



Diabetes Alliance Program Plus



# Diabetes Alliance Program plus Transformative integrated diabetes care across regional, rural and remote communities

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National Medicine Symposium 2025



Hunter New England  
Local Health District





Diabetes Alliance Program Plus acknowledges  
Traditional Owners of Country throughout Australia and recognises  
the continuing connection to lands, waters and communities.

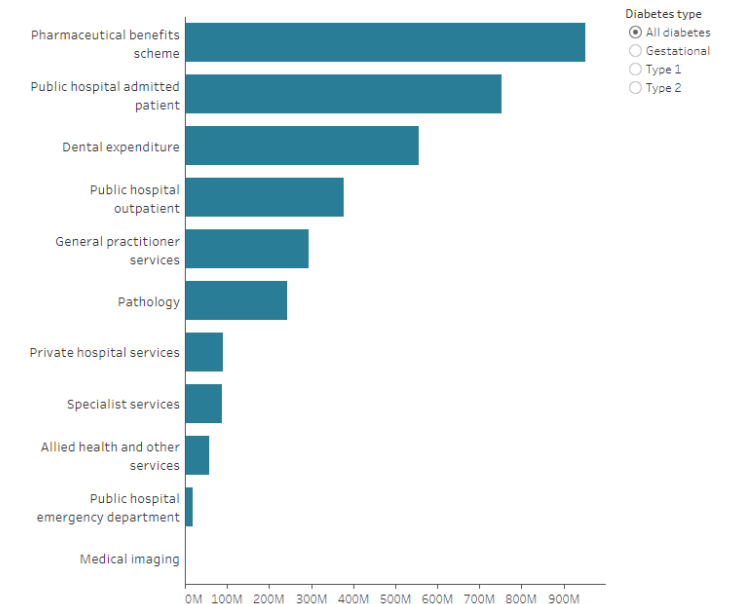
We pay our respect to Aboriginal and Torres Strait Islander cultures;  
and to Elders past and present.



# Landscape of Diabetes Care

- >1.5million Australians have type 2 diabetes, 30% undiagnosed while their disease is advancing
- Diabetes prevalence is reaching 12% across most parts of Australia; however, GP practice data shows 6-8% prevalence due to suboptimal screening and coding
- An estimated 3.4billion AUD spent on Diabetes in 2021, significant cost comes from inpatient expenditure
- Diabetes contributes to 10% of all hospitalisations across 1.2million admissions per year

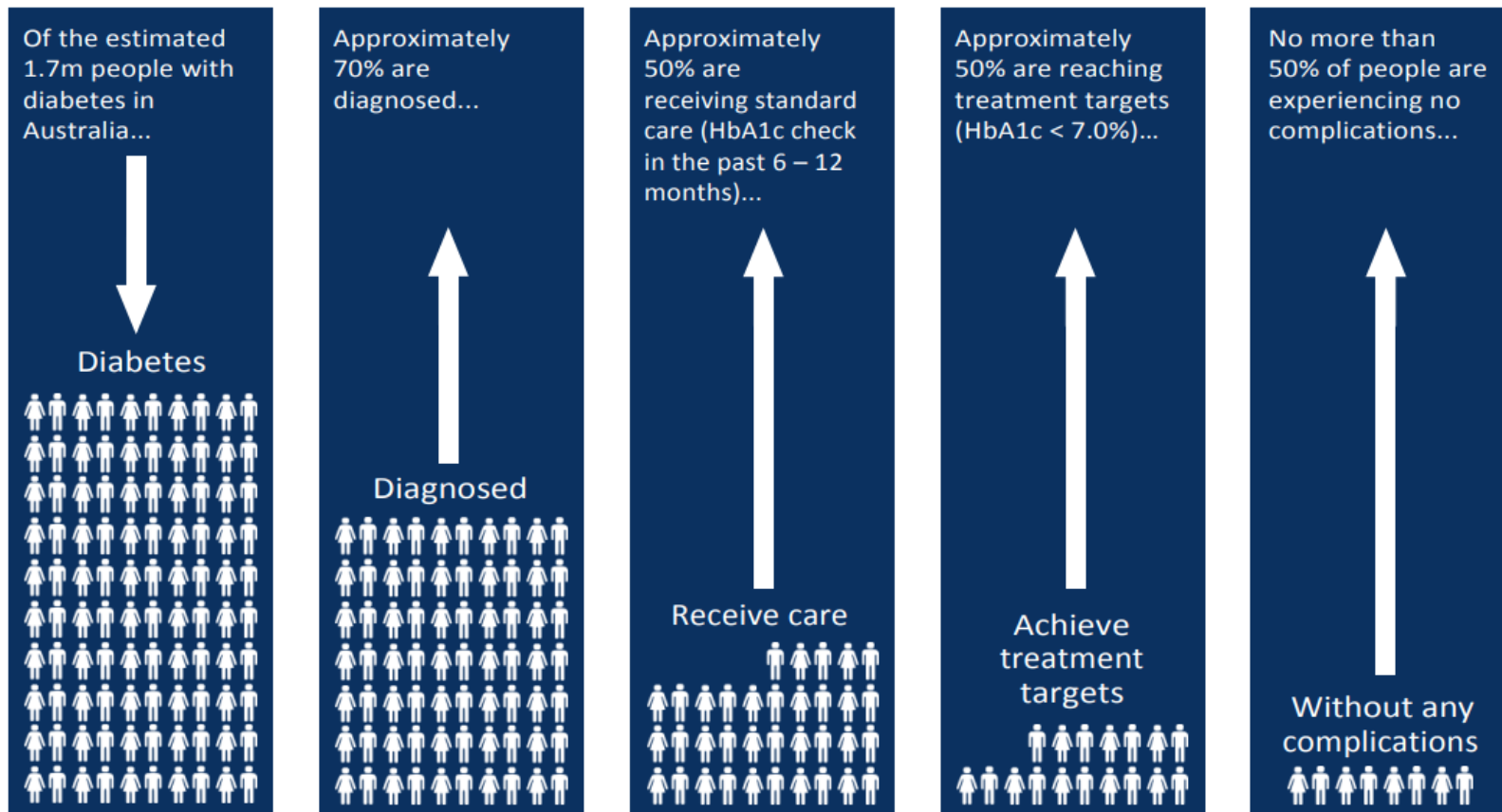
Figure 1: Health care expenditure on diabetes, by area of expenditure, 2020-21



