NATIONAL MEDICINES SYMPOSIUM 2025

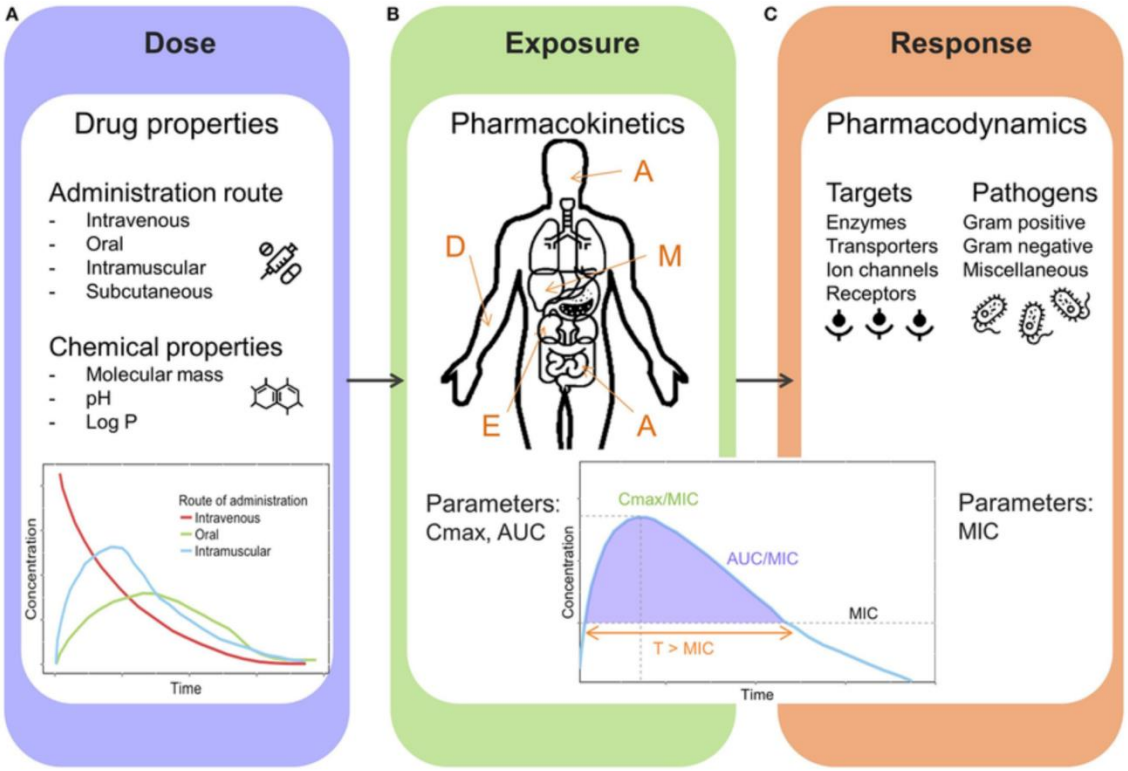
Pharmacological considerations for diabetes medicines in specific patient populations

Professor Jennifer Martin FRACP PhD

Australian Commission on Safety and Quality in Health Care

Consider differences and dosing challenges in

- People living with extremes body weight
- Pregnancy
- Paediatrics
- People living with chronic renal impairment



NATIONAL MEDICINES SYMPOSIUM 2025

Oral Hypoglycemic Drugs to Treat Type 2 Diabetes

General Class Compound/Brand Name	Generic Available	Dose Range	Cost
1st Generation Sulfonylureas			
Chlorpropamide/Diabinese	Yes	100-750 mg qd	Low
Tolazamide/Tolinase	Yes	100 mg qd to 500 mg bid	Low
2nd Generation Sulfonylureas			
Glyburide (Glibenclamide)/Diabeta, Glynase	Yes	2.5 mg qd to 10 mg bid	Low
Gliclazide/Diamicron	Yes	40 mg qd to 160 mg bid	Low
Biguanides			
Metformin/Glucophage, Glucophage XR	Yes	500-2500 mg qd or tid depending upon preparation	Low
Thiazolidinediones (TZDs)			
Rosiglitazone/Avandia	Yes	4-8 mg qd	High
Pioglitazone/Actos	Yes	15-45 mg qd	Low
Alpha-glucosidase inhibitors			
Acarbose/Precose	Yes	25-100 mg tid with meals	Low
Dipeptidyl peptidase-IV (DPP-4) inhibitors			
Linagliptin/Trajenta	No	5 mg qd	High
Sitagliptin/Januvia	No	25-100 mg qd	High
Sodium-glucose co-transporter-2 (SGLT2) inhibitors			
Dapagliflozin/Jardiance	No	10-25 mg qd	High
Dapagliflozin/Forxiga	No	5-10 mg qd	High
Oral glucagon like peptide 1 (GLP-1) receptor agonists			
Semaglutide/Rybelsus	No	7-14 mg qd	High

