

Innovative marvels in medtech

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A look at market growth

A recent McKinsey report authored by Amit Agarwal, an associate principal in McKinsey's Singapore office and Franck le Deu, Director in Shanghai office, highlights that rising standards of care for patients widens the challenges that medtech companies have to face in broadening their reach and identifying strategies that can help bring high-quality products and services to more patients.

The authors stress that medtech companies are under immense pressure to evolve with the growing technologies and those who would cross the hurdles will unlock greater opportunities in Asia and beyond. As per the McKinsey report, Asia-Pacific med-tech market is expected to rise to about USD133 billion a year in 2020, from about USD88 billion a year in 2015. However, by 2020, Asia-Pacific is expected to surpass the European Union as the world's second-largest med-tech market after United States. To reach these patients and defend against new competitors, global companies would have to rethink their approach to Asian region, creating new business models that encompass multiple channels, developing market-appropriate products rooted in innovation, allowing greater local autonomy, and removing structural barriers.

The right approach

The McKinsey report highlights that beyond traditional market-development efforts, med-tech companies trying to tap into Asia's opportunities and better serve patients should focus on four themes. They are:

They should re-examine their commercial models and channels. Successful companies will have to build a range of go-to-market models that cater to patients with diverse needs and account for varying levels of healthcare awareness. Companies that lean heavily on distributor networks may require dramatic changes because such networks make it more difficult to develop closer links to end users and clearer insights into their needs.

Med-tech companies should review their offerings and develop market-appropriate products that appeal to customers seeking greater value. While one aspect of market-appropriate products is cost, another important element is innovative features designed to meet local needs, say, by considering differences in disease characteristics, patient-flow management, and clinical and surgical practices. Moreover, serving a broader range of segments means med-tech companies must build new capabilities, for example, to deepen their supply chains or develop cheaper and lighter-touch commercial models.

Global med-tech companies will need to empower their local organisations. The best Asian companies are competing with global leaders and benefit from sharp insights into local market needs and nimbler organisations. In contrast, global leaders are often slower in responding to patient needs and cannot shift resources as quickly. Too frequently, local teams have limited input on longer-term decisions related to product development or manufacturing. Global med-tech companies in the region must offer their local leaders greater autonomy to optimise decisions and resource allocations.

Finally, removing many of the structural barriers will require greater collaboration among stakeholders. Efforts here should centre on building the capabilities of regulators and regulatory-affairs professionals, using technology to accelerate and enhance medical education, and encouraging shifts in attitudes and behaviours that hinder the adoption of new technology and delivery models among patients and providers.

Credits: Extracted from McKinsey report

Innovations in MedTech

Healthcare systems around the globe are under immense pressure to provide affordable and convenient healthcare solutions that are easy to use and deliver better and quick result. BioSpectrum takes a look at some of the innovations in medical technology that would redefine the way healthcare will be delivered in near future.

Smart coach for diabetes

A new smart coach, named GlycoLeap, is designed to support people living with type 2 diabetes. GlycoLeap combines human expertise and mobile technology to motivate patients towards healthier habits and a better quality of life. Designed by Holmusk, Singapore and US-based digital health and data analytics company, the firm recently launched the solution in Singapore to delivers human coaching via a mobile app that integrates connected health tracking tools. The app is available for iOS and Android.

GlycoLeap uses concepts from behavioural science to drive positive health outcomes for people with diabetes. Through small and sustainable lifestyle changes, users can achieve moderate weight loss and improve glucose control (as measured by HbA1c) within six months of the GlycoLeap programme, according to the company. As part of the programme, users take photographs of their meals with Glyco app. A coaching team of qualified dietitians rate the meals and provide daily feedback and support.

Users are also provided smart devices, including a wireless scale, glucometer and fitness band to track weight, blood glucose and physical activity. This gives the coaching team a 360-degree view of each user's behaviour, allowing them to provide the right feedback and support at the right time.

Patient Cloud

US-based Medidata has developed Patient Cloud, a mobile health (mHealth) solution that accelerates patient-centric clinical research. Patient Cloud enables sponsors to use sensors and apps that capture a richer, more complete dataset directly from the patient, improving the clinical trial experience on the Medidata Clinical Cloud. Patient Cloud offers visibility into the patient journey and experience, providing researchers a clearer picture of a therapy's safety and efficacy. Medidata SensorLink is a regulatory-compliant data ingestion platform for biosensors and wearables that provides summary views and raw data streams for detailed analyses.

