

Library Frontiers: Disasters, Emergency Preparedness and Emerging Diseases

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Providing information support services for diseases of animal origin: epidemic and endemic: the role of the ARC-Onderstepoort Veterinary Institute Library

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Abstract

The paper provides some background information on the institutions involved in combating animal diseases in South Africa. These include the Onderstepoort Veterinary Institute (OVI) of the Agricultural Research Council of South Africa (ARC), a central component of animal health in the national Department of Agriculture, and similar components in provincial departments of agriculture. Other role-players are the state-owned vaccine production company Onderstepoort Biological Products and the Faculty of Veterinary Science, University of Pretoria. The role of each body will be highlighted.

The ARC-Onderstepoort Veterinary Institute Library is responsible for information service to all of these, except the last mentioned. The response of the library to an outbreak of Foot-and-mouth Disease in 2000 is described. It will be compared with a response to a similar outbreak in the United Kingdom the following year, at the hand of a paper written on that incident.

The general preparedness of the ARC-Onderstepoort Veterinary Institute Library for outbreaks is analysed, as well as its situation in providing information for endemic diseases and emerging threats, like Avian Influenza. Constraints will be discussed. The role of the mother body (ARC-Onderstepoort Veterinary Institute) as "insurance policy" and how the library can support that, is described as well.

Role players in combating animal disease in South Africa

ARC-Onderstepoort Veterinary Institute

The ARC-Onderstepoort Veterinary Institute (ARC-OVI), has a long tradition of veterinary research since its founding in 1908. It is nationally and internationally recognized as a veterinary centre of excellence. The ARC-OVI is a flagship institution of the Agricultural Research Council (ARC), one of the 8 science councils of South Africa and plays an important role in maintaining the health of our poultry, livestock and wildlife.

Close attention should be paid to the mission, as we will return to that.

“The mission of ARC-OVI is to provide scientific support for veterinary services in effective risk management for quality of life for all in South Africa.” (Agricultural Research Council, 2006)

Directorates of Veterinary Services, Departments of Agriculture

In South Africa we have one national Department of Agriculture, as well as provincial departments of agriculture which are usually combined with other fields like environmental affairs. The veterinary function is likewise provincialized.

With a mission to provide national veterinary risk management services, the National Directorate of Veterinary Services has the mandate to set legislation, policy and standards regarding all functions of Veterinary Services (Department of Agriculture, [2007]).

The aims of the National Directorate of Veterinary Services is to ensure effective biological risk management in terms of animal diseases, food safety, as well as veterinary imports and exports. This goal is attained by providing information, legislation, policy, standards, capacity building, certification, control and audits.

The nine provincial directorates of veterinary services have the mandate to execute all regulatory functions, within their own contexts and in close co-operation with both the national directorate and the other provincial directorates of veterinary services.

The national directorate and the other provincial directorates of veterinary services are often referred to as “state veterinary services” or “field veterinary services”.

Onderstepoort Biological Products

Onderstepoort Biological Products (OBP) is a state owned company. Its mission is stated as: to harness science to help build a healthier and more commercially successful agricultural livestock population.

Within the framework of that strategy it has two chief roles: To produce quality vaccines for the prevention and treatment of livestock diseases, and to exploit and develop ongoing research into the production of new and advanced vaccines for the benefit of agriculture here and abroad. During emergencies therefore, OBP should be able to respond with an increased

output of vaccine production (Onderstepoort Biological Products, [2007]). In 1986 an outbreak of Equine Influenza occurred, which is a foreign disease. OBP was capable to produce an inactivated vaccine against the disease. This was due to the foresight of previously importing the relevant strains. It enabled OBP (then part of a predecessor of the ARC-OVI) to produce a vaccine in sufficient quantities, within weeks of its first diagnosis, to control the disease (Verwoerd, 2000, Bigalke and Verwoerd, in press).

Faculty of Veterinary Science, University of Pretoria

The last major role player in veterinary science is the Faculty of Veterinary Science, University of Pretoria.

The mission of the Faculty of Veterinary Science is to provide effective veterinary and para-veterinary manpower and expertise in order to promote the welfare of the total socio-economic spectrum of communities in South Africa and other countries in sub-Saharan Africa by improving and maintaining animal health, welfare, production and performance, veterinary public health and the conservation of natural resources (University of Pretoria, [2007]).

The paper by Coetsee et al.(2007) describes the role of their Academic Information Service. Before focusing on the role of the ARC-Onderstepoort Veterinary Institute, it can be mentioned that the institute maintains a library. With its historical ties to the government, it also serves the national and provincial directorates of Veterinary science and OBP. The University has its own library, doing business as the veterinary unit of the Academic Information Service, their main library. Historically, the veterinary faculty developed from the Institute, as OBP has. With organizational severance in 1972, the faculty founded a new library. Ties were maintained all the years, and by the end of the 20th century calls there were calls for closer co-operation. Ventures are mentioned here and in more detail in their paper.

