Disease prevention and preparedness in cases of animal health emergencies in the Middle East

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Summary
The animal health situation in the Middle East is particularly unfavourable, in that this area is significantly exposed to many serious animal diseases. Typical factors which contribute to this situation are illustrated with reference to an outbreak of Rift Valley fever in Egypt from 1977 to 1980. The Middle East is ill prepared to institute disease prevention and control measures, due to deficiencies at both national and regional levels. Early disease detection, diagnosis and reporting must become a priority, both within these countries and among them. The author describes several regional animal health programmes which are supported by international institutions and underlines their respective importance.

Keywords

Introduction
The Middle East, a geo-political region encircling the eastern Mediterranean Sea, constitutes a network of avenues through which animal diseases, in particular foot and mouth disease (FMD) and rinderpest, move very easily from country to country causing great economic losses. The reasons for this include the following:

- geographical position
- climatic conditions
- a low standard of animal husbandry
- the composition and distribution of livestock
- uncontrolled animal movement
- communal grazing
- the importation of animals without due safeguards
- the lack of efficient animal health extension services
- inadequate numbers of trained and experienced personnel
- inadequate numbers of appropriate facilities
- the lack of a continuing exchange of animal health information between neighbouring countries.

The regional situation has been described in the literature (7, 11, 13).

In climatic terms, the entire region has a strongly marked pattern of summer drought and winter rain. Aridity (with rainfall often below 100 mm per year) and very hot summers characterise vast areas of land. Rainfall is extremely erratic in terms of both season and geographical location. On the other hand, there are two large delta areas in the region, the Nile and the Mesopotamia, where large numbers of ruminants are concentrated, together with a dense and heterogeneous arthropod population. This situation represents an abundant source of wind-borne disease agents.

The land resources of the Middle East are small and fragile. Pastoralism is practised over areas of steppe (grassy plain), which are widespread in almost every country in the region. Nomadic herding, involving mainly small ruminants, and seasonal transhumance are widely practised. Humans and animals tend to share common premises, making the latter prone to zoonotic diseases. Productivity is low, due to the small-scale, family-type farming structure; natural hazards, pests and diseases; the limited availability of feed resources and limited capital and credit. Ritual slaughter, which may involve millions of animals on special occasions, such as the Bairam, and a deep-rooted, traditional preference for home slaughter predominate in the region, resulting in deficient meat inspection and poor disease monitoring. A net exporter less than fifty years ago, the Middle East has become the largest importer of food and animal feed in the developing world, due to a rapidly growing population. Imports, principally of live animals and animal products, now account for more than 25% of the total import bill for the region, and more than 40% of the value of all food imported by the
developing countries of the world. It has been predicted that, if current trends in production and consumption persist, the region will continue to be deficient in livestock and livestock products. According to the Food and Agriculture Organization (FAO) statistics, more than 15 million live food animals were imported into the area during 1996, of which approximately 12.4 million sheep and 2 million goats, accounting for 64.4% of the total world imports of sheep and goats (Table I). Sheep meat imports to the region have more than doubled in the last twenty years and now account for more than 25% of exports of this commodity throughout the world (19). In spite of the very large numbers of livestock in the region, the annual deficit of all kinds of meat currently stands at approximately 1.5 million metric tons and the gap is not expected to be bridged by 2000 (19).

This situation, when combined with the political instability which causes a lack of co-operation among various countries in the region and undermines regular and proper disease reporting, has created significantly unfavourable epizootiological conditions in the Middle East, which also endanger neighbouring regions.

Animal health status

The poor animal health situation in the Middle East has been repeatedly demonstrated by the presence in the region of epizootic diseases in List A of the Office International des Epizooties (OIE) (Table II). The two foremost diseases, FMD and rinderpest, have been reported at least once in all the countries reviewed, except Cyprus, during the last thirty years.

