Project Title

Transforming and Redesigning Patient Journey through IT Innovations

Project Lead and Members

Project lead: Ms Sharon Chen, Deputy Director, NHGP

Project members: Ms Asha Pandey, Executive, NHGP, Ms Yee Liu Lee, Senior

Executive Assistant, NHGP.

Organisation(s) Involved

National Healthcare Group Polyclinics

Project Period

Start date: 2016/7

Completed date: Ongoing

Aims

To create a seamless and efficient patient journey through IT innovation.

Background

Demographic shifts, aging population and the increasing burden of chronic diseases have led to a rapid increase in the demand for healthcare. We see an increase of 6% in total patient attendances from 2016 to 2018, and a 10% increase of chronic patient attendances within the same period. This translated into a corresponding increase in patient wait time for registration, payment and appointment booking in our polyclinics, especially so with the rapidly increasing chronic patient load requiring regular follow-up doctor consultations, nursing and laboratory appointments. Changes in the world of technology and innovation are taking place at an unprecedented speed. It is imperative to look at how we can leverage on technology to streamline work processes and empower patients for a greater control and ability to self-help. Before the implementation of this initiative, patients who need to register, make follow-up

appointments or update their contact details had to queue up physically at the appointment-making counters for about 15-20 minutes. This manual system not only takes up much time, the use of only verbal communication on appointment date and time had in some instances resulted in unnecessary miscommunication and subsequent re-work to reschedule the appointments. To create a seamless and efficient patient journey, the project team made much improvement on the self-registration kiosks (SRKs) and self-payment kiosks (SPKs).

Methods

The project team reviewed and identified the gaps in today's patient journey and leverages on technology in re-designing our patient experience. The team used sequence diagram extensively to analyse patient flow and work processes. This tool aids in identifying waste and potentially redundant steps to improve process efficiency. Graphical analysis was also used to study existing performance and establish baseline and measure improvements. Enhancement made to the SPKs now allowed for follow-up appointment-making. Patients can view 3 best matched appointment slots based on their clinical needs and book the option of their choice. This improved accuracy and reduced time spent on appointment scheduling. 4 language options were included to enable more patients to utilize the kiosks independently. The language option initially selected by patients would be captured and retained for subsequent bookings. Patients can also securely update their mailing address and contact number via the SRKs on their own. Further, a 'one queue one bill' system was implemented to streamline billing processes and reduce confusion. All patients now receive one bill per visit. The SRKs were also enhanced with an addition of a smart routing feature, personalized language, an ability to update patient particulars and make same-day appointments. A queue checker was introduced to enable patients to monitor their queue numbers and better manage their time. Online appointment booking through HealthHub was also introduced to allow for booking of appointment at the convenience of our patients.

Results

With this process re-design, we see more than a 55% reduction in the number of patients served over the manned registration counters and a growing number of patients using the SRKs. The average transaction time is less than 1 minute per patient. We also see about a 60% reduction in the number of patients served over the manned payment counters with an increasing utilization of the SPKs. 60% of follow-up appointments are now generated from the SPKs with an average transaction time of less than 1 minute for patients making payment and appointment via the SPKs. With this improvement, patients' clinic dwell time has been reduced significantly by about 50 minutes per visit. This improvement not only brought about enhanced patient experience, it also brought about higher productivity. The same numbers of staff are now able to manage a higher volume of patients, and, provide higher quality and more patient centric services. Further, this process re-design, also brought about a 30-40% reduction in the floor area needed for traditional manned counters. The floor space saved could hence be put to better use for example as clinical space or patient activity area.

Lessons Learnt

The team learnt much from this project. Some of our learning points include:

1. Change Management: The mental models and mind-set of service providers and staff are imperative to the success of any change process. There is a constant need to address concerns, resolve issues, and assist our staff in learning new ways of working.

