

The Battle Against the Coronavirus From the Perspective of the Healthcare System: An Overview

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Introduction

The prevention and treatment of the coronavirus pandemic will be costly worldwide. Although a vaccine has been developed, and, hopefully, the future will hold cures as with other similar diseases, vaccines and treatments are not free. Up until now, the battle against the virus is unique in several respects. First, absent a medical solution — no matter how expensive — the prevention of infection and its consequences means a disruption of economic and social activity on a scale that has not been seen since the Spanish flu at the beginning of the previous century. Second, once infection occurs, there are additional costs to the medical treatment, namely the forfeited consumption out of a dwindling GDP. The day-to-day efforts to prevent the spread of infection by imposing economic and social restrictions and the additional budgets allocated to medical care require, therefore, a challenging balancing act between the prevention of infection and mortality on the one hand and the economic effect on GDP and consumption on the other.

The challenge is to save life at as low a price as possible in terms of lost GDP, while preventing social harm on an unprecedented scale. The coronavirus crisis is first and foremost a health crisis and that the focus on protecting the healthcare services should be at the core of the fight in order to prevent a situation in which hospitals are unable to admit patients, as occurred in Italy and Spain early on in the pandemic in February and March 2020.

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Like a chess game, the fight against the virus, in Israel and elsewhere, is a battle where the means for the opponent's defeat are known but simply not available. In contrast, it is known that, at least until that means is found, the king — namely, the healthcare system — must be defended, using a hard-to-predict “give and take” and perhaps even at any price. The analogy of a chess game is guiding the discussion of protecting a weakened healthcare system, which is facing a threat that was, at least at first, unfamiliar. The fight against the virus is exposing and amplifying the strengths and weaknesses of Israeli society and of the Israeli healthcare system, which need to be taken into account in solving the current crisis and certainly in crises to come. Moreover, the crisis can constitute an opportunity to make long overdue improvements in the healthcare system.

This survey has four main parts. The first part discusses the prevention of the spread of infection and morbidity, which constitutes a kind of protective wall around the healthcare system's ability to treat infected patients. After presenting Israel's achievements in terms of mortality rates, the second section looks at the healthcare system itself and the other players involved in the response to the pandemic. In this context, the main question that arises is whether Israel could have dealt better with the virus. As part of the discussion of prevention, we present the advantages Israel enjoys alongside the economic challenges it faces in confronting the pandemic. Furthermore, we devote particular attention to the “price of life” in Israeli society in the context of the coronavirus crisis.

In the third part of the discussion, we examine the crisis management and the actions of the various agencies involved in fighting the pandemic, including the Ministry of Health and the Ministry of Defense as well as the authority they are granted (or not granted) by laws and regulations. Finally, in the fourth part, we discuss the healthcare system — its level of preparedness and the extent to which the budget assistance that it received can facilitate the long-term solutions it needs.

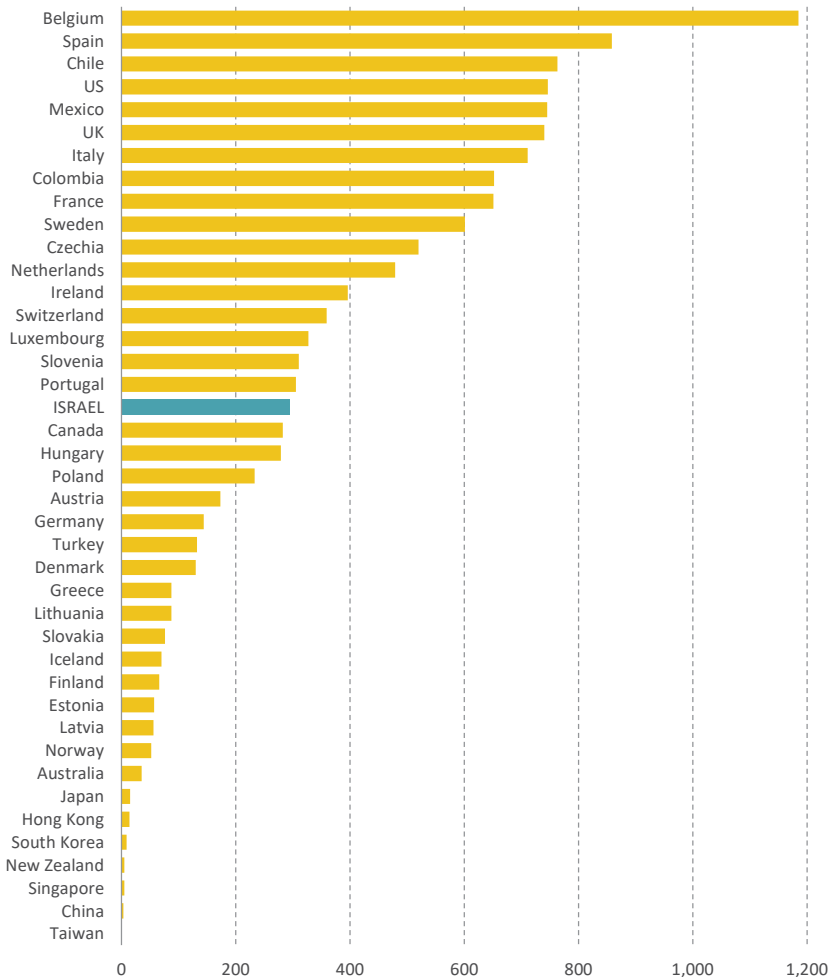
Israel's performance in the fight against the coronavirus

In terms of mortality per million inhabitants due to the virus, Israel is somewhere in the middle among the developed countries. In mid-November, the number of deaths per million inhabitants in Israel stood at about 290, which is higher than countries in the Far East — whose performance was a model for the fight

against the pandemic (only 9 deaths per million in South Korea, for example) — and some countries in Europe, and lower than in other Western countries whose performance was abysmal, including Belgium, Spain, the UK, and Italy, whose situations were dire early on in the process (Figure 1).

Figure 1. Mortality per million population, November 2020

OECD and selected countries



Source: Chernichovsky et al., Taub Center | Data: [Worldometers.info](https://www.worldometers.info)

This is little comfort. The questions to be answered are the following: Could Israel have done better? What worked in Israel's favor in the fight against the virus and what didn't? The answers to these questions can lead to improvements in the response to future crises.

A favorable starting position

Israel began the fight against the virus under relatively favorable conditions, particularly with respect to the demographic-health profile of morbidity and mortality caused by the coronavirus and with respect to lockdown capabilities.

Demography and the economy

Israel's population in 2019 was 9.136 million, which is distributed within a relatively small area of 22,145 sq. km, thus giving it a population density of 413 per sq. km, an area that is relatively easy to manage. The population is young: the 65+ age group accounts for only about 10 percent of the population, which is about half the rate in most of the developed countries. The population's health is relatively good, which is due not only to its young age profile but also to Israel's high levels of income and education. In view of the characteristics of the highest risk group in terms of the relative number of deaths from the virus, i.e., those of advanced age, in frail health, and of low socioeconomic status, with low access to medical services — it is to be expected that the mortality rate in Israel will be low relative to other developed countries.¹

Accessibility to healthcare services

Moreover, Israel's inhabitants — unlike those of the US as a prime example — enjoy universal healthcare, which guarantees them access to modern healthcare services. In other words, there is no situation in Israel in which a patient will be denied medical care, even when it is not emergency treatment.

The geopolitical situation

For political and security reasons, Israel is a geopolitical island with relatively hard borders, even considering the borders to the Palestinian territories. The main entrance that needs to be effectively closed is Ben Gurion airport.

1 It should be noted that Israel's high ranking in Figure 1 is, in part, due to the fact that there is no adjustment for the population age structure in the data.

Preparedness for a (short) crisis

As a result of its continual readiness for war, Israel can mobilize its resources, including advanced technological capabilities, for a short-term confrontation (in the form of an “operation”) more quickly and more efficiently than most other countries, which were also unprepared for this type of crisis. In the first lockdown, which was accompanied by high levels of uncertainty due to a general lack of understanding of the virus and its behavior, this preparedness spurred the population to comply with the social distancing directives and strengthened Israel’s ability to deal with the challenge relatively quickly.

Social solidarity

Despite the tribalism of Israeli society, its level of solidarity is relatively high. This was critical in the process to mobilize society and to minimize the potential intergenerational tension that prevailed at the beginning of the crisis between the young, who are “contributing” to the fight, and the elderly, who benefit most from medical treatment and whose lives are saved. This will be further discussed below.

Socioeconomic challenges

At least at first glance, it appears that the response of the public to the first lockdown, which was accompanied by high levels of uncertainty regarding the virus, differed from the behavior of significant parts of the population after the lifting of the lockdown, which was characterized by non-compliance with the directives as the character of the pandemic became clearer. It is possible that underlying this behavioral change was a growing understanding of the pandemic’s costs and benefits over time, which put long-term solidarity into question. From a socioeconomic perspective, this involves the risk from the pandemic faced by each population group and the price of prevention of infection and medical care.

Tribalism: morbidity, hospitalization and mortality in the various sectors

The differences between the various “tribes” in Israel — Haredim (ultra-Orthodox Jews), non-Haredim, and Arab Israelis, none of which are a monolithic group — are numerous, diverse and deep-seated, but are not the subject of this survey. These differences likely contributed to the different behavior patterns in

relation to the lockdowns and in the level of compliance with the government's directives to prevent the spread of the virus. From a socio-behavioral perspective, there is a question as to the extent to which a pattern of behavior is rational from the standpoint of the risk to the group that adopts it and the tribal psychology that is liable to accompany this risk, even unintentionally.

The morbidity and mortality caused by the virus are clearly age-dependent. The age distribution of the various population groups is one of the most evident differences between them, and therefore their patterns of morbidity and mortality differ. The Haredi population in Israel is particularly young, as is the Arab Israeli population. Thus, for example, individuals over 80 constitute about 4 percent of the non-Haredi Jewish population in Israel, in contrast to about 1 percent of the Arab Israeli population and about 0.5 percent of the Haredi population. Similarly, about 30 percent of non-Haredi Jews are over the age of 50 while in the Arab Israeli and Haredi populations this group constitutes 16 percent and 10 percent respectively (Table 1).

