MONASH University

ANNUAL REPORT 2023

AUSTRALIAN DIABETES CLINICAL QUALITY REGISTRY

ads Australian Diabetes Society

nadc National Association of Diabetes Centres

This report was produced by the Australian Diabetes Clinical Quality Registry.

The data contained in this report pertains to data submitted to the registry from 1 May 2023 to 31 August 2023.

Suggested citation:
Australian Diabetes Clinical Quality Registry Annual Report 2023. Monash University, School of Public Health and Preventive Medicine, April 2024, Report No 1, 82 pages.

Any enquiries or comments regarding this publication, or access to data, should be directed to:

Australian Diabetes Clinical Quality Registry
Monash University
553 St Kilda Road
Melbourne Victoria 3004
P: +61 (0)3 9903 0566
E: adcqr@monash.edu
W: https://www.monash.edu/medicine/sphpm/adcqr

Report No: 1, April 2024

Acknowledgment of First Peoples
In the spirit of reconciliation, the Australian Diabetes Clinical Quality Registry acknowledges the Traditional Custodians of Country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

FOREWORD

FROM OUR REGISTRY LEAD

On behalf of the Australian Diabetes Clinical Quality Registry (ADCQR), I am proud to present the First Annual Report for the Registry.

The ADCQR is the first clinical quality registry established in Australia for adults with diabetes. The ADCQR is the successor to the longstanding quality assurance activity, the Australian National Diabetes Audit (ANDA). By working in partnership with the Australian Government, states and territories, the private sector, clinical experts, and patients, the ADCQR aims to continue to drive improvements in quality of care by providing participating diabetes centres and health services the opportunity to evaluate their data against their peers and against national clinical guidelines. This will enable the identification of variations in care and implementation of quality improvement initiatives to reduce diabetes-related consequences and improve the health and well-being of people with diabetes.

The ADCQR has been based on the best elements of ANDA, collecting clinical and patient reported data on people with diabetes attending health services providing diabetes care across Australia during a specified sampling period of each year. Additionally, once the ADCQR is mature it will deliver a longitudinal component via data linkage to Australian Government datasets.

There has been a considerable amount of foundational work involved in establishing the ADCQR. I would like to take the opportunity to thank the Project Executive and Scientific Advisory Committee for their tremendous commitment to the ADCQR and efforts in producing this Annual Report.

I am delighted that in 2023, 25 diabetes centres were authorised to participate and able to complete data collection providing data on almost 1500 patients with diabetes attending their services. This report brings together that data to provide a unique snapshot of the current health status and outcomes of people with diabetes that attended services for diabetes care in 2023.

Many thanks to all the clinicians, multidisciplinary teams and people with diabetes who contribute their time and information and recognise the importance of the ADCQR in improving diabetes care and outcomes.

We are grateful for the financial support provided by the Australian Government Department of Health and Aged Care, and advocacy and championing of the ADCQR by the National Association of Diabetes Centres (NADC) and Australian Diabetes Society (ADS).

I hope you find our Annual Report of great interest.

Professor Sophia Zoungas
Registry Lead, Australian Diabetes Clinical Quality Registry

FROM THE PRESIDENT OF THE ADS

As the President of the Australian Diabetes Society, it gives me great pleasure to write this foreword for the First Annual Report for the Australian Diabetes Clinical Quality Registry (ADCQR).

The establishment of a national clinical quality registry (CQR) for adults with diabetes is particularly exciting given the burden of diabetes in Australia and the importance of CQRs in improving the safety and quality of care provided to patients.

The ADCQR Annual Report contains a comprehensive snapshot of clinical and patient-reported outcomes pulled from primary, secondary and tertiary health settings across Australia, providing an overview of the current state-of-play of quality of diabetes care across the country.

I would like to congratulate and commend the ADCQR team, under the leadership of Professor Sophia Zoungas, for the successful roll out of the Registry in 2023. I would also like to thank the participating centres and people living with diabetes for participating in the ADCQR, and the continued support from national peak bodies. I look forward to seeing the Registry grow and mature.

Professor Anthony Russell
President, Australian Diabetes Society

ABBREVIATIONS AND ACRONYMS

ACE	Angiotensin Converting Enzyme
ACSQHC	Australian Commission on Safety and Quality in Health Care
ADCQR	Australian Diabetes Clinical Quality Registry
ACR	Albumin-to-Creatinine Ratio
ADS	Australian Diabetes Society
AER	Albumin Excretion Rate
ANDA	Australian National Diabetes Audit
ARB	Angiotensin II Receptor Blockers
BMI	Body Mass Index
BP	Blood Pressure
CABG	Coronary Artery Bypass Graft
CoE	Centre of Excellence
COVID-19	Coronavirus Disease-2019
CSII	Continuous Subcutaneous Insulin Infusion
CQR	Clinical Quality Registry
CVD	Cardiovascular Disease
DKA	Diabetic Ketoacidosis
DPP4	Dipeptidyl Peptidase-4
DVA	Department of Veterans Affairs
eGFR	Estimated Glomerular Filtration Rate
GIP	Gastric Inhibitory Polypeptide
GLP-1	Glucagon-Like Peptide-1
HbA1c	Glycated Haemoglobin
HDL	High-Density Lipoprotein
HHS	Hyperosmolar Hyperglycaemic State
IQR	Interquartile Range
KDIGO	Kidney Disease Improving Global Outcomes
LDL	Low-Density Lipoprotein
NADC	National Association of Diabetes Centres
NDOQRIN	National Diabetes Outcomes Quality Review Initiative
NDSS	National Diabetes Services Scheme
NMA	National Mutual Acceptance
Non-HDL	Non-High-Density Lipoprotein
PCR	Protein-to-Creatinine Ratio
PCSK9	Proprotein Convertase Subtilisin/Kexin Type 9
PER	Protein Excretion Rate
PI	Principal Investigator
REDCap	Research Electronic Data Capture
SD	Standard Deviation
SGLT2	Sodium-Glucose Co-Transporter 2
SPHPM	School of Public Health and Preventive Medicine
T1DM	Type 1 Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus

EXECUTIVE SUMMARY

Diabetes represents one of the biggest challenges facing countries and health care systems, imposing a profound health and economic burden on individuals, families and wider communities. As such, improving outcomes for people with diabetes is of utmost importance. To do this, we need to understand what quality of care people with diabetes are currently receiving, and how we can improve care to get the best outcomes for people with diabetes. Clinical Quality Registries (CQRs) systematically collect information about the health care, health outcomes (results) and experiences of patients who have treatment for a particular health condition or disease. This information is then analysed and reported back to clinicians and health services to identify any variations in care with the aim to continuously improve the standard of care.

The Australian Diabetes Clinical Quality Registry (ADCQR) is a national registry that collects information on the care provided and outcomes for adults diagnosed with diabetes in Australia. The ADCQR was established in 2023 as the first national CQR for adults with diabetes, successor to the Australian National Diabetes Audit (ANDA), a longstanding, important quality improvement activity.

The ADCQR is an Australian Government health initiative, funded and supported by the Department of Health and Aged Care as part of the National Clinical Quality Registry Program. It is a clinician-led CQR managed by Monash University, and supported and championed by the National Association of Diabetes Centres (NADC) and Australian Diabetes Society (ADS).

The ADCQR will work towards the proposed vision of the National CQR Strategy to drive continuous improvements in the quality and value of healthcare to achieve better health outcomes for all Australians, by

- Collecting ongoing health outcome data for people with diabetes, regardless of where they receive their care or at what stage of their diabetes journey they are at
- Monitoring and reporting on the quality (appropriateness and effectiveness) of health care for people with diabetes by routinely collecting and analysing health outcome data
- Providing clinicians, health service managers, patients and other stakeholders with ongoing feedback on clinical practice and outcomes for people with diabetes to improve the quality of care

In the first year of the Registry implementation, the ADCQR included 25 participating diabetes centres, collecting data from 1426 adults with diabetes between May and August 2023. The analysis of data from all participating centres forms the basis of this report. Every effort was made to ensure data were complete and correct prior to analysis. This reduced the amount of missing data; 94.7% of variables with <30% missingness (average missingness of 8.0%). Unless otherwise indicated, outcomes are reported as the percentage of people who answered the question, not the percentage of the total group. Data have been grouped according to the various aspects of health status and clinical characteristics, and patient-reported outcomes.

This report provides a unique snapshot of key clinical care indicators and patient reported outcomes for Australians living with diabetes in 2023. Of note:

1. Most people have returned to in-person consultations post the COVID-19 pandemic

2. There is an ongoing need to focus on management of glycaemic control and other cardiovascular risk factors as complication rates remain high

3. There is considerable uptake of new diabetes treatments and technologies for both type 1 (T1DM) and type 2 (T2DM) diabetes

4. Screening for mental health remains poor despite the relationship between diabetes and mental health

5. Most people have seen diabetes specialists (including endocrinologists and/or diabetes educators/nurse practitioners) and other allied health services such as optometrists/ophthalmologists and podiatrists in the last 12 months

6. There is a need to focus on patient self-care practices such as diet/nutrition management and physical activity

The ADCQR acknowledges and thanks the diabetes services and their patients who have agreed to participate and contribute their data to this activity. The ADCQR would not be possible without the willingness of patients to provide their data and ongoing support by staff (clinicians, nurses and other staff members) at participating services to collect the data. The involvement of these patients and diabetes services is greatly valued and can truly make a difference in the lives of others; it helps us to better understand and tackle the challenges that people with diabetes are facing, and work towards improving outcomes.

KEY FINDINGS

DEMOGRAPHICS

25 Participating Centres

1426 Patients

14 Centres of Excellence & Tertiary Care Centres

11 Secondary & Primary Care Centres

7 States & Territories

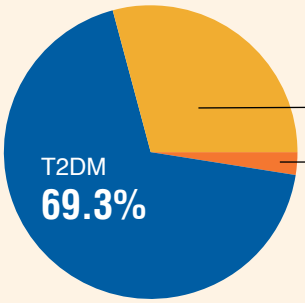
SEX DISTRIBUTION

45.0% Females

54.9% Males

0.1% Other

TYPES OF DIABETES*



28.0% T1DM

2.7% Other (Secondary Causes)

**Excluding unknown or unstated diabetes type*

MEAN AGE

T1DM **45.9** Years

T2DM **66.0** Years

MEDIAN DURATION OF DIABETES

T1DM **19.5** Years

T2DM **14.6** Years

BLOOD GLUCOSE MONITORING

T1DM BLOOD GLUCOSE MONITORING

17.6% Blood Glucose Self Monitoring Only

77.1% Continuous Glucose/Flash Monitoring Only

5.3% Both Blood & Continuous Glucose/Flash Monitoring

T2DM BLOOD GLUCOSE MONITORING

78.5% Blood Glucose Self Monitoring Only

5.2% Continuous Glucose/Flash Monitoring Only

0.2% Both Blood & Continuous Glucose/Flash Monitoring

NO REGULAR BLOOD GLUCOSE MONITORING

T1DM **0.3%**

T2DM **15.9%**

T1DM: Type 1 Diabetes Mellitus; T2DM: Type 2 Diabetes Mellitus

GLUCOSE MANAGEMENT

T1DM INSULIN REGIMENS

72.2% Multiple Daily Injections

27.8% Continuous Subcutaneous Insulin Infusion

2.1% Additional Non-Insulin Therapy

GLUCOSE MANAGEMENT

MEAN HBA1C (%)	MEDIAN HBA1C (%)
T1DM 8.2%	T1DM 7.8%
T2DM 8.0%	T2DM 7.8%

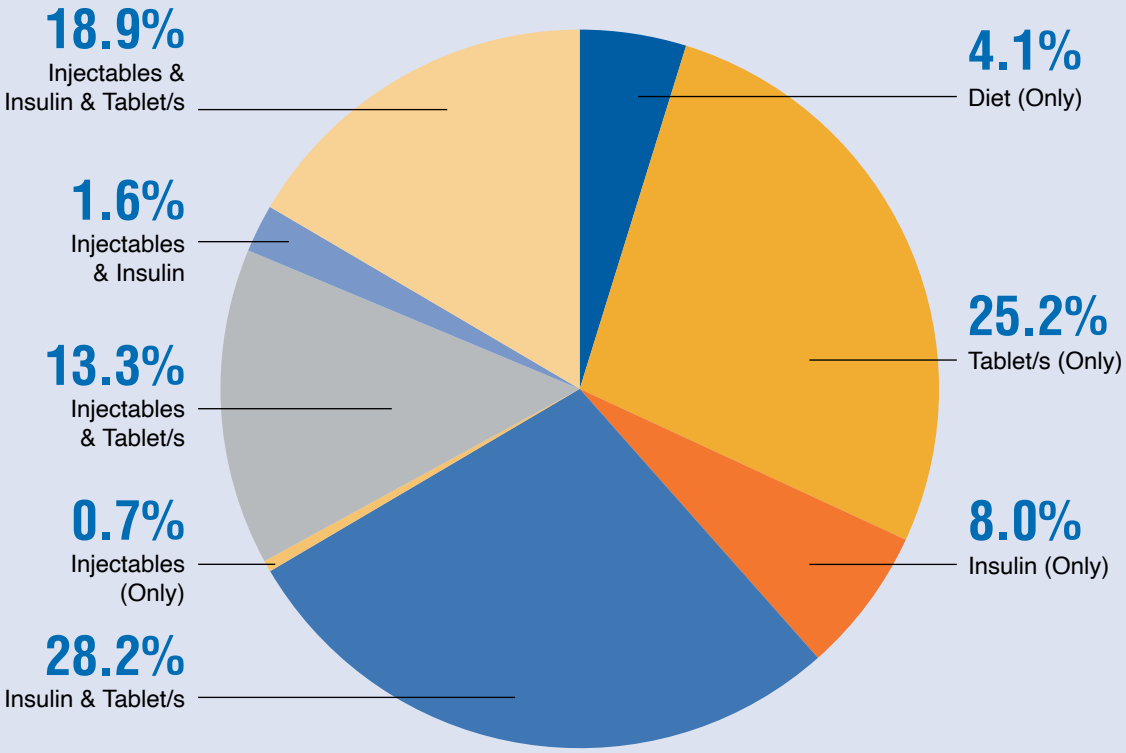
PROPORTION OF PATIENTS WITH T2DM ON GLUCOSE LOWERING THERAPIES

38.0% On 1 Therapy

43.1% On 2 Therapies

18.9% On ≥3 Therapies

TYPES OF GLUCOSE LOWERING THERAPIES (T2DM ONLY)



RISK FACTORS

CHOLESTEROL

54.7%
Total Cholesterol ≥4.0 mmol/L

33.2%
Not On Lipid Modifying Therapy

SMOKING

32.3%
Past Smokers

12.2%
Current Smokers

BLOOD PRESSURE

68.8%
Blood Pressure ≥130/80 mmHg

35.1%
Blood Pressure ≥140/90 mmHg

33.9%
Not On Anti-Hypertensive Therapy

WEIGHT

31.1 KG/M²
Mean BMI

T1DM 68.8%
Overweight/Obese

T2DM 86.8%
Overweight/Obese

COMPLICATIONS (EVER REPORTED)

FOOT COMPLICATIONS

9.4%
Foot Ulceration

20.8%
Peripheral Neuropathy

5.0%
Amputation

KIDNEY AND EYE DISEASE

25.5%
Retinopathy

2.2%
Blindness

6.0%
End-Stage Kidney Disease

CARDIOVASCULAR DISEASE

16.2%
Myocardial Infarction/CABG

7.0%
Stroke

7.9%
Peripheral Vascular Disease

OVERALL COMPLICATIONS

44.6%
NO COMPLICATIONS

55.4%
≥1 COMPLICATION/S

EXPERIENCED SEVERE HYPOGLYCAEMIA*

T1DM **9.3%**

T2DM **2.1%**

In the last 12 months

EXPERIENCED DKA OR HHS*

T1DM **5.0% DKA**

T2DM **0.7% DKA**
0.5% HHS

In the last 12 months

CABG: Coronary Artery Bypass Graft; DKA: Diabetic Ketoacidosis; HHS: Hyperosmolar Hyperglycaemic State

PATIENT REPORTED OUTCOMES

HEALTH PROFESSIONAL ATTENDANCES (IN THE LAST 12 MONTHS)

65.6%
Endocrinologist

66.2%
Diabetes Educator/Nurse Practitioner

30.7%
Dietitian

82.2%
Ophthalmologist/Optometrist

12.0%
Psychologist/Psychiatrist

58.4%
Podiatrist

PHYSICAL ACTIVITY

66.9%
<150 Mins/Week Moderate Or Vigorous Activity

66.3%
No Muscle Strengthening Exercise

NUTRITION/DIET MANAGEMENT

15.4%
Insufficient Time To Prepare Healthy Meals

36.0%
Too Costly To Eat Well

6.7%
Don't Know What Foods Are Best To Eat

46.4%
T1DM Only - Hard To Count Carbs/Weigh Food

VACCINATIONS

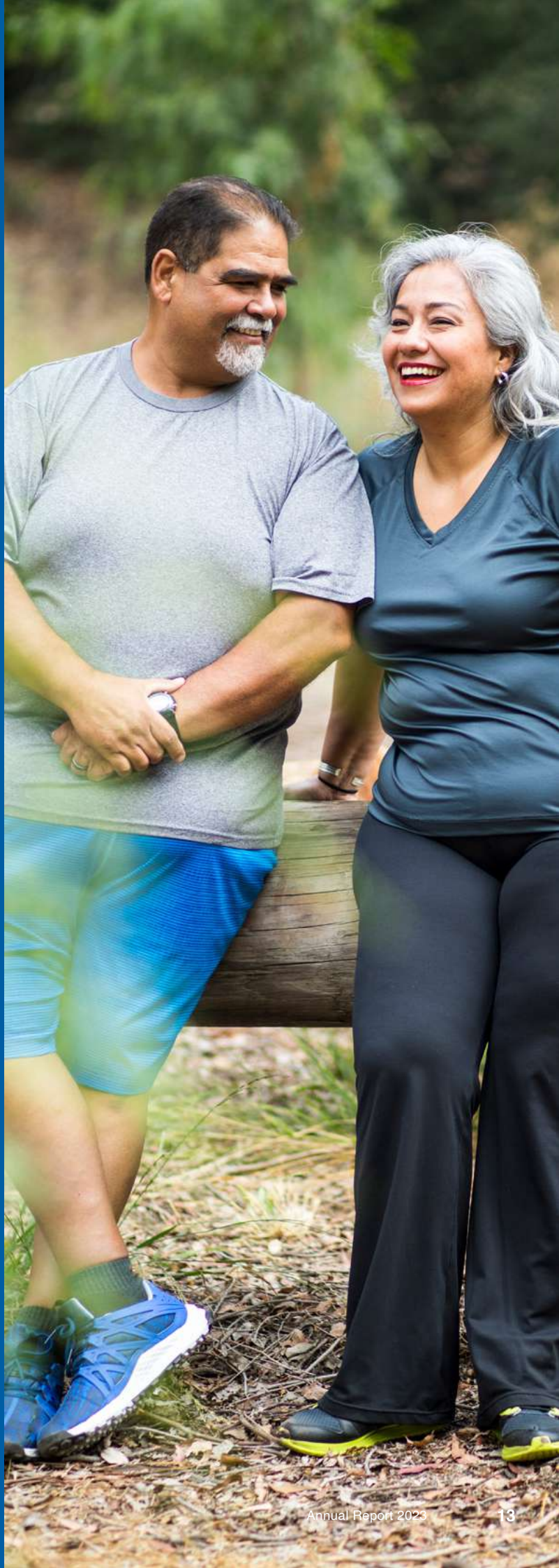
60.6%
Did Not Receive A COVID-19 Vaccination/ Booster In The Last 6 Months

30.7%
Did Not Receive An Influenza Vaccination In The Last 12 Months

75.2%
Were Not Up-To-Date With Pneumococcal Vaccination

SECTION 1

REGISTRY OVERVIEW



BACKGROUND

Diabetes represents one of the biggest challenges facing healthcare systems. In Australia, 1 in 20 (1.5 million) people are living with diabetes, with 300 Australians developing diabetes every day.[1] While there have been improvements in the treatment and management of diabetes, the chronic nature of the condition and complex interplay between risk factors, means that people with diabetes are more likely to develop multisystem complications and comorbidities such as cardiovascular and kidney diseases, and eye and foot complications. As a result, the economic burden of diabetes is large, with an estimated $3.4 billion of health care spending in 2020-21 attributed to diabetes in Australia (representing 2.2% of total disease expenditure).[1] The largest contributors to this spending were medications dispensed as part of the Pharmaceutical Benefits Scheme and hospitalisations/ hospital services.

The Australian Government recognises the burden of diabetes, developing the Australian National Diabetes Strategy to outline Australia's national response to diabetes and inform how health care and other resources can be better coordinated and targeted across all levels of government.[2] The main components of the Australian National Diabetes Strategy are summarised in Table 1.

TABLE 1. COMPONENTS OF THE AUSTRALIAN NATIONAL DIABETES STRATEGY, 2021-2030

Vision	Strengthen, integrate and coordinate all sectors to improve health outcomes and reduce the social and economic impact of diabetes in Australia
Principles	1. Facilitation of person-centred care and self-management throughout life 2. Reduction of health inequities 3. Collaboration and cooperation to improve health outcomes 4. Coordination and integration of diabetes care across services, settings, technology and sectors 5. Measurement of health behaviours and outcomes
Goals	1. Prevent people developing type 2 diabetes 2. Promote awareness and earlier detection of type 1 and type 2 diabetes 3. Reduce the burden of diabetes and its complications and improve quality of life 4. Reduce the impact of pre-existing diabetes and gestational diabetes in pregnancy 5. Reduce the impact of diabetes among Aboriginal and Torres Strait Islander peoples 6. Reduce the impact of diabetes among other priority groups 7. Strengthen prevention and care through research, evidence and data

The quality of care can influence the trajectory of diabetes and quality of life for people living with diabetes, as well as the economic burden. Clinical Quality Registries (CQRs) are unique safety and quality clinical data collections that systematically monitor and report on the quality of health care.[3] Therefore, information generated by CQRs can be used to improve the quality of care, and reduce variation in care. The Australian Commission on Safety and Quality in Health Care (ACSQHC) identified diabetes as a priority area for the development of a CQR.[4] In 2023, the ADCQR was implemented, representing the first CQR for adults with diabetes in Australia. The ADCQR captures patients from diagnosis right through to advanced complications, and will continue to reflect the community-based nature of diabetes care as the Registry matures.

The ADCQR is a key contributor towards the goals of the Australian National Diabetes Strategy, and conforms to the ACSQHC Framework for Australian CQRs[3] and Australian Government Department of Health National Clinical Quality Registry and Virtual Registry Strategy 2022-2030.[5]

The ADCQR is the successor to the national audit and feedback activity, ANDA, and therefore has benefited and leveraged from the formative work undertaken as part of ANDA.[6] The Registry (as part of its deliverables) produces annual site-specific reports, as well as an annual report on the current state of the nation, to identify variations in care and inform quality improvement initiatives.

VISION AND AIMS

The ADCQR endeavours to become a learning health ecosystem in diabetes care with the vision of participating health services continuously learning from the data collected (Figure 1). Its importance lies in the improvements in the quality and safety of care, and the promotion of the ADCQR for research use to better understand the trajectory of diabetes.

The aim of the ADCQR is to develop a longitudinal, multi-centre diabetes CQR to optimise quality of care provided to people diagnosed with diabetes. This will be achieved by:

1. Assessing patterns of care and access to care;

2. Identifying variability in treatments/outcomes amongst people with diabetes;

3. Benchmarking of process and outcome measures amongst providers of care;

4. Determining the degree of compliance (and reasons for non-compliance) with best practice-based guidelines for the treatment of diabetes;

5. Identifying factors that predict favourable and unfavourable treatment outcomes.

In addition, this diabetes CQR will improve knowledge and advance treatment by:

6. Monitoring trends in outcomes and survival over time;

7. Providing an infrastructure on which intervention or other studies can be established;

8. Determining the clinical effectiveness of treatments in a 'real world' setting;

9. Providing information to assist in the credentialing of clinicians and identification of appropriate training resources.

FIGURE 1. ADCQR FEEDBACK LOOP AND LEARNING HEALTH ECOSYSTEM

Adapted with permission from https://www.safetyandquality.gov.au/our-work/health-and-human-research/national-arrangements-clinical-quality-registries, developed by the Australian Commission on Safety and Quality in Health Care (ACSQHC). ACSQHC: Sydney 2024.

SECTION 2

REGISTRY METHODOLOGY

ETHICS APPROVAL

The ADCQR was established to improve the quality of care and outcomes for people living with diabetes and is considered to be in the public's interest.

To function as a CQR, the ADCQR collects, stores, and uses identifiable, personal and sensitive health information about people with diabetes.

The opt-out approach to participation is used to recruit participants due to the scale and significance of the Registry. In accordance with the State and Federal privacy legislation of Australia, the Australian National Statement for Ethical Conduct in Research,[7] the ADCQR has ethics approval under the National Mutual Acceptance (NMA) scheme from the Monash Health Human Research Ethics Committee. Additional ethics approvals are sought from participating sites that do not operate under the NMA.

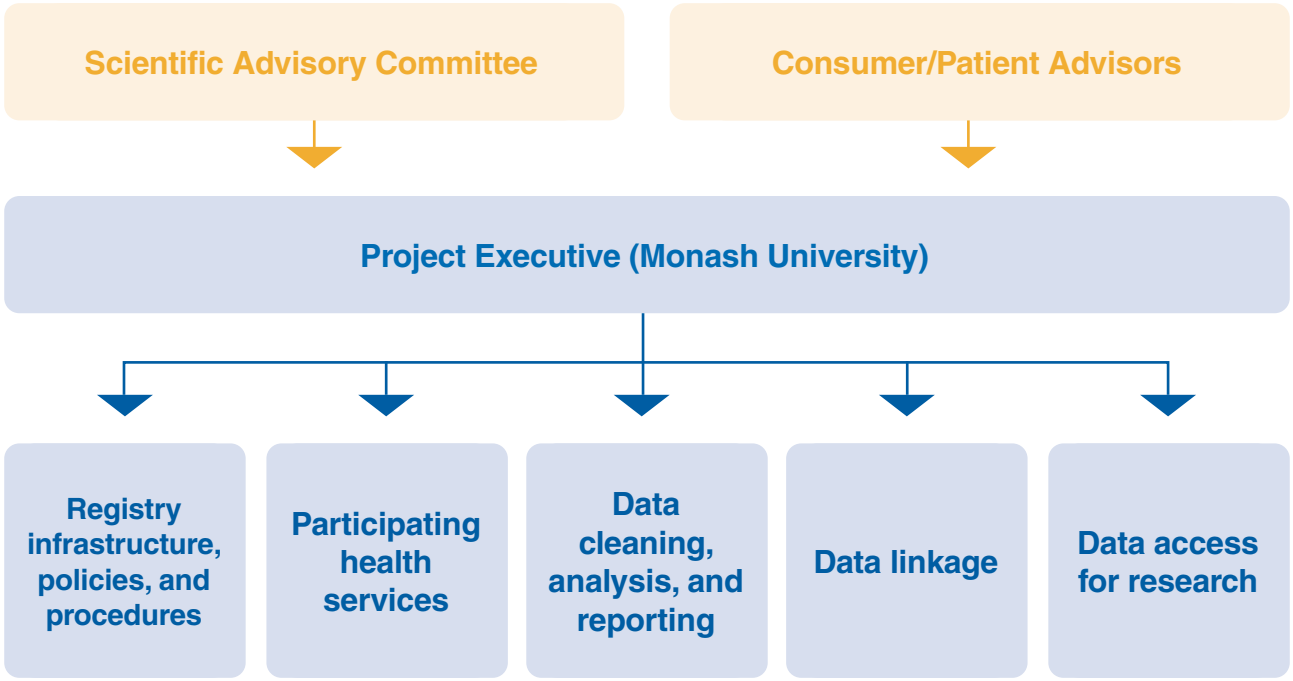
As part of local research governance processes, it is a requirement for all sites registered to obtain ethics approval and local research governance authorisation prior to commencing data collection.

