FUTURE HEALTH CARE SYSTEM

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Perspectives The Future of Health Innovation is blurring traditional health care boundaries The life sciences and health care industry is on the brink of large-scale disruption. In a future of health that's defined by radically interoperable data, open yet secure platforms, and consumer-driven care, what role will you play?

COVID-19 has revealed how vulnerable the health care industry is to change and its need for structural and technological transformation. In the future of health, we expect six key areas—data sharing, interoperability, equitable access, empowered consumers, behavior change, and scientific breakthrough—to collectively transform the existing health system from treatment-based reactionary care to prevention and well-being. The traditional boundaries of the industry will dissolve and new roles will emerge in the future of health as exponential innovation propels the industry towards 2040. Explore what the future of health could look like—a dramatic transformation driven by new business models, emerging technologies, and highly engaged consumers:

How will greater data connectivity and interoperability shape the future of health? Fundamental shifts in innovation tend to occur in seven-year cycles. And while it's possible to foresee what could happen over the next one or two cycles, looking ahead to 2040 (three cycles from now) will likely reveal a completely different reality than what we can comprehend today. What will emerge in the next 21 years that will dramatically reshape the life sciences and health care industry? 2040: Our vision for the future of health By 2040, health care as we know it today will no longer exist. There will be a fundamental shift from "health care" to "health." And while disease will never be completely eliminated, through science, data, and technology, we will be able to identify it earlier, intervene proactively, and better understand its progression to help consumers more effectively and actively sustain their well-being. The future will be focused on wellness and managed by companies that assume new roles to drive value in the transformed health ecosystem.

Driven by greater data connectivity; interoperable and open, secure platforms; and increasing consumer engagement, 10 archetypes are likely to emerge and will replace and redefine today's

traditional life sciences and health care roles to power the future of health. The 10 archetypes will fall into three distinct, but interconnected, categories:

Data and platforms: These archetypes will be the foundational infrastructure that form the backbone of tomorrow's health ecosystem. They will generate the insights for decision making. Everything else will build off of the data and platforms that underpin consumer-driven health. Well-being and care delivery: These archetypes will be the most health-focused of the three groupings, made up of care facilities and health communities—both virtual and physical, and will provide consumer-centric delivery of products, care, wellness and well-being. Care enablement: These archetypes will be connectors, financers, and regulators that help make the industry's "engine" run. All three components need to be fully functioning and integrated for the future of health to come to life.

Whether it's just one or several of these archetypes, life sciences and health care organizations need to make choices now to decide which role(s) they want to play in the future. Critical to this decision is understanding how multiple archetypes could fit together into a cohesive strategy and new business models required for success in the future.

What role will you play in the future of health?

The 10 archetypes defining the health ecosystem of the future These archetypes fall into three distinct, but interconnected, categories. Explore them below

1. Data convener

Data-gathering organizations will have an economic model built around aggregating and storing individual, population, institutional, and environmental data. They will also promote interoperability and help ensure privacy/security. Data will be used to drive the future of health.

2. Science and insights engine

Some organizations will likely have an economic model driven by their ability to derive insights and define the algorithms that power the future of health. These organizations will conduct research, develop analytical tools, and generate data insights that go far beyond human capabilities in care delivery.

3. Data and platform infrastructure builder

This new world of health will need infrastructure and platforms that can serve highly empowered and engaged individuals in real time. Someone will need to lay the pipes. Data and platform infrastructure builders will develop and manage site-less health infrastructure to link consumers and health stakeholders and set standards for platform components.

2 FUTURE HEALTH CARE CHALLENGES

Forecasting the future of health care and health policy is an imperfect science. Among the predictions made in the mid-1980s were that there would be a physician surplus, a growing number of elderly people, an increase in the number of people in managed care plans, restructured health benefits, new technologies, more for-profit health care delivery, rising health care costs, and a restrained federal government role. All of these issues–with the exception of a physician surplus, which is still being debated–turned out to have an impact on health policy. Several of these will continue to challenge policymakers during the next decade, and new or reemerging issues will also pose challenges.

