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Big Data and the Future of the Care Continuum

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Every facet of the healthcare sector has a role to play in the future of the care continuum as it evolves and faces new challenges. With an increasing segment of the continuity of care relying on effective and efficient filtering of Big Data and development of related systems, government and individual health facilities in Europe and the U.S. are investing in getting ahead of the game through development of IT systems for best patient and professional practice.

One sign of this commitment to betterment of healthcare is the proliferation of Innovation Centres in the U.S.. Many are attached to hospitals while others operate independently. Where cross-collaboration in healthcare is truly a daily experience, all are striving to better the quality of workflow, clinical practice and the patient experience.

Increasingly, Big Data touches on each of these areas and has a direct effect on the care continuum in profound but surprisingly simple ways.

HealthManagement.org had an insight into the workings of one such Innovation Centre and a sneak preview into what the future of Big Data and the care continuum may hold in the day-to-day running of a hospital when it spoke to Chief Innovation Officer, Dr. Peter Fleischut, at the New York-Presbyterian Innovation Center at New York-Presbyterian Hospital.

The care continuum is a vast network of ideas and practicalities. Where do you see Big Data, IT and the work you are doing as New York-Presbyterian Innovation Center fitting into this field? What role does it have to play in the facilitation of smooth interaction in healthcare?

The New York-Presbyterian innovation Center serves as a focal point for the development and application of internal and external innovation at New York-Presbyterian. The major focuses of this innovation thus far have been patient engagement and provider communication. The biggest link between these two areas is information. When our doctors have access to real-time, streamlined data, and can then easily share insights with their peers, they are able to make life-saving decisions quickly and more accurately. From a patient perspective, when patients and their families know more about their diagnosis and treatment plan, they're in a better position to participate in their recovery.

HIMSS describes the key areas of the care continuum as extended care, acute hospital care, ambulatory

care, homecare, outreach and wellness and housing.

Has New York-Presbyterian Hospital done any work in these fields or is it interested in pursuing these areas? Does any initiative stand out and can you say why it was such a success?

We're really proud of our autotexting service, which automatically sends updates to patients and their families about operating and emergency room visits. Not only has this service been widely used, but from positive feedback about the technology we've found that it really helps to address a fundamental need while in a hospital: simple information. We're helping to inform our visitors. We're also extremely excited about the launch of the New York-Presbyterian mobile application, a complete mobile guide to our doctors and services that the patient can use before, during, and after their visit with us. For example, they can learn more about their specific hospital and doctor as they prepare, use our GPS services to navigate within our buildings, and then pay their bill right from their phone.

Tell us a little bit about the process of developing IT solutions at New York-Presbyterian Hospital. Does the team keep its eyes on developing ideas and pursue them in-house or do entrepreneurs contact the team directly?

Our work is guided by a series of core innovation principles: rapid, sustainable, scalable, mobile and measurable. We have an innovation framework built in to meet these principles. First, we generate ideas from various internal and external sources. Then, we select innovation projects that enhance the clinical or consumer experience and we begin to develop. We test these projects in specific areas or with certain users. Once in place, metrics are collected and we evaluate the technology to determine deployment strategies. We're lucky that we collaborate with a wide range of accelerators and have launched a series of hackathons and challenges. These collaborations are extremely valuable. We've been working with a company to implement a mobile electronic medical record (EMR). By creating a mobile version, the EMR has become a dynamic source of communication and education. But ideas also come from within, and we are particularly dedicated to nurturing a culture of innovation at New York-Presbyterian. Autotexting and NYP Connect were developed in-house to meet a tangible need. Those projects were a result of collaboration across many of our it departments and clinical service lines. We've also generated a set of core goals and streamlined evaluation and development processes in order to make sure that we're creating efficiently and purposefully. At the same time, we are constantly monitoring trends, like mobile applications, in order to inspire ourselves and identify future collaborators and technologies. The New York-Presbyterian mobile app was a result of that evaluation process.