GOVERNANCE

The Registry custodian is the School of Public Health and Preventive Medicine (SPHPM), Monash University, and the ADCQR is operated by the Project Executive at SPHPM, under the leadership of Professor Zoungas.

The ADCQR Scientific Advisory Committee provides strategic guidance to the Project Executive to ensure the objectives, outcomes and deliverables of the ADCQR, as specified by the Australian Government Department of Health and Aged Care are achieved (Figure 2). This committee consists of representatives of key stakeholder organisations including endocrinologists, general practitioners, consumer representatives, Aboriginal and Torres Strait Islander representatives, and representatives from national peak bodies, and is working to the agreed Terms of Reference with the ultimate vision of assisting the ADCQR to maintain high visibility, appropriate engagement and relevance for diabetes service delivery. The ADCQR Project Executive and Scientific Advisory Committee members are listed at the end of this report.

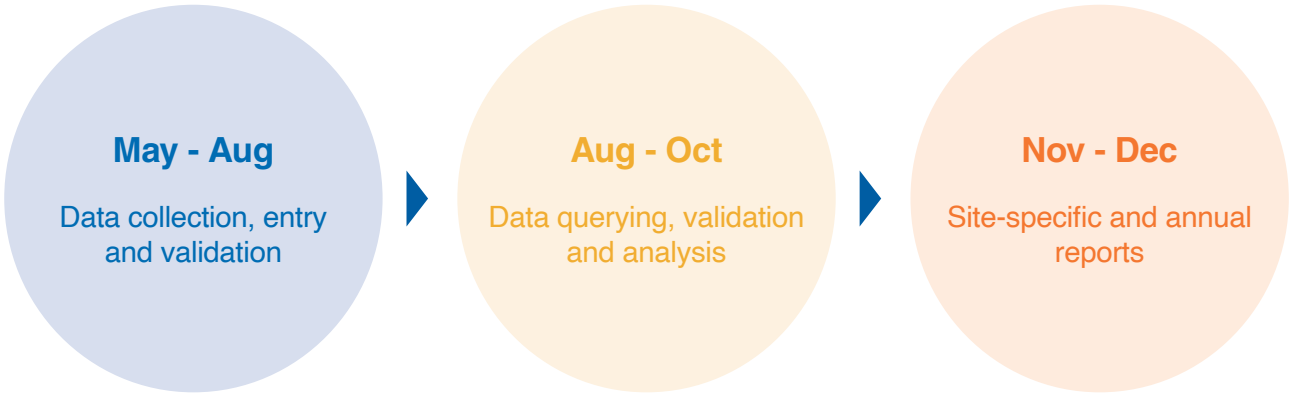
FIGURE 2. GOVERNANCE STRUCTURE



KEY REGISTRY MILESTONES

Expressions of interest and local research and governance processes are ongoing. To reduce the burden on participating health services, the ADCQR collects data during the months of May to June (n.b. participating health services self-select a continuous four-week period during the sampling period to collect data on consecutive patients with diabetes who attend the service and meet the inclusion criteria). The data collection period may be extended until the censorship date of 31 August of each year, at which time the Registry freezes the data for data cleaning, analysis and reporting. The major Registry Milestones are summarised in Figure 3.

FIGURE 3. ADCQR KEY MILESTONES



RECRUITMENT

SITE RECRUITMENT

Sites are recruited through the National Association of Diabetes Centres (NADC), a sub-division of the Australian Diabetes Society (ADS). The NADC, established in 1994, is a national collective of centres that are involved either directly or indirectly in diabetes services and care, brought together by a common desire to see improvement in the standard of diabetes care in Australia.[8] The NADC takes a leadership role in developing, fostering and supporting networks between diabetes services [from primary care to tertiary (hospital) care settings], recognising that diabetes care requires a shared, multidisciplinary approach. The NADC facilitates and promotes improved standards of diabetes care by implementing evidence-based policies and procedures, including developing national standards and auditing and benchmarking activities.

There are six membership/accreditation levels of the NADC. The ADCQR currently recruits sites from primary, secondary, tertiary and centre of excellence services:

1. **Centres of Excellence**
   Diabetes centres that have demonstrated excellence in education, research, service delivery, practice/policy development and national influence. These centres must be tertiary-level facilities.

2. **Tertiary Care Diabetes Services**
   These centres are hospitals with a full range of clinical diabetes service providers including endocrinologists, credentialed diabetes educators, dietitians and podiatrists on staff (full-time) and have demonstrated a high standard of care through service delivery and organisational capacity.

3. **Secondary Care Diabetes Services**
   These centres are typically community services with a range of full and/or part-time diabetes staff but often do not have an endocrinologist as part of their usual team.

4. **Primary Care Diabetes Services**
   These centres have part-time staff and work closely with local general practitioners to provide care for people with diabetes.

5. **Pharmacy Diabetes Services**
   These centres have staff that have received training and/or have expertise in diabetes and work closely with the local general practitioners (GPs) and allied health staff to provide additional care and services in the pharmacy context.

6. **Network Members**
   The NADC Network membership is offered to Primary Health Networks (PHNs) and State and Territory Government organisations who work directly with GPs, and other health care providers to facilitate improved outcomes for patients.

In 2023, there were 204 NADC member diabetes centres across Australia; these operate in a range of locations and facilities from major metropolitan adult and children's hospitals to community-based services including general practices and pharmacies.

PARTICIPANT RECRUITMENT

Participants are recruited through the participating site (health service) based on the following criteria:

Inclusion criteria

- Attend a participating centre
- Age ≥ 18 years
- Patients with T1DM, T2DM or other (secondary) forms of diabetes
- Have the capacity to make the decision to opt-out or to be included in the Registry

Exclusion criteria

- Age < 18 years
- Female patients with a diagnosis of gestational diabetes mellitus (not known to have established diabetes)

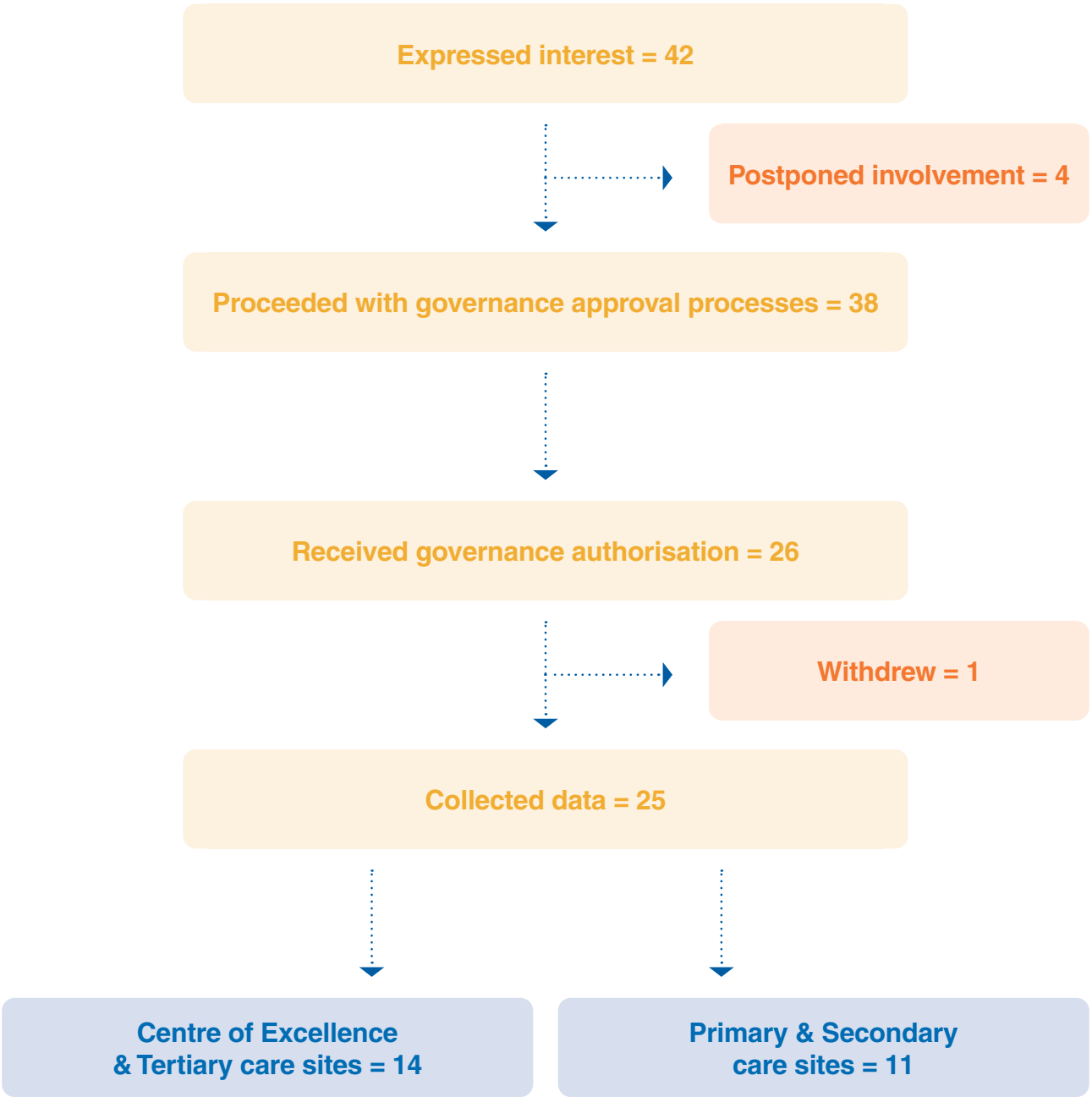
As participants are recruited using the opt-out approach, prospective eligible participants are provided with the Registry participant information sheet by a staff member at their health service, to inform them that their information will be shared with the Registry, and how to opt out if they change their mind and do not want their information shared. Moreover, their data are entered into the Registry 'holding database' for a two-week period where the data is stored and not used for any purpose, prior to their consent being assumed and their data included in the Registry.

HOW MANY SITES AND PARTICIPANTS WERE INVOLVED IN THE ADCQR IN 2023?

In the first year of the Registry's operation, 42 diabetes centres expressed an interest in participating in the ADCQR 2023 (Figure 4). Of those expressing interest, 26 sites (61.9%) received governance authorisation in time to collect data during the specified sampling period, 12 sites (28.6%) are pursuing governance process/approval with support of the ADCQR team, and 4 sites (9.5%) postponed involvement.

Of the 26 sites who received governance authorisation in time to participate, 1 site withdrew from the activity for 2023 due to staffing pressures. Therefore, data were received, processed, analysed and reported from 25 sites, comprising 14 sites (56.0%) from Centres of Excellence (CoE) & Tertiary care settings and 11 sites (44.0%) from Secondary & Primary care settings. Moreover, data was collected and processed on 1426 patients with diabetes, 986 (69.1%) from CoE & Tertiary care settings and 440 (30.9%) from Secondary & Primary care settings.

FIGURE 4. ADCQR 2023 SITE PARTICIPATION



DATA COLLECTION

WHAT INFORMATION DO WE COLLECT?

The ADCQR has leveraged from the formative work undertaken as part of ANDA.

In brief, the ANDA dataset used an enhanced version of the National Diabetes Outcomes Quality Review Initiative (NDOQRIN) dataset, aimed at improving diabetes care through a structured approach to patient management.[9] Initially, this was based on the NDOQRIN minimum dataset linked to the NSW Clinical Management Guidelines for Diabetes,[10] with subsequent updates/ enhancements to the dataset over the years based on feedback from participating health services, as well as the latest research and evidence in diabetes care and quality improvement.

The ADCQR minimum dataset is based on ANDA 2022. This has considerable similarity with international datasets throughout the United States of America and Europe.[11-14] Compared to international registries, the ADCQR provides comprehensive reporting on multidisciplinary care, diabetes complications and psychological factors, but lacks benchmarking of structural measures, smoking counselling, conception/pregnancy counselling and contraceptive counselling.[12] Overall, the high rates of agreement with international practice, supports the validity of the ADCQR in the benchmarking of key quality indicators regarding diabetes care within Australia.

The ADCQR captures clinical indicators as well as patient self-management outcomes. The clinical component is collected by the clinician or staff member at the participating site and may be collected during the patients' clinical consult or via medical records. It includes information on demographics, blood glucose control and management methods, other risk factors/ biomarkers, medication use, as well as complications and comorbidities. The patient reported component is self-reported by the patient either directly or with a health professional at their diabetes health service prior to (in the waiting room) or during their clinical consult. Participating sites decide how best to deliver the patient reported component for their patient and/or health service. Completion of the questionnaire directly by patients was intended to reduce the burden of data collection on participating sites. The patient reported component consists of one-page and includes information on smoking status, vaccination status, health professional attendances, medication use, patient self-care practices including nutrition/diet management and physical activity.

The data collection forms captured most fields using yes/no responses or other choice options to reduce the amount of written data required. The data collection forms are included in Appendix 1.

The ADCQR provides participating health services with a data definitions document, including the ADS Algorithm[15] to assist in the collection of data on treatments (Appendix 2). The ADCQR Public Facing Data Dictionary provides details on the variables collected and is available on the ADCQR website: https://www.monash.edu/medicine/sphpm/adcqr

HOW DO WE COLLECT THIS INFORMATION?

Participating sites have the option to choose from three methods of data collection outlined below.

Web-based data collection – Research electronic data capture (REDCap)
The web-based electronic data capture application, REDCap[16] has been previously used by ANDA since 2019, providing familiarity to many of the health services participating in the ADCQR in 2023. Study data were collected and managed using REDCap electronic data capture tools hosted and managed by Helix (Monash University). REDCap is a secure, web-based application designed to support data capture for research studies,[17,18] providing:

1. An intuitive interface for validated data entry
2. Audit trails for tracking data manipulation and export procedures
3. Automated export procedures for seamless data downloads to common statistical packages
4. Procedures for importing data from external sources

Branching logic coding was used to skip irrelevant questions. Data validations were put in place to help prevent data entry errors and reduce data queries. Staff were granted access to patients from their sites only.

Paper-based data collection
The Teleform© sotware was utilised for the design of paper data collection forms. Once completed by sites and sent to the ADCQR coordinating centre, the forms were entered directly into REDCap. Any printed data collection forms are stored in a locked room at SPHPM, Monash University.

Data Extraction
No sites collected data via this method in 2023.

HOW DO WE STORE THIS INFORMATION?

All Registry data are kept electronically in accordance with Monash University's Information Technology Services Security Framework policy. Patient identifiable data are stored in a highly secure database that is separate to the clinical and patient reported data, to reduce the risk of data breaches. Patient clinical and patient reported data are stored within the Registry database. The data are entered into the Registry 'holding database' for a two-week period, prior to consent being assumed and patient data included in the Registry. The date of the patient consult (clinic visit) indicates the commencement of the opt-out window.

The ADCQR has established a Risk Register to continually assess and manage risk, including any risks associated with data collection and storage. This is a standing item on the agenda of all Project Executive and Scientific Advisory Committee meetings.

DATA VERIFICATION AND VALIDATION

Near complete data capture is required to ensure the Registry's reporting is accurate. Data validations and quality checks were performed for each site at the end of their data collection period. Reports were generated for each site, querying missing data, potential duplicate records and invalid or out-of-range values. Sites were encouraged to address data queries prior to resubmission to the Registry. Where duplicate records were identified (multiple case record entries for the same patient), only the first entry was retained. Data assumptions and manipulations were made according to a pre-defined list of criteria (see the Supplement to this Report). Corrected data items were updated in the database prior to final analysis.

STATISTICAL ANALYSES

DESCRIPTIVE STATISTICS

Results are presented descriptively as percentages for categorical variables, and mean and standard deviation (SD) for continuous variables. Variables that were not normally distributed are presented as median and interquartile range (IQR, where IQR is represented by the first quartile (Q1 or 25th percentile) and third quartile (Q3 or 75th percentile)). Percentages are calculated from total respondents (and did not include missing data in the denominator). Percentages may not always add to 100% due to rounding. Where N is reported, it refers to the number of patients with available data (denominator). The number of people that answered 'Yes' (numerator or n) can be estimated by multiplying the reported percentages by the number of patients with available data (denominator).

Complications/comorbidities are reported as ever reported (percentage of patients with a diagnosis/detection either in the last 12 months or prior to the last 12 months) and reported in the last 12 months only (percentage of patients with a diagnosis/detection in the last 12 months).

Urinary albumin and urinary protein levels were used to determine albuminuria. Albuminuria was determined using the Kidney Disease: Improving Global Outcomes (KDIGO) guidelines.[19] Where albumin measurement was missing, and proteinuria measurement was available, patients were categorised into albuminuria using the relevant thresholds outlined by KDIGO. Albuminuria was defined as:

- Normal to mildly increased: AER <30 mg/24 hours, ACR <3 mg/mmol, PER <150 mg/24 hours, or PCR <15 mg/mmol
- Moderately increased: AER 30-300 mg/24 hours, ACR 3-30 mg/mmol, PER 150-500 mg/24 hours, or PCR 15-50 mg/mmol
- Severely increased: AER >300 mg/24 hours, ACR >30 mg/mmol, PER >500 mg/24 hours, or PCR >50 mg/mmol

In Australia, urinary albumin and urinary protein levels are most commonly reported in terms of mg/L (AER and PER) and ratio (ACR and PCR using mg/mmol). To categorise patients into albuminuria using mg/L units of measurement, the following thresholds were employed:

- Normal to mildly increased: AER <20 mg/L or PER <20 mg/L
- Moderately increased: AER 20-200 mg/L or PER 20-200 mg/L
- Severely increased: AER >200 mg/L or PER >200 mg/L

eGFR levels were used to determine chronic kidney disease (CKD). KDIGO guidelines define CKD as any abnormality of kidney structure or function that is present for >3 months, with implications for health.[19]

- Stage 1: eGFR ≥90 mL/min/1.73m^2 and evidence of kidney damage (albuminuria, urine sediment abnormalities, electrolyte and other abnormalities due to tubular disorders, structural abnormalities on histology or imaging and history of kidney transplantation)
- Stage 2: eGFR 60-89 mL/min/1.73m^2 and evidence of kidney damage
- Stage 3: eGFR 30-59 mL/min/1.73m^2
- Stage 4: eGFR 15-29 mL/min/1.73m^2
- Stage 5: eGFR <15 mL/min/1.73m^2

End stage kidney disease was also captured through a separate question, where end stage kidney disease was defined as Stage 5 chronic kidney disease (eGFR <15 mL/min/1.73m^2) and/or dialysis dependent (haemodialysis or peritoneal dialysis) and/or renal transplant recipient reported in the last 12 months.

Where number of complications are reported, these include myocardial infarction, coronary artery bypass graft (CABG)/ angioplasty, stroke, congestive cardiac failure, end stage kidney disease, foot ulceration, foot amputation, retinopathy, blindness, sexual dysfunction, diabetic ketoacidosis, hyperosmolar hyperglycaemic state or severe hypoglycaemia.

Selected analyses are also reported for people with and without cardiovascular disease (CVD), where CVD includes myocardial infarction, CABG/angioplasty, stroke, congestive cardiac failure or peripheral vascular disease.

SUBGROUP ANALYSES: CENTRE TYPE

Given the different patient populations attending primary, secondary and tertiary health care settings, results by centre type are presented. For comparability, pooled patient data from CoE & Tertiary care services were compared to pooled patient data from Secondary & Primary care services.

ADDITIONAL ANALYSES

The Supplement to this Report provides additional analyses including

- Key findings reported in terms of patients meeting target
- Frequency count data
- Missing data
- Descriptive reporting including bar charts to demonstrate the distribution of results across participating sites
- Post data collection questionnaire results

SECTION 3

RESULTS

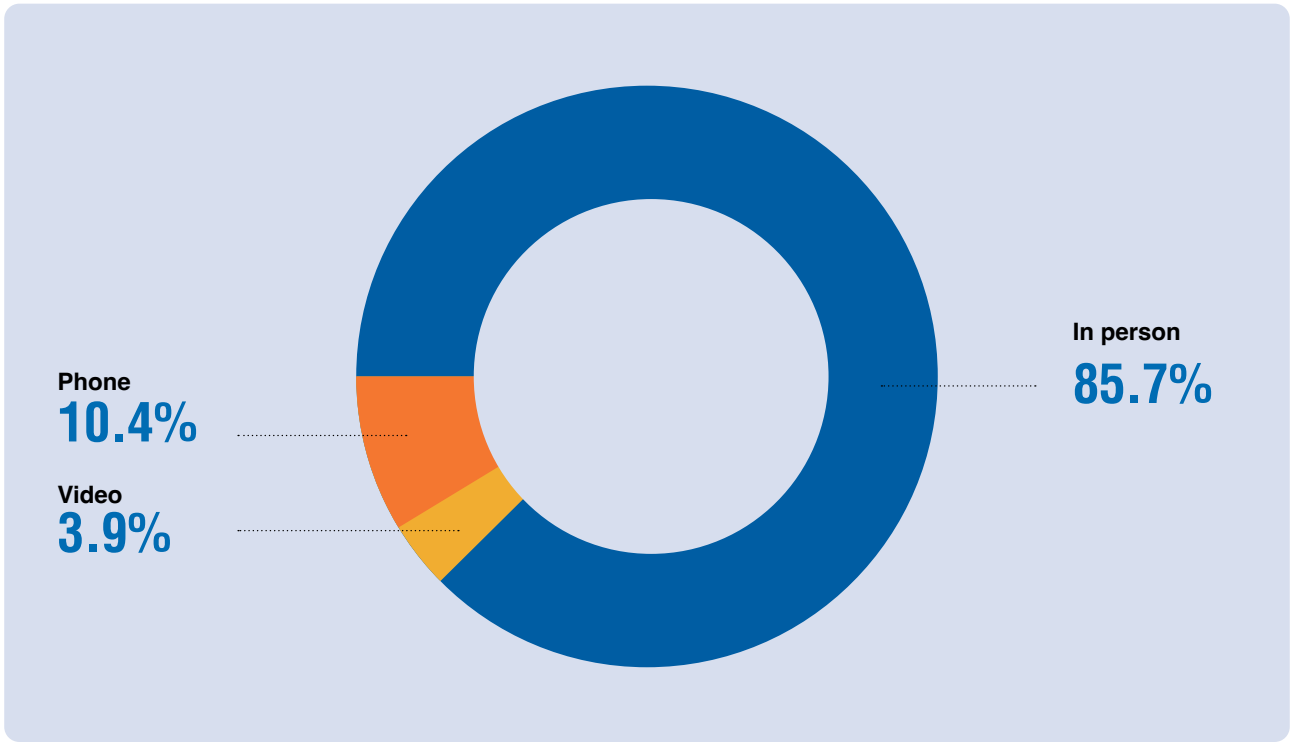
Data were collected on a total of 1426 patients.

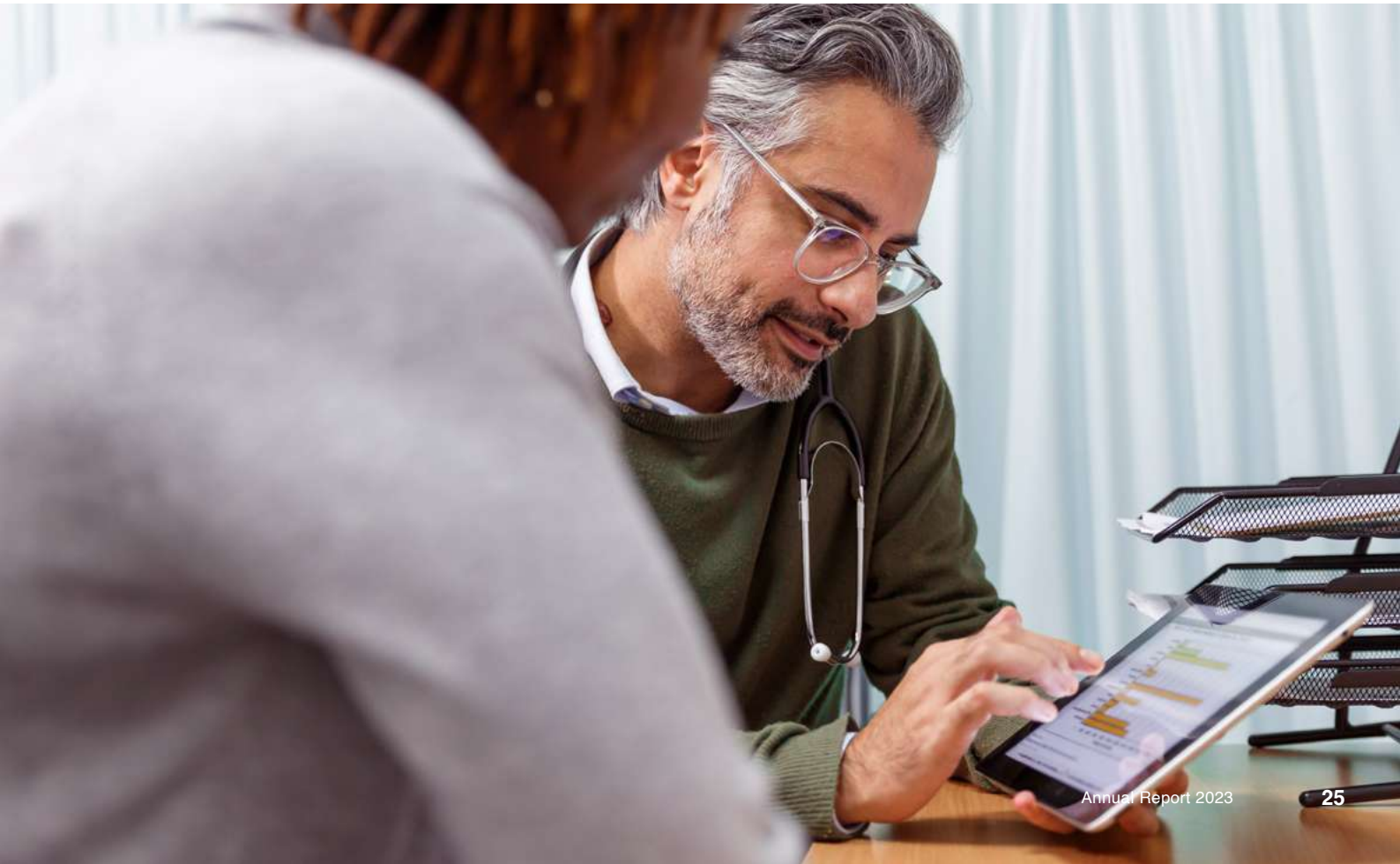
Results in this section of the report represent the pooled analyses for the total cohort. These analyses are also reported for patients with T1DM and T2DM separately.

