



THE PUBLIC HEALTH VETERINARIAN AND FOOD SAFETY CHALLENGE

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SUMMARY

Veterinarians bring a broad combination of knowledge and skills to the interdisciplinary farm-to-table public health team and are qualified by a broad biological education and experience to deal in a wide range of areas important to food safety. Food safety is a scientific discipline describing the handling, preparation, and storage of food in ways that prevent food-borne illness. In the United States, the Department of Agriculture's (USDA's) Food Safety and Inspection Service (FSIS) is the public health agency responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged. In Nigeria, two military decrees- the Animal Disease Control Act (Decree 10) of 1988 and the revised National Food and Drug Administration and Control NAFDAC decree of 1999 regulate and control medical and food safety matters. NAFDAC has monopolized the regulation and control of food safety matters to pharmacists, failing to accede and concede to the unique roles of public health veterinarians, which has been clearly elucidated in the Animal Disease Control Decree 10 of 1988. In the light of present universal public health realities, an appropriate review and strengthening of the Animal Disease Control Act (Decree 10) of 1988 and the need for a bill to create in the Federal Ministry of Agriculture, a Nigerian equivalent of the US Department of Agriculture's Food Safety and Inspection Service (FSIS) are called for while Public health veterinarians in Nigeria should brace up to adequately respond to the prevailing Food Safety challenge.

Key Words: Public Health, Veterinarians, Food Safety

INTRODUCTION

Food safety is defined as the conditions and practices that preserve the quality of food to prevent contamination and food-borne disease (7). This includes a number of routines that should be followed to avoid potentially severe health hazards. Food can transmit diseases from person to person as well as serve as a growth medium for bacteria that can cause food poisoning. Apart from ensuring the wellbeing of her citizenry, it is also needful to guarantee food safety as the only food certified as being safe by recognized regulatory bodies in an approved manner that can be traded in the International Food Trade market. Developed countries have intricate standards for food safety

In the United States the Department of Agriculture's (USDA's) Food Safety and Inspection Service (FSIS) is the public health agency responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged (7). It is charged with ensuring that all

meat, poultry, and processed egg products in the United States are safe to consume and accurately labeled. This includes all food products that contain more than 2-3% meat products (4)

In the United States, there are 15 agencies sharing oversight responsibilities in the food safety system. The four major ones are:

1. U.S. Department of Agriculture (USDA), which is responsible for the safety of meat, poultry, and processed egg products, under which are 7 services, the most important being the Agricultural Research Service ARS, Animal and Plant Health Inspection Service APHIS and the Food Safety and Inspection Service (FSIS)
2. Food and Drug Administration (FDA), which is responsible for virtually all other foods and under which are the Center for Food Safety and Applied Nutrition and Center for Veterinary Medicine
3. Centers for Disease Control and Prevention CDC, under which are the Division of Bacterial and Mycotic Diseases, Environmental Health Services



and the National Center for Infectious Diseases

4. Environmental Protection Agency EPA, under which are the National Center for Environmental Assessment, Office of Pesticide Programs and the Office of Water

The responsibilities of each of the agencies are described in "Food Safety: A Team Approach" and in the U.S. Food Safety System Country Report (2).

A number of States of the United States have their own meat inspection programs that substitute for USDA inspection for meats that are sold only in the State (12).

Public health is the field of medicine and hygiene dealing with the prevention of disease and the promotion of health by government agencies. Worldwide, public health authorities are engaged in many activities, including inspection of persons and goods entering the country to determine that they are free of contagious disease. They are empowered to isolate persons with certain diseases and to quarantine such individuals, if necessary, for the public good. Public health officials are responsible for supervising the purity of the water, milk, and food supply as well as the persons who handle these items and the public eating places that dispense them. They are responsible for the good health of animals that supply food and for the extermination of wildlife, rodents, and insects that contribute to disease. Public health authorities are also concerned with the pollution levels in air, on land and in water, and must assure the safety of water used for drinking, for swimming, and as a source of sea food. In addition, they collect vital statistics on death rates, birth rates, communicable and chronic diseases, and other indicators of the state of public health.

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 (5). The practice of veterinary public health has been redefined as "The contributions to the complete physical, mental, and social well being of humans through an understanding and application of veterinary medical sciences." (1). It is a very wide field and covers all aspects of animal disease, production and enterprise which have any interaction with the human population. It covers specific issues such as residues associated with pharmaceuticals, animal welfare, zoonoses, genetically modified food and feeds, environmental impact of farming, meat hygiene, food safety, as well as all aspects of the production of all foods of animal origin including seafood, mollusc farming and dairy production amongst many other issues (11).

