Transforming Diabetes Care Through Group Education and eMpowerment (GEM)

A COMPREHENSIVE CHANGE PACKAGE FOR HEALTHCARE INSTITUTIONS

JULY 2025

National Diabetes Collaborative
NiU National Improvement Unit Singapore
A unit of MOH Office for Healthcare Transformation
NHG Polyclinics
NHG Health
Khoo Teck Puat Hospital
NHG Health
Tan Tock Seng Hospital
NHG Health
Woodlands Hospital
NHG Health

TABLE OF CONTENTS

Message by NIU Director

Healthcare transformation begins with a simple yet powerful recognition: when we empower patients to take control of their health journey, we create ripple effects that strengthen our entire system. The Group Education and Empowerment (GEM) Change Package represents this philosophy in action—a practical blueprint born from rigorous testing, collaborative learning, and an unwavering commitment to improving diabetes care in Singapore.

Since its founding in 2021, the National Improvement Unit (NIU) has acted as the convenor and catalyst for collaborative learning, building networks among Singapore's healthcare professionals and using improvement science to enhance patient care. We have established a dynamic learning network that allows healthcare clusters to work together, share experiences, and scale evidence-based interventions that lower hospitalisations related to diabetes and enhance diabetes management through our National Diabetes Collaborative, an initiative based on the Institute for Healthcare Improvement's Breakthrough Series methodology.

The GEM project, led by NHG Health Polyclinics with NIU's support, exemplifies the power of collaborative learning networks in action. This initiative demonstrates how we need to continue to create conditions for innovation to flourish—bringing together diverse healthcare teams, facilitating knowledge exchange, and enabling rapid cycles of learning and adaptation. The resulting change package distils collective insights from across our learning network, capturing not just what works, but how successful practices can be adapted and scaled across different settings.

What sets this guide apart is its practical foundation. Every recommendation has been tested in real-world conditions, refined through feedback, and validated through results. The framework presented here offers healthcare teams a clear pathway to implement group-based education and empowerment strategies that strengthen patient self-management for their diabetes condition.

As you engage with this change package, I encourage you to view it not as a prescriptive manual but as a foundation for your own improvement journey—one that will undoubtedly be shaped by your unique context, patient populations, and organisational strengths.

I extend my deepest gratitude to the Ministry of Health Singapore, NHG Health, our healthcare partners, community collaborators, and especially the patients and clinical teams who contributed their expertise, time, and unwavering commitment to this initiative. Their contributions have created something valuable not just for Singapore but for healthcare systems seeking to enhance diabetes care through patient empowerment.

Together, we continue building toward a healthier Singapore,
one patient, one team, and one collaborative effort at a time.

Dr Eunice Wong
Director

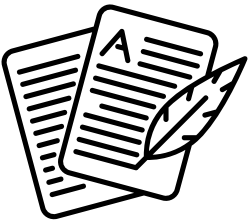
EXECUTIVE SUMMARY

The Group Education and eMpowerment (GEM) programme represents a paradigm shift in diabetes care, addressing a fundamental gap in our healthcare delivery system. Despite compelling evidence that structured diabetes education significantly improves patient outcomes, fewer than 10% of eligible patients within our network currently receive this vital service. The consequences are profound: suboptimal glycaemic control, increased complications, higher healthcare utilisation, and a diminished quality of life for our patients.

GEM provides a comprehensive, evidence-based solution that integrates seamlessly into existing clinical workflows. By combining structured group education, personalised goal-setting, and ongoing peer support, GEM establishes a sustainable framework for patient empowerment that extends well beyond the clinical encounter. This change package document presents a detailed implementation strategy designed to increase programme enrolment from 14% to 18% of eligible newly diagnosed patients within one year while achieving a clinically significant reduction of 0.5% in average HbA1c levels.

The strength of the programme lies in its multifaceted approach to patient engagement and its rigorous measurement framework, which evaluates clinical outcomes, psychosocial factors, and self-care behaviours. Through the strategic deployment of existing resources and clear delineation of roles and responsibilities, GEM offers a cost-effective model for improving diabetes care that is adaptable across diverse healthcare settings.

This change package document provides healthcare leaders and operational teams with a roadmap for implementation in their specific context, highlighting the critical role that structured education plays in transforming diabetes care from a provider-centred model to a patient-empowered approach that delivers sustainable results. By adopting GEM, healthcare institutions position themselves at the forefront of value-based care, aligning clinical excellence with patient-centred outcomes.



PATIENT'S STORY: THE HUMAN REALITY OF DIABETES

Michael’s story

"When I was first diagnosed with diabetes, I felt overwhelmed and alone. The doctor told me to change my diet, start exercising, and take medication, but I had no idea how to make these changes in my already busy life. The GEM programme connected me with others facing the same challenges and gave me practical tools to manage my condition. Now, six months later, my blood sugar is under control, and for the first time, I feel confident that I can live well with diabetes." – Michael, 52, GEM programme participant.

Michael’s experience reflects the reality for millions of patients who receive a diagnosis of diabetes but lack the knowledge, skills, and support needed to manage their condition effectively. His transformation illustrates the profound impact of structured education and peer support on clinical outcomes and quality of life. The GEM programme aims to make Michael’s success story the standard experience for all newly diagnosed diabetes patients in our healthcare system.

PATIENT'S STORY: THE HUMAN REALITY OF DIABETES

Mdm Zaleha's Story

As a patient, I want to share my journey regarding my health. I always thought I was eating healthy by consuming brown rice and fruits. However, during a health check, I was shocked to find out that I had high blood pressure and early-stage diabetes. The doctor advised me to monitor my diet instead of prescribing medication.

I learnt about the Group Education and Empowerment Program (GEM) from the National Healthcare Group, which taught me how to improve my eating habits. I started taking pictures of my meals to share with my support group, and I noticed significant changes in just two months. My blood pressure and blood sugar levels returned to normal, and I lost about five kilograms. I even bought a blood pressure and glucose monitor to keep track of my health at home.

Now, I continue to follow the GEM program's guidance. When dining out with my children, I choose salads to maintain my progress. I still enjoy eating mee rebus but in moderation. Joining the GEM program opened my eyes to the fact that my previous eating habits were not as healthy as I thought. I feel grateful for this experience and the knowledge I've gained.

Source:
https://www.beritaharian.sg/singapura/pesakit-diperkasa-kini-tahu-tangani-kesihatan-diri

Background: The Diabetes Care Challenge

The Global and Local Context

Diabetes has emerged as one of the most pressing public health challenges of our time, affecting over 460 million people globally, with projections indicating an increase to 578 million by 2030 and 640 million by 2045 (International Diabetes Federation, 2022). This epidemic carries enormous human and economic costs, with annual global healthcare expenditures for diabetes exceeding $760 billion (IDF, 2022).

Within our healthcare network, diabetes affects approximately 11.5% of our adult patient population, reflecting national prevalence rates. Analysis of our clinical data reveals that nearly 40% of these patients have suboptimal glycaemic control (HbA1c > 8%), placing them at significantly higher risk of complications, including cardiovascular disease, nephropathy, neuropathy, and retinopathy (Internal Quality Dashboard, 2024).

