Diabetes Medications

Presented by
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B. Phrm, CDE.

Updated March 2025

Wave 2025

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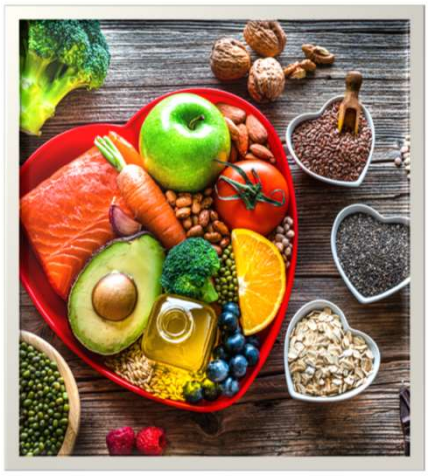
Housekeeping

- Diabetes Pathophysiology
- Medical Management - Medicines
- Medical Management - Insulin
- Q&A evaluation



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Acknowledgement of Country

Diabetes WA acknowledge and recognise Aboriginal and Torres Strait Islander peoples as the Traditional Owners and Custodians of the lands where we live, learn and work.

We pay respects and acknowledge the important role of Elders past and present, for they hold the memories of the traditions, cultures, and aspirations of Australia's First Nations peoples, and have taken on the responsibility to protect and promote our culture and leave a legacy for future Elders and leaders.

We acknowledge any Sorry Business that may be affecting individuals, families, and communities at this time.

As an organisation, we understand the impact that diabetes has on Aboriginal and Torres Strait Islander peoples across Australia and as such we promise to be respectful, take lead from the community and walk together with Aboriginal and Torres Strait Islander peoples, communities, and organisations in our journey to reducing the impact of diabetes for the First Peoples of Australia.

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Introduction to Diabetes

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NDSS Snapshots

As at 30 June 2024

There were 1,485,889 people with diabetes registered with the NDSS

Diabetes Type	Number	%	Registered in Past Year
Type 1 diabetes	139,257	9.4%	3,847
Type 2 diabetes	1,288,817	86.7%	65,654
Gestational diabetes	45,347	3.1%	45,290
Other diabetes	12,468	0.8%	1,266
Total	1,485,889	100.0%	116,057

* An additional 189,336 women who previously had gestational diabetes are registered with the NDSS. These women are at high risk of developing type 2 diabetes and receive regular reminder letters to have a diabetes check.

diabeteswa Diabetes Data and Figures Snapshots | NDSS June 2024

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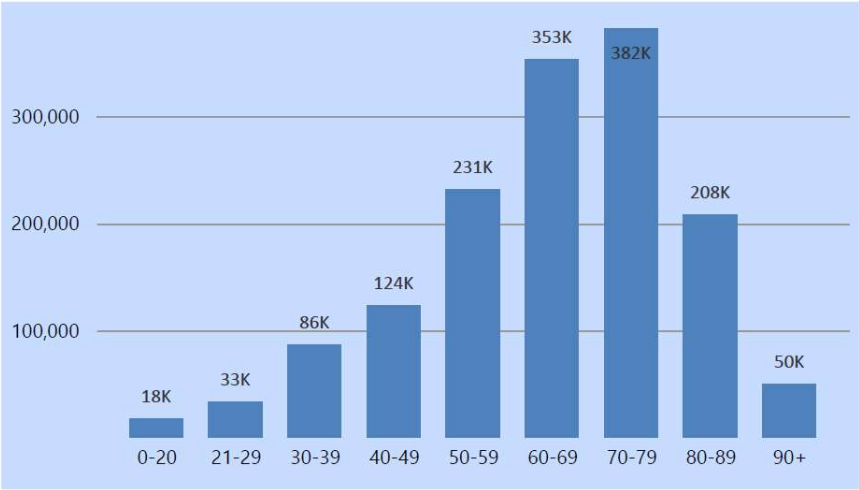
NDSS Snapshots

All people with diabetes by age group



diabeteswa Diabetes Data and Figures Snapshots | NDSS June 2024

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Let's start at the beginning…

