

The Irish COVID Action Network

THE ELIMINATION FRAMEWORK

A 7-STAGE APPROACH TO ELIMINATING COVID-19

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Those who cannot remember the past...

Malcolm Gladwell, The New Yorker

“The minute that the C.D.C. or a W.H.O. laboratory received a flu that didn’t fall into the H1N1 or H3N2 families, it would sound the alarm. The surveillance system is also specifically focussed on those parts of the world where flu is prevalent and the interspecies movement that creates pandemic strains is more likely to occur. That means China, where there are as many ducks as people, and where pigs are often raised on farms in close proximity to wild and domestic poultry. China has been the source of the last two pandemics, and most observers think it likely that the next will be from there as well”

September 1997

The WHO, Global Preparedness Monitoring Board

“Outbreaks have been on the rise for the past several decades and the spectre of a global health emergency looms large. If it is true to say “what’s past is prologue”, then there is a very real threat of a rapidly moving, highly lethal pandemic of a respiratory pathogen killing 50 to 80 million people and wiping out nearly 5% of the world’s economy. A global pandemic on that scale would be catastrophic, creating widespread havoc, instability and insecurity. The world is not prepared.”

September 2019

Dr. Mike Ryan, RIA: Learning from Pandemics

“The industrialised countries have become entirely complacent about the risk of infectious diseases and these high consequence events. Epidemics that were happening far away, were happening far away, and of little consequence. I don’t think the industrialised world connected the dots and recognised the threats... The first world health reports on the threat of emerging diseases were happening in the mid ‘90s... We went through it all, and every time we wrote the big documents and we said what a risk and what a threat all of this was. But in the end, we’ve not put in place the systems to defend against it.”

October 2020

...are condemned to repeat it.

PREFACE

The COVID-19 pandemic was not a ‘once in a century’ outbreak, or a ‘Black Swan’ event that no one could have foreseen. Those narratives might be attractive to the policymakers who were in charge when the virus arrived on our shores, and who were so ineffective in protecting the people and our society from its ravages, but that reframing of events would be a lie and a harmful self-delusion. The international community had been aware for decades that deadly novel contagious viruses had been emerging at increasing rates, and both the expert opinion and the clear evidence suggested that this trend would continue.

Leaders in Dublin and Brussels cannot argue that there were no warnings. In 2003, SARS spread to 30 countries on every continent. The final death toll from the 2009 Swine Flu (H1N1) pandemic was estimated to be at least 150,000 and perhaps more than 500,000. MERS had a case fatality rate of over 30% and was so terrifying that some health care workers refused to treat their patients. To this day, the MERS coronavirus continues to circulate in the Middle East.

Each of these viruses was a warning to the developed nations about what could happen if the ‘big one’ emerged and they were unprepared. The COVID-19 pandemic was the inevitable result of their failure to heed Mother Nature’s warnings – in addition to the many verbal warnings delivered by the WHO and other infectious disease experts. It is disconcerting that an institution with the scale, resources, and ambitions of the European Union did not have in place a competent, coherent ‘whole-of-society’ plan to protect its citizens from a pandemic. The consequences of this neglect can be seen in the EU nations’ deaths-per-million statistics.

At a fundamental level, the pandemic exposed our failure to live in harmony with the planet, and the macroeconomic conditions that are catalysts for these kinds of global health threats – urbanisation, deforestation, mass migrations, climate change – will continue to drive social change for years to come. We can be confident that more pandemic-potential viruses will emerge in the coming decades. The only question that matters for Ireland is whether we will have built a comprehensive pandemic defence infrastructure by the time the next one arrives. The development of this defence infrastructure is a national project that should have started years ago. It is a matter of the utmost urgency that we address this oversight.

The 7-Stage Elimination Framework outlined in this paper is a step in that process. It is a tool that can help us to eliminate a contagious virus from any region in the country, or to quarantine a town or city at the early stages of an outbreak, in order to prevent any further spread. Civic tools like these will become important components of Ireland’s national defence infrastructure, whether integrated into Ireland’s existing Strategic Emergency Management Framework, or into any other structure that emerges post-pandemic.

We should also recognise that the development of a meaningful pandemic defence infrastructure has already begun. The Levels system, as outlined in the government’s Resilience and Recovery Plan, is an example of a pandemic risk management tool that we have developed in this crisis, and which we will carry forward into future outbreaks. This work must continue.

