Project Title

The Clinical Diabetes Educator Programme: A Novel Transdisciplinary Model for Diabetes Care

Project Lead and Members

Project lead: Adj Asst Prof Seow Cherng Jye, Senior Consultant

Project members:

- Dr Hoi Wai Han, Senior Consultant, WHC (formerly TTSH)
- Dr Ray Lai, Consultant, TTSH
- Dr Chin Han Xin, Consultant, TTSH
- APN Joyce Lian Xia, Senior Nurse Clinician, TTSH
- Dr Lim Shu Fang, Principal Pharmacist, TTSH
- Ms Melissa Ho, Senior Dietitian, TTSH
- Mr Kenneth Koh, Senior Podiatrist, TTSH
- Ms Regina Huang, Senior Medical Social Worker, TTSH
- Ms Dorothy Chen, Operations Manager, TTSH
- Ms Soh Si Lin, Operations Executive, TTSH
- Ms Teo Hwei Yee, Operations Executive, TTSH
- Adj A/Prof Daniel Chew, ACMB (Manpower) and Senior Consultant, TTSH
- Dr Timothy Quek Head of Department and Consultant TTSH

Organisation(s) Involved

Tan Tock Seng Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Nursing, Healthcare Administration, Allied Health

Applicable Specialty or Discipline

Pharmacy, Endocrinology. Podiatry, Nutrition & Dietetics, Medical Social Worker, Operations

Project Period

Start date: Dec 2019

Completed date: Sep 2021

Aims

To reduce care fragmentation by systematically cross-train and elevate the capabilities of our diabetes Allied Health Professional (AHP) workforce

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

Some lessons we have drawn from conception to implementation have included:

1. Communication with stakeholders.

Our CDE trainees were initially apprehensive about widening of their job scope – while assurance was provided, setting clearer parameters about their expected responsibilities early in the process may have gone some way towards allaying these fears.

Furthermore, it was important to manage the expectations of the endocrinologists leading CDE teamlets. This would ensure that CDEs' practice was kept within the confines of their training and individual learning progress, while minimising

inappropriate referrals (e.g. those patients in whom diabetes was not the primary problem).

These teething issues were gradually ironed out with clear, constant communication following implementation.

2. Communication with target patient group.

Notwithstanding good patient feedback overall, some patients initially expressed discomfort at adjusting to (and paying for) the new CDE-Teamlet model of care. It was not immediately apparent that there would be cost and time savings in the long run.

A better publicity effort may have helped in this regard.

3. Competency maintenance and professional fulfilment.

We now have a pool of 22 CDEs (DNCs, Pharmacists and Dietitians) who have completed or partially completed their training portfolios.

Our attention has turned now towards maintaining their competencies and re-credentialling them for practice.

In the pipeline are the institution of regular journal club sessions – to keep knowledge fresh and engender greater professional fulfilment.

We are also attending to keeping training materials and classroom sessions up to date.

The operational and administrative considerations of maintaining this programme continue to provide us valuable lessons in resource optimisation.

Conclusion

Piloting a new value-based care model has been challenging and rewarding. Good patient feedback and outcomes have validated our work, and encouraged us to see that innovative workforce transformation is not only possible but worthwhile.

Additional Information

2022 National HIP Best Practice Medal – Workforce Transformation

Project Category

Workforce Transformation

Job Redesign, Trans-Disciplinary Upskilling

Training & Education

Learning Culture

Keywords

Clinical Diabetes Educator, Cross Training, Workforce Capability

Name and Email of Project Contact Person(s)

Name: Adj Asst. Prof Seow Cherng Jye

Email: cherng_jye_seow@ttsh.com.sg

Workforce Transformation

The Clinical Diabetes Educator Programme: A Novel Trans-Disciplinary Model For Diabetes Care

Adj Asst Prof Seow Cherng Jye[1], Dr Hoi Wai Han[2], Dr Ray Lai[1], Dr Chin Han Xin[1], APN Joyce Lian Xia[3], Dr Lim Shu Fang[4], Ms Melissa Ho[5], Mr Kenneth Koh[6], Ms Regina Huang[7], Ms Dorothy Chen[8], Ms Soh Si Lin[8], Ms Teo Hwei Yee[8], Adj A/Prof Daniel Chew[1], Dr Timothy Quek[1]

[1]Department of Endocrinology, TTSH. [2]Division of Endocrinology, Department of Medicine, WHC, [3]Divison of Nursing, TTSH, [4]Division of Pharmacy, TTSH. [5]Department of Nutrition & Dietetics, TTSH. [6]Foot Care & Limb Design Centre, TTSH. [7]Department of Care & Counselling, TTSH. [8]Department of Operations (Medicine), TTSH.

