

ENDING LOCKDOWN

THE COST OF A COMPREHENSIVE TESTING-BASED STRATEGY FOR REOPENING SCOTLAND

Craig Dalzell

DISCLAIMER

This report is unusual for Common Weal. We are a public policy think tank and not a medical think tank. Common Weal is not in a position to assess medical advice nor to provide it. However we are in a position to produce a Scotland-specific costing of public policy approaches. That is what we are seeking to do in this paper. It takes what we believe is emerging as the most effective option for reopening the economy and assesses the cost of implementing it in Scotland. We are doing this because we are concerned at the lack of public debate about our options. We encourage you read this as a public policy document and not a medical one, and that its contents be considered in that context.

INTRODUCTION

While the ongoing pandemic can be partially controlled through lockdown measures such as those implemented by the UK and other countries, it is clear that this lockdown cannot be maintained indefinitely. Until a vaccine is developed and deployed it appears that the only other way out of permanent lockdown is a strategy being employed by only a handful of countries (Scotland and the UK is not among them). Guidelines from the World Health Organisation are unambiguous. In order to properly combat the Covid-19 pandemic, countries must “Test, test, test”¹. We must know where the virus is, who has it and who is at risk of catching it from them. We must understand where the infection hotspots are and possibly even where people are becoming infected so that changes can be made. Where we identify communities which have a rapid spread we can target restrictions on social spaces or spaces where people come into contact in that area.

Countries that are not testing enough of their citizens cannot effectively protect them. Yet the Scottish Government has labelled such mass testing a “distraction”. If such testing was occurring in the absence of a good strategy then it certainly would be a distraction but it is not possible to mount a good strategy WITHOUT such testing.

Currently, Scotland ranks among the lowest in the world in terms of tests per positively identified case at just six. This is ahead of the UK’s four tests per case but well behind Germany’s 23 tests per case, South Korea’s 46 and Hong Kong’s 136 tests per identified case.

WHO pandemic response strategies recommend that countries test everyone who is infected and showing symptoms for the presence of the virus and then ‘contact tracing’ to determine who they might have spread the virus on to. If these people can be tested and isolated before they pass it on to anyone else, then the chains of infection are broken and the spread of the virus can be suppressed.

People can also be tested to see if their body has produced antibodies to the virus. This will determine if someone has had the illness at some point (even if they were asymptomatic) and may give an indication of immunity.

At the time of writing, it is not yet known how immune people will be to reinfection after they’ve recovered from Covid-19 but if immunity is not widespread or if a substantial proportion of the population has managed to avoid infection during the lockdown then they are particularly vulnerable to infection when the lockdown is lifted. Without this information, if people are told to emerge from their current lockdown, the virus will spread again and another spike of deaths will occur. A secondary impact will also be a further wave of lockdowns and closures in the economy to deal with that second spike and any spike subsequent to that².

HOW TO END LOCKDOWN

A model has been developed by Prof Tim Colbourn of University College London which

investigates the cost of rolling out mass testing across the United Kingdom. Common Weal has adapted this model for a case where Scotland decides to break with current UK policy and unilaterally rolls out mass testing as part of a New Zealand- or South Korean-style suppression strategy.

Key parts of this strategy would involve recruiting over 5,400 Public Health Community Officers to work in their local communities checking up on people, ensuring their wellbeing, asking if they have symptoms, testing people where possible and contact tracing when people fall ill or return a positive test result. This team would be supported by a hierarchy of team leaders and managers up to one general manager reporting to each of Scotland’s 32 Local Authorities.