TYPE OF CLINICAL CONSULTATION

More than 8 in 10 patients had in person consultations, 1 in 10 patients had phone consultations and 1 in 20 patients had video consultations (Figure 5).

FIGURE 5. TYPE OF CLINICAL CONSULTATION (N = 1420)





DEMOGRAPHIC DATA

The demographic data are included in Table 2. Overall, the mean age of patients was 60.2 years, and males represented slightly more of the cohort than females. The majority of patients included in the analysis identified as being born in Australia and almost 1 in 20 patients identified as Aboriginal/Torres Strait Islander. Most patients were registered with the National Diabetes Services Scheme (NDSS). Almost 7 in 10 patients had T2DM with a median duration of diabetes of 14.6 years (Table 3), and almost 3 in 10 patients had T1DM with a median duration of 19.5 years.

TABLE 2. DEMOGRAPHIC DATA

CHARACTERISTICS	N	
Total Number of patients	1426	
Age (years), mean ± SD	1425	60.2 ± 17.1
Sex, %	1426	
Female		45.0
Male		55.0
Other		0.1
Pregnant, %	641	2.2
Diabetes duration (years), median (IQR)	1416	15.5 (8.0 – 23.7)
Diabetes type, %	1426	
T1DM		27.8
T2DM		69.3
Other (secondary causes)		2.7
Don't know		0.2
Unstated		0.0
Initial visit, %	1421	10.1
Interpreter required, %	1426	5.0
Aboriginal/Torres Strait Islander, %	1425	3.2
Australian-born, %	1419	67.4
DVA, %	1421	0.6
NDSS registrant, %	1413	94.5

Patients with T1DM were approximately 20 years younger than patients with T2DM but had a slightly longer duration of diabetes (Table 3).

TABLE 3. AGE AT VISIT AND DURATION OF DIABETES, BY DIABETES TYPE

CATEGORY	N	T1DM	N	T2DM
Age (years), mean + SD	396	45.9 ± 17.6	988	66.0 ±13.1
Duration (years), median (IQR)	397	19.5 (9.4 – 31.7)	978	14.6 (7.7 – 23.5)

GLUCOSE MONITORING AND MANAGEMENT

Table 4 outlines the methods of blood glucose monitoring undertaken by patients with T1DM and T2DM.

Almost all patients with T1DM performed regular blood glucose monitoring with more than 8 in 10 using continuous glucose monitoring (CGM) technologies (either flash or other CGM). The majority of these patients used CGM only with a minority using CGM and finger pricking. Over 8 in 10 patients with T2DM performed regular blood glucose monitoring with the vast majority using the finger prick method.

TABLE 4. BLOOD GLUCOSE MONITORING BY DIABETES TYPE

METHOD	T1DM (N=397) %	T2DM (N=986) %
Any	99.7	84.1
None	0.3	15.9
Finger pricking*	22.7	78.7
Continuous glucose monitoring (CGM)*	82.4	5.4
Flash glucose monitoring	26.7	1.4
Other CGM	55.7	4.0
Method categories		
Finger pricking only	17.4	78.7
CGM only	77.1	5.2
Finger pricking and CGM	5.3	0.2

**Total may be greater than 100% due to patients indicating multiple methods*

Of those who performed regular blood glucose monitoring using the finger prick method, almost 7 in 10 patients performed testing as often as recommended, with a small proportion unsure of recommended testing (Table 5). Patients with T1DM performed similarly to patients with T2DM. On average, patients with T1DM performed finger pricking at least 3 times per day while patients with T2DM performed finger pricking 2 times per day.

TABLE 5. BLOOD GLUCOSE MONITORING BY FINGER PRICKING PERFORMED AS OFTEN AS RECOMMENDED BY DIABETES TYPE

FINGER PRICK TESTING	T1DM (N=85) %	T2DM (N=774) %
Yes	67.8	69.7
No	26.7	26.1
Unsure of recommended testing	4.4	3.7
Number of times per day, mean ± SD	3.3 ± 1.6	2.0 ± 1.2

Of those that used CGM technologies (flash or other CGM), the majority of patients used sensors for at least 14 days in the last 3 months with the sensor active for at least 70% of the time (Table 6). Specifically, more than 7 in 10 patients with T1DM and more than 6 in 10 patients with T2DM used sensors for at least 14 days in the last 3 months with the sensor active for at least 70% of the time.

TABLE 6. BLOOD GLUCOSE MONITORING BY FLASH/CONTINUOUS GLUCOSE MONITORING AND SENSOR USE BY DIABETES TYPE

PROPORTION OF TIME USING SENSORS	T1DM		T2DM	
	N	%	N	%
Sensor worn for ≥14 days in last 3 months	326	91.7	53	86.8
Sensor active ≥70% of time	293	85.0	46	78.3

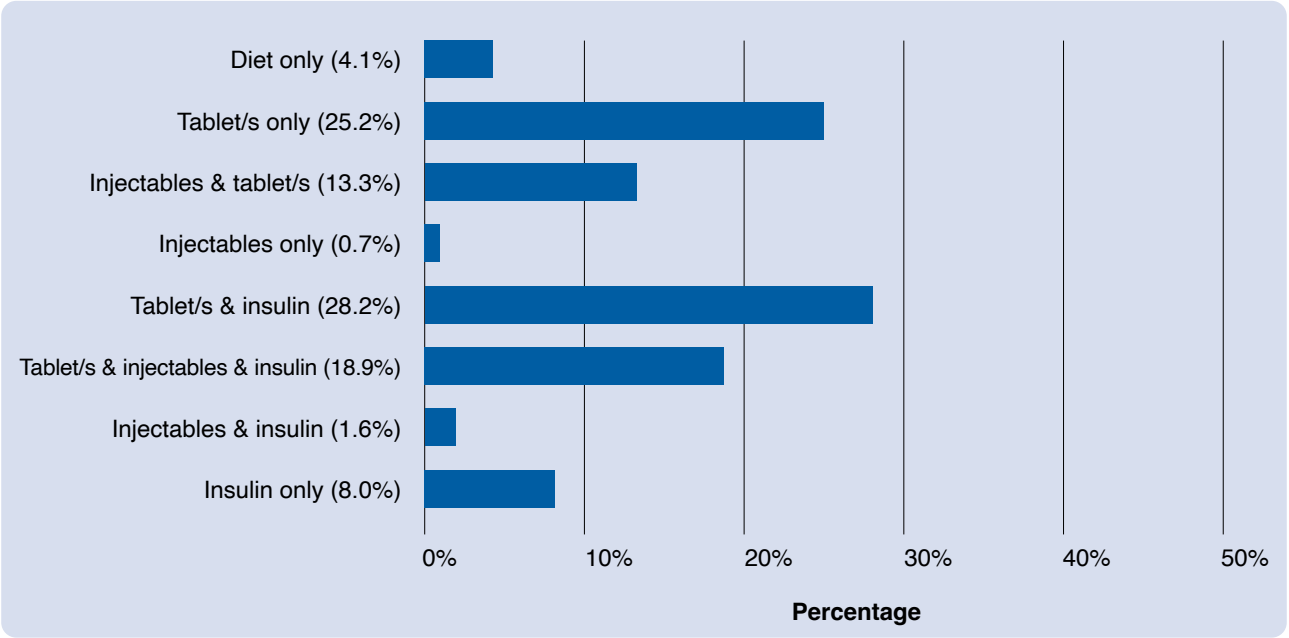
Table 7 details the classes of glucose lowering medications patients were treated with. All patients with T1DM were treated with insulin, and the most commonly co-prescribed adjuvant glucose lowering agent was metformin with 1 in 10 patients reporting adjuvant metformin. Of those patients with T2DM, more than 7 in 10 patients were treated with metformin, 5 in 10 were treated with insulin, 4 in 10 were treated with sodium-glucose co-transporter 2 (SGLT2) inhibitors and 3 in 10 patients were treated with glucagon-like peptide-1 (GLP-1) agonists or GLP-1/ gastric inhibitory polypeptide (GIP) receptor agonists. More than 5 in 10 patients with T2DM were using tablets and 3 in 10 patients were using injectables (Figure 6).

TABLE 7. CLASSES OF GLUCOSE LOWERING MEDICATIONS BY DIABETES TYPE

TREATMENT*	T1DM (N=397)	T2DM (N=986)
	%	%
Metformin	10.6	74.2
SGLT2 inhibitor	3.8	39.7
GLP-1 agonist or GLP-1/GIP dual agonist	1.8	34.6
DPP4 inhibitor	0.8	24.9
Sulphonylurea	0.0	23.6
Thiazolidinedione	0.0	0.1
Acarbose	0.0	1.2
Insulin*	100.0	56.8

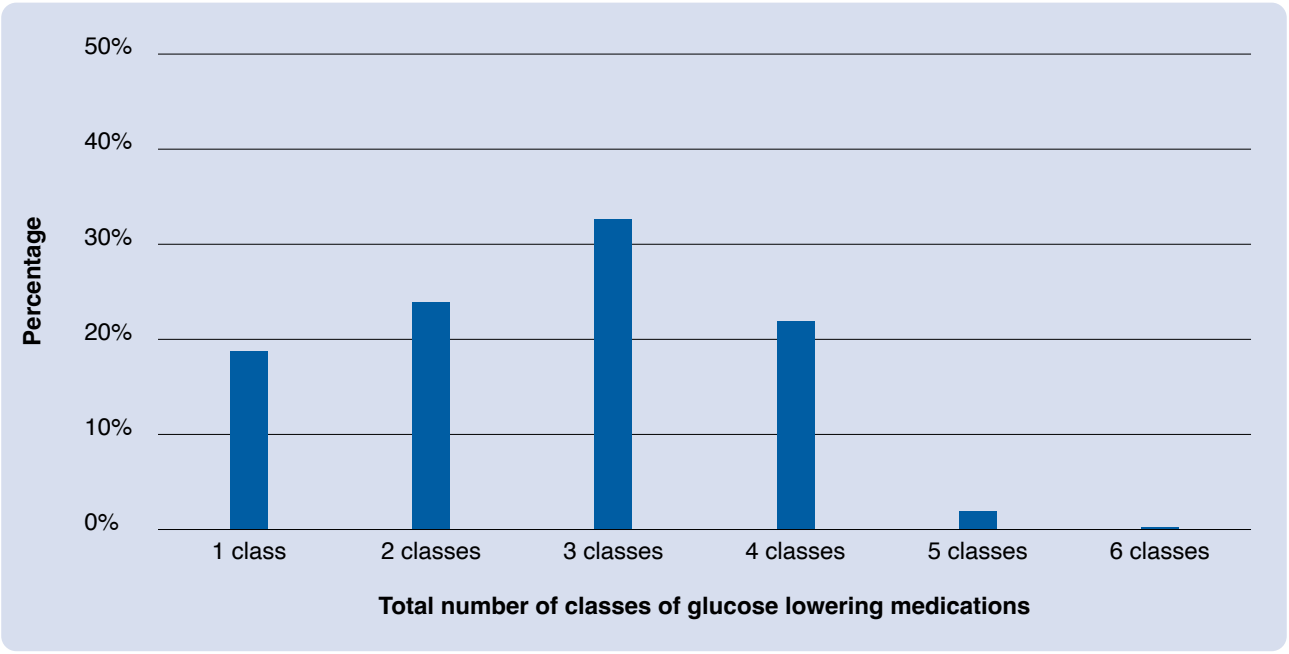
Total may be greater than 100% due to patients being on multiple agents
**Monotherapy or in combination with other treatments*

FIGURE 6. TYPES OF TREATMENTS USED IN PATIENTS WITH T2DM (N=986)



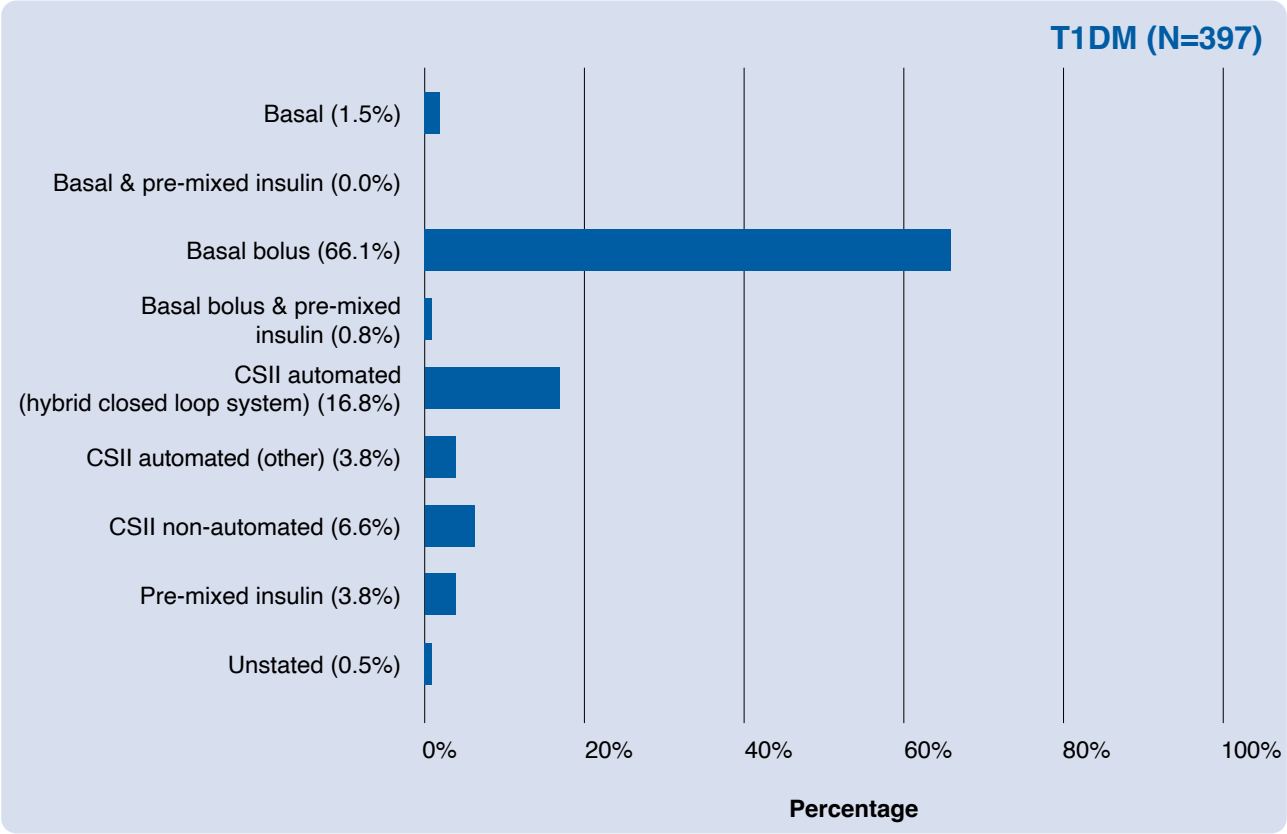
Almost 6 in 10 patients with T2DM were on 3 or more classes of glucose lowering medications (Figure 7).

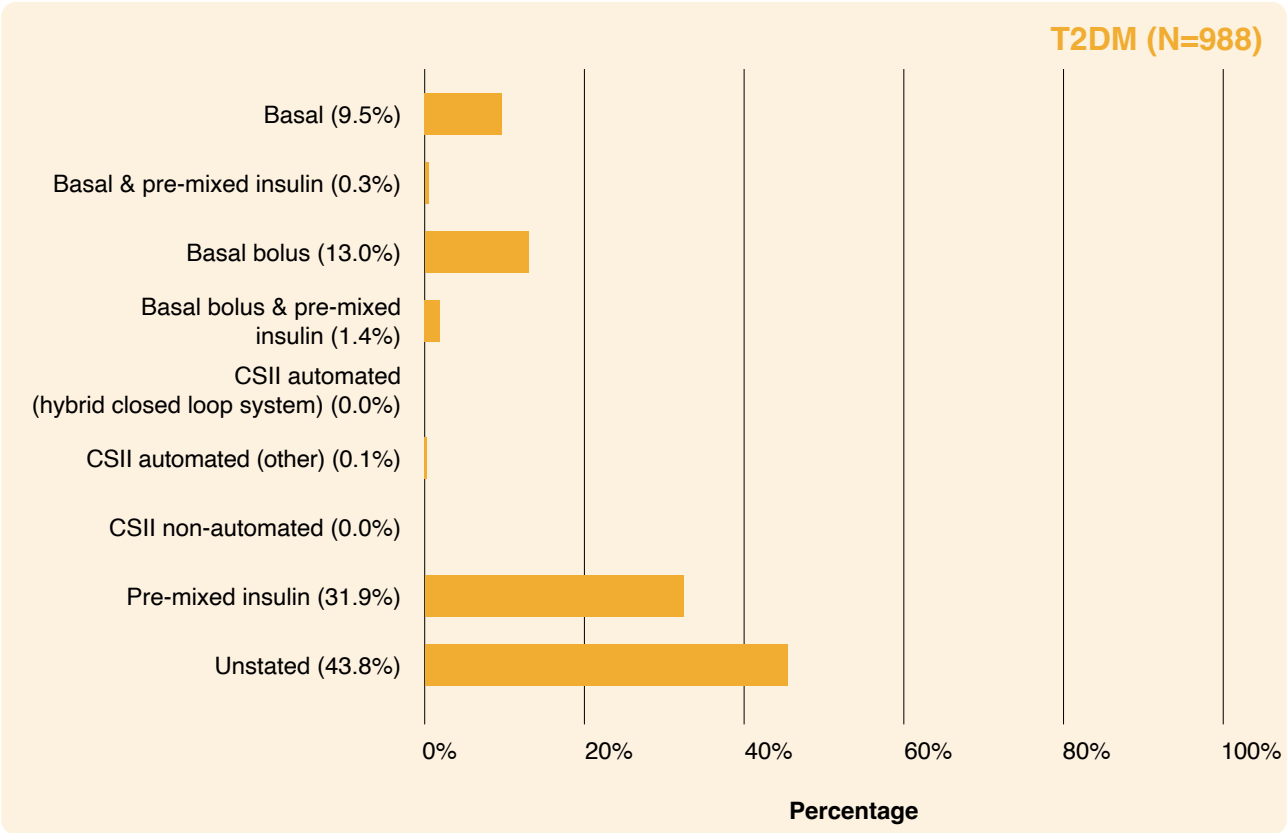
FIGURE 7. PROPORTION OF PATIENTS WITH T2DM TREATED WITH MULTIPLE CLASSES OF GLUCOSE LOWERING MEDICATIONS



Of those treated with insulin, more than 6 in 10 patients with T1DM were treated with a basal-bolus insulin regimen, and more than 2 in 10 patients were using continuous subcutaneous insulin infusion (CSII; automated or non-automated) systems. Of those patients with T2DM, 3 in 10 patients used a pre-mixed regimen, with the remainder mostly using either a basal-bolus or basal-only regimen (Figure 8).

FIGURE 8. MODALITIES OF INSULIN USE BY DIABETES TYPE





The ADCQR is an important quality improvement activity which serves to promote best practice and high-quality diabetes care by identifying gaps in diabetes centres. Choosing to join the Scientific Advisory Committee as their consumer representative gave me an insight into the importance of the ADCQR activity and inspired me to learn more about the disease and its management. To be a committee member contributing towards ADCQR's journey in improving the care of people with diabetes, by addressing barriers and gaps in diabetes management, has been rewarding.

– Trevor Jones, Consumer representative on the Scientific Advisory Committee

CLINICAL PARAMETERS, COMPLICATIONS AND COMORBIDITY DATA

Table 8 presents clinical parameters for the total cohort. Normally distributed data are presented as mean ± SD, and non-normally distributed data are presented as median and IQR. Tables 8-15 detail risk factors, complications and comorbidities of the total cohort. These data are reported as number of people with available data (N) and percent (%) of patients who responded 'Yes' to the question, unless otherwise indicated.

CLINICAL PARAMETERS

Overall, the average values for clinical parameters/cardiovascular risk factors were above targets with a mean HbA1c of 8.1% (median of 7.8%), mean systolic and diastolic blood pressure of 132 and 77 mmHg, respectively, and mean total cholesterol of 4.2 mmol/L, LDL cholesterol of 2.1 mmol/L and non-HDL cholesterol of 2.9 mmol/L. HDL cholesterol was the only parameter meeting recommended target levels. Mean BMI was in the obese range (31.1 kg/m^2).

TABLE 8. CLINICAL PARAMETERS

METABOLIC DATA	TARGET	N	MEAN + SD
HbA1c (%)	≤7.0	1381	8.1 ± 1.7
HbA1c (mmol/mol)	≤53.0	1381	64.7 ± 18.7
HbA1c (%), median (IQR)	≤7.0	1381	7.8 (6.9 – 8.8)
HbA1c (mmol/mol), median (IQR)	≤53.0	1381	62.0 (52.0 – 73.0)
Systolic BP (mmHg)	<130	1316	132 ± 18
Diastolic BP (mmHg)	<80	1316	77 ± 11
Total cholesterol (mmol/L)	<4.0	1074	4.2 ± 1.1
HDL cholesterol (mmol/L)	≥1.0	979	1.3 ± 0.4
LDL cholesterol (mmol/L)	<2.0	960	2.1 ± 0.9
Non-HDL cholesterol	<2.5	977	2.9 ± 1.1
Triglyceride (mmol/L)*, median (IQR)	<2.0	1067	1.5 (1.0 – 2.1)
BMI (kg/m^2)	<25	1345	31.1 ± 7.3

CARDIOVASCULAR RISK FACTORS

A high prevalence of cardiovascular risk factors was observed across the cohort (Table 9). Indeed, 8 in 10 patients were overweight or obese, almost 7 in 10 patients had blood pressure above target, about 5 in 10 patients had total cholesterol and LDL cholesterol above target and just over 1 in 10 reported current smoking.

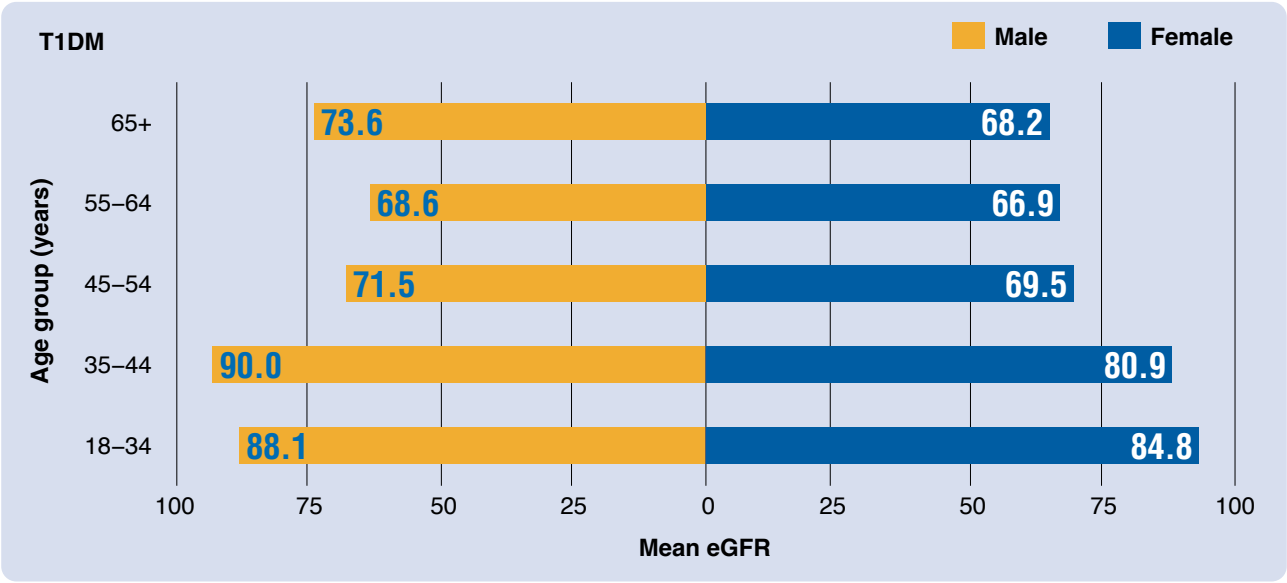
TABLE 9. RISK FACTORS FOR CARDIOVASCULAR DISEASE

RISK FACTORS	TARGET	N	%
Current smokers		1015	12.2
Past smokers		1015	32.3
Never smoked		1015	55.5
On anti-hypertensive therapy		1426	66.1
On lipid modifying therapy		1423	66.8
Blood pressure ≥130/80 (mmHg)	<130/80	1316	68.8
Blood pressure ≥140/90 (mmHg)	<140/90	1316	35.1
Raised total cholesterol ≥4.0 (mmol/L)	<4.0	1074	54.7
Raised LDL cholesterol ≥2.0 (mmol/L)	<2.0	960	50.4
Reduced HDL cholesterol <1.0 (mmol/L)	≥1.0	979	22.2
Raised triglycerides ≥2.0 (mmol/L)	<2.0	1067	30.8
Raised non-HDL cholesterol ≥2.5 (mmol/L)	<2.5	977	59.6
Overweight/obese BMI ≥25 (kg/m^2)	<25	1345	81.3

ESTIMATED GLOMERULAR FILTRATION RATE (eGFR)

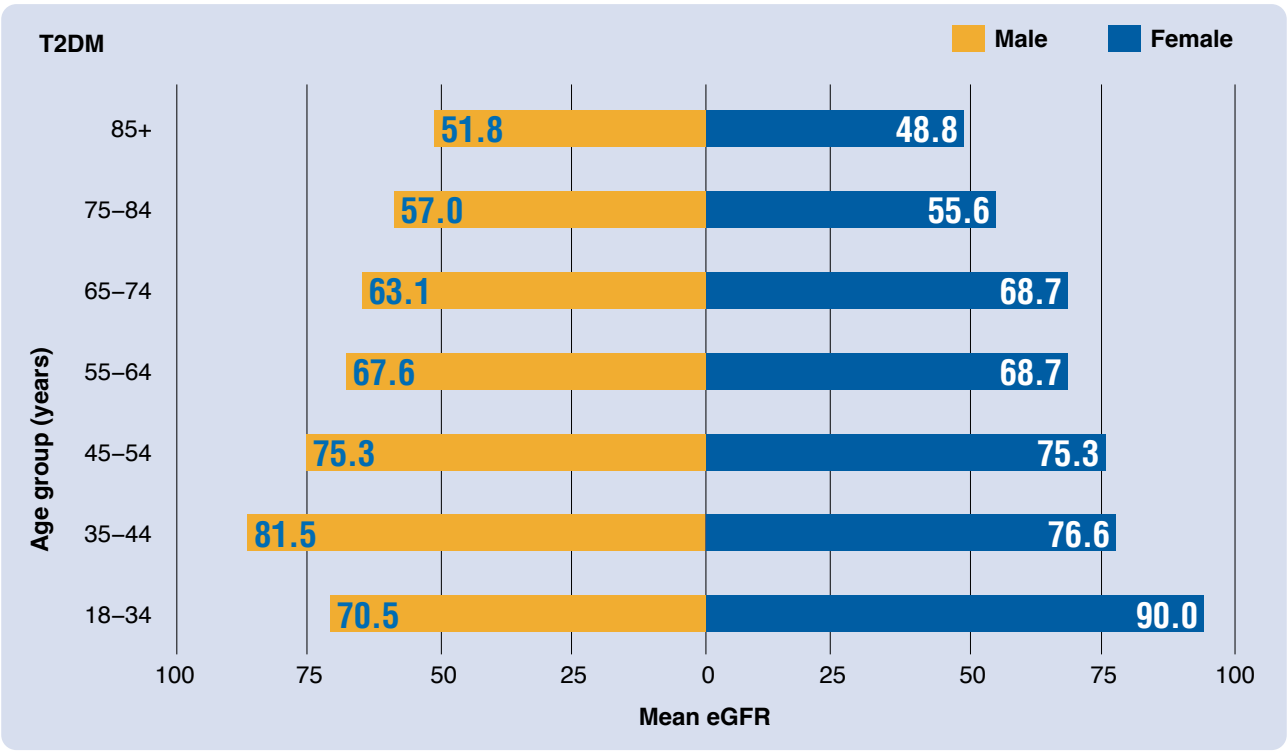
Figures 9 and 10 represent the mean values of eGFR by sex, age-group and diabetes type. The overall mean ± SD eGFR in T1DM was 75.5 ± 19.6 mL/min/1.73m^2 in males and 72.5 ± 19.5 mL/min/1.73m^2 in females. The overall mean eGFR in T2DM was 63.3 ± 21.8 mL/min/1.73m^2 in males and 64.2 ± 21.3 mL/min/1.73m^2 in females. Overall, increasing age was concurrently associated with a progressive trend towards declining mean eGFR in both male and female patients with T1DM and T2DM.

