HiMSS®
INSIGHTS
series

DIGITAL TRANSFORMATION

Transformers wanted

Philipp Grätzel von Grätz
Editorial Director
HIMSS INSIGHTS

My son went to a doctor recently. I received an unencrypted email the day after which included three PDF documents about the results of various tests. The documents were password-protected, and the password was sent by SMS messaging to my mobile simultaneously with the email. The email explained to me that I had to keep the password, supposedly forever, because the PDFs would continue to be protected even after I saved them under a different file name. There is a way out, though, and I am still quoting: "On a secure device, you can include the password into the file name."

This is what digitization of healthcare looks like in Germany in 2019, and I suppose, similar experiences can be made around the globe. The digital transformation of healthcare can be extremely demanding. Communication infrastructures that involve patients are patchy. And the results that you get when individual healthcare providers try to digitize on their own can be – well – interesting.

In this issue of *HIMSS Insights* you will be reading about digital transformation in various sectors of the healthcare system. Some of the examples are pretty advanced, like using blockchain for medication tracking in order to fight pharmaceutical counterfeiting. Others, like drone delivery of pills to private households, are experimental. What all activities have in common is that someone identified a problem and thought about how digital technologies might help to solve it. But an individual is not enough. Successful digital transformation needs transformers on all levels, from the dedicated individual on the ground to the clear-sighted regulator further up. We are getting there. One day, bizarre messages from doctors about using passwords to rename protected PDF files will be a thing of the past.

Enjoy the issue – and **do share your feedback.**

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Transformers in chief - navigating digital redesign

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Pimping the pharmaceutical supply chain

Let's connect care, everywhere

When patient data doesn't flow, it doesn't just impact hospital efficiency – it compromises delivery of care. Let's make critical information visible whenever and wherever it's needed.
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innovation ✦ you

TRANSFORMATION AT HEALTHCARE ORGANIZATIONS –
Why? How? Does it Happen?

WHY?
The drivers of transformation

- Improving patient safety and outcomes
- Reducing cost variations of service delivery
- Standardizing service quality
- Increasing financial control
- Improving financial return on investment and service delivery

HOW TO
set up a transformation plan

- Define an enterprise-wide strategy
- Build a change-ready culture
- Engage the workforce
- Empower leaders to drive transformation
- Develop an integrated data and management strategy

DOES IT HAPPEN?
The case of NHS England –
No transformation plan in place

57%
of all NHS trusts

44%
of all NHS acute trusts
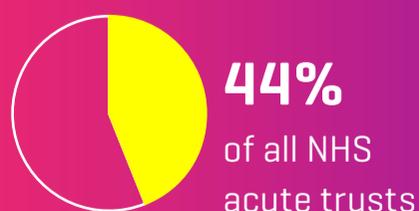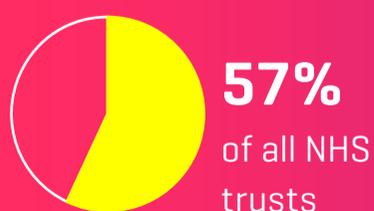
Sources: Transforming Healthcare Consultancy

Q. What can you share from your experience of digital transformation projects that you've been part of?

UK

Workforce inclusion is key to transformation success

The digitization of a discharge process in the UK's NHS has been the most successful project that Lawrence P Petalidis, Chief Innovation and Business Officer at Health Navigator Ltd., has been part of, due to stakeholder collaboration being a key focus.
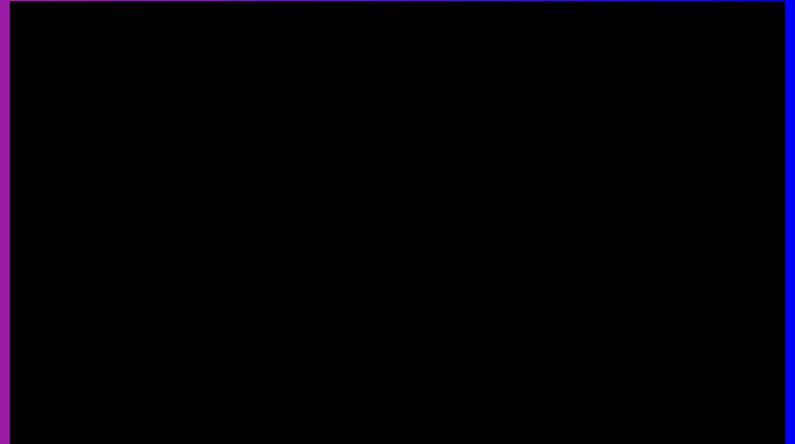
UK

Connected health for best possible citizen care

Research for breakthrough treatment and formulating up to date policies are just a couple of the benefits that connected health can provide for Dr Layla McCay, Director of International Relations, NHS Confederation, UK.
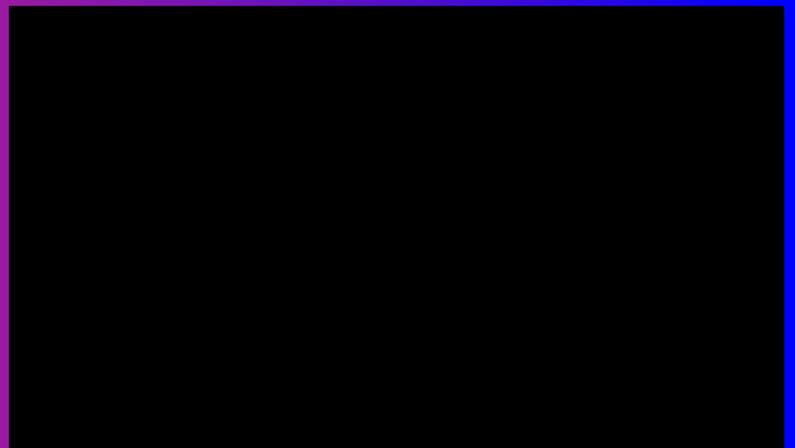
AUSTRALIA

Clear communication between government and suppliers helped digital transformation succeed

An Australian prescription monitoring service was appropriately funded and communicated to all stakeholders, which has resulted in a remarkable success story according to Emma Hossack, CEO of Australia's Medical Software Industry Association.
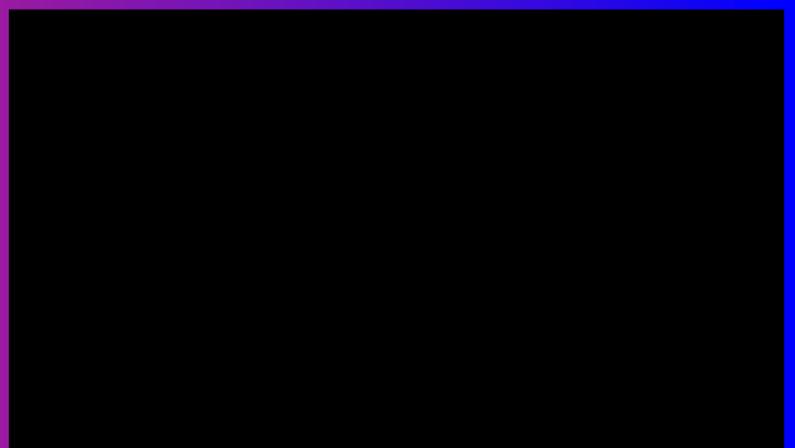
UK

The right 'buy in' is required for transformation projects

James Freed, CIO of Health Education England, insists that having sufficient support from relevant stakeholders across the business is imperative to success and recommends appointing a business lead to drive transformation projects from the start.

Source:
Rhön Klinikum AG
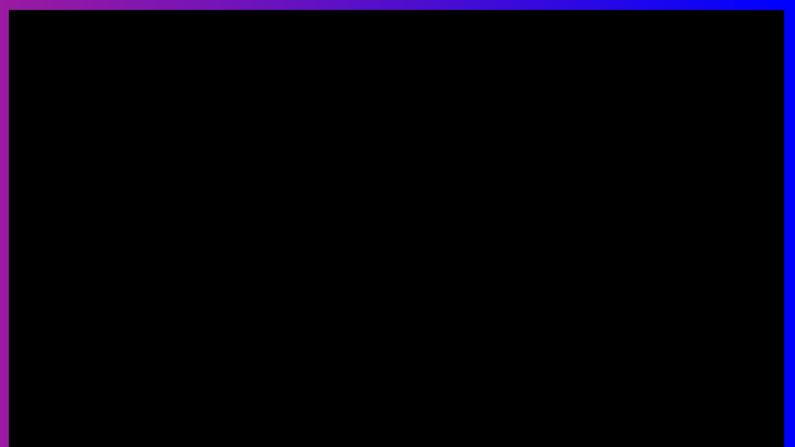
HOSPITAL CARE
BEYOND WALLS

The global telemedicine market looks set to grow much quicker than anticipated, and it is clearly hospitals that are in the driving seat. Both in Europe and the US, bold providers take digital transformation seriously and reach out to patients' homes.

By Philipp Grätzel von Grätz

Telemedicine has long been on the agenda of healthcare systems in the age of digitization, but in many places, it hasn't really taken off – despite promising clinical trials, convincing pilot projects, and eloquent advocates that argue in its favour. The tipping point might have been reached though: If a new report that has just been published by Global Market Insights turns out to be right, we are about to leave the age of tele-piloting behind us and enter the age of tele-caring.

For the global telemedicine market, the analysts expect a whopping 19.2% compound annual growth rate in the years to come, pushing the market volume from its present $38.3bn to $130.5bn by 2025. With $64.1bn, the US are expected to account for nearly half of the market volume in 2025. Still, the expansion of telemedicine is a global phenomenon.

