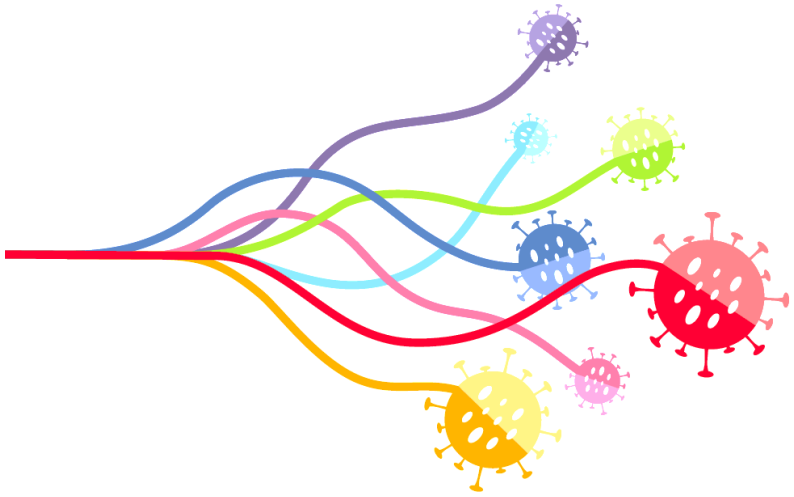
# SARS-CoV-2 Variants in Bangladesh

# Technical briefing 1

# 30 September 2021

This briefing provides an update on previous briefings 1 to 31 August 2021



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# SUMMARY

There are 4 current variants of concern (VOC) and 9 variants under investigation (VUI) are circulating globally. Among them, Delta variant constitutes more than 90% of the new infections. This report has been published to share detailed SARS-CoV-2 variant surveillance in Bangladesh during August 2021. The cumulative data since July 2021 have been included at the end of this report.

**Principal findings are:**

- The Delta variant accounted 100% from 1 to 31 August 2021.
- We have identified different lineages of Delta variant such as Delta B.1.617.2-like, Delta AY.4, AY.5, AY.12, AY.16, AY.20, and AY.26.
- Compared to July 2021, there were findings below in August 2021:
  (i) two new Delta lineages were introduced: AY.5 and AY.26.
  (ii) four Delta lineages had disappeared: AY.10, AY.19, AY.21 and AY.25.
  (iii) the original Delta B.1.617.2-like variant dropped down from 77% to 50%.
  (iv) Delta-AY.4 increased from 4% to 33%.
  (v) Delta-AY.12 dropped down from 13% to 0.6%.
- No variant unique to Bangladesh has been detected.

## 1. Variants under surveillance worldwide

SARS-CoV-2, the virus that causes COVID-19, has many variants of particular importance due to their potential for increased transmissibility, increased virulence, or reduced effectiveness of vaccines against them. Early in the pandemic, there were few 'mutant' variant viruses because of the small number of people infected. As time went on, SARS-CoV-2 started evolving to become more transmissible. Notably, the Alpha, Beta, Gamma and the Delta variants are more transmissible than the original virus identified around Wuhan in China. Viruses generally acquire mutations over time, giving rise to new variants. When a new variant appears to be growing in a population, it can be labelled as an "emerging variant". A brief description of emerging variant circulating recently in Bangladesh is given below.

The Delta variant also known as B.1.617.2, is now the most common variant worldwide. It was first discovered in India in October 2020 and has since spread internationally. In June 2021, reports began to appear of a variant of Delta with the K417N mutation. It has been nicknamed "Delta plus" from "Delta plus K417N". The name of the mutation, K417N, refers to an exchange whereby lysine (K) is replaced by asparagine (N) at position 417.

## 2. Variant circulation in Bangladesh: August 2021

The consortium has sequenced 181 samples collected between 1 to 31 August 2021. These samples were collected from all 8 divisions of Bangladesh. Table 1 shows the total number of variants sequenced by region. All 181 samples were Delta (100%).

