IDEA anti COVID-19 # 5

The economics of testing for COVID-19: beware of greater damage than benefit[1]

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Summary

- There are limited numbers of tests for COVID-19, especially of the more precise type known as PCR tests. That means they must be used as efficiently as possible, in terms of which people are tested. Efficiency in the use of these tests is not only a matter of revealing how many people are infected, but also has to do with the potential ability of those tested to spread the infection further, which a positive test result can help to prevent. The algorithms by which the short supply of COVID tests is assigned must therefore be grounded in the social, rather than individual benefits of testing. People whose testing brings maximum social benefit should be given priority.
- The social benefit of testing a particular person is calculated primarily in terms of the a priori likelihood (rough estimation) of that person being infected, based on information about where they live and their lifestyle. The second important criterion is that individual's epidemiological significance, which is an indication of how much the individual in questions comes into contact with, and is likely to come into further contact

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with other at-risk people. This can also be established by asking pertinent questions to the individual themselves, complemented if desired by a survey in the place where they live.

- Although our estimations of the social benefit of testing are based on imprecise and incomplete data, the algorithm for allocating the limited numbers of PCR tests we have that is based on them is more socially effective than blanket use of them for testing anyone suspected of having contracted COVID-19. The greatest social benefit of testing comes from identifying the infection in people whose level of social interaction is high, during the phase of the infection in which they do not yet have any symptoms; that is, in so-called superspreaders.
- When evaluating the results of any test it is necessary to bear in mind that no test is ever entirely precise (reliable). Although PCR tests are very precise in laboratory conditions, errors can occur when samples are collected in the field, for example through poor sample handling. Our interpretation of the test result is then sensitive to the a priori likelihood that the person in question is infected, which might be low even when the test is positive, because the tests are not entirely reliable.
- It is not appropriate to use tests in situations in which nothing about the healthcare official's decision about the next steps to take will change, regardless of the test result. If the healthcare official knows beforehand that they will not change their approach even if the result of the test is surprising, they should not waste one of those rather rare tests on testing the patient in question.
- Among the general public, testing can create undesirable motives that facilitate the spread of the infection. For example, if only people with a high a priori likelihood of infection are tested, people will exaggerate their own likelihood of being infected in an effort to gain access to testing. That's why, for example, at the beginning of the Covid-19 epidemic in the Czech Republic, some Czechs who wanted to get themselves tested told healthcare officials they had been in Italy, when in fact they had not. Having been approved for testing, they then unnecessarily exposed themselves to the virus at the testing facilities. Social stigma surrounding infection with COVID-19 also poses complications, since it motivates people to conceal any symptoms they are experiencing and avoid being tested. For that reason, it may be sensible not to publicise details of the algorithm according to which individuals might be selected for testing, and to work systematically and intensively to prevent any stigma associated with Covid-19 infection through media campaigns and raising public awareness.