



# CHANGING THE DYNAMICS OF HEALTHCARE WITH DIGITALIZATION

The healthcare sector is witnessing phenomenal changes with digital invasion, which has ushered in unprecedented innovation in patient care and medical procedures. Experts attribute this exponential growth to the present as well as upcoming digital offerings that would change the dynamics of healthcare industry. How continuous innovation provides value for patients, caregivers and medical insurance providers?

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# INTRO -

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Digital technology is on the verge of transforming healthcare from an overwhelming population-centric curative model to an individual-centric preventive model. As with all instances of digital transformation, the change is driven by DATA, which rises in importance to even make the difference between life and death.

Wearables and allied devices power the data-driven healthcare revolution. The annual smart wearable health care market volume is projected to touch **\$41 billion by 2020**, a big jump from the \$2 billion volume in 2014. Wearables make explicit key metrics such as blood pressure, blood sugar, calories expounded, and other vital data during normal day-to-day mode. Such real-time insights which were not possible before, open up a whole new world of possibilities.

Before you read on, we suggest you to ***check out our study on how wearables are revolutionizing healthcare sector today***. In this white paper, we look at how digital is transforming healthcare to make it more personal and patient-centric.

# IMPROVED PREVENTIVE DIAGNOSTICS

The existing health care system is based on a curative care model, where the patient, on falling sick or on developing undesirable symptoms, visits a physician. The physician offers treatment to cure the infirmity or manage the symptoms. Digitalization is on the verge of overturning this model into a predictive model, where the patient becomes aware of an imminent condition, and takes preventive care, with the assistance of the caregiver.

## ***Role of Wearables***

***Wearables such as fitness bands and smart clothing*** collect the required data and transmit it to a cloud server. Big Data analytics help to generate actionable insights that caregivers, medical practitioners, or the patients themselves can use. For instance, the caregiver, on receiving information of their patient having a throbbing headache and uneasiness in the chest, could phone up the patient, explain the gravity of the situation, and fix an appointment with the physician for preventive action against a heart attack. In the absence of the wearable, the patient is more likely to ignore a headache and uneasiness and end up being rushed to the hospital, after the heart attack takes place.

Wearables already contribute in a big way to the treatment associated with Diabetes, Alzheimer's, Dementia, Neuropathic pain, Depression, and Macular degeneration. In addition to the sensors and other wearables already in the market, a wide range of new digital sensors are in the development stage, most of them use innovative materials and promise path-breaking possibilities. The following are some of the latest devices:

- Biometric skin sensors fitted on chest capture vital parameters such as heart rate, heart rate variability, respiratory rate, skin temperature, and more, on a continuous basis.
- A gel-based sticky sensor monitors electrical activity in an organ, without it slipping off.
- A patch-like sensor moves with the skin, to record and transmit health information to synchronized smartphones and computers.
- An 'Electronic Skin' sensor detects tremors, and keeps track of muscle disorders in people suffering from Parkinson's or Epilepsy. The sensor even goes further and releases medication embedded in the patch.
- Smart contact lenses monitor and transmit glucose levels, to manage Diabetes effectively, in real-time.

# TRANSFORMING HEALTHCARE INTO A SELF-SERVICE

Healthcare providers are often hard-pressed owing to shortage of caregivers, scattered patient data, and limitations of infrastructure. Administrative and incidental activities, such as gathering patient history, collecting clinical data and more consume a large chunk of the treatment time.

Digitalization has the potential to herald a self-service approach to healthcare, where patient driven information could be accessed directly, in a structured and controlled way, eliminating all the hassles and ambiguities usually associated with the task. Medical practitioners, free of administrative and operational burden, can focus entirely on treatment. Automation of time consuming and resource intensive tasks such as patient records reduces the stress of the system. Today's technology savvy and conscious patients are ready to dabble with emerging technology, to make self-service a success.

## ***Manifesting Self-Service through Analytics and IoT***

Self-service in health care can manifest in many ways:

- Actionable data generated by apps crunch data from wearables, allowing individuals to make informed decisions themselves, without even approaching a medical practitioner. Apps and systems such as ***Patients Know Best (PKB)*** link to multiple wearables and other devices, to allow patients to monitor their own vital signs, through simple, intuitive apps.
- ***Internet of things (IoT) enabled devices*** to collect the physiological status of hospitalized patients, enabling error-free, continuous monitoring, and automated processes, greatly reducing dependence on caregivers.

Self-service increases quality in care, improves consumer satisfaction, and saves on cost. ***Wearable technology is estimated to drop hospital costs by more than 16%*** in the next five years. Remote patient monitoring technologies could save \$200 billion of overall healthcare costs, over the next 25 years.

# REMOTE TREATMENT

Just as technology enabled “work-from-home” concept in a big way, digital technology is on the cusp of decentralizing healthcare. The rise of mobility, 4G broadband, and other technological developments make “care-from-home” a viable proposition for most of the ailments and conditions. Caregivers could shift a good part of their hands-on treatment online by making e-visits, creating e-prescriptions, and by establishing remote monitoring. The obvious benefits are time, money, and convenience.

Orange Healthcare estimates that **over 88% of physicians** now prefer patients to monitor their health parameters at home, rather than make frequent visits to the clinic or hospital.

## ***Digitally driven care-from-home***

At a macro level, digitally driven care-from-home will remove geographical barriers to accessing healthcare. For instance, patients would no longer need to travel halfway across the globe to consult a highly skilled neurosurgeon. They can just as well get themselves treated with the same neurosurgeon through a dedicated online portal, with e-visits and e-prescriptions.



