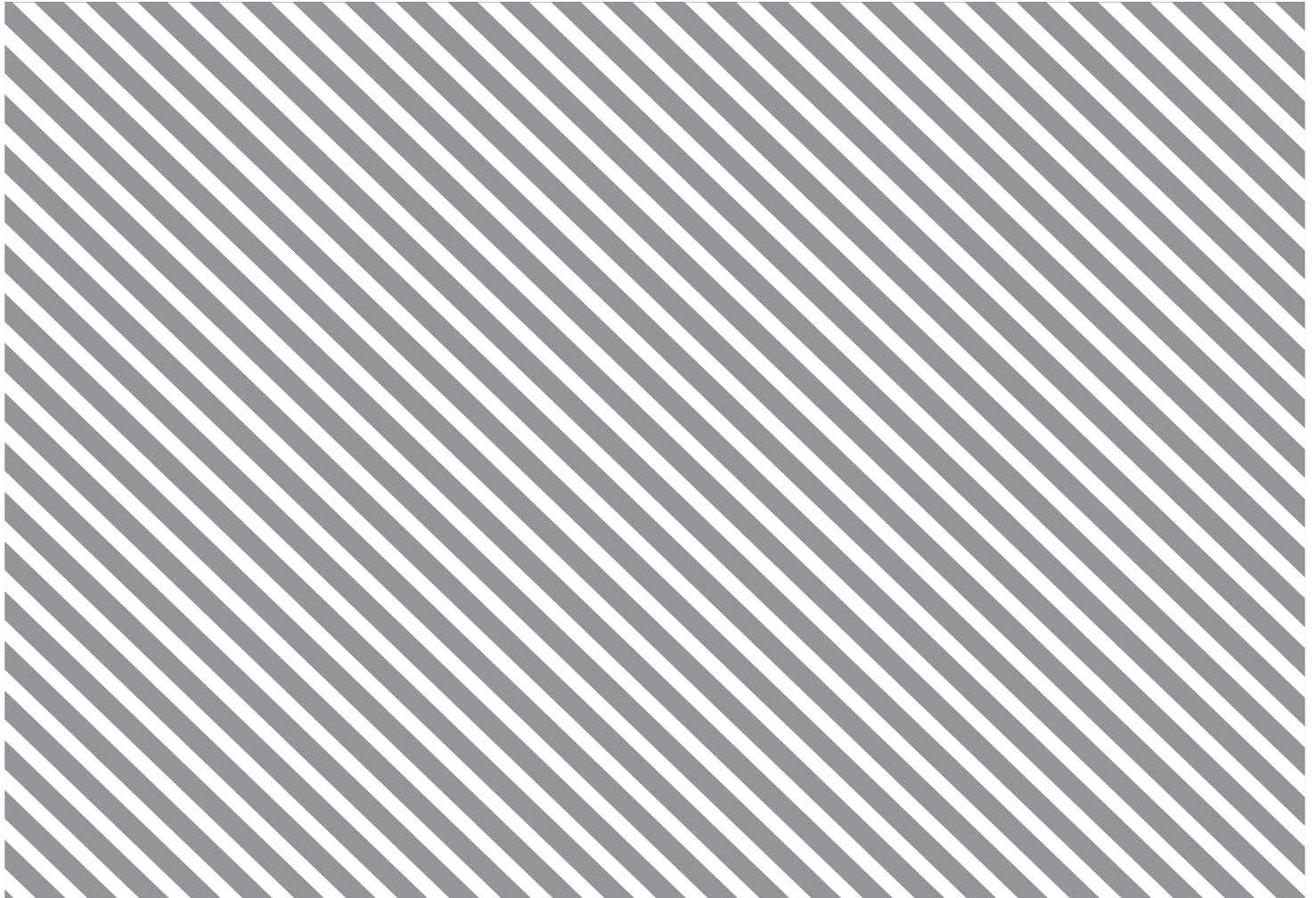


Reflection Paper

# Global Future Council on Health and Healthcare 2018-2019

## A Vision for the Future: Transforming Health Systems

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# Foreword



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Health systems are under major pressure globally. Population growth, ageing, the emergence of personalized medicine and the growing potential of new technologies, along with rapidly rising costs and the entry of disruptive and non-traditional competitors, will increase demand for services and affect the performance and sustainability of healthcare delivery systems. By 2050, one in six people will be over 65 years old<sup>1</sup> and more people will live with one or more chronic diseases. Despite reforms in funding and payment models in some countries, there is ample evidence of waste and inefficiencies in health systems.<sup>2</sup> Global healthcare spending is projected to continue increasing.

These trends demand urgent attention from all stakeholders in the health system. Such systems must transform to deliver what people need better, while remaining financially viable in the long term. This paper argues that today's health systems need to be reformed, and that reform is possible. It identifies some key conditions for reform and barriers that need to be addressed to encourage this transformation.

Prepared by the World Economic Forum Global Future Council on Health and Healthcare 2018-2019, this paper lays out five scenarios developed by the Council of how individuals with different health needs navigate through or relate to the current health system, and the challenges they face in doing so. The Council then considered forward-looking scenarios outlining what these individual health journeys could look like with improvements in health system delivery. The Council considered quality, accessibility, affordability and equity as key principles for future health systems. Through these future-oriented scenarios, the Council articulated how improved and more cost-effective journeys for individuals in health systems could be achieved across different regions.

These scenarios are achievable; building blocks for the more sustainable, people-centred health systems mentioned in them already exist. Nonetheless, realizing such scenarios by 2030 would require decisive action, such as:

- Reorienting health systems to increase the focus on preventing disease and promoting good health and earlier interventions
- Prioritizing universal health coverage, including by strengthening high-quality primary and community healthcare
- Ensuring the smarter use of innovation and technology-based solutions to make health systems more efficient, effective and responsive to people's needs
- Promoting well-designed partnerships
- Developing a fit-for-purpose institutional architecture and governance globally, nationally and locally

Thus, a quality health system that meets the needs of individuals, families and whole populations is within reach. Achieving that will require eliminating unnecessary waste, encouraging good health outcomes, breaking down systems that operate in isolation in care service provision, and using digital health data and technologies better. All stakeholders within the broad health system will need to work together to make a difference for individuals and populations.

# Executive summary

This paper, “A Vision for the Future: Transforming Health Systems”, addresses the need for health systems to be reoriented to meet populations’ needs in the context of the Fourth Industrial Revolution. It discusses present and future challenges faced by health systems, adopting a systems approach that places the experiences of individuals, families and communities at the centre of its analysis.

The paper addresses two sets of issues:

1. The requirements for future health systems to achieve good outcomes for individuals, families and communities in a sustainable and equitable manner
2. The ways that health system architecture can support this effort at all levels.

**Expected transformations:** A qualitative scenario analysis of individuals’ experiences identified key areas where changes within health systems can occur and can be achieved. These include, among others, developing a fit-for-purpose health workforce, implementing cost-effective technologies and operationalizing innovative service delivery arrangements. The scenarios describe a range of current journeys undertaken by individuals and how they might develop in the future. They address the potential and conditions for the transformation and improvements required to achieve the 2030 Agenda for Sustainable Development’s objective of having a well-functioning, resilient and people-centred health system.

**Methodology:** Several inputs shaped the scenario development – focus group discussions with patients, prior in-depth interviews conducted with patients and engagement with patient organizations, depending on the specific scenario. Key experts, who provided information on the health system context, helped to develop all scenarios.

