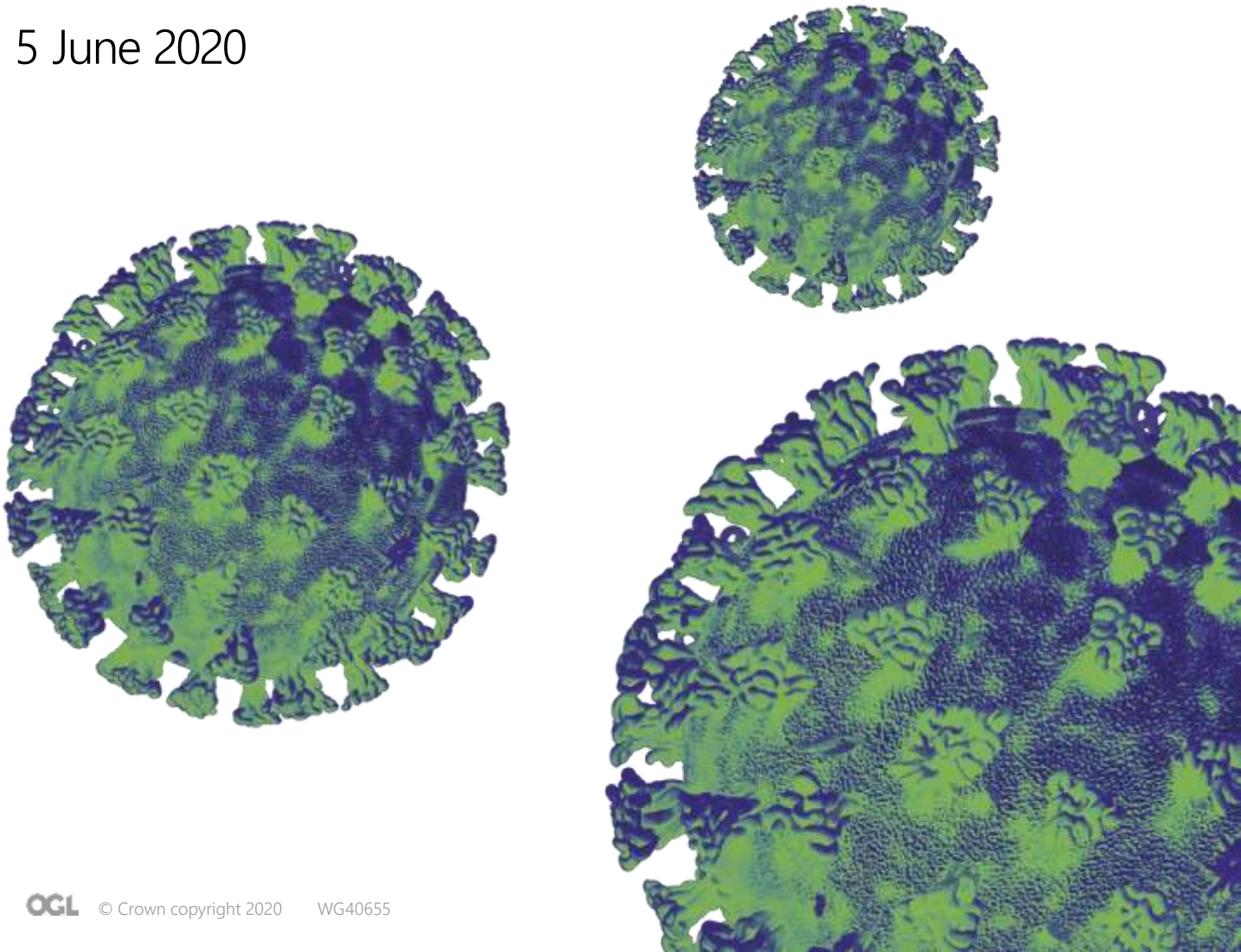
Llywodraeth Cymru
Welsh Government

Technical Advisory Cell
Summary of Advice

5 June 2020



 WG40655

Technical Advisory Cell: Summary of Advice

05 June 2020

Top-line Summary

- There is an increased risk from COVID-19 to BAME groups, which should be urgently investigated through social science research and biomedical research, and consideration should be given to how this can be managed and reduced when developing policy.
- TAG continue to advise at least 2m separation where possible, given the significant reduction in risk compared to shorter distance.
- There is high confidence that most people have an antibody response after SARS-CoV-2 infection, but further investigation is needed to understand the how much protection and how long it may last, and whether it prevents getting and passing on the virus again in future.

