



Big Data kutatás a klinikus szemével

Milyen tendenciák láthatóak ma az egészségügy fejlődésében és mik ennek az informatikai következményei?



Center for Research
in Healthcare
Innovation
Management



Hospital of the Future

A New Role for Leading Hospitals in Europe
Abridged version

Jaume Ribera / Gabriel Antoja / Magda Rosenmöller / Pablo Borrás

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A study by IESE Center for Research in
Healthcare Innovation Management
(CRHIM: www.iese.edu/crhim)
sponsored by Accenture

In collaboration with



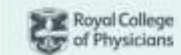
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Barcelona, January 2015



Delivering the
future hospital
Full report

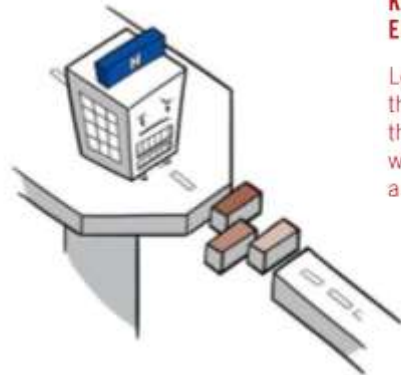
November 2017

This abridged version of the study presents **14 key messages** that summarize and describe the main findings relating to the challenges and characteristics of the new role of the leading public hospital in Europe by 2030.

These 14 key messages link and combine various study findings, assembling, in an easy-to-read scheme, the most relevant ideas as well as some quotes from participants that support or connect with the main key message.

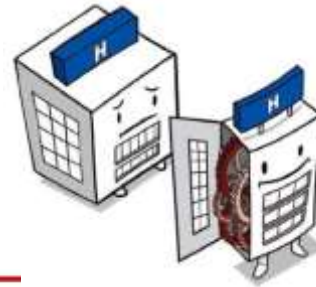
KEY MESSAGE 1: A TRIPLE-CHALLENGE CONTEXT FOR HOSPITALS

Leading hospitals will strive in a challenging context with a combination of an increase in healthcare needs, a decrease in resources, and changing social values.



KEY MESSAGE 2: SMALLER AND MORE COMPLEX HOSPITALS

Leading hospitals will be expected to focus on high-value and highly complex services and to become highly efficient organizations, without requiring high activity volumes.



KEY MESSAGE 7: INNOVATION CENTERS OF TECHNOLOGY AND SERVICES

Leading hospitals will be reference centers for process and technology innovation and healthcare service design.



KEY MESSAGE 8: RESEARCH AND EDUCATION AS KEY RESULTS

Leading hospitals will continue to be the main centers for research and for the education of new professionals, which means generating knowledge and capabilities.

KEY MESSAGE 11: INTEGRATED CARE AND PROCESS-ORIENTED TEAMS

Leading hospitals will be organized into process-oriented teams and seek to create integrated care models (either virtually or merging companies).

KEY MESSAGE 12: CONNECTED HOSPITAL

Improvement of the patient experience will lead to connected hospitals where case managers will reach out to coordinate care for patients at home.

In the next 15 years, patients will spend less time at hospital and on healthcare premises. Improving the patient experience will demand the introduction of new modes of interaction between patients and hospital professionals.

Information technologies will be used to predict needs, personalize healthcare processes and treatments and follow up and connect with patients wherever they are, using virtual consultation, not only one-to-one but also between a team and patient. Hospital professionals will also become mediators of relevant and personalized information to patients.



As remote health management services will become widespread, citizens will use mobile apps, sensors and medical devices to monitor and improve their health and well-being. There will be a wide range of such devices and apps, covering different age and socioeconomic groups in the population almost equally, though there will be different levels of adoption depending on each patient's willingness to communicate remotely and receive directions, support and monitoring.

These changes will lead to patients taking a more active role in the design of hospital services and participating in activities to redesign care processes so patients' needs and views are considered.

THE TRIPLE OPERATIONAL EXCELLENCE CHALLENGE

Public hospitals in Europe are becoming a critical piece in the new healthcare puzzle for achieving excellence. For the past few decades, hospitals have been concentrating highly skilled professionals, healthcare technologies, and volumes of activity. Hospitals have also become essential for clinical basic and translational research and for education and training.

Public hospitals share with other healthcare and nonhealthcare organizations worldwide the challenges of the triple operational excellence aim: (1) the management of scientific knowledge, (2) the need to implement agile and effective processes, and (3) the provision of excellent service, as perceived by the hospital stakeholders, primarily patients and their families.





