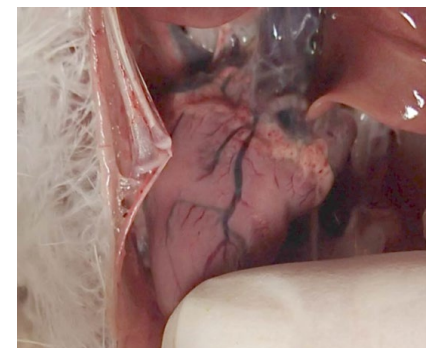
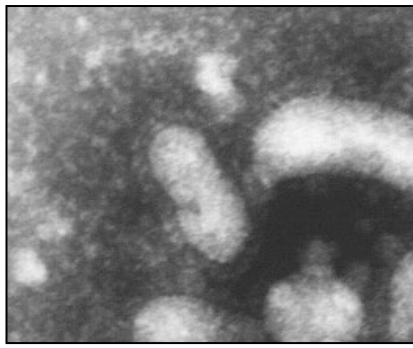
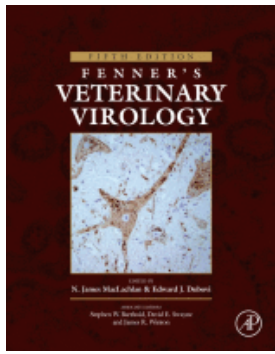
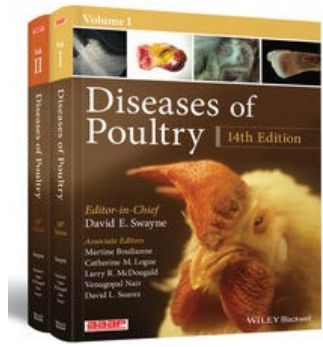


Mitigation of Risks in Agricultural Settings: Case Study of H5N1 High Pathogenicity Avian Influenza



David E Swayne

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Disclaimer: This presentation is based on current scientific data and is not an endorsement of any specific product or company, or the U.S Government

Introduction

Emergent zoonoses, significant entry through domestic animals

Historical noteworthy poultry and livestock zoonotic pathogens

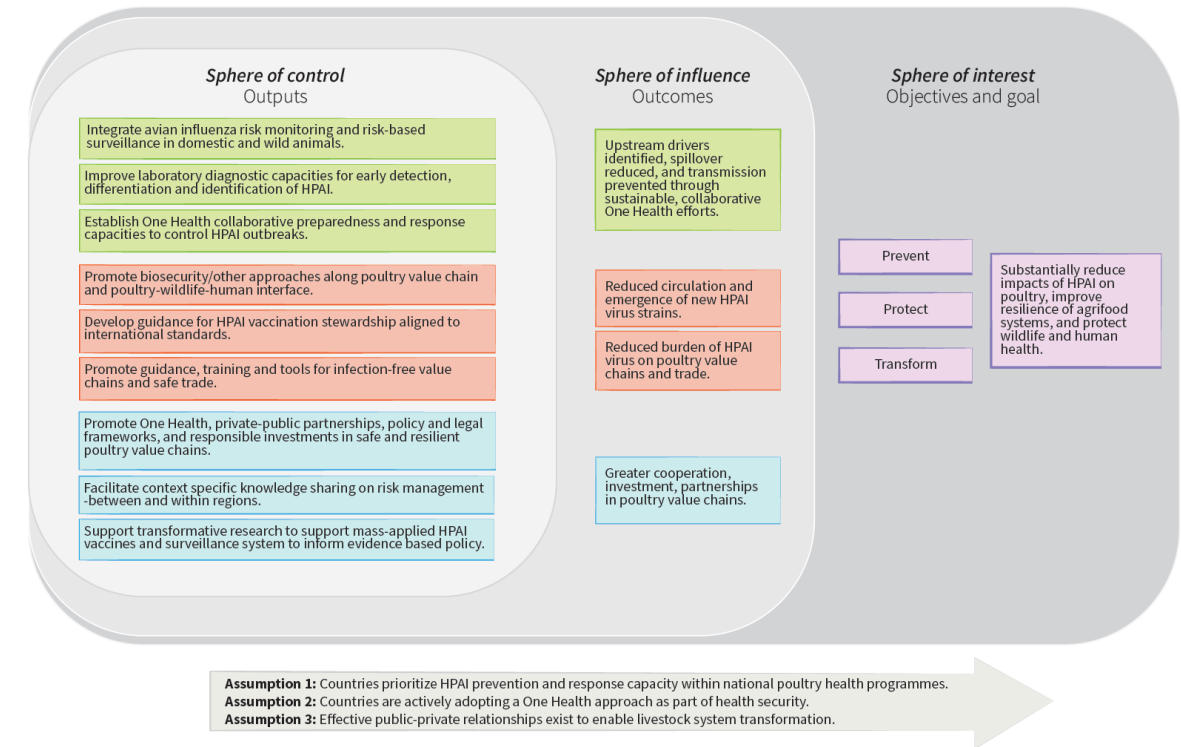
- **Nipha virus (1999) – Surveillance/diagnosis in animals with culling, preventative infection control in at-risk workers/farmers**
- **pH1N1 influenza A virus (2009): missed opportunity, identified only after it emerged as a pandemic virus with gene segments from avian, swine and human influenza A viruses – source and evolutionary history is unknown**
- **Remainder of the presentation will focus on high pathogenicity avian influenza (HPAI) - Complex issue:**
 - **Programs should be risk based**
 - **Reducing infections and disease in animals**
 - **Reducing human exposure to high-risk animals or resulting contaminates**