## MOBILITY

Along with the rise of wearables and big data, rides the mobility wave. UK smartphone penetration **touched 70% in 2014**, and top pharma companies responded by rolling out 63% more apps compared to the previous year. The total number of health apps has now crossed 100,000, having doubled in just 2.5 years.

From the patient's perspective, mobile apps offer readily accessible information on medical conditions, symptoms, and various treatment options. Mobile apps also help them communicate easily with their caregivers and physicians. While most apps are presently information heavy and thin on other aspects of overall care, the gap between app functionality and its compatibility with clinical guidelines is reducing fast, as the apps mature.

The bigger impact of mobility in healthcare is for medical practitioners, where it accelerates the process. For instance, a mobile working solution for community nurses reduces paperwork by 60% and increases patient-face time by 29%. If you analyze at a macro level, mobile health technology has contributed dearly to improve the antiretroviral medication compliance in Kenya by 11%. In Botswana, it has reduced government response time to malaria outbreaks from four months to three minutes.





# SOCIAL MEDIA

Along with mobility, there is big scope to leverage social media to improve healthcare.

- Popular forums, such as **[www.patientslikeme.com](http://www.patientslikeme.com)** enable patients get together and share their experiences. Such forums could also be a means to “crowdsource” requirement of blood, or other medical requirements.
- The social media allow patients to keep in touch with their caregivers and physicians on a real-time basis.
- Gamification and competition based apps encourage users to meet their healthcare goals.

From the caregiver’s perspective, social media makes a perfect accessory to the digitalization of healthcare, and contributes to making healthcare more dynamic. It complements the role of mobility in making healthcare accessible to remote and disconnected communities with limited access to healthcare.

# INSURANCE

Digitalization is on the cusp of transforming the incumbent insurance models in a big way as well. Personalized medical data derived from wearables, and passed on to insurance companies, either directly or through healthcare providers, could radically change the insurance premium model.

Increased insight into an individual consumer’s health and personal fitness levels enable tailor-made insurance plans. The current trend of changing premium rates on a yearly basis could also lead to premium rates changing each day, depending on the individual’s fitness and vital parameters.

Actuaries are in fact already on to such an approach, but in a limited way, mostly constrained by limited personalized data. Data-driven technology brings such an approach mainstream and would make it the norm.



## RESEARCH AND DEVELOPMENT

It goes without saying that big data gives a big fillip to research and development, and contributes significantly to the discovery of new medicines, procedures, and cures. **Ten leading global pharma companies have joined the “TransCelerate Biopharma” collaboration**, intended to simplify and accelerate drug development.

New information unlocks new pathways in clinic trials and drug discovery, with standard protocols for each treatment coming under increasing review. Advancement in genome treatment may render healthcare as we know it today redundant and obsolete. The ability to decode the human genome at an affordable cost offers an entirely new paradigm to understand disease risks and makes it possible to customize treatments.

## PHYSICAL TECHNOLOGY

Many hospitals are undergoing a sea-change, preparing for the big digitally inspired disruption around the corner. The hospital-room of tomorrow would feature interchangeable parts, adaptable to the specific situation of a patient, thereby increasing patient comfort and connectivity in a big way.

Medical equipment and other physical infrastructure, from the ambulance to ultrasound machines, is also at the verge of big transformation. For instance, the bulky and energy guzzling ultrasound machine may soon become obsolete, replaced by smaller, low-cost machines, running on battery power. These devices are small enough to fit the palm of the technician, but are still capable of generating high-resolution images and transmitting it over the cloud in real-time. When such machines become mainstream, patients would no longer have to visit diagnostic centers, but rather get the scans done at their homes, and still get expert advice from the top specialists anywhere in the world.

The Roswell Park Cancer Institute, in partnership with the University of Buffalo's School of Engineering and Applied Sciences has developed a **Robotic Surgery Simulator** (RoSS), offering realistic views of surgeries. This eliminates the need for training surgeons in a live environment, and also enables experimentation in a simulated environment rather than take risks on live patients. In fact, technology such as **Google Glasses** allow surgeons to reference notes and even connect with other specialists when conducting surgery, making surgery a collaborative process, spread across geographies.

Further innovations in middleware, digital imaging and improved digital sensors offer scope to transform healthcare in ways not imaginable now. McKinsey estimates **over 200 businesses** developing a diverse set of innovative tools to further healthcare.

## ***The path ahead***

Digital technology promises to herald a whole new world in healthcare, with everyone a winner. It offers better health outcomes with increased convenience for patients, even as it makes the life of caregivers and other medical practitioners a whole lot easier. However, key challenges remain. Data-driven healthcare depends largely on broadband connectivity, and variations in broadband speeds, or even access to broadband can create inequalities. The new digital model is also disruptive, and requires an overhaul of the existing ecosystems, with redefining staff roles and responsibilities just a start. The extent to which individual healthcare providers can ride the digitalization wave to success depends on how well they can overcome such challenges.



## ABOUT SUYATI

Suyati is a fast-growing, digital transformation solutions company that helps you rebuild your customer experience for the digital consumer. We collaborate with businesses to strategize and implement impactful digital initiatives that position our clients ahead of the competition. We are digital-first and we focus on delivering digital transformation solutions that support your various engagement strategies. With our niche and rich expertise in a wide range of technologies and services- CMS, CRM, e-commerce, Cloud, IoT, Data Analytics, and Product Engineering- we help companies leverage their best on web/cloud/mobile platforms.

We enable you to create insights driven customer engagement across all touch points to build a unified marketing approach. Our custom technology solutions have been deployed successfully in companies across the globe, especially in the US, UK, Europe and Australia.



[www.suyati.com](http://www.suyati.com)



[services@suyati.com](mailto:services@suyati.com)

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