

REGIONAL LOCAL HEALTH NETWORKS

Protocol (clinical)

Title: Insulin Titration Service – Stabilisation of diabetes in the community setting

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LC LHN Safety Quality & Clinical Effectiveness Council Governance Committee on: 20/10/2021

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Summary	This protocol outlines responsibilities and actions required by specialist physicians, general practitioners, endocrinologist and credentialed diabetes educators to ensure the safety and quality of client care.
Policy/procedure reference	This protocol supports the Controlled Substances Act 1984, SA Health Directive: High Risk Medicines Management, SA Health Directive: Clients' Own Medications
Keywords	Clinical, Protocol, Nursing, Midwifery, Safety, Blood Glucose, Insulin, Injectables, Injections, Dose Adjustment, Titration, Communication, Consumer Participation, Standards.
Document history	<p>Is this a new LHN protocol? N</p> <p>Does this protocol <i>amend or update</i> an existing protocol? Y</p> <p><i>Insulin Titration Service – Stabilisation of diabetes in the community setting, 2016 – A980551]</i></p> <p>Does this protocol <i>replace</i> an existing document? N</p>
Applies to	This protocol applies to specialist physicians, general practitioners, endocrinologist and credentialed diabetes educators
Objective file number	2019-13020

Version control and change history

Version	Date	Amendment	Amended by:
1.0	Nov 2016	Original version	Collette Hooper
2.0	Nov 2021	RACGP Revised Guidelines	Collette Hooper

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1. Purpose and scope of use

The clinical protocol supports clinical decision making by describing the best practice evidence-based process for the management and titration of insulin in adults with type 1 diabetes, type 2 diabetes and gestational diabetes mellitus (GDM) in the community setting.

The protocol will assist specialist physicians, general practitioners, endocrinologist, credentialled diabetes educators and diabetes educators to determine appropriate health care for the management of clients using insulin. The protocol also provides approved medication records for the ongoing clinical and educational services provided by the regional Local Health Network (LHN) Diabetes Service.

The client's doctor and consulting credentialled diabetes educator will be responsible for:

- > explaining management and titration of insulin
- > prescribing alternative therapy or arrangements if the LHN Insulin Titration Service is contraindicated.

The management and titration of insulin in children and those clients using continuous subcutaneous insulin infusion (insulin pump) is not addressed in this protocol and specialist consultation is required.

This protocol is not a complete or definitive resource but is designed to be used in conjunction with SA Health and SA Government regulatory documents regarding the scope of practice, competencies and professional development frameworks.

1.1 Insulin therapy

The objectives of insulin therapy are to:

- > replace absent insulin secretion in type 1 diabetes and supplement insulin production in type 2 diabetes and gestational diabetes mellitus (GDM)
- > minimise episodes of hypoglycaemia and their severity
- > approximate physiological insulin requirements
- > maintain or improve quality of life and reduce progression and effects of long term complications by achieving appropriate metabolic control
- > continue diet and activity management to maximise the effect of the insulin.

Insulin therapy guidelines used to support this protocol are the [Australasian Paediatric Endocrine Group](#), [Royal Australian College of General Practitioners](#), and the [Australian Diabetes In Pregnancy Society](#) available for type 1 diabetes, type 2 diabetes and diabetes in pregnancy (pre-existing diabetes and GDM).

Glucose monitoring utilises a capillary blood glucose (BG) sample via finger prick or sensor glucose (SG) sample via a continuous or flash monitoring device. Glucose targets need to be individualised and are dependent on health status. Treatment should be intensified if glucose targets are not met.

Special care needs to be taken in some people (e.g. older people, those with comorbidities including renal and/or heart disease, those with hypoglycaemia unawareness, those who are living in aged care facilities) due to the risk of adverse events such as severe hypoglycaemia and consequent trauma. In these situations, glucose targets (and HbA1c) are generally set at a higher range.

