

CAREERS IN AVIAN MEDICINE

A Continuing Education Program Prepared

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- 1      This slide set, sponsored by the American Association of Avian Pathologists, is intended to provide information on the broad scope of avian medicine and give insight into the opportunities in this important area of veterinary medicine for students, those considering careers in veterinary medicine, practicing veterinarians, and educators in schools of veterinary medicine.
  
- 2      The poultry industry in the United States is composed of hens for production of table eggs, broilers, chicken and turkey breeding flocks, market turkeys, ducks, geese, capons, baking hens, roasters, and small numbers of guineas, squabs, and game birds. It has a current farm value of 7 billion dollars, but generates about 12 billion dollars annually. The major source of income is derived from 275 million laying hens, 3.1 billion broilers, and 127 million turkeys. The poultry industry in some form can be found in every state in the nation. Today's industry represents a high degree of specialization in production, processing, merchandizing, and even financing.

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- 3        The pet bird industry in the United States is also growing rapidly with the population currently estimated to be approximately 30 million. Pet birds are small and easy to keep, with inexpensive maintenance. They are permitted by landlords in residential areas where other pet animals are prohibited. Older people often cannot care for a dog or cat but are able to care for a pet bird. The recent increase in pet bird numbers has created new needs for avian medicine.
- 4        One of the important reasons for the phenomenal success of the poultry industry is that chickens are among the most efficient converters of feed grains into animal protein. Modern broilers convert 1.9 pounds of grain into one pound of live weight. This is almost twice the efficiency ratio for swine and four times the efficiency of beef cattle. Poultry as well as other animals must supply an ever-increasing amount of meat to feed a world population already critically short of animal protein and expected to increase by one billion people over the next 40 years. The necessary increases in animal protein must come from further reduction of losses

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in weight gains, egg production and mortality, and costs of treatment and prevention of disease problems in the industry.

- 5      The growth of the poultry industry has been aided by many contributions of scientists in avian medicine-related careers. The threat of Pullorum disease infections in poultry and humans has been essentially eliminated after the cause and its method of spread were defined. The safety and application of oral vaccines for the control of many diseases in poultry were determined and used many years before an oral polio vaccine was developed for humans. The practice of confined high-density housing in the broiler industry was possible only after efficacious drugs were discovered to prevent coccidiosis. The first vaccine to control an oncogenic disease (cancer) was successfully developed for the poultry industry to control Marek's disease.

- 6      Disease prevention has been the key to a successful and profitable poultry industry. Veterinarians have made important contributions toward the control of many diseases; however, much work remains to be

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done. Both old and new diseases continue to cause losses. The United States Department of Agriculture estimates that poultry diseases and parasites cost the American poultry industry in excess of 300 million dollars annually. The challenge remains for defining improved and new methods of disease prevention. What are the career opportunities available to individuals to meet the challenge of disease control and needed production of wholesome poultry products for a hungry world? Accompanying the following slides are descriptions of various careers in avian medicine provided by scientists in those careers.

7 RESEARCH. The opportunities for basic and applied research of problems related to avian diseases are numerous in academic and governmental institutions, and in industry. The need for new methods of prophylaxis, improved diagnostic techniques, and a broader comprehension of old and new emerging disease problems prevails.

8 Dr. R. L. Witter is the Director of the USDA, North Central Regional Poultry Research Laboratory in East Lansing, Michigan. Dr. Witter is shown here removing an infected chicken for examination from

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a special isolation cage designed to prevent contagious disease from entering or leaving.

"Research is the principal means by which new treatments, vaccines or other methods of preventing diseases of poultry are developed."

- 9 "In his job, the researcher analyzes problems, and determines what needs to be learned. He then designs experiments to obtain the required information. He often has technicians to help in the conduct of experiments. At the end he analyzes the results, makes conclusions, and prepares the data for publication in scientific journals and/or presentation at scientific meetings."

The viruses and certain other microorganisms which cause disease in chickens are grown in cultures of avian embryo cells shown here in the round dishes. Changes caused by this growth can be seen with the microscope.

- 10 "More and more the scientist works as a member of a research team where each member contributes a different sub-specialty. The team at our laboratory presently includes nine scientists (four of which are veterinarians) representing the disciplines of

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immunology, pathology, genetics, virology, electron microscopy and biochemistry."

"Perhaps the greatest satisfaction a scientist receives is when his findings are applied by others to the benefit of agriculture or the advancement of science. Workers at my laboratory were very proud when a vaccine they developed for Marek's disease became widely used and saved the poultry industry over \$150 million per year."

This young chicken is being given a protective dose of the new Marek's disease vaccine.

11      TEACHING. Academic institutions are seeking those who find gratification in sharing and disseminating knowledge. Instruction in avian medicine is needed for undergraduates (students in poultry science, wildlife management, and pre-veterinary medicine curricula), professional students in advanced training and those in specialized training programs.

