A Strategy for Biosecurity in Gauteng Veterinary Services

**Definition of biosecurity**

Biosecurity attempts to ensure that ecologies sustaining either people or animals are maintained. This may include natural habitats as well as shelter and productive enterprise (especially agriculture) and deals with threats such as biological warfare or epidemics. Differing concepts of biosecurity are evolving in many professions. So far the field has focused on attempts to establish uniform standards of risk referencing.

The term biosecurity is given a different emphasis in different countries. One view, prevalent in New Zealand and Australia, states that it involves the protection of the ecological integrity of native ecosystems, and the measures taken to prevent bioinvader species imported via shipping, tourism or deliberately. It includes incidentally the human health risks that arise from such species, trying to prevent new pests and diseases, and unwanted animal and plant species from arriving. Biosecurity involves getting rid of, and controlling those that are already here. (Statement taken from the New Zealand web site.)

In the United Kingdom and Canada for example and in agricultural circles in other countries, however it is used to describe a series of precautions to prevent the outbreak and spread of disease. Biosecurity literally means ‘safe life’. For livestock farmers it is about the prevention of disease causing agents entering or leaving any place where farm animals are present or have been present recently. It involves a number of measures designed to prevent disease causing agents from entering or leaving a property and being spread. Of particular concern at markets is that disease causing agents can be present in animals’ breath, faeces, urine, semen, milk, nasal secretions and saliva (DEFRA website UK).

**The need for biosecurity in South Africa**

Prof Robert Bragg, lecturer at the University of the Free State’s (UFS) Department of Microbial, Biochemical and Food Biotechnology, during his inaugural lecture, said that although the development of vaccines remains the mainstay of disease control in humans as well as in avian species, disease control can not rely on vaccination alone and other disease-control options must be examined. “With the increasing problems of antibiotic resistance, the use of disinfection and bio security are becoming more important,” he said.
“Disinfection and bio security can be seen as the ‘Cinderella’ of disease control in poultry. This is also true for human medicine. One just has to look at the high numbers of people who die from hospital-acquired infections to realize that disinfection is not a concept which is really clear in human health care,” said Prof Bragg. Much research has been done in the control of diseases through vaccination and through the use of antibiotics. “These pillars of disease control are, however, starting to crumble and more effort is needed on disinfection and bio security,” said Prof Bragg.

Any outbreak of disease causes much animal suffering and millions of animals are destroyed. Economic consequences are severe and can cost the economy millions of rand. This loss is not only the cost of compensation and policing but also the loss of revenue from livestock sales both in the country and to other countries. The credibility of the Department of Agriculture to prevent the spread of disease is affected. Clearly it makes sense to concentrate on basic preventative measures that are often relatively low cost and very effective.

Traditionally disease control has centered on vaccination and the use of antibiotics. There is increasing public awareness that drug residues may have negative consequences for human health. It is consequently important to put measures in place to prevent the spread of diseases that need to be controlled. In any intensive farming situation such as that which commonly occurs in the poultry and pig industry, it is essential to prevent the introduction of diseases that might spread rapidly from animal to animal.

Outbreaks of animal diseases often affect those farmers that are most vulnerable, namely the emerging farmers. Many of these farmers have small poultry concerns and piggeries. An understanding of the principals of biosecurity would greatly benefit their businesses.

**Applying biosecurity to the South African and Gauteng context.**

It is clear in summary that biosecurity is much more than a set of hygiene rules.

It is possible to see Gauteng as a series of systems within systems each of which must be made safe. So the province itself must be made secure by regulating what comes in and out. The principal must be applied to each district and each farm or abattoir. It can even be applied to each home or community. By promoting awareness about this principal, people will be able to reduce disease outbreaks in both animal and human populations.

As each province and indeed the whole of South Africa have similar biosecurity needs, the eventual aim is to provide systems that can be adapted for every province. It is hoped to encourage biosecurity awareness in this way and also to build up international contacts and remain up to date in current thinking in other countries.
Biosecurity in Gauteng applies to four critical areas.