Table 1. The age distribution in Israel by population group, 2018

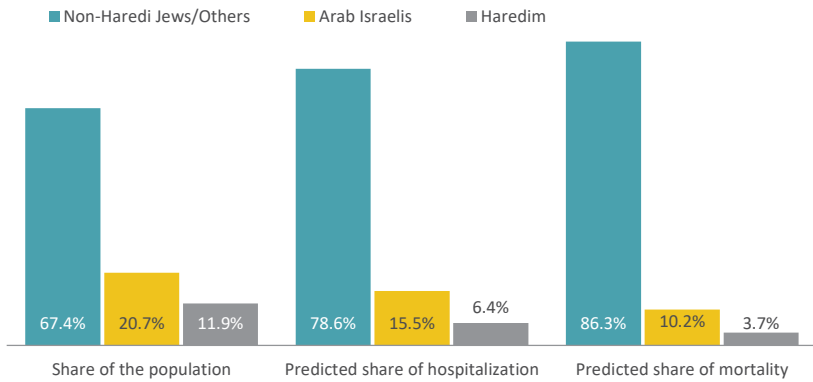
Age group	Non-Haredi Jews/Others	Arab Israelis	Haredim
0–9	16.4%	21.9%	34.1%
10–19	15.0%	21.3%	23.8%
20–29	12.5%	16.9%	14.9%
30–39	13.1%	13.3%	10.6%
40–49	12.2%	10.8%	6.8%
50–59	10.6%	7.9%	4.7%
60–69	9.5%	4.6%	3.1%
70–79	6.6%	2.2%	1.4%
80+	4.1%	1.0%	0.6%

Source: Chernichovsky et al., Taub Center | Data: CBS

Due to a lack of satisfactory data for the Israeli population, we used data from the Centers for Disease Control and Prevention (CDC) in the US to obtain age-adjusted probabilities for hospitalization and death from the virus and applied these probabilities to the relevant populations in Israel (Figure 2). Although the non-Haredi Jews constitute about 67 percent of the population in Israel, due to their age distribution their expected share of all hospitalizations is about 79 percent and of all deaths is about 86 percent. On the other hand, the share of the Haredim in the population is about 12 percent while their

expected share of hospitalizations is about 6.4 percent and of deaths is about 3.7 percent. The share of Arab Israelis in the population is about 21 percent and their expected share of hospitalizations is about 15.5 percent and of deaths is about 10.2 percent.²

Figure 2. The expected share of hospitalization and mortality for various population groups



Source: Chernichovsky et al., Taub Center | Data: CDC

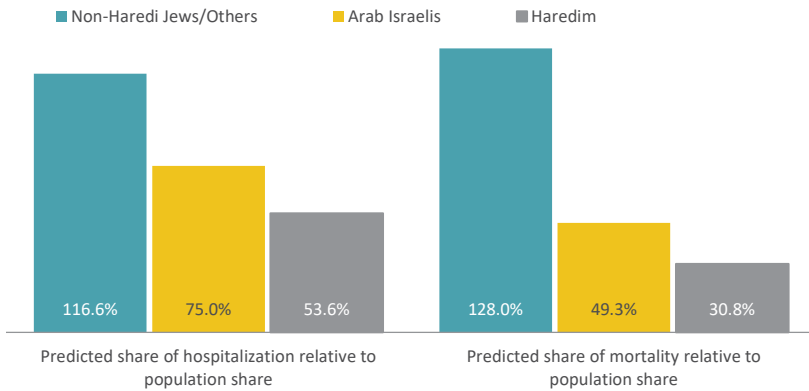
According to this data, it is possible to calculate for the average individual in each group the relative probability of hospitalization and death due to the coronavirus (Figure 3). Based on this calculation, the average likelihood of a Haredi individual being hospitalized is about 46 percent of that for a non-Haredi Jew while the figure for an Arab Israeli is about 64 percent. With respect to mortality, the chance of a Haredi individual dying from the virus is about 24 percent of that for a non-Haredi Jew and the figure for an Arab Israeli is about 38 percent.

Thus, within the limited boundaries of this discussion and ignoring many other factors, the tribal behavior of compliance or non-compliance with the rules of the lockdown makes some sense since it reflects the relative risk that each population group perceives and takes on. It became clear that this

2 The actual morbidity, hospitalization, and mortality rates among the Arab Israeli population, and even more so among the Haredi population, far exceed those expected based only on these populations' age structure.

reality creates a major challenge in the fight against the pandemic, namely the internalization of the cost to society in general, particularly to the majority who are not Arab Israelis or Haredim who take the toll for the behavior of some group or another. This discussion is not intended to propose solutions but rather to provide, to the extent possible, a quantitative presentation of the challenge, which is substantial from a numerical-probability perspective.

Figure 3. The expected share of hospitalization and mortality relative to the population group's share in the total population



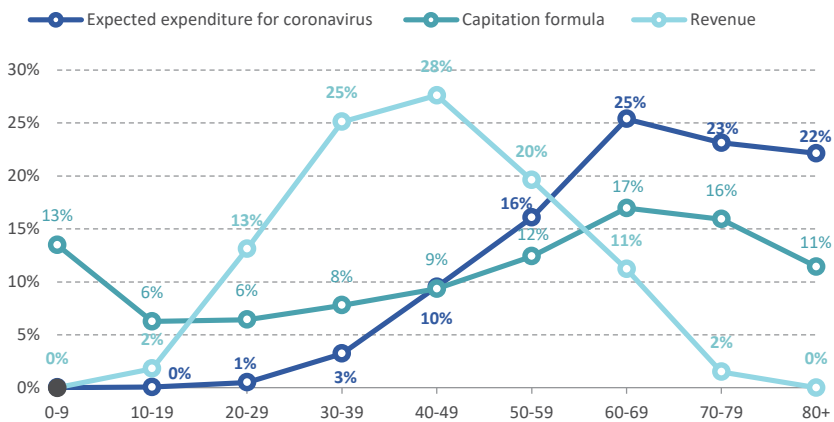
Source: Chernichovsky et al., Taub Center | Data: CDC

Intergenerational tension over time

In a national health insurance system such as Israel's, there is always an intergenerational transfer of resources from the young and relatively healthy to the old and relatively less healthy. This involves an arrangement for financing the current budget in which the insurance premiums and the health benefits they provide do not accumulate in favor of a particular insured individual. Rather, the payment is according to ability-to-pay, and eligibility is according to need, without any relationship between the payer and the beneficiary. Therefore, taxes and health insurance premiums are collected by the State and the National Insurance Institute (NII) and are then pooled by the latter and distributed to the health funds according to the number of their members and their profile by age and gender, with an adjustment for those living in the periphery (the "capitation formula").

Figure 4 (Chernichovsky & Bental, 2020) shows the share of the various age groups in the income distribution that is the basis for the public healthcare tax that helps finance the system, and the expected expenditure on each group according to the capitation formula. We assume that the two distributions represent the priorities of Israeli society and its willingness to subsidize treatment and save lives through medical care or to transfer income between age groups for this purpose, under the terms of the National Health Insurance Law. Under this assumption, the reality dictated by the National Health Insurance Law represents the social contract with respect to healthcare and life-saving in Israel.

Figure 4. The share of each age group in income, in healthcare expenditure according to the capitation formula, and in expected healthcare expenditure due to the coronavirus



Source: Chernichovsky et al., Taub Center, based on Chernichovsky and Bental, 2020

Accordingly, the young (up to the age of 19) are net beneficiaries. This is in fact an underestimation since a significant share of 18 to 21-year-olds serve in the army, which provides them with healthcare at the public's expense. The older age group of 57–58+ are also net beneficiaries. It is worth mentioning that this positive subsidy starts to decline at the late 60s. In general, the main working-age population, ages 21 to 57, subsidizes children on the one hand and parents on the other while also paying insurance for their own medical care.

One can frame the transfer from workers to retirees also in terms of insurance. The workers view the retirees at the present as themselves in the future, expecting that society will take care of their needs in the future just as they are taking care of the older generation at the present. The transfer to the young is considered to be an investment in future workers.

From the viewpoint of expenditure on the fight against the coronavirus, a different picture emerges. In order to construct the distribution of this expenditure across the various age groups, we made the following assumptions: a) in the absence of data unique to Israel, the probability of hospitalization and mortality for each age group is based on the CDC data presented above; b) the costs of treatment are divided between expected cost of hospitalization and of mortality based on the assumption that the cost of treating a patient who was hospitalized and recovered constitutes 92 percent of the cost of treating a patient who was hospitalized and dies.³ Based on these assumptions, we projected the expected cost related to the response to the coronavirus onto the various age groups. In contrast to the expected and generally accepted costs according to the capitation formula, the costs of the response to the coronavirus tend to benefit the 60+ group to a relatively large extent. In contrast to the under-21 age group, which hardly accounts for any of the costs and therefore is not subsidized, the elderly account for about 85 percent of the total cost of the coronavirus care, as opposed to about 40 percent of the daily cost in normal times. In other words, with regard to the response to the coronavirus, the elderly age group receives the share of the very young within healthcare costs — amounting to about 20 percent — and another 10 percent from the premiums paid for by the working-age population.

This reflects the reality of financing the general healthcare system in Israel from an age perspective, but is also applicable in a more general context. The economic costs of the lockdown are clearly related to the income age distribution, while the benefits are related to the relevant shares of the expected benefits of the prevention of hospitalization and death. In other words, those who bear the economic burden of the lockdown — from the perspective of age alone — constitute the population that produces about half of total income; however, they and their children gain almost no benefit from

3 The discussion is based on French et al. (2017). It should be mentioned that the previous estimates of the cost of death — the last year of life — were on the magnitude of about 60 percent of the total medical costs over the life cycle (Scitovsky, 1984). According to this figure, the curve would be even more biased toward the older age groups.

the prevention of infection. From the point of view of human capital, the fact that the young do not benefit creates an additional problem.

The solidarity implicit in the law is based on the social contract according to which when the young reach old age they will be treated like the elderly are treated today.⁴ This contract is not necessarily applicable in the case of the response to the coronavirus, which is perceived as a unique, temporary, and costly event. Since the income of the employed and the self-employed constitutes about 50 percent of GDP, and since the additional direct investment in the healthcare system up to now as a result of the response to the coronavirus (about NIS 17 billion) constitutes about 1.2 percent of GDP in 2019, the financing of only this additional cost is equivalent to about a 2 percent tax on the income of the employed and the self-employed. This implies an excess burden that is imposed on the working population in order to finance the direct response to the coronavirus pandemic.⁵

To conclude this section, the deviation of the distribution of the coronavirus subsidy from the normal subsidy distribution in Israel is liable over time to generate social tension and may put intergenerational social solidarity to the test. The burden of the response to the coronavirus, which benefits the elderly almost exclusively according to what we know at this time, is borne by the young who, together with their children, gain far less benefit. This situation represents a deviation from the normal age-based cost-benefit configuration determined by the National Health Insurance Law, which represents the social contract accepted in Israel with respect to the saving of life by means of healthcare. Despite the moral and ethical issues involved and given the existing resources — and in particular at a time when they are dwindling — a society tends to invest in the young rather than in supporting the old.