The Critical Role of Self-Management Education

The evidence supporting structured diabetes self-management education (DSME) is compelling and consistent. Meta-analyses of randomised controlled trials demonstrate that DSME programmes reduce HbA1c by an average of 0.57% (95% CI: 0.41–0.73) at six months, with effects persisting for up to 24 months post-intervention (Chrvala et al., 2016). Beyond glycaemic control, DSME significantly improves self-care behaviours, reduces diabetes distress, enhances medication adherence, and decreases emergency department visits and hospitalisations (Powers et al., 2020).

These findings are reflected in national standards of care. The American Diabetes Association (2022) recommends DSME as a fundamental component of diabetes care, stating that "all people with diabetes should participate in diabetes self-management education to facilitate the knowledge, skills, and ability necessary for diabetes self-care."

The Implementation Gap

Despite overwhelming evidence supporting DSME, a significant implementation gap exists within our healthcare system. Internal audit data reveal that fewer than 10% of eligible patients in our network receive structured diabetes education, compared to best-practice benchmarks of 60–80% in high-performing health systems (Beck et al., 2018). This implementation gap represents a substantial missed opportunity to improve patient outcomes and optimise healthcare resource utilisation.

Multiple factors contribute to this gap, including:

1. Limited provider awareness – Many clinicians underestimate the impact of DSME on patient outcomes or are unaware of available programmes.
2. System barriers – Current workflows often fail to systematically identify eligible patients and facilitate referrals.
3. Resource constraints – Traditional one-to-one DSME models are resource-intensive and difficult to scale.
4. Patient barriers – Time constraints, transport issues, and competing priorities limit patient participation.

The GEM programme has been designed to address these barriers through a group-based, technology-enhanced approach that maximises efficiency while maintaining personalisation and effectiveness.

Problem Statement: Addressing Critical Gaps in Care

The fundamental problem this initiative addresses is the persistently low participation rate in structured diabetes education among newly diagnosed patients, despite strong evidence supporting its effectiveness. This problem manifests in multiple dimensions:

Clinical Dimension

Our electronic health record data analysis reveals that only 14% of newly diagnosed diabetes patients currently participate in structured education programmes. This low participation rate contributes directly to suboptimal clinical outcomes, with 62% of non-participants failing to achieve target HbA1c levels within one year of diagnosis (Internal Quality Dashboard, 2024). Early glycaemic control is critical, as the "legacy effect" demonstrates that intensive management early in the disease course yields benefits that persist for decades (Holman et al., 2008).

Patient Experience Dimension

Qualitative research with our patient population indicates that newly diagnosed patients frequently report feeling overwhelmed, confused, and inadequately prepared to manage their condition. Patient satisfaction surveys show that diabetes education is consistently rated as one of the most valuable yet underutilised services, with 78% of patients expressing a desire for more comprehensive education and support (Patient Experience Survey, 2024).

System Efficiency Dimension

The healthcare utilisation patterns of patients who do not receive structured education reveal substantially higher costs, with 37% more diabetes-related emergency department visits and 29% more unplanned hospitalisations compared to patients who participate in education programmes (Internal Utilisation Analysis, 2024). This translates to approximately $3,420 in excess healthcare costs per patient annually, representing a significant opportunity for system-level efficiency improvements.

Root Causes

The low participation rate in diabetes education stems from multiple interconnected factors:

1.Process barriers – Current workflows fail to systematically identify eligible patients and facilitate enrolment at the point of eligibility.
2.Accessibility barriers – Traditional programme formats often conflict with patients' work and family responsibilities.
3.Knowledge barriers – Both patients and providers may underestimate the value and impact of structured education.
4.Psychological barriers – The overwhelming nature of a new diagnosis can impede patients' readiness to engage in education.

The GEM programme directly addresses these root causes through a multimodal approach that integrates seamlessly into clinical workflows, offers flexible delivery options, emphasises the value proposition for patients and providers, and provides graduated engagement opportunities aligned with patients' readiness to learn.

Strategic Outcomes and Measurement Strategy

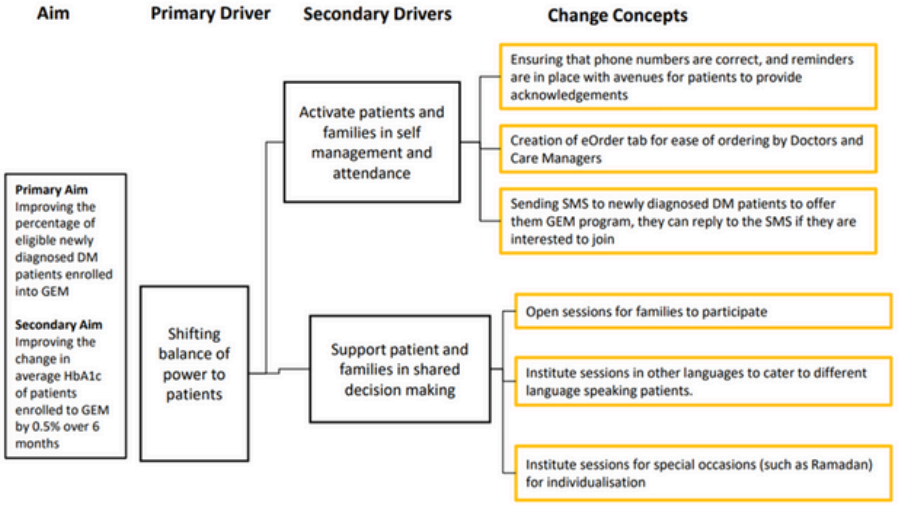
The GEM programme establishes clear, measurable objectives designed to address the identified problem and transform the experience of newly diagnosed diabetes patients in our healthcare system. The GEM programme primary outcomes are captured in two measures:

1. Improving the average HbA1c level by 1% for the eligible NHGP patients from March 24 to March 25.
2. Increasing the proportion of NHGP Diabetes patients achieving 1% drop in HbA1c level from March 24 to March 25.

In addition to the primary outcomes, there are secondary patient outcome measures and key system process measures such as referral and enrolment rate. The measures are categorised into a family of measures of outcomes, process, and balancing measures (see Table).

