

Raising the game

Asia is on the rise, with all eyes on its rapidly developing economy and a huge increase in demand for better healthcare, writes *Emily Brooks*

This January, *The Lancet* published its first-ever series of papers focusing on a specific region. It chose southeast Asia, a telling indication that there is a story to be told here, and significant problems to address as well as good news to report.

Hardly any other part of the globe is as fragmented – geographically, economically and culturally – and this splintered outlook is reflected in its divergent health outcomes. Singapore and Malaysia can boast some of the best healthcare in the world, so much so that visiting “health tourists” are now an important part of their economies, and are driving a building programme of upscale private facilities. Middle-income countries such as Indonesia and Vietnam are looking to replicate the success of Singapore, by reforming their healthcare systems and introducing social insurance schemes to reduce large out-of-pocket expenses. With rapidly increasing demand for better healthcare due to higher incomes, an ageing population, rural-urban migration and an increase in non-communicable diseases, they are viewed as prime investment opportunities. Meanwhile, Lao and Cambodia (average life expectancy 63 and 61 respectively, against a regional average of 77¹) remain critically underfunded, with no treatment outside of basic care available. Over all this, China looms large: with a healthcare reform policy worth \$124 billion, and restrictions

eased on foreign firms entering private healthcare, it is expected to become the second-largest healthcare market in the world by 2020². Southeast Asian architectural firms see themselves as perfectly placed to export to China the skills they’ve developed in assimilating the best western ideas with local climate and culture.

RTKL recently acquired a firm in Beijing as part of its wider strategy to expand in the region, and many international architectural practices have a presence in southeast Asia. Perth’s Sandover Pinder has two recent projects in Indonesia (see case study), and as its managing director David Karotkin explains, one of the most isolated cities in earth is now finding itself with a business edge: “We’ve got a quarter of the world’s population to the north of us; it’s in the same time zone, and we can get there quicker than we can get to Melbourne. It makes sense to strike up relationships there rather than looking east all the time. It’s a positive thing for Perth.” It is usual for firms outside southeast Asia that win contracts to work hand-in-hand with a local practice:

**Singapore is
always very
careful with
what it imports
from the US**



Khoo Teck Puat, acknowledged as a new benchmark for healthcare design



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Nightingale Associates has partnered with Malaysia's M&R for KPJ Specialist International Hospital in Johor Bahru (see case study), and Broadway Malyan is working with Ong and Ong for Singapore's National Heart Centre.

"You have to have a local architect in these situations," says Nightingale Associates' Mike Nightingale. "They're very familiar with their own standards, and they can feed them in while you're designing." This flow of ideas and expertise goes two ways, however: Singapore's CPG pulled in HOK to learn more about US methods of space-planning and clinical adjacencies for Ng Teng Fong General Hospital and Jurong Community Hospital (see case study). "For example, we wanted to learn about clean core operating theatres, which economise on space by putting the surgical provision and supplies in a single corridor, so there's no separate provision for each theatre," says CPG's Lim Lip Chuan. "By bringing HOK in we can debate these issues. But Singapore is always very careful to adapt and fuse the ideas it imports from the US with Asian culture and local environmental conditions, avoiding static designs or too many boxes."

In recent years southeast Asia has mounted several inspiring and innovative healthcare building projects. CPG's Khoo Teck Puat, which was completed in July 2010, has been garnished with many awards for its incorporation of green spaces at every level, and its environmental sustainability and climate control. Broadway Malyan's National Heart Centre in Singapore, completed next year, presents a daring faceted facade and courtyard gardens integrated throughout the building; VK Group's Binh Chanh Pediatric Hospital in Ho Chi Minh City, winner of a recent competition, is a futuristic-looking series of ring-shaped buildings wrapped in vertical timber louvers. Nightingale Associates' KPJ Specialist International Hospital presents a "healing hand" design concept, with central services such