**Analysis:** Throughout this paper, the analysis focuses on barriers, opportunities, risks and missing competencies which, if present, would have an effect by transforming health systems and contributing to societal well-being. The paper concludes with reflections on the current global health architecture.

**The scenarios:** Exploring the interaction between individuals and the health system, the journeys also include how a person, their family and/or their communities currently interact with the system. Some scenarios address factors beyond health systems, such as the role of education, transportation and the environment. The scenarios focus on individuals’ experiences, including their interaction with other members of the community and healthcare providers.

All the scenarios represent a future that is within reach. The elements mentioned in the scenarios are already present and could well become common by 2030, with key enablers such as cost-effective technology and adequate supply of appropriate professional skills, and with more focus on prevention.

The scenarios are:

1. Wellness journey in a low-income country or context
2. Woman and child journey in a low-income country or context
3. Diabetes patient journey in a middle-income country or context
4. Cancer patient journey in a high-income country or context
5. Healthy ageing journey in a high-income country or context

**Recommendations:** Today’s health systems require a fundamental transformation to meet the health needs of populations in 2030. This paper identifies what needs to happen to achieve this transformation and who should be accountable for driving change.

# Introduction

The World Economic Forum Global Future Council on Health and Healthcare brings together a diverse group of experts, members of patient organizations, policy-makers and government leaders. The Council met in Dubai in November 2018, where participants discussed and agreed on the structure and main contents of this paper.

A prior report, *Health and Healthcare in the Fourth Industrial Revolution: Global Future Council on the Future of Health and Healthcare 2016-2018*, produced by the previous Council,<sup>3</sup> described how the Fourth Industrial Revolution will affect health systems in the coming decades, and explored the societal and governance implications of key emerging technologies related to health and healthcare. This paper, “A Vision for the Future: Transforming Health Systems”, acknowledges that this revolution will fundamentally reshape the way people live, work and interact with each another. The paper addresses an additional challenge: the Fourth Industrial Revolution will profoundly affect the practice of medicine, such that health systems will need to be reoriented to meet populations’ needs. The paper outlines the present and future challenges health systems face, adopting a systems approach and putting the experiences of individuals, families and communities at the centre of its analysis, which is rarely done in health systems research. It acknowledges that all the actors involved need to work in close partnership to design quality health systems.

This paper considers the social determinants of health and analyses scenarios in a range of settings, highlighting the importance of context. It supports people-centredness, quality, accessibility, affordability and equity as key principles for health systems, and highlights the need to focus on delivering what people need, good outcomes, and experiences of care that individuals and populations value. Putting people at the centre of the health system and health policies involves enabling them to make choices that are positive for their health and involving them in decision-making processes.

The paper addresses two sets of issues:

1. The requirements for future health systems to achieve good outcomes for individuals, families and communities in a sustainable and equitable manner
2. The ways that health system architecture can support this effort at all levels.

The paper presents five qualitative scenarios of individuals’ experiences to identify key transformations required for high-performing future health systems. These transformations include, among others, developing a fit-for-purpose health workforce, implementing cost-effective technologies and providing innovative service delivery arrangements. The scenarios describe a range of current health journeys undertaken by individuals and how they might develop in the future. They address the potential and conditions for the transformation and improvements required to achieve the 2030 Agenda for Sustainable Development’s objective of having a well-functioning, resilient and people-centred health system.

These scenarios have a unifying theme of addressing the transformative effects that technology could have in each setting in the coming years. Each scenario is achievable but would require strong political will to address current bottlenecks, improve health system governance and remove silos. Many innovative technologies relevant to health and healthcare already exist. Health systems should not lag other sectors in using such technologies to transform service delivery.

The scenarios explore interactions between the individual and the health system, including how a person, their family and/or their communities interact with the system. Some scenarios address factors beyond health systems, such as the role of education, transportation and the environment. The scenarios focus on individuals’ experiences, including their interaction with other members of the community and healthcare providers.

The five scenarios are:

### **Scenario 1: Wellness journey in a low-income country or context**

Enemali, a 40-year-old farmer, lives in a rural village. As the only male child, he stopped attending school to look after his siblings and his sick mother. He also began working on their farm and rearing livestock. Enemali lacks access to many basic amenities essential to ensuring healthy living and a better quality of life. He eats an unbalanced diet composed mainly of carbohydrates that come from his farm but cannot afford foods rich in other essential nutrients. Enemali has access to some health services from a nearby community health centre, but would have to travel a half day to reach a hospital in the main town.

### **Scenario 2: Woman and child journey in a low-income country or context**

Anaya is an 18-year-old woman in rural India and is experiencing her first pregnancy. She has little access to healthcare, had not engaged in the past with the medical system and has not seen a provider since she became pregnant. With no clinic within easy walking distance, she receives guidance from her family on how to best care for herself. Moreover, she and her family have limited income and resources. She is small for her age and, though undernourished, does not present other known poor health indicators. Her family is determined to ensure she delivers in a clinic.

### **Scenario 3: Diabetes patient journey in a middle-income country or context**

Liyana, a 40-year-old woman in a South-Asian country, was diagnosed with early type 2 diabetes and hypertension. The hypertension diagnosis was made at a local private clinic she visited for advice on other non-related symptoms. She was prescribed medicines, but had difficulty buying them regularly from a pharmacy due to the steady rise in their cost and the need to prioritize the health needs of her children and husband.

### **Scenario 4: Cancer patient journey in a high-income country or context**

Cheryl, a 48-year-old woman, discovered a lump in her breast and sought testing, which led to a diagnosis of breast cancer with a small 1.5 cm tumour. The good news is that a further test showed the cancer had not spread. Given her family history of breast cancer, she undergoes surgery followed by radiation and combination chemotherapy. Following another test at the end of her treatment, her doctor considers her still at risk. As she could be eligible for additional therapy through a clinical trial, her doctor recommends this to hopefully further reduce her chance of recurrence. Cheryl is overweight, has type 2 diabetes and is also advised to make lifestyle changes.

### **Scenario 5: Healthy ageing journey in a high-income country or context**

Mrs Tan, aged 50, is free of chronic diseases such as hypertension or diabetes. Considering herself rather healthy, she has recently experienced moments of panic when remembering small things, or when familiar routes have suddenly become impossible. She discusses this with her husband, who accompanies her to a neurologist at the nearby hospital. Following a Montreal Cognitive Assessment and an MRI scan, Mrs Tan is diagnosed with early-onset Alzheimer's disease. A second-generation immigrant from China, she grew up in the United Kingdom and lives with her own family close to her parents' home to be able to care for them as they age.

For each of the scenarios, this paper describes a future possible state in 2030 as well as the barriers and opportunities to achieve this. The future state shows how differently the individual health journey could look if changes were made to realize the opportunities and address the barriers. The paper concludes with recommendations for countries to consider for transforming their health systems by 2030. The conclusion reviews how the health system architecture can support future health systems.

# Methodology

Five working groups were formed to design each of the scenarios. Following the scenario design, several virtual meetings were arranged to discuss progress and assign further responsibilities.

The scenarios were selected to cover a range of criteria, including geographic location, gender, different stages of the life cycle, and a range of diseases and conditions. They also incorporate wellness promotion and illness prevention. Throughout this paper, the analysis focuses on barriers and opportunities, risks and missing competencies for transforming health systems and contributing to societal well-being.

