

Project Title

Implementing Tele-consultation Services for the Care of Chronic Conditions

Project Lead and Members

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Project members:

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Organisation(s) Involved

National Healthcare Group Polyclinics

Project Period

Start date: February 2020

Completed date: October 2020

Aim

To redesign chronic care delivery

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

The lessons learnt by the team:

1. A high functioning multi-disciplinary team produces synergistic effects that enables an innovative and comprehensive approach to solving health system issues
2. Open and regular communication supports alignment of objectives and workflows, and facilitates sharing of best practices
3. Leveraging on technology to streamline processes reduces manpower requirements
4. Design thinking principles aids in identifying problems, setting clear objectives, and in developing patient-centred prototypes. Rapid PDSA cycles support refinement of the prototype

If the team were to start over again, it would have leveraged more on IT and technology from the planning stages, so as to ensure a seamless journey for patients from on-boarding, to breakouts and consultations, and to medication delivery.

Forward challenges will include patients' attitude and preference towards tele-consultations when situation returns to normalcy, as well as whether investment for tech enablers of tele-consultations can be sustained to ensure these services are tenable in the long term.

Conclusion

See poster appended/ below

Additional Information

- 2020 National Healthcare Innovation and Productivity (HIP) Best Practice Medal – Care Redesign (*video: <https://bit.ly/3h6jCkM>*)

Tele-consultation service represents a new fundamental shift in the way the healthcare professionals care for their patients, by continuing to push the boundaries of healthcare and technology in these unprecedented times. This shift also highlighted the resilience of the multi-disciplinary team working together. The integral role played by the senior management team in providing strategic directions had enabled the successful implementation of tele-consultation services.

Video consultation services were also successfully implemented for nursing home patients, partnering nurses in the nursing homes to improve the care of patients. Moving forward, NHGP has partnered IHiS to develop a national tele-consultation platform that is accessible through HealthHub. Learning points from the NHGP journey has played a key role in the development and this national platform will be used by the polyclinics and public hospital institutions across the three regional health systems.

The integration of tele-consultation services enhances the chronic care delivery model, with potential systems and manpower savings through leveraging of technology and minimizing manpower resources and is a key intervention strategy in the COVID-19 pandemic response plan.

Project Category

Care & Process Redesign

Keywords

Care & Process Redesign, Technology, Quality Improvement, Design Thinking, Plan Do Study Act, workflow Redesign, Telehealth, Video Consultation, Primary Care, Chronic Care, Multi-Disciplinary, General Practice, Nursing, Allied Health, Healthcare Administration, Pharmacy, National Healthcare Group Polyclinics, Teamlet, Tele-Consultation, Clinical Services, Operation, Quality and Patient Safety, Information Management and Analytics, Service Leadership and Patient Relations, COVID-19, Safe Distancing

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Mission Statement

The National Healthcare Group Polyclinics extended its teamlet care model beyond face-to-face consultations to encompass tele-consultation services during the COVID-19 pandemic to support safe distancing measures in the clinics. Tele-consultation services by doctors, nurses and allied health professionals were implemented in all six polyclinics to enable remote care for patients with chronic conditions from their homes.

Team Members

	Name	Designation	Department
Team Leader	Dr Sabrina Wong	Assistant Director/Family Physician, Consultant	Clinical Services
Team Members	Dr Siew Wei Fong	Family Physician, Consultant	Clinical Services
	Dr Donna Tan	Assistant Director/Family Physician, Associate Consultant	Clinical Services
	Dr Tung Yew Cheong	Director/Family Physician, Senior Consultant	Quality and Patient Safety (QPS)
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	Dr Kong Jing Wen	Head/Family Physician, Consultant	Hougang Polyclinic
	Dr Tan Khai Wei	Head/Family Physician, Associate Consultant	Toa Payoh Polyclinic
	Dr Evan Sim	Head/Family Physician, Principal Staff	Woodlands Polyclinic
	Dr Lim Ziliang	Head/Family Physician, Consultant	Yishun Polyclinic
	Dr David Ng	Head, Special Projects (Primary Care)/Family Physician, Consultant	Toa Payoh Polyclinic
	Wong Yuefen	Principal Dietitian	Allied Health
	Tan Hui Nah	Principal MSW	Allied Health
	Gary Cheok	Sr Physiotherapist	Allied Health
	Tan Sing Wuing	Psychologist	Allied Health
Alice Tang	Deputy Director	Information Management & Analytics/ QPS	
Tracy Gan	Deputy Director	Operations/Service Leadership and Patient Relations	
Gui Hui Ying	Executive	Clinical Services	
Sponsor	Dr Karen Ng	Director/Family Physician, Senior Consultant	Clinical Services