National University Hospital, Singapore

The first part of a wider upgrade of Singapore's National University Hospital, Broadway Malyan's project has delivered a remodelled east wing and the creation of a new hospital entrance and courtyard, with a new facade and striking red canopy, serving a new MRT station. The project was delivered while the hospital remained fully operational, and has also enabled the construction of three new operating theatres, a reconstructive microsurgery centre and specialist outpatient clinics. Ian Simpson of Broadway Malyan says the project has "enhanced the hospital's healthcare offering and environmental performance, in line with the drive for sustainable buildings." He describes some of the new features: "An open plaza that permits social interaction and an ease of movement is supported by a further series of semi-public open skygardens that create naturally lit and ventilated spaces where doctors, patients, workers and visitors alike can rest and recuperate."

Project completion date: September 2011

Client: National University Hospital Singapore

Cost: SGD \$43m (Phase I)

Architect: Broadway Malyan (in collaboration with RDC Architects)

Quantity surveyor: Davis Langdon & Seah Singapore

Civil & Structural Consultants: Aurecon Singapore

Mechanical & Engineering Consultants: Lincoln Scott Ng

Market Report: Asia

as imaging, pharmacy and intensive care at its core, and the various Centres of Excellence, including oncology, cardiology and orthopaedics, occupying a finger each. "They were very keen on the symbolism of it all, but it's actually a really good solution – you can grow the fingers in future, so it chimes with our philosophy of always having expansion zones," explains Mike Nightingale. "So it was kind of a marriage between local wishes and philosophies, and international ones."

These striking buildings, full of natural light and green spaces, do not sacrifice functionality or sustainability.

A patient-centric approach has become the norm – as opposed to the 1990s' focus on efficiency and workflow processes – with clear intuitive wayfinding and consideration for patients' and visitors' wider wellbeing. Green building features such as the use of recycled/recyclable materials, reduced water usage and greater use of natural ventilation are becoming standard – although with a tropical, equatorial climate, air-conditioning is still the norm on private wards. Open space and greenery are becoming ever-more important tools to aid wellness. "Our design moves away from the object-driven masses of the 20th-century healthcare prevalent in post-colonial countries: the 21st century has brought about resurgence in the understanding that space is more important

Parkway Novena Hospital, Singapore

Project completion date: April 2012

Client: Parkway Health

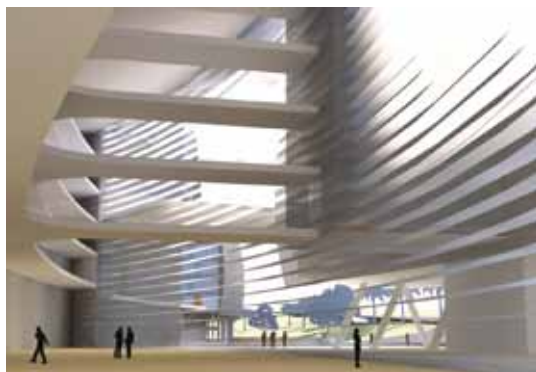
Number of beds: 333

Architect: HOK/CIAP

Main contractors: Penta Ocean Construction

Parkway operates 16 hospitals in southeast Asia, but this is the first one it has built, rather than acquired, and is seen as a flagship. The company envisions that the hospital will fill the niche for hospitality-style healthcare – it is light on emergency facilities, with a focus on heart and vascular, orthopaedics, neurology and general surgery. Parkway and HOK went to the extraordinary lengths of building a full-size mock-up of 23 rooms, off-site, from the reception counter to day wards and VIP rooms, to see how everything was working, and make changes where necessary. "It was incredibly useful, and especially meaningful for the users," says HOK's Kerry Clifford. "We had nursing staff come in, sit at the reception counter, tell us what was right and what was wrong – more storage, less storage, doors should open right, not left. All of which was already on the plans, but not everyone can understand the plans, and not everybody – especially in Asia, I've learned – will pipe up in a meeting to tell you something's not right. But once you have them in that forum and you're really soliciting opinion, it's different. And now we're building it, we know we've really got it right."





