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HISTORY AND SCOPE OF VETERINARY MEDICINE

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ABSTRACT

The history of earliest recognition, decline and renaissance of Veterinary Medicine in the world with the brief history of Veterinary Medicine in Indian sub-continent including Bangladesh have been described. It appears from the different reports that with the recommendation of the Joint Indo-American and Pak-American teams on agricultural research and education recommended to establish Agricultural Universities in India and Pakistan where veterinary and agriculture education brought under one umbrella with bifurcation of the complete degree, B.Sc. (Vet. Sci. & AH) into two, DVM (Doctor of Veterinary Medicine) and B.Sc. (AH) as an American education pattern of Land Grant colleges. Out of 22 Veterinary colleges of India, only three Agricultural Universities (Pantnagar, Haryana and Punjab) and two in Pakistan (EPAU and WPAU) were implemented the American recommendations. The Indian National Commission on Agriculture has recognized these two separate degrees offered in a profession as detrimental towards livestock development and the Review Committee on Agricultural Universities who recommended an integration of the two degrees to avoid duplication. Accordingly, these two degrees in all the three Indian universities have been combined as BVSc & AH in 1982, and as DVM in 2002 in Pakistan, whereas the Veterinary education has made more complex in Bangladesh through establishment of four Government Veterinary Colleges where offering five years DVM degree including one year internship with combined curricula on animal health and production against four years separate two degrees offering from BAU without internship. Veterinary education should include animal health, animal production and animal product technology for effective teaching, research and extension programme and accordingly, the curricula and syllabi of all the Veterinary degrees offering all over the world have been adjusted except BAU which is urgently required to adjust and reformulate the uniform curricula and syllabi in all the degree offering educational institutes in Bangladesh. Moreover, the history of modern veterinary education in India showed great achievement through establishment of Veterinary University, 'Tamil Nadu Veterinary and Animal Sciences University' on September 1989. Therefore, there is a strong urge to establish Veterinary University in Bangladesh following the pattern of India.

Origin of the Term Veterinary and its Definition

Possible Roman origins of the name *veterinarius*. The animal caretakers were called *souvetaurinarii*, from which the word *veterinarius* may have later been derived. However, the Roman word for 'pack animals' was *veterina*, another possible derivation of the term. A *veterinarium* was the compound set aside for the pack animals at a Roman military encampment. The term *medicus veterinarius* was also used on some miscriptions. The scholar Columella, a leading author on agricultural and veterinary matters, used the term *veterinarius* for caretakers of pigs, sheep and cattle and *mulomedius* for horse doctors. When Tarrentunus, a pretorian prefect during the region of Commodus (AD 180 -192), formalized the military regulations, the term *veterinarii* appeared (Dunlop and Williams, 1996).

Now, 'Veterinary science is the branch of knowledge that deals with the anatomy of the domestic animals, their physiology and racial characteristics, their breeding, feeding and hygienic management, the pathology and treatment of their diseases and injuries, their relation to man with regard to inter-communicable maladies and to the use of their flesh and products' – Encyclopaedia Britannica.

Early Records of Veterinary Medicine

Veterinary Medicine is an art and science of diagnosis, treatment and prevention of diseases of animal and birds. Like many other arts and science, the origin of Veterinary Medicine appears to be lost in the mists of antiquity. However, the Veterinary Medicine was very must in existence with dawn of civilization. The general idea of an animal doctor seems to have been described for the first time as a healer or azu, of the herds of ruminant animals during Sumerian King Ur-Ningursu of Lagash (2200 B.C.). The first, written record of Veterinary Medicine from ancient Egypt was provided by Kahun Papyrus (1900 B.C.). The oldest Veterinary publication is the part of the Kahun Papyrus that describes number of animal diseases and is one of the earliest records of a Veterinary-type approach to animal treatment. The town Kahun of the twelfth dynasty was sited at the Illahun of today, in the Fayoun district (Walkar, 1964 ; Dunlop and Williams, 1996).