BACKGROUND

6 years after the War on Diabetes was declared, diabetes mellitus remains a significant public health problem. Its prevalence is projected to continue rising over the coming decades[1] – and with it, an increasing burden of complications including cardiovascular disease, end-stage kidney disease, and lower limb amputations.

Upon diagnosis, the person with diabetes is thrust into a complex system of care delivered by a large team of healthcare professionals (HCPs). Doctors, nurse clinicians (DNCs), pharmacists, dietitians, podiatrists, social workers and others deliver various aspects of therapy and preventive care. However, with so many HCPs caring for a single patient, healthcare delivery can become fragmented. Duplicate services and uncoordinated visits may result in patient dissatisfaction, high default rates, and poor treatment outcomes.

AIM

The **Clinical Diabetes Educator (CDE) programme** was conceptualised to reduce this care fragmentation. The central idea was to systematically cross-train and elevate the capabilities of our diabetes Allied Health Professional (AHP) workforce.

CDEs would be diabetes subject matter experts, who would take on elements of a DNC's, pharmacist's, dietitian's and podiatrist's work at a single sitting. The CDE would also act as a physician-extender, being able to lead a diabetes clinic consult with physician supervision.

The program was piloted in Ang Mo Kio Specialist Centre (AMKSC) beginning in December 2019. There, CDEs practice in a teamlet model, led by a consultant endocrinologist.

With these transdisciplinary innovations in workforce capability, we achieved greater cost-effectiveness while improving patient compliance and therapeutic outcomes.

DEVELOPMENT & IMPLEMENTATION

CDE Training Framework – Trans-Disciplinary Education

3 Components

1 E-Learn
- Self-paced online lecture slides and quizzes

2 Classroom Sessions
- Face to face lectures
- Team-based learning
- Case-based discussions
- Role-play

3 Practical Sessions
- Hands-on experience
- Clinical attachments
- Practical assessment portfolio (including case logs, mini-CEX, competency checklists)

No.	Topics	1	2	3
Allied Health Professional Learning				
1.1	Introduction to DM			
1.2A	Principles of DM (Screening and Lifestyle)			
1.2B	Principles of DM (Screening and Lifestyle) on Diet			
1.3	Hypertension and Hyperlipidaemia			
1.4	Pharmacological Management of DM			
1.5	Hypoglycaemia			
1.6	DM in Special Scenarios			
1.7	Self Monitoring of Blood Glucose			
1.8	Foot Care Advice			
1.9	Psychosocial Aspects			
1.10	Basic Principles of DM Management: Exercise			
	Sub-Total no of Hours	19.5	9.5	29
	Estimated Total no of Hours	58		

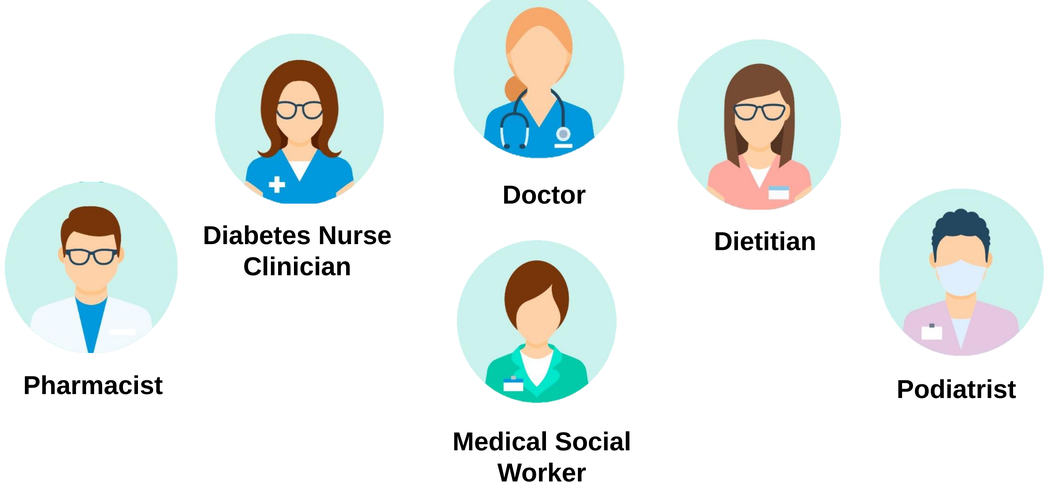
No.	Topics	1	2	3
Clinical Diabetes Educator Training Programme				
2.1	Overview of DM			
2.2	Getting to know Insulin			
2.3	Insulin Injection and Mixing			
2.4	Insulin Titration			
2.5	Interpretation of Blood Glucose			
2.6	Interpretation of Blood Glucose			
2.7	Basic Dietary Advice			
2.8	Foot Screening for Low Risk Patients			
2.9	Clinic Consultations			
2.10	Advanced Principles of Diabetes Management: Exercise			
3.1	Monitoring of Lab Results			
3.2	Monitoring of OHGAs			
	Sub-Total no of Hours	17.5	11.5	46.5
	Total no of Hours	75.5		

