

# THE HPAI VIRUS INTRODUCTION WINDOW INTO POULTRY HOLDINGS: THE RELEVANCE FOR PREVENTION AND CONTROL STRATEGIES

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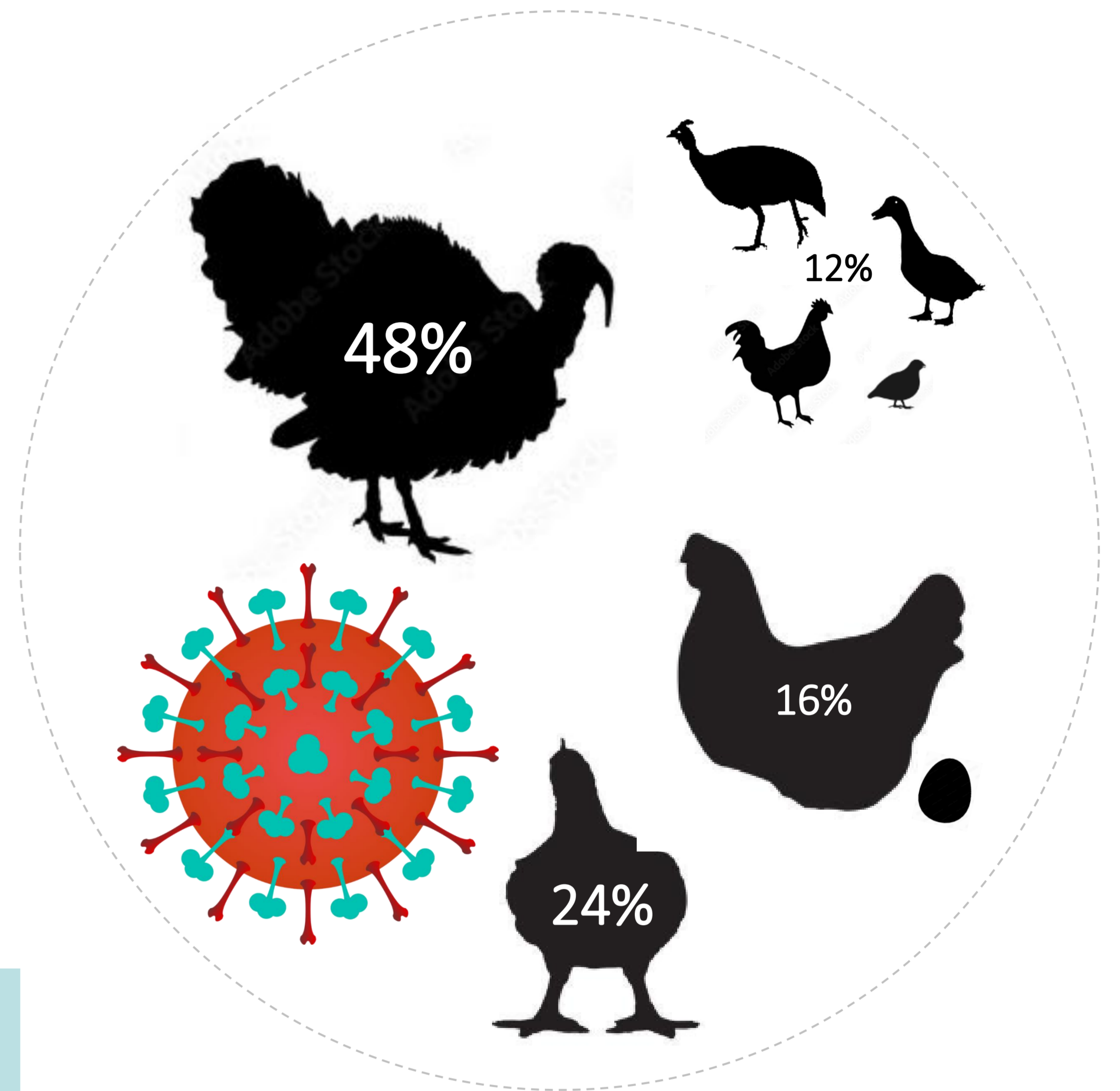
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## INTRODUCTION