In the past, exotic strains of FMD virus were involved in panzootics, covering large parts of the region, extending to the frontier of Europe. Such panzootics included the outbreaks of FMD virus types Asia 1 (1957-1964), Southern African Territories 1 (SAT 1) (1962-1964) and A22 (1964-1965). A classic example of rapid dissemination of a virus type which had previously been exotic occurred when virus type SAT 1 occurred in Bahrain in December 1961. By February 1962, the disease was extending north-westwards through the Gulf states to reach Iraq, Jordan, Israel and Syria by April. It then entered the Asiatic regions of Turkey and Iran. In September 1962, it crossed the Bosporus to enter Europe for the first time and in November caused an outbreak near the border between Turkey and Greece (10).

Another example is found in the progress of virus type A22 from 1964 to 1965. Originating in Iran and Iraq in September and October 1964, this virus spread towards the west and south, reaching Thrace in January 1965 and the former Union of Soviet Socialist Republics in September 1965, entering Bahrain, Israel, Jordan, Kuwait, Lebanon, Syria and Turkey (4).

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<td>95.5%</td>
<td>63.7%</td>
<td>69.3%</td>
<td>100%</td>
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</table>

Table I
Imports of live animals into the countries of the Middle East in 1996

Source: FAO Production Yearbook, 1996 (9)
were caused by a variant strain of serotype A, which is not controlled by any existing vaccine strain and is of unknown origin. The same strain has been identified in Turkey as well, and is currently threatening the entire region. The movements of FMD virus strains across the region have been traced repeatedly by means of nucleotide sequencing. In most cases, such was the case in the rinderpest outbreak in Lebanon, Syria and Israel in 1983.

Rinderpest has recently been reported in Iran (1994) and Turkey (1996), bordering the politically unstable 'Kurdish triangle', in which the disease might have become endemic. Although there is no information available from Iraq, a country neighbouring this area, it would not be unreasonable to suspect the presence of the disease there as well. Rinderpest has also repeatedly been reported from the Gulf and southern Arab peninsula — in Oman (1995), the United Arab Emirates (1995) and Yemen (1995). The situation in Lebanon may be a typical example (13). Although the cattle population of the Lebanon is 45,000, imports total 250,000 cattle and one million small ruminants for slaughter each year. The principal reasons for the persistence of rinderpest in Lebanon were described in 1993, as follows (13):

- insufficient vaccination coverage
- negligible financial support
- non-existent quarantine.

This situation has improved somewhat since then, due to international financial and technical support.

The introduction of other infectious diseases into the region for the first time is even more alarming. Several OIE List A

### Table II

**Office International des Epizooties (OIE) List A mammal diseases reported in countries of the Middle East, compiled in 1997**

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**Foot and mouth disease**

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**Rinderpest**

The recurrence of such situations is a distinct possibility. Recently, FMD outbreaks in Iran have been reported which were caused by a variant strain of serotype A, which is not controlled by any existing vaccine strain and is of unknown origin. The same strain has been identified in Turkey as well, and is currently threatening the entire region. The movements of FMD virus strains across the region have been traced repeatedly by means of nucleotide sequencing. In most cases, the trails are rather similar to those described in the past, namely: commencing in the Gulf states and other parts of the Arab peninsula and extending north-west (12). Saudi Arabia imports approximately 6.5 million live animals annually, mainly sheep and goats from Africa, Asia and Australasia. The animals from Africa and Asia introduce their own strains of FMD virus, which then spread within the nomadic herds of Saudi Arabia and have made it necessary to vaccinate cattle in this highly sophisticated dairy industry with vaccines against seven strains of FMD virus. These vaccinations are sometimes conducted every ten weeks, with disappointing results (12).

Wars and consequent breakdowns in infrastructure have always favoured the appearance of major diseases such as FMD and rinderpest. Such was the case in the rinderpest outbreak in Lebanon, Syria and Israel in 1983.