S/n	Types	Measures	Operational Definition
1	Outcome	Monthly Average HbA1c %	Numerator: Number of patients who attend GEM Denominator: Number of newly diagnosed DM patients in NHGP
2	Outcome	Monthly Proportions of population achieving 1% drop in HbA1c levels	Post 6-month HbA1c of GEM patients
3	Process	Number of eligible newly diagnosed patients	Number of newly diagnosed DM patients in NHGP
4	Process	Number of patients registered	Number of patients who were recruited to GEM
5	Process	Number of patients attend GEM	Number of patients who attended GEM
6	Balancing	Feedback by Stakeholders: Doctors, Care Managers, Care Coaches to elicit potential difficulties, explore improvements and prioritise our PDSAs	

Theory of Change



Change Ideas

Change Idea 1 (Enhancing Choices)
Instituting special occasions such as Ramadan GEM and GEM in different languages to provide more choices for patients

Change Idea 2 (Improving Actualisation)
Ensuring that patient phone numbers are correct when sending GEM details

Change Idea 3 (Improving Actualisation)
Providing reminders in place with avenues for patients to provide acknowledgements

Change Idea 4 (Streamlining Recruitment Process)
Using a pre-existing Care Coach Teleconsult E-order for clinic staff to refer patients to care coach to streamline recruitment process to GEM

Change Idea 5 (Streamlining Recruitment Process)
Enhancing cross referrals between NHGP clinics to increase outreach and reducing slot limitations

Change Idea 6 (Streamlining Recruitment Process)
Piloting SMS for patients to indicate interest to join GEM

Change Idea 7 (Streamlining Recruitment Process)
Surveillance on the impact of cross clinic referrals

Change Idea 8 (Streamlining Recruitment Process)
Cross clinic referral to a GEM slot within 1-2 month from current date

Change Idea 9 (Streamlining Recruitment Process)
Surveillance of pre-existing Care Coach E-order

Change Idea 10 (Streamlining Recruitment Process)
Generating new GEM E-order for Drs to order

Change Idea 11 (Enhancing promotional activities)
Promotion via whatsapp and clinic Teams chat

Change Idea 10 (Enhancing promotional activities)
Promotion via clinic roadshows

GEM Programme Components: A Comprehensive Approach

The GEM program integrates three evidence-based components designed to address the complex needs of newly diagnosed diabetes patients: structured group education, personalised goal setting, and ongoing peer support. Each element is grounded in behavioural science and diabetes education best practices, creating a comprehensive approach that extends beyond traditional clinical encounters.

Component 1: Knowledge is Power - Structured Group Education

Format and Structure:

- 4-hour structured session divided into 60-minute modules with 2 short breaks.
- Available in both in-person and virtual in both Chinese and English formats to maximize accessibility
- Group size limited to 40 participants to facilitate interaction while maintaining efficiency (Actual attendance may still varies)
- Led by Care Managers, Care Coaches and Dietitians using a standardized curriculum

Curriculum Content:

1. Understanding Diabetes (15 minutes)
    - Pathophysiology of type 2 diabetes in accessible language
    - Natural history and the progressive nature of diabetes
    - The relationship between glucose control and complications

2. Nutrition for Diabetes Management (40 minutes)
    - Principles of healthy eating for diabetes
    - Carbohydrate awareness and the glycaemic index
    - Meal planning using the My Healthy Plate model
    - Reading nutrition labels and making informed food choices
    - Strategies for eating out and on special occasions

3. Physical Activity as Medicine (30 minutes)
    - Benefits of regular physical activity for glucose control
    - Current physical activity guidelines for diabetes
    - Overcoming barriers to regular activity
    - Safe exercise practices for people with diabetes

4. Monitoring and Managing Blood Glucose (15 minutes)
    - Purpose and techniques for blood glucose monitoring
    - Understanding glucose targets and patterns
    - Recognising, preventing, and treating hypoglycaemia
    - Managing hyperglycaemia and sick days
    - When to seek medical attention

5. Preventing Complications (15 minutes)
    - Microvascular and macrovascular complications
    - The role of regular screening and check-ups
    - Foot care and daily self-examination
    - The importance of blood pressure and lipid control

6. Medication + Hypoglycaemia + Sick Day (30 minutes)
    - Emotional aspects of diabetes management
    - Stress management techniques
    - Communication with healthcare providers
    - Resources for ongoing support
    - Common side effects and management strategies
    - Importance of medication adherence

7. Interactive Q&A with Dietitians (30 minutes)
    - Addressing individual questions and concerns

Evidence Base: The structured education component aligns with the National Diabetes Reference Materials (NDRM) and incorporates evidence-based principles identified in systematic reviews of effective DSME programs (Chatterjee et al., 2018). Meta-analyses demonstrate that structured group education significantly improves glycaemic control (pooled effect size: -0.44% HbA1c, 95% CI: -0.60 to -0.28) and enhances diabetes knowledge, self-efficacy, and self-care behaviours (Odgers-Jewell et al., 2017).

Component 2: Setting SMART Goals for Success

Methodology:

- Introduction to SMART goal setting (**S**pecific, **M**easurable, **A**chievable, **R**elevant, **T**ime-bound)
- Facilitated goal-setting workshop integrated into the group education session
- Development of personalised action plans aligned with individual priorities

Implementation Process:

1. Education on principles of effective goal setting
2. Self-assessment of current behaviours and readiness for change
3. Identification of 1-3 priority areas for improvement
4. Development of SMART goals with specific action steps
5. Documentation of goals in the electronic health record

Example SMART Goals:

- "I will walk for 15 minutes after dinner 5 days per week for the next month."
- "I will measure my blood glucose before breakfast and dinner daily for the next two weeks."
- "I will replace sugary beverages with water or unsweetened alternatives 6 days per week."

Evidence Base: Goal setting is a cornerstone of effective behaviour change interventions, particularly when goals are specific, proximal, and challenging yet achievable (Lenzen et al., 2017). Research specifically in diabetes demonstrates that structured goal setting improves clinical outcomes, with a systematic review finding that interventions incorporating explicit goal setting yield HbA1c reductions 0.24% greater than interventions without this component (Fredrix et al., 2018).

Component 3: The Power of Community - Peer Support Networks

Structure and Format:

- Establishment of WhatsApp support groups for GEM participants
- Groups limited up to 40 participants to maintain intimacy and engagement
- Moderation by trained care coaches who provide guidance and evidence-based information
- Mix of structured activities and open discussion to maintain engagement

Key Activities:

1. **Celebration of Successes:** Recognition of participants' achievements to reinforce positive behaviours
2. **Problem-Solving Discussions:** Collaborative addressing of common barriers and challenges
3. **Educational Content:** Provide weekly sharing of curated resources and information to reinforce learning (Motivational quotes and videos)
4. **Q&A Opportunities:** Scheduled times for questions to clinical team members

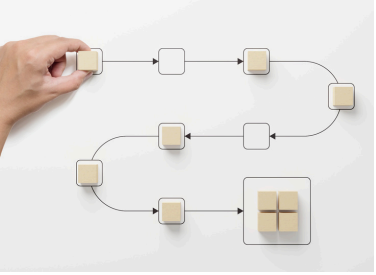
Engagement Strategies:

- Regular posting schedule to maintain momentum
- Recognition of active participants

Evidence Base: Peer support interventions have demonstrated effectiveness in improving diabetes outcomes, with a meta-analysis of 20 RCTs finding significant improvements in HbA1c (-0.24%, 95% CI: -0.43 to -0.05) as well as diabetes distress and quality of life (Joensen et al., 2019). Virtual peer support groups specifically have shown high engagement rates and cost-effectiveness, with retention rates exceeding 70% at six months in comparable implementations (Heisler et al., 2020).

Integration of Components

The strength of the GEM program lies in integrating these three components, which create a comprehensive approach addressing the knowledge, skills, and support needed for effective diabetes self-management. This integration follows evidence-based principles from implementation science, which demonstrate that multicomponent interventions addressing multiple barriers are more effective than single-component approaches (Lau et al., 2016).



