Achingly close: Digitally-enabled models of care are coming

Subhead: The brave new world of remote patient monitoring, telehealth, and AI assistants need a new way of looking at healthcare to live up to their potential.

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The new world of digitally enabled care hasn't quite arrived yet. We know it's coming, we even know what elements may look like, but the full scope of how remote patient monitoring (RPM), digital triaging, telehealth, AI diagnoses and so forth could work in the broader medical context is still wide open for ideas.

What is clear is that elements of digital care, such as RPM, require a new model of care to allow them to function to their full potential versus telehealth or the traditional hands-on approach.

As Jeffrey Brewer, president and CEO of diabetes management device maker Bigfoot Biomedical, said at the HLTH 2021 conference, giving a patient a device and caring for them in the same way -- healthcare as usual -- won't scale.

The pandemic introduced the concept of 'digitally-enabled care' to medical professionals around the world, from researchers to emergency department staff to family GPs.

And while the use of telehealth has fallen back from heights reached during the worst of the pandemic, it is now embedded in many clinicians' workflows. It is now the platform from which other digital modes of care can be built on.

The new mantra of healthcare is to meet patients where they are. And it is digital models of care that are allowing this to happen.

The trials of telehealth

In Australia, the proportion of subsidised telehealth consults has fallen from 35% of all Medicare Benefits Scheme (MBS) services in April 2020 to the high teens in the first half of 2021, after incentives enabled clinicians to use, and charge for, phone and video consults during the worst of the pandemic.

Australian clinicians and their patients have clearly decided they like the new way of doing health.

The highest proportion of MBS-covered telehealth consults are for GPs and mental health services.

Studies are showing that telehealth is proving critical to opening up reproductive health services to rural women in Australia, particularly for safe and legal abortion services. Telehealth has also

provided essential services for pregnant women, such as counselling and even making it possible to attend appointments, as homeschooling and now-home-based work commitments prevented many working women from trekking to GP clinics and hospitals.

How to make telehealth work after the pandemic

While the "forced adoption" has resulted in legitimisation of telehealth practices, confidence in it as a way to offer healthcare services and the uncertain longevity of resources and funding mean how it will continue to work in Australia is still a complex picture, wrote 11 researchers in a paper surveying medical professionals on the subject in early 2021.

"The adoption of telehealth access to enable physically separated care, may mark a 'new context'; or it could be that once the pandemic passes, previous policies and practices will re-assert themselves and curb support for telehealth-enabled care," they said.

As with other Western countries there remains an uncertainty about how to engage with data generated by personal monitors, how to systematise that data, and how to adapt it into workflows to make it useful and, potentially, both lifesaving and a way to reduce healthcare costs.

Experts at HLTH 2021 were similarly concerned about how telehealth will look in the future.

"A lot of people said telehealth was just a flash in the pan, we knew we had to do it, we're going back to the office thank you very much," said Joseph Kvedar MD, chair of Mass General Brigham.

"We're in a world where we're going to see… telehealth be an embedded part of care delivery… but the question is who is going to deliver the services."

The variables include pressure to go back to in-person consults, because these attract more funding (in Australia the federal government is offering GPs a $25 incentive to treat COVID-19 patients in their clinics). There are questions around how to deal with the sunk costs of office space, exam room equipment and other overheads. Triaging may require trained clinicians to start answering phones, or a new framework to judge health over the phone, in order to decide whether a patient should be seen in-person or via a call.

Telehealth is the starting point for digital care models

What experts like Kvedar agree on however, is that telehealth must be substitutive, not additive.

Roy Schoenberg, president & CEO of telehealth company Amwell, says we are still thinking about telehealth as a mechanism that allows us to replace where care happens.

"Telehealth is the digital distribution of health care and it's not going to be the same inventory; it's not going to be the same product that you have in the office," he said at HLTH 2021.

"I think most importantly, it will force us to think about the relationship between patients and clinician as one that is armed by physical, digital and automation, it will inevitably include all three. This isn't just about where the visit happens."

It's all about the money

The wild card, in Australia as in the US, is how telehealth will be reimbursed.

Telehealth offers a new way of doing value-based care, a system the US is slowly embracing that sees clinicians paid for health outcomes, and which Australia is embracing with bundled funding -- although telehealth funding would be restricted to patients who are linked to a GP clinic.

