

Guest Editorial

Smart Health for Smart Cities

Most discussions on Indian health care invariably journey to the topic of dichotomy; the reality of two India's is not new – it is an undeniable truth that pervades most aspects of life in our nation. Illiteracy coexists with several brilliant academics in the world; abundance is contrasted by abject poverty. More ironically, for a nation, i.e., powering the technology revolution in the world, large percentages of our population remain untouched by the digital revolution.

The Digital India movement saw this gap, and is making a comprehensive effort to remedy the situation. Smart Cities is an ambitious and game-changing initiative under this umbrella. With a clear objective to bring about sustainable and inclusive development, these cities can be characterized as developed urban areas that create sustainable economic development and high quality of life by excelling in multiple key areas: Economy, mobility, environment, people, lifestyle, governance, and, most importantly, health.

Core to the Smart City initiative is the promise of Smart Health. The theme of “Smart Health” encapsulates intelligent, networked technologies for improved health provision, is recognized as one of the most promising remedies to the rising per capita health care expenditure, and as the solution to address the challenges of the Indian health care system. Smart Health innovations allow health care providers to cure more effectively, to care for patients more efficiently, and to prevent frequent occurrence and reoccurrence of illnesses. Smart Health involves the use of computational technologies, smart devices, computational analysis techniques, and communication media.

The sweeping change that Smart Health promises is an imperative in the Indian health care context. It is in health care that the dichotomy is the starkest. Private health care in India is comparable to the best in the world and addresses over 60% of the country's medical needs, and yet large segments of our population travel miles to access even the most basic health care. India has highly qualified and highly skilled doctors and also has one of the biggest gaps in health care manpower. This widespread and inherent variance in our health care system has a profound impact on the health of our nation.

India contributes to 16.5% of the total global population and 1/5th of the world's share of diseases.

The primary issue that ails Indian health care is the delivery gap – a burgeoning disease burden is placing a massive strain on our limited infrastructure. The Public Health System in India is overloaded with the coexistence of infectious/communicable diseases and noncommunicable immunological diseases. This is compounded by issues, such as environmental pollution, malnutrition, especially in children, unimproved sanitation, lack of adequate employment, and gender inequality, all of which are priority areas for public policy related to Social Determinants of Health.

The need of the day is to devise alternate techniques to improve the health care systems in India and make health care accessible to all.

Today, we see increasingly complex health care systems all over the world that are driven by the fact that modern medicine is turning into a data-intensive science. Traditional approaches for handling these large volumes of data can no longer keep pace with demand, and are increasingly plagued by unsatisfactory results. Consequently, to cope with this rising flood of data, smart approaches are vital.

Smart Health involves many stakeholders, including clinicians, researchers, and scientists with a wide range of expertise in health care, engineering, software, social sciences, public health, health economics, and management. Smart health care presupposes do it yourself, point of care diagnostics, promoting wellness proactively, Staying Smart the eWay, and is a combination of eHealth, mHealth, and Internet of things (IoT) to provide continuum of care. The system relies on the ability to collect, process, and transform health care data into information, knowledge, and action.

In order to implement Smart Health in Smart Cities, it is important to reach out to huge masses with limited investment and innovative technology. One of the ways in doing so is through mobile devices. This can be



mainly attributed to the fact that India has the second largest mobile phone user subscription base in the world, with over 1 billion mobile phone users.

With regard to eHealth, India has made reasonable progress with milestones like National Health portal. Many IT applications in the National Health portal are also available through mobile apps. Various dimensions of eHealth are health care portals, digitization of health care records (Electronic Health Records), and creation of a centralized IT infrastructure for health care information access.

Apollo Hospitals believes that in order to provide continuum of care, an integrated system of care is required, one which will guide and track patients over time through a comprehensive array of health services spanning all levels of intensity of care.

An effective and innovative use of medical technology, supported by IoT, as a connected device has the potential of increasing access, significantly reducing the burden of disease and the load on health care delivery services. This is achieved through early diagnosis, better clinical outcomes, less invasive procedures, and shorter recovery times. While point-of-care testing devices improve access to health care, integrating *in vitro* diagnostic machines and smartphones allows self-monitoring.

With the rapid increasing burden of noncommunicable diseases, mass screening for prevention and control will promote the concept of “wellness,” not “illness.” Low-cost tabs in an intelligent connected ecosystem with point-of-care devices will enable better population health control.

Apollo Hospitals was the first to create a digital patient health record in the country; the group pioneered preventive health checks and actively promotes the concept of wellness through its large network of clinics, hospitals, and tele-clinics. As the path-breaking innovator of technology-based health care delivery and tele-health in India and South Asia, Apollo is technologically and clinically equipped to be at the frontier of Smart Health solution design and delivery. By leveraging infrastructure and IT capability of smart cities, Apollo now aspires to provide continuum of care through smart health solutions.

An ever-growing disease burden and a populous nation demand fast-paced health reforms. We need to achieve what our peer nations achieved across three to four decades in a much lesser timeframe. In this day and age, it is critical that health care systems and health care providers adapt. A synergistic and multisectoral approach between State and Central governments, private health care provider, and medical technology companies can bring about a much required transformation – an era of Digital Health.

Digital is our best bet in the journey ahead. It is our conduit to be truly smart. And let us all be very clear – smart is not a bonus, it is what we need to be. It is our surest way to a happier, healthier, and brighter future.

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