FIGURE 9. MEAN eGFR BY AGE AND SEX IN PATIENTS WITH T1DM



*Units: mL/min/1.73m^2

FIGURE 10. MEAN eGFR BY AGE AND SEX IN PATIENTS WITH T2DM



*Units: mL/min/1.73m^2

ACUTE METABOLIC COMPLICATIONS

Both hyperglycaemic and hypoglycaemic emergencies in the last 12 months, including impaired awareness of hypoglycaemia, were more common in patients with T1DM compared with T2DM (Table 10). Just under 1 in 20 patients with T1DM reported diabetic ketoacidosis, over 1 in 10 reported impaired awareness of hypoglycaemia, and 1 in 10 reported severe hypoglycaemia, with almost 5 in 10 of those patients experiencing 1-2 episodes.

TABLE 10. GLYCAEMIC EMERGENCIES IN THE LAST 12 MONTHS BY DIABETES TYPE

COMPLICATION/EVENT	T1DM (N=397)	T2DM (N=986)
	%	%
Diabetic ketoacidosis	5.0	0.7
Hyperosmolar hyperglycaemic state	0.0	0.5
Impaired awareness of hypoglycaemia	10.8	1.7
Severe hypoglycaemia	9.3	2.1
1-2 episodes	4.3	1.4
3-5 episodes	2.5	0.4
>5 episodes	2.3	0.3

EYE COMPLICATIONS

The majority of patients attended an optometrist or ophthalmologist in the last 12 months, with over 8 in 10 patients self-reporting optometrist or ophthalmologist attendances (Table 11). Eye complications were common, with more than 2 in 10 patients reporting retinopathy, and a similar proportion reporting cataract. A minority of patients reported blindness. Of the patients reporting eye complications, almost 1 in 10 patients reported retinopathy and 1 in 10 patients reported cataract in the last 12 months.

TABLE 11. EYE COMPLICATIONS

EYE TESTING AND COMPLICATIONS		EVER REPORTED	REPORTED IN THE LAST 12 MONTHS
	N	%	%
Attended optometrist/ ophthalmologist*	1079	N/A	82.2
Retinopathy	1422	25.5	9.8
Treatment for retinopathy	1423	15.0	6.0
Cataract	1424	26.1	8.1
Blindness	1423	2.2	0.9

**Attendances to optometrists/ophthalmologists reflect attendances in the last 12 months only*

FOOT COMPLICATIONS

The majority of patients had foot checks by a health professional in the last 12 months, with over 6 in 10 patients self-reporting foot checks by a health professional (Table 12). Foot complications were common, with 2 in 10 patients reporting peripheral neuropathy, and over 1 in 10 reporting foot ulcerations. A minority of patients reported lower limb amputation. Of the patients reporting foot complications, more than 1 in 10 patients reported peripheral neuropathy and just over 1 in 20 patients reported foot ulceration in the last 12 months.

TABLE 12. FOOT COMPLICATIONS

FOOT CHECKS AND COMPLICATIONS	N	EVER REPORTED %	REPORTED IN THE LAST 12 MONTHS %
Foot check by health professional*	1084	N/A	67.8
Foot ulceration	1424	9.4	6.5
Peripheral neuropathy	1424	20.8	14.1
Lower limb amputation	1424	5.0	2.2
Minor†		3.9	1.5
Major†		0.8	1.5

**Foot checks by health professionals reflect checks in the last 12 months only*
†Missing data for a small number of patients

KIDNEY COMPLICATIONS

Kidney complications were common (Table 13). About 3 in 10 patients had moderately increased albuminuria and 1 in 10 patients had severely increased albuminuria. More than 3 in 10 patients were classified as having stage 3-5 chronic kidney disease (CKD) with most having stage 3 CKD. A minority of patients were classified as having end stage kidney disease.

TABLE 13. KIDNEY COMPLICATIONS

COMPLICATIONS	%
Albuminuria (N = 946)	
Normal to mildly increased albuminuria	58.6
Moderately increased albuminuria	30.2
Severely increased albuminuria	11.2
Chronic Kidney Disease (N = 958)	
Stage 1	14.9
Stage 2	50.2
Stage 3	27.7
Stage 4	4.9
Stage 5*	2.3
End stage kidney disease*	0.8

**Stage 5 chronic kidney disease is a calculated category (estimated from creatinine and eGFR where eGFR <15 mL/min/1.73m^2) and end stage kidney disease was defined as Stage 5 chronic kidney disease (eGFR <15 mL/min/1.73m^2) and/or dialysis dependent (haemodialysis or peritoneal dialysis) and/or renal transplant recipient reported in the last 12 months*

CARDIOVASCULAR COMPLICATIONS

More than 2 in 10 patients reported cardiovascular complications (including myocardial infarction, CABG/angioplasty, stroke, congestive cardiac failure or peripheral vascular disease). Almost 1 in 10 patients reported myocardial infarction, 1 in 10 patients reported CABG/angioplasty, and a smaller number reported other cardiovascular complications. Of the patients reporting cardiovascular complications, a minority reported occurrences in the last 12 months. (Table 14).

TABLE 14. CARDIOVASCULAR COMPLICATIONS (N=1424)

COMPLICATION/EVENT	EVER REPORTED	REPORTED IN THE LAST 12 MONTHS
	%	%
Myocardial infarction	12.1	2.8
CABG/angioplasty	12.7	2.5
Cerebral stroke	7.0	1.8
Congestive cardiac failure	5.9	1.1
Peripheral vascular disease	7.9	4.0

OTHER COMPLICATIONS AND COMORBIDITIES

Other complications and comorbidities are shown in Table 15. The most commonly reported complication/comorbidity was COVID-19 affecting 5 in 10 patients. More than 2 in 10 patients reported depression and 2 in 10 patients reported anxiety. The presence of depression and/or anxiety was defined as a formal diagnosis from a clinician or prescribed pharmacotherapy for depression and/or anxiety. Sexual dysfunction and malignancy were each reported by 1 in 10 patients. Liver disease was also common with more than 1 in 10 patients reporting mild liver disease and 1 in 20 reporting moderate/severe disease. Dementia was uncommonly reported among the cohort. Of those patients reporting complications and comorbidities, more than 2 in 10 patients reported COVID-19, 1 in 10 patients reported depression, 1 in 10 patients reported anxiety, and 1 in 10 patients reported sexual dysfunction in the last 12 months. Other complications were less commonly reported to have occurred in the last 12 months.

TABLE 15. OTHER COMPLICATIONS AND COMORBIDITIES

COMPLICATION/EVENT		EVER REPORTED	REPORTED IN THE LAST 12 MONTHS
	N	%	%
Depression	1423	25.4	12.8
Anxiety	1424	19.6	11.8
Sexual dysfunction	1409	13.9	10.6
Malignancy	1424	9.1	2.4
Dementia	1424	1.3	0.3
COVID-19	1399	49.1	24.0
Hospitalisation for COVID-19		3.4	1.7
Liver disease*	1417		
Mild		N/A	14.9
Moderate/Severe		N/A	4.7

**Prevalence of liver disease refers to the presence of liver disease at the time of the patient's clinical consult*

CARDIORENAL PROTECTIVE AGENTS

Diabetes is associated with heightened cardiovascular risk. Therefore, treatment of modifiable risk factors such as lipids and blood pressure are recommended.[20-22]

The majority of patients were on lipid modifying therapy, with almost 7 in 10 patients on one or more lipid lowering medications (Table 16). Statin therapy was most common with more than 6 in 10 patients treated with statins. Almost 1 in 10 patients were treated with ezetimibe and a similar proportion treated with fibrates. A minority of patients were treated with fish oil and/or PCSK9 inhibitors.

TABLE 16. LIPID MODIFYING MEDICATIONS

TREATMENT	N	%
Any	1426	66.8
Statin	1426	62.6
Fibrate	1421	7.3
Ezetimibe	1422	9.4
Fish oil	1423	2.1
PCSK9 inhibitor	1422	0.3

Total may be greater than 100% due to patients being on multiple agents

The majority of patients were treated with blood pressure lowering medications (anti-hypertensives), with almost 7 in 10 patients on one or more anti-hypertensive medication (Table 17). About 3 in 10 patients were treated with angiotensin receptor blockers (ARB), almost 3 in 10 patients with angiotensin-converting enzyme (ACE) inhibitors, over 2 in 10 patients with calcium channel blockers, almost 2 in 10 patients with beta blockers, and 2 in 10 patients with thiazides/other diuretics. Just over 1 in 20 patients were treated with other anti-hypertensive medications.

TABLE 17. ANTI-HYPERTENSIVE MEDICATIONS (N=1426)

TREATMENT	%
Any	66.1
ACE inhibitor	26.0
ARB	29.8
Calcium channel blocker	22.7
Thiazides/other diuretics	20.6
Beta blocker	17.3
Other anti-hypertensive	6.6

Total may be greater than 100% due to patients being on multiple agents

More than 3 in 10 patients were treated with aspirin or other antiplatelet medications, and about 1 in 10 patients were treated with anticoagulants (Table 18).

TABLE 18. ANTIPLATELET AND ANTICOAGULANT MEDICATIONS (N=1423)

TREATMENT	%
Aspirin and/or other antiplatelets	31.1
Aspirin	27.8
Other antiplatelets	6.7
Anticoagulants	9.6

Use of newer glucose lowering medications with cardiorenal benefits was relatively high, with almost 3 in 10 patients treated with SGLT2 inhibitors and over 2 in 10 patients treated with GLP-1 agonists or GLP-1/GIP dual agonists (Table 19).

TABLE 19. OTHER CARDIORENAL PROTECTIVE MEDICATIONS (N=1424)

TREATMENT	%
SGLT2 inhibitor	28.7
GLP-1 agonist or GLP-1/GIP dual agonist	24.7

Patients with existing CVD were more likely to be treated with lipid lowering therapy, with more than 9 in 10 patients with CVD on one or more lipid lowering medications, compared to about 6 in 10 patients without CVD (Table 20).

TABLE 20. LIPID MODIFYING MEDICATIONS BY CARDIOVASCULAR DISEASE STATUS

TREATMENT	CVD		NO CVD	
	N	%	N	%
Any	372	92.2	1051	57.8
Statin	372	87.1	1051	54.4
Fibrate	372	8.1	1046	7.1
Ezetimibe	372	16.7	1047	6.8
Fish oil	372	3.2	1047	1.8
PCSK9 inhibitor	372	1.2	1047	0.0

Total may be greater than 100% due to patients being on multiple agents

Treatment with anti-hypertensives was higher in patients with existing CVD, with more than 9 in 10 patients with CVD on one or more anti-hypertensive medications, compared to about 6 in 10 patients without CVD (Table 21).

TABLE 21. ANTI-HYPERTENSIVE MEDICATIONS BY CARDIOVASCULAR DISEASE STATUS

TREATMENT	CVD (N=372) %	NO CVD (N=1052) %
Any	90.6	57.6
ACE inhibitor	32.8	23.7
ARB	37.6	27.1
Calcium channel blocker	34.9	18.4
Thiazides/other diuretics	32.3	12.1
Beta blocker	46.2	11.6
Other anti-hypertensive	14.5	3.8

Total may be greater than 100% due to patients being on multiple agents

Patients with CVD were more likely to be treated with antiplatelets and anticoagulants with more than 6 in 10 patients treated with antiplatelets (almost 6 in 10 with aspirin and almost 2 in 10 with other antiplatelets) and about 2 in 10 patients treated with anticoagulants (Table 22). About 2 in 10 patients without CVD were treated with antiplatelets and about 1 in 20 patients were treated with anticoagulants.

TABLE 22. ANTIPLATELET AND ANTICOAGULANT MEDICATIONS BY CARDIOVASCULAR DISEASE STATUS

TREATMENT	CVD (N=372) %	NO CVD (N=1051) %
Aspirin and/or other antiplatelets	65.1	19.0
Aspirin only	57.0	17.5
Other antiplatelets only	19.9	2.0
Anticoagulants	21.1	5.6

Patients with CVD were more likely to be treated with SGLT2 inhibitors with about 4 in 10 patients with CVD and 3 in 10 patients without CVD treated with SGLT2 inhibitors. Treatment with GLP-1 agonists or GLP-1/GIP dual agonists was comparable in patients with and without CVD, with more than 2 in 10 patients on GLP-1 agonists or GLP-1/GIP dual agonist therapy (Table 23).

TABLE 23. OTHER CARDIORENAL PROTECTIVE MEDICATIONS BY CARDIOVASCULAR DISEASE STATUS

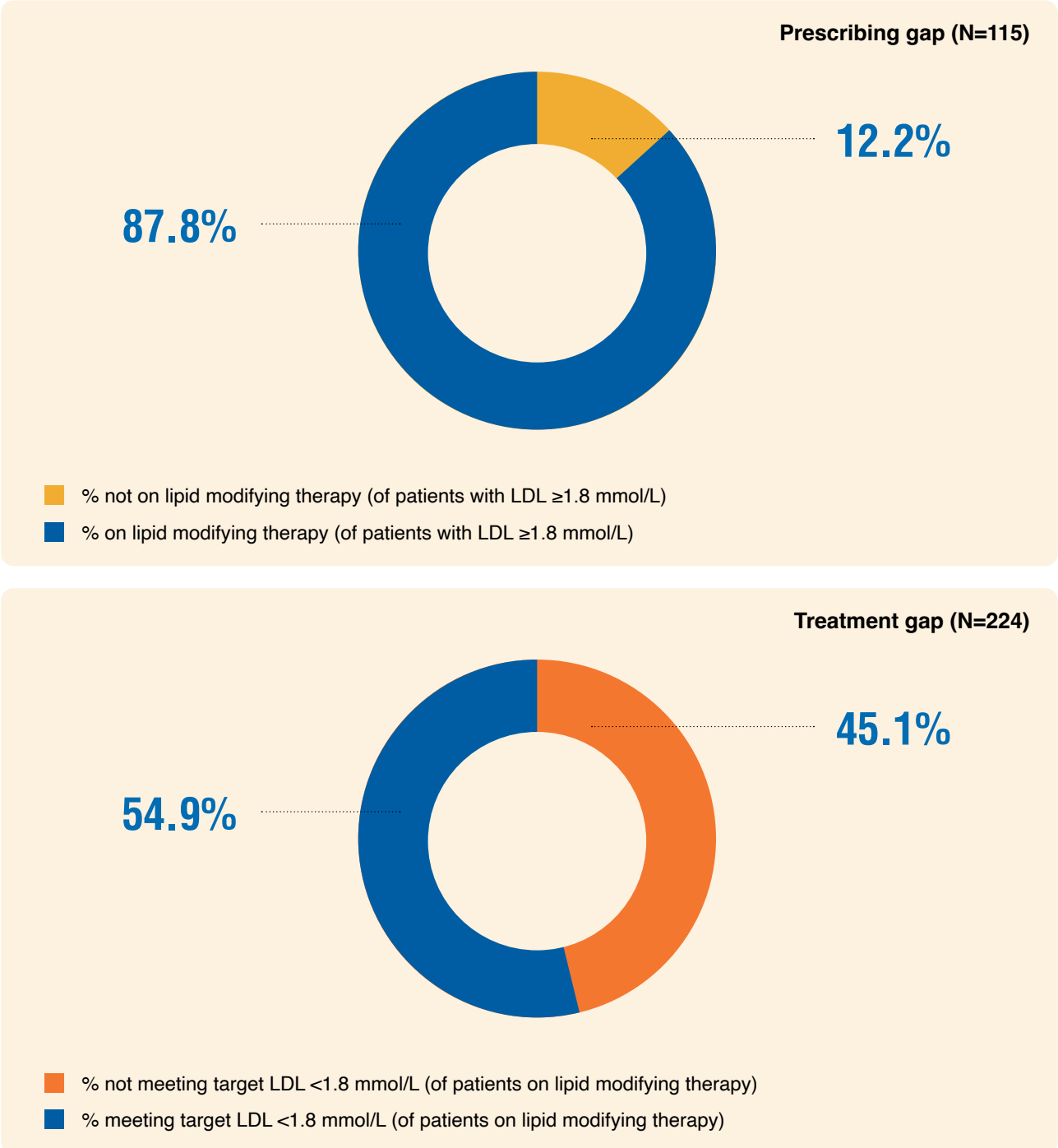
TREATMENT	CVD (N=372) %	NO CVD (N=1052) %
SGLT2 inhibitor	39.8	27.6
GLP-1 agonist or GLP-1/GIP dual agonist	24.1	24.8

MANAGEMENT OF CARDIOVASCULAR DISEASE

There were 242 patients with existing CVD and data available for LDL cholesterol and lipid modifying therapy. Of these patients, almost 5 in 10 patients had LDL cholesterol levels above target. About 1 in 10 patients with an LDL cholesterol level above target were not receiving lipid modifying therapy, reflecting a prescribing gap, which may include either provider non-prescription, patient non-adherence, or medication intolerance (Figure 11).

Of the 224 patients with CVD on lipid modifying therapy, almost 5 in 10 patients had LDL cholesterol levels above target, reflecting a treatment gap (Figure 11).

FIGURE 11. PRESCRIBING AND TREATMENT GAPS OF CHOLESTEROL AND LIPID MODIFYING THERAPY IN PATIENTS WITH CARDIOVASCULAR DISEASE



There were 336 patients with existing CVD and data available for blood pressure and anti-hypertensive therapy. Of those patients, almost 6 in 10 patients were above target blood pressure, and of those above targets, almost 1 in 10 patients were not receiving anti-hypertensive therapy, reflecting a prescribing gap (Figure 12).

Among the 303 patients receiving anti-hypertensive therapy, almost 7 in 10 patients were above target blood pressure, reflecting a large treatment gap (Figure 12).

FIGURE 12. PRESCRIBING AND TREATMENT GAPS OF BLOOD PRESSURE AND ANTI-HYPERTENSIVE THERAPY IN PATIENTS WITH CARDIOVASCULAR DISEASE

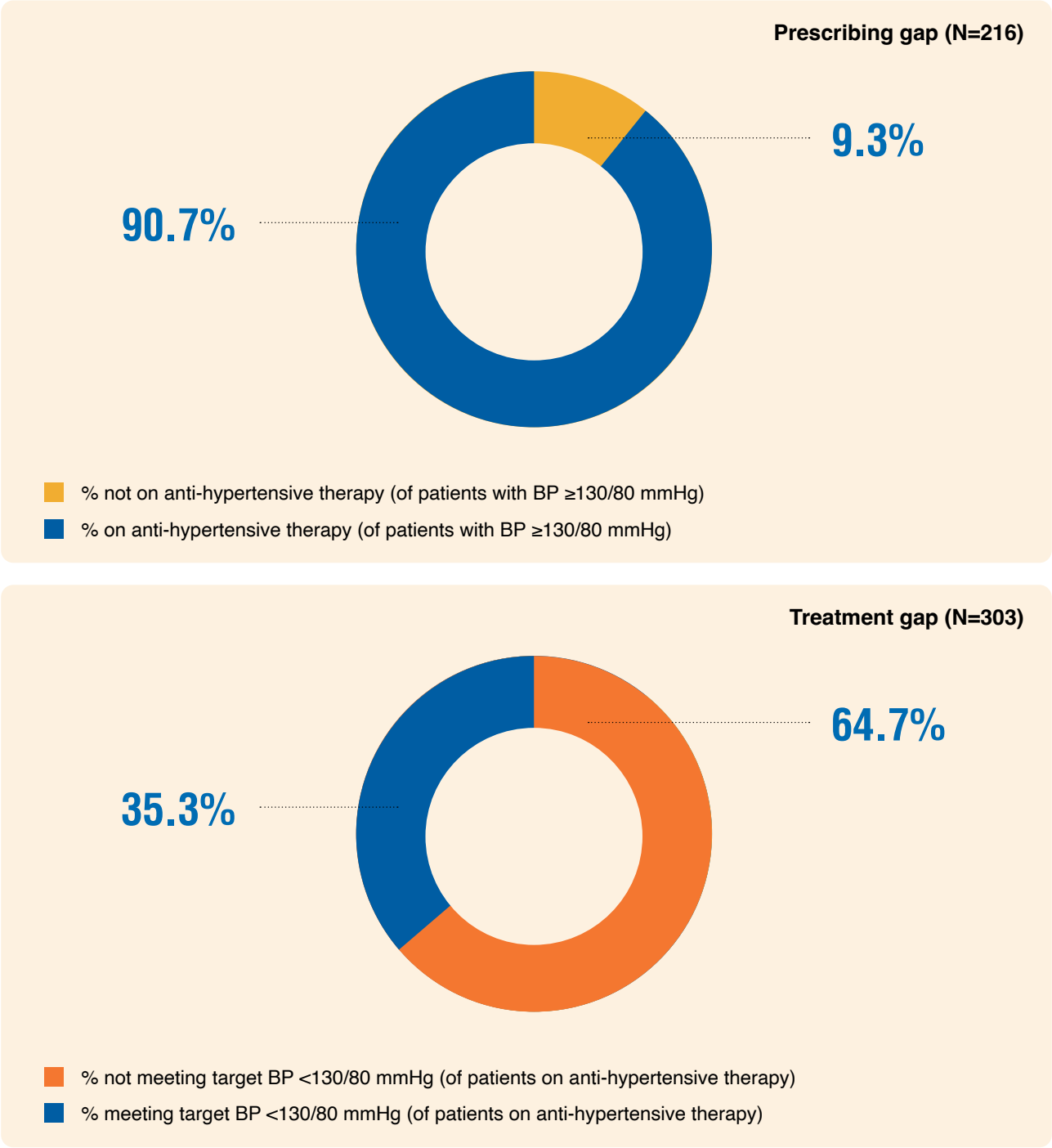
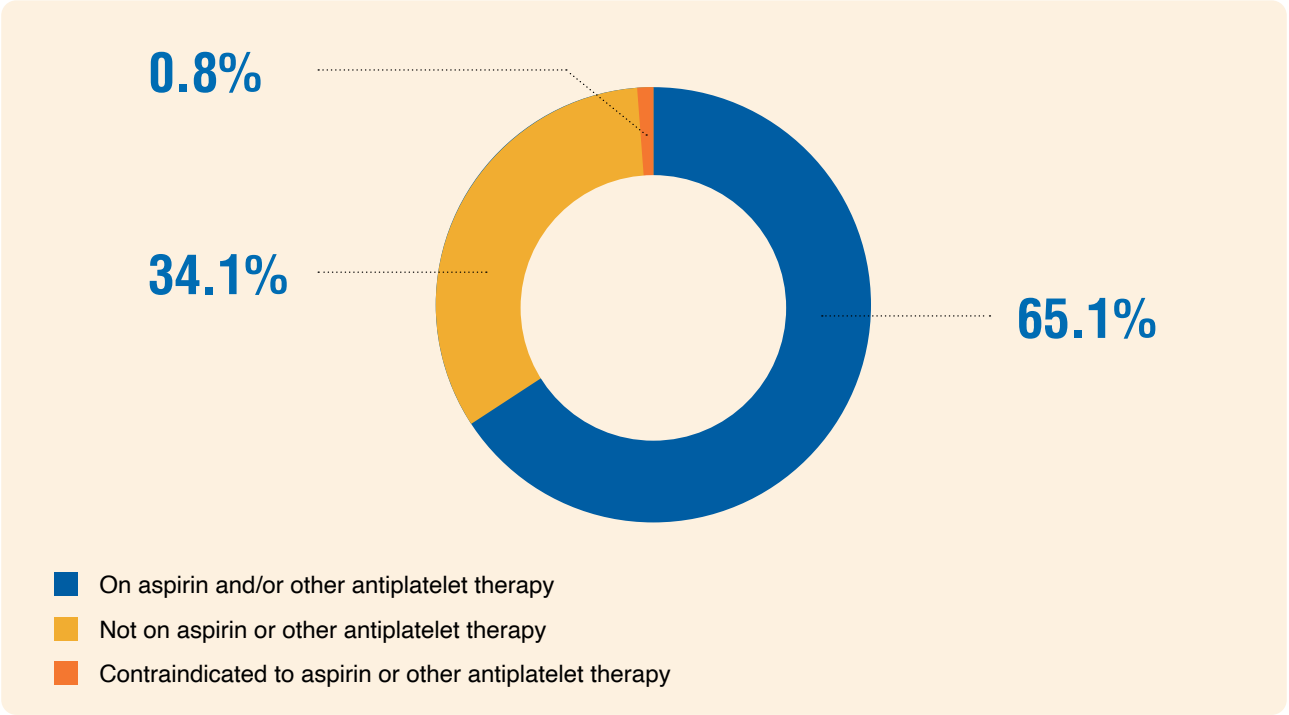


Figure 13 demonstrates antiplatelet use in patients with CVD (including myocardial infarction, CABG/angioplasty, stroke, congestive cardiac failure or peripheral vascular disease).

