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Meeting Needs Across the Patient Journey



Smartphones as a Window into the Mind



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Welcome



Today's patients are well informed consumers, and their expectations have helped set the benchmark when it comes to engagement, just as they have done in other areas, such as retail and financial services.

And just as those industries have turned increasingly to technology to meet rising consumer expectations, it's logical to ask how technology might also improve the patient experience.

Patient engagement happens at every stage of the patient journey – before the patient enters a healthcare setting, during treatment, after care, and even long after recovery and healing. Patient experience (PX) is the sum of all the engagements a patient has with his, or her, healthcare provider. In order to make a patient's experience better, what needs to be considered is how well all the various patient engagements are working together in unison – and technology is playing an increasingly important role on this front.

In this issue we discuss the role of technology in patient experience, as well as the importance of patient experience when it comes to designing, developing and implementing patient-facing technologies.

In the article, *Bringing the Patient Experience Back to the Future*, Matt O'Donovan, CEO of WiFi SPARK discusses how hospitals can take advantage of technology to meet rising patient expectations. In the feature *Meeting the Needs of Patients across the Patient Journey* we consider how technologies can strengthen the provider-patient connection and meet evolving patient demands.

Also inside, a thought-provoking piece that discusses the emerging use of smartphones as a source of collecting and analysing data from the sensors of such devices to infer information about a user's psychology. Read the article *Digital Phenotyping: Smartphones as a Window into the Mind* on page 8.

Finally, we are very pleased to announce that the applications for our annual Global Digital Health 100 are now open. This hugely successful award series is open to any company, or organisation, involved with the development of health technology. Applications are FREE, for more information visit thejournalofmhealth.com/digital-health-100.

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Bringing the Patient Experience BACK TO THE FUTURE

By Matt O'Donovan, CEO, WiFi SPARK

It's no secret that within hospitals today, new technology is making the impossible, possible. You can walk into a hospital and what you will see will be reminiscent of a science fiction film – new innovations being used to help fight diseases. But in these very same hospitals you will also see innovations that are stuck in a technological time vacuum.

It is high on the hospital agenda to take advantage of new technology that helps administer patient care, and there is no doubt that technology will continue to play an increasingly important role for years to come. But the technology that patients' interact with within the hospital environment is not evolving at the same pace. For patients, technology that improves their experience is not given the same urgency.

Ultimately, the primary role of a hospital is to provide the very best patient

care – and hospitals are investing in technology that helps them do this. But hospitals are also aware that they need to do more to enhance the experience – after all, experience has an impact on patient wellbeing.

As patient expectations rise, how can hospitals take advantage of technology that brings the experience into the 21st century, but doesn't take away from the foundation of which hospitals are built – on providing care?

Going beyond care

The view that hospitals should be solely focused on providing medical care is one that is dominant, and rightfully so. After all, a hospital's main job is to heal those who are ill. Hospitals are turning to technology to support this – in fact, there is talk intensifying around 3D printers emerging as a medical technology, able to regenerate skin cells and even 'print' blood vessels and synthetic ovaries.

But you can also walk around a hospital and see technology that is over a decade old – or a complete lack of technology all together. Hospitals are one of the biggest users of pagers, and there is an estimated 9,000 fax machines in use within NHS hospitals today. The majority of hospitals also take patients food orders with 'good old fashioned' pen and paper, and patients watch television on cumbersome screens which hang over their beds.

Healthcare professionals are beginning to take a more holistic view of the hospital experience. This change in attitude is evident in the NHS's Test Bed scheme, with trusts implementing innovative technologies to improve the patient experience. The scheme is seeing patients given access to their digital health records, manage and schedule appointments, given visibility of their waiting times, as well as the remote reporting of their health status. Not only has this allowed patients to plan their hospital visits in a much superior way, these innovations are

also predicted to reduce the number of missed appointments.

Taking inspiration from apps

When we consider the patient experience, we need to consider how wide and encompassing this is. The patient experience starts the moment a patient enters a hospital grounds, and encompasses almost everything until the moment they leave – from parking to food, comfort, right through to connectivity, entertainment and communications services. With the patient experience a combination of a number of different factors, it has been troublesome to employ cost effective technology that can be installed across the entire patient ecosystem that doesn't impact the day-to-day running of the hospital.

Yet outside of a hospital, consumers are able to take advantage of technology that manages the many different aspects of their day-to-day lives – from apps that wake them up in the morning, to apps that allow them to manage their finances, check train times, board flights, and ensure their homes are secure. But while it is a smartphone that is the vehi-

cle for this, it isn't the smartphone itself that enables consumers to do all of these things – it is the app ecosystem that is the key. The app store provides a platform that allows consumers to manage their lives, all through a click of a button (or a swipe of a screen).

And it is this model that hospitals need to take inspiration from to bring the patient experience in line with expectations. This would allow patients to use their own devices to access TV, media and communications services, eliminating the need for the old, outdated TVs (and charges) that we see in hospitals today – and also allow them to interact with content in a way that they are accustomed to today. Applications that allow patients to order their own meals with set dietary requirements gives them control over the food ordering process, removes reliance on hardworking NHS staff, reduces food waste and allows the nurses to dedicate more time to their vital work.

And just as we have apps for every element of our lives, the same model can be applied to every aspect of the patient experience – digital solutions that allow patients to check in and out of hos-

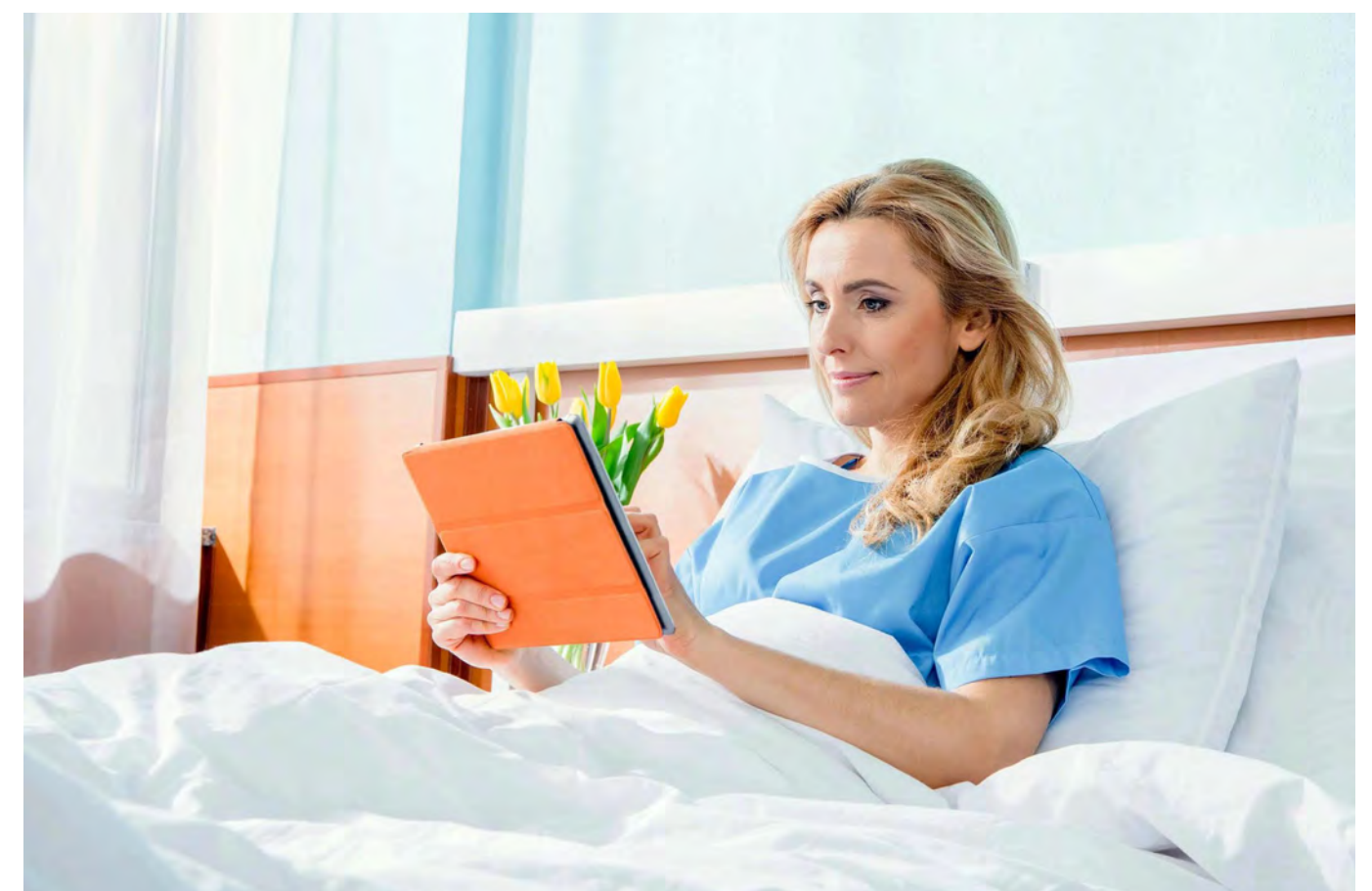
pital, technology that allows you to pay for car park fees, check the status of A&E waiting times – to applications of the future that are beyond our imagination.

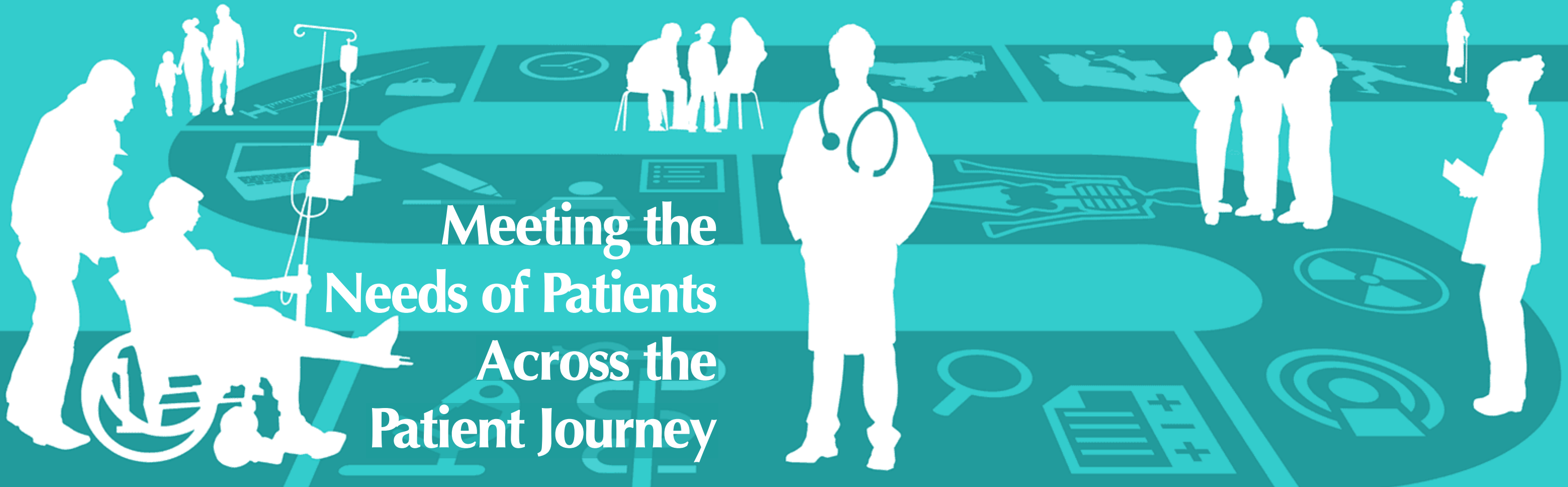
Closing the technology gap

It is clear that technology is playing, and will continue to play, an important role within hospitals. It is being used today to deliver care that is changing lives, and will continue to help provide care as technology continues to advance and develop.

But technology isn't playing the same role in shaping the patient experience. As more and more hospitals shift their focus to providing a holistic service to patients, they should take inspiration from the technology we hold in our pockets. Instead of trying to re-invent the wheel, hospitals should look at the technology that is already transforming patients' lives outside the hospital walls.

Implementing simple technological changes in hospitals will transform the patient experience for the better, and bring the overall standard of technology in hospitals back to the future. ■





Meeting the Needs of Patients Across the Patient Journey

Technologies can strengthen the provider-patient connection, help practices meet evolving patient demands, and even attract new patients. To meet the needs of patients across the “patient journey,” healthcare practitioners require a well-executed digital strategy that is capable of managing the complete patient-clinic relationship so that the whole patient pathway is outlined and all relevant data is recorded and tracked carefully.

Medesk is medical practice management software that makes work with patients and medical data easier for practitioners, receptionists and practice managers.

What defines the modern patient and how should healthcare practitioners adapt their approach to working with patients over the coming year?

Patients are more proactive than ever before when it comes to their well-being. They are progressively able and willing to accept technology as a toolkit with which to participate in their own healthcare. Patients want to discover new ways of leveraging digital advances to fulfil their health objectives. Using an integrated healthcare ecosystem like Medesk means that clinics are finally finding it possible to keep pace with their patients’ expectations.

