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## Mission Statement

Increase uptake for RM of INR among TTSH Pharmacists-run Anticoagulation Clinic (ACC) patients by at least 50% in number of visits from January 2021 to December 2022

### Aims and objectives

From January 2021 to December 2022:

- To increase uptake for RM of INR among TTSH ACC patients by  $\geq 50\%$  in number of visits
- To validate that RM of INR is also able to achieve  $\geq 60\%$  of INR within therapeutic range, comparable to face-to-face (F2F) ACC visits

## Team Members

	Name	Designation	Department
<b>Team Leader</b>	Ong Kai Xin	Principal Pharmacist (Clinical)	Pharmacy
<b>Team Members</b>	Choo Chor Hui, Theresa	Principal Pharmacist (Clinical)	
	Shaun Eric Lopez	Senior Pharmacist (Clinical)	
	Rachel Lim Xue Ting	Senior Pharmacist	
	Ten Wei Qing	Senior Pharmacist	

## Background

Warfarin is a blood thinner and is the mainstay in the treatment and prevention of thromboembolic complications. Warfarin dose is adjusted using INR blood test. Frequent monitoring of INR is often required.

There were numerous feedback from patients about the hassle of returning to hospital for frequent INR blood tests and attending ACC appointments.

RM of INR was explored as a potential solution to ease warfarin patients' care journey.

### History of TTSH ACC INR Remote Monitoring Service

**Year 2012**

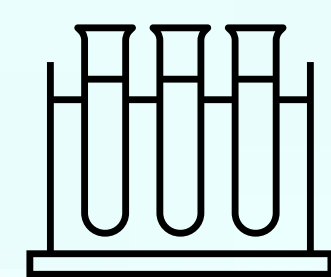
Launch of RM service: Loan of home POCT (Point-of-care-testing) INR meters to patients requiring frequent INR checks. Patients self-performed INR test at home followed by teleconsultation with pharmacist.



## Implementation and Partnership

We started exploring partnership with different community healthcare partners from 2020 to increase the number of avenues in which patients can have their INR drawn. With an increase in accessibility for patient's INR to be drawn followed by ACC teleconsultation at an agreed timing, we work towards increasing patient's adherence to consultations and warfarin therapy.

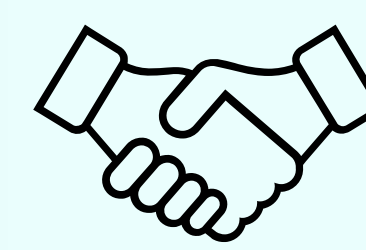
**November 2020**



New service level agreement (SLA) with **NHG Diagnostics** to allow INR blood test to be taken at NHG Polyclinics

- Patients can travel to nearby NHG Polyclinics with ACC memo and blood test form
- NHG Diagnostics perform INR blood taking and run blood specimen

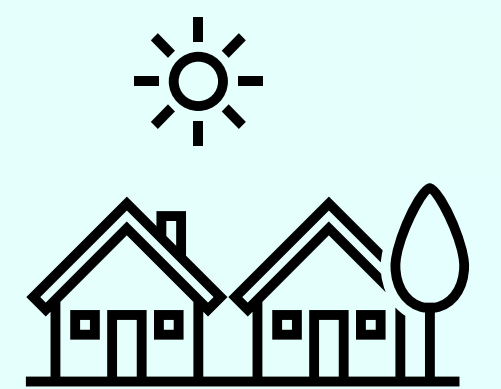
**March 2021**



INR blood taking expanded to **General Practitioners (GP), other tertiary institutions** i.e. IMH and nursing homes

- Patients from these tertiary institutions can have their venous PT-INR drawn by in-house nurses
- In-house or external laboratory runs blood specimen