2. Educating our Patients: One key challenge in introducing innovations is changing the mindsets of individuals. To facilitate and induct patients to this new service, frontline staff were deployed to demonstrate the use of these self-help services and made available to answer any patients' queries.

3. Regular Engagement for Feedback from Staff and Patients: Continual collation of feedback from both patients and staff ensures the team continues to learn. It

sharpens the team's ability to detect errors, learn from mistakes, question our underlying assumptions and ensure we are on the right track.

4. Continual Support for Ground Staff: There is a need to continue the provision of support for ground staff executing the new workflow, address issues raised and work collectively in resolving problems. This builds team spirit and staffs are also more willing to co-own the new initiatives implemented in their clinics.

5. Regular Maintenance of Kiosks: There is a need to ensure that kiosks are properly maintained to reduce the chances of breakdown and ensure its ability to handle the high patient load. However, there ought to be a down-time plan in place in case of an emergency. There is also a need to understand the root-causes of any breakdown should it happen so that preventive actions can be taken moving forward.

Conclusion

The team is constantly looking for new possibilities and enhancements to push the boundaries in improving our patient's journey and to empower our patients in co-creating their healthcare experiences in our polyclinics. For an example, we are now looking at empowering patients to select medication delivery/pick up options through the kiosks.

Project Category

Process Improvement

Keywords

Process Improvement, Digital Health, Patient Experience, Chronic Care, Waiting Time, Operations, National Healthcare Group Polyclinics, Sequence Diagram, Graphical Analysis, Self-Registration Kiosk, Mobile Appointment, One Queue-One Bill, Self-Payment Kiosk

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Transforming and Redesigning Patient Journey through IT Innovations

Sharon Chen, Asha Pandey, Yee Liu Lee
Operations

National Healthcare Group
POLYCLINICS

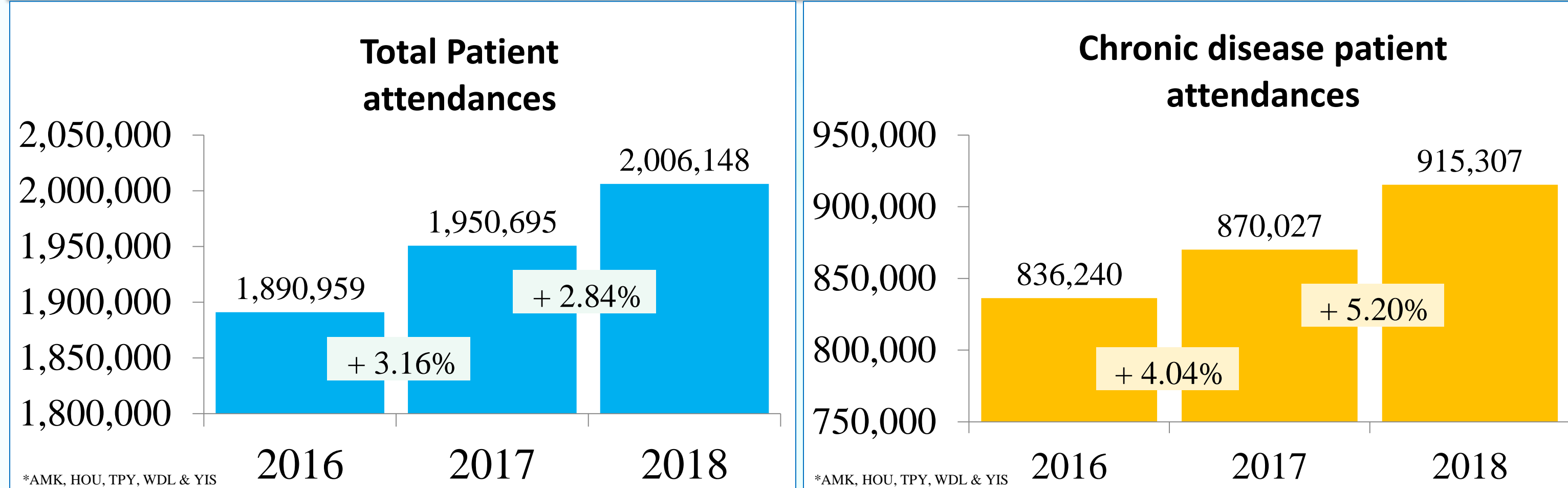National Healthcare Group
Adding years of healthy life

