Covid-19 Mismanagement in Ireland

This article will consider the potential for political and public-health mismanagement of the Covid-19 crisis, since confirmation of the first case in Ireland on 29/2/2020 to the time of writing 12/4/2020. I will begin with a brief outline of some of what is known about the Covid-19 virus, and what is known about Coronaviridae in general. Using both the available information and data from the UK and Irish census, I shall point to various demographic facts pertaining to the Irish and UK jurisdictions. This data suggests that the current political and medical response in the Ireland, is flawed, that current and previous Govt predictions in respect of management been widely 'off point'. Current expert advice has failed to consider relevant demographic data and potential opportunities for a more tailored and effective effort at containment may have been overlooked.

Covid 19. What is it?

The etiological agent responsible for the Covid-19 pandemic is recognized to be a coronavirus. These are described as relatively simple RNA viruses that were first identified in poultry in the 1930's. This family of viruses presently contributes to some 20-50% of cases of the seasonal or annual 'common cold'. (1)

Coronavirus might reasonably be described as a 'common' cold virus. However, it is clearly a cold virus with a difference, in that it is potentially fatal among certain defined population cohorts.

At the time of writing, the UK Prime minister Borris Johnson has a cold/flu type illness that has most likely been caused by Covid-19. It is very unlikely that Borris will die from his covid-19 cold. However, Borris (like anyone in a similarly unfortunate position) would like to know, what are the risks he must face, and how his condition is to be effectively managed personally and by society? In like manner medics, govt, and leaders must consider their 'patient-population' and the communities they are responsible for, as potentially 'infected'. They too must come up with evidence-based approaches to deal with the crisis.

Borris has been or is presently a smoker. He has (in some well publicized media interviews) admitted to having smoked cigar(s), and used cocaine in the past. (2) From his current photographs he appears to be somewhat overweight. In this sense Borris may be reasonably described has having had, or presently having some underlying or pre-existing health issues, and as such, whilst his age profile would suggest that he is unlikely to die from Covid-19, he is likely to have a worse experience or outcome than might be the case for an otherwise healthier male of similar age.

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To date a major difficulty with Covid-19 has been the enormous variability in morbidity/mortality data, the variability between countries, and the variability in individual outcomes. However certain risk factors have been almost universally agreed upon vis; 'age',

and the presence or absence of underlying health issues. This article will focus primarily upon the significance of ‘age’ as a risk factor for Covid-19 related mortality, and as it should perhaps feature in current management strategies.

Italy and Spain have endured a high mortality and high morbidity, whilst the Swiss who share a border with Italy have had a significantly better experience to date. Interestingly the Swiss have one of the highest infection rates in the world, and yet they have one of the lowest mortality rates. (3) Whilst the differences in mortality across jurisdictions, are great, there are significant demographic, cultural and social factors that readily explain some (if not most) of the difference in mortality.

Covid-19 has consistently shown itself to be of increasing morbidity and mortality among older people with defined underlying health issues. Popular media sources in several jurisdictions often fail to highlight the fact that the median age of mortality, is generally above 80yrs of age, and the presence of defined underlying diagnoses, are common among fatalities. (4)

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It is very likely that the many deaths presently being reported as ‘deaths from Covid-19′, would more correctly or more reasonably be described as deaths associated with Covid-19. There is a subtle distinction here, one that is frequently lost in popular media. The lack or inappropriate reference of such a distinction can only serve to add to what might be described as a ‘pandemic of panic’.

Whilst every death is a tragedy for victims and families; the death of a child, and that of an elderly patient with multiple underlying conditions, are two entirely different types of death. Both require different approaches in respect of ascertaining the precise cause of death. A patient with several decades of chronic heart failure, or chronic renal or liver failure etc., may well die ‘with’ or ‘from’ a Covid-19 infection. However, the degree to which that infection has ’caused’ the death of the patient, is different to the degree by which Covid-19 might be solely responsible for death of a young healthy adult.

Undoubtedly this type of analysis is open to the criticism of being ‘less understanding’ or even ‘inhumane’ towards the plight of an older unwell patient with Covid-19. However, criticism of this kind fails to recognize the clinical distinction being made here, and simply confuses or conflates the terms; ‘distinction’ and ‘discrimination’.

The popular and rather brutal use of mortality figures in most jurisdictions, adds to the panic and social anxiety in respect of the crisis; and this (as will be alluded to later) may be having a negative effect upon the immuno-response within populations, and thus contributing to the overall virulence of the disease itself

Popular Media

Whilst it is likely to be a common cry from a somewhat extremist perspective; the role of the media in the spread of ‘panic’; the role of that panic or anxiety in the pathogenesis of Covid-19 (and almost all disease) remains a clinically and empirically valid issue. This has been the subject of some detailed analysis to date. (4) This particular issue is beyond the scope of this

article, however it might be reasonably asserted that the management of social anxiety has not been a feature of management strategies across jurisdictions. Quite the inverse appears to be the case, and Government advice continues to urge ever greater degrees of justified caution and 'unjustified' fear.

For example, there have been recent media reports of 'children' having succumbed to infection with Covid-19. Recently the tragic death of a 13yr old boy in the UK, was reported under the following headline by the BBC on 13/3/2020:

"Coronavirus: 13-year-old boy dies, says London hospital trust."

The case was simillary reported in Ireland and around the world as a 'Coronavirus death'. However the same initial BBC report, ends with the following statement.

