Value-Based Health Care in the Midst of the COVID-19 Pandemic Response

Lessons from Health System Innovations Responding to the Pandemic in 12 Countries

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Global Innovation Hub For Improving Value In Health

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EXECUTIVE SUMMARY

In January 2021, the global health crisis continues. In the previous year, the COVID-19 pandemic required unprecedented responses from regional, national and international organizations. Much valuable original research has already been published on the COVID-19 response. This paper addresses health systems' responses to the pandemic, specifically from the perspective of value-based health care (VBHC). How have different countries managed the onset and impact of the pandemic whilst ensuring system value? Has the pandemic limited or accelerated countries' ability to establish value-based health systems, delivering and demonstrating outcomes that matter to their populations and patients at the lowest cost?
The Global Innovation Hub for Improving Value in Health emerged from the G20 Health Working Group in 2020 as an outcome of the priority topic "Improving Value in Health Systems". Countries established the Hub to enable sharing of best practice and design of new VBHC approaches that can be used by health systems to become learning health systems that are resilient and responsive, and achieve sustainable universal health coverage.

This paper describes how systems are responding to the COVID-19 pandemic from a value perspective; which health systems implemented solutions informed by VBHC in response to the pandemic and to sustaining their health systems. This report describes the results of a request to member countries of the Global Innovation Hub for Improving Value in Health for case studies of responses to the COVID-19 pandemic that related to value-based health care. Case studies were submitted from 12 countries.

The findings further demonstrate the case for change towards systems that focus on health outcomes relative to allocated resources, the tenet of value in health systems. Health systems will need to refocus on long-term health system objectives beyond the pandemic. Value-based health care is a promising approach to health system transformation. Health systems that used value-based approaches seem to have suffered fewer consequences from the pandemic and better control of health spending. However, the challenges of health system transformation are more difficult and complex as a result of the pandemic. The course of solutions sought in the pandemic response remains unclear and whether health systems will now move faster towards value is uncertain given the financial and political strains that continue. Sustainable VBHC is needed to be better prepared for the future. Health systems that had previous experiences combatting infectious outbreaks had more rapid responses to the COVID-19 pandemic. The sharing of global and regional lessons from this pandemic will aid in better readiness to respond to future health threats.

We must deliver better value in health addressing national policy beyond health systems with special attention to mental health of individuals and communities. Digital health solutions can enable this wider scope of consideration. Digital solutions must be sustained and potentially expanded to newer areas as we move forward. Special attention is needed to measure effectiveness and conduct cycles of improvement in digital health. The pandemic has also shown the importance of evidence-based clinical practice with real-time updates as knowledge becomes available. This certainly applies to many areas of healthcare as a means to eliminate unwarranted variation and improve care quality.

As health systems resume the full spectrum of healthcare services, special attention is needed to eliminate unnecessary care (waste) while reinforcing high quality and efficiency of services. The pandemic response showed that workforce reform is an urgent priority to improve health system efficiency and care quality. Approaches for value-based workforce reform can address staff shortages and burnout. New roles and value-based health care contracts can be developed to focus on delivering better outcomes for patients, the hospital and the healthcare system.

Irrespective of the impacts of the pandemic, cross-sector and cross-organization collaboration remains important. An important lesson the pandemic response demonstrated is that system-wide change is possible. This is an opportunity for health systems to attempt accelerating and scaling reform. The financial constraints are an additional reason to implement value-based approaches.

The role of citizens and their relationship with health systems is critical. Shared decision-making is a key component of VBHC and in how health outcomes that matter are defined. The pandemic further showed how this interaction is critical.

As we continue to navigate the COVID-19 pandemic, the next challenges to face health systems are becoming clear, the most immediate of which is the procurement, allocation and distribution of vaccines. Value should be the reference point to guide choices between available policy decisions in the coming year.

Dr. Reem F. Al Bunyan

Table 1: Summary of country experiences of the COVID-19 pandemic that align with or resist the implementation of value-based health care, as reported by participants in the Global Innovation Hub

	Experiences aligned with VBHC implementation	Experiences resisting VBHC implementation
Case for change ++	• Stronger imperative to deliver improved value to address heightened fiscal challenge and disease burden • Criticality of social determinants of health highlighted as a result of unequal impacts of pandemic on particular population groups • Importance of scientific evidence in policy-making process emphasized • Rapid, system-wide change shown possible • International, national and regional cooperation and alignment demonstrated	• Immediate crisis management took focus from long-term reform • Existing activities and programs to deliver value-based health care scaled back • Patient access, experience and outcomes impacted by suspension of elective services • Gaps in integration and patient-centricity of new services • Complexity, risk and pace of system reform impacted by pandemic
Financing and payment models +/-	• Additional central government funding provided to expand health coverage, including provision of COVID-19 services regardless of patients' ability to pay • Temporary flexibilities in payment for services introduced • New payment models introduced • Funding expanded to cover virtual services • Private sector capacity engaged	• Adoption of innovative payment models slowed to manage pandemic impacts • Use, or reversion to, block payments and fee-for-service • Efficiency gains of virtual appointments not yet translated into system cost savings in most countries
Digital health, data and measurement ++	• New digital services and tools • Greater citizen acceptance of virtual services • More positive attitudes of clinicians to provide virtual services • Heath system data strengthened • Data security and privacy issues addressed • Clinical decision support systems introduced • Use of advanced analytics and artificial intelligence	• Digital transformation resources prioritized to address the pandemic, impacting delivery of value-based IT developments • Variable access to digital services by some groups Telehealth flexibilities extended only for duration of pandemic in many countries • Lack of national, all-payer data impeded tracking of system-wide performance
Evidence-based practice, standards and guidelines +	• Rapid development of new regulations, policies, guidelines and protocols based on emerging evidence • Transnational sharing of data, evidence and guidance • Scientific advisory boards established to ensure evidence informs pandemic response • Evaluations of new digital health investments commissioned • Multiple accelerated vaccine development research studies initiated • New research commissioned to drive post-pandemic innovation • Debate on limiting low-value care reinvigorated	• Resources reprioritized from planned guideline development and health technology assessment

	Experiences aligned with VBHC implementation	Experiences resisting VBHC implementation
Quality, safety and operational improvement +/-	• Operational procedures redesigned and standardized, embedding new delivery modalities • Measures established to promote safety of healthcare personnel • External inspection and assurance of providers strengthened • Coordinated procurement and distribution of personal protective equipment	• Value improvement programs temporarily suspended
Workforce, culture and capability -	• Geographical redeployment of personnel to address outbreak • Additional flexibilities in staffing, skill-mix and scope of practice introduced • Additional funding for workforce to recognize contribution • Expansion in medical manpower • Rapid deployment of required training to health workers • Case for workforce recruitment and training redesign highlighted by pandemic	• Operational pressures leading to workforce exhaustion • Culture building activities to support value-based health care temporarily suspended
Patient and citizen engagement +	• Communications and education campaigns promoted public health information • Transparency evidenced in public messaging: daily briefings, sharing of statistics • Participative mechanisms for citizen engagement used • Increased public knowledge and support for health system • Communities mobilized through taskforces to lead local pandemic response • Patient communications to divert from in-person to virtual care settings and promote self-care	• Increasing citizen exhaustion and weakening engagement over time

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Value-based health care puts forward a vision for health systems that is centred on patient needs. Putting patient needs as the focus of what health systems are about provides a common focus for the various parts of the health system. Once that objective is clear, it becomes possible to assess where the health system is failing to improve patient outcomes as much as it could; where outcomes could be delivered more efficiently; and how to restructure and pay for a more efficient, effective health system.

Whilst in the early days of the COVID-19 pandemic, countries necessarily focused on emergency responses, moving forward the pandemic has – as emphasised in this report – also made the case for value-based health care stronger and more urgent. From the OECD perspective, COVID-19 has put in sharp relief existing weaknesses of countries' health systems, but also innovative responses to these weaknesses. Digital health is perhaps the most immediately apparent. The adoption of telehealth was limited in most countries before the pandemic. However, COVID-19 incentivised countries to move at speed and at scale to allow a range of services to be delivered remotely through digital means.
Looking beyond the immediate crisis, telehealth is part of the broader digital health transformation needed to improve value in health care systems. Standardised electronic health records and improved use of big data are also critical tools to managing patients at different points in the care pathway. Better integrating health services around people and patients improves the bridge across hospital and primary health care, health and long-term care, and somatic and mental health care.
Integrated care also means health workers will need to learn new skills and be encouraged to embrace stronger inter-professional team work. The pandemic, as this report has shown, has led to many countries introducing further flexibilities in staffing, skill-mix and scope of practice.

Evaluating the success or otherwise of such service delivery reforms to increase value also requires better measurement. If the focus is to be on the value to patients, then this is what needs to be measured, rather than the activities of the health care system. Most G20 countries know how many doctors they have, how many hospital beds, and how many people have various different diseases, but very few have any idea by how much their primary health care system has improved population health. The OECD patient reported indicators surveys (PaRIS) initiative will accelerate and standardise international monitoring of patient-reported indicators of outcomes and patient experience. PaRIS will provide critical information for policymakers to help them identify where to focus quality improvement efforts and resources. Priorities for allocating scarce resources across different health care sectors can be determined in part by the extent they improve health for a given amount of spending. These objectives are common across all countries, regardless of income levels, the role of public and private providers of health care, or the precise ways in which health care systems are structured.

