proxy for the changing levels of government staff employed under BTEC. The figure illustrates how the level of resources (including salaries and wages, and payments to private practitioners) rose to a peak in the mid 1980s and fell back as the program drew to its completion.

Figure 3.1 BTEC expenditure

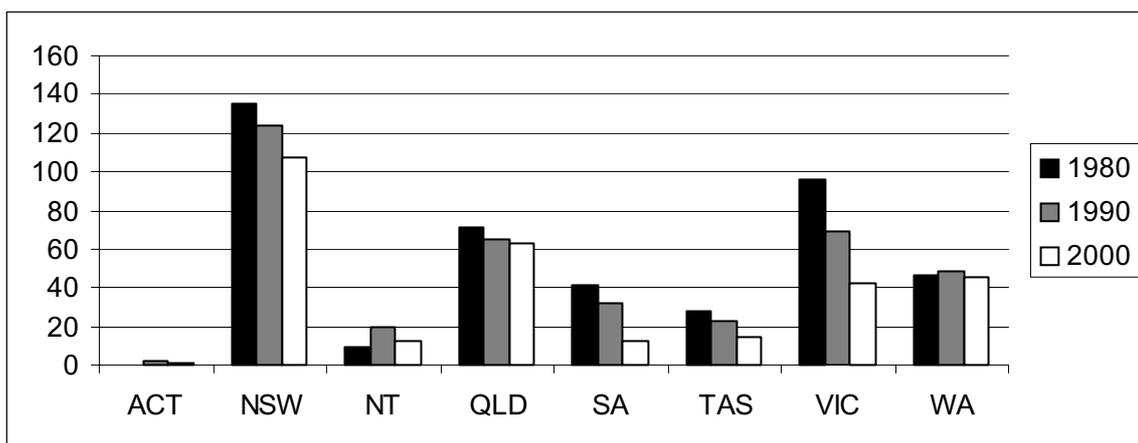


3.13 However, it can be argued that the impact of BTEC on national veterinary resource levels should be viewed as a temporary spike and the post-BTEC era represents a return to adequate long-term levels. Such arguments have some validity but may not take sufficient account of changing market demands for rural veterinary services.

(b) Current veterinary numbers

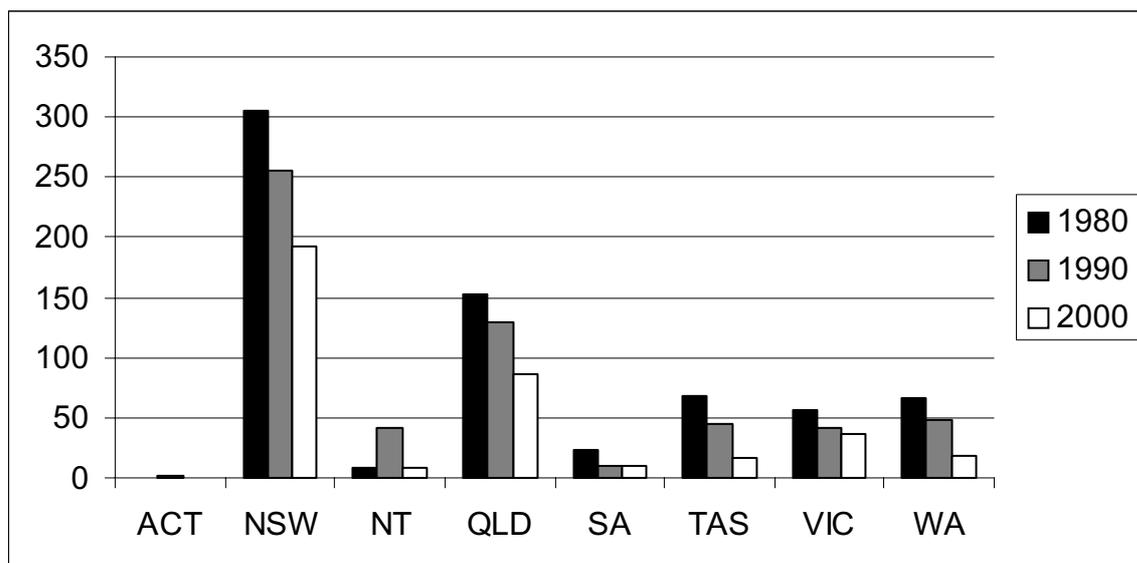
3.14 Figures 2 and 3, based on information provided by AHA and the NSW Rural Lands Protection Boards, illustrate the decline in personnel since 1980.

Figure 3.2 Number of State/Territory public veterinarians 1980 — 2000



3.15 The NSW figures include about 40 District Veterinarians employed by the NSW Rural Lands Protection Boards, funded by ratepayers.

Figure 3.3 Number of government funded stock inspectors (or equivalent) deployed in animal health 1980 — 2000



Current State/Territory government field veterinary positions

<i>State/Territory</i>	<i>Number</i>
NSW	7 (plus 40 RLPB)
Vic	21
Qld	21
WA	16
SA	4
Tas	7
NT	7
ACT	1

3.16 The number of Commonwealth veterinarians permanently employed in AFFA in 2001 was 183. There were 20 veterinarians employed in PIAPH and 27 employed in BA all of whom were engaged in animal health policy work. The vast majority of the remaining veterinarians conducted operational activities within AQIS. In addition AQIS let contracts equivalent to 30 full-time veterinarians in 2001, bringing the effective total number of AFFA veterinarians to 213. This represents an effective increase in the number of veterinarians employed by AFFA from 185 in 1980 and 204 in 1990.

(c) Recent veterinary staffing initiatives

3.17 A number of initiatives and announcements following the Newcastle disease incidents in NSW and more recently the UK FMD outbreak indicate a conscious decision by jurisdictions to address veterinary resource levels, particularly in the priority area of disease preparedness.

3.18 For example, AQIS has announced a bonded scholarship scheme for undergraduate veterinary study; NSW has appointed additional veterinary training and pathology staff; South Australia has recently recruited a number of veterinarians into program management roles and is seeking a further 3 field veterinary positions; and Queensland has announced it is to employ additional field veterinarians, pathologists and stock inspectors. Western Australia has recognised the need for a further 14 positions, including 4 veterinary officers. A further reassessment is likely as a result of Exercise Minotaur.

3.19 In a project being coordinated by Animal Health Australia, the States and Territories are determining key veterinary and para-veterinary competencies. The aim is to establish competency standards for staff and identify training needs. The outcomes should also assist agencies with recruitment and succession planning.

(d) The future

3.20 In its submission to the Review, Animal Health Australia observed:

Anecdotal and even objective evidence relating to trends in numbers of veterinary scientists and their age activities and other demographics is interesting and possibly of some potential value as a leading indicator but in the absence of the context of a desired outcome or performance measure is ultimately meaningless in the determination of policy.

3.21 Animal Health Australia is engaged in the development of a set of National Animal Health Performance Standards for the national animal health system. The objective is to allow government agencies (and industry organisations) to assess their capabilities against a range of criteria grouped under nine core competencies. Their implementation will provide a national framework for agreeing on investment inputs and measuring expected outputs and outcomes. The intent is not to prescribe details of how services will be *delivered*.

3.22 In the case of veterinary professionals, the performance standards will require that personnel delivering outputs should be competency accredited, and will measure outputs such as number of samples taken, coverage of farms, locations and species.

3.23 Competency standards for government veterinary and para-veterinary staff are being developed as a joint project between AHA and the Animal Health Committee of PISC. The competencies will provide for consistent performance measurement and importantly, assist in succession planning and help identify training needs.

3.24 The Review believes the application of performance standards provides the logical framework for taking longer-term decisions on government rural veterinary resource levels. However, their full implementation is likely to take some time. Action on identified agreed priorities in key areas such as national surveillance, information systems, and preparedness and response to animal disease emergencies will therefore need to be pursued concurrently.

Surveillance

3.25 In addition to State and Territory surveillance programs and activities, there are a number of national surveillance programs. These include:

- those coordinated by Animal Health Australia, such as the National Transmissible Spongiform Encephalopathy Surveillance Program (NTSESP) and the National Arbovirus Monitoring Program (NAMP);
- the Northern Australia Quarantine Strategy (NAQS);
- Tuberculosis Freedom Assurance Program; and,
- National Residue Survey.

Further discussion of National Disease Surveillance can be found at Chapter 8.

Animal health information systems

3.26 Constitutionally, each State/Territory primary industry agency is responsible for monitoring animal health status and reporting statistical information within their jurisdiction to national organisations. The information relates to both endemic and exotic diseases and is used to support market access arrangements and determining policies on agricultural imports.

3.27 The results of laboratory analysis on submitted samples are provided to the submitter (usually a government veterinarian) for further analysis and diagnosis. The results are recorded for further reporting, including to national bodies. Each State/Territory regularly reports on the presence, absence and prevalence of animal diseases, usually on a quarterly basis according to the category of disease and the requirements of the party for whom the report is intended.

3.28 Aggregated national reports are made available on the National Animal Health Information System (NAHIS) by AFFA, which currently acts on behalf of Animal Health Australia as a coordinator to receive and aggregate reports from States/Territories. The provision of these reports to AFFA is achieved through a range of methods and programs of varying sophistication.

3.29 An issue here is that, with the contracting of work to private laboratories in some States, privacy laws now restrict the transmission to government agencies of laboratory results of individual accessions by private practitioners. Only the results of tests relating to notifiable diseases are required under State legislation to be reported to government.

3.30 States and Territories have progressed at different speeds to continually improve their animal health monitoring processes. Those jurisdictions with larger livestock industries usually have more resources and have been able to progress at a faster rate. The data format within each State/Territory information system varies considerably. The result is a diverse range of information management systems and varying levels of capability.

3.31 Although there is a high degree of commonality of the tasks and information recorded by each jurisdiction, there is considerable variation in the systems used. Some States/Territories have rolled their internal systems into one. Others are integrating their internal systems to provide the ability to link the information. In some States/Territories, there are still manual processes and hard copy records of information.

3.32 There is little commonality in systems whether for laboratory information management, animal disease information, property registers, or for national reporting. As a first step in

addressing this issue, a PISC working group led by South Australia has recently developed standard definitions and business rules for collection and recording of field and laboratory animal disease information. These will be incorporated into AHA performance standards.

3.33 An improved national information system would facilitate the effective and efficient processing of field and laboratory data, whether responding to an emergency or in the course of routine surveillance, to:

- facilitate quick and effective responses to animal disease emergencies, and thereby minimise risks to exports; and
- enhance international reporting to bodies such as OIE and international trading partners.

3.34 At PISC's request, Animal Health Australia has developed a set of draft functional specifications for an information system that utilises a generic read and write interface to directly translate the format of each of the State/Territory systems into a national format, without the necessity to write dedicated programs. In an emergency, the system would have the capacity to relate this information to other relevant information on government databases, including property location and ownership data. The information collected would give positive and negative results, to enable reporting of both the presence and absence of disease in particular zones.

3.35 A particular aspect warranting consideration is the inclusion of data generated by private practitioners. Much of this data is held on veterinary software packages such as Visual VetAid. A supplementary software program could be developed and provided to practices to enable them to generate data for direct inputting into the national system.

3.36 The Review understands PIMC have agreed that the development of a more effective national information system is a priority. This is supported by the Review.

Accreditation Program For Australian Veterinarians (APAV)

3.37 APAV is a national program designed to integrate private veterinary practitioners into the national animal health system to support the international standing of Australia's animal health service capability. Accreditation under APAV provides the opportunity for private veterinarians to expand their services through approval to participate in government sponsored control and Market Assurance Programs. Its terms and conditions have been endorsed by PIMC and the AVA.

3.38 The APAV has been designed with two key parts:

- an "accreditation" process that provides a veterinarian with basic information about Australian animal health services and issues relevant to the role of an accredited veterinarian; and,
- an "operational" process that provides newly accredited veterinarians with specific knowledge and skills for them to participate in one or more programs requiring the use of accredited veterinarians.

3.39 Before veterinarians are accredited, they must complete a basic course of training in these fundamental areas via a distance-learning program. Accreditation under APAV qualifies but does not entitle private veterinarians to become involved in operational activities. Once accredited status is achieved, veterinarians can undertake further training and assessment to become "approved" in one or more of the operational programs that are conducted by government agencies.

3.40 There are currently 12 recognised operational programs:

- Australian Johne's Disease Market Assurance Program for Alpaca (AlpacaMAP);
- Australian Johne's Disease Market Assurance Program for Cattle (CattleMAP);
- Australian Johne's Disease Market Assurance Program for Sheep (SheepMAP);
- Australian Johne's Disease Market Assurance Program for Goats (GoatMAP);
- National Ovine Johne's Disease Control and Evaluation Program (NOJDP);
- Victorian Johne's Disease Agreed Test and Control Program;
- Victorian EBL Control Program;
- South Australian EBL Control Program;
- AQIS Third Party Pre-Export Preparation of Livestock;
- AQIS Third Party Pre-Export Preparation of Companion Animals;
- AQIS Accreditation for Embryo Transfer Veterinarians; and,
- EAD Field Surveillance Veterinarian.

3.41 At present there are about 515 APAV accredited veterinarians recognised under one or more of the above programs. In Victoria, for example, there are 207 accredited veterinarians, of whom 188 are accredited under CattleMAP, 188 SheepMAP, 47 AlpacaMAP and 6 GoatMAP.

3.42 Veterinarians are charged for training. A once-off \$95 application/training fee is payable to AHA at the time gaining accreditation, and there is an annual fee of \$40. Fees involved in respective operational programs are set by the agency managing the program. For example, there is a \$113 annual fee for the AQIS Third Party Pre-Export Preparation of Livestock. AQIS also undertakes audits of accredited veterinarians and these audits may incur a fee of up to about \$250. Some States charge for accreditation under their programs while others do not.

3.43 There are a number of issues that appear to be hampering the further uptake of APAV accreditation by practitioners:

- the investment required by practitioners in terms of fees and training is not compensated by the continuity of work;
- some practitioners have a perception that APAV indemnity clauses effectively transfer all responsibility to the practitioners who participate in programs;
- the potential effect on the nature of the relationship with existing clients;
- as the APAV agreements are with individual practitioners, the income generated follows the individual, so practice owners are reluctant to promote the scheme to employees, many of whom are likely to leave within a couple of years; and,
- there is little incentive for producers in zones free of Johne's disease to participate in the MAPs, while many producers in control zones remain wary about the costs and benefits of participation.

3.44 There is merit in considering options for expansion of the APAV to include field surveillance activity.

Australian Veterinary Reserve

3.45 The concept of an Australian Veterinary Reserve (AVR) whereby trained veterinarians from the private sector can participate in emergency animal disease responses is not new. It gained renewed support following the contribution of non-government veterinarians (NGVs) in the 2001 foot and mouth disease (FMD) outbreak in the United Kingdom. In that outbreak, over 2,500 Temporary Veterinary Inspectors were engaged. Nearly 40 Australian private practitioners travelled to the UK under an AVA-sponsored scheme while many others paid their own way (135 government personnel also participated under the International Veterinary Reserve scheme).

3.46 The utilisation of the expertise of NGVs in government programs was a significant feature of BTEC and is now in place through APAV. The AVR proposal is being canvassed amongst key stakeholders including governments, the AVA and Animal Health Australia.

3.47 If accepted, the AVR has the potential to substantially add to Australia's ability to respond to a large-scale animal disease outbreak.

3.48 However, if resources are put into providing training practitioners on EADs, it would seem unfortunate if this expertise could not be employed in on-going field surveillance for both EADs and significant endemic diseases. This would address perceived gaps in surveillance aimed at early detection and recognition of diseases. It would also enhance rural veterinary practitioner viability by supplementing practitioner incomes. The cost implications of such an extension would obviously need to be addressed. However, given the mix of public and private benefits likely to accrue from additional surveillance, a sharing of costs between governments and industry would seem appropriate. More detail on the mechanisms for enhanced general surveillance is at Chapter 8.

3.49 There are a range of issues that would need to be considered in utilising NGVs in this way, including:

- whether, for operational purposes, the EAD role and the on-going role should be kept separate;
- the funding of the scheme(s);
- training and competency assessment needs;
- accreditation procedures, perhaps through an extension of APAV;
- terms of engagement, including remuneration and professional liability issues;
- whether NGVs or governments would pay for their training;
- the need for NGVs to understand government philosophy, processes and approaches; and
- the potential for conflicts of interest, given that participating private practitioners will be seen as 'regulators'.

3.50 The funding issue is likely to be the most contentious. The costs of the scheme(s) could be expected to vary considerably, depending on the number of NGVs considered necessary for a viable scheme, and the level and frequency of training. The partnership approaches used in present Animal Health Australia-managed animal health programs and the EAD cost-sharing arrangements would appear to provide a useful template for sharing responsibility for funding.

Summary

3.51 Given the increasing importance of evidence-based international standards for trade in livestock and livestock products, effective Australian participation in the international organisations and forums that are responsible for setting the standards is critical. AFFA will therefore need to continue to build on its expertise in animal health, food safety, veterinary public health and forward assessments of disease risk.

3.52 The decline in government veterinarian levels over the last 20 years has been acknowledged and is being addressed through such strategies as the National Animal Health Performance Standards, the determination of competency standards for government veterinary and para-professional staff, and through individual jurisdiction initiatives. Aside from identified immediate priorities, decisions by jurisdictions on the long term optimal level of staff resources in veterinary services would be best delayed until the Performance Standards are in place.

3.53 The need for an enhanced national animal health information system is overwhelming and the Review believes its development and implementation must be a priority for governments.

3.54 The experiences gained in the 2001 FMD outbreak in the United Kingdom have confirmed the need for the speedy deployment of non-government veterinarians in a major animal disease response. The Review believes the establishment of an Australian Veterinary Reserve will help address that need. As discussed in chapter 8, there is also a significant opportunity for greater non-government veterinarian involvement in on-going field surveillance. The terms and conditions of such involvement would appear to be similar as that for disease responses.

Chapter Four

Veterinary Science Education, Training and Accreditation

Overview of veterinary science education in australia

Framework

4.1 Four Australian universities currently offer undergraduate degrees in veterinary science: the Universities of Sydney, Queensland and Melbourne and Murdoch University.

4.2 The Veterinary Schools Accreditation Advisory Committee (VSAAC) assesses individual Veterinary Schools in Australia and New Zealand at least every six years with a view to advising the Australasian Veterinary Boards Council (AVBC) on, among other matters:

- criteria for the education standards necessary for graduates to be acceptable to the registering authorities, the profession and the community;
- standards necessary to ensure mutual recognition for graduates from veterinary schools in Australia, New Zealand and United Kingdom; and,
- the adequacy of basic resources of staff, equipment and facilities that would reasonably be expected necessary to provide training to the standards adopted by the VSAAC.

4.3 These assessment arrangements, based on the European model, facilitate the maintenance of international mutual recognition agreements. To date, assessments under these arrangements have been undertaken of the Melbourne, Sydney and Queensland Schools, while Murdoch was accredited in the period before these arrangements came into place.

4.4 The common objective of undergraduate courses in veterinary science is to develop skills as a veterinary scientist as well as have at graduation a practitioner capable of dealing with fundamental animal health matters across all species. This accords with the approach of Australia's major trading partners, such as the United Kingdom, Canada, the US and the EU.

Entry pathways

4.5 Entry into an undergraduate degree is highly competitive, with some 14/15 applicants for each publicly funded place. In 2001, students entering into a publicly funded Bachelor of Veterinary Science degree at the University of Sydney required a University Admission Index of 98.35. The entry pathway at Melbourne University differs from the other three Schools in that only ten of the new fifty places available each year are allocated to students applying directly from secondary school. The other forty places are allocated to entrants who have successfully completed the first year of a Bachelor of Science degree to the required standard in physics, chemistry and biology. (Successful applicants from secondary school are required to take the same subjects, with veterinary science subjects beginning in the second year). At the other Schools, however, a substantial proportion of successful applicants enter by way of completing,

in part or full, other tertiary studies. For example, in the four year period 1999-2002, of the 387 entrants into the Queensland Veterinary School, 255 students (66% of the total intake) were admitted on the basis of their performance in other tertiary studies (with 45 actually having completed a course of study). Only 95 students (24.5%) entered at the completion of their secondary schooling.

Enrolments

4.6 The four Schools have over 1400 domestic undergraduate students and graduate some 300 domestic Bachelors of Veterinary Science a year.

Table 4.1 Veterinary Students

School	Undergraduate Students			Aust Post Grad	Intern. Post Grad
	HECS Places	Aust Fee Places	Intern. Fee Places		
Queensland	441	N/A	49	68	15
Sydney	370	110	105	56	07
Murdoch	267	N/A	90	82	03
Melbourne	200	50	51	53	07
TOTAL	1278	160	295	259	32

4.7 Over the period 1989-2001 there was a 20 % increase in veterinary science enrolments . This was one of the lowest rates of growth of all disciplines. By way of comparison, enrolments in medicine increased by 19%, dentistry decreased by 1% and Law/Legal Studies grew by 227% over the same period. Between 1989 and 1993 there was a steady increase in enrolments in veterinary science averaging 3.1% growth per year but this was followed by a 0.8% per year reduction in enrolments until 1997. Since 1997, enrolments have increased at 2.7% a year. .

4.8 The University of Sydney and the University of Queensland have the highest proportion of enrolments with around 33% and 31% respectively in 2002. Murdoch University and the University of Melbourne each enrol around 18% of the nation's veterinary students.

Prior residential location of students

4.9 Analysis of postcode data of permanent home addresses shows that the proportion of students enrolled in veterinary science originating from rural or remote areas varies considerably from School to School. For example, nearly 33% of entrants to the Queensland School appear to be from rural areas, with students with a postcode indicator of a remote location being over 5% of the intake. In 2001, 29% of students selected for enrolment in the Melbourne Veterinary School came from a rural postcode. About 25% of students entering the Sydney Veterinary

School appear to come from rural areas. At Murdoch University in 2002, 17% of students indicated permanent home addresses with postcodes of rural and isolated areas. It should be noted that, in all likelihood, the number of students with a rural background is understated because students who gain entry after completing some tertiary studies, which is increasingly the case, will have moved to urban areas to study on a long-term basis. This will be reflected in residential addresses supplied to the particular School.