"It is important that a coroner assesses whether a postmortem is necessary to further understand the exact cause of death." (5)

Media must function within an advanced capitalistic context, it must 'sell' news. Analysis of its contribution to the pathogenesis will undoubtedly be retrospective 'news'.

Herd Immunity

At present there is no vaccine available for Covid-19. The absence of a vaccine has greatly contributed to the 'pandemic of panic', in respect of the virus. It is commonly believed that this means there is no 'cure' for the virus.

There is however an entirely inevitable and 'natural cure' for the virus. The fact is, that 80-90% of those infected will by all accounts experience nothing more than symptoms generally associated with a standard 'cold' or 'flu'. There is no 'cure' for Covid-19, in the same sense that there is no 'cure' for the 'common cold'. The cure for both conditions lies in the reality that infection is not dangerous for the vast majority of victims. Following an infection, the significant majority who survive, are expected to remain immune to (the same) virus for quite some time. This is the same reality for cases of the 'common cold' and seasonal 'Flu'.

Once some 60-70% of a given population have been infected, effective immunity has been established within that population (6). This 'immunity' is commonly referred to as 'Herd-Immunity'. It is the process whereby populations become immune to the common-cold; and in the absence of a vaccine, 'Herd-Immunity' is the only available mechanism whereby any given population will become progressively immune to Covid-19. Indeed, this is the case most community acquired viral infections that are not amenable to vaccination.

Spread, becomes increasingly difficult, and the virus eventually expires.

It is a regrettable that the concept of 'Herd-Immunity' has been somewhat vilified in the media, since it was first openly discussed by UK officials at the onset of the crisis in the UK. The political 'encouragement' of it's development, has been portrayed in a negative manner, as a something of an 'experiment' or a cruel and rather inhumane response to the crisis. (7&8)

Herd-Immunity is an inevitable consequence of the Covid-19 pandemic. In the absence of a vaccine and if environmental or climate related factors are not influential upon reducing spread of the virus, Herd-Immunity is the only viable means of eradication.

'Herd-Immunity' is not the enemy, it is a natural and inevitable part of the process. Once some 60-70% of a population have been infected and recover, existing infections are unlikely to spread within that population. On each occasion that an infected individual meets another person in the community, the virus has a significantly reduced opportunity to spread. When a newly encountered 'potential host' is in fact immune to the virus (by virtue of that he or she has fully recovered). Spread, becomes increasingly difficult, and the virus eventually expires. Unfortunately, this type of immunity is contingent upon the fact that the original viral infection is the same virus; that the virus itself has not mutated and can therefore re-infect the initial host for a second time.

Viral mutation is not 'science fiction', it is part of the natural evolution of viruses. It is for this reason that the same person can have a cold virus infection on more than one occasion. Either they have been infected by a different cold virus, or the initial virus has mutated to the extent that it is no longer rapidly recognized by the immune system.

Viral mutation within a population is an inevitability, and it is contingent upon time and the availability of hosts. Unfortunately, an unavoidable consequence of 'lock-down' and social distancing is that Herd-Immunity is effectively delayed, and in this sense an increasing amount of time is afforded to the virus permitting and possibly encouraging its mutation. In our efforts to delay the spread of the virus, the virus itself is afforded more time. This may well be good for us, but it is also 'good' for the virus.

Risk groups

A difficulty with Covid-19 is the fact that it is quite dangerous if indeed it is contracted by defined cohorts with defined age profiles and specific underlying medical conditions, (we shall approach this issue later). As such, many of the difficulties encountered by jurisdictions, are relative to the number of individuals within these cohorts, and the rate at which members subsequently require, ICU admission, hospital beds, or the use of mechanical ventilation equipment etc.

It is for this reason (necessity not to overload health-infrastructure) that all jurisdictions have adopted policies of isolation and economic shut down. This approach inevitably slows the natural development of Herd-Immunity and attempts to 'flatten the curve'. In jurisdictions such as; Ireland, the population or cohort of 'at risk' individuals, is significantly lower. Where population densities, are lower, and significant demographic differences exist, entirely tailored strategies could potentially be less expensive and more effective at preserving some degree of Herd-Immunity, whilst also controlling the number or rate of presentations for hospital services.

Unfortunately, Ireland has not tailored its response to reflect these factors, but instead, has simply followed the lead of other jurisdictions, with entirely different demographics and mortality/morbidity statistics. It remains unclear why this should be the case. The role of popular media has already been alluded to here. This might well be described as a 'one glove fits all' solution, that is of course, yielding entirely different results across different jurisdictions.

It will be pointed out here that the Government's initial predictions in respect of; Covid-19 infections, fatalities, ICU needs and expanded hospital capacity, have proven to be gross over-estimations. Officials may be quick to attribute the lower than expected numbers, to government measures, however such an assertion does not hold up to closer scrutiny.

In respect of most community infections, three important factors will influence the spread of a given viral infection. The viral agent itself, the host (those likely to be infected), and the environment within which both the host and the virus co- exist. In respect of the current crisis, two of these factors remain relatively constant across each jurisdiction; the virus is the same virus, and within each jurisdiction the age and vulnerability profile of those who die from infection (by all accounts) remains largely consistent.

Broadly speaking the remaining variable is that of 'environment' (for our purposes here we shall consider demographics as an 'environmental factor'). In this sense, environmental factors are the most likely variables that have contributed to the different mortality stats, across different jurisdictions.

