Team-based Management of Patients with Poorly Controlled Type 2 Diabetes in Toa Payoh Polyclinic

Tan Poh Ching, NHG Pharmacy (Toa Payoh Polyclinic)

Mission Statement

To reduce the percentage of *poorly controlled diabetes patients from 8% to 6% in Toa Payoh Polyclinic Teamlet C within 6 months

Stretched goal : 5%

Definition of *poorly controlled diabetes = HbA1c> 9%
(HbA1c is the average blood glucose levels for the past 2 to 3 months)

Scope of patients:
- Type 2 DM patients 18-75 years old
- Taking oral diabetic medications or/ and insulin injection

After conclusion of the project in Dec 2020, we continued to sustain interventions for Teamlet C patients and replicated some successes to other teamlets in Toa Payoh Polyclinic.

Team Members

Role	Name	Designation	Department
Team Leader	Ms Tan Poh Ching	Senior Pharmacist (Clinical)	Pharmacy
Team members	Dr Kunwar Bir Singh	Family Physician-Senior Staff	Medical
	Dr Norhafiza Binti Md Nor	Family Physician-Senior Staff	Medical
	Dr Vittal Sunil Pawar	Resident Physician-Senior Staff	Medical
	Ms Ma Yuet Ting	Senior Pharmacist	Pharmacy
	Ms Millison Chua Lynn Shan	Clinical Pharmacy Technician	Pharmacy
	Mr Won Tin Chiang	Principal Dietitian	Allied Health
	NC Nor Shawiyah Binte Haron	Nurse Clinician	Nursing
	SSN Vasantha Arumugam	Senior Staff Nurse	Nursing
	Ms Fadzlina Binte Sujak	Care coordinator	Nursing

Evidence for a Problem Worth Solving

Poor glycemic control poses a significant financial burden to individuals and our healthcare system.

A baseline medication adherence survey among poorly controlled type 2 diabetes patients in Toa Payoh Polyclinic showed that about 70% of them were not adherent to the prescribed regimen due to various reasons .

Current Performance of a Process

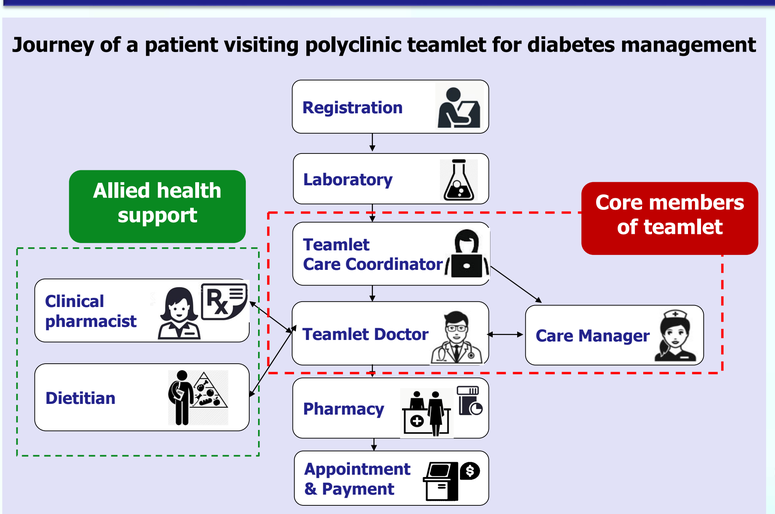
Baseline data showed that a total of 505 Toa Payoh polyclinic teamlet patients were poorly controlled Diabetes patients (HbA1c>9%).

Teamlet C had the highest % of poorly controlled diabetes patients (8%), which was above the teamlet KPI of <6%.

Teamlet	Total number of patient	Number of patient with HbA1c >9%	Percentage of patient with HbA1c >9%
A	2023	121	6%
B	1528	62	4%
C	1763	143	8%
D	1198	80	7%
E	1603	99	6%