Perspectives

The digital hospital of the future

In 10 years, technology may change the face of global health care delivery

As the cost of care continues to rise, many hospitals are looking for long-term solutions to minimize inpatient services. Learn how technology and health care delivery will merge to influence the future of hospital design and the patient experience across the globe in this report developed by Deloitte US.

To learn what this future of health care delivery may look like, the [Deloitte Center for Health Solutions](#) conducted a crowdsourcing simulation with 33 experts from across the globe. Participants included health care CXOs, physician and nurse leaders, public policy leaders, technologists, and futurists. Their charge was to come up with specific use cases for the design of digital hospitals globally in 10 years (a period that can offer hospital leaders and boards time to prepare).



The future awakens
Life sciences and health care
predictions 2022

November 2017

Trends in life sciences and health care

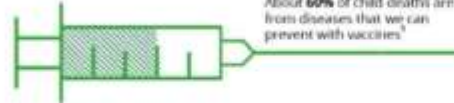
Demographic trends

Average life expectancy in OECD countries has **increased by 5.5 years** from 75 in 1990 to 80.5 years in 2015*



Telehealth use is accelerating. By 2018, **65%** of interactions with health care facilities will occur by mobile devices. Some **80%** of doctors already use smartphones and medical apps in health care provision*

In 1990, over **11 million** children died before age 5 compared to fewer than **6 million** in 2016. About **60%** of child deaths are from diseases that we can prevent with vaccines*



By 2020, the **over 65s** will number some **604 million** – **11%** of the global population (**19.8%** of Europeans)*



Economic trends



Global health care spending is estimated to grow at **4.2 per cent per year** from **\$7.1 trillion** in 2015 to **\$8.7 trillion** by 2020*

Global pharmaceutical spending will rise by **5% a year** from **2017-2021**, more than twice the average annual **2.2% rise** during **2011 to 2016***



MedTech sales are expected to increase by **5.1%** from **\$309 billion** in 2015 to **\$329.8 billion** in 2022*

In vitro diagnostics is one of the fastest-growing segments of MedTech and is expected to reach **\$67.3 billion** by 2020*



The crowdsourcing simulation developed use cases in five categories:

1.Redefined care delivery

Emerging features including centralized digital centers to enable decision making (think: air traffic control for hospitals), continuous clinical monitoring, targeted treatments (such as 3D printing for surgeries), and the use of smaller, portable devices will help characterize acute-care hospitals.

2.Digital patient experience

Digital and artificial intelligence (AI) technologies can help enable on-demand interaction and seamless processes to improve patient experience.

3.Enhanced talent development

Robotic process automation (RPA) and AI can allow caregivers to spend more time providing care and less time documenting it.

4.Operational efficiencies through technology

Digital supply chains, automation, robotics, and next-generation interoperability can drive operations management and back-office efficiencies.

5.Healing and well-being designs

The well-being of patients and staff members—with an emphasis on the importance of environment and experience in healing—will likely be important in future hospital designs.

These six core elements of an enterprise digital strategy can help you get started as you begin to push your hospital into the future:

1.Create a culture for digital transformation

It is essential that senior management understands the importance of a digital future and drives support for its implementation at all organizational levels.

2.Consider technology that communicates

Digital implementation is complex. Connecting disparate applications, devices, and technologies—all highly interdependent—and making certain they talk to each other can be critical to a successful digital implementation.

3.Play the long game

Since digital technologies are ever evolving, flexibility and scalability during implementation can be critical. The planning team should confirm that project scope includes adding, modifying, or replacing technology at lower costs.

4.Focus on data

While the requirements of data interoperability, scalability, productivity, and flexibility are important, they should be built upon a solid foundation of capturing, storing, securing, and analyzing data.

5.Prepare for Talent 2.0

As hospitals invest in exponential technologies, they should provide employees ample opportunities to develop corresponding digital strategies.

6.Maintain cybersecurity

With the proliferation of digital technologies, cyber breaches can be a major threat to hospitals of the future. Executives should understand that cybersecurity is the other half of digital implementation and allocate resources appropriately.