1.2 Management of insulin and titration in the community setting

The management of insulin in the community setting is an intensive process of concurrent assessment, insulin initiation, insulin adjustment, education and skills development. Australian Diabetes Educator Association (ADEA) Credentialled Diabetes Educators (CDE) integrate diabetes self-management education with clinical assessment as part of a therapeutic intervention to promote physical, social and psychological wellbeing.

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CDEs work with individual clients and their families to encourage them to take an active part in the management of their condition, including an understanding of insulin action and the subsequent need to self-adjust their insulin requirements as needed. CDEs work closely with specialist physicians, general practitioners and endocrinologists to support the best outcome for each person with diabetes.

The role of the CDE in the education and titration of insulin requires;

- > completion of a thorough clinical assessment (e.g. Diabetes Assessment Form (MR-DAF) and Diabetes in Pregnancy Assessment Form (MR-DIP)
- > provision of diabetes self-management education and evaluation of knowledge and skills
- > provision of planned individualised initiation and adjustment according to medical referral for insulin therapy
- > provision of instruction on blood glucose (BG) and where applicable, sensor glucose (SG) targets
- > provision of instruction on blood ketone targets and timing (in type 1 diabetes and if instructed in type 2 diabetes due to significant insulin deficiency and/or SGLT2 inhibitor use)
- > review of and/or provision of a sick day action plan and hypo action plan
- > ensuring correct self glucose monitoring technique/s and quality control/calibration
- > ensuring correct ketone monitoring technique/s and quality control/calibration (if applicable)
- > ensuring correct insulin administration technique and quality control
- > minimising the risk of hypoglycaemia, hyperglycaemia, diabetic ketoacidosis (in type 1 diabetes) and hyperglycaemic hyperosmolar state (in type 2 diabetes)
- > minimising the risk of emergency presentation and hospital admission
- > ensure appropriate documentation using the Authorisation to titrate insulin (MR-ATID). Form to be ordered from SA Health Procurement.

Role of the credentialled diabetes educator

CDEs who offer an insulin titration service should observe the following guidelines:

- > must practice within a defined multidisciplinary team (e.g. specialist physician, general practitioner, endocrinologist and dietitian)
- > must discuss appropriate 'out of hours' access for client support (e.g. 24 hour medical access)
- > must have written Authorisation to titrate (MR-ATID) order from the prescriber to titrate prescribed insulin
- > must be fully conversant with the practice of insulin titration and if they don't have specific training and experience should not undertake this task until appropriate professional development is sought
- > must identify the client, the situation, the clinical background and assess the compliance with diabetes management, summarise the assessment, the discussion and what was recommended using the ISBAR mnemonic, in the client's case notes
- > must communicate medication changes to the prescriber during the adjustment phase and notify them of the outcome as soon as possible after completion
- > must discuss any diversion from the authorisation to titrate (MR-ATID) order with the prescriber (e.g. initial dose or dose adjustment increment).

1.3 Precautions to be taken when adjusting insulin

A CDE has a duty of care to act professionally within the appropriate guidelines and within the limitations of his/her knowledge, experience and scope of practice. Before titrating insulin dose, the CDE should assess the clients:

- > level of support at home
- > level of activity (e.g. mobility increasing/decreasing)
- > eating patterns (e.g. carbohydrate type and load, appetite waning/returning)
- > glucose monitoring technique/s and consumables used (e.g. meter/monitor, test strips, technology, limitations)
- > glucose monitoring target/s and pattern/s
- > blood ketone monitoring (in type 1 diabetes and if instructed in type 2 diabetes due to significant insulin deficiency and/or SGLT2 use)
- > current medications (oral hypoglycaemic agents, other medications (prescribed and non-prescribed)
- > insulin injection technique and consumables used (e.g. device, needle length)
- > insulin:carbohydrate ratio/s, insulin sensitivity factor/s and correctional doses used
- > recent changes to the dose of diabetes medications (e.g. oral hypoglycaemic agents and/or insulin)
- > other factors that influence insulin response (e.g. intercurrent illness, infection, state of the injection site)
- > risk of hypoglycaemia (e.g. hypoglycaemia unawareness, severe hypoglycaemia)
- > risk of hyperglycaemia (e.g. development of diabetic ketoacidosis (in type 1 diabetes) and hyperosmolar hyperglycaemic state (in type 2 diabetes).

