A proposal for the creation of an International Veterinary Information System

by

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1. INTRODUCTION

One of the primary responsibilities of the OIE is for the management of veterinary information at world level.

At question is whether this information should simply be limited to the parameters of epidemic contagious animal diseases, and should a re-evaluation of the OIE field of interest be considered.

Revision of these information parameters is warranted largely as a result of changing disease patterns, the development of « new pathologies » and new sanitary problems related to the international trade and use of animal products.

Although in the past few years great advances in the fields of informatics and of communication technology have been made, international veterinary information (e.g.: OIE) has not kept pace with the emerging methods for information management.

Thus, a study for the establishment of an International Veterinary Information System should be carried out.

The establishment of such a system should be viewed as a dynamic process. Initially, the information channels should be based upon currently exis-

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ting pattern of information flows such as that at present controlled by the OIE, rather than create idealistic models which might prove impossible to implement. Likewise it would be advisable to determine through a preliminary investigation:

1. The definition and role of a veterinary information system.
2. The kind of information that would be managed by the OIE.
3. Future configuration and implementation of the International Veterinary Information System.

The purpose of this paper is to introduce specific parameters regarding the creation of an International Veterinary Information System. These parameters would include:

a) the type of veterinary information that would qualify for international usage;
b) the impact of an International Veterinary Information System;
c) possible revision and extension of the present OIE information methodologies in view of the development of an International Veterinary Information System.

2. THE INTERNATIONAL VETERINARY INFORMATION SYSTEM

Acha (1972), Blajan (1979), Caporale (1980) have described to varying degrees the contents, function, tools and management of a veterinary information system both at a national and international level. They all have emphasized the necessity for a needed improvement of veterinary information both at national and international levels. Information is considered the key element for the deployment of Veterinary Services. Information is essential for considering:

1. Assessment and evaluation of needs which must be satisfied; to gauge accordingly the response of both the technical-organizational and/or legislative type.
2. To plan actions and assess the financial resources required.
3. Verification of how the resources are exploited.
4. Evaluation of results obtained comparing them with expectations and thus assess the global efficacy of the service.
5. Dissemination of the data obtained in order to make governments, international agencies, breeders organizations and the general public fully aware of veterinary activity at an international level.

A rational management of veterinary information is possible only through the creation of an International Veterinary Information System. The system may be viewed as a mechanism for the gathering, analysis, and transmission of data necessary for the organization and management of Veterinary Services as well as for veterinary research on an international level.
A veterinary information system is characterized by:

(a) its contents;
(b) the purpose for which it has been created;
(c) the instruments which it can employ; and
(d) the ways it can be used.

The veterinary information system is finalized to improvement of animal production and to its control in relation to animal health and veterinary public health.

Actualization of this system will require information necessary for:

— establishing problem inventory: quantitative and qualitative information concerning existing pathology, pollution of alimentary sources, etc.;
— signalling the « vacuum zones » indicating those aspects of veterinary activities overlooked and requiring further attention;
— estimating the efficacy and efficiency of intervention, i.e. the capability of reaching a given objective at the best cost/benefit ratio;
— initiating a reciprocal flow of information extending beyond the present international arrangements (within Veterinary Services) and extending it to include « users » (development agencies, breeders, consumer associations, animal welfare organisations, etc.);
— pursuing a suitable action of public relations intended for people politically and socially involved in veterinary activities;
— development of continuing education for veterinarians involved in services at an international level;
— strengthening research finalized toward the solution of the various problems brought about by the international trade in animals and their products.

2.1. CONTENTS

The information system should contain information of the following nature:

— Epidemiological: the whole body of knowledge concerning the health status of: (a) animal populations, and (b) human populations as to their interactions with animals and their products.
— Zootechnical: animal population data, as well as animal nutrition and breeding patterns and methods.
— Food production: pathways for the transformation and commercialization of food products of animal origin for human consumption.
— Managerial: human, structural and economic resources available for field, laboratory and administrative activities as well as on the operative work of Veterinary Services.
— Legislative: principal laws, regulations, decrees, etc. regulating the activity of Veterinary Services.
— Bibliographical: technical and scientific documentation such as bibliographical references, data, documents, information papers, etc.
2.2. TOOLS

Although statistical data is very important, the veterinary information system cannot concern itself only with statistics. It must be characterized by contents and tools capable of meeting the requirements of its users in each and every phase of the planning, implementation and evaluation of veterinary activities at an international level. The system must make use of five basic tools: the early warning system, the statistical system, the experts system, the factual data banks, the bibliographical data bases.