12      Dr. W. M. Colwell, Professor, North Carolina State University at Raleigh, North Carolina, teaches courses in avian health to students pursuing degrees in the College of Agriculture. "Courses in avian health are taught to students in many colleges of



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agriculture. Typically they are taught by veterinarians and science majors. Common types of poultry diseases are surveyed and techniques for disease prevention including isolation, sanitation and immunization are emphasized."

13 "The poultry science and other nonprofessional students will gain an understanding of/and appreciation for veterinary medicine as it relates to the avian species. They will become aware of the sophistication of the profession and of the research and diagnostic techniques on which the scientific control of poultry diseases is based."

14 Students in the professional veterinary medical curriculum have an educational background in basic microbiology, pathology, pharmacology, and immunology. It is necessary for them to learn in depth the pathogenesis, diagnosis, therapy, and scientific control of avian diseases.

15 TECHNICAL SERVICES. The clinically oriented veterinarian, knowledgeable in areas of nutrition, preventive medicine, and disease control, finds profitable employment in industry. The services of these veterinarians are sought by biological



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companies, feed companies, and organizations producing poultry breeder stock, broilers, and eggs. The applied scientific knowledge of the veterinarian in technical services often provides the margin of profit in poultry production.

- 16 Dr. Pete Cragg provides veterinary technical service for the turkey industry. He is one of six full-time Poultry Veterinarians with the Central Soya Company of Fort Wayne, Indiana. "My job is to keep the cost of turkey meat as low as possible. I do this by protecting turkey flocks from diseases. As the numbers of turkeys raised in the U.S.A. grows and the flock size gets larger and larger, this becomes increasingly difficult. Prevention of disease is the key. I help develop health programs for turkeys of all ages. Teaching the turkey growers to use the health programs is one of my greatest tasks. I keep them informed of the latest ways to grow turkeys and avoid diseases."
- 17 "One third of my time is spent visiting flocks in the field, diagnosing health problems, followed by lab work to reveal the exact disease present. The producers are then instructed on how to treat the disease and especially its prevention in the future."

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"A veterinary diagnostic lab and poultry farm are at my disposal for doing research into ways of growing better, healthier turkeys. These findings are passed on to the grower."

"My job is very challenging, constantly changing, demanding the most out of my long years of schooling and training."

18 Dr. Reed Rumsey is Head of the Department of Veterinary Services and Development for DEKALB AgResearch, Inc., in DeKalb, Illinois.

"The main objective of the Department of Veterinary Services is to design disease control and prevention programs as well as management practices that maximize the genetic potential of the commercial egg-type chicken. Technical knowledge and assistance is made available also to poultrymen in implementing their disease prevention and control programs. A greater percentage of the work deals with the parent flocks, since their health and productivity greatly effects the overall success of the hatchery people who buy chickens from DEKALB."

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- 19      Some consumers prefer a brown shelled egg. The brown egg producing chickens marketed through DEKALB franchises are in production throughout the world. New challenges daily and international travel are often among the opportunities for the veterinarian in technical services for a dynamic poultry industry.
- 20      DIAGNOSTICS. Avian diagnosticians are vital to the welfare of the poultry industry through surveillance and monitoring of flock problems. Private corporations and state diagnostic laboratories seek astute veterinarians with skills and interests in the pathology of domestic, pet, and exotic species of birds.
- 21      Dr. Jack E. Hanley is the Director of the Poultry Disease Diagnostic Laboratory of the Florida Department of Agriculture at Dade City, Florida. Dr. Hanley is examining a specimen under the microscope.
- "This laboratory provides diagnostic services, statewide, to a large poultry industry as well as a growing pet bird industry. By using a battery of scientific tests including bacteriology, virology,

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serology, pathology, and chemistry we are able to identify the diseases present and offer advice as to medication and necessary management changes."

- 22 "As a veterinary diagnostician in avian medicine, it is possible to obtain a great deal of professional satisfaction. This was particularly true when at this laboratory we were able to isolate a new strain of infectious bronchitis, to isolate for the first time in the U.S. the Pacheco Parrot disease virus, and to play a part in the recognition of a new species of coccidia."

Viruses are often isolated by inoculating suspected material into embryonated chicken eggs.

- 23 POULTRY INDUSTRY. Veterinarians are employed as full-time staff members by many broiler and egg-producing companies. It is the responsibility of these veterinarians to develop health programs, monitor the health of all flocks, and prescribe prophylactic and therapeutic medication when needed.

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24 Dr. Gordon Miller is the Vice-President of Poultry Health for Holly Farms Poultry Industries, Inc., the largest producer and marketer of broiler chickens in the world.

