PROFESSOR WENDY BARCLAY

What level of precaution/protection do you think is needed for Covid-19 by general people in the community?

*There is scientific logic behind the recommendation to avoid being less than 2m apart for more than 15 minutes. This applies at work, and in any social settings. Although young people rarely get severe disease, we don’t yet know the long-term consequences of the airway damage the virus causes so avoiding infection by keeping a distance and washing hands is the best idea. Wearing a mask is altruistic-i.e. removes the large proportion of exhaled droplets that might carry virus from your own exhaled breath, but does not necessarily protect you from smaller droplets and aerosols that have been formed from breath exhaled by others.*

Dr Barclay noted that RNA viruses change. Can we develop a "universal" vaccine platform with "plug-and-play" characteristics that can equally rapidly adapt to these changes (rather than start from scratch all over each time the virus mutates)?

*This is a major goal for influenza right now- to develop a universal vaccine and to speed up the ability to generate new vaccines as viruses emerge- in a strange way the speed at which the world is responding to COVID might help here for other viruses too. Some of the vaccines that use nucleic acids for example are very fast to generate and generic.*

Dr Barclay, you were a lecturer on a course I took at Imperial in 2007. I also went on to work on viruses. What is your view on the new mRNA technology for vaccines? Do you think you will get a long lasting protection as seen with other vaccines especially in older adults who usually get better responses with adjuvanted vaccines?

*That was the year I arrived!! Glad I didn’t put you off! Some mRNA vaccines might need extra help to generate long lasting immunity I agree- there might be ways to achieve this by adding in additional mRNAs that code for cytokines or other immune boosting proteins...?*

Is there any potential for micro RNAs in the treatment of flu and other viruses e.g. Nanjing Uni’s Lonicera extracts?

*MicroRNAs that target the viral genome are a lovely idea in the lab- but I worry that a) the virus might mutate to alter the target, and b) delivering them to the infected cells is tricky.*

The elderly are clearly most in need of a vaccine for Covid-19 but, I assume, will have a significantly weaker immune response to any prospective vaccine compared to young people.

a) Are elderly people included in trials to establish the degree of immune response to the virus? (I assume that they are not included in safely trials of prospective vaccines)

*I believe there is an arm of the Oxford ChAd trial that looks at these in over 55 age group...*

b) If they are included in such trials then I presume that the next step would be to establish the degree of real world protection conferred by the vaccine through statistical analysis of infection rates, or death rates, in a population of people, half of whom had been vaccinated with the potential vaccine.

*Yes, logical.*
c) However, if elderly people are 'shielding' in order to avoid any possible contact with the virus then how can you get data on whether elderly people get any real world protection from the prospective vaccine?

I think not all elderly are shielding at the moment. Furthermore, one would compare an age matched and hopefully behaviourally matched group who received placebo or no vaccine. I see your issue, and this was also considered as a potential problem if UK didn’t get a 'second wave' i.e. how could you find enough people who would be likely to catch SARS CoV2 if there was not much virus around- the trials the take longer to conduct but if properly controlled can get there in the end. The other option is to conduct trials where the virus is more prevalent- in other countries and perhaps this could also be a solution to the issue of shielding as not every country has the same policy.

d) How has this been taken into consideration when producing the policy that I have seen in the news of vaccinating the elderly first once a vaccine becomes available (in limited supply at first)? Might it actually be more effective to vaccinate the carers and contacts of the elderly first?

Vaccinating carers is also being considered, it does rather depend on whether the vaccine protects against disease or works by reducing onwards transmission- until we understand a bit more about what the immune response actually does we can’t be sure how best to use the vaccines so this is currently a major focus of research.

What global problems relating to medicine do you believe need the most attention (apart from COVID-19)?

In terms of infectious disease: Can we cure HIV? What about hepatitis B? How to prevent TB and Malaria? Where will the next pandemic emerge from and can we prevent it? Who is genetically predisposed for poor outcomes and what impact do comorbidities such as obesity have on outcomes?

Based on their personal research and experience, what would be the single piece of advice related to their field that each panellist would give their own children (and future grandchildren!) about living healthy lives?

Eat lots of different things of different colours and tastes, exercise outside and laugh a lot.
The popular perception is that an increasingly sanitised environment has caused increases in allergies over the decades. To what extent is this true or is it a case of inaccurate information taking hold amongst the public?

This is the ‘Hygiene Hypothesis’ and is widely acknowledged to have been superseded by the ‘Old friend’s hypothesis’ – the idea that we are less exposed to the friendly bacteria that have usually colonised our guts. Changes in home births, antibiotic use, reduced breastfeeding have meant that the gut microbiome (the trillions of bugs in our gut) have changed in a very short period of time and this is reducing the ability of our immune system to interact effectively with the outside world and leading to more mistakes i.e. allergy.

Based on their personal research and experience, what would be the single piece of advice related to their field that each panellist would give their own children (and future grandchildren!) about living healthy lives?

Don’t worry about the current thinking on living a healthy life – it keeps changing anyway and worrying about it is no good for your mental health – do what you enjoy and don’t smoke.

What global problems relating to medicine do you believe need the most attention (apart from COVID-19)?

Clean water, birth control, vaccination – still!!
Given the link between dementia and inflammation, is there any link between infection with the herpes simplex cold sores virus and dementia?

There is indeed a viral hypothesis of dementia, at least in relation to a possible link between Herpes Simplex Virus 1 (which causes cold sores) and Dementia. For example, HSV1 has been reported in some studies to be more commonly found in the brains of people with Alzheimer’s disease than those without and some studies have suggested that people who have taken antiviral agents are at lower risk of developing dementia. Clinical trials of antiviral agents have been proposed and there is at least one ongoing study of an antiviral agent that I am aware of, results of which will be awaited with interest.

What global problems relating to medicine do you believe need the most attention (apart from COVID-19)?

A big question! Undoubtedly, there are a lot of global problems that have a big impact on people’s health. We could start with nutrition and sanitation, infectious diseases are clearly very important as well as the growing problems with issues like obesity and in some countries smoking and pollution. Of course, from my own field I would list Dementia, as cases will increase from 50 million to 150 million in the next 30 years, with most of that increase being in low and middle-income countries who are currently very poorly prepared to cope with this.

Based on their personal research and experience, what would be the single piece of advice related to their field that each panellist would give their own children (and future grandchildren!) about living healthy lives?

Stay in education as long as possible, I am sure parents and grandparents would be happy to support this. High levels of education are associated with multiple health benefits and good outcomes across the whole of medicine. In my field, low levels of education consistently emerge as one of the strongest risk factors for dementia in populations around the world, and in the 2020 Lancet commission it was estimated that over 7% of dementia cases worldwide might be prevented by increasing levels of education, a much higher proportion than tackling other risk factors for dementia like increasing exercise and managing hypertension and other vascular risk factors (though of course we should do all those things too).