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Healthcare Systems and Services Practice

Understanding and managing the hidden health crisis of COVID-19 in Europe

COVID-19 may produce further, longer-term consequences, not just from reduced care provision, but from the impact of lockdowns on mental and physical health.

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COVID-19 is having a significant impact on morbidity and mortality across the world, with a current worldwide death total, as of June 2, of more than 376,000 people.[1] The initial focus of all countries' response has been to address the critical needs of COVID-19 patients. However, hidden acute and chronic implications of the outbreak could have deeper impact across the population.

Some evidence already exists of a major, indirect, and undermanaged health impact. Data from many countries across Europe are showing significant increases in excess deaths[2] in March and April 2020. While many are likely attributable directly to COVID-19, up to 50 percent in some regions are recorded as non-COVID-19-related[3] (Exhibit 1). It is possible that these effects are driven in part by health services cancellation and care avoidance, but data to truly understand the causes are limited.

COVID-19 may produce further, longer-term consequences, not just from reduced care provision, but from the impact of lockdowns on mental and physical health. As the economic downturn continues, and unemployment rises, even greater deleterious tangential effects stemming from the pandemic may arise.

While uncertainty remains, understanding the possible causes of this hidden health impact, and starting to monitor them closely, are among critical first steps for governments and health systems.

This article sets out some of these hidden effects, and outlines six considerations for governments and health system leaders as they design their response.

The health impact of COVID-19 can be grouped into four categories:

1. **Direct health effects of COVID-19.** As of early May, rates of new hospitalizations and deaths from COVID-19 were slowing in parts of Europe.[4] However, health systems will need to continue to support those who survive the disease. Many patients requiring intensive care for COVID-19 are developing multi-organ failure.[5] There also are early reports of possible long-term damage to lungs and other organs.[6,7]
2. **Implications of reduced non-COVID-19 health services and care avoidance.** Many health systems across Europe have cancelled or postponed tens of thousands of elective procedures and outpatient appointments.[8] Care service levels are likely to remain affected for many months, and reinstating capacity cannot be instantaneous. For example, consider the need to ensure a robust personal protective equipment (PPE) supply chain, retain capacity for COVID-19 patients, and maintain a resilient workforce. The implications of deferring acute care, and support for those with longer-term conditions, may be significant. In England, for cancer alone, the postponement of diagnosis and treatment because of COVID-19 is projected by some to cause 18,000 additional deaths over the next 12 months.[9]

Many patients have not sought regular medical treatment during the pandemic, which may create short-term impacts. For example, emergency room rates in England for heart attacks fell to nearly half of baseline rates

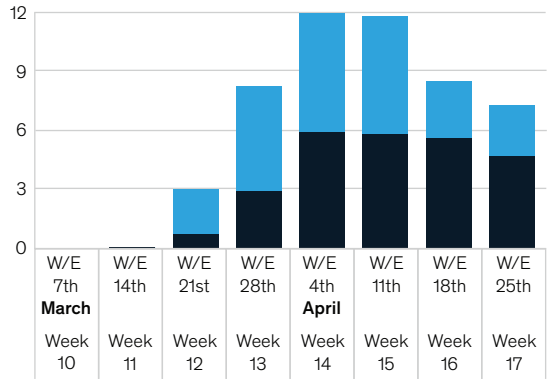
1 "COVID-19 case tracker," John Hopkins University, accessed on June 2, 2020, coronavirus.jhu.edu.
2 Excess deaths, also called excess mortality, is the gap between the total number of people who died from any cause, and the historical average for the same place and time of year. These metrics are collected and reported by national bodies in most European countries (see also Exhibit 1).
3 Comparatively, during a recent heavy flu season, roughly 25 percent of excess deaths were attributable to influenza. See Nielsen J et al., "European all-cause excess and influenza-attributable mortality in the 2017/18 season: should the burden of influenza B be reconsidered?" *Clinical Microbiology and Infection*, 2019, Volume 25, Number 10, pp. 1266–76.
4 "COVID-19 situation update worldwide," European Centre for Disease Prevention and Control, May 6, 2020, ecdc.europa.eu.
5 "ICNARC report on COVID-19 in critical care," Intensive Care National Audit and Research Centre, May 1, 2020, icnarc.org.
6 Pan Y et al. "Initial CT findings and temporal changes in patients with the novel coronavirus pneumonia (2019-nCoV): a study of 63 patients in Wuhan, China," *European Radiology*, June 2020, Volume 30, pp. 3306–9.
7 Tian S et al., "Pathological study of the 2019 novel coronavirus disease (COVID-19) through postmortem core biopsies," *Modern Pathology*, April 14, 2020.
8 "Beyond containment: Health systems responses to COVID-19 in the OECD," Organisation for Economic Co-operation and Development, updated April 16, 2020, oecd.org.
9 Lai A et al., "Estimating excess mortality in people with cancer and multimorbidity in the COVID-19 emergency," ResearchGate, April 2020, researchgate.net.

