

# DESIGNING FOR CHILD HEALTH

Creating a Saudi Arabian hospital and the concept of the medical city

Investment in healthcare facilities is a major priority as Saudi Arabia develops its infrastructure and a key part of this drive is the development of care for children.

Architect firm Areen Design has been working on the King Abdullah Speciality Children's Hospital in Riyadh which is one of the largest healthcare centres in the region with a built up area of 200,000m<sup>2</sup>. It has nine floors, four are patient floors and there are 24 wards.

Marc Bornstein is the senior project leader for the design team. He said: "The designing and planning of a hospital is all about efficiencies - for both patients and staff alike. From the moment a patient - or visitor - enters to the moment they leave, their experience should be as stress free as possible.

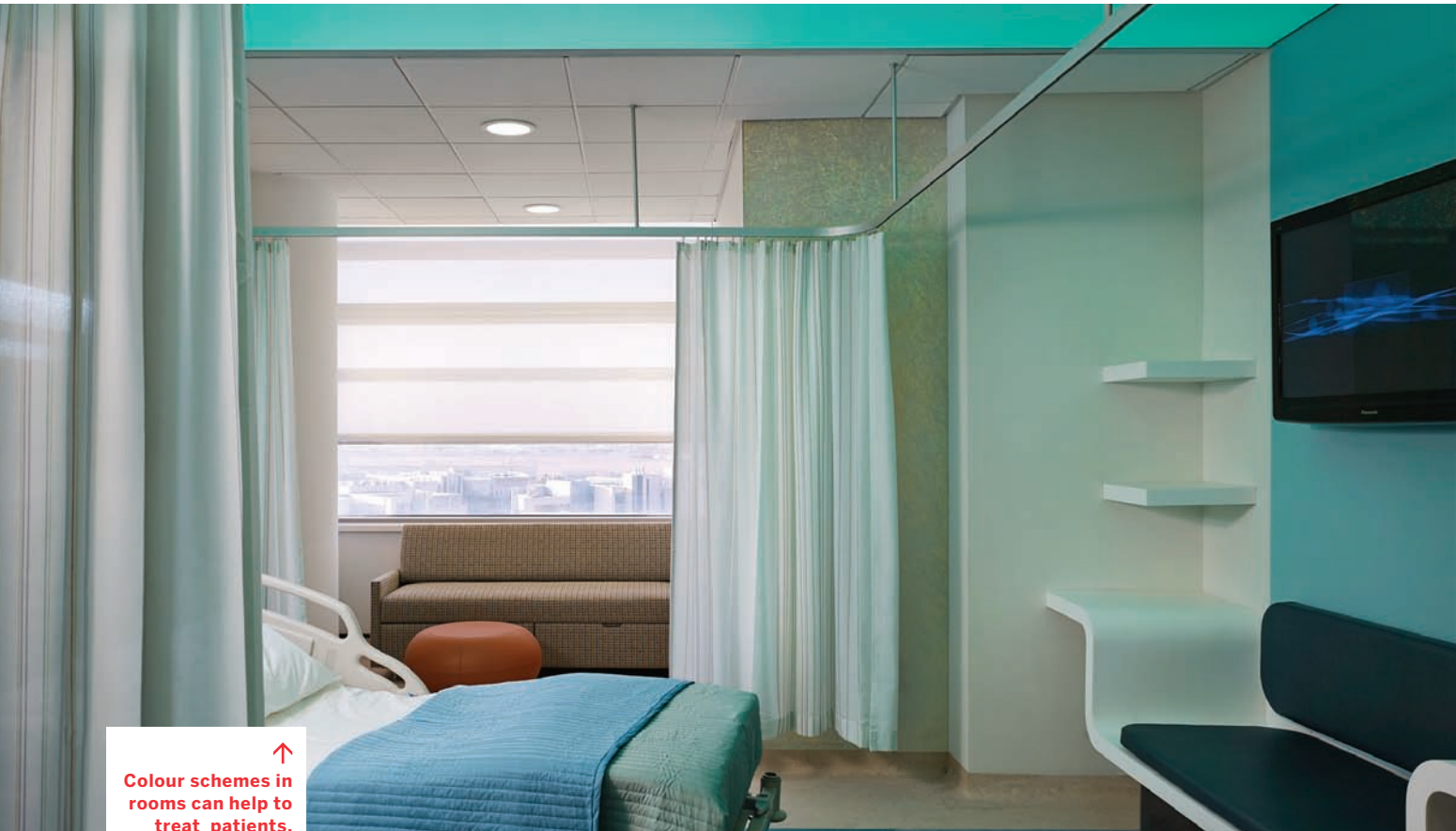
"This begins with way finding and signage, making it as easy as possible to find their way to their intended destination."

