GPN clinical supervision session

Type 2 Diabetes case studies

Type 2 Diabetes Case studies

Welcome and introductions

Plan for today's session

Group discussion and learning from real patient cases

The names and pictures used are fictional- no patient identifiable data

Mavis

89-year-old lady who is being reviewed by GP for exacerbation of her COPD

Currently semi-conscious

Cared for in a nursing home

Daughter lives 80 miles away

Medical notes record that a DNAR is in place

Advanced directive signed in 2017- would prefer to die in the residential home if she becomes seriously ill

Current medical history

Type 2 diabetes
On NovoMix 30 BD- 8units AM 4units PM and Sitagliptin 50 mgs OD
Partially sighted
Chronic obstructive pulmonary disease
Ischaemic heart disease
Peripheral neuropathy
Severe dementia (Alzheimer's)

Clinical data

Respiration rate 28
Heart rate, 83
BP 131/62
Temp 37.2 centigrade
Capillary blood glucose 6.6 mmol/L @ 1500 hours
HbA1c 47 mmol/mol
eGFR 28mls/min

Group discussion

Please review this case and develop a diabetes management plan for Mavis considering her holistic needs and choices

Factors to consider

GP review - what is the plan and outcome of that?

How do we know if Mavis is entering the end-of-life phase?

What are her wishes and how should we respect them?

What symptoms and problems should we be aiming to minimise?

How do we tailor glucose-lowering therapy and minimise diabetes-related adverse treatment effects?

Factors to consider- continued

Relax glycaemic targets?

Insulin requirements – reduce/switch/stop?
Oral medications- reduce/switch/stop?
semi-conscious so unsafe swallow?

Blood glucose testing options?
CBG/flash monitoring/no testing?
Other important interventions?
Skincare, pain-control and hydration, maintain comfort and dignity

Suggested management plan

Revised blood glucose targets - aim for glucose levels between 6 mmol and 15 mmol/L

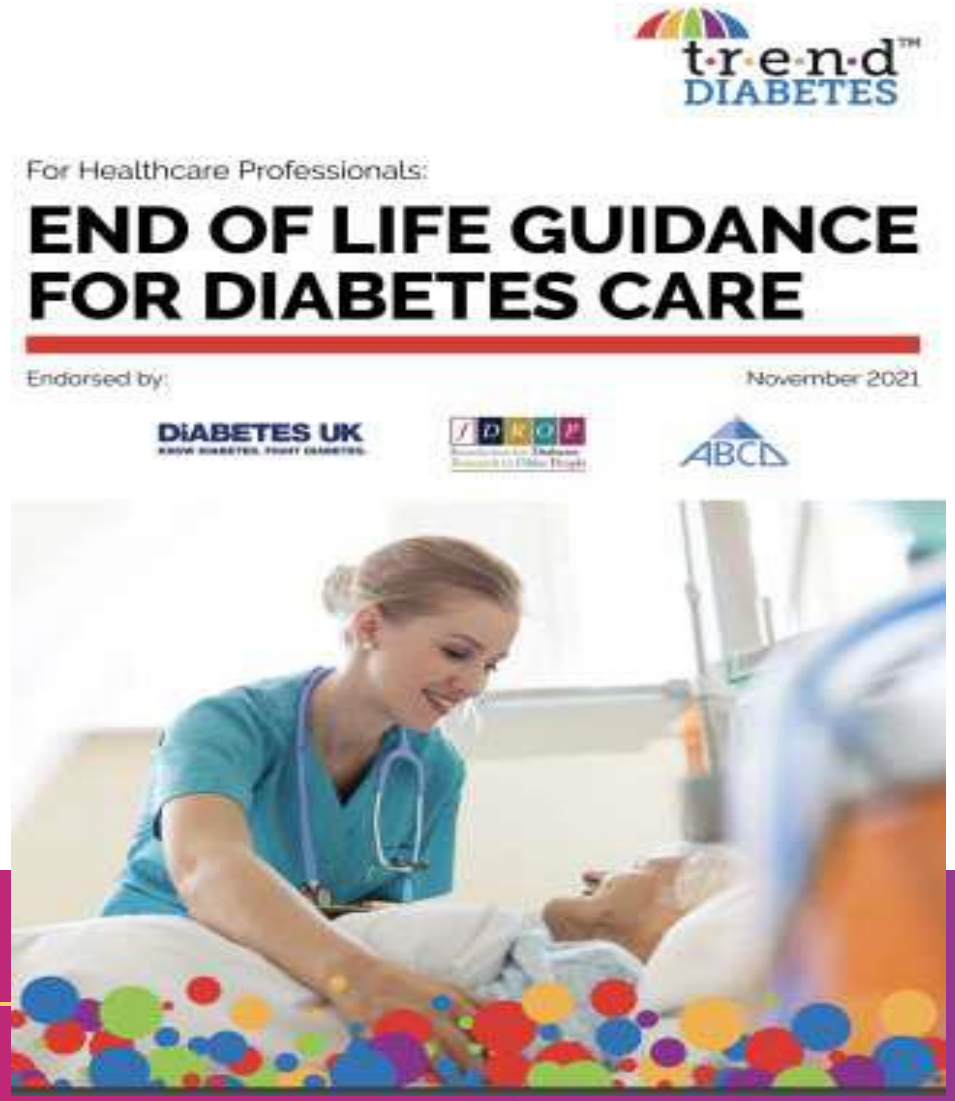
Keep blood glucose monitoring to once daily or use flash monitoring