Exhibit 1

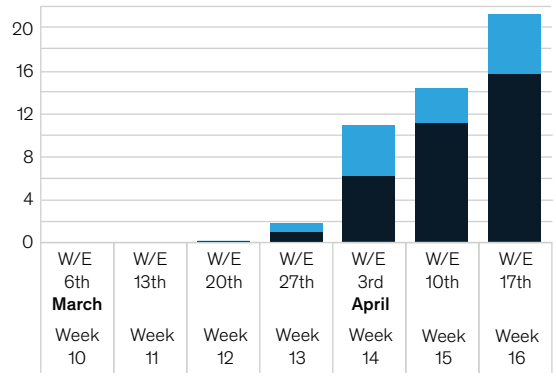
Excess deaths per 100,000 population, March–April 2020

Nurse shift length, by care setting,[1,2] % of total respondents, n = 4,146

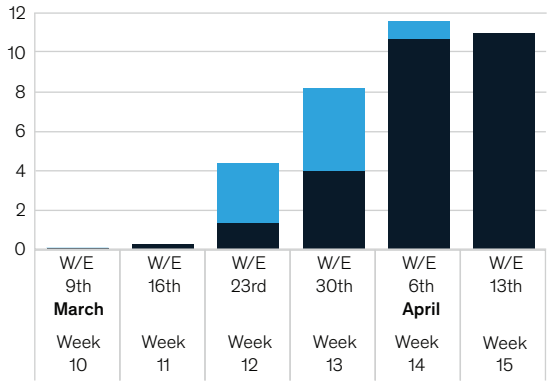
The Netherlands
50% of total excess deaths currently attributed to COVID-19



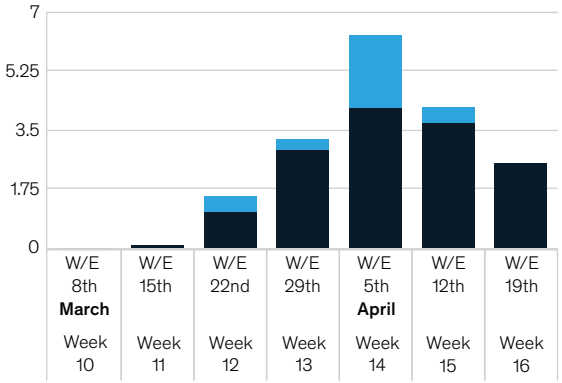
England and Wales
71% of total excess deaths currently attributed to COVID-19



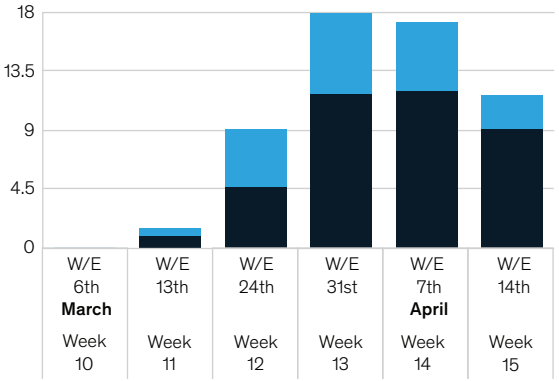
France
83% of total excess deaths currently attributed to COVID-19



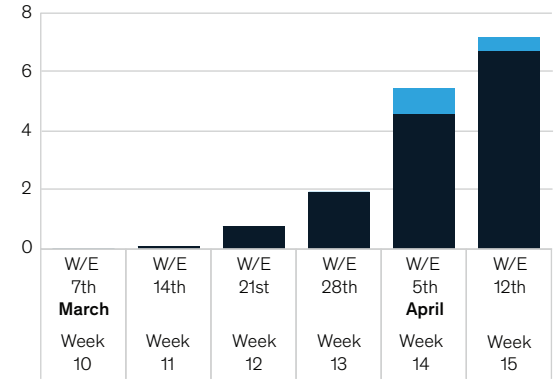
Switzerland
74% of total excess deaths currently attributed to COVID-19



Spain
67% of total excess deaths currently attributed to COVID-19



Sweden
91% of total excess deaths currently attributed to COVID-19



[1] Due to different approaches for reporting deaths in different countries, the timeline shown may not represent actual date of death.