Student gender

4.10 The total proportion of enrolments by women in veterinary science has increased substantially, from 55% in 1989 to 73% in 2001. This upward trend shows no signs of abating: 76% of the first year intake in 2001 was female, ranging from 69% at Queensland up to 83% at Sydney.

4.11 The actual number of female enrolments increased by 339 from 692 in 1989 to 1031 in 2001. Male enrolments have dropped by 189 from 566 in 1989 to 377 in 2001.

Post graduate courses

4.12 Each of the Veterinary Schools offers a range of postgraduate courses. In 2001 the total number of students enrolled in higher degrees in veterinary science was 259, comprised of Masters by coursework (58), Masters by research (44) and Doctorate by research (159).

4.13 In addition, James Cook University offers postgraduate studies in veterinary related science courses, although enrolment and completion numbers are very small. From 1989 to 2000, James Cook had 159 enrolments and 59 completions. Enrolment into the James Cook program is open only to veterinary science graduates.

4.14 The issue of more formalised Continuing Professional Development (CPD) – or continuing education - has become a matter for serious consideration within the profession. Increasingly CPD is being considered for inclusion in the criteria for the registration of veterinarians by State Veterinary Boards. This continuing education is catered for not only by postgraduate courses in the universities, but through courses offered by the Australian Veterinary Association, the Post Graduate Foundation in Veterinary Science at the University of Sydney, Murdoch University's Continuing Veterinary Education Office and through peer reviewed journals and a growing number of on-line resources.

Costs and funding of Veterinary Schools

4.15 The teaching of veterinary science is high cost, requiring the type of intensive, small group teaching and clinical experience also found in medical schools. Numerous veterinary biological subjects and clinical specialities must be taught requiring a comprehensive range of qualified staff. In addition veterinary science requires hands on access to animals in laboratory as well as clinical, hospital and field settings, which results in a significant increase in the cost per student, vis-à-vis other courses (including medicine). Veterinary Schools do not benefit from a public funded hospital system, as medical schools do, and must maintain their own clinical and hospital teaching facilities.

4.16 The Commonwealth currently contributes around two thirds of the revenue received by higher education institutions, with the majority of that, around \$5.9 billion in 2001, provided through the Department of Education, Science and Training. Funds for operating purposes are

provided to universities as a single block operating grant for a specified number of student places within the context of an educational profile that covers a higher education institution's teaching and research activities.

4.17 Operating grants and the agreed levels of fully funded places were adjusted in 1990 after a relative funding exercise. This was undertaken to ensure equity of funding to institutions reflecting the different costs of teaching in different disciplines and at different levels. It used a matrix of relativities between discipline groups and level of course to establish universities' relative funding positions. An institution with a high load in high cost disciplines such as medicine and veterinary science, for example, receives relatively more per student place than an institution with a lesser or no load in such disciplines. Under this model, courses are categorised into 5 clusters. Veterinary science is in cluster 5 (with medicine and dentistry), for which the Commonwealth provides, for each approved place, funding of 2.7 times that provided for cluster 1 (which includes accounting, law and humanities).

4.18 The internal allocation of operating resources is the responsibility of the institutions themselves. Higher education institutions are autonomous organisations that are responsible for the distribution of funds between faculties and schools based on their own assessment of priorities and needs. That said, institutions are expected to be responsive to community and individual aspirations and concerns as far as is possible. It must also be acknowledged that institutions have less flexibility where expensive programmes are concerned.

4.19 Since 1989, Australian students in a Commonwealth funded higher education place have generally been required to contribute about 25% of the cost of their education through the Higher Education Contribution Scheme (HECS). Students are able to choose whether to pay the contribution up-front or to defer payment. One option is to defer their payment (interest free) until their income reaches a minimal threshold (\$24,365 in 2002-03). The annual contribution rates for HECS liable places in Bachelor of Veterinary Science courses for 2002 was \$5,999 (as for law, medicine and dentistry), compared to \$5,015 for graduates of disciplines such as agriculture, economics and computing and \$3,521 for graduates in disciplines such as nursing, education, arts, humanities and social and behavioural sciences. A student graduating as a Bachelor of Veterinary Science at the end of 2002 who had chosen to defer payment would have an accumulated HECS debt of \$28,916 on graduation (assuming the student had taken five years to complete the course of study).

Full fee paying students

4.20 Under arrangements introduced in 1998, universities have been able to charge domestic students up-front fees for undergraduate courses, provided that the number of students charged fees for a particular course does not exceed 25% of the total number of places available for domestic students in that course. Undergraduate fee paying places for domestic students are additional to Commonwealth funded places offered by the university. The Schools currently enrol 160 full fee paying Australian students, with fees being in the range \$23,000 to \$26,000 a year in 2002.

4.21 The Schools can also enrol full fee paying international students, up to a limit consistent with their resources and capacity to maintain appropriate standards. In 2002, there are 295 international students paying in the range \$26,000 to \$30,000 a year.

4.22 The total number of fee paying students thus accounts for some 30% of total enrolments in 2002.

Discussion of education issues raised in consultations and submissions

4.23 Submissions to this Review were received from each of the four universities with Veterinary Schools. A joint submission from the four Deans of the Schools was also received, as was a submission from the Australasian Veterinary Boards Council, which oversees accreditation of the Schools, through its Veterinary Schools Accreditation Advisory Committee. The Review team also with each of the Deans separately, as well as the Head of the School of Biomedical Sciences met at James Cook University and with the Chair of the Accreditation Committee. Charles Sturt University (CSU) made a submission proposing the establishment of a “rural veterinary school” at its campus at Wagga Wagga and the Review team subsequently met with the Dean of CSU’s Faculty of Science and Agriculture. The education issues discussed below were raised in a number of other submissions and consultations. The Australian Veterinary Association, in particular, made a number of strong representations in its submission and in the course of consultations with AVA representatives.

Veterinary School funding

4.24 The principal issue canvassed by the Deans in their joint submission is the present funding arrangements for the Veterinary Schools. According to the Deans:

The major problem facing the 4 veterinary schools is a stable funding base compatible with trading partner countries. . . To ensure the integrity of the animal health system, it is critical that funding at an internationally acceptable level is provided so that the 4 Australian veterinary schools can meet national animal health priorities and retain staff.

4.25 The Deans point out, as discussed above (paragraph 4.15), that the teaching requirements of veterinary science are similar to those of medicine, with, for example, small group teaching under actual clinical conditions in veterinary teaching hospitals.

4.26 A submission by the Royal College of Veterinary Surgeons (RCVS - UK) suggests there is “mounting evidence that most of the Australian schools are underfunded”. The RCVS submission also provided details of its criteria for the accreditation of degree courses in the UK, which include indicators on the level of staffing and resources that are considered essential. The RCVS advised that the Australian schools will need to be able to satisfy these requirements for the qualifications they confer to continue to be recognised in the UK.

4.27 In the United Kingdom, the various veterinary schools receive direct funding from the Higher Education Funding Council, at the rate of around A\$36,000 per student in 2002. Taking this as the benchmark, the Deans propose that the Commonwealth – perhaps in co-operation with the States and industry – should fund at this rate of \$36,000 per student a year a “core number of places” at the four Veterinary Schools to ensure that the animal health system has an appropriate number of veterinarians for the future. They suggest that this level of funding is necessary to ensure that the Schools continue to meet accreditation requirements by key international authorities, particularly the RCVS, the American Veterinary Medical Association (USA & Canada) and the European Veterinary Council.

4.28 Other submissions refer to the apparently precarious state of funding of at least some of the Veterinary Schools. The AVA in its submission suggests that some Vice-Chancellors “appear” to be considering the “removal of the veterinary school from their university because the veterinary course is relatively more expensive to conduct than are other courses.” The submission from the Queensland School states directly that the level of funding it receives “is insufficient to support the operations of the School.” According to the Dean of the Sydney School, there has been a “dramatic decrease in Federal Government. . . funding for veterinary

education within the University of Sydney [over the past decade from] around \$7.5 million in 1991 to \$4.7 million in 2000.”

4.29 The Issues Paper on Financing Australian Higher Education prepared for the Review of Higher Education states that the operating grant per fully funded student place fell in constant prices from \$12862 in 1983 to \$11597 in 1991 and then rose to \$12150 in 1998, some 6% below the level of 1983.

4.30 The Deans claim that despite veterinary science being in the highest “cluster” for Commonwealth funding under the Relative Funding Model (along with medicine and dentistry), “the dollar value of funding cluster for veterinary science is several times less than the cost per student required to teach veterinary students”. As funding per student in universities has decreased, the ability of universities to provide extra funding per veterinary student has concomitantly decreased.

4.31 It is beyond both the scope and competence of this Review to undertake a detailed examination and consideration of higher education funding issues. These issues were considered in the context of a wide ranging Commonwealth Government review of the higher education sector – *Higher Education at the Crossroads* – which is presently being considered by the Government. Accordingly a copy of the Deans’ submission was forwarded to the Crossroads Review so that it could take into account these issues relating specifically to the funding of veterinary science in formulating its report to Government.

4.32 Nevertheless, to the extent that the resourcing of the Veterinary Schools bears on the overall effectiveness and/or credibility of the animal health system, this Review obviously has a legitimate interest in the matter. Three issues of concern suggest themselves:

- The failure of one or other of the Schools to meet international accreditation standards would undoubtedly undermine the confidence of key markets for Australian livestock products in the capability of Australia’s animal health system, in view of increasingly rigorous, evidence-based certification requirements.
- The closure of one or other of the Schools would potentially result in a decline in the number of qualified veterinarians and/or could reduce overall expertise in production animal health unless and until the other Schools responded by increasing enrolments or a new school was established.
- Resourcing imperatives might result in the Schools placing ever greater emphasis on companion animal health at the expense of production animal health.

4.33 Under the Relative Funding Model described above, for each full time undergraduate Veterinary Science HECS place, the universities would receive an annual sum of the order of \$20,000 built into their Commonwealth block grants. The portion of that amount allocated to an individual Veterinary School is determined according to the internal processes of the particular university, which typically take into account the provision of common services (such as library and building services) and other “corporate” charges (such as insurances and superannuation). The proportion of income from full fee paying students that is retained by each of the Schools is also variable. The final factor in the funding mix is net income derived from more “entrepreneurial” activities, such as clinics and consultancies.

4.34 As the following table shows, the financial circumstances of each of the Veterinary Schools vary quite considerably.

Table 4.2 Resourcing – Australian Veterinary Schools

School	Income \$ million					\$s/HECS student ^a
	Block	Fees	Clinic	Other	Total	
Queensland	3.21a 1.28b	0.52	3.37	1.05	9.43	7270
Sydney	2.92a 2.18b	3.4	5.2	5.2d	18.7	7900
Murdoch	3.52a 1.12b	1.22	4.14	3.4	13.43	12701
Melbourne	2.22a 2.06b	1.92	6.19	1.92c 5.00d 0.24e	19.55	11090

- a Allocated by individual university from Commonwealth block funding
- b Research training, Institutional Grants Scheme, Research Infrastructure Block Grant
- c Consultancy and contract income
- d Competitive research funding
- e Interest on bequests

4.35 There appears to be no imminent danger that any of the Schools will fail to meet international accreditation standards. Three of the Schools have been through the Australian accreditation process in recent years, which substantially aligns with the requirements of comparable countries. The Murdoch School is presently seeking direct accreditation by the American Veterinary Medical Association, which is indicative of a high standard at that School. Furthermore, the anecdotal evidence is that graduates of the Australian Schools are generally held in high regard and have little trouble in gaining employment in the profession when travelling overseas.

4.36 That situation could change, of course, should any of the Schools experience chronic under-resourcing for any protracted period, leading to diminished teaching standards and clinical experience for students. Obviously, the School at most risk in this respect is Queensland which, as noted above, claims that its current level of funding is insufficient to support its operations. Without being privy to all the facts, this claim appears to have considerable substance: despite being one of the two larger Schools in terms of student numbers, the School's gross income is about half that of the other Schools. The Review considers that the disparity in funding between Schools and the particular circumstances of the Queensland School require further investigation.

Student gender

4.37 The veterinary science courses, at both undergraduate and postgraduate levels, have become increasingly “feminised” as the following table shows.

Table 4.3 Gender of Veterinary Students

Year	Undergraduate					Postgraduate				
	Male	%	Female	%	Total	Male	%	Female	%	Total
1989	566	45	692	55	1258	96	63	56	37	152
1992	563	42	775	58	1338	124	56	96	44	220
1997	419	33	850	67	1269	137	51	130	49	267
2001	377	27	1031	73	1408	99	43	130	57	229

Similar trends are occurring overseas: for example, in the US, women make up over 70% of the veterinary science student population.

4.38 There is a belief that this feminisation of the profession is a factor in the perceived decline in the availability of veterinary services for the livestock industries. It has been proposed that a quota system be introduced for entry into veterinary science to redress the gender imbalance. Another suggestion is that young males be “encouraged” to undertake veterinary science.

4.39 The increasing engagement of women in education, in the economy and broader society is simply an irreversible phenomenon of contemporary society. Along with that, it needs to be acknowledged that the attitudes and values of men today – with respect for example to child rearing and caring responsibilities – are markedly different from those of a generation ago. This also has an impact on the business organisation and practices of the profession.

4.40 There is no suggestion at all that women are any less capable than men in dealing with production animals. Nevertheless, it is apparent that, for a complex range of reasons, women veterinarians generally have different career aspirations than their male counterparts. For family reasons, for example, some women may be less likely to aspire to own their own practice and many are likely to want “time out” from the profession and/or want only part time work. .

4.41 In the absence of a detailed study, it is not possible to make a definitive statement as to the causes of this growing imbalance. Intuitively, it would appear to be a combination of factors, such as:

- a more pronounced disposition on the part of females towards so-called “caring” professions;
- a loss of interest in the veterinary profession by suitably qualified young males as they turn their sights to ultimate employment in more highly paid professions (such as those in information technology, business and the law); and,
- the now widely recognised systemic problem of under achievement in secondary education by young males, with proportionally fewer males achieving the academic level required to be competitive for entry into veterinary science.

4.42 Whatever the reasons, the emerging majority of females has implications in terms of the profession’s work practices and business organisation, as discussed in Chapter 5 of this report.

Student origins – town or country?

4.43 It is often asserted that students of rural origin are more likely to take up rural mixed practice after graduation – that is, they will “return home” – and that students of rural origin are under represented in veterinary science. Proponents of these views suggest various measures to improve the representation in veterinary science courses of students of rural origin, such as:

- introduction of a quota system with a lower entry score;
- use of interviews to ascertain motivation and commitment; and/or
- bonded scholarships, both to reduce the financial burden on students living away from home and to require the recipients to spend a period commensurate with the period of the scholarship - most probably 5 years - in defined rural areas following graduation.

4.44 As discussed above (paragraph 4.10), the overall proportion of such students does not appear to be markedly different from their representation within the general population. Analysis of postcode data on residential addresses of first year veterinary science students indicates that nationally by 27% of these students come from rural areas.

4.45 Professor Heath’s work (see Chapter 5) actually shows that while graduates with a production animal farm background are much more likely to begin their career in rural mixed practice, by and large, the *attrition rate* of veterinarians in rural mixed practice is fairly consistent, regardless of background. That is, veterinarians with a rural background are not much more likely to stay in rural mixed practice over the long term than their urban counterparts. In a longitudinal study of two cohorts who graduated in 1989 and 1990, Heath found that overall 60% started in mixed practice, 26% were still there 5 years later and by 10 years only 18% remained in mixed practice. However, 83% of those who had spent more than 2 years on farms started in rural practice, compared with 55% of those with less or no farm experience. By the fifth year, 44% of those from farms and 25% of the others were still in mixed practice and by year 10 the proportions were 28% and 14% respectively. That is, even for those veterinarians with a farm background and prior production animal experience, nearly three quarters will be working in other than rural mixed practice 10 years from graduation.

4.46 It has been proposed to the Review that given that the proportion of graduates with a farm background remaining in rural mixed practice after ten years is twice that of graduates of other backgrounds (including rural non-farm), some type of preference for entry to veterinary science courses should be given to applicants with such a background. However, any such scheme would not add substantially to the population of veterinarians in rural mixed practice. If presently 10% of veterinary science graduates were of a farm background and this was doubled to 20%¹, some 10 years after graduation of the first veterinarians under this scheme (say, 2019), all things being constant, there would be a net addition to rural mixed practice of six veterinarians from that graduation class (and about another 65 in the “pipeline” from subsequent graduation classes). By contrast, using Heath’s figures and on the current rate of growth of the profession, if the proportion of veterinarians in mixed practice remained constant (at around 20% of veterinarians overall), in 2007 there would be a net addition of some 200 veterinarians to mixed practice. If the proportion declined by one percentage point the net addition would be 136 veterinarians. If the proportion increased by half a percentage point, the net addition to rural mixed practice would be about 250 veterinarians. In the decade to 2001, the proportion of rural veterinarians declined from 42% to 39% of the total population of active veterinarians (see Table 5.5 page 56), and it is assumed that most, if not all, of the decline was in

¹ At the 2001 Census, there were just 60,000 children under 15 living on farms with production animals out of a total population of 4 million children – that is, farm children comprise about 2% of the relevant population.

rural mixed practice. Given this, the most effective approach would be to seek to at least maintain the current rate of retention of veterinarians in rural mixed practice, if not improve it.

The structure and content of veterinary science courses

4.47 A recurring theme through the course of the Review's consultations and in the submissions it has received is the need to restructure veterinary science courses to make them "more relevant" to the needs of livestock industries and to provide graduates with the basic management, marketing and interpersonal skills necessary for the successful conduct of a small professional service business.

4.48 Many of the proponents of this line of argument state that there is an increasing emphasis on companion animal veterinary medicine and a corresponding decrease in emphasis on production animal health matters. The AVA itself says that current veterinary curricula have a small animal practitioner bias:

This is due to fees and HECS, demand for graduates, expanding knowledge in companion animal medicine and surgery and the desire of students to be competent small animal practitioners. . . The small animal bias detracts from the study of veterinary science as a discipline and locks future graduates into increasingly narrow career paths. There appears to be less emphasis on genetics, epidemiology, economics or farm management.

4.49 There is a common view among rural veterinarians, their Association and producer representatives that graduating veterinarians lack sufficient experience in the handling and treatment of large production animals and exposure to rural environments, with the result that they are neither confident nor comfortable in rural settings. More than one established rural veterinarian told the Review that recent graduates can be so unschooled in rural life as to struggle to open and shut a farm gate or put a halter on a sick animal. One submission summed up the common sentiment:

Any new graduate or recent graduate I have employed has had limitations in performing large animal work (irrespective of gender). They have all been surprisingly competent to perform small animal work.

4.50 The Review acknowledges that all the Veterinary Schools maintain a curriculum that covers herd health, large animal and small animal health, as required by accreditation authorities. Students also have exposure to a rural practice environment through extra-mural activities. The curriculum of each of the Schools does require students gain practical experience on farms and in rural practices during vacation periods, although the specific requirement in terms of time varies considerably from School to School.

4.51 A number of submissions to the Review, including that of the AVA, propose that a greater range of electives be introduced which would allow undergraduates interested in rural careers to graduate with "the competencies required in mixed practice and expose them to the better rural practices."

4.52 A more radical proposal is that, in the final two years or so of veterinary science, students be streamed into areas of "specialisation", such as production animal practice, which would extend beyond animal health per se and into broader areas of herd management and whole-of-farm management. Under such a scheme, students with other interests may take streams effectively specialising in companion animal health, epidemiology, pathology and so on.

4.53 This latter course is opposed by the Veterinary Schools, the regulating and accrediting authorities and professional bodies such as the AVA, on fundamental and practical grounds. The fact is, as this Review has heard time and again during the course of its consultations, most rural mixed practices have a substantial companion animal component, with the economics of many such practices being underpinned by that component. It is therefore important that rural practitioners be competent in companion animal health and treatment. It should also be noted that streaming would be at odds with the prevailing philosophy in comparable jurisdictions – such as the UK and USA – and might therefore put at risk existing mutual recognition arrangements.

4.54 The Review recognises there is considerable international value attached to the arrangement that veterinary undergraduate courses in Australia be regularly reviewed and accredited. There is a danger, however, that satisfying these international accreditation requirements could be at the expense of training undergraduates in the treatment of production animals under Australian conditions.

4.55 While introducing a broader range of electives into veterinary science to provide a wider range of skills and understanding of contemporary approaches would have some obvious benefits, there are practical limitations, including the high emphasis the Veterinary Schools must place on “core” veterinary science subjects and clinical training in order for them to meet accepted accreditation standards. It must be recognised that many younger producers have themselves gained quite specialist qualifications in agricultural science and animal husbandry disciplines and arguably do not need such a service from veterinarians. There are also a relatively small number of multi-disciplinary “one-stop shop” agricultural consultancies – which may include veterinarians, agricultural scientists, agronomists and so on – which would limit the entry opportunities for people whose principal expertise is in veterinary science. Furthermore, veterinarians also work in many biomedical and biotechnological industries where the combination of biological science and applied clinical training is an ideal preparation. Finally, it is likely to be the case that the principal motivation for most young people in pursuing veterinary science in the first place is their interest in the science and in the practice of animal medicine.

Post graduation qualification

4.56 A notion that is gaining currency in both the United Kingdom and the USA is that of a post-graduation “professional training phase” (UK) or “internship” year (USA). Under the UK proposal, following graduation, there would be a further supervised period of professional training in practice, usually of not less than a year, leading to the issue of a licence to practice within a broad, named area (e.g. companion animals, production animals, mixed practice, food safety and public health). This training phase would be undertaken within a practice or other institution that is itself registered for that area of work. Satisfactory completion of professional training, and the issue of the licence to practise, would depend on whether the individual had acquired the necessary further experience in practise and could produce evidence of further development across a range of professional skills. Those who wished to change direction and work in areas other than that covered by their initial licence would need to undergo conversion training leading to a revised licence to practise.

