What is Public Health (PH)?

- Public health promotes and protects the health of people and the communities where they live, learn, work, and play.
- PH works to prevent people from getting sick or injured. (PCP's treat individual; PH the masses)
- PH promotes wellness by encouraging healthy behaviors.
- PH conducts scientific research, educates the public about health, and works to assure healthy living conditions for people.
- PH tracks disease outbreaks, prevents injuries and sheds light on why some of us are more likely to suffer from poor health than others.
- The many facets of public health all promote science-based solutions to problems.

APHA

Washington's Public Health System

“Birds-eye” view of how To Navigate WaDOH Zoonotic Diseases

Human and Animal Perspectives

Washington's Public Health System

- Washington State has a decentralized (home based) public health system characterized by local jurisdictional authority and partnerships.
- Washington State law assigns primary responsibility for the health and safety of Washington’s residents to the county government where each person resides.
- Notifiable conditions (physicians, veterinarians, others) report specific illnesses to Local and or State Health Depts. Feeds Surveillance for Diseases of PH Concern
Public Health Significance of Poultry Diseases
Some things to consider:

• Poultry and humans have very different physiologies. (core body temperatures, cell receptor types, etc)

Zoonoses– how many are there?
There are over 1,415 organisms that cause varying degrees of illness in humans!

- Approximately 868 (61%) of those overall, originate in animals (zoonotic).

- Of 175 pathogens causing disease known as “emerging infections” in humans, 131 of these (75%) come from animals.

Components of Disease Transmission
Transmission requires three components:

- Susceptible host
- Pathogens and source
- Environment

Poultry Diseases –Transmissible to Humans
Most common ways?

• Improper food preparation: non-compliance with best kitchen management practices; improper cleaning of utensils and surfaces, cooking at improper temps & improper personal hygiene.

• Inadvertent hand to mouth transfer after handling birds, secretions, excretions:
  - From environmental contamination of clothing, shoes, etc.
  - Children handling baby chicks
  - Inappropriate hand hygiene after handling birds
  - Other

• As a Reminder– eating and drinking should be done away from animals including poultry and their environment.
People (of all ages) absent-mindedly touch their faces an average of 16 times an hour.

One of the primary ways pathogens are transferred from animals to people...even "big people". This is how you spell self-inoculation!!

(A Few) Poultry Diseases Transmissible to People

Diseases of Poultry, 13th ed

Campylobacteriosis
Campylobacter jejuni, coli
- Intestinal infection caused by members of the genus Campylobacter: normal intestinal inhabitants of wild and domesticated animals and birds.
- Colonization of broiler chickens is reported to be common and contaminated poultry meat is considered to be the most important source of human infections.
- Disease in humans characterized by fever, abdominal pain, and profuse diarrhea that is frequently bloody.
- Campylobacter is one of the most commonly reported intestinal infections.
- Causes an estimated 845,000 cases of foodborne illness and 76 deaths each year in the US.

Escherichia coli 0157:H7
- Causes diarrhea, fever, chills, abdominal pain, nausea, and vomiting in people.
- Most strains of E. coli are normal inhabitants of the lower intestinal tracts of warm-blooded animals.
- Enterohemorrhagic strains of E. coli (EHEC) like 0157:H7 are considered to be zoonotic pathogens.
- Strains of E. coli have been identified in retail chicken samples and in fecal samples collected from turkeys and pigeons.
- Transmission of EHEC strains occurs via contaminated foods, person-to-person contact, or contact with colonized animals including poultry.
- Causes an estimated 1 million plus cases of foodborne illness each year in the US.
**Listeriosis**

*Listeria monocytogenes*

- Clinical syndromes in humans range from fever, serious intestinal upset to severe invasive disease.
- Infections may include brain and liver abscesses, inflammation of gallbladder, tissue around eyes, lining of heart, joint, skin, and bone infections.
- Widely distributed in nature and can be identified in soil, water, silage, and animal feces.
- Commonly found on poultry farms and in processing plants.
- An important source of environmental contamination in processing plants; grows well at low temperatures and forms biofilms that are resistant to routine sanitation procedures.

**Salmonellosis**

*Salmonella*

- Causes an estimated 1.2 million cases of foodborne illness each year in the US.

**Erysipelas**

*Erysipelothrix rhusiopathiae*

- A pathogen or normal intestinal inhabitant in a wide variety of animal species.
- Swine are most commonly affected; considered to be the most important reservoir.
- Several poultry species including turkeys, chickens, ducks, and emus can be affected.
- Can survive weeks to months in farm and marine environments.
- Transmission** occurs by inoculation of the organism into an abrasion, cut, or puncture causing localized surface tissue infection. Pain and swelling can be severe.

**Avian influenza**

The Centers for Disease Control and Prevention (CDC) believes the risk of infection with AI viruses is low.

Because human infections with these viruses are possible, however, all people involved in an avian influenza outbreak response should:

- Be monitored for illness for 10 days after their last possible exposure to infected birds or potentially-contaminated environments.
- Be monitored for illness even if exposure to sick birds was minimal or if personal protective equipment (PPE) was worn appropriately.

**Recommendations for Use of Personal Protective Equipment (PPE) to Reduce Exposure to Potential Avian Pathogens**

*Including Highly Pathogenic Avian Influenza A H5 Viruses*

- Recommended PPE includes:
  - properly-fitted safety goggles
  - disposable gloves, boots,
  - NIOSH-certified respirator (e.g., N95)
  - disposable fluid-resistant coveralls

- Wear recommended personal protective equipment (PPE) when in direct contact with:
  - birds
  - poultry carcasses
  - poultry feces or litter,
  - when going into any buildings with sick or dead poultry, or carcasses, feces, or litter from potentially-infected poultry.

- Put on and take off PPE in separate clean areas and according to protocol.
A Few Final Thoughts

- CDC recommends that people responding to poultry outbreaks should get a seasonal influenza vaccination every year, preferably at least two weeks before engaging in an outbreak response.
- Seasonal influenza vaccination will not prevent infection with avian influenza A viruses, but can reduce the risk of co-infection with human and avian influenza A viruses.
- Be aware, young children, pregnant women, the elderly, and persons who are immunocompromised (IMC) due to medications or disease, are at increased risk for contracting zoonotic diseases. (20% IMC “rule”)
- Periodically discuss your health status with a health care professional when working around poultry or other animals.

Mother Was Right!

This is still the most important message and most effective way to reduce transmission of infectious organisms!

Remember: what’s easy to do is also easy NOT to do!

Acknowledgments

DOH Communicable Disease Epidemiology
  Dr. Vivian Hawkins
  Hanna Oltean MPH
DOH EPH Zoonotic Disease Program
  Wayne Clifford
  Others
WSDA Avian Health Program
  Dr. Lyndon Badcoe
WSU Avian Health & Food Safety Laboratory
  Dr. Rocio Crespo

The End(s)