Step 3.3 What influences policy?

In this article, Professor Judith Glynn and Dr Anna Seale discuss the options available to policy makers at present. As you read, consider that in some interventions there is conflict - between the needs of society and the rights of the individual – can you give examples of this?

What influences policy?

In responding to the COVID-19 pandemic, policy makers have to weigh up the available evidence. Over time, evidence from research and monitoring accumulates on how SARS-CoV-2 spreads and its severity, and the prior experience of other countries can help inform decisions.

Policy will be informed by the stage of the epidemic in that country or region as well as the specific context.

In the initial phase, the aim is containment, and, case finding, contact tracing, and isolation are critical. Travel restrictions and quarantine of new entrants can reduce new introductions of virus, so can be helpful in the containment phase.

Case finding and contact tracing are resource intensive, and to be effective need to identify all cases, to know who to isolate. Some people are infectious before having symptoms (pre-symptomatic), or never develop symptoms (asymptomatic) and in many settings, containment has not been possible.

With widespread infection, there are several theoretical options, not all of which are mutually exclusive:

(1) Do nothing and rely on herd immunity

If the epidemic runs its own course, infections would increase quickly to a peak and then decrease (the epidemic curve). The peak happens because the number of susceptible people in the population – those not yet infected – decreases over time, as people become immune after infection – assuming this does last for a period of time. As the number of susceptible people goes down, the chance of each person with COVID-19 infecting susceptible people also goes down. This reduces the reproductive number R, the number of successful transmissions per case. When the proportion immune is high enough, a point is reached when R=1, each case on average gives rise to one more case. As we saw in step 1.9, the proportion of the population that needs to be immune to get R=1 is known as the herd immunity threshold. When this is passed, R <1, and the number of new cases starts to decrease.

This approach would mean that most of the epidemic was over quickly – and would not recur in large numbers for as long as immunity was retained. However, a very large proportion of the population would need to get infected for herd immunity alone to bring down R. If R0 is 2 you would need to make 1/2 of the population immune to bring R down to 1. If R0 is 3, it would be 2/3. Even if the case fatality rate (deaths/cases) is as low as 1%, that would be a lot of deaths. For example, in the UK with a population of 60 million, if 2/3 were infected that would be 40 million people, and 1% deaths would be 400,000. Another problem is that with a large number of people ill within a short space of time hospitals would be overrun and treatment would be very limited. Many of those who would have survived with hospital support would die, and the case fatality rate would be several times higher than 1%.

Modelling has helped inform policy makers of likely cases and deaths taking into account factors specific to the context (Step 3.5)

(2) Protect the most vulnerable: shielding

Some people are more vulnerable to COVID-19 than others (Step 1.10). Case fatalities are higher at older ages, and in people with certain underlying conditions. If vulnerable people are shielded or "cocooned" case fatality rate may be reduced. However it can be difficult – vulnerable people may be exposed in multigenerational households or in care homes where there is transmission.

(3) Population wide interventions

Many countries have introduced population-wide non-pharmacological interventions, to reduce the number of effective contacts per case (and so reduce R). Individual hygiene measures (Step 2.10) and avoiding close contact are helpful and can be implemented simply and cheaply. However, the more far-ranging interventions have substantial social and economic consequences, particularly to the most disadvantaged, as discussed in Step 2.9.

More extensive physical distancing requires closing non-essential places where people come together (cinemas, bars, some shops, sports venues, places of worship), as well as closing institutions, such as schools and universities, together with guidance to work from home and stay at home. These interventions, which vary in their exact measures worldwide, have been described as "lockdowns" and imposed with different degrees of strictness. Lockdowns reduce transmission, but they are not a sustainable long-term strategy.

How do we get out of this?

In deciding when to start relaxing interventions, policy-makers need to consider the economic hardship and associated problems caused by the interventions themselves, as well as transmission patterns. Governments will look beyond health outcomes, but even in terms of health, the effects of some interventions can be detrimental, especially where access to food, medicines and even shelter have been disrupted. Deaths from conditions unrelated to COVID-19 can rise as people delay accessing, or avoid, healthcare.

Where population wide restrictions are in place, reducing restrictions completely would likely lead to rapid accumulation of more cases, resulting in a second wave – a peak until herd immunity was reached (as described above). Reducing restrictions will need to be done in stages and combined with other measures, including shielding, and a return to containment when cases and transmission are at a level at which this is feasible. In some settings containment - intensive case finding, contact tracing and isolation - may be supported by digital applications and location data, enabling automatic notification that you have been near to someone infectious. It would need to be supported by widespread and regular testing, which is important in identifying people with the infection who are asymptomatic or pre-symptomatic as well as the mildly or more seriously ill.

In reducing restrictions, it is important to know what the current infection rate is and how it changes when interventions are stopped. Ideally this should be measured through testing, as the hospitalisation rate, and death rate, depend on the infection rate in previous weeks and the availability of hospital care, not on current transmission. If infections start to increase again, reducing restrictions could be paused and even reversed.

Decisions on reducing interventions should consider transmission risk and risk of severe disease. Re-opening schools, for example, may be appropriate in an earlier phase, as children very rarely get severe disease with COVID-19, although it will increase transmission, through the contact between children and parents. It may be appropriate to reduce restrictions earlier in some parts of a country than in others, and to allow businesses where physical distancing can be practiced to re-open first.

Policy changes will continue to be influenced by modelling and assessments of the effects of removing interventions (Step 3.5). Decisions will also be influenced if there is progress on identifying effective medicines (Step 3.7). An effective vaccine would make the biggest difference, but this is many months away (Step 3.8).

See Also

Policy Responses to the Coronavirus Pandemic

https://ourworldindata.org/policy-responses-covid

COVID-19 policy tracker

https://www.health.org.uk/news-and-comment/charts-and-infographics/covid-19-policy-tracker

Response strategies for COVID-19 epidemics in African settings: a mathematical modelling study

https://cmmid.github.io/topics/covid19/covid-response-strategies-africa.html