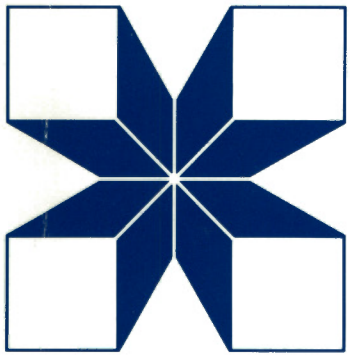
IDRC
CRDI
CIID



CANADA

ZOONOTIC AND PARASITIC DISEASES

PROCEEDINGS OF THE THIRD INTERNATIONAL AND PAN-ARAB SEMINAR HELD IN AMMAN, JORDAN, 17–20 OCTOBER, 1989

The International Development Research Centre is a public corporation created by the Parliament of Canada in 1970 to support research designed to adapt science and technology to the needs of developing countries. The Centre's activity is concentrated in six sectors: agriculture, food and nutrition sciences; health sciences; information sciences; social sciences; earth and engineering sciences; and communications. IDRC is financed solely by the Parliament of Canada; its policies, however, are set by an international Board of Governors. The Centre's headquarters are in Ottawa, Canada. Regional offices are located in Africa, Asia, Latin America, and the Middle East.

Le Centre de recherches pour le développement international, société publique créée en 1970 par une loi du Parlement canadien, a pour mission d'appuyer des recherches visant à adapter la science et la technologie aux besoins des pays en développement; il concentre son activité dans six secteurs : agriculture, alimentation et nutrition; information; santé; sciences sociales; sciences de la terre et du génie et communications. Le CRDI est financé entièrement par le Parlement canadien, mais c'est un Conseil des gouverneurs international qui en détermine l'orientation et les politiques. Établi à Ottawa (Canada), il a des bureaux régionaux en Afrique, en Asie, en Amérique latine et au Moyen-Orient.

El Centro Internacional de Investigaciones para el Desarrollo es una corporación pública creada en 1970 por el Parlamento de Canadá con el objeto de apoyar la investigación destinada a adaptar la ciencia y la tecnología a las necesidades de los países en desarrollo. Su actividad se concentra en seis sectores: ciencias agrícolas, alimentos y nutrición; ciencias de la salud; ciencias de la información; ciencias sociales; ciencias de la tierra e ingeniería; y comunicaciones. El Centro es financiado exclusivamente por el Parlamento de Canadá; sin embargo, sus políticas son trazadas por un Consejo de Gobernadores de carácter internacional. La sede del Centro está en Ottawa, Canadá, y sus oficinas regionales en América Latina, Africa, Asia y el Medio Oriente.

This series includes meeting documents, internal reports, and preliminary technical documents that may later form the basis of a formal publication. A Manuscript Report is given a small distribution to a highly specialized audience.

La présente série est réservée aux documents issus de colloques, aux rapports internes et aux documents techniques susceptibles d'être publiés plus tard dans une série de publications plus soignées. D'un tirage restreint, le rapport manuscrit est destiné à un public très spécialisé.

Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.

IDRC-MR263e
November 1990

ZOONOTIC AND PARASITIC DISEASES

Proceedings of the Third International and Pan-Arab Seminar held in Amman, Jordan, 17-20 October 1989

Edited by
Oumeish Youssef Oumeish and Panduka M. Wijeyaratne

Cosponsored by
International Development Research Centre,
Ottawa, Canada
and The Higher Council for Science and Technology,
Amman, Jordan

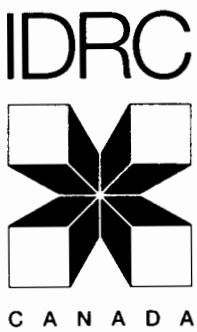


TABLE OF CONTENTS

ENVIRONMENTAL AND COMMUNITY RESEARCH ISSUES ON THE ZOONOSES

Pandu Wijeyaratne *

The Zoonoses constitute an enormous heterogeneous group of diseases that have been relatively neglected in terms of community based research in the past, although they are of worldwide distribution. As such, the ecology, socio-cultural and economic relationships of many of the diseases remain virtually undocumented, and perhaps also little appreciated.

Also, the complex interrelationship(s) between the animal and human cycles remain largely unclear. The parasite in the animal cycle has been a source of fascination and study, as it has in the human cycle and disease, but the interrelationships and transmission patterns are still obscure, precluding feasible and sustainable prevention and control.