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**Source:** FAO/OIE/WHO Yearbooks 1960-1994; OIE World Animal Health in 1995 and 1996 (Tables); World Reference Laboratory for Foot and Mouth Disease Annual Reports, 1990-1997

**Notes:**

- **Rev. sci. tech. Off. int. Epiz.,** 18 (1)
- **SP/GP:** sheep pox/goat pox
- **AHS:** African horse sickness
- **BT:** bluetongue
- **A:** Ansell et al. (3)
- **C:** Mathur (13)
diseases, which were previously unknown in the Middle East, have penetrated this region during the last two decades, that is: Rift Valley fever (RVF), lumpy skin disease (LSD) and peste des petits ruminants (PPR). Since their initial introduction or identification in the region, these diseases have occurred in many countries: LSD in Oman, Egypt, Israel, Kuwait, Lebanon, Bahrain, Yemen and probably other countries, and PPR in at least ten countries (Table II). Iraq reported the detection of clinical cases of PPR to the OIE in September 1998. The co-existence in the Middle East of PPR viruses of East African and Asian lineage has recently been demonstrated by A. Diallo (personal communication). This would be expected in the light of the animal trade routes used.

Bluetongue (BT) has not been reported from all countries in the region. However, serological evidence and the available knowledge of the epidemiology of this disease, and the distribution of the vector, Culicoides imicola, indicate that BT is enzootic throughout the region.

African horse sickness (AHS) last reached epizootic dimensions in the region during the early 1960s and later, during the 1980s, occurred sporadically in the Arab peninsula, as reported to the OIE Regional Commission for the Middle East. If and when re-introduced from Africa, this disease may again spread, due to the presence of C. imicola, which is the common vector of AHS and BT.

In fact, all List A diseases of ruminants, except vesicular stomatitis, which is restricted to the Western Hemisphere, have been reported in the region during the last two decades. This fact, combined with the lack of efficient controls on animal movement throughout the region, underlines the potential epizootiological hazards in the Middle East, the urgent need for improved preparedness and prevention in the region as a whole and in each country, and the importance of co-operative, integrated activities within the region.

The complex situation in the region may be demonstrated by one of the most serious outbreaks, involving both human and animal populations, which led, in 1980, to the placing sporadically in the Arab peninsula, as reported to the OIE Regional Commission for the Middle East. If and when re-introduced from Africa, this disease may again spread, due to the presence of C. imicola, which is the common vector of AHS and BT.

Rift Valley fever in Egypt: a lesson to remember

During the first week of October 1977, doctors reported to the Egyptian Ministry of Health that an unusual 'dengue-like illness' was rife among residents of villages near Inshas, in the south-eastern region of the Nile delta. The morbidity assumed extreme proportions and, by the third week of October, the area of the epidemic had spread both north and south. Village streets usually bustling with activity at every hour of the day were all but deserted when much of the population suddenly became ill or stayed indoors to tend sick relatives (6). The disease continued to spread in the human population until the onset of cooler weather in early December. On 30 October 1977, one isolate of a virus, obtained on 10 October from the sera of eleven patients and inoculated into white mice in a laboratory in Egypt, was brought to the Yale Arbovirus Research Unit (YARU) in New Haven, Connecticut, United States of America (USA), which is the Arbovirus Reference Center of the World Health Organization (WHO). There, a specific diagnosis of RVF was made.

The first news about the outbreak in humans in Egypt and this diagnosis by YARU appeared in the Weekly Epidemiological Record (WER) of the WHO on 16 December 1977 (20), followed by additional details in WER on 6 January, 1978 (21). The latter mentioned for the first time that the disease also affected sheep, buffalo and camels, stating: 'Rift Valley fever is not known to have occurred previously in Egypt and consequently physicians and veterinarians did not observe the clinical manifestations in the initial stages of this explosive outbreak'. This information apparently did not reach the international veterinary community until March 1978, when the OIE sent a circular to Member Countries, citing a letter from the Egyptian Veterinary Services (17). This communication announced the diagnosis of RVF on 10 October 1977, indicating that clinical signs of the disease in sheep, cattle, buffalo and humans had been observed since August 1977 in three provinces, two in the delta region and one in southern-most upper Egypt.