Early Recognition of Veterinary Medicine

Around 1760 B. C. King Hammurabi (1792 - 1750) established the Babylonian Empire in the central part of Mesopotamia. There was a due recognition of the value of livestock and the necessity for development of Veterinary Medicine seems to have been clearly evidenced by the fact that in a Code of Laws enacted in Babylon. The famous

Hammurabi code provided a legal framework for a moral code that was enforceable and was a great landmark in the emergence of protection of the rights of the individual (Dunlop and Williams, 1996). The code included rules for veterinary work; overall the medical focus of the code was on surgical interventions :

224 : 'If a 'Veterinary Surgeon' performed a major operation on either an ox or ass and cured it, the owner of the ox or ass shall give to the doctor one sixth of a shekel of silver as his fee'.

225 : 'If he performed a major operation on an ox or an ass and has caused its death, he shall give to the owner of the ox or ass one-fourth its value'.

The first mention of rabies occurs in the Eshuna code of 2300 B.C. (that is, before the code of Hammurabi). It called for action as soon as rabies was noticed in a dog. The owner was informed at once and had to take preventive action against bites. If the rabid dog bite someone who later died, a heavy fine was exacted (Dunlop and Williams, 1996).

Early Progress of Veterinary Medicine

The progress of Veterinary Medicine was well demonstrated in the time of Moses (1500 B. C.). From all accounts the great learning of Moses included at least a working knowledge of physiology, parasitology, hygiene and sanitation.

In ancient India, animal was considered sacred from the standpoint of religion and the care of the animal was a holy profession. Animal husbandry was considered as a lucrative profession even by the kings and elite of the society. Lord Buddha took much pain for the welfare of animals. In Verdic period, ancient Hindus had been found to be adequately concerned with management, diagnosis and treatment of the wide variety of diseases of animals. Verdic Aryans carried the animal practice.

The great Mauryan Emperor Ashoka (269 - 232 B.C.) made an edict that everywhere provision was to be made for two kinds of medical treatment, treatment for people and for animals through charitable animal hospitals. All kinds of injured and sick animals were receiving food, shelter and treatment for their sufferings. True veterinarians seem not to have been employed at pinjrapoles, but the individuals who treated the animals must have become quite skilled at treating fractured limbs and other common health problems. The remnants of those hospitals relating to sick animal treatment still exist now a days.

In ancient Greece and Rome, the Veterinary Medicine was ranked with human medicine (Dunlop and Williams, 1996).

Decline Period of Veterinary Medicine

In 1st century Varsow stated that that 'Certain animal culae which can not be seen with the eyes and which will breath through nose and mouth into the body where they cause great maladies'. Vargil mentioned about animal plague, which was anthrax. However, with the downfall of the Roman Empire, the Veterinary Medicine became entirely lost or passed into oblivion and little is known about Veterinary Medicine in the medieval period (Kendall, 1988 ; Dunlop and Williams, 1996).

Outbreaks of rinderpest (then called cattle plague) had been a common occurrence throughout Western Europe since the ninth century and inevitably killed huge numbers of cattle. In 1711 cattle plague took a heavy toll on cattle and Pope was authorized to investigate the devastating outbreak. In France the devastation caused by Rinderpest during 1710 to 1714 was so immense that it paved way for the establishment of the first Veterinary School of the world.

Renaissance of Veterinary Medicine

The actual renaissance of Veterinary Medicine marked by the establishment of the first Veterinary school at Lyon in 1761 by French Government. In 1776 a second Veterinary School was founded at Alfort near Paris.

Pronounced improvement in the selection and breeding of livestock had begun in Great Britain in 1745 mainly as the result of keen competition between continental and British breeders. The results of this work increased the value of British livestock, which lead to the establishment of the Royal Veterinary College in 1791 in London. These examples were soon followed in other European countries and established Veterinary Schools at various periods.

Doctor Benjamin Rush, famed American physician and the signatory to the declaration of the independence was the pioneer to augment the concept of Veterinary education in the United States in 1806 (Dunlop and Williams, 1996).

Veterinary students graduated from the different Veterinary schools and colleges but there was no legal protection afforded as Veterinary surgeons. This was rectified in due course by the granting of a Royal Charter in 1844 under which the Veterinary art is recognized as a profession regulated and controlled by the body styled the Royal College of Veterinary surgeons.

