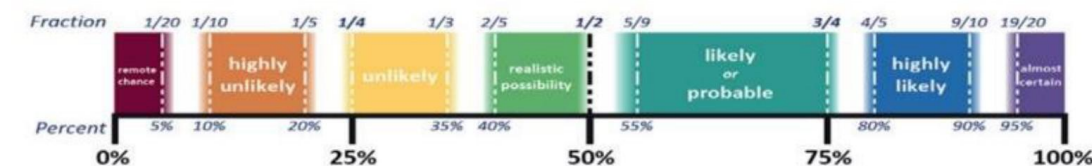


The Joint Biosecurity Centre concludes that a COVID-19 epidemic is in general circulation; transmission is rising exponentially, and it is highly likely that across much of the UK, the NHS will exceed its assumed COVID-19 contingency capacity in the next 21 days.

This report provides routine advice to UK Chief Medical Officers on the COVID-19 Alert Level.

- **COVID-19 cases are rising across the UK**, with confirmed case rates growing exponentially in London, the East of England and South East.
- **The epidemic is growing across the UK with the number of COVID-19 patients in hospital nearing or exceeding Spring Peak levels in all nations/regions.**
- **The number of COVID-19 patients in hospital has increased in England, Wales and Scotland and is plateauing at very high levels in Northern Ireland.**
- **SPI-M-O (22 Dec) consider it is highly unlikely that measures with stringency in line with November's England measures (i.e. with schools open) and adherence would be sufficient to maintain R below 1 in the presence of the new variant VUI-202012/01.**
- **The resulting pressure on NHS capacity and staff, as a result of increased numbers of patients in hospital, is highly likely to compromise quality and safety of care, leading to higher mortality and excess deaths.**



Current Alert Level (Alert Level 4): A COVID-19 epidemic is in general circulation; transmission is high or rising exponentially

Alert Level 5 Indicators

Indicator 4 – Will the NHS exceed its assumed COVID-19 contingency capacity in the next 21 days?	Highly Likely
Beyond the next 21 days?	Highly Likely
Indicator 1a – Are there more than 10,000 estimated new infections per day?	Yes (Slide 3)
Indicator 1b – Is the weekly case rate greater than 50 per 100,000 population?	Yes (Slide 3)
Indicator 2a – Is 'R' greater than 1?	Yes (Slide 3)
Indicator 2b – Is the doubling time of confirmed new infections less than seven days?	Yes, in some regions (Slide 3)

Alert Level 5 Definition

COVID-19 Alert Level 5: A COVID-19 epidemic is in general circulation; transmission is high or rising exponentially and there is material risk of healthcare services being overwhelmed

CONFIDENCE STATEMENT - We have medium confidence in our assessment of the next 21 days due to challenges in assessing the national net impact of long-term pressures that have built up in the NHS, the availability of suitable metrics with which to measure and compare NHS capacity, difficulties unpicking regional variations in the second wave and the impact of NPIs on the novel variant of SARS-CoV-2.

MEDIUM

This information is supplied in confidence and must not be disclosed other than to the agreed readership, unless that is with the prior consent of the JBC. This information and the data it contains must be kept securely and appropriate measures must be taken to prevent the unlawful or unauthorised processing of the data it contains. The relevant information management standards must be applied to the storage of and access to this information. This information shall not be shared outside the UK other than with the prior consent of the JBC.

INQ000276563_0001

Will the NHS exceed its assumed COVID-19 contingency capacity in the next 21 days? **Highly Likely**

Continued high numbers of COVID-19 patients in hospital are a substantial concern as admissions rise across the UK

The number of COVID-19 patients in hospital has increased in England, Wales and Scotland and is plateauing at very high levels in Northern Ireland. With occupancy tracking admissions in England and Northern Ireland, hospitals are experiencing little respite between waves (Figure 1).

The UK as a whole is at 77% of Spring Peak patients, a very high baseline to be moving into (more limited) relaxations for some on Christmas day.

All LTLAs in England are in a prolonged and ongoing epidemic phase with no sign of recovery. Three out of seven English NHS regions continue to exceed their COVID-19 occupancy during the Spring Peak. Patient numbers in hospital have grown in every English region. Numbers have increased by more than 30% in a week in the East of England, South East and London.