Contraindications

People with diabetes deemed inappropriate for the titration and stabilisation service include those with:

- > impaired communication
- > limited language skills
- > altered level of consciousness (e.g. confusion, poor historian).

If the Insulin Titration Service is contraindicated, it is the responsibility of the referring doctor to prescribe alternative therapy or arrangements.

1.4 Referral process

There are two pathways for a specialist physician, general practitioner or endocrinologist to refer to a regional LHN Insulin Titration Service.

The first is a direct referral whereby the specialist physician, general practitioner or endocrinologist uses the Authorisation to titrate insulin (MR-ATID) order along with the accepted referral form. This referral can also be part of an inpatient discharge plan. A CDE can provide a titration service on receipt of both the referral and the signed authorisation to titrate insulin order (MR-ATID).

The second pathway can be triggered by a CDE as part of the insulin education assessment process. Following referral, the client can be assessed for suitability for the insulin titration service. If the client provides consent, the CDE can forward the authorisation to titrate insulin (MR-ATID) order to the referring specialist physician, general practitioner or endocrinologist for consideration. As above, a CDE can then provide a titration service on receipt of the signed Authorisation to titrate insulin (MR-ATID) order.

1.5 Procedure

Before any titration of insulin, appropriate authorisation **MUST BE** completed and signed by the referring specialist physician, general practitioner or endocrinologist.

Approved document for use

- > Authorisation to titrate insulin (MR-ATID) order.

The authorisation is only valid for the period of time indicated on the Authorisation to titrate insulin (MR-ATID) order. A review date must be documented.

Client education

Before the commencement or titration of insulin, the client must be assessed regarding knowledge and skills of insulin self-administration and glucose monitoring. Refer to the Insulin Education factsheets and the ADEA Checklist for Education of Initiation of Injectable Therapies.

Client assessment

Before titration of insulin dose(s) the CDE will ascertain:

- > the glucose patterns over the preceding week
- > whether carbohydrate intake has changed (e.g. diminished/increased or delayed, alcohol intake or any nausea or vomiting)
- > level of blood ketone (in type 1 diabetes and if instructed in type 2 diabetes)
- > whether usual physical activity levels have changed
- > has there been a missed insulin dose, a mistaken increase or reduced dose or adjustment
- > if there are problems with injecting technique/sites (e.g. lipohypertrophy)
- > whether the client is tolerating/taking other oral hypoglycaemic medications and/or incretins
- > other prescribed medications directly impacting glucose levels (e.g. corticosteroids)
- > other issues (e.g. gastroparesis, over the counter medicines or illicit drugs, stress, anxiety, pregnancy, menses)
- > if an illness or infection is present (refer immediately to prescriber).

Guidelines for initiating and titrating basal (background) insulin

Reference to the guidelines is recommended when determining individualised glucose targets. Care needs to be taken in some people (e.g. older people, those with comorbidities including renal and/or heart disease, those with hypoglycaemia unawareness, those who are living in aged care facilities) due to risk of adverse events such as severe hypoglycaemia and consequent trauma. In these situations, glucose targets (and HbA1c) are generally set at a higher range.

The referring endocrinologist, specialist physician or general practitioner will adjust the insulin schedule accordingly.

Adjust the dose either weekly or twice weekly to reach the target fasting glucose, using the schedule below.

