



DELIVERING HEALTHCARE IN ASIA

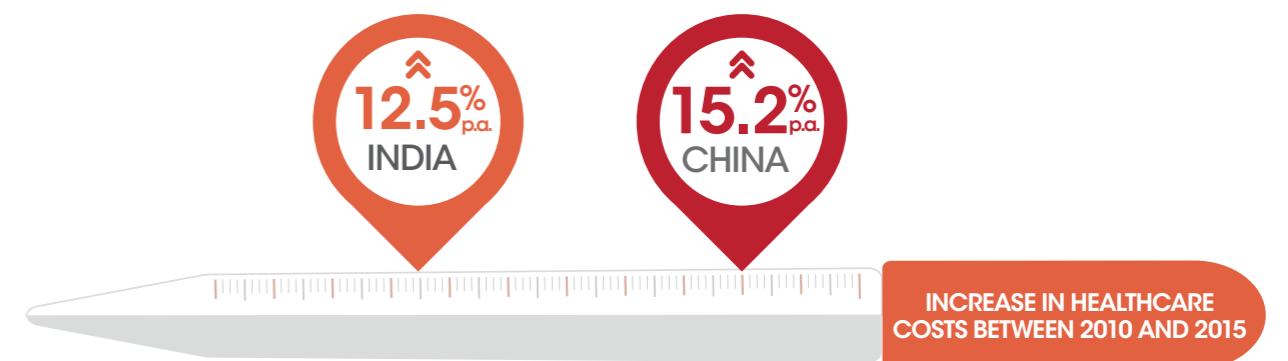
Is high-end innovation in medical technology a blessing or a curse?

By Elisabeth Staudinger

Demographic shifts and changes in population age structure are changing global dynamics in healthcare. World population is expected to grow by 2.4 billion between 2013 and 2050, touching 9.6 billion by 2050. More importantly, a massive 96 percent (2.3 billion) of this increase will be seen in emerging and developing countries alone, as population growth levels off in industrialised nations.¹ There is also expected to be an increase in global life expectancy, which is estimated to rise from 69 years (for those born in 2005-10) to 76 years (for those born in 2045-50).² At the same time, the world will see a growing burden of chronic diseases such as cancer, diabetes, and cardiovascular and respiratory diseases; and the World Health Organization (WHO) has predicted that

over 50 billion people will succumb to chronic diseases by 2030, up from 38 billion in 2012.³

The larger population pool, combined with more people living longer but not necessarily healthier lives, has a direct impact on worldwide healthcare expenditure, which currently stands at 10.6 percent of global GDP.⁴ In the United States, spending on healthcare accounts for 16.2 percent of GDP, while health expenditures in developing countries are growing at a rate well above the global average. Between 2010 and 2015, healthcare costs in China and India have risen by 15.2 percent and 12.5 percent per annum respectively.⁵ And, based on trends in global demographics, these numbers will continue to rise at an alarming rate in the foreseeable future.



Healthcare systems around the world have to find new ways to keep costs down while improving the reach and quality of medical services. The demand for professional, affordable, entry-level healthcare solutions is intensifying. While developed countries face the challenge of controlling costs and raising quality of care, developing countries need to improve access to healthcare while avoiding the implied cost trajectory.

The question that I address here is: How can innovation in healthcare contribute to solving these challenges? The medical field is a frontrunner in developing new devices and innovative procedures, and coming up with breakthrough technologies. But can these make a positive impact on the health of the world's population? Is investing in high-end innovation in medical technology a blessing or a curse?

Better outcomes at lower costs

Let's take an example of how innovation has been shown to improve health outcomes and reduce costs at the same time. Ten years back, a patient requiring aortic valve repair would have to undergo open-heart surgery. If for some reason the surgery was not successful, or if there were other complications, the procedure would most likely have to be repeated, or the prognosis for the patient would have been bad. Today, the same procedure can be done using sophisticated imaging and minimally invasive technology, with a positive outcome for the patient just from a minor cut.

What is more, real-time information from multiple imaging systems can be used, simultaneously, to detect abnormal tissues, and correct it immediately—without the need for a second procedure. And as the procedure is minimally invasive, the patient can usually be discharged sooner than before, sometimes even the next day. The multi-imaging system approach and minimally invasive

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surgery are expensive. However, when compared to the cost of one, or possibly two open heart surgeries, weeks of hospitalisation and post operative care, time lost away from work and home—not to mention the discomfort of the patient—it is actually a very good deal.

