



# Epidemic Intelligence: Coronavirus sequencing surveillance in Nepal



### PROBLEM STATEMENT

Genomic sequencing can help us understand and respond to pandemics of new and old infectious diseases. Nepal is particularly vulnerable to rapid and widespread transmission of emerging infections with high levels of internal and external migration.

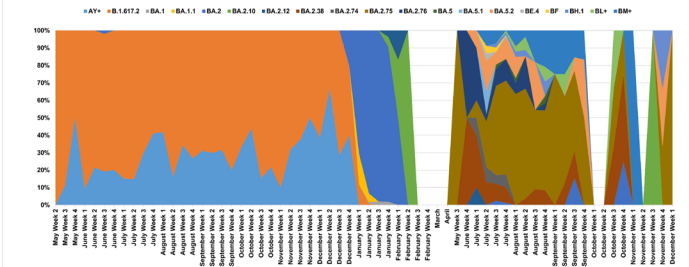
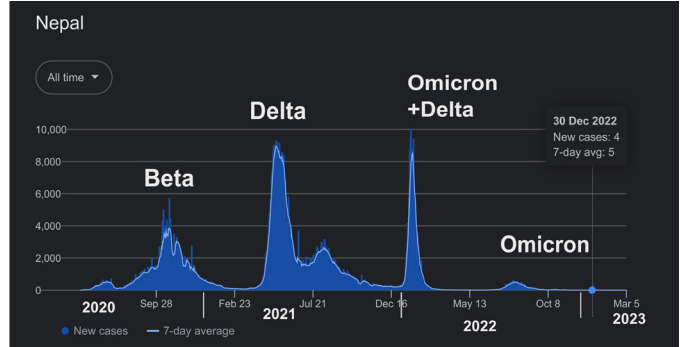
Long COVID has emerged as a significant public health challenge for countries in the aftermath of the COVID-19 pandemic. Understanding the prevalence and symptoms of Long-COVID is essential to identify evidence gaps, vulnerable population groups and key service strengthening needs which will enable rational resource allocation.

Epidemic Intelligence is a consortium project to improve our understanding of the ongoing transmission of COVID19 in Nepal using whole genome sequencing.

The project collected and sequenced SARS CoV-2 samples from three locations spanning Nepal: Bheri Hospital in Nepalgunj (Far West), Koshi Hospital, Biratnagar (Eastern Nepal), and Sukraraj Tropical Infectious Diseases Hospital in the capital city, Kathmandu (central region).

We also followed up the participants at three and six months to understand the frequency and symptoms of long-term complications of COVID-19 illness (known as Long COVID) in the patients.

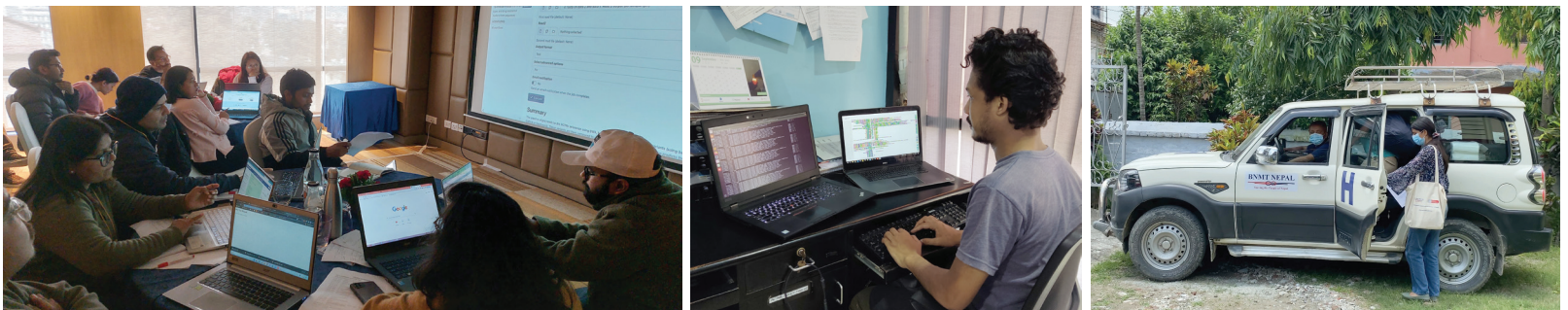
### Changing patterns of SARS CoV-2 in Nepal (1,900 samples)



[www.epiintelnepal.org](http://www.epiintelnepal.org)

## KEY FINDINGS

1. Nepal experienced three major waves of COVID-19. The first was caused by Beta variant, the second by Delta, the third by Delta and Omicron co-circulating.
2. Currently, a large number of omicron sub-variants are co-circulating in Nepal, with particular diversity recorded in Western Nepal.
3. More than a fifth of the participants had a migration history, of which 8% had a history of international migration.
4. Twenty percent of participants reported long COVID, broadly defined as symptoms lasting longer than 12 weeks.
5. At least one vaccine dose was protective against Long Covid OR= 0.679 [95% CI 0.499-0.925],  $P < 0.014$
6. Diabetes (OR=2.09 [95% CI 1.46-2.99],  $P < 0.001$ ) or hypertension (OR=2.01; 95% CI 1.46-2.76,  $P < 0.001$ ), and female gender (OR 1.25 (95% CI 1.04-1.51,  $P = 0.016$ ) were risk factors for long COVID.



## RECOMMENDATIONS

1. Nepal needs to continue strengthening genomic capacity to identify and respond to both emerging and endemic infectious diseases. Human resource capacity in bioinformatics is urgently needed alongside laboratory infrastructure and skills.
2. Molecular diagnostic capacity expanded during the COVID pandemic should now be pivoted to address other emerging diseases of concern, including influenza, antimicrobial resistance, drug resistant tuberculosis and dengue.
3. A significant proportion of COVID patients continue to suffer long COVID symptoms and struggle to access appropriate care. A large proportion have co-morbidities. Specialist care and research centres should be established to understand and treat the condition.
4. Vulnerable patient groups experiencing Long COVID require a broad range of support interventions including psychosocial support, livelihood support, personalized management plans and subsidized medical care.

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