

Project Title

Project CONNECT

(Connecting NHG and Nursing homes through rules of Engagement, Communication channels and a single source of Truth)

Project Lead and Members

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Organisation(s) Involved

National Healthcare Group: Tan Tan Tock Seng Hospital (TTSH), Khoo Teck Puat Hospital (KTPH), Institute of Mental Health (IMH)

Nursing Homes: Ling Kwang Home (LKH), Man Fut Tong Nursing Home (MFTNH), St Andrews Nursing Home (Buangkok) (SANH), Lions Home for the Elders (Bishan) (LH(Bishan)), Villa Francis Home for the Aged (VF), Sunshine Welfare Action Mission Home (SWAMI Home), Kwong Wai Shiu Hospital (KWSH), Ren Ci (AMK)

Integrated Health Information Systems

Project Period

Start date: Aug 2018

Completed date: On-going

Aims

To establish a seamless flow of medication information in the handover processes for better safety and care for the NH residents.

Background

See poster attached/ below

Methods

See poster attached/ below

Results

See poster attached/ below

Lessons Learnt

The 2 most valuable insights gathered from CONNECT's journey is that solutions to a complex problem have to be handled collaboratively and that changing habits on how care is provided is very difficult.

During the Value Stream Mapping sessions, the team realized that pre-determining certain touchpoints and where things should be done ended up with poor engagements with the stakeholders and that when a solution is discussed as a possibility during the session, it invites discussion, better participation and most importantly, shared ownership of the solution.

Getting the institution physicians to document medication changes consistently required multiple engagements and reminders. This will likely still remain as a challenge. A better way to promote the change would be designing current IT system to facilitate the documentation of the changes.

Conclusion

See poster attached/ below

Additional Information

CONNECT has been a journey of learning to work with multiple stakeholders with various expertise and agendas. Knowing who to bring together to fix a common pain point within a team is essential to facilitate smoother running of the process change required in redesigning the NH-hospital patient care trajectory.

The benefits shown by CONNECT will help reduce unintentional medication-related harm to patients and assist the NH staff perform their tasks more efficiently.

Project Category

Care & Process Redesign

Keywords

Care & Process Redesign, Care Continuum, Safe Care, Nursing Home, Elder Care, Quality Improvement, Value Stream Mapping, Workflow Redesign, Time Savings, Multi-Disciplinary, Medical Services, Nursing, Pharmacy, Healthcare Administration, National Healthcare Group, Tan Tock Seng Hospital, Khoo Teck Puat Hospital, Institute of Mental Health, Ling Kwang Home, Man Fut Tong Nursing Home, St Andrews Nursing Home, Lions Home for the Elders, Villa Francis Home for the Aged, Sunshine Welfare Action Mission Home, Kwong Wai Shiu Hospital, Ren Ci, Medication Management, Operations, CONNECT, SMURF, NGEMR, IngoT

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Background

Medication-related issues are prevalent in nursing homes (NH) in Singapore where elderly residents were often prescribed with an average of more than 5 types of medications and inappropriate medication use was seen in up to 70% of residents.¹

A ground sensing exercise conducted in Aug 2018 at 3 NHG hospitals and 4 NHs identified several issues when patients traversed between NHs and hospitals for care. (Table 1)

Table 1: Broad categorization of challenges in NHG-NH medication information flow shared by NH staff during ground sensing (Aug'18)

Lack of Common Platform	Lack of Quality information	Lack of Communication	Others
<ul style="list-style-type: none"> Separate medication data systems with no interface No access to national repositories (e.g. National Electronic Health Records (NEHR)) 	<ul style="list-style-type: none"> Silos of medication records across multiple doctors Inconsistent and/or limited information provided on medication changes 	<ul style="list-style-type: none"> Long delays & multiple transfers for clarification calls Hardcopy memos get lost in care transitions 	<ul style="list-style-type: none"> Manpower constraints to do medication reconciliation Poor information flow affects medication supply

Objectives & Methodology

CONNECT aimed to prevent harm and address patients' medication information needs for patients transitioning care between NHG institutions and nursing homes.