The design concept was based on several combined elements including state of the art healthcare planning strategies, contextual influences, integrated academic and research



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A total of 24 wards for  
adults and children.





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 Colour schemes in  
 rooms can help to  
 treat patients.

model of care, facility efficiency, patient healing concepts and staff efficiencies. The KASCH is composed of four stories of Diagnostic, Treatment and Ambulatory Clinic functions under three patient care towers containing 542 beds. The facility is a combination of paediatric hospital specialties with 364 beds and adult hospital provision with 174 beds.

The design challenge faced by Areen was to represent the hospital from these two divergent patient's experiences as separate facilities but from the service aspects of the facility as one.

Combining the paediatric and adult functions allows the hospital to share services that are not distinct between paediatric and adult within the same efficient footprint, which was a major factor in the design process.

Due to the KASCH paediatric and adult population compositions the building has two main entry and discharge atriums. The respective paediatric and adult functions are oriented around these atriums so that they are separate. The paediatric patient towers are two towers flanking the paediatric atrium separate from the third adult tower which is directly above and adjacent to the adult atrium.

Cultural considerations were an important factor in the project, said Bornstein. He explained: "Health care design like all other sectors in the Middle East have certain cultural considerations.

"First and foremost is requirement for separate public spaces for male and female and family. There is the need for separate waiting rooms, lounges and

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Areen has also been studying the Medical City concept and said it would appear to work better in larger under developed countries, at least in terms of healthcare, where people already have to travel long distances to receive treatment.

On their arrival, all the services needed are then in one central location.

Marc Bornstein said: “Naturally, there are advantages and disadvantages in centralising all health care services, but in the Middle East you have to see it from the locale point of view. Judging it from a European or American perspective is difficult, only because the preconditions are totally different.

“In principle, the Medical City is an excellent concept, but only if planned and executed with a clear vision of establishing a ‘Centre of Excellence’. It is not to be confused with a general public health system and needs to be developed as a facility that also promotes scientific research and high-end education. This will help ensure cutting-edge-of-technology healthcare services in only a few chosen competency fields.”

The firm said the benefits of knowledge and improved practices obtained in a Medical City can then be shared across the whole healthcare system on the “when needed, where needed basis”. In this way Medical Cities can act as excellent tools to translate “pure and applied research” in to “improved healthcare services to the patients”.

The latest Medical City concept is developing fast in the Gulf Region with Saudi Arabia and other countries planning a major expansion of medical education to upgrade treatment and improve clinical training of doctors.

Analysts say this will also help maximise the region’s share of the booming medical tourism market. In Saudi Arabia alone, five new medical cities are planned that will become operational within five years.

Saudi Arabia, UAE and Oman have pledged almost \$4bn four medical cities. However, the biggest mega-project currently under way in the GCC is split between Riyadh and Jeddah, where the Ministry of Interior is funding construction of two medical cities, both known as King Abdullah bin Abdulaziz Medical City, each with a 1,000-bed capacity costing \$6.7bn.

Bornstein said: “In simple terms, Medical Cities suit certain markets and within the GCC states there are both the means and the commitment to adopt this much more holistic and centralised approach to healthcare planning and delivery. Medical Cities are fast becoming a reality in a market where the demand is tangible and the delivery achievable.”



dining areas for both the public and the staff. This inherently increase the size of any facility, creating larger floor plates and greater circulation areas.”

The importance of family ties was also something which the design team had to incorporate.

Bornstein said: “Secondly, in the Middle East, when a member of family is in hospital, they are not just visited by their immediate family, but by very large extended families.