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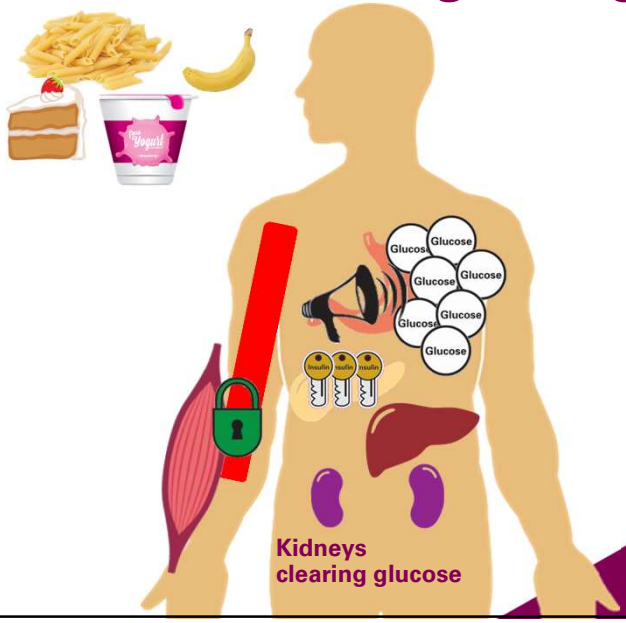
Let's start at the beginning…



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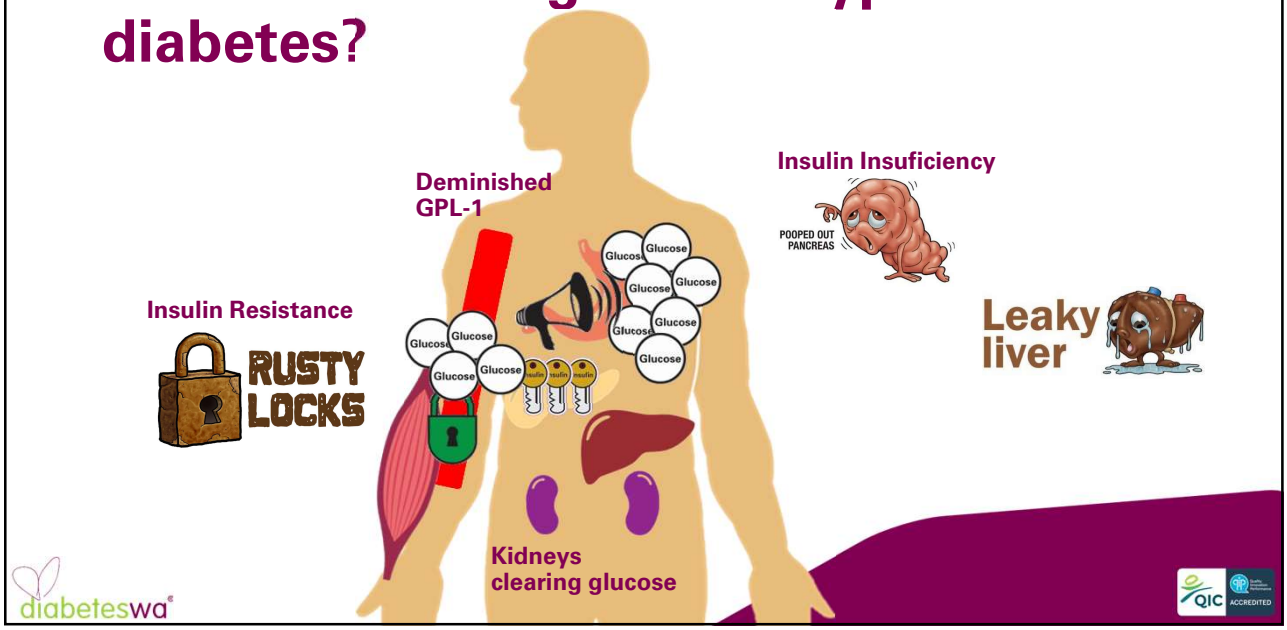
Now what changes with type 2 diabetes?