The project team was tasked to establish:

- a platform and streamlined workflow for medication list creation, documentation, maintenance and flow
- rules of engagement (ROE) and communication channels between care settings and stakeholders

CONNECT Initiatives

1. Platform(s) for Medication Information Flow

Electronic system interfaces were stymied by internet surfing separation in 2018. Two end-to-end workflows and 5 rules-of-engagements (ROE) were established for continuity of medication information flow through hardcopy updated patient medication lists (PML) (Fig. 1).

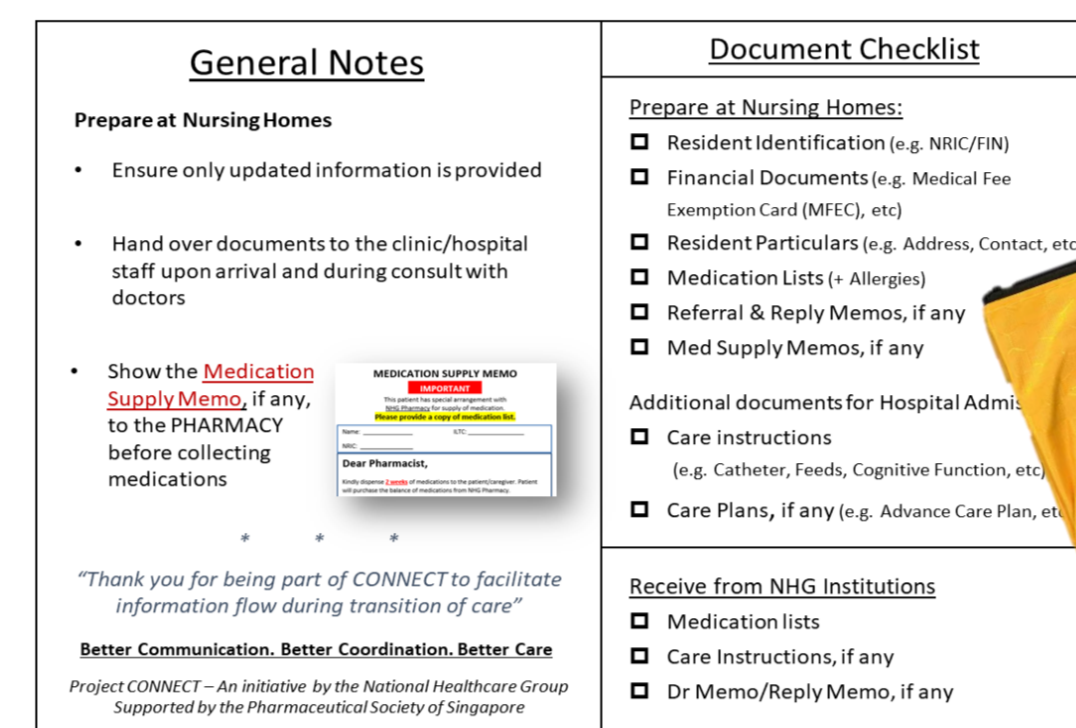


Figure 2: NH Folder Bag with checklist on documents to bring for TCUs

5 Rules-Of-Engagement in Medication Information Flow

- Document holders must know who to pass documents to
- Healthcare professionals should review the full list of medications before prescribing or dispensing
- Healthcare professionals should inform patients/caregivers of medication-related changes
- Pharmacists should conduct medication reconciliation for all inpatient discharges
- Healthcare professionals should provide a comprehensive medication list during transition of care

Figure 1: 5 Rules-Of-Engagement

Yellow NH folder bags were used during NH residents' visits to the hospitals to help organise and ensure visibility of important medical information. (Fig. 2)

Objectives

Approach

Measurement

A systemic step-wise approach was adopted as below:

- Multi-Disciplinary Team** – Engagement of key stakeholders to involve for care redesign in this transition-of-care..
- Ground sensing** - Collate current issues in information flow & determine commonalities to work on (Aug'18)
- Value-stream mapping (VSM)** - Map out end-to-end NH patient trajectories, co-create a vision state (Sep-Oct'18)
- Establish CONNECT's initiatives** to close gaps in medication information flow; engagement of stakeholders (Nov'18 -Feb'19)
- Piloting initiatives, feedback & refinement** (2 phases) (Mar-Dec'19)

A pilot was conducted with 3 NHG hospitals and 4 NHs in phase 1 between Mar – Jun 2019, and subsequently spread to a total of 8 NHs over Nov-Dec 2019 in phase 2.

