

Reflections on Two Years at War with Covid-19



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This article offers personal and professional reflections on the role of science and research, in Ireland and internationally, as we have grappled with Covid-19. An important lesson the pandemic has taught us is that Ireland's national research funding systems must be designed to support the full range of disciplines across the humanities, social sciences, science, and engineering.

Introduction

It is early September 2021, and I am returning to my office in Maynooth University for the first time since Friday 13 March 2020, having worked from home for 18 months. A newspaper lies on a table by a window, yellowed by the sun of two summers. It is the *Irish Times*, from that fateful Friday, the headline quoting the then Taoiseach Leo Varadkar TD: 'We have not witnessed a pandemic of this nature in living memory. This is uncharted territory.'

Little did we know how true this was or comprehend what lay ahead of us. Schools and colleges were to close, and a wider set of public health restrictions were to apply for 19 days, until 29 March 2020, but the reportage at this point was already suggesting that educational establishments could close until Easter, and restrictions 'could remain in force for months'.

Today, as I write this reflection, is 3 December 2021, 643 days since we notified the first case of Covid-19 in Ireland on 29 February 2020. Up to midnight last night, we have confirmed 583,472 cases of SARS-CoV-2 infection, 20,655 of whom have been hospitalised and 2,197 admitted to intensive care. 5,743 people have sadly died.

The Taoiseach and cabinet grapple with the rapid growth of a fourth wave of infection, which is so large it threatens to overwhelm the defences offered by a vaccination programme that is unprecedented in its scale, speed, and effectiveness. A new variant, Omicron, emerges as a threat we cannot yet understand or quantify, and yet again the Taoiseach, Micheál Martin TD, comes to a podium to tell a tired and frustrated nation that he has received 'some very stark advice from our Chief Medical Officer and our Public Health Experts that requires the reintroduction of a number of restrictions'.

The human, social, and economic cost of this pandemic has been extraordinary. Our lives have been damaged, disrupted, and transformed. And it is not over. It leaves us with much to grieve for, much to reflect on, and much to learn.

The value of science

There is no doubt that science and scientists have done us an extraordinary service during the pandemic. Knowledge and expertise built up over centuries were deployed in an unprecedented global effort to understand and mitigate the infection.

The first reported case developed symptoms on 17 December 2019. Twenty-five days later, on 11 January 2020, the sequence of the viral genome was published, allowing reliable diagnostic testing, and work to begin on the design of a vaccine. Almost a year later, on 21 December 2020, the European Medicines Agency recommended conditional marketing authorisation for the Pfizer-BioNTech vaccine.

As someone who trained in medicine in the 1980s, when genome sequencing was in its infancy and the development of an effective vaccine was a slow and fraught process, it is stunning that a safe, highly effective vaccine against a novel coronavirus was available just one year after the emergence of the virus. And this is just one example from a wide range of scientific and technological advances and applications that are bringing the virus under control, first mitigating its worst effects, reducing severe disease and mortality, and ultimately minimising transmission and infection.

It is also true that we have seen the scientific process, in all its messiness and complexity, play out in real time and in public. The disputes, debates, controversies, and paradigm shifts that are essential to the advancement of knowledge, which normally unfold within the confines of a given field, in its learned societies and journals, are now also transacted over the airwaves and on social media, with insufficient regard for the traditional boundaries of academic fields of expertise.

On the one hand, this has raised awareness of the power of science, or more comprehensively, research and scholarship, to address grand challenges. It has served to illustrate that questions in the natural, human, and social sciences are contested and unsettled, and that often there is no such thing as 'the science' to be followed by the policymaker.

However, there has also been a temptation for us as scientists to speak with too much certainty, to argue too strongly for our point of view, and for its urgent translation into policy. There is a danger that this leaves the public confused and concerned. It obscures a difficult reality that public health advice has had to be formulated, and policy decisions made, with extraordinary urgency based on scant and imperfect information.

A central problem in this pandemic has been the sheer volume of research generated, making it challenging, under emergency conditions, to separate the wheat from the chaff and establish an evidence base for policy decisions. This process normally takes years but is now done in weeks or days, in the full glare of the media spotlight.

Expertise and public service

My direct experience of this scientific and public health effort has left a deep impression on me. Early in the morning of Sunday 8 March 2020, the chief medical officer, Dr Tony Holohan, called me to ask if I would convene an

expert group to monitor and develop quantitative models of the likely course of the pandemic in Ireland. As he memorably put it: ‘We’ve had sight of some very good modelling from the United Kingdom; but we can’t just copy their homework, we need our own models adapted to our context.’