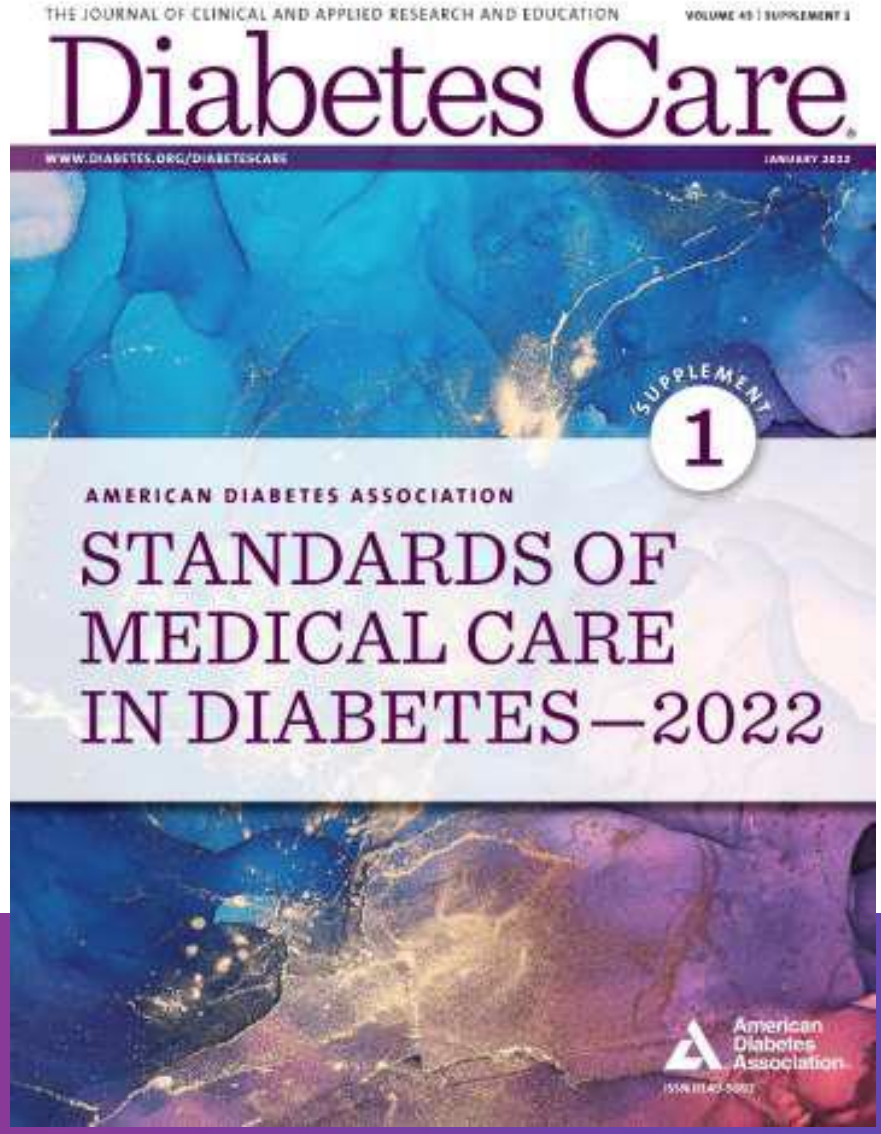
Oral medication withdrawal- stop gliptin