Global Prevention and Control of HPAI

- **2007: OIE/WOAH and FAO developed a global strategy for HPAI prevention/control**
- **2024: WOAH and FAO revised the strategy - learning from progress made since 2007**
 - **High-level strategic direction for global and regional coordination in supporting development and/or revision of national and regional action plans for HPAI prevention and control**
 - **Participatory process and not prescriptive, top-down or binding**
 - **Systematic Approach with long-term transformative change to poultry sectors**
 - **Strong focus on One Health Approach to integrate public, wildlife and environmental sectors**
 - **Prevent, protect and transform poultry value chains**
 - **Measure the reduction in HPAI burden**



ABBREVIATED THEORY OF CHANGE: GLOBAL STRATEGY FOR THE CONTROL OF HIGHLY PATHOGENIC AVIAN INFLUENZA (2033-2024)



Global Prevention and Control of Potential Zoonotic Pathogens: Basics

- 1. Integrated risk-based monitoring and surveillance of wild and domestic animals**
- 2. Improve laboratory diagnostic capacity for early detection of HPAI and differentiation from other pathogens**
- 3. Establish One Health collaborations preparedness and response capacities to control HPAI outbreaks in agriculture through stamping-out and other programs**
- 4. Promoting and sharing learned biosecurity approaches (structural and operational) along poultry value chains and at the poultry-wildlife-human interface**

Global Prevention and Control of Potential Zoonotic Pathogens: Basics

- 5. Increased use of vaccination (underutilized in HIC) as a preventative with emphasis on HPAI Vaccine/Vaccination Stewardship and international standards for antigenic matching and quality production**
- 6. Promote guidance, training and tools for production of infection-free value chains and safe trade**
- 7. Promote One Health, private-public partnerships, policy and legal frameworks, and responsible investments in safe and resilient value chains**
- 8. Sharing specific context knowledge on risk management**
- 9. Support transformative research to inform development of evidence-based policy**

Advantages of HPAI Vaccination

Increase resistance to AIV infection (10^{3-4} higher exposure dose to infect)

Reduce AIV replication in respiratory & GI tract which reduces shedding (10^{2-5})

Prevent disease and death in poultry



Reduced environmental contamination

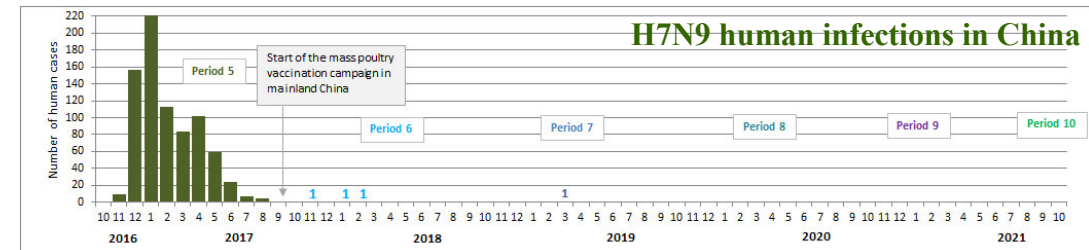
Reduced transmission to birds within premise

