

NHS Bed Demand for Covid-19: RWCS modelling

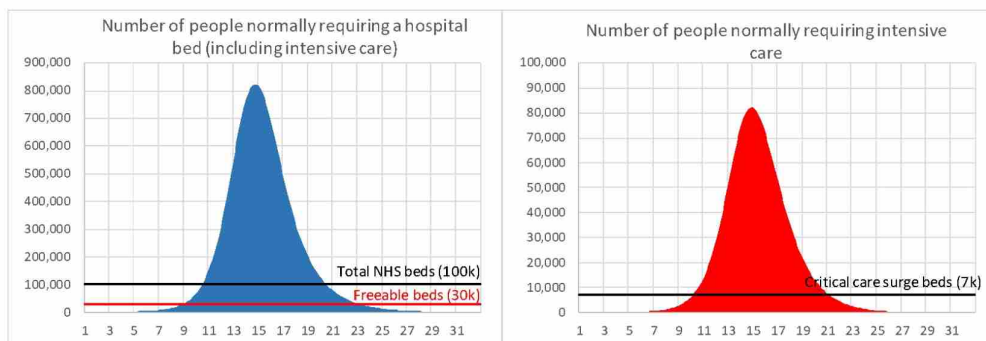
COBR brief

NHS have done complex multifactorial modelling of the impact of the 3 selected non-pharmaceutical interventions (NPIs) discussed at COBR on 9 March, based on the most recent SAGE assumptions for the RWCS. None of the results presented should be interpreted as a forecast of the impact of COVID-19; they are entirely a product of those assumptions and are preliminary. To demonstrate the potential spectrum of outcomes, NHSE/I modelled a 20% infection rate comparison (to the 81% in RWCS) as indicative of a low infection rate – this is NOT based on SAGE assumptions. This paper relates to *England*, not the UK.

In summary, NHS demand will greatly exceed supply before the peak of the virus is reached in a Reasonable Worst Case Scenario (RWCS), meaning the NHS will be unable to meet the demands placed on it. Demand will also exceed supply in a scenario were 20% of the population are infected. Non-pharmaceutical interventions reduce this deficit.

The NHS has c. 100,000 beds, of which c.30,000 could be occupied by COVID-19 cases; the remaining beds will continue to hold usual emergency care cases (like stroke, hip fracture or heart attack patients). Patients unable to access this would only receive supported care or end of life care at home; the vast majority without supplementary oxygen. Similarly, the intensive care surge capacity to provide mechanical ventilation for patients in c. 7,000 beds. Simple oxygen provision on wards would be the default in the absence of mechanical ventilation. **With no mitigations, NHS England will have a deficit of c. 780,000 beds at the peak of the epidemic, including a deficit of c. 75,000 intensive care beds, increasing excess mortality over and above the direct disease effects.**

Non-pharmaceutical interventions reduce this deficit. If symptomatic cases home isolate, the NHS bed deficit reduces by c. 240,000 at peak and intensive care beds by c. 25,000. If household isolation is introduced (in addition to home isolation for symptomatic cases) this peak deficit will reduce by another c. 170,000 beds including c. 16,000 intensive care beds. **Combining social distancing for the over 65s, home isolation and household isolation leads to the most dramatic reduction in the deficit of NHS beds at the peak of the epidemic, by a total reduction in deficit of c. 540,000 beds including c. 56,000 intensive care beds, ie a peak deficit of c. 240,000 beds including 19,000 intensive care beds.**



(Figure 1 - RWC 81% infected with no mitigation
Number of people requiring an NHS hospital beds each day over time with COVID-19 disease)