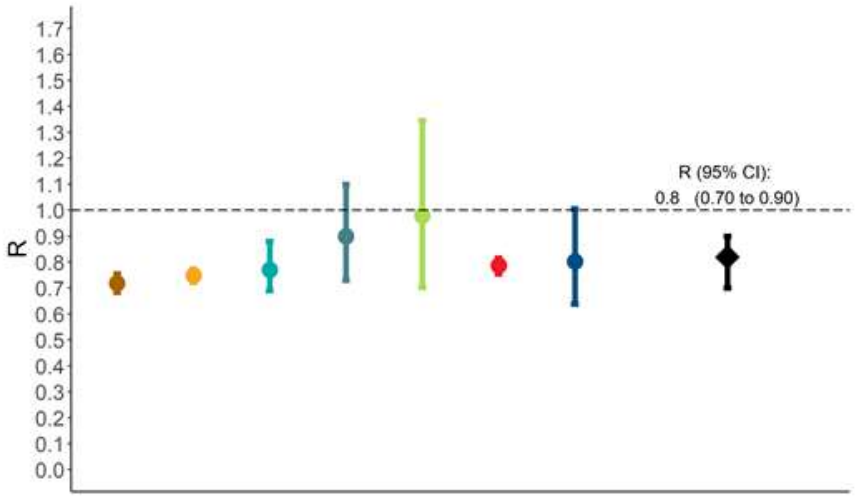
Reproduction Number

- The most recent estimate of the Reproduction number R_t from SPI-M is between 0.7 and 0.9, with a central estimate of 0.8.
- There is no evidence of R_t being significantly different in the different nations of the UK. There is, however, greater uncertainty in the estimates for Scotland, Wales, and Northern Ireland due to the smaller numbers of cases and deaths.
- There are signs that some regions of England may have an R_t value above one.
- CO-CIN data suggest it is highly likely that a significant proportion of total transmission is derived from hospitals or care homes. Infection within hospitals is responsible for an increasing proportion of total number of cases and may account for why R remains close to 1 in the UK.

Current Estimate of R_t

- Latest estimates of R_t for Wales are shown in Figures below. Results are anonymised to avoid giving precedence to one particular model over another. Results using the combined model using equal weights are also shown in black along with 95% confidence intervals.

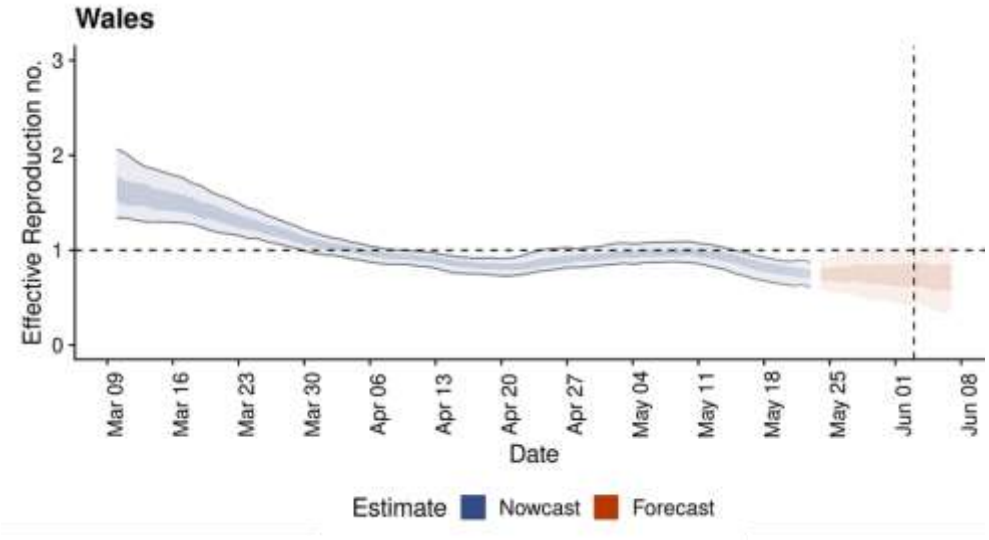
Figure 1. Current estimates of R_t in Wales –with 95% confidence intervals, along with the combined model based on equal weights



Source: SAGE

Figure 2 below shows the time-varying estimate of the effective reproduction number (light ribbon = 90% credible interval; dark ribbon = the 50% credible interval) in all regions. Estimates from existing data are shown up to the 24th May 2020 from when forecasts are shown. These should be considered indicative only. Confidence in the estimated values is indicated by translucency with increased translucency corresponding to reduced confidence. The horizontal dotted line indicates the target value of 1 for the effective reproduction no. required for control. The vertical dashed line indicates the date of report generation.