1. **Control of animal disease at the borders of the country and the province** - this will include importation of animals and animal products and management of un-permitted animals and animal products coming into the country. It should also include the illegal movement of animals and animal products from other provinces. Standards at import quarantines need to be monitored and implemented.

2. **Control of the spread of diseases within the province**. This will include measures on farms and at auctions and shows. Creating awareness about biosecurity among the farming population is the key to controlling the spread of disease.

3. **Control of the spread of diseases and resistant organisms from animals to humans** - biosecurity is especially important to prevent the transfer of zoonotic diseases to humans. Increasingly, bacteria that are resistant find their way from food animals to humans as the result of the use of antibiotics. It has become essential to monitor the occurrence of resistance that occurs as the result of use of antibiotics in animals and is a problem in humans. This has become an important concern of the biosecurity sub directorate.

4. **Biosecurity education** Awareness of biosecurity issues is crucial for every state vet. As the only biosecurity sub directorate in South Africa, we take our responsibility to raise awareness seriously and undertake numerous educational initiatives.

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**Current detailed biosecurity sub program priorities**

In the context of Gauteng, biosecurity is a set of measures that are put in place to control the spread of diseases. This can be at farm, provincial or national level.

The area of biosecurity in Gauteng must include the following main thrusts:

1. **Farm biosecurity**

   This entails raising farmer awareness about biosecure practices at farmers days, through publications aimed at farmers and through the practices of our own staff, as well as maintaining standards in compartmentalized farms.

   Priority continues to be given to encouraging pig and poultry farms to be compartmentalized as a means of limiting the impact of disease outbreaks on the export capacity of the province. In most cases compartmentalized farms are not affected by quarantine restrictions imposed during outbreaks in the rest of the country. At
present 54 farms in Gauteng are regularly inspected by the biosecurity sub-directorate and are registered as compartments and or ZA facilities.

Of some importance in this respect is the need to promote the concept of traceability. All animals should be marked with a non-removable identification system. In the past branding and ear tags have been used and are still the most widely used identification systems. These have the disadvantage in that they are seldom unique and often can be removed or erased. An electronic implant has the advantage that it is unique and can be used in conjunction with a database to provide valuable information about vaccinations, diseases, drugs used and movement between farms. Such a tool would enable the spread of a disease to be tracked and allow more effective monitoring for drug residues and more effective certification. At present this aspect of biosecurity, while vitally important, is not seen as a priority by DAFF and unfortunately, traceability is a national concern and needs input from that department to be effective.

2. Airport biosecurity
   1. Gauteng Veterinary services should continue to contribute to a policy for the disposal of airport waste. There must be an adequate and auditable procedure in place to cover the collection, transport, recycling of galley, cabin waste and dunnage. Gauteng is particularly active and proactive in this regard and has advanced significantly in the control of galley waste in Gauteng as well as providing reports to other provinces on the harbours and airports in an attempt to achieve a uniform standard. There is still much work to do in this regard.
   2. Gauteng Veterinary services must ensure that there is adequate and auditable system in place for the confiscation of animal products. This will involve working with APHIS. There must be adequate provision made to ensure safe secure disposal (incineration), recognising that confiscated animal products represent a very high risk for the province. This process including the act of confiscation, transport to the incinerator, and the process of incineration must be audited on a regular basis. Input from Gauteng biosecurity continues to be of value in this regard but APHIS practice in this area has improved greatly.
   3. The biosecurity sub-directorate continues to develop reports and pamphlets to educate both decision makers and role players.

3. Biosecurity practices of personnel in veterinary services

   This has been standardized and implemented – use of protective clothing, disinfection of vehicles etc. Within the budgetary constraints all personnel do biosecure farm visits.

   Most personnel have been equipped with a standard set of protocols and equipment to do farm visits. These protocols will be
developed to promote behavior that minimizes the risk of disease transmission. Different responses for different levels of risk must be developed and safe ways of executing different types of procedures need to be implemented and standardized. Personnel are trained in the use of such equipment and implementation of new protocols on an ongoing basis.