Italy for example, has had a much higher proportion of fatalities than other European nations. A cursory review of some of the environmental, social and cultural differences between jurisdictions sheds immediate light upon the influence of these environmental/demographic factors.

- The Italians have the oldest population within the EU
- The Italians have a higher than average number of smokers
- The Italians kiss each other 2-3 times when the meet and greet
- The Italians congregate in large numbers for regular religious gatherings.

There are of course other 'environmental' factors that have no doubt had a significant influence upon the Italian mortality figures, and the above are simply obvious ones that are immediately apparent. Given these factors, the 'surge' in cases, the size of the Italian at-risk population, and the inevitable collapse of the Italian Health Service, would validate their national response in respect of strict isolation, lock-down and economic paralysis etc.

A comparison between Ireland and Italy in respect of demographics might not be fruitful, and instead a more reasonable comparison might be made between Ireland and the United Kingdom. Cultural practices between both jurisdictions are very similar, dietary factors, climate etc. Indeed, the general mode of life in both countries is comparable on many levels. There are however significant demographic differences, and it can be shown that these factors correlate more directly with the difference in mortality data between both jurisdictions.

The population of the Republic of Ireland is roughly 10% that of the UK. Therefore, it might not be unreasonable to expect that Ireland's deaths from Covid-19, should very loosely be expected to be in the region of 10% of those for the UK. However, this estimate proves facile, and the number of daily deaths reported in the UK (to date) is generally in the order of 20 to 30 times higher than the number of deaths in Ireland. At the time of writing the total number of deaths in the UK is some 20 times higher than deaths in ROI. Authorities may be quick to relate the 'lower' mortality rates in Ireland, to the political response in Ireland, however this can readily be shown to be an unsound assertion.

Demographic distinctions: Ireland and the UK

Given that Covid-19 has its highest mortality among the elderly, and those with underlying health problems, data pertaining to one of these factors (age) is readily available from the published census data of both jurisdictions:

"The UK has an ageing population (ONS, 2018k). There are nearly 12 million (11,989,322) people aged 65 and above in the UK of which: 5.4 million people are aged 75+, o 1.6 million are aged 85+, o Over 500,000 people are 90+ (579,776) o 14,430 are centenarians (ONS, 2018f, 2018e)" (9)

Therefore, it must be recognized that presently some 18% of the UK population are over 65 yrs old. Let us now compare this to the Irish population:

Ireland Demographics Profile 2019. 5,068,050 (July 2018 est.) 65 years and over: 13.32% (male 312,694 /female 362,455) (10)

Whilst the percentage of over 65yrs might not seem hugely different between both jurisdictions (13% Ireland, vs 18% UK) Closer scrutiny of these figures reveals major distinctions that are crucial to understanding the different morbidity and mortality figures within either case.

In the UK, 12 million residents are over the age of 65, whilst in Ireland 675k residents are over the age of 65. One must pause here and reiterate for the purposes of clarity. There are 675k over 65yr olds in Ireland, there are 12 million over 65yr old's in the UK.

In respect of age alone there are circa 20 times more at-risk patients in the UK than there are in Ireland. As such if we restrict our comparison of both jurisdictions simply to age alone, we find a compelling correlation between the number of deaths in both jurisdictions.

Whilst the number of deaths in Ireland is still less than the factor 20 difference between both 'at risk' populations (in respect of age alone), it must be borne in mind, that we are simply applying age as the only factor influencing the number of fatalities. The manner by which those fatalities are recorded, and the prevalence of pre-existing health conditions in each jurisdiction etc., would have an additional refining influence upon the correlation presented here.

There are other factors that may serve to make the mortality rate lower in Ireland than in the UK. In the first instance there is a lag of one to two weeks, in that the infection is reported to have arrived some time earlier in the UK than in Ireland.

Notably out of the total of 53 European countries the UK has the 10th highest population density of 267 people per Km2 , whilst Ireland is ranked 43rd with a population density of 65 people per Km2 Population density in Ireland is some four times lower than that of the UK. In respect of a community acquired infection, population density is of course a significant factor in relation to contact spread and subsequent mortality. (11)

What these figures illustrate, is that in respect of age alone, as the primary factor influencing Covid-19 mortality; Ireland would be expected to have a mortality rate that is in the region of 18-20 times lower than the UK. In respect of population densities, this factor would have to be reduced even further.

Demographic realities present the Irish authorities with a singular advantage, in that, focused and intensive management of a potential population of 670k at risk, individuals, is certainly conceivable. However in respect of scaling, the short term intensive management of some 12 million individuals, would present enormous if not insurmountable difficulties.

Pre-existing social isolation, in Ireland:

According to the 2016 census data:

"There were 399,815 people living on their own at the time of the last census, almost evenly split between men and women with 195,519 and 204,296 respectively. The numbers living alone increased with age, with 39.2 per cent aged 65 and over." (10)

"In Ireland over one third of people over 65yrs are living alone and 60% of people aged over 80 live alone." (11)

The fact that at least 33% of over 65yr old's, and 60% of over 80yr old's were living alone prior to the arrival of Covid-19, would suggest that a significant number of the at risk population in Ireland are already practicing some degree of social isolation, and have been doing so prior to the crisis. As already mentioned Ireland has one of the lowest population densities in Europe, and as such, 'living alone' in Ireland, is (arguably), significantly more isolated than living alone in the UK.

