

Crossed Signals

By Gary Flood

>> While Europe's health policy makers have fantasies of telecare as a way to more efficiently manage the health needs of their ageing populations, hospital CIOs are already starting to offer more modest mobile hospital apps. Can the two ends of mHealth ever come together?



Mobile health (mHealth)

sounds like the answer to a lot of problems. Advanced economies are struggling with rising health-care costs and ageing populations: technology that could support care, cutting down the need for so much expensive direct contact with nurses, doctors and specialists, is beginning to sound like a very attractive way of helping with both issues.

Management consultants McKinsey, for example, have identified mHealth, or the use of mobile communication technologies to deliver healthcare services, as “an area of innovation with the potential to make a huge difference?” Much like SMS alerts that could remind patients to take their medication at the appropriate time, as a platform for remote diagnosis, a way to deliver treatment for patients

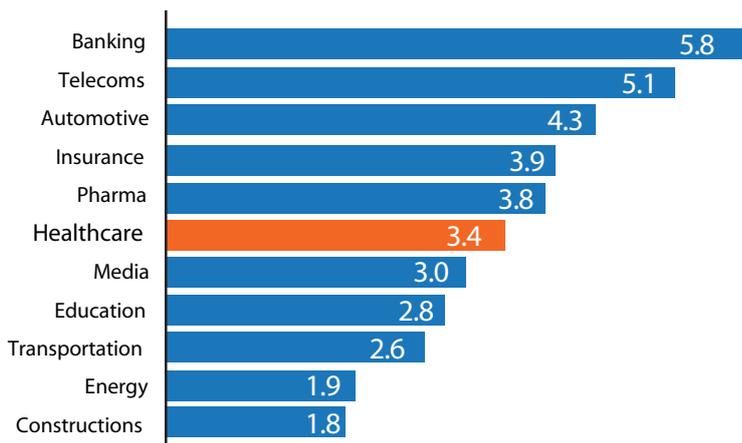
who do not have easy access to a physician, removing the need for so much face-to-face contact with patients via remote health monitoring devices that track and report patients' conditions, and so on (See *Figure 1*).

The firm claims remote health monitoring alone could reduce the growing cost burden of chronic diseases at the system level by up to \$200 billion (EUR 156 billion) across both Organisation for Economic Co-operation and Development (OECD) and Brazil, Russia, India and China (BRIC) economies. There seem to be many practical uses of mHealth already emerging. One supplier of mHealth, German-based TRxCARE, for instance, offers a ‘wireless pill-box’ that provides medication prompts, personalised contact and regular broadcasts of information, advice and guidance such as on specific dietary requirements before or after medication is taken. “Patients mistakenly believe they have taken their medicine and resist the need for support from healthcare professionals and others once they leave the clinic,” Markus Glimm, its CEO, says. “Yet studies over many years show that large numbers do not stick to their medication programme.”

One can't help asking—is 2013 the year of mHealth?

Europe agrees. Speaking at the start of the year, Brussels' digital agenda commissioner Neelie Kroes said: “Whether it's remote monitoring that lets you be cared for at home, robots to help around the house, or simply mobile apps that empower you to take control of your own

IT spending, 2005
Percent of revenues



Source: Gartner Consulting Worldwide IT Benchmarks

>> Figure 1: To innovate its delivery model, healthcare could learn from experiences of industries that have seen a much higher level of technology adoption

healthcare [mHealth] can provide better care at better prices.”

Meanwhile, in the UK, the National Health Service (NHS) plans to have three million people using mHealth services by 2017, part of an ambition to make the country a leading centre for telehealth outside the US. Given that an estimated 15 million people in England have some form of long-term health condition – a quarter of the population – but this costs the NHS 70% of all its £109 billion (EUR 128 billion approximately), the cash-conscious government can be forgiven for looking at any promising means of cutting costs. And the UK is far from the only country starting to think like this.

solutions into their systems, users will take their own decisions. Apps are already flowing in our health systems and at our hospitals: they are easy to develop and their use will grow if no alternatives exist.”