4.57 Professor Lonnie King, Dean of the Michigan State University Veterinary School, advised during his visit to Australia in August that a similar type of scheme is being considered by US accreditation authorities.

4.58 The introduction of a post-graduation training phase would meet many of the objections expressed as to specialised streaming within the undergraduate course. A Bachelor of Veterinary Science would graduate with the traditional grounding in veterinary science itself and with a basic “all species competency” and then undertake training in a specialised stream, post-graduation, as a precursor to full professional registration. This is not dissimilar to the final training pathway leading to registration as a medical practitioner.

4.59 Under the proposed UK model, the professional training phase (PTP) would be undertaken in a “registered practice” that has the ability and willingness to operate as a training practice. The burden of the cost of the additional phase would fall on the new graduate and in Australia, this could undermine acceptance of the scheme. It is known many graduates are already unhappy about current commencement salaries and the addition of another year with a small or no salary, because it would be an intern year, could well make it unacceptable.

4.60 A number of submissions by rural mixed practitioners referred to a fundamental problem being their ability to retain *experienced* veterinarians. A commonly expressed sentiment was that just as a recent graduate attained appropriate levels of skill and experience to be fully effective – said to take up to two years – that person would leave, rarely to return to rural mixed practice. It also appears that, perhaps in recognition of the need for a new graduate to gain practical experience in the field, the starting salaries of newly graduated are not high relative to broadly comparable professions (e.g. medicine and dentistry), particularly in rural areas.

4.61 On the other hand, the Review was advised during consultations that a cause of disaffection among many young veterinarians, whose initial professional experience was in rural mixed practice, was the lack of support and guidance provided by practice principals. To take the example above of the farm gate and extending it to other practical matters, such as preparing a cow for a caesarean section, it does not seem unreasonable – indeed, it would seem necessary – for a recent graduate to receive extra support, guidance and supervision in the early stages of their professional practice. On the basis of advice given to the Review, it does not always occur.

4.62 The introduction of a structured PTP would help address such issues and in that respect, therefore, it could be seen as a positive enhancement of rural veterinary services. But in isolation, without supporting measures, it could also serve as a substantial disincentive to young graduates entering rural mixed practice in the first place, by either requiring them to undertake a longer period of post graduation training to register as a “mixed practitioner” (compared to a “companion animal practitioner”) or limiting their opportunity to change stream, without undertaking, at some personal and professional cost, “conversion” training.

Alternative entry pathways

4.63 An alternative approach is to look more closely at the entry pathway into veterinary science rather than the pathway to professional registration. As noted earlier, 80% of entrants into the Melbourne Veterinary School are selected following completion of the first year of a Bachelor of Science. At the other Schools, an increasing proportion of entrants have undertaken or completed other tertiary studies. It has been suggested that formally adopting the Melbourne entry model, whereby nearly all entrants have completed a “pre-vet” year, may improve the chances of students of rural origin, who it is said have less opportunities in the later years of secondary school and are disadvantaged vis-à-vis urban students. Should the dramatically declining proportion of males gaining entry into veterinary science be a factor of systemic failure, then a revised entry pathway as suggested might also help to correct the balance.

4.64 Nevertheless, the analysis above (paragraphs 4.43 – 4.46) indicates that simply selecting more students of rural origin – or rural farm males, as some respondents to this Review have suggested - is not of itself likely to substantially improve the retention in the bush of experienced veterinarians with a production animal focus.

4.65 One approach would be to reserve a proportion of places in veterinary science for – or otherwise give some preference to - graduates in related disciplines, specifically, any of the agricultural and animal sciences. Almost by definition, graduates of such disciplines are likely to have a career focus on the agricultural sector and many will be of rural and farm origin, with real intentions of returning to their home communities. In addition, it would provide a stock of rural veterinarians with the “whole of farm” qualifications often suggested as being necessary for the long term viability of rural mixed practices.

4.66 A more radical approach, approximating that of medicine in Australia and veterinary science education in the USA, would be to have veterinary science as the latter half of a double degree in a related science-based discipline.

4.67 There would be some implementation issues relating, for example, to the application of HECS and eligibility for income support for what would be strictly a second degree. However these issues have been addressed in relation to the current structure of medical degrees and a similar approach could be adopted.

A New rural-based veterinary school?

4.68 It has been suggested to the Review that because the four Australian Veterinary Schools are based in the capital cities, they have an “urban bias”, expressed in terms of a lessening emphasis on production animal health and management. As discussed earlier in this Chapter, course structures are designed both to meet national and international accreditation requirements and overall market needs. The requirement of accrediting authorities is to have at graduation a generalist practitioner capable of dealing with fundamental animal health matters across all species. In terms of market needs, quite clearly the bread and butter work of most practices, including most rural mixed practices, concerns companion animal health. Indeed, the argument can actually be turned around. Members of the longitudinal study conducted by Heath observed that “they had as many lectures on poultry as cats...despite the fact that very few if any would work with poultry at least initially, whereas virtually all of them would be treating cats from the outset”.

4.69 In its submission to the Review, Charles Sturt University (CSU) argues that:

*The current system of locating the education and training of veterinarians in the capital cities is not working for rural Australia...Evidence suggest that the best prospects for a solution to the problem (the perceived maldistribution of veterinarians) are through a “**train in the country for the country**” approach.*

4.70 The data provided by CSU shows that in the cases of some disciplines, a majority of CSU graduates are employed in regional areas. But this is also the case with newly graduated veterinarians, with up to 60% gaining their initial employment in rural mixed practices. What is relevant to this Review is where the graduates are 5 and 10 years out from graduation and specifically their field of practice. In the case of veterinarians it is largely somewhere other than rural mixed practice.

4.71 Nevertheless, it is evidently the case that the formative adult life experience of all veterinary science graduates, whatever their origins, is essentially an urban one: it is in urban settings that they have lived, studied, played and socialised for a period of 5 years or more. By

the end of their veterinary training, the city is where their social networks are established, as well as, for many, their personal relationships. These formative adult years are likely to shape to a greater or lesser degree the future aspirations and expectations of new veterinarians, and are therefore a factor informing their career directions and choices - among, of course, a range of other factors.

4.72 Undoubtedly, grounding this experience in a “country” setting such as at CSU could well serve to create a positive disposition towards a “country” lifestyle on the part of its graduates.

4.73 But a “positive disposition” to rural life is only one facet of the matter. While Heath’s surveys show that for some people issues such as social isolation, limited employment opportunities for spouses and limited education options for children cause them to leave rural mixed practice, for many others, particularly those with a rural background, it is not rural lifestyle as such but the particular lifestyle of a veterinarian in rural mixed practice that underlies a disaffection with such practice. Most of the submissions to the Review from rural veterinarians would summarise their lifestyle thus: “overworked, overstressed, underpaid, undervalued”. Many expressed regret at finding themselves “forced” to leave rural mixed practice, thus:

I am one of those vets from a fourth generation farming family who has spent the majority of their careers in rural practice and would still love to be in rural practice. It is more acceptable to my wife and myself and we would love to live in the country. But we live and work in (a regional city) now....So I am treating pets now because people can and will pay what it costs to treat them.

4.74 The Review has concluded that unless and until rural practices are in a financial position to offer better pay and more attractive conditions in terms of family friendly hours, occupational health and safety, training opportunities and professional satisfaction, they will continue to have difficulty competing with city practices – and rural companion animal practices - for the services of veterinarians, no matter where they are trained.

4.75 If Australia’s existing Veterinary Schools were not training a sufficient number of veterinarians to meet current and foreseeable needs, the establishment of a new Veterinary School at a rural university campus might well be an attractive option. However, Australia already has higher numbers of veterinarians per head of population than Canada, the United States and the United Kingdom. Australia also trains more new veterinarians each year per unit of population than these countries.

4.76 Basically, if the need is to keep experienced mixed practice veterinarians in rural areas – and on all the evidence, this is the need – there are more direct, certain and less costly means than establishing a new Veterinary School.

4.77 It would seem to this Review that the best approach for CSU would be to build on its undoubted strengths in animal and agricultural sciences by:

- providing courses directed to better addressing the needs of producers in terms of animal production systems; and
- providing specialised post graduation “short courses” in animal production systems directed specifically at veterinary science graduates.

4.78 CSU does have excellent farm infrastructure and other facilities. It may be well worth exploring the possibility of CSU forming an association with an existing Veterinary School to provide the students of that School with all or some part of their training in production animal health.

Summary

4.79 While there appears to be no imminent danger that any of the Veterinary Schools will fail to meet international accreditation standards because of lack of resources, anomalies in the level of funding internally allocated to the Veterinary Schools by their universities warrant further investigation.

4.80 The emerging majority of female veterinary graduates has implications in terms of the profession's work practices and business organisation (as discussed in Chapter 5 of this Report).

4.81 Within the requirements of international accreditation, Veterinary Schools should be aware of the continuing need to produce graduates with both theoretical and practical skills relevant to work with production animals and animal production enterprises.

4.82 There is a need for more post graduation training opportunities for veterinarians in areas related to animal production, including formal or informal courses or "internship" type practical training opportunities.

4.83 Selecting more students of rural origin, or rural farm males, is not of itself likely to substantially improve the retention in the bush of experienced veterinarians with a production animal focus. A better approach appears to be to encourage graduates in related disciplines, specifically, any of the agricultural and animal sciences, to undertake veterinary science as they are likely to have a career focus on the agricultural sector and many will be of rural and farm origin, with real intentions of returning to their home areas.

4.84 As discussed in Chapter 5, Australia does not have an overall shortage of veterinarians and is training sufficient numbers to meet demand. There are more direct and less costly means of maintaining the overall numbers of experienced mixed practice veterinarians in rural areas than establishing new veterinary schools in regional centres. A better approach may be for regional Universities such as Charles Sturt to take advantage of their existing infrastructure and expertise by forming an association with an existing Veterinary School to provide the students of that School with all or some part of their training in production animal health.

Chapter Five

Private Rural Veterinary Practice

Overview of private veterinary practice in Australia¹

Registration requirements

5.1 To work as a veterinary surgeon in Australia, a person must register with the State or Territory Veterinary Surgeons Board (VSB) or its equivalent in the State or Territory in which they propose to practise. To be eligible to apply for registration, the legislation in each State or Territory either lists the institutions or states “a course accredited by the Board”.

5.2 Accordingly a person must have successfully completed a veterinary science degree from either a Veterinary School accredited by Veterinary Schools Accreditation Advisory Committee (VSAAC - Standing Committee of the Australasian Veterinary Boards Council Inc.), Royal College of Veterinary Surgeons (RCVS) or the American Veterinary Medical Association Council of Education (AVMA COE).

5.3 Each State and Territory VSB is formed by legislation exclusive to that jurisdiction. The legislation broadly provides for the protection of the public from incompetent and unqualified operators by providing the requirements for registration, complaint handling mechanisms and disciplinary mechanisms. Although similarities exist, there are variances in the requirements for registration, complaint handling and discipline processes between States and Territories.

5.4 Co-operation through the Australasian Veterinary Boards Council Inc. (AVBC - comprising each State, Territory and New Zealand) has seen the development of uniformity in the requirements for recognition of qualifications and registration. A national registration scheme, to facilitate the easy movement of veterinarians between the various Australian jurisdictions, has been considered a number of times in recent years and a report was provided to AVBC in January 2002. It identified a number of hurdles to such a scheme and proposed an alternative model based on “secondary registration” fees (see 5.9 below).

5.5 The Veterinary Schools Advisory Accreditation Committee undertakes accreditation visits to the Veterinary Schools in Australia and New Zealand to report to the registration authorities on the quality of veterinary education and provide a report and recommendation as to whether the veterinary graduates of the School being reviewed should continue to be eligible for automatic registration.

5.6 The source of suitably qualified and competent veterinary professionals is either from local graduates or overseas trained veterinary surgeons. Veterinary surgeons trained at Veterinary Schools that have not undergone an accreditation process by a recognised accrediting body (AVBC, RCVS or AVMA) are required to successfully complete all stages of the National

¹ Most of the published research on the veterinary science profession in Australia has been undertaken by Emeritus Professor Trevor Heath who has studied trends in veterinary graduate numbers and career paths for over three decades. The Review has relied heavily on the Professor Heath's work and gratefully acknowledges his permission to draw on his work without citation of individual publications.

Veterinary Examination (NVE) to be eligible to apply for full registration (and obtain a skill assessment for the purpose of migration post 1999).

5.7 The aim is to provide a rigorous process that satisfies the registration authorities that a candidate is competent in Australian conditions, cognisant of Australian diseases, legislation and reporting requirements of exotic diseases.

Registration fees

5.8 The current system requires a veterinarian to register in each State/Territory where they intend to practise. Registration fees range from \$375 in NSW, with an annual renewal fee of \$260, to \$116.20 in Queensland, with an annual renewal fee of \$81.10.

5.9 The AVBC has recommended that all jurisdictions consider introducing “home state” registration with a primary registration for the jurisdiction in which a veterinarian normally resides and practises and a discounted fee for secondary registration in other jurisdictions. To date, Queensland, South Australia, Western Australia and Victoria have adopted such schemes, with secondary registration being around 50% of the fee for primary registration. A report to the AVBC in January 2002 suggested that such a uniform application of secondary registration across all jurisdictions is a practical alternative to a national registration scheme.

Table 5.1: Registration Fees May 2002

	NSW	VIC	QLD	SA	WA	TAS	ACT	NT
Primary Registration Application	\$115 + 260 Roll Fee	298	\$35.10 + Primary Renewal Fee	\$50+ Primary Renewal Fee	\$50+ Primary Renewal	\$183	\$150	\$150
Secondary Registration Application	N/A	N/A	\$17.55 + Secondary Renewal Fee	\$50+ Secondary Renewal Fee	\$50+ Secondary Renewal Fee	N/A	N/A	N/A
Annual Renewal	\$260	\$204	\$81.10	\$175	\$235	\$100.80	\$150	\$100
Secondary Renewal	N/A	N/A	\$40.55	\$95	\$100	N/A	N/A	N/A

5.10 The Review considers this lack of a uniform national registration system and the existence of variable costs of registration between States is holding back movement of veterinarians between States and the ability of the profession to address short and long term vacancies.

Numbers of Veterinarians

5.11 The Rolls of the Veterinary Surgeons Boards contained the names of 8294 veterinarians in 2001. Professor Heath’s analysis indicates that of this number registered, some 6358 veterinarians were resident in a particular State/Territory and engaged in some veterinary activity. The remaining 1936 registered veterinarians were either retired, veterinarians pursuing other activities who maintained their registration, veterinarians

whose primary place of practice was another State/Territory or veterinarians who were currently resident overseas.

Table 5.2: Registration by State/Territory 2001

STATE	NSW	VIC	QLD	WA	SA	TAS	NT	ACT	TOTAL
Number	2376	1912	2062	862	531	166	177	208	8294

5.12 One-third (33%) of actively practising veterinarians were in NSW, 23% in Victoria, 19% in Queensland and 13% in WA, with the remaining 12% spread over South Australia, Tasmania, Northern Territory and ACT (Table 5.3). The high proportion of registered “non-active” veterinarians in Queensland and the Northern Territory can be attributed to Queensland providing low cost secondary registration and the Northern Territory having low fees.

Table 5.3: Total Numbers of Veterinarians 2001

	Registered by State	Practising in State	% Total Practising
NSW	2376	2142	90
VIC	1912	1432	75
QLD	2062	1217	59
WA	862	799	93
SA	531	410	77
TAS	166	156	94
NT	177	70	40
ACT	208	132	63
Total	8294	6358	77

5.13 The number of registered veterinarians in 1991 was 50% greater than in 1981 and 50% greater again in 2001. The average annual net increases for the two decades 1981-1991 and 1991-2001 were virtually identical: 158 and 160 per year respectively, so that the average net increase for the 20-year period was 159 per year.

5.14 The net increase in veterinary numbers was concentrated heavily in the four States with Veterinary Schools (Table 5.4). It is notable, for example, that in 1981, a few years after Murdoch University graduated its first class, Western Australia and South Australia had similar numbers of veterinarians. In 2001, however, the number of registered veterinarians in WA was almost twice that in SA.

Table 5.4: Total Number of Registered Veterinarians 1981-2001

	1981	1991	2001	Increase 1981-2001	% increase 1981-2001	State Share of national Increase 1981-2001 - %
NSW	1204	1663	2142	938	78	29.5
VIC	672	1156	1432	760	113	23.9
QLD	662	955	1217	555	84	17.5
WA	235	386	799	564	240	17.7
SA	221	298	410	189	85	6
TAS	86	139	156	70	81	2.2
ACT	59	96	132	73	124	2.2
NT	38	64	70	32	84	1
AUSTRALIA	3177	4757	6358	3181	100	

Urban and rural areas

5.15 Analysis of registrations by postcode shows that the numbers of veterinarians in “rural Australia” has actually increased quite substantially from 1,326 to 2,476 between 1981 and 2001, that is by nearly 90%. This is below the national rate of increase, resulting in a slight decline in the proportion of rural-based registered veterinarians, from 42% to 39% of total registered veterinarians.

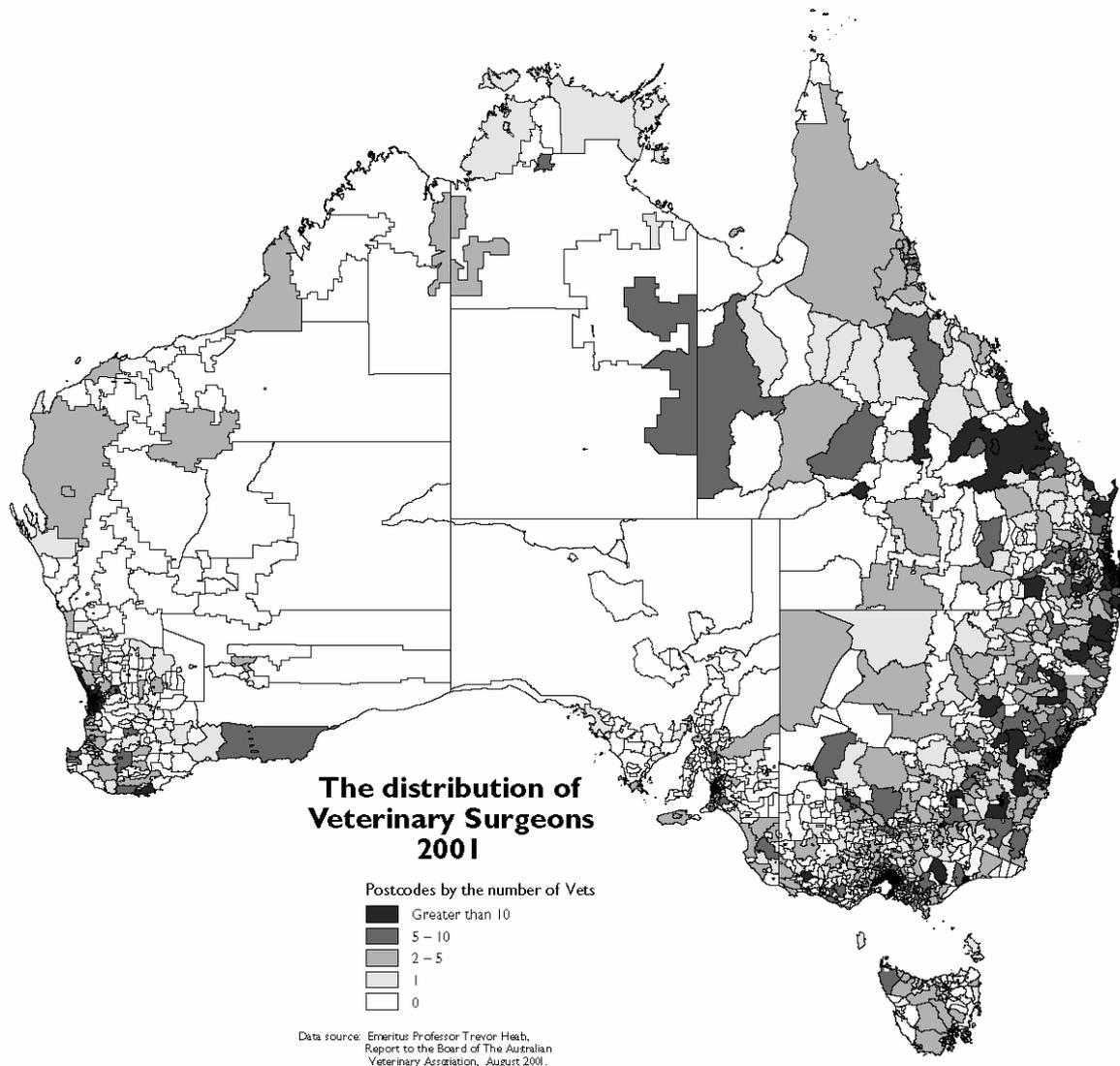
Table 5.5: Distribution of Registered Veterinarians between Urban and Rural Areas

	1981	Proportion	1991	Proportion	2001	Proportion
Cities						
Sydney	642	53	877	53	1159	54
Melbourne	362	54	623	54	781	55
Brisbane	346	52	505	53	678	56
Perth	153	65	226	59	563	70
Adelaide	150	68	223	75	310	76
Hobart	19	22	31	22	46	29
Darwin	22	58	44	69	46	66
Canberra	59	***	96	***	132	***
Regional Centres (1)	98	***	119	***	170	***
Total Cities	1851	58%	2744	58%	3885	61%
Rural						
NSW	525	44	739	44	902	42
Vic	310	46	533	46	651	45
Qld	266	40	384	40	459	38
WA	82	35	160	41	236	30
SA	71	32	75	25	100	24
Tas	67	72	108	78	110	71
NT	5	13	14	23	15	21
Total Rural	1326	42%	2013	42%	2473	39%
AUSTRALIA	3177	100	4757	100	6358	100

(1) Values for Newcastle, Townsville, Cairns and Alice Springs have been separated out from figures for the rural areas on the grounds that the vast majority of their veterinary services are directed at the residents of the cities and not the surrounding area.