**Table 1. Total number of confirmed cases by variant and region, August 2021**

| Division | Delta-like | Delta-AY.4 | Delta-AY.5 | Delta-AY.12 | Delta-AY.16 | Delta-AY.20 | Delta-AY.26 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| **Dhaka** | 33 | 15 | | | 4 | | 5 | **57** |
| **Chattogram** | 13 | 11 | | 1 | 1 | 1 | 5 | **32** |
| **Sylhet** | 1 | 4 | | | | | | **5** |
| **Rajshahi** | 22 | 8 | | | | | 1 | **31** |
| **Khulna** | 17 | 10 | 1 | | | 1 | 6 | **35** |
| **Barishal** | 4 | 4 | | | 1 | | 1 | **10** |
| **Rangpur** | 1 | 2 | | | | | 2 | **5** |
| **Mymensingh** | | 5 | | | | | 1 | **6** |
| **TOTAL** | **91** | **59** | **1** | **1** | **6** | **2** | **21** | **181** |

We have identified different lineages of Delta variants such as Delta B.1.617.2-like, Delta AY.4, AY.5, AY.12, AY.16, AY.20, and AY.26. Figure 1 shows the percentage of geographical distribution of different SARS-CoV-2 variants between 1 to 31 August 2021. Delta B.1.617.2-like lineage (50%) was the most predominant variant circulating across the country followed by Delta AY.4 (33%) and Delta AY.26 (12%).

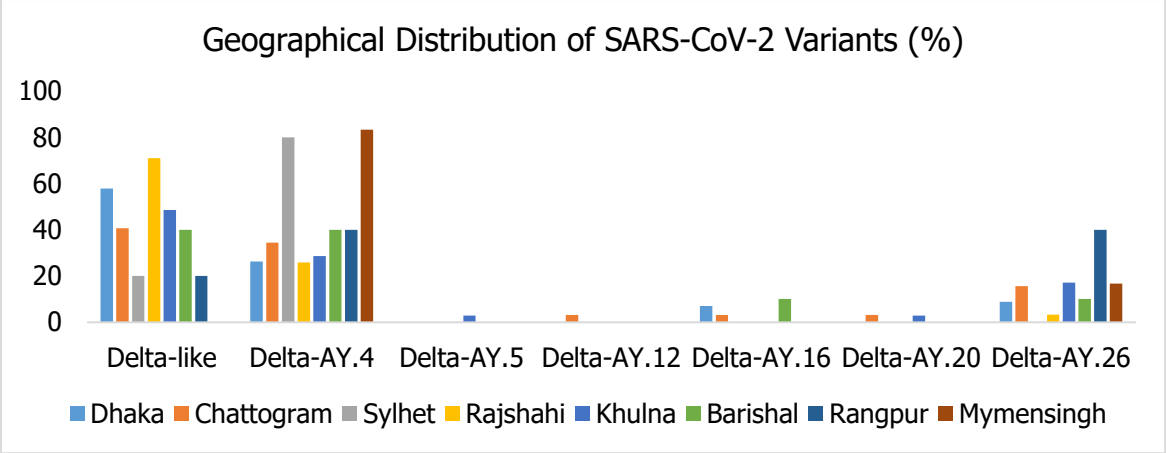


Figure 1. Geographical distribution percentage of SARS-CoV-2 variants in Bangladesh, August 2021

## 3. Metadata Analysis

Out of 181 COVID-19 specimens, we have analyzed 130 metadata available by specific variables e.g. age, sex, blood group, comorbidity, vaccination, hospitalization and death (Table 2). Out of 130, 52% patients were between 36-64 years and 28% between 18-35 years. Out of 98 patients, 97% reported of positive blood groups: notably 36% B+ and 34% O+. Out of 130 available, 42% patients were co-morbid, 46% vaccinated, 20% hospitalized and 8% deceased. No vaccinated patients had died of COVID-19. When compared metadata with sequencing data, no specific Delta lineage found to be responsible for hospitalization or death.

