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## Delays in the arrival of the waves of COVID-19: a comparison between Gabon and the African continent

2 years since COVID-19 was declared a pandemic by WHO, genomic surveillance of SARS-CoV-2 has become active in Africa, both in surveillance-leading countries such as South Africa and in other surveillance-developing countries. Sequence data from Africa identified the omicron (B.1.1.529) variant, which showed rapid expansion worldwide.<sup>1,2</sup> Despite the availability of free vaccination programmes, waves of the delta (B.1.617.2) and omicron variants were observed in most African countries. A great effort by the government has promoted whole-genome sequencing of SARS-CoV-2 in Gabon; as a result, in the early period of 2021, we identified imported cases of variants of concern in Gabon, demonstrating the importance of tracking travellers with COVID-19.<sup>3</sup> We have also conducted continuous genomic surveillance since the beginning of the COVID-19 pandemic, covering the first three waves of COVID-19 that occurred in Gabon. Our data clearly showed that Gabon experienced three major waves of COVID-19 before December 2021, similar to the entire African continent.

However, the peak of COVID-19 cases occurred approximately 1 or 2 months later in Gabon than the African continent, except for the first wave when the diagnostic strategies were largely unestablished, and the number of cases was expected to be underestimated. Although the main lineages of SARS-CoV-2 prevalent in each wave in Gabon were similar to those in the African continent, a large proportion of infections in the second wave in Gabon were occupied by B.1.1.318 (30.6%), which has mostly been detected in the USA and basin countries of the Gulf of Guinea, whereas it was minuscule in the corresponding wave in the African continent (0.34%). The main policies implemented by the government seemed to have few clear correlations with the delay in the infection waves.

There were approximately 1-month or 2-month delays in the infection peaks of COVID-19 in Gabon compared with the African continent, potentially providing a brief preparation period to develop countermeasures against an upcoming infection wave expected from the African continent. The spread of B.1.1.318 indicated frequent cross-border overland transfers between Gabon and countries surrounding the Gulf of Guinea, whereas no delays in the arrival of the waves of COVID-19 were observed in countries such as Nigeria and Ghana. There is an urgent need to clarify why the delay of the infection peak was generated, to seek more effective countermeasures to

block COVID-19, and for urgent studies on the development of novel vaccines and antiviral drugs.

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