Focus of the Onderstepoort Veterinary Institute

Interestingly enough, the Institute and hence the Faculty and OBP resulted from a disaster, that of the Rinderpest outbreak of 1896. Fifty percent of the cattle population and an apparent larger percentage of wildlife, died (Verwoerd, 1992). Arnold Theiler was a private veterinarian when he was called to quell the scourge. Theiler's efforts contributed towards the development of a vaccine and after a year the disease was eradicated. Local veterinarians were able to produce the vaccine again when the disease re-occurred after the South African War. Something positive that stemmed from this was the founding of a bacteriological institute that moved to permanent premises at Onderstepoort in 1908. This institution grew to the well-known institution it is today. The need to research and control East Coast Fever was also a major contributor to the founding of Onderstepoort. This disease broke out in the then Rhodesia in 1901 and was at first regarded as a variant of redwater, caused by a blood parasite. Others, including the renowned Robert Koch (who also was involved in the Rinderpest outbreak)

were of the opinion it was a new disease. Theiler proved finally in 1903-4 that a blood parasite not previously described, was involved.

The Institute covered a wide range of veterinary disciplines up to 1972. When the Faculty severed, its domain became limited to mainly diseases that undermine the livestock economy of Southern Africa: concentrating on fields like microbiology, parasitology and toxicology. Reporting to the department of Agriculture until 1992 and thereafter to the ARC, a parastatal, it also concentrates on farm animals and not on companion animals. Wildlife features where it forms part of the agricultural industry, otherwise not.

The Institute promotes animal health and welfare by providing an effective and efficient diagnostic service. The ARC-OVI is the collaborating centre for both the Office International des Epizooties (OIE) surveillance and control of animal diseases in Africa and the Food and Agriculture Organisation (FAO) of the United Nations for the emergency preparedness for transboundary animal diseases for Africa.

The OIE collaborating centre hosts six OIE reference laboratories for economically important viral diseases namely: African Horse Sickness, Bluetongue, Lumpy Skin Disease, Rift Valley Fever, Rabies and African Swine Fever.

The Institute produces vaccines against Foot-and-Mouth Disease and tick-borne diseases. The reason that these vaccines are not produced by OBP is due to practical reasons. Similarly during emergencies, an increased output of vaccine production may be called for.

Other activities include applied research and consultancy, and surveillance on livestock diseases to the national and provincial government and commercial customers. Earlier on, attention was drawn to the mission of the Institute: the keyword is to provide scientific *support*. While the government departments conduct risk management, the Institute provide scientific support to facilitate their duties.

The successes of the Institute are many. They are listed in: Bigalke, 1985, Verwoerd, 1992, Verwoerd, 2000, Brown 2005 and Bigalke and Verwoerd, in press. Bigalke and Verwoerd are former directors of the Institute with a combined term of 18 years, and even a longer stay in more junior posts. Their views may not be objective, but Brown, an independent historian, still describes its role in the development of Veterinary Science in South Africa.

Apart from Rinderpest, East coast Fever was eradicated in total. Nagana was subdued to such an extent that vast areas of the country were opened to farming. This had a considerable impact on the development of the country. Horsesickness and bluetongue are amongst the diseases that are managed effectively today. (Verwoerd, 1992, p 94).

Some other diseases will be discussed under following headings, when describing to the library of the Institute itself.

The ARC-OVI Library

The ARC-OVI Library is as old as the Institute itself. It holds a wealth of older information, which is not necessarily outdated. Parasitology researchers are often interested in older information. While this paper was being written, 2 papers from the 1880s were sought by a patron, which predates even our holdings unfortunately. Many visiting researchers from elsewhere in the world are impressed with what we have. One man-made disaster, the 2nd World War had a big influence in European veterinary libraries, especially those in Germany. It is not often that a library in a developing country has better holdings than some of those in the western world.

Its market is mainly the Institute researchers. Second are patrons from OBP which is situated next to us. The state veterinary services may make direct enquiries to the library, sometimes enquiries are made by internal patrons for work in co-operation with state veterinary services. Staff and postgraduate students from the Faculty, also next door, are served as well in terms of our agreement.

From 1998, the Institute had to adjust itself to several factors that limited its budget. The parliamentary grant was cut considerably. A weak national currency, the Rand, added to this cut, resulted in the ARC-OVI Library having to cancel more than half of its subscriptions in that year. Towards 2000 even more journals had been cut. In that year, 2000, the country had an outbreak of a foreign strain of Foot-and-Mouth Disease.