"My principal job is to keep all poultry healthy and converting feed into the high quality protein that we know chicken produces. I do my job by applying the principles of preventive medicine: that is to provide excellent environment, nutritious feed, healthy baby chicks, and then at a critical time during the growing cycle, instigate a vaccination and preventive medication program."

25 "To keep our customers supplied with broilers, we place and process 5,000,000 chickens per week. This means that there are 40,000,000 chickens growing in our company at any one time. To have enough eggs to place in the hatchery to hatch day-old chicks that supply contract growers who grow these chickens under Holly Farms supervision, we must have 2,000,000 breeder hens. These hens do not start laying until approximately 6 months of age, but will lay for approximately 10 months when they do

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start to lay. So this means that there are 750,000 replacement pullets growing along with the 40 million broilers and 2 million breeder hens."

26 "To keep this many chickens healthy, producing meat and eggs, and finally processing the chickens, there are many jobs open to veterinarians. At Holly Farms another veterinarian with a Ph.D. degree in virology is employed to work in the diagnostic laboratory. No one is more technically qualified to help the poultry industry than the veterinarian. The poultry industry and veterinary medicine complement each other through the specialized education a veterinarian has to offer."

27 TECHNICAL RESEARCH AND PROJECT DEVELOPMENT. The challenge to find efficacious and improved products for disease prevention and therapeutics is always present. Research and development of avian biologics and therapeutics by dedicated scientists have accounted for the tremendous growth of the poultry industry in the past two decades.

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- 28      Dr. Hiram N. Lasher is President of Sterwin Laboratories, Inc. Dr. Lasher is shown here reviewing the literature from around the world to keep aware of new and emerging disease problems. Sterwin Laboratories develops, produces and markets immunizing products, vaccines and bacterins needed by the poultry industry (including turkeys) to protect flocks against disease. Strict attention is given to safety, purity and effectiveness of the vaccines prior to their availability for use.
- 29      Providing the biologics needed by the industry requires a continuing awareness of new and changing diseases worldwide, and the capability to "harness" disease-producing microorganisms and render them suitable as immunizing products. This is properly in the province of veterinary medicine. A major portion of the progress in poultry disease control has resulted from the efforts of veterinarians with the development and production of vaccines being a substantial part of this. Dr. Lasher and Dr. Sam Schmittle are shown recovering a respiratory virus from a chicken in which vaccine virus was improved by back-passage.



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- 30        EXTENSION.   Most states with a significant poultry industry employ Extension Poultry Veterinarians. The extension veterinarian serves as the source of information for the poultry industry by keeping abreast of current disease problems and new developments in disease prevention.
- 31        Dr. Dwight Schwartz of Pennsylvania State University is the Extension Poultry Veterinarian for Pennsylvania. "The role of an Extension Poultry Veterinarian is to educate producers of the various methods of prevention and control of poultry diseases. The methods used include writing educational materials, developing educational conferences for growers of chickens, turkeys, game birds, or sometimes even aviary birds, and individual consultations. Telephone consultation often is all that is needed to help a poultryman resolve a problem."
- 32        "Farm visits are scheduled when other diagnostic approaches fail to resolve a health problem within a flock. Here the veterinarian and the poultryman examine a chicken that is representative of the flock problem. During farm visits, the veterinarian can not only see the flock, but can evaluate

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management and environmental factors, or maybe the flock response to earlier prescribed treatments."

- 33      POULTRY MEAT INSPECTION.    The United States Department of Agriculture employs veterinarians to administer and train personnel for the inspection of the more than 3 billion chickens slaughtered each year.    Many veterinarians find the fringe benefits of federal employees an attractive career amenity.
- 34      Dr. Jane O. Charbonnet is the veterinarian in charge of inspection at the processing plant of Sanderson Farms in Hammond, Louisiana.    Dr. Charbonnet supervises and monitors the work of her lay assistant inspectors.    Inspection includes, first, the examination of live poultry as well as of carcasses after slaughter.    The inspector must follow the product all the way through the plant to make sure that all facilities and equipment are sanitary, that all ingredients are proper, and that labeling meets established standards.
- 35      PET BIRD PRACTICE.    The rapid growth of the pet bird industry has created new needs for avian medicine.

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Veterinarians skilled in clinical medicine and surgery of pet birds have unlimited opportunity for self employment.

- 36 Dr. Greg Harrison owns the All Animal Clinic in Lake Worth, Florida. The clinic began as a private veterinary facility for companion animals but developed into a treatment center for wild animals, particularly birds, such as the immature Southern Bald Eagle as shown here. As the pet bird industry became popular, Dr. Harrison became more interested in avian species and has since developed the Research Center for Avian Medicine, Nutrition, and Reproduction.
- 37 Many of the diagnostic methods available for small animals can be adapted for pet birds, such as this X-ray of a cockatiel showing a ruptured uterus with the egg in the abdomen. However, birds have anatomical and physiological differences which call for unique methods of diagnosis and treatment. The tremendous opportunities for a private avian practitioner include not only avian medicine for the single pet bird in a family, but also consultation and practice for large breeding aviaries,

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zoological institutions, and wildlife management areas of the state and national government.