If we therefore roughly estimate that 33% of the over 65yr old population live alone in Ireland, a significant portion of the remainder are residing in 'two person' households, and only a small fraction of the remainder are living in households with more than two residents. As such, the age-related 'at risk' population in Ireland, is already significantly more socially isolated and socially distanced than those of the UK. In this sense, were Ireland to decide upon an alternative demographic and 'medical-risk' based approach; isolation of at-risk groups, could have potentially been achieved with relative ease, and relatively minimal economic cost.

Unfortunately in Ireland the current popular strategy has sought to isolate the entire population first and those most at risk, vis the elderly and nursing home residents, have featured as something of an afterthought.

Political failings within the current strategy

On the 13/3/2020. The Irish Govt closed schools, and began its social distancing program, in order to curb community transmission. Shortly afterwards, the measures were escalated to a near total social and economic shutdown, with the closure of all non-essential businesses, and a directive to all citizens to stay at home, not to venture more than 2km from their homes etc. Police have been given extra powers to enforce the restrictions. Gross impositions have been placed upon civil liberties and economic function. All with the stated objective of delaying presentations to hospital, of 'flattening the curve'.

These actions whilst perhaps noble in their ideal, are having and will have profound effects upon public-health, and the economic function of the entire nation. Impending economic recession, unemployment, the health consequences arising from near total shutdown of Community Health services, have yet to be accounted for.

Unquestionably the most vulnerable cohort of patients in Ireland are those residents of Nursing Homes. This fact should have been entirely obvious to all involved in the management of the crisis. Most of these individuals are of course elderly and most have significant underlying health conditions. Nursing home residents cannot or could not be expected to avail of the same measures applied to the general public. Their needs and care were only considered at a Ministerial level on 30/3/2020, long after the arrival of the virus on 28/2/2020. It beggar's belief, and remains an evolving tragedy, that these vulnerable people were not considered as the first priority for the state, rather than being the last to be considered.

Up until 9/4/2020, nursing home residents were refused testing in nursing homes where Covid-19 had already been detected. Nursing home staff were advised: ' to presume everybody has it'. Residents who had been booked for testing by their GP's were summarily removed from the queue for testing, without the requesting GP even being informed. Only on the 9/4/2020, after an outcry from some GP's and Nursing Home Managers, was this rule/guideline changed. On 9/4/2020 GP's around Ireland were contacted and requested to 'reapply' for testing, for those residents who's test requests had simply been erased. (12)

Many of these measures are clearly not part of a cohesive strategy, but are likely being made up as we go along. Certainly, this is evident in the context of social welfare payments, where many workers who have become unemployed as a consequence of the crisis, are currently being paid more in Covid-19 related unemployment-benefit, than the salaries of many part-time essential workers who continue to remain employed throughout the crisis. It remains contentious as to why unemployment benefits from the state should be subject of such large increases because of the crisis. Social isolation and the decrease in national spending would suggest that a decrease in welfare payments might have equal grounds, if welfare payments are contingent upon Covid-19 alone

Political instability in Ireland must be considered as a factor influencing the shape of the current response to the crisis. It has been several months since a General Election in Ireland and (at the time of writing) an agreed government has yet to be formed in Ireland.

The current crisis has been managed by an incumbent Government of Fine Gael. With merely 23-24% of public support. Fine Gael are in the unfortunate position of managing a crisis, without a significant political mandate. The consequences of 'bad decisions' during this crisis, are of course significantly different to those that might be faced by a government with a significantly higher share of the popular vote and government seats. The longer the crisis continues, in respect of the current management plan, the longer the incumbents can maintain themselves in power.

In the absence of a political mandate, it might be reasonably asserted that there exists a potentially lower tolerance for mistakes by the incumbent. Certainly, the political consequence of mismanagement for a minority incumbent, would be potentially catastrophic. It is therefore imperative that the current political regime should 'prove' to itself (and its many opponents), that its current strategy is both appropriate and yielding positive results. There is substantive evidence to suggest that this is not the case. The following facts must be considered in the evaluation of the national response to date.

On 12/3/2020 the Irish government closed all schools and initiated the formal process of social isolation and economic shut down. Five days later on 17/3/20 the Taoiseach of Ireland Dr Leo Varadkar, issued a press briefing that was reported as follows:

"Ireland's leader Leo Varadkar has warned that the number of infected during the COVID-19 outbreak would increase 30 percent every day.

Ireland's Taoiseach (Prime Minister) Leo Varadkar told a press conference at the Department of Health on Monday evening that 15,000 cases of the Coronavirus (COVID-19) by the end of March." (13)

The important point here, is that government's estimation of 15k cases by the end of March, was made during school closures, and social measures already in place. The rise in cases was predicted to occur during the measures already commenced on 12/3/2020. There is no evidence to validate the claim that the government intended to avoid its predicted 15k cases through the application of social measures already in place. The predictions of 15k confirmed cases, and a 30%daily increase in cases were made five days after many or most of the social measures were already in place.

It was precisely for this reason (expected 15k cases) that the extra ICU beds were procured, supplies of PPE were purchased, patients recovering in hospital were transferred for convalescence at community facilities, and numerous hotels around the country were converted into covid-19 makeshift hospitals etc.