Ireland cannot afford to let this crisis go to waste. We must build the infrastructure now that will protect us from the next one, and with the overarching goal of ensuring that the catastrophic mistakes of 2020 are never repeated. We should not be afraid of the workload involved, nor see it as justification that a more convenient approach is needed – that self-defeating denial would only succeed in passing the burden on to the next generation.

On the contrary, this crisis presents us with opportunities to build intergenerational solidarity, to repair relationships on both islands, and to redefine the nation's sense of self. After a year of grief, suffering, uncertainty, and an abject failure to solve the nation's problems, we cannot afford to let these opportunities pass us by. The anger is growing. The people know they are owed more from its leaders. Ireland needs a win.



INTRODUCTION

This paper presents ICAN's 7-Stage Elimination Framework – a structured process that supports the elimination of SARS-COV-2 on the island of Ireland. The goal of this paper is to explain the key features of the Framework, and to do so in simple terms so that readers of all levels can understand how an elimination approach would work in practice. The success of this, or any national plan, will depend in large part on the public's support for it and on their adherence to its policies. It is important that the analysis is made accessible to them.

In the process of explaining the Framework and its policies, this paper also hopes to convince the reader that elimination is not a notion or a pipedream, but a sensible approach to the management of contagious outbreaks, and an achievable goal that depends only on the hard-work and good sense of all involved.

This Framework comprises a set of policies – a protocol – that must be followed in order to achieve elimination within the specified region. While the protocol is strict, there is room for policymakers to adjust the plan to the local conditions at the time, both in the plan's design and its ongoing management. The key variable that will enable them to do so, is the level of medical resources available and in particular, the supply of rapid testing capacity.

A stockpile of rapid testing offers many strategic opportunities that are not possible with the NPHEt's 'PCR-only' approach to testing. Stockpiles of key equipment, surplus resources, or rainy-day funds are different versions of a key risk management tool – they all represent spare capacity that can be accessed in an emergency. In the context of this elimination protocol, a stockpile of rapid tests allows policymakers to douse a region to suppress and then eliminate transmission. More generally it allows policymakers to react quickly and decisively to unanticipated events, giving them more control over the outbreak.

The following sections explain each part of the Elimination Framework, from the preparations that must happen in advance of implementation, to the gradual easing of social distancing measures once elimination has been established. They describe the policies that will be implemented at each Stage, explaining their purposes and the actions that must be taken to ensure that they will be effective. The Stages are listed in order and with timeframes for each so that the reader can visualise the process and consider their responsibilities at each Stage.

This document describes how the 7-Stage Elimination Framework would be applied to eliminate the virus from a single Irish county. This is a hypothetical scenario that demonstrates the conditions necessary to achieve elimination in the target region. We purposely start with a simplified example so that the key characteristics of the process can be seen and understood. With that understanding, we can pursue a more detailed analysis that will lead to the development of a national elimination plan.

There will be points in the discussion where a national plan would require additional measures to the county-level analysis. We feel it is important to address the 'elephants in the room', and

these situations will be noted and discussed in the sections headed “International”. We also provide more commentary on the prerequisites for a national elimination plan in the Discussion section at the end of this paper.

No single document describing an elimination protocol – whether applied to an individual county or the whole island – could adequately address every possible criticism or answer every question that it would naturally elicit. This document is necessarily incomplete and imperfect, and it will leave many questions unanswered. That is not to say that there are no answers, but rather that the answers require further research and analysis, and may depend on discussions that can only take place at a later stage. This document is intended to be a starting point for those discussions.



THE 7-STAGE ELIMINATION FRAMEWORK

1 – PREPARE

Goal	To take all necessary preparatory actions so that the elimination plan is fully functional at initiation.
Policies	Acquire all necessary testing resources; add capacity to the health care system; engage political leaders in the county and in bordering counties; communicate the plan and its protocols to all stakeholders; establish the financial supports needed to protect businesses and livelihoods for the duration of the plan.
Timeframe	Preparation begins at the earliest possible date and continues until initiation of the plan.

Outline

A project of this scale cannot be undertaken at short notice; it demands preparation. The earlier those preparations begin, the better the outcomes for all involved.

The successful implementation of an elimination plan requires the commitment and the coordination of multiple layers of stakeholders, including policymakers, government agencies, civic institutions, businesses, essential service providers, and the people. Every cohort in the county must understand the structure of the elimination process, the policies that will be implemented at each stage, and their roles and responsibilities within them. These protocols must be communicated and discussed in the planning phases, and the government must ensure that lines of communication to all groups are opened early and used frequently.