Among those with CVD, more than 6 in 10 patients reported use of aspirin and/or other antiplatelet therapies, while about 3 in 10 patients reported no antiplatelet use. A minority of patients had a contraindication to aspirin and/or other antiplatelet therapies.

FIGURE 13. ANTIPLATELET THERAPY USE IN PATIENTS WITH CARDIOVASCULAR DISEASE (N = 372)



SECTION 4

CLINICAL PERFORMANCE INDICATORS

BENCHMARKING TO NATIONAL TREATMENT TARGETS

The data collected for ADCQR 2023 as compared to the Royal Australian College of General Practitioners evidence-based guidelines for the management of type 2 diabetes[20], National Heart Foundation of Australian blood pressure and lipid guidelines,[21, 22] and the Australian Diabetes Society (ADS) position statement on glycaemic targets[23] are summarised in Table 24.

These data provide a snapshot of the overall performance of participating centres with respect to key treatment targets and clinical indicators.

Table 24 demonstrates key data against benchmarking and treatment targets for patients with diabetes. For ease of interpretation, data in this table are presented without SD and IQR.

Glycaemic control targets were poorly met, with the mean (and median) HbA1c for both T1DM and T2DM being above target, and just over 2 in 10 patients and 3 in 10 patients meeting target, respectively. The attainment of lipid targets was fair, with almost 5 in 10 patients meeting total cholesterol target, 5 in 10 patients meeting the LDL cholesterol target, over 7 in 10 patients meeting the HDL cholesterol target, and 7 in 10 patients meeting the triglyceride target. The target for non-HDL, which has been shown to be an important predictor of CVD,[24] was met by 4 in 10 patients. In regards to blood pressure and weight management, almost 5 in 10 patients met the blood pressure target of <130/80 mmHg, and only 2 in 10 patients met the BMI target, with patients with T2DM having a higher mean BMI than patients with T1DM.

TABLE 24. BENCHMARKING TO NATIONAL TREATMENT TARGETS

RISK FACTOR	TARGET	MEAN	% MEETING TARGET
HbA1c (%) overall	≤7.0*	8.1	30.1
HbA1c (%) T1DM	≤7.0*	8.2	24.7
HbA1c (%) T2DM	≤7.0*	8.0	32.3
HbA1c (%) overall, median	≤7.0*	7.8	30.1
HbA1c (%) T1DM, median	≤7.0*	7.8	24.7
HbA1c (%) T2DM, median	≤7.0*	7.8	32.3
Systolic BP (mmHg)	<130	132	44.8
Diastolic BP (mmHg)	<80	77	55.0
Total cholesterol (mmol/L)	<4.0	4.2	45.3
HDL cholesterol (mmol/L)	≥1.0	1.3	77.8
LDL cholesterol (mmol/L)	<2.0	2.1	49.6
Non-HDL cholesterol (mmol/L)	<2.5	2.9	40.4
Triglycerides (mmol/L)†, median	<2.0	1.5	69.2
BMI (kg/m^2) overall	<25	31.1	18.7
BMI (kg/m^2) T1DM	<25	28.6	31.2
BMI (kg/m^2) T2DM	<25	32.2	13.2

**In 2009, the Australian Diabetes Society published a position statement describing the need for individualisation of glycaemic targets.[22] The key conclusions were that for most people with diabetes the general HbA1c target is 7.0% (53 mmol/mol), however*
• In people without known CVD, a long duration of diabetes, severe hypoglycaemia or another contraindication, the HbA1c target is ≤6.5% (48 mmol/mol)
• In people with reduced hypoglycaemia awareness or major comorbidities, the target may increase to 8.0% (64 mmol/mol)
• In people with limited life expectancy, aim for symptom control
• In women planning a pregnancy, aim for the tightest achievable control without severe hypoglycaemia before and during pregnancy; preferably ≤6.0% (42 mmol/mol)
For this analysis, a HbA1c target of 7.0% or less was applied to all patients.
† Reported as median as data were not normally distributed

NATIONAL CLINICAL MANAGEMENT GUIDELINES FOR DIABETES

National evidence-based guidelines for the clinical management of diabetes[20] emphasise the importance of patient assessment and management with regards to blood glucose control, blood pressure, lipids, BMI, eyes, foot and kidney function. The data below indicate process and outcome indicators based on these clinical management guidelines.

BLOOD GLUCOSE CONTROL

Process:	96.8% of patients had a HbA1c measurement recorded.			
Outcome:			Mean	Median (IQR)
	All patients	Overall HbA1c (%):	8.1 ± 1.7	7.8 (6.9 – 8.8)
	T1DM	Overall HbA1c (%):	8.2 ± 1.6	7.8 (7.1 – 9.0)
		Initial visit, HbA1c (%):	8.7 ± 2.2	8.4 (7.4 – 9.6)
		Follow-up visit, HbA1c (%):	8.1 ± 1.5	7.7 (7.0 – 8.9)
	T2DM	Overall HbA1c (%):	8.0 ± 1.7	7.8 (6.8 – 8.8)
		Initial visit, HbA1c (%):	8.9 ± 2.1	8.5 (7.2 – 10.1)
		Follow-up visit, HbA1c (%):	7.9 ± 1.6	7.7 (6.8 – 8.7)

BLOOD PRESSURE

Process:	92.3% of patients had blood pressure recorded. 66.1% of patients were prescribed anti-hypertensive treatment. Of these patients, 39.3% were on an ACE inhibitor, 45.1% on an ARB, 34.4% on a calcium channel blocker, 31.2% on a beta blocker, 26.2% on a thiazide or other diuretic and 10.0% on an alternative anti-hypertensive therapy.			
Outcome:	Overall 31.2% achieved a blood pressure of <130/80 mmHg, and 64.9% achieved a blood pressure <140/90 mmHg.			
	Overall blood pressure			
	<130/80 mmHg:	31.2%	≥130/80 mmHg:	68.8%
	<140/90 mmHg:	64.9%	≥140/90 mmHg:	35.1%
	Aged ≤60 years			
	<130/80 mmHg:	32.6%	≥130/80 mmHg:	67.4%
	<140/90 mmHg:	69.8%	≥140/90 mmHg:	30.2%
	Aged >60 years			
	<130/80 mmHg:	30.2%	≥130/80 mmHg:	69.8%
	<140/90 mmHg:	61.8%	≥140/90 mmHg:	38.2%

LIPIDS

Process:	75.3% of patients had total cholesterol level recorded, 67.3% a LDL cholesterol level, 68.7% an HDL cholesterol level and 74.8% a triglyceride level. 62.6% of patients were on statin therapy, 7.3% on fibrate, 9.4% on ezetimibe, 2.1% on fish oil and 0.3% on a PCSK9 inhibitor.			
Outcome:	Total cholesterol			
	<4.0 mmol/L:	45.3%	≥4.0 mmol/L:	54.7%
	LDL cholesterol			
	<2.0 mmol/L:	49.6%	≥2.0 mmol/L:	50.4%
	HDL cholesterol			
	≥1.0 mmol/L:	77.8%	<1.0 mmol/L:	22.2%
	Triglyceride			
	<2.0 mmol/L:	69.2%	≥2.0 mmol/L:	30.8%
	Non-HDL cholesterol			
	<2.5 mmol/L:	40.4%	≥2.5 mmol/L:	59.6%

BODY MASS INDEX (KG/M^2)

Process:	97.5% of patients had a weight measurement recorded and 95.0% of patients had a height measurement recorded so that BMI could be calculated for 94.3% of patients overall.					
Outcome:	<25 kg/m^2:	18.7%	25–<30 kg/m^2:	31.1%	≥30 kg/m^2:	50.2%

EYES

Process:	82.2% had an eye review by an ophthalmologist, an optometrist or both in the last 12 months.
Outcome:	25.5% of patients had retinopathy and 15.0% had treatment for retinopathy

FEET

Process:	67.8% had a foot check by a health professional in the last 12 months.
Outcome:	9.4% of patients had foot ulceration, 20.8% peripheral neuropathy and 5.0% recorded lower limb amputation.

KIDNEYS (ALBUMINURIA AND eGFR)

Process: 47.2% of patients had a urinary protein/albumin and eGFR recorded.

Outcome:

Adaptation of Prognosis of CKD by GFR and albuminuria categories: KDIGO 2012[19]				Persistent albuminuria categories Description and range		
				A1 Normal to mildly increased AER <20 (mg/L) ACR <3 (mg/mmol)	**A2** Moderately increased AER 20–200 (mg/L) ACR 3–30 (mg/mmol)	**A3** Severely increased AER >200 (mg/L) ACR >30 (mg/mmol)
GFR categories (ml/min/1.73m²) Description and range	**G1**	Normal or high	≥90	70 (10.4%)	25 (3.7%)	4 (0.6%)
	G2	Mildly decreased	60–89	222 (33.0%)	105 (15.6%)	26 (3.9%)
	G3a	Mildly to moderately decreased	45–59	47 (7.0%)	47 (7.0%)	17 (2.5%)
	G3b	Moderately to severely decreased	30–44	26 (3.9%)	25 (3.7%)	18 (2.7%)
	G4	Severely decreased	15–29	6 (0.9%)	15 (2.2%)	15 (2.2%)
	G5	Kidney failure	<15	0 (0.0%)	0 (0.0%)	5 (0.7%)

Green: low risk (if no other markers of kidney disease, no CKD); yellow: moderately increased risk; orange: high risk; red: very high risk.

BENCHMARKING TO INTERNATIONAL KEY METRIC TARGETS

The World Health Organisation (WHO) Global Diabetes Compact is a WHO-driven initiative uniting stakeholders around goals of reducing diabetes risk and ensuring that people with diabetes have equitable access to comprehensive, affordable care and prevention. The WHO Global Diabetes Compact have set out five key national metrics and target levels for United Nations member states to achieve.[25]

Of all people,

1. At least 80% have been clinically diagnosed

Of all people with diagnosed diabetes,

2. 80% have HbA1c <8.0% (<63.9 mmol/mol)
3. 80% have blood pressure <140/90 mmHg
4. At least 60% of people ≥40 years are receiving statin therapy
5. Each person with type 1 diabetes has continuous access to insulin, blood glucose meters, and test strips

Table 25 demonstrates key data against benchmarking to key metric targets outlined by the WHO Global Diabetes Compact. Over 5 in 10 patients met the glycaemic target, over 6 in 10 patients met the blood pressure target, over 9 in 10 patients met the statin therapy target, and all patients with T1DM had access to insulin.

TABLE 25. BENCHMARKING TO WHO GLOBAL DIABETES COMPACT KEY METRIC TARGETS

RISK FACTOR	TARGET	% MEETING TARGET
HbA1c (%)	<8	54.0
Blood pressure (mmHg)	<140/90	64.9
Statin therapy in adults aged ≥40 years	>60%	95.4
Continuous access to insulin – T1DM patients only	100%	100.0

Furthermore, the European Society of Cardiology (ESC) recently released the 2023 Guidelines for the Management of Cardiovascular Disease in Patients with Diabetes.[26] These are comprehensive guidelines that were developed to guide prevention and management of the manifestations of CVD in patients with diabetes, and provide clear recommendations on how to reduce cardiovascular risk in patients with diabetes. These guidelines provide treatment and targets levels for lifestyle changes (diet/nutrition, physical activity and smoking cessation) and other modifiable risk factors including HbA1c, blood pressure, lipids and BMI.

Table 26 provides key data against benchmarking to targets outlined in the 2023 ESC Guidelines that were not already captured in this report. Almost 4 in 10 patients met the individualised systolic blood pressure target and over 7 in 10 patients met the anti-hypertensive therapy recommendations. About 7 in 10 patients met the LDL cholesterol target of <2.6 mmol/L and this was further reduced to 4 in 10 patients meeting target when a lower LDL cholesterol target of <1.8 mmol/L was employed. Of those who were considered overweight/obese, 3 in 10 patients were on GLP-1/GIP agonists.

TABLE 26. BENCHMARKING TO 2023 ESC GUIDELINES FOR CARDIOVASCULAR DISEASE MANAGEMENT IN DIABETES

RISK FACTOR	TARGET	% MEETING TARGET
Systolic BP (mmHg)	Individualised*	39.5
Anti-hypertensive therapy when BP≥140/90 mmHg	100%	76.6
LDL cholesterol (mmol/L)	<2.6†	71.7
LDL cholesterol (mmol/L)	<1.8††	39.3
GLP-1/GIP agonists if BMI ≥25 kg/m^2	100%	29.4

**Individualised systolic BP targets where target is <130 mmHg if aged ≤65 years and target is 130-139 mmHg if aged >65 years*
†Target for patients at high risk of CVD, defined as patients with DM without CVD and/or severe target organ damage (TOD) and not fulfilling the moderate risk category (patients with well controlled short-standing DM (e.g. <10 years), no evidence of TOD and no additional CVD risk factors)
††Target for patients at very high risk of CVD, defined as patients with DM with established CVD and/or severe TOD

- *eGFR <45 mL/min/1.73 m^2 irrespective of albuminuria*
- *eGFR 45-59 mL/min/1.73 m^2 and microalbuminuria (ACR 30-300 mg/g)*
- *Proteinuria (ACR >300 mg/g)*
- *Presence of microvascular disease in at least 3 different sites (e.g. microalbuminuria plus retinopathy plus neuropathy)*

SECTION 5

HEALTH OUTCOMES BY DIABETES TYPE

BLOOD GLUCOSE CONTROL

Mean HbA1c was slightly higher in patients with T1DM compared with patients with T2DM and other (secondary causes) type of diabetes, however median HbA1c was comparable across diabetes types (Table 27).

TABLE 27. BLOOD GLUCOSE CONTROL BY DIABETES TYPE

DIABETES TYPE	N	HBA1C (%)	HBA1C (MMOL/MOL)
		MEAN ± SD	
Overall	1381	8.1 ± 1.7	64.7 ± 18.7
T1DM	376	8.2 ± 1.6	65.7 ± 17.4
T2DM	965	8.0 ± 1.7	64.3 ± 18.9
Other (Secondary causes)	37	8.0 ± 2.2	64.4 ± 24.0
		MEDIAN (IQR)	
Overall	1381	7.8 (6.9 – 8.8)	62.0 (52.0 – 73.0)
T1DM	376	7.8 (7.1 – 9.0)	62.0 (54.0 – 75.0)
T2DM	965	7.8 (6.8 – 8.8)	62.0 (51.0 – 73.0)
Other (Secondary causes)	37	7.9 (6.7 – 8.6)	63.0 (50.0 – 70.0)

BODY MASS INDEX

Of all patients captured, 97.5% reported weight, and 95.0% reported height.

Table 28 shows the mean BMI of patients with diabetes. The mean BMI of patients with T1DM and other (secondary causes) was in the overweight range, while the mean BMI of patients with T2DM was in the obese range.

TABLE 28. BODY MASS INDEX BY DIABETES TYPE

DIABETES TYPE	BMI (KG/M^2)	
	N	MEAN ± SD
Overall	1345	31.1 ± 7.3
T1DM	369	28.6 ± 6.1
T2DM	936	32.3 ± 7.5
Other (Secondary causes)	37	27.7 ± 6.2

BLOOD PRESSURE

Table 29 presents the mean blood pressure for patients with T1DM and T2DM, as well as those on anti-hypertensive therapy. The mean blood pressure of patients with T1DM was 130/77 mmHg and therefore met the blood pressure target of <130/80 mmHg. The mean blood pressure of patients with T2DM was 133/77 mmHg and therefore was slightly higher than the blood pressure target of <130/80 mmHg but was less than the more modest target of <140/90 mmHg.

Mean blood pressure was typically higher in those patients taking anti-hypertensive medication, likely reflecting a treatment gap.

TABLE 29. BLOOD PRESSURE AND ANTI-HYPERTENSIVE THERAPY BY DIABETES TYPE

ANTI-HYPERTENSIVE THERAPY	SYSTOLIC BP MEAN ± SD	DIASTOLIC BP MEAN ± SD
T1DM (N=353)		
Overall	130 ± 16	77 ± 10
On anti-hypertensive therapy	138 ± 16	76 ± 11
Not on anti-hypertensive therapy	126 ± 14	77 ± 9
T2DM (N=927)		
Overall	133 ± 18	77 ± 12
On anti-hypertensive therapy	134 ± 18	76 ± 12
Not on anti-hypertensive therapy	130 ± 17	79 ± 10

LIPIDS

Mean total cholesterol, HDL and LDL cholesterol were higher in patients with T1DM compared with T2DM, but no differences were observed for non-HDL (Table 30). In contrast, median triglycerides were higher in patients with T2DM compared with T1DM.

TABLE 30. LIPIDS AND DIABETES TYPE

LIPIDS (MMOL/L)	N	MEAN ± SD
T1DM		
Total cholesterol	282	4.5 ± 1.0
HDL cholesterol	244	1.5 ± 0.4
LDL cholesterol	249	2.4 ± 0.8
Non-HDL cholesterol	244	3.0 ± 0.9
Triglyceride*, median (IQR)	277	0.9 (0.7 – 1.4)
T2DM		
Total cholesterol	758	4.0 ± 1.1
HDL cholesterol	709	1.2 ± 0.4
LDL cholesterol	686	2.0 ± 0.9
Non-HDL cholesterol	707	2.9 ± 1.1
Triglyceride*, median (IQR)	757	1.7 (1.2 – 1.4)

**Reported as median (IQR) as data are not normally distributed*

Table 31 shows that patients on lipid modifying therapy had lower mean/median cholesterol levels than patients not on lipid modifying therapy. The average patient with T1DM on lipid modifying therapy met HDL (≥1.0 mmol/L) and triglyceride (<2.0 mmol/L) targets but did not meet the total cholesterol (<4 mmol/L), LDL (<2.0 mmol/L) or non-HDL (<2.5 mmol/L) targets. The average patients with T2DM on lipid modifying therapy met total cholesterol, HDL, LDL and triglyceride targets, but did not meet the non-HDL targets.

TABLE 31. LIPIDS AND LIPID MODIFYING THERAPY USE BY DIABETES TYPE

LIPIDS (MMOL/L)	ON LIPID MODIFYING THERAPY	NOT ON LIPID MODIFYING THERAPY
	MEAN ± SD	
T1DM		
Total cholesterol	4.2 ± 1.0	4.7 ± 0.9
HDL cholesterol	1.5 ± 0.4	1.5 ± 0.4
LDL cholesterol	2.2 ± 0.8	2.7 ± 0.8
Non-HDL cholesterol	2.7 ± 0.9	3.2 ± 0.9
Triglyceride*, median (IQR)	1.0 (0.8 – 1.5)	0.9 (0.7 – 1.4)
T2DM		
Total cholesterol	3.9 ± 1.0	4.7 ± 1.2
HDL cholesterol	1.2 ± 0.4	1.3 ± 0.4
LDL cholesterol	1.8 ± 0.8	2.7 ± 1.1
Non-HDL cholesterol	2.7 ± 1.0	3.5 ± 1.2
Triglyceride*, median (IQR)	1.7 (1.2 – 2.4)	1.7 (1.1 – 2.3)

**Reported as median (IQR) as data are not normally distributed*

EYE COMPLICATIONS

Table 32 show eye testing and complications data among patients with T1DM and T2DM. Most eye complications were more common in patients with T1DM, except for cataract which was more common in patients with T2DM. However, similar proportions of patients with T1DM and T2DM self-reported attendances at an eye specialist in the last 12 months. A minority of patients with T1DM and T2DM reported blindness.

TABLE 32. PREVALENCE OF EYE TESTING AND COMPLICATIONS BY DIABETES TYPE

EYE TESTING AND COMPLICATIONS	N	%
T1DM		
Attended optometrist/ophthalmologist*	306	80.8
Retinopathy	396	30.5
Treatment for retinopathy	397	17.8
Cataract	397	15.6
Blindness	397	2.3
T2DM		
Attended optometrist/ophthalmologist*	740	83.4
Retinopathy	985	24.3
Treatment for retinopathy	985	14.3
Cataract	986	30.6
Blindness	986	2.3

**Attendances to optometrists/ophthalmologists reflect attendances in the last 12 months only*

FOOT COMPLICATIONS

Table 33 highlights foot complications among patients with T1DM and T2DM. Compared to patients with T1DM, patients with T2DM were more likely to have self-reported a foot check by a health professional in the last 12 months. Foot complications including amputation were more common in patients with T2DM compared with T1DM. About 2 in 10 patients with T2DM reported peripheral neuropathy, and almost 1 in 10 reported foot ulceration and a similar proportion reported peripheral vascular disease. A minority of patients with T1DM and T2DM reported lower limb amputation.

TABLE 33. PREVALENCE OF FOOT COMPLICATIONS BY DIABETES TYPE

FOOT CHECKS AND COMPLICATIONS	N	%
T1DM		
Foot check by health professional*	305	58.5
Foot ulceration	397	8.5
Peripheral vascular disease	397	5.0
Peripheral neuropathy	397	17.1
Lower limb amputation**	397	4.3
Minor		3.3
Major		0.5
T2DM		
Foot check by health professional*	746	72.3
Foot ulceration	986	10.2
Peripheral vascular disease	986	9.3
Peripheral neuropathy	986	22.7
Lower limb amputation**	986	5.5
Minor		4.3
Major		1.0

**Foot checks by a health professional were only captured in the last 12 months*
***A small number of patients did not specify whether amputation was major and/or minor*

KIDNEY COMPLICATIONS

Almost twice as many patients with T2DM compared with T1DM had moderately/severely increased albuminuria. CKD was also more common in T2DM, with almost 4 in 10 patients with T2DM reporting stage 3-5 CKD compared to almost 2 in 10 patients with T1DM. While a minority of patients recorded end-stage kidney disease, it was almost twice as common in patients with T2DM compared to T1DM (Table 34).

TABLE 34. KIDNEY COMPLICATIONS BY DIABETES TYPE

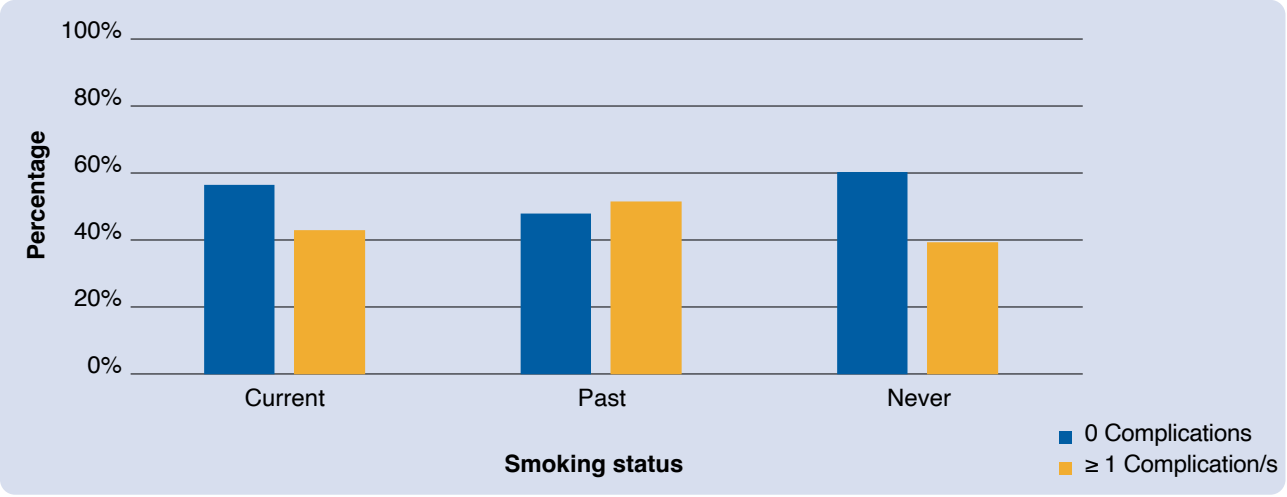
COMPLICATIONS	%	%
Albuminuria	**T1DM (N=248)**	**T2DM (N=649)**
Normal to mildly increased	85.5	73.7
Moderately increased	10.9	21.4
Severely increased	3.6	4.9
Chronic Kidney Disease	**T1DM (N=202)**	**T2DM (N=729)**
Stage 1	31.2	10.4
Stage 2	49.5	50.5
Stage 3	14.9	31.3
Stage 4	2.5	5.5
Stage 5*	2.0	2.3
End stage kidney disease*	0.5	0.9

**Stage 5 chronic kidney disease is a calculated category (estimated from creatinine and eGFR where eGFR <15 mL/min/1.73m^2) and end stage kidney disease was defined as Stage 5 chronic kidney disease (eGFR <15 mL/min/1.73m^2) and/or dialysis dependent (haemodialysis or peritoneal dialysis) and/or renal transplant recipient reported in the last 12 months.*

IMPACT OF SMOKING

Past smokers recorded the highest proportion of complications, with about 5 in 10 patients recording at least 1 complication (Figure 14). Of the patients who were current smokers, about 4 in 10 patients recorded at least 1 complication.

FIGURE 14. DIABETES RELATED COMPLICATIONS BY SMOKING STATUS (N = 1015)



Compared to patients with T2DM, patients with T1DM were more likely to be current smokers. More specifically, of those with T1DM, over 1 in 10 patients were current smokers and over 2 in 10 patients were past smokers. Of those with T2DM, 1 in 10 patients were current smokers and over 3 in 10 patients were past smokers (Table 35).

TABLE 35. SMOKING STATUS BY DIABETES TYPE

SMOKING STATUS	T1DM (N=397) %	T2DM (N=988) %
Current	15.6	10.8
Past	24.1	35.0
Never	60.3	54.1

MENTAL HEALTH SCREENING

Mental health screening was defined as screening using a validated questionnaire such as the Patient Health Questionnaire (PHQ-9) screening tool for depression, Generalised Anxiety Disorder scale (GAD-7) screening tool for anxiety and the Problem Areas In Diabetes (PAID) screening tool for diabetes distress.

Around 1 in 10 patients were reported as being screened for depression and/or anxiety, and 1 in 20 patients were reported as being screened for diabetes distress (Table 36).

