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HEALTH ECONOMICS IN THE POST-COVID-19 ERA

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Abstract

The Covid-19 phenomenon is exceptional and extraordinary. So much so, that the relevance of the insights we've gained over the years in economics in general, and in the area of health economics in particular, for understanding this phenomenon is especially small. Moreover, at this point in time there is a considerable lack of clarity regarding the various and important aspects of the pandemic, so that it is too early to express an opinion on the correct method of dealing with it. However, in contrast, I am of the opinion that it is possible and necessary to discuss the changes expected in the world of medicine and health management in the post-Covid-19 era. One of the most significant changes is the tremendous growth expected in "remote medicine", which alongside its numerous advantages incorporates numerous risks, both health-related and economic.

FOREWORD

The title of this paper requires some explanation. As it indicates, my intention is not to discuss health economics <u>in</u> the Covid-19 era but health economics in the <u>post</u>-Covid-19 era. The reason for this is not because I believe that the pandemic will end any time soon−to the contrary, from my limited understanding I believe that it will be with us for a long time. The reason for my decision to discuss the post-Covid-19 era is that, as I understand it, although there are a great many questions relating to the Covid-19 pandemic from both the health and economics perspectives, there is very little discussion about "health economics". The Covid-19 pandemic is so extraordinary and unusual, that all the insights we have gained from the numerous studies written on health economics in recent years have very little bearing on this pandemic. In fact, although a number of academic and scholarly papers have been written since the outbreak of the pandemic, very little has been written by health economists.

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Furthermore, like many academics, and certainly as someone who comes from the field of economics, over the last few months I have been asked on more than one occasion to express my opinion on the government's policy in this period of crisis. There are also those who believe that I should address this important question in a paper of this kind within the context of a conference to discuss the Covid-19 pandemic. However, I have no intention of doing so. I believe that at this point in time there is a great deal of uncertainty regarding various, extremely important aspects of the pandemic and that it is too early to express an opinion. Obviously, if I was a decision maker, I would have no choice but to act on the basis of the extremely partial and inaccurate information in our possession at this time. However, as an academic, I also have the right (and the obligation) not to be rash. It will certainly take time until the full truth emerges, if at all, and at some point in time it might be correct to take a stand, but in my opinion, we are still a long way from that point.

1. WHAT WE DON'T KNOW

To support my position on this matter, permit me to illustrate the uncertainty facing us with several questions, to which in my opinion we do not have the answers (and this is just the tip of the iceberg):

- What caused the pandemic? At present, we do not know. (In fact, we still don't really know what caused the great flu pandemic of 1918.)
- How does wearing a face mask help combat the pandemic? Some would argue that in Hong Kong, masks were the key factor contributing to the low rate of infection. In Israel, at the start of the pandemic, there were quite a few experts who believed not only that the masks did not help, they were even harmful. Now we are hearing contrary opinions.
- Can children be infected and infect others? In the early weeks of the pandemic, the prevailing view was that children cannot infect others and that schools should therefore be re-opened. Many experts have now expressed regret and admit that they erred and misled the community and that children might be a factor in spreading the disease. Moreover, in some cases, children who contracted Covid-19 might suffer from a complex illness known as Kawasaki Disease.
- What explains the huge differences between countries with respect to the mortality rates among Covid-19 patients? So far, there has been no real answer to this question. Is it the different quality of healthcare systems in different countries? Is it the way in which the health systems mobilized differently to treat their patients? Is it different nutrition, differences in climate or possibly mainly genetics? Notably, the different possible answers to this question are the same answers that the research literature provides in response to a much broader and more familiar question: what explains the large differences in life expectancy between countries? So far there has been no firm, clear-cut answer to this question either, but it is quite possible that there is a connection between the two.