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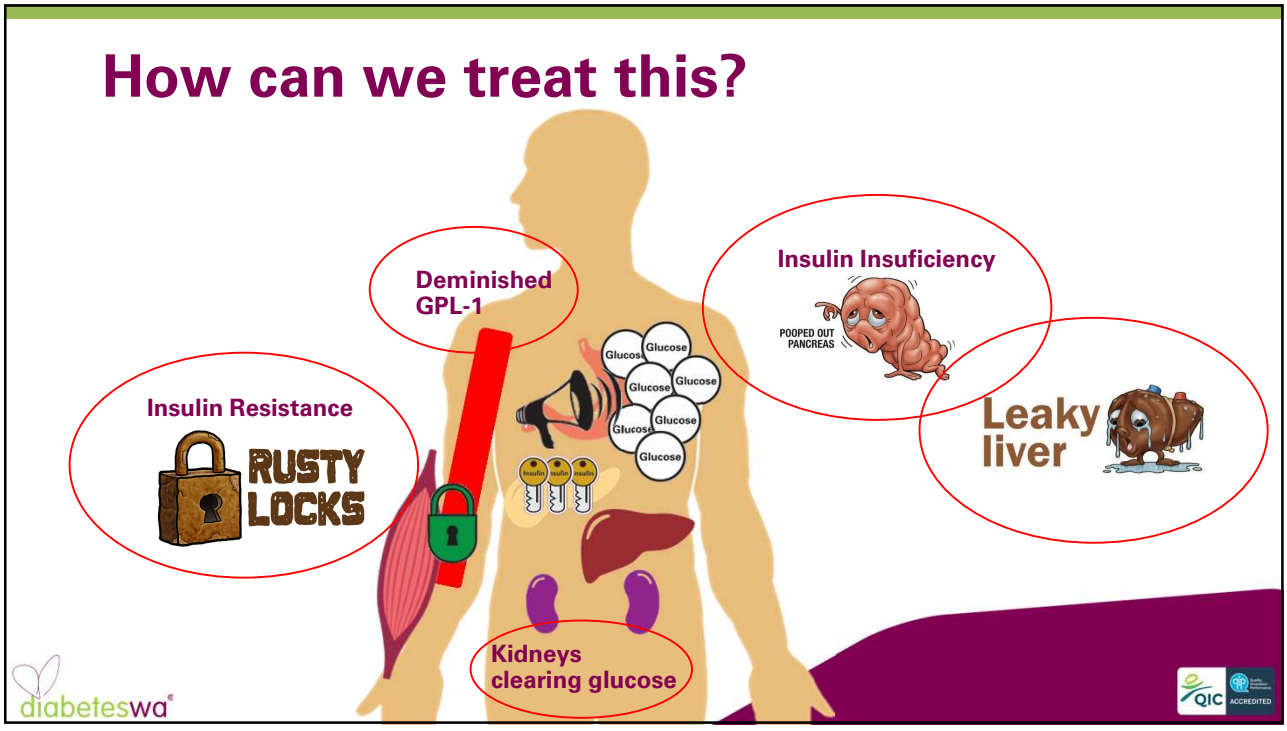
How can we treat this?



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Type 1 or Type 2….?

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Medical Management – Medications

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Classes of Medications

Metformin

DPP4i

GLP1a

SGLT2i

TZD

Sulfonylureas

Acarbose

Insulin

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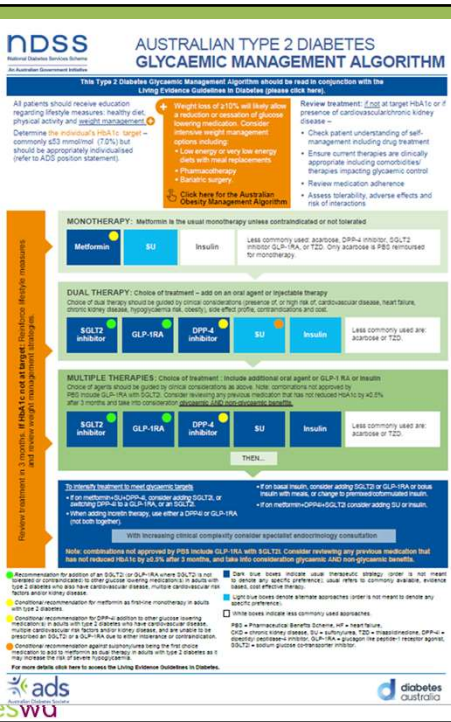

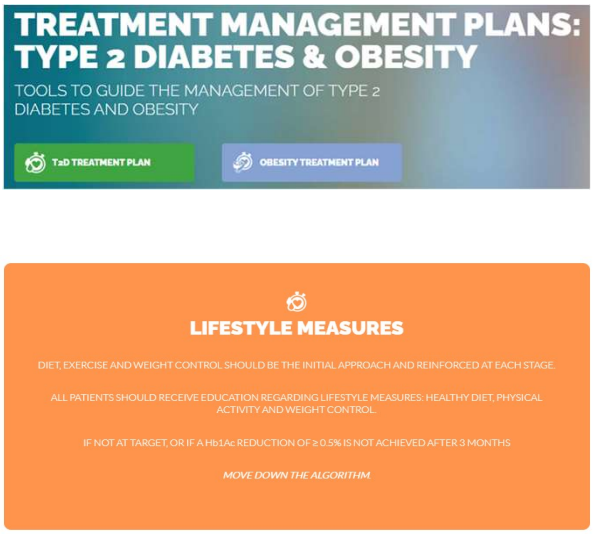

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Further Guidance from the RACGP