A large stockpile of rapid testing capacity must be acquired and distributed across the county. This is a key responsibility, as the plan's success depends in large part on the volume of rapid tests available during its implementation. The Department of Health ('DoH') also ensures the availability of sufficient health care workers and support staff in the local area for the duration of the plan. The Department of Finance ('DoF') will establish additional financial supports to ensure jobs and businesses are protected for the duration of the elimination process.

Implementation | Communication with The People

The government communicates the Framework and its protocols to the people through citizens' assemblies, local government structures, community representatives, and other civic institutions. Representatives explain the protocols to the people, answer their questions, take

surveys and receive feedback. The survey information (e.g. isolated individuals, high-density households, potential volunteers) will add more detail to the plan at the local level, which helps us to anticipate problems before they occur and aids the overall planning process. The representatives explain the process for both essential and emergency travel, and begin conversations with individuals who may need clearance.

Implementation | Communication with Businesses

The government communicates the Framework's standards and protocols to essential retail service providers directly, as their numbers will be small. The policies and their timeframes will also be communicated to non-essential business through their industry bodies. Wherever possible, policymakers seek to identify spare capacity in the private sector that can be built into the plan, and they will prioritise businesses and sectors that have been most disadvantaged by the pandemic. For example, representatives from the tourism industry could be engaged to discuss locations for potential quarantine and isolation facilities. Similarly, taxi drivers could be incentivised to provide delivery services while the stay-at-home advice is in place.

Implementation | Health Care Resources

In a traditional war, the side with greater resources usually wins. While the COVID-19 pandemic isn't a war, the same principle applies. Instead of soldiers, weapons, and ammunition, Ireland needs health care workers, medical facilities, and tests. The greater the State's resources, the greater its control over the outbreak.

The government must source enough rapid tests to suppress and eliminate transmission of the virus. All individuals in the county will receive multiple tests over the course of the plan. An estimate of the minimum requirement for the elimination protocol to be successful would be 10 tests per person, so a county with a population of 100,000 would require at least 1 million rapid tests. Some of the test kits will be distributed in advance to high-risk households (large, shared accommodation), high-risk individuals (health care workers and support staff) and to families and individuals living in isolated areas.

A mass testing program will lead to a sharp, short-term increase in the resources devoted to test, trace, and isolate cases. Where possible, the DoH and the HSE should seek to add capacity in the health care system in order to absorb that initial shock, including stockpiling key equipment and materials, and accessing spare capacity in the private sector.

Implementation | Financial Supports

The DoF establishes the financial supports necessary to guarantee that all jobs and businesses are protected for the duration of the elimination protocol. If the people can be confident that the period of elimination will not threaten their livelihoods or their financial circumstances, they will have less reason to oppose the plan and adherence will be higher. Equally, all unemployment benefits, including pandemic-related payments, should be increased by €50 a

week until Stage 7 – Reopen, both to encourage the people to adhere to the protocols and to recognise the sacrifices they are making for the nation.

International | Communication with International Partners

If the elimination protocol was applied at the national level, early communication with all neighbouring governments would be necessary. Clearly, a national elimination plan for Ireland could not succeed without the participation of Northern Ireland and the government would need to communicate the nation's intention to pursue an elimination strategy to representatives in Northern Ireland at the earliest possible date. The government should also seek to include them in the planning process. Indeed, the plan would likely need the support of the United Kingdom too, and so the Irish government would contact all four governments to seek their support. The sooner they are made aware of our intentions, the more time they have to consider the proposal, its effectiveness, and the potential implications for their nations.



2 – SEAL

Goal	To create an impermeable seal around the county that prevents external infection.
Policies	All travel across the county's borders is suspended for the duration of the elimination protocol, with exceptions for essential travel, emergencies, and the trade of goods.
Timeframe	The policy is signalled to all stakeholders during Stage 1 – Prepare, taking immediate effect at initiation. It remains in place throughout the protocol and until elimination has been achieved in this, and in all neighbouring counties.