**Table 2. Total number of confirmed variants by specific variables (n=130)**

| Variables | Delta variants (%) |
|---|---|
| Age groups (years) | |
| =>65 | 16 (12%) |
| 36-64 | 67 (52%) |
| 18-35 | 37 (28%) |
| <18 | 10 (8%) |
| Male | 68 (52%) |
| Blood group (n=98) | |
| A+ | 19 (19%) |
| B+ | 35 (36%) |
| AB+ | 8 (8%) |
| O+ | 33 (34%) |
| B- | 1 (1%) |
| O- | 2 (2%) |
| Co-morbidity present | 55 (42%) |
| Vaccinated | 60 (46%) |
| Hospitalized | 26 (20%) |
| Vaccinated and hospitalized | 6 (5%) |
| Deaths | 11 (8%) |
| Comorbidity present and deceased | 8 (6%) |
| Vaccinated and deceased | 0 (0%) |
| Hospitalized and deceased | 9 (7%) |

## 4. NextStrain build of SARS-CoV-2 variant distribution in Bangladesh (1-31 August, 2021)

A phylogenetic tree of the 181 complete genomes of Bangladesh variants (collected between 1-31 August 2021) sequenced by the consortium was constructed using NextClade (clades.nextsrain.org). Phylogenetic analysis reveals that there have been multiple introductions of Delta variants across the country (Figure 2). Till 31 August 2021, no variant unique to Bangladesh has been detected.

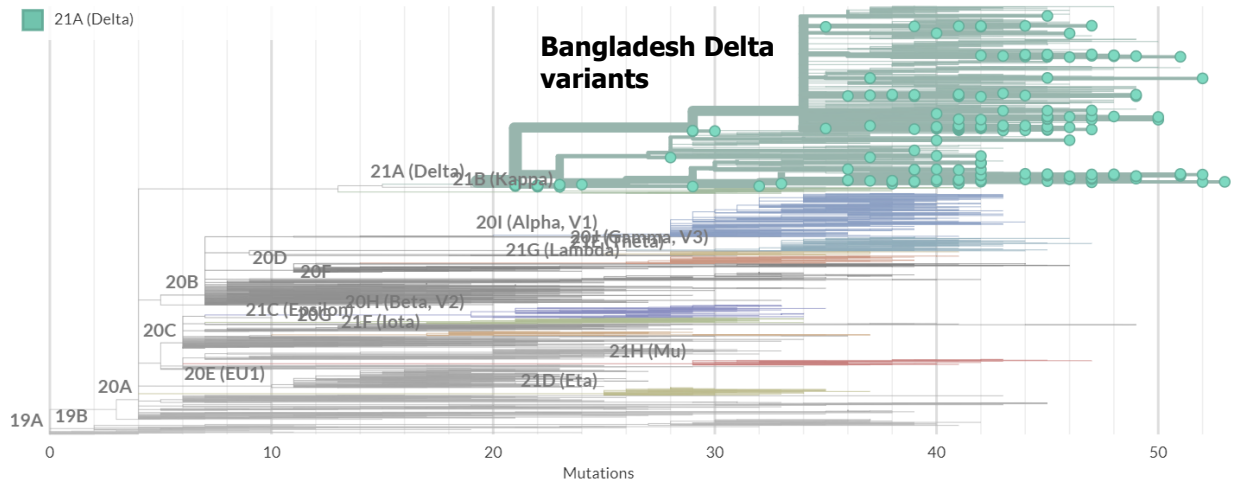


Figure 2. Phylogenetic tree of the 181 SARS-CoV-2 Bangladeshi variants (collected 1-31 August 2021) sequenced by the consortium.

## 5. Cumulative Variant circulation in Bangladesh: July-August 2021

The consortium has sequenced 360 samples collected between 1 July to 31 August 2021. These samples were collected from all 8 divisions of Bangladesh. Table 3 shows the total number of variants sequenced by region.

