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 subcontinent including Bangladesh have been described. It appears from the different reports that with the recommendations of the Joint Indo-American and Polish-American teams on agrarian research and education recommended to establish Agricultural Universities in India and Pakistan where veterinary and agriculture education brought under one university with bifurcation of the complete degree, B.Sc (Vet. Sci. & AGR) into two, DVM (Doctor of Veterinary Medicine) and B.Sc (Agr) in an American education pattern of Land Grant Colleges. Out of 22 Veterinary colleges of India, only three Agricultural Universities (Punjab, Haryana and Punjab) and two in Pakistan (PVAU and WFAU) were implemented at the American recommendations. The Indian National Commission on Agriculture has recognized one-two separate degrees offered in a profession as detrimental towards livelihood 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 five Indian universities have been combined as BVSc & AGR in 1982, and as DVM in 2002 in Pakistan where 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 in animal health and production against four years separate two degree offering from BAU without internship. Veterinary education should include animal health, animal production and animal health 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 through BAU which is urgently required to adjust and reformate the uniform curriculum and syllabi in all degree offering educational institutions 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 1999. 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 veterinarii, from which the word veterinaries may have later developed. However, the Roman word for 'pack animals' was veterinarius, another possible derivation of the term. A veterinarius was the compound set aside for the pack animals at a Roman military encampment. The term medicus veterinarius was also used on some inscriptions. The scholar Columella, a leading author on agricultural and veterinary matters, used the term veterinarius for care of animals and cattle and mulmosexualis for the home doctors. When Arabians, a pestrian prefect during the region of Commodus (AD 180-192) formalized the military regulations, the term veterinarius 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, Wade breeding, feeding and hygienic management, the pathology and treatment of their diseases and injuries, their relations to man with regard to inter-communicable maladies and to the use of their flesh and products – Encyclopædia Britannica.

Early Records of Veterinary Medicine

Veterinary Medicine is an art and science of diagnosis, treatment and prevention of diseases of animals and birds. Like most other arts and science, the origin of Veterinary Medicine appears to be lost in the mists of antiquity. However, the Veterinary Medicine was very exist in much with descent of civilization. The general idea of an animal doctors seems to have been described for the first time as a healer or aca, of the heads of ruminant animals during Sumerian King Ur-Ningirsu of Lagash (2200 B.C.). The first, written record of Veterinary Medicine from ancient Egypt was provided by Kahun Papyri (1900 B.C.). The oldest veterinary publication is the part of the Kahun Papyri 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 situated at the Ilkahon of today, in the Fawqan district (Walker, 1964; Dunlop and Williams, 1996).

Early Recognition of Veterinary Medicine

Abu' al-Qasim Qasim ibn 'Abd al-Rahman (879 - 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 to have been clearly evidenced by the fact that in a Code of Laws traced in Babylon. The famous
Hammurabi's 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 an ox or an ass and curset it, the owner of the ox or ass shall give to the doctor one sixth of a shekel of silver as his fee.

275: 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 of its value.

The Jewish practice of rabies occurs in the Talmud 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 preventative action against bites. If the rabid dog bit 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, pathology, 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 Veredic period, ancient Hindus had been found to be adequately concerned with management, diagnosis and treatment of the wide variety of diseases of animals. Veredic Ayurveda studied 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 temples, but the individuals who treated the animals must have become quite skilled at treating fractured limbs and other common health problems. The remains of such hospitals relating to sick animals 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 Varro stated that the "Certain animal carcass which can not be seen with the eyes and which will breath through nose and mouth into the body where they cause great maladies". Vargi 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 above 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.

Renaisance 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 Avignon near Paris. Prominent 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.

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History of Veterinary Medicine in Indian Sub-continent

In ancient India animal treatment was mostly confined to 'Ayurveda' medicine and naked foot soldiers were the care for the horse. Veterinary service in India on modern scientific lines came into being in 1734 with the establishment of a horse breeding farm. William Francis, 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 as Poosa 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 consultative role until 1809, when he was appointed Superintendent of Veterinary Surgeon of the company's stall at Poosa. Sixteen years after he qualified he went to India where he worked for 17 years until his premature (died under mysterious) death in 1827. 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. Battie was appointed as Principal Veterinary Surgeon of the Army Veterinary School at Poona in 1862. Desperate cattle plague forced to set up cattle plague commission in 1869 in India.

The first Veterinary College was set up at Bhopal in 1877 in order to produce efficient veterinarians in India. Later on, Veterinary Colleges were established in succession at Lahore in 1882, Bhopal in 1886 and Madras and Calcutta in 1883 with a three years course leading to a Diploma in Veterinary Science (D.V.Sc.)

The outstanding advancement in Veterinary science in India was made with the establishment of the Imperial Bacteriological Laboratory in 1889 at Khoa (Upper) Assam and the Indian Veterinary Research Institute (IVRI) in 1908.

History of Veterinary Medicine in Bangladesh

With the partition of India in August 1947 and the 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 8th December 1947 with a three years diploma course known as D.V.M/ (Diploma In Veterinary Medicine and Surgery). This diploma course was later renamed L.V.S. (Licentiate Veterinary Science) which was subsequently abolished in 1957. All. (1997).