Implementation Workflow: From Concept to Practice

The successful implementation of the GEM program requires a systematic approach that integrates seamlessly with existing clinical workflows, minimises additional burden on healthcare providers, and maximises patient engagement. The implementation workflow has been designed to address known barriers to diabetes education enrolment and optimise the patient experience from identification to participation.

Phase 1: Identification and Recruitment

Systematic Identification of Eligible Patients:

1. **Daily Pre-Identified Eligible Patient Lists:**
   - To identify patients, they will look at the OGTT results.
   - OGTT - 2nd hour: >= 11.1 mmol/L, if OGTT at 0min >= 7.0 mmol/L, we will need to dig previous lab results for any fasting venous glucose (FVG) which has a reading of >= 7.0 mmol/L
2. **Diagnostic Code Screening:**
   - Weekly EHR reports identify patients with newly added ICD-10 code E11.9 (Type 2 Diabetes Mellitus without complications).

Multiple Enrolment Pathways:

1. **Direct Clinical Referral:** Healthcare providers can enrol patients during diabetes diagnosis visits using Epic eOrder.
2. **Patient Self-Registration:** QR codes in clinic waiting areas and diabetes education materials link to an enrolment portal.
3. **Care Manager Outreach:** Weekly outreach to newly diagnosed patients who have not yet enrolled.

Enrolment Decision Support:

1. **Decision Aid:** Development of a one-page visual decision aid highlighting the benefits of participation.
2. **Motivational Messaging:** Training of providers in brief motivational interviewing techniques to encourage enrolment.
3. **Testimonial Videos:** Short videos of program graduates sharing their experiences, accessible via QR codes.
4. **Flexible Scheduling Options:** Offering different languages (English, Mandarin, Malay) and mode (Face-to-Face session or virtually via Zoom) to accommodate diverse schedules.

Phase 2: Pre-Session Preparation

Appointment Booking:

1. **Centralised Scheduling:** A dedicated scheduling team manages all GEM appointments.
2. **Multiple Booking Channels:** Phone, patient portal, and in-person options for scheduling.
3. **Reminder System:** Automated reminders at 8 days, 3 days, and 1 day prior to session.

Patient Preparation:

1. **Pre-Session Assessment:** Online completion of baseline questionnaires (SDSCA, DDS).
2. **Technology Support:** For virtual participants, provision of step-by-step instructions and technical support contact information.
3. **Expectation Setting:** Clear communication about session format, duration, and what to bring.

Phase 3: GEM Session Delivery

Session Logistics:

1. **Facility Requirements:** Dedicated space with appropriate seating, audio visual equipment, and privacy.
2. **Virtual Platform:** Zoom Healthcare with waiting room, breakout rooms, and recording capabilities.
3. **Materials Distribution:** Standardized handouts, action plan templates, and resource lists.
4. **Staffing Model:** Primary facilitator (diabetes educator) with support from dietitian during nutrition module

Session Flow:

1. **Welcome and Introduction (15 minutes):** Establishment of group norms and participant introductions.
2. **Knowledge Building (3 hours 15 minutes):** Delivery of core curriculum modules with interactive activities.
3. **Goal Setting Workshop (20 minutes):** Facilitated development of personalized SMART goals within 24 hours after GEM session.
4. **Support Group Formation (10 minutes):** Introduction to WhatsApp group and exchange of contact information (optional).

Phase 4: Follow-Up Support

Immediate Follow-Up:

1. **Session Documentation:** Standardized documentation in EHR, including goals and action plan.

Ongoing Support:

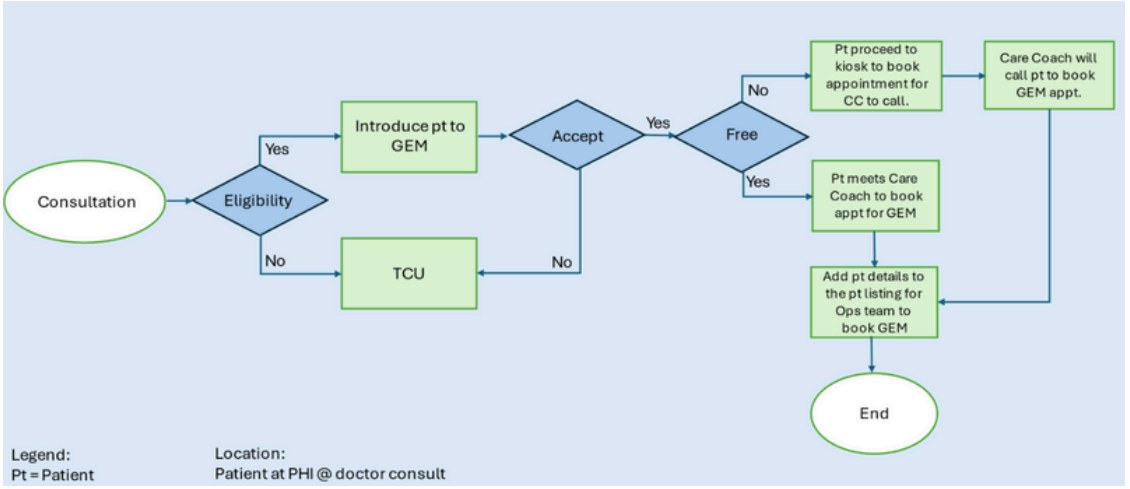
1. **Outcome Measurement:** Administration of follow-up assessments (HbA1c, SDSCA, DDS)
2. **Graduation Recognition:** Certificate of completion and recognition in support group.

Quality Assurance:

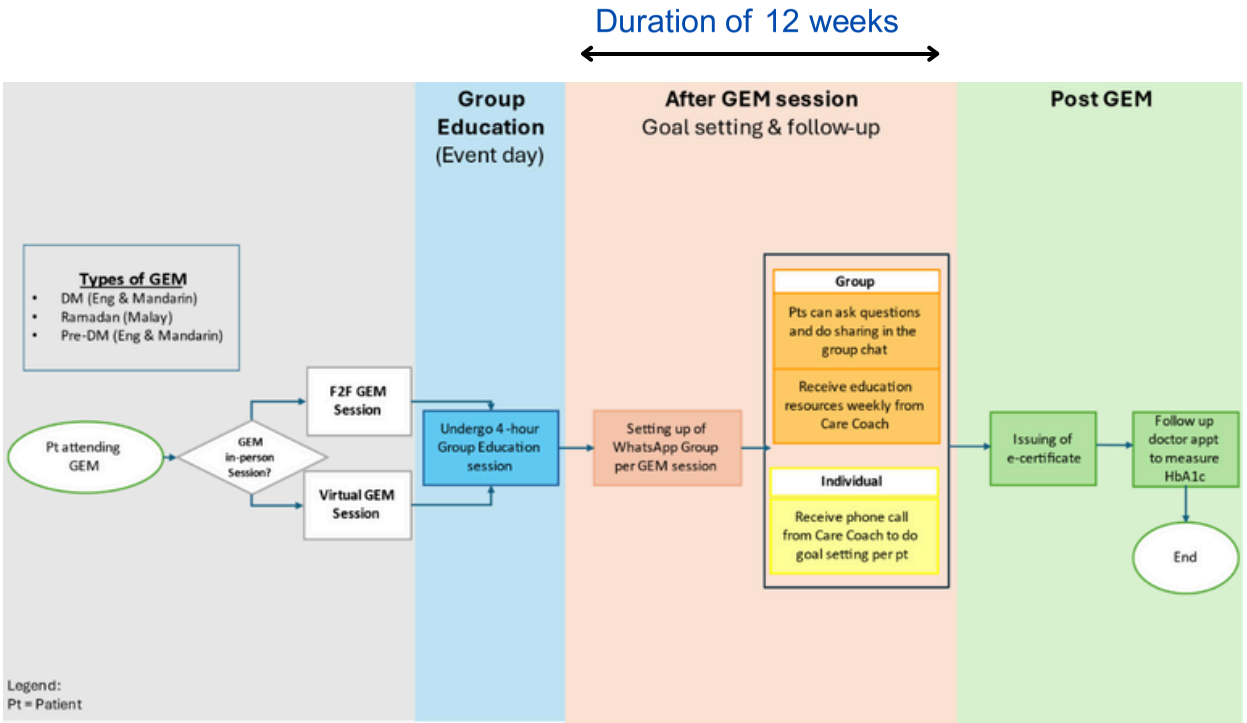
1. **Participant Feedback:** Post-session surveys with specific questions about delivery quality.