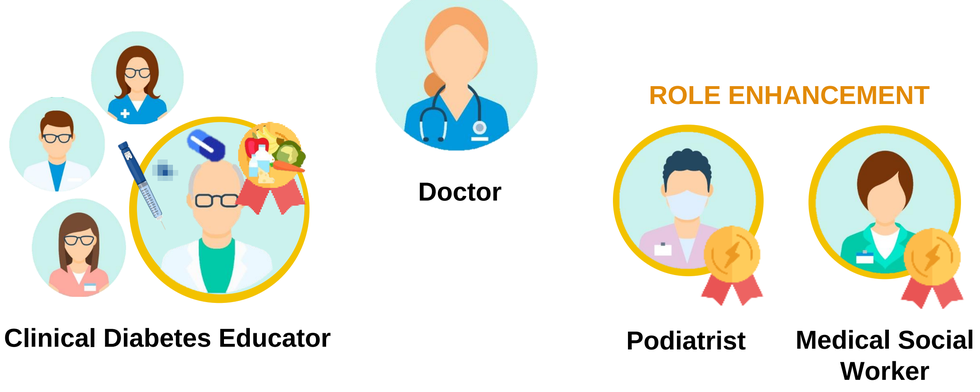
22 Trainees

- ***Jul 19*** — *AMKSC Workshop*; *Trans-D care model developed*
- ***Aug 19*** — *Commence CDE Training (Batch 1)*
- ***Dec 19*** — *AMKSC Opening*
- ***Dec 20*** — *CDE Training Completion (Batch 1)*
- ***Apr 21*** — *Commence CDE Training (Batch 2)*
- ***Oct 21*** — *CDE Training Completion (Batch 2)*
- ***Jan 22*** — *Commence CDE Training (Batch 3)*
- ***Jun 22*** — *CDE Training Completion (Batch 3)*; *Commence CDE Training (Batch 4)*

CDE training is an ongoing process

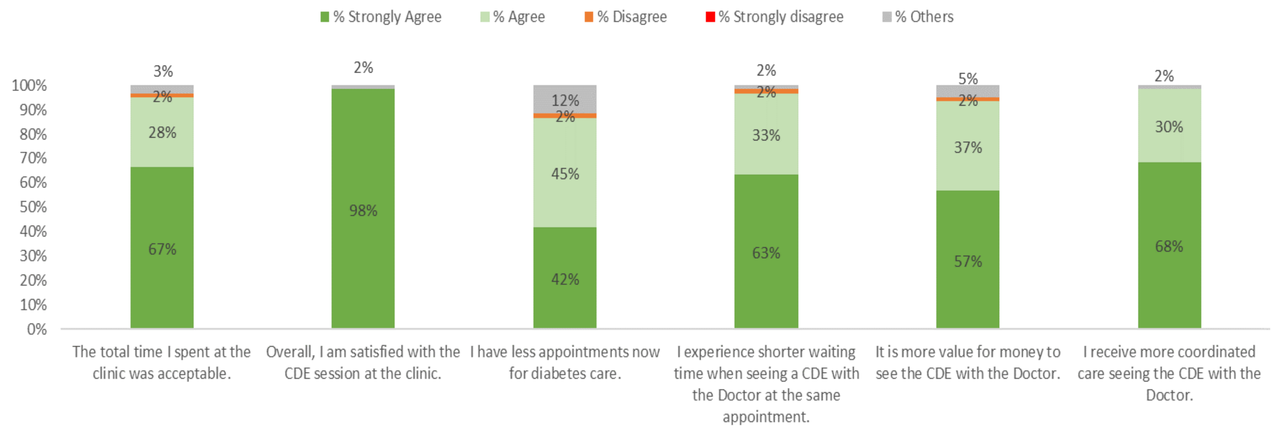
TRADITIONAL CARE VS TRANS-DISCIPLINARY CARE