China-based clinical-stage pharmaceutical company Techfields is using Medidata SensorLink to capture continuous data from the Garmin vÅ?Æ?Ã?Âvofit activity trackers measuring study participants' movement and mobility. Techfields is also using Medidata's Patient Cloud ePRO (electronic patient-reported outcome) app, accessible via a smartphone or tablet, to allow stroke patients participating in the trial to complete questionnaires on quality-of-life, disease state, and response to treatment using an Apple iPad.

"Cloud and mobile health technologies offer new channels for maximising the value of clinical data, and we believe they will play an increasingly important role in our ability to bring vital new medicines to patients," said Dr Chongxi Yu, Founder and President, Techfields, adding, "using the Medidata platform, our research teams can more quickly access richer, more complete clinical datasets while gaining valuable insight into patient well-being and disease progression. This is a key focus of our R&D strategy, as we pursue promising drug candidates with the potential to help people live longer, healthier lives."

"Now more than ever, life sciences companies are evolving toward a more patient-centric approach to drug development and healthcare, and Medidata's unified cloud platform, including our mHealth solutions, is helping to power that shift," said Edwin Ng, Medidata's Vice President of Field Operations, APeJ (Asia Pacific except Japan).

Robotic nurse

Changi General Hospital (CGH) in Singapore is implementing assistive robotics technology developed by Panasonic System Solutions Asia Pacific to improve operational efficiency of the hospital. CGH began experimental use of the Panasonic autonomous delivery robots, HOSPI, in February 2015 and are being implemented in phases. CGH is the first hospital outside of Japan to utilise HOSPI.

As part of the hospital's porter management system, HOSPI is able to deliver fragile and bulky medicine, medical specimens and patients' case notes 24/7, easing manpower constraints. HOSPI is equipped with security features to prevent tampering, theft and damage during delivery. The robot's contents can only be accessed with authorised ID cards. Automation enables HOSPI to move around using the lifts and between facilities in CGH's main building and the integrated building on its own, delivering medicine and specimens. HOSPI is equipped with sensors and programmed with the hospital's map data to avoid obstacles such as patients in wheelchairs and complete deliveries with minimal supervision. New hospital routes can be programmed in advance, allowing flexibility.

The autonomous robot communicates and relays information on its whereabouts to the control centre, enabling its location to be monitored and recorded consistently.

Management at CGH believes that HOSPI can help save manpower and time in a simple and practical way especially with the challenges of aging workforce and increasing healthcare facilities by size and distance. By harnessing autonomous technology like HOSPI, the hospital intends to optimise its workforce and improve productivity. Flexible glucose sensor & transmitter

US-based Echo Therapeutics has developed Echo sensor and transmitter that enables glucose monitoring through a flexible sensor that utilises a proprietary algorithm to accurately, continuously, and non-invasively monitor glucose levels which are then transmitted to any remote device or Cloud service. Echo's another device glucose display is designed to create a breakthrough in the way glucose data is monitored. Echo glucose data can be displayed on any mobile platform or Cloud service for user convenience and accessibility. Echo is developing a unique API to allow app developers to build their own applications for Echo's glucose monitoring system

Smart contact lenses

Verily, a subsidiary of Alphabet, focused on life sciences and healthcare, and Alcon, a division of Novartis, are working together on smart ocular devices, including a glucose-sensing lens for continuous monitoring of glucose levels and an accommodating contact lens for people with presbyopia (age-related farsightedness).

These soft contact lenses contain tiny Verily-designed integrated circuits, sensors, and wireless communication capabilities for self-contained wireless sensing on the surface of the eye. The team has been working to engineer novel solutions to the technical challenges of significant miniaturisation for autonomous sensing systems and dramatic reduction of power consumption to permit tiny batteries. The company is working with Alcon on biocompatible materials, optics and clinical development. Verily develops tools and devices to collect, organise and activate health data, and creates interventions to prevent and manage disease.