This comprehensive implementation workflow addresses known barriers to diabetes education, leverages existing systems and resources, and provides clear guidance for all stakeholders involved in the GEM program. The structured yet flexible approach allows for adaptation to local contexts while maintaining program fidelity.

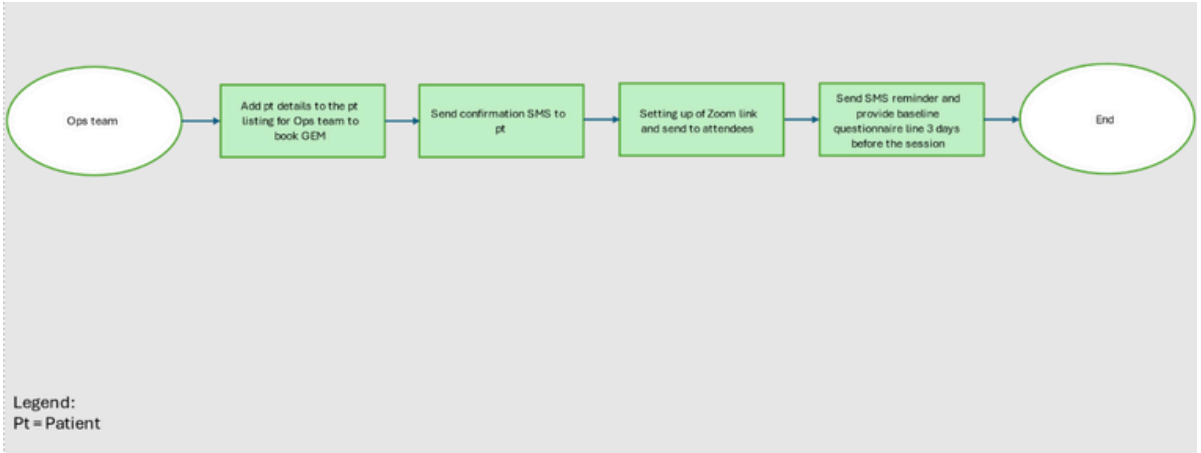
Recruitment Process



Patient Experience



Internal Process



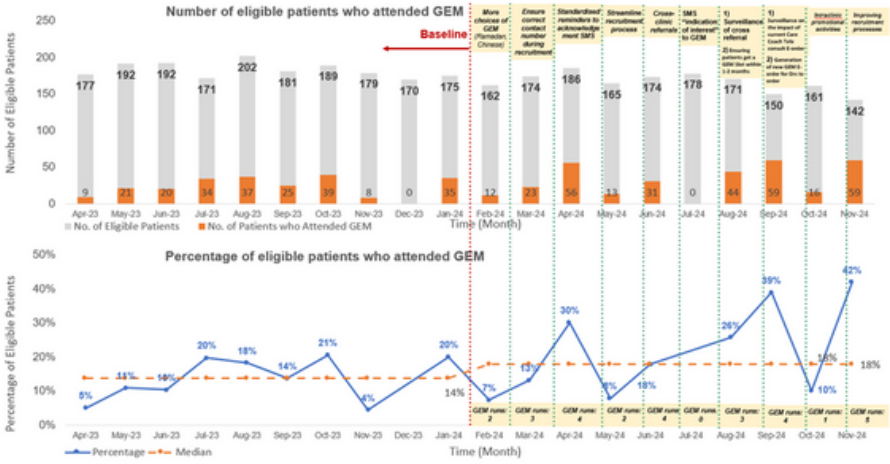
RESULTS AND IMPACT

Key Outcomes Achieved

- Enrolment increased from baseline 14% to 18%.
- HbA1c improved from a baseline 7.17% to 6.79%.

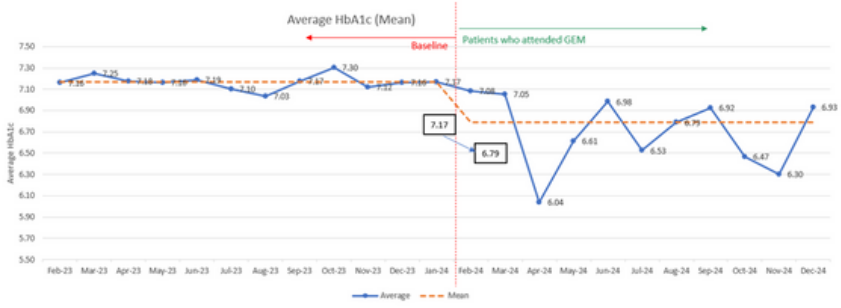
(*Include Graphs 1 & 2 for visual representation of these improvements*)

Enrolment median rose from baseline 14% to 18%



Graph 1. Number and percentage of eligible patients who attend GEM

The average HbA1c of patients have also improved from a baseline average of 7.17% to 6.79%.



Graph 2. Average HbA1c from baseline and start of PDSA interventions

Roles and Responsibilities: Organizational Integration

Successfully implementing the GEM program requires a clear delineation of roles and responsibilities across multiple stakeholders. This section outlines the specific functions of each role, ensuring accountability and seamless integration into existing workflows.