2.3. WAYS OF EXPLOITATION

The information system must be oriented to the solution of problems; it must not be confined to a mere « passive recording » of the veterinary activity but it must be geared toward the « active » identification and solution of specific problems.

To meet all information requirements necessary to solve problems it must include all information types reported under the item « Contents » and manage it by making use of the tools reported under the item « Tools ».

2.3.1. Participation.

The solution of veterinary problems, particularly at an international level, can be attained only through the consensus of all interested parties. The latter is the result of an interaction between technical operators (Veterinary Services), users (breeders, etc.) and legislative bodies (Governments). The management of this information should, therefore, be such as to allow for the participation of the above-mentioned in all decisional and operative phases of veterinary activity.

2.3.2. Decentralization.

The efficacy and efficiency levels of a centralized information system are usually very low. The main reason for this predicament is that a centralized system is usually viewed as an unnecessary (sometimes even detrimental) « superstructure », rather than an essential element for the management of an operative system.

This occurs when the information system is limited only to a statistical role and information flows are either unidirectional (from the peripheral nodes to the centre) or rendered useless due to insufficient and untimely feedback and/or processing.

To create an efficient and effective information system it is necessary that the people involved have the correct attitudes, i.e. not only being interested but also having a genuine commitment toward this endeavour.
However this is only possible if the contents of information feedback from upper to lower levels are such as to be considered definitely viable to solve the problems of the latter.

A centralized information system cannot guarantee either the necessary flow speed or the specificity of information feedback. It is, therefore, necessary that the information system be decentralized. This creates a distributed data base organized through peripheral nodes, all being responsible for the management of the information necessary to their own operative needs.

Such a system at the international level could consist of various national and regional centres with a single, commonly agreed upon, main terminal.

2.3.2.1. Regional Centres.

Presently, veterinary information organized through the OIE does not provide for any regional centres. On the contrary, the international veterinary activity is based on a regional model. This can be demonstrated not only by the existence of regional Organizations such as EEC, PAHO, IBAR, but also by operational models adopted by agencies operating on a world scale such as FAO. The OIE itself has four regional Commissions (Africa, America, Europe, Asia and Oceania).

In order to improve its efficiency and efficacy the International Veterinary Information System will have to conform to these operative realities. This will both render the information system more adherent to the actual operative needs of users and will result in greater responsibility for the generators of information. Consequently both the control and quality of information will be improved.

The actual operation of these regional structures, whose number should be determined according to the operative reality of the international veterinary system, could be entrusted to international Organizations already operating at regional levels.

The information would be screened, elaborated and distributed according to the formats and technology more suitable to that region. Beside working as an operative node, these regional structures ought to co-ordinate and promote veterinary information activity at a regional level.

They will, therefore, tend to promote better communication among countries of the same geographical areas as well as participation of users to the management of the information system.

2.3.2.2. World Centre.

The OIE should become the World Centre for the International Veterinary Information System. It would have two main functions:

1. Co-ordination and promotion of the national and regional veterinary information systems as these would be the foundations necessary to build an effective and efficient international network.
2. Collection and distribution of the information, generated at both national and regional levels, according to formats and technology suitable for its use on a world-wide scale.

3. INTRODUCTION OF THE SYSTEM

3.1. A GRADUAL APPROACH

The establishment of an International Veterinary Information System must be regarded as a gradual process that takes into account the different information needs of the « users ».

One must look for both an organizational structure sufficiently agile and decentralized and at the same time sources possessing information capable of meeting information needs, extremely differentiated or otherwise.

The full implementation of such a system must be viewed as a long-term process.