Figure 2. Reproduction numbers over time in Wales



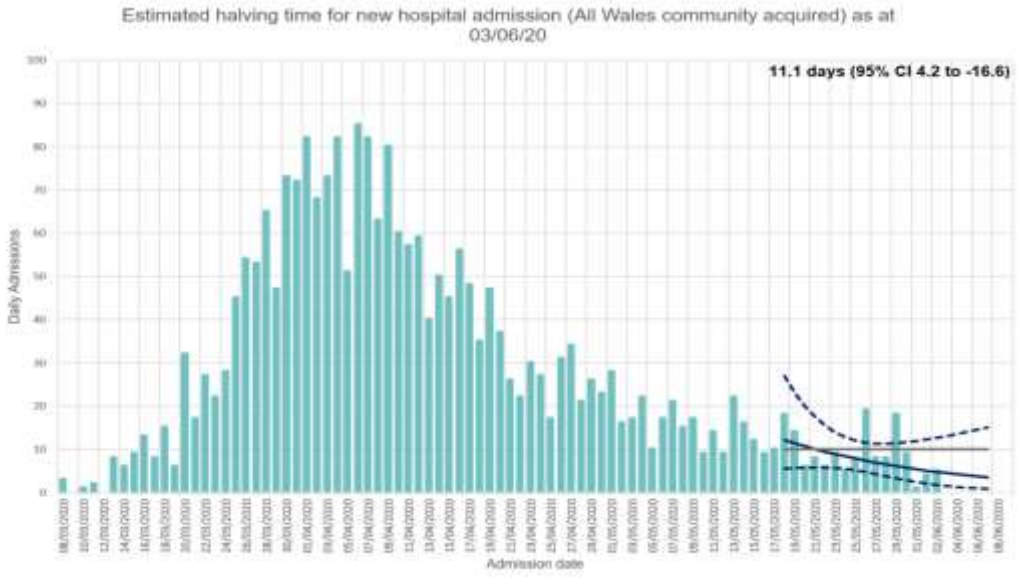
Source and further information: National and Subnational estimates for the United Kingdom
https://epiforecasts.io/covid/posts/national/united-kingdom/

Halving time

- The number of new hospitalisations for COVID-19 in Wales has passed the first peak and is estimated to be falling. So, instead of talking about 'doubling times', we now talking about 'halving times' – the time it takes for the number of cases to halve.
- From 22 March to 10th April, the estimated doubling times increased from 7.6 to 92.1 days. This was based on community-acquired hospital admissions (it excluded possible hospital-acquired cases).
- Halving time estimates as at 3rd June (based on admissions from 18th May to 31st May) suggest the time taken for the number of new cases to halve is approximately 11.1 days. This indicates that the number of hospital admissions is decreasing, however the rate at which it is decreasing has slowed since the previous publication, where the halving time was 9.2 days.

Figure 3: Estimated halving time for new hospital admissions for community acquired COVID-19[1]

About 11.1 days: Good



[1] Community acquired cases are assumed to be those where the time between admission and COVID-19 sample date is less than four days. This subset of data has been used for the purposes of estimating changes in transmission in the community and the number of new COVID-19 diagnoses in patients in hospital will be higher than presented in this chart.

Doubling/halving time estimates are sensitive to the time period chosen. For the purpose of this analysis 14 days' worth of data has been used. Halving time estimates as at 03/06/2020 and are based on admissions from 18/05/2020 to 31/05/2020. The 95% confidence intervals are indicated by dashed lines on Figure 3, the doubling/halving transition point is indicated by the grey line. These data exclude patients where the hospital admission date is more than 14 days after the specimen date. These are assumed to be non-COVID-19 related admissions because it is likely that most people will either recover from COVID-19 or deteriorate and require hospital before 14 days. After 14 days the COVID-19 test result is likely to be incidental to the subsequent hospital admission.

Source: All Wales Hospital Case Management System, Public Health Wales – as at 03/06/2020

Disparities in risk from COVID-19

- A number of recent papers have highlighted the disparities in risk and outcomes of COVID-19.

1. PHE Review of disparities in risk and outcomes

- Public Health England has published a review of Disparities in the risk and outcomes of COVID-19[2], based on surveillance data available to PHE at the time of its publication and linkage to broader health data sets.
- It confirms that the impact of COVID-19 has replicated existing health inequalities and, in some cases, has increased them.
- The largest disparity found was by age. Among people already diagnosed with COVID-19, people who were 80 or older were seventy times more likely to die than those under 40. Risk of dying among those diagnosed with COVID-19 was also higher in males than females; higher in those living in the more deprived areas than those living in the least deprived; and higher in those in Black, Asian and Minority Ethnic (BAME) groups than in White ethnic groups.
- These inequalities largely replicate existing inequalities in mortality rates in previous years, except for BAME groups, as mortality was previously higher in White ethnic groups.
- These analyses take into account age, sex, deprivation, region and ethnicity, but they do not take into account the existence of comorbidities, which are strongly associated with the risk of death from COVID-19 and are likely to explain some of the differences.