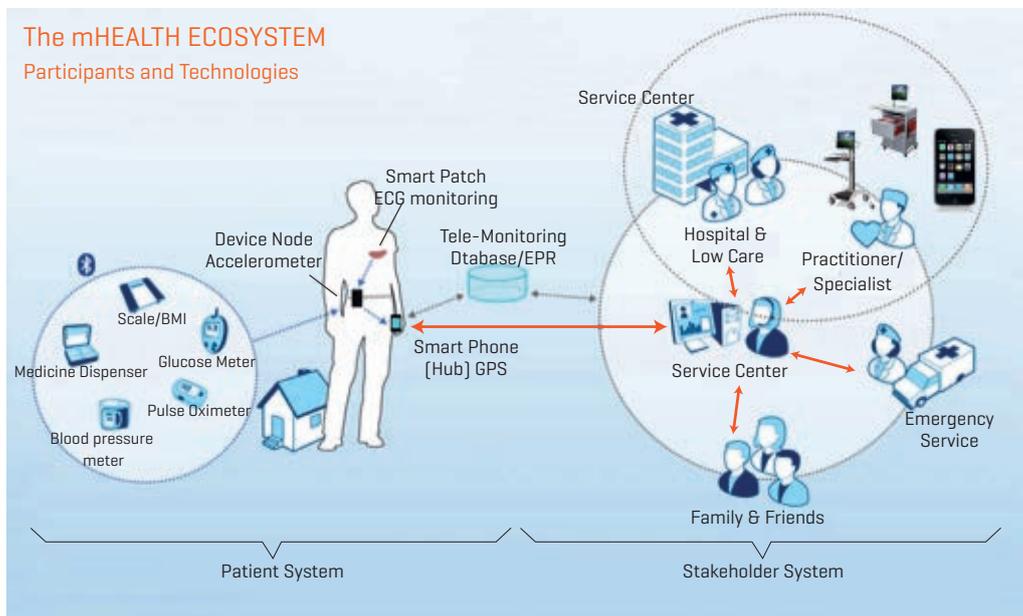
And it’s not like we haven’t been trying to get better connectivity out to our field workers in health for some time, either. Put that together with our latest mobile communications, and mHealth starts looking like something we’ve been doing for some time. Jon Harris, Head of IT at NHS Western Isles, says: “Implementation of digital pen technology has allowed us to free up a considerable amount of time for Community Nurses to spend face to face with

patients and for planning service improvements.” Previously, he says, these nurses were having to spend over 40% of their time each day on admin, recording their activity and patient notes into systems at the end of each day: now, they write the information on the digitised forms within their patient held record, which remains with the patient in their home. The data is sent via Bluetooth from these new pens, supplied by a firm called Anoto, creators of digital writing technology, to their phone, which then sends the data to his server, where it is decrypted and



MHEALTH: ALREADY ‘HERE’?

Indeed, Peder Jest, Director and Chief Medical Officer at Denmark’s Odense University Hospital, says that in many ways the ‘argument’s’ already over - and mHealth won. “mHealth is at a point of no return; it’s already what users, both patients and clinicians, want,” he points out. “If Clinical CIOs don’t accommodate such



Source: HIMSS Analytics Europe

>> The Status Of mHealth In The Hospital Setting

User, [mobile] Workstations, WLAN in Acute Hospitals 2012, Mean and %

	US	Germany	Italy	Spain	Poland
# User	1.562	796	854	957	292
# Workstation [total], of which:	854	341	354	509	154
# Desktops	758	299	295	451	145
# Laptops	130	35	22	17	7
% Laptops of all workstations	15%	10%	6%	3%	5%
% Hospitals with WLAN	91%	57%	32%	84%	29%
# Mobile Devices in WLAN, of which	237	63	32	28	8
CoWS, WoWs	76	7	2	2	1
Laptops	130	35	22	17	7
Tablets	51	3	2	7	0
PDA's	82	4	3	1	0
Workstations per User	0.55	0.43	0.41	0.53	0.53
Laptops and Mobile Devices in WLAN per User	0.23	0.12	0.06	0.05	0.05

WLAN: wireless local area network; CoWS: computer on wheels; WoWs: workstation on wheels

Source: HIMSS Analytics Europe, eHospital Census, 2011/12

picked up by the hospital's SCI Store system via ftp transfer.

So we're all going to have mHealth, it seems. A major March 2012 report by consultancy PwC and representatives of the global mobile operator industry predicted the worldwide mhealth market is expected to reach \$23 billion (EUR 18 billion approximately) by 2017, with Europe the biggest sector ahead of Asia Pacific. Meanwhile, one supplier estimated to us that there are at least 12,000 'health' mobile apps on the Apple iTunes store already.

But to say not everyone agrees is something of an understatement. We've been hearing about telemedicine, telehealth and telecare for quite some time: it's now forgotten, but a national telemedicine service was part of the original vision of the UK's failed National Programme for IT in 2003 - and was simply never delivered.

It turns out that any telehealth system of any size has huge practical obstacles to overcome. These obstacles are not really technical any longer, either. Thus Yeona Jang, Professor of the International Masters for Health

Leadership at the Desautels Faculty of Management in Canada, believes that the kind of healthcare via tablet and broadband people like Kroes envisage still lies in the future.