The increase in cases, was predicted to occur during the existing measures. This increase did not occur. On March 31st the total number of confirmed cases in Ireland was 3235. At the time of writing 12/4/2020 there were circa 9k confirmed positive cases in Ireland.

During the same press briefing the Irish Government, announced that positive cases were expected to "increase by 30% daily". Based on this prediction from a starting point of 15k cases on 31/3/2020 the Government expected a total of 590,606 cases in Ireland as of 14/4/2020. The actual 9k total figure of confirmed cases is obviously far short of the government's estimates. Surprisingly few questions have been asked of the Government in respect of the gross disparity between its estimates and the emergent reality of confirmed cases in Ireland. And surprisingly fewer questions have been asked of the National Public Health Emergency Team (NPHET), whom it is presumed, were at least partly responsible for these estimates.

It has been and will no doubt be claimed that the reduction in confirmed cases is a consequence of the govt response. However, if we are to make this assertion with any degree of credibility, the Government can only assert that the 'additional' measures put in place from the date of its predictions, are responsible for the reduction in expected cases. Given that social distancing and school closures were already in place, the dramatic decrease in expected cases is very unlikely to be solely attributable to the additional measures alone. This type of beneficial effect from the additional measures would be unlikely to have a parallel in any other jurisdiction.

Predictions in respect of ICU bed capacity

Prior to the arrival of covid-19 in Ireland, there were in the region of 250 ICU beds within the Irish jurisdiction. (14) A key priority of Government was to significantly increase this capacity.

There have been 350 deaths associated with Covid-19 in this jurisdiction since the arrival of the virus, to the date of writing this article. Currently (at the time of writing) 150 of those beds are occupied. It is very likely that additional ICU capacity has been unnecessary to date, and that many if not all of the additional ICU beds procured by the state are currently empty.

Indeed, the Chief Medical Officer in Ireland Dr Tony Holohan, on a recent non- Covid-realted admission to a Dublin Hospital, commented on the general lack of attendance at Irish Hospitals since the outbreak of covid-19.

"He said that during his stay, he was concerned by the number of empty beds that lay around him. He urged people who might have illnesses to contact their local GPs or emergency rooms as these medical professionals will be able to guarantee you get the best medical treatment possible." (14)

The point being laboured here is the potential manner by which 'expedience' or bias at a political level, may be contributing to the escalating political response. Regardless of the actual efficacy or need, for many of the Governments imposed measures, there does appear to exist a discernible bias towards an increase in those measures, in spite of the emergent data. In many respects perhaps the measures must be escalated if the measures themselves are indeed to appear commensurate with the actual reality of Covid-19 within the Irish jurisdiction. It may well be the case that some escalation of measures, is being or has been conducted purely towards the validation of the measures themselves.

Our present scenario may be comparable to that of a patient who insists upon antibiotics for his cold, and then believes that the medicine is curing him of the virus. Antibiotics are of course ineffectual in the treatment of viral illness; they do more harm than good. Much politics is already invested into policies that have been implemented upon the back of incorrect or unsubstantiated predictions to date.

Govt sources may be under some internal pressures to misrepresent factual data, in light of the apparent inaccuracy of its initial predictions. This issue may well become more apparent once competent researchers have an opportunity to impartially evaluate the response to date. As an example of one of the many political 'untruths' in respect of published information, take the following statement from merrion.ie released recently. This is from the Irish Governments official press release, 9/4/2020

"There are now 6,574 confirmed cases of COVID-19 in Ireland."

http://merrionstreet.ie/en/News-Room/News/
Statement_from_the_National_Public_Health_Emergency_Team_9t h_April.html

The word 'untruth' is a strong word and it is used with some with reservation, however, the above statement can only be described as such. There most certainly are NOT: "…now 6574 confirmed cases of covid-19 in Ireland"

Testing in Ireland has been ongoing for some 40 days, and the duration of a Covid infection is no more than two weeks. It is far more plausible that at the time of this statement there are (or were) no more than 1500 confirmed cases in Ireland.

Govt sources might counter an accusation of bias or 'political expedience', with the reasonable assertion that the current measures are being dictated to them by NPHET.

In respect of the 'National Public Health Emergency Team', a brief review of the qualifications of members might indicate part of the reason we may have gone so badly wrong in respect of predictions and management strategies to date. (15)

Two crucial areas of expertise would be expected to be fully represented on such a team; a Virologist, and an Epidemiologist. Interestingly, in respect of membership of NPHET; there is no Virologist, and there is no Epidemiologist. There is a Dutch professor (who may presently reside in the Netherlands), who does have an apparent 'interest' in Epidemiology. The present chair of the new Expert Advisory Group providing advice on the Coronavirus to the HSE and National Public Health Emergency Team, is a Pathologist at UCD.

It is difficult to accept that this type of expertise is indeed sufficient. There are many competent Virologists in Ireland and many competent Epidemiologists. An evaluation of the nature or quality of the expert advice is only mentioned in passing here. However, given the broad scope and social implications of guidance from the National Public Health Emergency Team, it is perhaps not unreasonable to ask whether the expertise is appropriate, given the inaccuracies of it's predictions to date.