Mission Statement

To create a **seamless and efficient** patient journey through IT innovations

Team Members

	Name	Designation	Department	Role
1	Sharon Chen	Deputy Director	Operations	Leader
2	Asha Pandey	Executive	Operations	Leader
3	Yee Liu Lee	Senior Executive Assistant	Operations	Leader

Evidence for a Problem Worth Solving

Total Patient attendances
- 2016: 1,890,959 (+ 3.16%)
- 2017: 1,950,695 (+ 2.84%)
- 2018: 2,006,148

*AMK, HOU, TPY, WDL & YIS

Chronic disease patient attendances
- 2016: 836,240 (+ 4.04%)
- 2017: 870,027 (+ 5.20%)
- 2018: 915,307

*AMK, HOU, TPY, WDL & YIS

Upward trend in patient attendances as well as chronic disease patient attendances over the years which would translate into increasing patient wait time for registration, payment and appointment booking
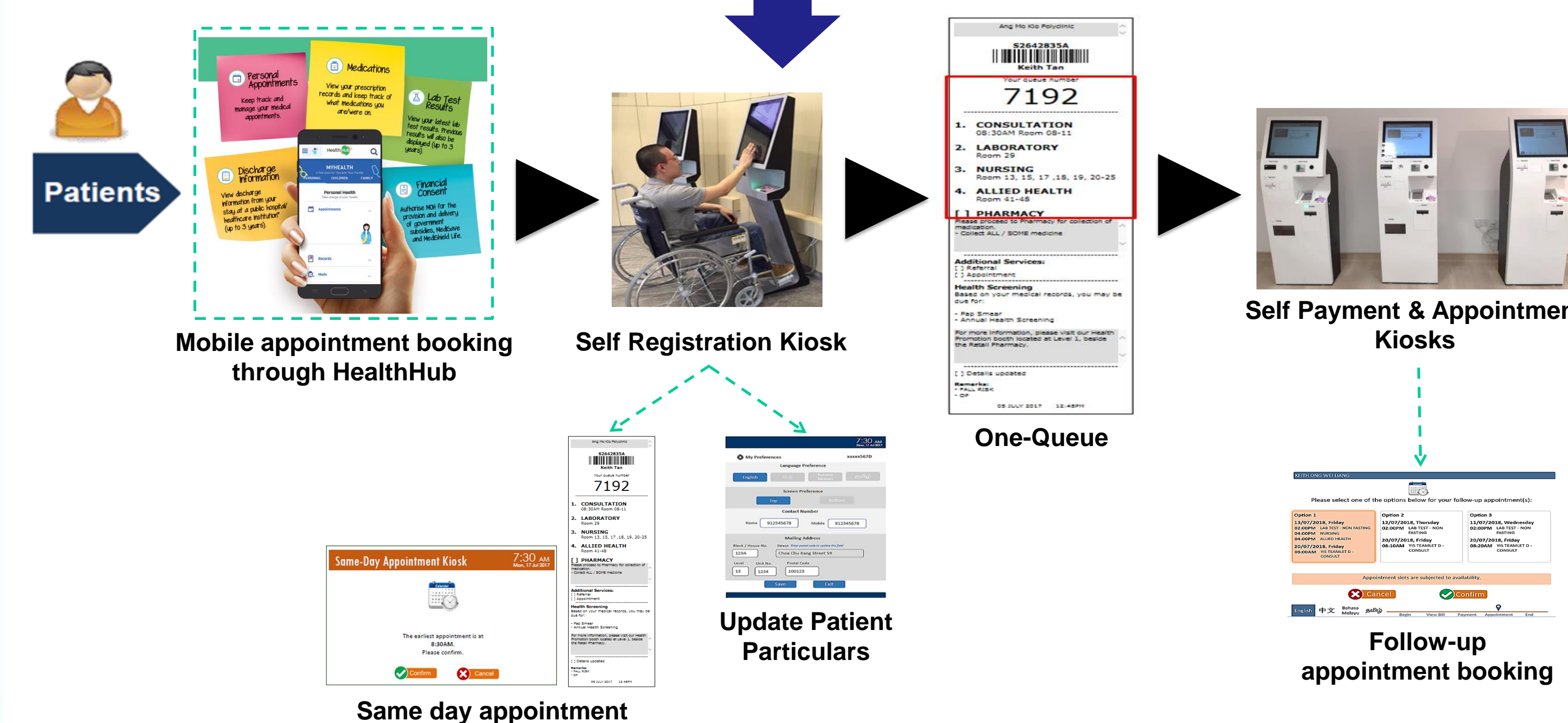
Current Performance of a Process

