I. *Flock Health Management*
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II. *Managing Flock Health*
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HEALTH MANAGEMENT = DISEASE AVOIDANCE
• Predicated on Knowledge of Disease
  • Specifically disease challenges in a given location
• Must Develop a Concept of Disease (A Definition)
  • Any biologic abnormality resulting in failure to hatch, thrive, grow, perform, survive, etc.
• Must Appreciate Causes/Origins of Disease
  • While it’s critical to know that a bacterium causes disease, it may be more important to know the source of the bacterium and how it might get to your birds.
• Need Also to Know the Nature of Disease
  • Need to know disease profiles so they can be recognized
• Knowledge Must be Applied at Flock Level
• Use the Expertise of Veterinarian, Diagnostic Laboratories, etc.

INFORMATION SOURCES ON DISEASES
• Detailed Reference Sources
  • Diseases of Poultry – Iowa State University Press
  • Isolation and Identification of Avian pathogens – AAAP
• Abbreviated Manuals
  • Avian Disease Manual – AAAP
  • Poultry Health Handbook – Penn State University
  • Merck Manual – Merck & Co.
• Quick Reference Guides
  • Salsbury Manual of Poultry Diseases
  • Others

MANY DISEASES ARE NON INFECTIOUS
• Infectious Diseases May be Overemphasized
• Non Infectious Diseases May be
  • Behavioral such as hysteria, cannibalism
  • Metabolic such as gout, cage layer fatigue
  • Nutritional such as vitamin or mineral deficiencies
  • Toxic such as aflatoxocosis
  • Management Related such as chilling, starvation

INFECTIOUS DISEASES ARE IMPORTANT
• Caused by a Variety of Infectious Agents
  • Viruses
  • Bacteria
- Fungi
- Protozoan parasites
- Metazoan parasites

- Need to Know
  - Reservoirs or sources
  - Means of transmission
  - How to avoid or get rid of these agents
  - How to prevent or control the diseases they produce

**VIRULENCE OF INFECTIOUS AGENTS**
- Highly Virulent Severe Diseases Which Override all Defense Mechanisms
- Moderately Virulent – Cause Mild to Moderate Disease
- Low Virulence – Cause Disease Only in Stressed or Highly Susceptible Birds

**SUSCEPTIBILITY OF CHICKENS**
- Partly Due to Genetics
- Partly Due to Normal Defense Mechanisms
  - Intact skin
  - Healthy respiratory and alimentary mucous membranes
  - Diluting and antimicrobial effects of body fluids
  - Protective effect of gastric acidity
- Partly Due to Immune System
  - Cloacal bursa, thymus, spleen, bone marrow, etc.
  - Components of the cellular and humoral immune response
- Compromise of Defense Mechanisms by Stress
  - Feed or water interruption, rough handling, chilling, etc.
- Compromise of Defense Mechanisms by Damage to Immune System
  - Infectious bursal disease
  - Chicken infectious anemia
  - Marek’s disease/leukosis

**MANIFESTATIONS OF DISEASES**
- Death of Birds
- Obvious System Malfunction
  - Respiratory signs
  - Diarrhea
  - Nervous disorders
  - Skin abnormalities
  - Loss of egg production
- Silent (Subclinical) Disease
  - Disease is there but not severe enough to show
  - Even minor stresses will trigger serious signs
ORIGINS OF DISEASE
- Genetic
- Management – Related
- Feed/water-Related
- Infectious

GENETICALLY DETERMINED DISEASES
- Generally Rare – Well Controlled by Breeders
- Examples
  - Kinky back
  - Wry-Neck
  - Cystic or malformed Kidneys
  - Cystic Right Oviduct
  - Hystera
  - Feathering Problems
  - Tibial Dyschondroplasia

MANAGEMENT-RELATED DISEASES
- Starvation/Dehydration
- Cannibalism
- Ammonia Blindness
- Caged Bird Problems
  - Caged Layer Fatigue
  - Fatty Liver Syndrome
- Foot Problems Associated with Wet Litter
- Prevented by
  - Regular and frequent flock observation
  - Timely management adjustments

FEED/WATER-RELATED DISEASES
- Nutritional Deficiencies/Excesses
- Intoxications
- Chemical Residues
- Prevented by
  - Monitoring feed and water

INFECTIOUS DISEASE ORIGINS
- Breeder Flock (By Vertical Transmission)
  - Mycoplasmosis
  - Salmonellosis
  - Avian encephalomyelitis
  - Leukosis
- Hatchery (From Contaminated Hatching Eggs or Hatchery Environment)
  - Omphalitis
- Salmonellosis
- Colibacillosis
- Aspergillosis
- Contaminated Premises (Carry over from Brood to Brood)
  - Diseases caused by very resistant agents such as
    - Clostridial spores
    - Erysipelas bacteria
    - Staphylococci
    - Certain hardy viruses (adenoviruses, bursal disease virus)

