Current COVID-19 situation: overview of SARS-CoV-2 circulating variants

What do we know about new COVID-19 variants?
Global COVID-19 weekly trends in reported cases and deaths

Cases reported to WHO as of 19 February 2023

- New cases: > 1 Million
- New deaths: > 7 000
- Cumulative cases: > 757 Million
- Cumulative deaths: > 6.8 Million
SARS-CoV-2 will continue to evolve

- Potential drivers of emergence of genetically divergent SARS-CoV-2 variants
  - Uncontrolled transmission and prolonged human-human transmission in areas with limited surveillance and sequencing
  - Viral adaptation following prolonged circulation in susceptible animals
  - Recombination of SARS-CoV-2 with other coronaviruses in animals or humans
  - Persistent SARS-CoV-2 infection in an immunocompromised
Global circulation of SARS-CoV-2 variants
As of 6 February 2023

- Globally, from 6 Jan to 6 Feb 2023, 90,096 SARS-CoV-2 sequences were shared through GISAID.
- Omicron accounts for 99.6% of the total.

**Epi Week 3** (16 to 22 Jan 2023) vs **Week 51** (19 to 25 Dec 2022)

- **BA.5** prevalence: 53.9% (74.2%)
- **BA.2** prevalence: 12% stable trend
- **Pooled recombinant variants** prevalence: 24.6% (8.8%) mostly due to XBB.1.5 (17.7%)

Figures by WHO, data from GISAID.org, extracted on 6 February 2023.
* indicates descendent lineages are included.
Omicron
Many lineages, One family

• Different, yet similar
  ▶ Wide spectrum of mutations and sub-lineages
  ▶ All lineages far more similar to each other than to pre-Omicron lineages
    • High immune escape
    • Upper airway tropism
    • Lower severity, esp with prior immunity

Shrestha, Med Virol 2022 and Fuss, COVID 2023
# Rapid risk assessment of variants

<table>
<thead>
<tr>
<th>Growth advantage</th>
<th>Evidence of a growth advantage likely to lead to global predominance</th>
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<tbody>
<tr>
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<td>An increase in variant specific Rt</td>
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<td>Logistic growth (compared to currently circulating variant)</td>
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<td>(Nb variants with subnational-limited growth are not assessed)</td>
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<tr>
<th>Immune escape</th>
<th>Genomic (predictive) and structural biology assessment</th>
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<td></td>
<td>Pseudovirus neutralization using vaccinee sera or pre-banked population serosurveys</td>
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<td>Reinfection rate through a cohort study or surveillance system</td>
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<td>Signals from outbreak investigations</td>
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<td>[Rapid VE is unlikely by 28 days so the rapid RA cannot reach high confidence].</td>
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<th>Severity and clinical considerations</th>
<th>Change in a rolling surveillance metric for severity synchronized with increase in variant</th>
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<td>e.g.</td>
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<td>infection hospitalization ratio</td>
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<td>indicators from sentinel hospital network (e.g. surveillance of severe acute respiratory infections)</td>
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<td>comparison of admission trends with previous variants</td>
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<td>change in the demographic profile of who is admitted to hospital</td>
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<td>Change in clinical phenotype</td>
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<td>Major tests/therapeutics issues</td>
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| Risk assessment | Including overall view of threat in the wider context, confidence level in the assessment, and identification of urgent priority work. |

## Indicators:
1. Growth Advantage
2. Immune Escape
3. Disease/Clinical severity

## Confidence Assessment:
Low, Moderate and High

## Assessments:
1. Rapid (0-4 Weeks)
2. Comprehensive (4-12 Weeks)
Current WHO process to track variants

Step 1:
- Any variant showing an early signal of growth advantage and significant spread is eligible to become to be tracked more closely (e.g. Omicron subvariants under monitoring)

Step 2:
- If growth advantage is suspected to be able to lead to global predominance, advice from TAG-VE is solicited and a rapid risk assessment (RRA) is initiated. RRA is updated as new data emerges.
WHO-TAG-VE Risk Assessment XBB.1.5

- **Updated RRA release:** 23 January 2023 (First RRA released on 11 January 2023)
- **Data:**
  - 8931 sequences of the Omicron XBB.1.5 from 54 countries (excluding low coverage sequences). Most from the USA (75.0%), the UK (9.9%), Canada (3.0%), Denmark (2.0%), Germany (1.5%), Ireland (1.3%) and Austria (1.3%).
- **Overall Assessment:** Available information does not suggest that XBB.1.5 has additional public health risks relative to the other currently circulating Omicron subvariants.
- **Confidence in the Assessment:** Moderate (updated from Low)
- **Recommendations:**
  - Neutralization assays using human sera representative of the affected community(ies) and XBB.1.5 live virus isolates (2-4 weeks).
  - Comparative assessment to detect changes in rolling or ad hoc indicators of severity (4-12 weeks)
Summary

• BA.5 and its descendant lineages are the dominating variants circulating globally, with a prevalence of over 50% at present
• There is some heterogeneity in dominant variants across regions
• Virus has not stabilized into predictable pattern of evolution.
  ‣ More variants are expected with increased growth rate and immune escape, no certainty on change of severity.
  ‣ Some recombinants have been detected throughout the pandemic, however current attention on XBB.1.5.
  ‣ With waning immunity, breakthrough and reinfections will occur.
• Declining and unrepresentative surveillance and sequencing is making it more difficult to rapidly assess known and detect new variants/recombinants.
• Smart (representative) surveillance and sequencing remains critical at this stage of the pandemic.