To produce each current scenario and future possible state, a mixed methodology was adopted, made up of discussing with patients in focus groups, constructing scenarios based on prior in-depth interviews with patients, engaging patient organizations and involving key experts in each of the scenarios to provide information on the health system context.

Scenarios 1, 2 and 5 were designed by experts and key informants on the conditions described. Scenarios 3 and 4 were based on previous in-depth interviews conducted in several Asian countries, and on focus group discussions from the United States. Data from those discussions and in-depth interviews underwent thematic analysis. Themes were selected based on their frequency in the interview data. Those themes, combined to represent the challenges individuals reported for the specific scenario, were incorporated in the scenarios and included, among others, awareness of the condition, knowledge of the condition, access to services, healthcare experience, and costs incurred in paying for medication and accessing services.

The strength of these scenarios is their holistic approach to the individual. They not only refer to their conditions at a point in time, but also account for their livelihoods, education, employment and environmental factors. One of this paper's limitations was the inability to collect primary data for each scenario. For each, however, individuals with expertise in the selected contexts were involved and, where primary data could not be collected, the scenarios were validated by patient organizations. All scenarios are also more accurate for the present situation because they are based on current knowledge and qualitative data. When looking to the future, the scenarios are illustrations of what is achievable within certain conditions, reflecting experts' judgements that have been validated by a wider community.

# The health journey scenarios

## Scenario 1: Wellness journey in a low-income country or context

### Current scenario

Enemali, a 40-year-old farmer, lives in a rural village in a low-income country. The only male child, he stopped attending school at the age of nine when his father died to look after his siblings and his sick mother. He began working on their land and rearing livestock.

Enemali lacks access to many basic amenities essential to ensuring healthy living and a better quality of life. He has no access to potable water, relying instead on harvested rainwater or water sourced from a nearby seasonal river that runs dry during the year. He lives close to an open rubbish dump and in a small two-bedroom mud house with 10 other household members. As his home is not connected to the national electricity grid, he relies on firewood for cooking and kerosene lamps for lighting at night. His community remains vulnerable to cholera outbreaks, and frequent malaria outbreaks are caused indirectly by stagnant water left in the neighbourhood. A poor road network is used to transport products from his farm to the local market.

This young farmer eats an unbalanced diet of mainly carbohydrates from foods from his farm and cannot afford foods rich in other essential nutrients. Although he does not smoke tobacco, he drinks a lot of palm wine in the evening and other locally brewed alcoholic beverages with his friends.

While Enemali has access to some health services from a nearby community health centre, he would have to travel a long way to the main town to access emergency or other specialized hospital treatments. In addition, patient health information is difficult to get and is not shared between community care services and hospital care. Superstitious about some ailments, Enemali believes they should be treated in traditional ways at home.

### Future possible state in 2030

The work of the World Health Organization (WHO) Commission on Social Determinants of Health recognized that the conditions in which people are born, grow, work, live and age significantly shape and affect their health. To ensure people stay healthy, it is essential to address the social determinants of health in addition to providing adequate quality, people-centred health services to all those needing them. For Enemali, it means the conditions and environment in which he lives, eats, works and interacts within society must be transformed by 2030 for him to stay healthy and enjoy a good quality of life.

The quality of healthcare in his country has varied in many places and across localities, and shortages of medical supplies may occur. Hygienic conditions are problematic (especially outside the large cities), and it is estimated that only four doctors are available for every 10,000 inhabitants. Highly trained medical and other experts often leave the country to pursue their professions in nations with better infrastructure and higher wages. Primary healthcare facilities are poorly resourced in many places.

By 2030, governments at the national and local levels have accelerated economic development that allows better infrastructure – from roads to technology and connectivity – and better access to healthcare and other basic services. With economic growth, a greater proportion of the annual budget is allocated to the health sector in this low-income country, although resource allocation must prioritize the most cost-effective interventions, particularly prevention and basic primary and community care services.

Farming becomes more automated, meaning Enemali relies less on manual labour. Road networks have improved, facilitating the transport of farm products to market. Rural areas have expanded access to modern energy, quality sanitation and potable drinking water, and to other basic infrastructure that enhances the quality of life and helps Enemali to stay healthy. All this also reduces the incidence of a number of preventable illnesses.

Higher income and better access to basic services and education improve the population's health literacy. An emphasis on good nutrition in the school curriculum and in family and community interactions with health services is needed. Programmes raise awareness of the negative effects of tobacco and alcohol, the latter of which benefit Enemali, and trained community health workers help address unhealthy behaviours. A mix of pricing policies and regulation are designed to discourage the consumption of unhealthy products and support a move to more varied and healthier foods, thus helping Enemali to eat a more balanced diet. Increased access to affordable and healthy food, irrespective of people's location, is required to enhance quality of life.

Advances in technology and communications systems further improve access to information in rural areas, supporting rural dwellers like Enemali with greater health knowledge and faster access to care. Mobile phone penetration has become universal. Governments consider effective alternatives, such as telemedicine and using mobile medical devices for clinical outreach, to assist rural communities affected by shortages of care workers or to reduce the long travel time to hospitals.

In addition, national dashboards provide local, regional and national health authorities with a timely picture of residents' health status and health risk profiles. This data is gathered by bringing together different data sets across the whole health system, such as hospital data sets, primary healthcare records, medicine utilization and biobanks, as well as data collected from individuals themselves through mobile applications integrated into their phones. Both individuals and health workers are able to monitor their conditions. Thus, vaccinations can occur on a timely basis and courses of medications are more likely to be completed, ensuring better overall health outcomes. Mobile-enabled programmes reduce government response times to malaria outbreaks from months to days. The delivery of prevention and awareness-raising information via text messages significantly reduces perinatal and maternal mortality rates.

In parallel, significant biomedical and technological advances dramatically reduce the incidence and burden of malaria, including in endemic regions. This helps Enemali stay healthy and take adequate charge of his health.

### **Barriers and opportunities**

The government will need to work together at the national and subnational levels to redirect resources to improve basic health infrastructure, encourage the deployment of health workers in rural areas and provide acceptable levels of healthcare services for all, thereby reducing gross inequality in health status and out-of-pocket spending by individuals.

National and global health agencies need to affirm their commitment to meet the health needs of the poorest populations. Policy-makers need to prioritize the provision of universal health coverage and invest in health infrastructure. Access to basic services should be recognized as an imperative, supported by focused budget allocations and an emphasis on the quality of services. Fundamentally, both political and social will must ensure that resources are deployed effectively, transparently and accountably.

Smaller low-income countries may depend to a degree on official development assistance which, in turn, is vulnerable to political pressures in developed countries. Yet official development assistance should continue to play a role in supporting low-income countries and people in fragile contexts.

Governments need to make adequate public investments to signal their commitment to implementing essential public health policies. In lower-resourced countries, public financing is often critical for providing healthcare. A thriving primary care sector should be a top priority for health investment; it increases access and helps people stay as healthy as possible across their lifetime, including by providing such services as immunization to antenatal care and chronic disease management.

Universal access to mobile phones and ideally to broadband as well as smart use of digital technologies will help to improve remote monitoring and the provision of services, and will be deployed to help individuals improve healthy lifestyles and achieve better outcomes. The Fourth Industrial Revolution can provide a platform for bridging the gaps between people of different locations and milieux.

Policies in other areas, such as education, the environmental sector, employment and social services, should align with the goal of improving the population's health. Staying healthy will also require individuals, their families and communities to have the knowledge and the means to make healthier lifestyle choices to complement policies and programmes aimed at lifting the health status.