History of Veterinary Medicine in Indian Sub-continent

In ancient India animal treatment was mostly confined to 'Ayurveda' medicine and Hakims and Kabiraj probably treated livestock as was the case for human. Veterinary service in India on modern scientific line came into beings in 1774 with the establishment of a modern horse breeding farm. Williams Frazer, probably a British cavalry officer, a non-veterinarian, became interested for the development of horses and cattle in India. In May 1795, he established a cattle farm at Poona and introduced two bulls and six cows from England.

The Bengal stud had been established in 1796 at Pusa by the East Indian Company to breed its own cavalry horses. After initial failures to acquire suitable breeding stock, the company sought the services of a competent member of the newly established veterinary profession who was a horse specialist to help identity suitable breeding stock for shipment to India in 1800. The person selected was William Moorcroft, the first English-speaking veterinary surgeon who had graduated in 1791 from the oldest Veterinary School in Europe, in Lyon, France, just before England had established its first such school. He served in this consultant role until 1808, when he was appointed superintendent and Veterinary Surgeon of the company's stud at Pusa. Sixteen years after he qualified he went to India where he worked for 17 years until his premature (died under mysterious) death in 1825. By 1820, Veterinary practitioners from England started coming to India, as there was a general awakening of interest in the profession.

The first Army Veterinary school was set up in India in 1862 at Poona with a course of one-year duration. Mr. J.H.B. Hallen was appointed as Principal Veterinary Surgeon of the Army Veterinary School at Poona in 1862. Devastating cattle plague forced to set up cattle plague commission in 1869 in India.

The first Veterinary College was set up at Babugarh in 1877 in order to produce efficient Veterinarian in India. Later on, Veterinary Colleges were established in succession at Lahore in 1882, Bombay in 1886, and Madras and Calcutta in 1893 with a three years course leading to a Diploma in Veterinary Science (GVSc).

The outstanding advance in Veterinary science in India was made with the establishment of the Imperial Bacteriological Laboratory in 1889 at Izzatnagar, UP, which in now known as Indian Veterinary Research Institute (IVRI). Sir Arthur Oliver, the first Animal Husbandry Commissioner in India, introduced the first degree course in Veterinary Science at Madras Veterinary College in 1936 (Dunlop and Williams, 1996).

History of Veterinary Medicine in Bangladesh

With the partition of India in August 1947 and consequent emergence of Pakistan as a new country in the geography of the world, most of the Muslim Veterinarians of West Bengal migrated to East Bengal i.e. East Pakistan (now Bangladesh). These Muslim Veterinarians established a Veterinary college at the outskirts of Comilla town, on 7th December 1947 with a three years diploma course known as DVMS (Diploma in Veterinary Medicine and Surgery). This diploma course was later renamed as LVS (Licentiate Veterinary Science) which was subsequently abolished in 1957 (Ali, 1997).

Veterinary college shifted from Comilla toTejgaon (Dhaka)

The Directorate as well as the Veterinary College got shifted from Comilla to Dhaka in 1950 and a five years B. Sc. (AH) degree course was introduced under the affiliation of the University of Dhaka in 1951. The name of the shifted Veterinary college was renamed as East Pakistan College of Veterinary Science and Animal Husbandry, with the consideration of that these two aspects of animal science are inseparable, and knowledge in only one will be considered incomplete for practical works in the field (Ali, 1997).

Veterinary college shifted in Mymensingh

The East Pakistan College of Veterinary Science and Animal Husbandry was shifted from Tejgaon to Mymensingh towards the close of 1955. The degree was subsequently renamed as B. Sc. (Vet. Sci & AH) in 1957 which was covered approximately 80% health and 20% production courses and this degree was continued until 1961.

Establishment of East Pakistan Agricultural University

In 1961, the East Pakistan Agricultural University (now BAU) was established taking the existing East Pakistan College of Veterinary Science and Animal Husbandry as its nucleus, on the recommendation of the National Educational Commission and the Food and Agriculture Commission of the then East Pakistan. The activities of the former College of Veterinary Science and Animal Husbandry taken over by the two faculties, viz. Faculty of Veterinary Science and Faculty of Animal Husbandry. The complete Veterinary degree of B.Sc. (Vet. Sci & AH) was bifurcated into two separate degrees, namely DVM (Doctor of Veterinary Medicine) and B. Sc. (AH) in 1963.

