

Vets would not manage Covid-19 this way

There needs to be a more effective and sustainable strategy to manage Covid-19 than the current economically ruinous policy, argue vets **Dick Sibley** and **Joe Brownlie**.

VETERINARY surgeons with any experience in dealing with infectious disease and population medicine will be looking at the government's current management of the Covid-19 epidemic with dismay.

The current approach is to manage the epidemic to fit the critical care capacity of the NHS – something that has been under-resourced over many years. It is a strategy not so much to save lives but to delay deaths.

But this policy could also wreck our economy and drive many businesses (including veterinary practices) into financial ruin. Livestock vets have experience of successfully managing national disease outbreaks. They understand the confounding factors that are important when determining strategies for delivering disease prevention and control on a major scale, including health, welfare, economics and political palatability: issues that are perplexing current policymakers.

The mathematical models that are driving current policy have a poor record of credibility; they predicted over 500,000 deaths and nearly 200,000 sick people requiring critical care at the peak of the epidemic. Understandably, the prospect of people dying in corridors and ambulance car parks is politically unacceptable, so the government was keen to find other ways to flatten the predicted epidemic curve. They opted to reduce overall transmission and spread the epidemic over a longer



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period – more of a system of delaying deaths than saving lives.

It is unfortunate that the medical world has historically invested in therapeutics, diagnostics, technologies and even bigger hospitals to treat the sick rather than the preventive medicine that has become the cornerstone of the veterinary world. The predict-and-prevent strategies that are familiar to any livestock vet seem to be alien to the medical policymakers who choose to expand treatment centres rather than invest in prevention programmes.

Most of us accept that this disease is not going to go away. We have written an accompanying Research Comment in this issue of *Vet Record* (see p 446-448), which reviews the emergence and characteristics of coronaviruses, including Covid-19. This very successful virus will circulate in world populations for years to come. The only effective long-term control to minimise new infections will be through developing immunity, either by managed exposure or vaccination, while at the same time accepting that there will always be vulnerable individuals requiring intensive treatment and support.

Those vulnerable individuals that would require hospital admission through being severely affected by the virus can be predicted and protected, enabling the NHS to cope, while the more resilient are exposed and become immune in a controlled way. The government's strategy of spreading the number of inevitable deaths over a longer time frame – in order to make the death rate more palatable to a figure-hungry news media and confused public – seems an odd way to go about controlling a disease, and unacceptable to any livestock vet. Imagine explaining to a farmer during a major bovine respiratory disease outbreak that the

best solution would be to accept the mortalities, but spread them over a longer period so they don't seem so bad.

If this was an animal disease outbreak, with similar infectivity, economic connotations and variable clinical outcomes, vets would apply the four pillars of disease control to manage it: biosecurity, biocontainment, surveillance and resilience.

Biosecurity protects a population by managing the risks of disease entering that population, while biocontainment manages the risks of the disease spreading within a population. When we as vets approach an infectious disease outbreak, whatever the cause and whatever the scale, we use these principles to devise strategy options and select the most appropriate for the situation at the time.

Biosecurity is second nature to any livestock vet: most of us in livestock practice are educated, examined and even audited in biosecurity theory and practice as part of our official veterinarian validation. Our clients run livestock units with absolute adherence to biosecurity as a norm.

Biosecurity against Covid-19 has been lamentable, with known focuses of infection in specific areas of the world being allowed to widely disseminate the disease into numerous new infection sites. Coincidentally, China is undergoing an epidemic of African swine fever that has decimated its pig population. We have extraordinary systems to keep the disease out of the UK – try carrying a pig in your hand luggage through Heathrow. But we happily accepted human traffic from known Covid-19-infected areas without any effective biosecurity, other than a polite request to individuals to voluntarily isolate themselves for a few days on arrival.

Once a disease is endemic in a

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population, biocontainment (the multiplier of disease) must be effectively managed. Probably the most familiar disease that we see in veterinary practice that emulates the Covid-19 epidemic is the large-scale outbreaks of respiratory disease in intensive livestock units, a day-to-day experience in our normal working lives when working in commercial livestock veterinary practice.

Bovine respiratory disease is a common syndrome affecting numerous cattle populations every winter. It is caused by a complex of respiratory pathogens, but like Covid-19, they have high infectivity with variable clinical outcomes due to differences in susceptibility, resilience and doses of pathogenic exposure.

Control in the first instance is by rigorous and robust biocontainment: isolating the infected animals from the susceptible, improving air space and air quality for the whole population and protecting the most vulnerable. The idea of mixing the infected, infectious and vulnerable, packing them tightly into concentrated air spaces with noxious air quality, and then moving them over large distances to seed the infection to other susceptible populations would be regarded as foolhardy, if not negligent. It may be no coincidence that the major Covid-19 hotspots have been in cities with underground mass transport systems. Moving animals in such conditions would be illegal in the UK.

As livestock vets, we understand the principles of surveillance, and

how testing plays an important part in managing and monitoring disease. However, we also understand the limitations of laboratory tests, their sensitivities, specificities, the need for active and passive surveillance and the use of surveillance to identify and categorise the disease status of populations and individuals.

We also understand the difference between disease prevalence and incidence, and test prevalence and incidence. Our extensive experience with mass testing programmes, such as currently being conducted on the majority of our cattle farms for Johne's disease, bovine viral diarrhoea virus, bovine TB and other problematical infections, allows us to understand that tests are rarely totally sensitive and specific, always require careful and skilled interpretation and need strategic use to be useful.

However, vets have the big advantage of having major databases and individual animal identification, introduced after difficult disease experiences such as the management, control and eradication of bovine spongiform encephalopathy. Privacy laws, the antagonisms towards identification cards and a political aversion to national databases will stifle effective systems for surveillance and disease categorisation. The current surveillance strategies for Covid-19 appear confused, inappropriate and undeliverable.

Any vet will understand that resilience is essential to manage long-

term disease control, whether that be by a managed, controlled exposure and immunity, or by vaccination or by a combination of both. No single infectious disease has ever decimated a population: there is always a natural variation in resilience that may reflect an evolutionary safeguard to ensure survival.

In any managed exposure, we can usually predict the particularly vulnerable (eg, breeds, age cohorts, those with concomitant infections etc) and protect them, while the most resilient are exposed and become immune. Vaccination allows us to improve resilience, but it has its limitations. Only two viral diseases have ever been eradicated from the world: our own veterinary heroes, Walter Plowright and Peter Roeder oversaw the eradication of rinderpest from the world's cattle population using an effective vaccination, and the infamous Edward Jenner started the control and eventual eradication of smallpox using a vaccine derived from a cow disease – although it took 200 years.

The key to managing Covid-19, if it were a disease in a veterinary context, would be to apply the key four pillars of control concurrently. In practical terms, that would mean managing the exposure of at least 60 per cent of the population who could be identified as being resilient to severe clinical outcomes, while protecting the 40 per cent who could be defined as vulnerable, if necessary by creating biosecure Covid-19-free zones. That would allow releasing the 60 per cent from lockdown while ensuring the vulnerable robustly restrict their exposure to infection.

If there is anything fortunate in this ghastly experience, it is that most of the vulnerable can be readily identified, protected and kept out of the intensive care units; they are generally not the economic generators within the population. The young, fit, slim, non-smokers could be left to get on with creating the wealth that we are going to need to secure our futures, instead of being locked away waiting for the inevitable. ●