As public health deals with all the activities related to

improving and preventing health related problems in the human population, veterinary public health deals with the part of public health that uses the knowledge, skills and resources of veterinary medicine to sustain or maintain human health and wellbeing. Beside the importance of VPH related to the production and consumption of food of animal origin, VPH also deals with zoonoses as well as aspects of occupational diseases and environmental health where animals are involved. At the Food and Agricultural Organization, FAO, the VPH group establishes a global framework of policies and measures to prevent and control the spread of zoonoses and food-borne diseases through the promotion of appropriate regional/national legislation and standards regarding zoonotic and food-borne diseases; improved service delivery and by increasing professional and public awareness on veterinary public health issues (6).



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Meat Inspection

Government inspection of meat began in Europe, supported mainly by physicians. In Germany between 1779 and 1819, Johann Peter Frank, a pioneer in social medicine, emphasized the need for central slaughter in public abattoirs with inspection of slaughter animals and meat for zoonotic diseases by specially trained veterinarians. In Dresden, Germany, Friedrich Kuchenmeister developed scientific meat inspection by veterinarians.

In England, in 1862, veterinarian John Gamgee led a commission which recommended a national system of specially trained veterinarians to inspect meat sold in public trade. France, Austria and Prussia also were developing meat inspection systems. By 1880 in England and continental Europe, the role of Veterinarians was being accepted by physicians, demanded by society, and implemented into law by politicians. Robert Van Ostertag, the "Father of Veterinary Meat Inspection," developed a rigorous scientific inspection program in Berlin in the 1890s. He wrote: "Veterinarians must do the important tasks of food hygiene for public health."

In the colonial United States, raising livestock and marketing meat was a local activity. In 1879, the Board of Health of Brooklyn appointed the first veterinary inspector, Lachlan McLean, who advocated that veterinarians be in charge of meat inspection. In 1890, the U.S. enacted a law requiring veterinary inspection of live animals for export and inspection of cured meat for both export and interstate commerce. While the act was comprehensive, its application to domestic trade was limited. However, the Guide to Practical Meat Inspection, written in 1900, stated that the act "opened the way whereby the veterinarians are the professionals appointed for this work. Therefore the practice of meat inspection rests in the hands of veterinarians."

Specially-trained "stock inspectors" were also authorized to be "to the veterinarian what the nurse or midwife is to the physician." (3).

Recognizing that veterinarians bring a broad

combination of knowledge and skills to the inter-disciplinary farm-to-table public health team in 1999, the US Department of Agriculture's Food Safety and Inspection Service (FSIS) convened a select panel charged with examining how veterinarians and the art and science of veterinary medicine, should be utilized in food safety. Earlier in 1996, FSIS issued the "Pathogen Reduction: Hazard Analysis and Critical Control Point" (HACCP) systems final rule to control and reduce pathogens (harmful bacteria) on meat and poultry. Federal and State meat and poultry plants must adopt HACCP, a system based on hazard prevention, with performance standards set by FSIS. Effective implementation of HACCP by industry will ensure safe food and should alter relationships with FSIS. Astute utilization of veterinary resources will enhance farm-to-table food safety. FSIS employees will increasingly make science-based judgments that impact a broad range of entities.

The Agency had targeted a 25% reduction in food-borne illness attributed to meat and poultry by the end of the year 2000. FSIS redeployed its resources to reduce food borne illness and to provide regulatory oversight within its statutory authorities along the farm-to-table continuum. For instance, FSIS envisions intensifying its food regulatory activities, within its statutory authorities, to address safety hazards and other consumer protection as product moves out of the plant and is transported, stored, and distributed to consumers (10).

WHAT VETERINARIANS BRING TO THE FOOD SAFETY TABLE

Veterinarians bring critical skills to ensuring the safety of foods of animal origin:

- Veterinarians are the predominant internationally-recognized authority to audit and inspect foreign establishments that export animal foods. They assess the safety of animal products from foreign sources, including freedom from unsafe levels of chemical residues, exotic pathogens and emerging agents of public health importance. Veterinarians are recognized internationally for possessing the scientific competence and integrity to sign certification for animal products attesting that the products were



produced within a system of controls which meet both food safety and disease freedom requirements of importing countries. They help ensure public and international confidence in the safety of the animal-based food supply.

- Veterinarians have an in-depth understanding of production practices and animal disease and the linkages between them. They can identify and scientifically evaluate the potential human and/or animal health significance of the wide variety of clinical signs in animals submitted for slaughter (ante mortem inspection). These skills help veterinarians make individual animal disposition judgments and target animals that may need more intensive inspection and/or diagnostic work. Examples include:

(1) Surveillance for exotic or Notifiable diseases (e.g., bovine spongiform encephalopathy, brucellosis and tuberculosis);

(2) Monitoring for disease or physiological states which can increase the potential for, or significance of, contamination occurring during processing (e.g., severely stressed animals tend to be high shedders of Salmonella);

(3) Assessing suitability for entering slaughter of non-ambulatory animals (downer animals), injured animals or animals approaching parturition (about to give birth), and then examining them after slaughter;

(4) Checking for signs indicating likely recent drug treatment or exposure to contaminants; and

(5) Monitoring for disease or physiological states which make the animals unsuitable for slaughter for human consumption (e.g., septicemia, toxemia etc); humane slaughter oversight. While other specialists may be able to evaluate animals as "normal" or "not normal," a veterinarian should make a specific diagnosis and interpret the significance of the findings. This information is increasingly important in ensuring reliability of producer and processor quality assurance programs in the farm-to-table continuum.