Data from Australian Institute of Health and Welfare

# Are we doing well? A wake up call

## Australia's Diabetes Burden



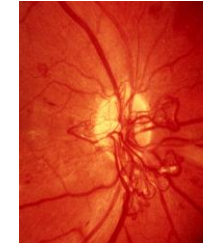
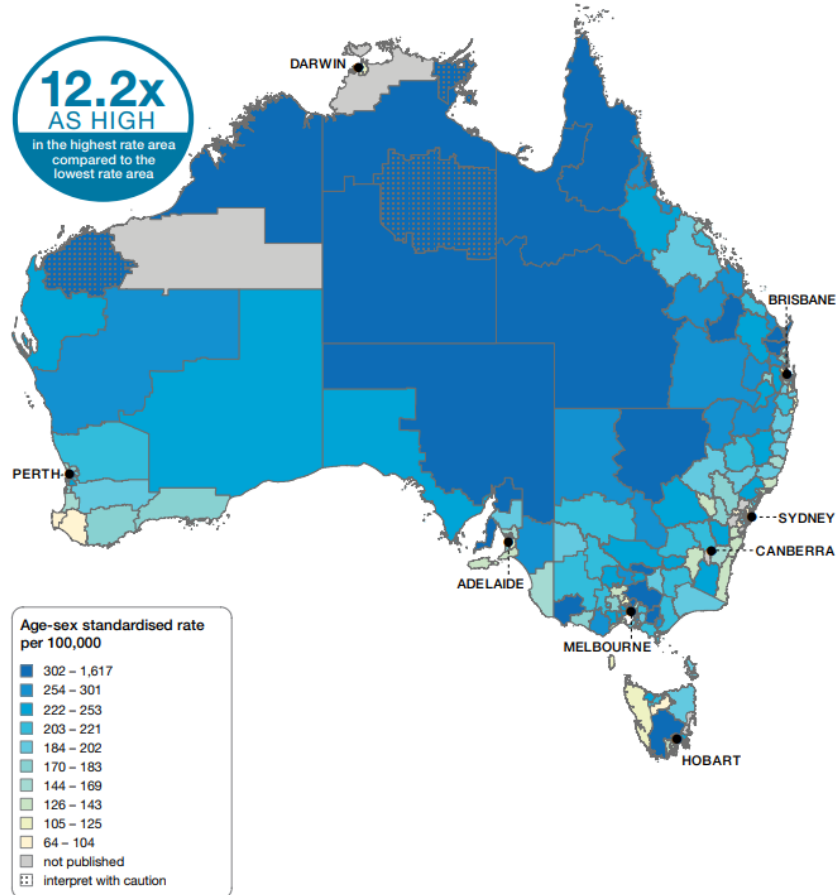
16 / Burden of Diabetes in Australia: It's Time for More Action

The report, appendix and the complete reference list can be found at:  
[www.sydney.edu.au/medicine/research/units/boden/recently-published.php](http://www.sydney.edu.au/medicine/research/units/boden/recently-published.php)

## Diabetes complications

### Rates across Australia

Figure 2.19: Number of potentially preventable hospitalisations – diabetes complications per 100,000 people of all ages, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



- Diabetes is over represented in hospitalised patients, with 20% of admitted patients, LOS 1 day higher and hospital acquired complications are higher in those with diabetes
  - Further away from metropolitan areas, higher the risk of admissions
  - Inner Sydney 64-104 potentially preventable admissions related to diabetes compared against 302 – 1617 admissions in most remote parts of Australia
- Source: Australian Atlas of Healthcare Variation

# Misconceptions are common

- Diabetes is not always preventable
- Diabetes is a heterogenous group of metabolic conditions
- Type 1 diabetes can occur at any age, 10% of all diabetes is due to T1DM, adults with new onset of T1DM are often misdiagnosed and mistreated
- Many other types of diabetes such as pancreatogenic diabetes, genetic forms of diabetes are not receiving clinician's attention
- Lifestyle changes are essential for everyone however evidence shows that lifestyle alone is insufficient to prevent complications of diabetes

# Quality use of medications in Diabetes

- Timely and appropriate use of medications improve prognosis and survival in diabetes however clinical inertia is very common due to resource constraints and stigmatisation
- Delayed treatment escalation results in premature morbidity and mortality
- 25-85% of patients with diabetes suffer from clinical inertia\*
- **Consider breast cancer or melanoma being treated the same way, would we accept inertia?**