DIGITAL TRANSFORMATION OF HOSPITALS: HUB-AND-SPOKE IS ON THE RISE

Among the general trends that fuel the growth are, according to the analysts, better telecommunications networks all around the world, favorable government policies not least in Europe that push for more interoperability, and, more generally, the ongoing integration of the healthcare and IT sectors. Most of all, though, it looks as if strategic decisions of hospitals are driving telemedicine, with the tele-hospital market accounting for nearly two thirds of the projected market volume in 2025.

Telemedical engagement of hospitals has several dimensions. Many rural hospitals are unable to support full-time on-site physicians in all medical specialities and sub-specialities and thus feel the necessity to provide virtual hospital presence. This is the realm of tele-stroke care and tele-ICU care, typically organised as hub-and-spoke networks with a big hospital acting as the central hub and various smaller hospitals in the periphery that are being supported by the hub's experts.

Both tele-stroke care and tele-ICU care have been around for more than a decade now. In both cases, the medical special-

> " *The UVA telehealth program will cover remote blood sugar monitoring, screening for diabetic retinopathy, home rehabilitation, and eConsultation services.*

TELEMEDICINE MARKET

Global market share (2018)
$38.3 bn

CAGR (2019-2025)
19.2 %

Global market share by 2025
>$130.5 bn

CAGR – Compound annual growth rate (2019-2025)

18.9% Teleconsultation service sector

20.8% Tele-education/ training service segment

19.6% Telehome market sector

39.8% Neurology market segment

REGIONAL INSIGHTS

US market share		CAGR (2019-2025)	
2018	by 2025	China	India
$19.5bn	**$64.1bn**	**23.0%**	**22.4%**
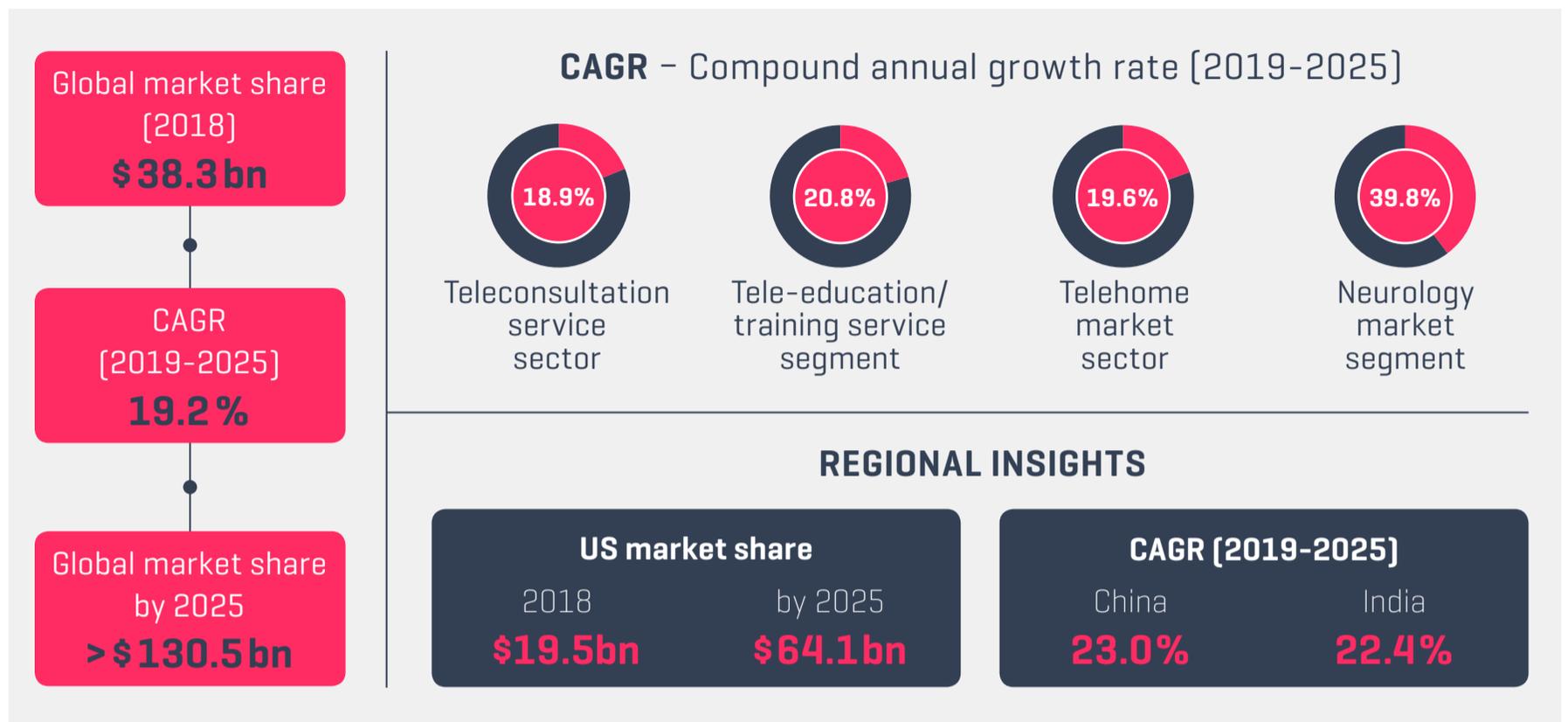
Source: Global Market Insights; Report: Telemedicine Market Size; 16 March 2019

" *The tipping point might have been reached. We are about to leave the age of tele-piloting behind us and enter the age of tele-caring.*

ities involved needed time to develop quality criteria, collect best practice experiences and, finally, write guidelines that set process standards and define parameters to evaluate outcomes. Today, tele-stroke and tele-ICU are not only established but increasingly being implemented all over the world.

HOSPITALS AS HOMECARE PROVIDERS: LOOKING FOR EFFICIENCY GAINS

More recent is the second type of telecare that is being driven forward by hospitals, which is telecare for patients at home. Examples of this trend can be found on both sides of the Atlantic Ocean. At the end of February, the University of Virginia announced that it will expand its telehealth offerings considerably, utilizing an initial grant of $750,000 from the federal Centers for Disease Control and Prevention and from the Virginia Department of Health. Only four weeks earlier, NewYork-Presbyterian Hospital started to expand its virtual care business by collaborating with Philips on a digital care program that includes remote patient monitoring and digital care coordination.

Stephan Holzinger, CEO of RHÖN
KLinikum AG since 2017

Source: Rhön Klinikum AG

The University of Virginia telehealth program will cover, among others, remote blood sugar monitoring for patients with type 2 diabetes, telehealth screening for diabetic retinopathy, home rehabilitation for heart failure patients, and eConsultation services for primary care providers. NewYork-Presbyterian, too, gears its telehealth activities towards a broad spectrum of chronically ill patients. Both providers hope to reduce length of stay in the hospital, prevent hospital admissions, and avoid costly visits to the emergency department.

TAKE IN-PATIENTS OUT:
HOME TREATMENT ON THE RISE

In Germany, the private hospital chain Asklepios is taking a different approach. It is planning to use telecare tools not only to optimize existing care processes, but to offer new types of care that would not have been possible before. To this end, Asklepios has acquired the Dutch eMental health provider Minddistrict earlier this year. One of the use cases for Minddistrict's eMental health tools is offering in-patient hospital care to psychiatric patients – but as a home treatment outside of the hospital.

The home treatment is aimed at patients who require hospital treatment but who are not willing or able to accommodate in-patient psychiatric care or in whom doctors expect better therapeutic outcomes when left in their familiar surroundings: "In this type of treatment, the patient is not coming to us, but the care team of our hospital is visiting the patient at home," says Volker Thesing, CEO of Fachklinikum Stadtroda, a mental health hospital in a small town in the German state of Thuringia. As far as actual physical presence is concerned, there are obvious limits to this treatment approach. But when supplemented with digital care tools, quality of in-patient care can be maintained, and in some cases, it might even be surpassed. "Modules for online-supported mental care like those offered by Minddistrict are a perfect fit for these new therapy scenarios", says Thesing.

Henning Schneider, CIO of
Asklepios Hospital Group since 2016

Source: Asklepios Kliniken

" *We will not only be a provider of hospital treatments, but rather a healthcare service organization engaged in the whole value chain."*

Henning Schneider, Asklepios

DIGITAL TRANSFORMATION: NEW BUSINESS MODELS WANTED!

For Asklepios CIO Henning Schneider, the Minddistrict acquisition was not only about being able to offer and to develop further eMental care tools. It was also a strategic decision that aims at opening new business opportunities for the hospital group: "We are convinced that we will not only be a provider of hospital treatments, but rather a healthcare service organization that is engaged in the whole value chain – before, during, and after the hospital stay. If we want to get there, we need products that make this possible, and this includes digital services on different levels."

Asklepios is not the only hospital provider that is entering into a love affair with digital services. A big competitor of Asklepios in Germany, the Rhön Klinikum AG, another private hospital group with dozens of hospitals including a large university hospital, is planning to establish itself as a national telemedicine provider by mid-year, in a joint-venture with Medgate, the leading telemedical service center in Switzerland. And again, this engagement is not only about optimizing care processes. Rhön-CEO Stephan Holzinger said that he expects that about 30% of the provider's ambulatory patients will be treated via telemedicine in the future. But he also adds that the investment has a strategic dimension: "Telemedicine has the potential to become an important second pillar for our business." ◾

Learn more

- NewYork-Presbyterian Hospital expands virtual care

- University of Virginia expanding telehealth to better treat diabetes, heart disease

- Network for excellence in health innovation; Healthcare without walls – A roadmap for reinventing US healthcare. Executive summary

TRANSFORMERS IN CHIEF – NAVIGATING DIGITAL REDESIGN

The elite corps of chief digital officers emerging today are both business-minded and tech-savvy and use those skills to rethink operations.