New York-Presbyterian Innovation Center provides solutions both in-house for its hospital and to outside stakeholders. What would you say the ratio is between the two in terms of your collaborations?

Currently, we're approximately 50/50 for patient-focused technologies and provider-focused technologies.

How do you see IT and the care continuum developing over the next 10 to 20 years at New York-Presbyterian?

Ultimately, we'd like to be providing even more control, choices, and knowledge to our patients. These goals are a big part of the reason we're so excited about the recent release of our New York-Presbyterian mobile app, which allows our patients to learn more about our hospitals, use our online services, and connect with doctors all right from their phone. And that's only the beginning. We're planning future programmes that will give our patients incredible access to New York-Presbyterian resources and providers. Our goal, ultimately, is to implement innovative, technology-driven solutions for both clinicians and patients/families to enable New York-Presbyterian to deliver the best possible care.

Is there any advice you can offer from a management perspective for anyone working in healthcare tech innovation?

We really focus on the concept of failing fast at the innovation centre. At any given point, we're creating, testing, and prototyping a lot of technology. Some of it won't work or won't be perfect—and that's ok. But what matters is understanding what went wrong, and the iteration process.

Key Points

- Hospitals in the U.S. are investing in Big Data and IT development through bespoke innovation centres.
- Major focuses in tech innovation have been patient engagement and provider communication with information linking the two areas.

- Developing innovation is about pinpointing what will enhance clinical and patient experience.
- Key to the care continuum is the offering of more control, choices, and knowledge to patients.
- It's all right to fail – but understand where and improve.
- Governments are investing in innovation and IT development in order to be ready for Big Data expansion.

Technology and Innovation in Healthcare

As technology advances and its potential for implementation in healthcare rapidly increases, governments and agencies are feeling the pressure to stay ahead of the curve.

In the U.S., the number of healthcare innovation centres like New York-Presbyterian Innovation Center is growing with development of Big Data implementation a focal point for many. The American Hospital Association says that there are more than 150 healthcare innovation centres across the country with Big Data and IT research central to their work.

"The AHA has been a longstanding advocate for health IT, specifically the rapid adoption of electronic health records," it says. "Research has shown that certain kinds of health IT can improve care. Shared health information will allow clinicians and patients to have the information they need to promote health and make wise decisions about treatments. Health IT can also be a tool for improving efficiency" (American Hospital Association 2016).

Meanwhile, the Advanced Medical Technology Association (AdvaMed) in the U.S., a trade association with international membership that leads the effort to advance medical technology for the betterment of healthcare, says that home-grown innovation is under pressure at the potential cost of the country's leading role in the sector. In order to combat this, last year it produced an agenda to rebuild the innovation ecosystem. These include improving the U.S. Food and Drug Administration (FDA)'s regulatory processes, investment in R&D infrastructure and improving access to international markets (AdvaMed 2016).

In Europe, one of the key driving bodies behind Big Data innovation is DG CONNECT at the European Commission. Pēteris Zilgalvis Head of Unit, eHealth and Well Being at DG CONNECT says: "In the area of research we are financing research on the virtual physiological human, telemedicine, mHealth, remote monitoring of chronic diseases, digital health literacy, patient empowerment in general, interoperability and standardisation. I think what we are going to see as data analytics progresses is that the way to use all types of data is going to increase and as it is put together, the possibilities will be endless. This is something we are trying to support in our Big Data research" (Zilgalvis 2015).

In the UK, a review is looking at ways to improve England's National Health Service (NHS) IT, including electronic health records, to achieve a paper-free health and care system by 2020. Making IT work: harnessing the power of health IT to improve care in England, will look at places where IT has worked well and those areas that need improving. It will also look at different ways to implement IT in healthcare as the NHS works towards being paperless by 2020. With an investment of 4.2 billion pounds, the National Advisory Group on Health Information Technology, which includes experts and patient representatives from England, Scotland, Denmark and the U.S., will present recommendations later in 2016 (Department of Health, National Information Board 2016).

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