This paper for discussion is attempted with that underlying thought in mind; it is aimed at generating key issues that need to be investigated, and examines some approaches for achieving them.

Firstly, I would like to take Leishmaniasis as an example and consider the whole question of preventive measures aimed at protecting the groups at risk in the community. These approaches have rarely been attempted for several reasons, including:

i) The risk factors of acquiring the infections are not completely identified; i.e., the precise interrelationships between the various cycles - domiciliary, peri-domiciliary, and/or sylvatic.

ii) The use of chemicals such as repellents to impede man vector contact is not feasible.

iii) There is a lack of "appropriate" drugs for community-wide use.

iv) Such measures as bed nets to prevent sandfly attach are unpopular because they decrease ventilation, make conditions hotter and are often very costly.

---

* Dr. Pandu Wijeyaratne, Senior Program Officer, Health Sciences Division, International Development Research Centre (IDRC) Ottawa, Canada

Now let us look at the issue of animal reservoir control.

Although such measures have been attempted on a very limited scale, significant impediments to their success in controlling the disease have been:

i) the lack of complete knowledge of all the reservoir hosts involved;

ii) the reluctance to destroy domestic animals when they constitute reservoirs; and

iii) the lack of economically feasible methods for their control.

It is becoming increasingly apparent that significant cultural aspects and lack of community education about the disease need to be addressed, if animal reservoir control measures are to be practised as viable approaches. Similar cases can be made for many of the other parasitic and non-parasitic zoonoses as well as for Leishmaniases.

I would now like to look at factors associated with development, e.g.:

1) <u>Who are the affected populations?</u>

The parasitic zoonoses predominantly affect poor rural communities who are a largely neglected sector of our populations.

Most sufferers belong to the economically viable age groups of the populations.

Very often, males are more affected, and a strong association with occupational exposure is evident. For instance, in Ethiopia, children (4-14 years) herding livestock show the highest prevalence of CL, acquiring the infection from sandflies infected mainly from the hyrax. In the Ethiopian southwest, the same animal reservoir is the source of infection of VL for coffee-growing adult men.

In the Andean and Amazonian regions of South America where CL and MCL are common, colonization schemes and resettlement, deforestation and cultivation of new land are known to be associated with widespread human infection, which is acquired from various animal reservoirs. People involved in hunting, fishing and gathering activities are the most affected.

In Tunisia, as well as in the Middle East, it appears that large scale construction programs for water resources appear to have increased the prevalence of CL and Dogs and rodents are incriminated as reservoirs.

2) What then are the socio-cultural aspects?

It is evident that the following factors need to be carefully considered in determining socio-cultural aspects relevant to the zoonoses.

i) General demography and educational status of the community, including occupations.

ii) General status of community well being (community diagnosis).

iii) Perception of the community on sources and modes of acquisition of infection and their attitudes towards such modes.

iv) Beliefs and practices about the diseases (this can include considerable surprises).

v) Social and community infrastructural aspects of the population, including occupations and services.

vi) Patterns of behaviour of:

(1) sub-clinical infection carriers,
(2) acute cases, and
(3) chronic cases.

vii) General comprehension about health and disease, prevention and control, and the use of any health facilities. The idea of risk factors in Zoonosis. Social interactions in the community and animal-human associations.

viii) If, as is often the case, there are resettlement schemes, and migrant workers or nomadic populations are involved, then it is important to examine three basic levels, i.e., point of origin, route, and final destination; as well as duration of movements, frequency, etc. Likewise recreation and leisure patterns in the community which may be related to disease transmission, and their impact and effects, would need to be looked at.

ix) Possible influence of "disease" on education attainment, development and motivation of the community are now of ever increasing concern.

x) influence of the "disease" on household activities, e.g., child care, cooking, backyard farming, productivity, etc. would also need to be addressed.