The lack of appropriate expert guidance in respect of governance and response, was equally highlighted when the initial national-guidelines for covid-19 testing were issued by the ICGP and the HSE, to Irish General Practitioners, at the outset of the crisis. The flawed testing criteria resulted a critical shortage of tests and had to be withdrawn and significantly revised some two weeks after their disastrous consequences

Community Transmission of Covid-19

The stated objective of much of the current policy in Ireland is to reduce the rate of community transmission in Ireland Lets us then consider the government data (govt.ie) in respect of 'Community Transmission' in order to get an idea of how effective the current containment policies might be:

From Govt.ie, under the heading: "How Covid-19 is Spreading": The following figures are recorded under the subheading:

'Community Transmission:'

(IE What percentage of the day's total confirmed cases, are known to have resulted from Community Transmission)

16/3/2020 22%

17/3/2020 35%

18/3/2020 40%

19/3/2020 42%

21/3/2020 43%

23/3/2020 29%*

(*Note: on 23/3/2020 the 'Community Transmission' percent of total, is reported at 29% However a new category of cases appears on this day under the sub-heading: 'Under investigation 38%".)

This means that of the total daily cases (1146) on 23/3/2020 38% of the day's total cases were 'under investigation' in respect of whether they are 'community transmitted'. Let us be very positive here and presume that only half of the 435 cases 'under investigation' turn out to have been community transmitted. This addition would bring the Community-transmitted total to 47%. Lets us (for curiosity' sake) use this more realistic figure as we proceed through the days.

23/3/2020 47% (estimate)

24/3/2020 28%**

(**Note: The same issue arises on 24/3/2020 in that of the total daily new cases (1383) 42% of cases are again classified as 'under investigation' in respect of community transmission. Let us once again be very generous and presume that only half of these turn out to be community acquired. Using the same math, we arrive at a Community Transmission of 49%. Let us once again apply this figure.)

24/3/2020 49% (estimate)

27/3/2020 51%

02/04/2020 62% (https://www.rte.ie/news/coronavirus/summary/)

According to the Govt's published statistics. Community Transmission has steadily increased from 22% to 62%, during the isolation measures. If indeed Community Transmission is increasing at such a rate, perhaps it is time to ask whether isolation is indeed having the desired effect, and whether the mode of spread has been correctly defined.

On 14/4/20 under the heading "How covid-19 is Spreading", "Close Contact Transmission" is recorded as 27%. "Community Transmission" is recorded as 66%. Contrast these figures with 16/3 when cases contracted by community spread was 22%, and close contact was 17%.

To date there has been a 300% increase in 'community transmission', and a 50% increase in 'close contact' transmission. If we are to presume that the isolation measures are effective, we should expect to see a significant rise in close contact transmission, (because of isolation measures), and a fall in community transmission. This is clearly not case.

Additional Environmental factors that may influence containment and spread

Because of the rapid evolution of the current crisis, research into the effect of environmental factors upon covid-19, is lacking. One recent research paper is summarized as follows:

“In applying the paper’s findings to the forecast temperatures and humidity, the authors concluded that the arrival of summer and rainy seasons in the Northern Hemisphere can “effectively reduce the transmission of COVID-19,” (16)

There is of course no controversy surrounding the assertion that UV exposure destroys viral particles. Climate factors are poorly amenable to human interventions (at least in the short term). They may have limited impact upon the spread of the virus, or they may be the most important factors influencing containment and spread. It is concerning to say the least that there is such an apparent paucity of research in this area. Human populations, medics and governments are presently acting upon the basis of a ‘droplet-spread’, as though specific distances and types of isolation are all based upon conclusive research and data, this is certainly not the case.

The stated correlation between mortality rates and population densities does suggest that in the event of aerosol spread those nations with a lower population density would be expected to have a lower mortality rate, and this does indeed appear to be the case. The CDC, has adopted ‘aerosol spread’ precautions, which is somewhat in contradiction with the WHO’s assertion that infection is ‘contact and droplet spread’. In either case the distinction between a ‘droplet’ and an ‘aerosol’ is not entirely clear. The size of a droplet that might contain transmissible virus, and the distance such a droplet might travel (whilst remaining pathogenic), has not been established with any significant degree of certainty.

The success or failure of social-distancing, isolation measures, economic shut down etc are all contingent upon a thorough understanding of the factors influencing the mode of spread. Although it is beyond the scope of this article to consider the distinction between ‘aerosol spread’ and ‘droplet spread’ , it must be recognized that some degree of aerosol spread remains a distinct possibility. There is very limited research in this area, however one recent study has isolated Covid-19 from the room air, from the exhaust of ventilators and in the ventilation systems at facilities where Covid positive patients are treated. (17)

Locking a population indoors, where UV light is filtered out by glass, may not be as beneficial as is currently presumed. With an airborne or aerosol spread, transmission between homes may well be possible. No lock-down can function at the level where continued community spread can be entirely prevented. This is not to say that a lock down is pointless, it is merely to assert that its aspirations can only be imperfect at best.

Regardless of the grey area between droplet and aerosol spread. It is perfectly reasonable to presume that UV exposure does disrupt and or destroy viral particles. In the same way that UV exposure damages living human skin cells. UV light destroys viral particles by disrupting their genetic material. This is old science, and probably does not need to be referenced. Our prolonged exposure to UV light during the long days of summer is undoubtedly related to the general and historical decline in cold virus during the summer months.

It must not be presumed that warmer countries like Italy have ‘more’ UV exposure than colder countries. To do so is to miss the point here. One can easily and more readily experience ‘sunburn’ upon the freezing and cloudy slopes of a snow-covered mountain.

