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Reimagining Hospitals

Michael Rogers
******@***michaelrogers.com

Futurist & Keynote Speaker
USA

One of the most cost-effective ways to reinvent hospitals will be through information technology. Over the next decade we can give hospitals the equivalent of brains and nervous systems. The fully digitised hospital of the future will become a healing machine, sensitive to the precise needs of each patient, seamlessly supporting human caregivers and allowing them to focus fully on the individual. Similar care, delivered virtually, will continue to surround the patient at home after discharge. And digitisation can create significant cost-savings as well.

Sounds Utopian, but it's within reach. For patient monitoring, the combination of smart sensors, wireless ubiquitous networks, artificial intelligence and automation will be powerful. Many new sensors for a wide range of vital signs will be available, and more will be non-invasive. That continual data combined with AI can create a "digital twin" for each patient--a software model of the patient, constantly updated, able to draw on a cloud-based database of history and outcomes for patients with similar conditions. The system can flag potential impending problems before they appear. And when care providers approach the bedside, an AI assistant can update them on the status of the patient, perhaps via smart glasses or a small earpiece.

The physical infrastructure of the hospital will grow intelligent as well. Not only energy efficiency but patient customised heating, cooling and even variable colour LEDs. Other intelligent sensors can monitor whether caregivers are following proper hygiene procedures...Big Brotherish, perhaps, but also a key defense against hospital-acquired infections. Robots will be increasingly common for deliveries, cleaning, kitchen prep and possibly more complex tasks like making beds (designed with machine-changeable linens), or bariatric patient lift and transfer.

In-patients return home from the hospital sooner, taking with them loaner equipment that ties into their home networks. ("E-nurse, can you take my blood pressure now?" "Yes. It's also time to take another antibiotic. It is in the red bin on the pharma dispenser.") Artificial intelligence is available around the clock to answer questions from recuperating patients at home, and patch through to human assistance if necessary.

What are the steps toward this reinvented hospital? The technology itself will advance rapidly and inexorably. But there are key elements that hospitals need to address. For one, healthcare in general needs to adopt and enforce “digital standards” that will allow records and devices and software to interconnect seamlessly. The need is obvious, but for the technology providers, standards are usually not a priority. The strongest push for this is from customers. Security is a similar issue: strong cybersecurity is doable but it will require both pressure on the suppliers as well as better execution on the hospital side.

Of course, in the midst of this transition, we must be careful not to replace the essential work of human caregivers with automation and AI. Too often business sees automation as a way to reduce staff and costs. But the essentials of caregiving are human skills. Displaced staff can be retrained and redeployed for additional human attention to individual patients.

And finally, we need to be careful that in this sweeping digitisation we don’t inadvertently “deskill” workers, whether that’s in the ability for intuitive thinking or empathetic communication. (One Fortune 500 company I work with, not in healthcare, has started “remedial social skills” classes for some of their new employees.)

By the end of the next decade, if we manage properly, hospitals could be very different places. The fundamentals of healing will still apply--but we will have more time and resources to deliver truly patient-centric care.

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