Essential equipment: Intensive care beds

The pandemic placed enormous strain on intensive and critical care resources. It was more intense in some regions and periods than others, for example in Lombardy (Italy) during March/April 2020. The pandemic resulted in intensive care demands exceeding the ability of critical care facilities to serve their communities. If critical care is not accessible when required, morbidity and mortality increase. Increasing occupancy of intensive care has been associated with increasing mortality (Bravata et al., 2021[1]).

In 2019, there was a wide variation between countries in the number of intensive care unit (ICU) beds, with an eight-fold difference between the Czech Republic (43 adult beds per 100 000 population) and Sweden (5.1 adult beds) (Figure 8.7). There was also wide variation in the spare capacity of ICU beds. Occupancy was high in Ireland (90%) and substantially lower in Spain (57%).

The treatment of patients admitted for COVID-19 early in the pandemic involved a high rate of invasive ventilation and critical care. Those admitted with COVID-19 pneumonia and organ failure had a relatively long period in ICU, implying a very high demand for critical care and invasive ventilation capacity. Prior to widespread COVID-19 immunisation, the requirement for ICU beds during periods of acute infection (i.e. waves) typically doubled every two to three days and required four weeks to reach its peak.

In response, many countries increased critical care capacity. The use of temporary facilities, including surge capacity in intensive care delivery, was widespread. Many countries increased the intensity of treatment they could offer, with a greater number of ventilators. Improved use of digital technology led to greater co-ordination and a better use of critical care resources. However, capacity constraints in physical supplies and workforce hampered the initial response (OECD, forthcoming[2]).

Most countries reported an increase in adult ICU beds per capita (13 out of 15 EU countries) and for some there was a substantial increase in their maximum capacity. Sweden reported a maximum capacity during 2020 of 10.3 beds per 100 000, more than doubling the number available. Due to increased capacity and a decrease in other activity, there was a decrease in average occupancy of adult ICU beds in 2020 compared to 2019 in all reporting EU countries (Figure 8.8). Switzerland was the only country to report a slight increase.

Resilient health systems have the flexibility to increase critical care capacity quickly to match demand. While physical capacity is important, it is essential that trained staff and adequate supplies are also present.

Definition and comparability

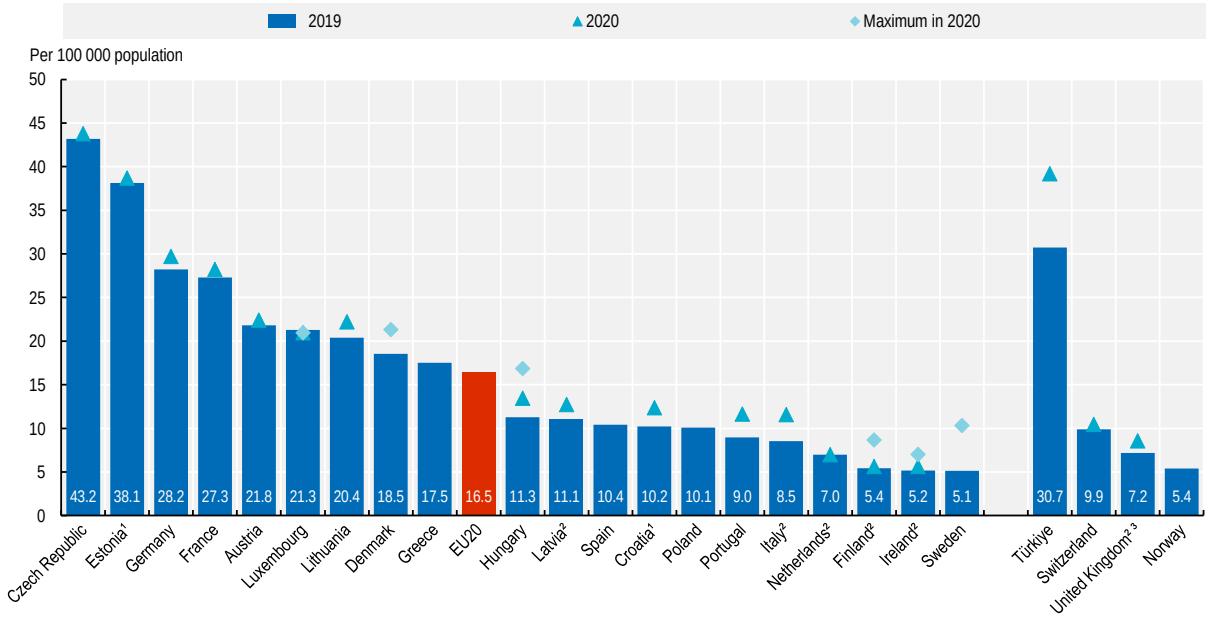
Data are sourced from OECD/Eurostat/WHO-Europe Joint Questionnaire on Non-Monetary Health Care Statistics. ICU beds are for critically-ill patients who need intensive and specialised care to sustain life during a period of acute organ system insufficiency. ICU beds are classified by the level of care provided to the patient. Commonly, this classification has three levels, with Level 3 providing the most intense care and Level 1 the lowest. The data on ICU beds cover these three levels, except in Finland, Ireland, Italy, Latvia, the Netherlands and the United Kingdom, which include only critical care beds (Levels 2 and 3). The exact definition of ICU beds varies between countries. The data for ICU beds for most countries relate to adult ICU beds, but a few countries (such as Croatia and Estonia) also include neonatal and paediatric ICU beds.