"[Pandemic] dynamics have shifted a bit where providers and regulators have started re-enacting some of those previous regulations that either force the same rate of reimbursement for telehealth as for brick-and-mortar care, [or] requiring that in-person care be offered before a telehealth option is offered, and in this market consumer demand is presently not enough to continue move the needle of adoption," said Meghan Joyce, COO of insur+Oscar at insurer Oscar Health at HLTH 2021.

"If they cared to do so, regulators could actually realign incentives. I do think that it is going to take creative capitalist solutions."

Joyce says telehealth technologies are in a state of flux and evolution now.

"The experience that the average telehealth user is having today is not what the future could look like…You allow and empower the physicians to do what physicians do best, which is really connect with their patient, whether they're interacting with them asynchronously or over video or even supplementally on an in-person basis when needed. Then you can use the surrounding digital tools to create a far bigger bear hug and a more intimate continuous longitudinal relationship and experience. That's the kind of thing that only technology can really unlock at scale, and I think we're really only scratching the surface there. The potential is enormous."

Embracing hybridity

If technology enables decentralised care, then what the future looks like is a hybrid of in-person, remote, and virtual/asynchronous solutions.

Hybrid models of care have the ability to bring care to where the patient is, offering higher quality of care to places that never had it before, and removing geographical differences.

Yet it's the home which is becoming an increasingly important locus of care.

It's more convenient, a lower-cost access point than alternatives, and 75% of Australians aged 50+ prefer to receive care at home. For aged care at home, digital tools can be introduced to new participants to the process, including family caregivers -- an adult child can remotely sit in on a consult -- translators, and even multiple people from a care team, so older people can remain at home for longer, share health data and information with their families, and achieve more coordinated care.

One US example is from the hospital Northwell Health in New York, which sent people to patients' homes during the pandemic to set up the technology they had to use, be that remote monitoring equipment or telehealth.

Others are using technology such as chatbots to engage patients with the digital process, or to bridge staffing shortages.

What these technology options have in common are simple user interfaces, multiple language settings, and strong data collection capabilities that feed into a patient's electronic health record, and sometimes also contribute to research.

Hybrid models, however, will of course come with challenges. Clinical research, for example, has had to figure out how to maintain high safety levels and high-quality data while expanding recruitment reach outside the small location of a specific site.

Dr Amy Abernethy, former deputy commissioner of the FDA and now Verily Life Sciences executive, says traditional endpoints can be difficult to achieve using the current decentralised clinical trial methods, so these will need to evolve.

The trick with hybrid care models will be ensuring everyone has access to the technology they need. For example, rural areas need a decent Internet connection in order for the full scope of telehealth or remote monitoring to properly work.

The next frontier: virtual monitoring

Once upon a time, the fax machine was considered remote patient monitoring (RPM).

Today, that technology has moved on to connected glucose monitors for diabetes patients and rings that track vital signals such as sleep patterns and pulse rates -- although smartwatches are yet to nail blood pressure.

This data, experts hope, will power asynchronous care, where patients are empowered to track their own health and clinicians can monitor them remotely, all with no continuous real-time interaction taking place between the two.

The trick will be figuring out how to use this data for that end. Who will look at data from 1000 patients sending in their blood pressure data every morning? What systems do we need to make that data functional in a daily clinical setting? Or, indeed, outside a daily care setting so it prevents damaging or fatal medical events? And how, and who, will reteach care providers to take care of someone without putting hands on them?

These are just some of the questions yet to be answered.

And yet some organisations are already well involved with RPM. US hospital system Ascension has been doing remote monitoring for heart failure, asthma, COPD and post-op care since 2015, using biosensors, said its CMO for virtual care, Tania Elliot, at HLTH.

She says they use the physiological longitudinal data to tailor daily interventions as well as allow early intervention and avoid emergency visits.

RPM and pregnancy

Louisiana health network Ochsner Health has also been in the RPM game since 2015, with programs such as Telestork, a system that monitors women in birthing suites and identifies problems with labour early. It has seen NICU admissions for full term babies fall by 40%.

Pregnancy is one health condition where RPM arguably needs to come into its own.

The RACGP in Australia says telehealth, which the vast majority of Australian women have been moved to, is fine for the first half of pregnancies but has its disadvantages during the second half when many women must be more closely monitored.

Monitoring devices for basic data such as blood pressure, fetal growth and fetal heart rate need to be made easily available for use in the home -- but with adequate 24/7 clinical support so urgent questions can be answered when the data collected falls outside the normal, or when devices are either not being used properly or stop working.