Outcomes were determined for all NH residents visiting NHG hospitals at baseline and at least 3 months into phase 1 & 2.

Three value-based outcome categories (clinical measures, cost reduction and staff experience) and process indicators were tracked and measured.

2. Documenting Quality Information

Roadshows on the ROEs & the NHG Prescribing Practice Guidelines* were done in NHG. This promoted the documentation of patient's medication changes & reasons of change. (Table 2)

Table 2: Example of PML documented with medication changes

No.	Drug	Form	Dose	Freq	Period	Comments
1	Glipizide	Tablet	5mg	OM	8 weeks	Decreased from 5mg BD
2	Metformin	Tablet	850mg	BD	8 weeks	
3	Amlodipine	Tablet	10mg	OM	8 weeks	Increased from 5mg OM

This practice would ensure medication change instructions are clearly communicated from hospitals and facilitates the NH staff's transcribing process into NH system records.

*in collaboration with Project SMURF (Standardize Med Info Update Retrieval and Flow across NHG)

3. Direct Communication Channels

Direct hospital pharmacy call lines were shared with NHs as a contact chart (Fig.3) for medication inquiries. This reduces delays in administering medication for NH residents & saves time for staff.

Direct specialist outpatient clinic lines were added following refinements prior to phase 2.

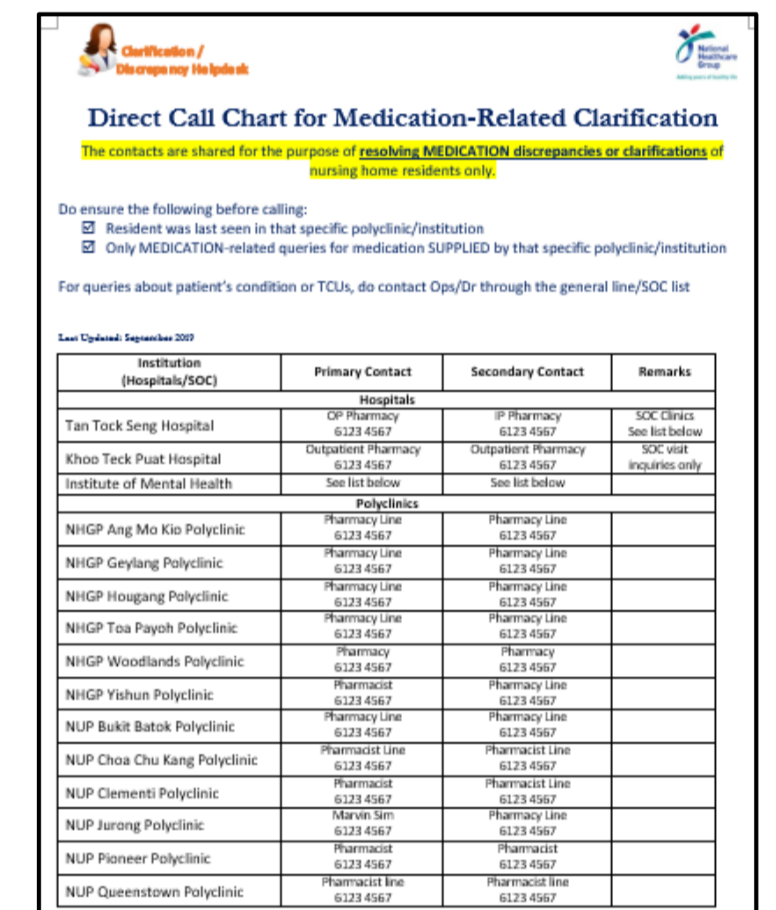


Fig 3: Contact Chart with direct call lines to SOC & pharmacy

Results & Discussion

Reduction in DRPs

- Medication discrepancy rates at the NHs reduced from 22% to 9%. (Chart 1)
- Reduction in these discrepancies will prevent unintended patient harm through wrong drug usage.
- Though a reduction was seen in both phase 1 & 2, the rate fluctuation is likely due to differing periods of engagement with care providers to change practices and document medication changes and their reasons of change consistently.