Table 1: Starting and adjusting basal (background) insulin

<p>Step 1</p>	<p>INITIATE</p> <p>Type 1 diabetes – commence 0.5 to 1.0 units/kg basal insulin nocte. Higher doses are needed in clients with mild - moderate ketones. Discuss with endocrinologist or medical specialist.</p> <p>Type 2 diabetes – commence 10 units basal insulin nocte. Morning insulin dosing if fasting glucose is on target but pre evening meal is high. Initially continue diabetes medications. Consider tapering sulphonylurea as glycaemic control improves.</p> <p>Gestational Diabetes Mellitus - commence 4 units basal OR intermediate insulin nocte. Discuss with endocrinologist or medical specialist.</p>														
<p>Step 2</p>	<p>ADJUST basal insulin weekly OR twice weekly using fasting glucose for nocte insulin or pre evening meal glucose for morning dose. Baseline algorithm below.</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Mean fasting glucose (mmol/L)* <i>Pre evening meal glucose for morning dose (over previous two days)</i></th> <th style="text-align: center;">Adjustment to insulin dose#</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">equal to or greater than 10.0</td> <td>Increase by 4 units</td> </tr> <tr> <td style="text-align: center;">8.0 – 9.9</td> <td>Increase by 2 – 4 units</td> </tr> <tr> <td style="text-align: center;">7.0 – 7.9</td> <td>No change or increase by 2 units</td> </tr> <tr> <td style="text-align: center;">6.0 – 6.9</td> <td>No change</td> </tr> <tr> <td style="text-align: center;">4.0 – 5.9</td> <td>No change or decrease by 2 units</td> </tr> <tr> <td style="text-align: center;">less than 4.0</td> <td>Decrease by 2 – 4 units</td> </tr> </tbody> </table> <p><small>* Do not increase insulin dose if fasting glucose <4.0mmol/L at any time in the preceding week # Prescriber may adjust algorithm for high risk clients or those with long standing diabetes. Consider splitting basal OR intermediate insulin dose if fasting and evening glucose are not in target.</small></p>	Mean fasting glucose (mmol/L)* <i>Pre evening meal glucose for morning dose (over previous two days)</i>	Adjustment to insulin dose#	equal to or greater than 10.0	Increase by 4 units	8.0 – 9.9	Increase by 2 – 4 units	7.0 – 7.9	No change or increase by 2 units	6.0 – 6.9	No change	4.0 – 5.9	No change or decrease by 2 units	less than 4.0	Decrease by 2 – 4 units
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<p>Step 3</p>	<p>CHECK overall glucose control by measuring HbA1c 3-6 monthly.</p>														
<p>Step 4</p>	<p>If fasting and evening glucose are on target but HbA1c is not, investigate causes of hyperglycaemia. Options to correct hyperglycaemia include:</p> <ul style="list-style-type: none"> > review glucose monitoring technique/s (e.g. hand washing) > change preceding meal size or carbohydrate composition > increase activity after meals > review insulin administration technique and timing > commence additional oral diabetes medications (<i>if type 2 diabetes</i>) > add meal-time rapid acting insulin (<i>if type 2 diabetes or GDM</i>). 														

Guidelines for initiating and titrating bolus (pre meal) insulin

Reference to the guidelines is recommended when determining individualised glucose targets. Special care needs to be taken in some people (e.g. older people, those with comorbidities including renal and/or heart disease, those with hypoglycaemia unawareness, those who are living in aged care facilities) due to the risk of adverse events such as severe hypoglycaemia and consequent trauma. In these situations, glucose targets (and HbA1c) are generally set at a higher range.

The referring endocrinologist, specialist physician or general practitioner or will adjust the insulin schedule accordingly.

Adjust the dose either weekly or twice weekly, to reach the target glucose post prandial or before the next main meal, using the schedule below.