The number of COVID-19 patients in hospital in London has increased by almost a half in 7 days. In addition, London is the medical hub for surrounding areas and a surge in London will impede capacity to provide mutual aid to surrounding areas.

Wales is now exceeding Spring Peak occupancy by 72%, increasing by 14% on the previous week and experiencing sustained high admissions of the 80+ age group.

In Northern Ireland numbers are plateauing, however hospitals continue to exceed Spring Peak levels by 27% and remain under sustained pressure.

In Scotland, hospital bed demand is increasing. In addition, proportions testing positive with three or more risk groups is plateauing at 13%. This is likely to increase demand in the next 21 days.

UK COVID-19 Patients in Hospital Compared to Last Week's Data and Spring Peak

Patients in hospital			Spring Peak	
Geographic Area	Actual beds	Weekly Change (%)	Actual beds	Current level as %
Nations	UK (18 Dec)	+13%	21,683	77%
	England (21 Dec)	+18%	18,974	93%
	Northern Ireland (20 Dec)	-15%	352	Exceeded (127%)
	Scotland (21 Dec)	+7%	1,520	71%
	Wales (18 Dec)	+14%	919	Exceeded (172%)
NHS England Regions	North East & Yorkshire	+2%	2,661	95%
	North West	+3%	3,065	78%
	Midlands	+7%	3,430	96%
	South West	+11%	1,080	Exceeded (103%)
	East of England	+44%	1,679	Exceeded (129%)
	South East	+30%	2,347	Exceeded (117%)
	London	+45%	5,201	65%

Table 1: COVID-19 Hospital occupancy for each of the four U.K nations and English regions. Data source: Gov.uk dashboard

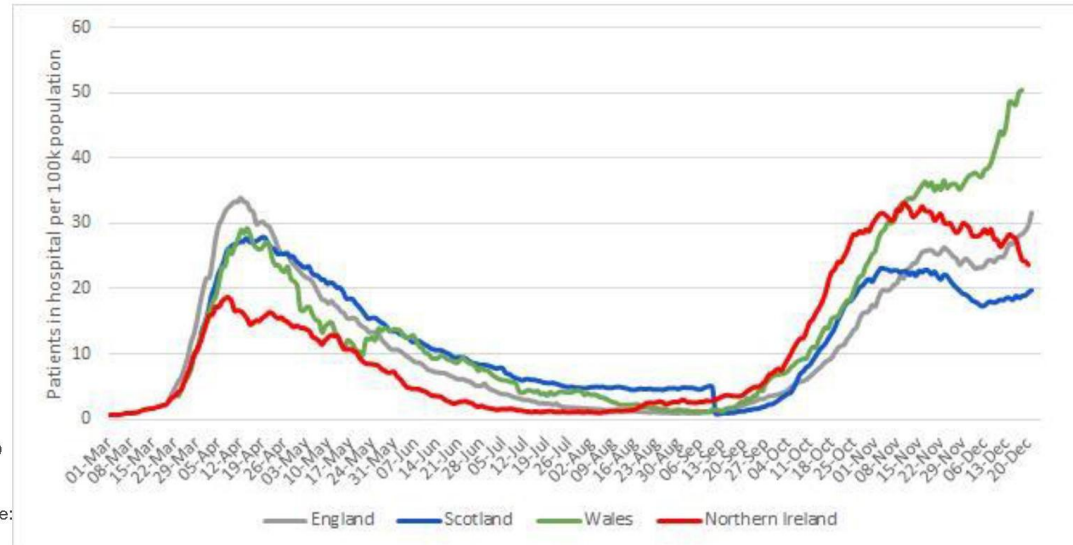


Figure 1: COVID-19 Patients in Hospital per 100k of four nations. Data source: Gov.uk/dashboard

What are the trends in the data and what can we say beyond 21 days?

Healthcare services in Wales, Northern Ireland and England are almost certain to face severe operational pressure in January.