# **Diabetes Alliance Program (DAP)**

**Partnership program  
between HNELHD  
and HNECCPHN  
established in 2014**

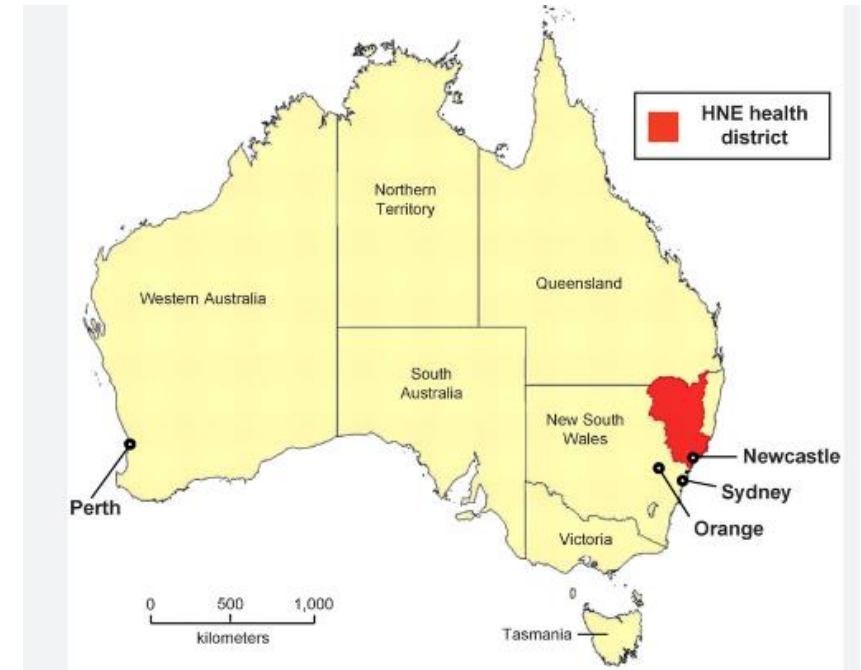
Our vision is to enable GP practices to deliver high quality clinical care for the majority of patients with T2DM

Improve timely access to those who would benefit the most from tertiary services



# Background

- HNELHD 1million residents
- 130 000 sqkm
- 100000 people with T2DM, 30000 undiagnosed T2DM
- 10000 people with T1Diabetes
- 300 GP practices
- 1000 individual GPs
- 3 FTE Endocrinologist in public – 2009-2014
- High incidence of potentially preventable admissions
- Both under and over referrals, delayed referrals were common
- Healthpathways, referral criteria, guidelines implemented





**DAP pilot project 2014-2017**

**Business as usual 2017 onwards**

**Philanthropic funding as rebranded as DAP+**

**Bench  
marking GP  
practice data  
appraisal**

**Case  
conferencing  
in the GP  
practice**

**Diabetes  
Master  
Classes**

**Virtual Case  
conferencing and  
1300 Advice line  
for clinicians**

**Medibus and  
Diabetes care**

**Lifestyle  
modules**

2017 onwards

2024 onwards

2025 onwards

# Evaluation

- ✓ Clinical outcomes of those who attended the case conferences
- ✓ Clinical outcomes of rest of the practice patients with diabetes measured as 'spill over' effects
- ✓ Clinician acceptance and satisfaction
- ✓ Consumer acceptance and satisfaction
- ✓ Patient activation measures
- ✓ Economic evaluation and sustainability
- ✓ Research and Impact assessment framework

# GP practice data extraction

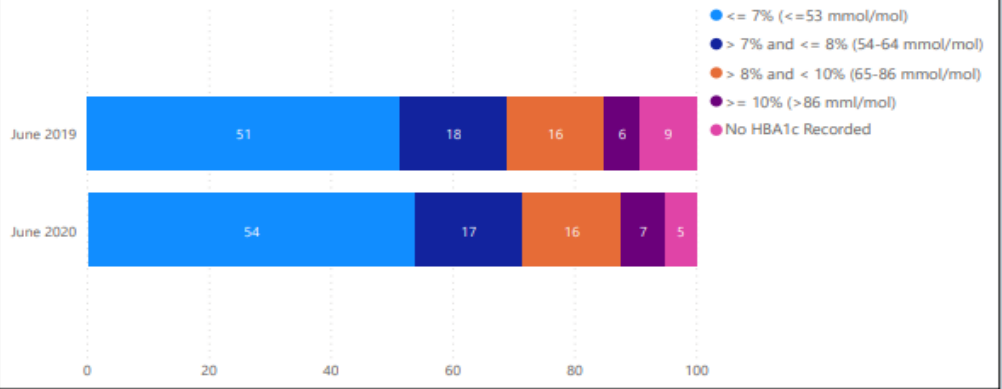
- Whole practice data extracted through PENCAT software
- Deidentified report prepared with PHN
- DAP+ Program Manager and DE visit the practice
- Identify patients who are moderate to high risk and also any patients on the hospital clinic waiting list
- Prepare the practice for Diabetes Alliance Day
- Schedule full day case conference with GP, Endo, DE and PN with the patient and carers
- Data education at lunch time



Individualised targets

Use the general HbA1c target of 53 mmol/mol (7%) for most people with type 2 diabetes. An HbA1c target greater than 53 mmol/mol (7%) may be appropriate in people with type 2 diabetes who have a history of severe hypoglycaemia, a limited life expectancy, or who are elderly.[2]

Most recent HbA1c for your patients with type 2 diabetes (%)



Most recent HbA1c results: your practice (no.)

| Period    | <= 7% (53 mmol/mol) | > 7% and <= 8% (54-64 mmol/mol) | > 8% and < 10% (65-86 mmol/mol) | >= 10% (>86 mmol/mol) | No HBA1c Recorded |
|-----------|---------------------|---------------------------------|---------------------------------|-----------------------|-------------------|
| June 2019 | 183                 | 63                              | 57                              | 21                    | 33                |
| June 2020 | 216                 | 70                              | 66                              | 28                    | 21                |

Most recent HbA1c results: all practices (%)

| Period    | <= 7% (53 mmol/mol) | > 7% and <= 8% (54-64 mmol/mol) | > 8% and < 10% (65-86 mmol/mol) | >= 10% (>86 mmol/mol) | No HBA1c Recorded |
|-----------|---------------------|---------------------------------|---------------------------------|-----------------------|-------------------|
| June 2019 | 62.8                | 15.7                            | 11.1                            | 3.5                   | 7.0               |
| June 2020 | 58.2                | 17.8                            | 13.1                            | 4.2                   | 7.2               |

REFLECTION

Does your practice have an agreed approach to review patients with type 2 diabetes at your practice? (consider the time since last HbA1c, HbA1c > 86 mmol/mol, patients factors?)