Table 2: Starting and adjusting bolus (pre meal) insulin

<p>Step 1</p>	<p>INITIATE</p> <p>Type 1 diabetes – commence 4 units rapid acting insulin before meal/s. Monitor glucose pre next meal and/or 2 hour post prandial as directed. Continue basal insulin at the current dose. Discuss with endocrinologist or medical specialist.</p> <p>Type 2 diabetes – commence 4 units rapid acting insulin before meal/s. Monitor glucose pre meal and/or 2 hour post prandial as directed. Continue basal insulin at the current dose. Initially continue all oral diabetes medications. Consider tapering sulphonylurea as glycaemic control improves.</p> <p>Gestational Diabetes Mellitus – commence 4 units rapid acting insulin before meal/s. Monitor 2 hour post prandial glucose level as per ADIPS recommendations. Discuss with endocrinologist or medical specialist. Continue basal insulin at the current dose.</p>										
<p>Step 2</p>	<p>ADJUST bolus (pre meal) rapid acting insulin every week or twice weekly according to medical order and pre/post meal glucose target. Baseline algorithm below.</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; border-bottom: 1px solid black;">Two hour post prandial glucose (mmol/L) (three consecutive days)</th> <th style="text-align: center; border-bottom: 1px solid black;">Adjustment to insulin dose[#]</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">equal to or greater than 8.0</td> <td style="text-align: center;">No change or increase by 2 units</td> </tr> <tr> <td style="text-align: center;">6.0 – 7.9</td> <td style="text-align: center;">No change</td> </tr> <tr> <td style="text-align: center;">4.0 – 5.9</td> <td style="text-align: center;">No change or decrease by 2 units</td> </tr> <tr> <td style="text-align: center;">less than 4.0 on any day</td> <td style="text-align: center;">Decrease by 2-4 units</td> </tr> </tbody> </table> <p><small>[#] Prescriber may adjust algorithm for high risk clients or those with long standing diabetes.</small></p>	Two hour post prandial glucose (mmol/L) (three consecutive days)	Adjustment to insulin dose [#]	equal to or greater than 8.0	No change or increase by 2 units	6.0 – 7.9	No change	4.0 – 5.9	No change or decrease by 2 units	less than 4.0 on any day	Decrease by 2-4 units
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<p>Step 4</p>	<p>If fasting and evening glucose are on target but HbA1c is not, investigate causes of hyperglycaemia. Options to correct hyperglycaemia include:</p> <ul style="list-style-type: none"> > review glucose monitoring technique/s (e.g. hand washing) > change preceding meal size or carbohydrate composition > increase activity after meals > review insulin administration technique and timing (e.g. 15 minutes prior to meal) > commence additional oral diabetes medication/s (if type 2 diabetes) > add another meal-time rapid acting insulin (if type 2 diabetes or GDM) > adjust basal insulin. 										

Guidelines for initiating and titrating premixed (biphasic) insulin or co-formulation insulin

Reference to the guidelines is recommended when determining individualised glucose targets. Special care needs to be taken in some people (e.g. older people, those with comorbidities including renal and/or heart disease, those with hypoglycaemia unawareness, those who are living in aged care facilities) due to risk of adverse events such as severe hypoglycaemia and consequent trauma. In these situations, glucose targets (and HbA1c) are generally set at a higher range.

The referring endocrinologist, specialist physician or general practitioner will adjust the insulin schedule accordingly.

Adjust the dose either weekly or twice weekly, to reach the target fasting glucose, using the schedule below.