Prior to 1977, RVF was recognised in at least eighteen countries, all of them in sub-Saharan Africa. Large epizootics were observed, principally in Kenya, South Africa and Zimbabwe. The outbreak in Egypt, beginning in mid-1977, has been considered the largest and most severe, in terms of morbidity and mortality in both humans and animals. Official Egyptian Public Health figures for 1977 indicated 18,000 mortalities, as well as many abortions in sheep and cattle, before a definite diagnosis was made (by the public health authorities).

In Egypt, the complex issue of recognising an entirely new disease entity was further complicated by other factors, including the high prevalence of endemic hepatic conditions in humans – namely, schistosomiasis (bilharziasis), which may have contributed to the severity of the human illness. The evolution of the RVF outbreak in Egypt, the multiple factors involved in the difficulty of controlling this outbreak, the regional and global response and the changes which followed the event in Egypt and other countries may all serve as a disturbing example in the context of this paper.
clinical cases and 598 deaths (22). However, later estimates, based mainly upon retrospective serological surveys in upper and lower Egypt, ranged from two million to nine million people infected, including at least 200,000 clinical cases (14). These estimates were substantiated in 1991 by the results of a serological survey in the Nile River delta, showing that 26% of the study population, aged from 13 to 19 years, who were young children and infants at the time of the outbreak, were found to have antibodies against RVF virus (5).

Though the mode of introduction of RVF to Egypt has not been established, four main hypotheses have been postulated, as follows:

- the importation of infected camels from the Sudan
- the smuggling of infected small ruminants from the Horn of Africa
- the introduction of infected mosquitoes (vectors)
- the arrival of viraemic humans from the Sudan or elsewhere in Africa, who acted as a source for further infection by the local vector, *Culex pipiens*.

The economic losses to the agricultural sector were enormous, involving morbidity, mortality and abortion storms in sheep, cattle, goats and buffaloes, which caused losses calculated at Egyptian £82 million (approximately US$115 million) (16). The Egyptian authorities, assisted by international expertise, decided to conduct mass vaccination campaigns in susceptible species, using an inactivated RVF vaccine. The only laboratory producing such a vaccine, at that time, was the vaccine laboratory of the State Veterinary Research Institute at Onderstepoort, Republic of South Africa. However, in light of the absence of diplomatic relations between the two countries, Egypt declined to apply directly to South Africa and consequently no vaccine could be ordered. Two laboratories in Egypt, one attached to the Ministry of Health (8) and the other to the Ministry of Agriculture (1), became involved in the production of inactivated vaccine from local strains of the virus. However, the quantities and quality of these batches were not satisfactory. In light of the desperate need of the Egyptian General Organisation for Veterinary Services (GOVS) for a large quantity of an efficient and safe inactivated vaccine, the Veterinary Research Institute in Cairo requested the Minister of Agriculture to assist in obtaining the inactivated vaccine from South Africa.

When the first news was published about RVF in Egypt, Israel still occupied the major part of the Sinai peninsula. In light of the potential spread of the disease north-eastwards, after discussions with the public health authorities, it was decided to seriously consider vaccinating the animal population in Sinai with the Onderstepoort inactivated RVF vaccine. Israel, which had diplomatic relations with South Africa, ordered a small batch in July 1978, comprising 20,000 doses of the vaccine. In July 1978, Veterinary Services and Animal Health (VSAH) in Israel conducted a preliminary, limited vaccination trial to assess the safety of the vaccine in local conditions and with local animal husbandry methods. In August, meetings were organised with the sheikhs of the Bedouin tribes in Sinai, to brief these local leaders and to obtain their cooperation for serum sampling in livestock, to enable future preventive measures. During September, indirect information was received from Egypt, indicating the following:

- an increase in the number of human cases
- further spread of RVF in northern Egypt
- recorded reports of the aerogenic mode of infection in humans
- the suspected spread of the disease to humans by insects.

