Improving Exercise Compliance of Patients at Centre for Geriatric Medicine Tan Tock Seng Hospital

Jiang Haiting[1], Bao Min Fang[2], Goh Gek Hum[3], Kylin Cheong Ming[1], Liu Yiting[3]

[1]Physiotherapy, [2]Geriatric Medicine, [3]Centre for Geriatric Medicine (CGRM)

Mission Statement

To improve partial compliance* of home exercises@ for patients attending Physiotherapy in TTSH Centre for Geriatric Medicine (CGRM) at their 2nd follow up appointment# from a baseline of 32.5% to 70% (Stretch goal: 80%) in 6 months.

*Partial compliance: Remembers and performs at least ≥50% of exercises (achieve frequency of at least 3x/week and at least 50% of total number of exercises given
Measured based on Pt [patient's] (+/- carer's) self-reporting, ability to recall and demonstrate exercises correctly as evaluated by the PT [physiotherapist]
@Home exercises: A set of individualized exercises prescribed by the physiotherapist during initial assessment
#Appointment frequency between 1st and 2nd follow up: ≤2 months

Team Members

	Name	Designation	Department
Team Leader	Ms Jiang Haiting	Senior Physiotherapist	Physiotherapy
Team Members	Dr Bao Minfang	Associate Consultant	Geriatric Medicine
	Ms Goh Gek Hum	Senior Staff Nurse	Centre for Geriatric Medicine
	Ms Cheong Ming Kylin	Senior Physiotherapist	Physiotherapy
	Ms Liu Yiting	Patient Service Associate Executive	Centre for Geriatric Medicine

Sponsors:
- Adj Asst Prof Rani Ramason (Senior Consultant, Geriatric Medicine)
- Ms Ye Xiuhua (Nurse Clinician, Centre for Geriatric Medicine)
- Mr Christopher Ng Thong Lian (Head & Senior Principal Physiotherapist, Physiotherapy)

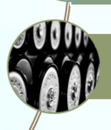
Mentor: Ms Clara Wong Xiu Qing (Principal Physiotherapist, Physiotherapy)

Evidence for a Problem Worth Solving

Rate of exercise compliance vary worldwide ~20-80%

Common barriers to exercise for older adults: Concern about physical health/fitness (14 studies), lack of motivation/interest (13 studies), fear of falls/history of falling (11 studies) and environmental barriers (10 studies) *(Kilgour et al. 2024)*

Exercise and physical activity are among the most important factors affecting health and longevity, but exercise adherence is a significant hindrance in achieving health goals in the older adults *(Rivera-Torres 2019)*



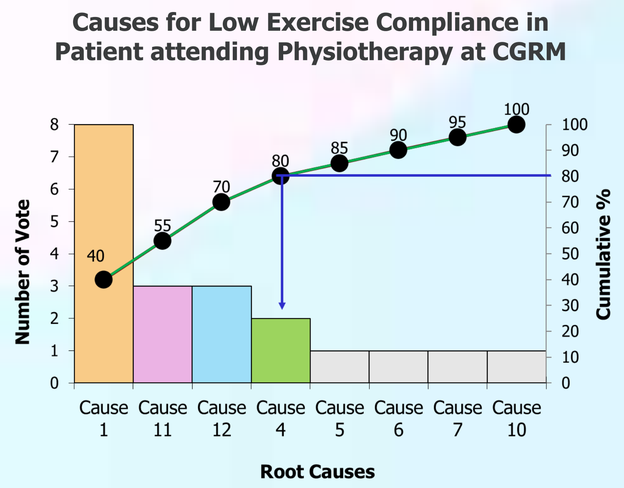
Sufficient exercise load and dosage is key to preserve endurance and strength over time *(Spiering 2021)*

Patients with poor exercise compliance will lead to **poor patient heath outcomes**, **increased healthcare costs** and **inability to maintain or achieve functional goals** *(Rivera-Torres 2019)*

Low Exercise Compliance. ONLY 32.5% of CGRM patients are >50% compliant with the prescribed exercises.

Home exercises is the MAIN mode of intervention for CGRM outpatient patients. Efficacy of therapy relies on how compliant patients follow the prescribed exercises.