It is impossible to deny that patients have gone digital and have no intention of going back. Carrying out your own research on

doctors and clinics before actually attending an appointment is so hassle-free nowadays that a considerable percentage of any given clinic’s potential patient base finds itself perfectly capable of choosing the right services and, indeed, the physician for their exact needs. For example, instead of making a phone call, patients can book an appointment online in a matter of seconds, as well as keeping track of test results, treatment plans and so on. For clinics, contending with all of this let alone the other innovations that patients expect can be very challenging, to say the least.

It’s time for medical practices to go digital and, in doing so, provide patients with the maximum in terms of service, attention and convenience.

What are the obstacles that clinics can expect to face in the patient engagement solutions space and how does Medesk effectively overcome them?

The main hurdle that clinics face when trying to promote themselves to new patients is that the patient journey from the internet to the premises tends to be rather opaque. It’s often poorly understood how they found the clinic, and what specifically convinced them to book an appointment in the first place. Here’s a big problem before the patient journey has even properly started!

Amongst other things, the Medesk plat-

form transforms all this into a series of transparent and workable steps from patient acquisition and their first visit to treatment, retention and future visits.

What are Medesk’s core values and how did the platform come into being?

Ten years before co-founding Medesk, Vladimir Kovalskiy dreamed of creating a platform that would allow doctors to provide their patients with a means of properly engaging with their own healthcare. Vladimir’s team had already begun to work on bespoke automated solutions for small clinics on a case-by-case basis when the first plans for the Medesk digital platform came to fruition.

As we gained valuable experience and feedback as a result of our localised solutions, we were sure that a properly unified digital health platform would be a success on a much wider scale. After all, healthcare providers need to be able to interact with one another without interruption if they are to meet their patients’ needs and the lack of a reliable digital means of doing so was a real problem.

In 2012, the Medesk platform was released with the intention of it being a single platform upon which clinics, labs, and insurance companies would collaborate with ease. The end goal was to help patients receive a whole new level of service quality from their healthcare providers. Today, Medesk is focused on

simplifying the patient journey by rapidly collecting and processing clinical and business data, resulting in the optimisation and cost-effective management of everything from the patient acquisition channels all the way to a complete resolution of their medical and surgical issues.

How does Medesk distinguish itself when it comes to solving the digital and management challenges faced by clinics?

Medesk perceives medical practices as service providers which should offer high value to their patients. We are dedicated to making sure this happens at all levels in all healthcare organisations.

Medesk acts to manage patients’ relationships with clinics so that the whole patient pathway is outlined and all relevant data is recorded and tracked carefully. Ultimately, clinics using the Medesk platform can handle everything about a patient whether it’s appointment booking, automatic email reminders, provision of medical data upon request or just about anything else.

Our platform makes it so simple for doctors and patients to interact that their relationship becomes truly balanced one, letting patients fully engage in their own healthcare at last.

Can you cite one or two customer success stories where Medesk helped their cus-

tomers address a specific concern?

We have a dedicated Customer Success department to handle every single problem that clinics might encounter. As such, we have a wide range of case studies to share on just about every topic you can think of. Throughout our collaborations with all kinds of private practices at different stages in their lifecycle, we have implemented a vast array of practice and patient relationship management tools.

One of the most common issues facing a new clinic is that they do not have a pre-existing list of patients who can be encouraged to attend. This is especially true when doctors are making the transition to private practice when they are used to serving patients in the public sector, or when they are moving from one end of the country to another.

One particular success story that springs to mind involves an occupational health practitioner who had recently returned to London after practising for several years in New York. She could hardly bring her patients in tow across the pond, so she had to start from scratch.

We provided her with some unique patient and referral booking links for specific acquisition channels to help her learn which kinds of patients were joining the clinic and how they found it in the first place. The level of data analysis and interpretation we offer means

that our customers can tweak their advertising campaigns and the messages therein to perfection, thus bringing in a reliable quantity of patients no matter what the situation.

Due to all the support from Medesk, our occupational therapist was able to identify a number of companies who were referring their employees in her direction and footing the bill. She is now working on a partnership that should encourage these employees to visit in their own right, thus developing the beginnings of a standalone patient list.

What does the future roadmap look like for Medesk?

Our goal is to realize our new concept of Medesk 24. Right now, the Medesk platform unites all the tools essential to clinics. In the future, we will extend this to include all the services that help patients to manage their own health in real-time. This will allow people to focus on prophylactic lifestyle changes, preventative diagnostics, risk factor management and so much more.

If you had to describe Medesk in one phrase, what would it be?

Medesk is all about flexibility and customization. Even if we come across a totally new problem, our growing wealth of experience combined with our unique insights and smart digital tools means that we are now better placed than ever before to help clinics engage their patients like never before. ■

Digital Phenotyping

Smartphones as a Window into the Mind

By Dr. Simon D'Alfonso

The value of digital solutions to mental health care is now clearly established and has given rise to the field known as digital mental health or e-mental health.¹ Whilst mobile apps for mental health abound, another emerging use for smartphones involves collecting and analysing data from the sensors of such devices to infer information about a user's psychology. At the intersection of the computing, data and psychological sciences, this use of smartphones is known as personal sensing or digital phenotyping and in terms of psychiatry or clinical psychology, such information can be used to predict or determine the presence of mental health issues.² Following are some examples of sensors/functionalities and early research that suggests how they are indicators of mental health.

The familiar GPS or geolocation sensors on our smartphones are used with applications such as Google Maps to guide us with directions from one place to another. Beyond this standard use, research into the association between location data and depression suggests that certain reductions in location change and the diversity of visited places were correlated with depression symptoms.³ Naturally the types of location one visits can also offer psychologically relevant information. A related sensor is the accelerometer, which measures a phone's movement in terms of acceleration and can be used to gauge physical activity, which can be associated with mental health outcomes.

Clinical text from sources such as patient session transcripts and non-clinical texts from peoples' social media posts have been analysed using computational linguistics to detect mental health conditions⁴, including psychosis.⁵ In terms of smartphone text input, whilst it is technically possible to record the characters that a user types on their phone, clearly this form of sensing could be particularly intrusive. However, without needing to track such character input information, there is work being done based on the idea that non-semantic information from tactile interactions such as typing, swiping and scrolling dynamics alone could indicate certain cognitive and mental health conditions.⁶

Apart from specific sensors, general phone usage can also provide interesting information about user behaviour.

When, how often or in what intervals someone is using their phone could provide behavioural information of diagnostic significance. For example, abnormal nocturnal smartphone use could indicate insomnia. Or which apps people are using and how often they are being used might say something about their current state.

Finally, as well as passively collecting data from such smartphone sensors and functionalities, another important component is the capacity to collect information from the active input of users responding to questionnaire prompts on their smartphones. Known as experience sampling or ecological momentary assessments (EMA)⁷, smartphones can be used to periodically push short psychological assessments that prompt users for responses on their thoughts, feelings, behaviours and environment in the moment. Such information can now be used to investigate connections between passive sensing data and user-reported psychological states. It is also interesting to note that such real-time assessments can provide psychologically valuable secondary information in terms of how users respond to them. For example, the time it takes one to respond to a questionnaire prompt, the time it takes to complete the answers or whether they respond to it at all can provide insights into their current state of mind.

Passive sensing and EMA information can then go on to inform what have been termed Ecological Momentary Interventions (EMI).⁸ These are health treatment or therapy suggestions delivered to users via their smartphones in the moment, in real-world situations. The ability to deliver contextually relevant interventions based on situational information from smartphones and other mobile devices is the future of integrating mental health care into people's daily lives.

In an era where big tech companies are storing and mining large volumes of our personal data, particularly for commercial motives and sometimes problematically, due consideration must be given to the ethical and privacy issues surrounding digital phenotyping technology. Some of these challenges come down to proper governance and responsible handling of the data, at both a social level (e.g. don't share personal client data without their consent to third parties) and technical level (e.g. ensure that data is stored in a secure way). Beyond this, personal sensing apps can be created so that the consumer is given



complete control over which sensors they wish to share. Also, in developing digital phenotyping frameworks, preference can be given to sensors that are less intrusive; if either of two sensors can be used to indicate a certain condition, then the least intrusive should be selected.

The functionality to objectively and continuously assess mental health by analysing the data patterns an individual creates in their daily life offers a radically transformative alternative to traditional methods that often rely on unreliable or inconsistent self-reporting and subjective analyses. Digital phenotyping heralds a revolutionary and wide-reaching technology for the future of mental health care.

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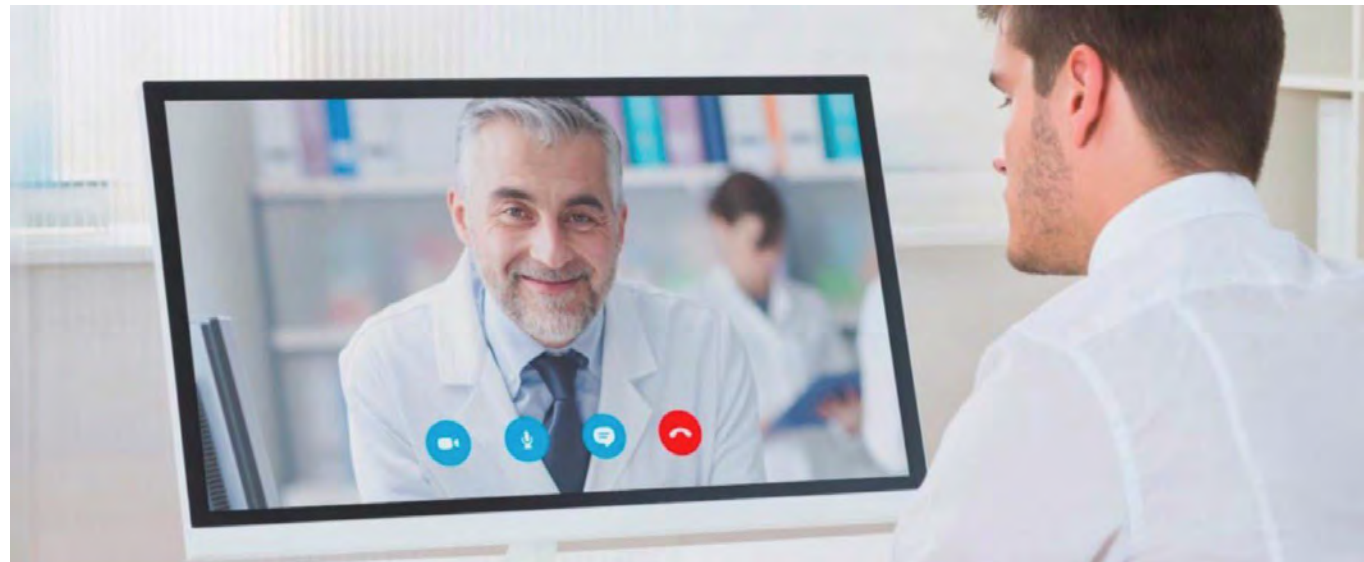
Dr. Simon D'Alfonso is an e-mental health and cyberpsychology researcher with an active interest in smartphone personal sensing and digital phenotyping. A member of the University of Melbourne School of Computing and Information Systems, Simon leads the project "Digital technology and artificial intelligence for mental health" (<https://bit.ly/2NbFii2>). He is also the lead engineer and head of computational research at eOrygen, the Australian e-mental health group of Orygen, the National Centre of Excellence in Youth Mental Health (eorygen.org.au). ■

INDUSTRY NEWS

News and Information for
Digital Health Professionals



Survey Shows Half of Doctors Expect to Conduct Video Exams by 2022



Nearly a quarter (22%) of US physicians have used telehealth to see patients, and a new telehealth forecast suggests that 61% of doctors, in the USA, will use it by 2022. Physicians are looking at telehealth to improve patient access to care, improve patient outcomes and attract and retain patients, according to new research from telehealth platform provider American Well.

This shift in expectations for telehealth, coupled with a more promising reimbursement landscape and health systems' vision to expand telehealth use, is expected to drive growth, according to American Well.

In a survey of 800 physicians, American Well discovered:

- » Physician adoption of telehealth has increased significantly and is up 340 per cent from 2015 when only 5 per cent of physicians reported having ever used telehealth.
- » More physicians are willing to try telehealth. A total of 69 per cent of physicians said they would be willing to use telehealth, up 12 percentage points, from 57 per cent in 2015. Interestingly, newer physicians (aged 25-34) were somewhat less willing to use telehealth compared to other young physicians (aged 35-44), possibly because these physicians are still learning their craft and thus are less confident about new technology.
- » Specialists want to use telehealth, especially those who are burnt out. Specialists most willing to practice

via telehealth are also among the most burnt out. The top specialties willing to practice via telehealth include: Urology, Emergency Medicine, Infectious Disease, Psychiatry, Pediatrics, Oncology and Neurology. "Physicians are adopting telehealth much faster than they adopted EHRs at a similar stage of market development," said Dr. Sylvia Romm, vice president of clinical transformation at American Well, in a prepared statement. "Physicians' increased willingness to see patients over video, in addition to the increasing physician shortage, high burnout rates and a more favorable reimbursement landscape, signals a boom in virtual visits over the next several years. It's exciting to be a part of such a significant movement." ■

Hospital Staff to Gain Enhanced Prescribing Guidance, Linked to Patient Information

DXC Technology is collaborating with Royal Derby Hospital on an initiative that will better alert doctors to genuine prescribing dangers, electronically link patient information and best practice to prescribing decisions, and improve patient safety whilst reducing pressure on staff.