Rising health care costs. We predicted in 1986 that health care spending would reach 14 percent of the nation's gross domestic product (GDP) by 2000. In 2001, it reached 14.1 percent of GDP, and it is expected to be 17.7 percent by 2012. In the 1990s, it was thought that managed care

and government limits on overall spending would restrain rising costs. Although managed care did restrain cost growth for a few years, the recent performance of individual health plans suggests that this will not be a major vehicle for future cost containment. The government is likely to try to constrain Medicare and Medicaid spending, but it is unlikely that there will be an overall national limit placed on health care spending, such as that proposed by the Clinton administration. Rather, we expect to see both business and government asking the public to pay more out of pocket for their health insurance and the care they receive.

The biggest challenge is the continued failure of decisionmakers to reach a consensus on how to address the major health care problems facing the country.

The tiering of health care. Historically, disparities in access to health care and health outcomes were seen between insured and uninsured people. However, the new approach to cost containment, which asks individuals to pay more for their own health care, is going to lead to tiering, in which those with higher incomes will be able to afford a wider range of health care services than much of the middle class and those with lower incomes. This trend is already visible. Several studies have found that middle-class insured people experience more problems getting care that are related to cost than do people with higher incomes. In addition, middle-class people are substantially more worried than those with higher incomes about paying for health insurance and health care in the future.

Growing numbers of elderly people. During the next decade, the proportion of U.S. citizens who are age 75 or older will grow from 17 million to 19 million. Death rates are steadily decreasing, while life expectancy has been increasing. These trends would suggest a rapid increase in funding for long-term care and the development of alternatives to nursing homes. But reduced state budgets, Medicare trust fund projections, employer reductions in retiree health benefits, and slow growth in the private long-term care insurance market suggest that the nation's older elderly will experience tiering in health care and shortages of some services. Individuals with higher incomes and private long-term care insurance coverage will have a wide variety of options available to them. But because of both insufficient financing and a lack of available services, middle-class people and those who rely on publicly financed

The uninsured. In 2001, 41 million people had no health insurance. During the early 1990s, the number of uninsured decreased as more people gained insurance through their employers. But by the end of the decade, the number of uninsured had again increased, as the economy softened and the number of people with employer-sponsored coverage decreased. We see nothing to suggest that this trend will not continue. A substantial body of research has shown that the uninsured do not receive the same amount of care as those with insurance, suffer serious health consequences as a result of being uninsured, and face serious financial problems when they do get care. Local health care systems, and safety-net hospitals in particular, experience financial strain when providing care for a large uninsured population. Without major new government spending, local health care systems will come under increasing financial pressure as the number of uninsured grows

New technologies. In the mid-1980s, organ transplants were the expensive new technology, and the financing of these procedures is still difficult. But there are many new and expensive technologies on the horizon, drugs in particular, that are likely to be only partially covered by insurance. The recent debate over a Medicare drug benefit has publicized the lack of drug coverage among the elderly. However, what is less well known is that although many people with employer-sponsored insurance have drug coverage, they are being asked to assume an increasing proportion of the cost of their prescriptions. Thus, there may well be a conflict between the public's interest in new technologies and efforts by government and employers to restrict coverage in an effort to control

costs. With 89 new pharmaceuticals approved by the Food and Drug Administration and almost 4,000 clinical trials for new medicines taking place in 2002, it remains to be seen how many of these new treatments will be fully covered by insurance. In addition, this lack of comprehensive coverage may discourage pharmaceutical companies from developing products that are clinically beneficial but not financially advantageous.

New and reemerging infectious diseases. During the 1980s and well into the 1990s, the health field shifted its attention to the problem of chronic disease, and took the view that infectious diseases were no longer a threat in the United States. The recent emergence of severe acute respiratory syndrome and West Nile virus, the steady increase in HIV/AIDS domestically and its rapid growth worldwide, and the emergence of multidrug-resistant bacteria have challenged this view. It is now clear that infectious diseases remain a threat, which will likely lead to greater interest in specialization in infectious disease and in rebuilding the public health system.

The threat of terrorism. The health care system will face increasing challenges in preparing to deal with the aftermath of terrorist attacks. In many cases, these preparations will require the diversion of other resources. Hospital bed closures during the past decade have substantially weakened the surge capacity of the system. As shown by its response to the anthrax attacks in the fall of 2001, the public health system lacks the capacity to quickly and effectively deal with a bioterrorist attack. There will be considerable pressure to improve the capacity of local public health systems in coming years in order to ensure that these systems are prepared.