"Improvements and innovations via mHealth will remain as pockets of fragmented local improvements with a limited overall impact until they are integrated, co-ordinated and optimised to improve the whole," she told *HIMSS Insights*. For Yang, any telehealth activities should be planned and managed as a coherent whole, not a collection of fragmented mHealth projects, with a clear vision of what the end-goal should be, with the strategic clarity on what the 'to-be' state will look like when the mHealth program is implemented. Another problem not yet worked out, she worries, is the level of payment reform that would make use more attractive, e.g. who is going to pay for all the data collected and how would it impact on care providers?

'NOT A COST-EFFECTIVE SOLUTION'

Other critics have more specific data to hurl against telehealth. Take

the UK's British Medical Journal - in March it released a study that claimed a recent high-profile NHS telehealth pilot, the Whole System Demonstrator, had not shown any appreciable benefits to patients on it. Its researchers had probed into the experience of a thousand patients on the project and in its view found the new technology "does not seem to be a cost-effective addition to standard support and treatment for patients with long-term conditions."

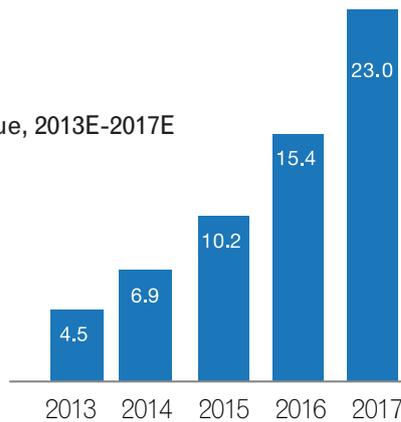
For some, the way out of this seeming mHealth impasse is contained in a key phrase in that last sentence: "long-term conditions." "I hate all the emphasis on long-term care," complains Richard Quine, Divisional Product Director at a British tech firm called InHealthcare, which provides that very clinical monitoring of patients in their own homes as a managed service.

"The emphasis is all wrong. The better question is, how can we expand what we know about our patients beyond the clinical setting and start building not 'tele' health but *digital* health?" he asks.

The question seems valid, given that many hospital CIOs seem to

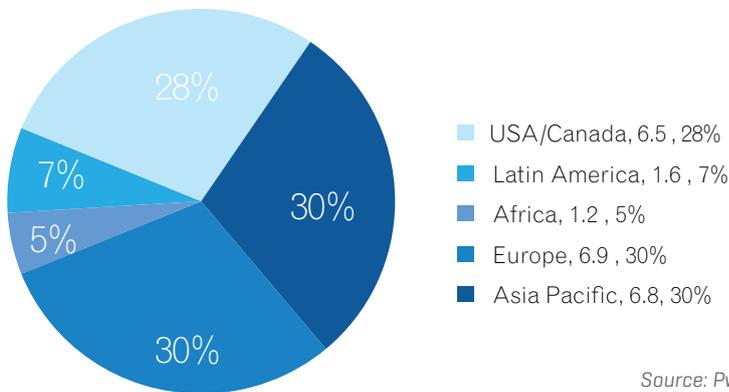
>> Worldwide mobile health revenue and global mobile health market opportunity by regions (US\$ billion) and percentage of overall market, 2017

Worldwide Mobile Health Revenue, 2013E-2017E



Global Mobile Health Market Opportunity by Regions, US\$ Billion and % Share of Overall Market, 2017E

Total Market Size: US\$ ~23 Billion



Source: PwC analysis

have decided to stop waiting for the kind of grand telemedicine systems they have been waiting for years and instead start with introducing mobile into their hospitals on an experimental, limited basis instead.

“We use six mobile apps and we find them extremely useful,” says one such, Michael Gogola, a London-based CIO for a range of private hospitals run by a group called HCA International. These range from a way to securely access the main hospital IT system via a Web portal to another that lets his ob-gyn experts remotely monitor foetal images via their iPads at home “so they don’t have to drive down to the hospital in the middle of the night if they don’t really need to.”

That kind of early take-up does not mean health CIOs can just write cheques for lots of smartphones and

forget about it: mHealth at any scale needs careful planning, say practitioners. “Thinking about mHealth in Germany, the important issues are security, costs and usability,” adds Henning Schneider, CIO at the University Medical Center Hamburg-Eppendorf (UKE), who says his institution is already testing mobile solutions to improve services.

Schneider offers examples of what he means. “Most users do not want share private use and business usage of mobile devices, they do not want to use two devices, but providing mHealth solutions, you always will need personal devices because if you really want to get benefits you have to combine apps for patient care with personal apps like mail, telephone and so on, or you will always have trouble to motivate

the user to care for the device,” he points out.

