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Trade offs in COVID-19 interventions

From the earliest days of the COVID19 pandemic, policy decisions have been characterised by trade offs. The highest level trade-offs have been between the socio-economic impact of lockdowns and control of the infection. But these trade-offs have continued throughout different interventions, with the evidence underlying these balances continually evolving. Mathematics has helped rigorize thinking and highlight interactions between different aspects of interventions. For contact tracing there is a trade off between risk of transmission and number of contacts needing to be contacted; the characteristics of a test and the completeness of contact tracing. One of the challenges of COVID!9 has been poor adherence to the 14-day isolation or quarantine period, and so interventions which increase this adherence, such as compulsory checks may be attractive. However, if they come at the cost of reduce rates of self-reporting symptoms, then there can be negative impacts on overall impact. Mathematical models have been used to understand many of these interactions, and as we look beyond the current pandemic it's important to understand which areas of our field will pose challenges for future research.