It is impossible to properly describe the quiet but essential public service that has been provided, for almost two years, by the dedicated team of applied mathematicians and modellers, computer scientists, statisticians, infectious disease epidemiologists, and public health specialists, which was convened over the next few days as the Irish Epidemiological Modelling Advisory Group (IEMAG), and which grew to over 40 people. It is what it is: quiet, essential public service, the sort of public service that was replicated across so many sectors and that sustained us through some dark days.

This team, starting from nothing, built a set of models and analytic techniques to help the National Public Health Emergency Team (NPHE) and government think rigorously and quantitatively about how different actions and decisions might influence the course of the pandemic, models which performed very well compared to the best available internationally, and the more innovative aspects of the work have been published so that they can be used by others. They worked, and continue to work, nights and weekends over and above their teaching, research, and service work, to support NPHE and government.

It is also important to acknowledge the simple fact that we had this expertise available to us. It is an eclectic set of disciplines, and the talent we could call on was there because of broad investment in science over two decades to foster and retain that talent. It is an important reminder that national research funding systems must be designed to support the full range of disciplines across the humanities, social sciences, and science and engineering. They are valuable in themselves, and we can never fully anticipate the circumstances under which we might require a specific ability and expertise which, prior to the moment of crisis, might have appeared obscure, marginal, or inessential.

The wider response of students and staff across the education system fills me with admiration. We should hesitate to use words like *resilience*. The strain of these two years will have taken their toll on our minds and our bodies, and we will have pushed ourselves too far in our efforts to support our students right across the continuum from early childhood to postgraduate and lifelong learning.

Each sector has faced similar challenges but in widely differing and continually changing contexts. The challenges for, and the strains on, educators and educational leaders have been enormous. They deserve our gratitude. But they deserve more. When this is over, they deserve proper consideration of what has happened, and action by society and government to strengthen the system through investments in people, technology, and infrastructure, so that it can be genuinely resilient in facing future crises.

This applies across the full range of public services, not just health and education. When the history of this pandemic is written, I suspect that one conclusion will be that countries with strong public services, and with public trust in the good administration of government, will have fared better than those without.

One of the criticisms of NPHEt that puzzles me was the assertion that there are too many civil servants. This is not my experience. The assertion fails to value the diverse professional experience, expertise, and capacities essential to a modern public service. The formulation and implementation of good public policy is a discipline and skill of its own, to be valued and respected, and different from the practice of science or medicine.

It has been a privilege to work with a large number of public servants in the Department of Health, other departments, the Health Service Executive (HSE), and a range of agencies, who have impressed me deeply with their ability, intellectual energy, collegiality, humanity, work ethic, and effectiveness. The pandemic is a strong argument for systematic investment in public services, to protect citizens and the economy from internal inequalities and external shocks.

It has been a particular privilege to work closely with colleagues on NPHEt; it is an experience unprecedented in my professional life, and unlikely to be replicated. The public figures are well known: Dr Tony Holohan, Dr Ronan Glynn, Dr Cillian de Gascun. The nation could not have wished for better, stronger, or more resilient leadership than that which was provided by, and continues to be provided by, those individuals, and by the wider team.

The public will be less aware of the central element of our public health response, the regional departments of public health and their staff and leadership, among whom there are many heroes. It is appropriate to single out an exemplar, Dr John Cuddihy, director of the Health Protection Surveillance Centre (HPSC), who along with his dedicated staff, day after day, has gathered the data, marshalled the response, and translated broad public health advice into specific guidance and protocols.

Concluding thoughts

Normally a time of year when we spice the dark days with joy as the season turns, we face a second Christmas with a sense of anxiety and constraint, knowing that we are well protected by vaccination, but uncertain as to what this new variant will bring. Exhausted, we are called again to protect ourselves and each other by avoiding that which we crave, close human contact. Let us remember that this pandemic will end. And when it does, it will be important to heal, but not forget.

The pandemic is just one aspect, an explosive and frightening aspect, of our ecological crisis. The emergence, crossing of the species barrier, and rapid global spread of SARS-CoV-2 occurred in the context of our changed relationship with and impact on the ecosphere. The pandemic, like the climate and ecological crises, can be mitigated by technical solutions, but fundamentally it requires our collective action through changed behaviours to protect our species and our planet.

The pandemic is a reminder, perhaps our last reminder, of the power of nature, and the fact that we must adapt to its rules, because it will not bend to ours. The cost of a delayed response, an incomplete response, or a divided response is enormous.