E-prescribing and medicines administration, or ePMA, is part of a much larger hospital digitisation programme in Derby underpinned by DXC's Lorenzo electronic patient record (EPR) system. As a next-generation EPR, Lorenzo is both interoperable and expandable, and it is designed as the heart of a best-of-breed healthcare architecture.

Deployment of the ePMA component of Lorenzo has already started at the Derbyshire Children's Hospital and will extend to all inpatient areas in Derby, replacing an outdated electronic prescribing system.

Debbie Loke, deputy chief information officer at the trust, said: "Enabling safer, faster and more informed prescribing for busy doctors and nurses and the patients they look after is a core ambition in our transition to Lorenzo ePMA. Unlike most hospitals embarking on digitisation programmes with the Lorenzo EPR, electronic prescribing is not new for us. However, staff will benefit from a much more intuitive, mature and connected system, configured around their workflow. This will better guide their decisions and alert them to real risks."

The new ePMA system will sit alongside several specialist prescribing systems used in areas such as oncology and critical care. It will integrate with crucial patient information held in the trust's EPR, facilitating suggestions and alerts based on an individual patient's circumstances.

Matt Elliott, the pharmacist responsible for overseeing ePMA systems at the trust, said: "This is about helping to guide prescribers – giving them suggestions based on the best practice, the latest drug prices, clinical guidance, prescribing policy and the context of a patient's history."

"Our staff are already familiar with the typical benefits of electronic prescribing – such as having access to information in different locations, legibility or being alerted to patient allergies."

"We now want to go much further with Lorenzo, pre-populating the system with common doses and using relevant linguistics so prescriptions can be issued quickly and easily. Linking to the EPR will mean prescribers have drug orders, lab tests, drug administration and patient information all in one place and they can benefit from proactive suggestions for patients with specific conditions and comorbidities."



Dr Sam Thacker, associate clinical informatics officer at University Hospitals of Derby and Burton NHS Foundation Trust, said the new system could check for conflicts for patients with chronic kidney disease, heart disease and other illnesses, whilst also helping to avoid alert fatigue.

"Every extra alert that is extraneous comes with a cost," he said. "We can stratify alerts in Lorenzo and manage them so the most dangerous and more uncommon things are more likely to interrupt users' work than the more common and benign. We haven't had the ability to do that before. Now something minor will show as text, whereas if a prescriber presses 'OK' on something potentially fatal – they have to enter a reason. That is a big improvement."

Dr Thacker added the new system would also help with drug administration, planning rounds and boosting compliance with drug administration policy.

"Additional safeguards will bring us down the road of better safety – with fewer errors. We can help to ensure harm is minimised and that any causes are recognised," he said. "This is something Lorenzo will help us to realise."

Colin Henderson, director of healthcare and life sciences for the UK, Ireland, Israel, the Middle East and Africa (UKIIMEA), at DXC Technology said: "Digital technology has the power to transform care and improve safety in the increasingly pressured environments faced by healthcare professionals in NHS hospitals. The work at Derby is a great example of taking established technology and configuring it to real clinical workflows. There is clearly strong commitment from hospital leadership, digital specialists and healthcare professionals in Derby to ensure technology provides the meaningful insights clinicians need to deliver the best outcomes for patients." ■

First Patient Multi-disciplinary Digital Care Plan in the World Highly Commended in Prestigious Awards

The work between Coordinate My Care and InterSystems on digital urgent care planning, which is helping thousands of patients share their end-of-life wishes, has been highly praised in this year's HSJ Partnership Awards.

The London-wide service by Coordinate My Care powered by InterSystems HealthShare® has been highly commended in the medical software, systems and technology category at this year's HSJ Partnership Awards, which celebrated successes in the NHS.

The Coordinate My Care (CMC) service gives thousands of patients greater power to let healthcare professionals know about their urgent and end-of-life care wishes. The program enables users to create an online urgent care plan which enables patients to specify the treatment they want, where, and when they want it. General Practitioners (GPs), hospitals, ambulance crews, 111 providers, care homes, hospices and out-of-hours services can access this information, alongside essential clinical details, so they can provide care in line with patients' requests.

The scalable service is helping to cut inappropriate hospital admissions and reduce the stress on patients and their loved ones – providing simple, yet secure access to vital information to authorised care providers.

Now delivering an annual saving of over £16.8m, CMC is transforming how those with urgent care plan requirements are looked after. Across the country, 47% of deaths occur in hospital; yet 70 percent of people say they would prefer to die at home. For patients with a CMC plan, only 19 percent die in hospital. An independent economic study found that the mean number of A&E attendances was 1.2 for CMC patients, and 1.5-1.9 for non-CMC patients in the 6 months prior to death.

Professor Julia Riley, CMC clinical lead, said: "With well over 65,000 CMC plans in place, we are helping NHS and care providers deliver the care patients want to receive at a crucial point



of their life. Thanks to the clinical team behind the service, and the technology underpinning it, we are seeing more patients having their wishes respected."

The system is built on InterSystems' suite of connected health solutions, HealthShare, which is recognised as one of the most advanced and interoperable platforms in use across global health and care systems. HealthShare enables organisations to pull together social and clinical care information into a unified patient record.

David Hancock, InterSystems client engagement director, said: "The Coordinate My Care system makes it simple to record and share in real-time medical details, treatment wishes and advance care plans for thousands of patients across London. It is also backed up with extensive security and access controls, so patients have control over which professionals can see their information. With the support of CMC and London's health community, we have come together to develop a digitally-enabled clinical service that is making a lasting difference to people across the capital, and which could help the wider NHS as well."

Judges for the HSJ Partnership Awards were looking for innovations in digital health technology that could demonstrate results for patients, staff and NHS organisations. ■

Malta Selects openEHR for National Health Records

Better by Marand has won the National Electronic Health Records and related support and maintenance tender in Malta. Its National Electronic Health Records (NEHR) will

use the Better Platform to implement a mature, future-proof national EHR and care coordination platform for collecting and storing patient health data. The Better Platform will make

health data from different sources available by electronic means, in a controlled manner, to as many health care providers as possible with a view to providing the best possible quality

and continuity of care.

The Maltese Ministry for Health (MFH) is implementing a National Digital Health Programme which will enhance the Digital Health infrastructure and add new systems to the portfolio, in support of improved health of the Maltese population and increased efficiency and sustainability of Malta's healthcare system. This can only be achieved by utilising clinically rich data from patient records to drive other forms of innovation and provide national research repositories.

With respect to these requirements and the proposed reference architecture, Better Platform is well aligned with the agenda of the customer. The deployed solution will be a secure, real-time, patient-centric information resource for both healthcare professionals and citizens.

Clinton Farrugia, CIO, Maltese Ministry for Health (MFH) commented, "Implementation of NEHR is a flagship project for Digital Health in Malta. The key requirement for the platform is providing data as a service by separating data from applications and storing it in a vendor-neutral format. For the NEHR minimum data set to fulfil its purpose, public and private health professionals and health care delivery organisations in contact with the patient will need to contribute to



patient's continuity of care, through the provision of health information."

Tomaz Gornik, Better by Marand CEO said, "We are honoured to have been selected as the provider of this core infrastructure component by the Maltese Ministry for Health. Better Platform stores all health data in openEHR, an open, vendor-neutral data format. This approach will help Malta execute a health system reform by building a solid foundation for current and future projects and applications."

Better by Marand is one of Europe's leading healthcare IT solution and professional service providers. They collaborate with a variety of clients on the same goal – to set them up for the future. The future that moves towards open platforms and away

from siloed solutions. The future where clinical teams can work with any digital solution provider without being tied to a particular vendor. In turn, storing data in an open, vendor-neutral format will incite vendors to innovate and create better solutions.

Their core technology solution, the Better Platform, is designed to allow clinical teams to work with any digital solution provider without being tied to a particular vendor and is based on openEHR specifications. Their OPENeP by Better product (a closed-loop medication management system) is built on top of the Better Platform and follows the same vision. Their innovations have so far taken them to 3 continents and 15 markets, including the UK, the Netherlands, Germany, Malta, Russia, Norway, Finland, Italy and Slovenia. ■

Mobile Technology Improves Care Home Staff Retention by up to 40%

UK-based Handsale Care Home Group has improved staff retention rates by 40% for carers and 33% for nurses since adopting the Mobile Care Monitoring system from Person Centred Software - with nursing staff gaining up to four hours a day to nurse, rather than do paperwork.

Handsale adopted Mobile Care Monitoring to improve the efficiency and communication across its eight UK homes, which will soon include a ninth home currently under construction outside of Edinburgh. Founded in 1988, the company employs

around 700 people, all of whom provide its 500 residents with friendly, personal and compassionate care.

Rishi Sodha, Care Director of Handsale says, "We are delighted with our latest staff retention figures. The time saved compared to doing paper charts and records has meant staff can spend more time with residents – which is exactly why they got in the job in the first place. "Our nurses are saving up to 4 hours a day and the care staff between 45 minutes to an hour. I hear many homes complain about lack of staff but if a nurse can save

four hours, it's like having another staff member for a third of a shift. Rishi adds, "Our staff feel more secure in the knowledge that what they're doing is being recorded accurately and in much more depth when compared to paper. I'm delighted to say that professional and regulatory partners have credited us with having some of the best and most person-centred care plans in the industry."

Care home staff use the icon-based application on a handheld device throughout their shift. It is easy to use, fast, and icon driven with limited need for typing – ensuring the quality of information is both accurate and detailed and most importantly, freeing up time to do the actual caring. It is ideal for non-native speakers of English, those with dyslexia and non-IT literate people.

Mobile Care Monitoring is currently used by over 30,000 carers and nurses who jointly record two million care notes every day. The results:

- » Enhances care – the accurate recording of fluids consumed by residents leads to a 33% reduction in falls and UTIs. The amount of tea evidenced in one year is equal to 1.4 Olympic swimming pools.
- » Saves time by reducing paperwork - the mobile software enables each carer to save at least three days a month on administration, compared to paper systems.
- » The paper saved equated to over 8 trees every day. This represents a saving in archived storage space equivalent to 850 sea containers since the company started five years ago.
- » Ease of use is critical to success with 85% of care homes only requiring one day of training to go live with Mobile Care Monitoring. 94% of CQC inspected homes using Mobile Care Monitoring are rated Good or Outstanding.



Jonathan Papworth, co-founder and director of Person Centred Software says, "Health and social care have been notoriously slow to move away from paper-based documentation. Even care providers that adopted desktop computers, care staff would still write up everything using words at the end of their shift; words which were subject to interpretation, were inconsistent and unmeasurable. The use of desktop computers also delivered minimal time savings since staff had to walk back and forth to a device throughout the day to record care.

"It became apparent to us that whilst administration software helps care providers' efficiency, it doesn't actually help those delivering care. Social care really only exists because of these people, so we decided to focus on improving the lives of the care staff users. All this added together makes a unique solution to a very simple objective: to improve the life of everyone involved in social care." ■

visual and audio interactions, Fundamental Surgery takes it to a new level with HapticVRTM, its proprietary technology that adds a real-time sense of touch. Surgical trainees can feel the movement and interaction of tissue, muscle and bone as they would in an actual procedure within a submillimeter of accuracy of resistance. Fundamental Surgery has a library of tools and tissue variants that mimic real life sensations that have been calibrated by a leading team of surgeons and KOLs.

"We are pleased Fundamental Surgery has been recognized by the Royal College of Surgeons of England as an educational platform that can help increase proficiency and help maintain and improve surgeon's performance," said Richard Vincent, CEO and Founder of FundamentalVR. "With Fundamental Surgery, we have developed a completely safe and realistic teaching environment for surgeons to learn and hone their skills combining virtual reality with tactile feedback that is so important for developing the muscle memory associated with different procedures."

The platform currently supports a range of orthopedic procedures, including the Total Hip Replacement Posterior Approach (P-THR) simulation that received the CPD accreditation. The P-THR simulation supports users in maintaining and developing their understanding of relevant



anatomy, pre-operative planning and post-operative patient care, as well as offering a haptically enabled simulation experience and intra-operative decision making.

Omar Sabri, Consultant Surgeon in Trauma & Orthopedics with a special interest in Pelvic reconstruction and Lower Limb arthroplastys and member of the FundamentalVR Global Medical Board said, "This is a huge step forward for VR surgical simulation and a validation of its role and propensity to add value to the surgical education system. As the first HapticVRTM simulation company to be accredited by the RCS of England for Total Hip Replacement (Poste-

rior Approach), Fundamental Surgery is an incontrovertible leader in the field."

The Fundamental Surgery platform is currently deployed in a number of different medical institutions. Most recently, leading London hospital, St George's Hospital, deployed Fundamental Surgery within their simulation centre. This installation enables anytime access for medical trainees to use the education platform, to monitor progress and help individual users continue to grow their skill sets. Fundamental Surgery is also deployed at the Mayo Clinic and UCLA in the US, UCLH in the UK and Sana in Germany. ■

First VR Surgical Training Simulation with Haptics to Gain CPD Accreditation

FundamentalVR has announced its platform Fundamental Surgery, which combines virtual reality with haptics (the sense of touch), has received Continuing Professional Development (CPD) accreditation by the Royal College of Surgeons of England. It is the first surgical simulation with HapticVR™ to receive CPD points and covers the Fundamental Surgery Total Hip Replacement (Posterior Approach) training simulation.