The “price of a life”

The first lockdown imposed in Israel lasted about a month and ended on April 19th, 2020. The lockdown, which was successful from the viewpoint of preventing mortality, of course had an economic cost. Even though “life does not have a price,” the question nonetheless arises of whether, in retrospect, the price that was paid is indeed acceptable to the Israeli society, within the given context.

4 The term “solidarity” is limited in this discussion only to intergenerational transfer and ignores transfers between other groups in society.

5 Based on data obtained from the Ministry of Health.

In practice, this question is answered when determining the budget for public healthcare services, within the framework of the National Health Insurance Law, and particularly in decisions regarding the adoption of new technologies and in the discussions of the Healthcare Services Basket Committee (also known as “the Basket Committee” or the “Healthcare Basket Committee”). In the first stage, the state decides on the public budget for the healthcare system. Within this process there is already a kind of determination of priorities regarding the saving of life, which is sometimes simply the means available to the doctor at the patient’s bedside. Furthermore, a designated share of the total public healthcare budget is allocated to the funding of new technologies (primarily pharmaceuticals) that will be included in the healthcare basket. In parallel to the budget decision, the Healthcare Basket Committee, which is an ad hoc public committee, prioritizes the technologies that will be adopted as part of the budget. In 2019, this budget totaled half a billion shekels (about \$143 million).

The committee, whose members include healthcare professionals, economists, religious leaders, and representatives of the public, prioritizes the technologies that are candidates to be included in the healthcare basket according to complicated medical, economic, ethical, and social criteria, including the cost-benefit ratio of the technology and, no less importantly, according to the number of patients that will benefit from it. The technologies that are finally included in the healthcare basket are those at the top of the list of priorities, up until the full utilization of the allocated budget.

The budget designated for new technologies and the committee’s decisions reflect the general norms established by the law and its interpretation and reflect social priorities (at the margins) with respect to the use of curative and life-saving technologies. Based on the Healthcare Basket Committee’s decisions in 2006 to 2007, Shmueli and Nissan-Engelchin inferred a value of NIS 200,000 (in 2006 prices) for a statistical life year (not adjusted for quality of life) and a value of NIS 250,000 for the price that society is willing to pay for a life year (adjusted for quality of life) (Shmueli & Nissan-Engelchin 2008; Shmueli, 2009). Using the lower figure, we increased it by 60 percent, according to the change in GDP in current prices between 2006 and 2019. We assume, therefore, that Israeli society’s willingness to pay for a life year, as reflected in the Healthcare Basket Committee’s decisions, increases by the rate of growth in GDP or income. This appears to be a good approximation in view of the relatively fixed share of healthcare expenditure out of GDP (about 7 percent).

Furthermore, we correct for the increase in medical costs beyond the growth in GDP at a rate of about 6 percent during this period. This correction assumes that the allocation to the healthcare basket at the margins remains stable in real terms and that it compensates for the change in healthcare costs relative to GDP, even if the committee's budget is not explicitly adjusted in this manner.

According to these two adjustments to the original estimate, the value of a life year in Israel in 2019 was approximately NIS 340,000. This amount is more than double GDP per capita in 2019 (approximately NIS 150,000). Since we are not taking into account the cost of improving quality of life, we use this value in order to evaluate the investment, on the margin, in saving a life in the response to the coronavirus pandemic.

Our estimates for number of life years that can be saved in Israel by preventing mortality, according to age group, are based on the exact life expectancy of each age group in the country, as presented in Table 2 (Chernichovsky & Bental, 2020). We discount potential future life years by a rate of 3 percent (the accepted rate in the calculations carried out by the NII).

Table 2. Life expectancy and discounted life expectancy in Israel

Age group	Life expectancy	Discounted life expectancy
0–9	77.7	30.9
10–19	67.7	29.7
20–29	57.9	28.1
30–39	48.2	26.1
40–49	38.4	23.3
50–59	29.2	19.8
60–69	20.4	15.5
70–79	12.2	10.4
80+	7.3	6.7

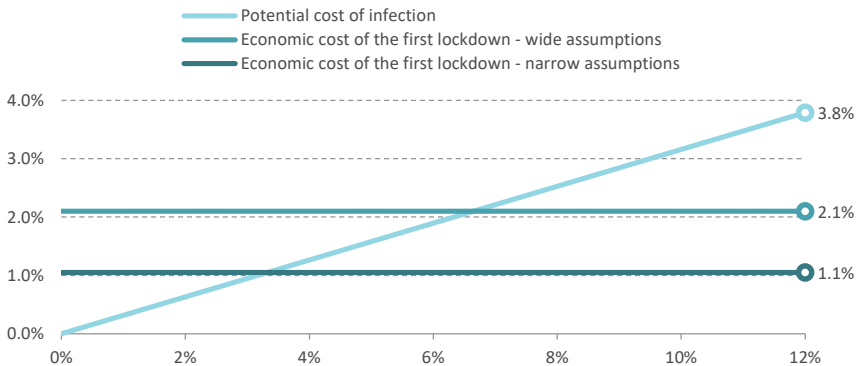
Source: Chernichovsky et al., Taub Center, based on Chernichovsky and Bental, 2020

We then apply the estimated value of a life year (i.e., NIS 340,000) to these data. Thus, for example, according to the third column in the table, Israeli society should be willing to invest up to NIS 10.5 million to save the life of a 5-year-old child but only up to NIS 2.3 million in order to save that of an individual age 80 or older. Although such a calculation leads to a thorny ethical dilemma, it is unavoidable since it represents the basic fact that the life expectancy of the

elderly is less than that of the young. Nonetheless, it is important to emphasize that underlying the approach used here is the assumption that a life year is the same no matter whose life it is or what its quality is.

Eckstein, Bental, and Sumkin (2020) report Israel’s situation in the context of morbidity and mortality rates by age groups as of May 31st, 2020. On the basis of their data and the data in the life expectancy table, we can calculate (using an extrapolation that assumes a linear relationship between rates of infection and rates of mortality) the value of life years in terms of GDP that would be lost at various rates of infection, based on an estimated value of NIS 340,000 for each life year. Figure 5 charts the relationship between the rate of infection and the loss in the value of life years as a percentage of GDP, up to a maximum infection rate of 12 percent, which represents a situation of “sit and do nothing.”⁶ According to the morbidity and mortality data as of the end of May, this rate of infection would have led to the deaths of about 17,000 individuals in Israel.⁷

Figure 5. The potential value of discounted life years that can be saved as a percentage of GDP by infection rate



Source: Chernichovsky et al., Taub Center | Data: Ministry of Health data for May 31st, 2020

- 6 According to the data of the government of Italy, during the month of March the rate of infection in Bergamo was 6–12 percent. The actual rate of infection was probably double that. See Buonanno, Galletta and Pucca (2020).
- 7 As of the end of May, the rate of infection in Israel was 0.215 percent and caused the deaths of 303 individuals. The result is obtained on the assumption that the ratio between the rate of infection and the number of deaths remains fixed.

The data in the figure can be interpreted as representative of the maximum amount, expressed as a percentage of GDP that would be worth sacrificing in order to “buy” life years at each rate of infection, up to the maximum number of deaths according to the experience in Bergamo, Italy. In other words, a 12 percent rate of infection would mean the loss of 17,258 lives, which translates into 156,107 life years. The lost value of life years is approximately equal to 3.79 percent of GDP in 2019. In economic terms, it would have been worthwhile for Israel to invest about 3.79 percent of its GDP in order to prevent morbidity. In actuality, there were 320 deaths up until the end of the second quarter, which represented a loss of 2,892 life years, whose value is 0.07 percent of GDP in 2019. If the difference is attributed to the lockdown, then it saved life years valued at 3.72 percent of GDP.

Although the first lockdown began in mid-March 2020, most of it fell in the second quarter. In real terms, GDP in the second quarter was lower by 8.2 percent than in the same quarter in 2019, while according to the rate of growth for 2020 that was indicated prior to the pandemic, it would have been higher by 3.5 percent relative to GDP in the second quarter of 2019. Using the financial values for 2019, this implies an amount of about NIS 30 billion or about 2.1 percent of GDP for 2019. According to this calculation, even if we attribute all of the loss to the lockdown, then at an infection rate of 6.5 percent the economic damage is equivalent to the value of life years that were saved as a result of the lockdown. If only one-half of the economic damage is attributed to the lockdown (on the assumption that the pandemic itself reduced economic activity), then the rate of potential infection of 3.25 percent equalizes the saving in life years to the economic damage. Of course, to the same extent, lower rates of potential infection result in the lockdown policy being less worthwhile as a “remedy,” from the perspective of the Healthcare Services Basket.

Analogously to the calculation of the value of life years saved up to May 31st, 2020, the period that includes the first lockdown, we now calculate the value of the life years that were lost between the lockdowns by not continuing the lockdown. In order to compare to GDP data, we relate to the third quarter (July 1st to September 30th, 2020). During this period, the number of deaths rose from 320 to 1,552, i.e., an additional 1,232 deaths, which according to the age distribution of mortality from the virus results in a loss of 12,162 life years. On the assumption that the continuation of the lockdown would have increased the number of deaths by 320, a loss of 9,270 life years can be attributed to the

lifting of the lockdown, with a value of about NIS 3.1 billion according to NIS 340,000 per life year. This amount constitutes 0.24 percent of GDP for 2019. Since GDP in the third quarter of 2020 grew by 8.6 percent relative to GDP in the second quarter, GDP grew during this period by about NIS 26.8 billion (in 2019 prices), which is about 1.9 percent of GDP in 2019.⁸ In other words, the increase in GDP is much larger than the value of the life years lost as a result of the opening of the economy during that period. In financial terms, for every life year lost the economy “gained” NIS 2.9 million, which is more than 8-fold the value of a life year, i.e., NIS 340,000, according to the healthcare basket calculations. On the basis of this purely objective calculation, the growth in GDP as a result of the lifting of the lockdown more than compensated the Israeli economy for the loss caused by the rise in mortality.

It is important to clarify the difference between the two outcomes, namely the one related to the beginning of the first lockdown and the other related to the ending of the lockdown. According to the latter, imposing the lockdown was worthwhile. The former calculation is based on the apocalyptic forecast according to which Israel would have suffered 17,000 deaths without a lockdown. This is an even lower number than that considered by decision makers at the time.⁹ It is clear that the larger the expected number of deaths, the more worthwhile is the investment in the lockdown, for any value of life. In contrast, the second calculation is based on realized data on GDP and mortality. In other words, given the data at that time, one cannot conclude from the discussion that as foreseen then, the first lockdown was not worthwhile. Moreover, it cannot be concluded from the data that a lockdown is necessarily not worthwhile in the long run. In Sweden, where there has been no formal lockdown, the rates of mortality rose and there was an economic loss. Thus, in contrast to Israel, Sweden paid twice — in terms of a high mortality rate as well as in the loss of GDP.¹⁰ It should also be noted that part of the price of the fight against the coronavirus pandemic is likely to be resulting illness and death caused by lack of routine treatment that would have been provided in normal times (Weinreb, 2021).