There was apprehension that the disease would spread into northern Sinai during the autumn months, coinciding with the anticipated increase in the incidence of RVF in Egypt during these months. The Israeli Ministry of Health formally requested VSAH to begin large-scale vaccination of livestock to prevent human infection. The Onderstepoort experts (B. Erasmus and colleagues) were subsequently consulted and recommended general vaccination of all livestock susceptible to RVF to lower the risk of human infection.

Consequently, all sheep, goats and camels in Sinai (totalling 172,000 animals) were vaccinated and ear-tagged before the Israeli troops withdrew, according to the Camp David agreement. This was followed by the vaccination of the entire cattle, sheep, goat and camel populations of Israel and the controlled territories. Revaccination in Israel followed later, using, in total, more than two million doses of the inactivated vaccine, which were kindly supplied by the Onderstepoort Institute.

In the meantime, the peace agreement between Egypt and Israel was signed and diplomatic relations between the two countries were established. On 24 March 1980, the two Ministries of Agriculture signed a memorandum of understanding, including a veterinary clause on co-operation in the prevention, control and eradication of animal diseases, as well as in the development and manufacture of veterinary pharmaceuticals and vaccines.

During the 48th General Session of the OIE, held in Paris from 26 May to 31 May 1980, the outbreak in Egypt was discussed and RVF was chosen as a priority subject for the 49th Session in May 1981. During the 1980 meeting, contact was established between the Chief Veterinary Officers (CVOs) of Egypt and Israel. The Egyptian delegation mentioned their desire to obtain the vaccine. This request was immediately passed on to the delegation of South Africa by the Israeli delegate. He emphasised the importance of effective vaccination in Egypt to suppress RVF, as well as to prevent its spread to other regions in North Africa, Asia and Europe. The South African delegates promised to give the matter serious consideration. Subsequent technical meetings in Egypt, Israel
and South Africa and the support provided by the Onderstepoort Institute, as well as the involvement of officials at the highest level in all three countries, led to an extraordinary, unofficial arrangement, which enabled the (indirect) supply of large quantities of inactivated RVF vaccine to the Egyptian GOVS. The mode of transportation was unusual, in that any direct contact between Egypt and South Africa was avoided. The first consignment arrived in Egypt during 1981 and the indirect 'airlift' continued during 1982. This is the first published mention of this event in the veterinary chronicles, and thus seems an appropriate opportunity to express appreciation to these South African colleagues.

The control gained over RVF in Egyptian livestock since 1981 is demonstrated by the absence of seroconversion in animals from 1981 to 1993 (19). The improved epidemiological situation in humans was indicated by a serological survey, conducted in the Nile River delta of Egypt in mid-1991, which showed that no detectable antibodies were found in those people born after 1984. Moreover, such antibodies were found in only 3% of those born between 1979 and 1984, in contrast to their presence in 26% of those born before 1978 (5). This RVF outbreak in Egypt underlined the urgent need for changes at the local level, as well as at regional and international levels, to prevent the reoccurrence of similar events related to animal or zoonotic diseases, and to ensure better preparedness for such situations. It led to immediate action being taken by many countries in the region to prevent RVF, and to the intensive involvement of international organisations, which led to some improvement in the flow of epizootiological information, as well as to detailed planning of several contingency programmes in the region and elsewhere. As a matter of fact, the RVF outbreak of 1977 to 1980 was a significant factor in the establishment of several regional co-ordination programmes, which is discussed in greater detail below.

Thus, when a focus of RVF was detected in the Aswan area of upper Egypt in the summer of 1993, GOVS was able to control this infection. The virus was isolated from a buffalo foetus and positive RVF serology was noted in sheep, goats and cows. Human infection was also noted. Another focus of the disease was identified in the same province of Aswan (15).