Rediscovery of lifestyle-related health issues. Smoking and obesity are among the major threats to health in the United States. Although many such lifestyle issues have been important to public health since the 1970s, we may see businesses and government becoming increasingly involved in trying to change behaviors, in order to keep health care costs down. Possible actions includethe introduction of new insurance products that provide a carrot-and-stick incentive system for enrollees. Positive incentives to engage in or maintain healthy behaviors might include discounted health club memberships and free smoking cessation programs. Individuals who do not work to change unhealthy behaviors might be sanctioned. For example, people who smoke might have to pay more for their health insurance.

Based on the experiences of the past decade, the biggest challenge facing the U.S. health care system, however, does not appear to be any of those listed above. Rather, it is the continued failure of decisionmakers to reach a consensus on how to address the major health care problems facing the country. Several factors contribute to this failure: declining levels of civic participation; a high level of public distrust in the federal government; growing partisanship; a hardening of ideologies; and highly organized, powerful special interest groups.

If this impasse could be broken during the next decade, then the United States could see solutions to many of these problems. Without such action, the trends we report on here are likely to be the factors that shape the nation's health care system in the next decade and beyond.

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3 FUTURE OF HEALTHCARE IN INDIA

Introduction Healthcare has become one of India's largest sector, both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. The Indian healthcare sector is growing

at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players.

Indian healthcare delivery system is categorised into two major components public and private. The Government, i.e. public healthcare system, comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centres (PHCs) in rural areas. The private sector provides majority of secondary, tertiary, and quaternary care institutions with major concentration in metros and tier I and tier II cities.

India's competitive advantage lies in its large pool of well-trained medical professionals. India is also cost competitive compared to its peers in Asia and Western countries. The cost of surgery in India is about one-tenth of that in the US or Western Europe.

As of November 19, 2021, ¿115 crore COVID-19 vaccine doses have been administered across the country

Market Size

The healthcare market can increase three-fold to Rs. 8.6 trillion (US 133.44 billion) by 2022. In Budget 2021, India's public expenditure on healthcare stood at 1.2 as a percentage of the GDP.

A growing middle-class, coupled with rising burden of new diseases, are boosting the demand for health insurance coverage. With increasing demand for affordable and quality healthcare, penetration of health insurance is poised to expand in the coming years. In FY21, gross direct premium income underwritten by health insurance companies grew 13.3 YoY to Rs. 58,572.46 crore (US 7.9 billion). The health segment has a 29.5 share in the total gross written premiums earned in the country. Recent developments. Indian medical tourism market was valued at US 2.89 billion in 2020 and is expected to reach US 13.42 billion by 2026.

According to India Tourism Statistics at a Glance 2020 report, 697,300 foreign tourists came for medical treatment in India in FY19. India has been ranked 10th in the Medical Tourism Index (MTI) for 2020-21 out of 46 destinations by the Medical Tourism Association.

By FY22, Indian healthcare infrastructure is expected to reach US 349.1 billion.

The e-health market size is estimated to reach US 10.6 billion by 2025.

Between April 2000 and June 2021, FDI inflows for drugs and pharmaceuticals sector stood at US 18.12 billion, according to the data released by Department for Promotion of Industry and Internal Trade (DPIIT). Some of the recent initiatives in the Indian healthcare industry are as follows:

As of November 18, 2021, 80,136 Ayushman Bharat-Health and Wellness Centres (AB-HWCs) are operational in India. As of November 18, 2021, 638 e-Hospitals were established across India as part of the central government's 'Digital India' initiative. In November 2021, Flipkart Group announced its foray into the healthcare sector through the launch of Flipkart Health+. As part of this development, Flipkart has signed definitive agreements to acquire a majority share in Sastasundar Marketplace Limited, which owns and operates SastaSundar.com, an online pharmacy and digital healthcare platform. In November 2021, Aster DM Healthcare announced that it is planning Rs. 900 crore (US120.97$million$)$capitalexpenditureoverthenextthreeyearstoexpandpresenceinIndia, asitlooksatincreasing$
$to-doctorconsultations, fromtheconfinesoftheirhomes, anddoctor-to-doctorconsultations.InSeptember$2021, $Biolog$
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$basedhealthstart-up, todigitise1,000clinicsacrossIndiabyimplementingcustomisedelectronicmedicalrecord(EMR)sy$