Estimates of R	
Nation	R value
U.K.	1.1 – 1.3
England	1.1 – 1.4
Northern Ireland	1.1 – 1.3
Scotland	0.9 – 1.1
Wales	1.0 – 1.3

Table 2: R numbers. Data source: SPI-M consensus and devolved administration communication. 22 Dec

Weekly Case Rate Per 100,000 by Nation			
Nation	Current	Previous	Change
UK (13 Dec)	227	162.5	+40%
England (15 Dec)	262.2	166.9	+57%
Northern Ireland (13 Dec)	174.9	161.5	+8%
Scotland (15 Dec)	115	104.3	+10%
Wales (15 Dec)	625.1	427.9	+46%

Table 3: Weekly case rates per 100k. Data source: gov.uk dashboard.

The epidemic is growing across the UK with the baseline of patients in hospital already high. (Table 2). Changes to Christmas relaxations are likely to have reduced the number of hospitalisations and deaths. However, as some level of mixing and travel is due to take place, it is highly likely incidence will increase in many parts of the UK. The degree of increase, and ages of potential infection, and subsequent net impact for hospitalisations and deaths is highly uncertain.

SARS-CoV-2 variant VUI-202012/011¹ is under investigation, the growth rate of the novel variant is almost certain to be significantly higher than other variants currently circulating in the UK. The novel variant has been detected across the UK, with most cases currently being concentrated in London, the South East and East of England.²

It is highly unlikely that measures with stringency in line with November's England measures (i.e. with schools open) and adherence would be sufficient to maintain R below 1 in the presence of the new variant.³

In England, confirmed case rates are growing exponentially in London, the East of England and the South East. In these regions confirmed cases are approximately doubling within 7 days. In addition, hospital occupancy in London and East of England has surpassed North West and North East & Yorkshire for the first time in the second wave. NHS trusts in the Midlands continue to face sustained pressure. Even with advances in care for patients with Covid-19 these patterns will cause extreme pressure on NHS system for the foreseeable future.

Healthcare services in Wales are almost certain to face continuing high operational pressure into 2021 due to the current increasing case rate and already very high occupancy levels. Cases continue to increase across all ages, including in the 60 to 80+ age group that are highly likely to feed into hospital admissions. The effect of Welsh level 4 restrictions (19 Dec) are too early to assess.

Healthcare services in Northern Ireland are seeing a plateauing of admissions in the last 7 days. However, the epidemic is growing with case rates rising and hospital occupancy plateauing at very high levels.

Scotland has seen a rise in cases in recent weeks. Recent Scottish Government modelling suggests a new peak, surging above the October peak, is possible. However, there is a wide range of uncertainty in terms of people's behaviour and the effect of Mainland level 4 restrictions introduced from Boxing Day.

ICUs at Capacity

Critical Care across the UK is experiencing sustained pressure on staff and capacity, it is almost certain this will be continue into January.

At the current levels of patient load, ICUs are operating at a capacity at or substantially above their formally commissioned capacity. This is almost certain to continue as cases and hospitalisations surge.

Patient safety is now highly likely to be at risk. Previous studies have shown high levels of psychological injury amongst healthcare staff correlate with patient load. These levels are known to cause functional impairment of the workforce and to impact patient safety.⁴

In Northern Ireland, ICU occupancy has decreased from 84% to 79% over the last week (Figure 2). Northern Ireland has a funded capacity of 70 critical care beds, with limited scope to surge with an increase in admissions to hospital.⁵

In Wales, 89% ICUs are at capacity for staffed beds (Figure 3), a 5% reduction on last week. However, overall there are more patients in ICUs than last week but capacity has been increased.

In England, the picture has worsened. The share of ICUs in CRITCON 1 and above increased in London, South East, South West and East of England compared to last week (Figure 4). In all regions, apart from the South West, some ICUs are exceeding usual capacity and have begun mutual aid (CRITCON 2). In London, the number of ICUs in CRITCON 3 has doubled, and 2% of ICUs in the South East are also at CRITCON 3, operating at or above the absolute limits of their operational capacity.

Scotland is currently experiencing an uptick in ICU bed demand after a period of sustained decline (Figure 5).