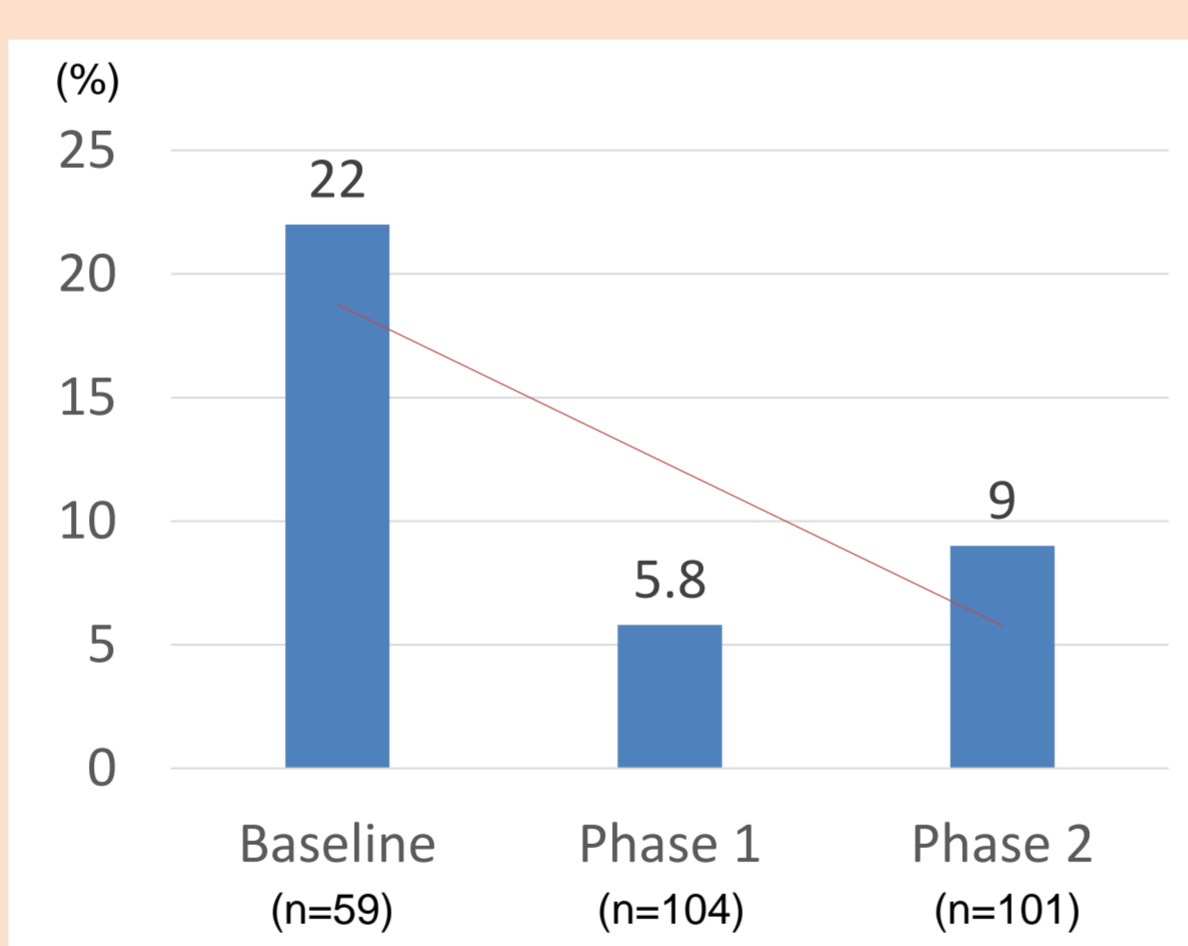
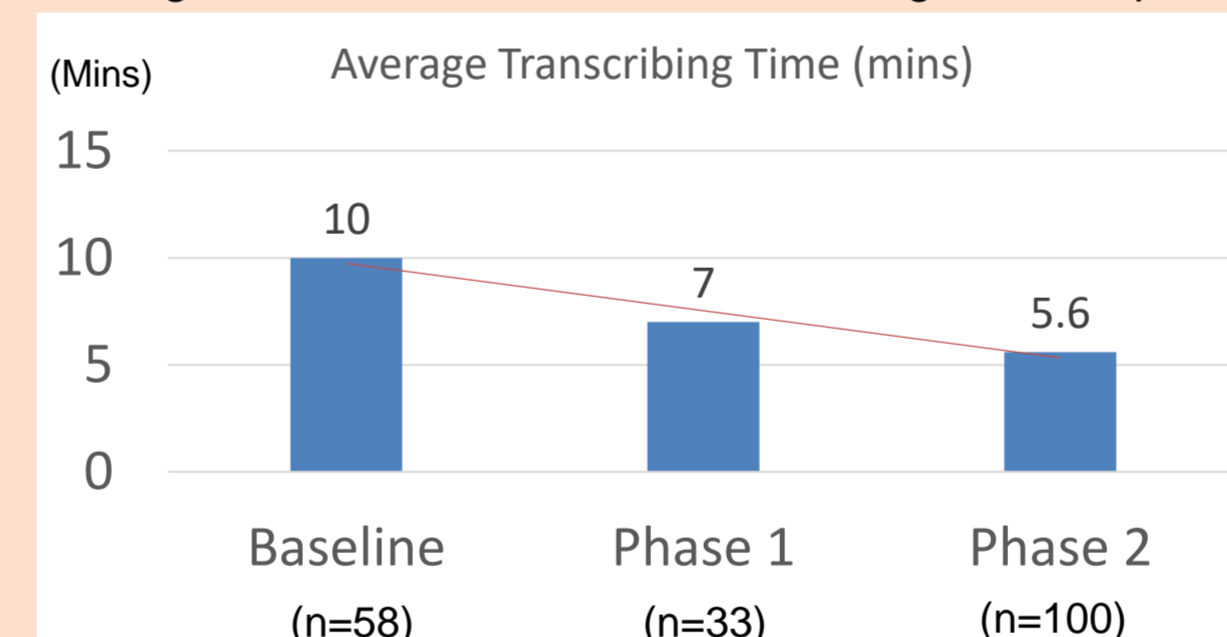


