What we talk about today

- COVID-19 update
- SARS-CoV-2 Variants
- Most infectious diseases the WHO has identified to date
- Nipah Virus
- Pandemic potential of avian influenza (H5N1)
- Efficacy of bivalent RSVpreF vaccine to prevent RSV in infants
Figure 1. COVID-19 cases reported by WHO Region, and global deaths by 28-day intervals, as of 26 March 2023**
Figure 2. Percentage change in confirmed COVID-19 cases over the last 28 days relative to the previous 28 days, as of 26 March 2023**
Figure 3. Percentage change in confirmed COVID-19 deaths over the last 28 days relative to the previous 28 days, as of 26 March 2023**

Percentage change in confirmed COVID-19 deaths

- Decreasing
- Limited change
- Increasing

No reported confirmed deaths
Currently, WHO is closely tracking one variant of interest (VOI), XBB.1.5, and six variants under monitoring (VUMs). The VUMs are BQ.1, BA.2.75, CH.1.1, XBB, XBF and XBB.1.16; XBB.1.16 was added to this list on 22 March 2023. XBB.1.16 is a recombinant of BA.2.10.1 and BA.2.75 and has three additional mutations in the SARS-CoV-2 spike protein (E180V, F486P and K478R) compared to its parent lineage XBB.
9 of the most infectious diseases the WHO has identified to date:

- Nipah virus
- Crimean-Congo hemorrhagic fever
- Lassa fever
- Rift Valley fever
- Zika
- Ebola and Marburg
- Middle East respiratory syndrome (MERS)
- Severe acute respiratory syndrome (SARS)

Disease X (any unknown pathogen that could cause a future outbreak)
9 of the most infectious diseases the WHO has identified to date:

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Disease X (any unknown pathogen that could cause a future outbreak)
Nipah Virus: A Potential Pandemic in the Making?

_Pteropus_ Bats Presence and Nipah Virus Outbreaks

- Red: Nipah virus infections in people
- Light yellow: Known or likely presence of _Pteropus_ bats in the Asia, South Pacific, and Australia region
Nipah Virus: A Potential Pandemic in the Making?

Nipah Virus Transmission and Mortality

- Fruit Bat
  - Blood
  - Saliva
- Urine
- Date Palm Sap
- Contaminated Fruit
- Pig
- Human
  - 40-75% Mortality

Outbreak: Pig > Pig
Outbreak: Human > Human
Impact of Nipah Virus

- Fatality rate among those infected ranges from 40% to 70%.
- 200 lives lost in Bangladesh in the last 20 years due to yearly outbreaks.
- Since the first reported case in 1999 in Malaysia, there have been 300 human cases and more than 100 deaths.
- Substantial economic impact as more than 1 million pigs were euthanized to contain the outbreak.
- Outbreaks have been recorded annually in some parts of Asia since then - primarily in Bangladesh and India.
How to prevent Nipah Virus infection

Avoid consuming raw date palm sap or fruits contaminated or partly eaten by bats

Wash hands regularly with soap and clean water

**With patients**

Try to avoid coming into close contact with the patient

Cover nose and mouth when going near to the patient

Wash hands with soap and water after handling the patient

Healthcare workers need to follow strict infection control measures with suspected or confirmed cases

Nipah virus (who.int)
Next influenza pandemic: H5N1?
Does active bivalent preF-RSV RSV vaccination during pregnancy reduce the burden (RSV)–associated lower respiratory tract illness in infants?

METHODS
Double-blind- 1:1-randomized, 18 countries, pregnant women at 24 through 36 weeks’ gestation
1 single intramuscular injection of 120 μg of a bivalent (RSVpreF) vaccine or placebo.
Endpoints at days 90, 120, 150, 180 after birth
- medically attended severe RSV-associated LRTI (MAS-RSV)
- medically attended RSV-associated LRTI (MA-RSV)

RESULTS
3682 / 3676 pregnant women received vaccine / placebo; 3570 / 3558 infants were evaluated.
MAS-RSV 90 days: 6 vaccine group infants versus 33 infants placebo group: VE: 81.8%; 99.5% CI, 40.6 to 96.3);
180 days: 19 cases versus 62 cases: VE: 69.4%; 97.58% CI, 44.3 to 84.1).
MA-RSV 90 days: 24 vaccine group infants versus 56 infants placebo group VE: 57.1%; 99.5% CI, 14.7 to 79.8); (n.s.)
Reported AE within 1 month after injection or within 1 month after birth were similar in the vaccine group (13.8% of women and 37.1% of infants) and the placebo group (13.1% and 34.5%, respectively).

CONCLUSIONS
RSVpreF during pregnancy was effective against medically attended severe RSV-associated LRTI in infants, no safety concerns were identified. (Funded by Pfizer; MATISSE ClinicalTrials.gov number, NCT04424316.)

Kampmann B et al., NEJM 2023: DOI: 10.1056/NEJMoa2216480
A Medically Attended Severe RSV-Associated Lower Respiratory Tract Illness

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>RSVpreF Vaccine (N=3495)</th>
<th>Placebo (N=3480)</th>
<th>Vaccine Efficacy (99.5% or 97.58% CI)</th>
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<tbody>
<tr>
<td>90 Days after birth</td>
<td>6 (0.2)</td>
<td>33 (0.9)</td>
<td>81.8 (40.6–96.3)</td>
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<tr>
<td>120 Days after birth</td>
<td>12 (0.3)</td>
<td>46 (1.3)</td>
<td>73.9 (45.6–88.8)</td>
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<tr>
<td>150 Days after birth</td>
<td>16 (0.5)</td>
<td>55 (1.6)</td>
<td>70.9 (44.5–85.9)</td>
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<tr>
<td>180 Days after birth</td>
<td>19 (0.5)</td>
<td>62 (1.8)</td>
<td>69.4 (44.3–84.1)</td>
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No. at Risk

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>RSVpreF vaccine</th>
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<tr>
<td>Days after Birth</td>
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<tr>
<td>0–30</td>
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### Medically Attended RSV-Associated Lower Respiratory Tract Illness

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<tr>
<td></td>
<td>no. of cases (%)</td>
<td></td>
<td>%</td>
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<tr>
<td>90 Days after birth</td>
<td>24 (0.7)</td>
<td>56 (1.6)</td>
<td>57.1 (14.7–79.8)</td>
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<td>35 (1.0)</td>
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<td>99 (2.8)</td>
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<td>180 Days after birth</td>
<td>57 (1.6)</td>
<td>117 (3.4)</td>
<td>51.3 (29.4–66.8)</td>
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</tbody>
</table>

#### Cumulative Incidence (%)

![Graph showing cumulative incidence over time for RSVpreF vaccine and Placebo groups](image)

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Measles?

Easter!