Finally, COVID-19 has shown that most countries will need to invest more to strengthen health system resilience to the ongoing pandemic and indeed future emerging shocks. But given the precarious economic environment, value-based health care should be at the heart of such investment decisions. This can help ensure well-chosen investments, ones that maximise the returns in terms of protecting and improving people's health.

1. INTRODUCTION

HOW ARE COUNTRIES USING VALUE-BASED HEALTH CARE TO RESPOND TO THE COVID-19 PANDEMIC?

The Global Innovation Hub for Improving Value in Health was established in 2020 as an international collaboration to share knowledge between countries on delivering value-based health care (VBHC). In the same year, a virus known as the "Novel Corona Virus" or "SARS-CoV 2", caused what was later known as the COVID-19 pandemic, which has massively impacted all countries and health systems. The Hub, therefore, saw it as an immediate priority to explore how different countries considered health system value in their responses to the pandemic. Countries in the Hub expressed a strong appetite to share value-related innovations between their health systems as they recover from the impacts of COVID-19.

VBHC has been proposed as a model that can be applied to increase health systems' effectiveness and sustainability by delivering outcomes that matter to patients and populations, and as most countries are going through health systems transformation, there has been a prominent agreement that VBHC is an approach to address the challenges health systems are facing and to achieve universal healthcare coverage. Rather than seeking to resolve the multiple available definitions and interpretations of value-based health care before it initiated this work[1], the Hub took a pragmatic approach by inviting countries to share emerging experiences of responding to the pandemic that they themselves identified as having a value-related aspect.

Much has been published on COVID-19 this year. The distinctive contribution of this report relates to three elements:

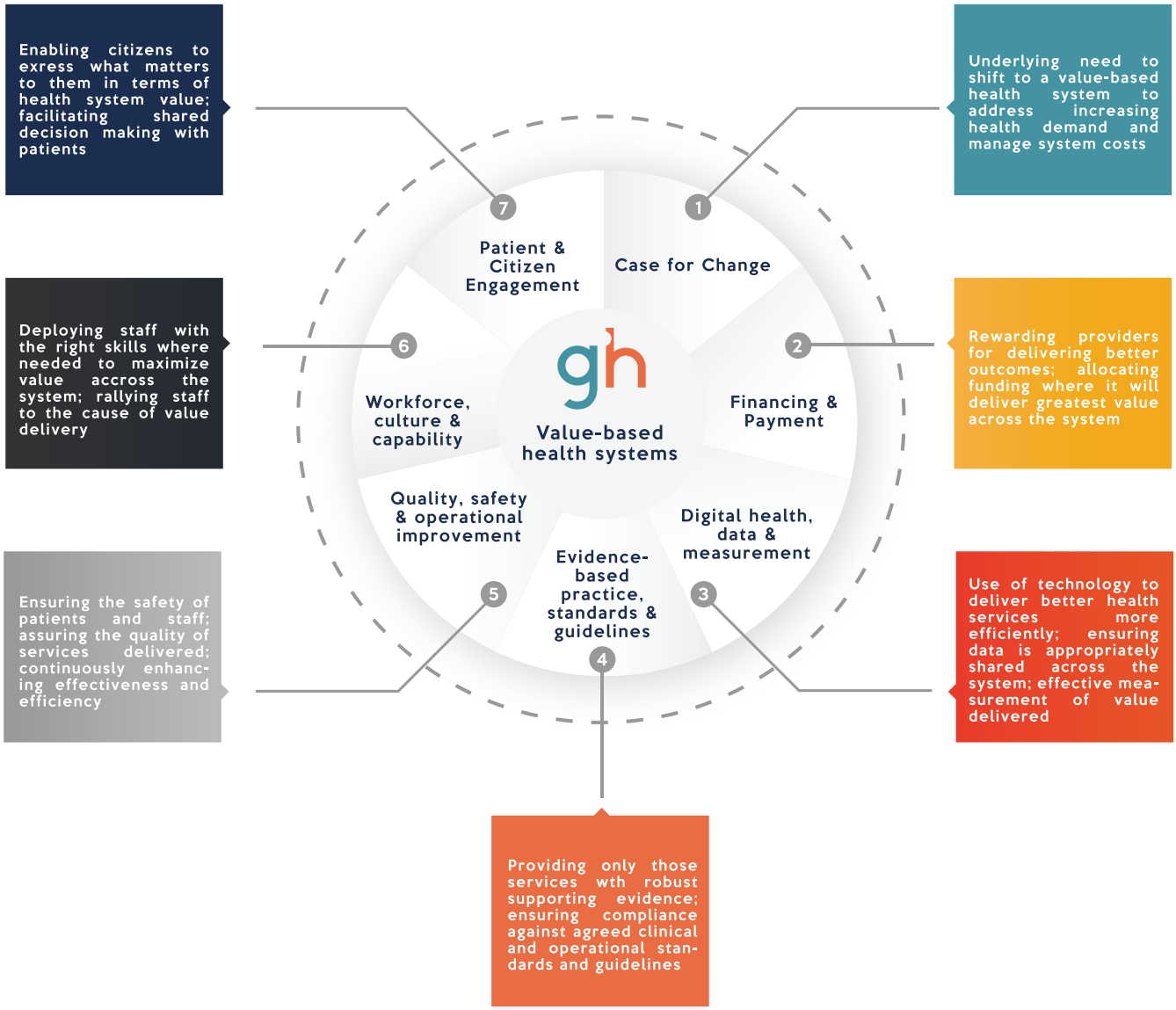
1. its *focus*, specifically on the concept of value in the context of the pandemic;
2. its *multi-country* perspective, with countries sharing their direct experiences of value in the pandemic response and recovery; and
3. its goal, to provide practical suggestions for countries to transfer learning from others and apply this in their own health systems, and to inspire policymakers and practitioners in their post-pandemic health system transformations.

This report will be of primary interest to those national health system policymakers responsible for shaping the pandemic recovery's next steps. It will also be of interest to executive and clinical leaders of payer and provider organizations in different countries as they navigate likely policy changes over the coming year.

METHODOLOGY

In November 2020, the Hub called for contributions from all G20 member countries and the Hub's members . Respondents were asked to what extent, positively or negatively, the COVID-19 pandemic had impacted the implementation of value-based health care in their country's health system. Contributions were invited against seven broad topics based on the most common aspects relating to value-based health care, described in Figure 1. In addition, the Hub invited countries to share specific examples from their health systems of initiatives that build on the positive or mitigate the negative effects of the COVID-19 pandemic on shifting to value-based health care.

Figure 1: Value-based health care, selected topics in health system response to the COVID-19



Responses were received from 12 countries: Argentina, Australia, Brazil, Canada, China, Japan, Russia, Saudi Arabia, Singapore, Turkey, United Kingdom and the United States. These responses were collated by the Hub secretariat team and circulated back to contributors for further comments. Within this rapid review's scope, it is not intended that all aspects of each country's response to the pandemic would be described.

2. LESSONS FROM HEALTH SYSTEMS

OVERVIEW OF RESPONSES

Detailed responses from each country were analyzed and common themes identified. Table 2 provides a summary of the themes identified in each country's response, against seven broad topics relating to value-based health care.

Table 2: Reported experiences of the COVID-19 pandemic on the implementation of value-based health care, by country

Theme \ Country	ARG	AUS	BRA	CAN	CHI	JAP	RUS	SAU	SIN	TUR	UK	US
Stronger imperative to deliver improved value to address heightened fiscal challenge and disease burden	✓	✓			✓		✓		✓		✓	✓
Criticality of social determinants of health highlighted as a result of unequal impacts of pandemic on particular population groups		✓										✓
Importance of scientific evidence in policy-making process emphasized						✓		✓		✓		
Rapid, system-wide change shown possible	✓		✓	✓			✓	✓	✓	✓		
International, national and regional cooperation and alignment demonstrated			✓	✓		✓		✓		✓		
Immediate crisis management took focus from long-term reform		✓							✓			
Existing activities and programs to deliver value-based health care scaled back									✓			
Patient access, experience and outcomes impacted by suspension of elective services									✓		✓	
Gaps in integration and patient-centricity of new services				✓								
Complexity, risk and pace of system reform impacted by pandemic					✓							
Additional central government funding provided to expand health coverage, including provision of COVID-19 services regardless of patients' ability to pay			✓		✓			✓		✓		
Temporary flexibilities in payment for services introduced						✓						✓
New payment models introduced	✓						✓			✓		

Theme / Country	ARG	AUS	BRA	CAN	CHI	JAP	RUS	SAU	SIN	TUR	UK	US
Funding expanded to cover virtual services	✓					✓		✓				
Private sector capacity engaged	✓							✓		✓		
Adoption of innovative payment models slowed to manage pandemic impacts												✓
Use, or reversion to, block payments and fee-for-service		✓									✓	
Efficiency gains of virtual appointments not yet translated into system cost savings											✓	
New digital services and tools	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓
Greater citizen acceptance of virtual services		✓				✓		✓				✓
More positive attitudes of clinicians to provide virtual services											✓	
Heath system data strengthened	✓	✓	✓	✓		✓	✓	✓		✓		
Data security and privacy issues addressed					✓	✓						
Clinical decision support systems introduced							✓					
Use of advanced analytics and artificial intelligence				✓	✓		✓					
Digital transformation resources prioritized to address the pandemic, impacting delivery of value-based IT developments									✓			
Variable access to digital services by some groups of citizens												✓
Telehealth flexibilities extended only for duration of pandemic												✓
Lack of national, all-payer data impeded tracking of system-wide performance												✓
Rapid development of new regulations, policies, guidelines and protocols based on emerging evidence		✓	✓		✓	✓	✓	✓		✓		✓
Transnational sharing of data, evidence and guidance	✓		✓		✓	✓		✓				
Scientific advisory boards established to ensure evidence informs pandemic response	✓					✓				✓		