CPD is set by General Medical Council (GMC) as activity outside of postgraduate training that demonstrates surgeons are continuing to improve and practice their skills and performance. The Royal College of Surgeons of England accredits

activities ranging from educational days and conferences that are in line with the GMC's guidelines and the number of points each activity counts towards each trainee's annual CPD points.

To maintain professional standards, surgeons must accrue 50 CPD points a year (250 over a 5 year revalidation cycle). With this accreditation, Fundamental Surgery's simulation is confirmed as an activity that demonstrates sufficient educational value to contribute to the CPD for which 6 CPD points can be claimed.

Named as one of the best inventions of 2018 by Time magazine, the Fundamental Surgery platform was launched in August

2018. It combines virtual reality (VR) with cutting-edge haptics to create a scalable 'flight simulator' experience for trainee and qualified surgeons, allowing them to experience and navigate the same visuals, sounds and feelings they would during a real surgical procedure. What sets Fundamental Surgery apart from other solutions is that it is designed to be equipment agnostic, compatible with any laptop, VR headset or haptic device enabling it to be delivered at a fraction of the cost. Furthermore its remote data analytics and data dashboard covering surgical skills and knowledge provide invaluable insight into surgical capability and education progression.

While other simulations are limited to

Unique Data-driven Tool Shows Diabetes not a Barrier to Joint Replacement Surgery

Around 2 million joint replacement surgeries are carried out around the world each year. Until now, pre-operative risk assessments have been based on the information provided by the patient and relied on the surgeon's own clinical experience and judgement. Developed by the Coxa Hospital for Joint Replacement, the Orthopedist's Risk Assessment Tool (ORA) is a unique calculator that produces an accurate, evidence-based assessment of surgical risks tailored to the individual circumstances of each patient.

The tool allows surgical teams to accurately identify patients who are not candidates for joint replacement surgery due to the risks involved, as well as those who need to make health improvements before surgery can go ahead. The analyses generated by the ORA tool are based on data gathered from almost 40,000 patients.

"We know that the risk of mortality can rise significantly when two or more of certain variables are present. This sort of risk may be difficult to identify just by looking at the patient's medical records, but the ORA tool will pick up on it on the clinician's behalf," explains Antti Eskelinen, Research Director at Coxa.

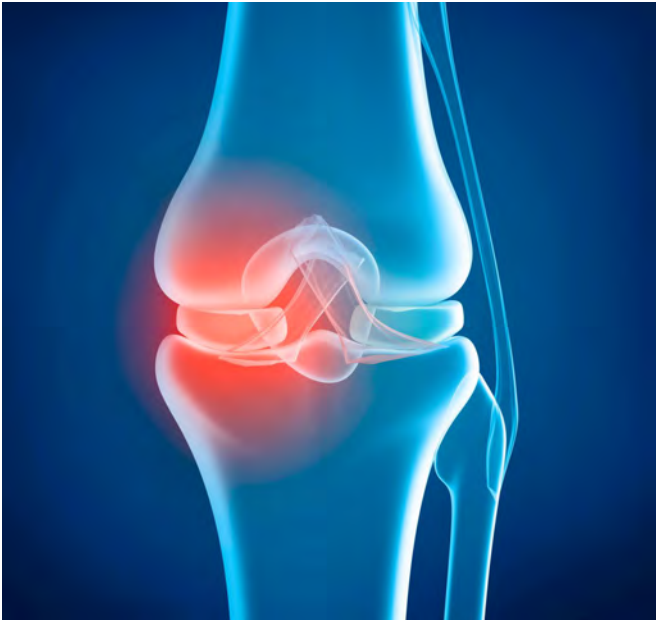
The risk assessment tool has also played a key role in revealing new information about the risks associated with joint replacement surgery. For example, diabetes is long believed to have been associated with an increased risk of post-operative infection. The data contained in ORA show that diabetes on its own does not constitute a significant risk factor, however, while an increased BMI is also not as significant a risk factor as previously thought. ■

Data-driven and patient-centred decision making

Until now, orthopaedic surgeons have had to rely on their own clinical experience when conducting pre-operative risk assessments. As the relevant information regarding risks has been provided to patients verbally in the clinic setting, surgeons have found that it has in some cases been difficult to discuss the risks effectively and to ensure that patients are fully committed to the lifestyle and other changes required before the operation can go ahead.

“In our experience, patients are more likely to engage with their treatment if the clinicians caring for them can quantify the risks, including showing what the risks look like relative to other patients. The benefit of ORA is that it makes this information available in an accessible and easy to understand format. When it comes to risk factors that patients do have control over, it is easier to help motivate the patients to make the necessary changes when they have first seen the statistical numbers and graphs for themselves,” Antti Eskelinen explains.

The ORA tool also supports clinicians in identifying the key risk factors. The ORA risk assessment tool is based on data from almost 40,000 joint replacement patients, gathered over a period of 15 years. The 550 pre-operative variables have been drawn up on the basis of patient surveys, prescription history, labo-



ratory results, clinical examinations and formal diagnoses. The tool generates an assessment of one-year post-operative infection risk, two-year post-operative mortality risk and the risk of further surgery after two or more years. ORA has been developed in collaboration with digital transformation company Solita. ■

World-first Online Lactation Care Support System Unveiled in the UK

The world-first online lactation care support system LactaMap, designed to help GPs support patients who have problems breastfeeding, has been unveiled for the first time in the UK at the 14th International Breastfeeding and Lactation Symposium.

Developed by researchers at The Univer-

sity of Western Australia and presented in the UK for the first time, LactaMap is a unique evidence-based information platform to support doctors caring for women and infants experiencing difficulty with lactation.

It is a result of over 10 years of research by a team of researchers and health pro-

fessionals including doctors, paediatricians, midwives, lactation consultants, and pharmacists.

It contains more than 100 clinical practice guidelines together with related patient information documents, supporting information documents, and articles describing normal function, all supported by more than 1000 references.

LactaMap is free to use and accessible to anyone who registers around the world and aims to be a globally collective initiative towards the standardisation of lactation terminology for science and medicine.

“Unlike other medical guidelines, LactaMap is an online lactation care support system for doctors to use at the point of care, to support mothers and infants experiencing difficulty with breastfeeding,” said Melinda Boss, Senior Research Fellow.

“Lactation completes the reproductive cycle but is often considered outside of the scope



of modern medicine. Conflicting advice is one of the most common factors that impact a mother’s confidence in her ability to initiate and sustain breastfeeding.”

“Once the GP has this information base, they can then work through the platform to develop a personal care plan for the patient,” she said. “The platform contains 112 clinical practice guidelines as well as the LactaPedia glossary and 21 information sheets that can be printed out during the consultation or emailed to patients.”

In total ten of the world’s leading breastfeeding researchers presented their latest findings at the Symposium.

Other research presented included clues to why breastfed babies are less likely to

become obese in later life. Prof Donna Geddes, Director of the Human Lactation Research Group at the University of Western Australia shared results from a 5-year project that has looked into the presence of appetite-controlling hormones in breast-milk known as leptin and adiponectin.

Dr María Carmen Collado of the Institute of Agrochemistry and Food Technology-Spanish National Research Council, Spain, also confirmed her recent discovery that yeast is present in breastmilk. She says, “Our research demonstrates the presence of yeasts and other fungi in breast milk in healthy mothers, supporting the hypothesis that breast milk is an important source of microorganisms to the growing infant.”

Also, Dr Janet Berrington, Consultant

in Neonatal Paediatrics and Honorary Senior Clinical Lecturer at Newcastle University previewed cutting-edge technology being cited as a model ‘unique to the UK’. It is being used to research necrotising enterocolitis and late onset sepsis. She spoke about the ‘mini-gut’ her team has been able to develop from pre-term gut stem cells, which offers unique insights into the way in which the infant gut develops and is allowing new research angles into gut health and disease.

She says “For the first time we now have a real model of very early gestation human gut tissue that can be used in our research, and which will hopefully allow a better understanding of the drivers of gut health and disease in preterm infants.” ■

World’s First Blood Test for Endometriosis can Detect up to 9 out of 10 Cases

MDNA Life Sciences has announced that it is to launch the world’s first blood test for endometriosis, able to detect the disease in up to 9 out of 10 cases. Results will be available in a matter of days after the test is carried out, enabling doctors to make earlier decisions on diagnosis and treatment.

Using its proprietary technology, MDNA has developed techniques to exploit the unique characteristics of mutations in mitochondrial DNA, which can act as biomarkers for the presence of a range of diseases. After successfully identifying biomarkers for different types of cancer, researchers at MDNA’s Newcastle upon Tyne laboratory have now identified biomarkers associated with endometriosis. Results of a clinical study3 recently published in the peer-reviewed journal Biomarkers in Medicine, show that the newly identified biomarkers can accurately detect endometriosis in blood samples in up to 9 out of 10 cases, even in its early stages.

MDNA has now embarked on a programme to create a CE-marked test kit to enable clinical laboratories in the UK and worldwide to carry out the test on a commercial basis. The CE process will be completed in 9-10 months when the test will be made available through MDNA’s distribution partners.

Dr Andrew Harbottle, MDNA Life Sciences’ Chief Science Officer explains: “Mutations in mitochondrial DNA act as ideal biomarkers, providing us with a unique and detailed diary of damage to the DNA and accurately detecting many difficult to



diagnose diseases and conditions, such as endometriosis.”

MDNA’s Mitomic™ Technology platform identifies and optimises the best biomarkers to detect a specific disease. The company has already demonstrated the accuracy of its technology in a blood test for prostate cancer, which is the best performing in the market. As well as the new test for endometriosis, MDNA is planning to release tests for ovarian cancer and pancreatic cancer next year. Tests for lung, liver, and stomach cancers will follow in 2021 and more tests are in the pipeline. ➡

Harry Smart, MDNA Life Sciences' Chairman says "We are the only company to use mitochondrial DNA to detect diseases and have developed a library of 16,000 biomarkers to date. Our ground-breaking test for endometriosis will fundamentally change the way this debilitating disease is detected and diagnosed. We look forward to helping UK women get treatment sooner, reducing their pain and distress and providing cost savings to health services."

An official statement from the World Endometriosis Research Foundation and the World Endometriosis Society states that the development of "low-invasive tests/biomarkers" for endometriosis remains high on the list of priorities of what is needed

to improve the diagnosis, management, and prognosis (progression/regression) of treated endometriosis.

Dr Christian Becker, Endometriosis CaRe Centre in Nuffield Department of Women's and Reproductive Health at the University of Oxford says, "Endometriosis not only causes enormous suffering to the affected women, but also brings a tremendous medical and economic burden to bear on society. There is a long lag phase between the onset and diagnosis of the disease, mainly due to its non-specific symptoms and because it can only be diagnosed invasively by laparoscopy. A specific, non-invasive test to aid diagnosis of endometriosis is certainly an unmet clinical need". ■

Israel and Finland Launch Digital Health Collaboration Initiative



Israel and Finland will partner to advance joint initiatives in digital health after a collaboration pilot project and call for proposals were launched by the Israel Innovation Authority (IIA) and the Israel-Europe Research & Innovation Directorate (ISERD).

Led by the IIA and the Helsinki Business Hub, the initiative will provide funding and matching services for Greater Helsinki-based and Israeli companies seeking to partner in order to co-develop, test, improve or pilot impactful technologies, products, services and devices with strong market potential in the fields of digital health, smart mobility and information and communication technologies (ICT).

Welcoming the initiative, Finnish Ambassador-designate to Israel Kirsikka Lehto-Asikainen said: "It is an important and exciting leap forward for the cooperation between Finland and Israel as leading innovative countries. We are truly happy to be part of that partnership and will continue promoting similar initiatives in the future – we can certainly see a great potential for that."

"This is also an extraordinary opportunity for Israeli companies to connect with Finnish leaders in the digital health ecosystem,

gain exposure to new cutting-edge technologies, receive support for meaningful innovations and tap into the Finnish market."

According to a report published by Tel Aviv-based nonprofit Start-Up Nation Central, the rapid growth in the number of Israeli digital health start-ups in recent years – from 327 companies in 2014 to 537 today – has drawn in new investors and driven investment to a record high of \$511m, in 2018.

Some 85% of the sector's total financing (\$433m.) last year went to health companies utilising some form of machine learning, demonstrating the ascendancy of artificial intelligence in digital health. By the end of the first quarter of 2019, companies had already raised some \$214m in funding.

The availability of detailed electronic medical records gathered by the country's four primary health maintenance organizations (HMOs), the report said, has provided start-ups with an increased ability to train and test artificial intelligence solutions and partner with HMOs to validate their technology from early stages of development. ■

Apple Heart Study Demonstrates Ability of Wearable Technology to Detect Atrial Fibrillation

Researchers from the Stanford University School of Medicine have presented preliminary results of the Apple Heart Study, an unprecedented virtual study with over 400,000 enrolled participants. The researchers reported that wearable technology can safely identify heart rate irregularities that subsequent testing confirmed to be atrial fibrillation, a leading cause of stroke and hospitalization in the United States.

The study was launched with sponsorship by Apple Inc. in November 2017 to determine whether a mobile app that uses data from a heart-rate pulse sensor on the Apple Watch can identify atrial fibrillation. The condition often remains hidden because many people don't experience symptoms.