Technological advancements have also been made in the field of diagnostic testing. Seventy percent of all clinical decisions are, in one way or the other, influenced by diagnostics. In order to determine the right treatment, an accurate diagnosis is essential. There are two ways of going about them. First, there is in-vivo medicine, where clinical images of the body are generated, for example through a computed tomography (CT) scan. Based on the images, a radiologist is able to make a diagnosis. The second method is in-vitro testing, where samples of bodily fluids such as urine and/or blood are taken from the patient and then analysed in a lab. Both aim to identify diseases early, to guide treatment and therapy, and to reduce cost of healthcare delivery.

It is said that up to 75 percent of cancer treatments are ineffective.⁶ Comprehensive cancer diagnostics are now able to meet this challenge. The liquid biopsy test, for example, is used to diagnose lung cancer, one of the most common types of cancer. The test is able to determine the specific treatment-relevant mutations in the cancer from a single blood sample, making it a non-invasive, painless and low-risk alternative to a biopsy. Once the type of tumour is ascertained from the



Two ways to determine the right treatment

blood sample, the treatment can be focused and effective. So the more we invest upfront in understanding the medical condition through diagnostic testing, the better it is. Otherwise the treatments that follow can end up being ineffective, repetitive and quite costly.

Innovation in healthcare is not only about the high-end. It is also about improving access and reducing the cost of high quality healthcare, and to have as many people as possible benefit from technology. This is particularly relevant for Asia.

The uniqueness of Asia

Asia, with the vast majority of its population residing in emerging markets, is in dire need of better healthcare delivery to its large and remote populations. Therefore, it is a region with tremendous opportunities for technological innovations to enable accessible, affordable and quality healthcare. While developing basic healthcare infrastructure calls for common strategies across countries, there are inherent differences between developed and emerging markets (and also within each of these categories). The needs and means in countries such as Indonesia and Thailand are certainly different from, say Singapore or Japan—which fundamentally changes how companies work with patients and healthcare providers.

Access and affordability are two key issues in Asia. Many people in this region live in remote areas and have to travel long distances to get access to and receive medical treatment, a journey which is hard to take when one is really sick. Look at the coverage of Southeast Asia when it comes to modalities such as CT scanners. In the Philippines, we find only one scanner per one million population—compared to around one to 40 in Germany or the United States. And there, not only is the coverage greater, infrastructure is also more advanced, which shortens travel time considerably.

And accessibility of healthcare also comes down to a matter of who can actually afford it—for many people, an X-ray scan will practically cost an arm and a leg. While basic healthcare is provided for under public healthcare schemes in some Asian countries, many additional treatments must be paid out of the patient's own pocket. In India, for example, 75 percent of treatments are being paid privately by the patient.

FINANCING OPTIONS

Many developed countries, such as Germany, offer a completely state-financed system, with a very well-structured reimbursement

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scheme, eliciting the highest standards in productivity from providers. Countries in Asia, in contrast, mostly exhibit a fee-for-service type model, depicting environments more akin to supply and demand dynamics. Premiums are afforded to those who can differentiate their service offerings and provide augmented value propositions through better technology, better qualifications, or even more convenient locations. There is also still a lot of room for entrepreneurs in the private segment, constituting many of the hugely successful private hospital chains in this part of the world—these types of opportunities simply don't exist to the same extent in highly regulated and developed markets of Western Europe.

When looking at emerging markets, the discussion then shifts to other considerations such as establishing basic healthcare systems and moving towards a more insurance-based framework that is subsidised by the government—a transition that is currently underway in Indonesia. But even if the economic outlook is good for many countries in Southeast Asia, it won't be possible for governments to fund a comprehensive insurance system, as the financial burden would simply be too great. Just think of chronic diseases such as diabetes and the treatment costs per patient! This is the case even when the cost of care and the subsidisation rates are often low due to young populations and low levels of care.

Singapore is a mature market and characteristically closer in comparison to developed markets like Australia, New Zealand, or even Europe. As a wealthy country with an advanced healthcare system, Singapore sets the standards for the rest of the region. It serves as a reference point for many countries in terms of the regulatory environment and the infrastructure of healthcare delivery systems, especially for Southeast Asia.

So how do some of the global key trends translate into the unique Asian environment?