Theme / Country	ARG	AUS	BRA	CAN	CHI	JAP	RUS	SAU	SIN	TUR	UK	US
Evaluations of new digital health investments commissioned												
Multiple accelerated vaccine development research studies initiated										✓		
New research commissioned to drive post-pandemic innovation				✓				✓			✓	✓
Debate on limiting low-value care reinvigorated				✓								
Resources reprioritized from planned guideline development and health technology assessment									✓			
Operational procedures redesigned and standardized, embedding new delivery modalities		✓		✓	✓		✓	✓				✓
Measures established to promote safety of healthcare personnel	✓				✓				✓			
External inspection and assurance of providers strengthened					✓			✓				
Coordinated procurement and distribution of personal protective equipment	✓				✓	✓		✓		✓		
Value improvement programs temporarily suspended									✓			
Geographical redeployment of personnel to address outbreak					✓	✓			✓			✓
Additional flexibilities in staffing, skill-mix and scope of practice introduced											✓	✓
Additional funding for workforce to recognize contribution	✓					✓						
Expansion in medical manpower			✓					✓		✓		
Rapid deployment of required training to health workers	✓	✓			✓	✓		✓				✓
Case for workforce recruitment and training redesign highlighted by pandemic		✓										✓
Operational pressures leading to workforce exhaustion	✓											
Culture building activities to support value-based health care temporarily suspended									✓			
Communications and education campaigns promoted public health information	✓	✓			✓	✓		✓		✓	✓	

Theme \ Country	ARG	AUS	BRA	CAN	CHI	JAP	RUS	SAU	SIN	TUR	UK	US
Transparency evidenced in public messaging: daily briefings, sharing of statistics	✓	✓				✓		✓		✓		
Participative mechanisms for citizen engagement used	✓	✓						✓				✓
Increased public knowledge and support for health system			✓									
Communities mobilized through taskforces to lead local pandemic response					✓							
Patient communications to divert from in-person to virtual care settings and promote self-care											✓	
Increasing citizen exhaustion and weakening engagement over time	✓											

CASE FOR CHANGE

The pandemic makes the case for value-based health care stronger and more urgent

Even before the COVID-19 pandemic, health systems worldwide faced formidable challenges: greater health burdens associated with aging populations, increasing prevalence of chronic diseases, rising patient expectations, and unprecedented demand and limitless pressures to spend more on health services. Weaknesses in health system performance were well-known, wasteful activity and variable patient outcomes well-evidenced. In many countries, policymakers sought to implement VBHC in their health systems to address these long-standing challenges.

Most of the countries reviewed here reported the pandemic was strengthening the case for VBHC to be adopted at pace, as the problems to which VBHC was seen as a solution intensified. The pandemic has damaging effects on funding, demand and supply of health care. Accelerating the adoption of VBHC was seen as a critical step to ensure the affordability of health systems in a period of fiscal shock, and improve access, coverage, quality and patient experience of health services whilst addressing new and backlogged health demands. A rapid move towards widespread deployment of VBHC in the United States was described as essential; health care costs in the US were high, expressed per person and as a share of GDP, and it was anticipated that the pandemic would exacerbate cost pressures significantly in the immediate term. In China, the pandemic heightened health system leadership desire to shift to a more value-based health system. Argentina reported measures this year to reorientate its health system around the concept of value. It seems likely that the pandemic will prompt increased policymaker interest in many countries to accelerate VBHC initiatives.

VBHC supports health system responses to pervasive health inequalities highlighted by the pandemic

The impacts of COVID-19 are uneven across populations, with social determinants of health critically affecting how some population

groups suffered worse consequences. VBHC, with its concern for value as defined by patients and citizens and the importance it places on system-wide allocative efficiency, is well-positioned to support health systems to address health inequalities. Two countries (AUS, US) emphasized the role of VBHC in urgently addressing long-standing health inequalities brought into focus by the pandemic.

The pandemic has shown that major system change is possible in a short period of time and different stakeholder groups can align their interests rapidly to make change

Country-level implementation of VBHC has typically been piecemeal, often entailing pilot programs or initiatives running in parallel to established approaches. One barrier to system-wide VBHC adoption is the scale of the change required. Many countries reported that the scale and pace of change in response to the pandemic have demonstrated that such system-wide changes are possible with the right incentives and alignment.

Management of the immediate crisis took priority, which shifted attention and capacity away from planned system reforms

Countries have been undergoing health system reforms for years to improve access to higher quality health care at a lower cost. Value-based health care has not been the only approach to these reforms, a variety of planned activities aimed at changing the structure of the health care system have been proposed. Some countries (AUS, SAU, TUR) noted refocusing resources to address the pandemic slowed or halted system reforms planned for 2020. Health system reform requires analysis, reflection, engagement and execution; the pandemic inevitably reduced leadership attention and capacity to drive system reform not directly related to the pandemic response.

FINANCING AND PAYMENTS

Funding for health services was found and flexed to address the pandemic, and coverage expanded

Once the seriousness of the pandemic became apparent, policymakers re-allocated available resources to manage the crisis. The priority from a value perspective was, of course, to limit the spread of the virus and to reduce the impact on those infected. Most countries reported the provision of significant additional resources for COVID-19 testing and treatment, frequently expanding health coverage and provision. China offered free treatment for all confirmed and suspected COVID-19 patients. Where medical insurance or existing medical finance assistance for the impoverished did not cover patients' medical bills, these costs were met centrally. Saudi Arabia as well offered free treatment and healthcare services to all citizens and residents, both legal and illegal, without legal consequences. Turkey provided free diagnostics, treatment and intensive care, irrespective of whether social security covered patients, or if a public or private provider provided treatment. All COVID-19 services were offered free to all Turkish residents regardless of citizenship. Additionally, intensive care treatment fees were doubled, and all treatment options were reimbursed. In Argentina, care networks involved public and private providers, allowing the flexible use of private sector capacity when needed to ensure healthcare services for publicly covered patients.

In the US, many temporary flexibilities in provider payments were put in place in response to the pandemic. To ensure service continuity and mitigate the impact on providers experiencing substantial reductions in activity and income, Medicare and other payers implemented a range of flexibilities, including expanding telehealth reimbursement policies, reducing cross-state licensure barriers and minimizing reporting requirements [7, 8, 9]. Brazil saw budget increases in municipalities, enabling an expansion in primary health care services and a reorganization of the provider network. Similarly, Medicare Australia as well as Saudi private medical insurance subsidized costs of specified telehealth and mental health services.

The pandemic had mixed impacts on value-based payment initiatives

Countries reported limited innovation in value-based payments during the pandemic response. One local innovation was reported in Russia, where bundled payments were introduced across two hospitals for patients with COVID-19 (Case Study 1). In the US, the Center for Medicare & Medicaid Services (CMS) Innovation Center runs numerous models to innovate payment and service delivery. Although the long-term impact of the pandemic on these programs is not yet clear, material adjustments were needed to existing models in the short term (Case Study 2). Further research is required to test the hypothesis that participants in alternative payments models could respond faster to the pandemic than other providers. Reform of payments mechanisms was also paused in the UK, where the NHS in England reverted to a block payment model for hospitals; meaning that payment was no longer linked to activity. This enabled providers to focus on managing their responses to the pandemic without undue concern for financial sustainability and released operational capacity by reducing bureaucratic burdens associated with reporting. As we recover from this pandemic, it is important to review and assess these changes that were implemented during the emergency phase of the pandemic to determine what should become permanent based on improved performance and that will affect the quality of care provided to patients. We should also consider which changes require modification and adaptation throughout the recovery period.

Case Study 1: Russia, payments bundled across providers

Challenge	Approach	Impact
Bed shortage caused by COVID-19 demand, St Petersburg	Bundled payments for COVID-19 patients across two hospitals. One hospital (more specialized with ICU) was designated for patients receiving initial therapy in the first few days of treatment, including oxygen treatment and ventilation. After critical care, patients transferred to a lower acuity hospital for conservative treatment and rehabilitation. The payment was distributed between the two hospitals for the total case.	This approach was reported to provide better-coordinated care for severe patients, improving value and reducing the total cost of treatment.

Case Study 2: US, CMS Innovation Center payment models

Challenge	Approach	Impact
Sustaining Innovation Center models Participants in ongoing payment models are held to account for cost and quality of care. Performance is typically evaluated through comparison with non-participant providers. The pandemic caused major disruptions to participant and non-participant performance, risking the validity and viability of these initiatives.	Several actions were needed to ensure continued participation in the models. These include offering more time for participants transitioning to financial risk and value-based payment, and changes in payment calculations to account for the pandemic's impact. Timelines for some models were also adjusted when participants required more time to prepare for implementation.	It is yet to be determined how the pandemic will impact performance in these models. However, the models have been sustained in the short-term, and payment and financial impacts are being monitored continuously to ensure ongoing performance and viability and inform the evaluations of these models.