Outline

Policies that enforce a strict separation of populations may appear crude, arbitrary, or authoritarian, but when managing risk during a contagious outbreak, they become essential measures that can protect the health of the individual and the stability of society. These measures work by cutting the lines of transmission between the susceptible and the infected, thereby protecting whole populations in one act. Their value is underscored by their long history of use. The quarantine and the 'cordon sanitaire' have been used for centuries and to this day they play an important role in outbreak risk management. Ireland must develop these capabilities to protect itself from further outbreaks.

This Stage of the protocol establishes a regional bubble around the county that protects those inside from external infection. In addition to protecting the people's health, the bubble reduces the number of risk factors to be managed during the protocol. Without the possibility of additional infections, the problem is limited to the viral load that is present within the bubble at the time it is established. This frees resources to be focused on the mass testing program, making it easier for the health service to track down and eliminate the virus, and minimising the amount of time that the people spend in lockdown.

The management of the border and all essential and emergency travel is the responsibility of the Gardaí and health care workers. If Stage 1 – Prepare has been carried out effectively, the protocol will be understood, and the seal can be maintained with minimal enforcement.

Implementation | Border Management

Most routes in and out of the county are closed in the days leading up to the implementation of the seal. All essential and emergency travel runs through a few main roads, where there are well-staffed checkpoints. Essential travel will have been cleared in advance and travellers will have been given papers. The Gardaí manage travel in and out of the county, and health workers will provide testing where appropriate. If needed, additional support can be provided by the army

and volunteers. The primary responsibility of all parties is to ensure the smooth and efficient implementation of the Framework's protocols, and only in exceptional circumstances would they be expected to provide enforcement.

Implementation | Border Enforcement

The integrity of the seal is primarily determined by the public's respect for it, which in turn is driven by their overall commitment to the plan. Neither the government nor the Gardaí can force the people to obey the protocols, but they can earn the people's respect for the plan by including them, their communities and their local representatives in the planning stage as described in Stage 1 – Prepare. The more engagement the people have with the plan, the more they will trust it, and the greater their adherence will be to all of its policies – not just the border seal. That said, no matter how well the government plans and communicates, there will still be a minority who chose to flout the rules. Extra powers could be handed to the Gardaí to support enforcement of the policies, but these would only be used in extreme circumstances, having exhausted every other option.

International | The International Border

If the region in question was a country instead of a county, the seal would be applied at the national level. The border would be closed, and all international travel would be halted for the duration of the protocol. For Ireland, this would involve the simple task of closing all air and seaports, and the more challenging task of co-ordinating the policy with Northern Ireland. That discussion is beyond the scope of this paper, but all efforts to work with Northern Ireland on these issues are more likely to be productive if they include the governments of the United Kingdom from the start. We offer additional commentary on this issue in 'Discussion', on page 23.



3 – STAY

Goal	To minimise the transmission of the virus within the bubble.
Policies	Implement a stay-at-home policy; reduce commercial activity to the provision of the most essential retail and public services; encourage the people to reduce their contacts to those in their households.
Timeframe	The advice remains in place until the beginning of Stage 7 – Reopen. For a single county, this period could be expected to last between 4 and 6 weeks, depending on the number of new cases at initiation.

Outline

The seal stops the virus spreading into the county. The stay-at-home policy stops it spreading *within* the county. Both policies are necessary to achieve elimination, and their strengths multiply when used in combination.

In an environment without restrictions, the virus will spread exponentially and in proportion to the number of people in the county. Fortunately, the reverse is also true. When movement and interaction are minimised, the number of new cases will also *decrease* exponentially, so we can go from 1,000 cases to 100 to 10 as quickly as we went from 10 to 100 to 1,000. A stay-at-home policy is key to achieving that exponential decline.

If the people can reduce their contacts to only those in their household, the virus cannot jump from one place to another, which greatly simplifies the task of finding and isolating all cases. The policymakers can be confident that the mass testing program is picking up every infection, and the people will learn to trust the elimination protocol. Minimising interactions at the civilian level is deeply intrusive, but it is necessary to eliminate the virus in the shortest time possible.

Implementation | How to Minimise Activity

All but the most essential of services are stopped for the duration of the elimination protocol. Schools and creches are not open. There is no non-essential retail, no personal care services, no construction, no café or restaurant take-away services, and no weddings or christenings. Some essential food retailers would continue their operations (including off-licences), but strict social distancing requirements would be in effect. Even then, we aim to deliver as much as possible directly to households. Ideally, the people would have no reason to leave their homes, bar for exercise, walking the dog, or whatever else is required to maintain their health and sanity.