CRITCON Levels 22 Dec vs 16 Dec

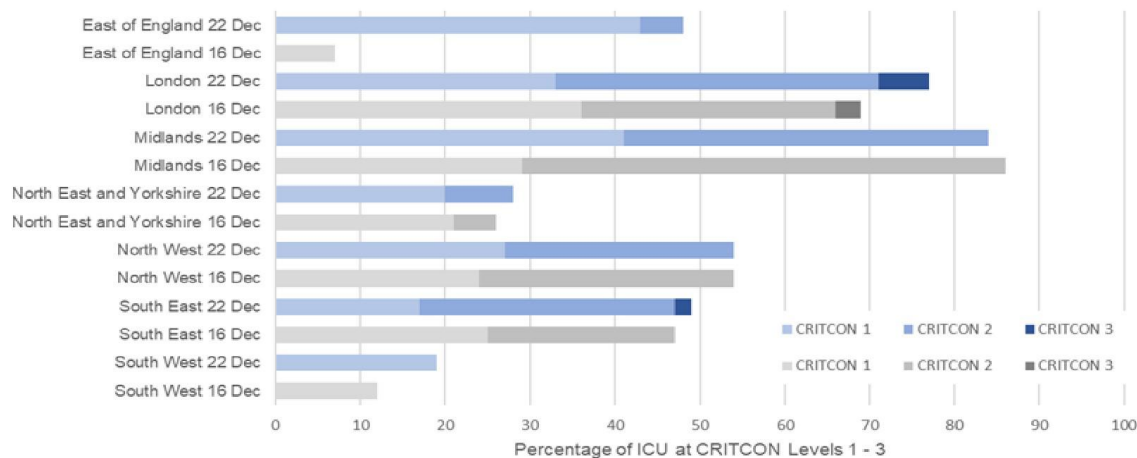


Figure 4: CRITCON scores by English region 22 Dec 20. Data source: NHSIE

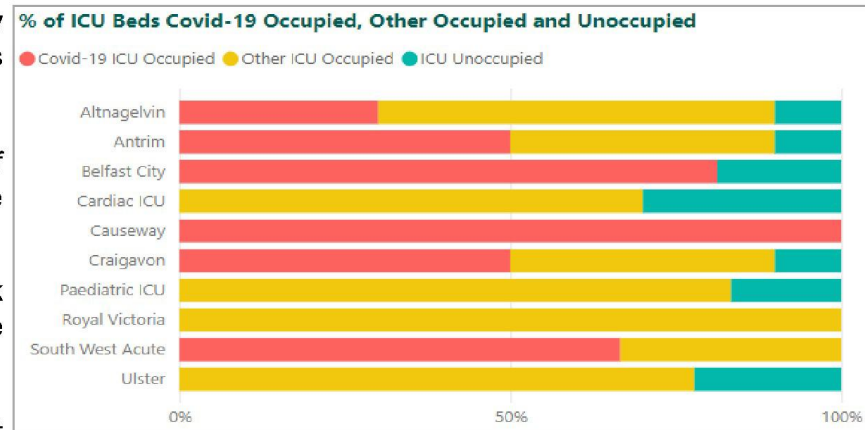


Figure 2: NI % of ICU beds occupied & unoccupied by unit 21 Dec. Data source: NI dashboard

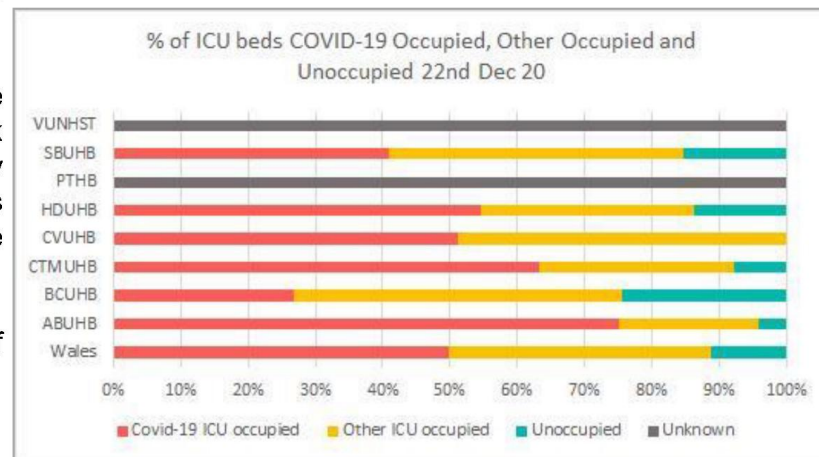


Figure 3: Wales % of ICU beds occupied & unoccupied by Health Board. Data source: Welsh Dashboard