5.16 The weight of the increase was greater in the more closely settled areas than those with lower population densities. In NSW, for example, the number of registered veterinarians in coastal areas increased by 45% over the period 1991-2001, while the increase in areas beyond the ranges was only 13%. Nevertheless, it is notable that between 1991-2001, the number of registered veterinarians in inland rural NSW increased by 53% (from 366 to 590).

The Distribution of Veterinary Surgeons 2001



5.17 When the number of veterinarians in each postcode centre in 2001 is compared with that in 1991, it is found that 13% had fewer, 40% had the same number and 47% had more veterinarians than 10 years previously. In similar vein, 81% of the centres had more veterinarians than in 1981, 12% had the same number and 7% had fewer veterinarians than 20 years previously. For the most part then, almost all of these rural centres had either the same number or more veterinarians compared with 10 and 20 years ago.

5.18 Another key factor is the migration of recent graduates through mixed practice on their way to other career paths. Although one-half to two-thirds of graduates find their first veterinary job in rural mixed practice, most of them leave over the next five years and do not return. For example, a longitudinal study of two cohorts who graduated in 1989 and 1990, showed that of the 60% that started in mixed practice, 26% were still there five years later and 10 years later only 18% remained in mixed practice. Similar results were found for two cohorts who had graduated five years earlier. It is extremely difficult for practice principals to recruit and retain associates, especially those with experience.

Gender

5.19 Of the average net increase of 159 registered and practising veterinarians a year, 100 (63%) were female. Accordingly, the percentage of females listed on the rolls increased from 15% to 39% between 1981 and 2001.

Table 5.6: Number of Female Veterinarians 1981 – 2001

	1981	1991	2001	Increase 1981-2001 (%)	Female Share of National Increase 1981-2001 (%)
NSW	201	594	811	400	64
VIC	85	323	560	658	63
QLD	84	223	403	480	57
WA	30	107	385	1280	64
SA	33	84	164	497	69
TAS	10	37	50	500	57
ACT	19	37	56	195	51
NT	5	20	39	780	106
TOTAL	467	1425	2468	528	63

5.20 Although the percentage of females in veterinary graduating classes between 1981 and 2001 was less than 63%, this figure also reflects males retiring from the existing, male-dominated veterinary population. On current undergraduate population and registration trends, it is estimated that women veterinarians will outnumber men in the profession by 2004/2005.

5.21 The number of females in rural areas increased from 153 to 504 - 35 a year - between 1981 and 1991, and to 866 (36 per year) by 2001. However, the number of males increased from 1178 to 1510 (33 per year) in 1981-1991, but to only 1610 (10/year) over the next decade. Thus women comprised 78% of the increase in rural veterinarians over the past decade.

5.22 Reasons for the decline in the net increase in males include the decrease in the number of male veterinary graduates over recent decades (males now constitute 30% or less of graduating classes); and the retirement of male practitioners, who have traditionally predominated in rural practices (88% of veterinarians registered in rural areas in 1981 were male).

5.23 On average there is no difference in the time males and females stay in the job. For example, Heath's survey of rural practices found that although 21% of principals reported that male associates stayed longer than females, the remainder reported either that females stayed longer (10%) or that there was no difference between genders. For the 830 recent graduates reported on in the survey, this was an average of 1.9 years. In the longitudinal survey mentioned above, equal numbers of males and females graduated, but 20% of the females and 15% of the males were still in mixed practice ten years after they graduated.

5.24 Although they stay in a job for a similar time to males, female veterinarians are less likely than males to continue to work full time. In the longitudinal survey, 73% of the males but 48% of the females were working full time after 10 years; 37% of the females but 16% of the males were working part-time and the rest were not doing any veterinary work at all. A number of principals commented that female veterinarians who had worked for them were reluctant to be on call after hours. Furthermore, the provision of maternity leave can cause additional difficulties for practice principals, especially given the difficulties in recruiting associates.

Veterinary practices

5.24 ABS data indicate that there were 1,792 veterinary practices operating from 2,325 locations in Australia in 2000. Of these 1,153 were in metropolitan areas and 1,172 outside metropolitan areas. Total income for veterinary services in 2000 was \$865m as follows:

- \$714m (83%) companion animals
- \$83m (9.6%) farm production animals
- \$30m (3.5%) racehorse breeding
- \$29m (3.3%) horse and dog racing industries.

Profitability is about 17% for practices of 3 plus and 12.7 % for practices of 2 or less.

5.25 A “Vet Lifestyle Survey – 2000”, commissioned by the Australian Veterinary Association, reported the following average levels of remuneration (gross annual) for veterinarians practising on a full time basis (40 hours or more per week):

- All respondents \$61,000
- All males \$72,000
- All females \$43,000
- Country employees \$46,000 (males)/\$38,000 (females)
- City employees \$54,000 (males)/\$43,000 (females)
- Country owners \$74,000 (males)/\$42,000 (females)
- City owners \$88,000 (males)/\$57,000 (females).

5.26 Limited benchmarking studies² in the veterinary profession indicate that profit levels in non-metropolitan practices are lower than those in city and suburban areas (around \$110,00 per practice principal compared to about \$160,000 per practice principal). Some of the key structural differences between the two groups included:

- practices in non-metropolitan areas have more principals and fewer employees;
- average employee costs (salary plus on-costs) in non-metropolitan practices are about \$7,000 less than in metropolitan;
- work patterns are substantially different, with principals in non-metropolitan practices working on average 7 extra hours per week (about an extra day per week). Principals and employees in non-metropolitan practice are also on-call a far greater number of hours per week;

² The 2001 Australian Veterinary Practice Performance Survey – Report to Participants, by The FMRC Benchmarking Team Pty Ltd

- non-metropolitan practices earn a higher total revenue per active client, but on average have 50% fewer active clients;
- the non-metropolitan practices appear to achieve lower efficiencies in capital usage;
- since non-metropolitan practices have relatively more principals, assets per principal are half those in metropolitan practices;
- asset turnover (income divided by assets minus loans to principals) is also lower; and,
- non-metropolitan practices invoice out about 60% of their total revenue compared to metro practices, which receive 90% of their revenue on day of service.

5.27 The benchmarking study concluded that the characteristics of the most profitable veterinary practices include:

- more people in the practice, but relatively fewer principals;
- each person generating more fees (ie more billable hours); and,
- lower practice costs.

5.29 The Review is not surprised that, despite long work hours, rural practices produce lower returns on capital and are less profitable. They tend to be smaller, with fewer employees per principal, they generate lower incomes from fees for services and have higher practice costs.

Discussion of Issues Raised in Submissions and Consultations

5.30 Because the Review focuses on rural veterinary services, most of the consultations and submissions concentrate on problems faced by veterinarians in rural and remote areas. The submissions and consultations consistently made the following kinds of assertions about rural veterinary practice.

- 1) It is difficult to maintain a viable rural practice because it is difficult to cover the costs of practice (especially after hours call outs and travel time) with the charges that clients with production animals are willing to pay for services.
- 2) The necessity of being on call 24 hours a day is exhausting for veterinarians in small practices and because of competition there is very little coordination between practices in rural areas.
- 3) Most practices in rural areas rely on companion animal and equine practice for the majority of income.
- 4) According to ABS data, the average age of veterinarians in rural practice is 41 – it would be expected that the average age of principals of rural practices would be higher, with many facing retirement in the next five to 10 years.
- 5) Attracting experienced veterinarians to work in rural practices is very difficult. It is even more difficult for practices where a high proportion of the work is with large production animals.
- 6) While many recent graduates come to rural practices, they tend to move on (overseas or to city practice) after a relatively short time.
- 7) Principals are concerned that there will be no one to take over their practice on their retirement.

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- 8) Producers with production animals are less willing to call on services provided by recent graduates.
 - 9) Recent graduates are seen as being inadequately prepared and lacking skills and experience in large animal work.
 - 10) Younger veterinarians are less prepared to endure the long hours, low pay and onerous (and often dangerous) work traditionally associated with large animal practice.
 - 11) There is a perception that students entering Veterinary Schools are doing so to become “animal doctors” rather than animal health experts. This is said to lead to an affinity for companion animal practice and, in some cases, an aversion to practice involving “exploitation” of production animals.
 - 12) Many suggest that selection criteria for Veterinary Schools should discriminate in favour of males from farms (even with lower academic achievement) as they are seen as more likely to fit into, and stay in, rural mixed practices.
 - 13) Veterinarians are seen by producers as treaters of individual sick animals, rather than as consultants that can increase productivity by monitoring and advising on a “whole of farm” or “herd health” basis.
 - 14) Veterinary practices in rural areas are usually too small to take on personnel and develop the skills necessary to move into and promote “whole of farm” approaches to animal health and productivity.
 - 15) There is little coordination between the activities of private veterinarians and government veterinarians in rural areas.

5.31 It is generally acknowledged that, in overall terms, there is no shortage of veterinarians in Australia. The population of veterinarians is actually increasing at three times the rate of the general population. Proportionally, Australia has more veterinarians than like developed countries by a factor of up to one third. Indeed, at the current rates of increase, it could be that an oversupply of veterinarians will emerge and in some metropolitan areas this may already have occurred.

5.32 It is clear that there is a shortage of veterinarians in specific, usually more remote and smaller, communities and temporary difficulties in other rural locations from time to time. One veterinary employment agency estimates that there are currently between 80 and 190 permanent positions available to be filled in rural mixed practices. The principal agencies reported nearly 400 vacancies in rural Australia over the course of 2001.

5.33 This does not, however, represent a “crisis”. The simple fact is that there are more veterinarians in “the bush” than ever before. Over the decade 1991 to 2001, the number of rurally based veterinarians increased by nearly a quarter and, while growth in urban areas was certainly greater, rural veterinarians as a proportion of registered veterinarians only declined from 42% to 39%. When compared to human health services, there are, in proportional terms, nearly two and a half times the numbers of veterinarians in rural and remote Australia as there are medical practitioners (39% of veterinarians *vs* 16% of registered medical practitioners).

5.34 This is not to deny that many veterinarians in rural mixed practice are, in terms of their professional practice, in some degree of distress. There is also clearly a real shortage in many rural areas of veterinarians with experience in treating production animals and the competence and confidence in dealing with them.

5.35 What the forgoing suggests, however, is that the high turnover of younger employee veterinarians in rural mixed practice, and their apparent reluctance to commit to practice ownership, indicates a succession problem for rural practice owners.

5.36 Every single submission by a rural veterinarian to this Review – and there were over 50- emphasises the extremely demanding nature of rural mixed practice itself and the accompanying lifestyle limitations of such practice. Compared to an urban small animal practice, rural mixed practice most usually involves:

- long and irregular hours;
- less pay;
- poor facilities;
- lack of professional support; and,
- substantial occupational health and safety hazards.

5.37 The point comes through time and again that committing to rural mixed practice over the longer term involves the adoption of an entire lifestyle shaped and limited by the factors listed above. It is also a fact of rural life, and the more so the smaller the community and the greater the distance from the capital cities and larger rural centres, that there is less access to a range of services and more limited recreational and social opportunities. As Heath has shown, the end result is that, while about 60% of newly graduated veterinarians have their initial professional placement in rural mixed practices, after about two years, most head to perceived greener pastures, perhaps to a period of travel and practise overseas or to an urban practice, never to return to rural mixed practice in the bush.

5.38 As one submission put it, “for most people raised in the city a rural life is as unfamiliar and threatening as life on Mars”. The majority of graduates are of city origin. But all the evidence is that graduates of rural origin, while socially and culturally acclimatised to rural life, are nevertheless increasingly less likely to accept the relatively poor remuneration and the difficult working conditions that characterise the typical rural mixed practice. As the principal of one rural practice put it, emphasised in capitals, in his submission:

If this sounds like a James Herriot lifestyle, you are right. But remember this is 2002, not the late 1930's. Today's younger generation are simply not prepared to put up with these conditions and lifestyle.

Or this observation from a now retired veterinarian with 40 years experience in rural mixed practice:

When all is said and done, I think the real reason for the decline in rural practice is a fundamental change over the last few decades in what everybody expects from life.

5.39 *Everybody* these days expects – and is entitled to expect - adequate remuneration as well as safe and relatively congenial working conditions. This applies as much to veterinarians of rural and farm origin as it does to those of city origin and to veterinarians with substantial experience of rural mixed practice as well as recent graduates. The Review received submissions from a number of veterinarians with substantial experience in rural mixed practice – 10 years and more - who are now in urban practices. The Review also met a “focus group” of former rural veterinarians to discuss their reasons for leaving mixed practice. In the case of both the submissions received and the outcomes of the focus group discussion, social and cultural reasons had marginal relevance, except in the case of educational opportunities for children, to their change in career direction. Many of these veterinarians are of rural origin and actually state

a preference for a rural lifestyle. The key factors in their change of career direction were invariably related directly to inadequate income and poor working conditions.

Rural mixed practice - a “dinosaur”?

5.40 The current model of rural mixed practice is highly fragmented and tends towards inefficiency in service delivery. As a general rule, a rural mixed practice is relatively small (1 to 3 veterinarians) and therefore has a relatively low income, reduced profitability and poor capitalisation compared to large multi-person practices. Again as a general rule, the experience in Australia and overseas is that women tend to work less hours overall and are more likely to want part time work than men, are highly averse to after hours and weekend callouts and are less interested in business aspects of practice, including practice ownership.

5.41 The perceived negative of a high proportion of women veterinarians wishing to pursue a part-time career can be an actual positive in terms of practice management. One submission points out that “as some females discontinue fulltime work to have a family but continue with part time work, it provides many practices with 0.2 or 0.5 of a vet....”.

5.42 Another point of pressure is the diminishing “domain of practice”. Although each State/Territory has laws restricting the practise of “veterinary science” to registered veterinarians, there is a growing population of relatively skilled personnel - such as qualified veterinary nurses, agricultural and animal scientists – who can legally and competently perform routine procedures that have traditionally been the domain of the veterinarian. Similarly, rapid advancements in technology, more effective drugs and the greater availability of over-the-counter drugs all serve to erode the demand for traditional veterinary services.

5.43 Many of the submissions refer to the combination of these various pressures and their impact on the viability of rural mixed practice. Submissions from older principals, nearing retirement, have a ring of despair, many seeing the only option as being to “turn off the lights” when they finally leave. Through the course of this Review’s consultations, it has been expressed that the rural veterinarian is a “dinosaur” – a species on the brink of extinction.

An alternative model of practice

5.44 None of the factors discussed above as adversely affecting the current model of rural mixed practice is going to disappear.

5.45 What is evidently required is a new model of rural mixed practice that can generate better economic returns and support necessary and better working conditions. Simply stated, rural practices need to become larger: multi-person and multi-skilled practices servicing relatively widespread areas. Larger, better capitalised, practices have more flexibility to provide, maintain and regularly update equipment and facilities, attract and retain staff and move into new areas of service delivery. Services with “critical mass” have more opportunities to:

- better utilise capital equipment and facilities;
- specialise to become "centres of excellence" in certain areas of practice;
- become more profitable;
- provide more attractive remuneration to staff;
- encourage specialisation of staff;
- provide congenial working hours and rostering for staff;

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- ensure mentoring and assistance to new staff;
 - ensure adequate leave provisions;
 - encourage professional development of staff; and,
 - employ adequate support staff, including clinical staff and staff in clerical/practice management positions.

5.46 Such a model could, of course, introduce several problems of its own, such as intensifying the ‘tyranny of distance’ encountered by rural veterinarians in terms of travel and possibly reducing demand if costs rose as a result.

5.47 Practice reform and consolidation is ultimately the province of the profession itself. It would be appropriate for the AVA, as the professional body representing about 70% of Australian veterinarians, to take the lead in developing, in consultation with its own members and other stakeholders, a “best practice” model for rural mixed practice and driving a process of implementation of any such model.

5.48 One of the major impediments to moving to a new model is a “cultural” one within the profession itself. It appears that rural veterinarians are highly “territorial” and competitive, judging from many of the submissions:

Almost without exception, the rural practices in Victoria work on a strictly competitive basis. There is no collaboration and no support given for each other. In some areas, there can be up to three vets on call overnight, each from their own clinic, each experiencing the stress of these hours. The ethos of the rural practice is a long way from cooperative interactions.

5.49 There are also a number of structural impediments which need to be addressed. One submission from a rural veterinarian observed that the various requirements of legislation, such as State-by-State registration and prescribed circumstances of practice “create and enforce a practice model which is not necessarily appropriate for rural communities or for the development of livestock health services.” .

5.50 In some jurisdictions, laws governing the profession prohibit the incorporation of veterinary practices or their ownership by other than registered veterinarians- and in some cases, prescribed relatives - in spite of national competition policy. This prevents the development of, for example, community-owned practices, say through a local council, along the lines of New Zealand’s “Vet Clubs”. It also blocks the development of “corporate” practices, such as one that has recently emerged in Victoria, which has commenced acquiring and consolidating companion animal practices in urban and regional Victoria.

5.51 Many jurisdictions also require registered practices to, in effect, provide “24/7” service – that is, 24 hours a day, 7 days a week. For smaller rural practices, this is a punishing burden, much commented upon in submissions to the Review. Obviously, the larger the practice, the more capable it is of shouldering this burden, one of the many benefits of practice consolidation. But even a larger practice in a more remote rural area might have difficulty in meeting this requirement. In many instances, the outcome of practice consolidation would be the establishment of a large central practice in a regional centre, created out of a number of practices located in outlying towns. These outlying towns would be serviced on an outreach basis – that is, part time. A continuing requirement to provide a “24/7” service – as well as separate clinic registration - would serve either to discourage consolidation in the first place or lead to a total withdrawal of service.

5.52 In addition, as the ACT branch of the AVA points out, “the present State based system entails costs and logistical difficulties which affect rural practitioners. The costs of registration in

multiple States can be high where a practitioner needs to operate in more than one State – for example locums”. As noted above (paragraph 5.9), Queensland, South Australia, Western Australia and Victoria have adopted such schemes, with secondary registration being around 50% of the fee for primary registration

Social and professional support for veterinarians moving to rural practice

5.53 While new models of practice could go a long way to making rural practice more attractive to veterinarians, attention also needs to be paid to the social and professional support of new veterinarians within their new communities and within the profession.

5.54 The notion of mentoring in the first few years of practice has been identified by the veterinary profession as valuable for new veterinarians to help them make a smooth transition, not only professionally, but also in terms of becoming more comfortable with living and working in a rural community. The AVA has established the “new graduate friendly” practice scheme, and various mentoring schemes are run by the profession and by Universities for their graduates. While these schemes are seen as valuable, more needs to be done in this direction to assure students and graduate veterinarians that help and support is readily available should they choose to enter rural practice.

Veterinary para-professionals and other animal science professionals

5.55 A professional attitude that might inhibit the development of more efficient practices – in terms of overall management and use of resources – is that towards para-professionals and professionals in related disciplines. Among older veterinarians, in particular, there is some antipathy towards para and other professionals. Understandably, there is a concern about non-veterinarians “poaching” traditional veterinary work, thereby diminishing actual or potential practice income. This has obvious validity in respect to service providers operating in opposition to veterinarians in areas such as pregnancy diagnosis. However, in both smaller and larger rural mixed practices, using the skills of non-veterinarians to undertake many of the more routine tasks in a practice would relieve the veterinarian(s) for those tasks of “veterinary science” for which they have been trained.

5.56 One submission suggested that veterinary nurses, for example, are an “undervalued resource” in rural practice:

The nurse population is stable, employed for much longer than veterinary associates. Veterinary nurses should be trained to a level to provide basic diagnostics, surgical and emergency medicine without direct vet supervision.

5.57 In fact, a veterinary nurse trained to what is known as Certificate IV level can undertake a wide range of tasks already. Currently about 6,000 people self identify as veterinary nurses, of whom about 1500 have attained Certificate IV level. In Western Australia, qualified veterinary nurses are actually registered with the Veterinary Surgeons' Board and are allowed under law to undertake a wider range of tasks than in other jurisdictions. This is similar to the UK and many US jurisdictions. In the US, qualified “veterinary technicians” volunteer and train to be part of the American version of AUSTVETPLAN, making them an extremely valuable resource in times of animal crisis. In the government sector, para-professionals such as stock inspectors and laboratory technicians form an integral part of the provision of animal health services.

5.58 There is also a growing population of people with tertiary qualifications in related and allied fields to veterinary science, such as agriculture, agricultural science, animal husbandry and animal science. Many of these courses provide strong grounding in animal science and health. Courses are offered at 15 universities, with total enrolments in 2001 of 3900 – nearly 3 times the numbers enrolled in veterinary science. Many thousands more are undertaking technical training, of varying degrees of complexity, at TAFE institutes. The School of Veterinary and Applied Science at the Torrens Institute (SA), for example, currently has 430 enrolments in fields such as veterinary nursing, animal studies and meat hygiene. Throughout Australia, 47 organisations are currently providing veterinary nursing training.

5.59 The Review does not have available to it any data as to the numbers and distribution of people with such qualifications. However, it would be assumed that there would be many thousands of people of people with para-professional and professional training permanently resident in rural areas, including those remote areas with poor and irregular access to registered veterinarians, and rural areas where rural mixed practice is overstretched.

5.60 The existence of this pool of alternative expertise is a challenge for the veterinary science profession in terms of its impact upon the traditional domain of veterinary practice, as discussed above. On the other hand it might be turned to advantage if veterinarians were to develop closer business relationships with these professionals in order to broaden the focus of rural mixed practice and to reduce pressure on rural mixed practices.

Summary

5.61 There is no shortage of veterinarians in Australia:

- the population of veterinarians is actually increasing at three times the rate of the general population;
- proportionally Australia has more veterinarians than like developed countries, by a factor of up to one third; and
- at current rates of increase, it could be that an oversupply of veterinarians will emerge and in some metropolitan areas this may already have occurred.

5.62 Some rural veterinary practices, particularly mixed practices dealing with production animals are, however, having difficulty attracting and retaining experienced veterinarians.

5.63 The key difficulty in attracting and retaining veterinarians for rural mixed practice is the inadequate compensation for demanding working conditions. Veterinary graduates (both female and male) also place high importance on lifestyle and professional development issues in choosing where to work.