By Nathan Eddy

> " *Another thing you have to get right is being transaction-ready"*
>
> Aaron Martin,
> Providence St. Joseph Health

As healthcare moves to value-based, consumer-centric models, and the industry is disrupted by tech-savvy vanguards, a small but intrepid group of hospital systems are introducing the chief digital officer (CDO) role to manage transformation.

"To really transform requires a complete 360 degree operational redesign," said David Chou, the former CDO of Children's Mercy Kansas City who is currently VP and principal analyst at Constellation Research. "Only a few CEOs get that and are willing to make the radical change."

Indeed, CDOs are something of an elite group today. Pamela Dixon, managing partner of SSi-Search, a recruiting firm that specializes in C-level roles, said she is seeing more of them crop up and pointed to Ascension's hiring of Eduardo Conrado last year as a reasonably high-profile hire. Another health system, Novant Health, made something of a splash when it named former Rent-A-Center and BDP International CIO Angela Yochem as its CDO as well.

We interviewed prominent CDOs Dr Fernando Martinez of the Texas Hospital Association and Aaron Martin of Providence St. Joseph Health about the emerging role.

CDOS: WHAT THEY DO

CDOs influence ranges from reducing risk in data-oriented projects to ensuring regulatory compliance and capitalizing on big data opportunities to monetize information assets.

Dixon described the CDO as both a strategic business-minded leader and tech-savvy enough to rethink operations for the digital era. "We're concerned with how technology and digital capabilities reconcile to the mission of the business – taking care of patients," said Martinez. "It's somewhat of a precarious balancing act, providing that information flow is one of the big challenges for a hospital-based CDO."

Martinez said seamless movement of data along the continuum of care – on a timely basis in order to provide the best care – is a critical aspect of digital strategy, and in healthcare it's complicated by security concerns. He explained data lives in a hierarchy. At the bottom you have data, followed by information, followed by knowledge, and by wisdom.

"A fact about a patient isn't helpful, but a bunch of details gives us knowledge. We want to turn it into actionable information," he said.

DIGITAL URGENCY

He noted there's a level of urgency in healthcare that does not exist to the same degree and it is critical to have access to a patient's EHR.

"How we take these large bodies of data and turn them to wisdom is a challenge that requires a discrete level of strategic thinking about data," he said.

Since Aaron Martin joined Providence St. Joseph Health as CDO in 2014, he has led a team of more than 200 software engineers and programmers tasked with better engaging patients, families, and communities.

"My job is to not only work on digital transformation, but more specifically to move our relationship with customers and patients from an offline status to an online status," Martin said. "We have a huge engagement problem, and so we don't really see patients but two and a half times a year."

The challenge, then, is how to get a continuous conversation about health going on, and part of that can be met by developing apps that keep people engaged about their health, with features like one click scheduling and telehealth visits.

"We take areas like better engaging the Medicaid population, break them down further, take it through a process to see if the digitalization approach moves the needle," Martin said.

"If Epic can solve the problem we use Epic – if it won't we go out into the market and look for the best of breed, or we build the platform ourselves."

HOSPITALS HAVE TO BE READY FOR A CDO

Martin said health systems also have to get their brand right, and what that means from the digital standpoint is needing to build a very substantial base of content online so that people trust the health system's credibility.

"Another thing you have to get right is being transaction-ready," he said. "Take for example the ability to plan scheduling with your physicians. It sounds easy, hard to do, and it has a lot to do with things like getting their schedules online."

When it comes to maintaining engagement with the population, he pointed to a platform that provided curated content for women who were pregnant, which eventually grew to encompass health issues spanning a woman's whole lifespan.

Martin said other health systems like Cleveland Clinic and Mayo Clinic do an "incredible job" with onlining patients through a variety of digital engagement initiatives.

In the not too distant future there are going to be huge changes on the Web in how healthcare is discovered, much of that dependent on being able to process these transactions online.

"I don't think there is going to be a typical five-year journey we have the luxury to complete, I think it's closer to about 18 months," Martin said. "There are a lot of technology partners out there willing to come in to help – but only if we're ready."

That's ready, as in prepared to harness the power of data and analytics to become a major competitive advantage for health systems that can unlock that value. ■

Healthcare IT News Editor-in-Chief Tom Sullivan contributed to this report.

> **"** *We're concerned with how technology and digital capabilities reconcile to the mission of the business – taking care of patients"*
> Dr Fernando Martinez,
> Texas Hospital Association

What do you think?

How important is the role of a CDO in your hospital?

GET IN TOUCH
to let us know your thoughts
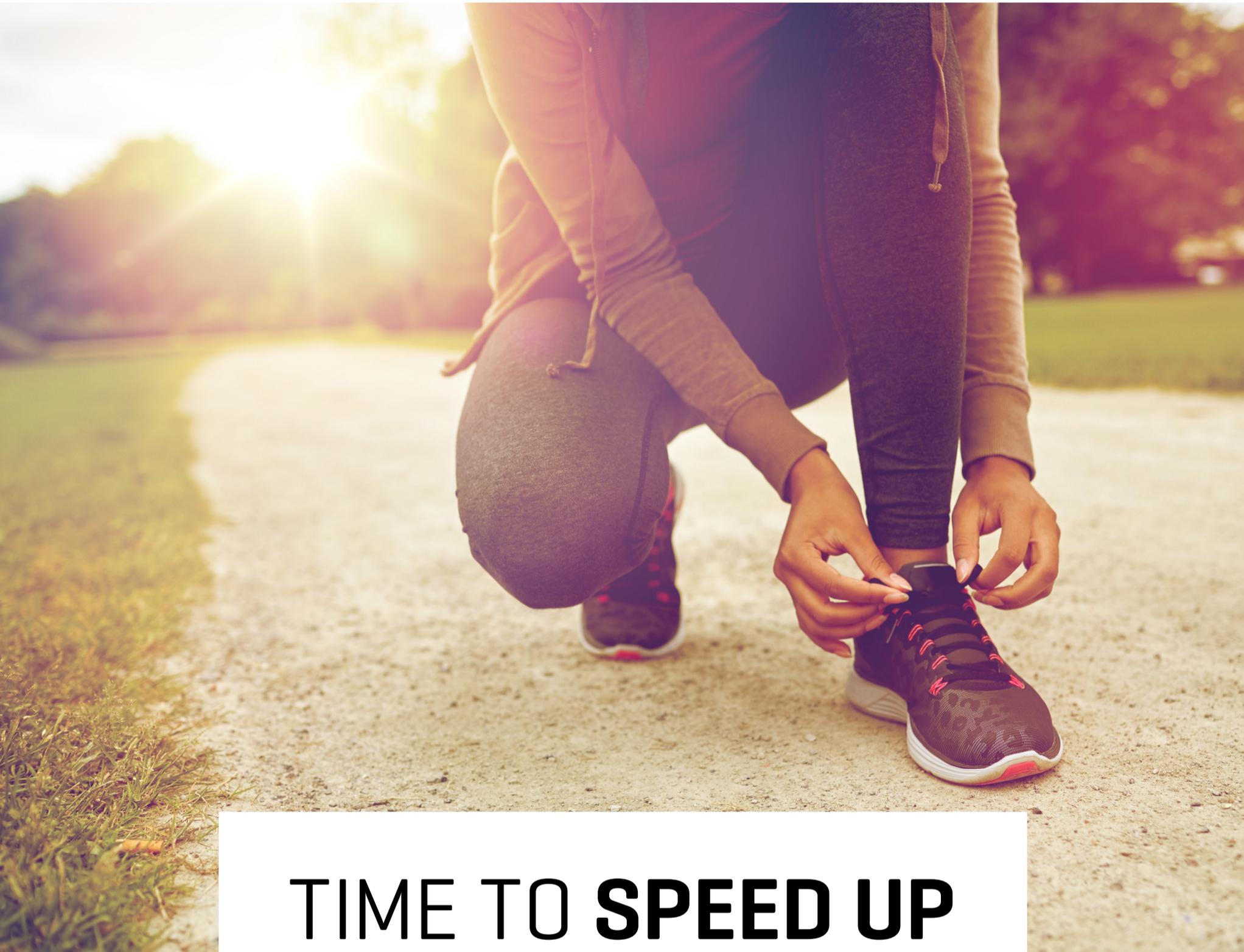
TIME TO **SPEED UP** HEALTH INSURANCE?

Health insurance companies have struggled to keep pace with global digitization but if they are to compete with an advancing battalion of disruptors, they need to mobilize coherent digital strategies now – and take the lead in building a new digital ecosystem.

———

By Piers Ford

I ndustry disruption by digital players is a major threat to the health insurance industry, but insurers themselves seem to be more dazzled by the oncoming glare than galvanized behind comprehensive strategies and best-practice development frameworks for digitizing their businesses.

While there is a general cohesion around CRM and the customer experience, the deeper benefits of digitization – administrative and medical streamlining and cost reductions, improved health for customers as they are influenced to take a more preventive approach to managing their own health-care and ultimately, sustainable revenue growth – have been noticeably slow to emerge.

PROMISING SIGNS

In Europe, there have been pockets of progress. AXA's collaboration with Ecole Polytechnique in France, for example, has seen the creation of a 'Data Science for the insurance sector' Chair with a focus on developing new techniques to exploit data collected by insurers and attract data science talent to the insurance business. In 2015, the company also formed a start up incubator, Kamet, to create a new generation of disruptors that will eventually join the AXA Group.

'Grow your own' is certainly one way to address the challenge posed by digital giants such as Amazon and Google as they mass their own forces to take on the health insurance space, but at the other end of the scale, much of the innovation is coming from smaller payers as they address customer influence.

The Exeter in the UK has developed a digital-first model that promotes digital healthcare as a benefit of health insurance. A new app provides access to digital health services without impacting a customer's no-claims bonus, including phone and video GP consultations, prescription issue, post-diagnosis second opinions, and physiotherapy and mental health consultations.