The better we can adhere to these day-to-day restrictions on movement, the more room we have to make exceptions on compassionate grounds. For example, if there was a high level of

adherence to the restrictions, it would be possible to allow limited numbers of people to gather for socially distanced funerals.

Implementation | Strict Does Not Mean Harsh

This protocol is strict, but we should not confuse strict with harsh. There are many levers that policymakers can pull to make the stay-at-home period a more tolerable and humane experience.

The government can work with local authorities, the GAA, residents' associations, and other community groups to ensure that everyone in their communities is safe and cared for. Those conversations begin in Stage 1 – Prepare. Local taxi drivers and volunteers can offer to do odd jobs and errands like sending packages, collecting prescriptions, or simply checking-in on people. If feasible, local artists and performers could be invited to play for people in their neighbourhoods. National news and social media can support online group activities, such as cook-alongs, exercise classes, or educational projects. A 6-week lockdown is plenty of time to work on a new skill, like gardening, playing the guitar, or learning cúpla focal.

International | Ireland's Soft Power

The pursuit of a national elimination plan for Ireland would be a globally significant event. The successful completion of the project would require the co-operation of the two countries on this island, with support from the governments on the island next door. This would be an internationally significant event and policymakers should use that profile to the nation's advantage.

For example, the government could engage Airbnb to help make some of its properties available to serve as isolation and quarantine facilities. Ireland could invite Netflix to offer the Irish people a free month's subscription to its streaming service during the stay-at-home period. LinkedIn could offer free access to online training courses to those who would be in the job market post-elimination.

There are many ways that the big multinationals could contribute to this project. Ireland only needs to give them the opportunity to do so. Given that they stand to benefit from the elimination of the virus, they might be keen to get involved. If there was ever a time for Ireland's leaders to stand up and flex the nation's soft power, this is it.



4 – TEST

Goal	To find every case of the virus as quickly as possible.
Policies	Initiate a mass rapid testing program that aims to serially test – repeated tests over multiple days – every individual in the county. Participation is optional, but strongly encouraged.
Timeframe	Mass testing starts in the first week of the stay-at-home period and continues until Stage 7 – Reopen.

Outline

With the county seal in place and the stay-at-home order established, the virus will be fixed in place and the mass rapid testing program can find it quickly. This approach tests households on multiple occasions over a period of a week to 14 days, and a series of negative results provides very strong evidence that the virus is not present.

While an individual rapid test has a lower sensitivity than a PCR test, repeating the rapid test over multiple days will increase the overall sensitivity of the testing regimen. A single rapid test with a sensitivity of 50% becomes 75% accurate on the second day, and 87.5% accurate on the third day. By taking advantage of this multiplicative effect, the repeated rapid testing regimen is cheaper, quicker, and more flexible than PCR testing, and in the context of an elimination framework, is significantly more effective.

The addition of a mass testing program is the biggest difference between this elimination protocol, and the first lockdown that took place from March to June 2020. The repeated testing of the population speeds the process of elimination and shifts the burden of adjustment from the people onto the policymakers, who would be responsible for its implementation.

The successful execution of a mass testing program presents a logistical challenge; firstly, to acquire and mobilise the necessary resources, and then to ensure that the testing regimen is implemented consistently and effectively. However, there is extensive international experience from which we can develop principles of best-practice, and many international experts would be happy to offer their advice. Ireland is limited only by the ambition of its leaders.

Implementation | Logistics

Tests are administered via mobile testing units, in testing centres, at drive-through testing facilities, and with home test kits. Offering multiple testing options will increase the number of tests performed and reduce the risk that the testing method leads to accidental infection. High-risk households (large, shared accommodation) and high-risk individuals (essential workers) are tested early and often with both rapid tests and PCR.

Individuals in large households (not families) could be invited to choose voluntary quarantine in order to reduce the risk to themselves and to their housemates. Low-risk confirmed cases (young / healthy) go to safe and comfortable isolation facilities and their contacts and housemates are moved into quarantine. High-risk confirmed cases (older / comorbidities) go by ambulance to local hospitals and medical facilities as required.

Implementation | Respect for Civil Liberties

While this testing protocol relies on high levels of public participation to be effective, some citizens will choose not to be tested. In a liberal society, such a personal decision can only be made by the individual and their choice must be respected. Rather than vilifying those who refuse to be tested, we should give them every opportunity to reconsider their decision, while recognising that the protocol does not need 100% participation to be successful. It should also be recognised that had this crisis been handled effectively in the first few months of 2020, few – if any – of the extreme infringements on our civil liberties that have been experienced over the last year would have been necessary, and the nation would not have found itself in a position where mass testing was required.