“The increased number of visitors needs to be accommodated, again, on many different levels. There is a need for larger waiting rooms, larger lounges and dining spaces, and most importantly, larger patient rooms. This intrinsically leads to the design of single patient rooms due to the mere fact



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**Space is vital for  
 operating theatre  
 design.**

that there simply wouldn't be enough space in a room to accommodate more than one patient's family without creating oversized rooms with most of the room being used as a lounge."

When looking at the design and how it would relate to the staff at the facility the architects focussed on the needs of the nurses

The designers said as they spend more time in the hospital than anyone else and are constantly up and down, walking from nurse station to patient rooms and all the necessary utility rooms in between.

Bornstein said: "It is a physically demanding job, so it is the designer's goal to make things as efficient as a possible

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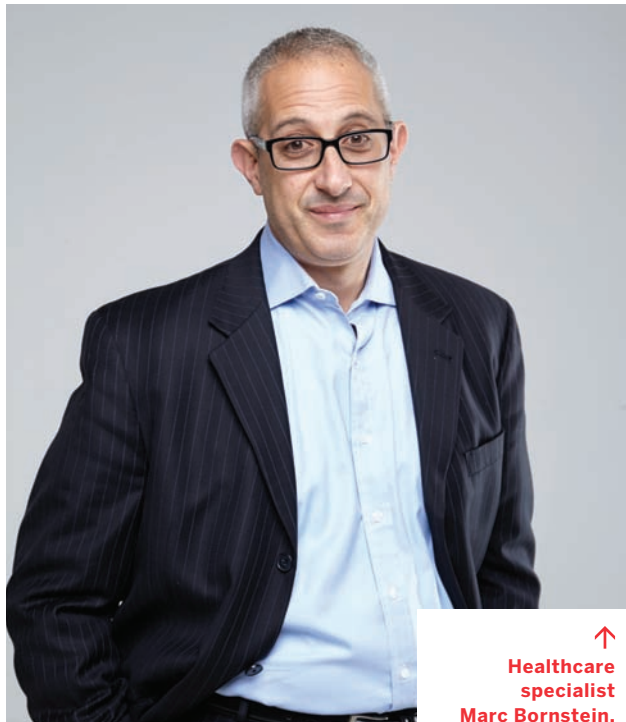
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Healthcare specialist  
Marc Bornstein.

for the nurses. A successful design will reduce travel distances and times and the results of this are quicker response times to patients' needs, less physical demands on the nurses which also helps in creating less turnover in staff."

The architects also employed psychology applied to the design from the use of specific types and amount of lighting to the different colours used in different medical wards.

They said many studies describe how colours can influence performance and the experience of a space and colour can create the illusion of a higher ceiling or a wider room or facilitate cueing in wayfinding orientation. Also from their experience in medical design the team has realised there are many func-

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— MARC BORNSTEIN



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Colour separation important for mobility issues.



**AREEN'S ROLE ON KASCH PROJECT:**

- Design development
- Construction Documentation
- On-site Construction management
- Specifying, purchasing and installation of all non-medical furniture
- 12 Operating Theatres
- Vast 542 all-private room hospital specialising in paediatric treatment and care
- Oncology hospital- mainly paediatric
- Areen procured all loose non-medical furniture including nurse stations, reception desks, play area furniture, furniture for staff dining and changing and bench-work for laboratories and workshops.



tional uses of colour. As an example, a colour separation between the floor and the wall in circulation spaces helps those with aging eyes to be aware of the space around them and reduces mobility issues.

Design can also have an impact on treatment, Bornstein said: "Skin colour is a vital clinical cue. The patient zone should have access to natural daylight so that clinicians can assess skin tone. Coloured walls and surfaces should be arranged so that light does not reflect colour from the surface directly onto the patient.

"For example, neonates and those with liver disease present with yellowing of the skin from jaundice; yellow or blue surfaces would make observing these conditions more difficult. Patients at risk of low oxygen levels or cyanosis present blue or purple skin coloration; reflection from yellow surfaces could minimize observation of blue skin tone; reflection from blue surfaces could unnaturally enhance a cyanotic tone." ●