Actually, with the recommendations of the Joint Indo-American and Pak-American teams on agricultural research and education recommended radical changes in the prevailing pattern of education and substitution in its place of the

American pattern of Land Grant Colleges, by bifurcating the complete degree on Veterinary Science and Animal Husbandry in poor countries like India and Pakistan. However, out of 22 agricultural universities, only three (Pantnagar, Haryana and Punjab) in India and both the East and West Pakistan Agricultural Universities implemented the American recommendations. But the veterinarians could easily identified the future fate of offering two separate degrees in a profession and accordingly, these two degrees were combined together as BVSc & AH in 1982 in India on recommendations of the Indian National Commission on Agriculture and the Review Committee on Agricultural Universities (Anon., 1982a,b). Recently, Pakistan Veterinary Medical Council (PVMC) has ruled out the two degree system of DVM and B.Sc. (AH) and from 2002 onwards there would be only one degree programme of DVM throughout Pakistan. B.Sc. (AH) cease in exist in Pakistan. Graduates of Animal Husbandry are offered deficiency courses to get the degree of DVM (Ramzee, 2002). But still these two bifurcated degrees in a profession are exist in Bangladesh as a reference record in the world.

Without considering the problems of the two bifurcated degrees offering from BAU on livestock, four Government Veterinary colleges have already been established in Bangladesh with a combined curriculum of Veterinary Science and Animal Husbandry and offering five years DVM degree including one year internship training. These Government Veterinary colleges have been established at Sylhet (1994), Chittagong (1996), Dinajpur (2003) and Barishal (2003). Therefore, the four years DVM and B.Sc. (AH) graduates of BAU and five years DVM graduates including internship training of Government Veterinary Colleges have already made complex in the education, employment and working field of livestock in Bangladesh. On the other hand, September 20, 1989 has been declared as a red letter day in the history of modern Veterinary education in India, a new Veterinary University, Tamil Nadu Veterinary and Animal Sciences University has established.

Many eyebrow will be raised in wonder at the separate two types of graduates to look after livestock work – the DVM and B. Sc. (AH), even today, while in all over the world there is only a single graduate working in the field of livestock. There is no denying the fact that only the veterinary graduates by virtue of their training and qualifications are best suited for animal health and husbandry works in all its aspects (Anan., 1965). Therefore, we appeal to the concerned authority to take urgently appropriate steps like India and Pakistan to combine the curricula of two degrees to make a complete degree.

Recognition of Veterinary Graduates in Bangladesh

Veterinary art in Bangladesh is recognized as a profession in 1982 through 'The Bangladesh Gazette' on Tuesday, September 7, 1982. 'The Bangladesh Veterinary Practitioner's Ordinance 1982' was enforced (Ordinance No. XXX of 1982) by the Government of the People's Republic of Bangladesh as 'An ordinance to make provision for the regulation, control and registration of Veterinary practitioners in Bangladesh and for the constitution of a Veterinary council and for matters connected therewith'. This was followed by the approval of 'The Bangladesh Veterinary Council Regulation 1985' (The Bangladesh Gazette, Saturday, August 24, 1985) with the establishment of 'Bangladesh Veterinary Council' under which the Veterinary graduates are now registered as practitioners.

Activities and Scope of Veterinary Medicine

Present day veterinarians do not only treat and control diseases of animals and birds but they perform multiple desired functions (Anon., 1993a) and veterinarians serve the need of the society in a variety of ways (Fig. 1).

(1) Food Animal Medicine

Food Animal Medicine is one of the most significant areas in which veterinarians serve the society. They serve agriculture and the nation by supporting efficient and economic production of meat, milk and eggs, and protecting the livestock from diseases. Veterinarians not only examine, diagnose and treat illness and injuries of various species of animals and birds but also advice on problems like feeding, management and basic principles of farm development and management. Precisely, all activities related to livestock health, production and management fall within the purview of Veterinary Medicine.