KPJ Specialist International Hospital, Johor Bahru, Malaysia
This 400-bed private hospital's form is based upon the idea of a "healing hand", with central services in its palm and specialist centres of excellence in each finger; accessed from a central atrium. "They wanted something that looked very interesting – curvilinear, new for the area," says Nightingale Associates' founder Mike Nightingale. The hospital will include four-bed cruciform wards, something of a Nightingale Associates signature, as a result of KPJ representatives seeing the architecture firm's work at Peterborough Hospital in the UK. Nightingale Associates is currently working with co-designers M&R Architects to develop a double envelope for the building that will act as a filter to the equatorial sun, with the aim of greater energy efficiency.



Project completion date:
starts on site mid-2012
Client: KPJ Healthcare
Number of beds: 400
Architect: Nightingale Associates/M&R Architects

than the object as a means of reducing carbon footprints and creating more socially responsible environments," says Broadway Malyan's director Ian Simpson of firm's new National University Hospital in Singapore (see case study). "Open spaces, be they

planted sky terraces, atria or open plazas, can sustain the health and social wellbeing of not only the patient, doctor and visitor; but also the health and carbon wellbeing of our built environment."

There are many national and regional sensitivities – cultural, geographical and clinical – making it hard to generalise about design standards. Asia's populous urban environments make high-rise hospitals very common: in the megacity of Jakarta (population 9.5m, expected to rise to 24.9m by 2025), Sandover Pinder's 30-storey Mochtar Riady Cancer Centre is one of the ten tallest hospitals in the world. CPG's Lim Lip Chuan mentions the more family-orientated culture of Vietnam versus Singapore, and RTKL's Jong Jun Lee similarly pinpoints a more "people orientated" culture in China and Asia. Tropical climates bring with them a certain design typology (see p22), with deep eaves for solar shading and rain protection, while 2002-3's SARS epidemic has resulted in a greater focus on minimising cross infection: the forthcoming Ng Teng Fong General Hospital (see case study) is designed to enable swift lockdown, with selected wards specially equipped so that they may be quickly converted to negative pressure isolation rooms; a designated space between A&E and JCH will enable A&E to quickly screen and triage patients during a pandemic.

It is hard to overstate the importance of medical tourism to the region: the desire to attract overseas patients, whether from adjacent countries or further afield, is having an effect on where hospitals are built, and to what standard. "Medical tourism



Broadway Malyan's striking National Heart Centre, Singapore, opening in 2012



Ng Teng Fong General Hospital and Jurong Community Hospital, Jurong, Singapore

Project completion date: end of 2014

Client: Jurong Health Services

Cost: SGD \$700m

Number of beds: 986 (General Hospital 700, Community Hospital 286)

Floor area: 169,000sqm

Architect: CPG (in collaboration with HOK and Studio 505)

Civil and Structural Engineer: CPG

is one of the key external drivers of growth of the healthcare sectors in many southeast Asian countries like Thailand, Singapore and India," says Broadway Malayan's Ian Simpson. According to the Singapore Tourism Board, in 2010 Singapore experienced a 19% increase in tourism receipts on medical expenses, to approximately SGD\$940m. Thailand is in the midst of a five-year plan to double revenue from foreign patients by 2014. Malaysia's Ministry of Health set up the Malaysia Healthcare Travel Council in 2009 to develop and promote the healthcare travel industry. Critics say that medical tourism creates dual standards of care, with medical staff attracted from the public to the private sector by better working environments, and often better pay.