DIGITAL HEALTH, DATA AND MEASUREMENT

New digital services and tools were introduced

Almost all countries introduced new digital services and tools during the year. Several innovations in telehealth and mobile applications that could support future VBHC adoption were reported to have advanced rapidly during the pandemic.

Telehealth

Many countries reported an extensive shift of clinical activity for non-COVID-19 care from in-person to virtual delivery during the pandemic, building on and extending telehealth infrastructure where this was possible. In principle, substantial value could be generated by delivering virtual services, providing wider access to health services more efficiently at a lower cost, assuming patient outcomes and experience can be maintained. Many countries reported rapid scaling of virtual consultation, remote tracking and care coordination services even as the crisis continued.

- The NHS in England rolled out technology to support virtual appointments for outpatient clinics and primary care, with almost all GP surgeries now offering telehealth services (Case Study 3).
- The United States Congress included telehealth provisions in the Coronavirus Aid, Relief, and Economic Security (CARES) Act. CMS used emergency rulemaking to provide Medicare telehealth flexibilities, expanding the list of telehealth-eligible services, and permitting reimbursement of audio-only communication and extending practitioner eligibility to provide telehealth services. Many US commercial insurers implemented similar policies [10]. Together, these changes prompted a rapid uptake of remote consultations. Patient feedback indicated that patients were satisfied with these new telehealth services. Therefore, an upcoming challenge for the US health system is to sustain telehealth services' growth in the long-run (Case Study 4).
- Virtual communications also facilitated engagement between clinicians. Both China and Brazil reported using online platforms to share knowledge between epidemiological teams in remote areas.
- The existence of a modern technical infrastructure in Saudi Arabia has contributed to the smooth digital transformation of many procedures such as activating the role of virtual clinics, tele-medicine, tele-consultations, tele-radiology, and the organization of virtual meetings. Home medical care centers and telemedicine was activated to help relieve the pressure on healthcare institutions.
- Telehealth case studies were also provided by Argentina, Australia and Canada (Case Studies 5-7).

Case Study 3: UK, Video consultations

Challenge	Approach	Impact
Patients were unable or unwilling to attend outpatients appointments in person	The NHS rapidly rolled out video consulting software to over 80% of Trusts to enable virtual appointments. The NHS also rolled out online consultation and triage software to primary care.	The number of virtual appointments grew from a pre-pandemic baseline of 6% to almost half at their peak. 46% of outpatient appointments took place virtually during May, up from 6% pre-COVID. There was not a strong difference in age profile, suggesting that older people are just as willing to use virtual appointments as younger people. The use of online consultations and triage in primary care also ensured that the right people (those with greatest need) could get appointments.

Case Study 4: US, Sustaining telehealth growth

Challenge	Approach	Impact
Moving Forward with Telehealth in Alternative Payment Models (APMs)	As a key part of maintaining access to health care services and communications with patients during the pandemic, both public and private insurers relaxed many of the restrictions and conditions for payment of telehealth services. Medicare telehealth utilization increased rapidly during March and April as in person visits declined; and then decreased as facilities reopened for patient care. The challenge now is to use this experience during the pandemic to assist us in developing long run policies regarding telehealth services' payment and use. That is, how do we structure value-based policies, and specifically APMs, that incentivize the most effective use of telehealth services as part of coordinated, person centered care.	Consideration of the role of telehealth services for post-pandemic value-based health care is just beginning. In addition to the Physician Focused Alternative Payment Model Technical Advisory Committee (PTAC) session, the National Committee for Quality Assurance (NCQA) recently summarized findings from a task force on telehealth policy. These included findings such that: telehealth can enhance patient safety; telehealth services should be subjected to the same quality measurement and reporting as in person services; and while very early evidence suggests that telehealth does not increase overall health care costs, more research and evidence is needed. It will be especially important to examine the difference in use of telehealth between pandemic conditions and post-pandemic care.

Case Study 5: Argentina, Generating workforce support for telehealth

Challenge	Approach	Impact
Telemedicine was only used for specific pathologies when there was a limited number of experts in some regions.	Delivery of materials and training to promote the use of technological tools and work among health personnel. "Red button" device available to provide 24/7 expert´s support from the Argentine Society of Intensive Care to health personnel of Intensive Care Units across the country for clinical management of severe cases of COVID-19.	The use of telemedicine became widespread in both the treatment of COVID-19 and non-COVID-19 patients, and a key component for consultations between professionals.

Case Study 6: Australia, Expanding the range of telehealth

Challenge	Approach	Impact
COVID-19 increased the demand for health services, while creating the need to ensure distancing to prevent its spread. This has necessitated the introduction of innovative methods of remote health care delivery	Australia has expanded the range of subsidized telehealth services available via Medicare in response to COVID-19. These services include chronic disease management, mental health plans, Aboriginal and Torres Strait Islander health assessments and allied health services. Patients from vulnerable populations do not incur any fees when accessing GP telehealth services.	Telehealth services allow people, particularly those in high-risk populations, to access essential health services remotely and reduce their risk of exposure to COVID-19 while also minimizing the risk to the health workforce. Telehealth also enables critical health services to continue to operate, maintains the integrity of Australia's health system and improves the productivity of health services providers.

Case Study 7: Canada, Investment in telehealth services

Challenge	Approach	Impact
Ensuring that Canadians get access to virtual services and digital tools and resources to support their health and wellbeing, including readily available information, mental health supports, alerts, and screening tools, is critical in minimizing impacts of the COVID-19 pandemic.	To support these efforts, the Government of Canada is investing $240.5M to support virtual tools and digital solutions. Of this, $200M will go to support work in health systems to support expanded deployment of virtual care, so that Canadians can safely engage with providers through telephone, text or video-conferencing.	In May 2020, the Federal, Provincial and Territorial governments (FPT) Conference of Deputy Ministers agreed to five shared priorities for technologies and infrastructure, supported by federal investments: secure messaging and file transfer; secure video-conferencing; remote patient monitoring; patient access to test results; and back-end supports to enable integration of these new tools into existing digital systems. The aim of this work is to enable Canadians to safely engage with their health providers through telephone, text or video-conferencing to have their health needs met.

Mobile applications

Many countries reported investment in mobile applications with varying functionality for COVID-19: symptom checkers; appointment booking; medication ordering; transmission hot spots; travel and transportation permits. This is in addition to applications for non-COVID-19 health uses.

- Several countries promoted the use of self-assessment tools to enable individuals to assess potential COVID-19 symptoms and alert them when to seek medical care. In Canada, citizens can track their symptoms, receive updates on the pandemic and access verified resources on topics such as wellness, resilience, mental health, and substance abuse through the free online portal "Wellness Together Canada." A mobile application was developed in Turkey, Mental Health Support System "RUSHAD", to provide psychosocial support for health professionals working in COVID-19 services or receiving COVID-19 treatment who needed mental health support. Argentina implemented the app "CUIDAR", which allows citizens to self-evaluate symptoms, provides assistance and recommendations in the case of risk of COVID-19, and provides tools for these cases to contact health authorities.
- In Australia, uptake of the application "My Health Record" increased; now, approximately 90% of eligible Australians have the application and can review their own health records online.
- Countries deployed applications to track potential transmission hot spots. The "Life Fits Home" mobile application was launched to enable citizens in Turkey to monitor the pandemic's spread and related geographic risks (Case Study 7). The application monitors non-compliance with public health measures (i.e., mask-wearing, social distancing) and shares daily statistical information. The app also supports the work of Turkey's filiation teams (Case Study 8). A similar application was rolled out in Saudi Arabia "Tabaud"; which alerts anyone who has been in contact with a case that happens to be later confirmed.
- In China, digital travel records were used to manage the transmission risks of

travel. QR codes were used to track trips to school and work, access to public venues and other common journeys, with notifications issued if other passengers later tested positive for COVID-19. Similar arrangements were in place in Turkey.

- In Russia, clinical decision support systems for treatment strategy and patient flow implemented based on the data collected and using technologies. They also developed approaches to automate calculation of risk for improved triage (Case Study 9).
- Saudi Arabia developed applications "Tetamman" and "Mawid" to assess suspected cases and monitor confirmed ones. They also activated an application "Takasi" to monitor suspected and confirmed cases on a daily basis in quarantine facilities and home isolation.

Case Study 7: Turkey, "Life Fits Home" mobile application

Challenge	Approach	Impact
Follow-up and control of the pandemic and patients	With the "Life Fits Home" mobile application, citizens can see the risk and disease intensity on the map in the region they live or in the location they want to go. In addition to the intensity of risk, places that need to be known for urgent needs such as hospitals, pharmacies, markets and stops are also shown to citizens.	In addition to providing person-based follow-up in the prevention of the epidemic, it is constantly updated, enabling people to follow their families, request masks, and see the risk situation in their regions. With the latest update made, the people can receive the code to be used in their travels and can a record travelling and if COVID-19 is detected in any of the passengers within the next 14 days, thank to records of travelling can be reached. At the same time, the health status of each passengers; it is taken under control by himself, family physician and filiation teams.