In April 2021, Tata Digital infused Rs. 100 crore (US 13.45 million) debt in 1mg, the online medicine start-up, and was in the final stages of acquiring a controlling stake in the company. In April 2021, the Ministry of Ayush and Council of Scientific and Industrial Research completed multi-centre clinical trial of a AYUSH 64 (a medicine) and found it useful for treatment of mild-to-moderate COVID-19 infections. By March 2021, India exported more vaccines than it had administered to its citizens—60 million doses had been dispatched to 76 countries, while 52 million doses had been administered to Indian citizens. Apart from vaccines, drugs indicated for Covid-19 treatment too witnessed an uptrend in exports. For example, Remdesivir exports doubled in March 2021 to 14.8 million from 5.75 million in February 2021 In March 2021, Union Health Minister Harsh Vardhan informed the Rajya Sabha that 157 medical colleges are under various stages of implementation across India. Of this, 58 colleges are in the first phase of implementation, 24 in the second phase and 75 are in the third phase. In June 2021, gross written premiums of health insurance companies in the non-life insurance sector increased by 32.25 YoY (for the FY period up to August 2021) to Rs. 30,192.30 crore (US 4.04 billion), driven by rising demand for health insurance products amid the COVID-19 pandemic. In March 2021, Virchow Biotech, a Hyderabad-based firm, and the Russian Direct Investment Fund (RDIF) announced a collaboration to manufacture up to 200 million doses of the Sputnik V vaccine in India. Government Initiatives

Some of the major initiatives taken by the Government of India to promote Indian healthcare industry are as follows:

In November 2021, the Government of India, the Government of Meghalaya and the World Bank signed a US40−*millionhealthprojectforthestateofMeghalaya.Projectwillimprovethequalityofhealthservicesandstre*
19*pandemic.Indiacouldrestartdeliveriesof Covid*−19*shotstoglobalvaccine*−*sharingplatformCOV AXinNovember*−
*December*2021*forthefirsttimesinceApril*2021.*TheWorldHealthOrganization*(*WHO*), *whichco*−
leadsCOV AX, *hasbeenpushingIndiatoresumesuppliesfortheprogramme*, , *particularlyafteritsent* 4*milliondosestoits*
19*summitsaidthatIndiahassharedits vaccineproductionwith*95*countriesandtheUNpeacekeepers.Healsostatedthat Indi*
19*vaccinestoothercountriesafterincreasedproduction.InSeptember*2021, *PrimeMinisterMr.NarendraModilaunched*
flungregionsofthecountry.Accordingtoaspokesperson, theIndiangovernmentisplanningtointroduceacreditincentivep
6.8 billion) to boost the country's healthcare infrastructure. The programme will allow firms to leverage the fund to expand hospital capacity or medical supplies with the government acting as a guarantor and strengthen COVID-19-related health infrastructure in smaller towns. In June 2021, the Union Cabinet was apprised of an MoU that was signed between Indian Council of Medical Research (ICMR), India and the Department of Medical Research (DMR), Ministry of Health and Sports of Myanmar in February 2020. The objective of this MoU was to build on the health research relationship in topics of mutual research between India and Myanmar. In June 2021, the Union Ministry of Health and Family Welfare, in partnership with UNICEF, held a capacity building workshop for media professionals and health correspondents in Northeastern states on the current COVID-19 situation in India, the need to bust myths regarding COVID-19 vaccines and vaccination and reinforce the importance of COVID-19 Appropriate Behaviour (CAB). In June 2021, Bolo Indya, a domestic social live streaming platform, partnered with the Ministry of AYUSH to improve awareness for traditional Indian methods of medicines and care such as siddha, yoga, unani and ayurveda to boost healthy living among citizens. Through this partnership, ¿10 million citizens will be covered in the next 12 months. In June 2021, West Bengal proposed for six new medical colleges in the state, nine new medical colleges became operational in Uttar Pradesh, Telangana approved six medical colleges in the state and Punjab announced establishment of four new medical colleges in the state. In June 2021, the Uttar Pradesh government announced to introduce automatic medicine dispensing machine to expand the primary healthcare industry and clinical centres in the