Staff	Time commitment	Key responsibilities	Support Required
Care Coaches	• Prep before GEM and facilitating GEM: 4 hours • Engagement in group chat: 2 hours • Follow-up on goal setting: 3.5-5 hours per month (based on 10 patients count)	• Verify patients' eligibility (age, diagnosis), and their preference (language, virtual/F2F session) during recruitment (registration) • Contact registered patients to confirm their attendance before GEM • Prepare a profile list of those patients confirmed attending • Assist with logistics during GEM • Facilitate goal setting segment during GEM • Follow up with no-shows to reschedule • Follow up on goal setting and documentation • Liaise with care team if any clinical issue was raised in group chat • Send out educational material and motivational quote to patients weekly over group chat	• Comprehensive facilitator training • Standardized curriculum materials • Session preparation and follow-up

Roles and Responsibilities: Organizational Integration

Care Managers	• 6 hours per session (4-hour session plus 2 hours preparation/ documentation)	• Tag patients from OGTT list to offer GEM • Facilitate GEM education sessions using standardized curriculum • Document session attendance and charge code • Coordinating with Care coach and Dietitian during GEM session	• Comprehensive facilitator training • Standardized curriculum materials Session preparation and follow-up (as needed) • Refer eligible patients
Dietitians	• 30 mins per session for Q&A segment • 1 hour (Preparation/ documentation)	• Provide education on dietary management (recorded video) • Providing answers to dietary questions during Q&A segment • Address diet-related queries raised by patients in group chat (when highlighted by Care Coach)	• Refer eligible patients • Provide list of snacks accordingly to healthy guidelines

Roles and Responsibilities: Organizational Integration

Project Team (Doctors, Managers, Executives)	• 2-3 hours weekly for program oversight	• Monitor program metrics and implementation fidelity • Address barriers to implementation • Manage resources and staffing • Extraction of data and generate report outcomes to organizational leadership • Lead continuous quality improvement efforts	• Update of workflow and processes, FormSG • Consolidate schedules and materials • Data extraction and Presentation • Stakeholder engagement with leadership and clinical teams to drive alignment.
Clinic Operation Team	• 5 – 10 per patients (Booking of GEM appointment on EPIC, sending out of SMS pre-GEM session and verification of patient's detail during virtual session. • 1 hour preparation to set up logistics.	• Book appt in Epic • Send out GEM details via SMS prior actual date • Actualize GEM attendance on Epic • Preparation of logistics for GEM session	• Send out GEM details via SMS prior actual date • Verify and admits patients to virtual platform upon login

Scalability & Adoption: Pathways for Institutional Implementation

The GEM program is designed to be adaptable across different healthcare settings, enabling primary healthcare institutions (PHIs) to implement and scale the model based on their available resources and infrastructure. The following strategies outline how different institutions can successfully adopt and sustain the GEM framework:

Implementing the 4-Hour Structured Education Model:

PHIs with limited resources can start by adopting the core 4-hour structured education model as a foundation. This allows for an efficient, high-impact intervention that leverages existing clinic staff without requiring additional hires.

- Utilizing Existing Staff as Health Coaches: Nurses, care coordinators, or allied health professionals (e.g., dietitians, pharmacists) can be trained as health coaches to facilitate GEM sessions, reducing the need for new personnel.
- Gradual Integration with Routine Care: PHIs can incorporate GEM education into routine chronic disease management visits, reducing additional scheduling burdens.
- Flexible Delivery Models: Institutions can pilot the program with in-person, virtual, or hybrid formats, depending on patient demographics and clinic capabilities.

Leveraging WhatsApp-Based Support Groups for Scalable Engagement:

A WhatsApp-based support group model provides a cost-effective and scalable method for ongoing patient engagement, motivation, and reinforcement of learning.

- Sustained Peer Support & Self-Management Encouragement: Patients can share experiences, challenges, and progress, fostering peer learning and accountability.
- Minimal Staff Burden: A single health coach or care coordinator can oversee multiple groups with minimal time commitment (10-15 minutes per day).
- Curated Content & Check-ins: Pre-scheduled messages, reminders, and weekly educational materials can be shared. Monthly Check-ins to check and encourage patients to stay focus and adhere to their new diet or new healthier lifestyle.

Scaling Based on Institutional Readiness & Resources:

Institutions can scale implementation progressively based on capacity:

A. Basic Model (Minimal Resource Investment)

- Run GEM sessions once per month with existing staff.
- Use WhatsApp support groups for follow-ups.
- Identify a QI lead to monitor participation and patient feedback.

B. Intermediate Model (Expanded Capacity)

- Increase GEM session frequency.
- Develop role-specific facilitators (e.g., separate educators for diet and exercise components).
- Enhance WhatsApp support groups with structured content libraries and scheduled interactive discussions.

C. Advanced Model (Full Integration & Expansion)

- Scale to multiple clinics or regional networks.
- Embed GEM principles into chronic disease management pathways.
- Conduct data-driven refinements based on patient outcomes and feedback.

Institutional & System-Level Adoption Strategies:

For wider adoption, institutions can take the following steps:

- Leadership Buy-In & Policy Integration: Engage senior management and policymakers to integrate GEM as part of standard diabetes management guidelines.
- EPIC Integration for Automated Referral & Documentation: Embedding GEM referrals and session documentation into the electronic health record (EHR) system streamlines enrolment and tracking.
- Cross-Institutional Learning Networks: Facilitate shared learning and best practice exchange among PHIs, enabling a collaborative approach to scaling GEM.
- Outcome Measurement & Continuous Improvement: Establish key performance indicators (KPIs) to track participation rates, patient engagement, and clinical impact, ensuring sustainable long-term adoption.

Supporting Wider Community & Patient-Led Engagement:

Beyond institutional implementation, PHIs can foster community-led scalability by:

- Encouraging patient champions to act as peer mentors within WhatsApp groups.
- Collaborating with community organizations to provide additional lifestyle support.
- Engaging family caregivers in GEM education to enhance home-based diabetes management.

Conclusion

Driving Success Through Continuous Improvement

The GEM program is a comprehensive, evidence-based initiative designed to support newly diagnosed diabetes patients through structured group education, personalized goal setting, and peer support. These three core components create a holistic approach that empowers patients with the knowledge, skills, and support necessary for effective diabetes self-management.

The structured group education component delivers standardized, interactive sessions covering key aspects of diabetes care, such as medication management, nutrition, physical activity, and glucose monitoring. By integrating personalized SMART goal setting, the program ensures that patients translate knowledge into actionable, achievable health improvements. Additionally, the peer support network fosters continued engagement and motivation, leveraging group interactions and health coach facilitation to sustain positive behaviour changes.

To ensure successful implementation, the GEM program follows a structured implementation workflow that integrates seamlessly with healthcare operations. This workflow includes systematic patient identification, multiple enrolment pathways, pre-session preparation, structured session delivery, and post-session follow-up support. By leveraging EHR-based patient screening, centralized scheduling, digital reminders, and technology-enabled education delivery, the program maximizes patient accessibility and participation. Continuous follow-up, including health coach check-ins and structured peer support, reinforces sustained engagement and long-term behaviour change.

The GEM program employs the Model for Improvement as its core quality improvement (QI) methodology. Through multiple Plan-Do-Study-Act (PDSA) ramps, teams systematically test, adapt, and refine interventions to optimize enrolment rates, attendance, and patient engagement. Key learnings from these cycles have led to practical enhancements, such as allowing patients to book GEM sessions 1-2 months in advance, offering them across multiple healthcare institutions (e.g., TTSH, KTPH), and providing both virtual and in-person options. These refinements have significantly increased enrolment and attendance rates, ensuring that more patients benefit from the program.

By embedding continuous learning and adaptation into its implementation, the GEM program is well-positioned to drive sustained improvements in diabetes management. Through its structured yet flexible approach, the program empowers patients, optimizes healthcare resources, and strengthens the overall diabetes care pathway.

