



Tan Tock Seng  
HOSPITAL  
National Healthcare Group

# Workforce Transformation

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

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

<sup>1</sup>Department of Endocrinology, TTSH. <sup>2</sup>Division of Endocrinology, Department of Medicine, WHC. <sup>3</sup>Division of Nursing, TTSH. <sup>4</sup>Division of Pharmacy, TTSH. <sup>5</sup>Department of Nutrition & Dietetics, TTSH. <sup>6</sup>Foot Care & Limb Design Centre, TTSH. <sup>7</sup>Department of Care & Counselling, TTSH. <sup>8</sup>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<sup>1</sup> – 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.

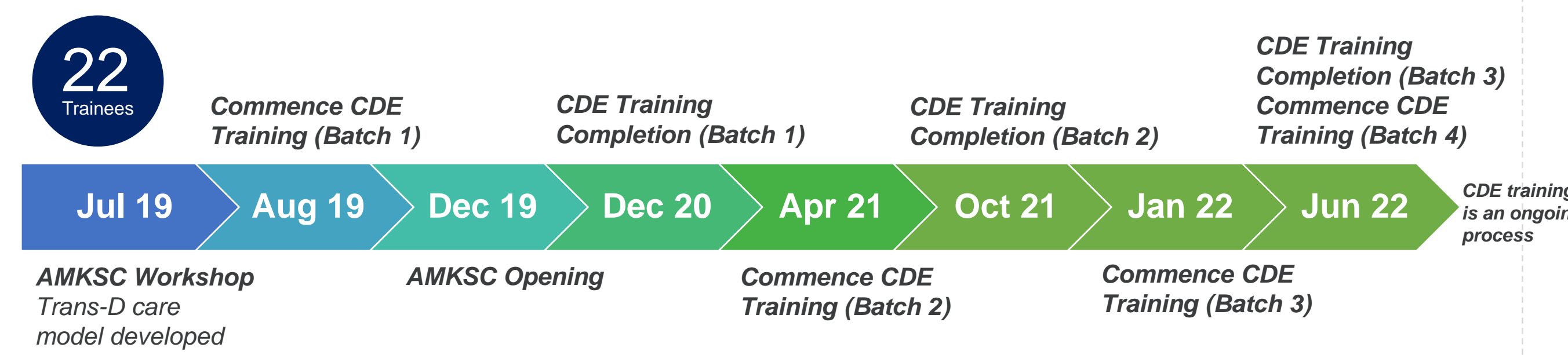
With these transdisciplinary innovations in workforce capability, we achieved greater cost-effectiveness while improving patient compliance and therapeutic outcomes.

### DEVELOPMENT & IMPLEMENTATION

#### CDE Training Framework – Trans-Disciplinary Education

- E-Learn**
  - Self-paced online lecture slides and quizzes
- Classroom Sessions**
  - Face to face lectures
  - Team-based learning
  - Case-based discussions
  - Role-play
- Practical Sessions**
  - Hands-on experience
  - Clinical attachments
  - Practical assessment portfolio (including case logs, mini-CEX, competency checklists)