38 Dr. Mary E. Mainster of the Broadway Animal Hospital, San Antonio, Texas, is a small animal veterinarian who treats many birds. "As apartment living is becoming more popular, so also is the choice of birds as the ideal pet. I realize the value of birds as a companion animal and enjoy treating them."

39 "The different types of birds treated include a large number of parrots and parrot-like birds, parakeets, canaries, finches, mynah birds, and sometimes ducks, chickens, hummingbirds, road runners and an occasional vulture. The most common problems are respiratory infections, overgrown beaks, scaly mite and broken bones."

"The challenges of bird medicine are many and the opportunities are varied according to personal interests. I work closely also with the Parks and Wildlife Department and the Raptor Preservation Fund to treat, rehabilitate and release injured wild and protected birds."

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- 40 WILDLIFE DISEASE SURVEILLANCE. An important but neglected field of avian medicine is disease problem surveillance of wildlife species. The early recognition of disease outbreaks and subsequent population control of pandemic areas by qualified scientists have preserved the lives of many game birds.
- 41 Dr. Louis N. Locke of the National Fish and Wildlife Health Laboratory, Madison, Wisconsin, is a Wildlife Diagnostician. Dr. Locke is shown at work at the Laboratory conducting a necropsy on a great horned owl and a collection of dead waterfowl. "The Wildlife Diagnostician conducts examinations on specimens submitted by biologists of the Division of Wildlife Refuges and of Law Enforcements USFWS. The specimens are primarily migratory birds, largely waterfowl, although a large number of raptors is also examined. This work includes a great deal of outdoor activities and some travel. Often specimens are collected, examined and a disease is diagnosed in the area where the problem occurred."

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42        ADMINISTRATION. Few veterinarians enter the specialty of avian medicine with the goal of becoming an administrator. Nevertheless, administration is a very necessary and challenging role for avian veterinarians in local, state, federal, and university positions, as well as in private industry. Every veterinarian discharges administrative duties to some extent.

43        Dr. Stan Kleven is Professor and Head of the Department of Avian Medicine at the University of Georgia, Athens, Georgia. "My duties include responsibility for all research, teaching, and service functions of the department, as well as to assist the Dean of the School of Veterinary Medicine in formulating policy for the college as a whole."

"The primary role of the administrator is to formulate broad policy for the organization. It includes hiring and supervision of personnel, preparing and carrying out a budget, preparing and conducting plans of work, and submitting reports of progress."

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"The advantages of such positions are that one can accomplish much through team effort. Administrative positions tend to be more prestigious, and the salaries are somewhat higher than for non-administrative positions."

44 OTHER FIELDS OF AVIAN MEDICINE. Many veterinarians are employed in other fields related to avian medicine. These include consultation, private practice, zoo bird medicine, sales, etc. Some are employed part-time in these related fields in areas where the need is not great, but find avian medicine rewarding and often complementary to other professions.

45 Dr. Wilson Miller, Roherstown, Pennsylvania, has a private practice limited to the diseases and management of poultry and other birds. "Farm calls are made to the individual poultry farms for diagnosis. If needed, tissue samples, blood samples, or dead or alive birds are brought back to the laboratory. Besides commercial poultry, numerous pet birds are brought in for diagnosis and treatment."

"The laboratory services include bacteriology, virology, serology and gross postmortem. Technicians do the blood work and culture work in the laboratory.



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On the farm, lay employees vaccinate, debeak, inject, and catch and house pullets."

- 46      What are the educational requirements for a career in avian medicine? The educational requirements will vary somewhat with the different careers. Basically, an understanding of avian anatomy, physiology, pathology, nutrition, diseases, and disease transmission and control is considered essential and may be acquired in meeting the requirements for a degree in veterinary medicine. Careers in teaching, research, and product development usually require personnel with extensive training and an advanced degree in some field such as microbiology, pathology, pharmacology, epidemiology, parasitology, or public health. Careers with specialization often require intensified training.
- 47      Many career opportunities are available in the diversified field of avian medicine. Compensation, including the fringe benefits, is usually good but varies with the types of careers and their geographic location. The demand for personnel with interests

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and skills in avian medicine provides a favorable job market.

- 48 Information concerning employment in this challenging profession may be obtained through the American Veterinary Medical Association placement service, members of the American Association of Avian Pathologists, and individual companies in the poultry industry.