> **"** *Digital transformation demands a nuanced approach. There are best practises, but no one-size fits all solution."*
>
> Greg Gilbert, McKinsey
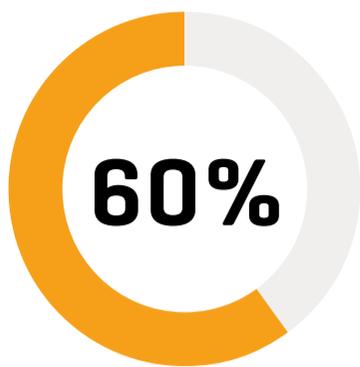
60% The volume of customers who would like health insurers to offer a wider range of services

Source: Customer Behavior and Loyalty in Insurance: Global Edition 2017, Bain & Co

"The Exeter's digital-first approach for customers is a really interesting one and shows it is listening to its customers, who are increasingly using devices for everyday matters," says Rod Jones, head of partnership at the company's insurance comparison partner ActiveQuote. "It also shows that health insurance providers, who have mostly remained very traditional in their approach to the way they work for and with policy holders, are following on the online and on-demand trend that the comparison market has been doing for decades."

Strategies like this clearly resonate with tech-hungry consumers – one of the reasons why disrupters have a strong card to play against the more cumbersome approach of incumbent payers, a trend identified by consultant McKinsey in a recent article on how **digital is reshaping health insurance** in the US.

While more agile providers are moving quickly, many are still finding it difficult to make headway with their digital transformation programs. "One thing is clear," say authors Greg Gilbert, Luis Almeida Fernandez and Ajit Sawant. "Digital transformation demands a nuanced approach. There are best practises, but no one-size fits all solution."

McKinsey paints a picture typical of an industry struggling to take a coherent approach to digitization. Multiple challenges, spearheaded by the lack of enterprise-wide collaboration and a major shortage of skills across the development, mobile, design, analytics and tools fronts, are compounded by a lack of internal focus and the sheer scale of the demand and urgency.

ORDERS OF IMPORTANCE

Prioritization will always depend on the individual business, but the authors of the article advocate a more collaborative approach which brings together stakeholders, drives new working practices – particularly in development – and focuses on investment and orchestration of a new technology ecosystem, the elimination of legacy complexity and the development of APIs for constituents, partners and customers. Ideally, this should be driven by a chief digital officer who can identify and prioritize momentum builders. The ultimate call to action is "Do it now" – but the authors also make a strong case for looking outwards to forge partnerships with disruptors themselves.

This suggestion is also made by partner Henrik Naujoks and his co-authors in an article from consultant Bain, which takes the view that insurers themselves hold **the key to healthcare's digital future**. "They can become the principal players at the center of an ecosystem of healthcare services, acting as processors and payers, but also as partners with their customers in the digital experience," they write.

By looking at the potential application of 30 technologies across the entire healthcare insurance value chain, they suggest that digitization could help a 'prototypical' German health insurer boost its premium revenues by 6-11 percent in five years, and cut costs by 15-20 percent using digital tools.

According to Bain, there are seven key technologies on which insurers should focus:

1. Infrastructure and productivity (*data exchange*)
2. Online sales technology (*mobile*)
3. Advanced analytics (*new business processes, CRM, claims processing and fraud detection*)
4. Machine learning (*care, claims management*)
5. Internet of Medical Things (*prevention and early detection*)
6. Blockchain and digital ledger (*treatment cost control*)
7. Virtual reality

> " *Health insurance providers, who have mostly remained very traditional in their approach to the way they work for and with policy holders, are following on the online and on-demand trend that the comparison market has been doing for decades.*"
>
> Rod Jones, ActiveQuote

With a more focused approach, insurers ought to be in a prime position to become the nucleus of a network of stakeholders, including hospitals, doctors, patients, pharmacists, pharma companies and device makers.

"" *In the UK, combining insurance, AI, robotics, digital, the workforce and social enterprise together with an integrated approach could produce a new model, which could provide much more support to the difficulties that exist in the NHS".*

Richard Skellett, Digital Anthropology

Some observers would go further, suggesting that digitization could be a force for change, with increased predictive analysis, for example, shifting the balance of power from claims management to customer benefits and the addressing of deeper challenges in healthcare systems.

"In the UK, combining insurance, AI, robotics, digital, the workforce and social enterprise together with an integrated approach could produce a new model, which could provide much more support to the difficulties that exist in the NHS, alongside providing much greater benefits to its direct customers," says Richard Skellett, founder of campaign group Digital Anthropology.

He says the impact of a new operating model for healthcare insurance would be a true illustration of how technology can augment and impact people's lives: "The ability to use AI in proactive treatments [and move] away from reactive profit-based treatments in one which should be pursued."

As a potential new business model, that might be a step too far from commercial health insurers who must answer to shareholders and investors, but it does signal digitization as an essential strategy for flexibility and diversification.

There is a note of caution, however. Insurers should be careful not to favor the front-end over an integrated behind-the-scenes strategy. As Henrik Naujoks points out, using AI tools to speed up claims processing might be a more profitable strategy in the long run than investing in the development of a cool bot for the customer complaints chatroom. ∎

PIMPING THE PHARMACEUTICAL SUPPLY CHAIN

Counterfeiting is a huge concern for the pharmaceuticals industry, with an estimated one in 10 medical products circulating in low and middle-income countries (LMICs) falsified, according to recent research from the World Health Organization (WHO).

————

By Tammy Lovell

> " *This novel technology of combining physical products with blockchain will support the security interests of businesses and their products by offering them new methods of tracking their supply chain through blockchain, Internet of Things and connected workflow environments".*

Isabel De Paoli, chief strategy officer, Merck

Governments, industry and regulators worldwide are trying to make the pharmaceutical supply chain more bullet-proof and the use of blockchain based track and trace technology has been hailed as a possible solution.

Blockchain is an electronic cryptographic ledger which creates an immutable record of all events throughout the supply chain, allowing digital information to be distributed without being copied.

For the drugs supply chain this has the benefit of passing data in a fully automated and safe way, whilst allowing all stakeholders to verify the authenticity of transactions.

THE COST OF COUNTERFEITING

Antimalarials and antibiotics are the most commonly reported counterfeits and up to 30% of malarials in sub-Saharan Africa could be fake. WHO estimates that 72,000 to 169,000 children die each year from pneumonia due to substandard and falsified antibiotics.

Meanwhile, a European Commission impact assessment carried out before the introduction of the Falsified Medicines Directive (FMD), estimated that 1 in 20,000 medicinal packs are counterfeit in Europe and an EUIPO report from 2016 showed that fake medicines cost the EU pharmaceutical sector $11.5bn (approx. €10.2bn) each year.

Source: Shutterstock/walterericsy

PHILIPPINES

Asia accounts for the biggest share of the trade in counterfeit medicines, according to the industry-funded organization, the Pharmaceutical Security Institute.

In the Philippines 30% of pharmacies inspected in 2003 were found to be selling fake medicines.

A **study** published in the Journal of Medical Internet Research (JMIR), tested the feasibility of a pharmaco-surveillance blockchain solution to deal with this problem.

The research team, led by Patrick Sylim of Philippine General Hospital's National Telehealth Center, intends to discuss implementation plans with the Philippine FDA.

NOVEL TECHNOLOGY

German pharmaceutical company Merck and Swiss firm Novartis are among those exploring the use of blockchain as a potential solution to track packages throughout the supply chain.

Merck has patented a security tool which uses artificial intelligence (AI) and blockchain to link physical objects called 'crypto-objects' through their own unique identifiers or 'fingerprints'.

Any unique feature can be used as a fingerprint, such as a chemical signature, DNA, or image patterns.

"This novel technology of combining physical products with blockchain will support the security interests of businesses and their products by offering them new methods of tracking their supply chain through blockchain, Internet of Things and connected workflow environments," said Isabel De Paoli, chief strategy officer at Merck.

US PILOT

The US Food and Drug Administration (FDA) launched a pilot in February into the use of blockchain technologies to improve the drug supply chain. This will inform the development of

What do you think?

Is blockchain more than an enabler in your experience?

GET IN TOUCH
to let us know your thoughts

the enhanced electronic, interoperable track-and-trace system for industry set to go into effect in 2023 as part of the Drug Supply Chain Security Act (DSCSA).

Goals for the system are "to fully secure electronic product tracing, which provides a step-by-step account of where a drug product has been located and who has handled it, establish a more robust product verification to ensure that a drug product is legitimate and unaltered, and to make sure that any party involved in handling drugs in the supply chain must have the ability to spot and quarantine and investigate any suspect drug," said the former FDA Commissioner Scott Gottlieb.

'PART OF THE TOOLBOX'

There is also growing interest in the use of blockchain technology in the EU to comply with the requirements of the FMD, which was introduced in February this year.

Under the FMD, manufacturers of all prescription and certain non-prescription medicines must add specific safety features to their packaging which allow legitimate medicines to be tracked at each point of the supply chain right down to the retailer.

Since the FMD does not specify how manufacturers implement the serial numbers or data collection systems it requires, blockchain seems a viable choice.

But despite admitting that blockchain has become a "buzzword in how the supply chain will look" a spokesperson for the European Federation of Pharmaceutical Industries and Associations (EFPIA) told HIMSS Insights it had not yet been widely adopted in the EU due to "lack of common standards, fast moving technology and legal barriers."

He added that blockchain is "just an enabler not a goal in itself, but it could be part of the toolbox used by companies to supplement their own anti-counterfeiting and enforcement efforts." ∎

TRANSFORMING HEALTHCARE SYSTEMS
THE EUROPEAN WAY

Electronic patient records of Central European healthcare systems are transforming towards IHE infrastructures and thus interoperability. Some are pretty advanced already. In others, progress is painstakingly slow.