5 – ISOLATE

Goal	To isolate the virus and remove it from the population.
Policies	Establish safe and secure quarantine and isolation facilities. Safely manage the transfer of individuals to and from those facilities. Confirmed cases are isolated until they are healthy and non-transmitting. Close contacts remain in quarantine for 14 days.
Timeframe	Isolation and quarantine facilities become operational at initiation of the plan and remain functional beyond Stage 7 – Reopen.

Outline

A mass testing program will lead to a short-term spike in the number of new cases detected. These cases will need to be isolated, and their close contacts (of which there should be very few) quarantined. It is essential that we have sufficient capacity to meet the demand for these services, including the staff needed to manage the facilities effectively. This capacity is separate to other health care capacity, including hospitals and ICUs, which would be reserved for high-risk cases.

Ensuring that the virus does not transmit within these facilities presents a challenge, as was demonstrated in Victoria, Australia. We can minimise the risk of an outbreak within a facility by using smaller, more local venues as our isolation and quarantine locations. Smaller venues also allow individuals to receive a higher level of care and attention, for example through better food and more opportunities to leave their rooms and exercise outside.

Implementation | Home Isolation

If individuals live alone, the priority should be to enable them to isolate in their homes. Self-isolation does not require additional capital investment, and there is less risk of accidental transmission. However, self-isolators would need daily monitoring and that may require the use of GPS devices, or employing volunteers to make regular (at least daily) physical house calls. These control mechanisms are essential. Isolation must be actively and consistently verified to ensure the effectiveness of the elimination protocol.

Implementation | Isolation and Quarantine Facilities

The facilities must be able to house the isolating individuals, plus the public health workers needed to administer tests and other medical treatment, and the security needed to ensure that individuals cannot ‘walk-off’. Isolation capacity can be sourced through hotels, guest houses,

and Airbnbs. The government pays for their use and funds all investments needed to meet the requisite outbreak control and safety standards. Smaller and more local facilities are preferred as they present a lower systemic risk. Individuals are less likely to pick up or transmit an infection in a smaller venue. In contrast, a large hotel with several hundred rooms would warehouse the virus, risking a more serious community outbreak.

Implementation | Transportation

Local taxi drivers can be incentivised to offer their services to transfer individuals to and from these facilities, as well as to and from testing centres, hospitals, and other medical facilities. Owners of private transport services, such as minibuses belonging to sports clubs and other community organisations, could also be encouraged to donate their vehicles for the duration of the protocol. Ambulances and other health service vehicles should be reserved for high-risk cases and other emergencies. The more private sector resources that can be built into the plan, the less demand there will be on the public sector infrastructure.



6 – WAIT

Goal	To build confidence that the virus has been eliminated.
Policies	Mass testing continues until the county has recorded 14 consecutive days without a case of community transmission. If a case is discovered, the day count restarts at zero.
Timeframe	The 14-day confirmation period is a threshold at which policymakers can consider reopening society.

Outline

There is no single, established definition of the elimination of COVID-19. Some regard the existence of clusters that can be managed within the public health infrastructure as being consistent with elimination. This Framework presents a stricter definition that is consistent with the approach taken in New Zealand and Taiwan.

The goal of establishing a series of 0-case days is to build confidence across society that the virus has been eliminated. Prematurely reopening society risks sparking an outbreak that could set the plan back many weeks, and this would deal a great blow to the public's morale. Given that many carriers are asymptomatic, policymakers must be especially cautious at this stage. There is always a small possibility that the virus is circulating out of sight, and it simply isn't worth reopening a few days earlier if it means risking further community transmission.

While it is possible to eliminate the virus, it is not possible to know when the point of elimination has been reached. This creates an ambiguity that some find difficult to accept. They can resolve the ambiguity by recognising that every day without a confirmed case provides more evidence that elimination has been achieved. For most people, this period will be characterised by feelings of nervousness and excitement as they will be so close to getting their lives back, and the uncertainty about the presence of the virus will diminish over time.