country. The state health department has been nominated to design an action plan and install 'Health ATMs' walk-in medical kiosks, with combined medical devices for basic laboratory testing, emergency offerings, cardiology, neurology, pulmonary and gynaecology testing services that will be operated by a medical assistant in all 75 districts of Uttar Pradesh

n June 2021, the government invited bids for using drones to deliver COVID-19 vaccines and drugs to remote and difficult-to-reach areas to ensure last-mile coverage in select locations of the country. As of May 2021, 11.9 lakh Health IDs have been generated and 3,106 doctors and 1,490 facilities have registered on the National Digital Health Mission (NDHM) platform. In May 2021, Defense Minister Mr. Rajnath Singh launched 'Services e-Health Assistance and Tele-consultation (SeHAT)' OPD portal to provide telemedicine services to armed forces personnel and veterans. On May 12, 2021, the Drugs Controller General of India (DCGI), accepted recommendation of Subject Expert Committee (SEC) and accorded permission to conduct the Phase II/III clinical trials of Covaxin (COVID vaccine) for the age group of 2-18 years to its manufacturer, Bharat Biotech Ltd. On May 17, 2021, the Defence Ministry launched the first batch of anti COVID drug, 2-deoxy-D-glucose (2-DG) that was developed by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of Defence Research and Development Organisation (DRDO), along with Dr. Reddy's Laboratories (DRL), Hyderabad. In May 2021, the government announced its plan to ramp up supply and availability of Amphotericin B, the anti fungal drug, for treatment of the 'Black Fungus' disease. It has also given the license to five manufactures to produce the drug within the country. In March 2021, various states and UTs started implementation of the 'Intensified Mission Indradhanush 3.0'—a campaign aimed to reach those children and pregnant women who were missed out or have been left out of the routine immunisation programme due to the COVID-19 pandemic. This is aimed to accelerate the full immunisation of children and pregnant women through a mission mode intervention. In March 2021, the Parliament passed the National Commission for Allied, Healthcare Professions Bill 2021, which aims to create a body that will regulate and maintain educational and service standards for healthcare professionals. In the Union Budget 2021, investment in health infrastructure expanded 2.37x, or 137YoY; the total health sector allocation for FY22 stood at Rs. 223,846 crore (US30.70 billion). The government announced Rs. 64,180 crore (US 8.80 billion) outlay for the healthcare sector over six years in the Union Budget 2021-22 to strengthen the existing 'National Health Mission' by developing capacities of primary, secondary and tertiary care, healthcare systems and institutions for detection and cure of new and emerging diseases. In Union Budget 2021-22, the government announced its plans to launch 'Mission Poshan 2.0' to merge 'Supplementary Nutrition Programme' with 'Poshan Abhiyan' (Nutrition Mission) in order to improve nutritional outcomes across 112 aspirational districts. The Government of India approved continuation of 'National Health Mission' with a budget of Rs. 37,130 crore (US 5.10 billion) under the Union Budget 2021-22. In the Union Budget 2021, the Ministry of AYUSH was allocated Rs. 2,970 crore (US407.84 million), up from Rs. 2,122 crore (US 291.39 million). Road Ahead $India is a land full of opportunities for players in the medical devices industry. The country has also become one of the leading d$
$end diagnostic services with tremendous capital investment for advanced diagnostic facilities, thus catering to a greater pro$
Indian healthcare sector is much diversified and is full of opportunities in every segment, which includes providers, payers, and medical technology. With the increase in the competition, businesses are looking to explore for the latest dynamics and trends which will have positive impact on their business. The hospital industry in India is forecast to increase to Rs. 8.6 trill 61.79 billion) in FY17 at a CAGR of 16–17

The Government of India is planning to increase public health spending to 2.5

India's competitive advantage also lies in the increased success rate of Indian companies in

getting Abbreviated New Drug Application (ANDA) approvals. India also offers vast opportunities in R and D as well as medical tourism. To sum up, there are vast opportunities for investment in healthcare infrastructure in both urban and rural India