Chart 1: Medication discrepancy rates (%) recorded by NH staff for residents returning from hospitals

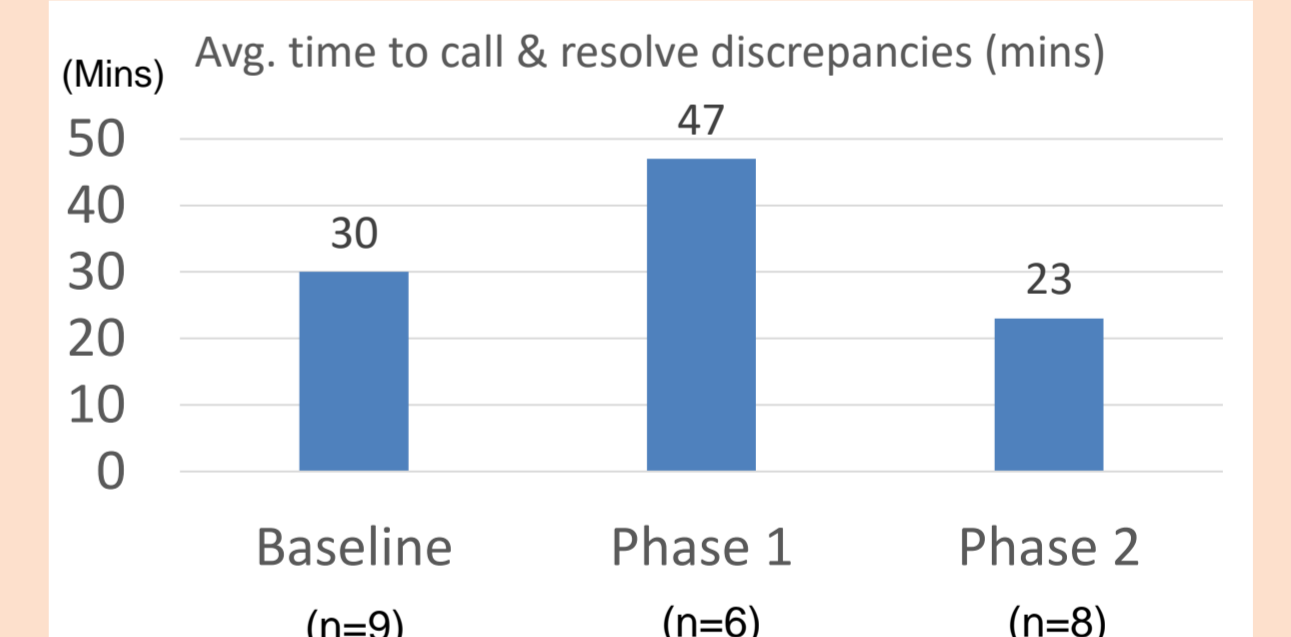
NH Staff Time Savings

Chart 2: Average transcribing time of NH resident's medication changes on to NH's IMRs when returning from hospitals



- Average transcribing time reduced from 10mins to 5.6mins (Chart 2). The time to resolve a medication discrepancy reduced from 30 min to 23 mins. (Chart 3)
- Time savings in these areas will ultimately translate into more quality time that the NH staff have to attend and care for their NH patients.
- The time study for resolving discrepancies fluctuated (Chart 3) and is likely due to the small number of interventions sought from the hospitals during the pilot.