References

Bravata, D. et al. (2021), "Association of Intensive Care Unit Patient Load and Demand With Mortality Rates in US Department of Veterans Affairs Hospitals During the COVID-19 Pandemic", *JAMA Network Open*, Vol. 4/1, pp. e2034266-e2034266, https://doi.org/10.1001/JAMANETWORKOPEN.2020.34266. [1]

OECD (forthcoming), *Ready for the Next Crisis? Investing in Resilient Health Systems*, OECD Health Policy Studies, OECD Publishing, Paris. [2]

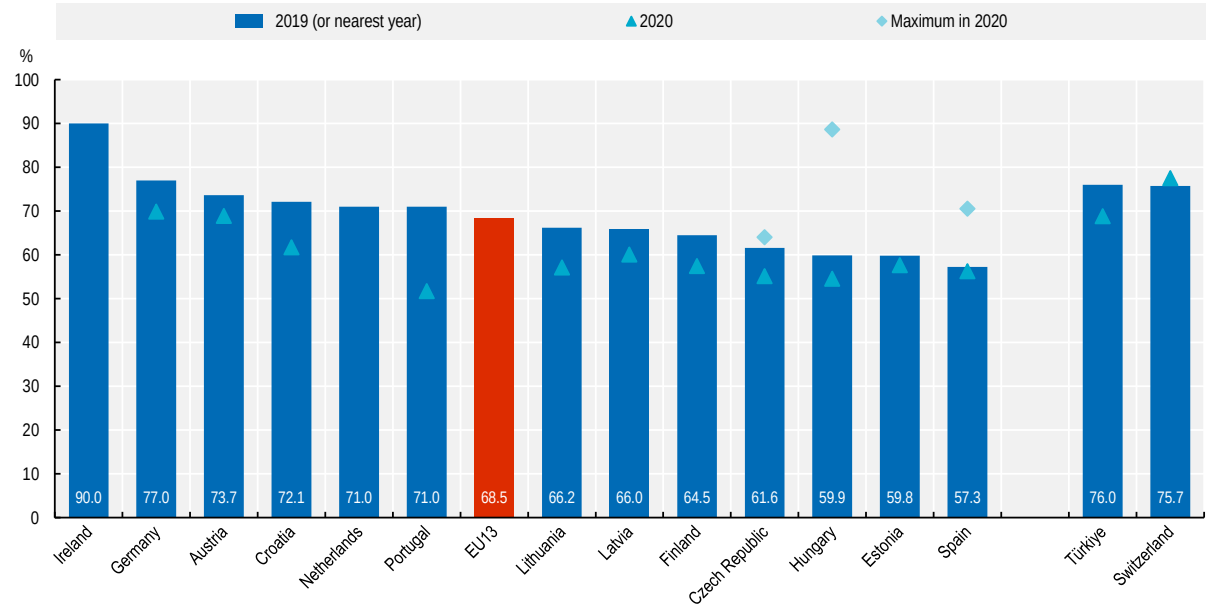
Figure 8.7. Adult intensive care beds, 2019 and 2020



Note: The EU average is unweighted. 1. Data include neonatal and paediatric ICU beds. 2. Data cover critical care beds only. 3. Data refer to England.
Source: OECD/Eurostat/WHO-Europe Joint Questionnaire on Non-Monetary Health Care Statistics. Data for Denmark, Norway, Poland, Sweden and the United Kingdom (England) come from additional data collections, also based on national sources.

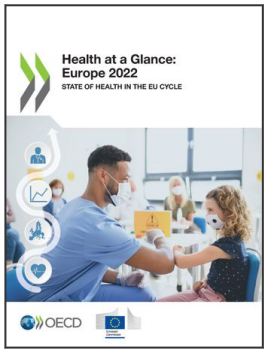
StatLink https://stat.link/07il69

Figure 8.8. Adult ICU occupancy rate, 2019 and 2020



Source: OECD/Eurostat/WHO-Europe Joint Questionnaire on Non-Monetary Health Care Statistics, based on national sources.

StatLink https://stat.link/q4p0tj



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