TABLE 36. MENTAL HEALTH SCREENING IN THE LAST 12 MONTHS

MENTAL HEALTH SCREENING	N	YES %	NO %
Depression	1423	12.8	87.2
Anxiety	1424	11.8	88.2
Diabetes Distress	1418	4.7	95.3

SECTION 6

PATIENT REPORTED OUTCOMES

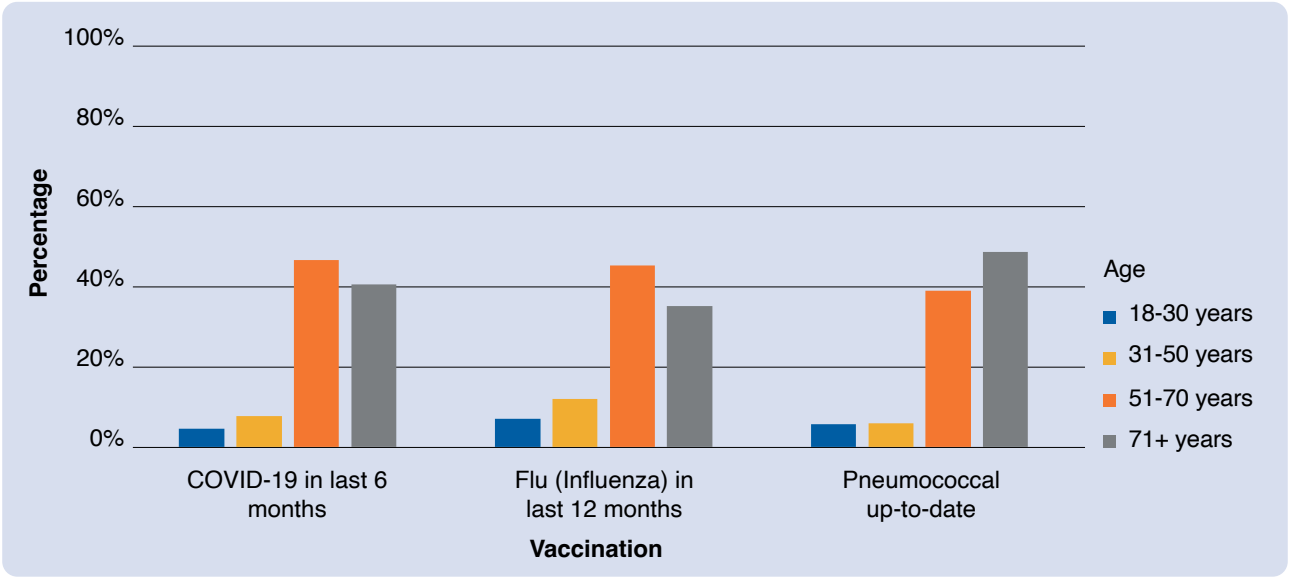
VACCINATIONS

About 7 in 10 patients self-reported vaccination against influenza in the last 12 months, 4 in 10 patients self-reported vaccination against COVID-19 in the last 6 months and over 2 in 10 patients self-reported vaccination against pneumococcal was up-to-date (Table 37). Those aged over 50 years were more likely to be vaccinated against COVID-19, influenza and pneumococcal, with vaccination rates highest in those aged over 70 years (Figure 15).

TABLE 37. VACCINATIONS

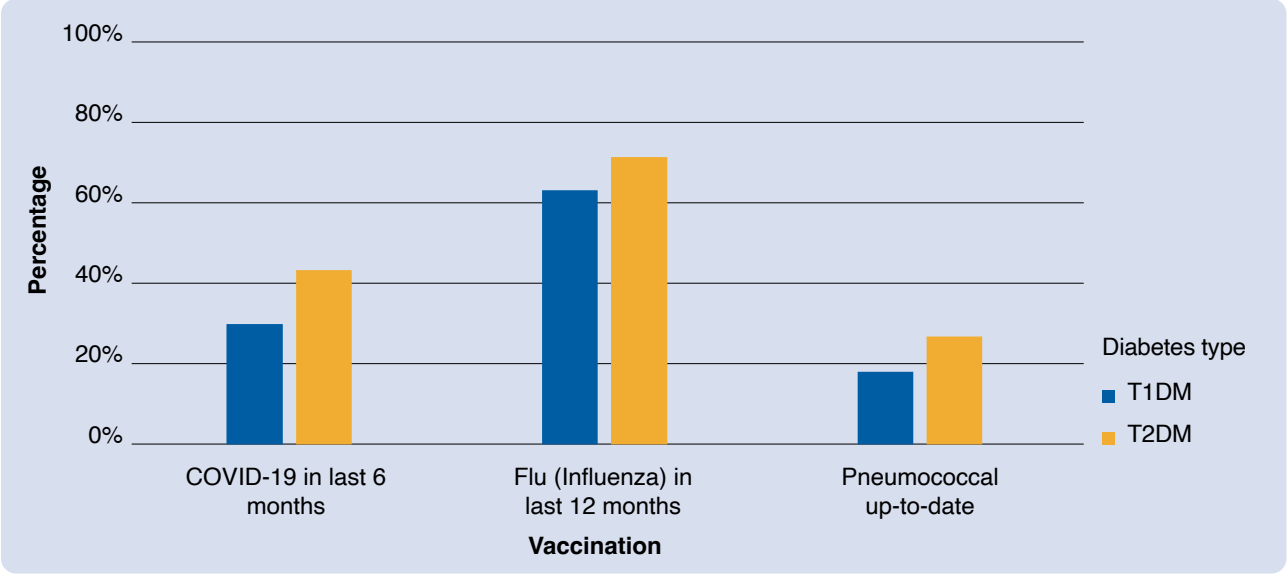
VACCINATION	N	%
COVID-19 in last 6 months	1080	39.4
Flu (Influenza) in last 12 months	1080	69.3
Pneumococcal up-to-date	1075	24.8

FIGURE 15. DISTRIBUTION OF PATIENTS VACCINATED BY AGE



Patients with T2DM were more likely to be vaccinated against COVID-19, influenza and pneumococcal compared to patients with T1DM (Figure 16).

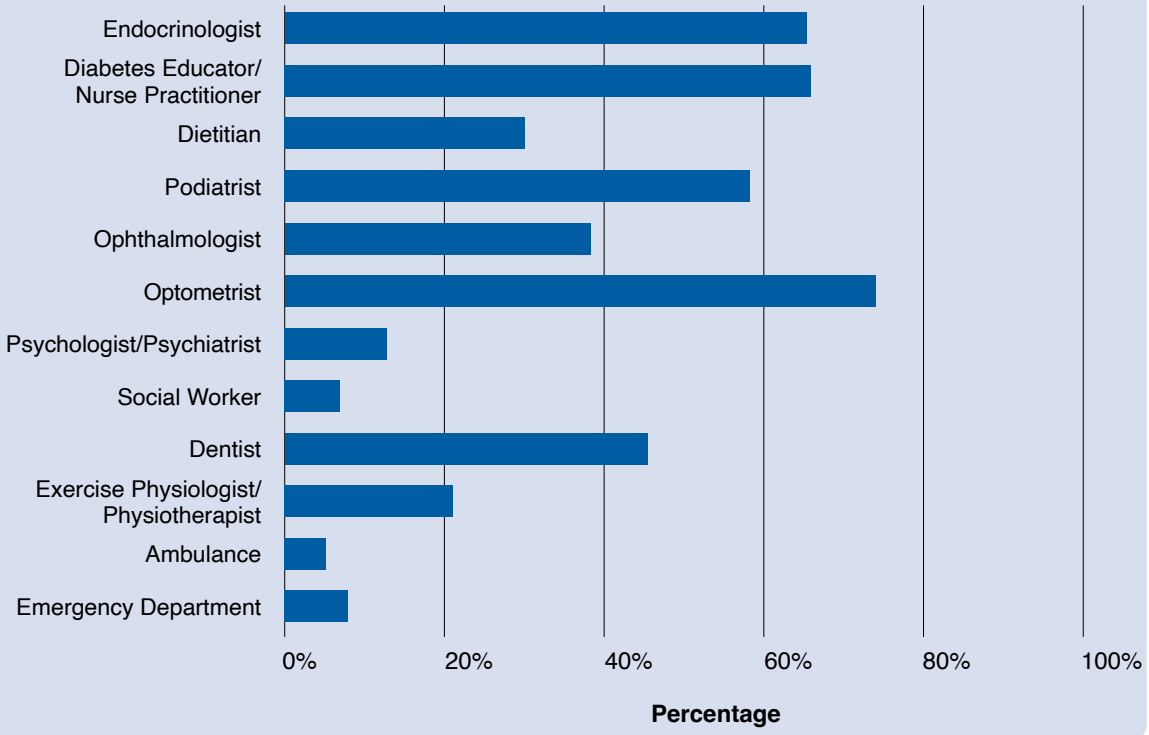
FIGURE 16. VACCINATIONS BY DIABETES TYPE



HEALTH PROFESSIONAL ATTENDANCES

Figure 17 presents health professional attendances in the last 12 months. Most patients self-reported consultations with endocrinologists (over 6 in 10 patients), and a similar proportion self-reported consultations with a diabetes educator or nurse practitioner. Over 7 in 10 patients self-reported consultations with an optometrist and 4 in 10 consultations with an ophthalmologist. Almost 6 in 10 patients self-reported consultations with a podiatrist, 5 in 10 consultations with a dentist, and 3 in 10 consultations with a dietitian. Just over 1 in 10 patients self-reported seeing a psychologist or psychiatrist. Emergency department and ambulance attendances were less common.

FIGURE 17. HEALTH PROFESSIONAL ATTENDANCES IN THE LAST 12 MONTHS



MEDICATION USE

The majority of patients self-reported that they usually take all of their medications as recommended (8 in 10 patients) (Table 38). Among those patients who do not take their medications as recommended, the average number of times this occurred was 3.4 times per week.

TABLE 38. MEDICATION USE

MEDICATION USE	N	%
Not taken medication as recommended in the last 2 weeks	1082	17.1
Number of times, mean ± SD	3.4 ± 3.8	

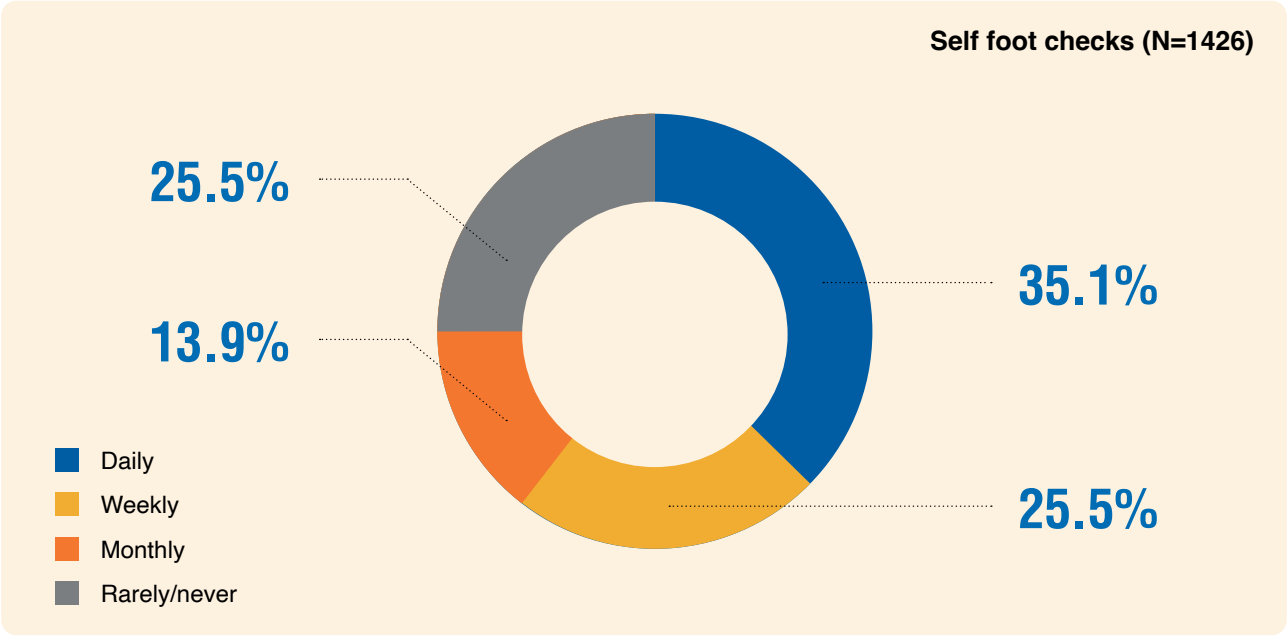
SELF-CARE PRACTICES

Patient self-care practices were collected on approximately 76.2% of patients.

FOOT CARE

Over 3 in 10 patients reported self-checking their feet daily and over 2 in 10 self-checking their feet weekly. Just over 2 in 10 patients reported rarely/never self-checking their feet (Figure 18).

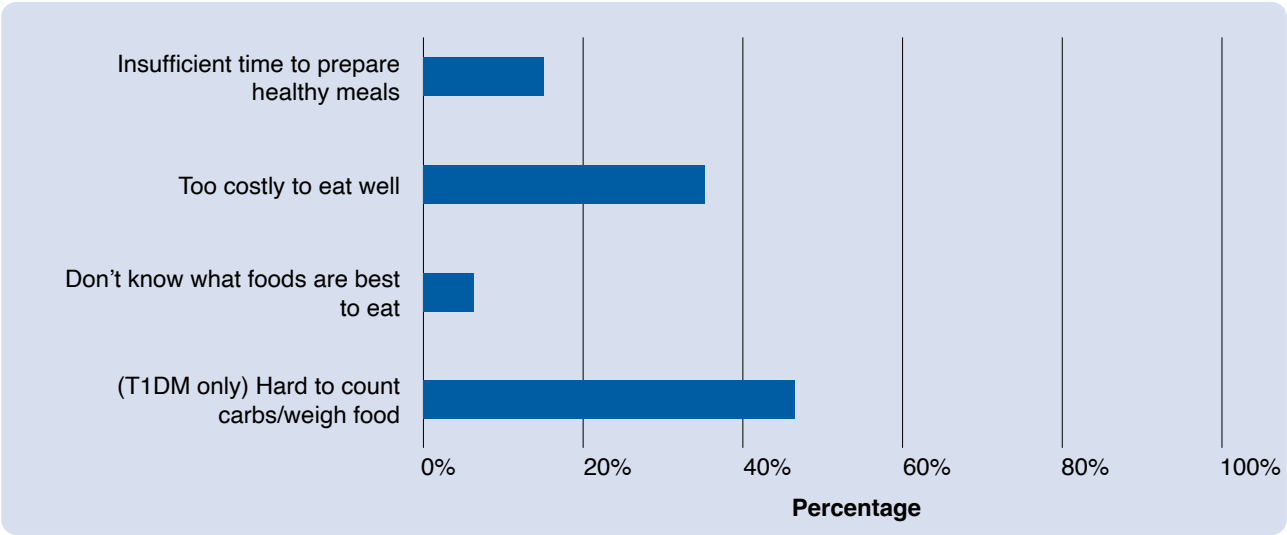
FIGURE 18. SELF-CHECKING OF FEET



NUTRITION/DIET MANAGEMENT

Patients with diabetes reported the greatest barrier for nutrition/diet management was the cost to eat well, followed by insufficient time to prepare healthy meals. A minority of patients reported they lack knowledge of what foods are best to eat (Figure 19). Of those with T1DM, almost 5 in 10 patients reported it is too hard to count carbohydrates and weigh food.

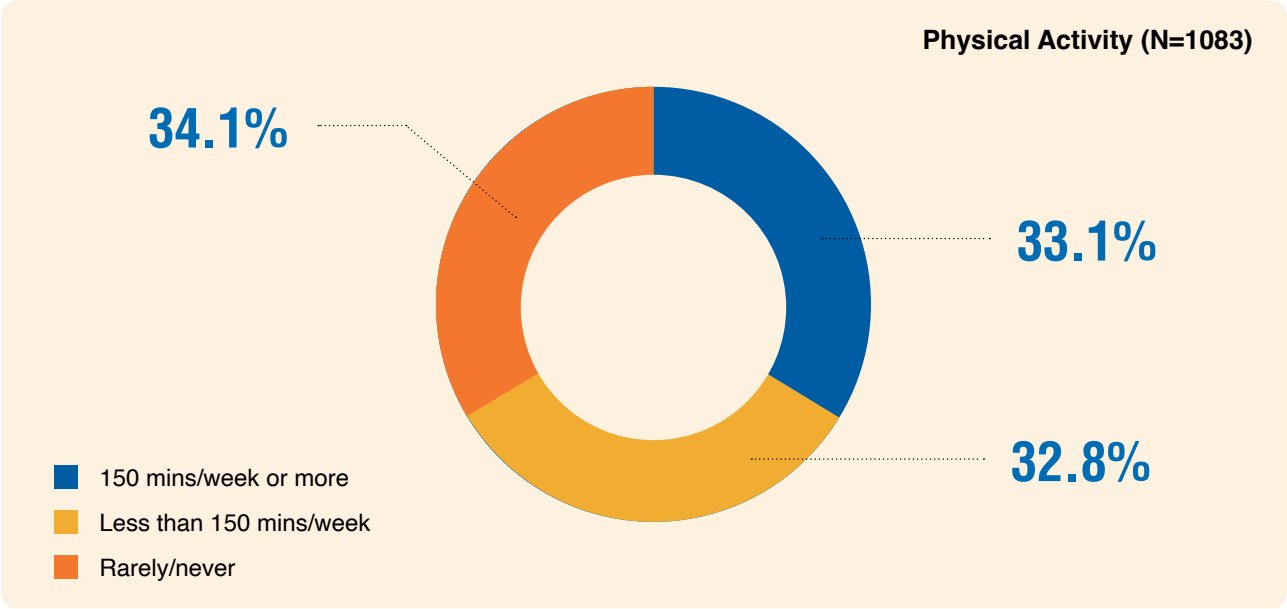
FIGURE 19. PATIENT DIETARY PRACTICES (N=1080)

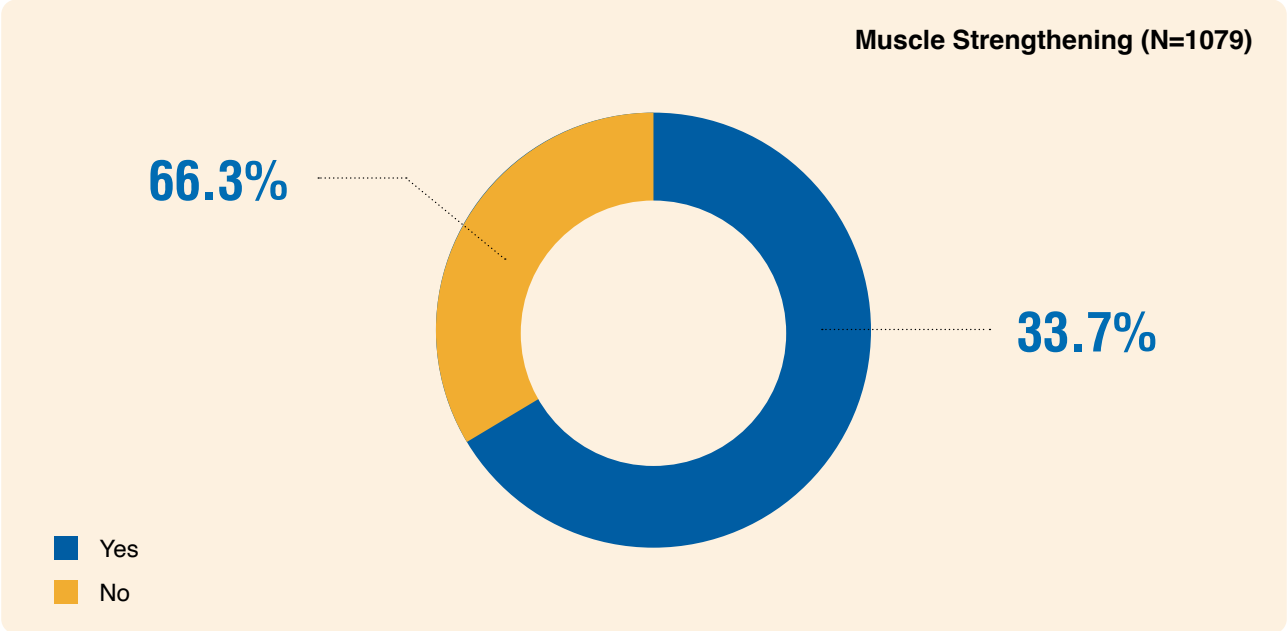


PHYSICAL ACTIVITY

About 3 in 10 patients self-reported that they engaged in sufficient physical activity (at least 150 total minutes of moderate to vigorous exercise per week), with almost 7 in 10 patients not meeting recommended physical activity recommendations (with 3 in 10 patients rarely/never engaging in physical activity) (Figure 20). Similarly, about 3 in 10 patients reported that they do muscle strengthening exercises in a usual week, including lifting weights or household tasks that involve lifting, carrying or digging while almost 7 in 10 patients reported that that do not undertake muscle strengthening exercises in a usual week.

FIGURE 20. PHYSICAL ACTIVITY





SECTION 7

SUB-ANALYSES

CENTRE TYPE AT A GLANCE

Table 39 details the 25 centres that participated in ADCQR 2023. Fourteen sites were comprised of Centres of Excellence or Tertiary Care Centres (CoE/Tertiary), with the contribution from each individual site ranging from 29 to 128 patients. Eleven sites were comprised of Secondary or Primary Care Centres (Secondary/Primary), with the contribution from each individual site ranging from 17 to 80 patients. There were more than double the number of patients from Centres of Excellence or Tertiary centres than Primary or Secondary care centres.

Patients from CoE/Tertiary centres were typically younger than those from Secondary/Primary centres (56.7 vs 67.9 years), however duration of diabetes was longer in CoE/Tertiary settings (16.0 vs 13.6 years). As expected, more patients with T1DM and secondary causes of diabetes attended CoE/Tertiary centres, while more patients with T2DM attended Secondary/Primary centres. As such, a greater proportion of patients from CoE/Tertiary centres were using CGM, with comparable rates of flash glucose monitoring among patients from CoE/Tertiary centres and Secondary/Primary centres.

Patients from CoE/Tertiary centres had a higher mean and median HbA1c than patients from Secondary/Primary centres. These findings likely reflect the fact that patients who are referred to CoE/Tertiary centres typically have more complex and difficult to manage diabetes. Blood pressure and lipid levels were comparable across centre types, although patients from CoE/Tertiary centres were more likely to be using lipid lowering therapy while patients from Secondary/Primary centres were more likely to be using anti-hypertensive treatment.

Patients managed at CoE/Tertiary centres had greater prevalence of complications and comorbidities, including microvascular and macrovascular complications, and acute glycaemic complications (impaired awareness of hypoglycaemia, severe hypoglycaemia, diabetic ketoacidosis and hyperosmolar hyperglycaemic state), than patients managed at Secondary/Primary centres. The only exceptions were cataract, sexual dysfunction, malignancy and mild liver disease, which were higher in patients attending Secondary/Primary centres.

Patients attending Secondary/Primary centres were more likely to be screened for diabetes distress compared to patients attending CoE/Tertiary centres, while screening for depression and anxiety were comparable across centre types.

TABLE 39. DEMOGRAPHIC, MANAGEMENT AND CLINICAL OUTCOMES BY CENTRE TYPE

ITEM NO.	CLINICAL PARAMETERS	CENTRES OF EXCELLENCE & TERTIARY CARE	SECONDARY & PRIMARY CARE
	Number of sites (N)	14	11
	Number of patients (N)	986	440
Demographics			
	Age (calculated; years), mean ± SD	56.7 ± 17.3	67.9 ± 13.8
1.2	Sex		
	Female, %	44.9	45.0
	Male, %	55.1	54.8
	Other, %	0.0	0.2
1.4	NDSS, %	95.7	91.6
1.5	Aboriginal/Torres Strait Islander, %	2.7	4.1
1.6	Initial visit, %	10.0	10.3
1.7	Interpreter required, %	6.1	2.7
1.8	Language spoken		
	English, %	66.6	92.5
	Other, %	33.4	7.5
1.9	DVA, %	0.3	1.4
1.10	Country of birth, Australian born, %	62.8	77.0
Diabetes type and management			
2.2	Type of diabetes		
	T1DM, %	33.8	14.5
	T2DM, %	62.4	84.8
	Other (Secondary causes) %	3.5	0.7
	Duration of diabetes (calculated; years), median (IQR)	16.0 (8.6 – 24.4)	13.6 (6.6 – 23.5)
2.3	Blood glucose monitoring		
	None, %	5.5	24.5
	Finger pricking only, %	62.7	58.5
2.3.1	Check as often as recommended, %	70.3	70.4
2.3.2	Number of times per day, mean ± SD	2.3 ± 1.3	1.8 ± 1.2
	Finger prick and CGM, %	2.2	0.5
	CGM only, %	29.5	16.4
	Flash glucose monitoring, %	9.6	10.5
	Other CGM, %	19.8	5.9
2.3.3	If using Flash/CGM, sensor worn for ≥ 14 days	89.2	97.9
	Sensor active ≥ 70% of time	86.8	82.6
Lifestyle risk factors			
	Body mass index (calculated; kg/m^2), mean ± SD	30.9 ± 7.5	31.5 ± 6.9

ITEM NO.	CLINICAL PARAMETERS	CENTRES OF EXCELLENCE & TERTIARY CARE	SECONDARY & PRIMARY CARE
Blood pressure			
4.1	Systolic BP (mmHg), mean ± SD	132 ± 17	134 ± 19
	Diastolic blood pressure (mmHg), mean ± SD	77 ± 10	76 ± 13
4.1.1	Blood pressure self-reported, %	15.4	4.2
	Blood pressure measured in clinic, %	84.6	95.8
4.2	On anti-hypertensive treatment, %	62.0	75.5
4.2.1	ACE inhibitor, %	23.6	31.4
	ARB, %	29.3	30.9
	Calcium channel blocker, %	22.2	23.9
	Beta blocker, %	21.2	19.3
	Thiazides/Diuretics, %	16.5	19.1
	Other, %	6.8	6.1
	Systolic BP - on anti-hypertensive treatment (mmHg), mean ± SD	135 ± 18	135 ± 19
	Diastolic BP - on anti-hypertensive treatment (mmHg), mean ± SD	77 ± 11	75 ± 13
Blood glucose control and renal function			
5.1	HbA1c (%), mean ± SD	8.3 ± 1.8	7.5 ± 1.4
	HbA1c (mmol/mol), mean ± SD	67.5 ± 19.5	58.6 ± 15.1
	HbA1c (%), median (IQR)	8.0 (7.1 – 9.1)	7.3 (6.5 – 8.2)
	HbA1c (mmol/mol), median (IQR)	64.0 (54.0 – 76.0)	56.0 (48.0 – 66.0)
5.2	eGFR (mL/min per 1.73m^2), mean ± SD	65.8 ± 23.0	66.1 ± 18.4
5.3	Serum creatinine (μmol/L), mean ± SD	101.8 ± 102.5	88.7 ± 33.6
5.4	Normal to mildly increased albuminuria, %	75.0	81.0
	Moderately increased albuminuria, %	19.5	16.5
	Severely increased albuminuria, %	5.4	2.6
Medications and lipids			
6.1	Aspirin, %	26.8	30.1
6.2	Other antiplatelets, %	6.8	6.4
6.3	Anticoagulants, %	9.1	10.7
6.4	On lipid modifying therapy, %	64.4	72.2
6.4.1	Statin, %	60.4	68.1
6.4.2	Fibrate, %	7.2	7.5
6.4.3	Ezetimibe, %	9.1	9.8
6.4.4	Fish oil, %	1.9	2.5
6.4.5	PCSK9 inhibitor, %	0.2	0.5
6.5	Lipids, %	73.5	81.5
6.5.1	Total cholesterol (mmol/L), mean ± SD	4.2 ± 1.1	4.1 ± 1.1
6.5.2	LDL cholesterol (mmol/L), mean ± SD	2.2 ± 1.0	2.0 ± 0.8
6.5.3	HDL cholesterol (mmol/L), mean ± SD	1.3 ± 0.4	1.3 ± 0.4
	Non-HDL, (calculated; mmol/L), mean ± SD	2.9 ± 1.1	2.8 ± 1.0
6.5.4	Triglyceride, (mmol/L), median (IQR)	1.4 (1.0 – 2.1)	1.6 (1.1 – 2.3)
Diabetes related eye and foot complications (Ever reported)			
7.1	Retinopathy, %	28.4	18.9
7.2	Treatment for retinopathy, %	17.9	8.4
7.3	Right or left cataract, %	23.1	32.6
7.4	Blindness, %	2.2	2.3
7.5	Peripheral neuropathy, %	22.6	16.6
7.6	Foot ulceration, %	11.7	4.3
7.7	Lower limb amputation, %	6.7	1.1
	Minor, %	5.2	0.9
	Major, %	1.2	0.0
Complications/events/comorbidities (Ever reported)			
8.1	Stroke, %	8.1	4.3
8.2	Myocardial infarction, %	13.2	9.8
8.3	CABG/angioplasty, %	13.3	11.4
8.4	Congestive cardiac failure, %	6.1	5.5
8.5	Peripheral vascular disease, %	9.6	3.9

ITEM NO.	CLINICAL PARAMETERS	CENTRES OF EXCELLENCE & TERTIARY CARE	SECONDARY & PRIMARY CARE
8.6	End stage kidney disease, %	7.5	2.5
8.7	Sexual dysfunction, %	12.1	18.2
8.8	Dementia, %	1.4	1.1
8.9	Depression, %	26.4	23.3
8.10	Anxiety, %	20.6	17.3
8.11	Malignancy, %	7.3	13.2
8.12	Diabetic ketoacidosis, %	9.2	2.5
8.13	Hyperosmolar hyperglycaemic state, %	1.3	0.2
8.14	Impaired awareness of hypoglycaemia, %	4.7	3.6
8.15	Severe hypoglycaemia, %	11.1	5.9
8.16	Liver disease		
	Mild, %	13.3	18.5
	Moderate/severe, %	5.5	3.0
8.17	COVID-19 positive, %	52.6	41.5
	Hospital admission, %	8.0	4.4
Mental health screening in the last 12 months			
9.1	Screened for diabetes distress, %	4.0	6.4
9.2	Screened for depression, %	9.9	10.5
9.3	Screened for anxiety, %	8.9	8.4

Table 40 outlines diabetes management methods by centre type and diabetes type. There were minimal differences in diabetes management methods in T1DM between CoE/Tertiary and Secondary/Primary centres, with the exception of SGLT2 inhibitors which were three times more likely to be used as adjuvant therapy in patients from Secondary/Primary centres. Among patients with T2DM, a marginally greater proportion from CoE/Tertiary centres were taking Dipeptidyl Peptidase-4 (DPP4) inhibitors, SGLT2 inhibitors and GLP-1 agonists or GLP-1/GIP dual receptor agonists than patients from Secondary/Primary centres; and a greater proportion of patients from CoE/Tertiary centres were treated with insulin.