Table 1. Clinical considerations when choosing diabetes medications

Clinical outcome	Medication effects on clinical outcomes: Metformin	Sulfonylurea (SU)	Dipeptidyl peptidase-4 inhibitor (DPP-4i)	Acarbose
Patients with established or at high risk of CVD (refer to the section 'Type 2 diabetes and cardiovascular risk')	Neutral effect[5]	Increased risk when compared with metformin monotherapy (excluding gliclazide), but neutral when used in combination with metformin[9]	Neutral effect[7,10–13] Refer to **Note A**	Neutral effect[14]
Patients at risk of hypoglycaemia	Lower rates compared to SU[5]	Higher clinical risks, both as monotherapy and in combination with other agents[9] Gliclazide – fewer hypoglycaemia episodes versus other SUs[15] Glibenclamide – higher rates of hypoglycaemia, especially in older people[16]	Lower rates compared to SU[5]	Neutral effect
Patients at risk of gastrointestinal conditions (eg IBS, IBD and gastroparesis)	Known intolerance as monotherapy or combination therapy – diarrhoea[5,17]	Neutral effect	Neutral effect	Known intolerance – bloating and flatulence[1]
Patients in whom stabilisation of BMI or weight loss is desired	Neutral effect	Neutral effect (gliclazide)[18] Modest weight gain (other SUs) compared with metformin monotherapy[9]	Neutral effect	Neutral effect
Patients with renal impairment (eg lowered CrC*)	Reduce dose by 50% with eGFR 30–60 Contraindication with CrC <30 mL/min[17]	Contraindication if CrC <15 mL/min Hypoglycaemia risk increases	Safe with dose reduction but linagliptin can be used in all stages (no dose reduction) Refer to **Note B**	Contraindication in severe renal impairment[5]
Other class-specific information	Monotherapy or combination with other agents (DPP-4i or SGLT2i) is available to reduce 'pill burden'	The Australian algorithm (Figure 1) suggests SU may be used as monotherapy or combined with other agents	Contraindication – do not use with a GLP-1 RA Increased hospitalisation for heart failure with saxagliptin	

Table 1. Clinical considerations when choosing diabetes medications

Clinical outcome	Medication effects on clinical outcomes: Thiazolidinedione (TZD)	Sodium glucose co-transporter 2 inhibitors (SGLT2i)	Glucagon-like peptide-1 receptor agonists (GLP-1 RAs)	Insulin
Patients with established or at high risk of CVD (refer to the section 'Type 2 diabetes and cardiovascular risk')	Contraindication if symptomatic heart disease, including heart failure[19] Pioglitazone is the preferred TZD	Selective benefit, depending on individual drug choice[20]	Selective benefit, depending on individual drug choice[21]	Neutral effect[3,4,22]
Patients with risk from hypoglycaemia	Lower rates compared to SU[5]	Lower rates compared to SU[5]	Lower rates compared to SU[5]	Higher clinical risks as monotherapy and in combination with other agents[22,23]
Patients at risk of gastrointestinal conditions (eg IBS, IBD and gastroparesis)	Neutral effect	Neutral effect	Known intolerance – nausea and vomiting, diarrhoea[24]	Neutral effect
Patients in whom stabilisation of BMI or weight loss is desired	Modest gain compared with other dual combination therapies[5]	Modest weight loss (in monotherapy, plus in combination with metformin versus metformin with alternate dual oral drug combinations)[5,25]	Weight loss (in monotherapy, plus in combination with metformin versus metformin with alternate dual oral drug combinations)[5,24,25**]	Modest gain[5,22,23,26]
Patients with renal impairment (eg lowered eGFR)	Neutral effect	Glycaemic-lowering efficacy decreases, thus contraindicated with renal impairment (eGFR ≥45 mL/min)[27]	Contraindication eGFR <30 mL/min (dulaglutide <15)	No contraindication, but hypoglycaemia risk increases
Other class-specific information	Increased atypical fractures (relative risk 1.57),[27] with women more at risk than men[5] Pioglitazone is contraindicated in individuals with bladder cancer or un-investigated haematuria[5]	Modest lowering of BP[5] Increased genitourinary infections (especially females) Refer to **Note C** Less common – euglycaemic diabetic ketoacidosis[28] (refer also to discussion of surgery in the section 'Managing risks and other impacts of type 2 diabetes')	Once-weekly formulations are available[1] Contraindication – combination with a DPP-4i	Dose required to be titrated to glycaemic goals while mitigating glycaemic variability and hypoglycaemia

https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/diabetes/medical-management-of-glycaemia