8 See Table F1 in the Monthly Bulletin of Statistics for Israel. The data are seasonally adjusted.

9 At that time, the National Security Council expected about 30,000 deaths in their “optimistic” forecast. See the [Report of the Advisory Group to the National Security Council on Responding to the Corona Pandemic](#), May 10th, 2020 (in Hebrew).

10 For a comparison between Denmark, where a lockdown was imposed, and Sweden, see Andersen, et al., 2020.

Crisis management: From over-concentration of authority to overlapping responsibilities, a lack of orchestration, and confusion

Much has been said about the management of the coronavirus crisis in Israel. Underlying this criticism is the original sin of the system, namely the actions of the Ministry of Health, both as an agent and as a policy maker and regulator (see, for example, Chernichovsky & Kfir, 2019a; 2019b). The Ministry has refrained from giving up any of its executive powers. This is reflected in the marginalization of the health funds and community medicine — the cornerstone of medical care in Israel — at least early on in the crisis. The combination of concentration of authority in the Ministry and legislative constraints has led to non-compliance with rules and regulations by individuals and the state itself, and, in turn, to the institutional disorder that has accompanied the crisis management until now.

This section examines the content of the legislation and the regulations and their quality, as well as the gap between them, on the one hand, and the reality on the ground, on the other. In other words, we will be examining the model used by the healthcare system in preparation for national health emergencies and its implementation in practice during the first few months of the coronavirus pandemic.

Routine and crisis: Authority and responsibility

The management of the Israeli healthcare system rests on two legal principles: the National Health Insurance Law, 5754-1994 (herein: the Law) and the Mandatory 1940 Health of the People Ordinance (herein: the Ordinance). The Law determines the day-to-day activity of the system in normal times. The underlying principle is of managed competition, based on the idea that the system is too complicated to be run in a centralized manner. Therefore, the state guarantees that the system will have sufficient public funding, it determines policy and eligibility and it regulates the activity of diffuse competing agents on the ground, through the health funds, which operate to the benefit of the insured public. The health funds are committed to a national deployment of services, including primary care, secondary care, diagnostic centers, and laboratories. In addition, they also operate call centers for various remote services, which constitute an important layer in their day-to-day activity.

The Ordinance, which was passed in 1940 and amended periodically, regulates the activity of the healthcare system also in matters related to public health and disease prevention, which naturally also require non-medical ancillary activities, such as supervision of sanitary conditions or activities on the population level, such as the issuing of directives and their enforcement in the case of an infectious disease outbreak.

Among other things, the Ordinance states that the control of disease and of infectious diseases in particular will be under the responsibility of the Ministry of Health, and it provides instructions for how to respond to such an outbreak. The Ordinance and the regulations that follow it define a series of preventive measures that the Ministry is to carry out, whether on its own or in concert with other ministries, such as the Ministry of Agriculture or the Ministry of Environmental Protection, and with the local authorities. In addition, the Ordinance states that, in cases of widespread disease, responsibility for the event management will be transferred to the Ministry of Defense.

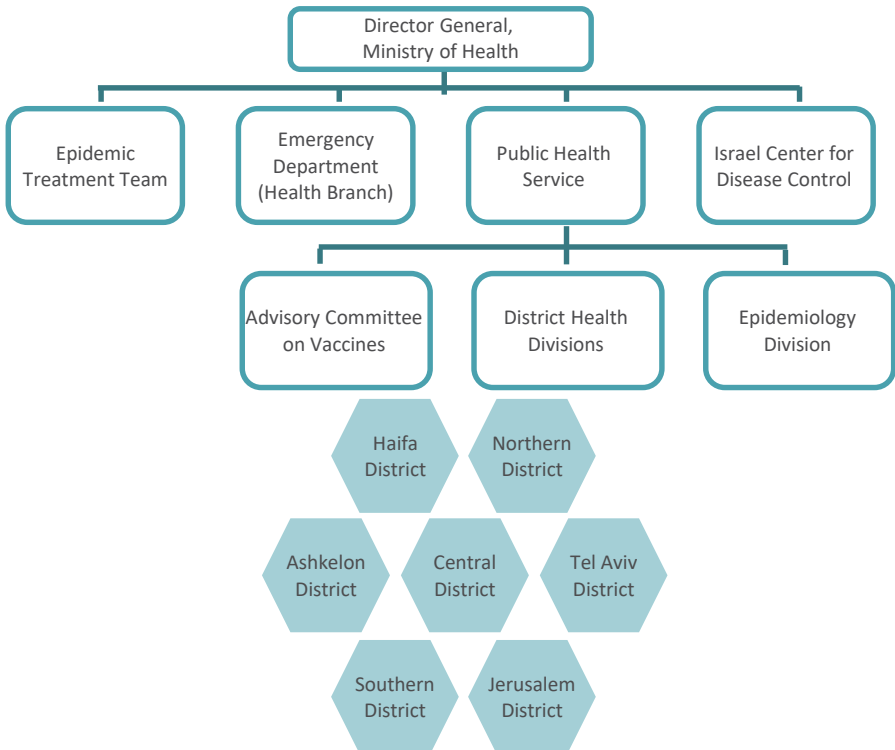
As can be seen in Figure 6, the Ministry of Health, in its function as regulator, includes various units that deal with tracking and monitoring during an epidemic or a crisis, and primary among them is the Public Health Service, which operates through the district health offices. In addition, there is an Emergency Division, which is meant to implement the Ministry's policy. Reporting to it is the Epidemic Treatment Team, which advises the Director General of the Ministry in all aspects of epidemics and their control, including the formulation of strategy and operational guidelines. The Team monitors outbreaks of disease and estimates the risk of them spreading to Israel, and determines the need to prepare and to take preventive measures. In the event of an outbreak of an epidemic, the Epidemic Treatment Team is meant to assist in the event management. Another body within the Ministry of Health, which reports to the Branch for Evaluating Medical Technologies, Information and Research is the Israel Center for Disease Control whose role is to monitor the spread of disease.

During an emergency, the healthcare system in Israel is operated by the Authority for Hospitalization and Healthcare During Emergencies (Procedure 1.003),¹¹ which is a designated authority of the Economic Emergency Committee (the body that manages the economy during an emergency on behalf of the Ministry of Defense). The Authority is meant to plan, organize,

11 See [Health System Preparedness for Hospitalization and Healthcare in an Emergency](#) (in Hebrew).

and operate the hospitals and the healthcare system in an emergency, to serve all victims and maintain the hospitalization services for those in need, as well as the healthcare services in the community and preventive healthcare for the population as a whole. The headquarters of the Authority is located within the Emergency Department of the Ministry of Health. Its managerial staff includes the Director General of the Ministry of Health and the Chief Medical Officer, as well as the directors of the health funds. Its core staff includes the Director General of the Ministry of Health, the Chief Medical Officer, and the Director General of the Clalit Health Fund.

Figure 6. The main agencies within the Ministry of Health responsible for dealing with an outbreak of disease and the prevention of epidemics



Source: State Comptroller, 2020, p. 524

According to the directives of the Ministry of Health, in a crisis (a war, a biological disaster, an earthquake, etc.) the health funds are to be prepared for all emergency scenarios and to be able to function as community treatment centers and to offer initial assistance to victims. According to the existing procedures, in an emergency, the health funds are expected to operate in full cooperation with the municipalities, various organizations, nearby hospitals, and the district health offices.

The procedures are defined according to the plans drawn up by the Ministry of Health: a 2005 preparedness plan for a pandemic, a 2007 plan called “Preparedness of the Healthcare System for a Flu Pandemic,” and a 2008 generic operational plan that formalizes the handling of a biological disaster.¹² The assumption in these documents is that the risk in such an event is the large-scale spread of disease that poses a public health risk and creates a burden on the hospital system preventing its optimal operation.

The division of authority described here, which is based on the aforementioned government decisions, establish that the Ministry of Health is responsible for managing the professional aspects of responding to a pandemic, including the operation of hospitals, clinics, and health offices; clinical and laboratory monitoring; preparing reference scenarios for an event; procurement and allocation of drugs and vaccines; and, finally, informing the public. In contrast, the defense sector, as explained above, is responsible for managing the other aspects of the response, by means of the Home Front Command and the Economic Emergency Committee, which in 2009 became the National Emergency Management Authority (NEMA). These aspects include the actions to be taken in an emergency, including the opening and closing of schools, maintaining public order, imposing of lockdowns and if needed, the operation of the economy. The procedures, which are in line with accepted practice worldwide, define the stages of a pandemic and the activity of the healthcare system according to those stages. In the preparatory stage (Stage IV), before the appearance of the disease in Israel, the Ministry of Health is to inform the health funds and the relevant government ministries of the approaching pandemic and instruct them to make the necessary preparations.

12 See [The Medical Response Plan for an Unusual Biological Event — the First Few Hours](#) (in Hebrew).

At Stage V, where transmission is clear and the danger of a pandemic is more imminent although without morbidity in Israel, the Ministry of Health is to update the government, the Ministry of Defense, the Economic Emergency Committee, the directors of essential agencies, and the local authorities that Stage V has been reached and its implications. The Ministry of Health is also to transfer responsibility for managing the crisis to a Crisis Management Group in the Ministry of Defense and also to operate the headquarters of the Hospitalization Authority, to fully deploy all the components of the healthcare system and to update all of the healthcare frameworks of the event. In Stage Vb, immediately upon detection of patients in Israel, the healthcare system is expected to activate the Hospitalization Authority (Procedure 1.003).¹³

Stages of preparedness for a pandemic as the basis for the division of authority

The World Health Organization (2005) defined six stages in preparing for a flu pandemic:

- Stage I** A new virus in animals. A low risk for appearance in humans.
- Stage II** A new virus in animals. A high risk for appearance in humans.
- Stage III** Instances of morbidity in humans (random and rare transmission among humans).
- Stage IV** Limited infection from person to person and localized morbidity.
 - IVa** Small clusters of morbidity abroad.
 - IVb** Small clusters of morbidity in Israel also.
- Stage V** Significant transmission from person to person with localized disease.
 - Va** Significant clusters of morbidity abroad.
 - Vb** Significant clusters of morbidity in Israel also.
- Stage VI** A flu pandemic — widespread transmission throughout the world.
 - VIa** Disease has not yet spread to Israel.
 - VIb** Spread of the disease in Israel also.

¹³ See [Procedures for an Emergency — Hospitalization, Part 1 — Organization and Operation](#) (in Hebrew).