Insulin requirements – stop or switch to basal and reduce

Keep Mavis comfortable, provide skin protection advice, minimise complications and symptoms of dehydration

Guidelines for EOL diabetes care





Contents- Trend Diabetes, EOL document

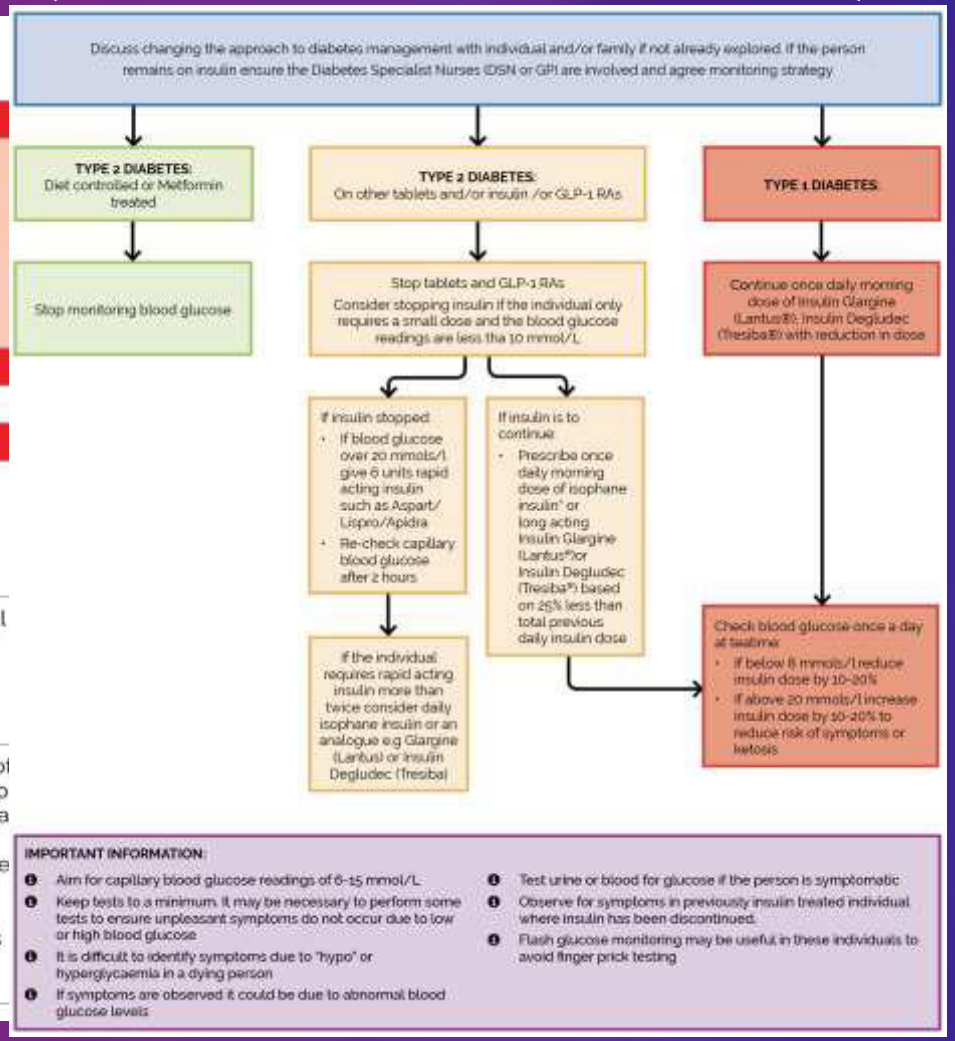
Update on diabetes oral therapies

Updated insulin recommendations to include newer insulin treatments

- Care home residents
- Cancer
- Renal disease
- Frailty
- Steroid use
- COVID-19
- Enteral feeding
- Dementia
- Provided more information on:
- An advance decision
- An advance statement
- Emergency health care