The public health authorities and GOVS moved swiftly to contain the outbreak. Since RVF seemed to become endemic, a decision was made to use the Smithburn modified live virus vaccine (MLVV) of RVF to vaccinate all susceptible animals, except pregnant ewes and goats, as MLVV is thought to be an abortifacient in small ruminants. This vaccine has been in use since 9 April 1994. However, inactivated RVF vaccine is still used to vaccinate pregnant ewes and goats, as well as new-born animals, and is also employed when vaccination is required for export purposes.

Other actions which followed the 1993 outbreak involved mosquito larvicidal treatment of drainage channels, the application of insecticides to animals by fogging, aerosols and spraying and extensive sero-surveillance to assess the immune status of populations after vaccination with each vaccine type. Both vaccines are now produced in Egypt. The results demonstrate a higher rate of animals testing positive for the presence of antibodies against RVF following vaccination with MLVV (94.6%), compared to 58.4% following vaccination with the inactivated vaccine. During 1994, approximately 2.6 million doses of inactivated vaccine were used, compared to 5.5 million doses of MLVV (16). No additional foci were reported from 1994 to 1997. This vaccination policy has been continued throughout subsequent years and up to the present. Surveillance to assess the post-vaccinal immune response was continued during 1997, with 'satisfactory results' (18). In this report, the establishment of the Egyptian National Animal Disease Emergency Plan is described, its aim being to prevent the introduction of exotic diseases and immediately to eradicate the foci of exotic or emerging diseases. To this end, one of the main steps was the establishment of a centrally located epidemiological unit, with branches in some provinces. Furthermore, steps are expected to be taken to link all provinces and to establish points of international liaison. Thus, lessons have been learned, both in Egypt and in the entire region, and – it is hoped – no unconventional modes of vaccine supply should be needed again.

Provisions for the management of epizootics

The classical approach in the establishment and maintenance of a national programme for the control of animal diseases includes, as minimum prerequisites, the following measures:
- the controlled importation of animals and their products
- efficient disease monitoring in the field
- rapid and reliable laboratory diagnosis
- epidemiosurveillance, with appropriate communication networks both within and outside the country
- an effective veterinary infrastructure in the field, to perform the necessary disease control measures, either directly or by means of accredited professionals
- appropriate rules and legislation and the tools for their effective enforcement.

As previously described, most countries in the Middle East lack some or all of these prerequisites. This was clearly demonstrated during the RVF outbreak in Egypt, which was characterised by problems at all levels, the most serious difficulty being the absence of early detection and reliable reporting systems.
Undoubtedly, improving this situation in each of the countries of the region is of the highest importance. However, this aim might not be achievable in the short term, although some countries — such as Egypt and Jordan — have recently initiated surveillance programmes for certain diseases. In 1997, in Egypt, for example, GOVS conducted serosurveillance to assess the post-vaccination immune status of livestock in relation to FMD, RVF and LSD, and to detect virus activity in regard to rinderpest and AHS.

As a result of the inadequate flow of information in the region, caused by the absence of diagnostic data, inadequate communication and political difficulties, preventive mass vaccination is the only effective method, at present, to minimise or prevent catastrophes.

This is the background to the decision of several countries in the region to continue employing, for many years, a trivalent FMD vaccine, incorporating types O, A22 and Asia 1, even though, for several years, the prevalent virus type in those countries has been only type O.

This was also the background to the step adopted by countries such as Jordan where, despite the fact that rinderpest has not been reported for more than twenty years, a part of the cattle population is still vaccinated annually, due to the "geographical location of the country and the absence of regional co-operation" (2).

The same policy has been adopted by Israel in certain border areas for rinderpest, LSD and RVF. Other countries in the region have applied similar measures. However, the effectiveness of such measures is hampered by a lack of regional co-operation and, in many instances, these measures were unfortunately applied too late.