Diabetes data extracted through PENCAT supported by PHN

16 page detailed performance feedback delivered at lunch time by visiting Endocrinologist

- Data extraction has the ability to reidentify patients at the practice for appropriate care escalation



# Diabetes Alliance Day Case Conferences

Case conferences  
conducted at GP  
surgery

Patient, (carer) along  
with GP and Practice  
nurse;  
Endocrinologist and  
DE

40min, Medicare  
revenue  
Both GP and  
Specialist bill  
Medicare

Holistic approach with  
the patient at the  
centre

Treatment planning  
and education to  
primary care

Knowledge transfer  
and capacity building  
model



- DE assists patient selection based on data extraction and waitlist from hospital
- PN prepare the patients with up to date pathology, eye and podiatry review, 3 days worth food and 8 point BGL profile, Patient activation measures
- On the day team discusses all aspects of diabetes, complications, treatment planning
- GP then implements management outlined
- DE educates the PN to optimise resources and educational material in the practice
- Lunchtime data discussion and education
- 6 months follow up
- Each practice receives 3 days of case conferences followed by 1 follow up day



# Clinician Masterclasses

- All aspects of diabetes including screening, diagnosis, initial management
- Advanced management including insulin therapy
- Complications and management
- Pregnancy and Diabetes
- Obesity management
- Contemporary topics, hands on workshop, allied health programs
- Interactive sessions, meet the experts, panel discussions



## Hunter and New England Diabetes Alliance: innovative and integrated diabetes care delivery in general practice

Shamasunder Acharya<sup>A,B,F</sup>, Annalise N. Philcox<sup>C</sup>, Martha Parsons<sup>A</sup>, Belinda Suthers<sup>D</sup>,  
Judy Luu<sup>A,B</sup>, Margaret Lynch<sup>E</sup>, Mark Jones<sup>D</sup> and John Attia<sup>A,D</sup>

- One session of case conference with primary care clinician led to significant improvement in HbA1c 0.9%, lipids, BP, weight and cardiovascular outcomes
- In addition, secondary diabetes, type 1 diabetes, monogenic forms identified
- Significant partnership and trust value
- Consumer and clinician high satisfaction rate

**Table 2. Change in mean scores between baseline and 6 months for intervention patients ( $n = 344$ ) from 14 practices**

If 6-month data were not available and the baseline levels were at guideline-recommended levels, the initial value was carried forward (HbA1c  $\leq 55$  mmol/mol; BMI  $\leq 30$  kg/m<sup>2</sup>; total cholesterol  $< 4.0$  mmol/L; systolic BP  $< 130$  mmHg; urine ACR  $< 3.5$  mg/mmol). Values are reported as mean  $\pm$  standard deviation, median (interquartile range) or % ( $n$ ). HbA1c, Haemoglobin A1c; BMI, body mass index; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin II receptor blocker; ACR, albumin/creatinine ratio; CVD, cardiovascular disease

| Variable ( $n$ = number of patients with parameter collected at both initial assessment and follow up) | Initial            | 6 months           | Missing | $P$ value |
|--------------------------------------------------------------------------------------------------------|--------------------|--------------------|---------|-----------|
| HbA1c (mmol/mol) ( $n = 266$ )                                                                         | 60.0 $\pm$ 16.2    | 55.3 $\pm$ 12.6    | 78      | $< 0.001$ |
| Weight (kg) ( $n = 264$ )                                                                              | 95.5 $\pm$ 20.9    | 94.5 $\pm$ 21.5    | 80      | 0.006     |
| Total cholesterol (mmol/L) ( $n = 263$ )                                                               | 4.3 $\pm$ 1.2      | 4.2 $\pm$ 1.1      | 81      | 0.03      |
| Systolic BP (mmHg) ( $n = 280$ )                                                                       | 134 $\pm$ 18       | 131 $\pm$ 17       | 64      | 0.004     |
| Diastolic BP (mmHg) ( $n = 280$ )                                                                      | 77 $\pm$ 12        | 74 $\pm$ 11        | 64      | $< 0.001$ |
| ACEI or ARB use ( $n = 199$ )                                                                          | 70.4 (140)         | 73.4 (146)         | 145     | 0.51      |
| Urine ACR $< 3.5$ ( $n = 257$ )                                                                        | 80.9 (208)         | 82.9 (213)         | 87      | 0.19      |
| Urine ACR $> 3.5$ mg/mmol on ACEI/ARB ( $n = 106$ )                                                    | 75.4 (49)          | 89.2 (58)          | 41      | 0.01      |
| Absolute 5-year CVD risk (%; $n = 150$ )                                                               | 18.4 (9.9 – 30.6)  | 16.7 (8.5 – 28.6)  | 0       | $< 0.001$ |
| PAM activation score (%; $n = 105$ )                                                                   | 56.4 (47.4 – 68.5) | 63.2 (56.4 – 75.3) | 239     | $< 0.001$ |

## Variation in primary care

- HbA1c testing is suboptimal
- Clinical inertia is common
- Urine ACR testing < 60%
- Eye and foot check are poorly recorded
- Most of these issues are related to lack of structured planned diabetes care, limited resources and Medicare item numbers
- 10% of so called 'T2DM' patients are missed LADA patients
- Huge variation in clinical practice both within the practice and between practices