Top 10 health care innovations

- **Next-generation sequencing:** Applications of genetic sequencing to identify at-risk populations or target therapies to patients who are likely to respond
- **3D-printed devices:** Lower-cost and highly customized medical technology products that can be tailored to suit the physiological needs of individual patients
- **Immunotherapy:** Treatments with the potential to significantly extend survival for cancer patients, without the negative side effects and related health care costs of traditional chemotherapy
- **Artificial intelligence:** The ability of computers to think like and complete tasks currently performed by humans with greater speed, accuracy, and lower resource utilization
- **Point-of-care diagnostics:** Allow for convenient, timely testing at the point of care (e.g., physician office, ambulance, home, or hospital), resulting in faster, more cohesive patient care
- **Virtual reality:** Simulated environments that could accelerate behavior change in patients in a way that is safer, more convenient, and more accessible
- **Leveraging social media to improve patient experience:** Tapping data from social media and online communities to give health care organizations the ability to track consumer experience and population health trends in real-time
- **Biosensors and trackers:** Technology-enabled activity trackers, monitors, and sensors incorporated into clothing, accessories, and devices that allow consumers and clinicians to easily monitor health
- **Convenient care:** Retail clinics and urgent care centers that provide more convenient and lower-cost care to patients for a number of health issues
- **Telehealth:** A more convenient way for consumers to access and increase self-care while potentially reducing office visits and travel time; may also prevent complications and emergency room visits

Advanced analytics and genomics driving innovation

Advancing data exchange using cloud technology to improve productivity of clinicians

In October 2017, GE Healthcare received Carequality certification to enable seamless data sharing by its ambulatory EHR customers with thousands of hospitals, physician practices, payer networks, vendors and consumer services nationally. Beyond meeting the criteria to participate in the Carequality Interoperability Framework, which includes legal, policy and technical qualifications for interoperability, the company has achieved effective integration of connected data and data exchange processes into clinician workflows. It has done so by introducing Centricity Healthcare Connections Hospital Connect for Centricity Practice Solution and Centricity EMR customers. This workflow-focused information exchange solution in the cloud has a strong emphasis on usability, saving individual clinicians at least one hour per day on chart reviews and information searches, reducing the number of duplicative tests and unnecessary services, and delivering higher quality, more personalised care to patients. As of August 2017, more than 260,000 physicians across approximately 23,000 clinics and 850 hospitals can share health data through Carequality.⁵²

The centralisation of data in 2017 from numerous sources around the patient

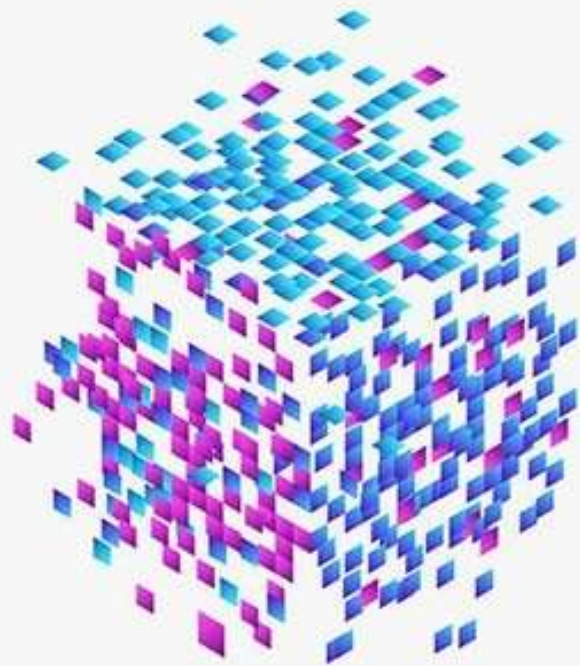


Source: Deloitte research, 2017

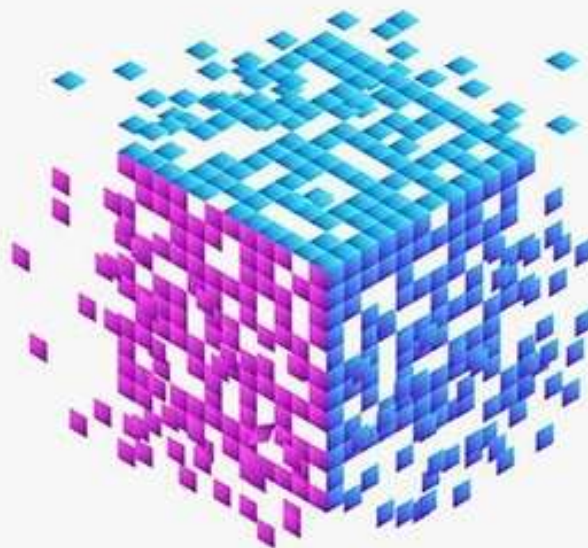
Teoretikusan ezekben az adatokban benne van minden, amire szükségünk lehet

Tudunk-e jó kérdéseket feltenni?

BIG DATA



▶ **ANALYTICS**



▶ **DECISIONS**