OUR TEAM

Dr Moses Tan Mong Heng
Team Lead
Deputy Head, NHG
Geylang Polyclinic

Dr Sabrina Wong Kay Wye
Deputy Director,
Clinical Research Unit,
NHG Polyclinics

Dr Tan Seng Kiong
Consultant Endocrinologist
DD, Diabetes Centre,
Khoo Teck Puat Hospital

Dr Yeo Pei Shan
Senior Consultant,
Tan Tock Seng Hospital

Dr Hoi Wai Han
Chief Endocrinology,
Woodlands Health

Improvement Specialists

Dr Bang Chungli
Senior Assistant Director,
National Improvement Unit,
MOHT

Mr Darren Ng Kim Siong
Improvement Specialist,
National Improvement Unit,
MOHT

Annexes

Importance of Self-care Behaviours

Self-care behaviours are essential daily practices for diabetes management, including a balanced diet, regular exercise, weight management, medication adherence, avoiding smoking, moderating alcohol intake, and attending medical appointments. Specific diabetes-related self-care activities involve regular glucose monitoring, learning insulin injection techniques, proper insulin storage, recognizing and treating hypoglycaemia, and knowing how to manage illness. Despite their effectiveness in improving diabetes control, adherence to these behaviours is often low among patients.

Research shows that patients develop beliefs about diabetes within the first three months post-diagnosis, which significantly influence their emotional well-being and motivation for self-care over time. Therefore, early supportive care and education are vital for helping patients understand diabetes and adopt healthier lifestyles.

The GEM programme aims to empower diabetes patients with self-management skills to achieve glycemic targets, reduce diabetes-related distress, and minimize long-term complications. It also addresses pre-diabetes to prevent progression to diabetes. The programme focuses on:

- Newly diagnosed patients, providing foundational knowledge for effective management.
- Patients with poor control and low health literacy, using relatable educational strategies.
- Family members and caregivers, equipping them to support patients effectively.

The GEM programme aims to ensure that more patients who are newly diagnosed or have poor diabetes control receive at least some form of structured diabetes education. Based on 2023, KTPH- AdMC Diabetes Centre has about 1,360 new referral patients per year, NHGP has about 4,700 newly diagnosed cases per year and TTSH has 1,329 diabetes patients from IDCP (programme consists of either the newly diagnosed and/or patients with poorly controlled diabetes which require endocrinology intervention) and only less than 10% are getting a structured education across the institutions, based on the number of participants (921 participants) under MOH-funded GEM programme.

2. Recruitment Brochure

NHGP GEM

Let's Beat Diabetes Together!

Join us for this 3-hour program, Saturday 9am to 12pm, developed and facilitated by nurses and dietitians, aimed at empowering individuals with diabetes to effectively manage their condition.

Topics	Physically in Polyclinic	Language	Online (Zoom) *(ZOOM details will be sent before each session)*	Language
Diabetes	❑ 18 Jan 25 - Woodlands Polyclinic ❑ 15 Feb 25 - Ang Mo Kio Polyclinic ❑ 01 Mar 25 - Geylang Polyclinic	Chinese	❑ 11 Jan 25 ❑ 08 Feb 25 ❑ 08 Mar 25	English
	❑ 08 Mar 25 - Yishun Polyclinic	English		
Pre-Diabetes			❑ 25 Jan 25	English
			❑ 22 Feb 25	Chinese
Ramadan			❑ 01 Mar 25	Malay

Suitable for:

- For patients who are on follow-up with NHGP and
- Diagnosed with Type 2 Diabetes or Pre-Diabetes and want to learn more about management of diabetes

Your family members are welcome to join in the session with you!

3. Programme Outline

Time	Content
0900-1000	**Part 1:** • Getting to Know You • What is Diabetes? • HbA1c – What is it? • Benefits of Home Blood Sugar Monitoring
1000-1010	- ***Break*** -
1010-1050	**Part 2:** • Dietary Management (Video)
1050-1110	• Exercise
1110-1120	- ***Break*** -
1120-1200	**Part 3:** • How do Medications Work? • Hypoglycaemia (Low Blood Sugar) • What If I Fall Sick? • Putting into Action!
1200-1245	• Q&A (incl. Diet) • Summary • Evaluation & Follow-up Plan

4. Outline of SMART Goal Setting

CONTENT
Why do we set goals?
A S.M.A.R.T goal
Let's set a goal!
WhatsApp chat follow-up
Evaluation

Example of SMART goals setting

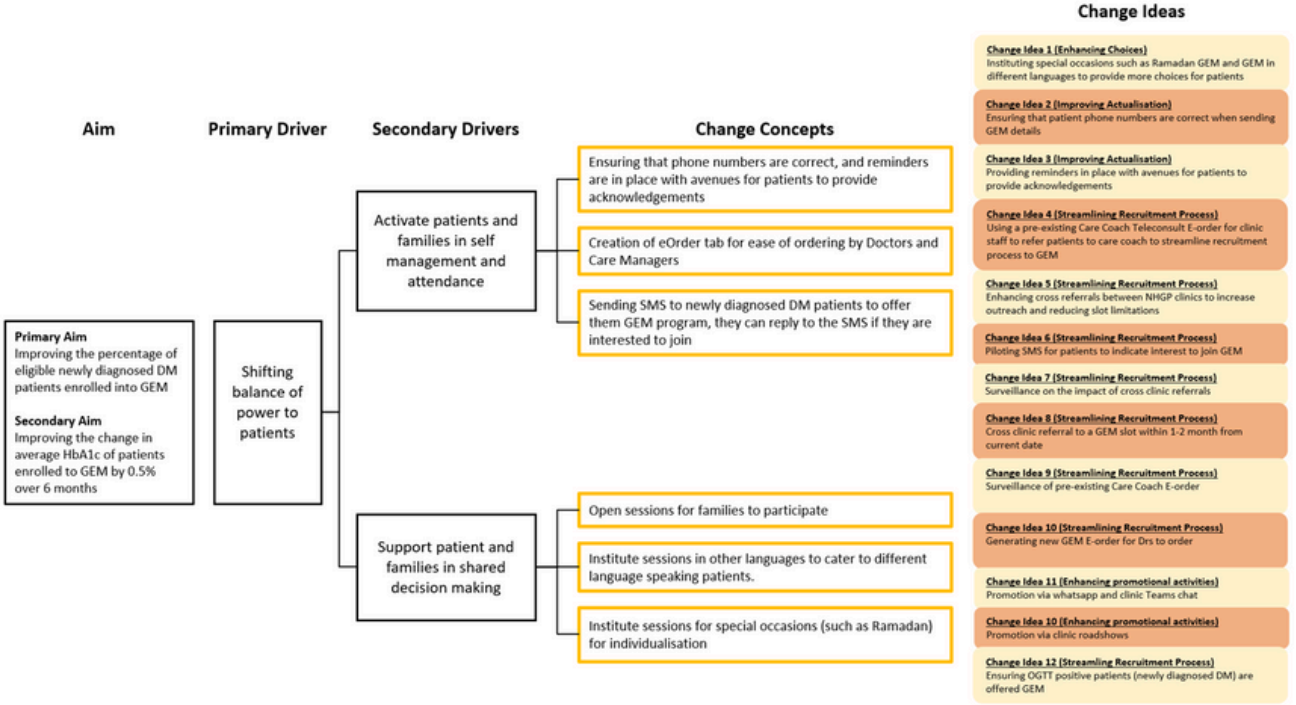
5. What to do during virtual GEM session

We appreciate if you could do the following during the session:

6. Invitation to join WhatsApp Group Chat

- ✓ Links / attachments sent via this official NHGP account (HP Nα) is **safe** for users to open.
- ✓ Participate **actively** in the activities that have been prepared for your learning. It will allow you to learn **optimally**.
- ✓ As this platform is for us to learn from and support each other, please **refrain** from sending **advertisements or unsolicited messages**, to keep this space safe.