Implementation | Prepare for Stage 7 – Reopen

Policymakers can use this period to prepare for the reopening of society. Their primary responsibility is to ensure that the public health functions are ready to identify infections and to suppress transmission without resorting to restrictions on civil society. These measures include a robust contact-tracing program that backward traces 14 days, and a surplus of testing capacity to perform the population-level screening and surveillance testing required to detect rogue cases in the population at the earliest possible time.

The reopening process is managed in phases, with the degree of social distancing reducing with each subsequent phase. The measures that are in effect in each phase are communicated by the

government well in advance of implementation. Most venues are open from the start of Stage 7, so businesses, clubs, community centres, and other public spaces can use this time to make their own preparations for reopening, and the government will support them with clear guidance.

Implementation | The Uncertainty of Establishing Elimination

While it is possible to eliminate the virus from the island, it is not possible to *prove* that it has been eliminated, or to know the exact moment at which elimination has been achieved. That means that we are implementing a plan with a clear goal, but one that we can't know that we have reached. For some, this will create a feeling of ambiguity or uncertainty, but it will only be temporary. While it is true that there will always be a small possibility that the virus is circulating out of sight, each additional day without recording a case allows the people to be more confident that elimination has truly been achieved. In addition, with the appropriate public health measures in place – a strong contact tracing system and a stockpile of testing capacity – the people can be confident that any further infections can be managed without heavy restrictions on their lives.



7 – REOPEN

Goal	To safely and reliably return society to normal.
Policies	The county bubble remains in place. Businesses and public spaces are opened, and social distancing gradually reduced, while minimising the risk of super-spreader events. Health care resources are moved to population-level surveillance and screening, and a robust contact tracing system takes effect.
Timeframe	Most business and other social venues can expect to resume normal operations within 4 weeks of reopening, with the reopening of the largest venues deferred.

Outline

The reopening process is managed in phases that gradually lower the degree of social distancing in society. The phases and the measures in effect are communicated by the government in advance of implementation. As more time passes without a confirmed case, the risk of hidden transmission falls, so larger numbers of people can be allowed to gather and in higher densities. As we work through the phases, the social distancing requirements are eased, and society gradually returns to normal.

Schools and creches are open. Gyms and salons are open. The vast majority of businesses, venues, and public spaces are open and free to serve their customers from the start of the reopening process. The number of customers that they can serve is determined by the venue's risk profile, including the size of the premises, the degree of ventilation, and the duration of the customer's stay. Restrictions remain on venues and events that are exposed to super-spreader risk, but these restrictions begin to roll off after a month without a confirmed case.

The fear and uncertainty that has characterised life in Ireland over the last year can only end when the people are confident that their health can be protected without resorting to civilian-level restrictions. This can be achieved post-elimination by combining population-level screening and surveillance programs with a robust contact tracing system. If these measures are designed and implemented effectively, the people can be confident that the days of extreme restrictions are behind them. The clouds will part, and they can begin to plan their lives again.

Implementation | Screening and Surveillance

Screening and surveillance are population-level measures that can find pre-symptomatic and asymptomatic individuals in the population, enabling earlier detection of the virus and reducing potential transmission. They include PCR testing of sewage and wastewater, temperature checks at entrances to public spaces, and repeated rapid testing in schools, universities and workplaces. The rapid testing approach naturally integrates itself into our social lives and community

structures, so that individuals are automatically tested during the course of their day, without having to book a test or wait for a result. High volume rapid testing is also cheaper, simpler, and less resource-intensive than PCR testing, so it provides marginal cost savings over time.

Implementation | Contact Tracing

If and when the screening process leads to a confirmed infection, the individual goes straight to isolation and the contact tracing system will be activated. The individual's close contacts from the previous 14 days are traced and moved to quarantine, where they receive regular testing. Contacts of contacts are also be traced, tested, and quarantined. If the full contact-tracing process happens within 4 days of the test result, policymakers can be confident that they have successfully traced the infection back to its source and there will be no opportunity for community transmission to occur. In a 'ZeroCOVID' environment, there would be few cases to trace and the contact tracing system may not even need permanent staff. It can perform at a significantly higher level and with a lower demand on our health care resources.



SUMMARY

The 7-Stage Elimination Framework is a structured process that can be implemented in any jurisdiction or geographic area to end a contagious outbreak within that region. Whether it is a city, a county, or a country is of secondary concern as the Framework can be adjusted and adapted to the local circumstances. As long as the Framework's key policies are implemented strictly and consistently throughout, the process will ensure that the virus is eliminated.