2. COVID-19 & Ethnicity

- SAGE members discussed evidence and emerging consensus from a series of papers related to COVID-19 and ethnicity[3]. It was noted that there was a high level of consistency between the papers.
- Evidence suggests a significantly higher likelihood of being tested, testing positive (i.e. increased chance of catching COVID-19), admission to critical care, and death for ethnic minorities, particularly Black and South Asian groups (high confidence).
- A significant part of the increased risk of contracting COVID-19 is likely to be due to wider factors including socioeconomic deprivation, involvement in high

[2] https://www.gov.uk/government/publications/covid-19-review-of-disparities-in-risks-and-outcomes

[3] Papers considered: CO-CIN - Ethnicity and outcomes from COVID-19: the ISARIC CCP-UK prospective observational cohort study of hospitalised patients (submitted, Lancet); ONS - 'Coronavirus (COVID-19) related deaths by ethnic group, England and Wales: 2 March 2020 to 10 April 2020'; PHE – COVID-19 Review of Disparities in Risks and Outcomes; Niedzwiedz et al. - Ethnic and socioeconomic differences in SARS-CoV-2 infection: prospective cohort study using UK Biobank; Willamson et al. - OpenSAFELY: factors associated with COVID-19-related hospital death in the linked electronic health records of 17 million adult NHS patients.; Alaa et al. – Ethnicity and Outcomes of COVID-19 Patients in England

contact/risk occupations, geography, household size and comorbidities (high confidence).

- BAME patients tended to be younger and have more diabetes (type 1 and 2).
- For hospitalised patients, even with similar disease severity and duration of symptoms on admission, and after adjustment for deprivation and comorbidities, there is an increased risk of critical care admission for South Asian, Black and Other Ethnic Minority groups. The South Asian group has higher mortality which is partly mediated by pre-existing diabetes (medium confidence). This in-hospital effect is not explained by socioeconomic factors and may be due to biological factors including increased cardiovascular disease risk.
- All-cause mortality is also elevated in BAME group.
- Consideration of any protective measures should take into account (i) likelihood of catching the disease is mostly due to the wider socioeconomic and occupational factors (ii) elevated hospital morbidity and mortality is more likely to represent a biological increased risk.

3. <u>Inclusion health settings and populations</u>

- There are a wide range of institutional settings that accommodate socially and clinically vulnerable populations including prisons, homeless shelters and migrant worker accommodation in which large scale outbreaks have been reported.

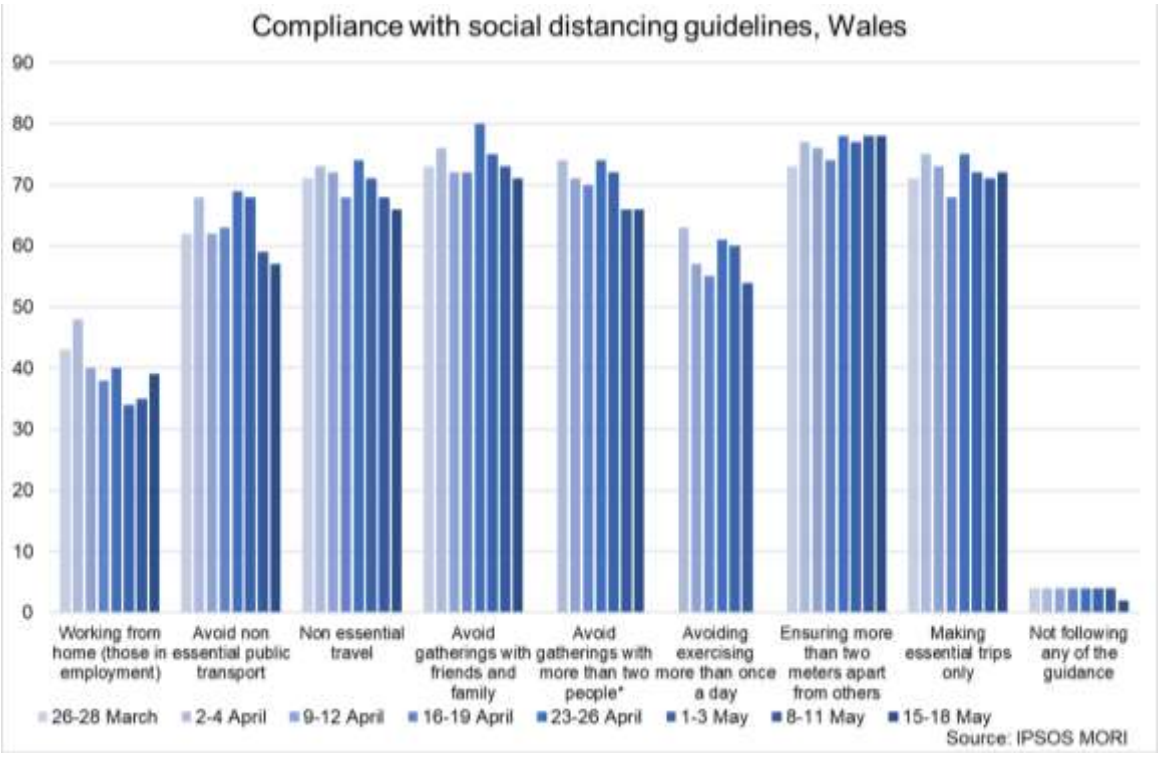
  Internationally, COVID-19 has been shown to transmit readily in institutional settings.