Case Study 8: Turkey, Filiation (contact tracing) teams

Challenge	Approach	Impact
Identification and follow-up of those who have contact with sick people	Filiation teams consisting of healthcare professionals have been established to monitor citizens who come into contact with sick people. In this way, the follow-up and isolation of those who come into contact with sick people, rapid sampling from symptomatic patients, and rapid treatment of positive cases have been provided.	The importance of these in terms of the epidemic is that they are infectious, i.e. carriers. If they are not detected and isolated, they lead to the growth of the epidemic. Thanks to the measures taken, our average filiation trail time has decreased to 13 hours. The time for us to detect the average contact has been reduced to 8 hours. As a result of the diligent work of the Filiation teams, the destructive effects of the epidemic have been reduced. At the same time, it has been ensured that those infected by the contact persons are diagnosed and treated at an early stage. In this way, both the number of cases and the number of deaths were kept under control.

Case Study 9: Russia, Decision support systems

Challenge	Approach	Impact
Need for laboratory monitoring for appropriate and quick treatment initiation for COVID-19	Decision support system for laboratory markers (CRP, ferritin, IL-6, lymphocyte rate count) Quick alerts information in medical informational systems for the stuff in case of critical elevation. Immediate response, administration of anti-inflammatory drugs	Reduction of mortality rate, 10% reduction of the need for mechanical ventilation

Health system data was consolidated, new systems introduced, and enhanced analytics deployed

VBHC requires standardized methods to measure clinical and patient-reported outcomes against which resources can be allocated. Countries' rapid adoption and expansion of health informatics during the pandemic could help support the future development of health systems and data to facilitate VBHC. Almost all countries described the establishment of national data and knowledge repositories to manage the pandemic.

- The National Center for Bioinformation in China launched its Novel Coronavirus Resource Database in January, sharing information nationally and internationally. A database was also established to provide data services for virus risk control, creating an "epidemic map" displaying the names and locations of communities where cases have been reported.
- In Argentina, data reporting was standardized across geographies, enabling impacts on specified groups, such as citizens requiring geriatric care, to be assessed (Case Study 10).
- The Public Health Management System in Turkey compiled COVID-19 data to support national decision-making. Integrating with many other national data sources, the system was the key data source for analysis and reports influencing the management of the pandemic in Turkey.
- In Japan, data and information on infected people were centrally managed and shared with medical institutions, health centers and districts.
- A special registry of COVID-19 patients, collating clinical, laboratory, treatment, outcome and autopsy data, was established in Russia. Data were used to predict regional needs and standardize treatment approaches.
- The "Getting it Right First-Time" program in the UK worked on a project to examine variation in COVID mortality and identify best practices from the leading providers.
- It can be challenging to access consolidated health data in countries with numerous jurisdictions and regions. Australia streamlined its data reporting processes to provide more timely, accurate, consistent and transparent data. This produced standardized outputs that are highly accessible and understandable while improving government data productivity and transparency.
- Canada also focused on improving interoperability between and across jurisdictions, using applications such as "Canada Health Infoway" to develop pan-Canadian standards for secure messaging, file transfer and video conferencing.
- In the US, no recent national data on the total supply of ventilators and their distribution across geographies and no comprehensive database available to examine the full financial impact of the pandemic on health care providers were available.

Consideration could now be given to whether a more comprehensive database across payers can be made available to support the response to future system-wide emergencies.

- The Saudi Ministry of Health used the Health Electronic Surveillance Network (HESN) to monitor and track suspected cases and their laboratory results, in order to enable specialists to monitor the epidemiological situation and take the necessary decisions to respond to COVID-19 in the Kingdom. This was used as an electronic database for patients, sample results and the surveillance of the contacts of confirmed cases, to facilitate data entry and extraction in various healthcare institutions, and is intended to produce accurate statistics about positive cases and enable researchers to conduct studies.

Case Study 10: Argentina, Harmonized performance reporting

Challenge	Approach	Impact
Information was not reported by jurisdictions in a timely manner	Agreements through the Federal Council of Health Ministers were made with all jurisdictions on the indicators to be submitted.	The commitment of all jurisdictions was achieved to report information that, prior to the pandemic, was not reported quickly.

Several countries highlighted the use of enhanced analytics and artificial intelligence to enable policymakers and health professionals better understand and make optimum use of the patient data available to them. Russia used Artificial Intelligence (AI) in the analysis of chest CT scans to detect disease progression. China used AI to forecast COVID-19 trends, identify infected individuals and trace contacts. Canada leveraged AI expertise to provide insights on the spread and public health risks of COVID-19.

EVIDENCE-BASED PRACTICE, STANDARDS AND GUIDELINES

Rapid development of new regulations, policies, guidelines and protocols based on emerging evidence

Country responses to the pandemic illustrate how clinical evidence can be gathered, analyzed and shared rapidly to improve the value delivered by health systems. China developed and improved its COVID-19 guidelines through clinical practice, medical research, experimentation and reviews. Research results, scientific knowledge, evidence and effective diagnostic and therapeutic regimens were incorporated in national diagnosis and treatment guidelines. These guidelines include several versions of protocols for diagnosis and treatment, prevention and control, management of severe and critical cases, management of mild cases, convalescent plasma therapy treatment, and rehabilitation.

Saudi Arabia established guidelines in line with the standards adopted from the WHO's document to deal with COVID-19, entitled "Operational Planning Guidelines to Support Country Preparedness and Response." This report documents the Kingdom's efforts to curb COVID-19, its key accomplishments and their results, public opinions feedback, and lessons learned regarding the health response and preparedness. These guidelines were frequently monitored, reviewed and adjusted as needed based on available data and evidence and were used by all communities and health facilities in the Kingdom.

Additional guidelines were also issued for all segments of society in public places, such as mosques, schools, markets, workplaces, public transportation, and others. This need for quick evidence based information has led to the establishment of a National Committee for Corona Research to support and encourage scientific research on COVID-19.

Brazil developed regulations based on national and international evidence to guide the organization of primary health care services. Work was coordinated through a central Health Emergency Operations Center (Case Study 11).

The Scientific Advisory Board of Turkey created and published various guidance, including a SARS-CoV-2 Infection Guide, which contains information on infection, case definition, case management, infection control and isolation, patient care and treatment, and is constantly updated. Russia produced clinical guidelines that were frequently updated and republished.

Countries in South America such as Argentina, affected by the pandemic later than Asia and Europe, were able to leverage the guidance developed by other countries and international organizations. Saudi Arabia also utilized the best international protocols for new treatments and vaccines by research centers and entities to combat the spread of the pandemic.

Australia emphasized the importance of taking into account the perspectives of all communities when developing evidence-based guidelines. Australia produced guidelines specifically reflecting the needs of Aboriginal and Torres Strait Islanders to guide planning, policy development and implementation of the primary care response for this group. Argentina updated their protocols to guarantee the continuity of care for non-COVID-19 patients during the pandemic, the follow up of cases within long-stay residences for the elderly and use of personal protective equipment.

Development of national guidelines for COVID-19 took priority over other clinical initiatives in health systems this year. An example is the immediate term postponement of healthcare technology assessments and the development of care guidelines planned by Singapore due to the diversion of resources to support the pandemic response.

In the US, work started to develop value-based health policies that can be flexed during pandemic and other emergency conditions (Case Study 12).

Case Study 11: Brazil, Harmonizing public policies

Challenge	Approach	Impact
Integration difficulties between the secretariats of Ministry of Health, as well as the difficulty to integrate the health sector with other public sectors	Creation of the Health Emergency Operations Center (COE).	Development of convergent public policies, whose synergistic effect favored the sharing of knowledge, human resources, inputs, budget resources to organize the health management at different levels (federal, state and municipal governments) and assistance services.

Case Study 12: US, Value-based emergency preparedness

Challenge	Approach	Impact
Balancing Efficiency and Preparedness under Value-Based Purchasing	Value-based programs are often structured with strong incentives for efficiency – high quality care to be provided at the lowest possible cost. Efficiency can mean delivery systems have just enough capacity – beds, staff, equipment and supplies – to meet day-to-day demands and provide care at the lowest cost. In a longer run context, efficiency can also mean or account for the ability to adapt capacity and technology to meet future demands – for example, those that might arise due to a pandemic. Indeed, the pandemic response required many hospitals and health systems to have the capacity to meet a surge of seriously ill patients. Moreover, value-based purchasing may require many of the specific items discussed above – digital technology, evidence-based guidelines, workforce, quality and safety, etc. – to be implemented and evaluated in one way during normal times, and quite differently in emergencies. A challenge unveiled during the pandemic is the need for health systems to be able to flex between efficiency and value in normal times, while being prepared to shift operations to address health care emergencies. The pandemic raised the issue of balancing efficiency and preparedness in this way. In particular, it may result in some consideration of how value-based care policies might to be revised to best navigate any tradeoffs between short run efficiency and the ability to respond to emergencies. We have initiated a project to compile information and gain expert perspective on how to think about crafting value-based purchasing policies drawing on the learning from our recent pandemic experience. Our ultimate objective for this project is to provide the best evidence available to inform policy discussions on these issues.	It is too soon to assess the impact of this project. The many experts contacted to date find this to be an important policy issue and are sharing their thoughts.

