

Influenza A Virus Subtype H3N2 as a New Threat for Iranian?

Piruz Shadbash¹, Marziah Bahari Babadi²

¹*Department of Microbiology and Microbial Biotechnology, Faculty of Life Sciences and Biotechnology, Shahid Beheshti University, Tehran, Iran*

²*Department of Biochemistry, Medical School, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran*

**Corresponding author: Piruz Shadbash*

Email addresses:

shadbashpiruz@gmail.com

marziye.bahari2019@gmail.com

Dear Editor,

We write to urgently alert clinicians, public-health authorities, and the international influenza community to the rapidly evolving threat posed by Influenza A(H3N2) viruses in Iran and the surrounding region. Recent surveillance and field reports indicate an accelerating H3N2 wave in Iran coinciding with the global rise of a genetically divergent A(H3N2) subclade (“subclade K”), raising the possibility of increased morbidity, vaccine mismatch, and healthcare strain unless immediate coordinated actions are taken (1).

What is new and worrying

1. Rapid countrywide rise in human H3N2 detections in Iran. Iran’s Ministry of Health and national reports describe a sharp rise in influenza positivity and respiratory hospitalizations beginning in November 2025, with children and adolescents disproportionately affected (2).

2. Emergence of a divergent A(H3N2) subclade with antigenic and genetic drift. European and global analyses identify a newly expanding A(H3N2) subclade (K/J.2.4.1 lineage) that shows notable divergence from the current northern-hemisphere vaccine reference strain, raising concerns for reduced vaccine effectiveness (3).

31 3. Historical susceptibility and low vaccine uptake. Iran experienced significant
32 H3N2/H1N1 activity during the 2022–2023 season with high hospitalization and
33 mortality among under-vaccinated groups. Low seasonal influenza vaccination coverage
34 among high-risk groups increases the pool of susceptible individuals (4).

35

36 4. One-Health risks: concurrent avian influenza activity. Reports of avian influenza
37 outbreaks (H5Nx) in Iranian poultry elevate the theoretical risk of zoonotic co-infections
38 and reassortment events (5).

39

40 Recommended urgent actions

41 1. Intensify genomic surveillance with rapid sequencing and sharing of Iranian isolates.

42 2. Prioritize antigenic characterization and vaccine-effectiveness studies.

43 3. Enhance clinical surge preparedness and antiviral stockpiles.

44 4. Accelerate targeted vaccination campaigns, particularly for vulnerable groups.

45 5. Integrate One-Health surveillance across human, veterinary, and agricultural sectors.

46 6. Implement rapid, transparent risk communication to the public.

47

48 Why this matters

49 The combination of an on-the-ground surge in Iran, the global expansion of a genetically
50 divergent H3N2 subclade, previously low vaccination coverage, and concurrent avian
51 influenza activity represents a convergence of risk factors that could amplify severity.

52 Proactive surveillance, preparedness, and targeted vaccination are critical to preventing
53 avoidable morbidity and mortality.

54 **Conflicts of Interest:** None

55 **References**

56 1. Iran warns of sharp rise in influenza cases, urges public to curb transmission. IFP
57 News. 23 Nov 2025.

58 2. World Health Organization. Global influenza updates- week 47 report. 23 Nov 2025.

- 59 3. European Centre for Disease Prevention and Control. Threat assessment brief:
60 Assessing the risk of influenza- November 2025.
- 61 4. Salehi M, et al. Clinical characteristics and outcomes of Influenza A (H3N2/H1N1)
62 infection in hospitalized patients: Iranian J Med Microbiol. 2024.
- 63 5. Reuters. Iran reports bird flu outbreak in poultry, WOAHA says. 7 Oct 2025.
- 64

Preprint