



AMPV Alert: Navigating the Rapid Spread of Avian Metapneumovirus in North American Poultry Farms

Steven Clark, DVM and Brandon Doss, DVM

The introduction of avian metapneumovirus (aMPV) into the United States was suspected in late 2023, with subtype A detected in California and subtype B in North Carolina. By January 2024, the rapid dissemination of aMPV was confirmed in both states, and within four months, it had spread to most poultry-producing regions nationwide. Individual states and trade associations* continue to determine the exact number of poultry affected and the related economic impacts. By mid-summer of 2024, infections extended across all commercial poultry-producing states and into Canada.

In response to the rapid spread of avian metapneumovirus (aMPV), a collaborative effort swiftly emerged across all industry segments, including commercial poultry production, public and private research institutions, trade and allied associations, and government agencies. This prompt response culminated in the first confirmed diagnosis of aMPV Type B in the United States within one week of the initial call of the aMPV Working Group in December 2023.

By March 2024, this *ad hoc* aMPV Working Group expanded to over 200 participants, comprised of poultry veterinarians, researchers, regulatory officials, and animal health professionals, predominantly from the United States. These stakeholders represented a diverse array of sectors, including commercial production, trade associations, government bodies, and allied industries. Collaboration among various laboratories and colleagues ensured that multiple facilities were equipped with the essential tools to effectively understand and combat the disease on a national scale. Within one month of the diagnosis, the first virus isolation of subgroup B was successfully achieved, followed by the isolation of subtype A. By April 2024, more than twenty laboratories were offering aMPV-related services, a significant increase from just four in December 2023, which had limited capabilities.

Throughout 2024, numerous meetings and several publications were conducted to enhance awareness of this emerging disease, underscoring the collective commitment of the industry to address the challenges posed by aMPV effectively. Within twelve months, United States Department of Agriculture (USDA) recognized the industry needs and approved the first-ever importation of a live vaccine, specifically a modified live avian metapneumovirus vaccine from Europe.

Impact on Poultry

aMPV is affecting all categories of poultry, including turkeys, broiler chickens, egg layers, and breeder poultry. Among these, turkeys are the most significantly impacted. Turkey breeders are experiencing egg production declines ranging from 20% to 100%, lasting 2 to 4 weeks. This decrease in egg production is leading to a national shortage of poults. In commercial turkey flocks, mortality rates can be severe, approaching 100%, with clinical disease persisting for up to three weeks. Broiler breeders show a moderate reduction in egg production of 5% to 10%, while broiler mortality is relatively mild, with recovery occurring within 7 to 10 days. The disease in egg-laying chickens is less severe and likely underdiagnosed. Secondary infections, including *Escherichia*

Avian Metapneumovirus in the United States (Updated March 25, 2025)

Steven Clark, DVM | Huvepharma, Inc. | iPh 201-741-2836 | steven.clark@huvepharma.us



coli, cholera (*Pasteurella multocida*), ORT (*Ornithobacterium rhinotracheale*), and MG (*Mycoplasma gallisepticum*), complicate the clinical disease in all poultry species.

Avian Metapneumovirus (aMPV) rose from years at the bottom of the ranking to #1 and reported 2,355 cases, in the recent USAHA annual turkey health survey.¹ It was #38 in 2023. aMPV is closely associated with secondary issues including, lack of drugs, colibacillosis, ORT and *Bordetella*. The introduction of Avian metapneumovirus (aMPV) into the United States was suspected in late 2023, with subtype A detected in California and subtype B in North Carolina. By January 2024, the rapid dissemination of aMPV was confirmed in both states, and within four months, it had spread to most poultry-producing regions nationwide (Figure).

One example shared by a large turkey company demonstrates the dramatic effects on flock mortality associated with aMPV. The first suspected case of aMPV clinical disease occurred in November 2023. Over the next three months, average weekly company-wide flock mortality increased by 113% above the prior 12-month company average, with one week peaking at a 208% increase. Following the winter introduction, the average weekly flock mortality has remained 65% higher than pre-outbreak levels.² Flock monitoring has revealed that 98% of all flocks are now infected with aMPV.

Epidemiology

Outbreaks have been linked to the movement of contaminated materials, such as litter, equipment, personnel, and vehicles, as well as infected birds. Airborne transmission also remains a potential mode of disease spread.

As part of epidemiology investigations, USDA Wildlife Services tested 100 peridomestic species around aMPV positive farms and did not find a single positive (David Marks, personal communication, Sept 11, 2024). In addition, USDA ARS tested 265 hunter harvested migratory bird samples from NC, VA, SC, and WV, and all negative for aMPV A, B, and C (David Surez, personal communication, Oct 4, 2024).