Source: England and Wales: Office for National Statistics; France and Spain: "Tracking covid-19 excess deaths across countries," *Economist*, April 16, 2020, economist.com; The Netherlands: Rijksinstituutvoor Volksgezondheid en Milieu RIVM (COVID data) and Het Centraal Bureau voor de Statistiek (Mortality data); Sweden: Folkhalsomyndigheten (Veckorapporten); Switzerland: Office fédéral de la santé publique (COVID-19 en Suisse data) and Office fédéral de la statistique (Mortality data)

between March 20 and April 20.[10,11] The implications of treatment avoidance for patients with chronic or longer-term conditions also may be significant. Activity of general practitioners in France reportedly has dropped by 44 percent, and that of outpatient medical specialists by 71 percent between January and April 2020.[12] According to a survey by the French firm Doctolib,[13] conducted in April, 38 percent of patients cancelling cited the risk of infection, and 28 percent fear of disturbing their doctor during the crisis period.[14] In the United Kingdom, to allow for critical care of COVID-19 patients, many services were stopped, reduced, and/or switched to telephone or video,[15] while general practitioner appointments were down 30 percent in March from the previous year.[16]

While the rapid growth in telemedicine may change access to health advice permanently, it cannot entirely make up the current shortfall. In one example, in Australia, psychiatric admissions were down 39 percent in March 2020 compared to the previous year—while lifeline calls are 20 percent higher than for the average summer.[17]

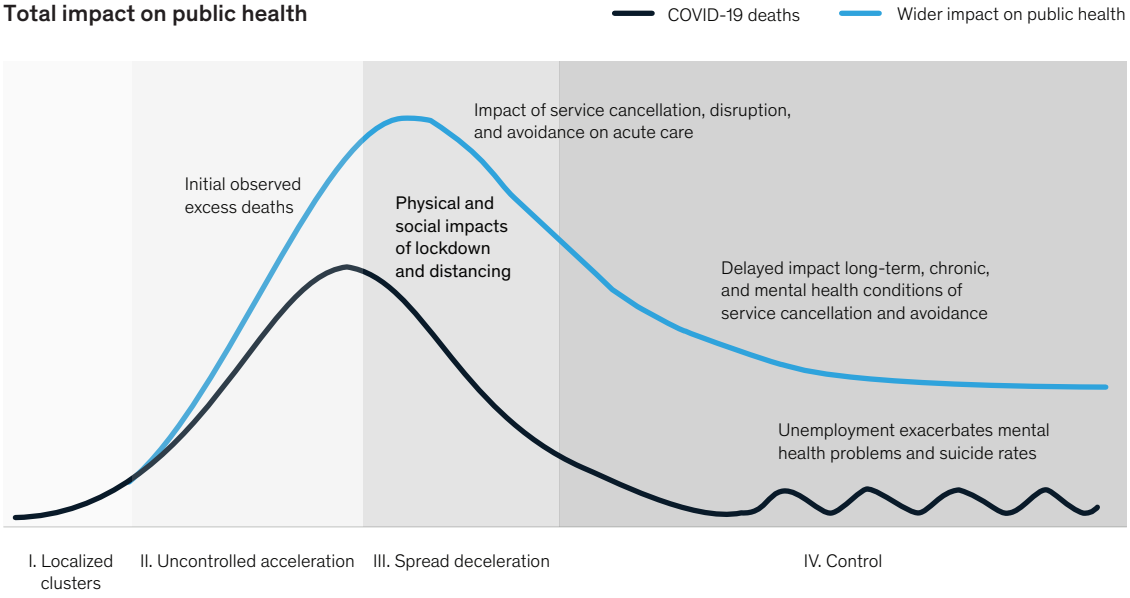
3. **Direct effects of lockdown.** The lockdown itself is likely to directly impact healthcare needs, both physical and mental. Ninety-three percent of respondents in Italy, during the first week of lockdown, reported being at least a little anxious; 42 percent reported a drop in mood; and 28 percent reported not sleeping well.[18] In the United Kingdom, mental health charities are reporting a doubling of reported feelings of loneliness since the lockdown began.[19] While the impact of reduced mobility among those with long-term or chronic conditions is unclear, the most immediate reported physical impact is a rise in family violence. Spain's governmental helpline for gender-based violence reported a 12 percent increase in call volume in the first two weeks of lockdown, with a 270 percent increase in online consultations of their website.[20] The UN's member states reported up to a 60 percent increase in emergency calls by women subjected to domestic violence in April.[21]

4. **Health effects stemming from the long-term economic recession.** In the article "Safeguarding Europe's livelihoods,"[22] the McKinsey Global Institute estimates that COVID-19 may almost double the unemployment rate in the coming years across Europe. Analysis from previous recessions suggests each 1 percent increase in unemployment correlates to a 0.8 percent rise in suicides[23]: this could mean up to an additional 1,500 to 5,500 suicides in Europe.[24,25] On top of this,