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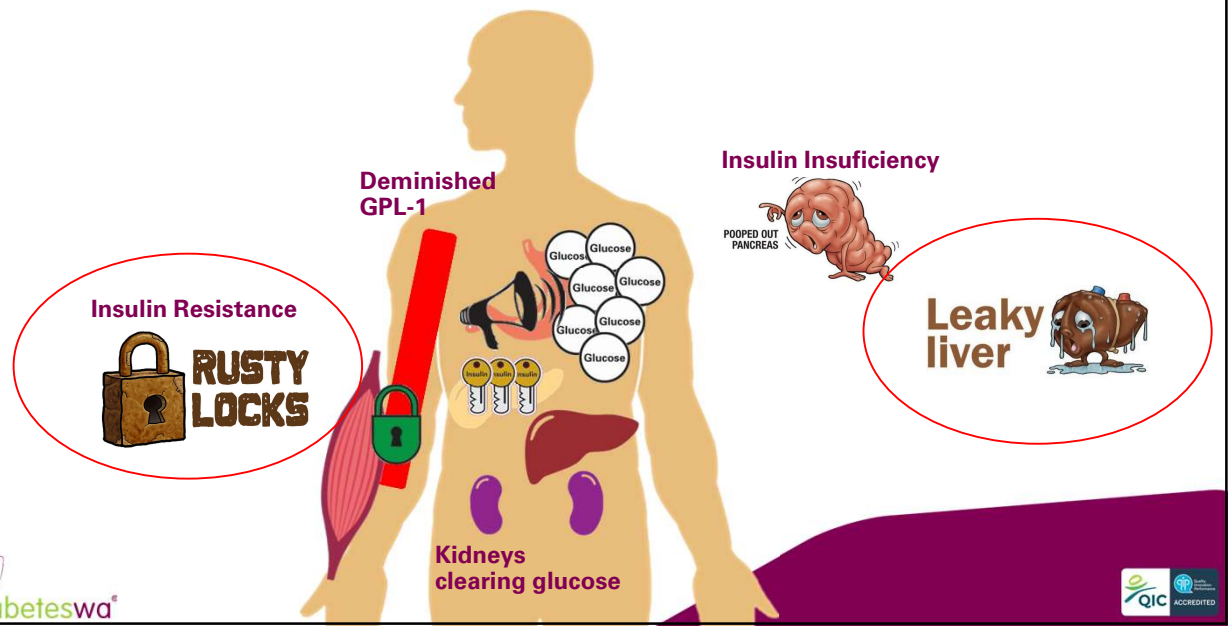
Metformin



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NL1

Class	Active Medication Name	Brand
Biguanides	Metformin	Diabex, Diaformin, Metex

Action

↓ hepatic glucose production

↑ insulin sensitivity

Delays glucose absorption

Adverse effects – gastrointestinal: nausea, bloating, diarrhoea

When to administer – with a meal, XR formulation can be given once daily, usually with the evening meal

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CL0

Class	Active Medication Name	Brands
Sulfonylureas	Glipizide Gliclazide Glimeperide Glibenclamide	Minidiab Diamicron, Glyade, Nidem Amaryl, Aylide Daonil