The relevant stage is determined by the World Health Organization at any given time while the sub-stage in Israel is determined by the Ministry of Health. From Stage V onward, the national responsibility for managing the crisis is that of the Crisis Management Group in the Ministry of Defense, by means of the Economic Emergency national headquarters and the Home Front Command (Ministry of Health, 2007).

The Ministry of Defense. According to law, it is the Ministry of Defense that is responsible for national emergencies in Israel. According to the State Comptroller Report published in March of this year, when there are a large number of victims and the functioning of the economy is impeded, the overall responsibility for the functioning of the various sectors in the economy is that of the Ministry of Defense by means of The National Emergency Management Authority (NEMA) and the Home Front Command (State Comptroller, 2020). Support for this can be found in Government Decision 4356¹⁴ from 2005, which states that when the WHO declares a pandemic, “it is the responsibility of the Ministry of Defense to provide solutions on the national level in essential areas of the economy by means of the Crisis Management Group through the Economic Emergency national headquarters (which in 2009 became the National Emergency Management Authority) and the Home Front Command.” In this situation, the assistant to the Minister of Defense is to coordinate “the work of the Crisis Management Group on behalf of the Minister of Defense by means of the Economic Emergency Committee” while the Ministry of Health has the overall responsibility for managing the professional and medical aspects of the crisis.

The National Emergency Management Authority (NEMA) was established by Government Decision 43/b on December 23rd, 2007.¹⁵ It serves as the coordinating agency for all organizations dealing with the home front during an emergency, in a wide variety of scenarios, including a pandemic. As a civilian body, NEMA assists the Minister of Defense in crisis situations and orchestrates the functional continuity of the economy and of government ministries.

When NEMA was created, its officials were scattered among various districts and it was managed by senior professionals with military and other logistic experience. Over the years, the status of NEMA has declined.

14 See Government Decision No. 4356, [Preparedness for a Flu Pandemic Outbreak](#), November 6, 2005 (in Hebrew).

15 See the [Ministry of Defense website](#).

In May 2018, it was placed under the Home Front Command, the number of its positions was reduced significantly (currently it is operated by only a few junior-ranked individuals), and its function of liaison with the local authorities was canceled. Since December 2019, NEMA has had no director and only recently, at the beginning of July 2020, was a tender publicized to hire one.

According to changes in 2018, NEMA is to focus on planning and coordination, while execution and responsibility for the economy in a crisis, for the operations rooms, and for the local authorities has been transferred to the Home Front Command. These recommendations were not approved by the government, but were nonetheless implemented in practice.

The Home Front Command, which can be characterized as a military logistic body, operates as part of the army (Israel Defense Forces, IDF) under the responsibility of the Ministry of Defense. The Home Front Command was created with the goal of operating on the civilian front, both in normal times and in an emergency, in order to prepare the population for an emergency. The Home Front Command works in cooperation with the various emergency organizations: the police, the Firefighters and Rescue Authority, Magen David Adom (Israel's Red Cross) and others. The Home Front Command districts are responsible for maintaining continuous contact with the local authorities, with emergency organizations, and with the government ministries. Oddly enough, it is not to cooperate, officially, with the health funds.

The Home Front Command is responsible for early warning, reinforcement of buildings and bomb shelters, the location of rocket landings, search and rescue, disseminating information and instructions among the population prior to an emergency situation, and operation of the command and control systems that are designated for the home front. Over the years, the Home Front Command has undergone various transformations. Currently, it is the body that organizes emergency activity. The Home Front Command has primarily prepared for various security scenarios and for earthquakes and has been less focused on pandemics.

The National Security Council (NSC) was created in March 1999 and in 2008 it was established by law as the national security body that advises the Prime Minister and the government in the areas of foreign affairs and security. The role of the NSC according to law is to coordinate the activity of the government, the Ministerial Committee for National Security, and any other ministerial committee to do with foreign affairs and security, to

prepare materials for the discussions of the government and its committees, to monitor the implementation of decisions and to recommend the invitation of guest participants to sessions of the various committees, to be responsible on behalf of the Prime Minister for inter-organizational and inter-ministerial activity related to foreign affairs and defense, and even “to operate the Center for the Management of National Crises within the Prime Minister’s Office,” a body that to the best of our knowledge does not yet exist. The NSC is an advisory body and usually does not act as an executive body.

It should be mentioned that in many countries, the handling of crisis situations has been assigned to a separate government ministry, such as, the Department of Homeland Security in the US or the Interior Ministry in Germany and the United Kingdom.

Crisis management in practice

In a comparison of system guidelines for procedures on the ground, there appear to be gaps on various levels. However, it should be emphasized that in the legislation and the regulations there are a multiplicity of agencies and there is no clear definition of the division of authority between them. These agencies, and first and foremost, NEMA, which are meant to coordinate the response to crises, have essentially been neutralized. The health funds, which form the backbone of healthcare services in Israel, are not part of the Home Front Command’s infrastructure. The municipalities, in contrast, have a defined role, although it is unclear what means are available to them in order to fulfill it.

From a survey of the Ministry of Health guidelines relative to the processes that actually took place, various gaps emerge. Some of them are gaps in authority and responsibility. Others are the result of difficulty in defining the operational units and the interfaces between the various agencies or the long period of time that has elapsed since the guidelines were put in place. Still others are simply the result of implementation not according to the guidelines, nor according to the approved operational plans, and without any mobilization of the relevant agencies within the Ministry of Health and outside of it.

Gaps in legislation, authority, and responsibility

The National Health Insurance Law does not relate explicitly to the provision of medical services in the community in an emergency. Given that, it is difficult to determine who is responsible for providing medical services in an emergency and on what scale. With respect to overall legislation and procedures and the role of the healthcare system in times of emergency, it appears that the interfaces and realms of responsibility are not defined either. A simulation exercise in December 2018 to test the ministerial and inter-ministerial preparedness in a scenario of a flu pandemic (*Nachshol Bari*, literally, a “healthy wave”), which was carried out jointly by the staff of the Assistant to the Minister of Defense, NEMA, and the Ministry of Health, showed that clarification of authority and responsibility in the response to an outbreak is needed, as well as with respect to the procurement and distribution of medicines and vaccines. It also demonstrated the existence of “legal-ethical challenges,” a shortage in manpower, and more. The gaps in authority and responsibility in a health emergency could be seen on several levels:

Between government ministries. First, the roles and areas of responsibility for each of the agencies were not defined, nor were the interfaces between the Ministry of Health and other frameworks in the areas of information sharing, computer systems, a situation room, etc., whether those agencies were parallel to it (such as the Ministry of Welfare) or under its supervision (such as the health funds). Nor were there any simulations of an emergency.

The most extreme example can perhaps be found in the guidelines of the Ministry of Defense, which is meant to coordinate the event. They make almost no mention of the health funds, their laboratories, or the nationwide services they offer. They even explicitly mention that “if it is decided to open centers for the distribution of medicine, the local authorities will assist the IDF in opening those centers.” In other words, to the extent that there was any mention of the health funds, the Ministry of Defense did not identify their potential with respect to the diffusion of their services nor their knowledge and infrastructures.

The Hospitalization Authority. The activity of the Hospitalization Authority is specified in the Ministry of Health guidelines; however, its authority to issue directives to the healthcare institutions is not set by law. Beginning in 1995, proposed legislation dealing with this issue was tabled and the State Comptroller’s reports for 2007 and 2014 relate to the situation. However, to the best of our knowledge, the Authority’s activity has not yet been legislated.

The healthcare system. According to information published on the website of the Ministry of Health, in an emergency, the health funds will constitute a community center for the provision of primary medical care. According to these guidelines, the health funds need to prepare for such an emergency situation with respect to accessibility, allocation of manpower, infrastructure, and handling of special populations. The website presents guidelines and information on the principles governing the health funds' activity during an emergency, including guidelines for requests for care, the operation of "unified clinics," the organization and deployment of local clinics, and other useful information on the preparedness for such a scenario. There is no mention of a defined budget source to finance this readiness and there is ample evidence of that the health funds expect to receive designated funding for preparedness, while the Ministry of Health expected them to provide these solutions from their own funding sources.

Preparation of infrastructures for implementation

The gaps between the guidelines and reality sometimes emerge in seemingly esoteric matters, which in the moment of truth nonetheless have a significant impact. An example is the fact that the level of implementation which the various guidelines relate to is the "district." It should be mentioned that the Ministry of Health districts are not defined the same as the health fund districts (and there is no consistency among the health funds either) and they also differ from the districts of the Ministry of Defense, the Ministry of Labor, Social Affairs and Social Services and the Ministry of Education, a situation that impedes event management.

As preparation for the outbreak of a pandemic, a reference scenario for such an outbreak in Israel was drawn up. The goal of the scenario was to define the threat (number of patients, level of infection, etc.) to decision makers, in order to assist them in determining the necessary steps to be taken. At the beginning of 2019, the Ministry of Health sent an updated scenario to the Minister of Defense; however, as of November 2019, the Ministry of Defense had not reviewed it, a fact that compromised the ability of the economy to ready itself. The initial scenarios drawn up used Italy and Spain as references and quickly became irrelevant, particularly since 96 percent of individuals tested in Israel were dealt with in the community rather than in the hospital system.

It is also worthwhile noting that only about a month elapsed between the declaration of a new global pandemic and its arrival in Israel. Nonetheless, according to the Knesset Coronavirus Committee, “Even in this given situation [of uncertainty regarding the disease and its impact], it is the committee’s impression that the month-long warning period was not used to formulate policy, to accumulate physical means of protection, and to establish operating frameworks to deal with the pandemic” (Knesset, 2020, 11). As part of the preparations for the pandemic, and in an effort to optimize the preparations based on the little information available on the coronavirus, the Ministry of Health, in collaboration with the Gertner Institute, prepared an initial reference scenario in late February and early March that constituted the initial basis for discussion and decision making. Despite the State Comptroller Report (2020), which concluded that the inventory of medicines and equipment in the emergency storerooms had expired and was unusable, there does not appear to have been any movement to begin procurement. During the period of preparations, and in view of the information published in various places, it appears that the Sarel company, which is responsible for the Ministry of Health’s procurement, did not provide any meaningful assistance in the procurement process, whether because it was unable to do so or because it was not asked to. Only on March 13th was a directive issued to the Government Procurement Administration to become involved in the procurement of equipment needed to deal with the pandemic. Other procurement efforts by various agencies, such as the General Security Services, were not always based on professional knowledge, and, as a result, the products did not meet technical requirements and were unusable. It appears that a gap existed between the guidelines and the reference scenarios for the preparation of the healthcare system, on the one hand, and the assessment of the defense sector that the main burden would be on the hospitals and the mass diagnostic centers, on the other hand. Thus, in the initial stage, most of the resources were invested in the hospitals and mass diagnostic centers, while the health funds were directed to make only limited preparations for the arrival of patients in the clinics. It appears that the defense sector’s reference scenario was not updated even as the situation became clearer, and major resources were not shifted to community healthcare even when it was understood that more patients than expected were being treated in the community.