10 "Emergency department syndromic surveillance system," Public Health England, April 29, 2020, gov.uk.
11 A possible explanation is that physical distancing measures during COVID-19 have led to a decline in triggers for cardiac events, such as exertion from recreational activity, heavy air pollution, anger from being stuck in traffic, and stress from watching a sporting event. However, the underlying cardiovascular disease often associated with heart disease is likely not affected over the short term. See Gump BB and Heffernan K, "Why the coronavirus appears tied to fewer heart attacks," *U.S. News & World Report*, May 11, 2020, usnews.com.
12 "Covid-19: Doctolib alerte sur la chute de fréquentation des cabinets et s'engage pour permettre aux patients de retourner consulter," Doctolib, April 16, 2020, cdn2.hubspot.net.
13 Doctolib is a French firm that provides a digital platform for booking and conducting primary care and outpatient consultations in Europe (predominantly France and Germany). The survey found that 35 percent of Doctolib patients reported cancelling at least one consultation since the beginning of the pandemic.
14 "Covid-19: Doctolib alerte sur la chute de fréquentation des cabinets et s'engage pour permettre aux patients de retourner consulter," Doctolib, April 16, 2020, cdn2.hubspot.net.
15 "Joint letter to the Health and Social Care Select Committee for the evidence session on delivering core NHS and care services during the pandemic and beyond," The Health Foundation, The King's Fund, and Nuffield Trust, May 14, 2020, health.org.uk.
16 Murray R, Edwards N, and Dixon J, "Delivering core NHS and care services during the Covid-19 pandemic and beyond: Letter to the Commons Health and Social Care Select Committee," The King's Fund, May 14, 2020, kingsfund.org.uk.
17 Data from the Wesley Hospital, Buderim Private Hospital, and St Andrew's Hospital, Australia; and Lifeline.
18 Henley J, "Lockdown living: how Europeans are avoiding going stir crazy," *Guardian*, March 28, 2020, theguardian.com.
19 "Almost a quarter of adults living under lockdown in the UK have felt loneliness," Mental Health Foundation, April 22, 2020, mentalhealth.org.uk.
20 "Calls to Spain's gender violence helpline rise sharply during lockdown," Reuters, April 1, 2020, uk.reuters.com.
21 "WHO warns of surge of domestic violence as COVID-19 cases decrease in Europe," United Nations Regional Information Centre for Western Europe, May 7, 2020, unric.org.
22 Chinn D, Klier J, Stern S, and Tesfu S, "Safeguarding Europe's livelihoods: Mitigating the employment impact of COVID-19," April 19, 2020, McKinsey.com.
23 Directorate general for internal policies, "Mental health in times of economic crisis," European Parliament's Committee on Environment, Public Health and Food Safety, June 19, 2012, europarl.europa.eu.
24 Latest EU data show 56,200 persons in the European Union committed suicide in 2015–16. See "Just over 56 000 persons in the EU committed suicide," *Eurostat News*, July 16, 2018, ec.europa.eu.
25 Assumes incremental unemployment lasts for 2.5 years on average; see Footnote 5.

Exhibit 2

Deaths from COVID-19 will only be part of the total impact on public health caused by the virus



there is a strong association between unemployment and life expectancy,[26] which could suggest that the impact on mortality could be substantial. Considering mental health alone, unemployment could lead to the loss of 5.5 million quality-adjusted life years in the EU-27.[27]

It will take many months to fully estimate the future impact on all facets of the healthcare system. However, the indirect health implications may potentially outlast and outweigh the direct impact on COVID-19 patients (Exhibit 2).

Governments and health system leaders could review six critical considerations to minimize the longer-term impacts of COVID-19.

Consideration No. 1

Create information transparency across the healthcare spectrum

The data and information that health and care systems and governments have available today are often too limited, too fragmented, and too slow. Policy makers and health systems need much broader data feeds that can support fast, data-driven decision making. Specifically, they could:

— **Move from offline to online reporting.** Each country may consider a system to monitor, in real time, the likely incidence of common events, such as cardiovascular incidents, along with associated morbidity and mortality, in order to permit rapid intervention as needed. This process could be done through strengthening and, where

[26] Between population cohorts, every additional 10 percentage points of unemployment is associated with a five-year reduction in healthy life expectancy. The direction of causality between these effects likely runs both ways, with many underlying factors contributing in addition.

[27] A quality-adjusted life year (QALY) is a measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. One QALY is equal to one year of life in perfect health. Our estimated figure is based on the effect of unemployment compared to being employed as 0.1 QALYs (See Norström F et al., "Does unemployment contribute to poorer health-related quality of life among Swedish adults?" *BMC Public Health*, 2019, Volume 19, Number 457, bmcpublichealth.biomedcentral.com.) The McKinsey Global Institute estimates that the EU-27 unemployment rate could increase by 4.9 percent and peak at 11.2 percent in 2021. The UK Commission for Employment and Skills suggests that following the 2008 financial crisis, it took five years for the unemployment rate to return to pre-2008 recessions levels. On this basis, we assume that unemployment might last on average 2.5 years.

Sidebar 1

The return of elective care

Elective surgeries, such as hip and knee replacements or cataract removals, have been paused en masse across Europe.* Three months of cancelled or postponed procedures will generate a significant backlog for healthcare systems, with potential to cause significant detriment to people's health and well-being.

