

# The new face of healthcare

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The healthcare sector, like so many others, is influenced by the introduction of new techniques and practices rooted in a growing reliance on so-called “digital” technology. Numerous factors have shaped, or will shape, the way in which our healthcare systems deal with patients, particularly in terms of the patient-doctor relationship and access to care.

These include the use of connected devices, the increasing digitization of medical data (from clinical experiments and studies in particular), and the sharing and processing of information on social media (which is now possible on a large scale).

In this context, Deloitte has put forward three major technical and behavioral advances which seem to stand out in terms of impact on the healthcare sector. The first trend is the explosion in the volume of data available (“Big Data”). Often discussed in terms of the three Vs (volume, velocity and variety) this development is now widely recognized and the techniques for sourcing and retrieving data are being adapted and adopted with ever-increasing frequency.

Next is the meaningful use of social media (a surprisingly rich source of data). When we consider the 2.5 million items posted per minute on the most popular site, it is easy to picture the sheer quantity of “information” produced. Nevertheless, extracting data from these items is far from easy.

The third advance addresses this issue through analytics: processing or analyzing this data using scientific methods. Medical data is not very homogenous in terms of form, and this makes it all the more difficult for the healthcare sector to analyze the data on a large scale.

This is particularly true of insurance contracts, medical billing, standardized medical data from electronic health records, medical imaging, conversations on social media, data from wearable technology and more. Furthermore, the number of players on the data collection market decreases the uniformity of collected data and this, in turn, makes it more difficult to analyze data and compare different data sets.

Closer collaboration between the public and private sectors will be essential if we are to better analyze this quantity of information in the future. However, the most important question to ask is: Are we moving towards a model where patient treatment revolves around processing their data?

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### Challenges and trends for the sector

The advantage of these techniques is that they may be an answer to the major challenges facing the healthcare sector and support established trends. They offer an opportunity to address major current sector-wide issues such as cost, availability, critical mass of management, medical training, etc.

### Potential savings

In a sector marked by ever-increasing pressure on costs, doing more with less is a fact of life for all healthcare professionals. Ensuring that access to care is as fair as possible and protecting the most vulnerable social groups are clearly major challenges for society. How can we achieve this degree of equality without systematically relying upon the nation's charity sector? One potential avenue to explore is cutting costs by making use of the data that is usually available. This is why certain countries use statistical analysis to verify the efficacy of medication, with a view to honing their medical expenditure.

This system favors the most effective medication and provides the most benefits for the patient. Another potential application is detecting potential fraud by devising and implementing forecasting models, as used by many private insurers.

### Personalized care

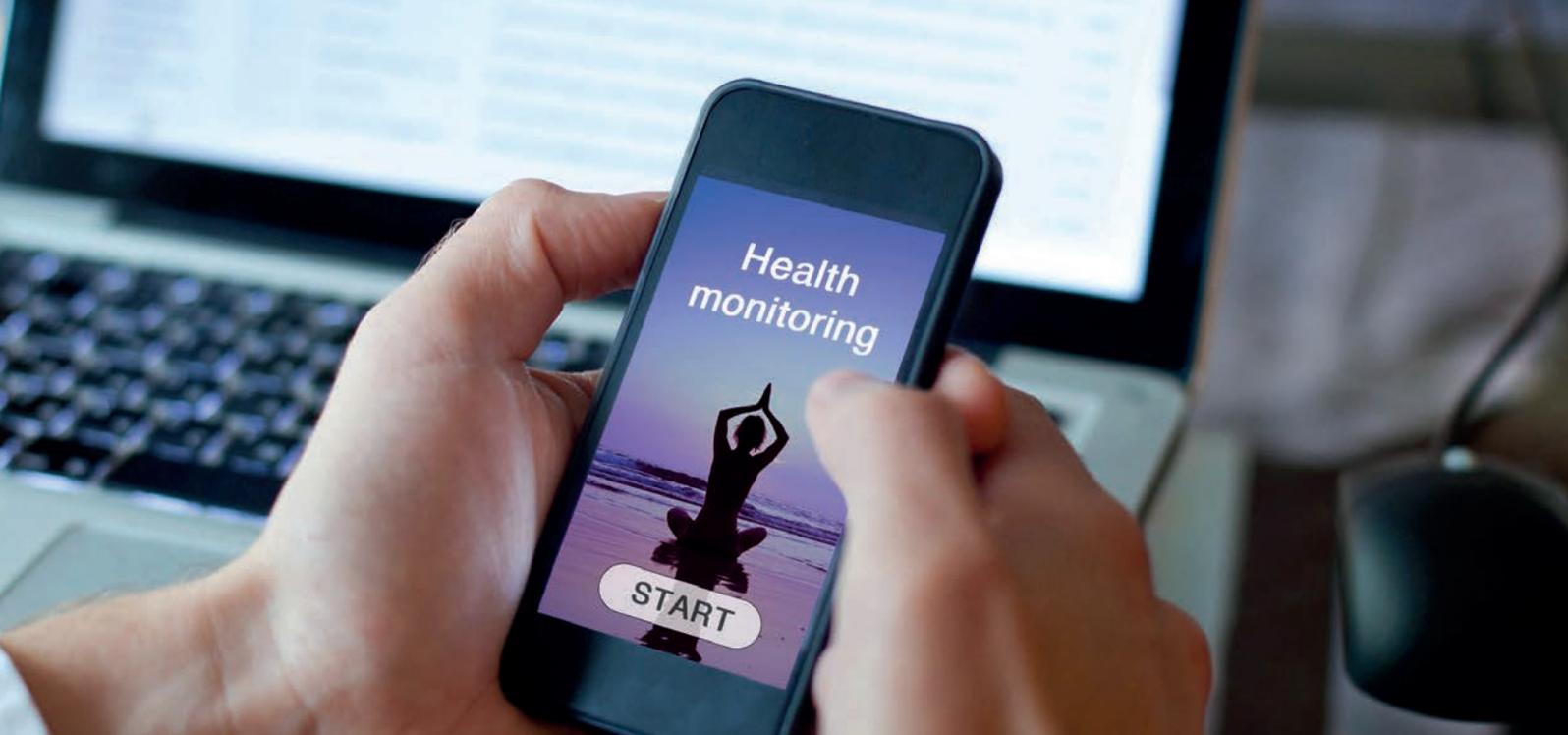
Personalized treatment is an emerging trend in the healthcare sector, with a primary focus on results. A prime example is the IBM initiative that aims to prevent surgical interventions in neonatal care through a detailed analysis of infants' vital signs.<sup>1</sup> Another key development is the emergence of a wide array of programs based around DNA analysis, offering preventative detection of risk factors for the population and therefore improved targeting for detection and prevention campaigns.