## Scenario 2: Woman and child journey in a low-income country or context

### Current scenario

Anaya is an 18-year-old woman in rural India experiencing her first pregnancy. She has limited access to healthcare and receives guidance from her family on how to best care for herself. She and her family have limited income and resources, however, which makes them worry about possible complications of pregnancy and delivery, especially since one of Anaya's sisters recently died during childbirth at home. Anaya is small for her age; while undernourished, she does not present other known poor health indicators. Her family is determined to ensure her delivery in a clinic. As they have extended family members living within walking distance to a central birthing facility, she stays with them when her due date is close.

Anaya is lucky and has a completely uncomplicated pregnancy. The primary health centre is a high-load facility for deliveries; due to a shortage of skilled staff, record keeping is insufficient, monitoring of progress during labour is poor and adherence to safe care practices is inadequate. In labour for several hours, she eventually delivers naturally. Her son is full term but below the fifth percentile in weight and length. Anaya is weak but returns to her relatives for recovery on the same day, despite recommendations to stay at least 48 hours in the facility following delivery. During discharge, she receives poor counselling regarding care of herself and her son.

Anaya spends the first week of her recovery with her relatives and then returns to her family. Community-based frontline workers are tasked with following up, but unfortunately for Anaya follow-ups are missed and of poor quality due to poor knowledge and skills. She has trouble breastfeeding, and her son fails to gain weight in the first month. At two months his appetite begins to decrease; he becomes increasingly lethargic and develops a fever. He eventually falls asleep and never wakes up again.

### Future possible state in 2030

Although young and pregnant with limited income in rural India, Anaya has access to remote health services through health-worker touchpoints in her local community. This entails a trained healthcare worker who checks on pregnant women in the community and organizes monthly gatherings to share information. The worker has access to a low-cost, handheld ultrasound device and a mobile app with nutrition and self-care advice. Her sister had a successful delivery after receiving counselling on nutrition and guidance to seek care at the clinic based on the results of an early ultrasound where a placenta praevia was diagnosed, necessitating a caesarean delivery.

Anaya is in labour when she first encounters the central birthing facility, but her local healthcare worker has already provided her with ultrasound and pregnancy progression information in a cloud-based medical record system. This information has been monitored remotely by the care team

in the hospital, which was eventually going to assist Anaya with her delivery. She delivers naturally, and her son is full term. He is in the 25th percentile on weight and the 50th on length due to her attention to nutrition and self-care during pregnancy. She returns home to her family, and her local healthcare worker tracks her son's growth. Her mobile app gives tips and advice on ways to improve her breastfeeding success, cautions on early warning signs of respiratory diseases and infections, and provides ways to keep her son healthy through frequent handwashing as well as information and reminders on immunization schedules. The frontline worker ensures that her son receives the necessary vaccinations on schedule.

Anaya trusts the local healthcare worker and seeks help immediately when her son develops a fever. The healthcare worker performs a rapid diagnostics panel locally that indicates respiratory syncytial virus infection. Supportive care, including effective hydration and nutrition during this 10-day illness, ensures a full recovery.

### Barriers and opportunities

Technology, especially digital technology, is important to increasing the effect of health interventions in low-resource environments, including remote advice and instruction via mobile apps, low-cost point-of-care (POC) diagnostic devices, cloud-based information management and data sharing across healthcare sites. Bringing the human touch and sophisticated technology together in seamless patient journeys, embedded in a locally deployed system, will make high-quality care accessible to many.

While technology can enable this scenario, the landscape for the health system, individual, facility and community must also be changed. Providing access to devices and interventions for underserved individuals is important, as is having enough trained healthcare workers that can reach them. Appropriate training and education of first-line healthcare professionals and community healthcare workers who are adequately paid are crucial to providing the human touch connected to high-tech.

Norms and standards, such as from WHO and country guidelines, are key policy enablers to ensure that the most effective health protocols are adopted. The scaling of simple enabling technologies needs to be promoted where possible, and combined with a strong, educated and motivated healthcare workforce. A good example is the POC ultrasound connected to a tablet computer, which can be used by community health workers to monitor pregnant women in remote areas. Obstetric specialists can receive the ultrasound images sent by these workers via the cloud and give real-time advice; this has been proven effective in pilot studies in Indonesia and Africa. Requirements for scaling the deployment of such building blocks, for example ultrasound and tablets, are financial support, trained community healthcare workers and organization of a collaborative system with a reference centre. Procurement and distribution systems need to ensure that correct, high-quality equipment are supplied to points of use. Local negotiations with network and telecom partners need to be

initiated and aided to provide connectivity solutions for these remote systems, and a solid local network of community health workers who know the regional and national healthcare system must be established. Finally, government policies should provide adequate health data governance that respects privacy.

Local stakeholders need to collaborate to make sustainable end-to-end solutions. Besides healthcare organizations and governments, these stakeholders include telecommunication companies, logistics providers, start-ups delivering locally relevant point solutions (such as drone delivery of urgent medicines or blood products) and infrastructure partners. Financing at the country and donor-support level is necessary to ensure access to technologies and the latest interventions available or nearly ready for use.

Finally, local communities of patients, local thought leaders and community health workers need to be created that can grow gradually in more complex and comprehensive primary care systems, engaged in the right way and sensitive to local culture and customs.

## Scenario 3: Diabetes patient journey in a middle-income country or context

### Current scenario

Liyana, a 40-year-old woman in a South-Asian country, was diagnosed with early type 2 diabetes and hypertension. The hypertension diagnosis was made at a local private clinic she visited for advice on other non-related symptoms. Her adherence to medicine was poor; she admitted going without her prescribed medicines for days at a stretch. She had difficulty buying medicines regularly from a pharmacy due to the steady rise in their costs and the need to prioritize the health needs of her children and husband. She believed doctors and pharmaceuticals alone could not control her conditions and that patients must eat properly and self-manage their situations.

One day she felt extreme pain in her foot and decided to see a public doctor. Unfortunately, the doctor's office was a 45-minute walk away. Completely exhausted, she reached the practice and sat down in the waiting room, which had many newspapers and brochures on infectious diseases but no information on diabetes or hypertension. The hospital nearest to her home was in the main city, a seven-hour trip by bus, but she could not afford the cost of transportation. In addition, the only medication that could treat her diabetes was not available and unaffordable. She lost her foot and died after two years.

### Future possible state in 2030

Liyana's diabetes and hypertension are manageable using a smartphone and electronic health records (EHRs) stored in the cloud (in a context where artificial intelligence [AI] compensates for health worker shortages). Her wearable sticker monitors blood glucose in sweat. This and other information from a microchip in her pill are gathered and uploaded to secured electronic health records in the cloud. She can take her retinal image on a smartphone; an AI algorithm analyses it, books an appointment with a doctor if it is abnormal and orders an Uber automatically to take her there. The algorithm deducts money from her mobile wallet savings account and sends her an SMS alert. The doctor, on the other hand, has tested the laser therapy on her digital twin to see what works best before she checks in. Liyana can order medicines online, print pills using a 3D printer at a local pharmacy, verify their authenticity through a text message, and have her insulin and other medications delivered to her doorstep by a drone. Furthermore, doctors do not wear stethoscopes but use a hands-free version and communicate virtually with their clients. In remote areas, teleconsultations enable doctors with laptops and internet access to see patients from their home.