Infrastructure will be put in place to support the mass testing of Scotland’s population on two fronts. Scotland should test every citizen once every four weeks using the current antigen test that tests for the virus and its byproducts. This will allow earlier detection of the illness especially in people who are asymptomatic but still infectious. Tracing the people who they have recently been in contact with and testing them can then slow down the infection rate. Medical staff and other workers likely to come into close contact with infected people should be tested more frequently than this (potentially multiple times per shift for some people such as those working in ICU)

Once an effective antibody test has been developed then this should also be rolled out and everyone given a test every four weeks. This will allow the detection of people who have already recovered from the illness (perhaps having been asymptomatic and having had the virus without even knowing) and will allow a definitive determination of how far the illness has spread. This information can then be used as part of a shielded re-opening strategy which will allow everyone – not just those who have gain immunity – to gradually leave isolation on the proviso that further outbreaks will be caught and suppressed by the testing strategy over the course of the 12 months it may take to develop and deploy a vaccine.

HOW MUCH WILL IT COST?

The model suggests that this effort would cost Scotland around £1.0 and £1.5 billion to maintain for one year. This is comprised of around £200 million for community officers, contact tracing and lock-down compliance and another £800 million to purchase equipment and perform the tests (with the upper figure representing a 50 per cent contingency fund given how unprecedented this programme would be). The data table below gives full details of the breakdown of the various aspects of the strategy.

HOW MUCH WILL IT COST TO NOT DO?

Fraser of Allander recently estimated³ that the effect of the lockdown on the Scottish economy across all sectors could be up to 25 per cent with construction and production jobs being particularly affected. For a three month lockdown,

this would represent a drop in GDP of £11 billion.

Added to this, the impact of lockdown itself on mental health, on a rise in domestic abuse cases, on reduced quality of life and reduced living standards through loss of income and isolation could represent around £3 billion over the course of a year. Finally, another £400 million may be lost if the current strategy is maintained and further outbreaks result in deaths above and beyond the initial spike.

The total cost to Scotland of maintaining the current strategy could therefore be estimated at £15 billion over the course of the next 12 months.

BREAKDOWN OF COSTS

The following table provides a breakdown of the costs and how the money would be spent. It also contains the information on how the economic impact of an extended lockdown has been calculated.

COSTS AND LOGISTICS FOR A VIRUS TESTING PROGRAMME IN SCOTLAND

1. Contact tracing

Staff cadre	Function	No.	Rationale	Salary per day	Days	Total (£)
Public Health Community Officer	Trace contacts via apps and in person - follow-up to check isolation and re-test	5440	1 per 1000 population (like community health workers in many countries)	£80	365	£158,848,000
Public Health Covid supervisor	Supervisor / manager for PHCOs - ~1 per 50, or ~4 per each of the 32 local authority areas	109	These team leads will work full time answering queries from PCHO and helping resolve problems	£160	365	£6,353,920

Local authority team lead	One for each of the 32 Local authorities	32	1 for overall control of contact tracing effort for each local authority area	£300	365	£3,504,000
Equipment	Function	No.	Rationale	Cost per day	Days	Total (£)
Phone pay as you go credit	For calls and data for all staff	5581	All staff above	£5 unit cost	365	£10,184,960
Smart phones	only for ~10% of staff who don't have one	558	Most people have smart phones in the UK	£200		£111,616
Mobile phone app	for rapid contact tracing given rapid spread	1	One app needs to be developed (or chosen from many already made?)	£100,000		£100,000
Travel (excludes community officers)	To check work of PCHOs in person if needed	141	Number of supervisors and managers	£10 per day	365	£513,920
2a. Testing - antigen tests						
Staff cadre	Function	No.	Rationale	Salary per day	Days	Total (£)
Lab technicians	running antigen tests	6000	Three 8hr shifts for each PCR machine.	£200	365	£438,000,000
Lab supervisors	supervising lab	400	one for each lab - average 5 PCR machines per lab (?)	£300	365	£43,800,000
PCR Machines	Antigen testing - use current capacity though allow for 2000 more to be bought	2000	Some PCR machines may be requisitioned from existing facilities..	£1,000		£2,000,000
PCR Machine maintenance	maintain working order of 14,000 PCR machines used	2000	Say 100 tests per day, per PCR machine. To test the whole population once every 4 weeks needs 194,286 tests per day. 1942 units rounded up to 2000 for redundancy	£100		£200,000