Medicines management (Trend diabetes)

Medicines Management – Non - Insulin therapies					
Metformin Standard Metformin or Glucophage SR	**Sulphonylureas** Gliclazide / Glipizide / Glimepiride / Repaglinide	**Pioglitazone**	**Gliptins** Alogliptin, Linagliptin, Saxagliptin, Sitagliptin	**GLP-1 RAs** Exenatide or Liraglutide, Lixisenatide, Semaglutide, Bydureon, Rybelsus and Dulaglutide	**SGLT2 inhibitors** Dapagliflozin, Empagliflozin, Ertugliflozin and Canagliflozin
Risk of hypoglycaemia with non insulin therapies when used as mono therapy					
✖ No Risk	✔ Moderate Risk	✖ No Risk	✔ Low risk	✖ No risk	✔ Low risk
General Considerations					
Review dose according to changing renal function	Review if dietary intake is reduced and/or there is significant weight loss	The risk-benefit ratio for Pioglitazone in individuals with terminal disease requires review and should be only prescribed if benefits can clearly be identified	Review doses in accordance with individual licences if renal function deteriorates	Review if eating patterns change or significant weight loss occurs	Refer to SPC* for doses
Withdraw if creatinine >150mmols/l or eGFR < 30ml/ l/1.73m²	Review dose if renal or liver function deteriorates and consider a switch to Tolbutamide		Some gliptins can be used for all stages of renal disease	Withdraw if abdominal pain or pancreatitis develops	Refer to individual SPC* for renal guidance
Review if gastrointestinal disease is present or symptoms of nausea, heartburn, diarrhoea or flatulence are making individuals miserable with discomfort	Review Tolbutamide dose if liver function deteriorates as hypoglycaemia may occur	Should not be used in individuals with or at risk of bladder tumour or heart failure	Combination with sulphonylurea increases the risk of hypoglycaemia	Refer to individual product SPC* for doses.	Stop if evidence of clinical dehydratio peripheral vascula disease/ foot ulceration in acute illness and pre-surgery. Test for ketones if there is acute illness



General guidance-Insulin

Doses may need to change if renal function declines

Hypoglycaemia risk will need to be reassessed with changes in eating patterns

A change of insulin regimen may be needed to match changes in “activity” levels and appetite

Insulin can often be reduced significantly or stopped in type 2 diabetes as appetite diminishes

Do not stop insulin completely in people with Type 1 diabetes

Usually maintain on an appropriate dose of basal once daily insulin

Sitaben

53-year-old South Asian lady

Diagnosis T2DM 2011

Started insulin 2 years ago

Strong family history of CVD and T2DM

HbA1c 76mmol/mol

BMI 27 kg/m2

BP 132/69

TC 4mmols, LDL 1.8mmols

eGFR 87mL/min/1.73m2

Sitaben

Current medication:

Metformin - 500mg twice daily
Linagiptin 5mgs once daily
Atorvastatin – 40mg once daily
Humulin I - 68 units at night

Sitaben lives with her extended family unit
Faith is an important part of her life
Daily routine revolves around the kitchen- cooks a traditional South Asian Diet
Three meals per day with smaller between meal food at the temple

Sitaben

Husband and mother have T2DM
Husband- MI and has diabetic retinopathy
Mother insulin-dependent for many years, taking basal insulin

Sitaben has strong beliefs around medication
Has tried SU, SGLT2i and GLP1RA and stopped these soon after starting
- Cites multiple side-effects
- Does not wish to try these again

Recent discussion around an insulin regimen change
Has come to see you today to discuss this

Sitaben

Latest Self-Monitoring Blood Glucose readings:

Fasting Blood Glucose: 8.5-13.4mmols/L (153-241mg/dL)

Pre-lunch: 9.9-12.6mmols/L (142 -226 mg/dL)

Pre-evening meal: 12.7-21.2mmols/L (228-381 mg/dL)

Post evening meal: 9.9-19.1mmols/L (178 – 343 mg/dL)

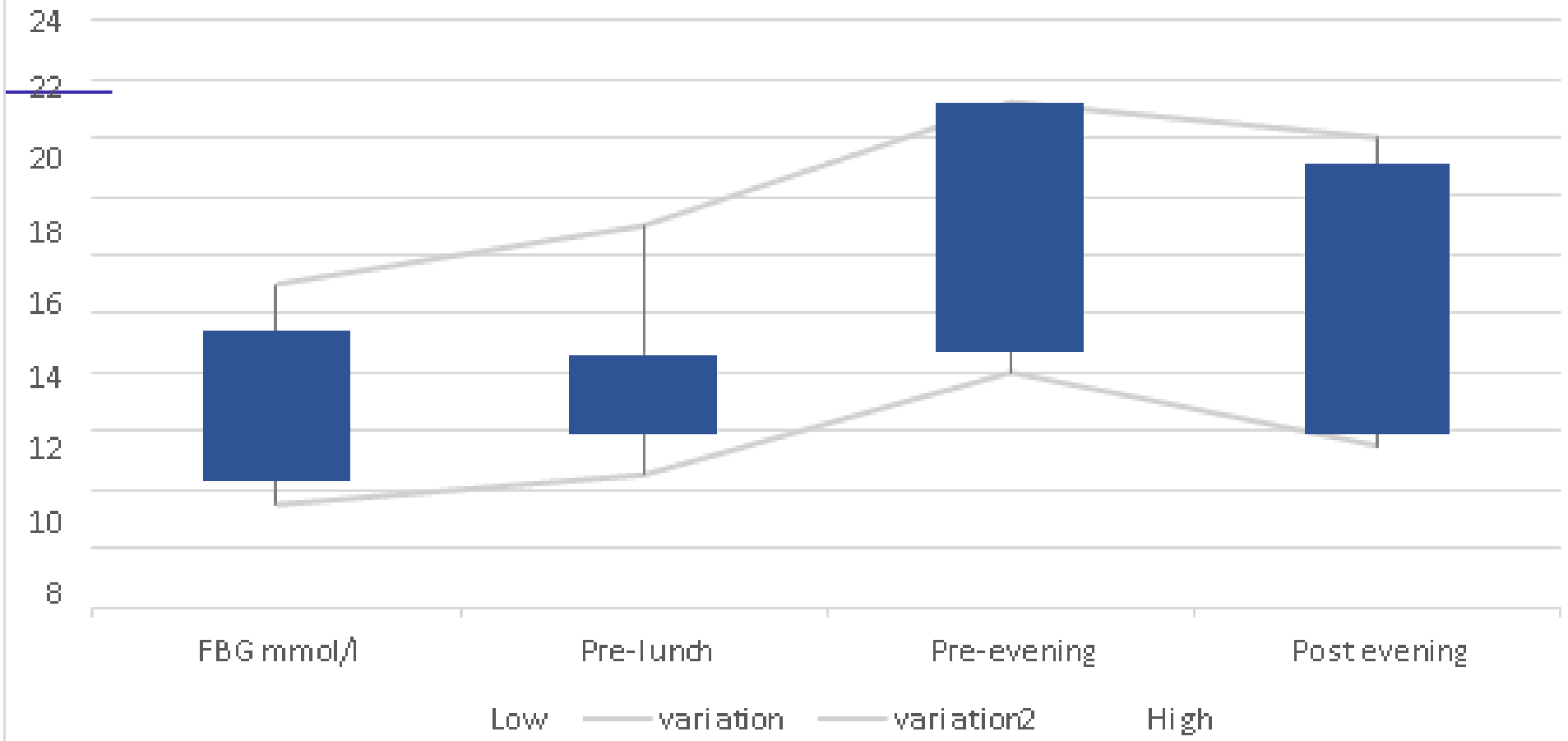
Group discussion

Sitaben is very anxious about her diabetes and the health consequences of prolonged poor control.