Debate on limiting low-value care reinvigorated

Canada provided an example of the COVID-19 pandemic directly shaping the national policy debate on value-based health care. Choosing Wisely Canada, a national organization focused on reducing unnecessary tests and treatments in Canada, identified that the COVID-19 pandemic has made health care resources more scarce and has heightened the urgency to consider ways to limit the provision of low-value care. In September 2020, it released a new report offering policy ideas to use available levers to address low-value care2. For example, hospitals could reduce laboratory testing for which there was evidence of no clinical value, allowing resources to be freed up to provide high-value

services. The ideas presented in the report were informed by the organization's extensive work in the area as well as a series of policy dialogs held with experts, senior government officials and health care leaders on this topic.

QUALITY, SAFETY AND OPERATIONAL IMPROVEMENT

Operational procedures redesigned and standardized, embedding new delivery modalities

COVID-19 exacerbated the conditions of many patients with chronic diseases and, in many countries, created a backlog of patients waiting for elective care and treatment.

Ensuring the quality and safety of services is a core requirement for VBHC. The demands of the pandemic response have necessitated some flexibility in the approach health systems take to quality management. For instance, in the US, CMS granted several exceptions to usual quality reporting requirements to reduce administrative burdens on facilities, practitioners and staff. Several countries (ARG, CHI, RUS) described their approach to ensuring quality remained a priority during the pandemic. In these systems, quality assessment tools were developed, including checklists of mandatory examinations, timelines of procedures and measurements of vital signs and labs, and criteria for drug administration, oxygen therapy, mechanical ventilation and discharge. The National Health Commission of China developed a set of technical manuals to regulate the layout of critical areas in medical institutions, including clean zones, partially contaminated zones, contaminated zones, and separate passages for medical staff and patients. Saudi Arabia similarly determined COVID-19 reference hospitals and monitored their readiness and capacity daily.

In the US, the pandemic reinforced the objectives of the CMS Innovation Center for the successful delivery of quality and safety measures. It provided a renewed impetus to pursue value-based policies and the application of strict tools for infection control, triage, testing and treatment of COVID-19 and non-COVID-19 patients and staff.

The pandemic forced health systems to expand and improve clinical operations rapidly. China massively increased its testing capacity, which shortened the time taken to receive test results and enhanced service quality, ensuring all those in need could be tested immediately. Russia rapidly expanded diagnostic capacity (Case Study 13).
Tailoring treatment to patients was not feasible in most countries due to the influx of patients needing care, and guidelines were used to standardized treatment methodologies in hospitals. In China, a treatment strategy for severe cases of COVID-19 and those with serious underlying medical conditions was improved and tailored to individual patients after consultation with a multidisciplinary team.

New technologies and tools used during the pandemic need to be evaluated thoroughly. Canada initiated evaluations of the impact of virtual services to improve patient care and outcomes and the efficiency and sustainability of care. Assessment of new digital health investments was also initiated in Canada as a partnership with a network of entities.

In Argentina, performance reporting was standardized and aligned across health and other ministries to ensure service quality could be monitored and managed (Case Study 14). Turkey has standardized testing and treatment protocols across providers (Case Study 15).

Case Study 13: Russia, Increasing access to diagnostics

Challenge	Approach	Impact
Difficulties in management simultaneously large number of patients, ambulance line at admission	Implementation of CT centers for 24-hour chest scans and triage	40% of patients with no signs of pneumonia or light cases was transferred to home for out-patient treatment. Hospitalization and quick triage at admission with no need for CT

Case Study 14: Argentina, Developing patient measures

Challenge	Approach	Impact
Assuring access to essential health care services including COVID-19 diagnostics and treatment.	Development of a monitoring system and agreement with other ministries to achieve more effective measures in monitoring patients.	Reduced disparities in the provision of quality services between publicly and privately insured populations.

Case Study 15: Turkey, Standardizing testing and treatment protocols

Challenge	Approach	Impact
Ensuring effectiveness in treatment for COVID-19 patients	Unlike other countries, in Turkey, perform a high number of tests done and without waiting for test results, approach towards the treatment process to be initiated immediately through considering clinical findings were adopted. The basis of this approach is the implementation of the coronavirus diagnosis and treatment processes, the algorithm and the steps in the guide determined by the Ministry of Health.	By initiating the treatment of patients at an early stage, both the treatment processes were effective and the increase in the number of serious patients was prevented.

Frequent evaluation and monitoring of compliance to infection control procedures were needed to prevent hospital transmission of the virus. Many countries dispatched teams for the frequent inspection of hospitals and institutions. Singapore's Ministry of Health tasked quality personnel from the Ministry to ensure the safety of staff within the temporary COVID-19 facilities, as well as to minimize further transmission within these facilities. In Saudi Arabia, coordination between relevant authorities and other government and private entities was ensured by the Command and Control Center (CCC) and the support of the National Health Emergency Operation Center (NHEOC) to apply monitoring procedures for the entities involved in the COVID-19 response; including reference hospitals and

quarantine facilities.

Coordinated procurement and distribution of personal protective equipment

The pandemic required health systems to procure and produce supplies quickly: drugs, masks, protective suits, disinfectants, temperature measuring devices, and other health products. A value-based approach to acquiring supplies needed to address the pandemic would be one where requirements were met without incurring avoidable costs to the system. Some countries gave examples of how they approached this issue.

China prioritized medical supply production early in the pandemic, imposing strict quality and safety supervision and streamlined product approval processes. Saudi Arabia signed a contract with China worth 995 million SAR (265 million USD) to provide COVID-19 diagnostic kits, specialists and technicians to train staff. This led to an increasing laboratory preparedness and implementing a National Mass Testing Program

Turkey prioritized domestic production of required supplies under the coordination of the Ministry of Health in Turkey, which developed a respiratory device in cooperation with local commercial partners for use within the country and export. Turkey also used and exported diagnostic kits developed by local firms.

Argentina centralized the distribution of ventilators at the national level based on equity criteria in order to provide an articulated response considering the epidemiological situation in each jurisdiction. Also, laboratory capacity was enhanced and the national network was expanded through the decentralization of COVID-19 diagnostic kits to ensure that all provinces are able to process samples and confirm cases.

Countries provided details of their approaches to accelerated drug and vaccine development. Turkey established the Vaccine Institute under the Health Institute of Turkey (TUSEB), and several vaccine and drug development projects were initiated in coordination with the Ministry of Science, Industry and Technology. TUSEB, an organization affiliated with the Turkish Ministry of Health, cooperated with commercial companies to develop drugs and vaccines, medical devices and biomaterials, and diagnostic kits (Case Studies 16-18). Saudi Arabia's Ministry of Health laboratories detected the genetic sequence of COVID-19 to understand the patterns of its transmission, and help develop vaccines and counteracting medications.

Case Study 16: Turkey, Supply chain resilience

Challenge	Approach	Impact
Providing the respiratory support that patients need	Because of the coronavirus holding in the lungs, patients who are being treated in intensive care need respiratory support. Turkey, by identifying needs here before, began domestic production breathing apparatus. The breathing apparatus, which started to be produced using domestic facilities in a very short time, started to be exported after the needs of the domestic market were met.	Having an adequate number of respirators is vital in terms of providing the respiratory support that patients need. Turkey, in this sense, thanks breathing apparatus produced by using its own resources, has led to more effective treatment of patients.

Case Study 17: Turkey, Local pharmaceutical production

Challenge	Approach	Impact
Availability and use of drugs needed in COVID-19 patients' treatment processes	The domestic production of medicines that have been used in the treatment of COVID-19 patients during the pandemic.	Early treatment of coronavirus patients is of great importance in survival and increasing the effectiveness of treatment. Turkey has started producing its own domestic drug use in the treatment of patients to avoid drug shortages in this sense. In this way, patients are provided to be treated in a shorter time and more effectively. At the same time, the worsening of the patients' conditions was prevented, and the number of deaths was controlled.

Case Study 18: Turkey, Product innovation for testing

Challenge	Approach	Impact
Detecting new cases of SARS-CoV-2	Aresearch protocol was initiated to develop and produce a rapid laboratory PCR test kit to meet the domestic need and export to other countries.	As of early December there were almost 400laboratories strategically spread across the country, capable of performing a PCR test for SARS-CoV-2 and providing accessibility and test coverage for diagnosing active SARS-CoV-2 infections. In this way, cases were detected early and quickly. At the same time, since the treatment and quarantine processes were initiated quickly, the spread of the disease was prevented, and the treatment of patients was provided effectively.

WORKFORCE, CULTURE AND CAPABILITY

Geographical redeployment of personnel to address outbreak

The geographical impact of the pandemic was not evenly distributed across countries. To manage fluctuating demand for COVID-19 diagnostics and treatment, coordination between providers and regions was needed. Several countries reassigned health workers to address variable regional needs. Within six weeks of the outbreak, China dispatched more than 8,000 national medical teams consisting of more than 46,000 medical workers and more than 900 public health professionals to Hubei and the city of Wuhan. Through regional collaboration, Australia flexed its health workforce to manage variable caseloads across the country. Brazil reviewed the assignment of its medical workforce to increase the number of doctors available in primary care organizations through its Family Health Strategy. Countries also expanded the health care workforce. For instance, Turkey hired 32,000 additional health personnel in April and 12,000 in December.