By Philipp Grätzel von Grätz

I t has been a number of years already since the European Commission embarked on a journey of bringing interoperability and international standards to help with digitizing European healthcare systems. Way ahead of other parts of the world, the European epSOS project started to define a European patient summary based on international standards a decade ago. Since then, the European patient summary has evolved beyond Europe and has found its way into the global endeavor to develop an "International Patient Summary" or IPS. The IPS, coordinated by CEN/ISO, is one of the most ambitious interoperability efforts with a clearly international agenda worldwide.

So far, internationally standardized patient summaries have not been in use much though, not even in Europe, where they had been invented. Healthcare IT reality in many parts of Europe is that most hospital and ambulatory IT systems tend to not be capable – or the IT providers not willing – to implement these datasets. And – mirroring this reality – national electronic patient or health record projects are often not advanced enough to be able to create or read standardized patient summaries, making truly interoperable cross-border healthcare scenarios remain – to a large extent – fiction.

A BOLD MOVE: THE EUROPEAN HEALTH RECORD EXCHANGE FORMAT

The European Commission has been well aware of these problems for years. And last year it decided to take another step and recommend a 'European electronic health record exchange format' or eHRXF. It was published earlier this year. The recommendation was widely considered to be a bold move, and sparked enthusiasm as well as nervousness. It draws on earlier work done by the European Commission, including an encompassing list of recommended IHE profiles that should be used to reach cross-border interoperability between European electronic health record projects.

In healthcare, though, the European Commission cannot do much more than recommend, since healthcare doesn't fall

"There won't be further delays."

Gottfried Ludewig,
German Ministry of Health

Source: Tobias Koch

MY HEALTH IN THE EU

DIGITAL EXCHANGE OF ePRESCRIPTIONS & PATIENT SUMMARIES
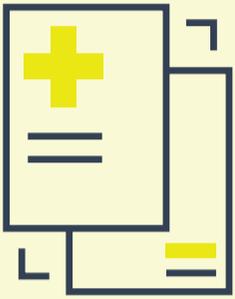
DIGITAL HEALTH EU

- ACCESS TO HEALTH DATA ABROAD
- CONTINUITY OF CARE
- CROSS-BORDER CARE
- SUPPORTED BY THE CONNECTING EUROPE FACILITY (CEF)

BY 2021:
22 EU
COUNTRIES

#DigitalHealth
ec.europa.eu/health/ehealth

Source: European Commission | Health and Food Safety

into the responsibility of 'Brussels'. One could argue that because the EU is responsible for digital infrastructures in general, it should also have the right to define healthcare IT related communication standards. But this is not how the European Union works. To make cross-border interoperability a reality in Europe, national governments have to want it and actively implement agreed-upon IHE profiles and datasets like the IPS in their national healthcare IT projects.

LUXEMBOURG TO IMPLEMENT EHDSI PATIENT SUMMARIES
This is exactly what is starting to happen now. In the context of the European eHealth Digital Service Infrastructure (eHDSI) under the Connecting Europe Facility (CEF), more and more EU Member States have been setting up National Contact Points for eHealth (NCPeH) that act as technical and semantic 'adapters' between healthcare IT infrastructures of different Member States. In January 2019, Finland and Estonia were the first EU Member States to be able to exchange ePrescriptions cross-border outside of pilot projects. Since then, more than 1,000 Finnish citizens have been able to go to a pharmacy in

> **" Health professionals in Luxembourg will be able to consult the patient summary from the patient's country of origin."**
>
> Heiko Zimmermann, Agence eSanté, Technical Project Lead NCPeH Luxembourg

Estonia and retrieve medicine prescribed electronically by their doctors in Finland.

In summer 2019, patient summaries will follow. For the first time outside of pilot projects, medical datasets that summarize the disease history of an individual will move back and forth between EU Member States. One of the forerunners in implementing cross-border use of electronic patient summaries is Luxembourg, where the Agence eSanté, that coordinates the digitization of Luxembourg's healthcare system, acts as the NCPeH: "Starting in mid-2019, visitors from other European countries requiring medical treatment in Luxembourg can benefit from this service," Heiko Zimmermann, CDIO of Agence eSanté told HIMSS Insights. "Health professionals in Luxembourg will be able to consult the patient summary from the patient's country of origin, to get an overview of the current health situation of the patient and to support the medical treatment."

NOT QUITE AN IPS, BUT WORKING TO GET THERE

Healthcare workers, of course, have to learn about the new service. This is why Agence eSanté informs health professionals – especially general practitioners and emergency units – about the background and the usage of the new provided services within their medical workflow. "These services are fully integrated with the existing national eHealth Platform, providing health professionals with a single entry point and ensuring secure authentication," according to Zimmermann.

In the beginning, the patient summary in Luxembourg will be a one-way road. As a next step, Agence eSanté will implement the bidirectional service, i.e. allow Luxembourg patients to benefit from retrieving their patient summary when treated by a foreign health professional abroad, based on an explicit consent from the patient. In relation to this, Agence eSanté is working with doctors and stakeholders of the healthcare domain, to evolve the patient summary into a structured document, aligned with both European Guidelines on Patient Summaries and the specifications of the CEN-IPS.

IHE IN CENTRAL EUROPE: FINALLY EN VOGUE?

Luxembourg is not alone on the patient summary implementation field. The second Central European country in which doctors will be able to access patient summaries from other European countries, starting in summer, will be the Czech Republic. And, once again starting in summer, Croatia will also enable its doctors to access patient summaries from abroad, with the focus being on patient summaries from Czech visitors in the beginning. Furthermore, Croatians travelling to Estonia will soon be able to get their ePrescriptions there.

The recent successes under the umbrella of the eHDSI efforts can be considered part of a wider trend: Central European healthcare systems are finally moving towards implementing international standards. Some countries, most notably Austria, have embarked on this journey early on. In Austria, nine million citizens are now registered for the largely IHE-based national electronic health record ELGA, that can be accessed via web browser or mobile app. Electronic medication lists as part of the ELGA system are currently being rolled-out, and from 2021 onwards, a digital vaccination application looks set to follow.

Austria is also planning to make its ELGA record accessible for medical providers beyond hospitals, doctors in private practice, and pharmacists. In July 2018, the country initiated a nationwide health worker registry in which physiotherapists, nurses, opticians and the like will have to register by 30 June 2019. This will allow health workers of all kinds to receive unambiguous digital identities, which is a prerequisite for taking part in the ELGA network

GAPS BETWEEN TALKING AND DOING REMAIN

Even Germany, well known for working with highly proprietary, very national healthcare IT standards, seems increasingly willing to make peace with IHE profiles. The national healthcare IT organization gematik has recently published the first version of its technical specification for electronic patient records in Germany. A new law makes it

mandatory for statutory health insurance providers in Germany to offer electronic health records that comply with gematik standards by 2021.

The gematik specification draws on a number of important IHE profile, including XDS. But for the moment at least, this can only be considered a careful approach. One of the reasons why Germany is much less at ease with IHE profiles than, for example, Austria, is the complex – and again very Germany-specific – communication infrastructure that the Ministry of Health is currently setting up, plus privacy requirements that exceed those in other European countries. In a rare public statement, IHE Germany has criticized the gematik specification, saying that, in its current fomat, it cannot be considered compliant with IHE at all.

There won't be major changes to the German electronic patient record specification in the short-term though. Gottfried Ludewig, head of digitization at the German Ministry of Health, has made it clear that the priority is not to be compliant with IHE but to have some sort of standardized electronic health record on track by 2021: "There won't be further delays."

Most healthcare IT stakeholders are aware that this will likely produce difficulties further down the road. But the decision has been taken. The EU says that by 2021, approximately 22 EU countries will have implemented cross-border exchange of ePrescriptions and patient summaries. It is highly unlikely that Germany will be among them. But at least there is a growing awareness that this should be the direction to move in. ■

Learn more

About the **European electronic health record exchange format**

DRONES TRANSFORMING
MEDICAL SERVICES DELIVERY

By Lynne Minion

As a high-pitched whirring sound passed over the Australian capital of Canberra, eyes went skywards to watch the curiosity as it flew by. The tiny aircraft was travelling back and forth in the lead up to the launch of a world-first drone delivery operation by **Wing**, a subsidiary of Google parent company Alphabet, which will begin depositing over-the-counter medicines at consumers' doorsteps in the city within weeks.

Source: Wing.com

A low-density sprawl of 420,000 people that is known as "the bush capital", Canberra would appear to be an unlikely digital transformation hub. But above its leafy boulevards, national institutions and mobs of kangaroos, a fleet of mini planes will soon be zipping around carrying painkillers, lattes, gelato and golf balls.

Wing announced in April that it had **received Civil Aviation Safety Authority approval** to fly drones over built-up areas for its business-to-backyard service in what is a groundbreaking development in the race to commercialize the technology.

"Whether you're a parent with a sick child at home and have run out of baby paracetamol, a busy professional who forgot to pick up fresh bread during your regular weekly shop, or you simply just want to order your morning flat white without the hassle of having to drive to the cafe, Wing has teamed up with local Canberra businesses to give customers the opportunity to have a range of goods delivered in a handful of minutes," Wing said **in a blog post** announcing the news.

OVERCOMING OBSTACLES

Drone deliveries are certainly expected to transform the way we rapidly access small items such as allergy meds and flu syrup. But companies looking to gain a foothold in the potentially lucrative field globally, including **Amazon Prime Air**, have often had to negotiate Byzantine regulatory and policy obstacles, and community backlash. In the Australian Capital Territory, however, Wing has had the advantage of a government keen to provide a launch pad, with **chief minister Andrew Barr writing to company CEO James Ryan Burgess** in 2017 that: "Canberra is well-placed for the roll-out of new and disruptive technologies."