1. All walk-in patients have to register and book an appointment through the manned counter with a wait time of **~30minutes**.
2. Patients have to physically queue up at the manned counter to update any change in address or contact number, wait time was **~30minutes**.
3. To obtain an appointment to see a doctor, patients have to either call in to the contact centre or walk-in to the clinic.
4. All patients would be issued with at least **2 queue numbers** during each clinic visit i.e. 1 for consultation/lab, and 1 for pharmacy. This often caused confusion to patients.
5. All patients who require follow-up appointments have to physically queue up at the appointment-making counter with wait time of **~15minutes** to schedule their next appointment. PSAs could only verbally communicate with the patients on the proposed appointment date and time, which often led to miscommunication and hence, subsequent rework to reschedule the appointment.

Patient Journey

PATIENT JOURNEY - PAST

Patients → Polyclinic — Crowded & Congested → Long Queue for Registration → Long Consult Wait Time → Long Queue for Payment & Appointment Booking

PATIENT JOURNEY - PRESENT

Patients → Mobile appointment booking through HealthHub → Self Registration Kiosk → One-Queue → Self Payment & Appointment Kiosks

Same day appointment — Update Patient Particulars — Follow-up appointment booking

Implementation

1. Self-Registration Kiosks (SRKs) with **smart routing feature**, **personalized language**, **update of patient particulars**, **same-day appointment booking** and **queue checker**
2. **Mobile appointment** booking through HealthHub
3. **One Queue-One Bill**
4. Self-Payment Kiosks (SPKs) with **personalized language** and **auto-generation of follow-up appointments**

Intervention

- Enhancement of SPKs with **follow-up appointment-making** function improved accuracy and reduced time spent on appointment scheduling
- Patients can view appointment slots available and book the option of their choice