Saudi Arabia formed specialized public health teams to evaluate and monitor confirmed cases and their contacts in different regions,

identifying infection causes, determine links between cases, and monitoring daily laboratory results and reporting them to the relevant authorities locally and internationally (WHO). The country also strengthened the medical workforce by creating a database of temporary contracts for health practitioners to work during the pandemic. In addition, they recalled contracted healthcare practitioners from their vacations and repatriated healthcare workers stranded abroad. Health volunteer teams were asked to help with health awareness and education; epidemiological surveillance; medical consultations; volunteering in hospitals, quarantine facilities, and laboratories; volunteering in home care; and delivering medication to patients in their homes during the COVID-19 pandemic to accommodate for the shortages of staff.

Additional flexibilities in staffing, skill-mix and scope of practice introduced

In addition to reassigning and hiring clinical staff, countries also changed how their existing workforces were deployed in response to the pandemic. The US temporarily relaxed licensing, reciprocity and credentialing requirements to expand the workforce in regions with the greatest needs. The US also extended the scope of practice for shortage professions. Provider organizations in the UK developed more flexible approaches to address workforce shortages and improve productivity. Skill mix in clinical teams was reviewed so that individuals could work to their current skill level rather than their existing grade or job title (Case Study 19). This approach was also used in the US, where team-based care was reconfigured, and roles for nurses, pharmacists, nurse practitioners, physicians' assistants and medical assistants were expanded. This entailed reconfiguration of training for new entrants to the workforce and existing employees.

Argentina provided bonus payments to health workers and adapted staff remuneration policies across the subnational level. These measures disincentivized multi-employment and allowed a more efficient distribution of health personnel across the provinces.

In Australia, medical education and training bodies introduced new training and assessment methods for practitioners as part of the country's COVID-19 response. Free infection prevention and control training modules were offered to all workers in general health and care settings. Such training programs were also offered in Saudi Arabia for all personnel of points of entry on infection control procedures and the use of PPEs, they also created programs to train non specialized doctors from various specialties on dealing with the pandemic, these programs were offered for all health practitioners in an online format.

There was a need to strengthen health workers' knowledge and skill in infection control. In China, the National Health Commission led measures to strengthen infection control at medical institutions by providing training and targeted guidance to staff and ensuring mandated control measures were implemented.

Case Study 19: UK, Workforce flexibilities

Challenge	Approach	Impact
Quarantine and self-isolation requirements reduced the staff available to Trusts	To continue to deliver essential services, the NHS used updated workforce models based on skill-mix to deliver quality care, rather than relying on job titles. In diagnostics, imaging networks were used to allow working from home for radiographers.	This allowed the NHS to continue to deliver care and to deliver it in a more efficient way.

PATIENT AND CITIZEN ENGAGEMENT

Communications and education campaigns promoted public health information

Many countries developed educational programs to raise public awareness and encourage behaviors to limit the virus's spread. Brazil found its educational programs' impact to be positive, increasing the citizen's awareness and understanding of the pandemic. Argentina leveraged experience from other countries in developing its communication strategy. Turkey shared data on preventative measures and quarantine procedures to improve health literacy. In Saudi Arabia, the Ministry of Health activated a website which contains awareness materials for COVID-19 prevention in Arabic and in other common languages spoken by the residents of the Kingdom. They also activated a hotline to support the community by answering inquiries, giving instructions, and providing medical and psychological consultations on all aspects related to COVID-19 around the clock. Information was also available through TV, radio, and text messages, by publishing preventive health guidelines, offering solutions through social media, and sharing video messages of ministers and other public figures urging people to follow the precautionary measures against COVID-19 and publishing the most prominent developments about the pandemic and developing awareness campaigns aimed at spreading awareness among the community.

Although educational campaigns and communication focused on the pandemic, the UK emphasized the importance of continuing communications on non-COVID-19 services. The NHS shared information to ensure patients understood how access to other services was impacted by the pandemic, routing patients to digital services as appropriate.

Transparency evidenced in public messaging: daily briefings, sharing of statistics

Several countries emphasized the importance of clear and trusted communications from national leaders. Public press conferences were an effective way to inform citizens of recent developments and statistics. For instance, the Turkish Minister of Health held regular press conferences to inform the public on progress managing the pandemic, emerging information and best practices. In Saudi Arabia daily joint press conferences were held to highlight latest updates. Sharing statistical data was also seen as important. Automated data collection and consolidation allowed Australia to produce highly accessible, understandable and transparent publicly available information, including daily briefings, statistics and modelling to meet public demand for information on COVID-19.

Participative mechanisms for citizen engagement used

Citizen engagement was important for the self-reporting of cases, which was implemented in almost all countries. In highly affected areas of China, residents were required to report their health condition daily. Wuhan, China, being the first city hit with the virus, has carried out two rounds of community-based mass screening of its 4.21 million households, where all households were checked to rule out potential sources of infection. Community grid-based screening was carried out across the country to identify four categories of vulnerable people (confirmed cases, suspected cases, febrile patients who might be carriers, and close contacts). Community workers in China also visited households door to door to collect and verify information about symptoms, and temperature screening was routine everywhere. Communities and villages comprised the first line of defense to control the epidemic and provided a major barrier to inbound cases and local transmission. During the strict lockdown, community workers were responsible for the purchase and delivery of daily necessities according to the needs of residents.

In Saudi Arabia, precautionary and proactive measures were applied in several stages to implement active surveillance measures for cases in the community, detecting infected

areas, and focusing on crowded residence sites in various regions. This led to the detection of many confirmed cases and their contacts and taking the appropriate preventive measures to prevent further spread.

In Argentina, daily morning and evening reports including frequent press conferences were broadcasted live. A publicly accessed dashboard was also set on the Ministry of Health's website with updated information on the number of infections, recoveries and deaths. Information letters for patients and contacts were sent in Russia, and individuals were instructed to monitor vital signs and contact physicians daily. After a hospital stay, discharged patients were instructed about self-management, physical training and rehabilitation.

Many of Medicare's value-based care programs include measures of patient and citizen engagement. This is important in identifying key issues and solutions and assuring the acceptance of value-based changes by providers and the public.

Mental health was a concern for many countries during this pandemic; in Australia, services were developed in partnership to meet the needs of specific population groups (Case Study 20). Saudi Arabia also provided counseling and psychological support to patients, health workers, and the community since the early stages of the pandemic, in cooperation with the mental health team, in order to contain and mitigate the social impact of COVID-19.

Case Study 20: Australia, Targeting vulnerable groups for mental health services

Challenge	Approach	Impact
The uncertainty, disruption to normal life and the health, economic and social impacts caused by COVID-19 has negatively impacted the mental health of Australians and led to an increase in demand for mental health services.	Australia has provided a number of mental health-related packages to support all Australians impacted by the COVID-19 pandemic. This includes telehealth services as well as targeted support for vulnerable groups including Aboriginal and Torres Strait Islander Peoples, culturally and linguistically diverse communities, senior Australians and young people. Broader supports have been put in place including an early intervention dedicated COVID-19 wellbeing and support phone line.	This expanded mental health offering takes pressure off the mental health system and enables the continuity of services to ensure Australians can continue to access essential mental health treatment and receive the support they need during the COVID-19 crisis.

Responding to COVID-19 during an 'infodemic'

Social media strongly influenced the way countries and citizens have dealt with the virus, particularly concerning the need to challenge unregulated and unverified information that can be shared quickly. Australia developed artificial intelligence models to analyze social media data to understand public sentiment towards its response better. Saudi Arabia also established mechanisms to systematically monitor community reactions through monitoring social media, behaviors and practices surveys, dialogues and direct consultations. This enabled the effectiveness of services to be improved and public messaging to increase citizen engagement and health literacy relating to COVID-19 to be targeted.

3. CONCLUSIONS

It will soon be time to shift focus from short-term pandemic control to long-term health system value.

Promising results on safe and effective vaccines for COVID-19 are in the pipeline for production and development, and scientists are beginning to understand the biology of the virus, treatment options, effects and transmission. However, the COVID-19 pandemic is far from over; countries continue to report more cases, and to limit further spread of the virus, many are re-imposing lockdowns and restrictions. As of early December 2020, the number of COVID-19 cases globally has surpassed 60 million, with deaths exceeding 1.5 million. Although the crisis response to the pandemic remains a priority, it has weakened health systems and slowed down the efforts to improve health system delivery. Governments must start to return to health reform to find sustainable ways to deliver health care to their populations.

VBHC remains a trending approach to health system reform

Before the outbreak of COVID-19, VBHC showed promising results. Countries that have implemented VBHC have suffered fewer consequences from the pandemic. Those that have seen an opportunity to implement VBHC reforms during the initial response to the pandemic have seen immediate benefits. For example, countries that implemented value-based payment models have had greater control over health spending during the pandemic and maintained a high quality of care.

The pandemic makes health system reform more needed but also more complex

There is no guarantee that lessons learned during the COVID-19 pandemic will result in a faster shift towards value. It is likely to be even more difficult for countries to transform their health systems as the pandemic continues to create financial strains and health needs.

We need sustainable VBHC to prepare for future system shocks

Although we are still in the midst of the COVID-19 pandemic, it is not too early to prepare for a future pandemic. We have seen that countries affected by previous new and emerging infectious diseases have recovered more quickly because they had already prepared their health systems to respond to a similar threat. We are hopeful that global and national lessons from COVID-19 will translate into more efficient responses when, inevitably, another pandemic strikes.