Chart 3: Average time needed to resolve medication discrepancies for residents returning from hospitals



Flow of Medication Information (Via PML)

- Percentage of NH residents receiving PMLs increased at hospital visits (Chart 4)
 - Inpatient: %PML increased from 92% to 97%
 - Outpatient: %PML increased from 34% to 52%
- The flow of PMLs is a proxy indicator of successful medication information flow. PML is a singular reference for medication changes, contributing to time savings in reconciling a patient's records.
- Identifying NH residents at the outpatient setting was a key challenge, thus only a modest improvement in the % PML given in this setting.

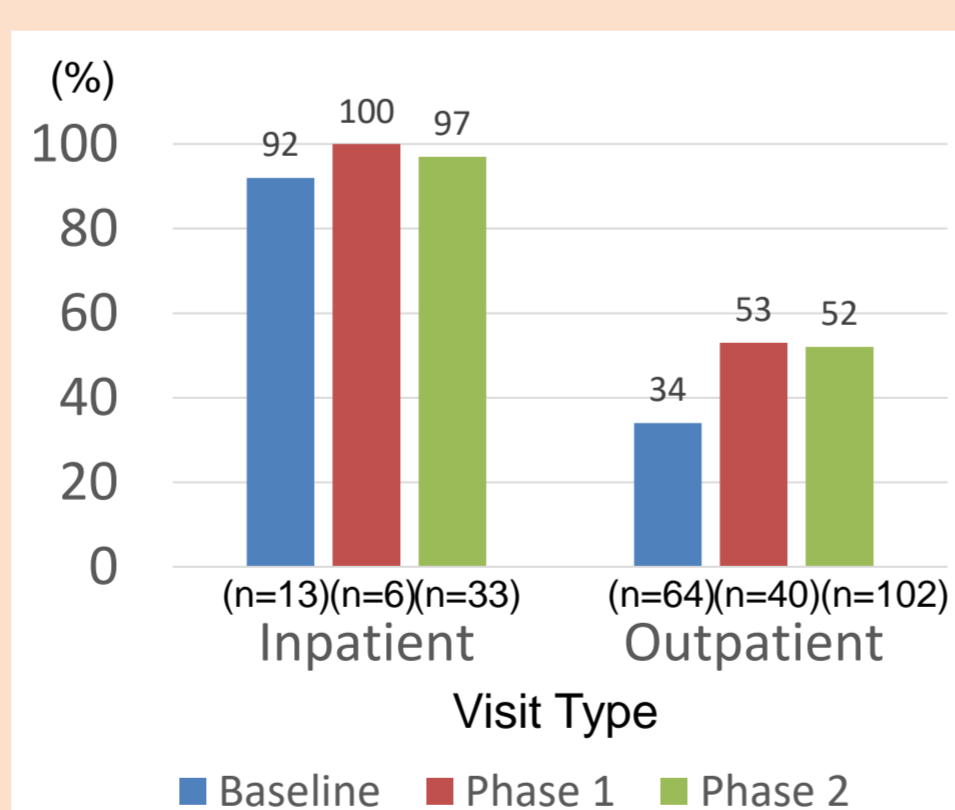


Chart 4: Percentage (%) of NH residents with medication changes returning from hospitals with a PML