Table 3: Starting and adjusting premixed and co-formulation insulin

<p>Step 1</p>	<p>INITIATE</p> <p>Type 1 diabetes - discuss with diabetes specialist.</p> <p>Type 2 diabetes – Premixed insulin – commence 10 units before the evening meal if morning glucose is high. If evening glucose is high, commence 10 units with breakfast. If both morning and pre-evening meal glucose levels are high and the client is on one daily dose, consider twice daily dose.</p> <p>Type 2 diabetes – Co-formulation insulin - commence 10 units with the largest carbohydrate meal. Initially continue all oral diabetes medications in both pre-mixed and co-formulation insulins. Consider tapering sulphonylurea as glycaemic control improves.</p> <p>Gestational Diabetes Mellitus - discuss with endocrinologist or medical specialist.</p>																								
<p>Step 2</p>	<p>ADJUST the evening premixed insulin weekly or twice weekly OR the evening co-formulation insulin weekly and both according to medical order and fasting glucose target. Baseline algorithm below.</p> <table border="0" data-bbox="268 860 1166 1077"> <tr> <td style="text-align: center;">Lowest glucose (mmol/L) fasting or preprandial <i>(previous three days)</i></td> <td style="text-align: center;">Adjustment to insulin dose[#]</td> </tr> <tr> <td style="text-align: center;">equal to or greater than 10.0</td> <td style="text-align: center;">Increase by 6 units</td> </tr> <tr> <td style="text-align: center;">8.0 – 9.9</td> <td style="text-align: center;">Increase by 4 units</td> </tr> <tr> <td style="text-align: center;">6.0 – 7.9</td> <td style="text-align: center;">Increase by 2 units</td> </tr> <tr> <td style="text-align: center;">4.0 – 5.9</td> <td style="text-align: center;">No change</td> </tr> <tr> <td style="text-align: center;">Less than 4.0</td> <td style="text-align: center;">Decrease by 2 units</td> </tr> </table> <p><i># Prescriber may adjust algorithm for high risk clients or those with long standing diabetes</i></p> <p>ADJUST the morning premixed insulin weekly or twice weekly OR the morning co-formulation insulin weekly and both according to medical order and evening glucose target. Baseline algorithm below.</p> <table border="0" data-bbox="268 1272 1166 1489"> <tr> <td style="text-align: center;">Lowest glucose (mmol/L) evening or preprandial</td> <td style="text-align: center;">Adjustment to insulin dose[#]</td> </tr> <tr> <td style="text-align: center;">equal to or greater than 10.0</td> <td style="text-align: center;">Increase by 6 units</td> </tr> <tr> <td style="text-align: center;">8.0 – 9.9</td> <td style="text-align: center;">Increase by 4 units</td> </tr> <tr> <td style="text-align: center;">6.0 – 7.9</td> <td style="text-align: center;">Increase by 2 units</td> </tr> <tr> <td style="text-align: center;">4.0 – 5.9</td> <td style="text-align: center;">No change</td> </tr> <tr> <td style="text-align: center;">Less than 4.0</td> <td style="text-align: center;">Decrease by 2 units</td> </tr> </table> <p><i># Prescriber may adjust algorithm for high risk clients or those with long standing diabetes.</i></p>	Lowest glucose (mmol/L) fasting or preprandial <i>(previous three days)</i>	Adjustment to insulin dose[#]	equal to or greater than 10.0	Increase by 6 units	8.0 – 9.9	Increase by 4 units	6.0 – 7.9	Increase by 2 units	4.0 – 5.9	No change	Less than 4.0	Decrease by 2 units	Lowest glucose (mmol/L) evening or preprandial	Adjustment to insulin dose[#]	equal to or greater than 10.0	Increase by 6 units	8.0 – 9.9	Increase by 4 units	6.0 – 7.9	Increase by 2 units	4.0 – 5.9	No change	Less than 4.0	Decrease by 2 units
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1.6 Documentation

Comprehensive and complete documentation should be undertaken after each contact with the person with diabetes.

CDE documentation in the medical record should include:

- > glucose measurements for the week preceding (Blood/sensor glucose & insulin titration record form)
- > blood ketone measurement (*if type 1 diabetes and if instructed in type 2 diabetes due to significant insulin deficiency and/or SGLT2 use*)
- > any information from the person with diabetes that may have affected glucose levels
- > the insulin dose adjustment advice offered to the person with diabetes and the rationale.

1.7 Reporting to the prescriber

Communication to the prescribing endocrinologist, specialist physician or general practitioner must be provided at the end of the timeframe indicated on the authorisation or at any time during the titration period where the CDE has identified an issue or concern.

This report should include:

- > current fasting and relevant pre-prandial glucose
- > current insulin dose
- > any difficulties or issues that have arisen that may contribute to problems in stabilisation.

Any communication with the prescriber is to be recorded in the medical record by the CDE.

In the circumstances that the prescriber is an endocrinologist, it is the responsibility of the endocrinologist to communicate the treatment plan including the use of the Authorisation to titrate insulin (MR-ATID) order to the specialist physician or general practitioner. All subsequent communications by the CDE are to be provided to both the prescribing endocrinologist and the general practitioner.