- These 'Inclusion Health' populations have significant barriers to accessing mainstream health care and other services. With the exception of young healthy migrants and prisoners, all these populations have very high levels of comorbidity which place them at increased risk of death from COVID-19
- Inclusion health populations:
  - Are clinically vulnerable individuals with high risk of morbidity and mortality from COVID-19;
  - Commonly experience significant barriers to accessing mainstream healthcare and require tailored approaches to achieve effective engagement with health providers;
  - Act as amplifiers of infection, due to overcrowding and shared facilities increasing risk of outbreaks;
  - Can have high contact rates with service providers and/or local communities;
  - Have higher rates of emergency health care usage and admission, especially homeless people;
  - Are largely invisible within routine health and surveillance data leading to unrecognised/hidden outbreaks that act as reservoirs of infection making local elimination challenging.

- Specific policy focus and response is required to consider COVID-19 control in these settings.

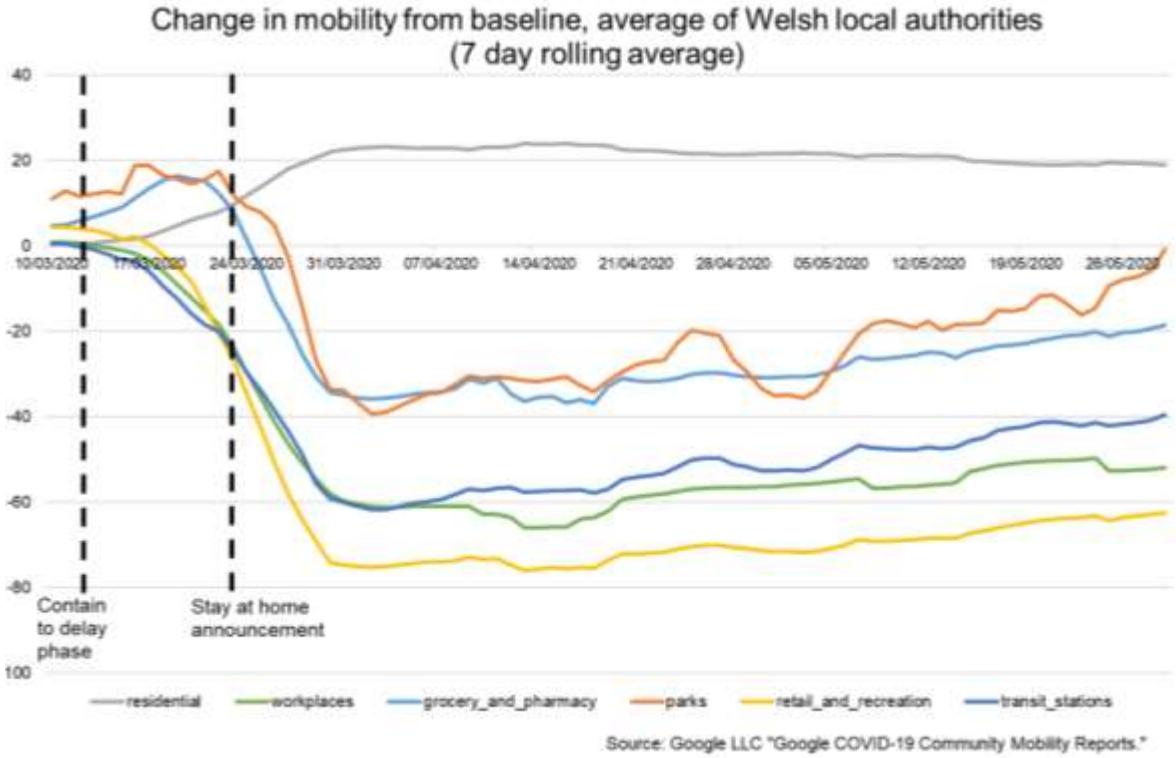
Adherence to current measures

- Most people in Wales continue to follow the social distancing guidelines, however there is a slight fall in compliance in the last week. Data at a GB level (from ONS) shows increases in those leaving their home for 'non-essential' reasons, however there are differences in the guidelines between the nations.
- Compliance was estimated to be around 70%, the latest data suggest it may have fallen to perhaps 65%. Recent research shows that despite general continued compliance, more people report breaking the rules by having friends or family visit them at home. Other research shows compliance is lower for younger age groups (18-29) and complete compliance is lower for higher income households.
- The most recent survey data for Wales show continuing compliance. There has been an increase in those saying they are working from home in Wales. The figure below represents data collected online by OPSOS MORI as part of a multi-country survey on the Global Advisor platform. Each of the past five waves has included c.600 respondents in Wales. The sample is broadly representative of the adult population aged 16-74. Data is weighted to reflect the age and gender profile of the Welsh population aged 16-74. All samples have a margin of error around them. For a sample of around 500, this is +/- 4.8 percentage points. For further information on public views on COVID-19, please see: https://gov.wales/survey-public-views-coronavirus-covid-19.



*Question was amended from the 8th of May to remove the word outside

- The mobility data continues to show increasing movement, for example increases in traffic flows, greater numbers of trips to shops and increases in workplace mobility. In recent weeks some major food outlets have begun to re-open as well as hardware stores and more recently garden centres. This is likely to have resulted in more people travelling (via car or foot) and also some returning to work in those businesses.
- The last few weeks shows some of the increases in Wales are less so than in England/UK – for example the Apple mobility data for driving directions shows a 46% increase for England, compared to 37% for Wales. Mobility in parks (Google) in the UK (which will be driven by England) is 60% above baseline levels, whereas in Wales it is at the pre-lockdown baseline. Changes in mobility in most other categories are broadly similar.