Numerous recently published articles compare the different results in different countries that adopted different strategies to combat the pandemic, in an effort to understand what the best policy is. In my opinion, these articles are problematic and their conclusions should be viewed skeptically. Further to my earlier comments, I believe that there are so many "background variables" that we are unaware of or unfamiliar with, or that we think that we know but it is certainly possible that we are wrong, that it would be incorrect to draw conclusions at this stage. Here are several examples:

- Sweden adopted a more liberal policy than other countries. However, with hindsight this policy was misguided given Sweden's high morbidity rates compared with neighboring countries and that it did not really help the Swedish economy. Nevertheless, some would argue that at least part of the high morbidity rate was not the direct result of the government's policy but that it was due to several events with a large number of participants (such as the Eurovision Song Contest semifinal) that took place at the beginning of the year.
- South Korea is considered a success story in combatting the pandemic although the reasons for this success are not entirely clear. Of course, there are the familiar explanations: extensive testing, accurate detection and rapid cut-off of the chain of infection. However, a study was recently published that contains a new, different explanation: the Korean authorities regularly publish the movements of infected individuals before being diagnosed. If, for example, a confirmed case was in a particular coffee shop for even a short time, this information was immediately disclosed. Consequently, people avoided locations and neighborhoods that were focal points of infection. Researchers argue that this policy was extremely effective and was the key factor in Korea's success in combatting Covid-19.[1]

2. THE DIFFICULTY OF COST-BENEFIT ANALYSES IN THE CASE OF COVID-19

As part of the effort to assess the different strategies for combatting the Covid-19 pandemic, a large number of researchers have attempted to calculate and compare the cost and benefit of the various alternatives. The idea is simple. We calculate the overall cost to the economy under each of the strategies and at the same time we calculate (in monetary terms) the benefit to the economy under the various strategies – the best strategy is the one with the greatest difference between cost and benefit. For example, a very recent study showed that the social distancing and economic closure policy introduced as a result of the Covid-19 pandemic in the USA "contributes" about $60,000 to the average family.[2] In other words, despite the

[1] David Argente, Chang-Tai Hsieh, and Munseob Lee, "The Cost of Privacy: Welfare Effects of the Disclosure of Covid-19 Cases", *Becker Friedman Institute*, May 2020.

[2] Michael Greenstone and Vishan Nigam, "Does Social Distancing Matter?" *Becker Friedman Institute*, March 2020.

closure policy's high economic cost, the benefit to the population from reduced infection and mortality (estimated in monetary values), resulting from this policy, is so high that the difference between the benefit and the cost is $60,000 more than the difference that would have resulted under a policy of a fully open economy. Concurrently, other papers have been published recently with different results.

Although I generally support cost-benefit analyses as a tool in the public decision-making process (such as, for example, decisions regarding which medicines should be included in the Health Ministry's basket of medicines or whether to expand Highway 6), in the case of what government strategy should be applied to combat the pandemic, I believe that use of this tool is highly problematic. The reason for this is twofold. First, and further to my earlier comments, I believe that at present we do not have adequate data or knowledge to accurately calculate the cost and/or the benefit of the different strategies. Second, in the case currently under discussion, it is not at all clear how this calculation should be made. Regarding the first point, I return to the beginning of this paper where I argued that there is a great deal of uncertainty about many of the variables relating to the pandemic. How do we calculate the benefit of using masks and how should be calculate the cost of opening schools if we do not know how each of these steps affect morbidity?

Furthermore, beyond the difficulties relating to the lack of information and accurate data, I believe that there is an even greater difficulty and this relates to how we should calculate cost versus benefit at all or what should be included in these calculations when examining a broad, complex issue such as the Covid-19 pandemic. Let us first take a look at the cost. Most of the recent calculations of the economic cost of a total shutdown were made based on the loss of output over the next one or two years. Clearly, this is an extremely limited calculation. Some of the cost to the economy is due to the decline in investments which in turn will result in lower output for many years. Similarly, we need to consider the harm to investments in human capital resulting from the loss of so many study days. Or from a completely different perspective, at present we do not know how to calculate the emotional and health-related damage caused to the population due to the ongoing economic closure. We hear anecdotes about people who suffered heart failure or a CVA or other health issues and arrived at the hospital too late, for fear of being infected. How can this be quantified? Alternately, do we know how to quantify the damage that the economy would have sustained had there been no closure and the health system would have been on the verge of collapse or had actually collapsed? How can we monetize the cost to the economy of damaging the reputation of the health system or the emotional stability of doctors who would have been forced to decide which patients to place on respiratory equipment? Without answers to these questions (and many others for which there is no room to detail here), any calculation of the cost of the various alternatives will be extremely partial and inaccurate.