It is therefore of the utmost importance to invest efforts into overcoming political obstacles and enhancing regional projects. To this end, the involvement of international organisations, such as the FAO, OIE, European Union (EU), US Agency for International Development (USAID), International Fund for Agricultural Development (IFAD) and WHO is vital. Some regional programmes are already operational, with promising results.

The FAO has initiated various regional operations in the past, namely: the Middle and Near East Regional and Animal Production and Health Project (MNEADEP), the West Asia Rinderpest Eradication Campaign (WAREC) and the Screwworm Emergency Centre for North Africa (SECNA), and is currently enhancing the Regional Animal Disease Surveillance and Control Network (RADISCON) and the Emergency Prevention System (EMPRES).

The RADISCON plan is a joint FAO/IFAD venture, targeted at twenty-nine countries located in North Africa, sub-Saharan Africa, the Horn of Africa, the Middle East and the Arabian Gulf. It aims to strengthen Veterinary Services in each country through improving their capacity to collect crucial and reliable information on the distribution of selected animal diseases and zoonoses. It also aims to assist in the establishment of a National Animal Diseases Surveillance System in each Member Country. Eleven of these countries are already connected to e-mail. Several workshops have been held and the project seems to be achieving promising results, bridging gulfs between countries which would otherwise be impassable.

The EMPRES programme is an FAO initiative against transboundary animal and plant pests and diseases. The animal component focuses primarily on rinderpest but also on five other epizootic diseases (contagious bovine pleuropneumonia, PPR, contagious caprine pleuropneumonia, RVF and LSD). The programme will assist countries in building their own surveillance/early warning systems and in establishing contingency plans and a global information system to monitor disease. Regional workshops have already been held. In cases of a disease emergency, EMPRES may assist directly with disease control through technical co-operation programmes. The EMPRES programme also seems to be advancing at a steady pace.

Furthermore, USAID, through the Middle East Regional Co-operation (MERC) programmes, has initiated and financed several regional animal health programmes. The first, the Trinational Animal Health Research Project (TAHRP), operated between 1990 and 1995, involving Egypt, Israel and the USA. The objective was to develop the information and technology needed to control three animal diseases: FMD, brucellosis and neo-natal diseases in bovines. The project included exchanges of research personnel, discussions of research reports and the common publication of some of these reports in scientific journals. Close links were established between laboratory research personnel who were dealing with specific field problems. Four annual five-day workshops were held, two in Egypt and two in Israel, which included visits to scientific establishments and farms. In the last two workshops, additional invited representatives from the region and from various international institutions (such as the EU, FAO, WHO and OIE) participated, extending the scope of the discussions to the general animal health situation in the Middle East. Jordan and the Palestinian Authority were among the new participants, within the framework of the Middle East Peace Process, and, jointly with Egypt and Israel, took part in the establishment of a regional overseeing committee (ROC). This regional veterinary committee includes the four CVOs, who discussed and prepared a subsequent programme to the successful animal health project, TAHRP. This new project ('Strengthening of regional...
collaboration in animal disease and zoonoses control in the Middle East) has already obtained the approval of USAID (MERC) and a three-year budget, commencing in 1998. The project includes the recruitment of an on-site co-ordinator. This co-ordinator, a specialist in the field, is already in the region, in Amman, Jordan, and has indeed been very helpful in the advancement of the project.

The EU has agreed to promote regional co-operation in animal health, following a meeting, within the Middle East Peace Process, of the Regional Economic Developmental Working Group in Copenhagen in November 1993. Consequently, the EU organised a regional workshop in Cairo in December 1994, with the aim of identifying animal health issues of interest and regional economic importance. During this workshop, in which Egypt, Israel, Jordan and the Palestinian Authority took part, the principal regional issues were identified, including a list of priority diseases. In November 1995, the EU engaged a consultant to assist with preparations for conducting appraisals required to follow the recommendations of the 1994 Cairo workshop. This project was conducted under the title, 'Regional animal health co-operation programme for the Middle East' (RAHCP).

