

Pharmaceutical Interventions: Pandemic Phase

Public Health Interventions

- Objective
 - Reduce morbidity, mortality and social disruption
 - Conduct research to guide response measures

Public Health Interventions

- Expected scenario
 - Neither timing nor severity can be predicted
 - Historically consistent explosive surge in cases and deaths
 - Temporary disruption of public services and productivity
 - All countries or parts of a country may not be affected simultaneously
 - The three pandemics of the last century encircled the globe in 6-9 months
 - Could be more rapid now due to the explosion in volume of international and domestic air travel
 - Relatively better hygiene, nutritional status and availability of drugs for treating secondary complications might mitigate health impact

Public Health Interventions

- ❑ Vaccines – intervention of choice but would not be available at the start of the pandemic
- ❑ Antivirals – critical intervention at start of the pandemic, mainly to protect priority groups such as health workers
- ❑ Non-pharmaceutical public health measure – those interventions that would be most effective based on the nature of the pandemic needs to be implemented

Seasonal Vaccine

Primary means of Preventing Human Influenza

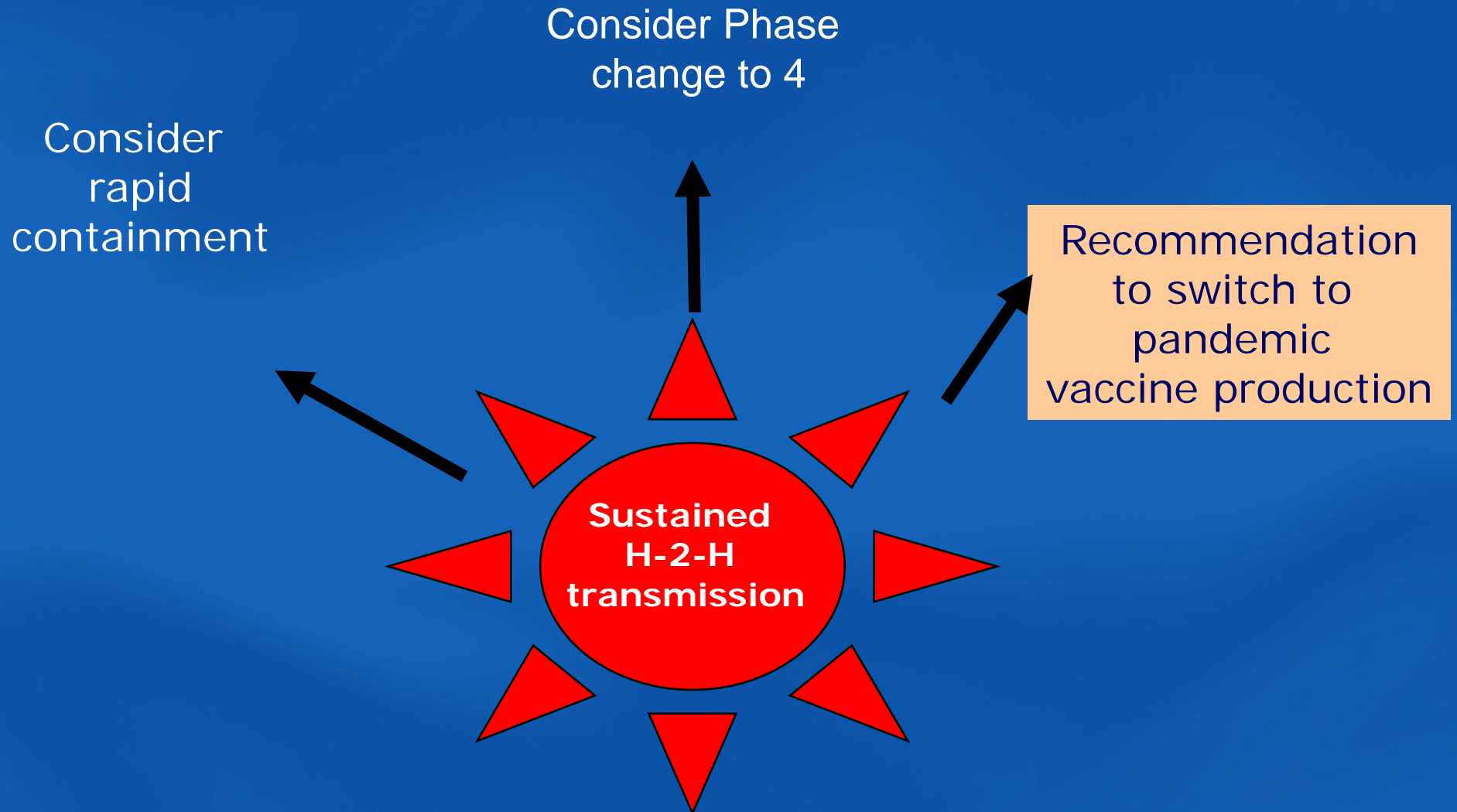
- ❑ Proven efficacy/effectiveness to prevent infection, severe illness (hospitalisation) and death in western settings. Good epidemiological data on burden and efficacy not available in India
- ❑ Cost effective in many target groups – especially elderly, children and immunocompromised
- ❑ Generally safe
- ❑ In India - high level committee has advised adoption of WHO recommendation on use of seasonal vaccine in priority/target groups
- ❑ Mechanisms for identification of such groups being worked out