At least one Australian company has a device for monitoring fetal heartbeats on the market today, while Monash University joined a global trial of a Singaporean device in 2019.

More patients, fewer clinicians

RPM has the potential to allow a single clinician or nurse to care for many more patients than they do now. But this can't happen using the same approaches used in clinical settings today, where one doctor looks at one patient's charts.

What is needed is software that can screen and alert a health professional when the data from one patient of hundreds goes awry. Equally important is setting patient expectations for how often, or how, that data will be checked; in law-suit-ready America a patient who thinks they're being continuously monitored won't be happy if a night-time event sends them to an emergency department, when in fact their data is checked at certain times during the day.

Bigfoot Biomedical's Brewer says RPM creates an opportunity for early intervention and continuous care, rather than the episodic care of going into a clinic and having health metrics taken only during a consult.

"This won't replace hands-on care, they complement each other. The tech does the surveillance and then surfaces the cases that need to be seen by people," he says.

That workflow piece is critical to doctor buy-in. Medical professionals don't want another platform to use, or more paperwork, or calls at midnight from panicking patients.

Furthermore, there needs to be one interface that can handle the multiple digital touchpoints an RPM system might engage with, from government and private reimbursement programs to pharmacies checking about digital script refills.

Interestingly, the US Centre for Medicare and Medicaid Services (CMS) has put in place a system to pay for RPM, reimbursing devices that are connected for 16 or more days a month.

James Mault, CEO of medical grade RPM device maker BioIntelliSense, says there needs to be more accountability to show that devices are actually being used and having a positive clinical outcome, in order to receive reimbursement.

He says endocrinology is one area of health where this could "save" practices: it's a field that is mainly about prevention so being paid for looking at the data and ensuring patients are using devices could open up new revenue streams.

The devil in the detail with getting paid for RPM devices is that payers need to be operating on that value-based care model, where clinicians are paid for preventing worse outcomes, and they need longitudinal data that shows a device is working in that regard.

The customer is always right

During the pandemic, US health provider CommonSpirit Health created a touchless registration system called Vital for its emergency departments. It allowed patients to wait in their car before being called in and nurses could send one-way messages to patients. Families could get up-to-date information on wait times and the status of the patient. Later, it led patients through the after-care process and linked to their electronic health records.

This is consumer-grade software applied to the emergency department, and indicative of the trend of consumer technology merging with healthcare as well as the increasing approach of viewing patients as customers.

These trends are partly rising because non-traditional health companies are moving into the space, as Amazon and Google and their competitors view it as a lucrative source of tech revenue, and retailers such as CVS, Walgreens and Walmart approach it from the mass consumer perspective.

Walmart's vision is to create an integrated physical, virtual, and at-home service which makes the most of each type of infrastructure.

"The home is a better place for kidney dialysis," says Walmart Health senior vice president Marcus Osborne.

"We see lots of future opportunities in home, but again it's about connecting home to virtual to physical."

For example, a food delivery service to the home will soon include medications, and Osborne speculated at HLTH 2021 they could add, on top of this, services such as medications or blood pressure checks.

Executives from Walmart and pharmacy CVS said at the conference that they begin as retail and ecommerce companies first, and apply healthcare to that lens.

Consumer v prescription

The concept of patient-as-consumer was highlighted best at HLTH 2021 by the tension between consumer-grade health products and services, such as weight loss and now mental health app Noom, and data-backed and prescription products and services which are considered medical-grade.

Creating consumer software requires a very different go-to-market strategy (direct to consumer or D2C) than a digital therapeutic (DTx) that is headed down the more traditional route of clinical trials and is engaging with a B2B or B2C2B strategy. Attitudes among investors and entrepreneurs are tending towards viewing the latter as the best option.

And yet there is a strong view that the only way to fix US healthcare is by introducing technology with a consumerist lens.

Noom general manager of healthcare, Firdaus Bhathena, says there is no reason not to leverage the same "hook cycle" engagement processes that keep people hooked on social media apps and games, for healthcare.

"Why can't we leverage best practices from the world of online addiction to get people addicted to better ehealth?" he asked.

"Prevention is better than a cure, and we're fixated on this term healthcare as something that is a next level up and helping people who are sick, but wouldn't it be a better world for all of us if we spent a lot more effort on trying to keep people out of trouble that trying to get them out of trouble once they're in it?"