Reduce spread between barns and premises

Maintained livelihood of growers and food security of consumers

Improves animal welfare

Prevent human infections

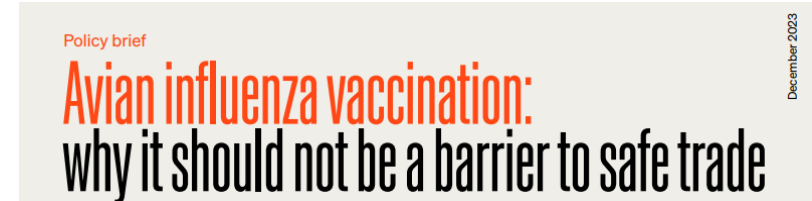


Vaccination adds an additional layer of protection on top of biosecurity measures and stamping-out but does not replace them

Vaccination should be risk based to the most susceptible species and geographic areas

WOAH Guidelines:

- The Code and Manual support vaccination as a control tool
- Supports trade in vaccinated poultry in the presence of appropriate surveillance to demonstrate freedom of HPAIV infection
- WOAHPolicy Brief on HPAI Vaccination (29 Dec 2023):
 - stricter biosecurity measures and mass culling of poultry may no longer be sufficient to control the disease
 -poultry vaccination can no longer be excluded from the available alternatives and should be considered a complementary tool
- What are the principal barriers to HPAI vaccination of poultry:
 - Potential non-tariff trade barriers by importing countries
 - Defining “appropriate” surveillance needed to demonstrate freedom from infection



Global Prevention and Control of Potential Zoonotic Pathogens: Challenges

No-one-size-fits-all

- 1. Production differences: not all production is the same. Variables - poultry type, backyard vs commercial, HIC vs LMIC, etc.**
- 2. Funding/financing impacts programs:**
 - **Indemnities/compensation – accelerates farmer/grower participation and actions, but lacking in most LMIC**
 - **Development of agriculture prevention and control programs, and the research needed to support them**
 - **Disparity in funds available between public health and agriculture and wildlife/environment**
- 3. Legal framework of agricultural regulatory actions – e.g. movement controls in USA**
- 4. Education programs for farmer/grower and others on why and how to contribute to prevention and control**
- 5. Communication plan with growers and consumers**

Example for LMIC partnership:

Low Literacy Program for Safe Slaughter of Poultry to Reduce Human Infection with Avian Influenza Virus

Received: 22 August 2021 | Revised: 6 June 2022 | Accepted: 1 August 2022
DOI: 10.1111/zph.12993

ORIGINAL ARTICLE

WILEY

Reducing zoonotic avian influenza transmission at household poultry slaughter using a behaviour change tool for limited literacy audiences

Andrew A. Clark¹ | Samah Eid² | Mohamed K. Hassan² | Kip Carter³ | David E. Swayne⁴

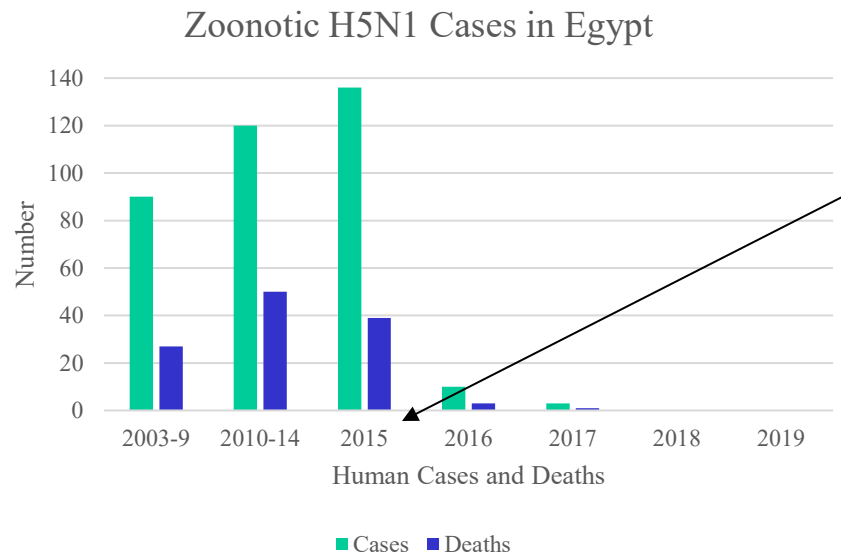
Zoonoses Public Health. 2022;69:956–965.

