

Publication: The Straits Times, p A04

Date: 15 December 2018

Headline: SCDF rides on data to get ambulances to patients more quickly

SCDF rides on data to get ambulances to patients more quickly

Toh Ting Wei

Help has been arriving sooner in medical emergencies after the Singapore Civil Defence Force (SCDF) turned to data to decide where to deploy its ambulances during peak periods in a bid to improve response times.

An analytics team studies data such as when 995 calls are made, where the calls come from and the number of ambulances at each SCDF base – a fire station or a fire post.

By drawing on patterns gleaned from the data, SCDF deploys ambulances to areas where higher demand is expected.

Since late September, SCDF has been deploying ambulances to more than 10 locations during the morning and evening peak hours. Peak hours refer to times of the day when SCDF expects more calls for its Emergency Medical Service (EMS), or when traffic is likely to be heavier.

These locations include Our Tampines Hub, and Keat Hong and Chong Pang community clubs.

In the past, SCDF's 75 ambulances were generally deployed among its 47 bases.

SCDF medical department director Yazid Abdullah told The Straits Times in a recent interview: "Typically on a weekday, there is a heavier call volume in the morning and early parts of the evenings, so that will help us determine when and where to place our resources."

"We try to figure out where it is best for us to place an ambulance so that it can reach a patient quickly and take the person to hospital, and then come back to the base quickly to wait for the next call."

The new locations were decided with the help of a data analytics platform known as Dynamic Resource Optimisation (DRO).

It is managed by a four-man analytics team, set up in 2015 under SCDF's medical department.

The system works by running simulations to determine what kind of deployment would help patients receive faster emergency treatment.

DRO has also been helping SCDF to work out how best to deploy new ambulances to existing bases, and the implications on EMS when bases are shifted, said assistant director of medical analytics Yeo Wee Teck.

The development of DRO comes as part of SCDF's drive to improve its operations via data analytics, in response to the growing demand



SCDF's assistant director of medical analytics Yeo Wee Teck (left) with SCDF medical department director Yazid Abdullah. By drawing on patterns gleaned from data, SCDF deploys ambulances to areas where higher demand is expected. Since late September, it has been deploying them to more than 10 locations during peak periods, including community clubs. ST PHOTO: TOH TING WEI

for emergency medical services.

Calls for these services have been rising at an average rate of about 5 per cent annually over the past five years, driven in part by Singapore's ageing population.

Of the 182,502 EMS calls SCDF received last year, 163,563 were emergency calls.

The rest were non-emergency calls or false alarms.

Assistant Commissioner Yazid said: "We used to have certain bases that were unable to meet response times, but we have managed to use DRO to redeploy some assets... Now, we are seeing all green in terms of key performance indicators."

The use of analytics also helps in planning for the future.

"We can't keep adding new ambulances to match the increase in demand, we have to try to be efficient given the resources that we have," said AC Yazid.

"We set up the team purely to look at how to manage data better, how to make use of data in driving policy and driving deployment."

For example, with data showing that the elderly make a disproportionate number of EMS calls, AC Yazid said it will help SCDF to prepare for the future in terms of how to respond to more elderly patients.

About 42 per cent of the emer-

gency calls last year involved those aged 65 and above.

SCDF has also shared some of its data with partners such as hospitals.

Through SCDF's simulations based on its data, it was able to advise two hospitals on what the estimated demand for the hospitals' emergency department could be.

SCDF is now looking to use the DRO system to optimise its EMS response framework, which prioritises cases based on their severity.

The force is also looking to extend the use of DRO to its firefighting resources.

twtoth@sph.com.sg

AI-powered platform improves efficiency

Dynamic Resource Optimisation (DRO) is a platform developed in 2015 by the Singapore Civil Defence Force (SCDF) together with the Singapore Management University, and it allows SCDF to virtually test ways to deploy its ambulance fleet more efficiently.

The system is powered by artificial intelligence and optimisation algorithms, and incorporates data that is processed and managed by SCDF's in-house analytics team.

Through DRO, SCDF has come up with strategies such as deploying its ambulances at community centres to improve response time.

It has also used DRO to help determine which bases to deploy new ambulances.

Prior to the introduction of DRO, SCDF had to physically test its deployment strategies. Ambulance drivers would have had to drive from point to point in different conditions to test out travel time.