World Health Organization

Preparing for containment and mitigation of pandemic H5N1 influenza

Uses of Statistical and Mathematical Modeling

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Introduction and objectives of the meeting

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Powering research to prevent epidemics

The flow of events and concepts to be modeled in a nutshell

1. Early **detection** and estimation of key indices and parameters

2. **Containment** at the source and early interventions with NPI's, therapeutics and vaccines

3. Global **mitigation**, NPI's; distribution of vaccines and therapeutics

Outline of the current pandemic threat and potential containment or mitigation of influenza A (H5N1) or some other variant

What is the current level of risk?

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Article | Published: 28 October 2024

A human isolate of bovine H5N1 is transmissible and lethal in animal models

Chunyang Gu, Tadashi Maemura, Lizheng Guan, Amie J. Eisfeld, Asim Biswas, Maki Kiso, Ryuta Uraki, Mutsumi Ito, Sanja Trifkovic, Tong Wang, Lavanya Babujee, Robert Presler Jr., Randall Dahn, Yasuo Suzuki, Peter J. Halfmann, Seiya Yamayoshi, Gabriele Neumann & Yoshihiro Kawaoka

Nature (2024) | Cite this article

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- Current parameter estimates critical parameters
- H5N1 vaccines and antiviral stockpiles
- Potential effectiveness of NPIs

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Understand the analytical and statistical tools available and how to apply them to containment efforts

- Surveillance for early transmission
- Effective stockpile sizes of vaccines and antivirals
- NPI’s
- What types of models are needed and can we build these models in advance

Understand the current mathematical modeling tools available and how to apply them to containment and mitigation efforts

- Critical questions:
  - Effective stockpile sizes of vaccines and antivirals needed for containment?
  - NPI's?
  - Models needed?

Describe what new analytic and mathematical models need to be developed and integrated into the response to pandemic influenza A(H5N1)

- Optimize global vaccine distribution
- Modeling for low- and middle-income countries
- Lessons from the COVID-19 pandemic
- Which data and resources
- Communication of modeling results

Conclusions and next steps

- Collaboratory: WHO Hub for Pandemic and Epidemic Intelligence initiative
  - Epidemilogical tools
  - Brings together modelers
  - Help develop solutions
  - Identify and share data
- Develop next steps for the integration analytical methods and mathematical modeling into the pandemic response

Thank you and on to the meeting!