Driver Diagram



What is GEM?

National Healthcare Group POLYCLINICS

In 2022-2023, our programme constitutes diabetes group education programme that

- Newly diagnosed patients with diabetes.
- Lasts 3.5 to 4 hours on Saturdays
- Conducted physically or virtually
- Comprises group education, SMART Goal Setting and group follow up with care coach over 12 weeks
- Community of support: patients are encouraged to attend with family and friends.

Group Education by Nurses and Dieticians including

- Diabetes & its complications
- Pathophysiology of diabetes
- Diet
- Exercise
- Sick day advice
- Hypo/hyperglycaemia
- Benefits of self-monitoring
- Medications

SMART Goal Setting

Group follow-up with Care Coach

- Sharing of diabetes resources
- Review and follow-up on goals
- Motivational support from peers
- Socialisation

Formation of informal support groups

Why GEM?

National Healthcare Group POLYCLINICS

Frameworks

ADA 2023 Guidelines
All people with diabetes should participate in DSMES to facilitate knowledge and skills for self care.

DSMES **at diagnosis** is required to aid treatment plan

DSMES should be **person-centered** and may be offered in **group settings**

Stages of change (transtheoretical model)
Shifting from contemplation to action and maintenance

Components

Group Education

Nurses and Dieticians
- Diabetes care skills & knowledge

Person-centeredness

Health Coaches Motivate
- Solution-focused

Behavior change
- Goal setting
- Support
- Accountability

Community Support
- Group chat
- Family members invited to sessions

Aims at the Cluster Level

Aligned Curriculum

Consistent messaging across institutions aligned to the NHG DM School

Opportunity to Scale

Able to scale quickly due to
1. Sharing of educational and training materials
2. "1 to Many" approach

Available across the NHG cluster including

National Healthcare Group POLYCLINICS

Admiralty Medical Centre

Woodlands Health

Tan Tock Seng Hospital

Why are we doing this?

Patient's voice

Patient Profile	Clinical History	Situation
Mdm Zaleha • Age: 59 years • Ethnicity: Malay	• On follow-up with NHGP for hypertension and hyperlipidaemia – on amlodipine and atorvastatin. • Diagnosed with DM in March 2022 (fasting glucose 7.7mmol/L, HbA1c 6.7%) • Weight 59.2kg. BMI 25.3	Mdm Zaleha has always been a health conscious person and was surprised when she was diagnosed with diabetes during a check-up at Yishun Polyclinic. After her diagnosis, she was even more determined to stay healthy and enrolled in the GEM programme in April 2022. She found that the information shared by the care manager and dietitian were useful in helping her adjust to a healthier diet. For example, she used to consume more brown rice but with the dietitian's advice, she has learned how to moderate her intake of food. Motivated to keep healthy with the help of the Care Coach, she increased the frequency and intensity of her exercises such as climbing twelve flights of stairs daily, and cycling once a week for three hours each time. From Apr 2022 till Oct 2022, she has lost about 5kg to 53.3kg and her blood sugar level has improved from 6.7% to 5.9%. Early interventions with SDESP such as GEM are crucial for newly diagnosed patients to achieve diabetes remission. Mdm Zaleha is grateful to the care team, and would strongly encourage eligible patients to enroll in the programme. She also advised her children and friends to adopt healthy lifestyle behaviours using the knowledge she has gained from the programme.

Mdm Zaleha
Age: 59 years

March 2022

- Mdm Zaleha was diagnosed with Type 2 DM.
- Recruited into **Group Education and eMpowerment(GEM)**.

2 April 2022

- Mdm Zaleha attended GEM Session 1 and found out more about **DM pathophysiology, risk factors, symptoms, complications and simple dietary advice** from the Care Manager.
- **Care Coach** shared **SMART goal setting strategies** and supported her in setting goals that are meaningful and achievable to her – to take a walk everyday and eventually progress to cycling or brisk walking.
- She was also enrolled into a Whatsapp group chat with other participants for **peer support and sharing of useful resources**.

16 April 2022

- Mdm Zaleha attended GEM Session 2 conducted by the dietitian and **received in-depth DM dietary advice**.
- Since the previous GEM session, she had **started cycling** with her family and had **reduced her carbohydrate intake**.

Oct 2022

- Through her lifestyle changes to increase physical activity and improvements in diet, Mdm Zaleha had **lost 5kg and achieved target blood pressure and glucose readings**.

- Mdm Zaleha attended GEM Session 3 and learnt the **importance of blood glucose monitoring and various DM medications**.
- She was **appreciative** of the knowledge shared in GEM.

Berita Harian. https://www.beritaharian.sg/setempat/pesakit-diperkasa-kini-tahu-tangani-kesihatan-diri. Accessed 1 Feb 2024.

Patient's Journey and Enrolment to GEM

1. Patient recruitment phase

1.1. Patients may be identified through OGTT scrub lists, self-registration via QR codes on posters/brochures, or opportunistic referral by doctors.
1.2. Care Manager or Care Coach explains the GEM programme to eligible patients using the recruitment brochure. They highlight the content of GEM and the run dates.

2. Patient Decision:

2.1. If the patient agrees, they are recruited into GEM.
2.2. For undecided patients, they can take the brochure home and register later via QR code.

3. Appointment Booking:

3.1. Clinic Operations staff book GEM appointments in EPIC for confirmed participants.

4. Pre-Session Preparation:

4.1. Patients receive Zoom details and baseline questionnaire link via SMS.

5. Attending Sessions:

5.1. Patients attend 4-hour physical or virtual session.

6. Follow-up and Support:

6.1. Care Coach provides ongoing support and engagement via WhatsApp group chat for 3 months.
6.2. Patients may be referred to additional programs based on their interests (e.g., Dietetics Consultation, Lighter Life).

7. Programme Completion:

7.1. Patients who completed the 3-month program will receive an e-certificate of completion.

GEM can be initiated by both doctors (through opportunistic referral) and Care Coaches (through scrub list review). The programme emphasizes a patient-centred approach, offering multiple entry points and ongoing support to ensure patient engagement and success in diabetes self-management.

For more information on GEM programme, please contact:

Leon Pei Fong Tan - Leon_PF_TAN@nhgp.com.sg
Tan Bee Yan - Bee_Yan_TAN@nhgp.com.sg