Seasonal Vaccine—Priority Groups

1. Residents of institutions (elderly people and the disabled)
2. Elderly with chronic underlying conditions
3. All individuals >6 months of age with chronic underlying conditions
4. Elderly individuals
5. Other groups (defined on the basis of national data and capacities), contacts of high risk people, pregnant women, health care workers and essential service providers, children 6–23 months of age

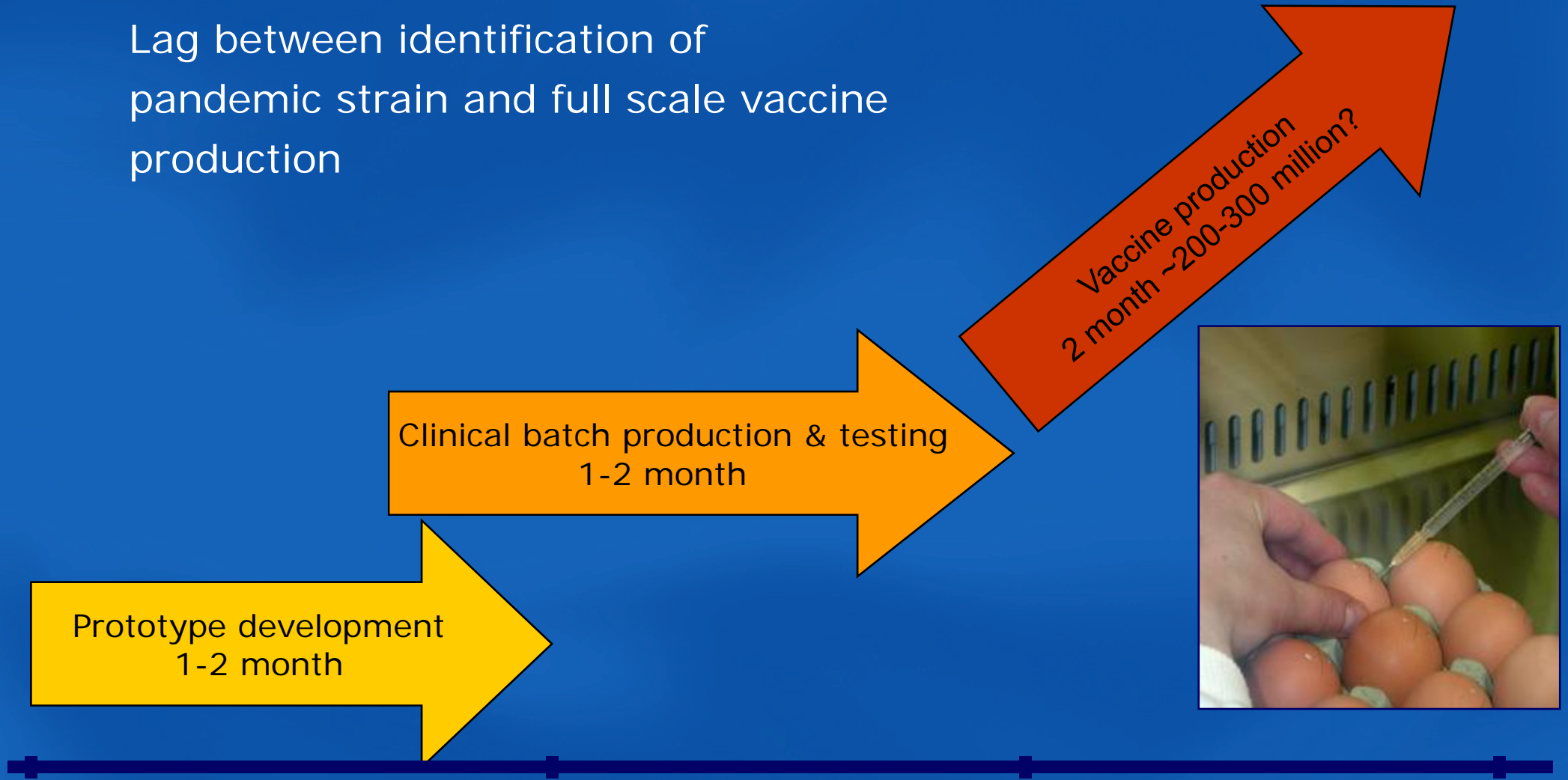
WHO position paper, 2005

First Detection of Community Level Outbreaks



Vaccine Production Timeline

Lag between identification of pandemic strain and full scale vaccine production



Pandemic Vaccine

- ❑ Priority groups will differ by country and depend on the goals
 - Maintain essential services
 - Reduce deaths and hospitalisations
 - Reduce morbidity
- ❑ Prioritisation can also be based on the nature of the pandemic
- ❑ Vaccine availability and population structure
- ❑ Logistics availability for distribution and administration of vaccine in the health system
- ❑ Experiences gained in mass vaccination programmes such as Pulse Polio need to be appropriately adapted and used

Pandemic Vaccine Lessons from 1957, 1968, & 1977

- ❑ Unprimed subjects require second inoculation
- ❑ Differences exist in immunogenicity between subtypes
- ❑ Whole virus is usually more immunogenic but reactogenic
 - Children have more side effects
- ❑ Adjuvants can spare antigen in unprimed persons
- ❑ Efficacy/effectiveness are unpredictable

H5N1 Vaccines

- ❑ Human H5N1 vaccines are immunogenic in humans and generally well-tolerated