5.64 The current dominant model of rural veterinary practice tends towards business inefficiency. They tend to be smaller, with fewer employees per principal, they generate lower fees for services than metropolitan practices and have higher practice costs. Despite long work hours most practices produce low returns on capital and are less profitable.

5.65 The veterinary profession should promote new models of rural practice that can generate better returns and support better working conditions and remuneration for principals and staff. Rural mixed practices need to become larger multi-person, multi-skilled practices, actively promoting their skills to animal production enterprises and servicing larger areas.

5.66 Some Government regulations relating to registration and accreditation of veterinarians and veterinary practice currently act as impediments to the reform of rural practice. The veterinary profession should work with governments to remove such impediments.

5.67 Veterinarians moving to rural practice should have support and encouragement available to them through the establishment or expansion of schemes such mentoring schemes and “new graduate friendly practice” schemes promoted by universities and the veterinary profession.

5.68 Rural veterinary practices should consider developing closer business relationships with veterinary para-professionals and other professionals and para-professionals with rural expertise in order to broaden the focus of rural mixed practice and to reduce pressure on rural mixed practices.

Chapter 6

Producers' Utilisation of Veterinary Services

Overview of Animal Producers' Use of Veterinary Services

6.1 Since the 1970s, clear differences have emerged between veterinary cover of intensive production systems (mainly pigs, poultry, and beef feedlots) and extensive (mainly cattle and sheep) systems.

Extensive Industries

6.2 According to ABARE, there are about 85,000 broad acre and dairy farms in Australia. Official ABARE survey outcomes indicate that only some 20% of these units engage veterinarians in a given year for professional services and advice. The numbers, by sector, vary between 23.1% of specialist beef producers, 24.8% of dairy farms, 29.1% of sheep specialist farms and 31.4% of mixed beef/sheep farms. The ABARE survey outcome further indicates that average expenditure by farm on veterinary services is about \$200 per year, which, on average, is less than 0.5% of total costs per farm. Expenditure is highest for dairy farms at \$A612 a year (down from \$1735 in 1996-97). The AVA believes the ABARE data substantially underestimates usage of veterinary services, particularly in relation to dairy farms¹.

6.3 This low utilisation has been generally confirmed in discussion with veterinarians and producers as part of the Review process. Both groups have confirmed that the most common services are for:

- “fire brigade” calls “for single animals which are unexpectedly sick, injured or experiencing calving difficulties”; and/or,
- low-cost routine services that employ relatively little veterinary expertise, such as pregnancy diagnoses, fertility testing and artificial breeding services.

6.4 The Review was informed that few extensive livestock enterprises engage veterinarians on a strategic basis, involving a whole-of-farm approach. Services in these circumstances may be supplied under a consultancy or as part of a rural practice. When engaged on such a basis, the veterinarian or veterinary consultant usually offers a range of services. These include parasite control programs based on worm counts, investigation of production parameters (eg birth and weaner rates), preventative medicine (eg mastitis management, milk quality control), feedlot production, quality assurance programs (eg Cattlecare and Johne's disease market assurance programs), and bio security.

6.5 In providing such services, veterinarians also gain access to the whole herd/flock. This in turn provides an opportunity for surveillance and judgements about whole of herd/flock

¹ ABS Survey of Veterinary Services (8564.0) confirms the low level of expenditure on veterinary services.

health and scope for productivity gains.

6.6 Farming operations that regularly use such veterinary services are, self evidently, better prepared to meet their current and future animal health needs. It is clear, however, that only a small proportion has this regular coverage.

6.7 Arguably, the extensive cattle production enterprises of northern Australia are under the highest risk of exotic disease incursions, yet many of these enterprises do not employ or regularly utilise veterinarians. This is partly due to the management regime and partly due to the lack of readily available private veterinarians. However, growing appreciation of the benefits of productivity programs in northern cattle areas is a positive indicator to an increased demand for veterinary services. These developments also offer the prospect of enhanced passive surveillance capacity in northern areas.

Studs

6.8 Stud producers would appear to have a greater need for veterinary advice because the health, genetics and fertility of their herd is fundamental to their commercial viability. Like all other parts of livestock industries, the utilisation of veterinarians by stud or seed stock operators is variable. Some operators seek advice at every point, from bull fertility testing and insemination through pregnancy testing, gestation, feeding, growth, animal structure and subsequent fertility testing, prior to sale. The work undertaken by veterinarians also involves post mortems should an animal be put down. Because of the high unit value of their animals, stud owners want to know of the existence and cause of any diseases or defects in their livestock.

6.9 The end result is that stud operations appear to have adequate service coverage, including ongoing access to rural veterinarians, and it appears that their requirements will continue to be met by the operation of market forces.

Equine

6.10 In some locations specialist equine practices have been established to service the racing industry. It is a legal requirement that a veterinarian be in attendance at all race meetings in Australia. This veterinary presence, combined with the frequent monitoring, and often full time stabling, of the horses, results in continual surveillance of racehorses. Consequently, their health needs are highly likely to be covered.

6.11 Veterinary advice for working horses and horses associated with pony clubs, dressage and rodeos is generally provided as part of the services offered by mixed practices. With the exception of rodeos, these animals are usually raised and treated as pets, often enjoying similar treatment and comforts. Horses participating in rodeos are subject to inspection on the day of the event and such coverage is likely to be adequate for ongoing health needs.

Intensive Industries

6.12 Objective measurements of veterinary cover are not generally available for the intensive industries – primarily pig raising and poultry growing, for either meat (broilers) or egg production, and beef feedlots. However, in all four industries there is a different structure and greater concentration of ownership than exists in the extensive industries. For example, some

20% of pig producers own 83% of the sow herd. The broiler industry is dominated by two large integrated companies that account for nearly 80% of production. In the egg industry, individual companies dominate growing and marketing on a State-by-State basis. There are about 900 commercial egg producers. While there are some similarities, the veterinary coverage is not identical across the intensive industries.

Pigs

6.13 In the pig industry, the large producers engage specialist veterinarians either on a full time or retainer/contract basis. There are fewer than ten such specialists across Australia but all travel extensively. They have specialised knowledge in swine medicine, production, reproduction and management. They provide excellent veterinary coverage for the bulk of Australia's pork industry.

6.14 There are some 1,600 smaller producers who only engage a veterinarian on an irregular basis or not at all. It is this group of producers that would be most likely to engage in behaviour that would put the industry at risk in respect to bio security and/or some animal health diseases. Many operate mixed animal farms and most are located in close proximity to regional centres. Accordingly, they would have access to mixed practice veterinary clinics if and when professional advice is required. Australia's animal health security could be improved if the coverage and frequency of calls by veterinarians to the smaller piggeries (fewer than 50 sows) was increased.

Chickens – Broiler

6.15 Ownership is more concentrated in the broiler industry than in the pig industry but the growing of the birds before processing is more geographically dispersed. Processing companies contract with some 850 farmers to grow their birds under specific conditions and to set standards. In addition to feeding regimes and expected turnoff weights, the standards include veterinary inspection frequency, chemical and medicine usage, general health and treatments for diseases.

6.16 The veterinary contact arrangements are fulfilled by processors engaging their own veterinarians, farmers contracting specialist poultry veterinarians, or some smaller farms relying on professional advice of experienced poultry veterinarians engaged full time by feed companies. Some very small growers rely on local veterinarians from mixed practices.

6.17 This coverage, coupled with the processors' requirement that all contracted farmers be able to satisfy the bird health specifications as a condition of accepting birds for processing, prompts the judgement that the current arrangements for chicken meat are satisfactory.

Chickens – Egg production

6.18 The contractual arrangements for poultry layers are similar to that for broilers. However, the ownership structure is not as concentrated and, with one exception of a very large grower and marketer, the production is more dispersed and in smaller units.

6.19 The Review was informed the veterinary coverage arrangements are a combination of those that apply in the broiler industry and those in the pig industry. For example, a number of companies employ veterinarians full time. Another group grow their eggs independently, market

co-operatively and have no set arrangements for veterinary cover. The smaller producers have no fixed arrangements regarding veterinary coverage or marketing.

6.20 Again, it would appear larger growers which have ongoing relationships with veterinarians have their future health requirements well covered. But there are many operators of smaller farms that do not and it is this group which pose the greatest health threat to the industry.

Beef feedlots

6.21 The structure of the beef feedlot industry is similar to that for pigs and poultry – relatively few operators who dominate capacity. The Review was advised large operators are extensive users of veterinary services, so much so that there is an emerging group of specialists focusing on the sector. Most large operators require as a minimum monthly visits by their veterinarians and constant contact at other times.

6.22 The Review considers the very large feedlots have satisfactory animal health protection systems in place.

6.23 The difficulty is that the very large feedlots (10,000 cattle and over) only account for some 4% of the total number of feedlots and a little over 50% of total feedlot capacity.

6.24 Medium size feedlots of between 1,000 and 10,000 cattle account for some 11% of all feedlots and some 28% of capacity. Some of the feedlots in this category operate in the same way as the larger feedlots but most would rely on individual calls by veterinarians from local mixed practices when animals require treatment.

6.25 All the other operators with less than 1,000 cattle on feed, and which account for some 85% of total feedlots and 18% of total capacity, would also rely on individual calls. It is these latter two groups that pose the greatest risk to animal health in this sector.

Reluctance of animal producers to use veterinarians

6.26 It is evident from the above that pig and poultry producers with minimal veterinary coverage are those which have relatively small operations. In extensive industries the small producers are similarly likely to have limited coverage but the Review believes a significant number of the larger operations in extensive industries are similarly placed. The obvious question is: *why do the producers who fall within these categories fail to regularly engage the professional services of veterinarians?* There is a range of contributing reasons, some of which reflect on producers and some of which reflect on veterinarians.

6.27 In the past, governments have provided a range of veterinary services free of charge or at subsidised rates. Laboratory testing services are the prime example. Producers object that such concessions have been withdrawn for routine testing and are reluctant to pay on principle.

6.28 “Do it yourself” is a longstanding ethic among many Australian producers; who are reluctant to engage a veterinarian because of confidence in their own ability and judgement.

6.29 Many producers are not convinced veterinarians add value, except when treating a working horse or dog. In short, producers regard veterinarians as a cost. They are, therefore, reluctant to call a veterinarian if the cost of their visit is likely to exceed the value of the livestock to be treated. This is usually the case with respect to sheep, unless the problem is flock-related.

6.30 Some producers are reluctant to engage recent veterinary graduates until they have established their credibility. This tends to create a vicious circle because veterinarians argue that if they are not engaged they will never be able to build the experience necessary to convince the producer of their abilities.

6.31 Producers' incomes are highly variable and affected by seasonal conditions, world prices, changes in market access arrangements and competitive forces. ABARE figures for 2000-01 give an average farm business profit of \$15,000 for dairy farms and a little over \$10,000 for other broad acre farms (ranging from - \$2,500 for sheep specialists to \$17,800 for beef specialists). All of these factors affect producers' ability to pay for veterinary services.

6.32 Some producers argue that it is preferable to dispose of sick and diseased livestock, rather than take the cost and risk of involving veterinarians. This reluctance to report disease incidents could have serious consequences as exotic diseases may have greater opportunity to spread before detection.

6.33 The closure of laboratories in recent years and problems in the transport of samples to remaining laboratories has allegedly resulted in delayed responses on samples submitted for testing and diagnosis. Producers argue such delays are an additional reason for not seeking professional advice.

6.34 Finally, in the heat of the recent debate on OJD, it has been said some producers do not use veterinarians because they live in fear of being quarantined with no compensation.

Veterinarian responses

6.35 For their part veterinarians initially settle in rural areas because of a strong desire to work in a mixed practice on production and companion animals or solely on production animals. There is evidence that over the past three decades the source of income to rural mixed practices has reversed from 70% production and 30% companion animals (including equine) to 70% companion and 30% production animals.

6.36 A number of factors have contributed to this reversal, including the attitude of producers.

6.37 One reason is that "veterinary surgeons" have always been regarded as "professionals" and for many years were prevented from advertising their services. While this restriction no longer applies, the attitude remains, especially among older veterinarians. Many veterinarians are not good marketers and sellers of their own services. There is scope for veterinarians to develop marketing skills and learn how to re-position their "product". The Australian Veterinary Association should be able to undertake industry-wide initiatives, which would help individual veterinarians address this issue.

6.38 A second factor has been producers' reluctance to engage veterinarians for anything beyond "emergencies" and routine operations. This has severely limited the scope for assessing herd/flock health status for possible disease issues or to provide general advice on nutrition and management. However, veterinarians repeatedly advised the Review that their presence on farm for a specific clinical or routine call-out very often leads to 'in-kind' advice being sought on a range of other issues. It also provides the opportunity for the veterinarian to conduct an informal assessment of other health and disease issues.

6.39 A third factor is that, as a rule, companion animal owners are prepared to spend more

money caring for their pets than farmers or owners of production animals. For a veterinarian this has translated into greater demand for companion animal services. Because such services are provided in clinics and there is no travelling time involved, treating companion animals has been more profitable and convenient for veterinarians. In a market economy no blame can be directed at individuals seeking the highest return for their professional skills. Indeed, while veterinarians recognise the increased proportion of time spent on the treatment of companion animals, they emphasised to the Review that this could be turned around again if producers were prepared to offer consistent whole of herd/flock work preferably under some form of contractual arrangement.

6.40 Overall, however, the general low level of demand for veterinary services is a major issue for Australia's animal health and the future of rural veterinary practice.

Uptake of veterinary services and australia's animal health exposure

6.41 On the basis of the above analysis, the Review is in little doubt that Australia's animal health status system would be better served if there were regular veterinary coverage of the extensive farming operations and the smaller and dispersed growers of pigs and poultry and the smaller feed lots where coverage is poor or does not occur at all. Regular veterinary contact provides opportunities for surveillance for diseases and opportunities to lift the productivity of livestock and animal product industries.

6.42 There are a number of ways this exposure to veterinary contact can be increased but it will involve changes in the attitudes of producers and their associations, of veterinarians and of Federal, State and Territory Governments for initiatives to be successful.

6.43 One key initiative would be to increase the participation of private practitioners in surveillance work on individual properties. This is discussed in detail in Chapter 8.

6.44 A second initiative would be for producers' associations to push their Quality Assurance programs more actively than at present. Such programs specify chemical usage, disease monitoring and compliance with trace back and trace forward requirements. An ideal outcome would be to have such plans linked to the surveillance arrangement and veterinarians paid for herd health information captured for NAHIS.

6.45 A third initiative would be for the Australian Veterinary Association to prepare a special marketing campaign aimed at assisting individual members to develop contacts with producers. It is acknowledged among some members of the veterinary profession that they are "their own worst enemy" when it comes to marketing their services. This acknowledgement has to be addressed in a more upfront and aggressive way than occurs at present. This initiative should be the responsibility of the AVA.

6.46 The training and availability of veterinarians is discussed in Chapters 4 and 5. These issues are linked to some of the points raised in this Chapter. However, if the broad Terms of Reference for this Review were to be addressed solely on the demand for professional veterinary advice by producers, there is no doubt that animal health in Australia is vulnerable. It is clear that the question of availability of veterinarians is not the limiting factor in their low level of engagement by producers.

Summary

6.47 With the exception of the large intensive production enterprises, such as pork and poultry, animal producers in Australia make very little use of the services of veterinarians. It is clear that the availability of veterinarians is not the limiting factor in this low usage.

6.48 Australia's animal health status system would be better served if there were regular veterinary coverage of the extensive farming operations and the smaller and dispersed growers of pigs and poultry and smaller feed lots where coverage is currently inadequate. Regular veterinary contact provides opportunities for surveillance for diseases and opportunities to lift the productivity of livestock and animal product industries.

6.49 Ways of improving veterinary coverage of these operations are:

- increasing the participation of private practitioners in disease surveillance work on individual properties (this is discussed in detail in Chapter 8);
- to have producers' associations actively promote Quality Assurance programs with QA plans linked to the surveillance arrangement and veterinarians paid for herd health information captured for NAHIS; and,
- for the Australian Veterinary Association to prepare a special marketing campaign aimed at assisting individual members to more aggressively promote their services to producer

Chapter 7

Specialist Personnel and Facilities

Overview

7.1 The Review was frequently advised that the closure of government laboratories and the introduction of fee for service had undermined Australia's surveillance capabilities. Moreover, these reductions, coupled with better prospects overseas, had reduced career path opportunities for veterinary 'specialists'. As a consequence, it was claimed there was an impending shortage of specialists that would have an adverse impact on Australia's animal health system in the future.

(a) Definitions

7.2 Registration by the State/Territory Veterinary Surgeons Boards as a specialist in the various veterinary disciplines usually requires Fellowship by examination of the ACVS (or an appropriate qualification from an American College or the UK Royal College of Veterinary Surgeons).

7.3 For the purposes of this Review, however, specialists are regarded as veterinarians who have completed post-graduate training – whether structured or unstructured (i.e. in-house) - in a veterinary discipline, as well as those who are registered as specialists by the Boards.

7.4 This broader definition is seen as more appropriate in terms of assessing whether there are sufficient veterinarians in specialised areas of veterinary science in Australia. It recognises that there are significant numbers of veterinarians who, through their experience and/or training, have expertise in specialised veterinary areas, but are not "specialists" in terms of professional accreditation by the various State and Territory Boards and the AVBC. It was also put to the Review that a Master's degree in diagnostic veterinary pathology, for example, would provide a broader training and equip a person better for work in a diagnostic laboratory than would the research required for a PhD in this discipline.

7.5 The specialised areas of most interest to the Review are epidemiology and pathobiology. Epidemiology is the science of the study of disease and its movement in populations. Pathobiology is concerned with the causes and diagnosis of disease. It embraces the veterinary disciplines of pathology, clinical pathology, parasitology, microbiology (including virology), and immunology.

7.6 Animal health laboratories are a crucial component of Australia's animal health system. While they are generally located in urban rather than in rural areas, they deliver vital services to the livestock industries in:

- passive and active surveillance;
- disease control;
- accreditation testing;
- research and development;

- residue testing; and,
- production of biologicals (eg vaccines).

As well as the more routine diagnostic services, public sector laboratories also need to provide high cost/low volume services in the public interest and to protect trade. Conversely, because of the commercial nature of private veterinary laboratories, they need to operate in low cost/high volume or high return areas of private benefit.

(b) Government funded laboratory services

7.7 The national veterinary laboratory framework comprises facilities in each jurisdiction as follows:

Jurisdiction	Delivery system	No of Labs	No of labs closed in past decade	Fee for private benefit service	Fee exemptions
Commonwealth (AAHL)	Commonwealth funded and operated	1	nil	N/A	
NSW	Government owned and operated	3	2	yes	Notifiable diseases and for specific targeted surveillance programs
Victoria	Routine services contracted to private supplier, central govt lab provides research, complex investigations & diagnostic capability for exotic and endemic diseases.	1 private supplier plus 1 govt	4	yes	Full or part exemption if in the public good (eg emergency animal disease investigation), or for specific targeted surveillance programs
Queensland	Government owned and operated	4	nil	yes	All investigatory laboratory services, for exotic and endemic diseases.
Western Australia	Government owned and operated	2	1	yes	Suspect exotic and notifiable diseases, government-approved programs, or if public benefits likely
South Australia	Government lab managed and operated by private contractor Some services outsourced interstate.	1		yes	If public benefits likely
Tasmania	Government owned and operated	1	nil	yes	Investigations of an unusual, new or suspicious disease or condition.
Northern Territory	Government owned and operated	1	nil	yes	Depending on the interpretation of the benefit derived

7.8 Changes in policy have facilitated the development of specific areas of expertise in the Government veterinary laboratory network and the creation of national reference laboratories for various diseases, as follows:

AAHL	FMD, rabies and Newcastle disease
Victoria (VIAS)	Johne's disease
NSW (EMAI)	anthrax
WA	tuberculosis and footrot

In addition, some laboratories provide an informal national service through their recognised expertise in specific pathogens, for example, EMAI has particular expertise in pestiviruses.

(c) Universities

7.9 There are veterinary laboratories associated with the Veterinary Schools in Brisbane, Sydney, Melbourne and Perth. These are used for education, research and in some cases for consulting work. Facilities at the Brisbane and Sydney Schools are understood to be in need of an upgrade.

In recent years, the focus of these laboratories has increasingly moved away from dealing with production animals towards companion and recreational animals.

(d) Private Laboratories

7.10 Nationally, there are three large private suppliers of veterinary pathology services, including the two suppliers contracted to deliver government services in Victoria and South Australia. These services are in the main provided as an adjunct to human pathology diagnostic services. For example, the veterinary workload of the Victorian service provider is about 4% of the overall pathology workload.

(e) Standards and Accreditation

7.11 Tests are approved nationally under the Australian and New Zealand Standard Diagnostic Procedures. Laboratories obtain accreditation from the National Association of Testing Authorities (NATA) and the International Standards Organisation (ISO). The proficiency-based Australian National Quality Assurance Program managed by the Subcommittee on Animal Health Laboratory Standards (SCAHLs) – a committee within the Primary Industries Standing Committee umbrella – assesses the capacity of laboratories to perform procedures accurately.

Specialist Numbers

7.12 Survey results gathered by SCAHLs show that the total complement of all personnel at State/Territory government laboratories has fallen 13% between 1998 and 2001 (from 380 to 330). There was a 19.4% fall in veterinary specialists in the same period (from 72 to 58). The specialist disciplines most affected were virology, microbiology and parasitology. However, the number of pathologists was maintained at about 42.