Key findings from the study include:

- » Overall, only 0.5 percent of participants received irregular pulse notifications, an important finding given concerns about potential over-notification.
- » Comparisons between irregular pulse-detection on Apple Watch and simultaneous electrocardiography patch recordings showed the pulse detection algorithm (indicating a positive tachogram reading) has a 71 percent positive predictive value. Eighty-four percent of the time, participants who received irregular pulse notifications were found to be in atrial fibrillation at the time of the notification.
- » One-third (34 percent) of the participants who received irregular pulse notifications and followed up by using an ECG patch over a week later were found to have atrial fibrillation. Since atrial fibrillation is an intermittent condition, it's not surprising for it to go undetected in subsequent ECG patch monitoring.
- » Fifty-seven percent of those who received irregular pulse notifications sought medical attention.
- » "The results of the Apple Heart Study



highlight the potential role that innovative digital technology can play in creating more predictive and preventive health care," said Lloyd Minor, MD, dean of the Stanford School of Medicine. "Atrial fibrillation is just the beginning, as this study opens the door to further research into wearable technologies and how they might be used to prevent disease before it strikes — a key goal of precision health."

For the study, each participant was required to have an Apple Watch (series 1, 2 or 3) and an iPhone. The most recent Apple Watch, which features a built-in ECG, wasn't part of the study, as it was released after the study's launch. The Apple Heart Study app intermittently checked the heart-rate pulse sensor for measurements of an irregular pulse. If an irregular pulse was detected, the participant received a notification and was asked to schedule a telemedicine consultation with a doctor involved in the study through American Well. Participants were then sent ambulatory ECG patches through BioTelemetry, which recorded the electrical rhythm of their hearts for up to a week.

The Stanford principal investigators were Mintu Turakhia, MD, associate professor

of cardiovascular medicine, and Marco Perez, MD, associate professor of cardiovascular medicine, and the study chair was Kenneth Mahaffey, MD, professor of cardiovascular medicine.

"The study's findings have the potential to help patients and clinicians understand how devices like the Apple Watch can play a role in detecting conditions such as atrial fibrillation, a deadly and often undiagnosed disease," said Turakhia. "The virtual design of this study also provides a strong foundation upon which future research can be conducted to explore the health implications of wearable technology."

"The performance and accuracy we observed in this study provides important information as we seek to understand the potential impact of wearable technology on the health system," said Perez. "Further research will help people make more informed health decisions."

Researchers from the Lankenau Heart Institute, Jefferson Medical College, the University of Colorado School of Medicine, Cooper Medical School of Rowan University, StopAfib.org, the American Foundation for Women's Health and Duke University also contributed to the study. ■

Upcoming events

May 2019

14-16

The MedTech Forum

Paris, France
For more information visit:
www.themedtechforum.eu

16-17

Digital Transformation in Healthcare Conference

San Francisco, CA, USA
For more information visit
www.events.marketsandmarkets.com/Digital-transformation-in-healthcare-conference/

19-21

National Healthcare CXO Summit

Palm Beach, FL, USA
For more information visit
www.events.marcusevans-events.com/healthcare-cxo-summit-2019/

22-23

Digital Health & Care Congress

London, UK
For more information visit
www.kingsfund.org.uk/events/digital-health-and-care-congress-2019

23-24

Deep Learning in Healthcare Summit

Boston, MA, USA
For more information visit
www.re-work.co/events/deep-learning-in-healthcare-summit-boston-2019

June 2019

5-7

3rd International Cancer Conference & Expo

Baltimore, MD, USA
For more information visit
www.cancer.imedicalconferences.com/

26-27

Digital Healthcare Show

London, UK
For more information visit:
www.digitalhealthcareshow.com/welcome

October 2019

1-2

HETT - Healthcare Excellence Through Technology 2019

London, UK
For more information visit
www.hettshow.co.uk

November 2019

7-9

IFH 43rd World Hospital Congress

Muscat, Oman
For more information visit
www.worldhospitalcongress.org/



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What's the Future of Brand in the Healthcare Sector?

By Jo Davies, Managing Director, VIM Group

The life science and health care industries are experiencing unprecedented disruption, as digital innovations and changing demographics continue to blur the traditional boundaries between sectors and specialisms.

For consumers, the key factors driving this change include the ageing population, the proliferation of online information and lifestyle changes in response to new information. Brand and reputation matter more than ever before as patients make more informed choices about healthcare providers.

For health providers and businesses, mergers and acquisitions are reshaping the industry – in fact we saw a total \$2.5trn in healthcare deals cut in the first half of 2018 alone. One example saw GSK and Pfizer announce a joint venture to create a premier global consumer healthcare company.

Overall, these changes have pushed the role played by brand into the industry's spotlight.

Businesses must also consider a global megatrend that has impacted marketing in all sectors: the need to show your organisation's purpose beyond profit. As a healthcare or pharmaceutical business, what is your reason to exist beyond profit? And how do you communicate that purpose?

When working with businesses in this sector, like Merck and Mediclinic, on complex brand change and digital transformation, I have been asked key questions: what's the future of brand in the healthcare sector? And how can businesses adapt to thrive?

Healthcare Marketing in the 'Fourth Industrial Revolution'

A new era of emerging technology, dubbed the 'Fourth Industrial Revolution', is already shaping our lives. Tech like 5G, artificial intelligence and digital realities have the potential to revolutionise how we treat and diagnose illness.

But this technology is also changing the way healthcare providers recruit, interact with and retain patients. Branding is particularly important in private care, where power has shifted back to the patient rather than the provider.

As patients shop around for care services, patient experience becomes a key driver of business performance by strengthening customer loyalty, brand reputation and referrals. In simple terms, consumerisation of the healthcare journey means that awareness, performance and coherency of the brand have become a priority.

One area where we expect to see healthcare innovate successfully is digital reality, an umbrella term for augmented, virtual, mixed reality and immersive technologies. Usually associated with early adopters in gaming and entertainment, this tech has reached a tipping point where cost, availability of content and market reach make them more accessible. Other household tech like voice-controlled and connected devices also present healthcare brands with entirely new brand touchpoints.

Businesses must consider how these new brand touch points can coherently convey the brand's purpose and tone of voice in a way that fulfils consumer expectations.

It's also important to remember that healthcare is rooted in the expertise of high-quality professionals with the right skills, training and qualifications to deliver that care. An ageing workforce and higher demand for services are putting pressure on providers to recruit and retain those professionals. Brand can play a role here: improved employer branding, internal and external reputation management, training and referrals are all rooted in an efficient brand organisation.

In reality, however, brand is too often overlooked within the healthcare sector.

We see a similar trend in professional and legal services, for example, where sales and client relationships have trumped the strategic priorities that effective marketing can drive.

Our research at VIM Group has shown that business performance in all sectors improves when brand is taken as a strategic starting point – but only a small percentage of organisations take a brand-first approach to strategy. Businesses opting to focus on brand as a cornerstone of business strategy are getting a competitive advantage.

Tips to Save Millions on Brand Investment

Whether healthcare businesses are considering an investment in a brand reboot, a post-merger refresh or a complete overhaul, they have two areas of opportunity. Firstly, to save millions through more efficient implementation of the brand change. And secondly, to create a compelling brand experience that drives long-term loyalty and high levels of awareness within target markets.

Here are a few points to consider before any brand investment in the healthcare sector:

1. Stay true to the brand story

Your organisation needs to have a clearly defined brand proposition. The strongest brands 'promise and prove': they make an enticing, relatable promise and prove it in every interaction with the target audience. This should be as true for a high street retailer as it is for a healthcare brand.

Staying true to the brand's promise, tone of voice and its over-arching perception among consumers will ensure it can always be coherently communicated, regardless of whichever marketing technology is adopted.

It's also important to remember that brand starts from within. It requires attention from everybody within the organisation – not just the marketing

team. Practical tech solutions such as employer branding strategies, e-learning and digital brand portals will make it much easier to ensure employees live and breathe the brand.

2. Re-define the brand organisation

Effective brand organisation should be a continual process of improvement and investment – a life cycle rather than a one-off.

Ten years ago, many businesses believed that the key to a strong brand was the consistent application of a corporate identity across all channels. But as the pace of change accelerates and brand touch points proliferate, it's more about having one coherent and convincing brand promise.

That means putting an end to the 'corporate style police' and the silo structure of brand management, while the concept of brand ownership also needs to evolve. Teams with a stake in brand management – IT, HR, Marketing and so on – must communicate and collaborate more effectively, whereby brand managers become more like community managers who aggregate input from a range of stakeholders.

An evolving set of brand principles delivered through a carefully defined brand organisation will put the business on a surer footing to respond to, adopt and take advantage of new opportunities pre-



sented by emergent marketing tech.

3. Make brand performance measurable

Many organisations are not clear about the exact value of their brand, how to assess its value or which analytics will best measure its performance. But this needs to be a key consideration, particularly in light of the fact that brand represents an average 18% of any organisation's total market value.

When undertaking a brand investment, boardrooms require hard data to justify that spend and will expect constant financial updates. Representing the value of the brand in financial terms will make it easier to secure that budget now and in the future.

To make the performance of brand investment measurable, a good brand dashboard that merges different data sets and provides real-time insight will be an invaluable tool.

About Jo Davies

As Managing Director of leading brand implementation and strategy specialist VIM Group, Jo Davies helps some of the world's biggest brands save millions through better structure, control and efficiency of their brand organisation. Over the last 25 years, VIM Group has saved its clients more than £100m. ■



Light Up the Beds

In the UK, the NHS has a problem with bed management; this is nothing new. However, current thinking around the issue is flawed. The problem is not one of bed blocking; it lies in the way patient flow is managed from the point of admission. The fundamental measure of bed utilisation – idle bed time – is not tracked, providing the NHS with no insight into the effectiveness, or lack of it, of bed management processes. Despite the accessibility of new technologies that can automate bed management and drastically reduce idle bed time, Trusts remain reliant on the ability of individual staff – the bed heroes – to save the day.

Fortunately, says Neil Griffiths, Managing Director, TeleTracking UK, the solution is both straightforward, easy and proven to deliver benefit at a scale few imagine.

MISPLACED RESOURCES

Every year the NHS opens 3,500-4,000 escalation beds over winter to accommodate additional demand. Every year, NHS Trusts spend between £2 million and £7 million adding capacity. Yet take any performance measure and it is absolutely clear that this approach to bed management is flawed, potentially fatally so.

The 95% target for A&E patients to be seen within four hours has not been met since July 2015; more than 75,000 patients were forced to spend at least half an hour this winter with ambulance crews waiting to be treated by A&E staff. In January, 13 hospital trusts were forced to temporarily send patients to other nearby trusts 35 times.



and staff welfare as well as bottom line value.

EFFECTIVE UTILISATION

The key is to better understand the process – and that requires both bed visibility and measurement of idle bed time. By tracking patient flow in real-time and automating processes, hospitals can light up the bed estate. With clear and accurate insight into bed availability, hospitals can drive improvements at every stage of the utilisation process and reduce idle bed time.

With the ability to track patients in real-time from A&E through to discharge using, for example, RFID badges, hospitals can transform the way beds are managed. Creating dedicated bed cleaning

teams for example, ensures empty beds are immediately prepared for a new patient while also releasing nurses from the burden of bed cleaning to concentrate on core clinical tasks; while porters can be automatically informed when patients are ready for transfer, further reducing idle time.

With complete visibility of both patient demand and available beds, patients can be allocated to the right bed, rather than the first bed, and get there sooner. Reducing outliers in this way provides more patients with better access to the doctors and nurses with the right skills, improving their confidence in the staff. Furthermore, by removing bed cleaning duties, nursing capacity is proven to increase by up to 30% - improving both patient care and staff morale. A better experience, including faster admission, will improve patient well-being, reducing the length of stay, and hence bed demand – as well as the need for social care intervention.

CONCLUSION

It is too easy for NHS Trusts to blame shortfalls in social care and the resultant bed blocking for the endemic problems of bed management and the knock-on effect on ED performance. Assuming the only option is to open more beds is both short sighted and wasteful. The reality of bed management is far more complex: delays in admission and inadequate bed allocation models measurably contribute to patients' duration of stay, exacerbating not only the problem within hospitals but actual adding to social care demands.

The benefits of better bed management are significant, affecting not only patients and nurses but also the bottom line. Reducing idle bed time from six hours to less than two, would not only eradicate the need to create temporary wards – saving up to £7 million per Trust per year - but each 600-700 bed hospital could create 60 beds of additional capacity and increase the number of patients treated.

By reducing idle bed time and implementing a care based rather than time based admissions model, hospitals can improve patient outcomes and reduce the end to end demand on services, including social care, as well as avoiding unnecessary cancellations of elective surgery. Better bed management delivers benefits throughout the entire acute care ecosystem. ■

Yet how would these patients feel if they knew that many of the ostensibly 'full' beds were actually lying empty awaiting cleaning and reallocating? Or to discover that the average bed in the NHS is left 'idle' between a patient being discharged and a new patient being admitted for six to eight hours, when proven best practice shows that it should be as little as one hour and 45 minutes?

There is no need for these delays. No need for additional temporary wards. There is already enough capacity in the system: better management of bed utilisation would increase capacity by 3,000 hospital beds per day.