Remarks: Teamlet KPI target < 6%

Flow Chart of Process



Doctor
Manages the chronic conditions of patients

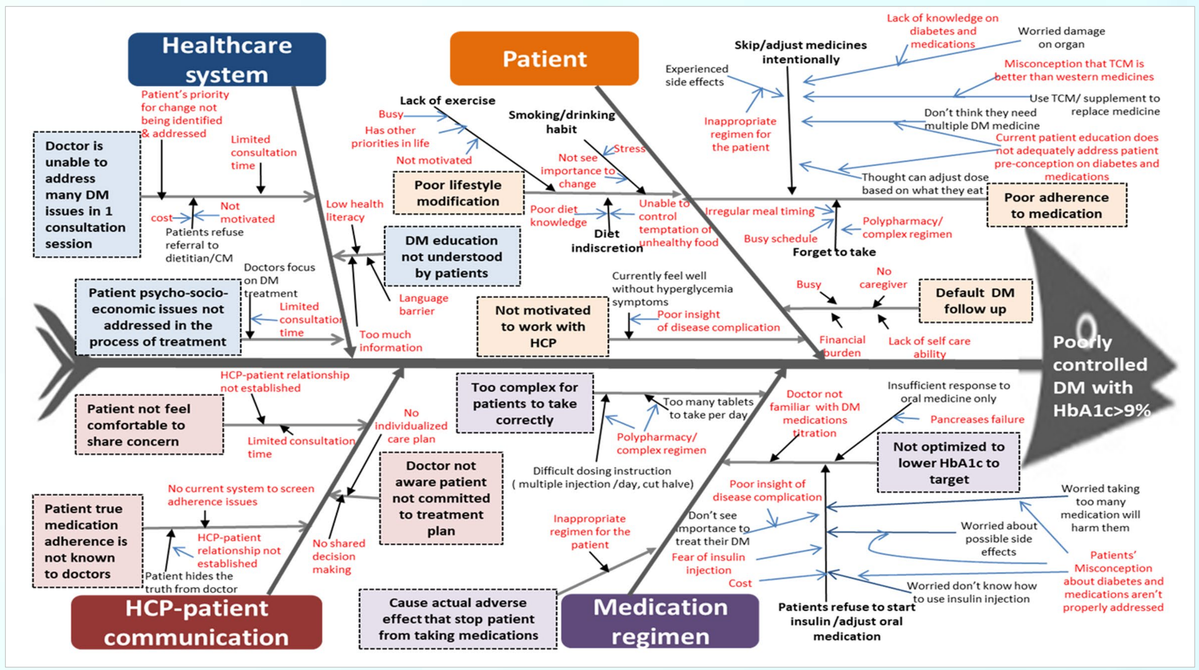
Care manager
Counsels & empowers patients to manage their chronic condition(s)

Pharmacist
Provides medication management support

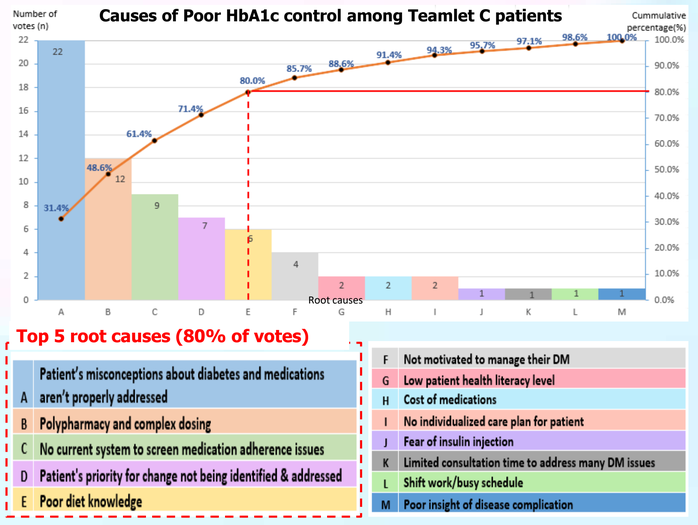
Dietitian
Provides dietary counselling

Care coordinator
Conduct screening& follows up appointments

Cause and Effect Diagram



Pareto Chart



We interviewed 10 poorly controlled diabetes patients to validate the patient root causes

"Why do you think your diabetes is not well controlled?"