Please discuss the clinical problems and sub-problems contributing to her poor glycaemic control.

Consider the treatment options for insulin management for Sitaben. Consider how you would address her concerns.

Fig 1. Daily glucose profile for Sitaben



Suggested management plan

A culturally adapted and individualised lifestyle education and support plan

- Carbohydrate awareness and meal planning
- Planning for festivals and occasions
- Movement and activity advice
- Diabetes education
- Well-being support

Check and optimise injection technique

Intensify the insulin regimen

Insulin intensification options

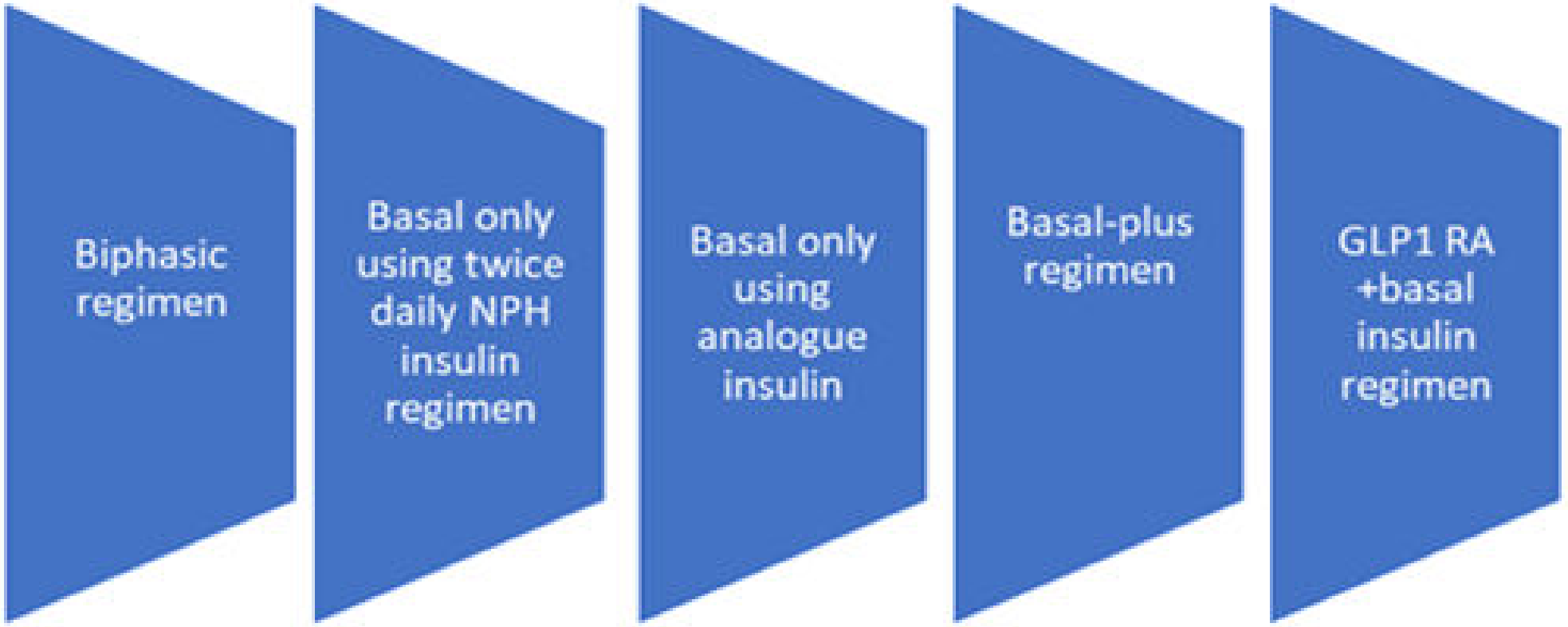


Figure 3: Potential insulin intensification options

What happened?

Switched to basal-plus regimen, using Toujeo U300 + Novorapid.