1.8 Evaluation

Evaluation will focus on:

- > appropriate timing and effectiveness of communication between referring endocrinologist, specialist physician or general practitioner
- > improved health status of the person with diabetes
- > person with diabetes, endocrinologist, specialist physician or general practitioner, dietitian, CDE and DE satisfaction.

2. Attached documents

ADEA Checklist for education of initiation of injectable therapies
Blood/sensor glucose and insulin titration record form
Authorisation to titrate insulin dose (MR-ATID) page 1 example
<p>Insulin education fact sheets:</p> <ul style="list-style-type: none"> > Starting insulin in type 2 diabetes > Insulin in type 1 diabetes – Basal bolus > Insulin pump therapy

3. References

Colagiuri S, Dickinson S, Girgis S, Colagiuri R (2009). <i>National Evidence Based Guideline for Blood Glucose Control in Type 2 diabetes</i>. Diabetes Australia and the NHMRC, Canberra.
Craig ME, Twigg SM, Donaghue KC, Cheung NW, Cameron FJ, Conn J, Jenkins AJ, Silink M (2011). National evidence-based clinical care guidelines for type 1 diabetes in children, adolescents and adults . Australian Government Department.
Nankervis A, McIntyre HD, Moses R, Ross GP, Callaway L, Porter C, Jeffries W, Boorman C, De Vries B, McElduff A (2014) ADIPS Consensus Guidelines for the Testing and Diagnosis of Hyperglycaemia in Pregnancy in Australia and New Zealand . Australasian Diabetes in Pregnancy Society, Sydney.
NPS: Better choices, Better health. Competencies required to prescribe medicines: putting quality use of medicines into practice . Sydney. National Prescribing Service Limited, 2012.
National Diabetes Services Scheme & Diabetes Australia (2016). Diabetes management in aged care: A practical handbook . RACGP, East Melbourne.
The Royal Australian College of General Practitioners (2020). Management of type 2 diabetes: A handbook for general practice . RACGP, East Melbourne.
The Diabetes Control and Complications Trial Research Group (1993). The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus . N Engl J Med; 329:977-986.

4. Accreditation standards

National Safety and Quality Health Service Standards (2nd edition)

1 <input checked="" type="checkbox"/>	2 <input checked="" type="checkbox"/>	3 <input type="checkbox"/>	4 <input checked="" type="checkbox"/>	5 <input checked="" type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input checked="" type="checkbox"/>
Clinical Governance	Partnering with Consumers	Preventing & Controlling Healthcare Associated Infection	Medication Safety	Comprehensive Care	Communicating for Safety	Blood Management	Recognising & Responding to Acute Deterioration

Aged Care Quality Standards (includes home care clients)

1 <input type="checkbox"/>	2 <input checked="" type="checkbox"/>	3 <input checked="" type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>
Consumer Dignity & Choice	Ongoing Assessment & Planning with Consumers	Personal Care & Clinical Care	Services & Supports for Daily Living	Organisation's Service Environment	Feedback & Complaints	Human Resources	Organisational Governance

National Disability Insurance Scheme (NDIS) Practice Standards

CORE MODULE				SUPPLEMENTARY MODULES	
1	2	3	4	1	2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rights and Responsibilities	Governance and Operational Management	Provision of Supports (to participants)	Provision of Supports (environment)	High Intensity Daily Personal Activities Module	Early Childhood Supports Module

5. Consultation

Version	Consultation
1.0	SA Health Metropolitan Diabetes Services, NP-Diabetes - Mt Gambier, CHSA Diabetes Specialist Nurse Network, CHSA Clinical Pharmacists, CHSA Director of Endocrinology, CHSA Drug & Therapeutics Committee
2.0	SA Health Metropolitan Diabetes Services, Regional LHN Executive Directors of Medical Services, Executive Directors of Nursing & Midwifery Services, NP-Diabetes - Mt Gambier, Regional Diabetes Specialist Nurse Network, Regional LHN Clinical Pharmacists, Drug and Therapeutics Advisory Committee for Regional LHNs.