Innovations have occurred not only in technology but also in service delivery; five of these can be cited. First, at the country level, EHRs boost the integration and quality of healthcare. Second, reformed funding mechanisms improve purchasing and enable appropriate contracting arrangements that encourage the most equitable outcomes possible. Third, an integrated health system with primary healthcare at the forefront prevents or manages chronic conditions. Fourth, policy innovations enable nurses and community workers to take care of some tasks usually performed by doctors. Measures to encourage retention of the rural health workforce in public health facilities include efforts to improve working conditions and train health workers who come from such rural localities. Fifth, the introduction of a more holistic, multisectoral approach addressing the challenges of population health include prevention and treatment.

To address population health needs, healthcare systems, agencies and organizations work together to improve the health outcomes of the communities they serve. Furthermore, the different ministries work closely together to address health and other related social and cultural factors and to establish synergies in a "health in all policies" approach to public policies. For this to occur, adequate funding is required to permit the system to function well and to limit impoverishing individuals through their out-of-pocket expenditures.

### Barriers and opportunities

This is not science fiction; even today, each of these solutions exists in isolation, with efforts under way to knit them together. When viewed in the overall context of changes many developing countries are undergoing, such as leapfrogging straight to 4G and 5G, and of a world on track to meet digital technology targets, a quantum leap is possible in the near future.

Diabetes and hypertension care can be transformed in the future, as can many other non-communicable diseases (NCDs). Current developments in precision medicine, which target treatments to the specific genetic profile and the needs of an individual, are part of a growing number of solutions to address NCDs. Such advances are possible thanks to the declining cost of genome sequencing and the advances in pharmacogenetics and flexible low-volume manufacturing.

The main health system barriers to accessing NCD services as experienced by Liyana are low awareness of hypertension and diabetes, inadequate services and poor quality of health facilities, supply shortages of medicine, doctors' busy schedules due to high patient load, the lack of community workers and nurses, long travel distances to facilities, and long waiting times in government facilities. For Liyana, cost was also a barrier to accessing services.

Beyond Liyana's case, many other patients also have multiple chronic conditions, and hypertension medication could be but one of the many pills and supplements they take daily. This emphasizes the challenge of adhering to treatment regimes.

Furthermore, women like Liyana struggle to access and maintain hypertension care and medications. Liyana reported not prioritizing her own health over the needs of her husband and children, and she also did not want her transport and healthcare costs to burden family members. These and other gender inequalities in women accessing healthcare remain a global challenge and especially so in low- and middle-income countries.

From a policy perspective, key barriers to realizing the 2030 scenario relate to having the right governance, leadership and resources to bring together the technological solutions that already exist in isolation. Norms and standards, ethics, patient safety, regulatory and human resource capacity issues also need urgent attention. To achieve equity, norms are needed to overcome financial access barriers and to address the unique concerns of most vulnerable people, including women. In addition, investment is required in technology literacy.

Health systems can deliver high-quality care only if they invest in the necessary resources and optimize their investment decisions. This includes having a sustainable, skilled and motivated health workforce, and using equitable and effective financing mechanisms to encourage the prevention and control of NCDs. Health systems also need to be grounded in the principles and values of human rights, equity, evidence and empathy, while leveraging solutions from a range of stakeholders.

To mount an effective response to NCDs, a societal transformation towards healthier lifestyle choices is required, as are a re-engineering of health systems for chronic care and a culture of building partnerships to deliver good outcomes. Universal health coverage must include health promotion and disease prevention. In addition, tackling NCDs requires effective and coherent policies cutting across health, agriculture, education and other sectors. This also means action across government to ensure that health systems are designed to leave no one behind, support from parliamentarians for the necessary legislation and budgets, and leadership from communities.

Finally, the health system of the future will have to empower and engage patients and the community in the planning and implementation of services. Community participation can influence priority-setting, lead to changes in community practice and bolster community resilience. It can also improve health status and quality of care, and enhance quality of life.

## Scenario 4: Cancer patient journey in a high-income country or context

### Current scenario

Cheryl, a 48-year-old woman, discovers a lump in her breast and seeks testing that leads to a diagnosis of breast cancer with a small 1.5 cm tumour. The tumour tissue biopsy confirms hormone receptor-negative, for example oestrogen, progesterone and HER2,<sup>4</sup> which is deemed a “triple negative breast cancer” and typically suggests a more aggressive course. The good news is that further tests show the cancer has not spread.

Given her family history of breast cancer, Cheryl undergoes surgery followed by radiation and a chemotherapy cocktail known as ACT regimen. At the end of her treatment, she is tested again, and her doctor considers her still at risk. Given her eligibility for a clinical trial, her doctor recommends additional chemotherapy to hopefully further reduce her chances of recurrence.

The psychological effect of the year-long treatment programme is significant and difficult. During her treatment, Cheryl suffers from depression due to the negative effect on her life and self-image. The cost of treatment, combined with the loss of income because she is unable to work, results in extreme financial hardship. After a year of treatment, she and her husband must consider filing for bankruptcy, which only worsens her feelings of inadequacy.

Cheryl is overweight, has type 2 diabetes and is advised to make lifestyles changes. She also gets genetic testing, given her family history, and is found to be BRCA1 positive.<sup>5</sup> This increases Cheryl's risk of other cancers, such as ovarian/fallopian tube and peritoneal or pancreatic cancer. She chooses to take the only available preventive measure: a bilateral ovarian resection that includes removing both ovaries and their annexes. After this procedure, she is routinely monitored, initially every three months and then every six months, through physicals and routine blood work. Cheryl continues to be monitored; she does very well and remains disease-free over eight years after her original diagnosis. During this time, she also rebuilds her identity and slowly rebuilds her finances, but the process takes many years.

### Future possible state in 2030

Improved treatment in 2030 is the result of better public education and preclinical care to reduce the incidences of cancer, better screening, more precise (precision) medicine to expedite treatments, progressive and greater specialization among clinicians to improve care, and more innovation to broaden and improve care treatment options.

Cheryl's cancer is detected more easily and earlier with increasingly common genetic testing and improved diagnostics, such as liquid biopsy tests that detect trace DNA released by abnormal cells. She also benefits from new preventative measures, including biological modifiers, for example medications that block or fight cancer cells by strengthening her immunity and thereby reducing the risk of developing cancer.

For people like Cheryl (who is at risk of developing additional cancers due to her BRCA1 positive status), additional ways of predicting who will or will not develop a cancer are available. This will be very helpful to guide and manage patients.

While Cheryl is diagnosed with a triple negative cancer, better ways and tools to fight breast cancers are becoming available. She has new treatment options, particularly targeted therapies that will block a specific mechanism in those cancer cells based on her own tumour characteristics. With an estimated 400 different molecular subtypes of cancer, applying precision medicine at scale improves each individual patient outcome. In addition, Cheryl's microbiome can be modified to modulate the immune system and thus either prevent or help cure many diseases, including cancer.

Many better ways to assess the response to any therapy than imaging alone are available, particularly in using biomarkers in the blood. This helps to evaluate the depth of response and identify patients who have measurable, minimal (“left over”) or residual disease, which then allows customizing a treatment's duration. Better detection of early resistance to treatment is also possible, therefore providing a rationale to adjust therapy again based on repeat molecular profiling of tumours through sequential liquid biopsies.