3. CALCULATING THE VALUE OF LIFE

To compare the various alternatives for combatting the pandemic using cost-benefit analyses, we need to monetize the value of life. This calculation is essential since one of the main prices of the pandemic is death or severe morbidity. The economic literature contains an abundance of research and studies that discuss the question of how to properly calculate the value of life, and there is no single accepted answer to this question. Furthermore, the answer often depends on the context in which the question is asked. One of the better known and more useful ways of calculating the value of life is to calculate the "value of a statistical life-year" ("VSLY"). Let's assume that we believe that a particular individual is willing to pay X amount to reduce by one per cent the probability that he will die in the coming year from an accident, illness, or any other cause. We can then say that the value of a statistical life year (VSLY) from this individual's perspective is 100X (similarly we can calculate the VSLY from the perspective of the society or country where in this case X is the amount that the country is willing to invest to reduce by one per cent the probability that a particular individual will die in the coming year). This calculation is extremely useful where, for example, the country must decide whether to add a particular medicine to the health services basket or to widen a particular road (in both cases the assumption is that the action to be decided upon reduces the probability of death by a certain percent). In fact, in many countries (Israel included), such tools are applied in making decisions of this kind. However, the question we must ask is to what extent is the value calculated in this manner relevant to the case of the Covid-19 pandemic. The pandemic is not a probabilistic event that might occur (i.e., a pandemic that might occur in the coming year) but an event that has already occurred (the pandemic is already here) and even at this moment in time the probability of being infected or of dying from the illness remains in the realm of uncertainty. If the question facing us was whether to purchase vaccines against an illness that might occur next year, then the VSLY would be relevant. But this is not the case at hand. With respect to Covid-19, the more correct value is the value of saving life. This value addresses the question of how much the individual (or the society) is willing to pay to save him/herself from certain death. For example, let's assume that an earthquake occurred and a number of people were trapped under a collapsed building. What price would the individual (or state) be willing to pay to save himself in this situation? Obviously, the value of a life year calculated here will be much higher than the statistical value of a life year. In my opinion, in the case of Covid-19, if we want to calculate the cost and the benefit of the closure correctly, then on the benefit side the value of saving life is much more relevant than the VSLY.

Beyond the foregoing, many people believe that there is place in medical decision-making for the use of cost-benefit analysis, and decisions must be based on more intrinsic criteria. One example is a decision made recently in the US state of Oklahoma:

> *As many in the bioethics movement push various schemes to ration health care based on "quality of life" — such as the odious QALY (quality adjusted life year) system beloved of the New England Journal of Medicine — some are pushing back and insisting that health-care coverage and treatment public policy be predicated on the intrinsic equal dignity and moral worth of all patients.*[3]

In the next part of this paper, I will briefly discuss those subjects which, in my opinion, will concern decision makers and scholars of health economics in the post-Covid-19 era. The final topic discussed in this part of the paper (calculating the value of life and using it to make public decisions) will also be a topic that will engage a large number of researchers in the near future. The question that will repeatedly be on the agenda is how to correctly calculate and use cost-benefit analyses for making the complex and far-reaching decisions that we face at this moment in time.

4. HEALTH ECONOMICS IN THE POST-COVID-19 ERA

The world of healthcare will be transformed in the wake of Covid-19. Some of the changes will take place whether we like it or not, some of them will be for the good while others might not necessarily be so. In some cases, Covid-19 has created opportunities for change, and the question is if and how the system will know how to exploit them. In other cases, the changes incorporate many risks and the healthcare system must prepare itself accordingly. Later on in this paper, I will present some of these changes and the dilemmas they present for policy makers. As we will see, most of these dilemmas are not new to health economics, but they acquire a different perspective and different intensities as a result of the changes in the system. The points that we discuss here are just a small part of the changes that the healthcare system will experience in coming years. I have chosen to focus on those topics that I believe we health economists have a significant contribution to make in their discussion based on the insights we have gained over many years of research in this field.