The Foot-and-Mouth Disease outbreak of 2000, and a comparison with an outbreak in the UK, 2001-2002

Foot-and-Mouth disease (FMD) is a highly infectious viral disease that can spread widely within a short time span. This disease and similar ones are handled in a special containment facility on biosecurity level 3 at the ARC-OVI. Biosecurity levels vary in the amount of measures taken to control pathogenic organisms, 1 being the lowest, and 4 the highest (sometimes a 5th category is added for outer space biosecurity (preventing terrestrial organisms to contaminate space)).

When a foreign strain entered the country via illegally imported animal fodder, the field services acted accordingly with quarantine measures, always the first line of defence. As described above the ARC-OVI was called upon for further support. I awaited the requests for information from the library. This soon came, when the secretary of the director of the Institute arrived at the library one day. The director, by coincidence, was an FMD expert and was involved in the Institute's participation in the crisis himself. The secretary announced that she will be waiting for the articles to be copied.

It turned out that we could only provide one of the requested articles from our own stock.

It was shocking as an investigation some years before showed that, after a literature survey on the abstract database, CAB, we could deliver 70-80% of the articles from stock.

The rest were often of an esoteric nature and the patrons waived our offer to order such articles on interlibrary loan.

In this case we had less than 10% of an immediate fulfilment rate. The fact that these articles were not known and procured earlier by the FMD experts, lie in the fact that was a foreign strain of the disease.

We dispatched the secretary with the one article and ordered the other articles on interlibrary loan, marked as extremely urgent. Some were not held within the country. For that we made a plea on the international listserv Vetlib-I. This listserv is known for its extremely good co-operation and helpfulness. Within an hour we received the 2 articles from the Pirbright Library of the Institute of Animal Health, United Kingdom. It was taken to the Director's office. He was mostly interested in an article which we requested from a local library. Since it was too soon to hassle them, we waited until 15:00. A phone call revealed that the normal staff of that library were on a course. The person placed there from another branch, could not help. After 16:00, however, the normal staff returned and they went out of their way to deliver the article immediately. The rest of the articles arrived over the next days from various libraries.

Except for the Pirbright delivery, none of the turnaround times can be considered satisfactory enough to address a crisis. Further enquiries by other FMD experts proved a problem exists: urgency waned as the epidemic was brought under control, but in the early stages we could not provide sufficient information support.

Later in 2000 another outbreak of FMD occurred in the Mpumalanga province. This time a South African strain was involved. The demand on our services this time was far less. There may be several reasons: the outbreak was contained to a smaller region, but the main reason probably was that our FMD experts knew what to do and were not reliant on information on the unknown.

While this was the one eye-opening event, before and after that, we experienced problems since we run on far less than a core journal subscription list, while the book collection also deserves attention. Before we attempt to find solutions, let us look at Pirbright's similar challenge the following year.

Shrigley, 2005, describes an "unexpected and unusual level of activity around Pirbright". As the title of her paper states, it was a national crisis. Amongst others it led to the postponement of the national elections. In South Africa it was still a matter of great concern, but geographically isolated to the 2 areas.

Shrigley's description of their outbreak proves that the library was better prepared than its mother body itself, to address a crisis. The main factor was their in-house database on viruses (and related families) under research at Pirbright. The database was started in the 1960s and in 2005 stood at 150 000 records with a monthly growth of about 500 references. It covers journal articles, monographs, book chapters, conference papers, abstracts and some ephemeral material. The oldest reference is dated 1546.

A former librarian of Pirbright visited the ARC-OVI in the 1980's. When an opportunity arose in 1992 to visit Pirbright, I visited Shrigley, the new librarian and was most impressed.

Some attempt to include relevant micrographic indexing in the ARC-OVI's catalogue has been made. Since we cover all diseases however, it is by no means sufficient to address a crisis. The Exotic Diseases Division of the ARC-OVI (the abovementioned biosecurity containment facility) also maintains a database on Reference Manager. It is not as extensive; in April 2007 it stood at 4578 references. Of that the majority are on FMD (3006) and the remainder are on African Swine Fever, Classical Swine Fever and Avian Influenza. Strictly, a database like this should be maintained by the library.

Shrigley continued updating the database during the UK outbreak regardless of the increased number of literature searches experienced. She even widened the scope of the work conducted: press releases and websites were monitored as political movements were just as important. People working longer hours in the restricted area lost touch with the larger picture and this helped them to follow the progress of the outbreak and to see where their role fitted into the overall pattern of events.

The ARC-OVI Library similarly tried to provide an alerting service in the initial stages of the South African outbreak. These were communicated to the Public Relations division, whose function was to use it as appropriate. No effort was made to index the reports.

The UP Library did compile a website with links to publicly accessible information during that time.

The keywords in the success of the Pirbright Library, are pro-activity and immediacy.