Improved adherence to treatment is measurable by Apps, wearables and digital pills. Digital personal assistants have become household goods and services, and soon serve as connectors to patients' homes and their environments, offering ways to monitor patients remotely and when they are “on the run” (as, for example, when and if they take their pills, if they undertake physical activity, what they eat). Engaging patients through remote coaching assists in promoting sustained lifestyles changes. In addition, monitoring their immune system helps to check patients' recovery and the effect of those changes. Connectivity and engagement of all involved providers in the patient system will help to take the social determinants of health, such as nutrition-related issues and loneliness, into account and to address them. All are critical to improving cancer and co-morbid outcomes.

New payment models and insurance reform based on performance or outcomes help to rationalize decisions and improve individual outcomes. In the past, 20% of health spending was considered ineffective at best or even wasteful. In oncology, up to 40% of money spent had no effect on outcomes; this was either because the funds were used during the last two weeks of life, or because drugs approved by the U.S. Food and Drug Administration typically had an overall response rate of 30-40%, so they did not work in the remaining 60-70% of cases. This meant the way clinical trials were conducted needed to be reinvented. Now, once a drug shows promise in early phase I and II trials, for example, medicine regulators provide conditional approval while requiring that the treatment's efficacy and toxicity subsequently be evaluated based on data collected in real, routine practice. This helps to accelerate discovery and reduce the cost of drug development.

### **Barriers and opportunities**

Breast cancer, the most common cancer among women, also causes the greatest number of cancer-related deaths among this group. Breast cancer is a global issue, with almost 50% of cases and 58% of deaths occurring in less-developed countries.

To combat cancer, all stakeholders must reshape health and healthcare delivery at scale, provide the best outcomes for each individual and reduce the cost to the population by promoting early screening and lifestyle improvements, removing waste and eliminating redundancies. Such value-based care will require data-driven solutions that allow stakeholders to see the complete patient journey, and solutions that account for individual patient characteristics while providing incentives to maximize outcomes for such patients.

Advances in computational technologies and big data and analytics offer an opportunity to cut across silos of care, to create a seamless process to deliver care and improve efficiency by moving away from the current fragmentation across multiple healthcare systems. This requires cultural change away from hospital-centric systems and towards the entire spectrum of care across each person's sphere. During this process, reimbursement models must be adjusted and transparency promoted. Interoperability and data sharing will imply new regulations and policy to protect patients and the public, but will also support initiatives on data usage for improving healthcare delivery and research.

With the drive towards consumerism and rising expectations, people will also become more involved in their health and with managing it. Technology will have to provide solutions at the point of care to support their decisions with relevant information. Similarly, apps (and wearables) which connect to patients and people in their communities will help engage them and improve management and prevention of chronic conditions, such as by reducing readmissions and improving diabetes control. Mental health and wellness programmes will expand to address stress and anxiety for the population, as well as for patients undergoing demanding treatment programmes such as Cheryl's.

In her case, her physicians would be connected and to her directly, helping to manage her chronic conditions and diabetes in addition to her breast cancer. Intervention to assist with her required lifestyles changes could be coordinated, encouraged and verified by all her caregivers. Technology and apps will also help her caregivers manage her care better by offering rationale for decisions at the point of care. As the pipeline of medicine expands, the complexity of care increases; a general oncologist will need support to distinguish between the various subtypes of breast cancer to give Cheryl her best chance. Cheryl's insurance will be interested to know that her care is the best care to provide her with the longest clinical benefit and therefore the best value.

Policy-makers need to support these changes, including new drug development processes. For example, under 5% of patients are enrolled in clinical trials in the United States, and it currently takes an average of 15-20 years from a phase 1 clinical trial until a drug is approved. Faster approval processes for promising new compounds, coupled with strict requirements for developing high-quality evidence, could help reduce the cost of future novel therapies.

Though all stakeholders agree on the unsustainable situation in healthcare, its current fragmentation is a formidable challenge. Technology and policy alignment would help accelerate the development of new solutions. They would also engage providers/payers, employers, staff and all other stakeholders in moving towards an accountable, more efficient process. That process would promote value-based care and allow society to continue being able to afford costly innovation and improve people's and patients' lives. Multiple platforms are being developed to take advantage of big data and analytics in a move that for health systems is unprecedented but also overdue. These approaches and initiatives ought to provide better ways to evaluate individuals' outcomes and optimize their journey while reducing costs along the way.

Reshaping health and healthcare delivery will require engaging all stakeholders, including patients and providers, at the centre of most decisions. This also implies preparing the next generation of medical students and other care providers with medical education that takes new health and healthcare delivery models, a culture of value and continuous improvement into account.

## Scenario 5: Healthy ageing journey in a high-income country or context

### Current scenario

Mrs Tan watches the award-winning film *Still Alice* in horror. At the age of 50, free of chronic diseases such as hypertension or diabetes which her friends are starting to have, Mrs Tan considers herself rather healthy. But just like Alice in the movie, she has recently experienced similar moments of panic when remembering small things, or when familiar routes have suddenly become impossible. She talks to her husband about it, who accompanies her to a general practitioner (GP) at the community hospital. After the necessary assessments, the GP refers Mrs Tan to a neurologist, who confirms a diagnosis of early-onset Alzheimer's disease.

As a second-generation immigrant from China, Mrs Tan grew up in the United Kingdom. She lives with her own family close to her parents' home to be able to care for them as they age.

The realization after seeing the movie, and the diagnosis of the much-dreaded incurable disease, puts Mrs Tan into an unexpected situation. Not only is she unable to provide care to her family members, but also, day by day, her husband (aged 55) and her parents (aged 79 and 76) will become her primary caregivers.

The chronically progressive loss of cognitive abilities impairs her physical functionality in daily life as well. Fear keeps her from going out alone. Both Mrs Tan and her caregivers know that the time will come when she cannot recognize her family and is not able to shower, dress or eat on her own. She will be asking the same questions many times a day and getting angry very fast because she cannot understand what her family is talking about. According to her doctor, as the disease worsens, medications available today for managing the symptoms are somewhat useful but come with side effects and are far from ideal. She is asked to return every six months for another test to best understand the disease's progression.

Mrs Tan and her caregivers decide to look for help as much as they can, and to prepare for a future of care and support as early as possible. Their first stop is a memory clinic in the neighbourhood recommended by the neurologist. A geriatric nurse greets them there. More assessments are done before advice is given, including doing more physical exercises and playing games that stimulate brain activity. The geriatrician suggests signing Mrs Tan up for an intervention research project that provides support group therapies.

They searched online for specific recommendations, and the question of whether Mrs Tan should start taking medications seems to have conflicting answers. Many different physical activities are suggested, some with evidence from randomized controlled trials. To their surprise, tai chi, a Chinese martial art, is among the frequently researched options. Certain dietary choices, such as the Mediterranean diet and more generally a healthy one, are suggested to have positive effects in stabilizing the disease.

Mrs Tan's parents attend a workshop organized by their case manager on preventing and identifying Alzheimer's disease, as well as caring for Alzheimer's patients. They return home with a leaflet that introduces a dementia care service agency. Her husband calls the agency and gets an offer to send someone to assess her situation before devising a care plan.

Although much younger, Mrs Tan is at the beginning of a gloomy journey – like many people who face physical and neuro-degenerative diseases or who are simply elderly with increasing frailty. There is no cure, no definitive solution and no clear guidance. For her, navigating the current health and healthcare system seems to be a mission impossible. The system is not designed to handle functional health issues crucial to the quality of life throughout one's lifetime as people live much longer than in the past.