NATIONAL MEDICINES SYMPOSIUM 2025

Currently Available (USA) Injectable Hypoglycemic Drugs to Treat Type 2 Diabetes

General Class Compound/Brand Name	Generic Available	Dose Range	Cost
GLP-1 Receptor Agonist			
Exenatide/ Byetta	No	5-10mcg bid	High
Exenatide/ Bydureon	No	2mg once weekly	High
Liraglutide/ Victoza	No	0.6-1.8mg qd**	High
Albiglutide/ Tanzeum*	No	30-50mg once weekly	High
Dulaglutide/ Trulicity	No	0.75-4.5mg once weekly	High
Lixisenatide/ Adlyxin	No	10-20mcg qd	High
Semaglutide/ Ozempic	No	0.25-2.0mg once weekly	High
Dual GLP-1 Receptor/GIP Receptor Agonists			
Tirzepatide/ Mounjaro	No	5mg-15mg once weekly	High
Amylin Mimetic			
Pramlintide/ Symlin	No	15-120mcg tid with meals	High

Quality use of medicine issues and tailored medicines management plans

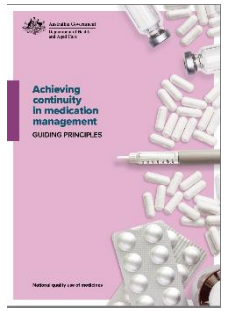
Many classes of orally available pharmacological agents to treat T2DM:

sulfonylureas	meglitinides	metformin (a biguanide)	thiazolidinediones (TZDs)	alpha glucosidase inhibitors
dipeptidyl peptidase IV (DPP-4) inhibitors	bile acid sequestrants	dopamine agonists	sodium-glucose transport protein 2 (SGLT2) inhibitors	oral glucagon like peptide 1 (GLP-1) receptor agonists

Fixed dose combinations

NATIONAL MEDICINES SYMPOSIUM 2025

Quality use of medicines – key aspects



Quality Use of Medicines in diabetes involves ensuring that medications are used appropriately, safely, and effectively to achieve the best possible outcomes for individuals with diabetes including:

- Medicines should be based on individual needs
- Ensuring medicines are taken as prescribed to achieve optimal blood glucose control and minimise the risk of complications
- Minimising the risk of adverse drug events such as hypoglycaemia or other side effects
- Addressing factors that can affect medicine adherence e.g. cognitive impairment or complex medicine regimens
- Maintaining consistent and coordinated medicines management across different healthcare settings
- Individualised Assessment - A thorough assessment of the individual's diabetes, other health conditions, lifestyle and preferences
- Goal Setting - Collaboratively setting realistic and achievable goals with patients

NATIONAL MEDICINES SYMPOSIUM 2025

Tailored medicines management plans is crucial for optimising QUM in diabetes

- Providing patients with education about their medicines
- Regularly monitoring blood glucose, medication effectiveness and side effects
- Involving a multidisciplinary team to provide comprehensive care and support
- Gradually increasing medicine dosages to minimise side effects particularly in the elderly
- Reducing the number of medicines or simplifying dosing schedules
- Utilising diabetes management apps or devices to track blood glucose levels, medication schedules, and other relevant data
- Carefully reviewing medications and potentially discontinuing or reducing the dosage of medications that are no longer necessary or are causing harm.