Consolidation and industrialisation

Industry-wide, we notice shifts towards consolidation and industrialisation. What do I mean by consolidation? Healthcare providers are merging to gain competitive advantages by achieving economies of scale and offering more specialised

care. Within Asia Pacific, Australia is a very extreme example of a highly consolidated market, which has only a handful of healthcare providers that run very large-scale operations. Other countries in the region are moving towards consolidation, too. In India, for example, currently about 80 percent of the healthcare providers are unorganised. As the market starts getting served by more organised and bigger players, the patients can expect more professional care becoming available at reasonable cost.

The second trend is towards industrialisation in healthcare, which specifically addresses the need to lower costs while improving outcomes, and doing so in a repeatable manner. Look at laboratories, for example. The way they work has changed a great deal over the past years—a lot more is being achieved with fewer resources. Nowadays, it is like looking at a factory: There are centralised, highly productive labs, managing up to 100,000 tests a day.

In line with those developments, Siemens Healthineers, the medical

technology arm of Siemens, has designed a new automated laboratory solution which combines immunoassay and chemistry testing. It utilises a magnetic transport system that works ten times faster than conventional tracks. And by producing over 400 immunoassay tests per hour, it boasts the industry's highest productivity per square metre. Due to the high degree of automation and clever routing of test samples, urgent results can be provided more quickly—which in some cases can be crucial for the survival of a patient.

Solutions for remote areas

For remote areas, point-of-care testing is ideal, as it can be done on the spot, using urine test strips to detect any kind of inflammation. Blood samples can be taken at decentralised collection centres and then sent to central hubs for analysis in larger cities. This field is currently unfolding. There are a few centres in India, such as Thyrocare, and in Southeast Asia, such as Prodia in Indonesia and Medic in Vietnam.

The case looks different for medical imaging. Here, the patient needs to be where the scanner is and vice versa. But what about the highly-trained radiologists who are reading the images? They can actually deliver their diagnosis remotely, a process that is called teleradiology and is a great means of improving the quality of healthcare in remote or rural areas.

Another option is to develop products that address the particular needs of healthcare providers in remote areas. To give an example, Siemens Healthineers has come up with a new CT scanner with simplified features and small footprint, which comes at a fraction of the price of its high-end machines—an important consideration when budgets are limited. Patients in India already benefit from one of the first three installed systems worldwide—and there is more to come. This shows how pioneering innovation is not only about serving the high-end segment, but also has accessibility and affordability in mind.

Future priorities

Global healthcare needs will continue to grow, be it in industrialised nations or emerging markets. The pace of technological innovation will also continue. So what can healthcare businesses do to leverage innovation to find more suitable ways to support healthcare needs, especially in emerging countries?

First, partnerships are key. Technology is a great enabler to link healthcare providers, health solution providers and patients, as well as their data and knowledge. Such an integrated ecosystem can pave the way for the digital transformation of healthcare. For example, when it comes to product development, companies that are leading the market are co-creating solutions by working with hospitals, universities and research institutes.

Second, I believe localisation can drive business success. Siemens Healthineers, for example, has set up a factory in Goa, India, to design and produce basic X-ray systems that are also sold in the country. This ensures that local market needs are met and products are readily accessible. In addition, Bangalore, India, is a fantastic example of how local knowledge can influence the global business of companies. Siemens Healthineers has around 1,500 software engineers employed onsite whose vast knowledge has a great impact on product development on not just at a local but at a global scale.

Overall, in order to be successful, medtech companies have to make the move from product-centric towards value- and patient-centric business models: Healthcare is not only about the latest and greatest products. It is first and foremost about understanding the needs of healthcare providers and

their patients here in Asia, and working together to answer those with great care. I would also like to mention the potential of IT in this regard. Already today, we see what artificial intelligence and deep machine learning can do to support clinical decision-making—and for sure, these capabilities when developed will have a major role to play in the future of healthcare.

Where does this leave us in terms of high-end innovation in medical technology? There is no black and white. Even if sometimes one can get the impression that the field of medical technology may at times be overengineered, high-end innovation does not necessarily mean expensive machines—it can also mean an investment paying off in the long-term. Or it can mean innovation trickling down to the lower end of the price spectrum, which is great because this is where many people can actually benefit from such technology, especially here in Asia. Thus, it can ensure that every penny used for pioneering in the field of healthcare is money well spent.

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