- A total of 317 HPAI H5N1 outbreaks were confirmed in poultry farms between 18 October 2021 and 1 April 2022 in Italy <sup>[1]</sup>
- An atypical course of infection in broiler premises was observed: in the absence of any increased morbidity or mortality or significant drop in production, RRT-PCR positivity was found mainly restricted to carcasses<sup>[2]</sup>



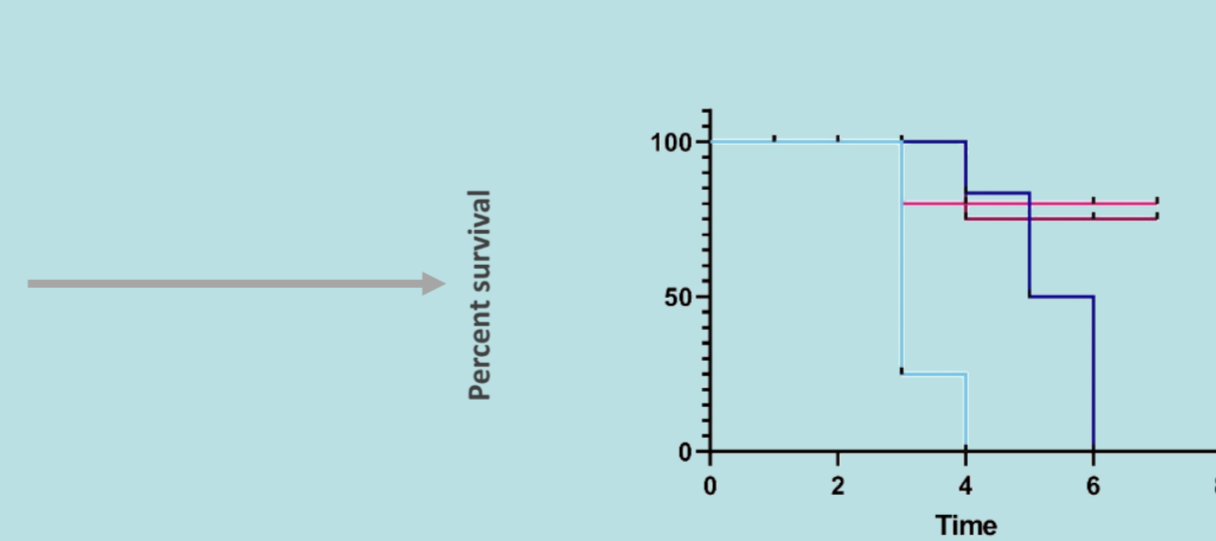
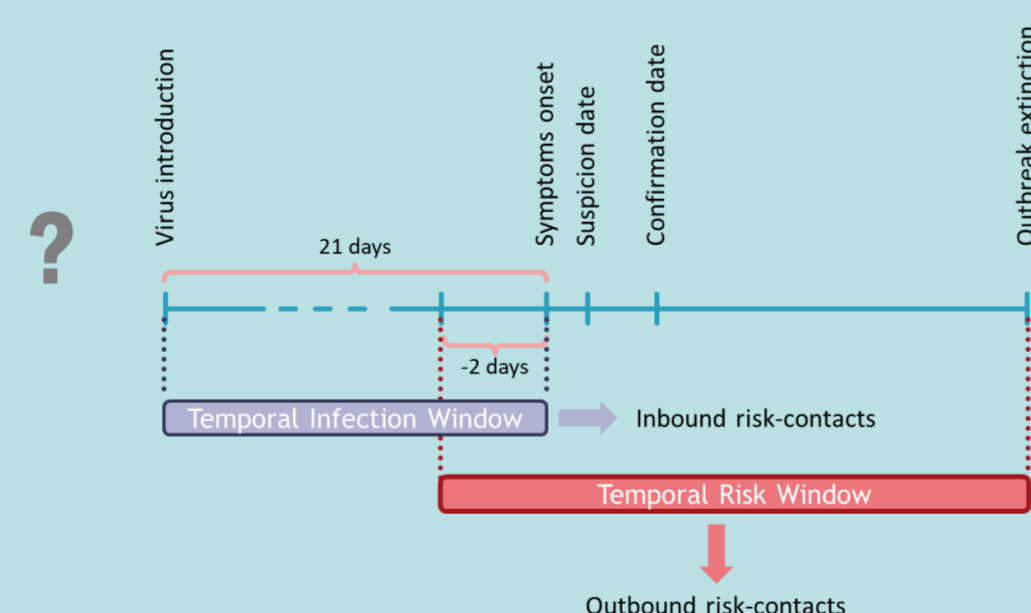
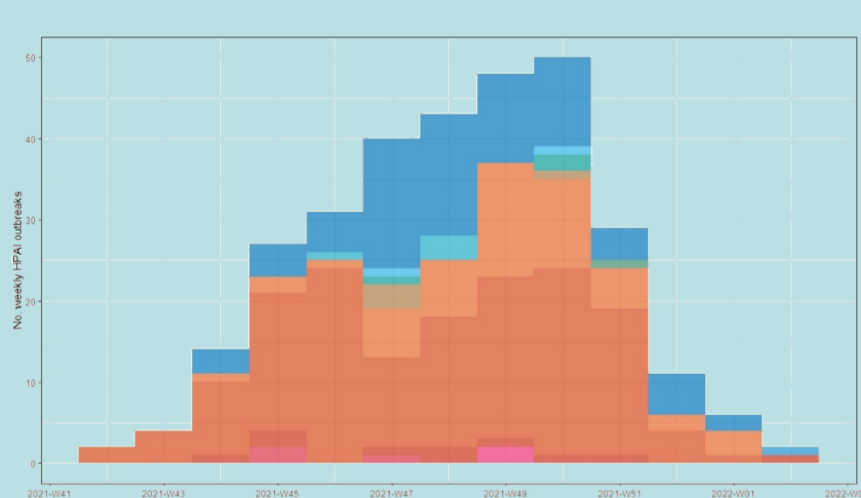
## QUESTIONS