5. REMOTE HEALTHCARE (TELEMEDICINE) AND HOME CARE

In recent years, we have witnessed the significant development of remote healthcare (also known as telemedicine). In practice, remote healthcare is a generic term for a range of services in which the common denominator is that the patient is not required to be physically

[3] Wesley J. Smith, "Oklahoma Bans 'Quality of Life' Health-Care Rationing", *National Review*, May 26, 2020.

present at the clinic or hospital to be examined or even treated by the medical team and the treatment is provided while the patient is in his home environment. In some cases, the doctor or medical team comes to the patient's home and in other cases the treatment is administered over the phone, the Internet or other means. Telemedicine began long before the Covid-19 era but it received a significant boost as a result of the pandemic. Covid-19 has removed barriers for both doctors and patients who until now had avoided using remote healthcare for various reasons but now had no choice but to adopt this mode of operation.

a. Remote healthcare has several clear advantages:

Accessibility – the patient does not have to be physically present at the clinic or hospital to be examined or receive treatment. Besides the time saving, this also means that there is no physical or geographical barrier to the location of the appointment.

Availability – the treatment can be administered at different times of day independent of the clinic's opening hours and by a large number of available doctors.

Greater choice – patients can contact many more clinicians and they have a much wider choice of the "best" or most "suitable" clinicians.

More convenient ambient conditions – home hospitalization or a (virtual or physical) house call by the doctor is much more convenient for the patient.

Less cross infection – the treatment and hospitalization can be administered under more sterile conditions with much less likelihood of infection.

Greater flexibility of the medical system – in a world of extremely rapid technological innovation, telemedicine requires less investment in infrastructure (e.g., hospital beds) and facilitates faster adaptation of the system to changing conditions.

However, alongside the numerous advantages, remote healthcare also harbors more than a few medical and economic hazards. From the medical perspective, the principal risks are:

- Patients who are at home, far away from a hospital or clinic, do not have medical staff on hand in the event of an emergency or in case of a medical event which becomes more complex.
- In certain cases, particularly at the first meeting between the patient and the medical team (e.g., an initial meeting with a new family practitioner), it is extremely important that the appointment is face to face and not *in absentia*. Doctors who do not receive patients in the clinic at fixed times, may be flooded with calls at all hours of the day and night (particularly if the doctor is in high demand). This in turn, could lead to the "burnout" of doctors and affect the quality of the treatment.
- For home-care patients, a great deal of the burden as well as the responsibility for the care falls on the family. In many cases, particularly when the patient is elderly, this burden could be very significant.

In addition to the medical risks, the shift to remote healthcare also entails many economic risks. Here are several examples:

- A dramatic increase in demand. The problem of moral hazard in health systems refers to the notion that individuals who hold medical insurance tend to consume services far beyond the desired and effective level since they do not pay for the treatment. As telemedicine develops, there is a chance that this problem will be aggravated given that the medical treatment becomes more available and convenient. If previously, patients did not want to be hospitalized due to the distance from home and the fear of infection, these concerns will now dissipate. If previously, patients avoided going to the clinic because of the time factor, all they need to do now is send an email or call the doctor. All this could lead to a significant increase in demand and overload the system.
- Supply generates demand. One of the most prominent features of the world of medicine as an economic sector is the issue of supply generating demand. Many studies have shown that an increase in the supply of doctors or medical technologies (such as hospital beds or MRI machines) is generally accompanied by an increase in usage, in many cases beyond the desired level. Remote healthcare significantly increases the supply of services. If for example, there are two hospitals in a particular area, then the number of hospital admissions in this area is limited by the number of available hospital beds. With the shift to home care, this restriction no longer applies and there could be a dramatic increase in the number of hospitalized patients. The same is true of internet-based house calls or telemedicine examinations.
- Long waiting times for appointments with doctors in high demand. With no barriers to accessibility and availability, many patients might ask for remote healthcare treatment by doctors with a strong reputation. In many cases, these doctors might not necessarily see the patients face to face and the system could find itself operating inefficiently where good doctors who can certainly meet the patients' needs, find themselves with few patients while waiting times for other doctors are long.
- Inefficient referral of patients. Home care opens up treatment possibilities that previously did not exit. In addition to the considerable advantage of these broader treatment options, the question must be asked regarding how to ensure that patients are referred to the doctor or treatment most suited to their needs. For example, let us take a patient who comes to the hospital ER and the hospital decides that he should be hospitalized. In this case, the hospital must decide whether to hospitalize the patient in one of the hospital wards or alternatively to refer him to home hospitalization. Clearly, in addition to the clinical perspective, the hospital's considerations will be influenced by the economic repercussions of such a decision for the hospital. If the hospital is not remunerated for home care, it will tend towards keeping the patient in the hospital despite the fact that the best (and most effective) treatment can actually be administered at home. Similarly, decisions made by HMOs regarding where to hospitalize the insured depend largely on the price that will be paid according to each of the alternatives.