At successive ROC meetings, animal health priorities were discussed and approaches developed. The first programme component to be formulated was the Regional Veterinary Information System Project (RVISP), concerning the establishment of information-sharing systems among the four parties. The implementation of RVISP is well advanced. Electronic equipment has been provided to each participant to enable staff at their veterinary headquarters, epidemiology units and laboratories in Egypt, Israel, Jordan and under the Palestinian Authority to communicate directly with each other. The RVISP website has been developed as a collaborative effort, and is now operational. This website contains a general overview page, as well as information on RAHCP (background statistics, projects, forum, contact, news), in addition to the four, interlinked independent sites of each participant. These individual sites include data on livestock, drugs and vaccines, import requirements and epidemiological statistics, etc.

The RAHCP has been designed, from the very beginning, to enable other countries in the region to join the network eventually. RVISP may serve as a model for national information networks.

The high-priority topics of the 1998 workplan, as agreed by the ROC, are as follows:
- FMD
- veterinary epidemiology and economics
- rabies
- brucellosis
- small ruminant viral diseases (with a special emphasis on RVF)
- bacterial diseases of poultry
- regional diagnosis capabilities
- veterinary information systems
- human resources development.

In addition to regional programmes, several countries in the Middle East have the support of international institutions or of developed countries with bilateral animal health projects. These are not canvassed in this paper, although their contribution to the general animal health situation in the region should not be neglected.

**Conclusion**

The Middle East is extremely prone to the introduction of exotic epizootic disease and to the spread of endemic infections and zoonotic diseases. Early disease detection systems, the development of or improvement in diagnostic capabilities and the consolidation of veterinary field services are all needed. But the most urgently needed requirement is a radical improvement in animal health communication and co-ordination systems, both within countries – between national headquarters and peripheral units – and between these countries. Achieving this change is crucial for the control of animal and zoonotic diseases in the Middle East, as well as in individual countries.

Regional projects which are targeted towards improving animal health communication and co-ordination systems, in conjunction with the assistance of international organisations, are of the utmost importance. Their ultimate success may be achieved only if combined with local efforts and initiatives.

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Prévention des maladies et état de préparation aux urgences zoosanitaires au Moyen-Orient

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Résumé
Au Moyen-Orient, la situation de la santé animale est très défavorable, la région étant fortement exposée à nombre de maladies animales majeures. Pour illustrer les facteurs déterminants qui contribuent à cette situation, l’auteur prend pour exemple une épidémie de fièvre de la Vallée du Rift survenue en Égypte entre 1977 et 1980. Le Moyen-Orient est mal préparé à la mise en place de mesures de prévention et de contrôle des maladies en raison de carences tant au niveau national que régional. La détection précoce, le diagnostic et la déclaration de maladies doivent devenir une priorité pour chaque pays mais également entre pays. L’auteur décrit plusieurs programmes régionaux de santé animale, soutenus par des organismes internationaux, et montre leur importance respective.

Mots-clés

Prevención de enfermedades y preparación para las emergencias zoosanitarias en Oriente Medio

A. Shimshony

Resumen
La situación zoosanitaria en Oriente Medio dista mucho de ser favorable, sobre todo porque se trata de una zona especialmente expuesta a muchas y graves enfermedades animales. El autor ilustra los factores más habituales que contribuyen a esa situación refiriéndose a un brote de fiebre del Valle del Rift que tuvo lugar en Egipto entre 1977 y 1980. Debido a deficiencias en el plano tanto regional como nacional, Oriente Medio carece de la capacidad necesaria para implantar medidas de prevención y control de enfermedades. Es preciso otorgar prioridad a la creación de mecanismos de detección, diagnóstico y declaración precoces de enfermedades, tanto en el interior de un país como entre distintos países. El autor describe varios programas regionales de sanidad animal que gozan del respaldo de organismos internacionales, y subraya la importancia respectiva de cada uno de ellos.

Palabras clave
References