### Table 3. Total number of confirmed cases by variant and region

| | Beta | Delta-like | Delta-AY.4 | Delta-AY.5 | Delta-AY.10 | Delta-AY.12 | Delta-AY.16 | Delta-AY.19 | Delta-AY.20 | Delta-AY.21 | Delta-AY.25 | Delta-AY.26 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dhaka** | | 73 | 15 | | | 11 | 5 | | 1 | 2 | | 5 | **112** |
| **Chattogram** | | 39 | 11 | | 1 | 5 | 1 | | 2 | 1 | 1 | 5 | **66** |
| **Sylhet** | | 6 | 4 | | | 1 | | | | | | | **11** |
| **Rajshahi** | | 51 | 9 | | | 2 | | | | | | 1 | **63** |
| **Khulna** | | 36 | 16 | 1 | | 3 | | 1 | 1 | | | 6 | **64** |
| **Barishal** | | 11 | 4 | | | 0 | 1 | | | | | 1 | **17** |
| **Rangpur** | | 6 | 2 | | 1 | 1 | | | | | | 2 | **12** |
| **Mymensingh** | **1** | 7 | 5 | | | 1 | | | | | | 1 | **15** |
| **TOTAL** | **1** | **229** | **66** | **1** | **2** | **24** | **7** | **1** | **4** | **3** | **1** | **21** | **360** |

All SARS-CoV-2 strains were Delta variant except one Beta variant. We identified different lineages of Delta variants such as Delta B.1.617.2-like, Delta AY.4, AY.5, AY.12, AY.16, AY.20, and AY.26. Delta B.1.617.2-like lineage (64%) was the most predominant variant circulating across the country followed by Delta AY.4 (18%) and Delta AY.12 (7%) (Figure 3).

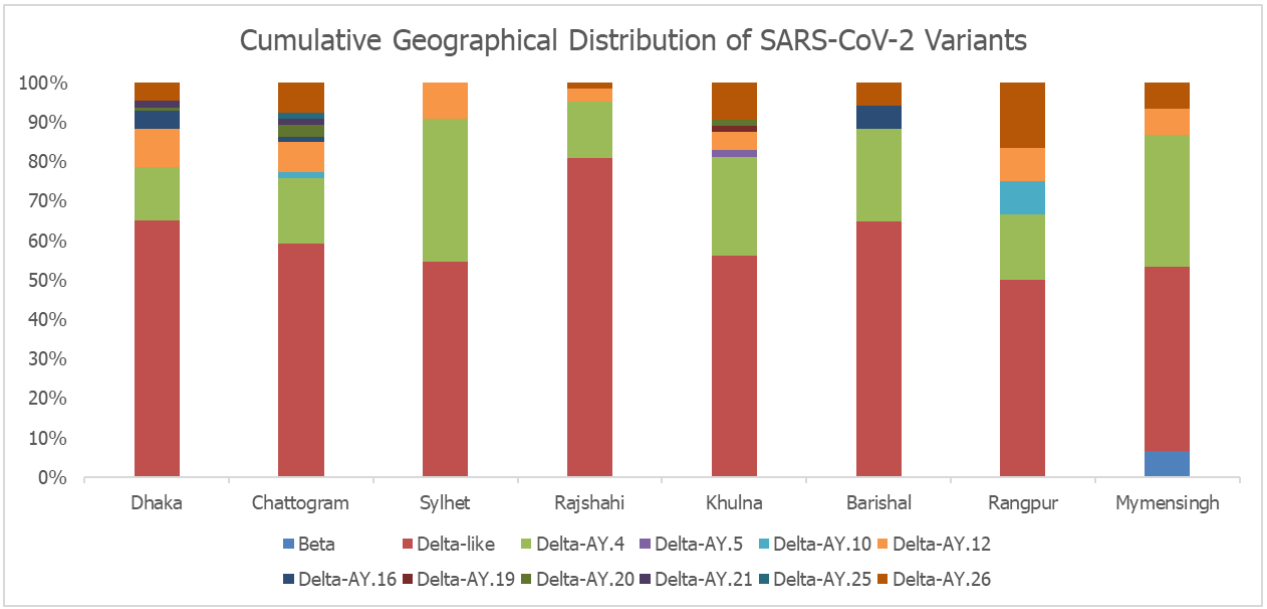


Figure 3. Geographical distribution percentage of SARS-CoV-2 variants in Bangladesh, August-September, 2021