OUTDATED MANAGEMENT

The problem is not bed blocking or inadequate social care provision; the NHS is attempting to manage unprecedented service demand using the same bed management approach that has been in place for over five decades. And the implications extend far beyond A&E delays: poor bed management is proven to result in cancellations of elective surgery; increased mortality; incorrect clinical pathways and therefore extended issues around care in the community; and staff sickness due to raised stress levels.

Today bed management teams have no insight into the number of beds available or where; they rely on periodically roaming the wards in a bid to find a bed. With nurses tasked with bed preparation – a job that will never be prioritised over a patient's clinical needs – bed turnaround is routinely delayed. Furthermore, with pressure to hit Emergency Department (ED) targets, beds are not allocated by suitability, or appropriateness of care, but on time: the patient closest to breaching the access target or the patient waiting the longest receives the bed. The result is a large number of outliers, patients located in the wrong ward for their clinical needs – a problem that affects both staff morale and long term patient outcomes.

It is the inherent delays at every stage in the bed allocation process that create the annual demand for temporary capacity. Hospitals need to better utilise the existing NHS bed estate but tinkering at the edges of this problem makes little or no difference; what is required is a fundamental shift in bed management – from cleaning to allocation and portering – and complete, real-time visibility of the bed estate. It is a system led approach to transforming bed utilisation that will deliver benefits for both patient

Telepsychiatry

A Viable Solution to Today's Mental Health Crisis in Prisons & Jails

Avrim Fishkind, MD, General Manager, Psychiatry for SOC Telemed

The inadequate treatment of mentally ill prisoners across the U.S. is at national crisis levels as evidenced by the special update on the mental health of incarcerated populations, published by Bureau of Justice Statistics in 2017. The report highlights a bleak reality: U.S. prisons and jails are to capacity with people experiencing mental health problems. Half of prison inmates and two-thirds of people in jails reported serious psychological distress or a history of mental health problems; and of these, only a third reporting serious psychological distress were receiving treatment.

Correctional facilities in the U.S. are considered the largest provider of mental health services. Yet many prison systems struggle to provide adequate treatment, even after lawsuits and courts demand access to mental health care. Why? They lack the financial resources and the necessary mental health staff to provide treatment to everyone who needs it. This is not to say all is lost. Telemedicine, specifically telepsychiatry, can help improve access to mental health services for inmates.

By its very nature, telemedicine serves to connect healthcare providers with patients in need. Similarly, correctional systems are beginning to see how telemedicine can offer them a comprehensive telepsychiatry approach for cost savings, timely access to mental health care, and overall better health for both inmates and staff. Consider these leading benefits of using telemedicine in a correctional setting:

Improved Mental Health

Without mental health services in the community, many people with mental illness have run-ins with the law and end up in prisons ill-equipped to give them the care they need. Correctional facilities

may not be trained to handle the misbehavior, for example, in a manner that benefits these inmates and corrects the behavior. Sheriff's deputies with little or no training in psychiatric care typically respond to misbehavior as they are trained — with force and isolation, both of which generally exacerbate mental illness. Conversely, a mental health professional is equipped with an assortment of care-oriented responses focused on improving behavior, managing the symptoms and encouraging recovery. Telemedicine brings this expertise in-facility, making timely and humane mental health treatment accessible to inmates.

Reduced Recidivism

Reports show that nearly 50% of people in state prisons with a mental illness were incarcerated for a nonviolent crime. Once in prison or jail, lack of treatment/medication and even the strict conditions typically cause substantial and rapid deterioration in their condition. It's a destructive series of events: a person with mental illness is incarcerated for a small infraction; once in, their mental conditions worsen; this leads to behavioral and other issues that result in extended sentences. To make matters worse, when they get out, they're ill-equipped to deal with life. The bottom line is that prison inmates who don't receive the mental health care they need are more likely to cycle in and out of the criminal justice system. Appropriate and continuous mental health care is the key to breaking this cycle.

Promotes Staff & Public Safety

In the event of a serious mental crisis — with no mental health support on staff — most protocol calls for a prisoner transfer to a local hospital or appropriate medical facility. Such a scenario introduces the risk of prisoner escape or harm to the escorting officers and the hospital staff. The ability to bring trained medical professionals in-facility through technology negates the need for transport,

thereby increasing staff and public safety.

Reduction in Costs

Lastly, are costs. Timely and continuous onsite mental health care leads to cost savings for correctional facilities in the form lower psychotropic medication costs, reduced transportation costs, reduced costs of recidivism, and improved medical care, which ultimately results in fewer medical complications, hospitalizations and lawsuits.

In all, telepsychiatry can serve as a critical component to solving the current mental health in our jail and prison systems. We must do more as a society to ensure psychiatric patients are diverted from correctional facilities to psychiatric hospitals, community-based mental health emergency centers, and crisis residential units, rather than costly, unproductive and harmful incarceration. In the meantime, telemedicine is the key to delivering appropriate, humane psychiatric care to inmates living with mental illness.

About Avrim Fishkind

Dr. Fishkind is a past president of the American Association for Emergency Psychiatry. He has designed multiple comprehensive psychiatric emergency programs including Psychiatric Emergency Rooms, 23-Hour Observation Units, Mobile Crisis Outreach Teams, Crisis Residential and Stabilization Units, Crisis Hotlines, and short-term Crisis Counseling Units. Dr. Fishkind has been employed in the delivery and development of psychiatric crisis services in many locations, including New York City, Austin, Texas, Houston, Texas, Washington, D.C., Portland, Oregon and most recently Omaha, Nebraska. ■



Understanding Population Health Management

An interview with Tony Ramwell, Servita

What is Population Health Management?

I guess firstly we should understand what Population Health is. The widely accepted definition of population health is: “the health outcomes of a group of individuals, including the distribution of such outcomes within the group”. In simpler terms it is the clinical or health outcomes of a defined section of society, as well as the distribution of health outcomes within the group.

Population Health Management [PHM] is an analytical use of data collected from multiple sources. This data is focused on defined segments of the population in order to manage specific diseases in that group. The idea being that this approach will improve clinical outcomes, standardise physician approach and help to reduce the cost of the disease management, amongst other benefits.

Is this new, new or a new definition for a previous theme / idea?

This is really an evolution of the public health approach. With the increased amount of data available via the modernisation of healthcare systems such as Electronic Health Records (EHR), this has made it easier collate data, often in huge amounts. PHM has taken the public health approach one step further by using advanced analytics of the data collected from EHR's, disease registries and other data sources.

What's the main benefit to the provider and patients?

The benefits are vast. From a patient perspective PHM would aim to deliver improved patient outcomes, disease prevention, improved management of chronic diseases and standardised coordinated care. For providers such as physicians the information available to them enables for far greater understanding of the disease and impact to the patient groups. Healthcare institutions will expect to see the cost of care reduced with more targeted, standardised evidence based treatment being provided to the patients. Lastly, both patients and providers will benefit from the preventative medicine aspect that aims to reduce the need for health interactions once the patient is already advanced to the point of poor health.

How can his help with issues like an ageing population?

Generally, we are seeing a global trend for aging populations with less births and a longer life expectancy. With this expanding older adult population there is also an increase in chronic diseases such as hypertension, coronary heart disease, stroke, diabetes, and cancer. The management of these chronic diseases in this defined population group can benefit from the data that is being collated both at hospital, national and international levels. Using this data to understand how best to treat these chronic diseases will help the outcomes and also reduce the cost of care. Further, with more understanding better preventative measures



can be applied to help reduce the onset of these chronic diseases.

What stops more providers using it?

There are a few challenges with providers utilising PHM. Firstly, there is a huge reliance on data; where this data is stored and how it is shared to enable a large enough data set to have meaningful levels of insight. Typically, healthcare institutions have kept their data to themselves and the sharing of data on regional or national levels has been sparse.

Increasingly, the need for this data sharing has become a hot topic and is now beginning to gain traction. Next, the quality of the data is of paramount importance. Often EHR data is incomplete through poorly entered patient information or poorly structured data capture where the use of free text fields allowed for the important data to be buried in with other information.

There is also the question of funding, most healthcare providers globally are funded on a fee for service model aimed at treating sickness and not at preventing illness. Therefore, there is little incentive to focus on preventative care models. However, this is changing. Countries where there is an insurance based healthcare system have started to see insurance companies realising the benefit of preventative medicine and more focus is being placed upon this. In countries such as the U.K. there is obvious synergy in preventative medicine which is cheaper to implement and reduces the cost of the management of chronic disease over the longer term. There is a shift in thinking but it has taken time to be realised.

Another challenge with PHM is the patient themselves. The patient is the key factor in the implementation of PHM and the ability to engage the patient in their own care management. Changing the populations/patients' behaviours are key, health is not something an individual should become concerned with only when they are ill, but should be throughout all stages of their life. Increased access to cheap, high calorific food is driving

obesity globally, more so in emerging nations such as Mexico (which has the fourth highest rate of obesity in the world), India and China (who project rapid increase in diabetes by 2035). A clear strategy to engage the patient at all states of their life is critical to create a successful PHM model, this has to be done not just through primary care but all the healthcare system. There may also be an issue if patients are not willing for their personal data to be shared in a PHM system.

How would you recommend approaching a PHM deployment?

This has to be a well thought out and carefully managed transformation that has the stakeholder buy in across the healthcare system. This can be at a trust level for the NHS or at a national level where they have achieved a single patient record or are planning to implement a new regional or nationwide EHR. From a technical aspect the key point is understanding the current data and where the challenges lie. How can a system be optimised to better capture this data to allow for secondary use? There are many aspects of the system design that allow for this. I would recommend a Data Enterprise Architect team complete a review of the data structure and quality as an initial step to understand the challenges that may need to be resolved to enable the data capture required for PHM.

Which parts of the World are leading the way?

Currently the US and the UK are the most active in the PHM space. This is largely due to the fact that they have been collecting data through the EHR records for a number of years already

which has given a head start on other countries.

How does the UK compare to Asia / ME?

The UK NHS went through a digital transformation a quite some time ago and as such has been collating data for some time. There has also been a number of initiatives to create national registries via the NHS registries and audit team, these include, National Diabetes Audit, National Bowel Cancer Audit, National Oesophago-Gastric Cancer Audit, National Audit of Pulmonary Hypertension, etc. These registries capture disease specific data which can then be distilled to certain areas of the population, this level of data is hugely beneficial to the PHM programmes in the UK.

The ME and Asia, in general, are playing catch-up in this regard. Countries such as Qatar and Singapore are making great in roads to this with National EHRs and national patient registries being developed.

How can delivery organisations like Servita help with PHM?

Servita is able provide expertise across the board. With our team's vast healthcare experience across a number of geographies we are able to bring a specialised transformation team to help our customers through a challenging implementation. From the initial planning and strategy, data review, registry design and build and patient engagement. Servita possess the teams that have experienced this first hand and will be able to guide our partners through this. ■

Mental Health Trust Cuts Falls and Saves Time with Patient Monitoring Technology

Coventry and Warwickshire Partnership NHS Trust saw falls at night drop by a third on two wards that introduced the Oxehealth Digital Care Assistant technology, a clinical study has shown.

Manor Hospital's Pembleton and Stanley wards, which care for inpatients with dementia, installed the Digital Care Assistant in half of their bedrooms, and measured the impact over eight months.

The Digital Care Assistant uses software to enable an optical sensor to detect activity and measure the vital signs of patients in bedrooms. During the clinical study that ran from March to October last year, there were 33% fewer falls at night than in the same period of 2017.

A just published report also shows that there was a 71% reduction in time spent by nurses on enhanced observations; a time saving of 7,800 hours per year for the hospital. Staff reported increased confidence and family members felt they had more peace of mind that patients were well looked after.

The falls that did take place were less severe: more than half did not result in harm to the patient. This not only supported better care but resulted in a 56% reduction in demand for A&E services.

Tracey Wrench, trust chief nurse and chief operating officer, said: "This initial data is very promising. The one third reduction in falls is very encouraging,

and the remaining falls have been less serious. The data really does suggest that patients are safer.

"Also, nursing staff have really enjoyed using the technology and working with Oxehealth on embedding this innovation into nursing practice. It has also been supported by the whole multidisciplinary team. The study collected a lot of positive feedback, in terms of staff being able to anticipate falls and respond faster to falls and as a result has improved staff experience.

"Carers have also been positive, because the technology helps to give them peace of mind, and reduces disturbance at night, which is a serious issue and ➔

one that the trust will be very mindful of, as we move into business as usual.”

Manor Hospital near Coventry cares for people with a primary diagnosis of dementia from two, 12-bed-room wards: Pembleton for women and Stanley for men. Patients stay in individual rooms off a main corridor for privacy and dignity, but they are at high risk of falls, so staff typically check on them every 15 minutes.

This is time consuming for nurses and disruptive for patients, particularly at night; and if an ‘unwitnessed’ fall takes place, even more intrusive observations are required, to make sure the patient didn’t suffer a head injury.

To address this, the trust instigated a research project and installed the Oxehealth Digital Care Assistant in six bedrooms on each ward. This sends an alert to a central monitor when a patient is on the edge of their bed or getting out of bed, which enables staff to react quickly and take preventative action.

If there is a fall, staff can also use the Digital Care Assistant to replay a short video of the incident, turning an unwitnessed fall into a witnessed one, and avoiding the need for invasive observations if no head injury occurred.