Impetus For Change

In view of COVID-19 situational needs, development of tele-consultation services started when the pandemic alert was raised to DORSCON Orange on 7 February 2020. Tele-consultation services was necessary to facilitate safe distancing measures and mitigate physical congestion in the clinics. At the same time, during Circuit Breaker, these services provided a convenient avenue for eligible chronic patients to access care without making physical trips to the clinics.

Redesign Of Care Delivery Model

A multi-disciplinary workgroup was formed comprising key members from clinical services, nursing services, operations, pharmacy and the polyclinics. All members contributed domain expertise during process development and the rapid "Plan-Do-Study-Act" (PDSA) cycles. The services were developed and implemented intensively during the COVID-19 Circuit Breaker months.

The comprehensive suite of tele-consultation services included:

1. Doctor video consultations
2. Care manager (nurse trained in chronic disease management) tele-consultations
3. Tele-Wound Care
4. Tele-Direct Observed Therapy (DOT)
5. Tele-Dietetics
6. Tele-Physiotherapy
7. Tele-Psychology

To ensure sustainability, technology was leveraged upon to optimise the use of resources:

- 1. Patient eligibility**
Automated patient lists were developed using predictive analytics, replacing the need for doctors to review medical records for patient eligibility. This reduced the doctor FTE required per clinic per week from 2.9 to 0.5.
- 2. FORMSG recruitment**
A FORMSG form was developed that enabled eligible patients to indicate interest in a tele-consultation. A PDSA cycle found a low uptake of less than 20% and the pilot project was not adopted by other clinics.
- 3. Mass actualization of tele-consultation visits**
During tele-consultations, patient had to be individually actualised by patient service associates, which took up to 1 hour. Enhancement to the ePOS system was made, which allowed mass actualisation, reducing the time to 5 minutes.
- 4. Identification of patients for home medication delivery**
Orders were created for home medication delivery and an automated patient list was developed that identified patients requiring home medication delivery on a daily basis, reducing time spent on collating excel sheets and reducing missed deliveries.

Implementation

From February to November 2020, a total of 139,845 tele-consultations (doctor, nurse, allied health services) have been conducted. This resulted in a reduction of about 14,000 physical polyclinic visits per month, supporting safe distancing measures in the clinics, especially during the Circuit Breaker and Phase 1. Video consultation services were also successfully implemented for nursing home patients, partnering nurses in the nursing homes to improve the care of patients.

Results

An evaluation was conducted to assess the clinical impact of tele-consultations on patient outcomes and to understand patients' perceptions of the service.

Clinical Impact of Tele-consultations (Table 1)

Outcomes of patients with type 2 diabetes, hypertension or hyperlipidaemia, were compared at 6 months between 11379 patients who had a tele-consultation and 27670 patients who had an in-person visit. After adjustment for demographic factors, chronic conditions and baseline readings, patients who had tele-consultations were more likely to have their HbA1c (O.R. 1.4, CI 1.3-1.5), blood pressure (O.R. 1.5, CI 1.4-1.6), LDL-cholesterol (O.R. 1.4, CI 1.3-1.5) level and BMI (O.R. 1.4, CI 1.4-1.5) readings done in the last 3 months. Patients with tele-consultations were more likely to have good control of blood pressure (O.R. 1.2, CI 1.1-1.3). There was no significant difference in well controlled HbA1c, LDL-cholesterol, BMI. This showed that video-consultations were appropriately conducted in a group of patients who were more likely to have tests done, and the outcomes showed that video-consultations were not inferior to in-person consultations.

