Study on Use of Real-Time Location System (RTLS) for Infectious Disease (ID) Contact Tracing Sengkang General Hospital **Singapore Healthcare** SingHealth Management 2019 Ng Mei Jie, Strategic Projects, SKH Ng Guan Yee, Medical Student (Year 3), Duke-NUS Medical School Sharon Wong Yit Ngoh, Infection Prevention & Control, SKH Lee Puay Chuan, Strategic Projects, SKH Dr Ng Tong Yong, Pathology, SKH Samuel Chong Zeng Rong, Clinical Governance, SKH Background Result 1) <u>Time taken for contact tracing</u> Metropolitan cities like Singapore are susceptible to emerging infectious

disease (EID) outbreaks. Singapore's pandemic control measures include running biennial simulation exercises for all public hospitals on EID case

Overall, it took the team approximately 1 hour to complete the contact tracing via RTLS which is more than 97% reduction in the time spent compared to the manual method of about 35 hours.

management, where a key assessment criterion is contact tracing.

Contact tracing, a systematic process of identification, assessment, and management of people exposed to the disease, is a critical element in containing any outbreak. Conventional methods are time consuming, heavily manpower dependent, and fail to capture a significant number of contacts. Failure to trace contacts in a timely and accurate manner can lead to continued transmission of diseases, preventing effective control of EID outbreaks.

Aim

To assess the effectiveness of RTLS technology to support ID Contact Tracing in Sengkang General Hospital (SKH).

Methodology

A prospective case study was conducted during a simulation exercise (a surgical patient with three inpatient days was selected as the simulated MERS-COV index case) to determine and compare time taken, manpower cost and the list of contacts required between RTLS and conventional methods of contact tracing. During the simulation exercise, two concurrent contact tracing teams performed contact tracing, one via conventional method (EMR), and the other via RTLS technology that was already implemented to support patient and asset tracking in SKH.



Table 2: Time taken (in hours) for contact tracing

2) Manpower Cost

Manpower cost is significantly reduced, and this can potentially lead to a manpower saving of \$99k per year or more depending on the increasing rate of ID cases over the years.

Cost	RTLS	Conventional method
Number of manpower resources	1	42
Avg manpower cost/per contact tracing episode	\$62	\$2,125
Estimated manpower savings /per year		\$99,024



(estimated 4 contact tracing episodes per month)

Table 3: Comparison of manpower cost between RTLS and EMR

3) Number of contacts identified



* Refers to staff wearing RTLS staff card. Only ED and inpatient staff are deployed with RTLS staff cards for this phase

Table 1: Comparison of the conventional contact tracing method with RTLSmethod



Figure 1: Showing how RTLS works

Conclusion

RTLS identified almost <u>three times</u> the number of contacts compared to conventional method, while achieving that with significantly <u>less time (1 hour versus 35 hours)</u>, less manpower (1 versus 42) and lower manpower <u>cost (\$62 versus \$2,125)</u>. While there is still work to do be done, the study has demonstrated RTLS technology's efficacy in timely contact tracing and value in better & faster ID management.

Some areas of future works include looking into tag designs to help with staff adoption & adherence to its proper usage of charging and wearing of tags; and working on correlation analytics to help address false positive contacts as some staff kept their cards in staff lockers after their shift.