It must, however, be initiated as soon as possible to avoid a further increase of the gap already existing at present among the various world regions.

Currently if one accepts that information is probably the most important element for the development of human activities, it is obvious that any organization interested in international development should improve the quality of its information.

One can, therefore, envisage the activation and/or improvement of some operative tools necessary for the management of international veterinary information.

The main operative tools necessary to activate an International Veterinary Information System have already been mentioned.

These tools, at present, already exist and are practically accessible at regional, national, and world levels. They must, however, be rationalized from both a qualitative and quantitative perspective.

The study for the creation of an International Veterinary Information System could be entrusted to the OIE, whose animal health information gathering activity, in spite of various shortcomings, is, at present, unrivalled at the world level.

A collaboration of all national and international organizations interested in veterinary information appears necessary. This is because it is necessary to integrate within the international system, from a functional point of view, already existing systems such as those of the FAO, WHO, IBAR, PAHO, etc.

In the immediate future an amelioration of the OIE animal health information system can be envisaged. One could review information management
methodology by an accurate verification of information contents, a modification of information flows, activating some new information tools at the international level.

3.2. THE TOOLS

3.2.1. Early warning epidemiological system and statistics.

According to Blajan (1979) it is possible to distinguish through the apparatus created by the OIE a warning system applied to diseases regarded as highly diffusive and dangerous and a surveillance system concerning the continuous information on the evolution of the diseases included in the A, B, C lists, independent of their severity. The information is issued on a monthly, quarterly and yearly basis. It is our opinion, however, that the two systems would best be defined as a warning system and a statistical system.

A surveillance system, in fact, should be regarded as a whole set of processes and activities that are not only a passive recording of the diseases but in addition serve toward an active search for information about diseases amongst animal populations and their ensuing control and/or eradication programs. It would, thus, consist of a complex of analyses of monitoring activities carried out on animal populations and on products of animal origin.

The realization of such a system, however, would extend beyond present human and financial resources and, thus, renders its implementation unfeasible at this time. Despite these barriers, actualization of this system could be achieved through gradual development. Key to this gradual approach would be utilization of the presently existing international information flows already organized by the OIE.

According to Blajan (1979) the information currently available is unsatisfactory due to various reasons.

It is believed, however, that one can usually identify the main source of these shortcomings.

The kind of data collected and/or the standard product (i.e. information) coming from their elaboration is considered by the Veterinary Services of the various countries as unnecessary for the management of the Services themselves. This is not surprising if one considers the existing diversities amongst Veterinary Services in the different geographical zones. As previously stated the Information System should be organized on a regional scale to make the information management more suitable to the needs of the different countries belonging to homogeneous veterinary realities.

One could introduce some modification as to the OIE disease listing arranging them on a regional scale. Furthermore only two groups of diseases should be distinguished: those requiring timely information, as their onset requires immediate intervention on international scale (List A of the OIE) and
those which do not necessarily need such a type of intervention (Lists B and C of the OIE).

Arrangement of the lists on a regional basis is suggested due to the fact that some diseases which must be considered a major problem in certain areas (e.g. Bluetongue in the European area) are often endemic and/or not notifiable in other geographical areas (Bluetongue in North America).

3.2.1.1. Early warning epidemiological system.

This system, as already mentioned, should allow for a timely collection and distribution of epidemiological data concerning outbreaks of diseases requiring a rapid intervention by Veterinary Services, as they can be a major threat with regard to animal movements and/or their products.

Blajan (1979) has described present arrangements enacted by the OIE and concerning the generation of the different stages of information on animal diseases. The following changes could be made:

(a) Diseases in List A.

a.1. Input.

1. The onset of one of the diseases in the OIE List A, in a hitherto free country, is communicated by the national centre to the Regional and World Centres by telegram, telephone, or telex within 24 hrs following confirmation or suspicion of a case or an outbreak.

2. The national centre reports to the Regional Centre information about the epidemiological evolution of the disease within 15 days from the first report and every 15 days for three months or until eradication of the disease has been ascertained.

3. Every month the national centres send information to the Regional Centre about the epidemiological evolution of the diseases included in List A.

a.2. Output.

