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Remarks on the Future of the Health Sciences

Robert C. Hardin*

I suppose the most highly visible problem in the field of health science and health care delivery in our nation today is the shortage of physicians, particularly in the inner cities and in the rural areas of our country. At least this is the problem I hear the most about and it is with some pleasure that I turn my attention to another group in the health professions. I am told that there is a shortage of veterinarians and that this deficit will continue to grow. In a report published in December, 1965 by the American Veterinary Medical Association, it was stated that there were approximately 24,000 veterinarians practicing in the United States and that by 1975 there would be 40,250 needed but only 28,000 available. The net shortage, then, would be 12,250 and this was expected to increase by 1985 to approximately 20,000. These figures were based on a need of 17.5 veterinarians per 100,000 population.

I cannot judge the validity of these statistics except to compare them with similar ones applying to practitioners of human medicine. For the past ten years we have increased the number of physicians available per unit population but there have been changes in the organization of health care delivery and in the kinds of endeavors physicians undertake which have rendered the figure of 130 per 100,000 population suspect. What I am saying is that we must be extremely careful of the "numbers game." Changing conditions may very well alter the ratios which are currently accepted.

In human medicine these changes are easily identified. They are: more specialization, greater numbers employed by governmental agencies, both state and federal, and the increasing entry of physicians into research and education. None of these are bad but the net result has been a marked diminution in the number of physicians actually engaged in patient care full time.

So far as I can tell, the same thing is happening in veterinary medicine. The 1965 report of the American Veterinary Medical Association states that of the 24,000 veterinarians, 3,500 or approximately 15% were employed by the federal government primarily associated with the Department of Agriculture. When one adds to this the unknown number employed by state and local governments the percentage is even higher and is about double that for physicians. In March of 1968 several leading veterinary medical educators testified before a Congressional Committee concerning the present state

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of veterinary education and the needs of the future. Included in this distinguished group were Dr. George C. Christensen, Dr. John S. McKibben and Dean R. L. Kitchell of Iowa State University. Dean W. W. Armistead of Michigan State University, as well as others, spoke of the need for specialization within veterinary medicine and for programs in clinical specialization beyond the doctoral degree similar to those found in human medicine. There are 18 veterinary colleges employing 850 veterinarians as teachers. In addition to this other educational institutions need and employ veterinarians. We have, for example, seven veterinarians on the faculty of the College of Medicine in Iowa City. It would seem, then, that government employment, specialization and the needs of education have made the same demands upon the ranks of the veterinarians as have occurred in human medicine.

Dr. Clarence R. Cole of the College of Veterinary Medicine, Ohio State University, has summarized the roles of the veterinarian in our society. There is a startlingly large number. He has identified the public health responsibilities of the veterinarian as comprising four activities. These are: 1) removal of sources of infection to man through eradication or control of animal diseases transmissible to man, 2) development of preventatives or treatments that can be adapted for use in man, 3) development of food hygiene programs that protect the consumer against food-borne diseases and 4) protection against importation of animal diseases into the United States. A second kind of role for the veterinarian is in research. Only a few of our modern-day problems need to be mentioned to show its importance. Veterinarians have been in the forefront of research in toxicology, environmental hazards, pesticides, food, air and water pollution and in the development of drugs and other chemicals. I have already mentioned the third role which is that of an officer in the armed forces where veterinarians play a major part in preventive medicine and environmental health. A newer field for veterinarians is laboratory animal medicine. A newer field for veterinarians is laboratory animal medicine. This rapidly-emerging specialty has greatly enhanced research in the United States and will play an even larger part in the future. The final role for veterinarians which Dr. Cole identifies is that of private practice which he divides into large and small animal practice.

Those of us who are in human and veterinary medicine are not peculiar. There is a shortage of all other kinds of health professionals and this will continue into the foreseeable future. All of us are finding new roles in response to society's needs which would appear to make our manpower problem worse. We must face this situation squarely and ask the questions, "Why have these changes occurred?" and "Are we changing our roles in the proper way?"

It seems to me that veterinary medicine is coming rapidly to the time when it must face the problem which has plagued human medicine for some time. That is the loss of the general practitioner through increased specialization. Enough has been said in the past about the explosion of scientific knowledge that we need not repeat it here but the fact remains that the increase has been almost terrifying. There now exists a body of health science knowledge so large that no one person can know all of it. The inevitable result is specialization. I believe that in all ventures in the health sciences, specialization will increase and we must structure health care delivery to take advantage of this fact.

There is no question that more veterinarians will enter the fields of education and research. If we are to have a greater supply of health professionals all of our schools will have to increase both in size and in numbers. This will require more teachers. As specialization increases in veterinary medicine it will have become a factor in the number of teachers in any given school. There will be an increase in numbers of individuals as well as in numbers of departments. I would also think that research in veterinary medicine will come to reside largely, although not exclusively, in veterinary colleges. At least this has been true in human medicine and I would expect veterinary colleges to follow the same path.
I would, too, predict that more veterinarians will enter governmental service in the future than have in the past although the percentage of veterinarians now in governmental service is quite high. The unique role veterinarians have in protecting human health will undoubtedly expand. We have seen something of this in the past year in the form of legislation concerning the meatpacking industry which must have increased the demand for veterinary services.

