

Supplementary Written Evidence Submitted by Peter Hebard (C190054)

I am sure that you and the members of your committee will be as concerned, as Engineers are, both at the extraordinarily high death rates in UK and highly confusing advice as to how to “stay alert” as we come out of the Lockdown.

A key reason behind both is that it is Engineers, rather than Scientists, that are the experts on Infection Control, Risk and Crisis Management, yet we have been unable to get our advice to SAGE, the Cabinet Office or the DHSC, let alone to the general public, through the Government, the Public Service Broadcasters or the media. I attach a bullet point brief that explains some of the reasons behind that.

In contrast the Far East, where Engineers have had the lead on Covid, death rates have been several orders of magnitude lower (Hong Kong 7, Vietnam 0, Singapore 29), yet the advice we would have given is remarkably similar and still could be vital to avoiding another Lockdown.

I represent the Infection Control Engineers Covid Task Force. now adopted by the Institution of Mechanical Engineers. of which we are all members. Whereas Scientists have been finding nothing but problems, we have been developing the solutions that we urgently need to get to Government to save many lives and avoid a second peak

Whereas infection rates are currently very much lower, in absolute terms they are very concerning and across Europe and the US there are a worrying number of post Lockdown outbreaks, as sadly the lessons from the Far East and our IMechE colleagues in Hong Kong have yet to be applied.

There is much more we can ask the public to do to help reduce infection rates still further and suppress any new outbreaks before they they escape and again become serious. For example, the issue of masks has become particularly confusing but this is the advice we would issue:-

" Why, Where and How you Should Wear Masks - Clear Stay Safe Advice from Engineers

If you want to avoid a second peak, another lockdown or having to self-isolate for 14 days, wear a good mask in high risk places and ask others around you to do likewise.

It is the only way to stop Covid at source - people's nose and mouth – suppress this pandemic, so it is worth this minor inconvenience to be able to get back to normal fast.

The simplest and best solution to catch virus and improve protection for yourself is to wear a blue surgical mask under a "face covering", ideally an all-round neck-warmer, Buff or snood. You only need to wear them over your face in the most dangerous places - supermarkets, public transport, crowded or poorly ventilated spaces and workplaces. Elsewhere, you can pull them down under your chin, so most of the day you can look normal and people can still see all of your face"

This advice has been recognised as highly effective for outbreaks like Leicester, and more generally to reduce the chance of further outbreaks. In Scotland it could be key to eliminating Covid and it is being picked up for aviation, hospitality, schools, prisons and some care homes.

I hope we can have the opportunity to be interviewed by your committee and to put the case for Engineers to be heard. We have heard from many Scientists, many offering opinions well outside their field of expertise so it is long over due to hear from the real experts on Infection Control

Why it Pays to Ask Engineers, not just Scientists

Scientists find problems – Engineers devise innovative & cost-effective solutions

(In the UK, NERC funds research into problems but not solutions, so Scientists never learn)

Scientists urge caution – Engineers take preventative action, anticipating & managing any risks

(Engineers have to field innovations to stay competitive, anticipating & managing many risks)

Engineers are Risk Management experts, Scientists, the precautionary principle i.e.do nothing

Scientists need “evidence” – Engineers use understanding of processes & common sense

Engineers urge immediate intensive infection control - BEFORE people get infected

Scientists watch models, wait for test results, track & trace - all AFTER people have been infected

Engineers understand aerosol & droplet dynamics & use tools like Computational Fluid Dynamics

Scientists rely on models to understand what is happening and have lost perspective as a result

Engineers use models to aid understanding but maintain wider perspective to decide what to do

Engineers use a range of scientific expertise but do not look for “single bullet” scientific solutions

Managing Covid without Infection Control from Engineers ties one hand behind your back

On Covid

Scientists' role is to define the mechanisms of infection but still argue which is most important

The Engineers design Infection Control for hospitals, supermarkets, trains, planes & buses

Engineers don't discount any - they can address all just as easily “for the avoidance of doubt”

Stop Covid at source, your nose & mouth, by wearing the mask most effective at retaining it

Washing hands works, so mitigate all mechanisms of contaminating anything you might touch

Do not discount any cause or mechanism unless you are sure

If you give simplistic guidance people need to know why it works & when it doesn't

Engineers provide simple explanations & guidance as to how to stay safe for each location

Engineers target Infection Control on highest risk areas which are dangerous but very limited

Engineers are expert in particular on ventilation, often missed

On Masks

Engineers said from outset masks are the prime way to control Covid at Source

Scientists needed “evidence” before recommending it

Engineers said to prove it, the “Control Group” (i.e. the UK) would have to die & they did

Engineers kept highlighting “Experimental Groups” in the Far East that had far fewer deaths

Scientists said if we recommend masks it will deprive the NHS

Engineers said the specification & solution are different - furloughed textile mfrs could make it

Scientists said they might induce false confidence, so people would get too close

Then recommended a face covering that is still dangerous when up close

Engineers said, if you are going to wear one, it makes sense to wear the most effective

Scientists wrote 200 papers but never designed one to do that, just tested scarves

Engineers said you need them to stop all infection mechanisms – both droplets and aerosols

Engineers found an innovative way to achieve that and patented it for the Nation

Scientists ignored aerosols, so said a face covering was OK, then changed their minds

Engineers provided a solution - adding a blue mask to a face covering stops aerosols

Engineers pointed that combination works even better and addresses all concerns

The face covering stops the blue mask leaking out sides
or spraying droplets when you cough & catches any drips

With an all-round absorbent neck-warmer, as a face covering, it works best

It is more effective than any NHS Spec mask at catching & retaining virus

Both can be worn under the chin & only need to be pulled up in High Risk areas

Those are very limited so most of the time it is down and the wearer looks normal

The act of pulling them up reminds people to “stay alert” as they enter

By pointing out that blue masks can be washed this reduces, not increases, usage

It transforms the risk on transport but also for schools, restaurants, shops & aviation

In Hong Kong, where they have had 7 deaths compared to our 45,000

Scientists, Engineers & Government work together

They have developed a mask to meet the precise specification & gone into production

They are giving masks free to all citizens, optimised to catch maximum virus and kill it

Just as UK Engineers tried to suggest back in March but could not get a hearing.

Peter Hebard

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