Table 1. Evaluation Outcomes

	Difference (6 month-baseline)		Difference in Difference	p	Multivariate Analysis ¹	
	Tele-consults (N= 11379)	In-person visits (N= 27670)			OR	CI
Process Indicators (Test done)						
HbA1c (DM only)	-0.8%	-16.2%	15.4%	<0.001	1.4	1.4 - 1.5
BP	4.5%	-24.5%	28.9%	<0.001	1.5	1.4 - 1.6
LDL	-26.2%	-11.7%	-14.4%	<0.001	1.4	1.3 - 1.5
BMI	-4.0%	-16.7%	12.7%	<0.001	1.4	1.4 - 1.5
Risk Factor Control						
HbA1c ≤ 7% (DM only)	-1.7%	2.6%	-4.3%	0.006	1.0	0.9 - 1.1
BP < 140/90	2.1%	1.8%	0.3%	0.107	1.2	1.1 - 1.3
LDL < 3.4 mmol/L	4.4%	8.4%	-3.9%	<0.001	0.8	0.7 - 1.0

¹Adjusted for demographics, medical conditions, baseline reading

Patient Experience Survey of Tele-consultations (Table 2)

A patient experience survey was conducted with 844 participants within 1 week of patients having a tele-consultation. Our survey found that majority of patients had a positive experience regarding communication with the doctor via tele-consultations, feeling empowered and majority were willing to conduct a tele-consultation again. This showed that the tele-consultation service was well-received by patients and highlighted patients' wish for tele-consultation services to remain.

Table 2. Patient Experience Survey of Tele-consultations

Perception of Communication	Scored "Always or Usually" (%)
Explain things in a way you could understand	96.3
Listen carefully to you	96.9
Treat you with courtesy and respect	99.0
Give you opportunities to ask questions or raise concerns	96.7
Address your health concerns	96.7
Perception of Empowerment	Scored "Strongly Agree or Agree" (%)
Understood the symptoms and health problems to look out for after the consultation	99.6
Good understanding of the things I am responsible for managing my health	99.5
Overall	Scored "Excellent or Good" (%)
Overall experience	97.5
Rating of sound quality	98.5
Rating of medication delivery service	97.7
Would use tele-consultations again	Scored "Strongly Agree or Agree" (%)
Would use tele-consultations again	94.5

Mental Health Screening and Functional Assessment During Tele-Psychology (Table 3)

Mental health screening and functional assessment were conducted for patients who underwent Tele-Psychology from February 2020 to October 2020. Patients reported 40% improvement for PHQ9, 33% improvement for GAD7 and 34% improvement for ISI. With reference to Table 4, that shows the changes in functioning after Tele-Psychology, there was an 80% improvement reflected by the GAF and 34% improvement shown by the SDS.

Table 3. Tele-Psychology Mental Health Screening

Mental Health Screening (N=134)	Improvement during tele-psychology
Patient Health Questionnaire 9 (PHQ9)	40%
Generalised Anxiety Disorder 7 (GAD7)	33%
Insomnia Severity Index (ISI)	34%
Functional Assessment (N=134)	Improvement during tele-psychology
Global Assessment of Functioning (GAF) Scale	80%
Sheehan Disability Scale (SDS)	34%

Conclusion

Tele-consultation service represents a new fundamental shift in the way the healthcare professionals care for their patients, by continuing to push the boundaries of healthcare and technology in these unprecedented times. This shift also highlighted the resilience of the multi-disciplinary team working together. The integration of tele-consultations services enhances the chronic care delivery model, with potential systems and manpower savings through leveraging of technology and minimizing manpower resources and is a key intervention strategy in the COVID-19 pandemic response plan.