Is the monitoring scheme implemented in the restricted zones able to detect those infections?

Which are the consequences associated with possible undetected infections?

## MATERIALS AND METHODS

- A stochastic simulation model was used to generate distributions for the plausible period from virus introduction to detection
- Data available:
  - in vivo studies (transmission parameters of H5N1 2.3.4.4b clade representative of the last Italian epidemic)
  - field observations collected during outbreak investigations
  - mortality data recorded by farmers and poultry companies



## TAKE – HOME MESSAGES

- The most likely time window of introduction should account for HPAI subtype or lineages-dependant differences and poultry species
- For poultry species that may not show significant clinical signs the recommended surveillance strategy is the pooled sampling of dead birds
- The quantification of a sensitive parameter (time window for virus introduction) will improve the efficiency of contact-tracing efforts



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[1] Fornasiero D, Fusaro A, Zecchin B, Mazucato M, Scolamacchia F, Manca G, Terregino C, Dorotea T, Mulatti P. Integration of Epidemiological and Genomic Data to Investigate H5N1 HPAI Outbreaks in Northern Italy in 2021-2022. Pathogens. 2023 Jan 6;12(1):100. doi: 10.3390/pathogens12010100.

[2] Gobbo F, Zanardello C, Bottinelli M, Budal J, Bruno F, De Nardi R, Patregnani T, Catania S, Terregino C. Silent Infection of Highly Pathogenic Avian Influenza Virus (H5N1) Clade 2.3.4.4b in a Commercial Chicken Broiler Flock in Italy. Viruses. 2022 Jul 22;14(8):1600. doi: 10.3390/v14081600.