- The figure below shows the change in mobility in Wales. The figures are based on the average of the local authorities that have data. The baseline is the median value, for the corresponding day of the week, during the 5-week period Jan 3–Feb 6, 2020. This pattern is similar to that of the UK as a whole.



SAGE Environmental Modelling Group Report on Transmission of SARS-CoV-2 and Mitigating Measures

- Transmission of SARS-CoV-2 is most strongly associated with close and prolonged contact in indoor environments. The highest risks of transmission are in crowded spaces over extended periods (*high confidence*).
- **TAG advise** at least 2m separation where possible, given the significant reduction in risk compared to shorter distances. Current evidence suggests that 1m

separation carries 2-10 times the risk of 2m separation, though there remains significant uncertainty.

- Given the continuum in risk, 2m separation should not be treated as an absolute rule, with greater distances presenting lower risk, and shorter distances presenting higher risk.
- Where a situation means that 2m face-to-face distancing cannot be achieved it is strongly recommended that additional mitigation measures including (but not limited to) face coverings and minimising duration of exposure are adopted (*medium confidence*).
- Selection of prevention and mitigation measures should consider all the potential transmission routes and need to be bespoke to a setting and the activities carried out (*high confidence*).

Use of Thermal Imaging for controlling COVID-19 transmission

- TAG commissioned Health Technology Wales (HTW) to undertake a rapid review of the evidence for use of thermal screening in controlling transmission of COVID-19. HTW liaised with counterparts in Scotland who were already considering this issue.
- ***TAG consensus*** is that, based on the available evidence, thermal screening is not effective in controlling transmission of C19 and mass screening is unlikely to be effective.
- The rapid evidence review undertaken by Healthcare Improvement Scotland and the full review can be found here

  http://www.healthcareimprovementscotland.org/our_work/coronavirus_covid-19/evidence_for_scotland.aspx

Summary of the latest evidence about SARS CoV2 Immunology

- Most people make an antibody response after infection by SARS CoV2 (high confidence)
- Antibodies can protect against infection and disease in animals models (high confidence). The presence of antibody to SARS-CoV-2 does not necessarily indicate protection from re-infection.
- Immunity to a virus, whether elicited by a vaccine or by infection, rarely completely prevents re-infection, but is usually effective in preventing or reducing the effect of the disease.
- It should not be assumed (indeed it is unlikely) that there will be true sterilising immunity, either from vaccines or from natural immunity. Immunity may provide protection from disease but not necessarily complete protection from infection.
- Vaccines that induce neutralizing antibody responses may protect against infection or disease (moderate confidence)

- Vaccines that only employ spike protein as antigen will induce some T cell response, especially if delivered via recombinant virus of nucleic acid (moderate confidence)
- The immune response must be distinguished from the inflammatory response. In COVID-19, it is becoming clear that a strong early immune response to the virus protects the host by limiting viral spread, whereas severe disease is caused by inflammation resulting from widespread viral infection.