Table 7.1: State/Territory Laboratory Human Resource (Full-time equivalents)

State	Vet Specialists		Other scientists		Technical Officers		Support Staff		Total	
	1998	2001	1998	2001	1998	2001	1998	2001	1998	2001
NSW	25	13	5	4	37.5	42.6	21	15.1	89	75
VIC	9	12	11	31	18	5	3	32	41	80
QLD	17	12.9	32	14	57	18.8	24	15.6	130	61
WA	9.8	8.8	16.5	14	30.6	29.5	1	1	58	53
SA	5	5	5.5	4	6	9	8.5	4	25	22
TAS	4	4	3	3	11.6	11.2	2	2.5	21	21
NT	3	3	2.6	2.1	10.6	11.6	1	1.5	17	18
	72.8	58.7	75.6	72.1	171.3	127.7	60.5	71.7	380	330
NZ	1	8	1	2	10.5	10.5	8.5	8.5	21	29

(source: SCAHLS, September 2002)

Note: the SCAHLS data is based on returns from each State/Territory and there may be definitional variations between jurisdictions and between years, especially for technical staff and support staff

Table 7.2: State/Territory Laboratory Veterinary Specialists and Other Scientists (Full time equivalents)

Category	1998 (inc AAHL)	1998 (excl AAHL)	2001 (excl AAHL)
Pathologists	42.5	40.5	42.7
Virologists	13.8	8.8	3.0
Parasitologists	7.0	7.0	4.0
Microbiologists	11.0	10.0	5.0
Toxicologists	1.0	1.0	1.0
Other Vet Specialists	2.8	2.8	5.0
Other Scientists	133.6	78.6	70.1
Total	211.7	148.7	130.8

(Source: SCAHLS, September 2002)

Table 7.3: Age Analysis of Veterinary Specialists in State/Territory Laboratories (As at 30 June 2001)

	NSW	VIC	QLD	WA	SA	TAS	NT	TOTAL
Number	17	4*	12	9	4	4	3	53
Age Range	39-56	44-60	35-63	38-61	30-63	31-62	51-61	31-63
Average Age	49.4	51.5	51.4	48	51	45	56	49

* Data supplied for 4 of 12 specialists. (Source: SCAHLS, September 2002)

7.13 As shown in Table 7.3, the average age of veterinary specialists in State/Territory laboratories is 49 years (in 1998 it was 45.9). SCAHLS also advised that in July 2001 57% of veterinary specialists were aged 50 years or over and 27% were over 55 years.

7.14 The SCAHLS survey did not cover private laboratories or universities, so no inferences can be made for the situation in those sectors. However, Dr R Miller¹ has estimated that, in 2001, nationally there were 135 persons with, or undergoing, pathology training in the fields of laboratory diagnostics (including microbiology and parasitology). Of these, 36% were in government laboratories, 22% in universities or research institutions, 20% in private institutions while 9% were no longer employed in the pathology field. The age distribution was similar to the SCAHLS figures, with only 10.4% of pathologists under 35 years old. However, 50% of trained pathologists and 72% of specialist pathologists were over 50 years old. Dr Miller noted there were only six veterinary pathologists in training programs in Australia at the time.

7.15 The key issue, then, is that while pathologist numbers are presently being maintained, the age distribution is such that Australia appears to be heading towards a critical shortfall over the next 10 to 15 years. There are already reduced numbers of veterinary virologists, parasitologists and toxicologists in State/Territory government laboratories.

7.16 This coincides with a period in which several new viruses, such as Hendra virus, bat Lyssavirus, virulent Newcastle virus and Nipah virus, have emerged in Australia or overseas. The State/Territory laboratory system will need to be able to continue to play a significant part in the detection and characterisation of viruses.

7.17 In the area of parasite control, the national capacity to address the growing problems of anthelmintic resistance and trade issues associated with chemical residues stands to be severely affected by shortages in parasitologists. Similarly, the ability of the national animal health system to address food safety issues associated with toxin-contaminated animal products will be compromised in the absence of an adequate supply of veterinary toxicologists.

7.18 Numbers of specialists in epidemiology are harder to quantify. However, it was put to the Review that many epidemiologists are moving offshore because of the lack of opportunity in Australian universities and the limited opportunity in government departments to retain veterinarians with epidemiological expertise.

¹ Australian Veterinary Journal, Vol 79, No8 August 2001

7.19 A further measure of the relative well-being of national specialist numbers can be gleaned from the number of Members and Fellows of the Australian College of Veterinary Scientists (ACVS). The ACVS advises the numbers of Members and Fellows who have satisfied examinations since its inception in 1971 in particular subject areas are:

SUBJECT	MEMBERS	FELLOWS
Epidemiology	102	5
Pathology	98	
Clinical pathology	–	7
Anatomical pathology	–	3
Beef cattle	6	–
Dairy cattle	28	4
Sheep	28	3
Equine medicine	67	6
Equine surgery	40	12
Animal reproduction	9	4
Animal nutrition	21	–
Deer	2	–
Goats	4	–
Pigs	10	4
Aquaculture	8	–
Microbiology	4	–
Parasitology	1	3
Pharmacology	50	2
Vet. Public health	11	2
Avian	23	3
Ophthalmology	–	10
Animal welfare	10	–
Small animal medicine	220	18
Small animal surgery	162	28

7.20 The College does not itself provide postgraduate training but confers Membership or Fellowship by examination. It was established to provide a means of recognising advanced

professional skills and proficiency by veterinarians in various aspects of veterinary science who are not in a position to devote the time to acquire higher academic qualifications, or do not have the desire to, but who aspire to a higher standard of proficiency in their chosen field. It is seen as a means by which veterinarians in practice, in industry and in government can obtain recognition for their advanced level of knowledge and skills without having to undertake an academic postgraduate degree course.

7.21 The ACVS figures need to be interpreted carefully. The numbers in each Chapter are not necessarily engaged in that discipline in Australia or may be working overseas. However, the numbers do give a broad indication of the relative interest in specialisation in the 'production' and 'non-production' animal disciplines.

7.22 The College system of Membership and Fellowship is widely accepted by the profession and appears to provide considerable opportunity for Universities to develop production animal course-work postgraduate programs that will assist veterinarians to prepare for College examinations.

Changing circumstances

7.23 Laboratories are key elements in the surveillance system. Effective surveillance is essential for the early detection of disease incidents. Generally this relies on surveillance by veterinarians in the field who may submit samples for laboratory testing to assist in reaching a diagnosis.

7.24 The figures above indicate that in the absence of ameliorative action, there is a likely shortage of laboratory veterinary specialists in the medium term. While it is technically feasible that specialists with basic degrees in other areas (such as science and medical technology) may be able to provide part of the solution, it is likely that the OIE and overseas markets will continue to see specialist veterinary expertise as an essential component of a national animal health system. Additionally, in some States, veterinary diagnosis is considered an 'act of veterinary science' that can only be undertaken by a registered veterinarian.

7.25 An analysis of Melbourne University data suggests a reduced investment by governments in human capital in veterinary services over the past 20 years. An analysis of places of first employment of 1967-1980 graduates showed 16% first worked in a government position. However, less than 1% of 1985-2001 graduates commenced employment in government. This has resulted in veterinary graduates following postgraduate pathways that lead to increased specialisation in veterinary practice, rather than pathology and veterinary public health areas. Ten percent of 1985-2001 graduates had obtained Membership of the AVCS and another 10% had obtained a Masters or PhD qualification, mainly in clinical areas.

7.26 There are substantial impediments to veterinarians undertaking postgraduate training. The significant HECS debt accrued by veterinary graduates and full fees for course-work postgraduate studies provide an incentive for specialists who do undertake postgraduate study to seek out the higher financial rewards on offer overseas, such as in the USA, and in the private pathology laboratories, rather than positions in Australian government or universities.

7.27 While the outsourcing of routine pathology services to private laboratories in some States has generally been seen to provide a cheaper and more responsive service, the government laboratories have tended to foster the development of veterinary pathologists. Private laboratories do undertake some research and development (R&D), but the emphasis is very

much on the development of new diagnostic techniques rather than on research and investigation based on laboratory results. They do not have a primary charter of disease surveillance.

7.28 A number of submissions to the Review argued that the closure and/or rationalisation of government laboratory services and the introduction of fees has :

- reduced the incentive for producers and practitioners to submit samples for routine testing;
- degraded national surveillance capacity;
- contributed to reductions in laboratory personnel;
- reduced the opportunities for pathologists to interact closely with veterinarians and producers;
- reduced opportunities for pathologists to undertake investigative work; and,
- generally decreased career options.

7.29 However, it can be argued that any fall-off in routine submissions has been balanced to some extent by the impact of submissions made as part of active surveillance programs. In addition, the impact of closures of regional laboratories has been countered by the progressive improvements to transport networks and the increasing availability of rapid diagnostic tests – and that the disproportionately high volume of local material the regional laboratories attracted may in fact have distorted surveillance data. The consolidation of infrastructure in larger, more sustainable institutions can in fact provide substantial benefits in terms of cost efficiencies and better career structures and opportunities.

7.30 Nevertheless, as the following figures demonstrate, there has been a general decline in the number of submissions to government laboratories. A submission (also known as an accession), can relate to samples from one or many animals – for example, in the case of the Johne’s Disease Market Assurance Program for cattle, an accession would normally involve about 150 blood samples. Accession numbers therefore approximate the number of ‘events’ investigated.

7.31 In Western Australia accessions to the State laboratories in recent years have been:

Year	No of accessions
1995–96	2819
1996–97	2740
1997–98	2865
1998–99	2986
1999–00	2492
2000–01	2197
2001–02	1824

The 10-year average is 2552.

7.32 The number of accessions to the public veterinary laboratories in NSW between 1991–92 and 2001–02 were:

Year	No of Accessions
1991–92	19 015
1996–97	25 846
2001–02	18 708

A NSW Audit Office Report tabled in May 2002 noted that NSW Agriculture laboratories deal with 22,900 submissions per year on which 197,000 tests are carried out. The cost was \$1.7 million to government and approximately \$4 million to industry. The Audit Office Report also noted that, since the introduction of the charging policy for laboratory services in 1999, the number of animal and plant samples (as opposed to submissions) received by NSW Agriculture laboratories have fallen by 55%. In its submission to the Review, the NSW Farmers Association noted a 34 % decrease in number of animal samples submitted between 1998/99 and 2000-01.

7.33 In Tasmania, the mean number of laboratory accessions by 26 veterinary practices fell by 75% between 1992 and 2001.² Issues contributing to the decline in laboratory usage by practitioners in Tasmania include:

- cost of laboratory services;
- credibility of diagnostic services, turnaround times (i.e. greater use of interstate private laboratories for both companion animals and large animals); and,
- delivery of diagnostic specimens to the laboratory – small samples present no difficulty but submissions of whole animals usually rely on owner delivery.

7.34 In Queensland, total accessions have risen over the past 11 years by a factor of 1.41, but *diagnostic* accessions have declined by 30% over the same period (from 8273 per annum to 5775 per annum). A prime reason has been the decline in service levels brought about by staffing level reductions in regional laboratories.

7.35 Victoria and South Australia advised that that while disease diagnoses as part of passive surveillance programs have fallen, this would have been counteracted by work flowing from structured surveillance programs. The position in these States is complicated by the involvement of the private laboratories in delivery of government diagnostic services.

7.36 In the Northern Territory, most accessions to the laboratory are from abattoirs and the farming community around Darwin. Consequently, passive surveillance direct from Territory cattle herds is limited. This is largely due to the extensive system of cattle production, where musterings are only once or twice per year.

7.37 Significantly, the Review was informed the closure of regional laboratories and the general inability of private laboratories to conduct gross post mortems on large animals has led to a marked reduction in the number of gross post mortems on production animals. A comprehensive diagnosis of a suspect disease may rely on a wide range of investigative tests including gross pathology services (i.e. post mortems) and laboratory-based services involving histological pathology, virology, microbiology and serology to confirm the presence or absence

² DL Obendorf, 2002, Tasmania's Preparedness & Response to Outbreaks of Significant Animal Diseases – A Shared Community Responsibility: A Report to the Chief Veterinary Officer (Tasmania)

of disease. In NSW, for example, there has been a fall of approximately 50% in the numbers of post mortems and diagnostic investigations in the government laboratories.

Opportunities to improve performance

7.38 The most important factor in encouraging more postgraduate participation in production animal work is the need to provide sufficient financial incentive and enhanced career opportunities. Many submissions made to the Review remarked that the reduction in government laboratory services and the introduction by States of fees for most services has markedly reduced the nation's capacity to train veterinary pathologists and has reduced the demand for veterinary laboratory physical resources.

7.39 The impending loss of specialist expertise, particularly in the area of pathology, threatens to detract from Australia's excellent international reputation.

7.40 In a constructive development, two of the larger private laboratories are currently seeking to appoint recent veterinary graduates as veterinary pathology interns to work in their laboratories. The interns can develop veterinary diagnostic skills through a structured education program and on-the-job training. NSW Agriculture has recently appointed two additional veterinarians with some pathology expertise, who are undergoing additional in-house training and undertaking post-graduate studies. Agriculture, Fisheries and Forestry – Australia (AFFA) is also strengthening its capability in epidemiology and risk assessment with the appointment of additional specialists.

7.41 The issue of surveillance capacity is discussed in more detail in Chapter 8. Properly structured programs aimed at increasing national animal disease surveillance levels will help to demonstrate claims of disease and food safety status for trade purposes, and serve to increase opportunities for specialists across the range of disciplines, including:

- for diagnostic work by pathobiologists in laboratories; and,
- epidemiological program work within governments or by private consultants at an industry, State or national level.

7.42 There is an essential linkage in animal disease surveillance between the detection of disease in the field and ultimate diagnosis in the laboratory. Veterinarians need to maintain field and laboratory diagnostic skills on which to build specialisations. Postgraduate programs therefore need to involve formal and informal training and exchanges between government and private laboratories, field services and government agencies.

7.43 Maintaining the critical mass necessary in terms of resources and expertise for research, training and enhancing diagnostic capabilities and providing an enhanced career structure can be achieved through increased collaboration between government animal health laboratory services, universities and the private sector. Greater interaction on issues such as the development of specialisation and cooperation would prove to be beneficial.

7.44 Such proposals to create "centres of excellence" in animal health research, teaching and diagnosis are not new.

7.45 In 1998, a feasibility study was prepared on the integration of the animal health components of the University of Queensland Veterinary School, the Department of Primary Industries and northern Australia components of the CSIRO into a proposed entity to be known as the Queensland Animal Health Institute. A similar collaboration initiative involving NSW Agriculture and Sydney University laboratory facilities was developed in the late 1990s. Both

proposals lapsed due to an inability of the parties to agree fully on some of the project details, such as funding and siting.

7.46 The benefits of consolidating the animal health capabilities are seen to include:

- improved research and development;
- further development of animal health capabilities;
- attraction of high quality scientists;
- enhancement of veterinary education in undergraduate and postgraduate areas; and,
- substantial cost benefits and potential for increased revenue.

A renewed and concerted effort by the parties to address the stumbling blocks to the laboratory consolidation would therefore appear a most positive step.

7.47 Murdoch University in its Submission to the Review raised the prospect of a similar proposal for animal health in Western Australia, encompassing the Murdoch Veterinary School, the WA Department of Agriculture Animal Health Laboratories and the University of Western Australia Faculty of Agriculture. Murdoch envisioned that such a proposal would harness synergies in teaching, research and diagnostic activities.

CRC on Biosecurity

7.48 In December 2002 the Commonwealth Government announced it will provide \$17.5 million for the establishment of a Cooperative Research Centre (CRC) on Biosecurity: Emerging Infectious Diseases. The participants are drawn from Commonwealth and State departmental agencies, universities, livestock industry bodies, CSIRO, and small business enterprises. The priority is to build national capacity for prevention, preparedness and response to emerging infectious diseases. The aim is to protect Australia's health, livestock, wildlife and economic resources by developing new capabilities to monitor, assess, predict and respond to emerging infectious disease threats.

7.49 An education and training element of the CRC will specifically address the skills shortage in Australia by:

- producing research graduates with a high level experience in areas such as virology, parasitology and applied epidemiology;
- developing specialised modules for Masters programs; and,
- contributing to community awareness and professional development programs.

Availability of post graduate training

7.50 All the university Veterinary Schools, plus James Cook University, offer veterinary post-graduate training. In 2001 the total number of students enrolled in higher degrees was 261, comprised of Masters by coursework (58), Masters by research (44) and Doctorate by research (159).

7.51 For example, the University of Melbourne offers a Masters of Veterinary Studies (coursework) in a range of disciplines, including veterinary pathology, and a Masters of Veterinary Science by research.

7.52 In 2003 the Faculty of Veterinary Science at Sydney University is introducing a coursework postgraduate training program (including at Masters level) in veterinary public health.

The program is aimed at production animal professionals and will combine traditional elements, such as epidemiology, with new areas, such as project management. Delivery will be flexible and delivered mainly through distance education.

7.53 The University of Queensland Veterinary School is investigating the establishment of a post-graduate coursework program in tropical animal health, with units of study in areas such as pathology, epidemiology and livestock production.

7.54 Postgraduate epidemiology training is available at Massey University in New Zealand. Other institutions such as the University of Newcastle also offer epidemiological postgraduate courses that are not veterinary specific, but which are nevertheless relevant to, and undertaken by, veterinarians.

7.55 It would appear, then, that the courses in post-graduate disciplines are available. Several of the State agriculture department submissions advised that they continue to actively encourage staff to undertake higher degree studies. Rather, the main impediment seems to be the support levels during the period of study and the financial rewards and career opportunities upon completion of the study.

7.56 A limited number of scholarships and awards are provided in the livestock area by bodies such as the rural Research and Development (R&D) Corporations (for example Meat and Livestock Australia) and the CSIRO. However, several submissions noted that the emphasis of the R&D Corporations is now heavily on marketing issues rather than animal health.

7.57 The offering of an additional range of scholarships and/or internships by the Commonwealth and State/Territory governments and private laboratories offers a pathway to addressing the looming shortage and provide employment opportunities in Australia, particularly if offered through contemporary centres of excellence or the Cooperative Research Centre model.

Summary

7.58 The impact of the changes in government policies towards veterinary services is yet to be fully evident. However, there are significant implications for future surveillance capacity and the level of specialist expertise in laboratories.

7.59 There has been a fall-off within most jurisdictions in laboratory submission levels, especially for diagnostic tests not associated with active surveillance programs. There has also been a reduction in the capacity to undertake gross post mortems of production animals. This is primarily attributed to the introduction of fees for private benefit services and for tests not associated with notifiable diseases, and a reduction in the overall level of service.

7.60 These policy changes have occurred at the same time as staff numbers in government laboratories have fallen in some specialist areas, while in others, such as pathology, the age distribution points to a critical shortfall in the next 10 to 15 years.

7.61 While the private laboratory system is an efficient and effective provider of the more routine services, the government system remains the primary source of development of specialist skills and of research and development.

7.62 A reversal of the State government policy towards reductions in regional laboratory services is unlikely. The move towards consolidation of laboratory services does appear to offer significant benefits (apart perhaps from post mortem capability) in terms of better infrastructure and staff opportunities. However, this will need to be pursued with greater vigour and commitment from the parties involved.

Chapter Eight

Surveillance

Overview

8.1 For the purposes of this Review, the term surveillance is used to embrace both the activities of monitoring and surveillance as defined in the OIE International Animal Health Code. The OIE defines surveillance as the detection of disease and monitoring as measuring the change in occurrence of disease.

8.2 Surveillance may be classed as either active or passive, depending on the way the data is generated:

Active	The generation of data primarily for surveillance purposes, to answer specific questions about a disease on a population basis.
Passive	The secondary use of data that was generated for some other purpose. The term usually refers to information acquired as a result of investigation of clinical cases of disease or certification testing.

8.3 Surveillance may also be classed as either general or targeted, depending on the focus of the surveillance activity. Targeted surveillance is focused on a single disease group and/or species, whereas general surveillance collects information about a range of known and unknown diseases in general populations.

8.4 General surveillance is the most effective and efficient way of detecting new diseases provided animals are under reasonably constant and competent observation.

8.5 General surveillance provides a cumulative body of information. It can enable general trends in endemic diseases to be monitored for control and certification purposes. In addition, knowledge of endemic disease situations can help investigators identify any unusual findings that may indicate the occurrence of a new or exotic disease. However, general surveillance can be unreliable for estimating the distribution and prevalence of disease, or verifying the health status of a livestock industry for trade purposes because it is usually not representative of all livestock in all regions.

8.6 This is where targeted surveillance can have a role. More attention is paid to ensuring data is representative through a statistically valid survey, usually targeting disease syndromes, the use of sentinel animals and abattoir sampling. Examples of targeted surveillance are NAMP, NAQS and the NTSESP. In turn, targeted surveillance is usually ineffective for the early detection of new or exotic diseases that are not being targeted.

8.7 An efficient and effective surveillance system therefore needs to comprise both general and targeted components.

8.8 Because of Australia's superior livestock health status, vast area and large export volumes to disease-sensitive markets, the surveillance system required to support claims of disease freedom may differ and need to be more comprehensive than for many other countries.

Current adequacy of surveillance in Australia

8.9 Surveillance relies heavily on a network that consists of

- producers and others in close contact with livestock and reporting anomalous events to a veterinarian;
- veterinarians (government and private) being available and competent to observe animal health and to investigate and diagnose anomalous cases; and,
- diagnostic laboratory services to assist in reaching a diagnosis.

8.10 Livestock producers, agents and transport operators constantly observe and monitor the health of animals that are their responsibility. While astute enough to recognise anomalous developments/changes in animal health, few are trained in diagnosis of exotic diseases or even endemic (but rarely occurring) diseases such as anthrax. Their observations/concerns are only likely to trigger a response if they call upon publicly employed or private veterinary practitioners. In turn, the outcome will only result in registration of the event and data collected if laboratory testing is arranged.

8.11 The Animal Disease Surveillance Program Baseline Study commissioned by AHA in 2001 concluded that a potential weakness is Australia's vulnerability with respect to the time taken to detect new or exotic diseases. In the case of rapidly spreading diseases such as FMD, effective measures to address this will be critically dependant on the awareness, vigilance and the willingness of producers, farm workers, transport operators and stock agents to report anomalous events. It will also be influenced by a continuing level of contact of these groups with government and private veterinarians.

8.12 While there is a widely held view that **private veterinary practitioners** are constantly observing livestock in the course of their daily activities, and can be relied upon to investigate and/or report anomalous events and episodes, that view has been questioned. AHA in its submission to this Review presents such a counter view:

Disease surveillance activities generally do not meet commercial criteria and are therefore a low priority for most rural veterinary practitioners. This means that rural veterinary practitioners are only marginally engaged in surveillance and make a relatively small contribution to the body of national animal health information.