- ❑ H5 haemagglutinin is a weak human immunogen
 - Two doses and an adjuvant will likely be needed
- ❑ H5 viruses continue to change - antigenic match between vaccine initially produced and circulating strains in the country is of concern
 - Another 4-6 months time lag before vaccine matching circulating strain in the country is produced
- ❑ Establishing mechanisms to capture evidence for efficacy and adverse effects during mass use is important since these will not be available prior to use due to curtailment of usual vaccine approval processes to gain time

Antiviral Prophylaxis

- ❑ Prioritisation may be necessary based on available stockpile and logistics for distribution and delivery
- ❑ Priority groups will differ by country and depend on the goals
 - Maintain essential services
 - Reduce stress on health services
 - Reduce speed of geographic spread
 - Reduce morbidity
- ❑ Antiviral availability and population structure
- ❑ Logistics availability for distribution and mass administration of drug in the health system
- ❑ Experiences gained in mass drug administration programmes such as for filariasis need to be appropriately adapted and used
- ❑ Policy resolution on whether and when the current restriction of drug availability for retailing needs to be removed

Oseltamivir Chemoprophylaxis Doses*

Patient Age	Prophylactic Dose
≥ 13 years	1 capsule (75 mg) once a day
1 to 12 years	<ul style="list-style-type: none">❑ < 15 kg: 30 mg once a day❑ 15-<23 kg: 45 mg once a day❑ 23-<40 kg: 60 mg once a day❑ ≥ 40 kg: 75 mg once a day

*Duration of prophylaxis depends on epidemiologic setting
(several weeks in pandemic setting)