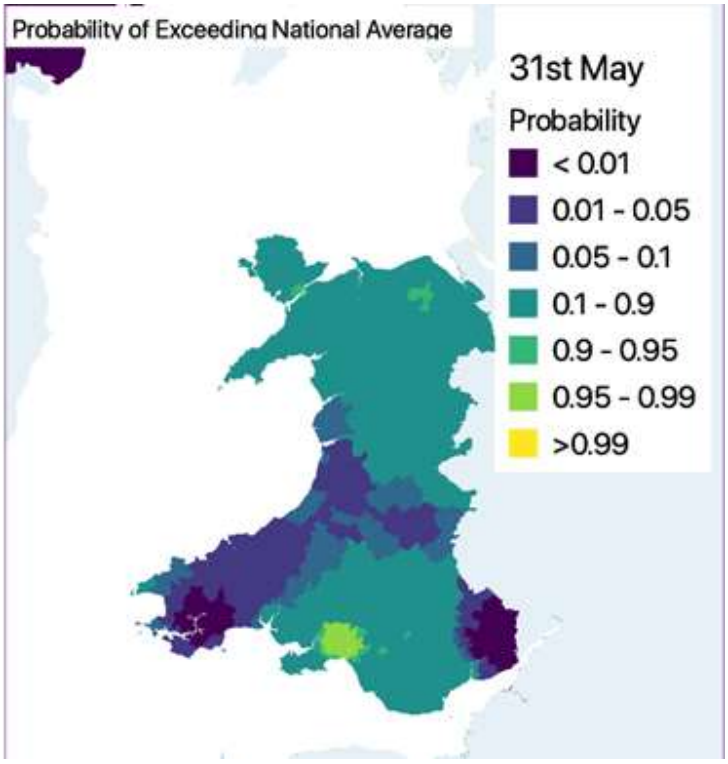
- Protective immunity to the four endemic human coronaviruses wanes after one to three years, allowing frequent re-infection. It is not known whether this applies to COVID-19.
- Uncertainties around the implications of antibody test results mean that clinical use of serological testing is some way off. Immunity passports or equivalents are not advisable for similar reasons.
- Key unknowns requiring further research are (a) degree of protection conferred by the presence of antibodies (and which antibodies are protective), (b) duration of any protection, and (c) whether the presence of antibodies prevents acquisition and transmission of virus.

Schools and Children

- TAC has published a separate consensus statement with current evidence related to children and schools: https://gov.wales/our-latest-understanding-covid-19-respect-children-and-education

Research

- There are currently 2320 Welsh patients recruited to COVID-19 urgent public health studies, an increase of 416 in last 7 days.
- The latest data from collaborative research work drawing on the KCL ZOE study app (based on approx. 70,000 users in Wales) is tremendously helpful in showing how the COVID19 pandemic affects Welsh communities. The most recent maps show that, at the moment, the number of predicted cases is declining and the potential hotspots previously predicted in Valley communities are also getting smaller.



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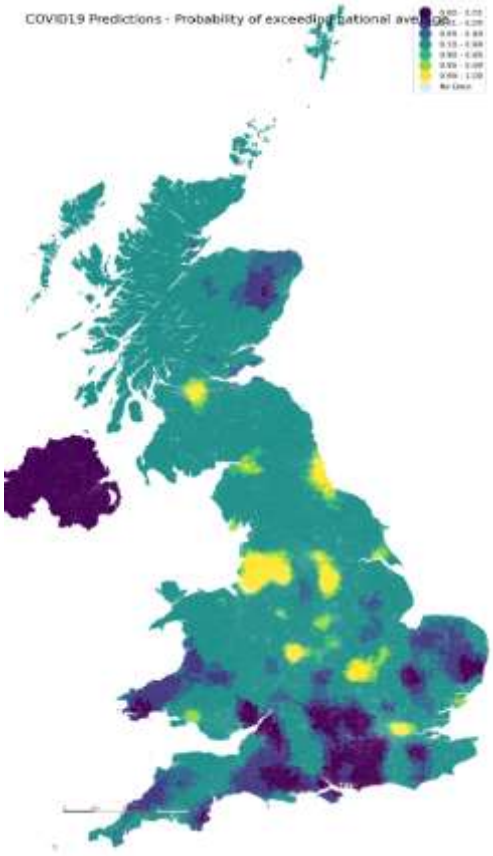
- A map of predicted UK cases is included as a comparison.