There is another problem which all health professionals face. This is the restructuring of the health-care delivery system. Health is now ranked among the human rights and the public will demand good health care. At this time, when such social pressures are mounting, we are faced with a shortage of professionals, increased specialization which requires more personnel, increased demand for people in governmental service particularly in public health activities and with economic problems which impinge on health-care delivery in both the inner city and the rural areas. I know of no one who has the answer to this problem and sometimes it seems as though we simply haven’t the human resources to meet the need. However all of us in the health science fields must seek a solution. This may mean training new and different kinds of personnel, changing the roles of the health professionals we now have or altering the system in which health care is delivered. Probably the solution lies in the combination of all three.

So far I have talked about the past and the present and very little of the future. The roles which veterinarians now undertake have been listed and it would seem that to provide for present needs would be task enough for the future. However, I feel that veterinarians, along with all other health professionals, must accept some additional responsibilities.

Among the most pressing problems of our time is the socio-medical one of the discrepancy between the food supply of the world and its population. If population increases continue at the present rate and are not matched by increased production of food, the time will come when large segments of the world’s population will be removed by starvation, epidemic disease or war. Since none of these is acceptable we must seek to match population to food supply by population control and increased production of food. Health science professionals have a major role to play in this regard.

Quite adequate methods of population control are now available and what remains to be done is a mass education regarding their use. In this endeavor health professionals should take the lead but should not perform the actual work. Others should be trained for this task as a means of conserving the numbers and energies of the health professionals. This is perhaps an example of changing from the traditional role. The area in which health professionals, particularly veterinarians, can play a significant part is in increasing the supply of food. J. C. Thompson from the faculty of the Veterinary College at Cornell University states that areas of the world where there is a low intake of animal protein are exactly the areas in which there is the serious risk of malnutrition regardless of total calorie intake. The biological fact remains that even though a sufficient intake of protein can be secured in an all-vegetable diet, it is extremely difficult to do so without supplementation. The biologically most useful proteins are animal in origin and attention should be given to the increase in meat supply as well as the total food supply. I am constantly amazed by accounts of the revolution in the poultry industry which seems to produce more and more chicken at less and less cost each year. It is this kind of thing which needs to be duplicated in other sectors of the food industry and it would seem to me that the veterinarian is ideally suited for a central role in the endeavor.

I have tried to point out that the veterinarian, like other health professionals, has his own unique role which only he can fill but that all of us have formed a partnership in the past with the ultimate aim of ensuring health to all people. This partnership will prosper in the future as we attempt to improve our services in seeking our goal. However, today’s problems will not be answered by yesterday’s solutions and we need to examine the system in
which we work and perhaps to change some of the roles we play. To me the opportunity for veterinarians, or for that matter any health professional, seems limitless. You are assured of a busy life and satisfaction in what you do with perhaps some frustration because of being personally unable to attend to everything that needs doing. It would seem, however, that whatever insecurity may be engendered by being torn between several desires may be compensated for by the fact that whatever you do, you can’t help but feel wanted.

**Book Review**

"Reproduction in Farm Animals"

The second edition of *Reproduction in Farm Animals* edited by E. S. E. Hafez and published by Lea and Febiger of Philadelphia in 1968 only partially fulfills the need for a comprehensive textbook on reproduction, obstetrics, gynecology and andrology. Perhaps it’s only possible to partially fulfill this need in one text, especially when such general categories as endocrinology, anatomy, physiology, comparative reproduction, reproductive failure and reproductive infections are included. Certainly Dr. Hafez and the 18 other contributing authors have made a noble effort in attempting the impossible. They have updated considerably over the first edition by adding four new chapters and deleting one, thus putting more emphasis on behavior, reproductive failures and cytogenetics.

This book is quite easy to read, is quite accurate and up to date and has very satisfactory tables, figures and illustrations. The photographic plates are minimal and of poor quality and generally do not reflect the quality of the text.

The section on reproductive infections could well have been left out as they offer little more than a list of diseases by etiological agent and are more confusing than enlightening to the target reading group.

This text would be very fine for animal science courses and as a beginning text for veterinary students. The information in the book is information to which these groups need to be exposed. It is not enough, however, for the advanced or graduate student. Diseases perhaps should be omitted as we need an entire text on reproductive disorders and to tack on a sketchy, incomplete touch at the end of a very satisfactory text on normal reproduction only deters and is a misuse of much needed space in the book. Perhaps that effort could have been put into more and better photography. In their effort to be all encompassing, the twenty pages on reproductive failures in females and the eight pages on failures in males are merely scattered fragments of information with little continuity or depth.

The list of films on reproductive biology is very good.

This is a good survey book and should serve well the function of introducing students to the various facets of reproduction in farm animals.

(Reproduction in Farm Animals, edited by E.S.E. Hafez, 401 pages plus index, glossary and list of films. Many excellent diagrams. Lea and Febiger, Philadelphia, 1968.) By W. M. Adams, B.S., V.M.D., M.S., Associate Professor of Reproduction, Iowa State University, Ames, Iowa.