8.13 Some practitioners volunteer the view that the way they are obliged to operate in order to maintain viable businesses leaves little opportunity to observe more than the animals immediately receiving their attention. That said, all veterinarians are obliged by law to report occurrences of notifiable diseases. A related observation in another submission is that there is a lack of animal health information from extensive cattle and sheep grazing enterprises in pastoral Australia, infrequently visited by veterinarians.

8.14 Whatever their contribution to general surveillance, private veterinary practitioners do not contribute to the *recording* of surveillance data except to the extent they participate in the few targeted surveillance programs (e.g. the NTSESP) and submit samples for testing for other diseases to diagnostic veterinary laboratories.

8.15 **Public service veterinarians in the field** such as those employed by the Rural Lands Protection Boards in NSW and by departments of agriculture in all States and Territories are heavily involved in the monitoring, management and (limited) eradication of endemic diseases, including parasites and contaminants such as chemical residues and antibiotics. This is the most

likely group to have anomalous disease events brought to attention, refer samples for testing to veterinary laboratories and for the results to be recorded in the NAHIS.

8.16 Further surveillance is provided by animal health personnel employed in abattoirs around Australia. All export plants must have an AQIS veterinarian on plant during operations. Over 100 such veterinarians are so employed. One of the functions is to screen animals for diseases but because only apparently healthy animals are consigned for slaughter, the contribution to surveillance (as opposed to food safety) may not provide early enough warning in the case of any virulent exotic disease incursion. This was demonstrated in the UK's FMD outbreak where the disease was detected at the abattoir level after it had already been widely spread.

8.17 **Diagnostic testing laboratories** receive samples for testing and as well as employing veterinary pathologists sometimes employ other specialists to assist with confirmatory diagnosis and in advising appropriate responses. Other chapters in this Report have commented on implications for national surveillance of the closure of some laboratories over the last decade.

8.18 To date, the adequacy of the national animal health surveillance system has been measured largely by the judgements of the international veterinary community and by Australia's continuing access to overseas markets. Australia's record in avoiding incursions, and dealing with those that have occasionally occurred, is obviously also influential.

8.19 For most diseases, the level of surveillance (in such terms as the number of cases to be investigated and diagnosed) required to meet international requirements and/or to demonstrate disease freedom with varying degrees of confidence has not been established. Indeed, there is a large body of expert opinion that subscribes to the view that the elements and dimensions of an adequate surveillance system cannot be prescribed in practical terms.

8.20 Animal Health Australia is undertaking work on national animal health performance standards. Disease surveillance is one of the nine core functions that are being developed and evaluated with the aim of implementation of national benchmarks by 30 June 2003.

8.21 This action does not appear to be going far enough, notwithstanding the fact that the present system evidently meets current international standards for demonstrating disease status for trade purposes. More work needs to be done on the challenge of specifying an adequate level and coverage of disease surveillance to meet Australia's future needs. This will require the design and implementation of procedures for achieving a more rigorous, risk-based system for prioritising animal disease surveillance and determining appropriate resource allocation across Australia.

8.22 Representations to this Review suggest there is too little systematic collation and analysis of diagnostic test results produced in the course of passive surveillance activities by veterinarians. Even where diagnostic testing of samples is undertaken in veterinary laboratories, the data sets are often fragmentary or unavailable or do not lend themselves to interpretation for surveillance purposes.

8.23 With respect to this last point, it has been argued that laboratory information systems are chronically deficient in collecting comprehensive data sets about syndromes of animals for which samples have been submitted for testing. Even where this information is in fact available, too little further diagnostic analysis is often applied. Further, there is not as yet a uniform laboratory information system across jurisdictions. This impedes national collection and collation of data.

8.24 A number of submissions to the Review observed that the on-farm visits made by private practitioners, often as part of a clinical treatment, provide a valuable opportunity in some regions for many more observations to be made and data recorded on disease occurrence and freedom. Much of this opportunity is currently lost.

8.25 Apart from the judgment needing to be made that the capture of this data is desirable and/or necessary for surveillance purposes, two other key developments are required to change the current situation:

- the first is a much better electronic data/information capture and management system than is presently available to practitioners; and,
- the second is appropriate incentives for practitioners to make the effort and spend time undertaking ancillary investigations and in collating and submitting information.

8.26 The logical extension of this line of discussion is that much more has to be done about improving the quality and use of data potentially available for surveillance purposes as an output of passive and general surveillance. Only then can decisions be taken about the need for more “surveillance” in relation to particular species, regions, diseases and syndromes.

8.27 The strengths and weaknesses of Australian veterinary surveillance are largely mirrored in the UK and the USA. In the UK, a new strategy for enhancing veterinary surveillance is under development. A Consultation Paper released in December 2002 notes that while the UK system fully meets international reporting requirements, there is no overarching strategy; it is poorly integrated; there is no scope for spotting gaps; prioritisation is not transparent; and data is not fully utilised.

8.28 In October 2001, the National Association of State Departments of Agriculture and the USDA Animal and Plant Health Inspection Service (APHIS) released a report entitled The Animal Health Safeguarding Review. It pointed to the need for a nationally comprehensive, coordinated and integrated surveillance system, noting:

- the unmet and increasing demands for surveillance information to support international trade; and,
- the current program strategy focuses on specific diseases and commodity groups and lacks sufficient flexibility to efficiently respond to new and emerging issues.

Current initiatives to improve surveillance

8.29 The Review is aware of initiatives in at least three States to increase the level of surveillance information. NSW, SA and WA have all commenced programs aimed at communicating the need for surveillance reporting and encouraging the participation of veterinary practitioners, producers and other relevant groups dealing with livestock to report disease incidents.

8.30 The enhanced surveillance reporting programs that the States are seeking to implement revolve around a system of syndrome reporting (such as scouring, abortion and nervous signs). The rationale is that most diseases of significance exhibit certain syndromes and the reporting of these syndromes allows for profiles to be constructed for changes or events that should be investigated.

8.31 The initiatives also recognise that practitioners are generally not well trained to undertake disease investigations. Although basic training is provided at undergraduate level, additional training in epidemiology and pathology is often required.

8.32 Additional surveillance effort is also being directed to the wider use of serum banks. This may include the establishment of new serum banks and/or the rationalisation of existing banks. Dedicated sero-surveys are an excellent, though expensive, surveillance technique. Samples collected passively or as part of a targeted program and catalogued in these banks, can form a resource for use in outbreaks and in demonstrating disease status. The pig industry, concerned

over surveillance levels, recently established a serum bank containing about 4,700 samples. The samples were collected mainly by private veterinarians from a stratified sample of pig herds. The present intention is to conduct collections about every four years.

8.33 Other emerging opportunities for enhancing surveillance include the use of “bio-sensors” attached to sentinel animals or even entire herds that will remotely register symptoms of any anomalous illnesses.

8.34 Representations to this Review also pointed to considerable potential for further expansion of APAV within existing programs and in new surveillance programs. The preferred basis for engaging non-government veterinarians in an animal disease emergency will be the holding of competencies under the new APAV accredited program “Field Surveillance Veterinarian”. Many of these competencies would be likely to be desirable for more general surveillance work.

8.35 Considerations to be further addressed if APAV is to have a role in enhancing surveillance include:

- the identification and development of agreed areas of work, such as additional surveillance;
- finding continuity of work necessary to provide sufficient incentive to maintain accreditation;
- obtaining financial commitments by the stakeholders (government and industry) who will be the beneficiaries of the programs; and,
- identifying the necessary geographical location of accredited personnel to effectively undertake the new programs.

8.36 Livestock industry and community awareness of livestock diseases is a key component of Animal Health Australia’s Emergency Animal Disease Preparedness Program. This component of the program is primarily delivered via the Protect Australian Livestock Campaign. This is a major project designed to maintain livestock producer and veterinarian awareness of the importance of emergency animal diseases and the appropriate actions to be taken when one is suspected.

8.37 Efforts to better address the animal health information required for adequate surveillance of extensive grazing systems (particularly in northern Australia) include, for example, research being funded by MLA with industry into ways of working with stockowners and employees to generate appropriate surveillance data.

8.38 These initiatives in effect involve a mix of general and targeted surveillance elements, using scientifically valid methods of combining information from whatever source is available.

Priorities for a surveillance system to meet future needs

8.39 It is not the task of this Review to attempt to specify the elements and dimensions of a national surveillance system that will meet the future needs of Australia’s livestock industries. However it can point to a number of issues that it believes will have to be addressed before the current system will meet future needs.

(a) *Designing/managing surveillance according to risk*

8.40 The disposition of resources that Australia will need to employ to undertake surveillance for new and exotic diseases must be based on a more comprehensive assessment – region by region – of the threat that various diseases present to animal and human health, trade access and animal and wildlife welfare.

8.41 This will mean that the future intensity and focus of surveillance will vary considerably, with some regions more heavily resourced than others. While individual jurisdictions already exercise a professionally intuitive approach to achieve adequate coverage, a more systematic approach will be required in future.

(b) *Implementing appropriate surveillance mechanisms*

8.42 Having assessed the elements of risk, the next step will be to design and implement a commensurate surveillance regime. For some diseases, the targeted model developed for the NTSESP will be a useful template. For others, the strategy may rely more on general surveillance elements. The use of sentinel herds/flocks may be another approach needed for some diseases.

8.43 In some regions, the number of public veterinarians currently deployed will be too few to provide sufficient resourcing for the delivery of the specified regime. Reliance on the current deployment and performance of private practitioners will also leave unacceptable gaps, quite apart from concerns that the number of practitioners in some (remote) rural areas is in decline.

8.44 One option is for governments to build (in some States to re-build) more extensive networks of government veterinarians dedicated to surveillance. This Review considers this to be a more expensive and less effective option than one that would engage private practitioners more systematically into the surveillance regime established for each region. This latter option would offer private practitioners the opportunity to undertake specified surveillance activities in return for agreed fees.

8.45 The advantages to the nation's governments and livestock industries would not just be in enhanced surveillance: improved commercial returns to practitioners would contribute to sustaining and, in places, extending the network of viable rural practices offering a more robust emergency disease response capability, care for wildlife, and production services to private producer clients. Because private production services for clients could incidentally involve surveillance tasks – and *vice versa* – the cost of the surveillance is likely to be less than dedicated public veterinarians.

8.46 It needs to be emphasised that this proposal does not prescribe a simple formula to apply across all regions. In many regions, existing surveillance arrangements may fully meet future requirements. Such a situation is most likely in farming regions in NSW with the extensive network of RLPB veterinarians. However even in this jurisdiction, semi-urban regions with small-scale intensive livestock production may present disease risks that will require more intensive surveillance.

(c) *Funding private practice surveillance*

8.47 The means by which private practitioners undertaking specified surveillance activities are remunerated will require more detailed consideration than this Review can provide. However some tasks may attract a standard fee and be open to any (accredited) practitioner to undertake. Such is the approach in the NTSESP scheme where an incentive is available for veterinarians (and producers) to report and investigate animal displaying certain neurological signs. For other

surveillance activities, it may be more effective for the tasks to be comprehensively specified and put out for tender. Such an approach is being used in New Zealand.

8.48 Surveillance is a “public good” providing benefits to the livestock industries and the community as a whole. These beneficiaries have been enjoying something of a “free ride” from private practitioners, although the extent of this can be easily exaggerated; the actual contribution of practitioners to surveillance remains contentious. However, the Review considers that to bring surveillance up to more adequate levels is going to require, in many regions, the service providers being more adequately remunerated by the beneficiaries.

8.49 There is a clear case for both governments and industries to provide funding for surveillance but the arguments for relative shares of the necessary contribution will include the nature of specific risks by disease, region and jurisdiction, and the funding/resourcing already provided. As the negotiations over sharing the costs of eradicating emergency animal diseases have demonstrated, agreement will be difficult but nevertheless is achievable.

Summary

8.50 Improvements to enhance national surveillance *in the immediate future* include:

- addressing the generally poor understanding amongst stakeholders of surveillance and a disinclination to report disease;
- improving data collection and management, taking greater advantage of modern technologies;
- strengthening general surveillance, particularly those investigations which include laboratory analyses;
- developing performance standards for the number of cases diagnosed;
- developing syndrome reporting systems;
- tapping into field activities, which though highly relevant to surveillance, often do not generate appropriate data;
- accessing privately held data in private laboratories and veterinary clinics;
- developing a strategy to overcome the lack of animal health information from extensive pastoral systems; and,
- developing improved methodologies for demonstrating disease freedom using a combination of data sources to provide quantifiable probability estimates.

8.51 Improvements that will be required *in the medium term* include:

- undertaking national risk based assessments according to species, region, disease and syndrome and the surveillance regimes that need to be put in place to provide adequate cover;
- specifying the systematic integration of private practitioners into these enhanced surveillance regimes, where this is efficient and effective, and prescribing fees and other incentives; and,
- negotiating funding contributions of governments and industry.

Chapter Nine

Addressing the Terms of Reference

9.1 The Terms of Reference for this Review were expressed in two parts; scope of the Review and specific points the Review should examine. This Chapter addresses and reaches broad findings on the Terms of Reference but, to avoid repetition, does so under three headings:

- future needs of Australia's animal health systems;
- changes in availability, roles and requirements of rural veterinarians; and,
- potential changes affecting education, training and accreditation.

9.2 The Review has reached three broad findings which underpin the specific findings in this Chapter and the recommendations of this Report.

9.3 First, Australia's animal health needs are being met on a day-to-day basis but will need to be enhanced to meet more stringent requirements likely for international trade in the future. The focus for immediate enhancement is surveillance.

9.4 Second, there is no current crisis in the availability of veterinarians. However, there are developments in the pipeline which could lead to shortages, especially in remote locations. Rural veterinarians have to contend with rising costs, reluctance of producers to utilise their services, long hours and limited schooling and social opportunities. Increased numbers of female graduates, both in absolute number and as a proportion of total graduates, introduce further complications. Many are reluctant to buy practices and prefer to work part time.

9.5 Third, the Review finds that the opportunity for the most lasting solutions is offered by policies which will build up the demand for veterinary services, such as jointly funded surveillance and/or QA work by private practitioners, rather than policies which might involve subsidies to induce supply, such as rural scholarships and lower entry requirements for student entry.

9.6 Most issues cannot be successfully addressed by any one sector: there is a need for all involved in rural veterinary services to make changes to their current approaches – governments, producers, veterinary practitioners and Veterinary Schools.

Future needs

Animal health and access

9.7 The ultimate business of Australian livestock industries is to produce food for human consumption. The viability of these industries is therefore dependent on raising disease free animals and the efficient production of wholesome and nutritious meat, eggs, poultry, milk and other animal based food products.

9.8 Importing countries require certification that imports meet set standards. Many governments are becoming increasingly risk-averse about animal health issues and there is a marked trend towards revising and tightening the standards they require in certification.

9.9 In some importing countries, food industries and consumers are also demanding that imported product meet new standards, concerning such issues as:

- genetically modified organisms in the product and the production process;
- good agricultural practice with sustainable impact on the environment;
- traceability of products, processes and components (including feed);
- ‘appropriate’ use of chemicals; and,
- animal welfare.

Findings

9.10 The viability of Australia’s animal based industries is dependent on their ability to meet international standards on animal health and welfare. The standards are becoming more stringent.

9.11 If Australia is to maintain export markets, the national animal health system will need to be able to deliver more detailed and sophisticated certification based on data from surveillance and inspection and quality assurance schemes.

9.12 Governments and industry must continue to develop integrated national animal health systems.

Surveillance

9.13 Australia’s animal products enjoy a clean green image and ongoing access to markets at home and abroad. There is a widely held view among agencies and rural veterinarians, however, that while the existing surveillance programs are effective, there is scope for systemic improvement to meet increasingly stringent requirements of importing governments.

9.14 Australia’s capacity for surveillance depends on having skilled people in the field, an accessible and capable diagnostic laboratory infrastructure and an effective system for recording and retrieving data about animal diseases.

9.15 With the exception of TSE, and, more recently OJD, there has been very little formal involvement of private practitioners in surveillance programs. Given their number and location across rural Australia, this is a major shortcoming of the existing arrangements.

9.16 Greater involvement in surveillance by rural practitioners would bring both public and private benefits. There is thus a case for cost sharing between governments and industry producers and veterinarians.

Findings

9.17 The Review considers Australia's surveillance arrangements are meeting requirements now but must be progressively enhanced.

9.18 Features of the enhancements would include:

- (i) progressive assessment of disease risks region by region;
- (ii) active involvement of private veterinarians in surveillance programs;
- (iii) comprehensive information/data capture and management system to enable thorough investigation and follow-up; and,
- (iv) a national plan for laboratory utilisation (which may involve further closures and specialisation in individual laboratories).

Productivity gains

9.19 Australia's livestock industries and individual producers use veterinary practitioners and other experts to maintain and improve enterprise productivity. However, most professional service requests are for single animals or for routine operations. Even then, only 20 – 30 % of producers of all livestock have veterinarians visit their operations on a routine basis. There is concern about this lack of coverage.

9.20 There is a view that the role of a rural veterinarian as professional service provider on extensive farming operations is diminishing and will eventually fail to provide the basis for viable rural practices. The arguments supporting this view include the limited amount of work rural veterinarians undertake now, their limited ability to add value beyond basic single animal treatment, the relative ease of servicing companion animals and the emerging presence of skilled para professionals who are able to undertake work previously the preserve of veterinarians, e.g. fertility testing.

Findings

9.21 Livestock producers do not utilise veterinary services very much because they are not perceived to add value.

9.22 Veterinary practices do not do enough to develop and promote the services they can offer to improve productivity in animal production. The AVA can assist rural veterinarians to develop appropriate programs.

9.23 There is no case for direct government funding of veterinary services directed toward private productivity gains. However, private practitioner contributions to surveillance activities which are a public good should attract industry and government funding.

Disease incursion

9.24 Australia's ability to respond to an emergency animal disease incursion is of vital importance to animal industries. The Productivity Commission estimated in 2002 that an incursion of FMD could cost Australia up to \$13 billion in lost exports and \$450 million in control and eradication costs.

9.25 The events of 2000 and 2001 in UK, Europe, Japan and Korea have been a wake up call for Australia. Commonwealth, State and Territory governments always had plans to address disease incursions but the detail and funding arrangements were not fully signed off. Considerable progress on these aspects were finalised during 2001/2002 and there is now a framework in place. Exercise Minotaur in September 2002 was designed in part to test the framework, particularly processes and communication.

9.26 There is a widespread perception, based on UK experience, that Australia simply does not have sufficient veterinary capacity to carry out disease management tasks in the event of a major disease incursion. However, Australia is a member of the International Veterinary Reserve, an agreement that allows for competent personnel from one country to be made available on a temporary basis to a country which experiences a disease outbreak.

Findings

9.27 Australia does have a blueprint for action in the event of a major disease incursion.

9.28 A disease incursion creates effects that will be long lasting. Australian government and industries need to have long term management programs in place. Such programs are not effective if turned on and off.

9.29 Australia does not have enough veterinarians to manage a major disease incursion.

9.30 The concept of an Australian Veterinary Reserve similar to the International Veterinary Reserve is a good one.

Quality Assurance and Inspection Programs

9.31 Veterinarians and livestock producers are mindful that consumers, food marketing companies and regulatory authorities are becoming increasingly conscious about the safety of food products.

9.32 Producer industry associations have made genuine efforts to encourage members to adopt quality assurance programs on farms. It is understood that to date there has only been limited take up except where particular demands have been made by individual markets. e.g., complete trace back and vendor declarations required by the European Union for beef imports. One reason for the limited take up is the inability of producers to recoup the additional costs of meeting special QA requirements. There is scope for rural veterinarians to play a greater role in farm quality assurance programs including advice and especially regarding chemical usage to avoid residue contamination.

Findings

9.33 Producers need to be continually reminded about the increasing sophistication of consumers and their demands for higher standards of health and hygiene for animal products.

9.34 Producer and industry associations need to maintain their efforts to secure widespread adoption of quality assurance plans.

9.35 Private practitioners can assist in the development and implementation of quality assurance programs and should be encouraged and assisted to do so by the AVA. A quality assurance program with provision for sign off by a veterinarian would assist in surveillance of whole herds/flocks.

Animal welfare

9.36 There is considerable evidence that animal welfare is increasingly becoming an access issue in some markets, particularly in Europe. As noted above, the effect of agricultural practices on the environment is also drawing attention.

9.37 The Review was advised governments and industry in Australia are developing a national animal welfare strategy to facilitate a national policy on this issue.

9.38 The Review was further advised that OIE has recently included animal welfare in its program of activities in which Australia is an active participant.

9.39 One national animal welfare agency in Australia expressed general satisfaction about the application of existing welfare standards throughout the country.

Findings

9.40 Animal welfare standards are continuously evolving in all countries. Therefore, Australian industries and producers will need to be mindful of changing standards which, in turn, could affect access for imports.

9.41 Australia will be called upon to participate actively and constructively in international debates aimed at lifting world animal welfare standards. Australia's broad policy objectives in any such debates will be to seek to ensure that any new standards take account of the climatic and other conditions under which livestock are raised in Australia.

Roles and requirements for rural veterinarians

9.42 The Terms of Reference specifically seek examination of changes in the requirements, role and availability of rural veterinarians and "what can and should be done to ensure their availability when and where required".

9.43 The key requirements for rural practitioners have not changed. Producers and rural communities expect practitioners to have the expertise to diagnose and treat disease in any animal. Moreover, many expect, perhaps unreasonably, extended service hours and, if necessary, for veterinarians to travel long distances, as Australian producers do not generally transport production animals to a clinic. There are often unreasonable expectations about the fee to be paid.

9.44 A change in the past three decades is significant growth in demand for treatment of companion animals in rural towns. This has led many rural veterinarians to diversify the focus of their practices from production to companion animals.

9.45 While it varies between industries, only 20%-30% of producers engage veterinarians for professional advice.

9.46 Australian Bureau of Statistics survey results indicate that the number of veterinary practices is evenly divided between capital cities and country areas.