(2) Laboratory Animal Medicine

The rapid evaluation since 1950's of health research involving use of animals have made impractical for animal care programmes in large institutions to be handled by biologists. Veterinarians in these organizations have been necessarily involved to serve the following purposes, production or purchase of research animals, appropriate housing and care, preventive medicine, clinical facilities for diagnosis, control and treatment of diseases and research on diseases, or other health problems of laboratory animals.

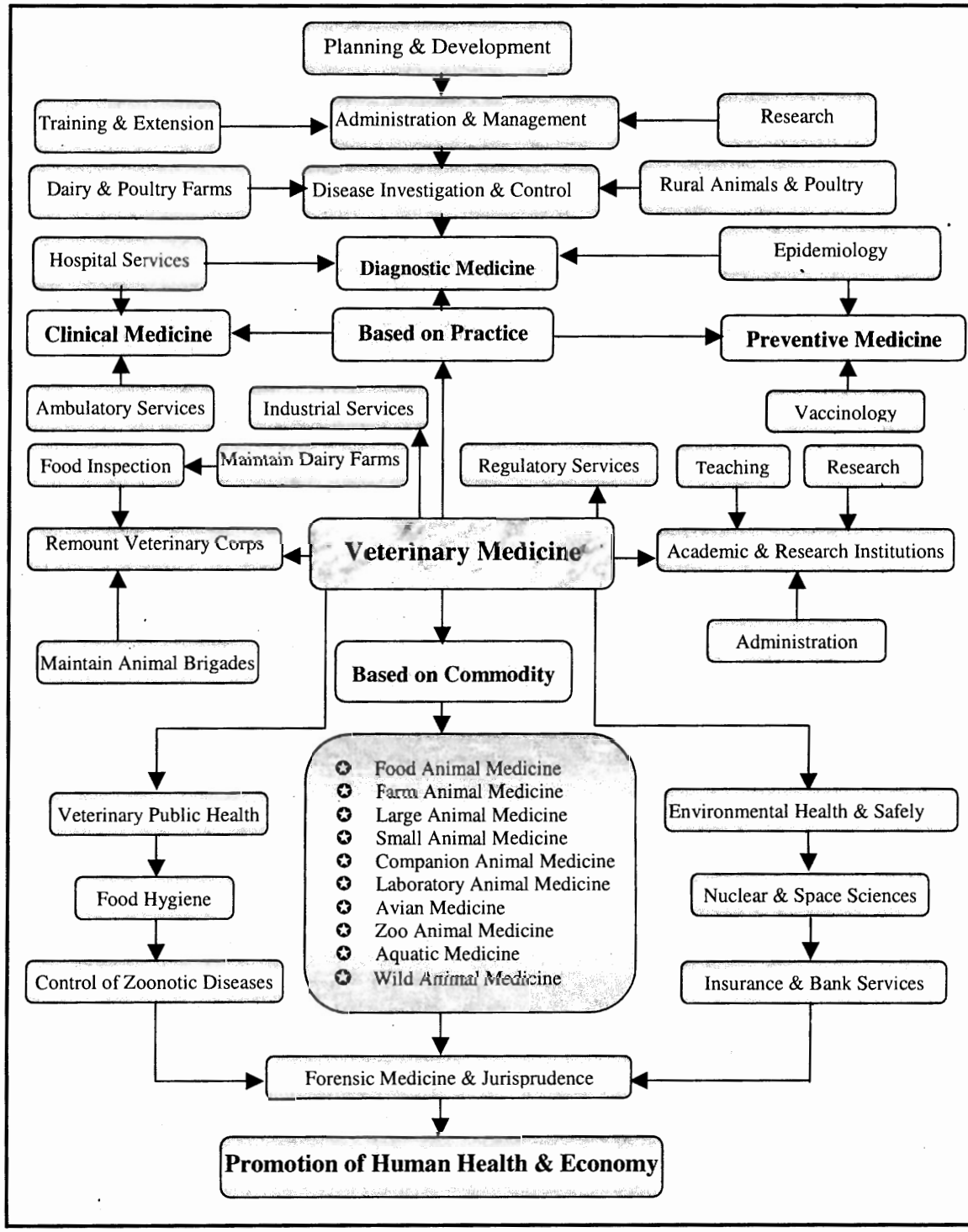

Fig. 1. Multiple Links and Activities of Veterinary Medicine

(3) Zoo Animal Medicine

The primary responsibility of zoo veterinarians is to maintain the health of animals on exhibit. He is also in demand for prevention and control of zoonoses, breeding, dietary regulation and the welfare and training of the animals.