Two years, a proof-of-concept trial and more than 3,000 deliveries later, Wing's launch into the consumer market will start off with 100 households in three suburbs. The service will then be expanded, **with projections** that 11,000 drone deliveries could occur each day in Canberra by 2030.

> " *Wing has teamed up with local Canberra businesses to give customers the opportunity to have a range of goods delivered in a handful of minutes.*"
> Wing blog post

Sprawling and sparsely populated:
The Canberra region is uniquely positioned to experiment with novel approaches to medication delivery.

Plans are also underway for Wing to take off in other countries, and a **launch is planned** for Finland's Helsinki. Since the Australian licence was granted, the US Federal Aviation Administration has awarded Wing **the first "air carrier" certification for a drone company**, allowing it to conduct commercial deliveries in Blacksburg, Virginia.

As with most pioneering efforts, however, Wing **has met with opposition**. Residents within Canberra's trial areas claimed the drones were noisy and warned they could drop medicines into the wrong yards, invade people's privacy or crash. Conservation experts said they could have a "significant impact" on birdlife. Opposition political parties called for an inquiry, **which is underway**. Within the submissions received by the parliamentary committee, the vast bulk of which oppose the project, one resident claimed that during the trial **there had been**: "Distressed mothers, frightened children, frustrated families and many others aggravated by the invasion of drones."

In response to the controversy, Wing has developed a quieter drone for its commercial roll-out.

But ultimately, in the ACT where the incumbent Labor Party has ruled since 2001, support for the company's efforts is assured.

A GAME CHANGER?

Wing has emerged from **X, Alphabet's innovation arm or "moonshot factory"**, and its little plane flies along at a cruise height of 30 meters and a speed of 125km/hr to its delivery address. Once there, it hovers and descends to 7.5 meters above the garden and lowers the purchased wares before climbing back up into the air and flying back to base.

Machine learning algorithms allow each drone to negotiate trees, buildings and power lines, while "remote pilots" based in a converted warehouse in a nearby industrial area are required to be at the helm of each flight.

The Alphabet off-shoot has partnered with local companies to co-locate in its facility and come onboard for what could be a game-changing, standard setting roll-out. A small pharmacy chain, Capital Chemist, has joined for the project launch.

GLOBAL DISRUPTION

While Wing's drone-to-home delivery service is a first in the consumer medications market, efforts have been **underway for years** to realize the promise of the technology for the transportation of blood, vaccines, medical equipment, medications and body parts for transplant in clinical and emergency settings. And continuing milestones show it is becoming integrated into healthcare worldwide.

Since December, **Swoop Aero** has been delivering life-saving vaccines to remote parts of the **Pacific island nation of Vanuatu** in a trial funded by UNICEF and the Australian Government.

About 60 percent of blood products delivered beyond the **Rwandan** capital of Kigali are transported by **Zipline's** drones, with the company expanding into **Tanzania** and **Ghana**.

In the US in March, UPS began delivering medical samples with **Matternet** drones at the WakeMed hospital and campus **in North Carolina** in what was the first revenue-generating drone delivery scheme approved by the Federal Aviation Administration.

The postman always knocks twice –
but what if the postman is a drone?

Meanwhile, back in Canberra as Wing's project prepares for lift off, a resident who took part in the trial said complaints about the noise of the drones should pale into insignificance when compared to the "positive advancement" of the technology and the need to embrace change.

"I'm sick at home alone with the kids and can't get out, I need cough lollies and Sudafed, I didn't even have to stress about it, the drone had it covered," Aanika Shah wrote to the parliamentary inquiry.

"There is so much negative stigma attached to anything that is different or new that sometimes due to that we overlook something that could be so useful if everyone was just willing to give it a go."

Canberra is giving it a go, but change of a disruptive kind doesn't come easy. ■

Pushing healthcare to new boundaries

All over the globe, innovative thinkers and doers are working to reform health and care through IT and technology. Get to know some of them.

ISRAEL
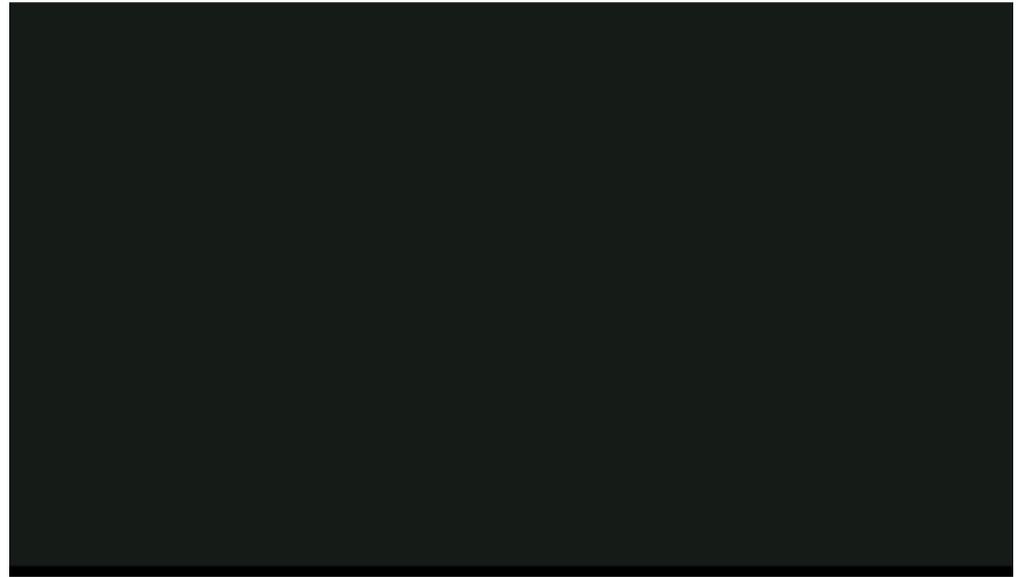
Saving patients: Why Israel's Sheba Medical Center partners with startups, hospitals

Dr Eyal Zimlichman, Sheba's CIO and CMO, discusses the hospital's mission of "sustainable innovation" at the MEdinIsrael conference in Tel Aviv.

CHINA
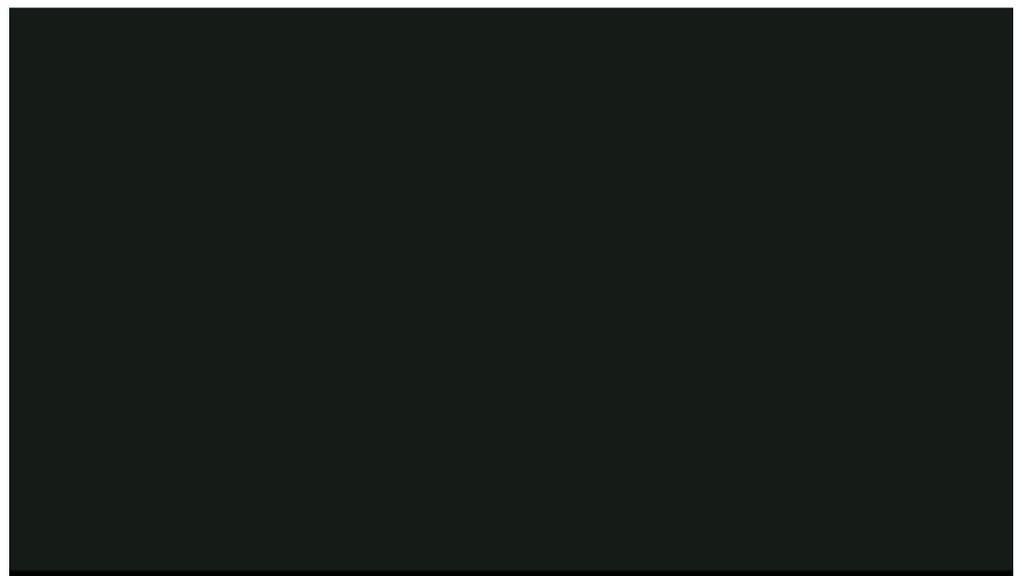
Tech's role in Healthy China initiative

Hong Xu, CPC Party Secretary at Children's Hospital of Fudan University, discusses digital health, smart hospitals and where technology fits into the government's Healthy China initiative.

EUROPE AND MIDDLE EAST
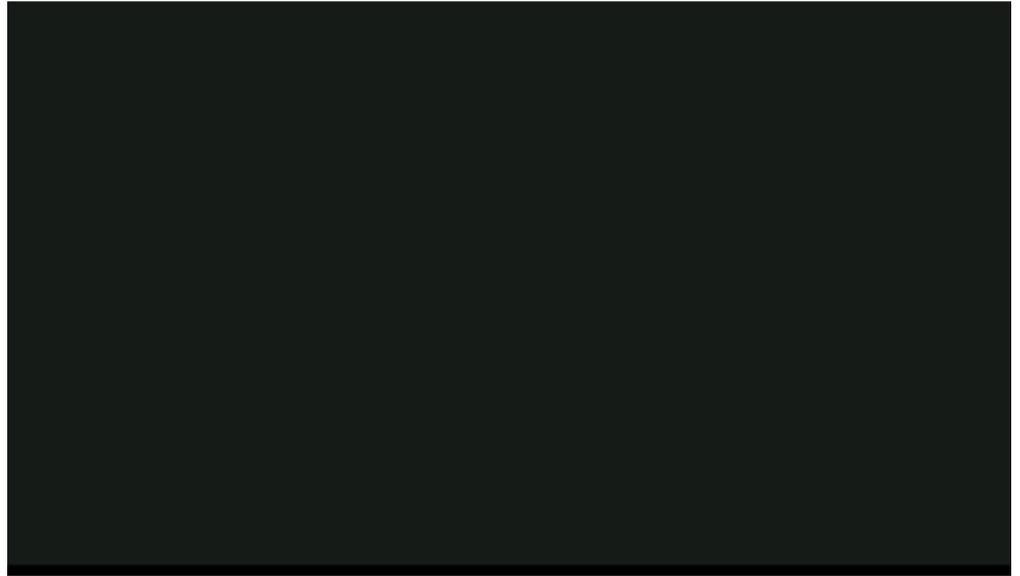
How to get digital transformation to evolve

Clinical engagement is key to an effective digital transformation, says Chris Brice, Hyland account manager for Europe and Middle East.