TABLE 40. DIABETES MANAGEMENT METHODS BY CENTRE TYPE AND BY DIABETES TYPE

ITEM NO.	CLINICAL PARAMETERS	CENTRES OF EXCELLENCE & TERTIARY CARE		SECONDARY & PRIMARY CARE	
		T1DM	T2DM	T1DM	T2DM
2.4	Management method				
	Diet only, %	0.0	0.5	0.0	9.9
	Metformin, %	10.5	74.8	10.9	72.9
	SGLT2 inhibitor, %	2.7	40.7	10.9	37.8
	GLP1/GIP agonist, %	1.8	37.7	1.6	29.2
	DPP4 inhibitor, %	0.6	26.7	1.6	22.0
	Sulphonylurea, %	0.0	26.3	0.0	19.0
	Thiazolidinedione	0.0	0.2	0.0	0.0
	Acarbose, %	0.0	1.5	0.0	0.8
	Insulin, %	100.0	67.3	100.0	39.1
	Unstated, %	0.0	0.0	0.0	0.0
2.4.1	Years on insulin (only patients using insulin), median (IQR)	17.0 (7.8 – 28.0)	7.0 (2.0 – 13.0)	25.0 (14.4 – 38.4)	8.0 (3.1 – 14.0)
2.4.2	If on insulin, mode				
	Basal, %	2.4	12.0	4.7	8.0
	Basal bolus, %	67.3	17.4	67.2	11.3
	Pre-mixed insulin, %	3.6	39.7	9.4	23.1
	Pump, %	28.5	0.0	23.4	0.3
	CSII automated, Hybrid closed loop, %	16.5	N/A	18.5	0.0
	CSII automated, Other, %	4.5	N/A	0.0	0.7
	CSII non-automated, %	7.2	N/A	4.7	0.0

Table 41 outlines patient health and well-being outcomes. Patients managed at CoE/Tertiary centres were more likely to be current smokers and patients managed at Secondary/Primary centres were more likely to be past smokers, but overall, the proportion of current/past smokers were similar across centre types. Patients managed at Secondary/Primary centres were more likely to be vaccinated against COVID-19, influenza and pneumococcal, compared to patients managed at CoE/Tertiary centres.

Health professional attendances varied by centre type. As expected, patients from CoE/Tertiary centres were more likely to have consultations with an endocrinologist and/or diabetes educator/nurse practitioner, which reflects the more complex diabetes typically managed at these types of centres. Moreover, these patients were three times more likely than patients from Secondary/Primary centres to have ambulance attendances and emergency department presentations. Interestingly, patients from CoE/Tertiary centres were also two times more likely to see a psychologist/psychiatrist.

In terms of self-management of diabetes, patients from CoE/Tertiary centres were more likely to undertake daily foot checks. Patients from CoE/Tertiary centres were more likely to self-report barriers to nutrition and diet management, with the cost of healthy food being the greatest barrier and almost two times more common in patients from CoE/Tertiary compared to patients from Secondary/Primary centres. Of those with T1DM, the proportion of patients that self-reported that it was too hard to count carbs/weigh food was comparable across centre types, with slightly more patients from CoE/Tertiary centres reporting difficulties. Patients from CoE/Tertiary centres were more likely to engage in moderate/vigorous physical activity, while patients from Secondary/Primary centres were more likely to undertake muscle strengthening exercise.

TABLE 41. PATIENT REPORTED OUTCOMES BY CENTRE TYPE

ITEM NO.	HEALTH AND WELL-BEING OUTCOMES	CENTRES OF EXCELLENCE & TERTIARY CARE	SECONDARY & PRIMARY CARE
Smoking & vaccination status			
1.1	Currently smoke tobacco, %	12.1	10.7
1.1.1	Previously smoked tobacco %	36.2	37.8
1.2	COVID-19 vaccination - last 6 months, %	33.5	49.9
1.3	Flu (influenza) vaccination - last 12 months, %	65.5	76.0
1.4	Pneumococcal vaccination - up to date, %	20.2	33.2
Health professional attendances			
2.1	Endocrinologist, %	80.2	39.1
2.2	Diabetes Educator/Nurse Practitioner, %	70.7	58.0
2.3	Dietitian, %	36.1	21.0
2.4	Podiatrist, %	54.7	65.2
2.5	Ophthalmologist, %	36.6	41.7
2.6	Optometrist, %	71.3	76.6
2.7	Psychologist/ Psychiatrist, %	14.3	7.6
2.8	Social Worker, %	8.3	5.0
2.9	Dentist, %	46.0	43.7
2.10	Exercise Physiologist/Physiotherapist, %	21.8	21.2
2.11	Ambulance, %	7.0	2.8
2.12	Emergency Department, %	11.5	3.4
Medication use			
3.1	Not taken medication as recommended in last 2 weeks, %	19.4	12.9
3.1.1	Number of times per week, mean ± SD	4.0	3.3
Foot care			
4.1	Feet checked by health professional	64.5	73.7
4.2	Frequency of self-foot check		
	Daily, %	37.0	31.7
	Weekly, %	25.7	25.1
	Monthly, %	12.0	17.3
	Rarely/Never, %	25.3	25.9
Nutrition and diet management			
5.1	(Adapted) Don't know what foods are best to eat, %	7.3	5.5
5.2	(Adapted) Insufficient time to prepare healthy meals, %	17.6	11.4
5.3	Too costly to eat well, %	42.4	24.4
5.4	(T1DM) Too hard to count carbs/weigh food, %	47.9	40.7
Physical activity			
6.1	Moderate/vigorous intensity physical activity, %		
	150 mins/week or more %	34.8	30.2
	Less than 150 mins/week %	31.3	35.4
	Rarely/never %	33.9	34.4
6.2	Muscle strengthening exercise, %	31.3	38.1

FUTURE DEVELOPMENTS

The ADCQR was successfully implemented in 2023, generating this Annual report benchmarking clinical indicators against endorsed guidelines to gauge effectiveness of diabetes management and intervention strategies and providing robust individual audit reports for each participating site.

As the ADCQR is in its implementation phase, the focus of the coming years will be on the growth and maturity of the Registry. The ADCQR is committed to promoting the importance of this activity and involving more health services and their patients so that we can achieve better health outcomes for all Australian adults living with diabetes.

In addition, as part of the Registry deliverables to the Australian Government Department of Health and Aged Care, the ADCQR is

1. Developing a purpose-built database
2. Developing user-friendly dashboards to facilitate use of data by participating sites
3. Developing risk-adjusted outcome models
4. Implementing risk-adjusted outcomes for reporting

The ADCQR site-specific reports have been based on formative work undertaken as part of ANDA which were redesigned to better meet the needs of end users, in accordance with current audit and feedback theory. These participating site reports provide an overall visual summary of clinical outcomes at participating sites, with further detail for each major outcome. We provide information in simple tabular and graphic formats, with the use of infographics where appropriate. We also provide a PowerPoint template to be used internally to help aid in dissemination to clinical teams. We will continue to refine our reporting based on the needs of end users and changes in clinical practice/ outcomes of interest over the course of the Registry.

AWARDS

In March 2024, the National Association of Diabetes Centres (NADC) announced a new award in honour of the ADCQR Registry Lead, Professor Sophia Zoungas, and her contribution to quality improvement.

The 2024 NADC Sophia Zoungas Quality Improvement in Diabetes Services Award (QIDSA) is a prestigious award that aims to recognise organisations that have demonstrated significant improvements in diabetes management or have secured additional funding or services through their utilisation of ADCQR data as a quality improvement tool. There are two awards available to recognise the contribution from various health services in diabetes care; a Primary Care service award and Secondary/Tertiary or Centre of Excellence award. This is an annual award and announced at the Australasian Diabetes Congress each year.

PRESENTATIONS

- Zoungas S. Transitioning from an audit to a clinical quality registry: The journey from the Australian National Diabetes Audit (ANDA) to Australian Diabetes Clinical Quality Registry (ADCQR). Australasian Diabetes Congress, Adelaide Australia, 23-25 August 2023.
- Pourghaderi A. Conference Workshop – Data to Action: Leveraging automated interactive reporting for CQR. Australian Registry Annual Scientific Meeting, Melbourne Australia, 19 October 2023.
- Zomer E. Taking Diabetes Care to New Heights: The Australian Diabetes Clinical Quality Registry (ADCQR). Australian Registry Annual Scientific Meeting, Melbourne Australia, 20 October 2023.

REFERENCES

1. Australian Institute of Health and Welfare. Diabetes: Australian Facts, 2023. https://www.aihw.gov.au/reports/diabetes/diabetes/contents/summary (accessed 14 December 2023).

2. Australian Government Department of Health and Aged Care. Australian National Diabetes Strategy 2021-2030. Canberra: Australian Government Department of Health and Aged Care.

3. Australian Commission on Safety and Quality in Health Care. National Arrangements for Clinical Quality Registries. https://www.safetyandquality.gov.au/our-work/health-and-human-research/national-arrangements-clinical-quality-registries#australia-s-framework-for-clinical-quality-registries (accessed 14 December 2023).

4. Australian Commission on Safety and Quality in Health Care. Prioritised List of Clinical Domains for Clinical Quality Registry Development. Final Report. November 2016. Sydney: Australian Commission on Safety and Quality in Health Care.

5. Australian Government Department of Health and Aged Care. Maximising the Value of Australia's Clinical Quality Registries and Virtual Registries 2020-2030. Canberra: Australian Government Department of Health and Aged Care.

6. Australian National Diabetes Audit. https://www.monash.edu/medicine/anda/home

7. National Health and Medical Research Council, Australian Research Council and Universities Australia (2023). National Statement on Ethical Conduct in Human Research. Canberra: National Health and Medical Research Council.

8. National Association of Diabetes Centres. https://nadc.net.au/

9. Bonney M, Harris M, Priddin D. National Divisions Diabetes Program: Recommended GP Subset of the NDOQRIN Dataset and Alternate Fields from which NDOQRIN Fields can Subsequently be Derived. 1999.

10. NSW Department of Health. Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus v1.3, 1996.

11. National Board of Health and Welfare. Quality and Efficiency of Diabetes Care in Sweden: National Performance Assessment, 2011.

12. National Institute for Health and Care Excellence (UK). Quality and Outcomes Framework Indicators: Diabetes Mellitus. NICE, https://www.nice.org.uk/standards-and-indicators/qofindicators?categories=&page=1 (accessed 7 December 2023).

13. Fleming BB, Greenfield S, Engelgau MM, et al. The Diabetes Quality Improvement Project: Moving Science into Health Policy to Gain an Edge on the Diabetes Epidemic. Diabetes Care 2001; 24(10): 1815–1820.

14. Danek E, Earnest A, Zoungas S. Advancing the Quality of Diabetes Care through Audit and Feedback: Literature Review. Monash University, School of Public Health and Preventive Medicine, May 2017.

15. National Diabetes Services Scheme. Australian Type 2 Diabetes Glycaemic Management Algorithm. https://www.diabetessociety.com.au/guideline/australian-type-2-diabetes-glycaemic-management-algorithm-august-2022/ (accessed 2 December 2023)

16. REDCap, https://www.project-redcap.org/ (accessed 24 November 2023).

17. Harris PA, Taylor R, Thielke R, et al. Research Electronic Data Capture (REDCap)--a Metadata-Driven Methodology and Workflow Process for Providing Translational Research Informatics Support. J Biomed Inform 2009; 42: 377–381.

18. Harris PA, Taylor R, Minor BL, et al. The REDCap Consortium: Building an International Community of Software Platform Partners. J Biomed Inform 2019; 95: 103208.

19. Kidney Disease Improving Global Outcomes (KDIGO). KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int; 3 (1).

20. The Royal Australian College of General Practitioners. Management of Type 2 Diabetes: A Handbook for General Practice. East Melbourne Vic: RACGP, 2020.

21. National Heart Foundation of Australia. Guideline for the Diagnosis and Management of Hypertension in Adults - 2016. Melbourne: National Heart Foundation of Australia, 2016.

22. National Heart Foundation of Australia. Practical Guide to Pharmacological Lipid Management. Melbourne: National Heart Foundation of Australia. https://www.heartfoundation.org.au/heart-health-check-toolkit/pharmacological-lipid (accessed 7 December 2023).

23. Cheung NW, Conn JJ, d'Emden MC, et al. Position Statement of the Australian Diabetes Society: Individualisation of Glycated Haemoglobin Targets for Adults with Diabetes Mellitus. Med J Aust 2009; 191(6): 339-344.

24. Brunner FJ, WaldeyerC, Ojeda F, et al. Application of Non-HDL Cholesterol for Population-Based Cardiovascular Risk Stratification: Results from the Multinational Cardiovascular Risk Consortium. Lancet 2019; 394(10215): 2173-2183.

25. Gregg EQ, Buckley J, Ali MK, et al in collaboration with the Global Health and Population Project on Access to Care for Cardiometabolic Diseases. Improving Health Outcomes of People with Diabetes: Target Setting for the WHO Global Diabetes Compact. Lancet 2023; 401: 1302-1312.

26. Marx N, Federici M, Schütt K, et al, ESC Scientific Document Group. 2023 ESC Guidelines for the Management of Cardiovascular Disease in Patients with Diabetes: Developed by the Task Force on the Management of Cardiovascular Disease in Patients with Diabetes of the European Society of Cardiology (ESC). European Heart Journal 2023; 44(39): 4043–4140.

INFORMATION FOR DIABETES CENTRES AND HEALTH SERVICES ON HOW TO PARTICIPATE

HOW TO PARTICIPATE

If you are a diabetes centre health service providing diabetes care and would like to contribute to the ADCQR, please register your interest by contacting the ADCQR Secretariat on adcqr@monash.edu.

Your diabetes centre or health service must nominate a local Principal Investigator (PI). The PI is the ADCQR main point of contact and is responsible for site participation and compliance with ADCQR policies and procedures.

Inclusion in the ADCQR is voluntary, and there are no financial incentives for diabetes centres/health services, clinicians or their patients to participate. The site-specific reports are provided to participating centres/health services free of charge, to be able to monitor their own performance against other similar participating diabetes centres and national benchmarks.

Once you have registered your interest, the ADCQR Secretariat and team will provide information on how to proceed and support the submission of applications for local ethics and governance approvals. The ADCQR will also provide resources to assist and train all relevant staff prior to the data collection sampling period.

REQUIREMENTS FOR PARTICIPATION

To participate in the ADCQR, your diabetes centre or health service must be able to meet the following criteria:

1. Ability and commitment to enter all eligible patients into the database
2. Nomination of a PI to oversee and manage local data collection
3. Ability to establish and maintain internal systems for data accuracy and timely data entry
4. Willingness to comply with the project protocol and ethics requirements
5. Willingness to sign an ADCQR Collaborative/Data Sharing Agreement that outlines the mutual obligations and use of data

ADCQR COMMITTEES

ADCQR Scientific Advisory Committee Membership

MEMBER NAME	ROLE TITLE AND ORGANISATION	CONTRIBUTION
Professor Sophia Zoungas (Chair)	Head, School of Public Health and Preventive Medicine, Monash University and Clinical Endocrinologist, Alfred Health and Monash Health, Melbourne [VIC]	Registry Lead and Data Custodian
Associate Professor Sofianos Andikopoulos	Chief Executive Officer, Australian Diabetes Society [NSW]	National Peak Body Representative
Ms Taryn Black	Chief Strategy Officer, Diabetes Australia [QLD]	National Peak Body Representative
Associate Professor Wendy Davis	Epidemiologist and Applied Biostatistician, The University of Western Australia [WA]	Data/Science Expert
Professor Barbora de Courten OAM	Deputy Dean and Distinguished Professor of Medicine, School of Health & Biomedicine, RMIT University and Specialist Physician, Monash Health [VIC]	Clinical Representative
Dr Gary Deed	General Practitioner and Medical Director, Mediwell Medical Clinic [QLD]	Primary Health Sector Representative
Professor Jeff Flack	Conjoint Professor, School of Medicine, Western Sydney University and Senior Staff Specialist Endocrinologist and Head, Department of Diabetes & Endocrinology and Director, Diabetes Centre, Bankstown-Lidcombe Hospital [NSW]	Clinical Representative
Professor Jenny Gunton	Head, Centre for Diabetes, Obesity and Endocrinology Research and Head, Westmead Institute for Medical Research and Clinical Endocrinologist / Diabetologist, Westmead Hospital [NSW]	Clinical Representative
Mr Trevor Jones	Person living with Type 2 Diabetes [WA]	Consumer Representative
Dr Konrad Kangru	General Practitioner, Whitsunday Doctors Service [QLD]	Primary Health Sector Representative
Associate Professor Odette Pearson	Co-Lead Aboriginal Health Equity Theme, South Australian Health & Medical Research Institute [SA]	Aboriginal and Torres Strait Islander Representative and Data/Science Expert
Ms Megan Phelan	Policy Officer, Clinical Quality Registry Section, Health Modelling, Partnerships and Evaluation Branch, Health Economics and Research Division, Australian Government Department of Health and Aged Care [ACT]	Australian Government Department of Health and Aged Care Representative
Ms Sally Rayner	Director, Clinical Quality Registry Section, Health Modelling, Partnerships and Evaluation Branch, Health Economics and Research Division, Australian Government Department of Health and Aged Care [ACT]	Australian Government Department of Health and Aged Care Representative
Professor Jane Speight	Chair, Behavioural and Social Research in Diabetes and Foundation Director, The Australian Centre for Behavioural Research in Diabetes [VIC]	Data/Science Expert
Ms Natalie Wischer OAM	Chief Executive Officer, National Association of Diabetes Centres [VIC]	National Peak Body Representative

ADCQR Project Executive

NAME	ROLE
Professor Sophia Zoungas	Registry Lead
Ms Dimitra Giannopoulos	Project Manager
Professor Susannah Ahern	Technical Advisor
Professor Arul Earnest	Senior Biostatistician
Dr Ella Zomer	Research Lead
Dr Ahmad Reza Pourghaderi	Senior Data Scientist
Dr Hossein Nejati	Senior Data Manager/Analyst
Dr Anthony Pease	Clinician Advisor
Dr Matthew Quigley	Quality Improvement Advisor
Ms Trieu-Anh Truong	Data Manager
Ms Mahima Choudhary	Research Support Officer
Ms Kara Kotsovolos	Administrative Officer

APPENDICES

APPENDIX 1

ADCQR 2023 Data Collection Form

17942

Australian Diabetes Clinical Quality Registry
ADCQR Clinical Data Collection Form

SITE STAFF FORM
Page 1 of 3

Patient ID | **Site ID** | **Staff Initials (optional)**

How was the consultation conducted? ☐ In person ☐ Video ☐ Phone — **Participant information sheet given** ☐

Section 1. Patient Demographics

1.1 Date of birth (d d / m m / y y y y) — **1.2 Sex** ☐ Male ☐ Female ☐ Other → **1.2.1 Currently pregnant** ☐ Yes ☐ No

1.3 Date of visit (d d / m m / y y y y) — **1.4 NDSS registrant** ☐ Yes ☐ No — **1.5 Aboriginal/Torres Strait Islander** ☐ Yes ☐ No

1.6 Initial visit ☐ Yes ☐ No — **1.7 Interpreter required** ☐ Yes ☐ No

1.8 Main language spoken at home — **1.9 DVA** ☐ Yes ☐ No

1.10 Country of birth — **1.11 Residential postcode**

Section 2. Diabetes Type & Management

2.1 Date of diagnosis (m m / y y y y) — **2.2 Type of diabetes** ☐ Type 1 ☐ Type 2 ☐ Other (Secondary causes) ☐ Don't know

2.3 Self-monitoring of glucose *(Select all that apply)*

☐ None

☐ Finger pricking → **2.3.1 Does the patient check as often as recommended?** ☐ Yes ☐ No ☐ Unsure of recommended frequency; **2.3.2 How many times a day?**

☐ Continuous Glucose Monitoring

☐ Flash Glucose Monitoring → **2.3.3 Was the sensor worn for ≥ 14 days in the last 3 months?** ☐ Yes ☐ No

***if YES*, percentage of time sensor was active** ☐ <70% ☐ ≥70%

2.4 Glycaemic Management method *(Select all that apply)*

☐ Diet only ☐ Metformin ☐ SGLT2 inhibitor ☐ GLP1/GIP agonist

☐ DPP4 inhibitor ☐ Sulphonylurea ☐ Thiazolidinedione ☐ Acarbose

☐ Insulin → **2.4.1 Insulin duration** ( ) years ( ) months

2.4.2 Insulin mode *(Select all that apply)*

☐ Basal ☐ Pre-mixed insulin ☐ CSII Automated → ☐ Hybrid closed loop system

☐ Basal bolus ☐ Pump → ☐ CSII Non-automated

Section 3. Weight & Height *(Measured in clinic or self-reported)*

3.1 Weight ( ) . ( ) kg — **3.2 Height** ( ) . ( ) m

Section 4. Blood Pressure

4.1 Blood pressure ( ) / ( ) mmHg → **4.1.1** Measured in clinic ☐ **OR** Self-reported ☐

4.2 Anti-hypertensive treatment ☐ Yes ☐ No — ***if YES*** → **4.2.1** *(Select all that apply)* ☐ ACE inhibitor ☐ Ca^{2+} channel blocker ☐ Beta blocker ☐ ARB ☐ Thiazides/Diuretics ☐ Other

Section 5. Blood Glucose Control & Renal Function *(Most recent in last 12 months)*

5.1 HbA1c Result ( ) . ( ) % **OR** ☐ Not tested — **5.1.1 HbA1c test date** (m m / y y y y)

5.2 eGFR ( ) mL/min per 1.73m^2 **OR** ☐ Not tested — **5.3 Serum creatinine** ( ) µmol/L **OR** ☐ Not tested

5.4a Urinary albumin ( ) . ( ) ☐ mg/L ☐ ratio **OR** ☐ Not tested

5.4b Urinary protein ( ) . ( ) ☐ mg/L ☐ ratio **OR** ☐ Not tested

Section 6. Medications & Lipids

	Yes	No	Contraindicated
6.1 Aspirin	☐	☐	☐
6.2 Other anti-platelets	☐	☐	☐
6.3 Anti-coagulants	☐	☐	☐
6.4 Lipid modifying Rx	☐	☐	
if YES → 6.4.1 Statin	☐	☐	☐
6.4.2 Fibrate	☐	☐	☐
6.4.3 Ezetimibe	☐	☐	☐
6.4.4 Fish oil	☐	☐	☐
6.4.5 PCSK9 inhibitor	☐	☐	☐

	Yes	No	
6.5 Lipids measured	☐	☐	
if YES → Complete below:			Not tested
6.5.1 Total Cholesterol	( ) . ( ) mmol/L		OR ☐
6.5.2 LDL	( ) . ( ) mmol/L		OR ☐
6.5.3 HDL	( ) . ( ) mmol/L		OR ☐
6.5.4 Triglycerides	( ) . ( ) mmol/L		OR ☐

PLEASE COMPLETE PAGE 2

ADCQR 2023 Data Collection Form - Page 2

17942

Australian Diabetes Clinical Quality Registry
ADCQR Clinical Data Collection Form

SITE STAFF FORM
Page 2 of 3

Patient ID | **Site ID**

Section 7. Diabetes Related Eye & Foot Complications

	Diagnosed in the last 12 months		Diagnosed previous to the last 12 months	
	Yes	No	Yes	No
7.1 Retinopathy	☐	☐	☐	☐
7.2 Treatment for retinopathy	☐	☐	☐	☐
7.3 Right or left cataract	☐	☐	☐	☐
7.4 Blindness	☐	☐	☐	☐
7.5 Peripheral neuropathy	☐	☐	☐	☐
7.6 Foot ulceration	☐	☐	☐	☐
7.7 Lower limb amputation	☐	☐	☐	☐
if YES (Select all that apply) → 7.7.1 ☐ Minor ☐ Major			7.7.2 ☐ Minor ☐ Major	

Section 8. Other Complications/Events/Comorbidities

	Diagnosed in the last 12 months		Diagnosed previous to the last 12 months	
	Yes	No	Yes	No
8.1 Cerebral stroke	☐	☐	☐	☐
8.2 Myocardial infarction	☐	☐	☐	☐
8.3 CABG/Angioplasty	☐	☐	☐	☐
8.4 Congestive cardiac failure	☐	☐	☐	☐
8.5 Peripheral vascular disease	☐	☐	☐	☐
8.6 End stage kidney disease	☐	☐	☐	☐
8.7 Sexual dysfunction	☐	☐	☐	☐
8.8 Dementia	☐	☐	☐	☐
8.9 Depression	☐	☐	☐	☐
8.10 Anxiety	☐	☐	☐	☐
8.11 Malignancy (exclude non-melanotic skin cancers)	☐	☐	☐	☐
8.12 Diabetic ketoacidosis	☐	☐	☐	☐
8.13 Hyperosmolar hyperglycaemic state	☐	☐	☐	☐
8.14 Impaired awareness of hypoglycaemia	☐	☐	☐	☐
8.15 Severe hypoglycaemia	☐	☐	☐	☐
if YES → 8.15.1 No. of episodes ☐ 1-2 ☐ 3-5 ☐ >5				

8.16 Liver disease ☐ Mild ☐ Moderate/Severe ☐ Not applicable

	Last 12 months		Previous to the last 12 months	
			Yes	No
8.17 Has the patient tested positive to COVID-19?	☐ Yes	☐ No	☐ Yes	☐ No
if YES → 8.17.1 Was the patient hospitalised?	☐ Yes	☐ No	8.17.2 ☐ Yes	☐ No

Section 9. Mental Health Screening *(if not previously diagnosed)*

9.1 Has the patient been screened for diabetes distress in the last 12 months using a validated measure? ☐ Yes ☐ No
(e.g. PAID, DDS)

9.2 Has the patient been screened for depression in the last 12 months using a validated measure? ☐ Yes ☐ No
(e.g. PHQ_9)

9.3 Has the patient been screened for anxiety in the last 12 months using a validated measure? ☐ Yes ☐ No
(e.g. GAD-7)

Please indicate whether the patient health and well-being questionnaire will be completed?