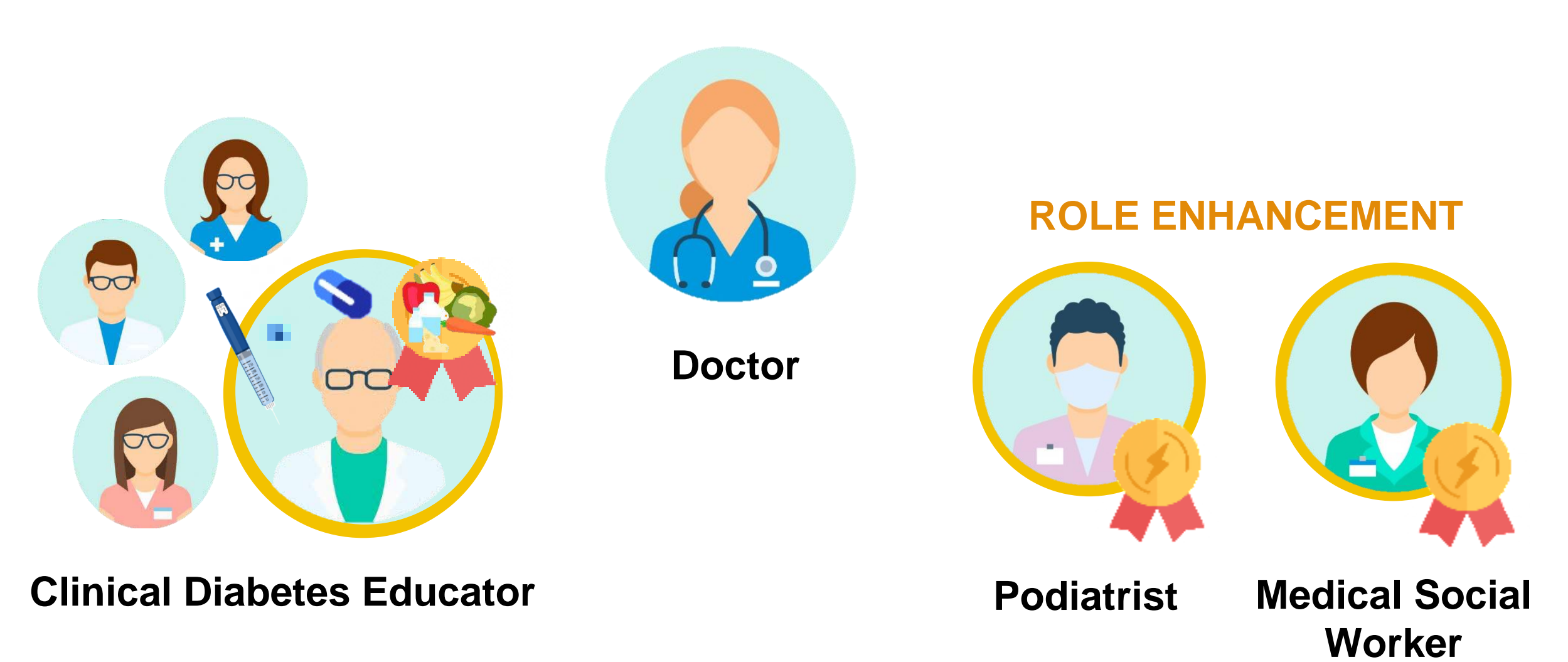
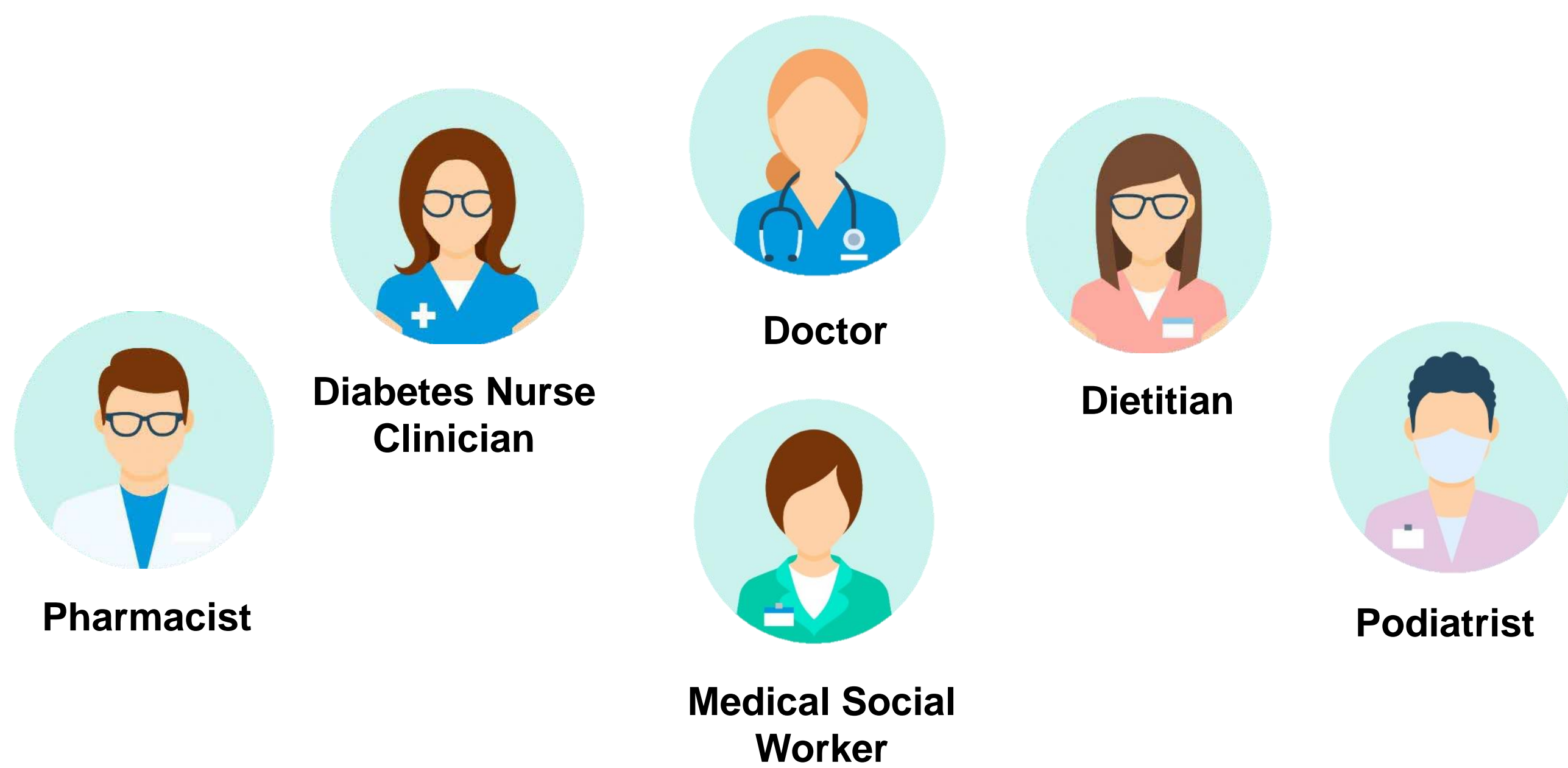
No.	Topics	Hours	No.	Topics	Hours
<b>Allied Health Professional Learning</b>					
1.1	Introduction to DM	19.5	2.1	Overview of DM	17.5
1.2A	Principles of DM (Screening and Lifestyle)	9.5	2.2	Getting to know Insulin	11.5
1.2B	Principles of DM (Screening and Lifestyle) on Diet	29	2.3	Insulin Injection and Mixing	46.5
1.3	Hypertension and Hyperlipidaemia		2.4	Insulin Titration	
1.4	Pharmacological Management of DM		2.5	Interpretation of Blood Glucose	
1.5	Hypoglycaemia		2.6	Interpretation of Blood Glucose	
1.6	DM in Special Scenarios		2.7	Basic Dietary Advice	
1.7	Self Monitoring of Blood Glucose		2.8	Foot Screening for Low Risk Patients	
1.8	Foot Care Advice		2.9	Clinic Consultations	
1.9	Psychosocial Aspects		2.10	Advanced Principles of Diabetes Management: Exercise	
1.10	Basic Principles of DM Management: Exercise		3.1	Monitoring of Lab Results	
	Sub-Total no of Hours	58	3.2	Monitoring of OHGAs	
	Estimated Total no of Hours			Sub-Total no of Hours	75.5
				Total no of Hours	



