

A NOVEL TRANSDISCIPLINARY MODEL FOR DIABETES CARE

A person with diabetes is often thrust into a complex system of care delivered by a large team of healthcare professionals (HCPs) of doctors and nurse clinicians (DNCs), pharmacists, dietitians, podiatrists, social workers, and others to deliver various aspects of therapy and preventive care. With so many HCPs caring for a patient, healthcare delivery can become fragmented.



Dr Janil Puthuchery presenting the award to representatives of the team from TTSH

The Clinical Diabetes Educator (CDE) programme was conceptualised to reduce care fragmentation, with the central idea to systematically cross-train and elevate the capabilities of the Allied Health Professionals (AHP) to manage patients with diabetes.

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

The programme won the “Best Practice Medal (Workforce Transformation)” at the 2022 National Healthcare Innovation & Productivity Medals. Here is how the team from Tan Tock Seng Hospital (TTSH) changed the way they work, in order to deliver better care for patients.

The team, led by Adj Asst Prof Seow Cherng Jye (senior consultant), included Dr Hoi Wai Han (senior consultant), Dr Ray Lai (consultant), Dr Chin Han Xin (consultant), APN Joyce Lian Xia (senior nurse clinician), Dr Lim Shu Fang (principal pharmacist), Ms Melissa Ho (senior dietitian), Mr Kenneth Koh (senior podiatrist), Ms Regina Huang (senior medical social worker), Ms Dorothy Chen (operations manager), Ms Soh Si Lin (operations executive), Ms Teo Hwei Yee (operations executive), Adj A/Prof Daniel Chew (ACMB for Manpower, and senior consultant), Dr Timothy Quek (head of department and consultant).



Identify Key Issues

The goal was to optimise value-based healthcare delivery for diabetes outpatients through transdisciplinary workforce transformation. The key problem was when a diabetes patient was referred to a tertiary outpatient setting, they would be expected to accrue a significant cost and multiple follow-up appointments.

These appointments with healthcare professionals from different disciplines result in fragmented, overlapping, uncoordinated care at potentially high cost. To address this issue, there was a need to reconceptualise the diabetes care delivery model by upskilling the AHP workforce into CDEs.

CDEs would be diabetes subject matter experts, taking on the relevant duties of a DNC, pharmacist, dietitian and podiatrist in a single sitting. The CDE would also act as a physician-extender, with the ability to lead a diabetes clinic consultation and propose management changes under the supervision of a physician.

Furthermore, Pharmacist-CDEs who have completed the National Collaborative Prescribing Programme would be able to prescribe medications under a Collaborative Prescribing Agreement, augmenting their role. Overall care delivery could therefore be streamlined.

The expected outcome would be to improve the value of care by achieving the same therapeutic outcomes at lower time commitment and cost per-patient, while improving patient adherence to follow-up appointments, as well as generating patient and provider satisfaction.

Assess the Problem

The total cost each patient would typically incur per year is estimated at a conservative S\$218, which would include the first consultation, review consultation, DNC visit, dietitian, foot and eye screening.

The estimates exclude the cost of medication and laboratory tests. Furthermore, these patients would have already had follow-up appointments with other medical or surgical disciplines. The time investment and financial burden of care was established as a factor in patients' non-adherence to treatment, and does not constitute value-based care.

Following an initial process of brainstorming and conceptualisation across several meetings, a CDE workgroup was formed to address this need. The vision was to assemble a group of upskilled and cross-trained AHPs (the CDEs) – primarily a mix of DNCs, pharmacists, and dietitians – who would be able to bridge the value gap by:

- Retaining competencies intrinsic to their own family groups
- Being able to perform functions of the other family groups
- Being able to lead diabetes clinic consults and propose management changes under physician supervision

To implement this, the team mapped out a series of competencies for a CDE, which include:

- Knowledge of diabetes pathophysiology and diagnosis
- Familiarity with non-pharmacological management of diabetes, in particular dietary and exercise advice



- Familiarity with pharmacological management of diabetes
- Competency in advice and application of diabetes self-monitoring and self-management

A training curriculum was created to meet these learning objectives through e-learning modules, virtual and physical classroom sessions, as well as an assessment portfolio with competency and clinical assessment checklists.

CDEs practise in a teamlet under the supervision of a consultant endocrinologist. A pool of diabetes patients would be shared by the teamlet, with patients seen by or referred to CDEs for either a diabetes clinic consultation, or a specific diabetes self-care need (eg: insulin skill teaching, dietary advice, medication reconciliation, flash glucose monitor insertion).

For the implementation of this novel transdisciplinary model, they subsume the responsibilities of their own and their ancillary AHP family groups, saving patients the cost and time of multiple clinic visits to other AHPs.

To sum up, the work was designed to optimise value-based care delivery through workforce transformation, by refining the process:

- Upskill and provide transdisciplinary training of AHPs in the realm of diabetes care delivery. This would increase an individual AHP's productivity beyond their traditional purview.
- Generate patient satisfaction with fewer clinic visits at lower cost.
- Generate provider satisfaction on the part of CDEs, recognised for their expertise in holistic diabetes care.
- Achieve similar, if not better, diabetes outcomes with fewer clinic visits at lower cost.
- Improve patient adherence to follow-up and screening.

The projected savings in time and cost based on this model showed:

- Number of visits reduced to 5 each year, from 8 based on the previous model
- A total of 135 minutes compared to 180 previously
- Annual cost reduction to S\$173.50 per year





Effects and Impact

Patient survey results revealed good satisfaction with the novel transdisciplinary care model, along with perceptions of better “value-for-money” and coordinated care.

The thematic analysis of the CDEs’ interviews revealed a balance of pre-job apprehension and a tough training experience, versus professional fulfilment in their transformed capabilities.

The majority of patients expressed that the number of diabetes-related clinic appointments had reduced. Rates of compliance to physician visits, AHP visits, and health screening appointments were better than pre-implementation rates.

“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,” shared the team.



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