Made one change at a time

Switched the basal insulin first

Added prandial insulin starting with 4units added to meal with highest postprandial excursion

Appointment 1- SWITCH TO TOUJEO	•Demonstration of Doublestar pen •Stop HUMULIN I •Start 68 units Toujeo at bedtime •1:1 switch in line with SmPC guidance for Toujeo (35) •Request blood glucsose readings for next appointment
Appointment 2- FOUR days after appointment 1 ADD IN PRANDIAL INSULIN	•Review BG trends •Demonstration of Apidra Solostar pen device •Prescription for Apidra Solostar pen, 4 units added to meal with largest postprandial meal pattern (42) •Explain the timing of injection. 15-20min before food -has been shown to reduce PPG levels by approx. 30%, with less hypoglycaemia, when compared to injecting immediately before a meal (43)
Appointment 3- THREE to FOUR days after appointment 2 TITRATION of prandial insulin	•Agree **realistic** initial FBG and Premeal target ranges •One change at a time, so titrate up prandial insulin •If three day average BG is above the top number in the range, increase insulin by 2units •Provide written titration plan and arrange follow up telephone appointments every 3-4 days to support the titration.
Review appointment 4 - TWO weeks after appointment 3	•Review progress with titration and lifestyle choices •Reassess FBG target and adjust insulin if necessary •Reassess Pre-meal BG target •Hypoglycaeamia and illness advice
Review appointment 5 -TWO weeks after apointment 4	•Assess injection sites and technique •Review of lifestyle support •Consider adjusting Blood glucose target ranges downwards if realistic and acheivable.
Three month review appointment	•Hba1c, BMI, urine ACR, foot check, Lipid profile and Blood pressure •Medication review •**Work towards long term ideal fasting and pre-meal BG target of 4-7mmol/l**

Phillip

59-year-old gentleman

T2DM for 12 years

On insulin past 18months

Sales representative

HbA1c 65mmol/mol

BMI 28 (26 when insulin initiated)

eGFR trend over three years: 58, 56 and 53mL/min/1.73m2

BP 134/89

Phillip

Current medication:

Insulatard 24units before bed
Metformin 1g twice daily
Gliclazide 80mg twice daily

Range of home tests:

Pre-breakfast: 7-9.8mmol/l
Pre-lunch: not tested
Pre-evening meal: 7.5-12.4mmol/l
Pre-bed: not tested

Case discussion

Phillip attends for his review appointment to discuss his latest results.

Discuss a suggested management plan

Discuss insulin titration options

Suggested plan

Revisit eating pattern and provide carbohydrate awareness

Set an individualised HbA1c target and blood glucose target range

Review oral medications and consider SGLT2inhibitor
See individual SmPCs and BNF guidance for renal cut-offs
Addition of SGLT2i for reno-protective and Cardio-protective benefits
Addition may allow down-titration of gliclazide/insulin

Agree an “alarm blood glucose level” e.g., 5mmol/L.
Start down-titration if blood glucose starts dropping below this level

Review of oral medications- What NICE 2022 guidance suggests

In Cardiovascular disease or high risk patients

"Take into account the person's current treatment regimen and preferences and make a shared decision about switching treatments or adding an SGLT2 inhibitor, as appropriate" (NICE 2022)

Cardiovascular outcome trials and other key trials influencing targeted treatment decisions

- EMPA-REG for Emagliflozin
- CANVAS trial for Canagliflozin
- DECLARETIMI 58 study for Dapagliflozin

Suggested plan

If he had no success/side-effects from SGLT2inhibitor:

Weight 86kg, yet currently taking 24units insulin daily.
A typical total daily dose once stable on insulin is 0.5-1unit/kg
Start by “fixing the fasting first”
Encourage him to continue checking Fasting Blood Glucose (FBG)
Discuss option to self-titrate
Set a target FBG- 5.5-6.5mmo/L
Review mean FBG every 3-4 days and compare to target
Titrate in 2-4unit steps and repeat 3-4days until target reached
Repeat HbA1c in 3 months

Summary

Mavis- End of life care

Sitaben- Insulin intensification

Phillip- Insulin titration and medicines optimisation

THANK YOU!

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