In both of these examples, analyzing large quantities of data quickly is clearly the determining factor for achieving the desired results.

### Patient as/and doctor

The use of social media (and internet sources more generally) has, to a certain extent, changed the patient-doctor relationship. This does not involve questioning the authority of the doctor and the crucially important bond of trust between doctor and patient. However, it is important to recognize that the patient is increasingly well-informed about treatment options and their effects through social media. In fact, increasing numbers of communities are springing up around certain illnesses so that patients can share their experiences in a way that often proves mutually beneficial. The patients can therefore rest assured that they are not alone and share some of their problems with people who are going through similar experiences. However, it is important to guard against these groups becoming a substitute for the invaluable advice of a healthcare professional.

<sup>1</sup> [https://www.ibm.com/smarterplanet/global/files/ca\\_en\\_us\\_healthcare\\_smarter\\_healthcare\\_data\\_baby.pdf](https://www.ibm.com/smarterplanet/global/files/ca_en_us_healthcare_smarter_healthcare_data_baby.pdf)



### **A preventative approach**

Prevention does not seem to be immune to this trend in the healthcare sector. Private insurance companies, among others, scrutinize social media to better understand the behavior of current or future insured parties; this enables them to adapt premiums and prevention campaigns accordingly and also to analyze risks. One day the public sector, and the healthcare sector in particular, may rely on the same kinds of techniques to improve the targeting of their prevention campaigns for example. Furthermore, the use of increasingly connected devices, which collect a vast quantity of information about our behavior on a daily basis, enables our propensity to certain illnesses to be deduced. This is why some countries are even considering compensation mechanisms which would enable individuals who take the necessary steps to limit their risk factors to enjoy lower healthcare costs.

### **Sharing information between patient service providers**

The healthcare sector's use of data is characterized by data sharing. From this perspective, it is easy to see the value in a doctor having access to information about the patient's treatment history, or the value of knowing the specific background to emergency cases. Once again, data usage is a defining characteristic of the changing practices seen within the various "e-Health"-style networks currently in development around the world.

### **Extending outpatient and telemedicine services**

The use of communications networks in the healthcare sector has wider implications including, for example, the development of telemedicine techniques where the patient is not necessarily in direct contact with the medical practitioner. This also ties in with hospitals' aim of extending outpatient services, as it is easy to imagine a time when systems for monitoring vital signs would be relatively simple to install in the patient's home so that they could recover in a safe environment.

### **Luxembourg: the perfect environment for connected health**

The Grand Duchy of Luxembourg has undeniable strengths when it comes to positioning itself to play a major role in the future development of this technology. Firstly, it is recognized as a center for excellence in the field of Data Centers and data processing. The country is also able to adapt to new regulations quickly and implement appropriate legislation for this kind of development while ensuring the necessary level of security and protection. Finally, Luxembourg has inherited a culture of confidentiality from the world of finance. This gives it an advantage on questions of privacy, which necessarily go hand-in-hand with analyzing personal data (above all data relating to health).

Luxembourg already has a whole host of plans and initiatives that demonstrate how IT developments can improve the healthcare sector. These include studies and work conducted by the LCSB, the IBBL, the e-Santé agency and the high-performance calculation platform which will be developed further by the University of Luxembourg.