Action

Stimulates release of insulin from beta cells

Adverse effects – hypoglycaemia, rash

When to administer – with a meal, XR can be given once per day

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Slide 17

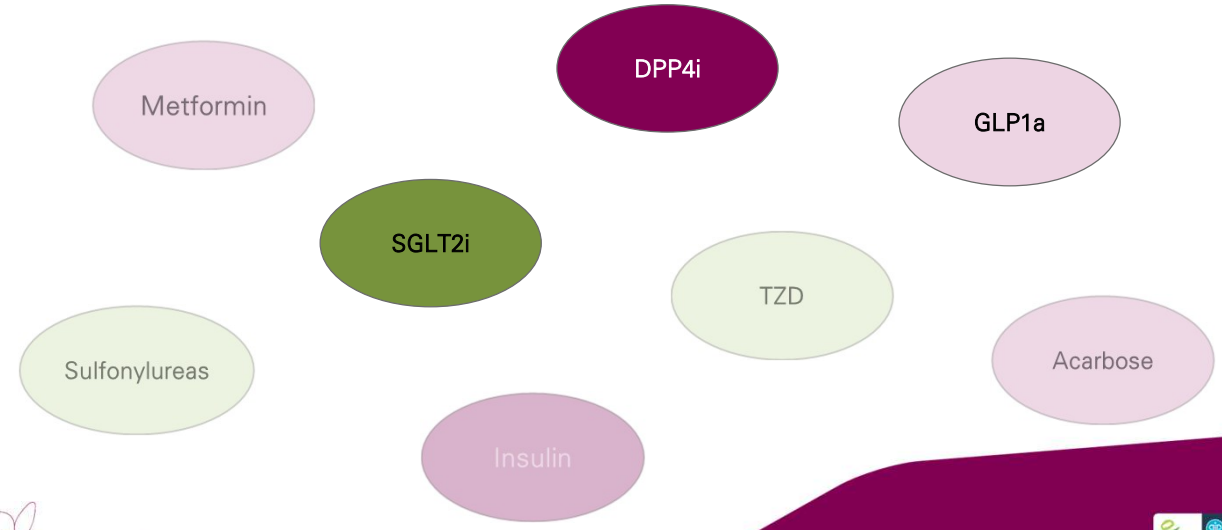
CL0 Please make notes clearer
Carly Luff, 2023-10-02T06:06:14.006

NL1 I think the activity where we ask each table to work out where on the feltman to put their drug name (before we talk about the specific drug class) is a very effective learning tool and I would like to keep it in the training.
Nyaree Lawler, 2023-10-19T04:18:33.830

Slide 18

CL0 Please make notes clearer
Carly Luff, 2023-10-02T06:06:33.584

Modern Diabetes Medication Options



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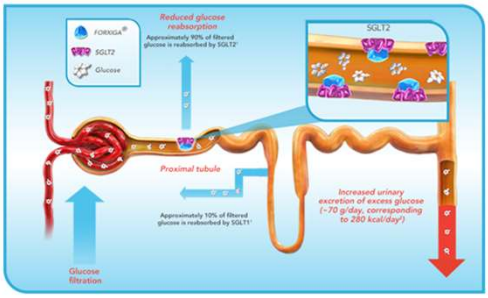
Class	Active Medication Name	Brand
Sodium Glucose Co-transporter 2 inhibitor	Dapagliflozin Empagliflozin	Forxiga Jardiance

Action



Adverse Effects – UTI, thrush, polyuria, dehydration, euglycaemic DKA

When to administer – with or without food

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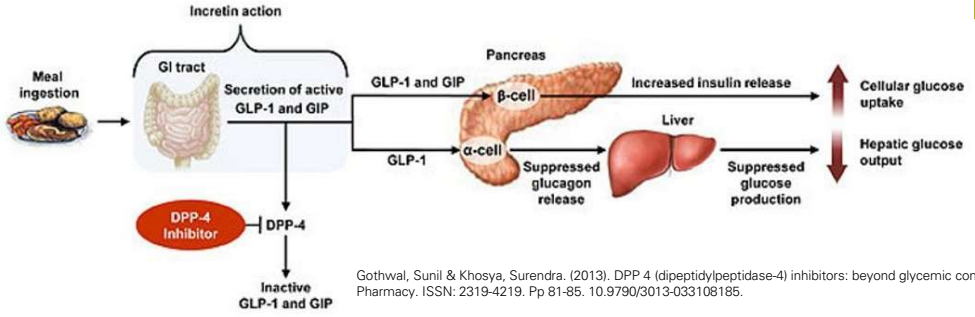
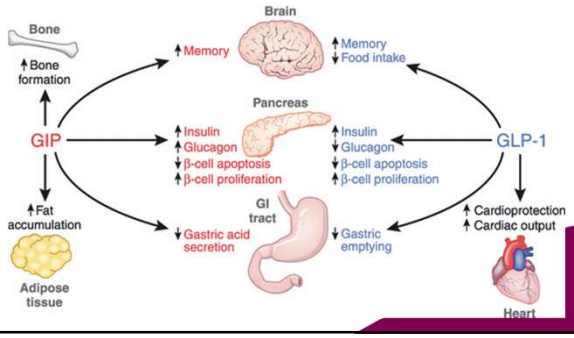