To establish the impact of the installation, the trust ran a clinical study with staff on the night shift (7.30pm to 7.30am), when 70% of falls in bedrooms take place.

The study compared incident data from January 2017-February 2018 with March-October 2018, ran surveys and interviews with staff, and conducted detailed interviews with carers. Its key findings were:

- » Falls at night were reduced by 33% and the severity of falls was reduced substantially; ‘moderate’ falls that may result in additional treatment, A&E visits or surgery, fell from 8% to 2%, while ‘no harm’ falls increased from 31% to 55%. As a result, demand for A&E services dropped 56%.
- » Time spent on ‘enhanced’ observa-



tions has reduced by 71%, saving 7,800 clinical hours per year for the hospital.

- » Staff reported greater confidence in managing patients and were positive on the impact of the technology: in October 2018, 92% said the system helps them to provide better care during the night and improves patient safety on the ward.
- » All carers felt the system keeps patients safer. Five of the six carers interviewed felt the system improved care for patients on the ward, and four felt it offered greater privacy and less disruption than the trust’s current protocols.

Stanley ward manager, Linda Fitzpatrick, told the study: “The severity of falls and associated injuries have reduced massively at night: I think it’s because we can intervene earlier. For example, we can attend to patients within seconds if they are disorientated or confused so they don’t slip and fall.”

Coventry and Warwickshire Partnership NHS Trust is now in a transition phase and is progressing towards embedding the Digital Care Assistant into ‘business as usual’ in this care setting. It has already extended its research project

in the use of the system to adult acute wards at its Caludon Centre following full support of the senior clinical leadership team. It is working with other trusts using the Oxehealth technology to support continued developments of the technology and therefore its potential wider roll-out.

Tracey Wrench said: “The trust has taken an active approach to introducing innovation, and we want to encourage other organisations to become fast followers. We are collaborating with other trusts so we can learn from them and they can learn from us. This research has given us robust evidence that we can all build on.”

Charlotte Wood, mental health director at Oxehealth, said: “It has been a very positive experience working in partnership with CWPT to advance dementia care. The trust is committed to using innovation where it can be shown to improve the quality of inpatient care, and it’s fantastic to see the Digital Care Assistant working to help their nurses improve patient safety and save them much needed time.”

“The report establishes a strong evidence base for the roll-out of the Digital Care Assistant across the trust and other mental health services.” ■

Giving Instant Messaging a Clean Bill of Health

Shallu Behar-Sheehan, Chief Marketing Officer at StarLeaf, discusses the dangers of using insecure messaging

Social media is the modern medicine for wagging tongues and communal chat. It is the panacea for a digitally hungry generation and a platform for participation that globally pulses every second with voice and video calls, image sharing, and messaging. However, used for the wrong purposes, it can leave medical professionals with a big headache – a major data breach.

So, as pressures on the health service are intensifying to diagnose and communicate more quickly, are we in danger of creating a data-dystopian society, which is putting patients’ information at risk?

What’s the problem?

According to research undertaken by BMJ Innovations, WhatsApp is used by 97% of doctors to routinely send patient data without gaining consent, albeit that 68% were ironically concerned about sharing information in such a public way. This is a worrying trend given that information security is paramount today and that recent Public Health Sector cyber-attacks have devastated systems with ransomware and malicious botnets.

Falling foul of data security can be a bitter pill to swallow. With the EU’s General Data Protection Regulation (GDPR) having the power to bite with hefty fines, being non-compliant will be damaging to both reputation and finances. Today, people are empowered cybercitizens who can enforce the ‘Right to be Forgotten’ and demand consent before their sensitive information is shared, stored, and used for commercial purposes.

Vulnerabilities within messaging services raise serious concerns around end-to-end encryption on platforms, such as WhatsApp, and the data-in-transit security on phones and servers must comply with NHS security and privacy standards. Smart hackers choose to target these platforms because they contain weak security, which acts as an open door to steal valuable biomedical data to commit identity fraud. Once a cybercriminal has built a profile of an innocent victim, it is possible to use this information to access their bank accounts, on-line shopping channels, and even government held information.

Another concern for healthcare services is the potential for data misuse by staff that leave their job at the organisation. If they have been using WhatsApp on their personal devices to send and receive patient data, they will still have access to this data when they leave the organisation. This could constitute a serious breach of data privacy regulations, and open patients up to their data being misused. A secure, integrated messaging platform managed by IT staff could prevent this kind of data breach, by ensuring that employees cannot access this data once they have left the organisation.

The British General Medical Council (BGMC) clearly states “the standards expected of doctors do not change because they are communicating through social media rather than face to face or through other traditional media.”



In the United States, exploitation of detailed personal information like Social Security numbers and patient’s medical history is on the increase. The use of inappropriate mobile apps has crippled hospital systems resulting in sick people being denied vital healthcare. Alarming, in April 2018 the California Department of Developmental Services reported that medical records of 582,174 people had been stolen by hackers.

Patient confidentiality and safety are of paramount importance. Heads of Medial Centres and their IT departments recognise the need for effective messaging services but have stressed that free apps are not appropriate for professional use. Dealing with data confidentiality does not have to be complex. Robust solutions with intelligently designed cloud architecture will safeguard the operation.

Easy to swallow solutions

Doctors need the freedom to stay in touch with colleagues whether they are in hospitals for consultation or simply on the move. With a reliable face-to-face communication platform, through which meetings can be easily set up and rescheduled to accommodate clients, physicians can swiftly share patient information with the knowledge that transmission is secure.

StarLeaf, a pioneering leader in video conferencing solutions, has revolutionised how organisations seamlessly connect people through secure video conferencing, messaging, and mobile apps – all supported by the secure StarLeaf cloud. These cost-effective products work from anywhere, on any device, to cater for a dispersed workforce. By improving the way in which medical staff operates, compliant mobile messaging tools play a vital role in enabling colleagues to intuitively share messaging or call via video chat to speed up decision-making and collaborate more easily.

A clean bill of health

Doctors have an ethical, legal, and contractual duty to protect patient confidentiality. One single breach of patient confidentiality could result in numerous patient complaints or even a disciplinary action from governing authorities.

The prognosis suggests the remedy is less WhatsApp and more of what’s essential in healthcare – safety, reliability, and robust communications. As the medical profession looks for cost-effective solutions, now is the time to keep its finger on the pulse of innovation and safeguard patient care. ■



Data is the Beating Heart of Life Sciences

By Marie Clutterbuck, CMO, Tectrade

April saw yet another cyberattack in the medical industry. Over the weekend of 06-08 April, the Hardin Memorial Hospital (HMH) in Kentucky was hit with a cyberattack, which caused EHR downtime and IT disruption. While the hospital itself issued a statement that “at no time during this event had quality and safety of patient care been affected,” it is indicative of the increasing dependence on IT systems and how underprepared the industry is to deal with cyberattacks. While it is obviously not ideal when medical facilities are knocked offline by IT outages, just as much attention should be paid to medical research and ensuring that clinical data managers are equipped to deal with the rigours of the modern day.

Within medical research, there are few roles as important as that of the clinical data manager. Particularly in today's age of cyber-dependency, there is little that the clinical data manager does not have a hand in. This is somebody who is responsible for ensuring the correctness and accuracy of information that is collected during a clinical trial. Clinical data managers rely on a range of data collection tools to interrogate and validate that data, while also raising and reviewing queries for other sites. They combine these tools with an expertise in and application of regulations, protocols, policies and pro-

cedures to control and maintain accurate records. They are an essential part of medical research, and there are a large number of other functions within the pharma industry that rely on the actions of clinical data managers. Essentially, if a clinical data manager can't do their job efficiently then everything gets slowed down, and time and money is wasted.

At home and abroad, IT operational downtime is becoming an alarmingly regular common occurrence. According to a survey of healthcare information systems (HCIS) by Ponemon Institute, medical institutes are faced with an average of 2.7 total system over a period of two years – the highest when compared to other sectors. The survey also revealed that healthcare facilities suffer the second-longest downtime, with each incident rendering systems unavailable for several hours at a time. Individual systems (endpoints or servers) experience more than one outage instance every year. All this is to say that downtime in healthcare is common, and this has a significant effect on clinical data managers.

With traditional hardware failures, along with ransomware and other forms of malware, combined with an ever-increasing demand for profits, clinical data managers are under more pressure to deliver results. In the US, there has also recently been guidance from the Food and Drug Administration (FDA) on integrating

medical imaging into clinical trial processes. This has caused the industry – and clinical data managers – to have to deal with more data than ever before. This is, of course, a guidance for the US but, as in most aspects of business, where the US goes the rest of the world tends to follow.

With all of this in mind, it is important that life sciences companies have prepared appropriate data management plans. A data management plan (DMP) is a formal document that clearly defines data handling procedures during and after research projects. It ensures that data is in the correct format and well organised when it is collected and saves time in the long run. DMPs also improve efficiency as there will be a common understanding between the collectors, the researchers who read the data and the data managers in the middle. However, perhaps more important than the organisation and formatting is ensuring that archiving, preservation and backups are also in place.

By correctly archiving data, researchers can make their work more relevant as it can be later reused in other projects. This is part of the reason why the clinical data manager's role is so important. By implementing a system whereby data is properly preserved, it can be easily accessed and potentially lead to new and unanticipated discoveries. It also can prevent newer researchers from carrying out stud-

ies that had previously been undertaken. While this is increasingly becoming an expectation of data management in life sciences research, I am of the opinion that this should go one step further, in light of the aforementioned growth in outages.

With this in mind, we advocate for a zero day architecture within the healthcare industry. Zero day architecture allows organisations of all sizes to minimise downtime and recover from backups without having to worry about lost data. An

evolution of the 3-2-1 backup rule (three copies of your data stored on two different media and one backup kept offsite), zero day recovery enables an IT department to partner with the cyber team and create a set of policies. These policies define the architecture for what they want to do with data backups being stored offsite, normally in the cloud. This policy could, for example, mean that a particular workload (such as access to live research) needs to be brought back online within 20 minutes while other less essential workloads (like older, archived

research) can wait a couple of days.

IT outages are an unfortunate part of life, but they should not be resigned to as an inevitability that cannot be mitigated against. With clinical data almost entirely being digitalised in 2019, any outage simply means that work can't get done. This means that money is being lost and time that should be being spent on helping people is wasted. That simply cannot be the case, particularly when the tools to minimise downtime are readily available. ■

Patient Facing Technology is Key to Clinical Trial Success

When it comes to using technology to boost clinical trial recruitment and retention, the possibilities are practically endless.

But despite the increasingly prevalent role of patient-centric technology in research, its ability to improve engagement and deliver significantly greater value throughout an entire study has yet to be fully realised on a wide scale.

Jeff Lee, Product Management VP, Patient Engagement and eConsent at CRF Bracket, explains why it's time to embrace integrated, disruptive solutions that truly address patients' needs, and looks at how a view of misperceived complexity and a lack of joined up thinking might be holding us back from measurable benefits.

Delivering end-to-end engagement

Sponsors and researchers are heavily reliant on 'engaged' volunteers to take part in their studies, but the issues surrounding recruitment and retention are well documented.

Three-quarters of trials never reach their sign-up targets,¹ and even those that do face significant challenges keeping people from dropping out. With so few patients participating, ensuring all collected data is of the highest possible quality is paramount to the success of any study.

The industry has come to the realisation that the key to solving this problem is end-to-end engagement.

From gaining informed consent, making sure volunteers have the understanding they need to make an informed participation and commitment decision, to securing the highest quality data endpoints, patients need to feel invested in the process. And many sponsors and CROs have risen to the challenge by partnering with technology companies focused on clinical research.

Technology opportunities are (literally) in our hands

Patients are people, and people are consumers. In our consumer lives, we have become used to, if not reliant on, apps and other technology that goes where we do on our mobile devices. Technology has simply become an integrated and integral part of the workflow of our daily lives, to the point we only notice it when it is absent. Bringing clinical trial commitments, documents, information

and data into this friendly and accepted frame, from recruitment through closeout and beyond, can transform the patient experience, data quality and operational efficiency of your global programs.

A few examples:

eCOA: It is well documented that electronic clinical outcome assessment (eCOA) systems and wearable trackers capture treatment-related improvements that matter to patients, at the same time as building engagement. They also generate effective real-world evidence which regulatory approvals increasingly demand.

Biometric Devices: Technology offers novel approaches to treatment and trial conduct as wearables and connected devices collect richer data which supplements understanding of treatment effects. This leads to study design changes and the development and validation of new gold-standard clinical endpoints, all of which demand new ways to train and monitor the researchers who collect data to ensure measurements and insights are understood, consistent and, crucially, reliable.

eConsent: The consenting process is now being seen as a prime opportunity to help potential study patients feel invested in the process, with increasing interest now in how trial participation can be simplified. Patient-centric technologies, such as informed eConsent, ensure study information is conveyed effectively and in a more engaging manner, even enabling some study visits to be conducted remotely to reduce travel requirements.

Patient Engagement: Technology can broker study transportation when needed, provide study apps and communications to help keep patients engaged and prepared during the study, and even share lay summaries of study results and personal data to provide additional value.