**INFECTIOUS DISEASE ORIGINS**
- Biological and Mechanical Carriers
  - Blood sucking arthropods – Mosquitoes, blackflies, mites, ticks, transmit pox, spirchtesis, leukocytozoonosis
  - Rodents and free-flying birds – Carry many agents including Salmonella, the Cholera bacterium
  - Flies and beetles – Carry many bacteria and viruses and act as intermediate host for internal parasites
  - Man – Carries anything that survives in exudates, dust, feces long enough to be carried form on premises to another
  - Equipment
- Recovered or Normal Appearing Carrier Birds
  - “Typhoid Marys” of the chicken world
  - Dangerous sources of Mycoplasma, pox, laryngotracheitis, coryza and many other diseases
  - A guaranteed source of pullet infections in multiage operation
- Dead birds
  - The weakest birds in a flock may succumb to even opportunistic agents
  - These birds act as factories for disease agents
  - Represent a concentrated source of bacteria or viruses
  - Should be removed and safely disposed of FREQUENTLY

**ROLE OF DIAGNOSTIC LABORATORIES IN POULTRY HEALTH MANAGEMENT**
- Definition of “Diagnostic Laboratory”
  - Private vs public
  - Testing vs disease orientation
    - Chemical and nutrient analysis
    - Microbiological
    - Clinical chemistry and hematology
    - Serology (serum antibody)
  - Animal disease diagnostic laboratories
    - Pathology emphasis (postmortem and microscopic)
    - Full service capabilities
NEEDS FOR DIAGNOSTIC LABORATORY SERVICES

- Monitoring of Causative Agents of Diseases (from breeders through processing)
- Monitoring of Health Status of Birds
- Monitoring of Antibody Status of Birds
- Determination of Nature and Causes(s) of Disease Outbreaks
- Testing Required by Regulatory Programs

EXPECTATIONS OF DIAGNOSTIC LABORATORIES

- Accessibility
- Reliability (High Quality Control Standards)
- Knowledge of Clients and Their Perspectives
- Reasonable and Affordable Fees
- Timely and Lucid Reporting of Findings

ELEMENTS OF DIAGNOSTIC LABORATORY QUALITY

- People
- Technology
- Quality Control Standards
- A Sense of Priorities
- Knowledge of the Laboratory Niche in Health Management

USE OF DIAGNOSTIC LABORATORY SERVICES

- Disease Diagnosis
- “Spot Checks” of Health Status
- Organized and Programmed Health Monitoring
  - Mortality
  - Serologic monitoring
  - Environmental monitoring
  - Compilation of baseline flock information

THE LABORATORY NICHE AMONG OTHER HEALTH SERVICES

- Poultry Veterinarians and Technical Service Staff
- Health Consultants
- Cooperative Extension (Education and Field Research)
- Academic Programs (Teaching and Research)
- Regulatory Programs
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**Know Resources**
Laboratories
   Use regularly to monitor mortality
   Routine and higher than expected

Service Crews
   Know capabilities
   How clean are they

Veterinary Consultants
   Use regularly to prevent problems with disease
   Help to design your plan
   Optimize productivity
   Maximize profit

Nutritional Consultants
   Prevent nutritional diseases
   Optimize production
   Maximize profit

**Information Systems**
Maintain Disease Awareness
   Local
   Region
   State

Hotline
   Stay informed
   Keep others informed

Database

**Supplies and Equipment**
Working Relationship with Suppliers
   Avoid least cost vaccines and medications
   Buy quality
   You get what you pay for
   Never use out of date vaccines

If service crews are used
   Monitor Sanitation
Monitor Performance
Handling of vaccines
Placement of injected vaccines
Do not rush

**Dead Bird Disposal**
Remove from cages daily
Prevent further disease spread
Remove from ranch frequently
Summer vs Winter
Best to take to central collection point
Renderer picks up there
Sanitize containers before return to ranch
Composting
Alternative to rendering

**Disease Control Programs**
Up to 70% of breaks are management related
Plan programs
Adjust Quickly
  - If a break occurs reevaluate your program
  - If you hear about nearby disease
  - Tighten biosecurity
Vaccination programs
  - Plan for individual ranches
  - Avoid vaccinating at times of stress (moving)
  - Don’t vaccinate sick birds
  - Handle vaccines properly
  - Administer according to directions
  - Don’t introduce unnecessary vaccines
Infectious Bronchitis
Pox

**Monitoring Disease Control Programs**
Follow through on control programs
Plans cost money
Make certain that they are working
Written records
Charts/Tables
Don’t place blind faith in programs
Vaccination goal is immunity
  - Monitor serology
  - Do bird challenge
  - Monitor productivity
Routine monitoring of dead birds
At least weekly
Immediately if mortality is above expected
By company personnel
By consulting veterinarian
Observe flocks Closely
Watch production records
  Egg production
  Feed consumption
  Water consumption
  Mortality
  Egg Quality

**Emergency Disease Plan**
Know who you are going to call
Isolate flocks
Get diagnosis
Treatment/Management