Consideration No. 1
Healthcare systems could consider tracking how many patients are waiting for elective care and stratifying them by severity of condition. Where possible, health systems could look to monitor some of the known adverse effects of delaying surgery. For example, tracking the mobility of patients waiting for orthopedic procedures, and the vision of those waiting for ophthalmic surgery, so that the burden of disease is known.

Consideration No. 2
Among the questions for system leaders are: How many beds are needed to provide care as normal? What is the workforce requirement to treat these patients? What will be the ongoing demand for critical supplies? All of these issues need to be considered in light of ongoing COVID-19 demands. Systems also may look to change their model of care to better deliver services to patients.

Consideration No. 3
Many of the cancelled procedures will still need to be completed, resulting in a significant backlog of surgeries. It is also reasonable to expect the acuity of some patients' needs will have increased due to the delay. Investing in expanding the temporary surge capacity to run down this backlog in a timely fashion will be important. Investing in private sector capacity or extending surgery hours to include weekends are potential solutions.

Consideration No. 4
It is likely that patients have avoided seeking care for conditions that require intervention. The severe drop in emergency department attendances, including for severe acute conditions such as cardiovascular events,† illustrates this point. It will be important for systems to quantify what was underdiagnosed during the COVID-19 crisis response and add these patients to the backlog. Systems then need to implement measures to prevent patients from avoiding care moving forward.

Consideration No. 5
Digital health solutions have seen a proliferation. The implementation of digital telemedicine solutions can support primary and outpatient care, with many systems shifting to virtual care as a default. In England, National Health Service (NHS) data shows that at the end of March 2020, only 54 percent of primary care appointments were taking place face to face, compared to 84 percent of appointments at the beginning of the month.‡ Understanding the effectiveness of digital appointments as well as the uptake and barriers to adoption across age groups will be important to maintain the digital momentum and adapt elective care long term.

Consideration No. 6
In addition to the backlog, providers may examine whether patients will continue to postpone indefinitely. Cancelling or postponing elective care represents a significant proportion of the care provided by health systems each year. Managing the capacity to work down the backlog and maintain population health during this time will require concerted coordinated efforts across primary and secondary care.

* "Tens of millions of surgeries are being postponed as a result of the pandemic," *Economist*, May 18, 2020, economist.com.
† "Emergency department syndromic surveillance system," Public Health England, April 29, 2020, gov.uk.
‡ "Appointments in General Practice – March 2020," NHS Digital, April 30, 2020, digital.nhs.uk.

Attention should be placed on vulnerable populations, such as those with chronic health conditions, the elderly, individuals experiencing homelessness…or other underserved populations.

needed, creating real-time observatories actively collating and monitoring data.

— **Collect and collate information on all elements relevant to changing population health.** This would include health system metrics (including waiting times, service cancellation, accident and emergency attendance volumes, diagnosis rates and severity at presentation); tracking the longer-term implications for recovered COVID-19 patients; mental health indicators (including population surveys, calls to helplines, service utilization, rates of suicides and attempts); surveillance on the impact of non-pharmaceutical invention (including mobility data, excess drug and alcohol usage, as well as domestic abuse incidents and hotline utilization); and economic factors (unemployment and furlough rates; household spending on healthcare).

— **Model and estimate long-term implications.** This process requires monitoring leading indicators of future health burdens (such as unemployment, and the utilization of services that support people with chronic or long-term problems), as well as modelling the future implications of current service disruption (for example, oncology surveillance).

— **Act on the result of detailed reporting.** Clarity about where regional pressure points of non-COVID-19 morbidity and mortality are occurring, as well as having an understanding of the reported causes of death. In addition, specific attention should be placed on vulnerable populations, such as those with chronic health conditions, the elderly, individuals experiencing homelessness, people who are unemployed, pregnant women, or other underserved populations.

Consideration No. 2

Accelerate, de-risk, and prioritize the return to the next normal

The speed at which health systems bring back urgent and elective care beyond COVID-19 is critical. In most countries in Europe, system capacity during the COVID-19 crisis has exceeded demand with a large proportion of the healthcare workforce temporarily stood down.[28] This capacity should be rapidly redeployed. Delays in cancer treatment are likely impact outcomes,[29] while postponing screening may result in cancers being detected at a later stage, which also affects prognosis.[30] The first procedures and specialties to restart will need to be carefully prioritized, considering both the acuity of care needs, and the impact of delaying or not delivering care. Health systems are focused on ensuring their supply chains, managing their capacity, and supporting the resilience of their workforce, as discussed in McKinsey's April 24, 2020 article, *"From 'wartime' to 'peacetime': Five stages for healthcare institutions in the battle against COVID-19."*[31]

[28] For example, 40.9 percent of acute hospital beds in the [[NHS—first use. Spell out?]] in England were unoccupied as of April 13, 2020, compared with an average of around 10 percent prior to the COVID-19 pandemic. See West D, "NHS hospitals have four times more empty beds than normal," *Health Service Journal*, April 13, 2020, hsj.co.uk.

