

## **Briefing prepared by the Analytical Collaboration for COVID-19: 5<sup>th</sup> May 2020**

### **Briefing Summary: Are some countries better at caring for their ICU patients than others?**

#### **Introduction**

The Analytical collaboration for COVID-19, a collaboration across five organisations: The Health Foundation; King's Fund; Nuffield Trust; and two specialist NHS analytical teams, Imperial College Health Partners, and the Strategy Unit. Have been supporting ad hoc immediate questions raised by national bodies in relation to the impact of COVID-19.

This is a summary of a briefing that was produced by a team at the Health Foundation on the 5th May 2020. The briefing was produced rapidly in an environment where data and evidence was continually changing and should be seen in that context. The briefing was intended to shed light on the issue in question but does not constitute advice.

#### **Summary**

Recent headlines have suggested that around 50% of COVID-19 patients admitted to NHS ICUs are dying. What should we conclude from this figure? Is this unavoidable mortality?

Understanding, and comparing countries performance here, is challenging. Different countries' populations will have different demographics, the population infected will vary (e.g. Italy many more old people may have been infected), and criteria for admitting to ICUs will vary – both potentially due to rationing, but also due to different clinical decision making.

If we exclude those patients who are still in the ICU, 51% of NHS ICU patients have died. This compares to 62% in one small site in Wuhan, 61% in Lombardy, and 78% in one major provider in New York City. An early (still in press) study from France suggests ICU mortality of between 30-40%.

It is too soon to conclude whether (a) these differences in mortality between countries are significant/ real or (b) if they are the result of differences in the quality of care or definitions or (c) whether the duration/stage of the epidemic is a factor (e.g. in the earlier stages, whether 'less sick' patients get access to IC).

We know that COVID-19 mortality is strongly affected by age and comorbidities. If a country admits a greater proportion of young patients, with few comorbidities to their ICU, their ICU mortality will be lower. The U.K.'s lower ICU mortality rate could, therefore, be explained by us admitting, on average, younger, healthier patients to our ICUs. We know that U.K. patients are, on average, a few years younger than those in Spain, Italy, and NYC.

Without a complete understanding of the demographics and morbidity of patients admitted to ICUs in different countries, we cannot unpick what variation might simply be due to the case mix – and what is the result of variations in the quality of care.

As more data emerges from the pandemic, researchers interested in this question should prioritise two things. Firstly, looking at variation within countries (particularly within the NHS) – to see whether factors such as level of staffing, or number of COVID-19 patients, are related to ICU mortality rate. Secondly, as more comparable countries such as France and Spain produce more complete data – unpick and understand, ideally using multivariate analysis, whether true variation between different countries exists.