USDA ARS is continuing research into the rapid spread of the virus (Darrell Kapczynski, personal communication, Sept 17, 2024). **PCR of turkey samples from Eastern North Carolina, collected September 2023, have tested positive for aMPV documenting the first case of subtype B in the US (publication pending).** The virus phylogenetic analysis within each subtype shows >96% similarity, even among the most distant isolates examined. Specifically, the phylogenetics of subtype B, all of the US isolates tested to date are >99% similar. Comparing US subtype B isolates against the foreign B isolates, similarity drops to 96-97 %. based on the G protein. The subtype A is close to the Mexico strain. The subtype B strain is still being studied. Comparison of US subtype A sequences versus US subtype B sequences, there is only 59-60% sequence similarity, **highlighting the need for separate vaccines against the different subtypes.** The virus can be detected in drinker water samples and litter and exhaust fans and circulating fans from infected farms (publication pending).

¹ Clark, SR and L. Chiai. Current Health and Industry Issues Facing the US Turkey Industry. Proceedings 128th Annual Meeting of the USAHA, Virtual; Committee on Poultry and Other Avian Species. Pending Publication. Presented Sep 30, 2024.

² Nov 29, 2023 – Feb 26, 2024, average weekly company-wide flock mortality was 1.28%, and the prior 12-month company (Nov 28, 2022 – Nov 20, 2023) average was 0.60%, and week of Jan 1, 2024, peaked at 1.85%. Following the winter introduction, average weekly flock mortality is 0.99% (March – September 2024) compared to before the disease introduction in 2023.



Vaccination

The poultry industry urgently requires both live and killed [inactivated] vaccines for Avian metapneumovirus (aMPV) subtypes A and B for both chickens and turkeys. As of March 25, 2025, there are five USDA-approved live vaccines for aMPV (Boehringer-Ingelheim^{3,4}, Hipra, Vaxxinova⁵, Zoetis^{6,7}), and four special approvals for inactivated (killed) vaccines. One is specific subtype A modified live vaccine (MLV), and the other MLV approvals are subtype B. Two (Hipra⁸ and Boehringer-Ingelheim⁹) are an import permit for an inactivated vaccine and three vaccine manufacturers (Vaxxinova¹⁰, Merck/Cambridge^{11,12} and Ceva¹³) are domestically producing experimental autogenous inactivated vaccine, with US-origin subtype A or B or combination of isolates, to control outbreaks of aMPV in poultry farms in the US.

Control Measures

After exposure, turkeys typically develop clinical signs within 3 to 7 days and shed the virus for around 4 days, usually not exceeding 3 weeks. In laboratory conditions, the virus can survive: 2 to 4 weeks at room temperature (68°F), 4 to 12 weeks under refrigeration (39°F), 2 days at 98°F, less than 72 hours at 100°F, and 6 hours at 122°F. The virus is effectively killed by common disinfectants.

First, confirm the diagnosis of aMPV and identify the subtype (A, B, or C) involved. Next, routinely rule out other diseases that can mimic or complicate aMPV, such as cholera (*Pasteurella multocida*), ORT (*Ornithobacterium rhinotracheale*), MG (*Mycoplasma gallisepticum*), or HPAI. It's important to communicate flock status to neighboring farms and within the company. Implement strict **biosecurity** measures to prevent the virus from spreading both on and off the farm, following protocols like those used for HPAI. Controlling wild birds is also crucial.

Emphasize rigorous **sanitation of drinking water** and improved **barn ventilation** as critical measures. Secondary bacterial infections and associated mortality can be partially managed with prescribed medications. Live vaccines are proven, around the world, to be a successful part of any aMPV program; USDA approved live vaccines are a need. Recently approved inactivated vaccines will be evaluated in breeder birds but are noted that they do not provide significant maternal antibodies to chicks/poults.

³ <https://modernpoultry.media/usda-authorizes-boehringer-ingelheim-to-import-two-live-ampv-vaccines-for-emergency-use/?mp=1738265963935>

⁴ <https://www.wattagnet.com/broilers-turkeys/diseases-health/news/15736219/new-ampv-vaccines-coming-to-us-soon>

⁵ <https://vaxxinova.us.com/poultry/vaxxon-shs/>

⁶ <https://www.wattagnet.com/broilers-turkeys/diseases-health/news/15736219/new-ampv-vaccines-coming-to-us-soon>

⁷ <https://www.thepoultrysite.com/news/2025/01/zoetis-granted-import-permit-for-turkey-rhinotracheitis-vaccine>

⁸ USDA CVB has granted a Special Import Permit for the HIPRA vaccine against Avian Metapneumovirus: HIPRAVIAR® TRT on July 26th, 2024 (No. VB-283390). "... subtype B chicken origin strain, 1062, with proven cross-protection against subtype A, in injectable emulsion. In countries where the product is registered, it is indicated for use in both for chickens (breeders and layers) and turkeys." (Laboratorios Hipra S. A. memo, US - HIPRA introduction, 2024).