Study Logistics: Not all technology needs to be patient-facing in order to be patient-centric – some solutions that exist in the background ensure a smooth experience for patients, sites and study teams to run a faster, seamless trial. Enterprise-wide intelligent supply management, forecasting and planning, and interactive response technology (IRT) are revolutionising study management and supply chain processes. Algorithms that accurately calcu-

late required study supply levels make sure volunteers have exactly what they need, where and when they need it, enabling companies to reduce costs, maintain safety and ensure compliance across territories to focus on the next life-saving drugs.

Each one of these technology advances contributes toward improving clinical trial practice and ultimately benefits patients by facilitating the process and experience, whilst serving to engage and educate patients. This certainly contributes to earlier communication and understanding of treatment effects which ultimately speeds drug development to the benefit of all.

Intelligent streamlining to minimize added burden

Despite their individual advantages and value, when taken together this wide array of technologies can place an increased burden on sites and volunteers alike. They are surrounded by technology all the time, and they expect and demand a seamless experience without a dozen different logins and interfaces. Therefore, it is the responsibility of technology providers (and their sponsor and CRO customers who keep them accountable) to treat sites and patients as any forward-thinking consumer technology provider would. App developers would never ask their customers to carry a single phone for each and every app, and likewise we must utilize tools such as single sign-on (SSO) to provide a coherent experience that optimizes and organises the experience for sites and patients around the world. Only by providing technology of value without increasing burden will we truly achieve our goals of transforming clinical research on a global scale.

Patients expect technology

Findings of a study CFR Bracket conducted in conjunction with PMG Research found that 31% of patients² would be more likely to participate in a study if they knew that a mobile app would be available. It also highlighted the importance of that app being easy to use.

The array of technologies also places increased burden on sites. In a study where the patient is presented disparate technologies from different providers, a great strain is placed on the site staff to carefully train the patient on each technology. This demands a new skill set or role to emerge at sites. This role can be thought of as a "Technology Navigator" which can help non-technical staff confidently harness diverse technologies for each study. The industry needs to adapt to help sites deal with this technology explosion and we are witnessing sites today leaning more than ever on technology help desks as they struggle to provide the patient all the training they require.

So, whilst technology is being exploited for patient-centred study design, focused on the actual protocol-driven procedures, more can be done to actually help the patient make their way through the study, which is the area that Sponsors are now focussing their attention toward.

Integrated solutions

Leading technology innovators are tackling this problem. At CRF Bracket, we are involved in integrating several third-party services into one app, creating one simple interface for patients and another for sites and study teams.

By combining ePRO and eCOA data capture, eConsent, patient engagement, patient payments, courier and travel services and home health nursing – whether it is our own solutions or from a trusted third-party such as Uber or Greenphire – such solutions eliminate the need for patients to interact with overwhelming numbers of notifications from different websites, apps or SMS alerts services. Combining as many solutions as possible into a single app not only eases the logistical and daily burdens of participation, it also

meets the expectation of a quality trial. Such seamless interaction provides systems that reflect and respect patient-centricity and build confidence in how well studies are managed.

Integrated end-to-end systems, compatible platforms and connected devices also increase visibility and trial management for sites and sponsors. And by combining these technologies into a single project delivery team, the site can also receive streamlined/coherent training, which makes them a more effective educator to the patient.

Giving your trial the very best chance of success

The industry has seen an explosion of innovation in the adoption of patient-facing technology applied across research, routine care and personal wellness, as well as enterprise-wide with fully integrated forecasting, planning and inventory management.

Choosing integrated, supported solutions can help sponsors fully embrace the patient-centric opportunities that can often be the most pivotal factor in the success of a study.

Ensuring the pharma industry has a more palpable feel for what patients need in order to execute the best possible study experience, from end-to-end, is where the best in class technology disruptors are now operating, pushing the boundaries beyond industry standard features into an advanced patient-centric realm, improving the patient experience and increasing ROI for sponsors and CROs.

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About the Author

Jeff Lee - Product Management VP: Patient Engagement and eConsent, CRF Bracket

Jeff joined CRF Bracket in 2017, following the acquisition of his company, mProve Health, which he founded 2010. As CEO of mProve Health, a leading provider of mobile technologies for patient recruitment, engagement, and data collection in clinical research studies, Jeff grew the company globally. Today, its applications are used by 18 of the top 20 pharmaceutical companies, 15,000 clinical research sites in over 60 countries, and they are translated in over 50 languages.

About CRF Bracket

CRF Bracket was formed in 2018 by the merger of CRF Health and Bracket to provide life science companies with patient-centric technology solutions that advance clinical research and transform the patient experience. The company's solutions include electronic clinical outcome assessments (eCOAs), eConsent, patient engagement, interactive response technology (IRT), clinical supply forecasting and management, and endpoint quality services that combine advanced analytics and therapeutic area-specific scientific consulting. CRF Bracket's applications are trusted by pharmaceutical companies of all sizes, including all of the top 20 pharmas, as well as CROs, biotechs, and academic institutions on over 4,000 global clinical trials. For nearly 20 years, CRF Bracket has been committed to helping life science companies bring life-changing therapies to patients and communities around the world. To learn more visit www.crfhealth.com and www.bracketglobal.com. Contact: media@crfhealth.com, +1 267.498.2350 ■



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New Technology Aims to Revolutionise Fluid Control in the Healthcare Industry

A new UK medical technology company, specialising in the precise, high-speed and low energy control of liquid and gas, is aiming to revolutionise the healthcare and life sciences industries through its unique Binary Actuation Technology (BAT).

Camcon Medical's BAT has the potential to optimise the controlled flow of any fluid in a clinical or laboratory environment. However, the company intends to introduce BAT to areas of substantial unmet medical need, where the benefits of its unique valve can enhance the performance of existing devices and create new innovations across multiple applications that require fluid control, whether in-vivo or ex-vivo, providing sustainable and effective solutions that have clinical value, improve patient quality of life and are cost efficient.

First invented in 1998 by Wladyslaw Wagnanski, BAT is a fail-safe and pioneering technology that allows a valve to switch between its open and closed status faster than any other valve mechanisms, all while using a minuscule amount of energy, resulting in major breakthroughs across an array of industry challenges and markets. The move into healthcare and life sciences follows on from BAT's proven success and established heritage in the oil and gas and automotive industries.

Camcon Medical has identified respiratory care as an area of

particular interest, with an initial focus on the medical devices market. One of its first applications will involve oxygen delivery, where accurate dosing is a substantial clinical challenge, especially as over or under dosing of oxygen can be fatal. An estimated 2,000 to 4,000 patients a year in the UK die from incorrect oxygen supply.¹

We spoke to Charles Potter, Director at Camcon Medical to find out more about the company's plans for the healthcare market.

Can you describe what makes your Binary Actuation Technology unique?

Alongside the technology's ability to precisely control liquid and gas, Binary Actuation Technology (BAT) is also extremely energy efficient. The science underpinning the technology is primarily based on an energy-recycling mechanism. Due to this characteristic, the BAT valve requires very low power to switch between an open and closed position. Further still, no energy is required to hold the valve in either of these positions, which makes the technology ideal for battery powered operations. This, coupled with the high speed of this quick-acting valve technology, will undoubtedly unlock numerous applications of BAT in healthcare and the life sciences.



This technology has had tremendous success in other industries, which is largely due to its incredible versatility - the valves can be designed in a range of shapes and sizes to suit the unmet need of the application in question. Being able to adapt a technology is imperative for some potential medical applications. For example, this could allow miniature valves to be developed for use as implantable devices in vivo.

BAT also has the ability to operate silently to suit patient comfort and quality of life when applied to medical applications.

What are some of the unmet medical needs where you have identified potential opportunities for your solutions?

Our initial medical applications will be within respiratory care, with our first product, Intelligent Medical Oxygen Delivery® (IMOD®), being created to deliver oxygen to patients more safely and efficiently.

As it stands, over 2,000 hospital patients receive excess oxygen every day in the UK. Oxygen saturation for patients with Chronic Obstructive Pulmonary Disease (COPD) should be maintained within the range of 88-92%. However, with the current use of continuous oxygen delivery systems, these levels are often exceeded. Therefore, in COPD and some other medical conditions, excess oxygen delivery can exacerbate issues, and can in some cases be fatal. To address unmet needs in safe oxygen delivery to patients, IMOD® has been developed with three key components in mind; recognition and monitoring of the patient's breathing pattern, an adapted version of BAT which allows it to function silently, and a feedback loop to control oxygen flow to automatically maintain the oxygen saturation based on the patient's individual requirements.

Oxygen delivery will also be more efficient with IMOD®, with the device only delivering oxygen when the patient breathes in, saving approximately 65% of oxygen compared to continuous flow methods. A report conducted by Cambridge University

calculated that a 1,000-bed hospital could potentially save up to £200,000 per annum on wasted oxygen when using IMOD® – up to two-thirds of current expenditure. Not only will this be cost-effective for hospitals, but it will allow ambulances and air ambulances, that rely on a limited oxygen supply, to treat patients for longer durations safely.

In terms of respiratory care, what are some of the challenges that you are looking to solve?

Over-dosing and under-dosing of oxygen is common. With IMOD®, oxygen can be delivered and automatically maintained to the required blood oxygen saturation level, thanks to a built-in pulse oximeter. IMOD® will also solve the problem of current oxygen wastage which occurs with a continuous flow of oxygen being delivered.

Another issue with the current oxygen delivery methods, is that of patient comfort. Having oxygen blowing across your face continuously can be an uncomfortable process and can dry the mucosal tissue and skin, causing skin irritation. IMOD® will improve patient comfort by only delivering oxygen when the patient breathes in. This, in turn, also solves the issue of excess oxygen being a potential fire hazard.

What will be the benefits for solutions that look to integrate your technology?

I believe that BAT can deliver all three dimensions of value to healthcare and the life sciences – clinical benefit, patient quality of life and economic value to the whole system. However, the most important added benefit will be dependent on the type of technology that BAT is integrated into.

With its energy efficiency, speed, accuracy, precision and numerous other benefits, BAT can be tailored to different applications. The next challenge Camcon Medical has is identifying which markets BAT can have an impact on – a challenge we plan to embrace! ■



Improving Management of Medical Records for Paediatric Diabetes Patients

A partnership between software and consultancy provider Hicom, and the University Hospitals of North Midlands (UHNM), in the UK, is providing multidisciplinary teams with instant access to patient medical history, whenever there is patient interaction.

Implemented in 2014, Hicom's paediatric diabetes management system, Twinkle, links with the hospital's PAS and pathology system to provide nurses, clinicians and dieticians with the ability to quickly access up to date patient data, appointments and test results. Twinkle also delivers a single view of all medical notes and as a result has improved operational efficiencies and interoperability, which has led to considerable time savings for staff and better care for patients within the hospital's three clinics and in their homes.

EFFICIENCY AND INTEROPERABILITY

Twinkle enables nurses to review vital patient data such as what insulin regimen a patient is on, previous appointment notes, historical HbA1c in graphical form and any ongoing issues that need to be evaluated. They can also view any alerts that are on patient records that indicate additional tests are required.

Dr Parakkal Raffeeq, Consultant Paediatrician comments: "The process of planning each day of appointments has not only become less time intensive with using Twinkle but we've also been able to better manage resources.

"Previously, data was just being stored, however Twinkle is more than a database, it's a live clinical information system. For example, if a nurse in the community visits a patient in the morning and a note is added to the system to state additional insulin was given, both us and our patients have the reassurance that a nurse on call later that evening will have access to up to date and accurate information and will know the next course of care needed to be given to the patient. This has led to the team feeling more prepared heading into an appointment and they know what the outcome of the appointment needs to be."

AUDITABILITY

With the requirement to regularly submit information for the National Paediatric Diabetes Audit (NPDA), one of the initial main drivers for the Trust to use Twinkle was having the use of data indicators that immediately identify any gaps in information. Similarly, when reporting for the Best

Practice Tariff (BPT), clinicians are able to click on individual patients and see how they are performing, how many appointments they have left in the fiscal year and whether they are likely to meet targets that have been set. These features are key to enabling clinicians to proactively manage long term care planning and ensure accuracy of data as part of their day to day patient interactions.

Dr Raffeeq continues: "The functionality of being able to access individual patient data, whether recent or historic, and at any time, is proving to be extremely useful for when we review patient care and for the NPDA."

PAPERLESS-APPROACH

In support of the Government target for the NHS to become paperless by 2024, the Trust is committed to moving away from paper-based records and migrating to a digital working environment.

"Working with paper records has been challenging. If notes don't arrive at the clinics in time or are misplaced, it can have an immediate knock on effect to not only our team but also our patients. Now, if a note is added to a patient record, regardless of when it was added or if it was added in a clinic or at the patient's home, we are all able to view what care is needed on any given day.

"Additionally, we are delighted that having Twinkle and digitising our processes has meant that the aim to achieving paperless records throughout the entire Trust is well and truly in sight," concludes Dr Raffeeq.

CONCLUSION

The implementation of Twinkle has proved to be an invaluable data resource for the diabetes team at UHNM and the day to day operation of the hospital. It is enabling staff to input changes to patient records in real time and giving them access to accurate and up to date information, whilst cutting down the amount of time spent on administrative tasks. Additionally, it is helping them to better prepare for and manage appointments and has freed them up to spend more time with patients.

Ultimately, the combination of all of the benefits being seen from using the technology has led to the diabetes team being able to make better informed decisions about the care they provide to each of their patients. ■

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