

### COVID-19 emergence and transmission as a pandemic

SARS-CoV-2, the viral cause of the disease coronavirus disease 2019 (COVID-19), led to the most significant pandemic in over a hundred years. The COVID-19 pandemic began with reports of pneumonia-like symptoms of unknown cause, affecting individuals in the city of Wuhan, capital of Hubei Province in China. The disease was subsequently confirmed to have arisen from infection with a novel coronavirus, now named SARS-CoV-2. Following these first cases in December 2019, SARS-CoV-2 spread rapidly in the city of Wuhan and within weeks<sup>17</sup>, began to be reported outside of China.

In response to the virus's rapid transmission, the World Health Organization (WHO) declared a 'Public Health Emergency of International Concern' on 30 January 2020. By February 2020, COVID-19 cases were recorded across Europe, Asia and the United States, with numbers of hospitalisations and deaths rapidly increasing<sup>18, 19</sup>. Responding to the exponential increase in cases, the WHO declared a pandemic on 11 March 2020<sup>20</sup>.

SARS-CoV-2 was a virus novel to humans and no effective vaccinations or medicines were available to protect people from the severe effects of COVID-19 disease. Instead, governments were reliant on NPIs. The purpose of implementing NPIs was to prevent the virus spreading between people by cutting off routes of transmission from person to person. In some countries a strategy was implemented for the application of NPIs that aimed to eliminate domestic transmission of SARS-CoV-2, a 'zero COVID strategy'. These countries applied NPIs to minimise importation of cases by infected travellers, accompanied by stringent application of local, regional or national NPIs to eliminate domestic transmission. In other countries, NPIs were implemented with the aim of slowing, but not eliminating, the transmission of infection, thereby reducing the number of severe cases and preventing healthcare systems from becoming overwhelmed. By the end of March 2020, NPIs had been introduced around the world. The measures introduced remained in place in different combinations and to different extents across the world throughout 2020 and into 2021, representing the largest global disruption to day-to-day life since the Second World War.