### Future possible state in 2030

Mr Tan, 90 years old, wakes up in his robotic bed. It senses he is ready to get up and softly changes its shape to lift his upper body and lower his legs. As he walks to the bathroom, he reads his vital signs displayed in a large font on his mirror, together with a list of his three tasks for the day. Smart handrails are installed by his bed, along the walls and in the bathroom; the floor is covered with anti-slip materials, and all his furniture is free of sharp edges that may hurt him should he fall.

The tough future that Mr Tan and his daughter, Mrs Tan (mentioned above), expected 11 years ago has taken a turn for the better and is quite promising now. Mrs Tan can remain independent for much longer despite her recent diagnosis. She has a virtual care manager that checks her data every day, and she is alerted whenever an irregularity occurs. They have become best friends. The care manager adjusts Mrs Tan's medications according to her health readings, drops in either in person or via augmented reality and calls to coach her doing exercises. Her Alzheimer's disease is well under control.

She loves shopping in the virtual mall of Amazon.com, while her favourite pastime is still walking in the forest park two blocks away. Getting around is convenient now that most cities like theirs have been redesigned and rebuilt according to the WHO Guide to Age-friendly Communities 2.0.

Using the care manager, Mrs Tan arranges for a full evaluation of the age-friendliness of her home and her parents', and returns with a home adaptation plan that gets implemented and revisited each year (unless unexpected changes call for immediate action). Her vital signs are monitored continuously and effortlessly wherever she is. Data collected by wearables and sensors is immediately shared with her care manager, husband and doctor. Over the years, Mrs Tan has also been diagnosed with diabetes and has a high risk of cardiovascular disease. As a result, part of her care manager's job is to prevent and minimize the negative effect of co-morbidities.

Mrs Tan sees her GP every three months, participates in a Dementia Friends Network event twice a week, and gets a home visit every other day. She uses her care manager to coordinate a network of care, as well as support for her family and relatives, and to prevent her from becoming socially isolated. The care manager is smart and starts talking about advance care planning, noticing that Mrs Tan is reading the book *Being Mortal*. Getting this topic out of the way is a big milestone for them, as her community is often not willing to talk about death. Now, the whole family has done so.

## Barriers and opportunities

In the future journey of Mrs Tan, a few important changes make all the difference, including early detection of a decline in physical and/or mental function, use of advance care planning, ambient assisted living, and the provision of a continuum of care. Most important, all family members, including her father, mother and husband, now share a virtual care manager who supports them in being responsible for their own health. To revolutionize Mrs Tan's health journey accordingly, a holistic, people-centred and value-based healthcare system premised on a multistakeholder dialogue is needed.

Drivers such as technological innovations (augmented reality, robotics, AI and analytics) are accelerating and creating new opportunities for early detection of functional decline and for improved healthcare plans that provide virtual experiences and social meetings. This allows to anticipate upcoming challenges and declines, to meet a patient's evolving needs and to create a continuum of care and access for all involved parties.

For the above vision of 2030 to happen, some key obstacles must be overcome. Like all challenges, they come with opportunities for policy-makers, industry leaders, academia and practitioners to advance their respective and collective work and to create value for society. First, current health systems are mostly disease-oriented and lack focus on both the physical and mental functionality dimensions which are key to populations' health. Their inflexible allocation of resources poses the greatest risk. Specifically, payment, talent and other resources in the healthcare system remain predominantly focused in large hospitals, and treatment of diseases is prioritized over prevention and rehabilitation of functional loss. But healthcare changes from treating the sick to focusing more on staying healthy. The opportunities lie in innovative healthcare models, with people-centred care pathways emphasizing primary care management and quality of life. To advance such models, the private sector, whose role in prevention is currently lacking, could be one resource. Data-driven prevention and care are important elements for setting incentives. Examples of work in progress include WHO's Integrated Care for Older People and managed care models in the United States.

Second, while technological advances such as augmented reality, robotics, the internet of things and AI are crucial opportunities to support smart care management, gaps still exist in information aggregation, and technology needs to be better integrated with the human side of care. Hardware and software products, such as HoloLens and EPIC, are good cases to watch in order to make it happen.

Third, current education systems are better at producing a more specialized and empirical workforce than preparing people for future jobs. When many jobs formerly done by people are done by AI, education will need to help train a more flexible and agile workforce, such as holistic care managers. Such changes would need early integration of interdisciplinary collaboration when educating healthcare professionals. A recent partnership between the International Council of Nurses and Age Care is aimed at solving this challenge with forward-looking, locally relevant care training.

Payment, a fourth and major barrier, also needs to be overcome. Currently, payment is mostly based on a reimbursement model that faces a high risk of overutilization or of not adequately rewarding good care. Value-based payments, such as those that are population-based or bundled, are being introduced to reward better quality of life and reductions in the burden of disease. The Realizing the Value programme funded by the United Kingdom's National Health Service, Maryland's global budgeted revenue, and the Programs of All-Inclusive Care for the Elderly in the United States are good examples of such trends.

In addition to the barriers and gaps mentioned, policy and ethics are also posing challenges that need to be solved before realizing the scenario. Data privacy concerns over the potential risk of a catastrophic misuse of health data need to be addressed with appropriate data governance frameworks and national and international health data protection standards, such as the European Union General Data Protection Regulation. As patients are not always at their full decision-making capacity, advance care planning must be promoted while people can still decide for themselves.

Tackling the challenges in the key areas would not only help to realize Vision 2030, but would also create enormous opportunities that add value to every organization and individual involved.

# Recommendations

The five scenarios presented in this paper generated nine recommendations that may offer guidance to policy-makers working at the local, national and global level who are interested in taking a holistic and people-centred approach to health system design. It is beyond the remit of this paper, however, to provide accompanying monitoring and evaluation indicators to monitor implementation.

The recommendations are:

- 1. Work in partnerships across sectors to design the health systems of the future.** To provide the best possible health outcomes for populations by 2030, policy-makers, industry leaders, academia, members of civil society and practitioners must work closely together to reorient health systems to become people-centred and holistic. This will be enabled by fully integrated technological advances and supported by appropriate funding. Such collaboration should lead to innovation and to addressing current health system inefficiencies, inequities and poor services. Health ministries should also work more closely with other ministries to address health and other related social, political, environmental and cultural factors affecting population health.
- 2. Address the social determinants of health and health inequalities.** The work of the WHO Commission on Social Determinants of Health recognizes that the conditions in which people are born, grow, work, live and age significantly shape and affect their health. To ensure that people stay healthy, it is essential to address these wider social and economic conditions affecting health in addition to providing adequate quality, people-centred health services. Moreover, both national and international health agencies need to affirm their commitment to meet the needs of the poorest populations. Governments will need to work together at the national and subnational levels to redirect resources for health in order to improve health infrastructure, to encourage equitable deployment of health workers across urban and rural areas, and to provide adequate levels of health services for all in order to reduce inequalities in health status.
- 3. Prioritize and support universal health coverage, including through appropriate human and physical resources.** Health systems, agencies and organizations will have to work together to improve the health outcomes of the communities they serve and to ensure universal coverage. Access to basic services should be recognized as imperative, supported by focused budget allocations and an emphasis on the quality of services. Adequate training of first-line health professionals and community health workers would ensure a well-functioning and responsive health system. Political and social will must ensure that these human and physical resources are deployed efficiently, effectively, transparently and accountably.
- 4. Increase the focus on preventing disease and promoting health.** So much of health spending is focused on addressing illness and curing diseases. Yet, many illnesses could be avoided or their progress slowed if focus would be put on tackling obesogenic environments and wider unhealthy lifestyles. Among the resulting benefits would be improvement in people's quality of life and their ability to participate in society and the economy. Type 2 diabetes and heart disease are two examples of diseases whose incidence could be both significantly reduced and better controlled with effective regulation and access to better nutrition and exercise. Prevention and early detection should be supported across all generations – from birth to advanced age.
- 5. Strengthen primary healthcare.** A robust primary care sector is the linchpin of good health services and should be a priority for national and international health agencies. It increases access to care and helps many people stay as healthy as possible during their lifetime by providing immunizations, antenatal care and chronic disease management. Strengthening primary care requires shifting the focus of care from hospitals to care provided in the community, as well as encouraging continuity of care across each person's care pathway. Adjusting payment models to encourage care coordination and promoting transparency of health outcomes would facilitate this shift. Interoperability and data sharing across the health system will require policies encouraging privacy and the respectful use of data to protect patients and the public, while still improving healthcare delivery, better disease surveillance, and health research and innovation.
- 6. Empower and engage people and their communities.** Staying healthy also requires actions and choices by individuals and their families. Communities can complement government policies and programmes that assist individuals to stay healthy, such as by providing access to the right information and improving health literacy. Changing lifestyles requires a package of policy approaches that affect individuals, populations and the landscape where they operate. Providing access to interventions for underserved individuals is important, as is training health workers who can reach them. Local communities of patients, thought leaders and community health workers should be created that can actively plan and implement health services and be sensitive to local culture and customs.