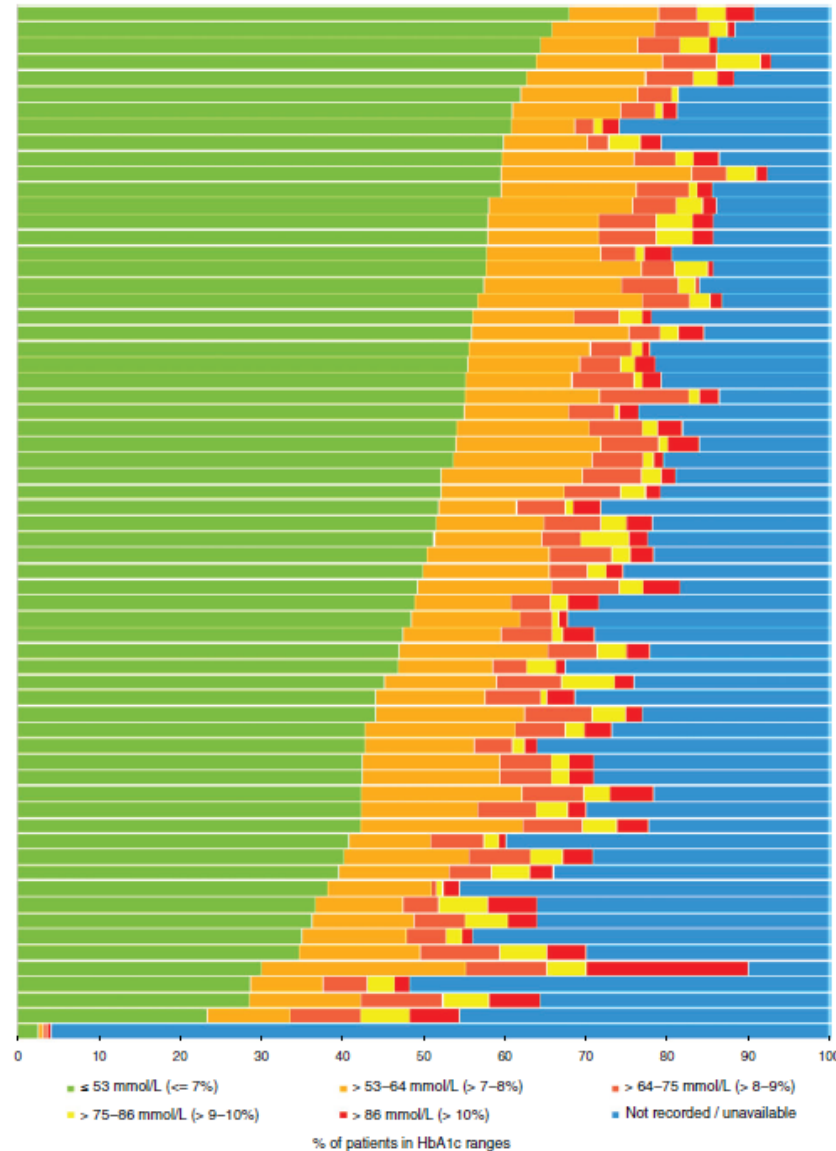


Fig. 2. Individual practice Haemoglobin A1c (HbA1c) ranges, each horizontal row represents practice aggregate HbA1c ranges.

CSIRO PUBLISHING

Australian Journal of Primary Health  
<https://doi.org/10.1071/PY18179>

Practice & Innovation

### Hunter and New England Diabetes Alliance: innovative and integrated diabetes care delivery in general practice

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# Spill over effects from a type 2 diabetes integrated model of care in 22,706 Australians: an open cohort stepped wedge trial

## Acharya et al. BMC Endocrine disorders

2024 Sep 10;24(1):183. doi: 10.1186/s12902-024-01692-4

- Data from 72 GP surgeries who received 1072 case- conferences intervention, performance appraisal and education
- 22706 patients belonging to these practices showed significant improvement in clinical process measures and outcome measures
- Compared to before DAP, the odds of patients receiving monitoring tests at or above the recommended intervals were significantly higher for all tests after DAP (odds ratio range 1.41—4.45,  $p < 0.0001$ ). Significant improvements in patient outcomes were observed for weight (absolute mean difference: -1.380 kg), blood pressure (-1.12 mmHg for systolic, -1.18 mmHg for diastolic), glycated haemoglobin A1c (HbA1c) (-0.028% or -0.27 mmol/mol), total cholesterol (-0.098 mmol/L) and triglycerides (-0.019 mmol/L) ( $p < 0.05$ ).

Clinical effectiveness of DAP intervention: For every 1,000 case conferences 22,000 patients benefit

## DAP Plus new initiatives 2023 onwards

- 60 new practices per year continue to receive DAP+ intervention
- DAP+ dedicated **advice line** for GPs and peripheral hospitals
- Introduction of video enabled **virtual case conference** clinics with GPs/PN and patients
- Physical activity, Nutrition and Mental health modules for our consumers (not building new evidence, but implementing the best evidence)
- **Medibus** for rural and regional communities
- Aboriginal specific **Yarn up** models

## Diabetes Alliance Program - Core Model

| In-Person Joint Case Conferencing                                                                            | Data Driven Quality Improvement                                                      | Diabetes Masterclasses                                                                | Virtual Joint Case Conferencing since July 2023                                       |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>&gt;200 General Practices</b><br><b>7000 Patients</b><br><b>15% Aboriginal and Torres Strait Islander</b> | <b>&gt;200 General Practices</b>                                                     | <b>&gt;100 Sessions</b><br><b>&gt;3,000 Clinician Attendees</b>                       | <b>&gt;90 General Practices</b><br><b>&gt;500 Patients</b>                            |
|                           |  |  |  |

## Building the Evidence

- Improved patient outcomes for those who receive case conferencing (*Acharya, 2019*)
- Better experience for the patients (*Harris, 2020*)
- Better experience for primary care team (*Taylor, 2023 & Taylor, 2025*)
- More cost efficient at \$108 less per patient than the Outpatient Service alone (*Embedded Economist, 2021*)
- Spillover benefits to patients with T2DM at the General Practices who receive the intervention (*Acharya, 2024*)