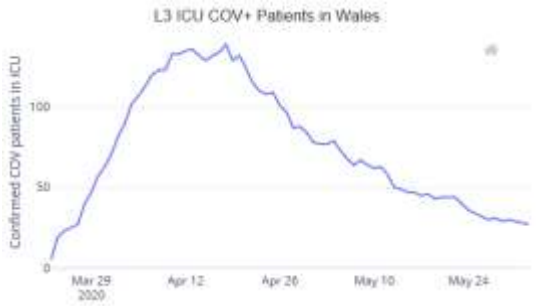
- We are very grateful to ZOE participants in Wales whose information is helping us to respond and reduce the risk. The total number of app users has declined in recent weeks and there are some areas where the participation is not as high so we would encourage more to join.

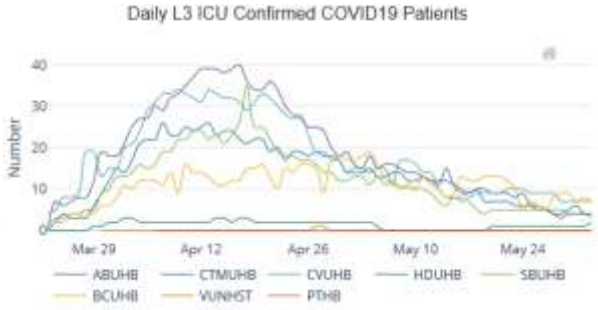
NHS Data Dashboard

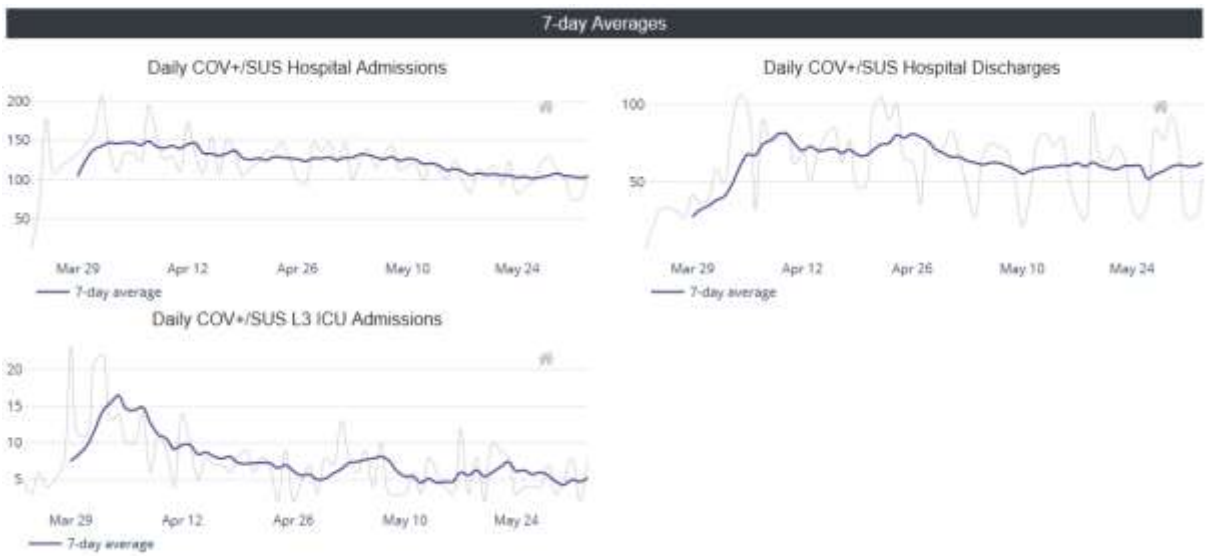
- PHW data updated at 02/06/2020
- Hospital data updated at 02/06/2020

L3 ICU

- Overall occupancy is at 38.2%
- All health boards with L3 ICU units are at less than 50% capacity, with ABUHB below 25%.
- Of the total of 136 patients in L3 ICU in Wales, 20% are confirmed COVID patients, 11% are suspected COVID patients and 68% are non-COVID patients.







- As of 4 June 2020:

	Cases		Deaths	
	Number	**Per 100k Pop.**	**Number**	**Per 100k Pop.**
Confirmed (04/06/20):				
UK	281,661	422.6	39,904	59.9
England	153,807	274.8	35,605	63.6
London	27,063	303.8		
Scotland	15,553	286.0	2,386	43.7
NI	4,773	253.7	534	28.4
Confirmed (04/06/20):				
Wales	14,238	453.6	1,379	43.9
ABUHB	2,570	434.7		
HDUHB	1,055	273.6		
SBUHB	1,874	481.3		
CTMUHB	2,581	579.8		
CVUHB	2,759	555.8		
BCUHB	2,888	41.5		
PTHB	287	216.6		

Professional Head of Intelligence Assessment (PHIA) probability yardstick

- Where appropriate, TAC advice will express Likelihood or confidence in the advice provided using the PHIA probability yardstick to ensure consistency across the different elements of advice.