Older people (in RACFs) with chronic disease often have multiple comorbidities

Carefully evaluate resident comorbidities, overall health and resident/carer preferences – goals of care

- Ensure a sensitive discussion and documentation of an individualised treatment plan, glycaemic targets and strategies for medication management.
- Start low and go slow with doses when initiating and/or changing medications
- Assess and minimise the risk of hypoglycaemia and other ADEs related to GLMs. Consider use of the following resources when assessing medication use:
  - GLM-related ADEs risk assessment tool (available from the McKellar guidelines for managing older people with diabetes in residential and other care settings)
  - Beers criteria for potentially inappropriate medication use in older adults
  - STOPP: screening tool of older people's potentially inappropriate prescriptions, and START: screening tool to alert doctors to right treatments
  - *Australian Medicines Handbook Aged Care Companion*
  - A new blood glucose management algorithm for type 2 diabetes: A position statement of the Australian Diabetes Society
- Simplify treatment regimens
- **Avoid sliding scale insulin**

Examples in elderly – tight control vs QOL

- Intensive glycaemic control increases the risk of adverse events and mortality
- Glycaemic management may help to prevent acute symptoms of T2DM
- How often to test?
  - Most guidelines suggest for T2D only to minimise hyperglycaemia-related symptoms.
  - For RACF residents, monitoring of BGLs not routinely indicated for residents who are not receiving insulin and have stable BGLs
  - If hyper/hypoglycaemic symptoms are present, or if there is a change in management, BGLs measured three to six times per day (i.e. pre-meals and two hours post-meals). Once stable, and depending on the resident's condition, less frequent pre-meal and post-meal BGL monitoring (e.g. once per day to once every three days).

Obesity

- Several diabetes medicines esp. GLP-1 receptor agonists and SGLT2 inhibitors promote weight loss and are increasingly used in the management of obesity, even in individuals without diabetes. These drugs offer a dual benefit of managing blood sugar levels and aiding in weight reduction.
- Cause various side effects, including gastrointestinal issues (e.g. nausea, vomiting, diarrhea, constipation), fatigue, and potential risks like pancreatitis and gallbladder problems. Some drugs may also impact heart rate, blood pressure, or cause other specific side effects like headaches or dizziness.

Renal Impairment

- Identify residents with T2DM who may benefit from de-intensification of prescribed GLMs or other medicines that may be affecting BGLs.
- Discuss with the resident and prioritise the discontinuation of those medications that have the greatest harm and least benefit.
- In partnership with the resident (and family members as appropriate), negotiate and implement a de-intensification regimen that incorporates:
  - reducing dose or ceasing medications that are most likely to cause hypoglycaemia; or
  - switching to a different agent with lower hypoglycaemic risk if possible; or
  - reducing dose of renally eliminated GLMs (e.g. metformin, exenatide, dapagliflozin, empagliflozin, insulin) where appropriate.
- Communicate the plan to health professionals, aged care provider staff and family involved in the resident's care.

NATIONAL MEDICINES SYMPOSIUM 2025

Pregnancy – insulin and metformin ‘safe’

GESTATIONAL DIABETES

Metformin in women with type 2 diabetes in pregnancy (MiTy): a multicentre, international, randomised, placebo-controlled trial.

Feig, Denice et al.The Lancet Diabetes & Endocrinology, Volume 8, Issue 10, 834 – 844. This tested the effects of metformin in women with type 2 diabetes during pregnancy, investigating its effects on neonatal morbidity and mortality.

The multicentre randomised control trial involved 502 women from 25 centres in Canada and four in Australia. Participants were given either 1000 mg of metformin twice daily or a placebo, in addition to their usual insulin.

Researchers found no significant difference between groups in the primary composite outcome of neonatal mortality and serious morbidity; however, several health benefits were noted for women in the metformin group, including:

- better glucose control
- lower insulin requirements
- less gestational weight gain
- fewer caesarean births.

Type 1 and 2 non gestational diabetes

- Pregnancy affects pre-existing diabetes - more difficult to keep BSL steady/within range. Medications may need to be adjusted more often than usual.
- Reviewing all your medicines, to make sure they are safe for pregnancy
- Health screening tests for medical problems that can occur with diabetes
- Blood tests — including routine pre-pregnancy tests as well as those that are related to diabetes.

Thank you

NATIONAL
MEDICINES
SYMPOSIUM
2025