Over the years, the Ministry of Health has on a number of occasions recommended that in a crisis the service provided to patients at home by the health fund physicians in secondary medicine should be expanded, that the authority of nurses should be expanded, or that the health funds should be reinforced with volunteers. However, no regulatory infrastructure was prepared, there was no training of manpower and again there was no earmarked budget source.

Management

Based on considerations that are not clear to the authors, most of the existing guidelines were not followed and authority was not granted to them. A national emergency was not declared, a step that would have mobilized systems and budgets accordingly. In the stage of preparation for the coronavirus crisis, the Prime Minister decided during the second half of February that the NSC would manage the crisis. To the best of our knowledge, there was no prior legal discussion of the NSC's authority to coordinate and lead efforts in a crisis of this sort. The Home Front Command was also only partially mobilized. Since a national emergency was not declared, neither NEMA nor the assistant to the Minister of Defense were mobilized, which according to the guidelines were meant to coordinate the event. Instead, and a number of months after the onset of the pandemic, a project manager was appointed on behalf of the government. His authority is not defined and, therefore, he, too, has become just an advisor.

During the first wave, a variety of bodies were assigned to implementation, such as the Ministry of Health, the Home Front Command, Magen David Adom, a number of designated laboratories, and the hospitals. In normal times, these entities are not connected to one another and they share no infrastructure for communication between them or guidelines for working together, neither with respect to testing, nor with respect to patients. Even if each of them is efficient on its own, the interfaces between them are limited and their ability to track a blood sample until a result is delivered to the patient is highly limited. To the best of our knowledge, and despite the need for managing the process and its monitoring, no single entity has been defined to coordinate patient care from the moment they make contact with the healthcare system until they recover.

According to the existing guidelines, the health funds, apart from the Clalit Health Fund, are not part of the core group that directs the Hospitalization Authority in an emergency nor do they have any role in the management of the event, but rather are only involved in implementation. Nonetheless, it is not clear why most of the health funds were not invited to the discussion of preparations for the pandemic held in the Ministry of Health, not even as it became clear that the pandemic was approaching Israel. On the other hand, there is a question as to why the health funds did not prepare for the approaching crisis on their own initiative. Even if they had done more, it appears that the health funds were paralyzed, waiting in expectation of directives from the Ministry of Health, and they only took the initiative several weeks after the onset of the pandemic. There are those in the healthcare system who ask why the health funds were not involved in the thinking and planning processes. They emphasize the health funds' needs for a full picture and their involvement in decision making, even if only to provide them with the opportunity to present their relative advantages in responding to the pandemic. Nor was the relative advantage of the Ministry of Health as a regulator, including its ability to gather the best minds and to mobilize the best infrastructures, to learn from other countries and to generate local knowledge, to define standards and guidelines and to coordinate with other government ministries, used to the fullest extent possible due to the overconcentration of authority within the ministry itself.

One of the main guiding principles during a crisis is the broad allocation of authority to implementation agents on the ground, exploiting their strengths, including their familiarity with the territory and their ability to quickly make decisions based on the data. During the initial stage of the pandemic, and according to a variety of sources, the Ministry of Health operated in a highly concentrated manner. This did not allow others to participate in decision making, to take a leading role in processes, or to share data. This led to decisions that were not in line with the reality in the field. During the crisis, a number of municipalities lost patience and instead of waiting for directives, they took a number of local initiatives, such as the distribution of food, visits to individuals living alone, and the organization of educational and recreational activities. This process also created collaborations with the healthcare system and of course primarily with community medicine in the provision of assistance, in the supply of medicines, in mobilizing volunteers, etc. The sharing of medical and other information with the municipalities is complicated by the Protection of Privacy Law. Only at the beginning of April was a bulletin published by

the Ministry of Health which provided guidelines for the transfer of medical information to the local authorities and made it possible to coordinate activity related to patients in quarantine or who are liable to be at risk. The Home Front Command, which was responsible for maintaining contact with the quarantined, was not always able to create such a relationship of trust.

Implementation

Many years have passed since the guidelines of the Ministry of Health (the Emergency Branch's last position paper was in 2013; plans for a flu epidemic from 2007; guidelines for dealing with a biological disaster from 2008; etc.) and numerous gaps have appeared between them and the world of modern technology. As a result, and despite the well-known areas of responsibility, there has not been any development of guidelines for the transfer of information nor a communication infrastructure that connects between the source of the initial diagnosis and the agencies responsible for treatment (in the hospitals, in the designated quarantine hotels, or in the community), which would facilitate the transfer of information and the continuity of treatment.

During the first wave of the coronavirus pandemic in Israel, the various systems were operated directly by the Ministry of Health and the other ministries, and, as a result, the existing model of provision of services, which had been in place for decades, was eroded and the health funds were marginalized. Thus, it was, in fact, the providers of services whose role in normal times is the provision of a variety of healthcare services to diverse populations and which by their very nature have a national distribution and are able to move samples and staff around also in normal times, who were excluded from the efforts to mitigate the first wave of the pandemic.

The question of who has a relative advantage and the required experience in carrying out certain tasks on a national level or in the procurement of healthcare items was not given any consideration and thus, in spite of their massive presence in the community and a national deployment, as well as their experience in taking samples, transporting them, and testing them in a laboratory, the health funds were not instructed at the beginning of the pandemic to prepare for providing specialized treatment in the community. Moreover, on March 18th, the Ministry of Health sent a document to the health funds in which it was made clear that they are to continue to operate as normal with no instructions to prepare their laboratories for coronavirus testing. Instead, the task was given to Magen David Adom, which has abundant

experience in providing service in an emergency but lacks the experience and equipment to collect and transport samples, as well as the technical infrastructure and computer systems for the identification and tracking of samples. This occurred in spite of the fact that both the plan drawn up by the Ministry of Health to prepare the healthcare system for the outbreak of a flu pandemic and the 2007 document on preparing the healthcare system included guidelines for preparations to be made in the community for the treatment of patients by the health funds and the principles for implementing that treatment.

The knowledge for diagnosing a new disease and treating its victims was accumulated in the course of the first wave. Around the time of the onset of the pandemic in Israel, the Ministry of Health uploaded a designated website in order to keep healthcare workers informed. The site had abundant content and thousands of pages were added to it within a short period of time, thus providing evidence of the lack of information (which was understandable, given the circumstances), the regulatory load and the confusion that prevailed in the system during the first wave. The subject of laboratory testing is an example of this lack of knowledge (which is understandable given the complexity of dealing with a new disease). Combined with other constraints, such as the concentration of authority and the lack of trust between the various agents, this led to a situation in which there was no issuing of regulations, there were no consistent directives, and there was no process of certification for laboratories. At the beginning of the process, only one laboratory in Israel was prepared for carrying out coronavirus testing. This was due to objective reasons, namely a shortage of equipment and knowledge, and various subjective reasons, including that additional laboratories were not prepared in a timely manner. Only on June 22nd, 2020 — more than four months after the onset of the pandemic — was a one-day open seminar held on testing.

The challenges of providing the manpower needed for treatment and implementation were also foreseen. The existing guidelines and reference scenarios described in the documents forecast a shortage of between 25 percent (according to the defense sector documents) and 35 percent (according to the healthcare system documents) in healthcare workers in an emergency and they suggested that the gap be filled by volunteers and soldiers. It does not state who will be responsible for training and managing these support personnel and no budgets were allocated for this purpose. Indeed, there was no training, nor was there any mapping of manpower that could be trained.

The challenges in operating the laboratories and their effect on the number of tests carried out have already been mentioned; nonetheless, they are also related to another component of the response to the pandemic, namely contact tracing, which is a critical tool in managing a pandemic and rapidly truncating the chain of infection by quarantining potential carriers. In order to accomplish this, it is necessary to diagnose infected individuals by means of laboratory testing and contact tracing, continuous interviewing and technological means that map the individual's whereabouts and encounters with others. In normal times, this responsibility belongs to the district health offices, which each have about 10 assigned workers. Due to a persistent shortage of manpower in the health offices, no manpower was trained for emergencies and no relevant technological systems were put in place.

The transfer of patients from the hospitals to the community and the continuity of care are clearly defined in the guidelines, including the involvement of the district health office and the operation of a desk by each of the health funds and the health offices in the hospitals, with the goal of tracing and managing these transfers. The hospitals are meant to appoint a nurse to coordinate the transfers. In practice, information was not conveyed to the health funds, due to the infrastructure limitations among other reasons, and often treatment continuity was not maintained.

Communicating with the public. According to the guidelines, an authorized medical professional in the Ministry of Health is to be responsible for providing information to the public. In practice, most of the information was provided to the public in two main ways at the beginning of the crisis: messages to the public that were conveyed almost every evening by the Prime Minister and information posted on the website of the Ministry of Health. Another source was, of course, the various news channels whose information was not always authorized. Activities that are closely connected to the management of the crisis, such as, public relations, were not carried out by professionals and existing frameworks, such as the IDF Spokesman or the public relations professionals at the Home Front Command.

The dissemination of information in a culturally-sensitive way or in languages other than Hebrew was insufficient, whether because of language and medium constraints (the messages were conveyed in Hebrew and relatively quickly and on channels that not everyone watches) or because of the low level of technological ability among some of the public. It is, in fact, the more vulnerable populations (the Haredi community, the elderly, and some

Arabic speakers) that were not exposed to relevant messages. The National Emergency Portal that was operated by the Home Front Command, in Hebrew and Arabic only, also included information in sign language and directives for autism caregivers, as well as directives for the religious sector. However, cultural mediators who assist the health funds were not utilized, not with respect to high-risk populations nor with respect to any other populations. The health funds, which are involved in marketing and the dissemination of information to a variety of target audiences, quickly identified this shortcoming and by early April began disseminating messages to various populations in a culturally-sensitive manner.