[29] Huang, J et al., "Does delay in starting treatment affect the outcomes of radiotherapy: a systematic review," *Journal of Clinical Oncology*, 2003, Volume 21, Number 3, pp. 555–63.

[30] McPhail S et al., "Stage at diagnosis and early mortality from cancer in England," British Journal of Cancer, 2015, Volume 112, pp. S108–15.

[31] Singhal S, Reddy P, Dash P, and Weber K, "From 'wartime' to 'peacetime': Five stages for healthcare institutions in the battle against COVID-19," April 24, 2020, McKinsey.com.

Sidebar 2

Cancer care may be delayed

Cancer is responsible for more than one-quarter of deaths recorded in Europe each year.* Oncology services across Europe have seen significant delays and cancellations as health systems attempted to free up capacity for COVID-19.† Given the time-sensitive nature of cancer care, these delays could impede people's recovery.

Systems should consider acting now to understand the size of the impact of COVID-19 on cancer patients within their systems, and develop robust plans to restart care at scale, catch up, and mitigate unnecessary deaths.

Consideration No. 1
Active monitoring of rates of cancer diagnostics and treatment can help. Increases in average wait times should ideally be avoided, and countries may want to continue to monitor average wait times to receive care. It may also be necessary to monitor potential consequences of delayed diagnosis and treatment. Such factors may include patients' stage of cancer at diagnosis and potential impact on survival rates.

Consideration No. 2
Resuming cancer services to normal levels may be an urgent need. Where they do not already exist, European healthcare systems could consider establishing dedicated cancer care facilities. This may be achieved by working as part of a network to consolidate cancer care at one site. For example, much of the cancer care across London is now being coordinated and delivered by a specialist cancer hub at The Royal Marsden NHS Foundation Trust.‡ This organization is similar to local consolidation of care happening in networks centered around the Instituto Nazionale dei Tumori di Milano in Italy, and the Netherlands Cancer Institute.§ As systems rebuild their capacity, some have turned to prioritizing patients based on clinical need and potential impact of treatment.

Consideration No. 3
A continued examination of diagnosed cancer rates in each country may be wise. In the Netherlands, there was a 40 percent decrease in cancer diagnoses in the first week of April, dropping from 3,500 to 1,983 cases. This decrease in new patients was across the cancer spectrum, and correlates to up to a 60 percent decrease in oncological surgery in academic hospitals.# The decreases likely reflect deferred healthcare interactions that would lead to a cancer diagnosis and surgery. Investing now to increase capacity in cancer facilities could help address the potential fallout from this lack of care. This increased capacity includes both screening and early diagnosis programs as well as treatment capacity.

Consideration No. 4
Oncology patients may have a fear of infection that could be addressed. The fear of COVID-19 is likely driving a significant reduction in people seeking medical attention for suspected cancer symptoms, as evidenced by a drop in the number of urgent referrals for cancer diagnosis. In Scotland, referrals have dropped by more than 70 percent.¶ Discussing with patients the safety measures during primary care appointments and their ability to seek specialist referrals may

* "Still 1 in 4 deaths caused by cancer in the EU," Eurostat, February 3, 2016, ec.europa.eu.
† Saini KS et al., "Effect of the COVID-19 pandemic on cancer treatment and research," Lancet, April 24, 2020, thelancet.com.
‡ The Royal Marsden, "Cancer Hub to deliver treatment during coronavirus pandemic," NHS Foundation Trust, April 3, 2020, royalmarsden.nhs.uk.
§ van de Haar J et al., "Caring for patients with cancer in the COVID-19 era," *Nature Medicine*, 2020, Volume 26, pp. 665–71, nature.com.
# McKinsey analysis based on available data and expert interviews w/e April 16, 2020, NOS, Gupta, Parliamentary documents, BVO NL, NHG, Zorgdomein, EenVandaag.
¶ Philpotts E, "GP urgent cancer referrals decline by more than 70% as 'fewer patients come forward'" Pulse, April 24, 2020, pulsetoday.co.uk.

Sidebar 2 *(continued)*

Six considerations on routine vaccinations

help. Some systems may consider establishing COVID-19-free primary care facilities and implementing robust triage processes to direct patients to the right care for their needs. Measures may be needed to support public confidence in not getting infected while at a healthcare facility.

Consideration No. 5
The transformative solutions being adopted by health systems more broadly, such as digital care modalities and remote monitoring tools, may have applications to support cancer care. Delivering as much care as clinically safe and possible remotely will reduce the in-person traffic in healthcare facilities and make establishing COVID-19-free pathways and facilities easier. An opportunity may also exist to accelerate the adoption of hospital-at-home models, where infusion therapies are delivered at a patient's home. This particular kind of delivery may support the self-isolation and "shielding" of cancer patients with compromised immune systems.