1. The World Centre communicates the onset of a disease included in the above-said list in a hitherto free country and/or region to all Regional Centres by telex, telegram or telephone.

2. An epidemiological bulletin with information relating to the epidemiological evolution of the diseases included in List A of the OIE is issued quarterly by the World Centre.

3. The onset of a disease in List A in a hitherto disease-free country and/or region is communicated by telegram or telephone to the national centres by Regional Centres.

4. A monthly bulletin is issued by every Regional Centre containing epidemiological information on the course of the diseases in List A at regional level for the period. Such a bulletin will be forwarded:
   
   a) at the regional level to all people interested in the course of animal diseases;
   
   b) at the international level to the World Centre and to the other Regional Centres.
5. Every Regional Centre in its monthly epidemiological bulletin will issue news from other areas, which is considered relevant for the control of animal diseases in the region; and of any other diseases relevant within the region.

(b) Diseases in Lists B and C.

Information concerning these diseases is not part of the early warning epidemiological system but it is relevant only for statistical purposes. The information about these groups will be dealt with in the «statistical system».

3.2.1.2. The statistical system.

The statistics involved in a veterinary information system will not be limited to the animal diseases only but they should deal also with zootechnical, food products of animal origin, managerial data, etc.

Even if the information is restricted to the zoo-sanitary situation and to the control system of animal diseases, the data included in the statistics should not be limited to record the disease-related events (e.g.: No. of cases, No. of outbreaks, No. of dead animals) and their control methodologies (e.g.: sanitary, medical methodologies, quarantine, etc.). In fact the statistics on the control methodologies have no significance if there are no statistical data concerning animal population, and human structural resources available to implement the respective control measures.

Much statistical data, useful for an International Veterinary Information System, has already been published within the scope of other information systems. The sources for these data should be identified and that data relevant to the veterinary information system should be extrapolated.

The identification of those statistics pertinent to the International Veterinary Information System should be determined by an Expert Committee (see «the experts system»).

In awaiting the development of an International Veterinary Information System it would be advisable to partially revise present OIE statistics. The present statistical information flows should be modified as follows:

(a) Input.

1. Every 12 months the national centres send to the Regional Centres statistics concerning the zoo-sanitary position and the control methods of the diseases listed under B and C.

2. The Regional Centres forward the above-said information to the World Centre possibly aggregating data on a regional scale.

(b) Output.

1. A statistical bulletin containing information on the zoo-sanitary position and animal disease control methods involving diseases in Lists A, B, C of the OIE for each country and region should be issued by the World Centre (presently the FAO-WHO-OIE Yearbook).

2. The Regional Centres should also issue their own bulletins with statistical information on the zoo-sanitary situation and the control methods of the animal diseases relevant within their region.
The formats employed to forward data to the OIE must be revised in accordance with what has been described about the early warning epidemiological system. It is necessary to carry out the revision even if the information flows have not been modified. It is believed that, on the one hand, some data used in the compilation of the table concerning the zoo-sanitary position may cause confusion (e.g. : the evolution) while on the other hand some useful data are lacking (e.g. : the prevalence on December 31st in statistical reports).

3.2.2. The experts system.

This group represents the most widespread veterinary information system both at a national and international level throughout the world. It is based upon an informal network of experts whose task is to convey information to the decisional bodies. It is an effective, inexpensive, and generally very timely « network ». Furthermore, it does not need any formal technological base and is extremely flexible. The information provided by the experts is of fundamental relevance within an International Information Veterinary Service. The advice of experts is indispensable for defining the roles of management and control methods to be enacted within the information system. Blajan (1979) has already emphasized the creation of a Veterinary Information Experts Committee and has stated its main functions.

Furthermore the International Veterinary Information System should gather and disseminate information available at the international level in relation to experts.

It would, for example, be quite useful to make available a list of experts and/or institutions capable and willing to offer counsel or advice concerning veterinary problems at international level as well as being available for international panels, task forces, emergency interventions, etc.