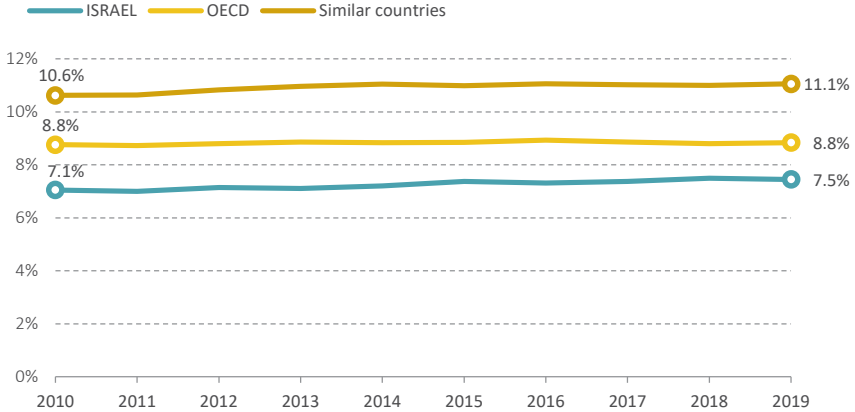
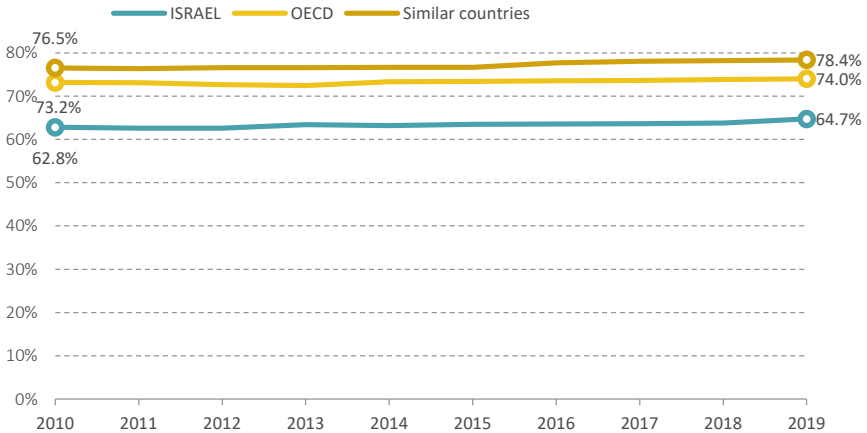
The healthcare system and the addition of resources to deal with the coronavirus

Limited sources of funding: National and public expenditure

As in previous years, national expenditure on healthcare was low prior to the crisis relative to other developed countries and stood at about 7.5 percent of GDP in 2019 (Figure 7). Despite the slight increase from 7.1 percent to 7.5 percent during the past decade, Israel's situation lagged far behind those of the OECD countries, in which healthcare accounts for 8.8 percent of GDP on average. The gap is even larger and expanding relative to the situation of countries similar to Israel with respect to the structure of their healthcare systems (herein, the similar countries),¹⁶ in which the national expenditure on healthcare in 2019 was about 11 percent, following an increase of about 0.5 percentage points during the past decade. Although the gap shrinks when Israel's younger age profile is taken into account, it is still considerable.

The share of public expenditure on healthcare in Israel also continues to be relatively low (Figure 8), despite a rise of about 2 percentage points during the past decade. Only about 64.7 percent of healthcare expenditure in Israel is publicly financed, as compared to about 74 percent in the OECD countries and about 78.4 percent in the similar countries (in 2019). Relative to the similar countries, Israel's situation remains unchanged since they experienced a similar increase.

16 Countries that have a model of managed competition between health funds and similar bodies (Belgium, Germany, France, the Netherlands, and Switzerland).

Figure 7. Expenditure on healthcare as a percent of GDP**Figure 8. The share of public expenditure within total healthcare expenditure**

Source for Figure 7 and 8: Chernichovsky et al., Taub Center | Data for Figure 7 and 8: OECD.Stat

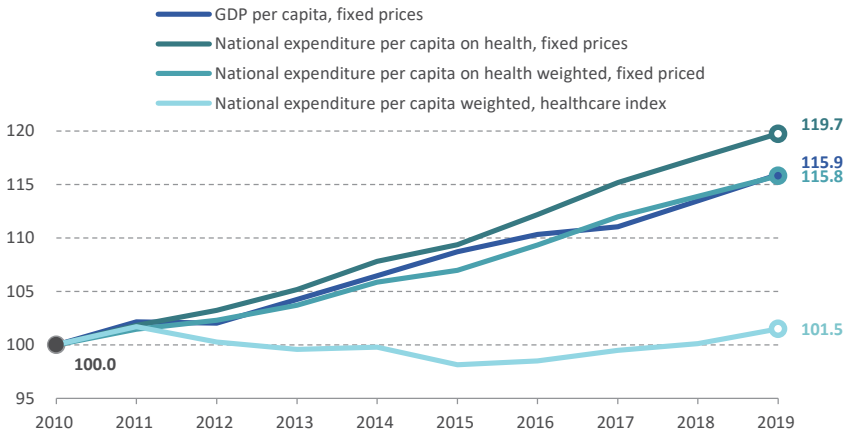
It is worth noting that private expenditure on healthcare in Israel is composed of, among other things, supplementary insurance offered by the health funds and private health insurance, where the share of the latter within total private expenditure has been consistently rising over time and is generating

a distorted system of incentives from the viewpoint of equity and efficiency (Chernichovsky, 2020). It appears that if the private healthcare system made any contribution to the war on the virus, it was only a minimal one.

The share of national expenditure on healthcare within GDP has been on an upward trend in recent years. This implies that the rate of increase in expenditure on healthcare services in Israel is somewhat higher than the rate of growth in GDP. Nonetheless, “real” output generated by that expenditure is not necessarily rising at the same rate (Figure 9). After adjusting for demographic changes, namely the aging of the population, the national expenditure per standard person has, since 2010, risen at a similar rate to that of GDP per capita. If changes in the price of healthcare services in those years (as represented by the index of healthcare prices) is also taken into account, it appears that the rate of increase in the national expenditure on healthcare has been significantly less than the rate of growth in GDP per capita. In other words, when demographic changes and the price of healthcare are considered, expenditure on healthcare in real terms has risen by just about 1.5 percent since 2010.

Figure 9. The index of healthcare expenditure per capita in Israel, adjusted for demographic changes and the increase in healthcare prices

Index year: 2010 = 100



Source: Chernichovsky et al., Taub Center | Data: CBS; Ministry of Health

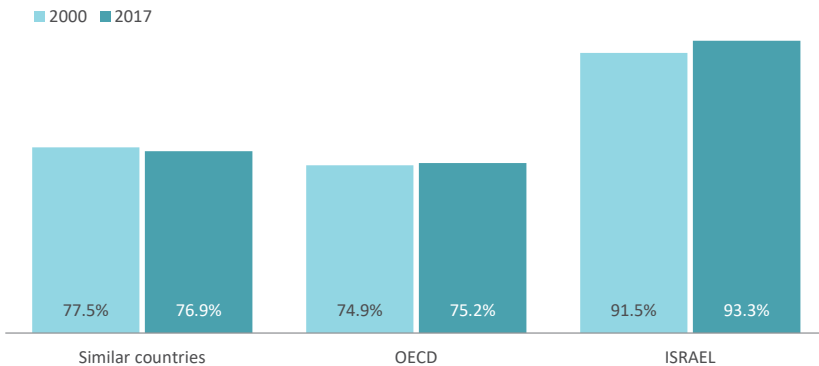
Indeed, the situation is reflected in significant shortfalls in the system's sources of funding and these can be seen in the fragile state of healthcare services, both in the hospitals and in the community.

The general hospital care system in Israel

The general hospital care system is still characterized by a low number of beds per capita and a relatively short duration of hospitalization. This was also the situation prior to the crisis and it contributed a great deal to the atmosphere of hysteria, at least during the first lockdown. The number of beds in the general hospitals in Israel stands at 2.2 per 1,000 population, as compared to an average of 3.6 in the OECD countries and 4.1 in the similar countries (in 2018).¹⁷ After adjusting for the younger age profile in Israel, the number of beds per 1,000 population rises to 2.5, which is somewhat higher but still lags behind the rest of the developed world to a significant degree.

The low number of beds per 1,000 population leads to a high occupancy rate of hospital beds: in 2017, Israel had an average occupancy rate of 93 percent, in contrast to 75 percent in the OECD and 77 percent in the similar countries (Figure 10). As a result, it also has a high patient turnover rate for each bed. Thus, the duration of hospitalization is short in Israel relative to the developed countries: an average of about 5 days as compared to about 6.5 in the OECD and 6.3 in the similar countries (data for 2017 to 2018).

Figure 10. Occupancy rate of general hospital beds



Source: Chernichovsky et al., Taub Center | Data: OECD.Stat

17 The OECD average relates to its members for which there are data. The figures for Germany and the US are for 2017.

This indicates that the general hospital care system in Israel is continuously overloaded, which has a cost in terms of the level of health among Israel's population. This overload may lead to health risks, such as infection, a drop in the quality of care since patients have to be discharged as quickly as possible in order to free up beds, and a lack of preparedness for security or medical emergencies, since the hospitals do not have a margin of safety that allows them to intake additional patients beyond the needs of routine hospitalization.

Healthcare in the community

The overloading of the hospital system relative to the sources of funding represents to a large degree the situation of healthcare in the community in the zero-sum game between the two systems. Chernichovsky and Kfir (2019a; 2019b) discuss this issue in detail. Apart from the overall shortage in funding, the system of payment for hospitalization (the CAP mechanism) encourages the preference of hospitalization over care in the community.

It is possible that the weakness of healthcare in the community is reflected in the fact that it was ignored, at least at the beginning of the crisis, which was apparently the result of an overemphasis on the hospital system, the concentration of authority in the Ministry of Health, and the inadequacy of legislation, as described previously.