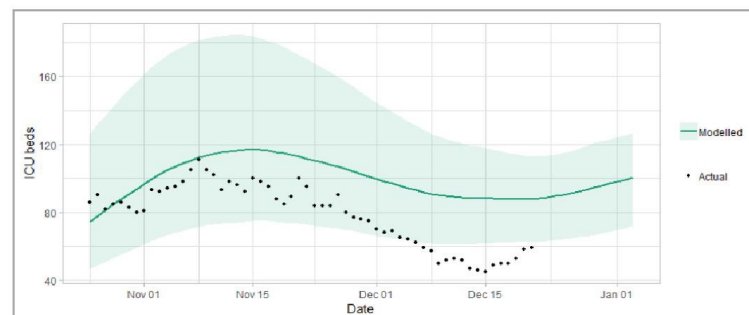


Figure 5: Scotland short term forecast of modelled ICU bed demand. Data source: Scottish Govt.

Referencing Annex & Glossary of Terms

Reference	Data source
Figure 1	Gov.uk/dashboard (date accessed 21 Dec 20)
Figure 2	Northern Ireland Govt. dashboard, 21 Dec
Figure 3	Welsh Govt dashboard, 22 Dec
Figure 4	NHSIE, 22 Dec
Figure 5	Coronavirus (COVID-19): modelling the epidemic in Scotland (Issue No. 32) p.10
Table1	Gov.uk/dashboard (date accessed 21 Dec 20)
Table 2	SPI-M-O: Consensus Statement on COVID-19, Devolved administration communication (22 nd Dec 20)
Table 3	Gov.uk/dashboard (date accessed 21 Dec 20)
Footnote 1 (slide 3)	NERVTAG, 18 Dec
Footnote 2 (slide 3)	SPI-M-O: Consensus Statement on COVID-19, Devolved administration communication (22 nd Dec 20)
Footnote 3 (slide 3)	SPI-M-O: Consensus Statement on COVID-19, Devolved administration communication (22 nd Dec 20)
Footnote 4 (slide 4)	Rona et al, The impact of posttraumatic stress disorder on impairment in the UK military at the time of the Iraq war. J Psychiatr Res. 2008 Oct 22.
Footnote 5 (slide 4)	Email Briefing, Gearoid Cassidy, 18 December 20
Staffed Bed Capacity	Refers to beds that are fully staffed, funded and available for use by patients. (https://www.kingsfund.org.uk/publications/nhs-hospital-bed-numbers)
Psychological Injury	Psychological injuries are stress-related emotional conditions resulting from real or imagined threats or injuries. Such disorders include post-traumatic stress disorder (PTSD), acute stress disorder (ASD), major depressive episode (MDE), substance abuse disorders, and a myriad of other less-defined anxiety and depressive reactions. It is a concept that involves harm, though harm of a primarily nonphysical nature (acknowledging that many psychological conditions have biophysical correlates). The concept also involves not only harm, but enough harm to mean that it needs to be considered by legal mechanisms. (Koch, W.J., Douglas, K.S., Nicholls, T.L. and O'Neill, M.L., 2005. Psychological injuries: Forensic assessment, treatment, and law. Oxford University Press.)
CRITCON	Level
	Definition
	0 Normal, able to meet all critical care needs, without impact on their services
	1 Usual funded critical care capacity full. Some non-clinical transfers.
	2 Usual funded critical care capacity full . Trusts beginning mutual aid.
	3 Trust operating at or near maximum physical capacity.
	4 Resources overwhelmed.