“You also have to ensure that apps cannot sync contacts with their servers or if a doctor’s child is using the device at home for gaming, they can’t read incoming emails from patients and so on. So you have to use encrypted container-solutions for any kind of data sharing on your mobile device, etc.”

The usability and function set of any kind of possible ‘mobile electronic medical record (EMR)’ would also have to be adapted, he adds: “There could be different mobile apps for the round at the ward, for a nurse doing documentation, for a physiotherapist, and so on. So there are many things to develop before this will work properly.”

STEP FORWARD HTML5

That being said, Schneider is one of a growing band of health informatics leaders who see great potential in something called HTML5, the latest version of the core language files on the World Wide Web talk to each other. Denmark’s Jest is another. “HTML5 will make it possible to connect information directly to the EMR, the key instrument for clinicians, patients and managers,” he says. “For example, it offers the chance to offer health IT systems in closed loops, combining the different elements so as to bind them up better up to the EMR. It will also ensure legal aspects and confidentiality in the whole system.

“HTML5 might be a new and convincing instrument for public and big private health systems,” he predicts.

So we see big unfulfilled telehealth ambitions at one end of



What do you think?

Is 2013 the year for mHealth to take off?

Please send your comments [accepted in native language] to Dillan Yogendra [Dillan.Yogendra@himssmedia.com]. Selected comments will be published online.

the mHealth scale and promising early use of mHealth apps at the other. But what if we could bring together the two ends of the mobile spectrum? What could we achieve, perhaps through use of more standards like HTML5 but also wider policy changes and training, to fold together both the local, 'bottom up,' mobile solutions that hospital CIOs like Jest, Gogola and Schneider are starting to pioneer and link them to some larger, national, telehealth-style framework?

Clearly, organisational policies and procedures on the use of mobile devices and mobile risk manage-

starts to accompany the patient right throughout their interaction with the medical system – that's to say beyond individual visits, forming more of a continuum that both useful mobile apps, hospital EMRs and bigger telecare strategies could eventually all connect to.

A CONNECTED MOBILE TOTALITY

"It's the data that's important, not the app," says InHealthcare's Quine, who says we need to start thinking of a network of devices and systems that connect together via mobile to help doctors better treat us. "Some-

It's a powerful and attractive idea. But, as Jang says, our policy makers and administrators still need to do a lot of hard work and start better connecting these great tools with the more comprehensive telehealth back-end structures society now requires.

This is why we will probably need both ends of the telehealth spectrum - the national-level infrastructure and the local, hospital app level - to deliver the sort of technology-enabled health delivery benefits visionaries like Kroes say Europe can look to.

"It's the data that's important. Although an app may be the best technology to help some patients or conditions, a good digital health system would also include an automated phone call asking them to enter their blood pressure over the phone: that's also good 'mHealth,'" says InHealthcare's Quine. "There are also emerging examples

of connected medical devices that automatically upload their readings into the cloud via GPRS or 3G as soon as the patient has taken their readings. This is also what mHealth should mean.

"But if health apps end up becoming yet another island of disconnected patient data, not integrated into a digital pathway and their hospital's EMR – a great opportunity will have been wasted," he concludes.

TrxCARE's Glimm agrees, "We have lots of kit now in mHealth, from wireless blood–pressure cuffs to Bluetooth glucose meters. But it's no use if it is not connected. Some authority has to make sense out of all this data, contextualise it – or it is just useless." ■

"We have lots of kit now in mHealth, from wireless blood –pressure cuffs to Bluetooth glucose meters. But it's no use if it is not connected"

ment will need to be developed so as to reassure the public that health information on mobile devices is protected. At the same time, healthcare providers and staff will need to be educated on such policies and procedures, implying a very large training load.

To get there, "government support is a critical success factor," Yang warns. "It should take a more active enabler role beyond just 'encouraging' the use of mHealth services by healthcare providers."

One possible way forward some observers are starting to suggest is to start thinking of a clinical interaction with a patient as part of a "digital whole". In this perspective data, accessible from many points,

times the best technology for some patients or some conditions will be use of an app on a smartphone. At other times, it might be an automated phone call asking them to enter their blood pressure over the phone, or logging into a health platform via a Web portal on their smartphone to enter some personal readings."

Certainly, there are an increasing number of connected medical devices that can do things like automatically upload data into the cloud wirelessly as soon as the patient has taken measurements and so on. What if such devices could link more of the individual's digital care pathway with other systems, like EMRs, to make wider information available - to both patients and their carers?