Consideration No. 6
Academic research in the United Kingdom has estimated that delays across the full spectrum of cancer care due to COVID-19 could lead to 18,000 additional deaths in the country. If the same impact is seen across Europe, an additional approximation of 140,000 deaths could otherwise have been avoided.** Establishing a robust cross-sector cancer plan to deal with this crisis and mitigate these excess deaths should be considered a priority.

** Assumes same scale of delayed care and scale of impact across Europe. Scales 18,000 excess deaths in the United Kingdom to Europe based on population size.

Consideration No. 3

Invest in catching up

After quantifying the deficit in care provision resulting from the COVID-19 pandemic, systems may need to identify and quickly implement catch-up interventions. Systems will need to make up for healthcare and public health campaigns put on hold during the initial crisis response. This response could include nationwide vaccination catch-up campaigns, targeted cancer screening, regular follow-up of chronic conditions, and targeted mental health services to treat those who could not access care during quarantine or who are experiencing high levels of post-COVID-19 stress.

Consideration No. 4

Understand and counter behavioral change and harness the benefits of new approaches to care delivery

It is possible that the current crisis will have fundamentally altered the attitude of many toward healthcare. Some of it may be positive—for example, anti-vaccine sentiment may be reduced.[32] However, an apparent avoidance of care as suggested by the reduction in emergency department attendances for a breadth of conditions, including stroke and heart attack,[33] indicates negative effects. While hopefully transient, it will be important to identify any such trends and consider public health awareness campaigns to counter them.

[32] Stacey K, "The coronavirus pandemic is moment of truth for anti-vaccine movement," *Financial Times*, April 27, 2020, ft.com.
[33] "Emergency department syndromic surveillance system," Public Health England, April 29, 2020, gov.uk.

Sidebar 3

Six considerations on routine vaccinations

Vaccinations are a key cornerstone of public health campaigns across the globe. Significant infrastructure is traditionally required to ensure continuous provision of childhood immunization throughout the year.

COVID-19 has caused many parents to delay routine pediatric office visits that include vaccinations.* This postponement indicates a cohort of children who are missing this vital protection from infectious disease. Adults may also delay routine vaccines, such as flu shots, that may potentially result in a more burdensome flu season in some geographies.

Here we outline six critical considerations regarding vaccinations and COVID-19.

Consideration No. 1
Create information transparency across the healthcare spectrum

In general, health systems are well equipped to track reemergence of the major pathogens that are targeted by immunization.† Some areas around the world have automated vaccine registries, but health systems are often less well equipped to know in "real time" which individuals missed out on immunization. Identifying missed individuals is one of the key challenges faced by regular vaccination campaigns, which can be exacerbated by other infectious diseases. For example, the Western Africa Ebola Outbreak significantly affected measles vaccination coverage rates in two of the three worst affected countries. It led to persistent gaps in coverage, along with high measles incidence that was documented until two years after the end of the Ebola outbreak.‡ Accurate data can facilitate the right interventions around the COVID-19 crisis, such as gradual catch-up by the standard healthcare system.

Consideration No. 2
Prioritize return

Preliminary findings from the London School of Hygiene and Tropical Medicine found that if routine immunization was continued, for each excess COVID-19 death due to an infection acquired during the vaccination visit (predominantly among elderly household members), around 29 to 347 future child deaths could be prevented.§ Given the requirement for face-to-face, this measure requires careful considerations for protecting patients and workforce from COVID-19. For example, clear PPE guidelines and robust supplies are needed. With many of the healthcare workforce redeployed to manage COVID-19 patients, systems will have to plan how to staff their vaccine clinics. Training healthcare assistants or recruiting volunteers may support these efforts. However, risks for vaccinators, who may be interacting with large numbers of patients, will need to be taken into account.

Consideration No. 3
Catching up

Extended outreach to identify and provide vaccination for those who missed it during the initial COVID-19 crisis response may require concerted tracking efforts and catch-up campaigns. Both developed and developing countries alike may need to invest in ramping up vaccination capacity beyond the pre-COVID-19 level in order to ensure everyone is reached. This outreach will have implications for the workforce and vaccine

* Santoli JM et al., "Effects of the COVID-19 pandemic on routine pediatric vaccine ordering and administration—United States, 2020," *MMWR Morbidity and Mortality Weekly Report*, 2020, Volume 69, pp. 591–3, cdc.gov.
† "The expanded programme on immunization," WHO, last updated December 1, 2013, who.int.
‡ Masresha BG, et al., "The impact of a prolonged ebola outbreak on measles elimination activities in Guinea, Liberia and Sierra Leone, 2014–2015," *Pan Afr Med J*, January 6, 2020, Volume 35, p. 8, ncbi.nlm.nih.gov.
§ CMMID nCov working group, "Benefit-risk analysis of health benefits of routine childhood immunisation against the excess risk of SARS-CoV-2 infections during the Covid-19 pandemic in Africa," Centre for Mathematical Modelling of Infectious Diseases, last updated May 1, 2020, cmmid.github.io.