9.47 Professor Heath's analysis indicates that, since 1981 rural Australia's share of the number of rural veterinarians has fallen slightly, by about three percentage points, but the absolute number has almost doubled. Two other significant changes are: first, more females are now practising in rural areas than in previous years; and, second, most graduates who initially choose to work in mixed rural based practices leave within five years.

9.48 For males, the most common reasons reported for leaving rural practice are pay and conditions and a desire to travel. For females, the explanations also include working hours, a simple desire to return to the city and a desire to raise a family.

9.49 These are similar problems to those faced by other professionals in rural areas. Many representations to this Review noted that the problems facing veterinarians were part of a "deeper malaise" affecting rural areas.

Findings

9.50 The requirements for rural veterinarians have not changed in that the community and clients expect them to treat any animal, at any time.

9.51 There have been a number of structural changes in the environment in which rural veterinarians operate. These include a reduction in government resources for animal health, laboratory closures and the introduction of fees for service.

9.52 Most rural veterinarians no longer rely on production animal services for their income.

9.53 The limited access to livestock enterprises by veterinarians is a serious limitation to Australia's surveillance programme.

9.54 The most common practitioner service remains the treatment of single animals. There are opportunities for rural veterinarians to widen their client base and provide professional advice on a whole herd/flock basis. But producers are resistant and veterinarians are not good marketers of their professional knowledge and skills.

9.55 Rural practitioners justify their opinion of a shortage of rurally orientated veterinarians on their inability to attract staff who are prepared to stay or serve as locums.

9.56 The increased number of females, in both relative and absolute terms, graduating from veterinary science from Australian universities is not having an undue influence on the availability of rural veterinary services except in one important respect and that is the apparent reluctance of employed female veterinarians to enter into practice ownership may pose succession problems in the future. New approaches to practice ownership need to be explored.

9.57 Greater involvement of private practitioners in surveillance will improve the viability of individual practices, which, in turn, will assist retention of staff.

Education and training

9.58 The Terms of Reference seek specific advice on the role, character and resourcing of education and training of Australian veterinarians.

9.59 Australia's veterinary education is comparable to that offered in other countries, notably UK, NZ, USA and Canada.

9.60 While teaching requirements in Veterinary Schools are similar to those in medicine, the absence of a publicly funded teaching hospital system means that the Veterinary Schools are at a considerable cost disadvantage relative to medicine.

9.61 Perhaps the most common topic raised in the representations to the Review was the need for a change in the existing arrangements for entry into a Veterinary School. The common perception is that direct entry based on secondary schooling results is the customary pathway. However, entry to veterinary science is increasingly via other tertiary study rather than direct from secondary school. The latter approach has definite merit because it offsets the disadvantages of attending rural high schools.

9.62 Professor Heath's longitudinal and other studies (Chapter 4) do not support a general perception that rural veterinary graduates return to and remain in rural areas. His results indicate graduates who were raised in and return to rural areas to practise after graduation, only remain in the rural areas for 18 months to 2 years longer than their city born colleagues.

9.63 Australia's four Veterinary Schools have over 1400 enrolments and graduate some 300 domestic based Bachelor of Veterinary Science each year. This number has increased steadily since 1989.

9.64 Charles Sturt University in Wagga Wagga urged the Review to recommend the establishment of a fifth veterinary school. Another university advised it was considering whether there was scope to open a fifth veterinary school but made no direct representations.

9.65 Course content was a common theme with many veterinarians and students asserting existing courses are biased toward companion animals. This contention is rejected by the Veterinary Schools.

9.66 Practice owners commented new graduates often lack practical skills and empathy with production animals. There is a belief that this shortcoming stems from limited contact with production animals as part of course work. The Review is aware that the existing schools are implementing changes aimed at addressing such issues by requiring more hands on practical work.

9.67 Pig and poultry specialist veterinarians have a particular concern that existing courses only include the basics about their species. They add that students are not encouraged to take interest in their species and consequently find it hard to attract new graduates. Similar concerns have been expressed about teaching related to native animal diseases.

9.68 There are also apparent shortages emerging in specialised areas of veterinary science. The essential issue is that the present number of veterinarians in specialised areas is aging and few veterinarians are undergoing training to replace them. It has been estimated that there are about 130 veterinary pathologists, of whom 10% are under 35 years of age and over 50% aged 50 years or older. In 2001, there were only six veterinarians undertaking pathology training.

Findings

9.69 Veterinary science education provided in Australia is internationally recognised as comparable with the best available overseas.

9.70 Because of the cost structure and requirements to fund clinic and off campus programs, a combination of rising costs and reductions in real terms in both Commonwealth funding and university internal funding allocations have had a harsh effect on the Veterinary Schools, particularly the Queensland School.

9.71 The Review is satisfied that unless adequate resources are directed to the Veterinary Schools, their standards may be called into question. This in turn would have implications for recognition of Australian graduates and acceptance of certification by Australian government veterinarians of livestock product for export.

9.72 The Review is not convinced changing entry requirements to favour students of rural origin will significantly improve retention of veterinarians in rural mixed practices.

9.73 The Review found the four Schools have a wide variety of entry pathways.

9.74 The Review considers that the current 300 HECs and domestic graduates per year is “about right” for Australia’s immediate needs.

9.75 Current industry needs do not favour the opening of a fifth veterinary school in the immediate future.

9.76 The Review believes there is scope for rural based universities to move further into the provision of production animal, equine and wildlife animal science courses. The opportunities include:

- (i) special courses aimed at producers and focused on production systems with components in animal health;
- (ii) special courses aimed at producers and focused on production systems with components in animal health; and,
- iii) a degree combining elements of veterinary and agricultural sciences.

9.77 The Review is satisfied, despite the contrary views of the Veterinary Schools, that existing courses have a stronger focus on companion animals than production animals. This influences students’ interest in production animal veterinary practice after graduation.

9.78 Many experienced practitioners have little faith in the abilities of new graduates when they take up their first job. More practical work related to building confidence in handling production animals and more mentoring in this area would be useful.

Veterinary Para-Professionals and Allied Professionals

9.79 There is a large and growing number of personnel with the qualifications, training and/or experience in animal health related fields. As a general rule, rural veterinarians regard such personnel as competitors when this need not be the case.

Findings

9.80 Scope exists for veterinarians and para-professionals professionals in allied fields to work more cooperatively and closely. For example, rural veterinary nurses could undertake many routine tasks, freeing veterinarians to undertake more specialised tasks and there is considerable scope for veterinarians and agricultural scientists to establish joint farm consultancy practices.

Appendix 1

Terms of Reference

Overview

Australia's animal health systems, the services they provide and the animal health status they deliver influence the profitability of Australia's livestock industries. In turn, this influences the contribution of these industries to rural and regional Australia and the economy more generally.

These animal health systems span on-farm activities to regional and national programs and activities underpinning disease free status, detection and emergency response. The influence of these systems ranges from impacts on productivity at enterprise level, to the ability to maintain and demonstrate required animal health status and product integrity.

A widely held view within the livestock industries and the animal health system is that Australia's animal health capabilities are not keeping pace with the changing and more stringent needs being placed on them. While market requirements become more demanding and maintaining profitability becomes more challenging, the required resources and veterinary expertise appear to be in decline, or at least not developing to meet future needs.

Veterinarians, and particularly those outside the major metropolitan centres, are a key resource in Australia's animal health systems. Operating in both private and public sectors, they contribute to service delivery and system performance throughout the chain from the farm and private practice, to policy planning, regulation and program implementation at regional, State and national levels.

Recent industry surveys have shown that the average age of these rural veterinarians is fifty years. Many are expecting to retire within the next five to 10 years, with too few young veterinary graduates prepared to take their places. The majority of graduates prefer to work in the more closely settled areas servicing, in particular, companion animals and wildlife. It is difficult for rural practices to recruit and retain veterinarians with adequate expertise with farm animals; who will accept full-time continuing employment; and who are interested in management or ownership of rural practices.

Scope of the Review

From the perspective of delivery of animal health services to livestock industries, the Review should examine:

1. The future needs of Australia's livestock industries in respect to animal health systems.
2. The expected roles and requirements for rural veterinarians in meeting these needs.
3. What will be required to ensure people with the required veterinary training and expertise are available where and when needed.

Specifically, the Review is to:

1. Examine changes in the availability and roles of rural veterinarians (in private and

government sectors) and determine the major causes of these changes.

2. Analyse and reach conclusions on the impact for rural veterinarians of future animal health needs, based on:
 - expected requirements throughout the production and supply chains;
 - perspectives at the levels of livestock enterprises, livestock industries, and specific regions and/or the country as a whole;
 - the factors relating to the character, management and performance of veterinary practices and government animal health services in rural areas;
 - livestock industry demand for the services of rural veterinarians; and,
 - activities undertaken by veterinary practices in rural areas that may have a public benefit.
3. Having determined the needs for rural veterinarians, consider what can and should be done to ensure their availability when and where required, with regard to:
 - the role, character and resourcing of education and training, including for professional development;
 - registration and accreditation systems for veterinarians to practise in Australia, including the scope and precedents for revised approaches in this area;
 - the role of veterinary support personnel in the provision of animal health services; and,
 - the importance of social and environment factors that influence where veterinarians chose to live and work.

Appendix 2

Consultative Group Members

Dr Robert Baker	Australian Veterinary Association
Mr Bill Burmester	Department of Education Science and Training
Mr Michael Hartmann	Cattle Council of Australia (representing extensive industries)
Dr Bill Hetherington	Australian Meat Council Limited (representing meat processors and exporters)
Dr Alick Lascelles	National Farmers Federation
Dr Gardner Murray (Chair)	Agriculture, Fisheries and Forestry – Australia
Dr Geoff Neumann	Animal Health Australia
Ms Kathleen Plowman	Australian Pork Limited (representing intensive industries)
Mr Peter Strong	Rural Skills Australia
Dr Robin Vandegraaff	Primary Industries & Resources South Australia (representing States/Territories)
Professor John Yovich	Murdoch University

Appendix 3

Submissions to the Review

Written submissions relating to the Review Issues Paper were made by the following organisations and individuals and a further **five** were received on a confidential basis.

Agriculture, Fisheries and Forestry Australia	
Alston, Margaret	Lecturer
Animal Health Australia	
Australian Association of Cattle Veterinarians	
Australian Council of Veterinary Scientists - Epidemiology Chapter	
Australian Embryo Transfer Society	
Australian Equine Veterinarians Association	
Australian Racing Board	
Australian Sheep Veterinarians Society	
Australian Small Animal Veterinarians Association	
Australasian Veterinary Boards Council	
Australian Pork Ltd	
Australian Veterinary Association	
Australian Veterinary Association ACT	
Australian Veterinary Association NSW	
Australian Veterinary Association NSW Central West	
Australian Veterinary Association Tas	
Baldock, Chris	Consultant
Batey, Roy	Veterinarian
Beach, Zoe	Student
Braithwaite, Chris	Veterinarian
Butterworth, Edward	Veterinarian

Cameron, Ranald	Ex Professor, Vet Science
Campbell, Angus	Consultant & Researcher
Cattle Council of Australia	
Cave, Carol	Veterinarian
Charles Sturt University	
Chemonges-Neilson, Saul	Veterinarian
Clarke, Roger	Veterinarian
Clift, Catherine	Veterinarian
Clyne, Helen	Veterinarian
Collins, Henry	Veterinarian
Daniel R.C.W.	Veterinarian
Deans of Australian Veterinary Schools	
Doughty, Frank	Veterinarian consultants
English, Doug	Veterinarian
Erikson, Anna	Veterinarian
Everett, Roy	Veterinarian
Foote, M. G.	Ex Veterinarian
Gardiner, David	Agriculturalist
Gardner, Ben	Veterinarian
Guilfoyle, Alan	Veterinarian
Harris, Ron	Veterinarian
Hart, Keith	Veterinarian
Hatch, Peter	Ex Veterinarian
Hawkins, Chris	Veterinarian
Hawson, Lesley	Veterinarian
Hedfels, Robert	Veterinarian
Henderson, Alastair	Ex Veterinarian
Hobson, Simon	Veterinarian
Lawrie, Tim	Veterinarian
Lean, Ian	Rural consultant

Lovell, David	Veterinarian
Lyons, Don	Veterinarian
Macdonald, Barry	Veterinarian
Macintosh, Fiona	Veterinarian
Malmo, Jacob	Veterinarian
Marchant, David	Veterinarian
Maxwell, John	Veterinarian
McAuliffe, Peter	
McLennan, Malcolm	Lecturer
Melbourne University Veterinary School	
Millar, Richard	Pathologist
Morrice, Gabe	Veterinarian
Murdoch University Veterinary School	
Niethe, Geoffrey	Veterinarian
Noble, John	Veterinarian
Nottle, Frank	Veterinarian
New South Wales Agriculture	
NSW Farmers Association	
Nugent, Rod	Veterinarian
Nye-Chart, Miles	Veterinarian
Paine, Katrina	Veterinarian
Parsonson, Ian	
Penry, John	Veterinarian Vet
Post Graduate Foundation, Veterinary Science, Sydney University	
Queensland Department of Primary Industries	
Quarantine and Exports Advisory Council	
Rheinberger, Bob	Veterinarian
Richards Lionel	
Roe, Dick	Veterinarian, consultant

Royal College of Veterinary Surgeons (UK)	
Rural Skills Australia	
South Australia Department of Primary Industries & Resources	
South Australia Farmers Federation	
Schiemer, Greg	
Sheridan, Allan	Veterinarian
Skerman, David	Veterinarian
Smith, Charissa	Veterinarian
Tan, Rachel	Veterinarian
Thompson, Ruth	Veterinarian
Tuckett, Graham	Veterinarian
University of Queensland Veterinary School	
University of Sydney Veterinary School	
Veterinary Nurses Council	
Veterinary Surgeons Board ACT	
Western Australia Department of Agriculture	
Watson, K. G.	Veterinarian
Webb, Kathy	Veterinarian
Welch, Marion	Veterinarian
Wells, Kendall	Veterinarian
Wright, John	Veterinarian

Written submissions relating to the Review Policy Discussion Paper were made by the following organisations and individuals and a further **one** was received on a confidential basis.

Agriculture, Fisheries and Forestry Australia	
Albiston, Andrew	Plant Pathologist
Animal Health Australia	
Australian Association of Cattle Veterinarians	

Australian Racing Board	
Australian Veterinary Association	
Australian Veterinary Association – NSW	
Baldock, Chris	Consultant
Brown, Alec	Veterinarian
Cattle Council of Australia	
Charles Sturt University	
Doughty, Frank	Veterinarian consultant
Foote, M.G.	Veterinarian
Gardiner, Ben	Veterinarian
Hatch, Peter	Counsellor (Veterinarian)
Lascelles, Alick	Veterinarian consultant
Morris, Rodger	Professor
NSW Farmers Association	
Northern Territory Chief Veterinary Officer	
Nottle, Frank	
Reece, Rod	Pathologist
Rheinberger, Bob	Veterinarian
Skerman, David	Veterinarian
Templeton, Bob	Veterinarian
University of Sydney Veterinary School	
South Australia Chief Veterinary Officer	

Appendix 4

List of Organisations and Persons Consulted

Queensland

John Armstrong	Veterinarian
Chris Baldock	AusVet Animal Health Services
Alastair Bassingthwaite	Producer
Robert Brydon	Veterinarian
Lex Carroll	Veterinarian/producer
Kevin Dunn	Department of Primary Industries
Lee Fitzpatrick	James Cook University
Graham Garde	Veterinarian
Don Glasgow	Veterinarian
Robert Headless	Department of Primary Industries
Trevor Heath	Emeritus Professor
Sandy Jephcott	Stanbroke Pastoral Company
Glen Kennedy	Veterinarian
David Lovell	Veterinarian
Hugh McIntosh	Veterinarian
Neil McMeniman	University of Queensland
Roly Nieper	Animal Health Australia
Scott Parry	Veterinarian
David Pietsch	AgForce
Richards Glen	Veterinarian
Russell Rogers	Department of Primary Industries
Gregory Smith	Veterinarian

Graham Stabler	Veterinarian
John Stewart	AgForce
Kevin Sullivan	Veterinarian
Graham Thomson	Veterinarian
Ross Wilson	Veterinarian

Australian Capital Territory

David Banks	AFFA
Carmel Brophy	National Rural Health Alliance
Bill Burmester	DEST
Andrew Cupit	AFFA
Geoff Gorrie	AFFA
Gordon Gregory	National Rural Health Alliance
Bill Hall	Australian Pork Limited
Michael Hartmann	Cattle Council of Australia
Rob Keogh	Animal Health Australia
Anne McDonald	AFFA
Gardner Murray	AFFA
Geoff Neumann	Animal Health Australia
Mike Nunn	AFFA
Tim Roseby	AFFA
Michael Taylor	AFFA
Steve Tidswell	AFFA
Sharon Turner	WoolProducers
Jonathon Webber	AFFA

New South Wales

Heidi Austin	Charles Sturt University
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Ken Baker	Veterinarian
Peter Best	Veterinarian
Renata Brooks	NSW Agriculture
Ian Brown	FMRC Benchmarking
Peter Carter	Producer
Michael Chambers	Veterinarian (Health Research Pty Ltd) New England
Bruce Chick	Veterinarian (Health Research Pty Ltd) New England
Bruce Christie	NSW Agriculture
Chris Collins	Veterinarian
Peter Cosgrove	Veterinarian
Christine Cosgrove	Veterinarian
Peter Cregan	Charles Sturt University
Ian Denney	NSW Agriculture
District Veterinarians	RLPB District Veterinarians Annual Conference
Frank Doughty	Australian Veterinary Association
Keith Entwistle	University of New England (Adjunct Professor)
Ben Gardner	Veterinarian
Ian Godwin	University of New England
David Golland	Veterinarian
Scott Lackenby	Veterinarian
Joe Lane	NSW Farmers Association
Maria Linkenbagh	NSW Veterinary Surgeons Board
Andrew Litchfield	Veterinarian
Bryn Lynar	Veterinarian
Jim Martin	Veterinarian
Greg McCann	Veterinarian
Finola McConaghy	Veterinarian

Steve and Wendy Nathan	Veterinarians & personnel consultants
Nicole Newsome	Veterinarian
Frank Nottle	RLPB State Council
Lorroi Pagett	Veterinarian
Ross Pedrana	Veterinarian
Kevin Pendergast	Veterinarian
Alex Pottie	Veterinarian
Colin Poyner	Veterinarian
Jim Pratley	Charles Sturt University
Janet Riley	Veterinarian
Reuben Rose	Sydney University
Tony Ross	Pathologist
Simon Rushworth	Veterinarian
David Sackett	Consultant Veterinarian
Don Saville	NSW Agriculture
Richard Sheldrake	NSW Agriculture
David Skerman	Veterinarian
The Board	Australian Veterinary Association
Hugh White	Veterinarian
Bruce Wynn	Australian Veterinary Association

South Australia

Robert Baker	Primary Industries and Resources SA
Tony Barnett	Primary Industries and Resources SA
Nigel Baum	Veterinarian
Mustafa Bozkurt	Veterinarian
John Carles	Veterinarian
James Champion	Veterinarian
Brenton Clarke	Veterinarian
Katherine Clift	Primary Industries and Resources SA
Andrew Coffey	Veterinarian
Vic Coleman	Veterinarian
Andy Doube	Veterinarian
Lorelle Fenner	Veterinarian
Dennis Golding	Veterinarian
Alison Gunn	Australian Association of Cattle Veterinarians
Peter Jones	Veterinarian
John Koch	Veterinarian
Tim Lawrie	Veterinarian
Barry Lloyd	Veterinarian
Bernie Mason	Veterinarian
Angas McCurdie	Veterinarian
Kevin McGrath	Veterinarian
Peter Nosworthy	Primary Industries and Resources SA
Jane Parker	Veterinarian
Barry and Joanne Pfiffer	Producers
David Pritchard	Primary Industries and Resources SA
Jeremy Rogers	Veterinarian
Jim Smith	Veterinarian

Brian Thomson	Veterinarian
Colin Trengrove	Consultant veterinarian
Margie Trowbridge	Veterinarian
Jack Van Wyk	Primary Industries and Resources SA
James Vowles	Veterinarian
Michael Warner	Veterinarian
Geoff Warren	Veterinarian
Ken Watson	Veterinarian
Whyalla Veterinary Hospital	Veterinary Nurses

Victoria

Jane Bindloss	Veterinary Nurses Council of Australia
Gus Braniff	Gribbles Pathology
Ivan Caple	University of Melbourne
John Craven	Australian Veterinary Boards Council
Mary Ann Culliver	Australian Veterinary Boards Council
Peter Daniels	CSIRO (AAHL)
Mark Eagleton	Veterinarian & primary consultant
John Galvin	Department of Primary Industries
Jacob Malmo	Veterinarian
John McQueen	Australian Dairy Farmers Ltd
Hugh Millar	Department of Primary Industries
Mike Rickard	CSIRO (AAHL)
Dick Rubira	Department of Primary Industries
Judy Slocombe	Gribbles Pathology
David Stewart	CSIRO (AAHL)
Steve Tait	Department of Primary Industries
Margaret Wilson	Veterinary Surgeons Board (Vic)
Hugh Wirth	RSPCA

Western Australia

Ray Batey	Veterinarian
John Bolton	Murdoch University
Peter Buckman	Department of Agriculture – WA
Helen Chapman	Murdoch University
Anna Ericson	Veterinarian
Stan Fenwick	Murdoch University
Mark Kabay	Department of Agriculture – WA
Mike Lumsden	Australian Veterinary Association
John Maxwell	Veterinarian
Brad McCormick	Department of Agriculture – WA
Helen McCutcheon	Veterinarian
Ashley Mercy	Department of Agriculture – WA
Lisa Mitchell	Veterinarian
Don Moir	Department of Agriculture – WA
Richard Norris	Department of Agriculture – WA
Graeme Penno	Veterinarian
Dave Pethick	Murdoch University
Paul Repton	Veterinarian
Peter Rosher	Veterinarian
Jan Thomas	Murdoch University

United States of America

Lonnie King	Michigan State University
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