- Veterinarians have knowledge and experience in pathology, microbiology and toxicology to evaluate human health hazards during the slaughtering process (at postmortem). They are able to evaluate and correlate risks that may impact food all the way to the consumer. Suspicion or diagnosis of exotic transboundary

disease is reported to State Veterinary Epidemiology Units immediately to facilitate trace-back and prevent local or national disease spread. Doctors of Veterinary Medicine are trained to assess lesions, microbiological and chemical residue findings and other laboratory data to advise animal and human health authorities and industry on prevention, decontamination and/or product recalls. Veterinarians can collect and evaluate specimens for specific hazard identification and for monitoring for chemical residues, infectious diseases, emerging pathogens, and zoonotic parasites.

- The scientific training and diagnostic skills of veterinarians make them particularly well equipped to identify and solve problems. They understand those factors which contribute to food safety from farm to table. This enables them to assess and verify HACCP plans and systems at production, processing, and retail levels. Their perspectives and evaluative skills extend well beyond applying the Meat Hygiene decrees and regulations. They are well trained to perform oversight and verification, assess performance standards of food inspection and microbiological laboratory personnel, and verify industry quality and safety controls throughout the food chain.

- Veterinarians have a strong foundation upon which they can build capabilities to supervise, train, and interact with others. This includes knowledge and professional experiences in record keeping, systems analysis, administrative skills, and client education. They have skills in developing, implementing, and analyzing public and animal health policies, correlating and analyzing information systems, managing and leading complex and extensive government programs and personnel, and building national and international partnerships for food safety systems. Veterinarians can train food inspectors, laboratory personnel, and sanitarians. These skills will be especially important in educating very small plant operators to meet pathogen reduction and HACCP requirements.

- Veterinarians are well-trained and experienced in animal welfare during production and in humane handling as animals are



transported, unloaded, stunned, and handled at plants. They are well able to evaluate compliance with the Humane Slaughter Act, especially proper stunning, bleeding, rail insensibility, pen maintenance and handling, truck unloading procedures and handling of non-ambulatory animals.

- Veterinarians provide leadership to human and animal health programs in other Federal and State agencies and promote public health and the safety of animals presented for slaughter. They help prevent animal disease, protect against exotic diseases, certify animal health, and control animal drug and agricultural chemical use.

- Veterinarians in food animal practices are first line promoters of the production of animals that are healthy and free of violative residues and other public health hazards. They prevent, control, and eradicate animal diseases. Skilled in examining animals for specific public health hazards, they form important links to FSIS veterinarians by validating and maintaining food safety and quality assurance certification programs and auditing systems.

They are qualified by a broad biological education and experience to deal in a wide range of areas important to food safety, including, but not limited to:

- Disease recognition, especially zoonotic diseases
- Emerging pathogens
- Bioterrorism threats
- Foreign animal disease threats
- Public health
- Epidemiology (including outbreak investigations)
- Science-based certification and auditing processes
- Animal science and population medicine experience
- Pathology
- Parasitology
- Microbiology, virology, bacteriology
- Comparative medicine and multi-species experience
- Chemistry/toxicology and pharmacology
- Drug resistance mechanisms

Furthermore, public health can tap into the veterinarian's analytical and problem solving skills in order to perform broad public health

policy development and evaluation, risk assessment, data management and evaluation, leadership, and administrative activities which have both national and international impact (10). In Nigeria two military decrees regulate and control medical and food safety matters. These are the Animal Disease Control Act Decree 10 of 1988 (8) and the revised NAFDAC decree of 1999 (9). The NAFDAC has monopolized the regulation and control of food safety matters to pharmacists, failing to accede and concede to the unique roles of public health veterinarians, clearly elucidated in the Animal Disease Control Decree 10 of 1988. One expects this unwholesome professional mind-set to change presently, in submission to a worldwide acclamation of the role and place of public health veterinarians in food safety measures.

A first measure in this inevitable direction is the need for a bill to create in the Federal Ministry of Agriculture, a Nigerian equivalent of the US Department of Agriculture's Food Safety and Inspection Service (FSIS). This will entail a review and strengthening of the mandate of the National Veterinary Quarantine Services as contained in the Animal Decree Control Acts of 1988. In effect, the present hydra-headed tasks of NAFDAC have transgressed the limits of ethical professional duties. NAFDAC should rather concentrate on medical drug matters, leaving animal related veterinary and food safety matters to the right custodians- the WHO- FAO- CDC- and- APHA acclaimed experts health professionals trained in multi-species comparative medicine- the Public Health Veterinarians. In addition, public health veterinarians in Nigeria should brace up to respond to the prevailing Food Safety challenge.



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