OUTCOMES

Qualitative and quantitative feedback on the CDE model was collected from 60 patients.

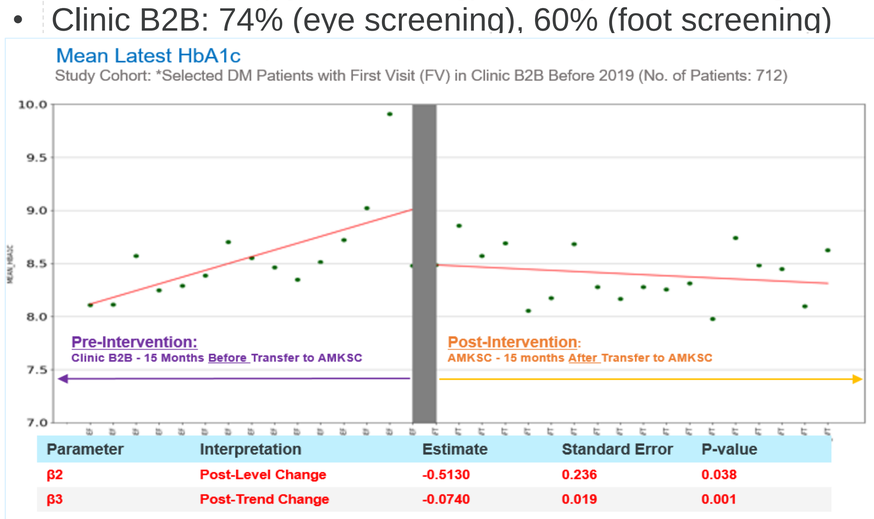


> **"CDE was helpful, knowledgeable, patient, caring, professional, pleasant and encouraging."**

98% of patients surveyed expressed strong agreement with the statement that they were "satisfied with the CDE session." At least 85% of patients surveyed agreed or strongly agreed that they had fewer diabetes clinic appointments, shorter waiting times, better "value for money," and more coordinated care.

Lower defaulter rates (Dec 2019 to Sep 2021) were seen in AMKSC compared to Clinic B2B, where the traditional care model had been continued:
- AMKSC: 14% (Dr consult), 18% (AHP consult), 9% (CDE consult)
- Clinic B2B: 21% (Dr consult), 27% (AHP consult)

Higher screening rates (Jan 2021 to Dec 2021) were seen in AMKSC:
- AMKSC: 81% (eye screening), 72% (foot screening)
- Clinic B2B: 74% (eye screening), 60% (foot screening)



Parameter	Interpretation	Estimate	Standard Error	P-value
β2	Post-Level Change	-0.5130	0.236	0.038
β3	Post-Trend Change	-0.0740	0.019	0.001

HbA1c improved in a group of 712 patients who had been flagged with greater psychosocial needs, whose care was transferred from B2B to AMKSC after December 2019.

NG POH LENG
Senior Nurse Clinician

When I was first assigned to be a CDE, I was very interested and keen as I always wanted to learn the different aspects of diabetes management. As a CDE, we can deliver seamless, more efficient and holistic consultations for the diabetes patients. This win-win approach is truly beneficial to patients and the diabetes management team.

LIM SHU FANG
Principal Clinical Pharmacist

Being a CDE Pharmacist in a transdisciplinary diabetes care team has been such a rewarding and enriching journey, as we learn from our fellow inter-professional practitioners. Our CDEs are now empowered with the skills and competencies to improve the patient experience, while providing patient-centred holistic diabetes care within a single visit.

1. Tan KW, Dickens BSL, Cook AR. Projected burden of type 2 diabetes mellitus-related complications in Singapore until 2050: A Bayesian evidence synthesis. BMJ Open Diab Res Care 2020;8:e000928.