Microstimulator for cluster headache

Autonomic Technologies, a medical device company headquartered in US, with offices in Germany and Switzerland, has developed Pulsante Microstimulator for the treatment of cluster headache. Pulsante System is a minimally-invasive, rechargeable, multi-channel, peripheral nerve stimulation system. The System includes:

#The Insert: A microstimulator (smaller than an almond) with an integral lead designed to fit ranging facial anatomy. The insert has CE-marked MR Conditional labelling for whole-body MRI.

#The Remote Controller: A hand-held device with simple therapy controls that provides on-demand patient-controlled SPG therapy. Therapy settings are individualised and can be adjusted quickly by physicians using a programmer laptop.

The device is inserted through a small incision in the upper gum above the second molar and positioned at the sphenopalatine ganglion (SPG) nerve bundle. The SPG is located deep in the face on either side of the nose. The neurostimulator is placed on the side of the patient's headache pain. The procedure leaves no visible scars. Patient using the device can control his or her own stimulation treatment as needed by turning on the Remote Controller and placing it on the cheek over the inserted device. When the patient no longer desires stimulation, the Remote Controller is simply removed from the cheek, turning off stimulation therapy.

If SPG Stimulation Therapy and use of the Pulsante System is no longer needed, the device can be left in place or, if desired, can be removed under local anaesthetic in an outpatient procedure.Â?Â

Smart injection pad training system

Noble, a biopharma onboarding and device training company, has developed Smart Injection Pad engineered with multisensory and error correcting technologies. The device is designed to address the need for impactful injection training as many patients do not know how to correctly administer treatment via auto injector. The training system alleviates this problem by increasing understanding of auto injection through practice with a needleless device and touch pad prior to administering treatment via self-injection.

The company highlights that despite the redesign of auto injectors for easier use, most patients still don't understand how to properly administer treatment. This lack of knowledge is attributed to insufficient training which can cause patients to feel anxious, leading them to administer incorrect dosages and even discontinue treatment all together. The new Smart Injection Pad utilises audible and error correction technologies to teach patients how to use auto injectors correctly. Additional features include pressure sensing technology compatible with shield and button-activated auto injector devices, allowing the system to detect user errors and alert the patient.

Bone growth stimulators

Orthofix International has developed CervicalStim and SpinalStim bone growth stimulators. These Class III medical devices use a low-level pulsed electromagnetic field (PEMF) designed to activate and augment the body's natural healing process, providing patients with a safe, non-invasive treatment option for promoting post-operative spinal fusion. The CervicalStim and SpinalStim systems are accompanied by an application for mobile devices called Stim onTrack. Designed for use with smartphones and other mobile devices, Stim onTrack provides tools to help patients follow their prescription, including daily treatment reminders and a device usage calendar. The mobile app also includes a first-to-market feature that enables physicians to receive real-time data on how their patients are adhering to their prescribed treatment protocol.

Implantable pulse generator

US-based SetPoint Medical is developing breakthrough therapies to reduce systemic inflammation by stimulating the vagus nerve using an implantable pulse generator. This activates the body's natural inflammatory reflex and is intended to dampen inflammation to improve clinical signs and symptoms. SetPoint Medical has achieved positive results from the first-ever human study using an implanted neuromodulation device to treat rheumatoid arthritis. SetPoint's proprietary neuromodulation platform consists of an implantable microregulator, wireless charger and iPad prescription pad application. SetPoint is using its neuromodulation platform to develop safe and effective alternative therapies to target other diseases.Â?Â Portable ultrasound

GE Healthcare has developed pocket-sized, dual-probe ultrasound, Vscan Extend, that enables high image quality and wireless connectivity to improve patient care especially in hospitals and ambulance in rural environment.

"Vscan Extend completely changes the game in how we are able to use ultrasound both inside and outside hospitals," says Dr Guy Lloyd, Clinical Cardiologist and Lead for Echocardiography at Barts Heart Centre in London. "For the first time on handheld ultrasounds, we can pre-populate the device with images thanks to the DICOM integration, which then cascades the images through PACS, enabling seamless collaboration with colleagues in our hospital system. As a result, we are able to provide rapid diagnostics to patients, increase efficiency, and save on cost."

Vscan Extend offers an intuitive touch screen and weighs just 406 grams.

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