Post-exposure use is typically for 7 to 10 days

Oseltamivir Treatment – All cases

- **Adults:** 75 mg two times a day for 5 days

- **Children ≥ 1 year old:**
 - <15 kg: 30 mg twice daily
 - 15 - <23 kg: 45 mg twice daily
 - 23 - <40 kg: 60 mg twice daily
 - ≥ 40 kg: 75 mg twice daily

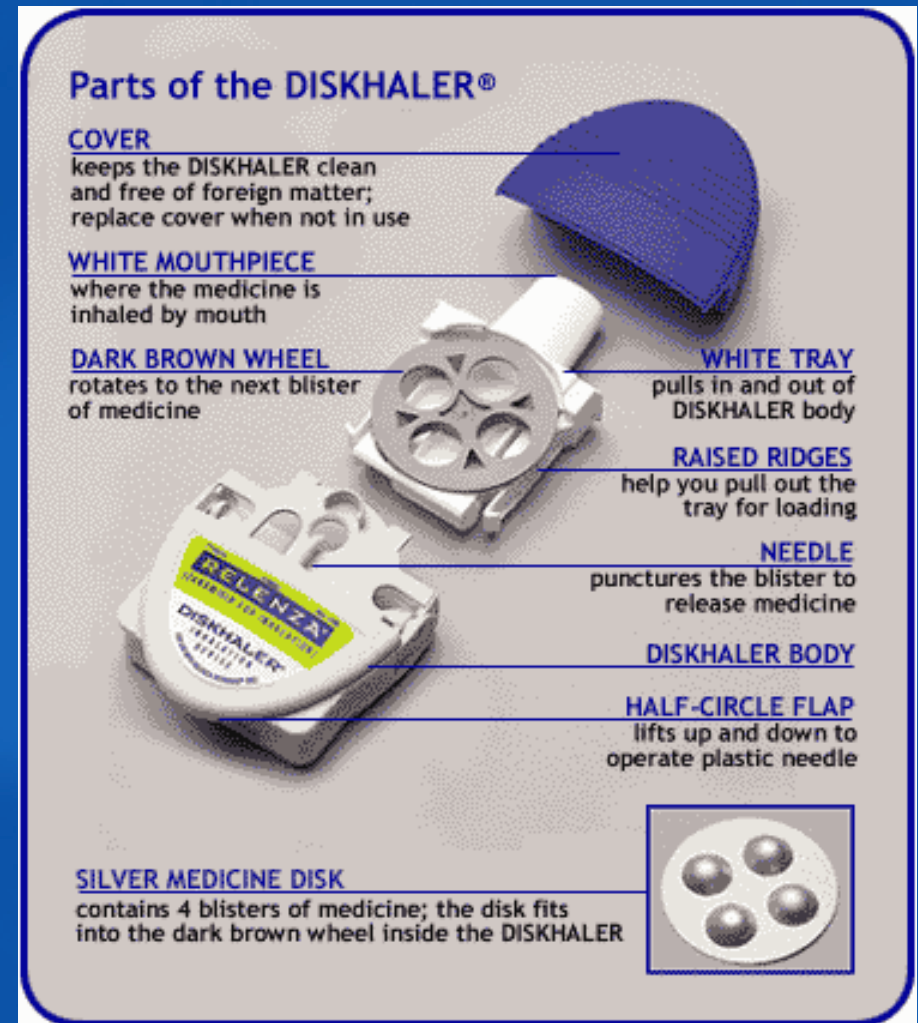


Zanamivir Overview

- ❑ Orally inhaled powder (Diskhaler)
- ❑ Low systemic absorption
 - ~7-21% of dose reaches lower airways
- ❑ Adverse effects
 - Bronchospasm, sometimes severe
 - Uncertain relationship to drug: nausea, diarrhea, headache
- ❑ Antiviral resistance rare to date

Zanamivir Administration

- Treatment: 5 days
 - Age ≥ 7 years: 2 inhalations (5 mg each), twice daily
- Prophylaxis
 - Age ≥ 5 years: 2 inhalations (5 mg each) once daily
 - Duration of prophylaxis depends on clinical setting
- No dose reductions for age, renal insufficiency



Thank you