US
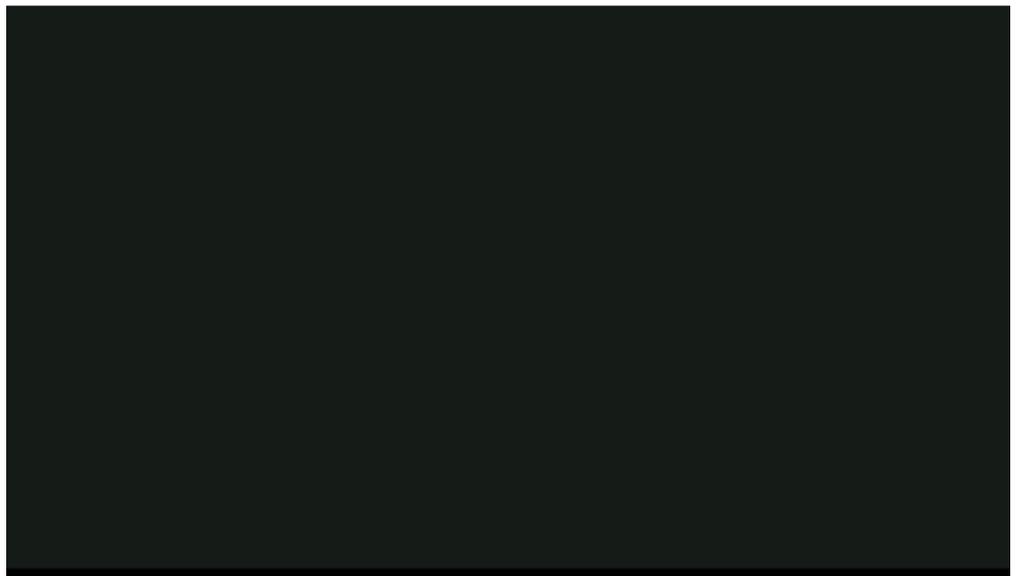
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GET IN TOUCH
to appear on HIMSS TV

'New wave of change' coming to healthcare

Subha Airan-Javia, associate professor at Penn Medicine, says the industry has learned a lot during the last decade and now we're ready to use those lessons learned to move in new directions.

SHARED DECISION MAKING

in the era of digital transformation

Health and care systems are being subjected to significant changes associated with digital transformation, enabling pathways of care to be redefined and redesigned. This is accompanied by changes to the behavior of patients. These combined factors have the potential to fundamentally alter the existing patient–doctor relationship. We explore their implications for the future of medical care.

By Charles Alessi and Richard Barker

Global health and care systems are changing rapidly. These changes are in part being driven by the pathway redesign that accompanies digital transformation but there are other significant factors that are being brought into play. Medicine itself is changing, as new diagnostic tools enable greater personalization of treatment, the number of therapeutic options multiply and digital monitoring of individual patients becomes a reality. People have become more assertive and assured in their expectations of delivery of services in many walks of life, and this consumer revolution is beginning to make its impact in the health and care system. This is facilitated by a democratization and ready availability of medical information, as a direct result of the digital revolution. Furthermore, people are now starting to directly access – and in places control – their own health data and this of course empowers them to become even more involved in their own care.

While all these developments are positive in that they tend to lead to a more "activated and engaged" patient, there are also some potential downsides. The availability of information is one of the greatest benefits from the use of the internet, though information does not equate to knowledge. The fact that a patient has downloaded every possible article about a condition, from whatever source, does not necessarily mean that they have the ability to sieve through a whole series of often conflicting views and determine optimal pathways of care and therapeutic interventions.

Societal changes are also leading to increased suspicion of formerly authoritative institutions like governments and scientists, which means that "official" information may not be weighed more heavily than emotionally charged anecdotes. The recent decreases in national vaccination rates despite scientific best evidence is a notable illustration of this trend.

These factors are affecting health systems globally. Although we inevitably reflect our own health system, we can see sim-

> " *The availability of information is one of the greatest benefits from the use of the internet, though information does not equate to knowledge.*"
>
> Richard Barker

ilar patterns of behavior in all continents and populations, albeit to differing degrees. These changes presage a new doctor-patient relationship in which the interactions between the two parties are shifting to a new paradigm.

The relationship in the past was relatively unidirectional, with the physician being the only authoritative source of information and the patient being the recipient, expecting to be given instructions on what therapy to take and on how to manage disease. Whilst this relationship had its strengths, it did not always deliver the intended benefits, often because of problems with compliance and adherence, both in terms of prescribed drugs as well as lifestyle modifications. That should not really come as a surprise, given that in the case of a typical non communicable disease like type two diabetes, the interactions between physicians and patients last no longer than a couple of hours a year, with the patient expected to retain the information and act on it appropriately for the 364 days and 22 hours for which they are left to manage their condition. In this past model the patient was a passive recipient of the decision of the doctor and often was not 'bought in' to that decision in the first place.

A PARADIGM SHIFT IN THE PATIENT-DOCTOR RELATIONSHIP
With the digital media now becoming available, the relationship can be both more two-way and more continuous. The ideal is that the patient makes the decision jointly with the doctor, with the necessary validated information about treatment options to hand in a language the patient can understand, and the rationale for the choice of treatment and/or lifestyle change clear, with aide memoires available for smartphones or on paper.

It is not unusual for a patient to request treatment or adoption of a pathway which is not necessarily based on evidence. This choice of therapeutic intervention can concern both the nature of the treatment and how it should fit within the life of the patient. Modern 21st century care needs to become much more participative and personalized and this is where shared

decision making becomes critical. We are now in the age of "evidence based care for one". This level of buy-in has great advantages as a care plan and treatment that fits well with the patient's life is much more likely to be followed and thus effective.

After the initial treatment plan is agreed, digital tools can act as digital 'extenders' and "monitors" to support the patient as he or she manages their condition away from the doctor's office. A multitude of apps (over 200,000) are now available of differing quality and complexity, but it is well known that patients often do not persist with their use. The best tools will reinforce what the patient has heard from the doctor and add a dimension of "pull" to the "push" physicians are generating, about optimal ongoing care. An informed and activated person is far more likely to get involved in their own care and take responsibility for it, rather than leave it all to the "experts". Elements of 'gamification' that add a competitive element to adherence can be effective in some cases, particularly for lifestyle changes such as weight loss or exercise.

EMPOWERING THE PATIENT

The majority of clinicians have embraced the new way of working and altered the style and approach to consultations from a more didactic stance to a genuine partnership. The aspiration is of assisting the patient through the life course rather than telling them what to do, concentrating on giving them the means to make the decisions themselves. Although this more concordant approach is the basis of modern medical practice, it has its challenges and there still is a gap in medical education around the application of behavioral techniques to deliver better outcomes. There is an urgency to get this addressed.

There is also the need for decision support tools that inform the interaction and decision-making from both directions, both patient and health carer, with options and evidence clearly laid out.

" *Standard clinical pathways have their place, but in many diseases we are seeing a shift from a population evidence-based approach to a more personalized approach."*

Charles Alessi, HIMSS

In the absence of such tools, patients may request a treatment option where evidence is lacking (or is even strongly negative) because of input from others. This unfortunate situation is sadly starting to occur and it is particularly in such instances that the right consultative approach to a consultation could be a game changer. Just telling patients what to do in these cases rarely yields the optimal results but if physicians are skilled enough in behavioral techniques, utilize their relationship with a patient, and can point to reliable sources that patients can consult and study , there is more likelihood this will steer the patient to better choices and thus more optimal outcomes.

" Paradoxically, in some places, where there is less of the traditional 'higher income country' medical infrastructure to stand in the way, the pace of change around digital transformation is faster."

Standard clinical pathways have their place, but in many diseases we are seeing a shift from a population evidence-based approach to a more personalized approach based on molecular diagnostics or other 'precision medicine' tools. This will also result in the patient being both more engaged and participative in treatment.

In summary, managing decision making in the digital age requires at least seven key concepts:
· Rebalancing the physician-patient relationship to a more equal footing, moving from the didactic to the partnership approach in terms of style. This is achievable with appropriate physician education and administrative support.
· Encouraging healthcare providers to alter the consultation rate of physicians to allow for more time with patients per consultation. Didactic consultations are easier to deliver to a passive patient whilst a more participative approach requires information exchange, negotiation and debate. The extra time will have a positive return on investment if the patient becomes more involved and engaged in their care, and this is sustained.
· Ensuring that patients' views and life situation are not only understood but also given appropriate weight. The non-biomedical determinants of outcomes (like employment, financial and domestic situation) also need to be better incorporated in pathway design with appropriate weight. This is no longer a "nice to include".

- Making best use of digital extenders to increase the interaction between physician and patient. The more personalized these extenders are, the more likely they are to be used sustainably and thus produce best outcomes.
- Making the best use of data to produce knowledge for the patient. As we move to an era of personalized or precision medicine, it is more likely that advice will be heeded and acted upon, as it becomes more personalized. "Evidence based medicine for one" will become the norm not the exception.
- Adopting consultation styles based on the principles of behavioral modification techniques. These can be learnt or refreshed and reap immediate benefit.
- Encouraging patients to become activated and more involved in their own care. A more engaged patient with access to their own record is something we should encourage as it is far more likely to result in concordant care.