### TRADITIONAL CARE

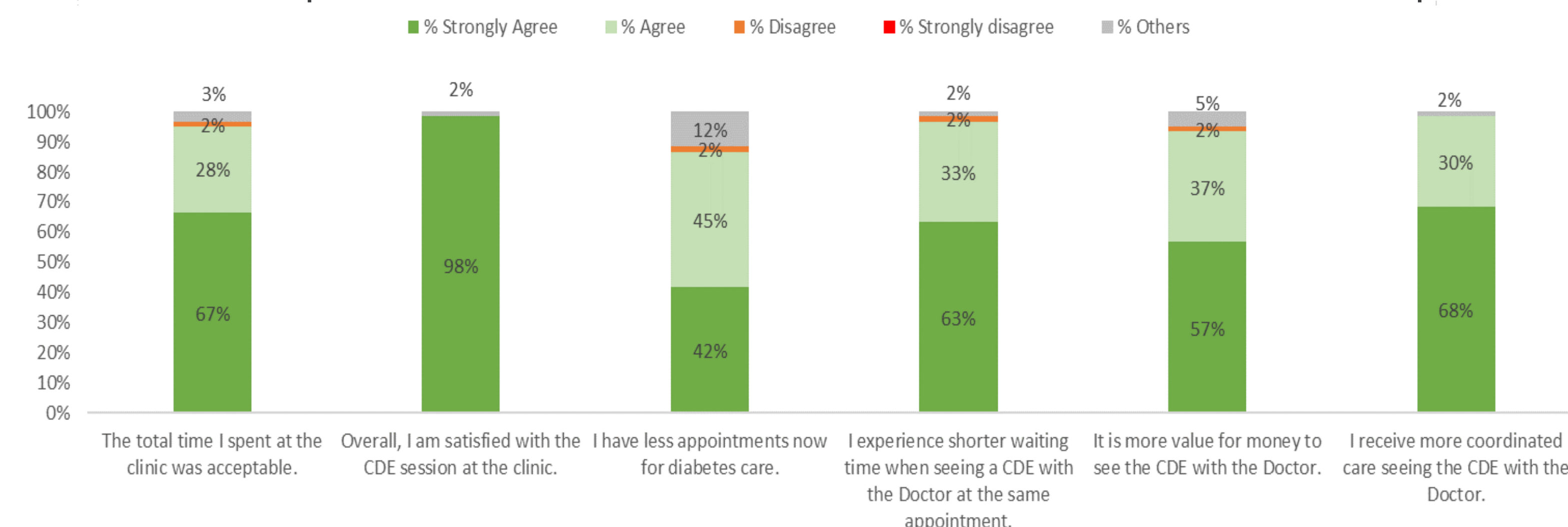
VS

### 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. ”

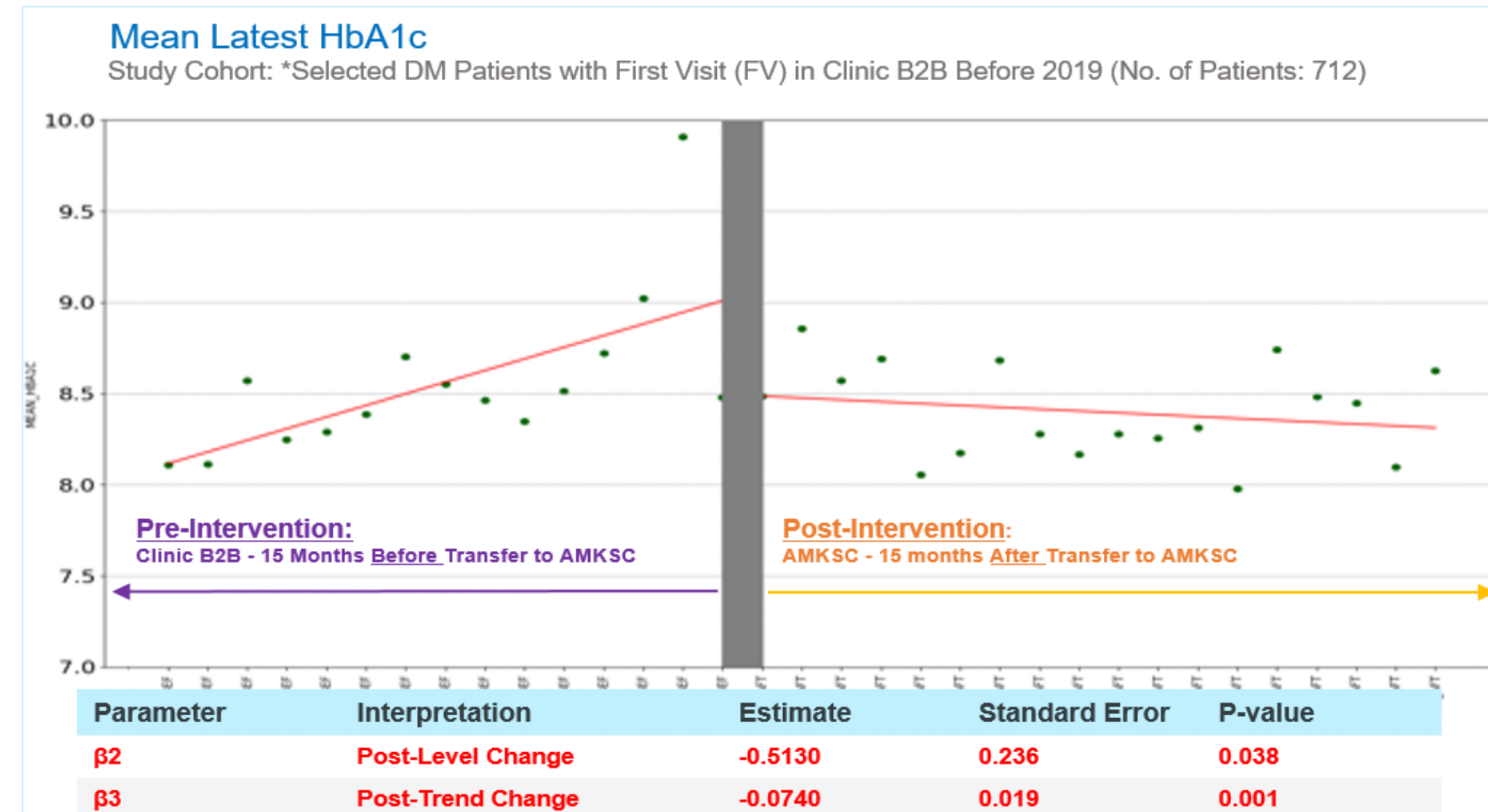
98% of patients surveyed expressed strong agreement with the statement that they were “satisfied with the CDE session.” At least 85% of patients surveyed agreed or strongly agreed that they had fewer diabetes clinic appointments, shorter waiting times, better “value for money,” and more coordinated care.

**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)



**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.