

relaxation of, of some of these measures. I, I wouldn't put it any stronger than that. But you'll also appreciate that there are lots of caveats, lots of ifs built into that, the most important of which is that we all now follow the guidance and, and stay at home, protect the NHS, save lives.

**CW:** I'll have a first go at this but Patrick will want to add to this on the vaccine question. By extending the gap, we are going to over the next three months be able to essentially double the number of people who are going to be vaccinated. So if, by process of not very difficult mathematics, if over that period there is more than 50 per cent protection, then you've actually won. More people will have overall have been protected than would have been otherwise, and our quite strong view is that we think it'll be, protection will be quite a lot more than 50 per cent. So therefore in net public health terms, they'll be substantially more protection by going faster, not with the absolutely complete protection, we fully agree, we need a second dose for everybody, but with the great majority of the protection for that initial period so we get twice as many people vaccinated over that period, and then, then there will catch up as we go into spring. There are obviously some unknowns in that, and there's quite a vigorous scientific debate about some of those unknowns and one of the things people have raised is a theoretical risk that by having this longer gap, you could actually lead to a slightly increased risk of an escaped mutant. And that is a, a real worry, but quite a small real worry within the system and I think we discussed this, and Patrick may want to add this, amongst scientists involved in SAGE and others, and I think the general view was, the size of the increase in risk is sufficiently small that measured against this ability to double the number of people who actually are vaccinated, the public health arguments are really strongly for doing what we've decided to do. And that's why JCVI independently, MHRA, were content with us taking this approach, and a variety of other bodies have agreed that this is a sensible balance of risk. Clearly, if we had infinite vaccine, we might have taken different approaches, but we don't. At this point in time, for the next three to four months, the number of vaccines we have available is going to constrain our ability to get through the 25 to 30 million people we must do to get through all of the JCVI areas, and whilst this is such a fast-moving vaccine, virus at this point in time, our view was very strongly on balance of risk, the benefits to the UK for us at this point of the epidemic were in favour of doing this. Patrick, you may want to add to that on the science.

**PV:** Well, the only thing to add to that is, is the more you vaccinate, the more you put evolutionary pressure on the virus. So it's true that as you get up to very high levels of vaccination, that the virus is then struggling to find out what to do, and that eventually will become an issue, and, and, and the, and the virus probably will mutate at that point, and that means that different vaccines will be needed in due course and one of the, I think, very exciting things about the science behind this is the messenger RNA vaccines in particular are incredibly fast to make in response to new mutations. So that in due course, in years to come, as we think about this, that will be something that, that I think gives an advantage to being able to get round it. But all vaccination will ultimately put some pressure on viruses to mutate.

**BJ:** Thanks very much. Sam Coates of Sky.