- 7. Promote people-centred innovation and technologies.** The Fourth Industrial Revolution will provide a platform for bridging the gaps between people of different locations and milieux. Technology, especially digital technology, is key to providing greater impact in poor environments, including remote advice via mobile apps, low-cost diagnostic devices, cloud-based information management and data sharing across healthcare sites. Bringing the human touch and sophisticated technology together in seamless patient journeys, deployed locally, will make care accessible to many. Big data and analytics have the potential to provide better ways to evaluate individuals' outcomes and cut across silos of care. Moving away from the current fragmentation will improve efficiency. Though overdue, multiple platforms are being developed to take advantage of big data and analytics in health systems in unprecedented ways. Parallel efforts must be made to train and appropriately skill enough health professionals. Other stakeholders also have a role to play to create sustainable solutions, such as telecommunication companies, logistics providers, start-ups delivering locally relevant innovations such as drone delivery of urgent medicines or blood products, and infrastructure partners.
- 8. Allocate the appropriate resources to health and social systems and maximize value for money.** Governments need to create enough fiscal space to sustain a minimum level of public investment in essential health services and to minimize impoverishing households through out-of-pocket expenses. This includes having a sustainable, skilled and motivated health workforce, and using equitable and effective mechanisms to raise funding. All stakeholders must be aligned to provide the best outcome for each individual and reduce the costs for the population, such as by removing wasteful expenditure. Such value-based care requires robust and broad data to monitor complete patient journeys; payment mechanisms and other nudges that encourage a focus on outcomes for patients and populations; infrastructure investments in community and primary care clinics, especially in poor countries; and an enabling environment for generating innovation to improve access, efficiency and quality. Finally, wider social sectors, including education and employment, can be encouraged to take responsibility for the health of populations by further demonstrating the significant economic and social returns of good health. This requires governments to better understand what drives populations' well-being and to work across sectors to achieve progress for all.
- 9. Promote accountability and leadership.** Achieving this vision requires strong accountability mechanisms (application of laws, regulations, ethical standards and norms) throughout the health system. Leadership and policy alignment are needed to accelerate new solutions and engage providers, payers, employers and staff, and patients and their families towards an accountable, more efficient and transparent health system.

# Conclusion

A societal transformation towards healthier lifestyle choices is needed, together with several other actions: a re-engineering of health systems to put people at the centre, the provision of adequate funding which ensures that money is well spent, and a culture of building partnerships to deliver good outcomes. This also means having the right global health architecture and the support from legislators for the necessary legislation and budgets at the national level, as well as leadership from communities and action across government to ensure the design of health systems that leave no one left behind.

A key question in this paper is: How can the global health architecture support the development of people-centred and equitable health systems? The Council members raised six issues for consideration:

- 1. Global health institutions need to be better coordinated.** The global health architecture comprises an array of actors, including multilateral institutions (such as the World Health Organization; United Nations Children's Fund; United Nations Population Fund; United Nations Development Programme; Joint United Nations Programme on HIV/AIDS; United Nations Entity for Gender Equality and the Empowerment of Women; World Bank; Global Fund to Fight AIDS, Tuberculosis and Malaria; and Gavi, the Vaccine Alliance); many bilateral agencies; the International Red Cross and Red Crescent Movement; global, national and community non-governmental organizations (NGOs); private-sector entities; and private foundations. Over the last 20 years, a proliferation of actors has led to a more complex global health architecture, with challenges for governance, accountability and financing.
- 2. Work at the global level must be coordinated more effectively with work conducted at the country and local levels.** Global health policy-making is becoming increasingly complex, with risks of duplication of programming, the lack of government say in donor health programmes, and duplication of monitoring and evaluating systems, placing a potentially huge burden on countries. Global health institutions and health systems within countries need to be efficient, sustainable and equitable, and have good coordination mechanisms between the different operational levels.
- 3. Greater accountability and transparency must be encouraged among all global health institutions.** One challenge is that international actors are normally accountable in the countries where they are based, not in the countries where they operate. For example, bilateral donors are accountable to their own legislatures and executives; foundations have their own governance structures; and NGOs are accountable to their boards. Transparent decision-making processes are beneficial, as is making information publicly available on how these organizations operate and how decisions are made. There must be a will to ensure that resources are deployed effectively and in a coordinated manner.
- 4. Greater representation at the global level of voices from the South needs to be encouraged, particularly from local civil society organizations.** The scenarios in this paper focus on patients, families and communities, but their voices are not necessarily heard globally. Some global institutions have members of civil society on their boards, but overall local civil society organizations are not well represented at these levels. Furthermore, strong and renewed leadership promoting gender equality, ethnic diversity and safeguarding mechanisms is needed.
- 5. Both national and international health agencies need to affirm their commitment to meet the needs of the poorest populations.** Policy-makers need to design the health systems of the future within the United Nations Sustainable Development Framework, prioritize universal health coverage and invest in health infrastructure. To achieve universal health coverage in all countries by 2030, mechanisms for intersectoral working must be developed, including with the private sector and to tackle the wider social and commercial determinants of health. Funding priorities also need to be restructured so that institutions are provided incentives to work on health systems rather than on vertical programmes.
- 6. While rules are required to facilitate the transformation foreseen in Sustainable Development Goal (SDG) 17, an understanding of how implementation will play out to revitalize global partnerships for sustainable development is also needed.** SDG 17 seeks to strengthen global partnerships to achieve the targets of the 2030 Agenda, bringing together governments, the international community, civil society and the private sector. Some agreement is emerging on what will be needed to achieve the health targets in the SDGs, but much more action is required.

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# Endnotes

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- 4 Human epidermal growth factor receptor 2.
- 5 BRCA1 is a gene on chromosome 17 that normally helps to suppress cell growth. A person who inherits certain mutations in a BRCA1 gene has a higher risk of getting breast, ovarian, prostate or other types of cancer.



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