## NEED

Diabetes is a silent killer

Diabetes carries a high burden for individuals, communities, and health systems

Access to healthcare is not equitable

## AIM

To reduce the burden of diabetes by improving prevention, detection, treatment, & self-management of diabetes, especially in regional/rural communities

## ACTIVITIES

Integrated clinical care  
Culturally sensitive care  
Capacity building  
Medibus  
Nutrition  
Physical activity  
Mental health  
Research & evaluation  
Economics  
Stakeholder engagement

## OUTPUTS

Guidelines  
Publications  
Grants  
Presentations  
Courses  
Apps  
Media  
Protocols  
Policy briefs  
Business case  
Economic evaluation  
Research impact assessment

## ENDUSERS

Patients, families, communities  
  
GPs, nurses, diabetes educators, allied health, other specialists  
  
LHD, PHN, HMRI, UON, Colonial, Diabetes Aust., NSW Health  
  
Pharmaceutical, medical devices, insurance  
  
Taxpayers, Medicare, Gov.

## IMPACTS

**Reduce diabetes-related morbidity & mortality** (e.g. admissions, amputations)  
  
Better patient & clinician experience  
  
Equitable access to diabetes care for regional/rural communities  
  
Sustainable & scalable healthcare

PATHWAYS TO ADOPTION

# Medibus for Diabetes Care





DAP





# Medibus as a magnet!



- Advocacy and de-stigmatisation
- Community events
- Medical and Allied Health consultation
- Video link to other specialists
- Diabetes Camps and many more
- National conference in Gold Coast
- IDF Melbourne 2026





# Supporting the Whole Person: Lifestyle & Wellbeing Modules



For more information visit:  
[dapplus.org.au](http://dapplus.org.au)

Diabetes Alliance Program Plus

## Healthy lifestyle for diabetes

Did you know that you can slow the progression of diabetes by practising healthy lifestyle habits? **Healthy eating** helps to keep your blood sugar levels within the target range. **Being active** helps your body to use sugar in the blood more efficiently. Taking care of your **mental wellbeing** can help you to nurture your physical health.



### Being active

ecofit is a free, evidence-based program delivered in a smartphone app that guides users in how to perform and complete exercises at home or in local parks.

Visit: <https://web.ecofit.app/#/register/2>

Register & download the FREE ecofit app today



### Healthy eating

No Money No Time® provides free recipes, tools, advice and credible nutrition information that makes healthy eating easy. Discover how healthy your eating habits are by completing the evidence-based Healthy Eating Quiz™!

Visit: <https://nomoneynotime.com.au/uploads/DAP-Nutrition-Resources.pdf>

Check out No Money No Time®



### Mental wellbeing

MoRE and SHADE are two evidence-based online programs, developed to support you to improve your mental health. MoRE focuses on overcoming anxiety and depression, while SHADE provides support for depression and alcohol problems.

Visit: <https://dapplusmentalwellbeing.org.au/>

Check out MoRE & SHADE



**Acknowledgements:** The 'Healthy lifestyle for diabetes' pamphlet contains evidence-informed resources to help you with your diabetes. Research and evaluation is conducted for the Diabetes Alliance Program Plus. Those that decide to enroll in the program will be invited to participate in this research and evaluation.

**Terms of use:** This material has been developed by the Diabetes Alliance Program Plus for general information and education purposes to support the management of diabetes in adults. The information provided is based on evidence available at the time of publication. Created 2024, review due June 2027. Diabetes Alliance Program Plus acknowledges Traditional Owners of Country throughout Australia and recognises the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to elders past and present.



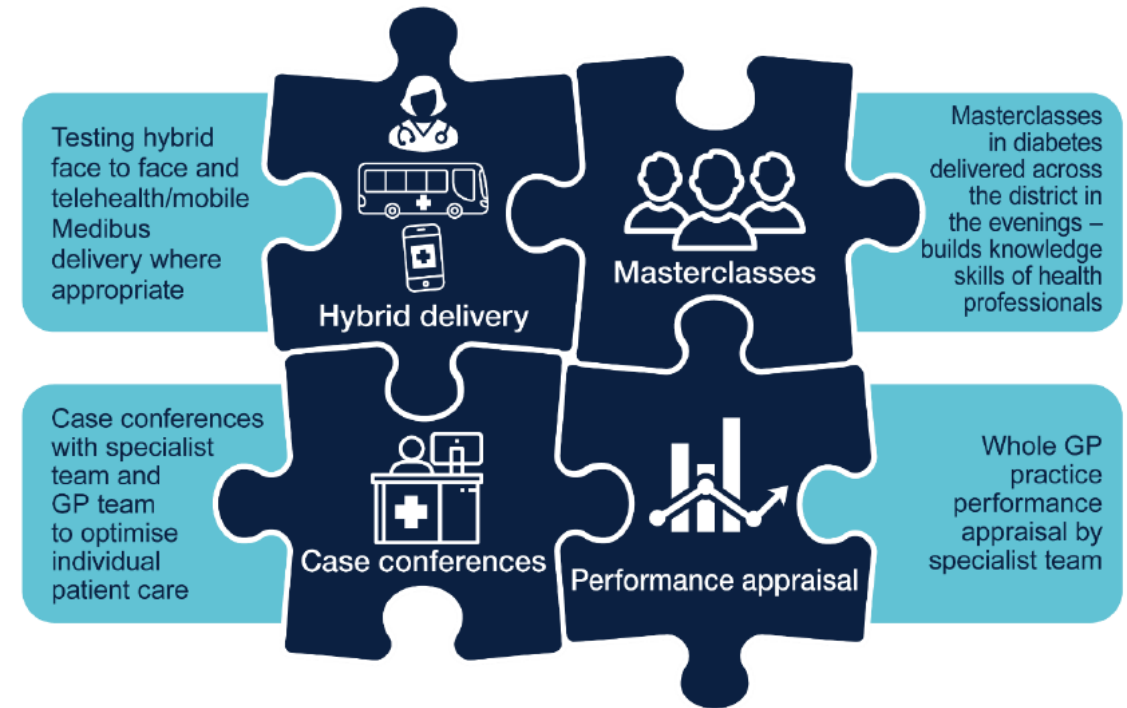
Hunter New England Local Health District





