Big data making a great difference in healthcare

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SINGAPORE – It is a recurrent challenge of public hospitals here: Waiting times for patients at the emergency department. To tackle the issue at Changi General Hospital (CGH), Dr Chow Wai Leng and her team waded into three years’ worth of data: Who were the patients coming to the department and what were their numbers? On which days of the week and at what times of the day were they coming in? Were they acute cases?

After analysing usage patterns, the team proposed a redistribution of manpower to better match arrival patterns of patients. From July 2013, the emergency department rejigged its roster for doctors, arranging for greater overlap in their shifts during the peak hours of around 10am and 7pm to 8pm. The results soon followed, with average median time to first consultation for patients with more serious conditions shortened from 33 to 25 minutes, a 24 per cent improvement. Doctors have also reported a qualitative improvement in their workload, said Dr Chow, head of health services research at Eastern Health Alliance, which runs CGH.

The use of big data to derive insights for better decision-making — or analytics, which is fast becoming the new buzzword in both government and commerce — is slowly but surely changing healthcare here. Examples abound of how the crunching and analysis of data have improved hospital operations in recent years, and experts say greater things are in store, with analytics possibly having further spillover effects.

SAF raises bar for fitness test awards

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SINGAPORE – Following a trial of the new Individual Physical Proficiency Test (IPPT) that showed servicemen were capable of better showings, the bar for clinching gold and silver, which come with financial rewards, has been raised.

The targets for gold and silver are now 85 and 75 points, respectively, four points more than when the new format was unveiled last year. Elite commando and guards personnel will need to score 90 points for gold, up from 85. Their standard for silver awards remains at 75 points.

The new standards mean that a 25-year-old gunning for four additional points at one station will need to do 34 sit-ups in a minute, rather than 29, or finish the 2.4km run in 12 minutes and 20 seconds, instead of 13 minutes, for example.

The difference in the new IPPT format, which will be adopted by the Home Team and which will kick in in April, is that there is no minimum standard for each of the three stations, unlike under the current five-station format. Push-ups was the new addition to sit-ups and the 2.4km run, while standing broad jump, shuttle run and pull-ups were dropped.

This means servicemen can push themselves to the limit for stations they are good at, then meet the minimum for their weaker stations in order to hit their target of passing, or the respective awards. The new format led to perceptions that it will be an easier test, which was borne out, going by the continued on Page 6
Big data making a great difference in healthcare

Using big data

The National Healthcare Group’s Health Services and Outcomes Research department is collaborating with Tan Tock Seng Hospital, National University Hospital, Alexandra Hospital and nine polyclinics to better understand the profile of the population they serve, including those who were frequently admitted to hospital. By analysing the data, health services can start intervention earlier, design suitable programmes to help the patients and track the outcomes of treatments among other things.

Big data in healthcare refers to much greater risk when they undergo surgery, especially under anaesthesia, said a KTPH spokesperson.

In another instance, the analytics team saved the hospital “quite a lot of money” that would have been spent if the arm was not sent through such as blood samples and medication.

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The analytics team worked with the Emergency Department to develop a prediction model for serious conditions such as heart attacks. The model was then used to develop a protocol for patients who were likely to have heart attacks, allowing them to be treated more effectively.

Raghupathi of Fordham University said that big data is rapidly changing how healthcare is delivered.
the kind of thing we are going to do further down the road.”

NHG’s Health Services and Outcomes Research department is collaborating with Tan Tock Seng Hospital, National University Hospital, Alexandra Hospital and nine polyclinics to better understand the profile of the population they serve — their state of health, the at-risk groups, ‘frequent admirers’ to hospital (people who have had three or more emergency inpatient admissions in a year), the diseases they have and services used, among other information.

“If we integrate primary care data (of the polyclinics), intervention may be able to start earlier,” explained Ms Tan. “By knowing the baseline, we can design suitable programmes. Analytics doesn’t stop there. We hope to use the merging of data to include outcomes that we are going to track for the population. Right now, it’s still very much in the works.”

In a speech last year at a healthcare analytics conference, Health Minister Gan Kim Yong said a robust and secure platform could be set up to accelerate analytical initiatives. The platform would link up data sources from public healthcare institutions, providers and other organisations, and even allow individuals to contribute data from self-monitoring devices. Mr Gan said the Health Ministry would start pilot projects this year to “test the concept and gain experience in this area.”

Big data and analytics have enabled the authorities to gain insights necessary to deliver care that is appropriate for the patient and the healthcare ecosystem, he said. “This is imperative in optimising our scarce healthcare resources.”

The Integrated Health Information Systems or IHiS, the Health Ministry’s IT arm, is helping drive analytics through powerful data warehousing systems and easy-to-use analysis tools that allow staff to more quickly analyse and transform data into information they can act on. The institutions are increasingly using automated dashboards to enable staff to view data in real time for swift and proactive decision-making, said Dr Chong Yoke Sin, chief executive of IHiS.

Analytics will enable Singapore healthcare to progress from treatment care to proactive healthcare for each patient, said Dr Chong. Proactive care refers to care provided on a pre-emptive basis, such as a regime to prevent potential diseases, re-admissions, and complications. Treatment care, on the other hand, is part of the care protocol for a particular episode of a disease or treatment.

“The analysts said it is the potential to make an impact on a large number of people that drives them. “I still like to see patients but I feel that at a systems level, if you wanted to improve the quality of care, then the data-driven approach would probably reach out to more people,” said Dr Chow, a medical doctor by training.

Ms Tan is an economist by training and the daughter of a traditional Chinese medicine shop owner. Growing up, she watched customers return to thank her father for advice that helped them recover from illnesses. “I definitely can’t be a clinician because I’m not great with blood. But I can run an analysis,” she said. “The healthcare sector in Singapore is undergoing such big change, so it’s nice to be able to use some of the things I’m trained in and am good at to impact people, especially when they are sick.”

Executives from SingHealth, IHiS and SGH. Analysts said it is the potential to make an impact on a large number of people that drives them. PHOTO: GENEVIEVE TEO

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