As the Northern Hemisphere moves from winter to Spring those countries further north are the first to experience longer total daylight exposure than those closer to the equator. This fact may contribute to the observation that northern countries appear to have a lower mortality burden. This possible relationship can be readily observed from available international mortality and case burden statistics.

The role of longer days in the containment of Covid-19 is speculative at best. But it does merit consideration. A shorter 'hot bright day in Italy', and a 'longer cold bright day in Iceland' might be considered by analogy: In the former case, nature throws a bucket of water (uv light) at the virus, whilst the latter might be akin to sticking its (the virus') head in the bucket of water for a prolonged period time. A brutal and awkward analogy for sure, however, the apparent decline in cases and or mortality, as one moves from the equator into the northern hemisphere needs further research and consideration.

Exploring the enigmas

Let's begin with perhaps the most enigmatic observation in respect of Covid-19. Healthy children do not generally die from infection. There have been rare and isolated cases where this might be contradicted, however, almost all of these isolated cases remain the subject of much controversy. Most, if not all countries, report an age specific mortality rate of o% in children under 10yrs of age. This is a strange fact, to say the least, and the apparent 'immunity' of young children, may well contain crucial information in respect of management strategies.

In 1796 When Edward Jenner 'discovered' or 'invented' the vaccine for Smallpox, his discovery was made upon the back of his observation that milkmaids did not generally die from Smallpox. Milkmaids, (Jenner noticed), had an occupational exposure to cowpox, a similar infection caused by a similar virus. The Milkmaids (as a consequence of their exposure to cowpox), had acquired an immunity to the smallpox virus. It was Jenner's insights here, that led to the development of vaccines, and the ultimate eradication of Smallpox throughout the world.

Similarly, we might learn much from children's clinical experience with Covid-19. It is not that children don't become infected, they do, just like Jenner's milkmaids. However, they (unlike older adults) do not generally suffer severe illness, and they rarely if ever, die as a sole consequence of Covid-19 infection. What are the important differences between children and adults that apparently afford children such a startling degree of protection or 'immunity' from the virus?

One might presume that there are some hitherto negligible differences between the immune system of a child and that of a healthy adult. The adaptive component of a child's immune system, vis the ability to mount an active immune-response; manufacture white cells, antibodies, etc., is little different to that of a mature healthy adult. So too with the innate or passive component of the immune system.

If the immune systems of children and those of adults were vastly different to the extent that one group is more prone to death from a virus; as a physician I would presume to have been informed of those differences at some point during my training and clinical practice. This of course does not rule out the possibility that my own training and understanding might well be deficient.

A brief literature search at the time of writing this article, does not reveal any major immunological differences between a child and an adult that might explain the disparity. Therefore, how might we explain the striking differences in morbidity and mortality, existing between adults and children in respect of Covid-19?

If we presume that children are as vulnerable to infection as older adults, how is it that their immune systems can apparently clear an infection with relative ease as compared to an older adult? In the absence of internal immunological distinctions, it might be reasonably presumed that external factors are influencing the improved immune -response of children. Conversely, we might presume that environmental factors are perhaps having a negative or depressive affect upon the immune response of older adults. It is the latter presumption that shall briefly be considered here.

It is of course obvious to most clinicians and researchers that an older adult with co-morbidity or pre-existing disease would be expected to mount a less vigorous immune response to an infection than a young healthy child. This is perhaps obvious does not need to be referenced.

Therefore, we are left with the question; What are the factors that depress the immune response of a healthy adult, to a greater degree than that of a healthy child? There are many potential answers here. Adults are often less healthy than children because they have been around longer and have had more time to damage their health via the biggest 'health-damager' for western populations, that is their/our 'lifestyles'.

Cardiovascular disease is the single biggest killer in the western world, and lifestyle is the biggest factor in cardiovascular health; smoking, alcohol, cholesterol, obesity etc. Age itself, is of course a factor, in that older people are weaker, and carry a larger number of co-morbidities. They have older respiratory systems, that have suffered years of trauma from colds flu's etc., and perhaps even more pertinent, potential years of exposure to cigarette smoke. Most children under 10yrs old, do not smoke. (350 million Chinese, roughly one third of its entire population are smokers)

So much for the obvious (internal) factors that differentiate between the immune response that might be mounted by a 10yr old and that of an older adult with underlying medical/lifestyle issues. The significant question remains as to why a healthy child is less likely to suffer from a covid-19 infection than an otherwise equally healthy older adult?

To try to answer this question we must be aware that the immune system is not simply a machine that is turned 'off' and 'on', each time one encounters a pathogen. It is of course far more complex. For a start the immune system can not only be turned 'off' and 'on', it can also be turned 'up and down'. That is, the vigor, the tempo, or the 'strength' of the adaptive immune response can be significantly modulated by external factors.

So what are the distinguishing external factors that modulate the immune response; and which of those factors are significant in the ostensibly better response of children when compared with older adults?

Before we postulate an answer, at this point we should perhaps remind ourselves that in spite of the low or absent mortality among children; certain factors presently working against children, should be expected to increase child mortality in respect of Covid-19. For a start,

children in Western countries have rising levels of; obesity, diabetes, and other lifestyle related conditions. These should be expected to increase their risk of significant illness and or death from Covid-19.