Competition for overseas patients means that hospitality-type environments

and VIP suites are

more common: Malaysia's Sime Darby Medical Centre Park City, designed by CPG and opening in 2013, goes one better with a "VVIP" ward. HOK's Parkway Novena Hospital (see case study), designed in conjunction with Singapore firm CIAP, is an all-single-suite facility that has its sights firmly set on Singapore's high-earners and medical tourists. "I've never worked on anything as opulent," says Kerry Clifford, associate and senior medical planner at HOK. "In the VIP suites and super-suites, there is no indication at all that these are patient rooms." Rooms are same handed, and canted so that the patient's bed is angled towards floor-to-ceiling windows, with their head near the door so medical staff can check their welfare without coming in to disturb them. "There's no clutter in the corridors, or around the ORs, and very few alcoves: everything is nicely tucked away because Parkway wanted to have the appearance of a hotel," adds Clifford.

Although the expertise, will and funding undoubtedly exists to build world-class hospitals, there is a much broader problem of a lack of staff

Singapore's next major public hospital project is actually a general and community hospital side-by-side, but with some integrated services such as parking, catering, imaging, laundry and pharmacy. "The idea is to create a more efficient bed-management system," says CPG's Lim Lip Chuan. "The acute hospital will have patients stay three to five days, and should the patient need further care in the step-down environment, they can be pushed on to the community hospital. There is one admission, and one discharge." The General Hospital will give "a window for every patient": six-bed, fan-shaped wards with views of greenery and outdoor sky gardens will, according to Jurong Health Services CEO Foo Hee Jug, "improve ventilation and maximise natural lighting, improve infection control, create more privacy and comfort for patients and make a conducive working environment for staff. This is especially important in the subsidised wards which rely on natural ventilation."



VK Group's proposed Binh Chanh Pediatric Hospital for Ho Chi Minh City

and hospital management experience. "Governments and private investors are approaching the concept of 'building the hospitals', not 'designing the healthcare system'," says Jong Jun Lee, principal at RTKL. "The real issue is finding good doctors and nurses; it takes ten years to educate and produce them, but there are no schools. So the first step to building a healthcare system is building an education system – medical schools." This accords with Lim Lip Chuan of CPG's experience at Hanh Phuc International Women and Children's Hospital in Vietnam. Built by Singaporean company Thomson Medical it proudly touts itself as a "Singapore standard" hospital, but as he explains, "I worked with Vietnamese doctors, bringing them to Singapore to see what we do, including how to go about resourcing and manpower. The developers said they wanted a 1,000-bed hospital – but really, they didn't know what they wanted. I told them to start small, with 200 beds, and grow slowly as they learn to operate and function as a hospital." One of CPG's conditions of taking on the project was that the developer also built a training facility for medical staff.

It is significant that architectural practices are beginning to drive these wider improvements, something that is beyond their traditional remit, and that could have far-reaching consequences. If they are applied alongside a focus on prevention – wellness, people and the capacity to deliver services directly into people's homes – and a determination not to leave behind the poorer tiers

of society during the economic boom, they will have the power to reshape healthcare systems to fulfil the region's great potential.

It is hard to overstate the importance of medical tourism to the region

Emily Brooks is an architectural writer

1. World Health Organisation country health profiles, <http://www.who.int/countries>, accessed 26 September 2011

2. *Life Sciences and Health Care in China: Opportunities, Challenges and Implications*. Deloitte Global Services 2010



Mochtar Riady Comprehensive Cancer Care Centre, Jakarta, Indonesia

Indonesia's largest privately owned cancer hospital demonstrates the reality of building in Asia's densely constructed megacities: on a tight urban plot, the 30-storey building is the southern hemisphere's tallest hospital. This creates its own difficulties, not least with future flexibility: its Australian architect Sandover Pinder has built in some empty floors next to certain clinical areas in anticipation of growth. The hospital is one of the first in Indonesia to run an integrated computerised and digital information system linking imaging, laboratory, pharmacy and hospital IT services.

Mochtar Riady Comprehensive Cancer Care Centre, Jakarta, Indonesia

Project completion date: July 2011

Client: Siloam Hospitals Group

Cost: US \$138.8m

Number of beds: 375 (first phase 100 beds)

Architect: Sandover Pinder