Additionally the dissemination of information, especially that resulting from international workshops, meetings, expert committees, etc. is too often released after great delay thus diminishing its value or is buried amidst « grey literature ». Consequently, priority information channels should be established for distributing this information while it is still « hot ».

It would be advisable to develop a computerized epidemiological data bank on animal diseases within the OIE information system. The data generated would be collected as non-aggregated data and then computerized. Data would then be accessible either through already existing data transmission networks (e.g. : EURONET) or could be transferred onto floppy disks, magnetic tapes, etc. and be forwarded to users upon request.

Raw data can then be treated and interpreted according to the users' needs. The OIE factual information system now in existence would, thus, become more effective without any important rise in costs. Both the increased efficiency of utilization and the reduction in the labour necessary for the compilation of statistics, will make up for the additional costs incurred through computerization.
Countries where the technologies of informatics are at present not available will also have the advantage of being able to request non-aggregated data from the OIE. Furthermore, valuable technical expertise would be available to them should they decide to develop automatic veterinary information systems at the national level as well.

The development of a veterinary data bank network as an integrated entity, should be encouraged on a world scale.

It would be desirable that an effort be made to render already existing data banks of veterinary relevance as accessible as possible on an international level. Thus, they could be linked through the existing international data transmission networks. Some examples of this kind of integration are the AGREP plan in the EEC, or the system for the collection of clinical data in American and European Universities (VMDP program). Hence close co-operation amongst the experts responsible for the development of already existing veterinary data banks should be encouraged.

3.2.3. The data bases and documentation centres.

There are at present several collections of bibliographical data of veterinary interest that could meet the requirement of the veterinary profession (thus H. Brodauf, S. Schönherr, 1973). It seems unnecessary to establish new ones. There are, however, some data bases non specifically dedicated to veterinary science whose usefulness for the veterinary profession could be accrued if properly integrated (e.g. : Agris System of FAO).

It would also be advisable to encourage the training of veterinary documentalists as well as to improve back-up services (e.g. : the retrieval of original documents signalled by data bases). The creation of veterinary documentation centres at a national and international level should also be promoted as they would, undoubtedly, be valuable reference points for users on an international scale.

4. CONCLUSIONS

A rational management of veterinary activities requires suitable information support. Information is essential for the programming, implementation and control of interventions. The establishment of an International Veterinary Information System ought to be encouraged. It would improve both the management of the veterinary activities at the international level and contribute toward the creation of information systems at a national and regional level. The contents of the International Veterinary Information System would consider not only animal health but any and all information (demographic, managerial, victualling, etc.) necessary for the management of Veterinary Services at a national and international level. This system must not be regarded as a rigid and formal structure but as a body of data, sub-systems, tools,
skills, and reference points dedicated to render available the information necessary for the management of Veterinary Services at national and supranational levels.

Essentially this plan must provide information on a two-dimensional basis. Vertically, information would be passed in an ascending and descending fashion amongst the national, regional and world levels. Horizontally, information must also be collected, elaborated and disseminated amongst the various levels and their respective interactive users. Hence all users’ needs could be met through this multidimensional system.

One has, therefore, to hypothesize a decentralized structure based on a wide-mesh net of information transmission capable of managing the information through diversified channels, methodologies, technologies and contents. This kind of system could be achieved by encouraging the formation of a network composed of a World Centre, national and regional Centres. Various tools such as the early epidemiological warning system, statistics, experts, data bases and banks must be activated. Some of them are already in existence at a national, regional and international level. It is necessary to actualize their use and/or access from both a qualitative and quantitative point of view, upon the international level.

The establishment of such a System could be entrusted to the OIE, in cooperation with other national and international Organizations.

Such a co-operation seems to be indispensable, as all the existing veterinary information systems (FAO, WHO, IBAR, PAHO, etc.) could be integrated within the International Veterinary Information System.

There remains little doubt that the International Information System on Animal Health, presently managed by the OIE, is desirable and will only benefit from these proposals.

REFERENCES

ACHA P. — Project for developing systems for the notification and collection of data on animal diseases. Technical Publications of Veterinary Services of PAHO, October 1972.

