

Medical technology to watch out for

By [Deon Kotze](#)

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Ground-breaking technologies are empowering healthcare systems and consumers at an unprecedented rate. And, 2019 will prove no exception to this trend. With disruption in the medical world set to accelerate, which top healthcare technology trends will lead the momentum?



Deon Kotze, head of technical marketing at Discovery Health

Billions of people are connected to the internet, so digital connectivity is key to solving healthcare challenges. Technology giants such as Amazon, Apple, Alphabet/Google, and IBM are increasingly partnering with big names in healthcare. And many Silicon Valley start-ups have joined the fray, to command and streamline areas of the healthcare value-chain long-plagued by waste and redundancies - and ripe for a digital overhaul.

Whether those technology entities that have healthcare's future in their crosshairs will prove to offer real customer-centricity and long-term savings through their innovations, remains to be seen. Certain technologies have proven their worth in putting patients at the centre of personalised, quality healthcare. And, three powerful technology trends will continue to do just this, in 2019.

Tele-medicine's titanic potential

Recently, Doctors Without Borders/Médecins Sans Frontières (MSF) physician Dr Adi Nadimpalli, a specialist in internal and paediatric medicine based in South Sudan, treated a pregnant woman with a likely heart valve problem. Her ultrasound images were digitally sent from South Sudan to a telemedicine doctor in Canada, a cardiologist in the US, a specialist anaesthesiologist in Paris and an obstetrician in Australia, confirming mitral stenosis. An elective C-section and tubal ligation, which saved both mother and baby girl, followed. Since 2010, Médecins Sans Frontières (MSF) has used telemedicine to connect doctors in remote areas with more than 280 global experts, for virtual back up within minutes, 24/7. Up to 10 cases a day are dealt with in this way. Telemedicine, telehealth, or mHealth (mobile health) – remote patient diagnosis and treatment by means of telecommunications technologies – is key to treating patients with reduced access to primary healthcare.

Telemedicine has really enabled a new world of interaction between consumers and healthcare experts, bringing measurable cost efficiencies. Take, the free-to-use, Vula app, founded locally in 2014 and now the official referral system for the Western Cape Department of Health. It is also being used in five other provinces (80% in public sector, 20% private sector). Around 5,550 healthcare workers in rural areas use Vula to connect with specialists in the region, who are often located hours away. In under 15 minutes, they receive advice about whether to treat a patient locally or refer on. Vula facilitates interaction across 17 medical disciplines, helping over 300 patients a day. There's an average reduction of 31% in physical referrals, saving both time and costs for patients and the healthcare system.

Teladoc, the leading telemedicine provider in the US with a 70% share of the market, has shown a doubling in telemedicine uptake between 2013 and 2017 year on year. Though they calculate their market penetration at only 1%, virtual consultations realized a saving of around \$300m to their healthcare system in 2017 alone. This means a total potential saving of \$30 billion.

Global telehealth adoption is driven both by the fact that people are living longer and by the global explosion in costly, chronic diseases of lifestyle. In both contexts, telehealth fundamentally reduces barriers to communication between patients and their healthcare providers to work at preventing disease, or existing conditions, from worsening. It's estimated that virtual consultations may comprise 80% of patients' first medical contact in both Israel and parts of the USA.

Telemedicine's applications abound. Discovery Health's DrConnect app allows users to access vetted medical information through a worldwide network of over 105,000 doctors, or search a library of over five-billion doctor-created answers to common medical questions. As users pose personal medical questions, the app's AI system narrows down possible diagnoses, with advice on whether to consult a doctor, and how urgently. Patients can use the app to book virtual consultations with doctors they've seen face-to-face in the previous 12 months.

There will be continued efforts to realise telemedicine's profile in South Africa in 2019 - as we strive to define regulations governing everyday doctor-member interaction via these platforms, as well as reimbursement for remote patient-monitoring.

Cutting-edge drugs defining a new world of healthcare

Cutting-edge, targeted drugs therapies, have revolutionised the way we treat common illnesses. In fact, the 2018 Nobel Prize in Physiology or Medicine went to Immunologists, Dr James Allison and Tasuku Honjo who each discovered ways to stimulate the inherent ability of the immune system to attack tumour cells. This sort of research has, since 2011, fuelled the development of various so-called immunotherapy drugs, revolutionising and personalising the care of previously untreatable cancers. During 2019, billions will continue to be invested in the development of new compounds that could form the basis of similarly life-extending or -saving drugs.

Yet, the challenge will remain providing access to these medications universally, as their high development costs mean they come to market at a premium. In 2016, 89 Discovery Health Medical Scheme (DHMS) members requiring these high-cost medicines each claimed an average of R1.4m. Compared to the R608m spent on such drugs in 2010, the scheme paid out R1.5bn in 2017 - almost a tripling in costs. The number of members claiming towards these medications has increased seven-fold since 2008 - and this trend will continue into 2019.

Big data analytics and machine learning enable greater personalisation of care for all

Forecasts suggest that by 2025, the global datasphere will grow to 163 zettabytes (ZB) or 163-trillion gigabytes - 10 times the 16.1ZB of data generated in 2016. Our increasing ability to accurately analyse new kinds of health data, means 2019 will propel us further from a one-size-fits-all approach to treatment and deeper into personalised medicine. This is due to machine learning, a facet of artificial intelligence (AI), which allows for analysis of enormous data sets from thousands of people, yielding insight applicable to predicting health risk, in a single individual.

Machine-learning is also what enables the latest Apple Watch Series 4 to detect an irregular heart rate and rhythm and send an electrocardiogram to a doctor so that high-risk patients can access timeous medical care. The watch also detects hard falls and alerts emergency services. In a world in which older people are living longer, and in which heart disease is a leading global killer, this sort of technology literally saves lives.

In 2019, Discovery Health will launch a machine-learning powered platform which, on admission to hospital, will predict a patient's risk of complications, hospital-acquired infections, future re-admissions or mortality. A good, early understanding of these risks allows for the right interventions and better outcomes.

We are also using machine learning to develop an app-based platform that will offer medical scheme members a personalised prediction of their risk for developing diabetes, hypertension or hyperlipidaemia, based on their unique health metrics. Members of the DHMS will also have access practical and specific advice - through the Discovery app - to address the underlying behaviours that are fuelling their risk, with rewards for following the individualised advice.

There will be significant volumes of data emanating from the Medical Internet of Things - wearable fitness devices and other connected health monitors. These allow for remote patient-monitoring by sending out continuous biometric data to healthcare providers. Wearable and ingestible devices can track systems as varied as gut health, heart rate, activity levels, stress and insulin levels, and more.

Globally, the world of wearables now features research into biosensing patches and digital tattoos that monitor metrics such as blood sugar levels for people with diabetes, sensor-embedded bandages, implantable and ingestible medical devices, at home vision-testing devices and even tiny tooth-mounted sensors that aim to track a person's food intake.

In summary, as public support for AI-based platforms grows, 2019's technology-driven, digitally-enabled offerings will continue to empower patients and providers alike, realising their aims to contain costs, remove bottlenecks and improve quality of care across the healthcare spectrum.

ABOUT THE AUTHOR

Deon Kotze is the head of technical marketing at Discovery Health

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