☐ **Yes** → Please complete the questionnaire on page 3.

☐ **No** → Thank you for completing the ADCQR data collection form.

ADCQR 2023 Data Collection Form - Page 3

17942

PATIENT HEALTH & WELL-BEING QUESTIONNAIRE
Australian Diabetes Clinical Quality Registry

PATIENT FORM
Page 3 of 3

Patient ID | | | | | | | | | | | | | | | **Site ID** | | | | | |

(OFFICE USE ONLY - Site staff to complete Patient ID)

Please answer all questions by marking the appropriate box **Cross box like this: X**

Section 1. Smoking & Vaccination Status

1.1 Do you currently smoke tobacco? ☐ Yes ☐ No → **1.1.1 *If NO*, did you previously smoke tobacco?** ☐ Yes ☐ No
[i.e. cigarettes/cigars/e-cigarettes(vaping)]

1.2 Have you had a COVID-19 vaccination in the last 6 months? ☐ Yes ☐ No

1.3 Have you had a flu (influenza) vaccination in the last 12 months? ☐ Yes ☐ No

1.4 Are you up to date with your pneumococcal vaccination? ☐ Yes ☐ No ☐ Unsure

Section 2. Health Professional Attendances

2.1 Have you seen an Endocrinologist in the last 12 months?	☐ Yes	☐ No
2.2 Have you seen a Diabetes Educator/Nurse Practitioner in the last 12 months?	☐ Yes	☐ No
2.3 Have you seen a Dietitian in the last 12 months?	☐ Yes	☐ No
2.4 Have you seen a Podiatrist in the last 12 months?	☐ Yes	☐ No
2.5 Have you seen an Ophthalmologist in the last 12 months?	☐ Yes	☐ No
2.6 Have you seen an Optometrist in the last 12 months?	☐ Yes	☐ No
2.7 Have you seen a Psychologist/Psychiatrist in the last 12 months?	☐ Yes	☐ No
2.8 Have you seen a Social Worker in the last 12 months?	☐ Yes	☐ No
2.9 Have you seen a Dentist in the last 12 months?	☐ Yes	☐ No
2.10 Have you seen an Exercise Physiologist/Physiotherapist in the last 12 months?	☐ Yes	☐ No
2.11 Have you needed an Ambulance for your diabetes in the last 12 months?	☐ Yes	☐ No
2.12 Have you attended the Emergency Department for your diabetes in the last 12 months?	☐ Yes	☐ No

Section 3. Medication Use

3.1 Sometimes people do not take their medications as recommended. Has this happened to you in the last 2 weeks? ☐ Yes ☐ No

3.1.1 → *If YES*, how many times? | |

Section 4. Foot Care

4.1 Have you had your feet checked by a health professional in the last 12 months? ☐ Yes ☐ No

4.2 How often do you self check your feet? ☐ Daily ☐ Weekly ☐ Monthly ☐ Rarely/Never

Section 5. Nutrition/Diet Management

5.1 Do you know what foods are best to eat?	☐ Yes	☐ No
5.2 Do you have enough time to prepare healthy meals?	☐ Yes	☐ No
5.3 Does it cost too much to eat healthy meals?	☐ Yes	☐ No
5.4 If you have type 1 diabetes - Do you find it hard to count carbs/weigh food?	☐ Yes	☐ No

Section 6. Physical Activity

6.1 How many minutes per week of moderate or vigorous intensity physical activity do you usually do?
(e.g. brisk walking, lawnmowing, swimming, or more vigorous activity such as jogging)

☐ 150 mins/week or more
☐ Less than 150 mins/week
☐ I rarely/never do moderate or vigorous physical activity

6.2 Do you do any muscle strengthening exercise in a usual week? ☐ Yes ☐ No
(e.g. lifting weights or household tasks that involve lifting, carrying or digging)

THANK YOU FOR COMPLETING THE QUESTIONNAIRE.
PLEASE RETURN TO STAFF.

APPENDIX 2

ADCQR 2023 Data Definitions

IDENTIFIERS	
Patient ID	Compulsory field. Enter identifier such as record number or use the following nomenclature: site ID, the first 2 letters of the first name, and the first 2 letters of the surname (e.g. NNNFFSS) to enable you to check your records if there is a query from the ADCQR regarding the data.
Site ID	Unique site identifier (assigned by the ADCQR Secretariat).
Staff initials (optional)	Site staff initials.
Visit conduct	Record if the consultation was conducted in person, by video or by phone.
Participant information sheet given	Mark if the patient was provided with the participant information sheet.
SECTION 1. PATIENT DEMOGRAPHICS	
Date of birth	Record the patient's date of birth as **DD/MM/YYYY.**
Sex	Mark **Male** or **Female** or **Other** to indicate the person's recorded sex at birth.
Currently pregnant	If sex is female, mark **Yes** or **No** to indicate if the patient is currently pregnant.
Date of visit	Record the date the patient attended as **DD/MM/YYYY.**
Initial visit	Mark **Yes** or **Yes** to indicate if this is an initial visit assessment at this site.
Aboriginal/Torres Strait Islander	Mark **Yes** or **No** to indicate Aboriginal/Torres Strait Islander background.
Main language spoken at home	Record the patient's main language spoken at home.
Interpreter required	Mark **Yes** or **No** to indicate if the patient requires an interpreter.
Residential postcode	Record the patient's residential postcode.
NDSS registrant	Mark **Yes** or **No** to indicate if the patient is registered on the National Diabetes Services Scheme (NDSS).
Country of birth	Record the patient's country of birth.
DVA	Mark **Yes** or **No** to indicate if the patient's medical care charges are met by the Department of Veterans' Affairs (DVA).
SECTION 2. DIABETES TYPE & MANAGEMENT	
Date of diagnosis	Record first diagnostic blood glucose estimation as **MM/YYYY**. [If date unknown other than year, record as 01/YYYY].
Type of diabetes	Mark **Type 1 or Type 2 or Other (secondary causes) or Don't know**, to indicate the clinical classification of diabetes. Please note: Female patients with a diagnosis of gestational diabetes mellitus (GDM) (not known to have established diabetes, i.e. a diagnosis of diabetes prior to pregnancy) are excluded from the Registry and should not have data collected.
Self-monitoring of glucose	Mark how blood glucose levels are self-monitored by the patient. If multiple, tick all that apply within the last 12 months. **None**: No regular blood glucose monitoring is performed. **Finger pricking**: A blood sample is obtained via a finger-prick and is analysed using testing strips and a glucometer. **Continuous Glucose Monitoring** (CGM): Subcutaneous/interstitial glucose monitoring systems that automatically provide the user (and/or carer) with real-time glucose data via a receiver or compatible phone running an application. To indicate that a patient uses CGM, this system should have been used for at least 1 month over the last 12 months. **Flash Glucose Monitoring**: A factory calibrated subcutaneous/interstitial glucose monitoring system that currently requires the user (and/or carer) to scan the attached sensor with a reader or compatible phone running an application in order to view recent glucose data. To indicate that a patient uses Flash Glucose Monitoring, this system should have been used for at least 1 month over the last 12 months.
Finger pricking - Does the patient check their blood glucose level as often as recommended?	If monitoring glucose by finger pricking, mark if the patient checks their blood glucose as often as recommended **(Yes/No/Unsure of recommended frequency).**
Finger pricking - How many times a day?	If monitoring glucose by finger pricking, indicate the number of times the patient does finger pricking per day on average.
If using Flash/CGM, time using sensors	If monitoring glucose using Flash/CGM, mark **Yes** or **No** to indicate if the patient has worn a sensor for a minimum of 14 days in the last 3 months. If Yes, mark the percentage of time the sensor was active (**<70% or ≥70%**)

Management method	If multiple, **tick all that apply**. DPP4 – dipeptidyl peptidase IV, GIP – glucose-dependent insulinotropic polypeptide, GLP1 – glucagon-like peptide 1, SGLT2 – sodium-glucose cotransporter-2. See the Living Evidence Guidelines in Diabetes for treatment recommendations and information on each drug class. These guidelines can be found on the Australian Diabetes Society website, or with the direct links below: https://www.diabetessociety.com.au/living-evidence-guidelines-in-diabetes
Insulin duration	If the patient is on insulin, record the number of years/months the patient has been on insulin.
Insulin mode	If the patient is on insulin, mark the mode of administration(s). If multiple, tick all that apply. **Basal**: Intermediate-acting or long-acting insulin injection(s). **Basal bolus**: Insulin regime that utilises any type of basal insulin as well as any type of bolus insulin. Pre-mixed insulins are excluded from this category. **Pre-mixed**: Injection of any pre-mixed combination of intermediate or long-acting insulin with either short-acting or very short-acting insulin. **Pump**: Mode of insulin delivery being via continuous subcutaneous insulin infusion. **If using a pump, mark the type of pump**: CSII Automated or CSII Non-automated **If using a CSII Automated pump**, mark if it is a hybrid closed loop system: The simultaneous and integrated use of continuous glucose monitoring and an insulin pump with a control algorithm that may increase and decrease basal insulin delivery based on real-time interstitial glucose results.
SECTION 3. WEIGHT & HEIGHT	
Weight	Record in kilograms the weight measurement without shoes or jacket. Weight may be measured in clinic or self-reported by the patient.
Height	Record in metres the height measurement without shoes. Height may be measured in clinic or self-reported by the patient.
SECTION 4. BLOOD PRESSURE	
Blood pressure	Record systolic / diastolic (mmHg) measured after **5 minutes sitting, [1st and 5th phases].** Mark the option that describes where blood pressure was measured **(In clinic/Self-reported)**
Anti-hypertensive treatment	Mark **Yes** or **No** to indicate if the patient is on treatment for hypertension.
Anti-hypertensive medications	If **Yes**, select the anti-hypertensive medication(s) the patient is currently taking. ACE – angiotensin converting enzyme, ARB – angiotensin II receptor blocker. Thiazides also include thiazide-like diuretics. If on a combination tablet, tick all that apply.
SECTION 5. BLOOD GLUCOSE CONTROL & RENAL FUNCTION	
HbA1c result	Record the most recent Haemoglobin A1c (HbA1c) result [%] in the last 12 months, or tick 'Not tested'. 'Not tested' refers to a test which has not been ordered by the patient's clinician/health practitioner in the last 12 months.
HbA1c test date	If HbA1c was measured, record the date as **MM/YYYY** for the most recent Haemoglobin A1c (HbA1c) result in the last 12 months.
eGFR	Record the result for the most recent eGFR [**mL/min per 1.73m2**] in the last 12 months, or tick 'Not tested'. If the result is reported as eGFR ≥90, record as 90. 'Not tested' refers to a test which has not been ordered by the patient's clinician/health practitioner in the last 12 months.
Serum creatinine	Record result measurement of serum creatinine [***µmol/L***] in the last 12 months, or tick 'Not tested'. 'Not tested' refers to a test which has not been ordered by the patient's clinician/health practitioner in the last 12 months.
Urinary albumin	Record amount of albumin **[mg/L] or ratio**. If the result is less than the lower limit of detection provided by the pathology service, please record the lower limit of detection. Example: If reported as <0.05 please record as 0.05. Tick 'Not tested' if a test has not been ordered by the patient's clinician/health practitioner in the last 12 months.
Urinary protein	Record amount of albumin **[mg/L] or ratio**. If the result is less than the lower limit of detection provided by the pathology service, please record the lower limit of detection. Example: If reported as <0.05 please record as 0.05. Tick 'Not tested' if a test has not been ordered by the patient's clinician/health practitioner in the last 12 months.

SECTION 6. MEDICATIONS AND LIPIDS

Aspirin	Mark **Yes** or **No** to indicate whether the patient is on aspirin. Indicate if contraindicated.
Other anti-platelets	Mark **Yes** or **No** to indicate whether the patient is on any other anti-platelet treatment (e.g. clopidogrel, ticagrelor or prasugrel). Indicate if contraindicated.
Anti-coagulants	Mark **Yes** or **No** to indicate whether the patient is on anti-coagulants (e.g. warfarin or non-vitamin K antagonist oral anticoagulants (NOAC)). Indicate if contraindicated.
Lipid modifying treatment	Mark **Yes** or **No** to indicate whether the patient is on lipid lowering treatment. If Yes, indicate whether they are on statin, fibrate, ezetimibe, fish oil, PCSK9 inhibitor. PCSK9 – proprotein convertase subtilisin/kexin type 9. Indicate if contraindicated. If on combination tablet, tick all that apply.
Lipids measured	Mark **Yes** or **No** to indicate if lipids have been measured in the last 12 months.
Total Cholesterol, LDL, HDL, Triglycerides	Record the most recent result(s) for total, LDL & HDL cholesterol and triglycerides [mmol/L] in the last 12 months or tick 'Not tested'. Recorded lipids can include fasting or non-fasting results. 'Not tested' refers to a test which has not been ordered by the patient's clinician/health practitioner.

SECTION 7. DIABETES RELATED EYE & FOOT COMPLICATIONS

Mark **Yes** or **No** to indicate diagnosis/detection of diabetes related eye and foot problems in the last 12 months **AND/OR** previously (prior to the last 12 months). Answer all questions.

Retinopathy	Mark **Yes** or **No** to indicate if the ophthalmological assessment revealed any diabetic retinopathy or maculopathy.
Treatment for retinopathy	Mark **Yes** or **No** to indicate if the patient has had any treatment for retinopathy. Includes any of the following: laser photocoagulation treatment, intravitreal VEGF inhibitor injection, or vitrectomy.
Right or left cataract	Mark **Yes** or **No** to indicate if the patient currently has a cataract or has had one removed.
Blindness	Mark **Yes** or **No** to indicate if the patient became legally blind (visual acuity <6/60) in either eye.
Peripheral neuropathy	Mark **Yes** or **No** to indicate clinical judgement following assessment using pin prick and vibration (using a Biothesiometer or tuning fork) or Monofilament. Includes the presence of both painful and non-painful neuropathy. Also includes the presence of Charcot foot.
Foot ulceration	Mark **Yes** or **No** to indicate past history of foot ulceration.
Lower limb amputation	Mark **Yes** or **No** to indicate lower limb amputation. Amputation of toe, forefoot or leg [above or below knee], not due to trauma or causes other than vascular disease.
Minor/Major Lower Limb Amputation	If the patient has had an amputation in either lower limb, indicate if minor and/or major. **Minor** = Amputation of the toe(s) or foot (below the ankle) **Major** = Amputation above the ankle.

SECTION 8. OTHER COMPLICATIONS/EVENTS/COMORBIDITIES

Mark **Yes** or **No** to indicate diagnosis/detection or event in the last 12 months **AND/OR** previously (prior to the last 12 months). Answer all questions.

Cerebral stroke	Mark **Yes** or **No** to indicate if the patient has had a diagnosis of ischaemic stroke (Does not include transient ischaemic attack or haemorrhagic stroke).
Myocardial infarction	Mark **Yes** or **No** to indicate if the patient has had a myocardial infarction evidenced by ECG changes, plasma enzyme changes or medical documentation.
CABG/Angioplasty	Mark **Yes** or **No** to indicate if the patient has had Coronary Artery Bypass Graft (CABG) surgery, coronary angioplasty or stent.
Congestive cardiac failure	Mark **Yes** or **No** to indicate if the patient has symptomatic congestive cardiac failure with response to specific therapy.
Peripheral vascular disease	Mark **Yes** or **No** to indicate if the patient has peripheral vascular disease. Yes: Absence of both dorsalis pedis and posterior tibial pulses in either foot and/or symptoms of peripheral vascular disease (e.g. intermittent claudication, rest pain, tissue loss/gangrene) and/or Ankle-Brachial Pressure Index <0.9 and/or confirmatory arterial ultrasound or angiography and/or previous revascularisation procedure (incl. angioplasty, stent insertion or surgical bypass).
End stage kidney disease	Mark **Yes** or **No** to indicate if the patient has any of the following: stage 5 chronic kidney disease (eGFR <15mL/min/1.73m2) and/or dialysis-dependent (haemodialysis or peritoneal dialysis) and/or renal transplant recipient.
Sexual dysfunction	Mark **Yes** or **No** to indicate if the patient has/had experienced any of the following: If male: History or treatment of failure to achieve or maintain erection sufficient for satisfactory sexual intercourse. If female: History of persistent and recurrent problems with sexual response, desire, orgasm or pain that cause distress or relationship strain associated with diabetes.
Dementia	Mark **Yes** or **No** to indicate if the patient has had a formal diagnosis of dementia from a clinician or prescribed dementia-specific pharmacotherapy.
Depression	Mark **Yes** or **No** to indicate if the patient has had a formal diagnosis of depression from a clinician or prescribed pharmacotherapy for depression.
Anxiety	Mark **Yes** or **No** to indicate if the patient has had a formal diagnosis of anxiety from a clinician or prescribed pharmacotherapy for anxiety.
Malignancy	Mark **Yes** or **No** to indicate if the patient has had any type of malignancy. Exclude non-melanoma skin cancers.

Diabetic Ketoacidosis (DKA)	Mark **Yes** or **No** to indicate if the patient has had any hospital admission involving diabetic ketoacidosis as evidenced by blood results (glucose, ketones, pH) or medical documentation.
Hyperosmolar Hyperglycaemic State (HHS)	Mark **Yes** or **No** to indicate if the patient has had any hospital admission involving hyperosmolar hyperglycaemic state as evidenced by blood results (glucose, osmolality) or medical documentation.
Impaired awareness of hypoglycaemia	Mark **Yes** or **No** to indicate if the patient has had any of the following: Mark **Yes** or **No** to indicate if the patient has had any of the following: - Reduced ability to perceive the onset of hypoglycaemia. Includes: - Reduced symptoms of hypoglycaemia - Lower recognition of those symptoms, e.g. through diminished severity of symptoms or because those symptoms are occurring at a lower glucose level than previously - Change in symptom type, whereby the patient does not 'recognise' the new symptom as being related to hypoglycaemia onset
Severe hypoglycaemia	Mark **Yes** or **No** to indicate severe hypoglycaemia requiring assistance of another person to actively administer carbohydrates, glucagon, or other corrective actions.
Number of episodes	If **Yes** to 'Severe hypoglycaemia', mark the number of episodes (**1-2, 3-5 or >5**).
Liver disease	Indicate severity of liver disease or if not applicable. **Mild**: cirrhosis without portal hypertension, chronic hepatitis. **Moderate to severe**: cirrhosis with portal hypertension.
COVID-19 positive	Mark **Yes** or **No** to indicate if the patient has tested positive to COVID-19 confirmed by a positive Rapid Antigen Test (RAT) or Polymerase Chain Reaction (PCR) test in the last 12 months **AND/OR** previously (prior to the last 12 months).
COVID-19 hospitalisation	If Yes to 'COVID-19', mark **Yes** or **No** to indicate if the patient was admitted to hospital. Any hospital admission, including to a general medical ward or intensive care unit (ICU).
SECTION 9. MENTAL HEALTH SCREENING	
Diabetes distress	Mark **Yes** or **No** to indicate if the patient has been screened for diabetes distress using a validated questionnaire/measure in the last 12 months. Example: Problem Areas In Diabetes questionnaire (PAID) screening tool, Diabetes Distress Scale (DDS).
Depression	Mark **Yes** or **No** to indicate if the patient has been screened for depression using a validated questionnaire/measure in the last 12 months. Example: Patient Health Questionnaire (PHQ-9) screening tool. This only applies to patients who have NOT had a formal diagnosis of depression from a clinician or prescribed pharmacotherapy for depression in the last 12 months.
Anxiety	Mark **Yes** or **No** to indicate if the patient has been screened for anxiety using a validated questionnaire/measure in the last 12 months. Example: Generalized Anxiety Disorder scale (GAD- 7) screening tool. This only applies to patients who have NOT had a formal diagnosis of anxiety from a clinician or prescribed pharmacotherapy for anxiety in the last 12 months.

PATIENT HEALTH & WELL-BEING QUESTIONNAIRE

SECTION 1. SMOKING & VACCINATION STATUS	
Currently smoke tobacco	Mark if the patient currently smokes any tobacco material (**Yes/No**). [i.e. cigarettes/cigars/e-cigarettes(vaping)]
Previously smoked tobacco	If No to 'Currently smoke tobacco', mark if the patient previously smoked any tobacco material (**Yes/No**).
COVID-19 vaccination	Mark if the patient had a COVID-19 vaccination in the last 6 months (**Yes/No**).
Flu/Influenza vaccination	Mark if the patient had a flu (influenza) vaccination in the last 12 months (**Yes/No**).
Pneumococcal vaccination	Mark if the patient is up-to-date with their pneumococcal vaccination (**Yes/No/Unsure**).
SECTION 2. HEALTH PROFESSIONAL ATTENDANCES	
Endocrinologist	Mark if the patient attended an Endocrinologist in the last 12 months (**Yes/No**).
Diabetes Educator/Nurse Practitioner	Mark if the patient attended a Diabetes Educator/Nurse Practitioner in the last 12 months (**Yes/No**).
Dietitian	Mark if the patient attended a Dietician in the last 12 months (**Yes/No**).
Podiatrist	Mark if the patient attended a Podiatrist in the last 12 months (**Yes/No**).
Ophthalmologist	Mark if the patient attended an Ophthalmologist in the last 12 months (**Yes/No**).
Optometrist	Mark if the patient attended an Optometrist in the last 12 months (**Yes/No**).
Psychologist/Psychiatrist	Mark if the patient attended a Psychologist/Psychiatrist in the last 12 months (**Yes/No**).
Social Worker	Mark if the patient attended a Social Worker in the last 12 months (**Yes/No**).
Dentist	Mark if the patient attended a Dentist in the last 12 months (**Yes/No**).
Exercise Physiologist/ Physiotherapist	Mark if the patient attended an Exercise Physiologist/Physiotherapist in the last 12 months (**Yes/No**).
Ambulance	Mark if the patient needed an Ambulance for their diabetes in the last 12 months (**Yes/No**).
Emergency Department	Mark if the patient attended an Emergency Department for their diabetes in the last 12 months (**Yes/No**).
SECTION 3. MEDICATION USE	
Medication use practices	Mark if the patient has not taken their medications as recommended in the last 2 weeks (**Yes/No**). If **Yes**, indicate the number of times.
SECTION 4. FOOT CARE	
Feet Checked	Mark if the patient has had their feet checked by a professional (e.g. doctor, nurse, podiatrist) in the last 12 months (**Yes/No**).
Self-check of feet	Mark the option that best describes how often the patient self-checks their feet (**Daily, Weekly, Monthly, Rarely/never**).
SECTION 5. NUTRITION/DIET MANAGEMENT	
Do you know what foods are best to eat?	Mark if the patient has enough knowledge about what foods and how much are best to eat (**Yes/No**).
Do you have enough time to prepare healthy meals?	Mark if the patient has enough time to prepare healthy meals (**Yes/No**).
Does it cost too much to eat healthy meals?	Mark if the patient feels it costs too much to eat healthy meals (**Yes/No**).
If you have Type 1 diabetes, do you find it hard to count carbs/ weigh food?	If the patient has type 1 diabetes, mark if the patient finds it hard to count carbs and/or weigh food (**Yes/No**).
SECTION 6. PHYSICAL ACTIVITY	
Physical activity	Mark the usual weekly duration of time (**150 mins/week or more, less than 150 mins/week, or rarely/never**) spent performing moderate or vigorous intensity physical activity. Physical activity is calculated in '**total minutes per week**' by summing the total minutes of walking, moderate and/or vigorous physical activity in a usual 7-day period. Vigorous physical activity is weighted by a factor of two to account for its greater intensity. Intensity of physical activity is defined by The National Physical Activity Guidelines for Australians: **Moderate** physical activity causes a slight but noticeable increase in breathing and heart rate, the person can comfortably talk but not sing. **Vigorous** physical activity causes the person to 'huff and puff,' talking in full sentences between breaths is difficult.
Muscle strengthening exercise	Mark whether the patient does any muscle strengthening exercise in a usual week. (**Yes/No**). Muscle strengthening activities are physical activities that maintain or improve the strength, power, endurance and size of skeletal muscles. This can be physical activity with free weights, body weight or resistance machines/bands, or house/garden activities that involve muscular effort, such as, lifting, carrying or digging.

APPENDIX 3

ADCQR 2023 Participating Sites

NAME
Albury Wodonga Health
Alfred Health
Bankstown-Lidcombe Hospital Diabetes Centre
Bendigo Health
Canberra Hospital
Dr Harry Grunstein
Endocrinology East
Gateway Health, Wangaratta
Gateway Health, Wodonga
Goulburn Valley Health
GP Plus Noarlunga
Kyabram District Health Service
Liverpool Diabetes and Endocrine Service
Monash Health, Clayton
Monash Health, Dandenong
NCN Health, Numurkah
NCN Health, Cobram
North West Diabetes Centre/ North West Regional Hospital
Northeast Health Wangaratta
Northern Health
Royal Melbourne Hospital
St Vincent's Hospital Melbourne
Timothy Davis - Private Practice, Applecross
Western Health
Whitsunday Doctors Service

ANNUAL REPORT 2023

MONASH University

ads Australian Diabetes Society

nadc National Association of Diabetes Centres