Sources of information for the ARC-OVI Library

The ARC-OVI Library receives money from the management of the Institute, that pays for information procurement. OPB and the Gauteng provincial veterinary services pay a sum for services rendered to them. A very small amount of income is also derived from services to external clients on an ad hoc basis.

There are schemes like HINARI and AGORA available for developing countries. Unfortunately the Gross National Product of South Africa is high, and that serves as criterion; the country is not seen as poor enough. Pleas to these schemes that the financial situation of individual institutions should be taken into account, were not met favourably. An analysis of the list of journals covered, also revealed that these schemes on their own will not be sufficient to serve our purposes. There are good titles, but some are aimed at developing economies, while the science conducted at the ARC-OVI is very much on the level of a developed country.

Unlike eg. Britain, South Africa has no large, centralized national library system. A distributed interlibrary loan system for many years was quite useful, still with the

understanding that it should serve fringe needs, not core needs. The movement to electronic information makes interlibrary loans less and less of an option. Interlibrary loans for electronic articles are usually contractually prohibited by the publishers. The ARC-OVI library has an account with the British Library. A few “urgent action” requests to this institution were still delivered only after 2-3 days and cost a pretty penny. Experience with OCLC’s ILL system shows the same problems as with SA’s one, like turn downs for cancelled subscriptions, policy problems (e-subscriptions, possible transgression of copyright etc.) Delivery times are even longer than within South Africa. The agreement with the University of Pretoria is of great help, but they too have to stay within the copyright- and contractual law. Furthermore, their mission is distinct from ours, and they do not always hold what we need. One survey revealed that the entire SA interlibrary loans system, including UP, catered for only 54% of our external needs. Vetlib-I stays the best emergency helper, but there is an unwritten policy that it should not be overused.

Conclusion and strategies

One disease outbreak showed that the ARC-OVI Library is not equipped to handle emergencies. Since 2000 a few critical subscriptions have been reactivated, but otherwise little has changed. We failed both the criteria of pro-activity and immediacy.

Avian influenza is the major emerging threat. The ARC-OVI spent a substantial amount of money for a new AI laboratory. Information provision to the researchers has not yet been upgraded.

Cooperative steps by the UP Veterinary Science Library and the ARC-Onderstepoort Veterinary Institute Library to improve information support for all involved with animal health including state veterinarians, are in the pipeline. The development of a website by the UP Veterinary Science Library to serve as a one-stop e-information source for the country’s animal health workers who will have to deal with disasters and emerging diseases is a logical next step. Problems addressed before the final product could be made available included what type of information should be featured, who were the experts we would consult to add appropriate content to the site, how it may perhaps differ from similar sites elsewhere in the world, who would be the target audience, with whom to collaborate, and what potentially dangerous information should be omitted from the site.

By making the information electronically available it is ensured that the animal health worker, veterinary practitioner, epidemiologist, state veterinarian, or public health official will have the information he or she needs when he or she needs it, at any time and in any place where he or she has a computer and Internet connection. The scope is therefore wide, and includes some needs of the ARC-OVI and its state clients minus access to specialized scientific journals. Links to open access journals will, however, be made available.

As for subscriptions, the ARC-OVI corporate body, the Agricultural Research Council, recently invited ARC librarians to submit strategies and appropriate budgets to upgrade

ARC libraries. There is a glimmer of hope. I would still suggest that pandemics should be addressed in a pan-continental or global way, that is that research institutions like us should be allowed onto schemes like HINARI, regardless of the wealth of the country.

Pro-activity can be arranged by either the Pirbright approach, that is to procure all relevant articles that may be required in future. To select these is not easy. Full coverage will mean a lot of indexing (read: human resource time) and procurement of individual articles is no longer cheap itself. Such an approach will literally procure everything written on a disease, in all formats, on all strains, in all languages. The other option is wide coverage in subscriptions. This is also an expensive option, but will also support everyday work on endemic diseases much better. Immediacy of document delivery will follow from both approaches.

Out of crisis times, the Institute quietly performs its duties, and does it well regardless of the constraints. The yet to be published paper of Bigalke and Verwoerd after all lists successes right to recent times. It is only during crises that the Institute's value as an "insurance policy" is appreciated. Insurance policies in other environments are regularly reviewed and upgraded if necessary. This should be the case here as well.

I conclude with some hints by Shrigley on how to be proactive, and otherwise what to do in a crisis:

Normal service should be maintained as far as possible. Other patrons should not be neglected.

More time should be spent on training researchers in library use and database searches, in order to empower themselves with information skill and not be reliant on the information intermediary.

Reading lists should be available, stemming from observations on the type of enquiries made in "normal" times.

Help should be accepted when offered. Shrigley told a colleague that she had things fairly under control and that it would anyway be over in a week. The outbreak lasted 18 months!

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