Staff Experience Measure

- A high NH staff satisfaction rate of 83% was sustained throughout phase 1 and increased from 79.5% to 84% in phase 2. (Chart 5)
 - Phase 1 saw a shift towards "very satisfied" as well
 - Phase 2 sustained high satisfaction of 84%
- This affirmed the project team's work and is an indicator of sustainability of the initiatives.

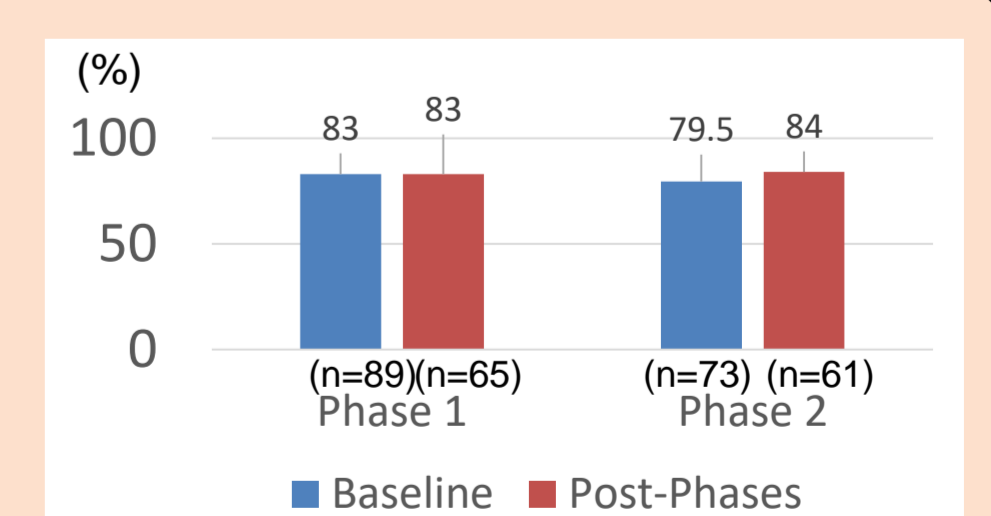


Chart 5: Overall satisfaction (% satisfied) of NH staff on medication information workflows at NHs

Conclusion

Nursing home patients face medication information disruptions during transition-of-care at hospitals. A multi-disciplinary approach, proper communication of medication changes and essential information across the hospital and NH transition-of-care are crucial in preventing medication-related issues for these patients. Through CONNECT's 2 study phases, the initiatives demonstrated promising results such as a reduction in the medication discrepancy rate from 22% to 9%, reduced average transcribing time of NH patient's medications from 10min to 5.6min (improvement by 44%) and increased the percentages of PML availability for NH residents after visits to NHG institutions. This translates to reducing unintentional medication-related harm to NH patients and assists the NH staff perform their tasks more efficiently.

References

1. Mamum K. et al. Polypharmacy and Inappropriate Medication Use in Singapore Nursing Homes. Annals Academy of Medicine Singapore. 2004; 33:49-52

Acknowledgement

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National Healthcare Group (NHG) Piloting Hospitals (Both Phases)

[a] - Tan Tock Seng Hospital, [b] - Khoo Teck Puat Hospital, [c] - Institute of Mental Health

Project Support

[d] - MOH/IHS, [e] - Woodlands Health Campus, [f] - NHG Pharmacy, [g] - Peacehaven Nursing Home

Nursing Homes in Pilots

Phase 1: [h] - Kwong Wai Shiu Hospital, [i] - Ling Kwang Home, [j] - Man Fut Tong Nursing Home, [k] - St Andrew's Nursing Home (Buangkok)

Phase 2: [l] - Lion's Home for the Elders (Bishan), [m] - Ren Ci (AMK), [n] - Sunshine Welfare Action Mission Home, [o] - Villa Francis Home for the Aged