Since trained personnel are a visible example to each and every farmer that they visit through them, farmers continue to be educated. A biosecurity message will be more effective when distributed by staff that is an example of best practice. Outbreak preparedness which is done by the epidemiological unit, has resulted in staff being trained in outbreak response. This is ongoing as GDARD adapts to evolving best practice in this regard.

4. Education about various diseases and biosecurity issues.

1) The biosecurity sub directorate publishes a veterinary related magazine both for Gauteng vets and animal health technicians as well as for national vets every 2-3 months. This is seen as important in developing knowledge and awareness about various issues that affect biosecurity.
2) Assistance in assessing risk of various diseases and products is given to DAFF and the biosecurity sub directorate is represented at various ad hoc meetings of DAFF for this purpose.
3) The biosecurity sub directorate is represented on the training team of DAFF and is instrumental in developing educational material for state vets and officials that are involved in exports to promote safe responsible exports from South Africa.
4) Dissemination of various publications of the NICD and other role-players to staff is undertaken.
5) Presentation at various congresses and information days is seen as a priority to ensure that the concept of biosecurity is widely accepted.

6) Biosecurity for the Gauteng Department of Agriculture and to veterinarians and others visiting farms in Gauteng

It is important to introduce the concept of biosecurity to the agricultural officers who work for Gauteng Department of Agriculture. Farm veterinarians and all other high risk visitors to farms need to be sensitized to the issue of biosecurity. A training programme for GDARD staff needs to be discussed and implemented. Short talks have been given to various information days in this regard.

7) Other issues in which biosecurity is an important role player
1. **Disposal of Abattoir waste** in a safe cost effective way. Biosecurity issues around abattoir waste continue to be raised as new ways of disposing of abattoir waste become available. Since abattoir waste clearly affects human and animals and can cause disease in both, it is a biosecurity issue. Of major importance is the fact that whatever method is approved needs to be effective in inactivating the prion of BSE. Further research needs to be done with respect to the safety of composting and the cost effectiveness of plasma converters.

2. **Disposal of carcasses of animals that die on farms and are used to feed carnivores.** Protocols have been developed to control this practice which can be a key factor in spreading disease. Guidelines to improve on farm carcass disposal have been drawn up and are regularly updated and monitored.

3. **Antibiotic resistance.** Increasing use of antibiotics in food production animals has led to resistance developing in animals and being transferred to organisms that affect humans. The Biosecurity sub-directorate needs to increase the monitoring of the antibiotics used in the intensive production industries – pig and poultry mainly and liaise with the NICD’s antibiotic resistance unit and ensure responsible use of antibiotics and recommend withdrawal if necessary. It is envisaged that a committee will be established to oversee this function.

4. **Development of standards for import and export quarantines.** The biosecurity sub-directorate is involved in the monitoring and implementation of standards in all types of quarantines. Assistance is rendered at the ORT quarantine and once there is a veterinarian employed there, an education process will ensue and an audit role will be assumed.

5. **Development of standards to control poultry diseases in South Africa** Input continues to be given in the development and application of standards to control poultry diseases. The number of poultry diseases in which the state is involved that is diseases that are notifiable continue to be very small in comparison to the number of poultry OIE listed diseases. This lack of control can affect our ability to export. Improved control can lead to a reduction in diseases and this will lead to a reduction in antibiotic usage as well as improved production standards and better food security.

6. **Biotechnology- Assessment of the risks that gene manipulation has for the survival of traditional animals.** Input into any committee that exists to provide information with respect to veterinary concerns. Biosecurity was approached to give input into the registration of products which have been genetically modified and remains committed to do so.
7. The unpredictable element of biosecurity. As biosecurity in its nature involves assessing new threats, there is an element of unpredictability in the work which has to be catered for. New developments need to be assessed and action taken if necessary to limit or prevent threats to the animals and people of the province. Literature searches and information searches are continually done and new developments are investigated timeously.
Routing sheet

1) Dr Wynton Rabolao (Director)

Sign …………………………………………………

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