To derive the maximum from the numerous advantages inherent in remote healthcare, while at the same time properly addressing the unwelcome "side effects", the healthcare system must be revamped, and this should be done sooner rather than later.

6. ADVERSE SELECTION OF SEVERELY ILL AND ELDERLY PATIENTS

In many healthcare systems worldwide, Israel included, competition is the principal mechanism for improving the efficiency and quality of medical treatment. Under Israel's National Health Insurance Law, insureds may move freely between HMOs, thus allowing them to move from one fund to another it they are not satisfied with the service provided. This fear of losing members should motivate the HMOs to provide the best quality service and the concern of losing money should encourage them to become more efficient. However, since not all HMO members are equal with respect to the scope of services they utilize— some are more costly and others are less expensive— then if the payment received by the HMOs for the different members does not correspond with the expected outlay for them, the HMOs are faced with powerful incentives to attract the lower cost members and to reject the less profitable members.[4] If the HMOs operate in this manner, the resulting market equilibrium will be inefficient (and lack equality). Some HMO members, those who are less costly for the funds (generally the younger, healthier members) receive high quality services (in some cases beyond the socially effective level) while the less profitable members from the funds' perspective (generally the older, less healthy members) receive poorer services, in some cases below the socially effective level. To prevent HMOs from favoring low-cost members over high-cost members, many countries apply differential compensation to the HMOs (in Israel this mechanism is known as the "capitation formula"). However, as the economic literature shows, even sophisticated compensation models have difficulty in accurately predicting the cost of each member and there will always be more and less profitable members and the HMOs will still have an incentive to compete for the lower cost members.

The Covid-19 pandemic could severely aggravate this market failure as the disease mostly targets the older population and those with chronic and pre-existing illnesses. In other words, the same members who are already more costly to the HMOs and in many cases are not profitable, now become even more costly and less profitable. If until now, the incentive to the HMOs to invest in these members was weak, then in the wake of Covid-19 it will be even weaker. Assuming that Covid-19 is not going to disappear any time soon (or at least next winter), then those who foot the bill for these insurances will have to scramble to adjust the compensation mechanism for the HMOs so as to reduce their incentive to apply selective acceptance policies.

[4] In the economic literature, this problem is known as adverse selection.

7. THE PHARMACEUTICAL AND MEDICAL TECHNOLOGY INDUSTRY

One of the best known market failures in the medical world is in the pharmaceutical industry – the development and manufacture of new drugs. The high cost and considerable uncertainty relating to the development of any new drug result in a small number of players in the industry and that many countries, rather than encouraging the development of these drugs themselves, rely on developments and production in other countries. One of the negative repercussions of this problem is that the developing and producing countries hold considerable market power. A company that develops a new drug generally enjoys a monopoly allowing it to charge prices far higher than the competitive price. The Covid-19 crisis is changing the rules of the game in the pharmaceutical industry from several perspectives.

One aspect is the renewed thinking among a large number of countries regarding the question of whether or not they should attempt to develop and manufacture the drugs themselves in order to reduce the dependence on foreign companies, mainly in times of crisis such as the one we are currently witnessing.

Another development that we are seeing is the developing "arms race" between several companies with each one trying to be the first to produce a vaccine or treatment for Covid-19. In parallel, there is a "procurement race" between countries, with many rushing to close contracts and pay up front for medicines that are in the initial stage of development even though there is no certainty that they will actually mature into a final product, approved for use. The full implications of this race remain unclear but there is considerable doubt as to whether the present market equilibrium is necessarily effective.