Sidebar 3 *(continued)*

Six considerations on routine vaccinations

distribution network, as well as possible implications for manufacturing. It also could be important groundwork for efficient immunization if and when a safe and effective vaccine becomes available.

Consideration No. 4
Behavioral changes may change vaccine sentiments

Many countries have faced an increase in anti-vaccine sentiment over the past decade. However, given the push globally for the development of a COVID-19 vaccine, there is a belief that vaccine hesitation may be reduced. A survey conducted by the Vaccine Confidence Project at the London School of Hygiene and Tropical Medicine at the end of March found that 5 percent of people in the United Kingdom said they would not take a vaccine to COVID-19 if one were available. This figure was down from 7 percent in the previous week, suggesting some change toward pro-vaccination.[#] Healthcare systems could consider actively investigating and monitoring any vaccine hesitation not just for COVID-19 vaccines, but for the broader set of key immunizations. Information shared on early COVID-19 vaccine trials could affect these views and campaigns would need to take this into account in their messaging.

Consideration No. 5
Capture the momentum for change that COVID-19 has generated

The imperative for developing a COVID-19 vaccine has created unseen investment levels, global collaboration, and significantly accelerated approval processes across the globe. These changes may present the opportunity to streamline and accelerate the drug and vaccine authorization and manufacturing in a lasting way. If accelerated clinical trials and authorization prove safe, cementing these changes can have great beneficial implications for any needed vaccine in the future. If collaboration is sustainable, vaccine supply overall could be less of a risk.

Consideration No. 6
Manage the additional health challenges with a crisis-level framework

Any reemergence of a vaccine-preventable infectious disease following COVID-19 is possible. Understanding gaps in the vaccination status of populations, and closing them swiftly, is therefore critical. This rapid response is likely to require a national plan of action that straddles the health system and is managed alongside the crisis response. The process of preventing disease reemergence may also provide lessons that can be applied during the deployment of a SARS-CoV2 vaccine.

[#] "Coronavirus causing some anti-vaxxers to waver, experts say," *Guardian*, April 21, 2020, theguardian.com.

Consideration No. 5

Capture the momentum for change that COVID-19 has generated

There has been a dramatically higher use of digital and remote healthcare-related activities over the last few weeks and months. For example, a survey of physicians found the rate of remote patient consultations has increased up to six-fold across Europe.[34] Dedicated COVID-19 treatment facilities have supported improved quality of care for patients,[35] and the recruitment of volunteers at scale to support care services allows more effective use of highly trained professional

[34] Remote consultations as a percentage of total consultations have increased: from 16 percent to 76 percent in Spain, 10 percent to 49 percent in France, 19 percent to 86 percent in Great Britain, 25 percent to 70 percent in Italy, and 9 percent to 32 percent in Germany. See "COVID-19 healthcare practitioner survey," Sermo, April 2020.

[35] "New Rabin COVID-19 Dedicated Hospital Opens," American Friends of Rabin Medical Center, 2020, afrmc.org.

staff.[36] Pharmaceutical approval processes have accelerated, with clinical trials for medicinal interventions and vaccines for COVID-19 being launched in weeks rather than years.[37] Maintaining these new ways of working, along with far greater workforce flexibility (assuming no negative impact on quality of care) can allow a quicker ability to return to providing all inpatient and outpatient services and transition to the "next normal."

Consideration No. 6

Manage the additional health challenges with a crisis-level framework

A similar focus and investment to that seen in the COVID-19 crisis is now required to deal with indirect health impacts. One model may be to form a dedicated team specifically for non-COVID-19 health strategy—able to monitor current health needs, the demand for care, and available capacity—and prioritize the restarting of health and care services effectively.[38] Other structures exist but any model deployed should include clear prioritization of interventions based on health impact, mobilization of existing and new players, and the tracking of progress. The trade-offs are important, and the speed with which countries implement measures to counter the indirect health effects of COVID-19 may directly determine outcomes.

Conclusion

While the full extent of the impact of COVID-19 is not yet known, it is clear that it goes well beyond the immediate deaths and morbidity. The impact is likely to be felt for long after COVID-19 itself has been dealt with, with there being long-lasting implications for cancelled elective healthcare, mass unemployment, and extended social isolation. As governments and health systems look to re-open, it is clear that having a non-COVID-19 recovery plan is just as important as that for COVID-19 itself.

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[36] A call to recruit 250,000 volunteers to support the NHS and broader care services during the COVID-19 crisis saw over 750,000 applications from the public. Health and care services are able to refer people to the NHS Volunteer Responders team to receive basic care and living support from volunteers. See "NHS Volunteer Responders," GoodSAM, last updated March 29, 2020, goodsamapp.org.

[37] "Guidance for medicine developers and companies on COVID-19," European Medicines Agency, last updated April 30, 2020, ema.europa.eu.

[38] Latkovic T, Pollack L, and VanLare J, "Winning the (local) COVID-19 war," April 6, 2020, McKinsey.com.

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