# DAP+ model and hospitalisation reduction

To test whether the DAP+ integrated care intervention reduces all-cause hospitalisations for people with T2DM, compared to matched controls from outside the Hunter New England Local Health District, over 5 years



# Methods

- HMRI Data Sciences
- Target trial framework
  - Hypothetical RCT, including eligibility criteria, treatment strategies, time zero, and analysis plan → align with the available observational data
- Propensity score matching (1:1)
  - Clustering at level of the General Practice
- Lumos Data
  - January 2015 to September 2023, most current data refresh
  - Analysed using R
  - Secure Analytics Primary Health Environment (SAPHE)
- Governance and Ethics

# Results

N=31,844

52 DAP+ General Practices

- Patient and cluster level **matching worked well!**

All standardised mean differences <0.1

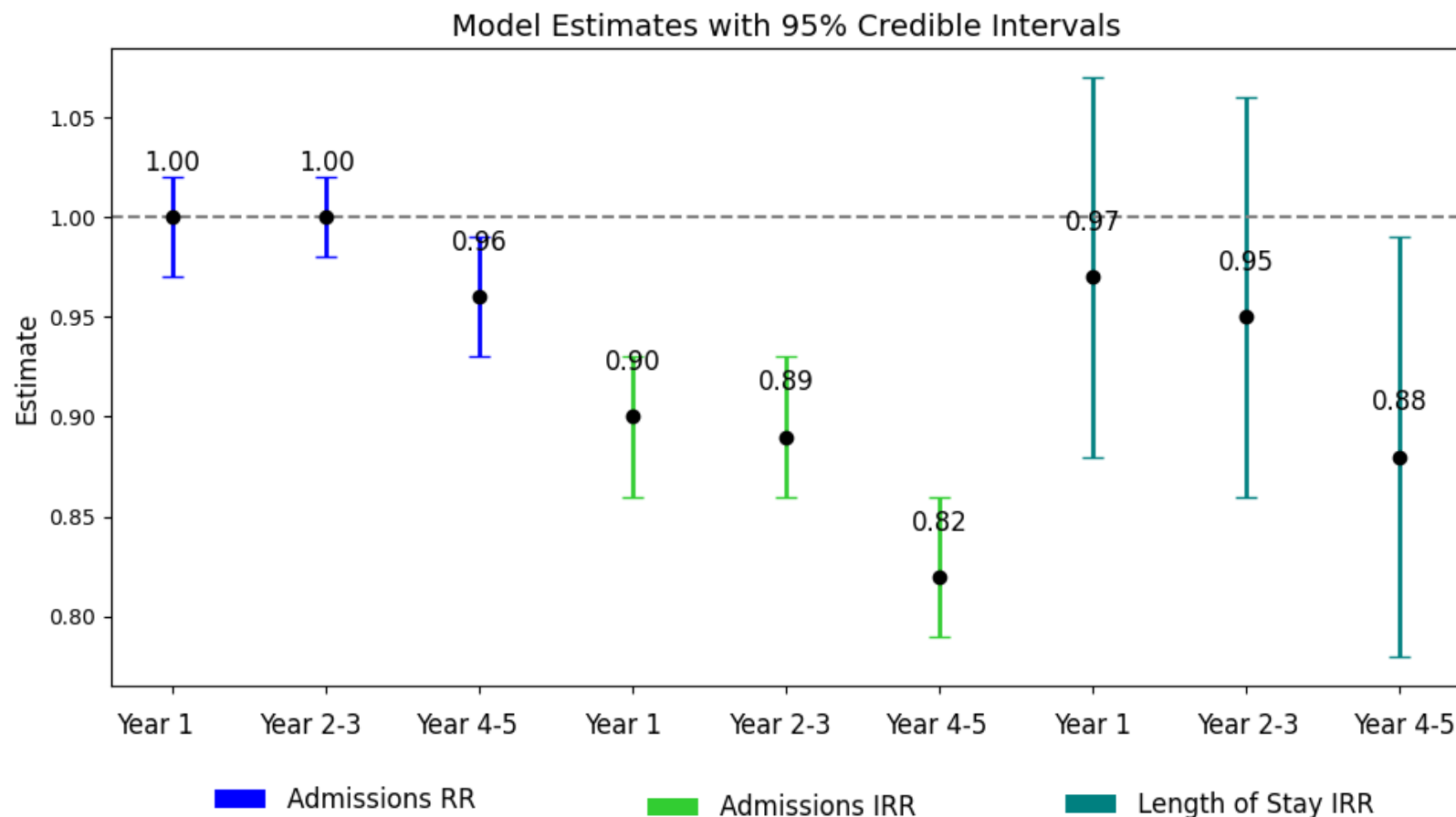
**Practice-Level:** aggregated IRSAD, MM, high-frequency servicing practices

>30% of patients visited at least 12 times in 2 years

| Cohort Characteristics        |           | Intervention<br>n=15,922 | Control<br>n=15,922 |
|-------------------------------|-----------|--------------------------|---------------------|
| Age (yrs)                     | mean (SD) | 65.4 (13)                | 65.4 (13)           |
| Age at diagnosis              | Mean (SD) | 59.6 (13)                | 58.4 (14)           |
| Sex                           | Female    | 47%                      | 48%                 |
| Regional, rural, remote (MM)  | 2-6       | 34%                      | 34%                 |
| IRSAD decile (most DA)        | 1-3...    | 50%                      | 54%                 |
| (most advantaged)             | 8-10      | 9%                       | 8%                  |
| Visits GP frequently          | Yes       | 40%                      | 40%                 |
| Heart failure                 | Yes       | 3%                       | 3%                  |
| MI                            | Yes       | 5%                       | 4%                  |
| Stroke                        | Yes       | 5%                       | 6%                  |
| CKD                           | Yes       | 6%                       | 6%                  |
| COPD                          | Yes       | 5%                       | 6%                  |
| Atrial fibrillation           | Yes       | 7%                       | 6%                  |
| Liver disease                 | Yes       | 7%                       | 8%                  |
| Cancer                        | Yes       | 12%                      | 12%                 |
| CVD                           | Yes       | 19%                      | 20%                 |
| Hyperlipidaemia               | Yes       | 33%                      | 30%                 |
| ≥1 admission in the last year | Yes       | 46%                      | 46%                 |