Pareto Chart

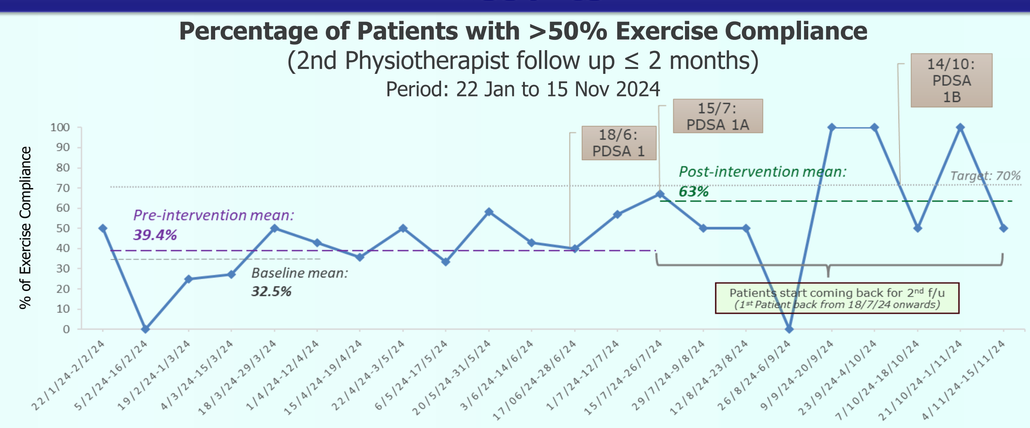


Cause #1	Patient's lack of knowledge (e.g. importance of exercise/different type of exercise/ differences between exercise and daily activity/planning of exercise)
Cause #11	Patient's perceived mindset, not open to change.
Cause #12	Insufficient time during Physiotherapist appointment slots
Cause #4	Doctor does not emphasize importance of Physiotherapist service/ reason for Physiotherapist referral
Cause #5	Mode of reference showing home exercises not suitable
Cause #6	Caregiver lacks knowledge of importance of exercise
Cause #7	Physiotherapist did not provide clear enough instructions visually on exercise brochure
Cause #10	Decreased cognition and education level

Implementation

Root Cause	Intervention	Start Date
Patient's lack of knowledge ▪ Importance of exercises ▪ Planning of exercises into daily routine	**PDSA 1:** Exercise planner with video narration	18 Jun 2024
	PDSA 1A: Compliance toolkit (Eng Educational video & Exercise planner with video narration)	15 Jul 2024
	PDSA 1B: Compliance toolkit version 2 (Eng Educational video & Video narration) + Physiotherapist to help translate or tap on carer/ family to translate and explain to Patients +/- cognitive impairment	14 Oct 2024
Patient's perceived mindset, not open to change.	**PDSA 2:** Group sessions in between one-to-one Physiotherapist follow up sessions ▪ Tap on benefits from group/peer support/positive encouragements ▪ Provide more opportunities for other avenues of education and regular review of exercises using lesser resources	9 Apr 2025

Results



Dates as above																											
% of exercise compliance	50	0	25	27	50	43	36	50	33	58	43	40	57	67	50	50	0	100	100	50	100	50	50	50	100	50	83
No. of Patients who are >partially compliant	7	0	4	3	5	9	5	5	3	7	6	2	4	2	1	1	0	1	3	1	3	1	1	1	1	2	5
No. of Patients (with 2nd f/u ≤2/12 + agreeable for intervention)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	2	2	2	1	3	2	3	2	2	2	1	4	6
No. of Patients (with 2nd f/u ≤2/12)	14	7	16	11	10	16	14	10	9	12	14	5	7	11	7	16	8	7	11	4	5	4	5	5	5	8	13

Cost Savings

Average cost of therapy services 'saved' per patient (~7 min/ session)	$1.38 x 7 = $9.66 *(based on $1.38 unit cost per minute)*
Total cost of therapy services 'saved' per month *(Average number of patients attending Physiotherapists = 160 patients/month)*	$9.66 x 160 = $1545.60
Total Cost of Therapy Services 'Saved' (Annualized)	$1545.60 x 12 = **$18547.20**

Flow Chart of Process

MACRO FLOW

Clinic of Geriatric Medicine (CGRM) receives referral for Doctor review
→ PSA/Staff Nurse determines subspecialty of referral and books Doctor appointment
→ Patient sees Doctor
→ Doctor assesses patient's indication and suitability for Physiotherapist (PT) referral
- No → Patient completes visit at clinic and goes home
- Yes → Patient sees PT for initial assessment
→ Patient sees PT for 2nd follow up review
→ Patient sees PT for subsequent follow up reviews
→ Patient is discharged/open dated from PT