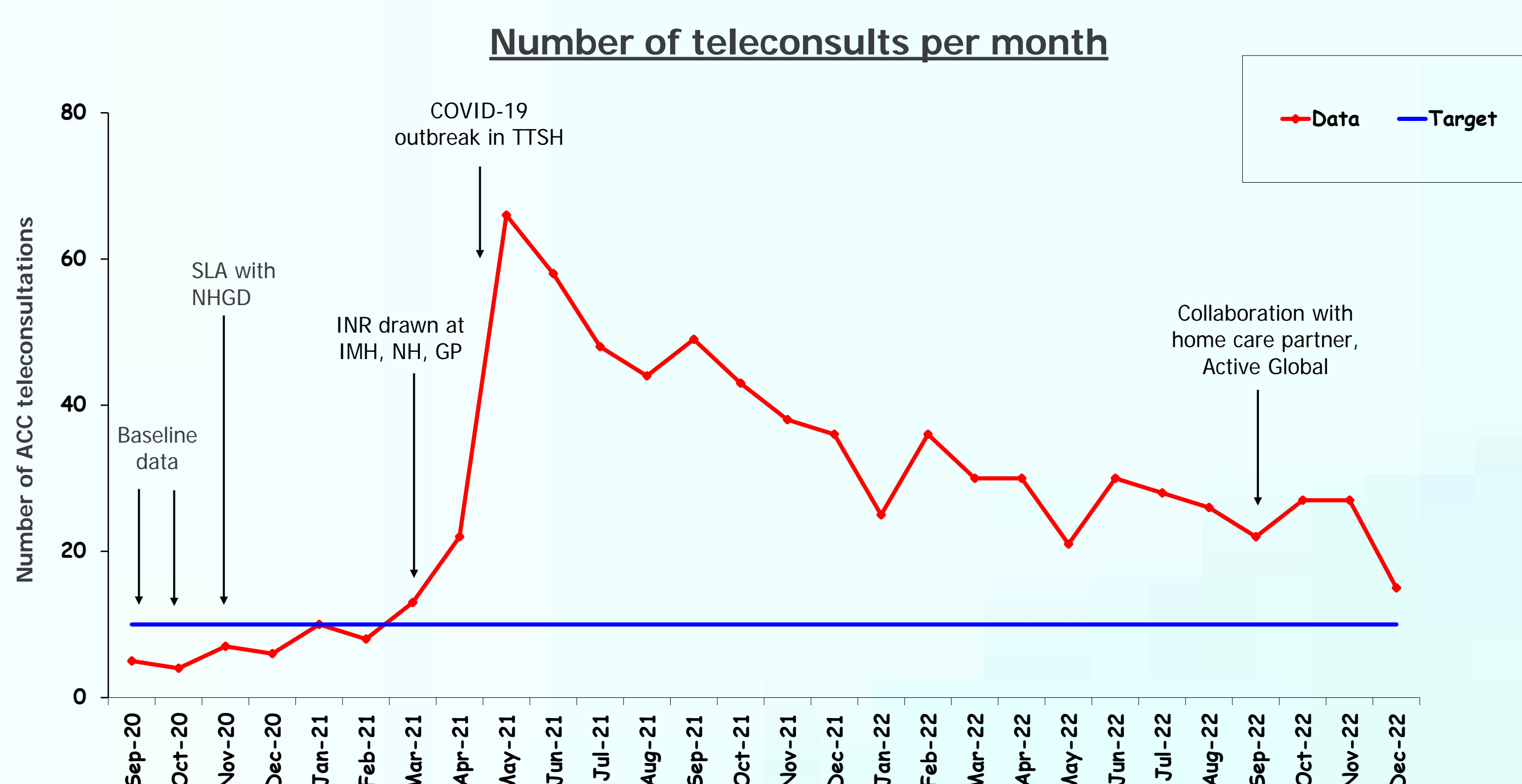
**September 2022**



Collaborated with **home care partner, Active Global**, for INR to be drawn at home.

- Home care nurses travel to patients' homes to draw venous PT-INR
- External laboratory runs blood specimen

## Results



TTSH COVID-19 cluster outbreak on 28 April 2021 has facilitated the push for RM and teleconsultations with the ramping down of physical clinics.

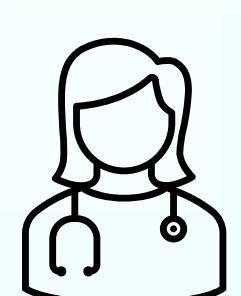
There is an **annual increase** in number of RM visits of **435% from 2020 to 2021**. It then **sustained at 375% from 2020 to 2022**.

	Year 2019	Year 2020	Year 2021	Year 2022
<b>Number of RM visits</b>	26	68	364	323
<b>% within therapeutic INR range for RM visits</b>	70%	70.8%	66.9%	60.3%

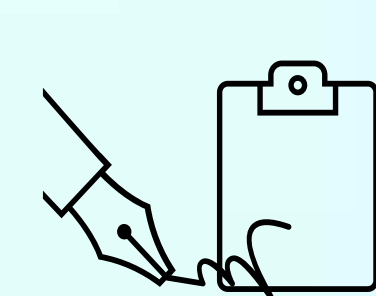
Between Year 2019 and 2023, the average % within therapeutic INR range for F2F visits was 64.55%

## Benefits of Remote Monitoring: Time Saving

Per patient: Typical wait time for a F2F physical ACC consultation



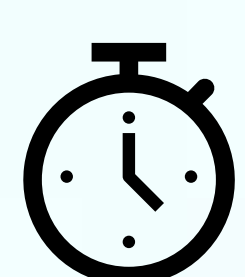
ACC pharmacist consultation wait time:  
**14.4 minutes**  
(2020)



Dr to approve prescription:  
 **$\geq 30$  minutes**  
(CPIP 2017)



Pharmacy wait time:  
 **$\geq 30$  minutes**  
(2020-2021)



RM patients are seen at allocated timing and medicines are delivered to them. This reduces the need to wait for consultation and medication.  
**Average time saved per RM patient: 74 minutes per visit; total time savings of 448 hours (in 2021) and 398 hours (in 2022)!**

## Conclusion

RM has demonstrated **Better Care** (patients reviewed at their convenient time and place), **Better Community** (collaboration with community partners), **Better Health** (RM encourages compliance for routine INR checks and warfarin titrations and hence better attainment of therapeutic INRs; this translates to lower bleeding and thromboembolic risks) and **Better Value** (RM patients getting the same clinical care as F2F ACC visit patients).