- **4 language options** allowed more patients to utilize the kiosks independently instead of relying on staff for registration and payment.
- The language option initially selected by patients is captured and retained.
- Patients can securely **update their mailing address and contact number** via the SRK on their own.
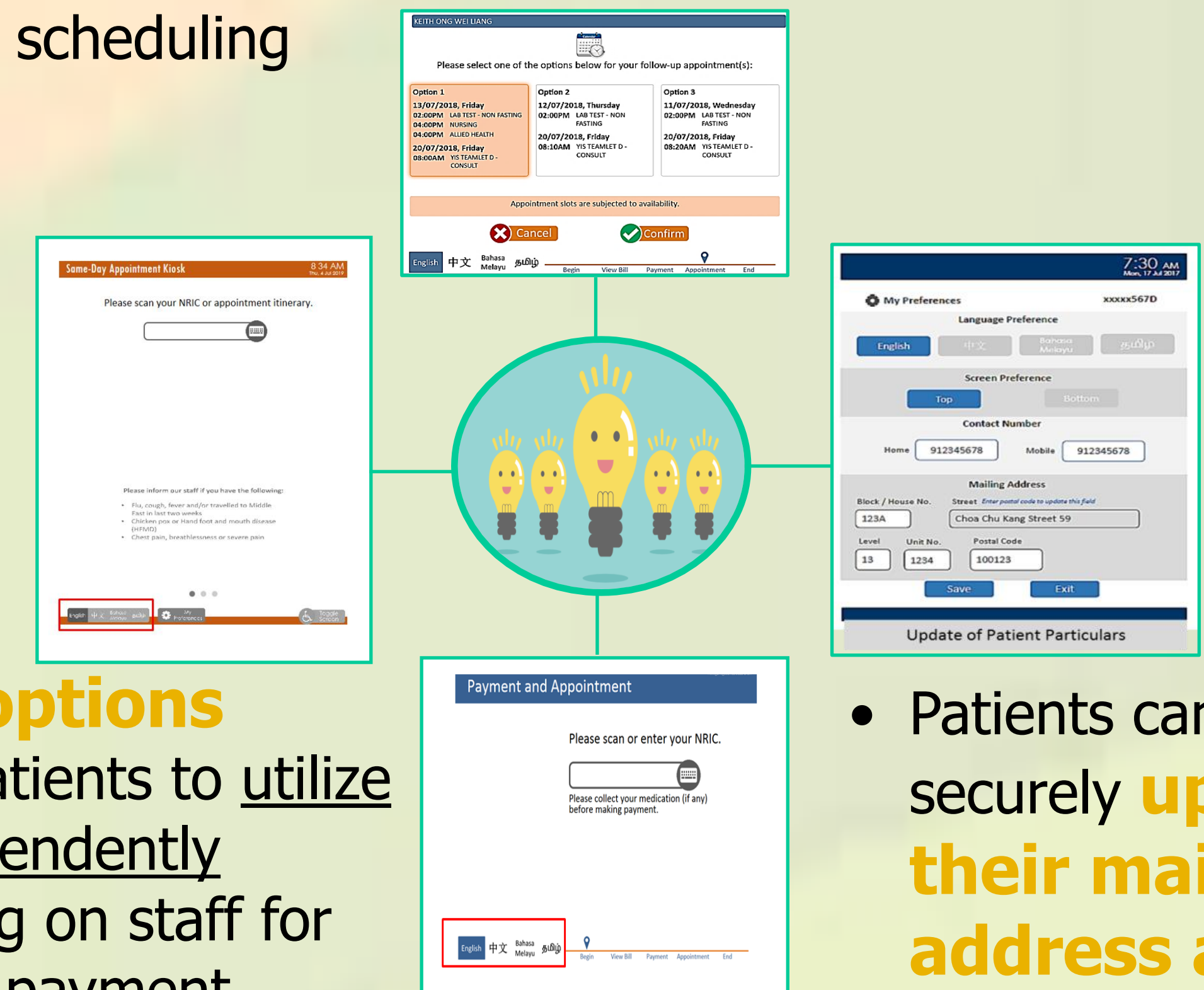
Results

1. Self-Registration Kiosk (SRK)
   - **More than 55%** reduction in number of patients served over the manned registration counters with a growing number of patients now using the SRKs.

Number of patients served over the manned registration counters

   - Average transaction time of **less than 1 minute** per patient using the SRKs

2. Self-Payment Kiosk (SPK)
   - **More than 60%** reduction in the number of patients served over manned payment counters with the increasing utilization of the SPKs.