Veterinary college shifted from Comilla to Tejgaon (Dhaka)

The Veterinary college as well as the Veterinary College (from Comilla to Dhaka in 1959 and a five years B. Sc. (Agriculture) degree course was introduced under the affiliation of the University of Dhaka in 1951. The name of the shifted Veterinary college was changed to East Pakistan College of Veterinary Science and Animal husbandry, with the consideration of that two aspects of animal science were inseparable, and knowledge in only one will be considered incomplete for practical works in the field (All. 1997).

Veterinary college shifted to Mymensingh

The East Pakistani College of Veterinary Science and Animal Husbandry was shifted from Tejgaon to Mymensingh in the year 1958. The degree was subsequently renamed as B. Sc. (Veterinary Science) in 1957 which was covered approximately 80% health and 20% production courses and this degree was continued until 1966.

Establishment of East Pakistan Agricultural University

In 1951, the East Pakistan Agricultural University (EPAU) 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 Agricultural Commission of the East Pakistan. The merger 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 by B. Sc. (Vet. Sci & AH) was bifurcated into two separate degrees, namely DVM (Doctor of Veterinary Medicine) and B. Sc. (Agriculture) in 1963.

Actually, with the recommendations of the Joint Indo-American and Pakistan teams on agricultural research and education recommended radical changes in the prevailing pattern of education and substitution in its place the
American pattern of land grant colleges, by elevating the complete degree on Veterinary Science and Animal Husbandry in poor countries like India and Pakistan. However, out of 22 agricultural universities, only three (Panjab, Haryana and Punjab ) in India and both the East and West Pakistan Agricultural Universities implement the American recommendations. But the veterinarians could easily identify the future fate of offering two separate degrees in a profession and accordingly, these two degrees were combined together in BVSc. & AH in 1982 in India on recommendations of the Indian National Commission on Agriculture and the Review Committee on Agricultural Universities (Anon., 1982a). 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.S. (AH) ceases to exist in Pakistan Graduates of Animal Husbandry are offered deficiency courses to get the degree of DVM (Rambo, 2002). But still these two bifurcated degrees in a profession are exist in a reference record in the world.

Without considering the problems in the two-bifurcated degrees offering from BVSc 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 Bauccoli (2008). Therefore, the four years DVM and B.Sc. (AH) graduates of BVSc 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. Or the other hand, September 20, 1988 has been declared as a red rag 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 and the DVM and B.Sc. (AH), even today, while in all over the world there is only one single graduate working in the field of livestock. There is no denying the fact that only the veterinary graduate by virtue of their training and qualifications are best suited for animal health and husbandry works in all its aspects (Anon., 1965). Therefore, we appeal to the concerned authority to take regrettably appropriate steps like India and Pakistan to combine the curricula of the degrees to make a complete degree.

Recognition of Veterinary Graduates in Bangladesh

Veterinary act 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 regulation 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 save 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 by protecting the livestock from diseases. Veterinarians not only examine, diagnose and treat illnesses and injuries of various species of animals and birds but also advise on problems like feeding, management and basic principles of farm developments 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 evolution since 1950s of health research involving use of animals have made impractical for animal care programmes in large institutions to be handled by hortologists. Veterinarians in such 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 stems from the discovery that wildlife can serve as reservoirs 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 disasters or calamities. Accordingly, veterinarians work with wildlife with a view to 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 incentive is being given to the study of disease factors in the pets 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. (Alton, 1995, a.)

Zoonoses continue to represent an important health hazard in most parts 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. Prevention of zoonosis is becoming more challenging and scientifically 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 several 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 diarrheal 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 by the overwhelming number of causes, by S. enteritidis, a poultry-borne agent.
- Leptospirosis is found worldwide. Most cases diagnosed in countries where wet rice and dry field cultivation is common, large number of farmers are affected by leptospirosis.
- Trichinosis 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 exposure 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 army fowls, Veterinary functions include foodstuffs, 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 inspectors' responsibilities of Military Veterinarians include technical guidance for purchasing and contracting personnel and totery and supply officers who supervise supply of food. They also have responsibility for inspection and supervision of food processing and handling.

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

Development of specialized veterinary and transport meat products under different situations by the army 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, pets 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 pharmaceutics, 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 three diseases of economic importance that because of their etiology, epidemiology are amenable to control prevention or therapy with drugs, chemicals or biologics.

(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 biologics used on humans. During the last few years, there has been extensive development in the field of radiation biology and safety concern 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 aquaculture animals is surely one of great potential. The development of increased cooperation among veterinary epidemiologists, fish health scientists and aquaculture will be mutually beneficial and, therefore, of such collaboration would be initiated from all parties involved (Sergiadias 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 toxics from vehicle emissions. Pollutants may exert their effect through direct toxicity, immunosuppression or in the case of some heavy metals, also by the competitive inhibition 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 fully appreciated in Bangladesh. The activities of the veterinarians in Bangladesh are mainly undertaken within the duties on livestock health and production through the Directorate of Livestock Services. However, in many societies dairy and poultry development activities were included within veterinary functions but these 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 origin 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, prerequisite 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 fluid 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 so that all the degree offering universities and colleges in Bangladesh. We can together create a positive future for veterinarians in Bangladesh which possibly could be more appealing if the uniform and up-to-date curricula and syllabi are used for training of veterinary graduates.

REFERENCES