⁹ [Boehringer Ingelheim granted USDA import permit for TUR-3 vaccine to help protect U.S. poultry against avian metapneumovirus](#)

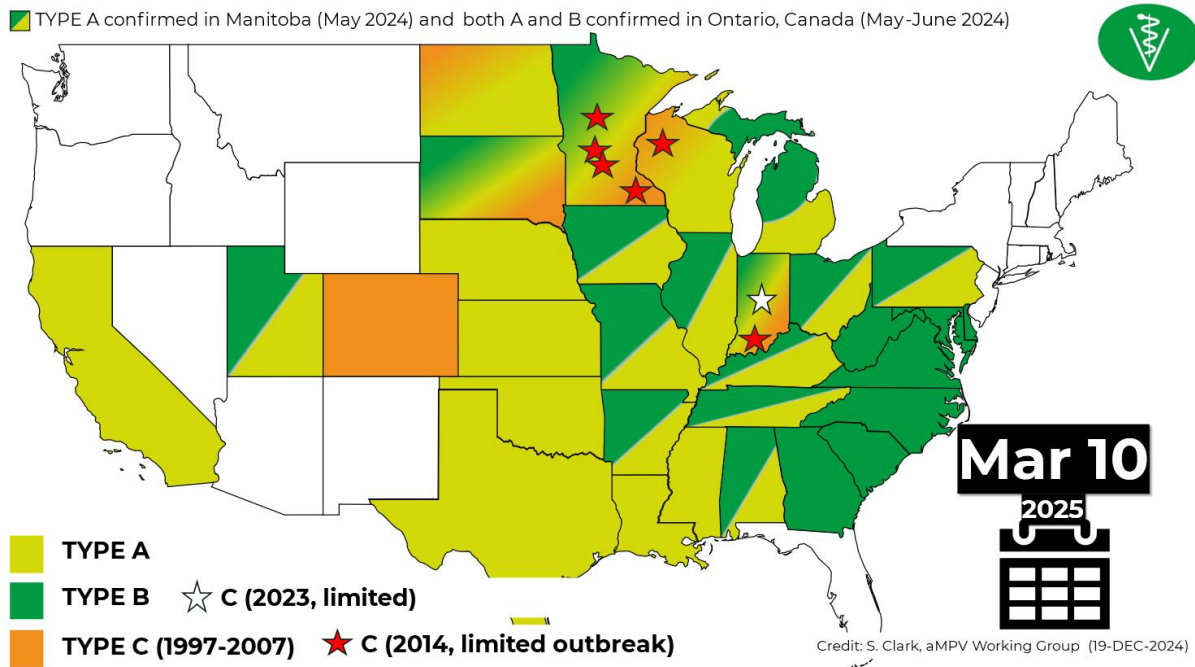
¹⁰ <https://vaxxinova.us.com/poultry/>

¹¹ [Merck Animal Health launches experimental autogenous vaccine for avian metapneumovirus type B](#)

¹² Merck/Cambridge has experimental autogenous vaccines for subtype A and subtype B, separately, and also received CVB authorization for a A/B vaccine with both strains included in the same bottle. All autogenous vaccines use an oil in water emulsion adjuvant (Ivan Alvarado, personal communication, Feb 2, 2025).

¹³ [Ceva producing aMPV experimental autogenous vaccine using US-origin isolate - Modern Poultry](#)

Figure 1. Map of aMPV cases in poultry.



*For further information, contact the National Turkey Federation (NTF), the National Chicken Council (NCC), and the United Egg Producers (UEP).

Figure 2. USDA Approved aMPV Vaccines for Import.

USDA Approvals: Import of aMPV Vaccines

Mod Live – Imported	Inactivated/Killed – Imported	Experimental Autogenous
Vaxxon SHS Vaxxinova, Italy Live attenuated subtype B "For the active immunization of chickens against Swollen Head Syndrome." For use in US Turkeys and Chickens	TUR-3 Boehringer Ingelheim, France Killed /inactivated vaccine Trivalent vaccine (AMPV/ PMX3/ NDV) For use in US Turkeys and Chickens	MSD/Merck Cambridge, USA US origin subtype B For use in US Turkeys and Chickens
Poulvac TRT Zoetis, Spain Mod live subtype A For use in US Turkeys and Chickens	HIPRAVIAR TRT Hipra, Spain Killed/inactivated ... aMPV Type B chicken origin strain with proven cross-protection against Type A ... indicated for use in both chickens and turkeys. For use in US Turkeys and Chickens	Ceva, USA US origin subtype B For use in US Turkeys and Chickens (Subtype A expected to be released soon)
AVIFFA RTI Boehringer-Ingelheim, France Mod live subtype B cross protection For use in US Turkeys and Chickens		Vaxxinova, USA Inactivated subtype A vaccine US origin, turkeys For use in US Turkeys and Chickens
NEMOVAC Boehringer-Ingelheim, France Mod live subtype B cross protection For use in US Chickens		
RESPIVAC aMPV Hipra, Spain Modified live subtype B, strain 1062 Oculonasal (by coarse spray) or drinking water For use in US chickens		May be use in all poultry: For use in chickens and turkeys. FYI: USDA PERMITTED VACCINES* as of March 20, 2025. *USDA PERMITTED VACCINES which are valid for 1 year.