SPK Utilisation Jan 17 - May 19

   - **60%** follow-up appointments generated from the SPKs for patients.
   - Average transaction time of **less than 1 minute** for patients making payment & appointment via the SPKs

3. Higher productivity
   - The same number of staff can **manage a higher volume** of patients, **provide higher quality** and **more patient centric service**.
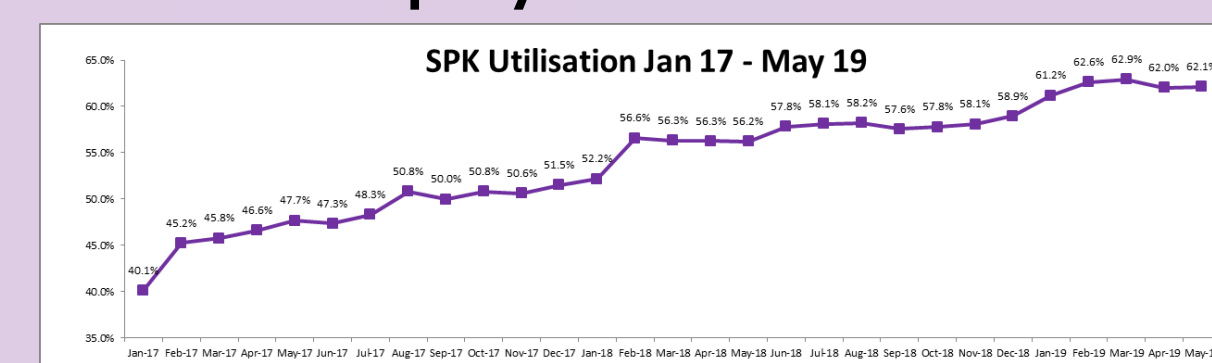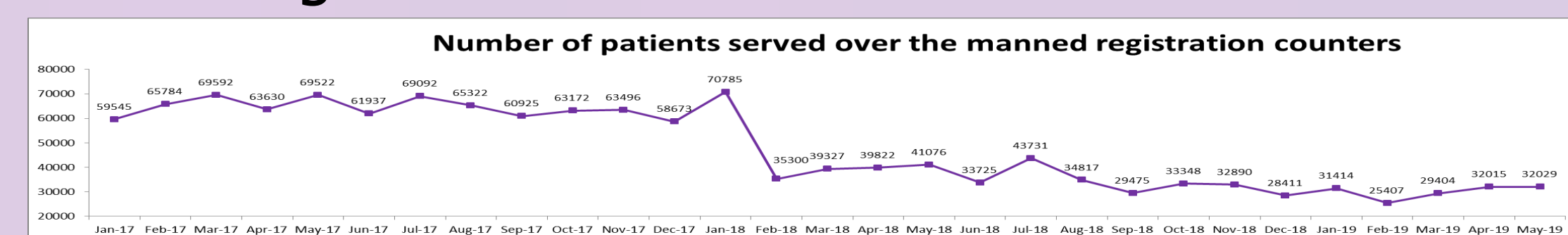
Cost Savings

1. With the myriad of functionalities at the self-help kiosks, multiple touch points that were previously an unavoidable part of the patient journey have now been eliminated. Patients' clinic dwell time has been **reduced significantly by ~50minutes/visit.**

2. These innovations have resulted in higher productivity and a **savings of some PSA FTEs.** Furthermore, there is a **~30-40% reduction in the floor area** needed for traditional manned counters. The floor space saved could hence be put to better use e.g. clinical space, patient activity area.

Problems Encountered / Solution

- Staff's resistance to change → Regular staff engagement sessions · Roll call, training
- Patients' resistance to change → Intuitive kiosk interface · Assistance from Staff / Service ambassador
- Machine downtime → Regular maintenance · Downtime training · Root cause analysis team

Strategies to Sustain

- HealthHub Promotion Booth · Posters · Banners · Brochure · E-Poster
- Assistance from Staff / Service ambassador
- Patient education videos on self-help services
- Getting feedback from patients and staff · Performing data and needs analysis · Ongoing improvement efforts and enhancements to keep systems up-to-date