(4) Wild Animal Medicine

Veterinary interest in wildlife medicine from the discovery that wildlife act as reservoir of infectious diseases of animals and man. In addition, behaviour of wildlife constitutes a sort of early warning system indicating existence or approach of natural disaster or calamities. Accordingly, veterinarians work with wildlife with a view in an effort to understand and control natural disease and to minimize the threat to the health and survival of wildlife imposed by man's invasion of their environment. The veterinary profession is well suited to the protection of animal welfare, and behavior studies must be given a much higher priority.

(5) Veterinary Public Health and Zoonoses

Zoonotic diseases are those diseases which are naturally transmitted from animals to man. More and more intensive farming and the pet keeping habit, results in the increased incidence of zoonoses. The Veterinary public health (VPH) is a component of public health activities devoted to the application of professional veterinary skills, knowledge, and resources to the protection and improvement of human health. VPH activities involve a very diverse range of functions within public health which reflect the broad community of interests between veterinary and human medicine. The main activities are aimed at reducing the incidence of zoonoses in humans, in their wild animal reservoirs and in economically important farm animals (Anon. 1993a,b).

Zoonoses continue to represent on important health hazard in most part of the world, although the situation is improving in the industrialized world, zoonoses prevention and control will remain an area of major concern in most developing countries. Protection of food is becoming more challenging and scientifically and new zoonoses continue to emerge. Therefore, programmes for their control and eventual elimination in animal reservoirs are urgently needed. More than 100 zoonotic diseases have been reported to be associated with serious diseases in humans of which importance of the some diseases are given below:

- Each year, more than 35,000 human rabies deaths and at least 6.5 million rabies post-exposure treatments are reported worldwide, mostly in Asian and African countries.
- WHO considered food borne diseases to be one of the most widespread health problems in the world. In developing countries up to 70% of all diarrhoeal diseases in children under the age of five may be of food-borne origin.
- The reported number of salmonellosis cases in humans has increased on a major scale in many countries. This increase has been caused, in the overwhelming number of cases, by *S. enteritidis*, a poultry-borne agent.
- Leptospirosis is found worldwide, most cases diagnosed in countries where watery rice paddy field cultivation is common, large number of farmers are affected with leptospirosis.
- Toxoplasmosis is a recognized problem in pregnant women resulting in fetal deaths, perinatal morbidity or chronic infections.
- Anthrax in humans is acquired through direct or indirect contact with infected animals or by occupational exposures to contaminated or animal-infected products.

(6) Remount Veterinary Corps

Remount Veterinary Corps has been developed for the prevention of zoonoses and preservation of health of the armed forces. As regards health of arm forces, Veterinary functions include food (meat, milk and eggs) production, procurement and food inspection, control of zoonoses, laboratory animal medicine, laboratory support to military services in such areas as research and development. Food inspection responsibilities of Military Veterinarians include technical guidance for purchasing and contracting personnel and to commissary and supply officers who supervise storage of food. They also have responsibility for inspection and supervision of food processing and handling.

Military veterinarians also collaborate with medical colleagues in prevention programmes like control of zoonoses, detection and control of health problems related to environmental contamination of food and general problems of food storage and disposition, and surveillance and control of insect, rodent and toxic contamination of food.

Development of specialized auxiliary forces until like dog and monkey brigades for intelligence activities, rapid transportation under different situations by the use of camels, donkeys and horses are the principal activities of military veterinarians.

(7) Regulatory Services

The regulatory practices may be divided into regulatory activities related to control of communicable diseases within and across the state boundaries and prevent entry of diseases. The regulatory and disease control programmes

involve enforcement of laws governing animal quarantine control of diseases and insects, pests of animals, humans, treatment of laboratory animals, and the regulation of pesticides and veterinary biologics. The primary objective of veterinarians is to identify and certify meat and poultry as acceptable for human consumption. Other activities include examination of the qualitative aspects of eggs, milk, fish and their processed by-products.