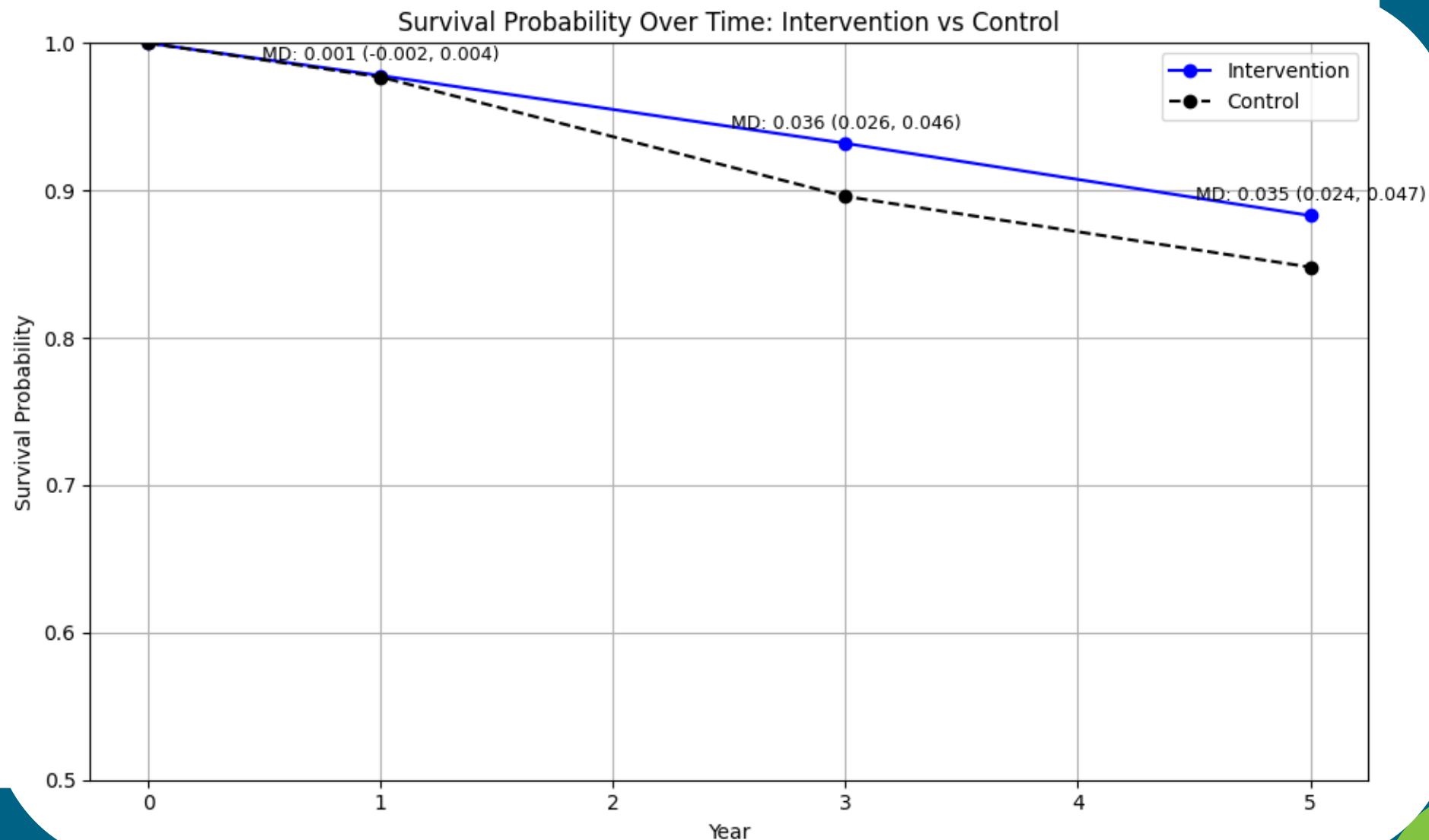


# Impact of Intervention on All-Cause Hospitalisations



- Bayesian hierarchical regression framework
  - Zero-inflated Poisson
  - Negative binomial
- Relative Risk (RR): the probabilities of having at least one hospitalisation in the interval
  - Binary: yes/no
- Incidence Rate Ratio (IRR): the actual number of admissions in the intervals (i.e., 0,1,2,3,...).
  - Think of those with repeat hospitalisations

Does  
DAP+  
reduce  
mortality?



# Summary of Findings

- DAP+ was associated with a reduction in all-cause hospitalisations by 10-18% over 5 years
- 12% reduction in length of stay at 5 years, suggesting reductions emerge over time
- Significant population-level reductions in hospital utilisation among patients with T2DM in DAP+ intervention practices and patients compared to concurrent controls
- Further research is needed to understand the potential health and economic gains from this integrated model of care
- **Any health care gains are due to combined effects of access to care, quality use of medications, patient and clinician education**







# Acknowledgments

- HNELHD, HNECC PHN, University of Newcastle, HMRI executive team and staff
- Patients as our partners, Primary care colleagues as our colleagues and friends
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- Our industry partners for supporting us to deliver care for our vulnerable community

