I am writing, in a private capacity, in response to your request to give the point of view of a biomedical researcher and an analysis of the response to COVID in different countries, for the Health and Social Care Committee.

Comparative response to COVID in Europe and Asia:

- Most countries in Europe and America (North and South) have faced similar issues in terms of shortage of masks, PPEs and tests, due to the massive increase in demand worldwide and production restricted to China, where production was on hold. The countries that have faced the pandemic most efficiently were Asian countries where wearing face masks in public places was already the daily routine (Taiwan, Korea, Japan).
- In addition, these countries have put in place very early on a testing-tracking-isolating strategy which has limited the spreading of the virus (so did Germany, as well). These tests where not available early enough in Europe and had only 70% reliability (30% false negatives, which means 30% infected people were not considered as contagious and have likely infected their households).
- Care homes have also been strongly hit in a similar fashion in Spain, France and UK.
- Most countries worldwide had similar lockdown strategy. The difference was mostly the timing.

UK and Wales specific issues:

- Many symptoms confirmed by WHO have been put on the list on COVID symptoms very late in the UK, e.g. loss of sense taste and smell, originally described beginning of April and added to the list of COVID symptoms in UK beginning of June, or skin inflammatory reactions on extremities (fingers, toes), which to my knowledge is still not recognised as a COVID symptom in the UK.
- Infected essential workers, including health care workers, have been sent back to work too early after the end of their symptoms. The recommendations in the UK were that essential workers could go back to work 48h after the end of symptoms, while numerous scientific publications have shown that patients were **still highly contagious 4 to 6 weeks after the end of symptoms.** Most of them did not have access to tests.
- Tests have been made available in Wales much later than in the rest of the UK. While it was possible for essential workers to book COVID testing in England, Scotland and Northern Ireland beginning of May, this service has been available in Wales only several weeks later and were otherwise only provided to people in hospitals.

What we know of the disease:

- Only 50% of infected people will develop symptoms, only 20% will require hospitalisation. However **asymptomatic carriers are the biggest spreaders of the virus**. Hence the need to test all the contacts of a patient, as many of them will be infected but asymptomatic.
- Most deaths occur in people above 65 with comorbidities, however, a high number of patients with severe forms are between 40 and 60 years old. They are likely to recover but will still require important medical care.

- Recovery is extremely long (several months) and some patients develop chronic pathologies following the infection, in particular auto-immune and auto-inflammatory diseases. This is still under investigation.
- Children are mostly not infected by the virus. Hence reopening of schools did not increase spreading of the virus in most countries in Europe (Germany, France, Denmark).
- Most infections during lockdown occurred within the same household. Hence, different strategies have been put in place in different countries to avoid this, such as isolating the patient or asymptomatic infected person in hotels (which are currently closed anyway).
- BAME population seem to show a much higher susceptibility to the disease. It is likely to be a combination of factors:
  -Genetics (several projects investigating genetic susceptibility or resistance to COVID are ongoing worldwide).
  -Underlying conditions.
  -Bigger households, hence increased risk of intra-familial contamination.
  -Many of them are frontline workers and are likely to have been more exposed to the virus than the general population.
- In several countries, small clusters of infection have re-appeared after easing of the lockdown, but have been successfully kept under control thanks to massive testing and tracing.

Moving forward:

- Prolonging the lockdown was the right option for Wales.
- Easing the lockdown could be done through a more local approach. For example, the situation could start easing in Cardiff area, where the situation seems under control, while the lockdown should be prolonged in North Wales which is currently very badly hit by the epidemic.
- Ceredigion had a very low rate of infection, most likely due to its very early test and track strategy. A similar approach would be beneficial for the whole of Wales, i.e. much broader testing, both or the virus (PCR tests) and for the antibodies, indicating that people have been infected and healed, irrespective whether they had symptoms or not.
- As mentioned above, isolating infected people outside of home would reduce intra-familial contamination.
- Local production of masks and PPEs in Wales? The Northwood Hygiene Products factory in Gwynedd could probably be repurposed in order to produce masks and PPEs. A number of companies in Europe, in the textile and perfume industry, have repurposed their productions during the lockdown to produce masks and sanitising gels.

Please feel free to contact me if you need further clarification on some of the studies mentioned above.