Additional resources provided to the system as a result of the coronavirus crisis

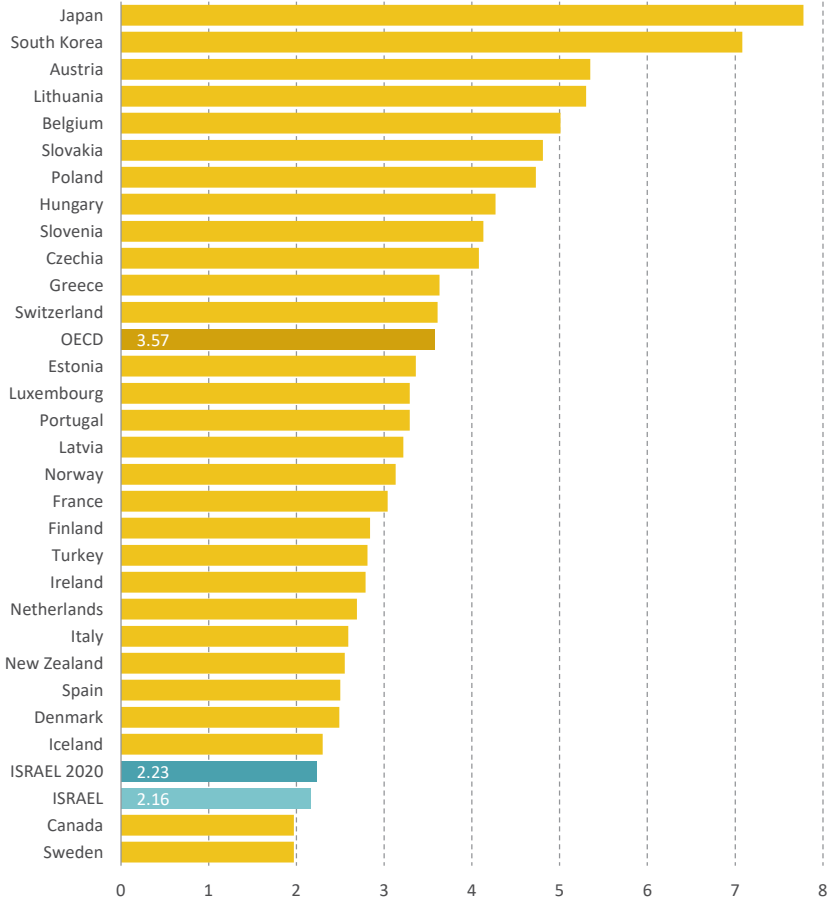
With the onset of the coronavirus, the government and the healthcare system had to invest additional resources in order to protect the functioning of the system and to improve it. An amount of NIS 17 billion was allocated to this task. If the investment in respirators, protective gear, and special medicines is ignored, then only about NIS 4 billion was allocated directly to the healthcare system. About one-third of this amount is designated for intervention in the community, including the procurement of flu vaccines. Of the budget addition earmarked for dealing with the virus, it is estimated that about NIS 2.7 billion was invested in manpower, infrastructure, and technology that can be utilized in normal times, if the government chooses to leave the budget in the system.

Thus, for example, in order to deal with the expected morbidity from the virus and prepare for a level of morbidity much greater than previously experienced, about 3,200 beds were added in the hospital system, which represents an addition of about 16 percent to the existing number of beds in the general hospitals. Of the additional beds, about 1,000 are standard beds and about 2,200 are temporary beds, which have been placed in parking lots and protected spaces, areas that are not normally used for that purpose. On the assumption that the state decides to leave the standard beds in the hospitals after a vaccine for the virus is found, they will constitute a welcome improvement in the hospital system, which as already mentioned is characterized by a severe shortage of beds. Nonetheless, this will be the only addition of hospital beds in 2020, and on the assumption that the population in Israel grows by a rate of 1.9 percent, the number of beds per 1,000 population will be about 2.23 in 2020, as compared to 2.16 in 2019 (Figure 11). Although this will increase the number of beds per 1,000 population by 0.07, the number of beds in general hospitals in Israel will remain low relative to other countries.

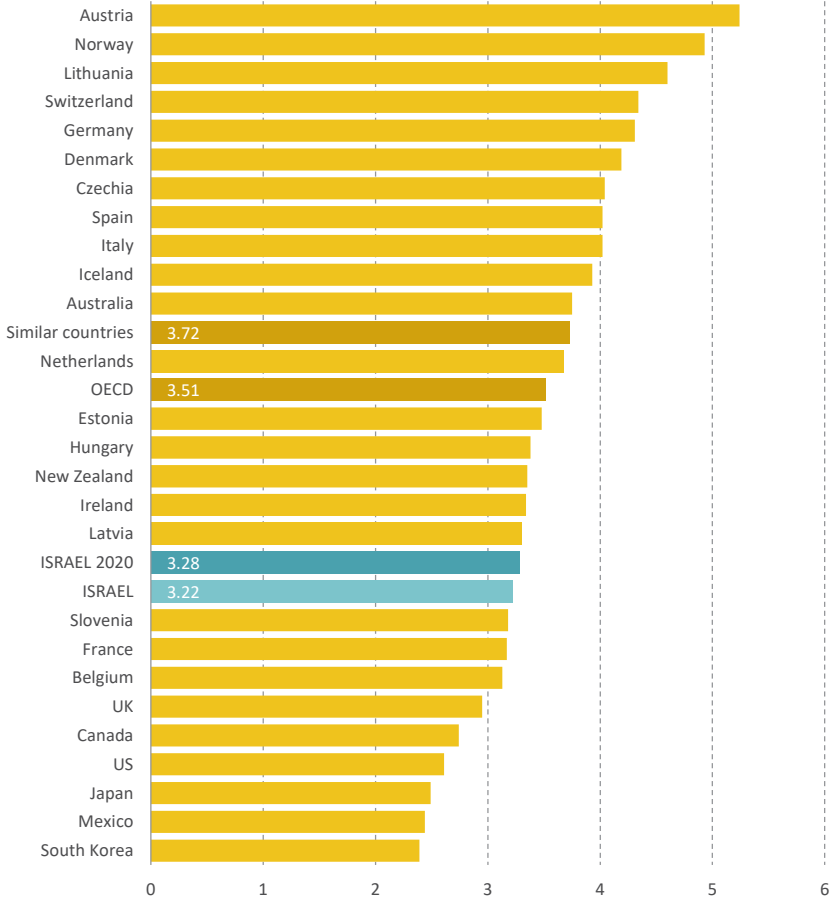
Similarly, the healthcare system received about 500 new positions for physicians in response to the coronavirus crisis. If these positions are defined as permanent, they will help solve the ongoing shortage of physicians in Israel. Between 2014 and 2018, the average number of physicians rose by about 980 per year. On the assumption that the number of physicians will grow by a similar number in 2020, an addition of 500 positions beyond the regular increase, if successfully filled, will bring the number of physicians in Israel to 30,575 as of the end of 2020 and the number of practicing physicians per 1,000 population to 3.28, as compared to 3.22 in 2018 (Figure 12). Despite the slight upward trend, the number of physicians is still significantly lower than the OECD average of 3.51 and the average of 3.72 in the similar countries.

In other words, even on the assumption that the additional positions are not cancelled, the potential effect of the coronavirus crisis on the number of physicians and the number of beds will not be sufficient, at least in comparison to the situation in other countries.

Figure 11. Hospital beds per 1,000 population, OECD, 2018



Note: For Belgium, Canada, Denmark, Iceland, Israel, Luxembourg, and New Zealand, data are for 2019.
 Source: Chernichovsky et al., Taub Center | Data: OECD; CBS; the World Bank

Figure 12. Physicians per 1,000 population, OECD, 2018

Note: For Canada, Iceland, Ireland, Italy, Norway, and the UK, data are for 2019.

Source: Chernichovsky et al., Taub Center | Data: OECD; CBS; the World Bank

Conclusion

At least until now, the Israeli health system has successfully dealt with the coronavirus relative to other OECD countries. However, in view of Israel's small population and its younger age profile, its overall level of solidarity, its relatively high standard of living, and its isolation from surrounding countries, a better outcome could perhaps have been expected.

In retrospect, the first lockdown was a success from the perspective of mortality and the economic investment in preventing what was then viewed as an apocalyptic vision of mortality, similar to that in Italy at the beginning of 2020. The economic loss from the lockdown — of about 2.1 percent of GDP, on the assumption that the lockdown is responsible for the full decline in GDP — was far smaller than the economic value of the potential loss of life years according to the estimated mortality at the time and according to the estimated value of a life year (calculated from the decisions of the Healthcare Basket Committee as NIS 340,000).

It appears that the deterioration in the management of the crisis began with the population's learning curve in understanding the character of the crisis, at least in comparison to the original forecast, while at the same time the state did not learn to manage the crisis. The population began to internalize a message that the crisis is less serious in terms of mortality and more serious in socioeconomic terms. Tensions emerged that can be characterized economically, although this is a narrow characterization that ignores other tensions. From the perspective of non-compliance with the directives, a share of the Haredi and Arab Israeli population behaved according to their own perceived low risk of hospitalization and death from the coronavirus, relative to the non-Haredi population. Moreover, as the crisis progressed, the public realized that in contrast to normal times, during which there is an accepted cross-subsidization between the age groups, as embodied in the National Health Insurance Law, the subsidization during the coronavirus crisis imposes a particularly heavy burden on the working-age population and even on future generations in order to finance the treatment of coronavirus patients who are primarily the elderly. Nor did society understand that the imposition of a lockdown imposes a relatively high price in terms of "paying for human life," which is at least 6-fold greater than what is accepted according to the standard of the National Health Insurance Law.

It also appears that the government has not internalized the method of crisis management in its policy. Underlying this issue is outdated legislation that has not been adequately amended over the years. There is tension between the National Health Insurance Law and the Health of the People Ordinance and its various amendments. The Law for example views the health funds as the system's main operational component while the Ordinance assigns this role to the local authorities, which have no medical infrastructure. The transfer of responsibility for managing the crisis from the Ministry of Health to the Ministry of Defense is hindering the ability to carry out policy in a well-orchestrated way.

One way or another, the Ministry of Health — due to its tendency toward centralization of authority and the mixing of regulation and implementation — at first ignored the community care system, and focused on preventing the collapse of the hospital system, which even in normal times it over-manages. If at first there was perhaps justification for this approach, in view of the apocalyptic vision and the almost 100 percent occupancy of the hospital system prior to the crisis, there was no such justification later on. Essentially, the Ministry of Health held onto its apocalyptic vision even though, according to the heads of the health funds, who at the beginning of the crisis were excluded from the treatment efforts, 96 percent of coronavirus patients are currently treated in the community and relatively few are hospitalized.

It is possible that the resulting reality was an overreaction due both to inadequate legislation and the complex concentration of authority in the Ministry of Health (at least with regard to laboratories). A reality emerged that is not set in comprehensive and fully-formed legislation. There was no declaration of an "Economic Emergency," which would have facilitated a more structured national effort. NEMA, which by law was meant to manage the crisis as part of the Home Front Command, was almost not utilized. In contrast, the management of the crisis was assigned to the NSC, which has no legal standing in the management of such a crisis. The project manager appointed by the government has no such standing either.

At the moment, there is no great hope that the crisis will be used as an opportunity to amend existing legislation and to add sources of long-term funding for the healthcare system. After the addition of hospital beds, if they are made permanent, the number of beds per 1,000 population in 2020 will be about 2.23, as compared to about 2.16 in 2019. Although this represents an increase of 0.07 beds per 1,000 population, Israel still lags behind other

countries. With respect to manpower, the addition and filling of 500 physician positions beyond the normal annual increase will bring the number of physicians in Israel to about 30,575 at the end of 2020 and the number of practicing physicians per 1,000 population to 3.28, as compared to 3.22 in 2018. This increase reinforces the positive trend that began in 2017, which is described in Tur-Sinai et al. (2020), but this level is still low relative to the OECD average of 3.51.

The handling of the coronavirus crisis thus far, which we have tried to describe comprehensively in this survey, calls for an in-depth process to learn its lessons, if only to prepare the healthcare system for the next crisis, to prevent panic of the system's collapse, and to advance legislation and regulation for crisis management.

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