Gothwal, Sunil & Khosya, Surendra. (2013). DPP 4 (dipeptidylpeptidase-4) inhibitors: beyond glycemic control. Iosr Journal Of Pharmacy. ISSN: 2319-4219. Pp 81-85. 10.9790/3013-033108185.



https://doi.org/10.1111/j.2040-1124.2010.00022.x

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CL0

Class	Active Medication Name	Brand
Dipeptidyl Peptidase-4 Inhibitors (Gliptins)	Alogliptin Linagliptin Saxagliptin Sitagliptin Vildagliptin	Nesina Trajenta Onglyza Januvia, Sitaglo, Xelevia Galvus

Action

Allows incretin driven insulin release

↓ glucagon release

Adverse effects – headache, musculoskeletal pain, nasopharyngitits

When to administer – with or without food

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Slide 21

CL0 Please add some notes to this slide and reference where the image came from
Carly Luff, 2023-10-02T06:10:35.458

Slide 22

CL0 Please make notes clearer
Carly Luff, 2023-10-02T06:11:10.116

CL0

Class	Active Medication Name	Brand
Glucagon-like Peptide-1 Analogues	Dulaglutide Semaglutide Liraglutide (not PBS listed)	Trulicity Ozempic Victoza, *Saxenda (wt loss)*
GLP-1/GIP	Tirzepatide (not PBS listed)	Mounjaro

Action

Incretin driven insulin release

↓ glucagon release

Delays gastric emptying

Adverse Effects - nausea, vomiting, pancreatitis

When to administer – once a week, by injection

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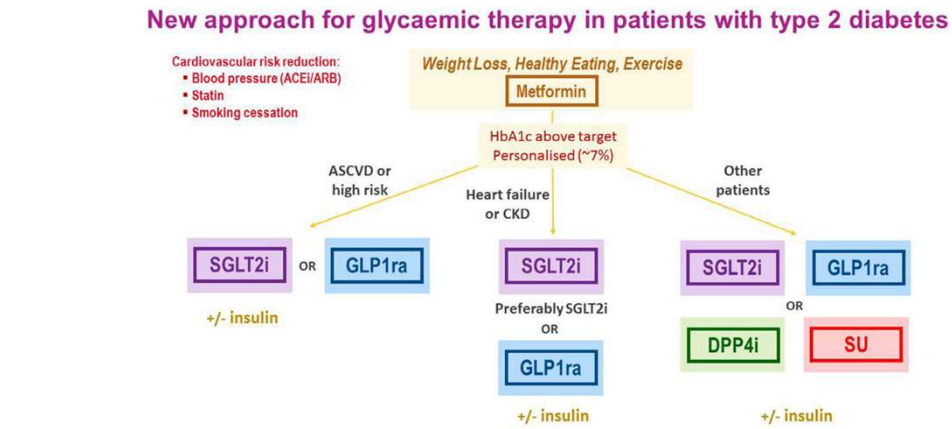
Slide 23

CL0 Please make notes clearer
Carly Luff, 2023-10-02T06:11:48.022

CL0

Treatment Decision Infographic



Reference: Priorities and practicalities of prescribing diabetes medicines with cardiovascular and renal protective effects: an Australian perspective Sarah A. Hitchen, Nick S. R. Lan, P. Gerry Fegan and Bu B. Yeap: 20 November 2020 https://doi.org/10.1111/imj.15055

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Medical Management – Insulin

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Slide 25

CL0 It may be worth adding notes to where this one came from and some further explanation
Carly Luff, 2023-10-02T06:13:11.551

Insulin

- 32% of all people diagnosed with diabetes use insulin
- Type 1 diabetes – no pancreatic insulin production, therefore insulin injections are required
- Type 2 diabetes – when other medications are unable to keep the BGL's in target or patients have contraindications or side effects to other medications
- Gestational diabetes – insulins used to manage GDM are considered safe to use during pregnancy

- NDSS Statistics as at 31/06/2024 Insulin-Therapy.pdf (ndss.com.au)

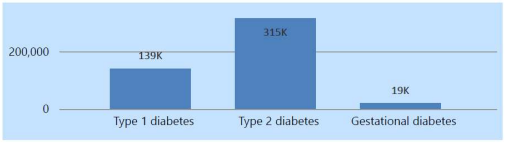
As at 30 June 2024

There were 481,336 people with diabetes registered with the NDSS who require insulin therapy. This was 32% of all people with diabetes