Sealing the county off from its bordering regions prevents external infection, while the stay-at-home order halts the internal spread of the virus. This combination of policies alone is sufficient to suppress the transmission of the virus, as it suppresses the number of interactions between people. This was the mechanism at work during the first lockdown Ireland experienced between March and June 2020. However, in the absence of any other public health measures, this period of suppression was slow, painful, and inefficient, with the burden of adjustment borne entirely by the people. Maintaining suppression through this approach would require a permanent and extreme lockdown, and that is neither feasible nor desirable.

The addition of a mass rapid testing program greatly improves the speed and efficacy of the elimination protocol. An aggressive rapid testing program that aims to test every individual in the population will reduce by weeks, the amount of time required to find and isolate confirmed infections. This is a key feature of ICAN's 7-Stage Elimination Framework. By maximising the amount of testing resources available to detect the virus, we minimise the burden on the people. The medium of suppression is transferred from their sacrifices to the intelligent policies of their leaders, and this will bolster public morale, speed the elimination process, and lower the total cost of the pandemic.

By enlisting local hotels and guesthouses as isolation and quarantine facilities, the plan also provides Keynesian investment that naturally supports sectors of the economy that have suffered greatly through the crisis. For similar reasons, we should seek to include taxi drivers, musicians, performers, and volunteers to support community engagement during the stay-at-home period. From there, it's a case of holding firm and keeping on top of the basics until the county has recorded 14 days without a confirmed case at which point policymakers can be confident that the county can be reopened, for good.

In order to make that achievable, it is essential that policymakers begin with the preparatory actions outlined in Stage 1 – Prepare. Those efforts can begin at any time, including right now.



DISCUSSION

This paper has presented a simplified ‘whiteboard’ approach to elimination. It demonstrates how we can eliminate the virus from a small, confined region which, in this case, was a single Irish county. The challenge for Ireland’s policymakers is to find a way to turn this theoretical presentation into a practical strategy that can be implemented across the country and the whole island.

ICAN sees four questions that must be answered before we can view elimination at the national level as a feasible strategy:

1. How to scale the strategy from one county to many?
2. How to manage the complexity of Dublin and its commuter zone?
3. How to achieve the levels of public adherence needed to make it a success?
4. How to win Northern Ireland’s support?

These are no small hurdles to overcome. But they *can* be overcome, and we must try. Herd immunity via vaccination, if achievable, is at least another 9+ months away, so we have plenty of time to talk, to prepare, and to be ambitious. ICAN will address each of the questions listed above in a follow-up paper, but we would like to leave you with a few thoughts.

The Elimination Framework benefits from economies of scale. While it would take 4-6 weeks to clear the virus from a single county, a group of neighbouring counties (say 3 to 6) could successfully eliminate the virus in a similar amount of time, say 5-8 weeks. The key assumption underlying that estimate is that sufficient medical resources are available to fully implement the protocol. With sufficient tests, health care workers, and isolation facilities, it is reasonable to assume that parallel implementation of the elimination protocol across several counties could be completed in roughly the same time.

The greater Dublin area is more dense and higher risk than the rest of the country. The region will need a broader definition beyond Dublin’s county borders, and it would then need to be broken into smaller parts. From there, however, the protocol would proceed as for every other county: seal the region off, douse it with tests and medical resources, and remove the virus in the shortest possible time. The key to clearing Dublin, as it is with clearing multiple counties in parallel, is the creation of a surplus of medical resources, primarily rapid testing capacity.

Rapid testing is a cheap, simple, flexible policy tool that can be utilised to achieve multiple public health goals, including to suppress transmission via population-level screening for asymptomatic carriers, or to achieve elimination, as outlined in this paper. While an individual rapid test produces at a lower level of sensitivity than a PCR test, a program of serially testing the population with rapid tests produces a similar level of sensitivity as PCR, while also being cheaper and easier to use. Rapid testing should have played a central role in our pandemic response, and it is disappointing that our policymakers have neglected this powerful and versatile public health measure.

Finally, Ireland will find it much easier to work with Northern Ireland on this project if it includes the United Kingdom from the start. Reaching out to all governments on our neighbouring island will take the pressure off the North-South and Westminster-Stormont relationships. If we can reframe this project as one that serves the health and well-being of every country and every community, we stand a far greater chance of success in this endeavour, and we will build a foundation for future co-operation on our shared islands.



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