Part of the tension between consumer and medical healthcare tech is about trust: can a consumer service like Noom be trusted to deliver a medical outcome, and therefore attract subscriptions or other sources of revenue, without clinically-validated data?

Representatives from medical DTx companies Everly Health, Thirty Madison and Big Health said no, claiming that the current crisis of trust in public health requires services to be backed by strong data that proves they can achieve as advertised.

But Bhathena proffered an alternative of ongoing, short surveys and tests of their hundreds of thousands of users each week, and building feedback loops into the product from the start, enabling the company to almost read their users' minds, and certainly read the market. For example, he says the world doesn't need another mental health app, but the data Noom was receiving from its weight loss users was that its psychology-based techniques could be well applied to that space.

Personalisation

Over the next decade, health data will be democratised and that means greater levels of personalisation, tailoring treatments and processes to individual patients.

"When we think about personalisation it's about the data, but the problem is data is a commodity. Everyone's got data but they don't know what to do with it, they don't understand how to actually get it to the right place at the right time. Of the 50,000 points of information, what are the three you must have?" said Darshak Sanghavi, global CMO of Babylon Health at HLTH 2021.

For providers, digitisation means you can begin to use information in a synthesised way to show risk. It doesn't help to bring up 15 diagnoses when a doctor can easily assume the top three, nor to raise a super rare condition that might send you down the wrong track. Technology such as natural language processing can narrow the options by summarising a patient's entire medical history, or extracting details from a range of medical notes or hard-to-extract files such as EKGs.

RPM comes with its own challenges when it comes to personalisation, for example an Apple watch is great for engagement but it can't do defibrillation if a person's heart actually stops.

Money

Switching to digitally enabled models of care requires funding, from governments, investors and private health insurers.

Laura Veroneau, a partner at Optum Ventures, says the ability to engage customers is now "baked into contract values", but the next evolution is in creating cost savings and real healthcare outcomes -- your intervention was responsible for the end result.

Investors are looking for ideas that engage patients over the long term, but also don't annoy them. For example, expensive patients will soon, if they aren't already, stop replying to text nudges or notifications because of digital overload.

And there is also a question of who "owns" a patient's care, or who is responsible. Even in Australia's private healthcare system the division is between the insurer who pays, and the healthcare provider, as both have a financial stake in reducing costs, yet improving the patient's condition.

In the US, at least, there has been a huge surge in investor interest in digitally-enabled healthcare solutions. Valuations have surged thanks to increased demand from both buyers and investors, and later stage and non-health investors are moving in earlier -- the risk with the latter is that some are expecting tech-level speed in an industry not known for haste.

Value-based care and digitally-enabled models

The traditional way of charging patients for healthcare was by fee-for-services delivered in a clinic. It meant that products delivered outside the clinic or over time, such as telehealth or remote monitoring, and focused on prevention or monitoring did not capture any of that revenue.

Value-based care, or the idea that a provider is paid based on outcomes rather than number of patients seen, is part of the patchwork of elements making digital-enabled care models possible.

At the same time, prescription DTx is also growing as a way to make money.

Ed Cox, an executive at life sciences company Eversana, says the pricing of different DTx solutions will start diverging depending on the data pack a company can provide proving how much they can "move the dial" on specific conditions.

"I think over the next five years you're going to see DTx that actually have data, that actually are regulated or have enforcement discretion, with prices of $100 a year up to $15,000," he said at HLTH 2021.

"Now because of the pandemic people are more used to getting their healthcare at home. Whether it's Peloton or Noom, healthcare is coming into the house, and people also know mental health is a major crisis.

"Other interesting logistical components such as streaming, the ability to watch Game of Thrones and movies on your phone is great infrastructure that makes the delivery of DTx way more possible than it was two to three years ago."

He says some solutions will be commercialised like consumer apps, others like biologics or CPAP machines will go through more traditional pharmacy benefits scheme payment models or insurer reimbursements.

"Understanding how much you can save the payer, then how you can price it, then build a commercial model around that," he says.

Julia Strandberg, COO of Pear Therapeutics which developed the first prescribed DTx to receive marketing approval from the FDA, says they are focused on the pharmacy benefit model of reimbursement, because DTx needs its own reimbursement benefit categories.

But with RPM codes coming out a couple of years ago, and now remote therapeutic monitoring codes which are also priced on physician fee schedules, it shows the US at least in a window of change towards digitally-enabled models of care.

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