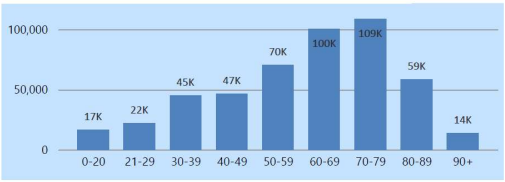
CL0

Diabetes Type	Requiring Insulin	% of Total	% of Diabetes Type
Type 1 diabetes	139,257	29%	100 %
Type 2 diabetes	315,432	66%	25 %
Gestational diabetes	18,638	4%	41 %
Other diabetes	8,009	2%	64 %
Total	481,336	100%	32 %

People with diabetes requiring insulin by diabetes type



People with diabetes requiring insulin by age group



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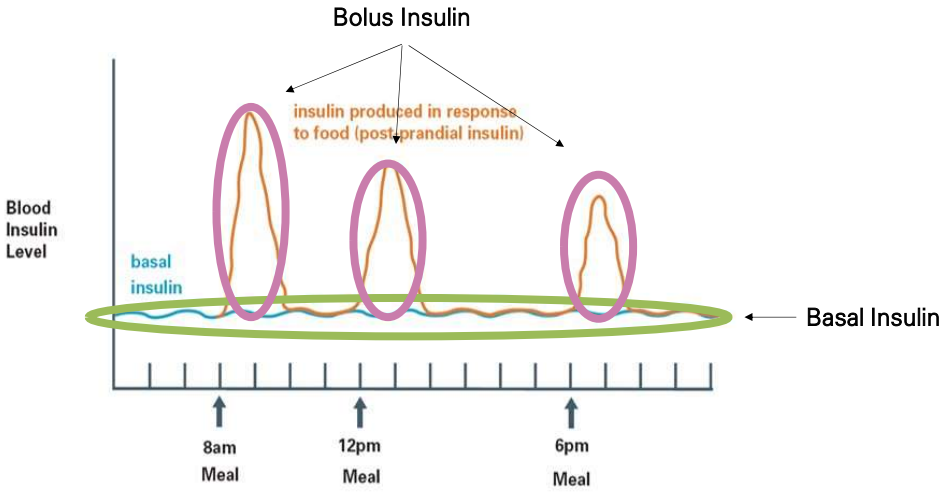

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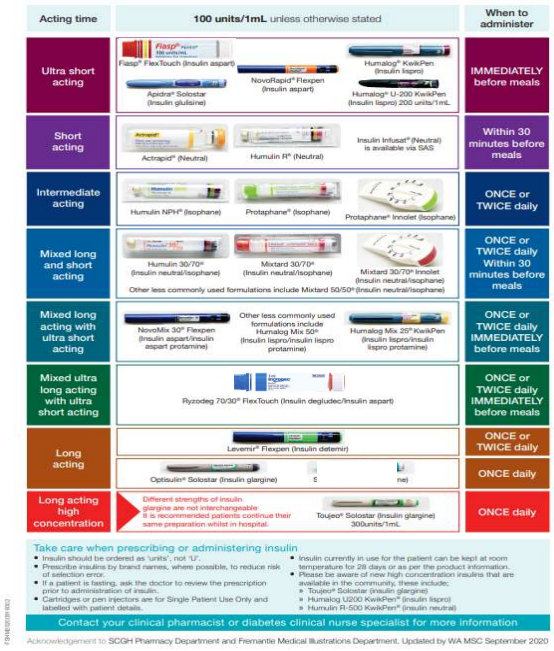
Slide 27

CL0 Are the the latest snapshot images? Please reference date
Carly Luff, 2023-10-02T06:14:51.826

Slide 28

CL0 Please add some notes
Carly Luff, 2023-10-02T06:15:04.835

Know Your Insulin



https://www.health.wa.gov.au/~/media/Files/Corporate/general-documents/safety/PDF/Medication-safety-resources/Know-your-insulins.pdf

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NL0

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Slide 30

NL0 I think this slide would go at the end of the whole presentation?
Nyaree Lawler, 2023-10-19T04:23:06.854

TS0 0 [@Nyaree Lawler] - maybe leave it here as this section may be used as a stand alone presentation - feel free to 'hide' it
Tara Savage, 2023-10-23T05:25:47.560

Thank you!
Any questions?

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