Although there is little readily available data on the morbidity of Covid-19 among diabetic children, or children with significant health issues, one must assume that many of these children (unhealthy children) should be appearing in the published child-mortality data associated with Covid-19. It is certainly true that an unhealthy child; a diabetic child, an obese child etc., is for the purposes of mortality statistics, still a child. A child-death from Covid-19 would equally be recorded in mortality rates, as is the case for adults with co-existing disease.

Perhaps of even greater significance is the fact that children have a higher incidence of asthma than adults, this is especially true for industrialized nations. It is particularly the case for Irish children. Covid-19 is a respiratory infection. Asthma is a significant respiratory disease, and as such, the absence of mortality in severely asthmatic children, can only be described as highly unusual.

Here is what the HSE website states in respect of asthma in Irish children:

- Ireland has the 4th highest prevalence of asthma worldwide
- Approximately 470,000 people affected (1 in 8 of population)
- Prevalence in 13 – 14-year-old school children increased by 40% between 1995 to 2003 (15.2% to 21.6%)
- Asthma is the commonest chronic disease in childhood and the most common respiratory condition in Ireland. (18)

An REDC study commissioned by the Asthma Society of Ireland in 2019, informs that in Ireland in the 0-14yr 18.9% of these children have clinically diagnosed asthma. (18)

At the very least, if the picture was a clear one (and it certainly is not), we might reasonably expect a significant number of asthmatic children to have died from covid-19? Certainly, in a country like Ireland, with one of the highest rates of childhood asthma in the world, we should have at least one recorded death of an asthmatic child. Given the prevalence of Asthma, one would reasonably expect a very large number of Covid-19 fatalities among this cohort of children. This is not the case.

There is of course one significant general difference between children and adults, that is a clinically recognized modulator of the immune system. That difference is the relatively common ‘illness’ or ‘dis-ease’ that is referred to as ‘anxiety’ and or ‘depression’. These terms have become so ubiquitous and so hackneyed, as to be almost meaningless unless they are immediately contextualized or defined.

The following is an excerpt from an article that appeared in the New York Times on 10/3/2020

“In a series of remarkable studies over 20 years at Carnegie Mellon University, volunteers were exposed to the cold virus (using nose drops) and then quarantined for observation. The researchers found that people who reported less stress in their lives were less likely to develop cold symptoms. Another series of studies at Ohio State University found that marital conflict is especially taxing to the immune system. In a series of studies, the researchers inflicted small wounds on the arms of volunteers, and then asked couples to discuss topics both pleasant and stressful. When couples argued, their wounds took, on average, a full day longer to heal than after the sessions in which the couples discussed something pleasant. Among couples who exhibited especially high levels of hostility, the wounds took two days longer to heal.” (19)

Immunologists and clinicians have long been aware that anxiety and stress have a very significant impact upon the immune response. When an individual is under psychological stress, one might presume that his or her immune response would be heightened in order to deal with the anxiety or perceived threat. In fact, the opposite is the case, and when an individual is psychologically stressed, they become relatively immuno-depressed. I have not encountered a good scientific explanation for this well documented fact. However, I do remember an immunology lecturer once postulating, that this may be one of ‘ nature’s cruel mechanisms’ for removing ‘weaker’ or potentially ‘weaker’ members from a given population or gene pool. Nature is not compassionate.

It is not unreasonable to assert that adults have higher levels of clinically significant anxiety and depression than children. It is a well-established general fact, that anxious and depressed individuals suffer more illness than others. Anxiolytics and antidepressants are probably next in line to antibiotics on the list of most prescribed drugs in General Practice. This is true here in Ireland, and other Western countries must have similar patterns of use. In my own 18 years of clinical practice I have never once prescribed an antidepressant or anxiety medication for a child under 12yrs of age.

It is important to bear in mind that one is not suggesting here that anxiety and or depression are a ’cause’ of Covid-19. Due to the controversial nature of some of the observations contained in this article, it is perhaps an inevitable criticism that will be made. However, what is being highlighted here is the coincidence of two facts that are broadly accepted within the scientific and medical community; the first that anxiety/depression have an overall significant negative effect upon the immune-response. Secondly, that the incidence of significant clinical anxiety and depression is much lower in children than adults. Clearly the current management strategy within this jurisdiction (and elsewhere) remains almost entirely ignorant of the relationship between socially induced anxiety and pathology.

Summary

To summarize, the main points of this article; are as follows. Demographic distinctions between jurisdictions need to be considered in respect of the current management strategy. Certain significant advantages may be available to a jurisdiction such as ROI with its significantly smaller at-risk population. These advantages are potentially lost in respect of a ‘one size fits al’l response.

Significant questions need to be asked in respect of the Government’s response to date, in particular, the gross overestimation of the national case burden, and subsequent actions and directives in light of these overestimations. The presence or influence of political bias must

be considered and reviewed. Guidance from Public Health, the ICGP and the National Public Health Emergency Team must be held to account, and reviewed, in respect of its estimations and figures, and the mishandling of tests and testing criteria. The poor consideration of the vulnerable especially those in Nursing homes, needs to be accounted for at the highest possible level.

The constituent level and type of expertise presently advising the Government must equally be questioned. Social anxiety and its consequences must be addressed. There can be little doubt that many mistakes have been made to date. Given the cost of the crisis and the cost of the response, the most crucially lacking ingredient in respect of this crisis, may not in fact be guidelines, 'experts', ICU beds and resources etc. but rather a fundamental lack of questions.

Marcus de Brun

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