Equipment	Function	No.	Rationale	Unit cost	Total (£)	
Test kits, including reagents	Antigen tests	70.7m	194,286 tests per day, 7 days per week, 52 weeks.	£2	£141,440,208	
2b. Testing - antibody tests						
Staff cadre	Function	No.	Rationale	Salary per day	Days	Total (£)
Lab technicians	Running antibody tests	589	1 Lab tech can perform 1,000 tests per day. Say 330 for re-check redundancy. 194,286 tests per day equals	£200	365	£42,978,355
Lab supervisors	Supervising lab	118	One for each lab - average 5 lab technicians per lab	£300	365	£12,893,506
Equipment	Function	No.	Rationale	Unit cost	Total (£)	
Test kits, including reagents	Antibody tests	70.7m	Testing whole population every 4 weeks	£2	£141,440,000	
3. Isolation encouragement						
These costs are all covered under 1. Contact tracing.		No.	unit cost	Total (£)		
There may be additional policing costs estimated at £500 for every infringement requiring police action - estimated at 100 such infringements per day nationally:		36400	£500	£18,200,000		
Cost Totals						
Grand Total				£1,020,568,485		
Total with contingency	This is an unprecedented programme and there may be many unknowns at this stage. A contingency of 50% may be appropriate.			£1,530,852,728		
Cost per day				£4,194,117		
Society wide costs of lockdown						
Economic costs	It is estimated Scotland will lose about 25% of GDP during lockdown (Fraser of Allander) and it is assumed that the lockdown lasts three months.				£11,095,890,411	

Social and Health costs	Mental health burden, Domestic violence, divorce, childhood disruption, loss of education, Non Covid health problems exacerbated, other negative impacts – say 0.05 QALY lost per person on average over a year i.e. it lockdown makes life 5% worse on average for everyone on scale of 1 perfect health to 0 death. (Source: https://www.ncbi.nlm.nih.gov/pubmed/25692211)	£272000
	Shadow price of a QALY based on NHS spending to gain a QALY (Source: https://www.ncbi.nlm.nih.gov/pubmed/25692211)	£12,963
	Cost of QALYs lost	£3,525,936,000
	Deaths due to Covid that would have been averted by this population-wide contact tracing, testing and isolation strategy (based on 50,000 deaths a year with intermittent lockdown, and 80% being prevented)	3320
	Quality Adjusted Life Years lost (~10 per death on average)	33200
	Shadow price of a QALY based on NHS spending to gain a QALY (Source: https://www.ncbi.nlm.nih.gov/pubmed/25692211)	£12,963
	Cost of QALYs lost	£430,371,600
	Total potential cost of not implementing a testing programme	£15,052,198,011
	Potential daily cost	£41,238,899
	Potential saving from a testing programme	£13,521,345,283

CONCLUSION

Once again, Common Weal is not a medical think tank but the model described here has been developed by those with that experience. Common Weal is, however, a public policy think tank and we voice our alarm at Scotland's strategy towards this pandemic seemingly directly in contradiction to medical experts such as the author of this model and organisations such as the WHO. This shouldn't be a game of comparing numbers and balancing accounts – not with so many lives at stake – but it is because of those lives that we urge the Scottish Government to either strongly lobby the UK Government to change its strategy or to unilaterally break from compliance with the 'Four Nations' approach that is clearly putting lives at risk. Failing to adopt either of these options will leave the Scottish Government with

the sole remaining option of accepting its share of responsibility for the lost lives and broken economy to come.

REFERENCES

- 1) World Health Organisation, "WHO Director-General's opening remarks at the media briefing on COVID-19 - 16 March 2020", 16th March, (2020)
- 2) Tomas Pueyo, "Coronavirus: The Hammer and the Dance", Medium, 19th March, (2020)
- 3) Fraser of Allander Institute, "Coronavirus: quantifying the impact on the Scottish Economy", 7th April, (2020)