(8) Industrial Medicine

Veterinarians serve industries like pharmaceutical, biological, feed and poultry in various capacities including management, field investigations, sales promoting, advertising, research, laboratory animal medicine, technical services, production and training. The veterinarians in these industries concentrate on those diseases of economic importance that because of their aetiolgy, epidemiology are amenable to control prevention or therapy with drugs, chemicals or biologicals.

(9) Veterinary Medical Research and Human Health

Research is the process by which new knowledge is created. The purpose of veterinary medical research is to create new knowledge about livestock diseases and disease process with the objective of preventing and controlling these diseases. However, veterinary medical research is not only limited within the livestock health and production but also become more sophisticated and depend on inter-disciplinary efforts like public health, nuclear and space sciences, organ transplantation, environmental health and safety, biotechnology etc.

More than 100 diseases of animals are transmissible to and produce disease in man. Veterinary research has made contributions to the control of nearly all these diseases. A great many veterinarians are active in research in industrial organizations which produce drugs and biologicals used on humans. During the last few years, there has been extensive development in the field of radiation biology and aero-space programme in the world. because of the importance of animals to such programmes, veterinarians are playing key roles in the research in these areas.

(10) Aquatic Medicine

The expansion of the activities of the veterinary medicine into the arena of the health management of farmed aquatic animals is surely one of great potential. The development of increased cooperation among veterinary epidemiologist, fish-health scientists and aquaculturists will be mutually beneficial and, therefore, of such collaboration should be initiated from all parties involved (Georgiadis *et al.*, 2001).

(11) Environmental Health and Safety

Deposition of contaminants in soil and water and on plants can derive from a large number of sources including atmospheric pollution, residues from industries, persistent pesticides etc. Pastures adjacent to major roads (highway) and the animal grazing them, are also contaminated by heavy toxicants from vehicle emission. Pollutants may exert their effect through direct toxicity, immunosuppression or in the case of some heavy metals, also by the competitive induction of trace element deficiencies. Animals exposed to radioactive material caused by radionuclides in environments of feed resulting from nuclear bombs or nuclear power plant accidents may suffer radiation injury. They may also serve as reservoirs for radioactive material which could be passed to humans in meat, milk and other animal products. Therefore, protection of the environment from hazardous pollution as a high priority as in the protection of endangered species.

Conclusions

- Although the activities and status of veterinarians in most of the developed and developing countries of the world are wide and appreciable but it has not yet been duly appreciated in Bangladesh. The activities of the veterinarians in Bangladesh are mainly limited within the duties on livestock health and production through the Directorate of Livestock Services. However, in early seventies dairy and poultry development activities were included within veterinary functions but these now have been ambiguously segregated into non-veterinarian activities resulting the livestock sector more problematic.
- Veterinary medicine has not been recognized as complimentary to human medicine and as such only few veterinarians have been involved in the public health services. Unfortunately, inspection of most of the foods from animal origins is still performed by the non-veterinarians in Bangladesh with consequent horrendous exposure of human health to zoonotic diseases. The responsibility for the health of man is not a one discipline job, practitioner of both veterinary and human medicine must work hand to hand. Each must take an interest in the other's work. Such cooperation will play big dividends in improving the health of both man and animals.
- Veterinarians are yet to be appreciated in biomedical research, pharmaceutical companies, environmental science, biotechnology, wildlife studies and banking sectors in Bangladesh.

- Recently, a large number of elite and skilled farmers have ventured into poultry and dairy farming in Bangladesh which enhanced scope of Veterinary medicine but veterinarians are not well trained as per field requirement. The curricula and syllabi of undergraduate veterinary educations are not only up-to-date like developed and developing countries including neighbouring countries, but also great differences exists among the degree offering institutes within the countries. With a view to bring parity with global veterinary education and widen the scope for employment within and outside Bangladesh, it has become highly desirable that curricula and syllabi for the undergraduate veterinary education in Bangladesh must be pragmatically designed and meticulously executed in all the degree offering universities and colleges in Bangladesh. Therefore, we can conjecture into a optimistic future for veterinarians in Bangladesh which possibly could be more alluring if the uniform and up-to-date curricula and syllabi are used for training of veterinary graduates.

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