Patients' verbatim	Matched patient root causes (in fishbone)
"I seldom exercise recently as I am too busy with work"	Lack of exercise
" I think I didn't control my diet recently"	Diet indiscretion/ Poor diet knowledge
"Sometimes I forgot to take my diabetes medications , especially the afternoon and night doses"	Poor medication adherence
" I think I am perfectly ok now"	Not motivated to manage diabetes
"I just started a new herb recommended by my friend to control my diabetes , I believe my sugar will get better in next visit. "	Misconception that Traditional medicine is better than western medicines to control their diabetes

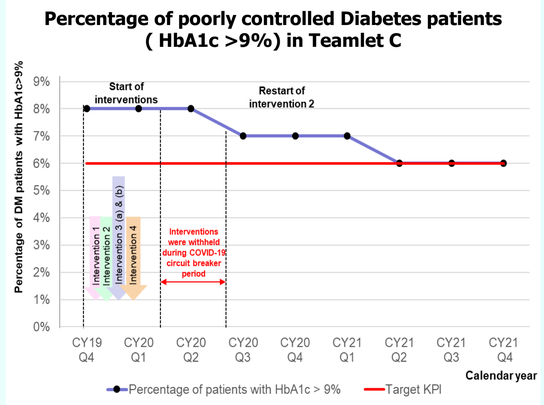
Implementation

Problem(s)	Intervention(s)	Start of PDSA
(A) Patient's misconceptions about diabetes & medications not properly addressed	(1) Patient education on common myths and facts about diabetes, medications & diet	1 Nov 2019
(E) Poor diet knowledge		
(B) Polypharmacy and complex regimen	(2) Referral of poorly controlled diabetes patients to clinical pharmacist to review medication regimen	25 Nov 2019
(D) Patient's priority for change not being identified and addressed		
(C) No current system to screen medication adherence issues	(3a) Screening of diabetes medication adherence by Teamlet Care coordinator (pre-consultation)	5 Dec 2019
	(3b) Screening of diabetes medication adherence at pharmacy(Post-consultation)	12 Dec 2019
(E) Poor diet knowledge	(4) Charting of self monitoring blood glucose level together with food diary	23 Dec 2019

Results

A) Reduction of HbA1c in each intervention group **B) Run Chart**

	Intervention(s)	Percentage of patients with HbA1c reduction in 6 months	Mean reduction in HbA1c (%)
1	Patient education on diabetes-related myths	93.8%	0.9%
2	Referral to clinical pharmacist for medication review and optimization	87.0%	1.7%
3(a)	Screening of diabetes medication adherence by Care coordinator (pre-consultation)	75.0%	0.7%
3(b)	Screening of diabetes medication adherence by pharmacy staff (post-consultation)	72.7%	0.7%
4	Charting of paired self monitoring blood glucose levels with food diary by patient	90.9%	1.1%



Cost Savings

Clinic services	Subsidized adult rate	Well controlled Diabetic patient		Poorly controlled Diabetic patient	
		Visits per year	Total costs	Visits per year	Total costs
Consultation[1]	SGD 13.20	3 x Doctor visit (4 monthly)	$ 39.60	6 x Doctor visit (2 monthly)	SGD 79.20
Care manager	SGD 7.30	1 x CM visit	$ 7.30	3 x CM visit	SGD 21.90
Lab (HbA1c & Fasting glucose)[2]	SGD 17.90	3 x lab	$ 53.70	6 x lab	SGD 107.40
Others[3]: DRP DFS DM Panel test	SGD 12.80 SGD 12.80 SGD 35.30	1 x DRP 1 x DFS 1 x DM Panel	SGD 12.80 SGD 12.80 SGD 35.30	1 x DRP 1 x DFS 1 x DM Panel	SGD 12.80 SGD 12.80 SGD 35.30
Total cost/patient		SGD 161.50		SGD 269.40	

Cost savings from reduced clinic visits (for closer monitoring)
= SGD 107.90/ year /patient

The postulated cost savings does not include other possible cost avoidance from managing complications of poorly controlled diabetes including emergency visits, hospital admissions, specialist clinic visits etc.)

Actual overall cost savings from improved diabetes control could be HIGHER

Problems Encountered

1. There are financial and social influences impacting patient's diabetes control, and some issues are too complex to be resolved within the project timeline.
2. System limitations such as healthcare resources and operational constraints need to be taken into consideration when planning an improvement project.
3. Involvement of patients in their own diabetes care plan is beneficial but it is more resource intensive especially when motivational interviewing or detailed counselling is required.

Strategies to Sustain

Intervention (2): Referral of poorly controlled diabetes patients to clinical pharmacist to review medication regimen

- Referral rate from doctors is monitored closely.
- A systematic workflow is implemented to increase doctor's referral rate.
- List of teamlet patients with HbA1c>9% is extracted monthly and reminder is created to alert doctors to refer patients to clinical pharmacist if suitable.
- The new referral workflow is available for all Teamlets in Toa Payoh Polyclinic.