Now let us look at some relevant economic factors that need to be examined in relation to the zoonoses.

i) Sources of income in the community and employment patterns.

ii) Ownership of land and other assets.

iii) Nomadic populations and sources of income/survival and productivity.

iv) Access to resources, e.g., hunting, fishing, gathering.

v) Agricultural patterns in the community, including schemes for mechanization, commercial enterprises, etc.

vi) Colonization and resettlement schemes, forestation and forest clearance activities, irrigation schemes and other development projects in the area.

vii) Local political and economic structure.

viii) Location and distribution of houses and their design.

ix) Domestic animals, livestock and other animals - distribution and practices.

x) Existence of temporary and permanent labour pools.

xi) Individual treatment costs.

xii) Loss of time at school/work/home at different levels of disability/morbidity.

xiii) Associated losses in income/revenue and savings and investment opportunities.

xiv) Hospitalization costs.

xv) Costs of preventive care.

xvi) Costs associated with animal reservoirs and their control or elimination.

xvii) Costs of efforts at disease control in the community.

xviii) Priority given to the zoonoses by:

1) local physicians,
2) the local Health Centres,
3) Ministry of Health,
4) Other relevant authorities, e.g., Agriculture.

Now I would like to address this issue in the general context of "development".

For developing countries, which constitute about 75% of the global population (the "less-developed countries", or the "Third-World"), "development" is the key objective and is usually thought of in terms of planned intervention. Major obstacles in the path of development include many varieties of widespread infectious and parasitic diseases, frequently exacerbated by malnutrition and other health conditions. The zoonoses are typical and important examples.

Disease control, with the intention of producing decreased morbidity, decreased mortality, and general economic development, is considered necessary to improve the "quality of life". The links between disease and poverty, including the idea that people are sick because they are poor and become poorer because they are sick, also appear logical.

If zoonotic diseases such as Neurocysticercosis, Brucellosis, Hydatidosis or Leishmaniasis debilitate the population and eventually deplete the vitality of the labour force, they constitute barriers to progress. Therefore, it is widely held that public health interventions are prerequisites for economic development, implying that poverty can be prevented by disease control. Of course, thought should also be given to possible negative aspects of such interventions.

On the other hand, the consideration of development, developmental projects and macrodevelopmental schemes and their impact on exacerbation of zoonotic diseases are of increasing urgency. Massive internationally funded schemes of various types are now rampant in various part of the tropical world. Water resource development schemes such as large dam construction projects, or projects associated with deforestation or reforestation, as well as migration, resettlement, or road building, usually cause widespread ecological disturbances, and communities are subjected to significant changes in their

biological, physical, or socio-cultural environment. Whatever the specific attributable factors, exacerbation of zoonotic health problems are considered to be by-products.

We have, today, very little knowledge of the precise impact of the developmental projects on parasitic diseases, including the zoonoses. We have an even lesser understanding of the possible mechanisms involved in the effect of these ailments on behaviour or on learning capacity, development and work efficiency. Needed desperately are: more reliable data on prevalence, precise and usable information on vectors and reservoirs in relation to their habitats, and a better understanding of traditions, customs and practices in relation to the disease in the community.

Information to be provided to the relevant ministries and planners in the country should be shown in the context of the communities' needs and demands, along with the essentials for intervention, and the impact on development, both short and long term. Every macrodevelopment project must have a component which considers all factors in relation to relevant zoonoses, and approaches to prevention and control must be identified through reliable research findings. There is a great need for input from the affected communities, with their active involvement and their in-depth understanding for a more effective role in the overall process of intervention. Community participation plays a significant role in sustained health improvement.

Available technology, whether for more sensitive diagnosis, community surveillance or epidemiological methodology, needs to be exploited and applied; costs and benefits are of prime importance. Useful information from various disciplines attacking the problems could be the key to the elimination of these infections as obstacles in the path of development, or could at least minimize their adverse impact on developing communities.

Selected References

1. Acha, Pedro N., and Szyfres, Boris, (1987): Zoonoses and Communicable Diseases Common to Man and Animals; 2nd Edition Scientific Publication No. 503, Pan American Health Organization, Washington, D.C.

2. Brown, P.J., Socioeconomic and Demographic Effects on Malaria Eradication: A Comparison of Sri Lanka and Sardinia, Soc. Sci. Med. Vol 22, No. 8, pp 847-859, 1986.

3. Herrin, A.N. and Rosenfield, L. (1988): Economics, health and Tropical Diseases. University of the Philippines, School of Economics, Manila, Philippines.

4. Walton, B., Wijeyaratne, P.M. and Modabbar, F., (1988) Editors; Research on Control Strategies for the Leishmaniases, IDRC Manuscript Report Series MRS-184e; International Development Research Centre, Ottawa, Canada.

5. World Health Organization (1989). Tropical Diseases. Program in International Research, 1987-1988. World Health Organization, Geneva, Switzerland.