- Field sampling and laboratory research demonstrated aerosol exposure during the poultry slaughter process was source of human HPAIV exposure and infection
- FAO and USAID funded a program to develop and implement a mitigation strategy at household level in Egypt
- First and second concept posters developed with medical illustrator
- Input from additional Egyptian Village Women's Focus Groups
- Developed 5 and 11 step educational materials for communicating the new home poultry slaughter process in both English and Arabic versions
 - Two sided poster/handout concept
 - 11 step poster covers the full process
 - 5 step poster summarizes the critical parts



Education Program

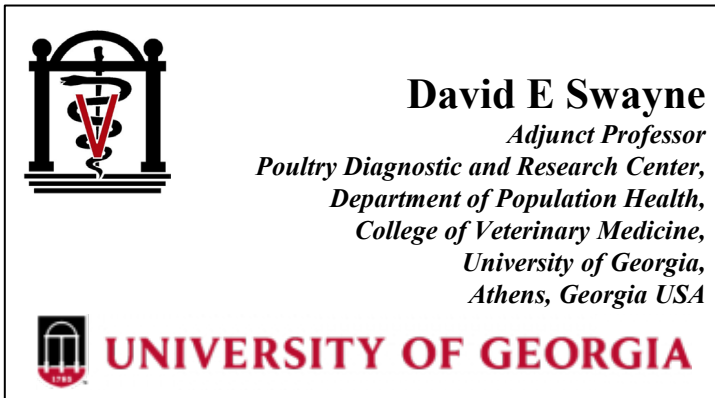
- Used in FAO Exposure Reduction Programme (ERP) – began June 2015
 - 1600 large Presentation Posters for the instructors
 - 1.44 million Handout Flyers
 - 9,700 Sticky-back Posters
 - 3,436 educate meetings
 - CVO: 7 million households were contacted by the ERP Project



ERP implemented
June 2015



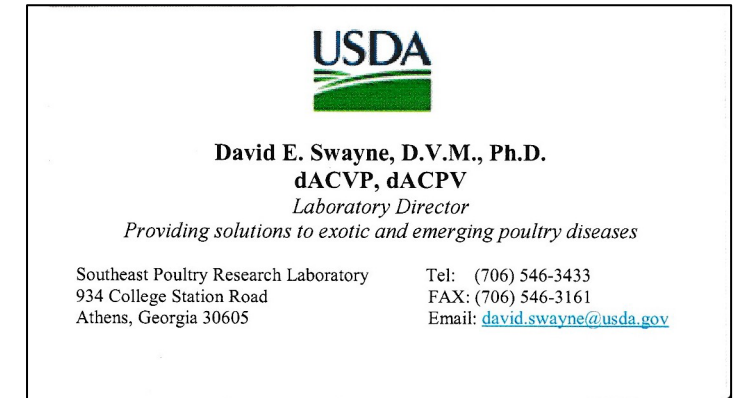
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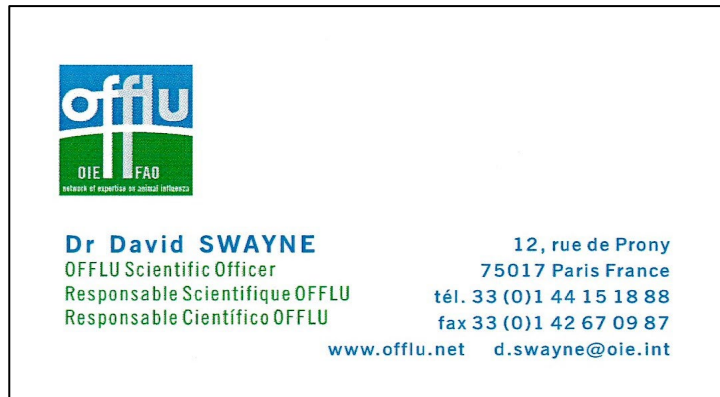
2024 - present



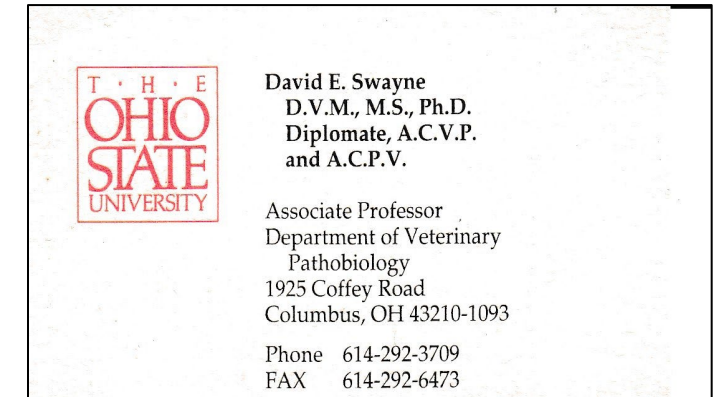
2023 - present



1994 - 2022



2010 – 2011 (Sabbatical)



1987 - 1994