We need to design health systems' "new normal"

More importantly, we need to focus on the transition to the "new normal", and create safe initiatives to protect people as the initial effects of the pandemic wear off. As we think of the "new normal" and how our lives will look, it is difficult not to focus on the negative effects of the pandemic and how it has left many with financial hardships, lost jobs, deaths and illness of loved ones. However, if there is a silver lining to the pandemic, it must be that we take this as an opportunity to transform not only our healthcare system, but all other aspects of our lives, and create more sustainable systems that can cope with the effects of such an emergency.

It is time to accelerate the shift to VBHC, starting with payment reforms

The COVID-19 pandemic has strengthened the need to shift to VBHC in all its aspects. The financial challenges that have been created during the pandemic are immense, and payment reforms should be a primary focus as countries are recovering. Payments mechanisms that reward quality outcomes and prioritize high-value care must be the cornerstone of more sustainable post-pandemic health systems.

We must deliver broader "value in health", beyond "value in health systems"

COVID-19 has severely affected both our health systems and the global economy. All industries and individuals have been affected by this pandemic, and it is important for

policymakers to intensify the recovery efforts now and provide the necessary resources to support people's needs post-pandemic.

The need to focus on mental health as we recover from this pandemic

The effects of the pandemic have exacerbated mental health issues such as depression and anxiety, and it is crucial to take measures to help the mental health and wellbeing of persons and communities affected by the pandemic. The pandemic has also affected the accessibility to mental health services, but there have been many positive approaches that have helped in tracking the mental health of individuals and communities such as telehealth and applications that have made it easier for individuals to access high quality services online.

Restarting health system activity requires more than managing down existing waiting lists

As most hospitals postponed non-emergency procedures at the start of the pandemic, many countries find themselves with large backlogs of cases to be attended to. Hospitals will find it more challenging now as waiting lists continue to lengthen, shortages in workforce experienced, infection control protocols remain strictly enforced, operational capacity constrained, and fluctuations in the prevalence of COVID-19 cases that remain. If the backlog issue is not addressed now, healthcare systems might need to deal with the consequences of potentially higher morbidity and mortality due to the delayed procedures. Solutions include many value-based healthcare approaches to tackle this issue, including the use of artificial intelligence and data analytics to manage capacity and prioritize cases in real time, other solutions that would focus on increasing the efficiency and use of available resources may include increasing operating rooms and compensating staff for working overtime. Although it may take years to work through the excess surgeries, these value-based approaches may be an opportunity for providers to strengthen clinical operations and transform care delivery to improve patient experiences and outcomes in the future.

System-wide change is possible; the pandemic response demonstrates this

Seeing how some countries have created the opportunity to transform their healthcare systems as they respond to this pandemic from a value perspective sparks much optimism on system- wide change. Countries are learning from others' experiences and are seeing the benefits of quickly applying value-based approaches. Over the past decade, there have been many attempts to enhance the sustainability of health systems globally through VBHC, such as bundled payments, alternative payment models and others. The COVID-19 pandemic has highlighted the need to expedite these reforms and analyze what has been effective and how to accelerate the change. It is important to resume and accelerate VBHC work that started before the pandemic on payment reform, and not allow the pandemic to halt these efforts. These payment models have shown to be more resilient in the face of the outcomes of the COVID-19 pandemic, and protect physicians, healthcare workers and populations against financial hardships, and need to continue throughout and beyond the pandemic for the sustainability of health care and delivery. They would also serve as an opportunity during the recovery phase of the pandemic and given the budget constrains; approaches such as capitation and incentivization for outcomes would serve as an additional opportunity to implement value-based approaches.

Gains in technological enablement must be sustained, deliberately extended and not reversed

The widespread use and prompt implementation of telehealth and telemedicine services is one other positive emerging from this year. Although telehealth services benefits are clear - in terms of convenience, cost and protection against exposure to the virus - it is important to address privacy concerns and ensure benefits are seen by patients, providers and the healthcare system. Other technologies implemented during the pandemic have shown to be effective tools to facilitate the delivery of healthcare to both COVID-19 and non-COVID-19 patients, as well as

facilitating communication and effective data sharing and analytics for efficient response. Mobile applications have been rolled out to serve many functions of healthcare delivery, monitoring and prevention, and should undergo continuous improvement to be used as this pandemic continues to spread.

Local, national and international collaboration is key

Irrespective of the impacts of the pandemic, cross-sector and cross-organization collaboration remains important for the creation of new approaches, mitigate challenges and the sustainability of any delivery system. The pandemic highlighted the need to strengthen these collaborations in the healthcare sector that will help all stakeholders to create and deliver value in response to all threats.

Changes made during the pandemic should be sustained and monitored prospectively

With hindsight, many health systems were not fully prepared for an emergency such as COVID-19 and ended up creating processes to tackle issues as they arose. This responsive approach caused strains elsewhere in the systems, in terms of cost and quality. As we move through the response and recovery phases of the pandemic, it is crucial to revise these operational workarounds and make sure to look at all aspects of care delivery, including value, before making them permanent.

The pandemic is a pivotal moment for evidence-based clinical practice

Since the emergence of the novel coronavirus, there has been an influx of research and evidence around the topic used for detection, prevention, treatment and recovery from the virus. Guidelines have been developed to direct clinical practice and define patient pathways for care of COVID-19 patients, which has been crucial to maintaining standards of care. Many guidelines were produced by country officials and international organizations with frequent review of available data, analysis of trends and outcomes, and as studies progress, more evidence is included in these protocols. These guidelines have been adapted for use in other countries that were hit later in the pandemic, which have served as a reference for all activities.

Value-based procurement will support resilience in health system supply chains

It is clear that COVID-19 will push countries away from the traditional fee for service reimbursement model towards value-based care, and due to the immediacy of tackling the COVID pandemic, this change will come soon, especially for procurement models, that will ensure supply chain resilience and reduce waste. Value based procurement will be a major part of the future of healthcare delivery post COVID-19 and as we recover from this pandemic.

VBHC will be needed to drive efficiency and cost savings

Inefficiency is a key constraint in providing more value and improving outcomes, and health systems remain under intense pressure to improve health outcomes while reducing costs. During the pandemic, clinical outcomes have been prioritized over other aspects of value with the financial constraints this pandemic has left us with. As countries recover, health spending will remain tight, and there will likely be a need to lower operating expenses and cut costs. Health systems will review their spending, purchasing, supply chain and waste, and this should be done based on value, on cost and outcomes that matter to patients and citizens.

Workforce reform is an urgent priority

It will be important to improve efficiencies in the healthcare workforce, particularly how we best use frontline health workers' skills. Healthcare workers have been stretched to their maximum during the pandemic. Healthcare workers have been redeployed, and their roles reviewed in a responsive rather than a planned way. There has been significant disruption to medical education and training. Approaches for value-based workforce reform are now necessary to address staff shortages and burnout. New roles and value-based health care contracts can be developed to focus on delivering better outcomes for patients, the hospital and the healthcare system.

The relationship between citizens and their health systems needs to be renegotiated

Even before the pandemic, patients should be the core of the decision-making process. Given the additional strain under which health systems must operate during the pandemic, patient engagement and transparency has not always been optimal. Now more than ever, it is important to build trust among communities and citizens. There is a higher chance of cooperation if they believe the message officials are giving. To build trust, it is important to communicate effectively and provide accurate data about the spread of the virus and how to protect yourself and others from contracting the virus. This will also support future decisions, most notably, for allocation decisions such as vaccines. Patient engagement is a crucial aspect of value-based healthcare that affect other aspects of care delivery and cooperation.

The next questions in the pandemic response should be answered with reference to health system value

As we move on from the initial response, we expect other challenges to face health systems, the most immediate of which is the procurement, allocation and distribution of vaccines. Countries are now trying to secure supplies of vaccines, which has raised the alarm about equitable access. It is also not clear how the vaccine will be distributed or how much it will cost and who will pay for it. We should also consider the production and sustainability of diagnostic tests and testing labs as we move forward to the “new normal”; if any new treatment modalities will be provided and how drugs will be allocated and distributed; and if more will be invested in increasing capacity of hospital beds. Value should be the reference point to guide choices between available policy decisions in the coming year.

GLOSSARY

VBHC	Value-based health care
ARG	Argentina
AUS	Australia
BRA	Brazil
CAN	Canada
CHI	China
JAP	Japan
RUS	Russia
SAU	Saudi Arabia
SIN	Singapore
TUR	Turkey
UK	United Kingdom
US	United States
OECD	Organization for Economic Co-operation and Development
WHO	World Health Organization
COVID-19	Corona Virus Disease of 2019
UHC	Universal Health Coverage
AI	Artificial Intelligence
ICU	Intensive Care Unit

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Global Innovation Hub For Improving Value In Health

This report describes the results of a request to member countries of the Global Innovation Hub for Improving Value in Health for case studies of responses to the COVID-19 pandemic that related to value-based health care. Case studies were submitted from 12 countries. There were clearly multiple impactful opportunities for countries to share good practices and adopt value-based approaches in the immediate response to, and recovery from, the pandemic.

The Global Innovation Hub for Improving Value in Health

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