MICRO FLOW

Doctor assesses patient to be indicated and suitable for PT referral
→ Doctor explains to patient reason for PT referral to PT
→ Patient/family member agrees to PT referral
→ Doctor puts up referral to PT
→ PSAs schedules PT appointment
→ Patient comes for PT initial assessment
→ PT checks patient's understanding of reason for PT referral
→ PT conducts subjective and objective assessments
→ PT prescribes and explains individualized set of exercises
→ PT offers next follow up appointment
→ Patient schedules next visit at PSA counter
→ Patient makes payment at Self Payment Kiosk
→ Patient goes home
→ Patient comes back for 2nd PT follow up review

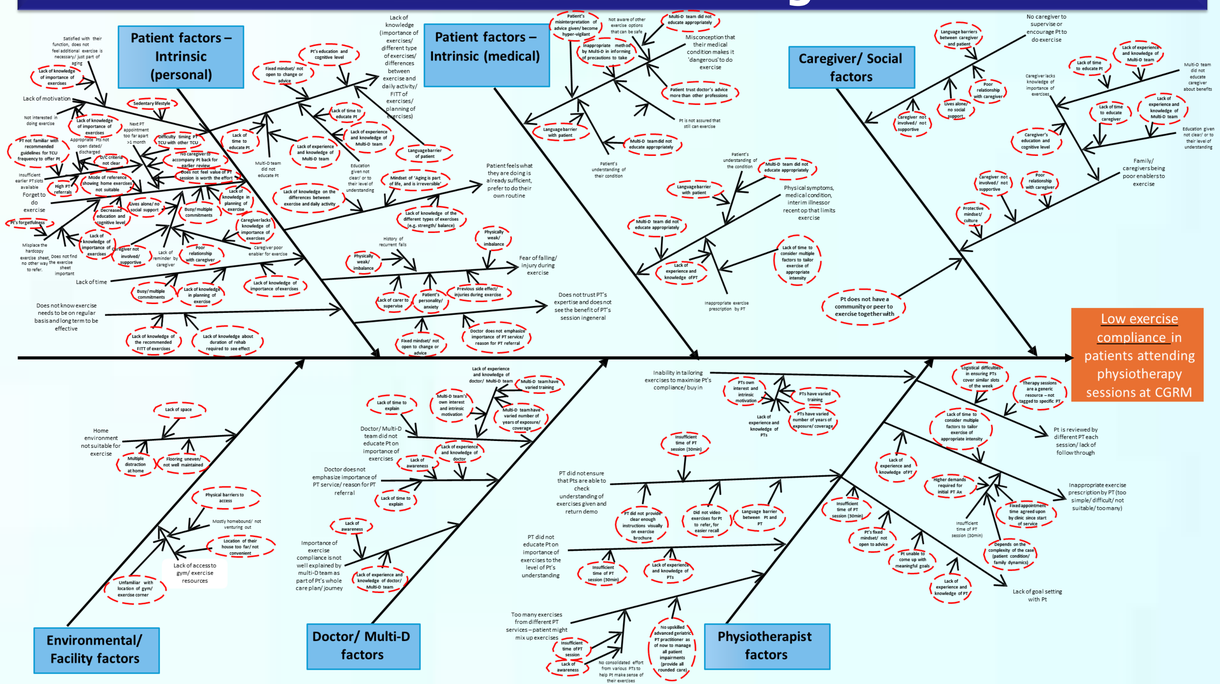
Patient's own flow chart

(Based on 2 patients interviewed: one <50% compliant, one >50% compliant)

Patient goes home
→ Do I feel like doing the exercises prescribed?
- Yes → Ensure exercise sheet is kept somewhere easy for me to refer → I will do my exercises at home after my morning walk, in my living room for ~20mins
- No → I only occasionally remember the exercises and might not do it → I feel lazy, will just try to move a bit more when I am at home. → Few days before my next PT appointment, I try to recall and do some of the exercises taught.

→ Patient comes back for 2nd PT follow up review

Cause and Effect Diagram



Problems Encountered

- Mission statement chosen is a very big topic which resulted in the team putting in a lot of effort to fine tune what we hope to achieve along the project journey
- Behaviour change is complex and multi-factorial, hence it is difficult to have one single tool/toolkit that suits everybody.

Strategies to Sustain

- Interventions to improve compliance should be feasible (not be too time consuming or difficult for physiotherapists) and tailored to patient's needs and profile (acceptable & useful to patients)
- Physiotherapists/Multi-Disciplinary team should be familiar with all the necessary tools available, and to offer and match suitable tools to patients at appropriate times.
- "Exercise compliance" to be one of the key indicator for therapy success (can be easily incorporated into smart phrases as a 'visual' reminder)
- Continual education through orientation and reminders at roll calls
- Identify champions who will initiate new ideas to improve patient's compliance