EMBRACE DIGITAL TRANSFORMATION

There is no doubt this new world is a challenge to traditional hierarchical medicine. Also when health systems seek decreased costs and more 'productivity' on the part of professionals, this is in tension (over the short-term) with the need for increasing patient convenience and access, and person-centered care. But, over the longer-term, properly deployed knowledge can assist the physician in the transition as well as aid the patient in their life's journey. These changes are being played out globally, albeit unevenly. Paradoxically, in some places, where there is less of the traditional 'higher income country' medical infrastructure to stand in the way, the pace of change around digital transformation is faster. It seems inevitable that soon these higher income countries may well be finding themselves having to play 'catch up' unless the digital transformation and democratization of information is embraced more completely. ∎

Westchester Medical eHealth Center

Source: Philips

THE IMPACT OF DIGITAL TRANSFORMATION IN ACUTE CARE

By Jake Durgan, Business Leader,
Patient Care Analytics, Philips

Today's healthcare system is facing many challenges globally, including growing aging populations, a rise in chronic conditions and co-morbidities, and increasing constraints on the healthcare workforce. As the industry works towards achieving the quadruple aim to help address these issues – the goal of better patient outcomes and improved patient and clinician experiences, all at a lower cost – there is a great need to optimize resources and increase efficiencies. To do this, the industry must embrace the shift to digitization.

While this shift has been difficult in some countries due to the continued use of paper-based systems and low levels of electronic medical records (EMRs) adoption, it is becoming essential if hospitals want to successfully operate in the current healthcare landscape. The benefits of digitization are becoming quite clear – especially in areas like acute care – and technology that can help hospitals make this transition at a scale that works for their organization is critically important.

'The benefits of digitization are becoming quite clear – especially in areas like acute care – and technology that can help hospitals make this transition at a scale that works for their organization is critically important.'

CHALLENGES IN ACUTE CARE SETTINGS

The intensive care unit (ICU) is associated with some of the highest mortality, morbidity and error rates, making it an area where digitization is particularly necessary to help improve the quality of care. With hundreds of processes being delivered to patients each day, more patient data often means less time to interpret it and react appropriately, leading to errors and misdiagnoses.

Trying to access this patient information from various devices, records or areas of the hospital that are often disconnected can worsen this problem exponentially. Decision-making in the ICU has therefore become a complex process for caregivers, yet one that is time-critical since acute care patients can deteriorate rapidly. According to a recent survey of European Healthcare systems, more than 75% of clinicians believe that the digitization of patient data could help them improve the quality of care in the next three to five years, as long as new systems ensure that information is secure [1].

[1] Front Line of Healthcare Report 2018. Bain (2018).

EMPOWERING CARE PROFESSIONALS TO ADDRESS ACUTE CARE CHALLENGES

Philips understands the complex challenges present in acute care settings and has years of experience bringing together clinical data across multiple sources in the hospital. Philips solutions use this information to generate time-critical, actionable insights, and through advanced visualization tools, organizes these insights in a way that fits seamlessly into a clinician's workflow.

Philips' strong patient monitoring portfolio in critical care provides continuous monitoring for every care setting – from the point-of-care, to the unit central station, to a virtualized care provider or team. For example, Philips IntelliSpace Critical Care and Anesthesia (ICCA) is a clinical informatics and patient care solution that simplifies clinician workflow and helps enhance patient care in the ICU through clinical decision support. ICCA interfaces to Philips and most third-party monitors and devices so that data can be transferred to ICCA, where it is centralized and organized to put the clinical information that clinicians need most front and center. This helps streamline data from the point-of-care to the central station, helping to reduce information overload and supporting a comprehensive patient record to help reduce errors due to missing data.

An example of acute care at the virtual care level is the Philips eICU Program solution. It allows for virtual intensivist-led coverage through a scalable, centralized solution, where a centralized critical care team can remotely provide additive support to the bedside care team. Adaptive intelligence plays a large role in this area, as a key aspect of the eICU solution is its Automated Acuity (AA) scoring capabilities within CensusMosaic, a graphical patient population census tool. The Automated Acuity tile provides a total acuity score that is calculated from six clinical components (cardiovascular, respiratory, infectious disease, central nervous system, renal and hematology), each providing a targeted assessment of a patient's trended data in that component through

near–real time interfaced data. This provides clinicians with an at-a-glance view of a patient and areas of concern. "This is of highest importance when I evaluate patients who are worsening and getting sicker," says Majdi S. Hamarshi, MD, Medical Director of the Saint Luke's Health System eICU. "The automated acuity tool displays a total score, and breaks the score down into six organ systems. It also indicates which of these systems contributes the most to the total score and which organ system is worsening. This information makes my job much easier to quickly dive in to the underlying problem. The graphical census allows me to easily manage a list of 100 patients by helping me quickly and easily see who the sickest patients are, prioritize them based on their acuity, and then round with guidance."

PAVING THE WAY FOR THE FUTURE

Building on expertise as a data aggregator and integrator, Philips is dedicated to creating solutions that work within – and extend – existing systems so that hospitals can realize the full value of their investments and move towards the quadruple aim.

To achieve digitization realization in the acute care suite, hospitals will require technology that can grow and scale along with their needs. Starting with small implementations in areas that need it most can help hospitals begin to overcome the challenge of digitization on a more manageable level. For this to be possible, vendor-agnostic platforms that provide underlying support and enable customers to add or plug in features based on what their budgets allow will be key to driving digitization forward. It's increasingly not a matter of what the leap to digitization can bring, but what the cost of inaction can result in. ∎

> *'It's increasingly not a matter of what the leap to digitization can bring, but what the cost of inaction can result in.'*

TO LEARN MORE about this topic and to see Philips' solutions in action, please visit **booth #6a20** at the **HIMSS & Health 2.0 European Conference 2019** taking place 11-13 June 2019 in Helsinki, Finland.

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HIMSS & Health 2.0 European Conference brings delegates from all over the world to Helsinki

This June, more than 2,000 digital health innovators are expected to meet in Finland, one of the most digitally advanced countries in the world – and the happiest nation for the second year in a row according to the World Happiness Report, for the **HIMSS & Health 2.0 European Conference**.

The event aims to create a platform to work towards a roadmap with one common goal in mind: improving healthcare through information and technology, regardless of geographical boundaries.

Attendees from more than 64 countries will convene to discuss the hottest topics in the field, from promoting a secure, ethical and actionable flow of data to tackling the opportunities and challenges that opening up innovation brings.

Delegates from South Korea, US, India, the Netherlands and many other countries will connect in activities organized throughout the three days of the conference to support the development of a digital health ecosystem, amid the realization

that everyone is facing similar challenges. But they will bring their own stories, and see what they can learn from each other on this journey.

Delegations will see the Skolkovo Innovation Centre, also known as the Russian Silicon Valley, bring the best innovators and technology from the Moscow based Technopark, while Kazakhstan will join with a group led by the Ministry of Health.

The Italian Community will have a Country Pavilion, along with an Aperitivo taking place too. Turkey, the country that boasts more than 160 hospitals validated against the HIMSS Electronic Medical Record Adoption Model [EMRAM] Stage 6 standards, will also have representatives on site.

The HIMSS Dutch Community will organize workshops giving an international perspective on the scarcity in leadership, finance and HR. The Nordic Community will convene at the Nordic Workshop to reflect on the many achievements and milestones thus far.

Your chance to network, connect and innovate
Join our EMEA events to meet the people who matter in health IT
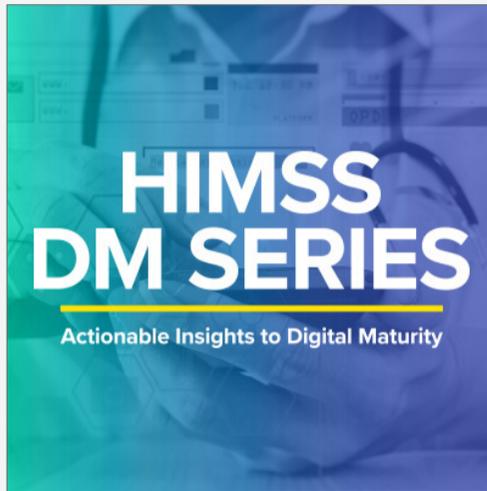
HIMSS DM: Actionable Insights to Digital Maturity
14-15 May 2019, Manchester, UK

In a joint collaboration, HIMSS and the Salford Royal NHS Foundation Trust have designed a Hospital Tour on the ward and in the Salford Digital Experience Center with a first-hand look at their digital transformation, their Allscripts EMR, followed by a Networking Dinner to celebrate the launch of HIMSS DM. On the following day, we will host a full educational summit to explore all the key learnings from Salford and around the world, interactive sessions on innovation and actionable insights to utilise in the real-world.

MORE INFORMATION

HIMSS & Health 2.0 European Conference
11-13 June 2019, Helsinki, Finland

Mark the dates in your calendar. Following an undeniably successful collocated event in May 2018, HIMSS and Health 2.0 continue to strengthen their ties and have chosen one of the most innovative countries worldwide to host the 2019 conference. The HIMSS & Health 2.0 European Conference will be held on 11–13 June 2019 in Helsinki, Finland.

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Swiss eHealth Summit
12 September 2019, Bern, Switzerland

The Swiss eHealth Summit 2019 takes a look at the time after the introduction of the Electronic Patient Dossier (EPD) and presents innovations, ideas and projects that will shape the future of Swiss healthcare. The decision makers and executives in Swiss healthcare will meet in the Kursaal Bern, on 12 September 2019.

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No digital healthcare without cybersecurity: This is a no-brainer, but getting security reliably out into routine digital healthcare is challenging to say the least. Not only are there myriad interconnected healthcare IT systems. Patients, too, need to be involved digitally. And cybersecurity of medicinal products is a whole chapter of its own, with hijacked defibrillators and faked cancer nodes on CT images no longer a fantasy. Are healthcare systems doing enough to survive in the digital wild?

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