



Care Plan for a Fictional Patient with Type 2 Diabetes Mellitus

Charlie Payton

2334149

Introduction to Physiology (BMHP5023)

Introduction

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder characterised by persistent hyperglycaemia due to insulin resistance and impaired insulin secretion. It is one of the most common long-term conditions in the UK and significantly increases the risk of cardiovascular disease, kidney failure, blindness and limb amputation.

 Fictional Patient Profile (Type 2 Diabetes)

Basic Details

Name: Mr David Patel (fictional)
Age: 59 years
Gender: Male
Ethnicity: South Asian
Occupation: Taxi driver
Marital status: Married
Living situation: Lives with wife in a rented flat

Medical History

- Newly diagnosed Type 2 Diabetes Mellitus
- Hypertension (diagnosed 5 years ago)
- Hyperlipidaemia (high cholesterol)
- Body Mass Index (BMI): 33 kg/m² (obese)
- Waist circumference: 110 cm

 Lifestyle Factors

Sedentary occupation (sits for long periods driving)
Minimal physical activity
High-calorie diet, frequent takeaway meals
High intake of refined carbohydrates and sugary drinks
Former smoker (quit 2 years ago)
Occasional alcohol consumption

 Current Symptoms

Increased thirst (polydipsia)
Frequent urination (polyuria)
Fatigue
Blurred vision
Slow wound healing

 Clinical Findings at Diagnosis

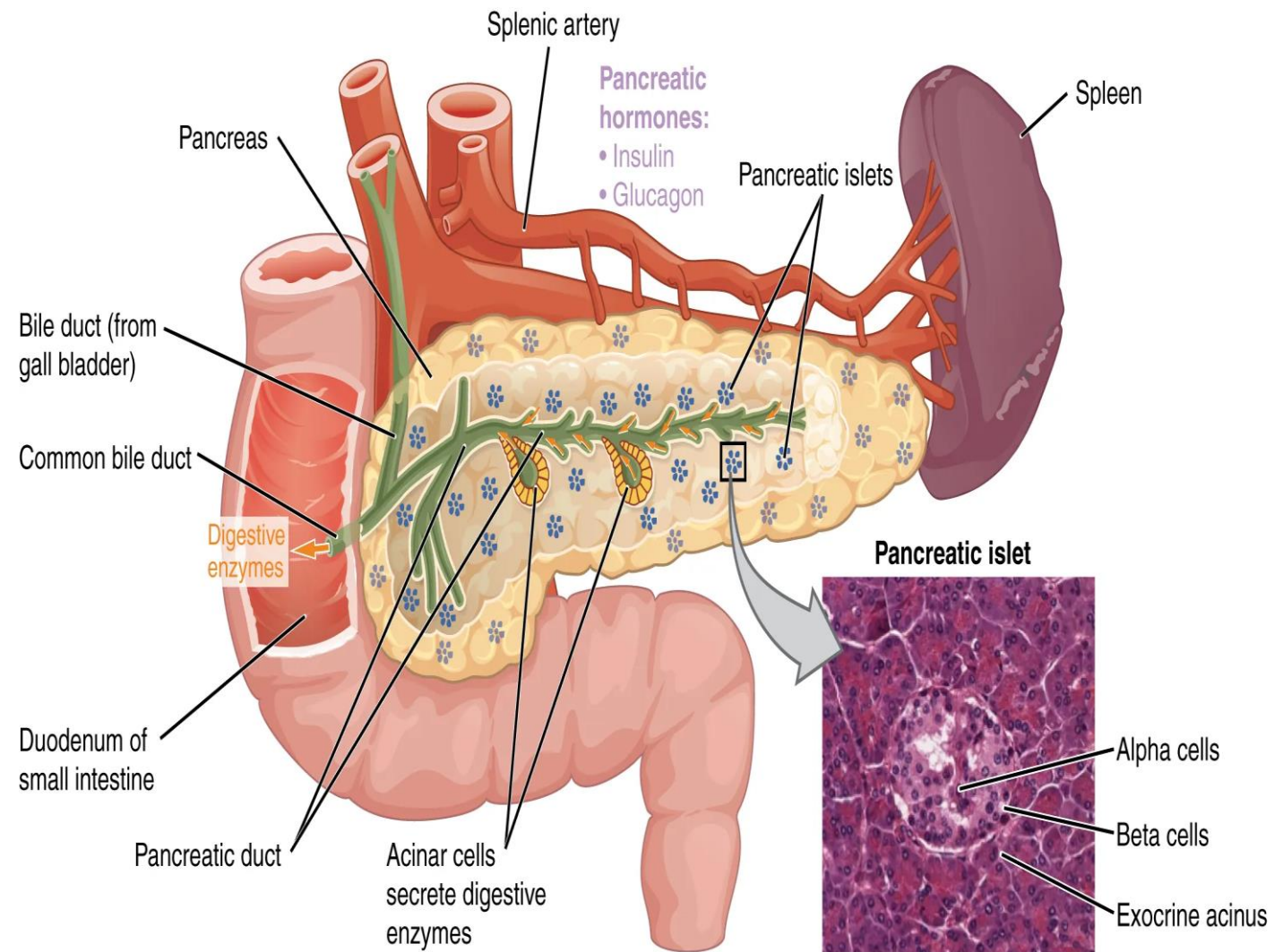
Fasting blood glucose: Elevated
Blood pressure: 150/95 mmHg
Lipid profile: Elevated LDL cholesterol

 Psychosocial Factors

Limited knowledge of diabetes
Concerned about complications
Irregular work schedule affecting meal patterns
Financial constraints limiting healthy food choices

Relevant Body System: Endocrine & Metabolic

- Blood glucose regulation is controlled by the endocrine system, primarily the pancreas.
- Key components:
- Pancreas (islets of Langerhans)
- Beta cells → insulin secretion
- Alpha cells → glucagon secretion
- Insulin lowers blood glucose by promoting cellular uptake and storage.
- Speaker note:
- “Understanding normal physiology is essential for explaining how diabetes develops.”



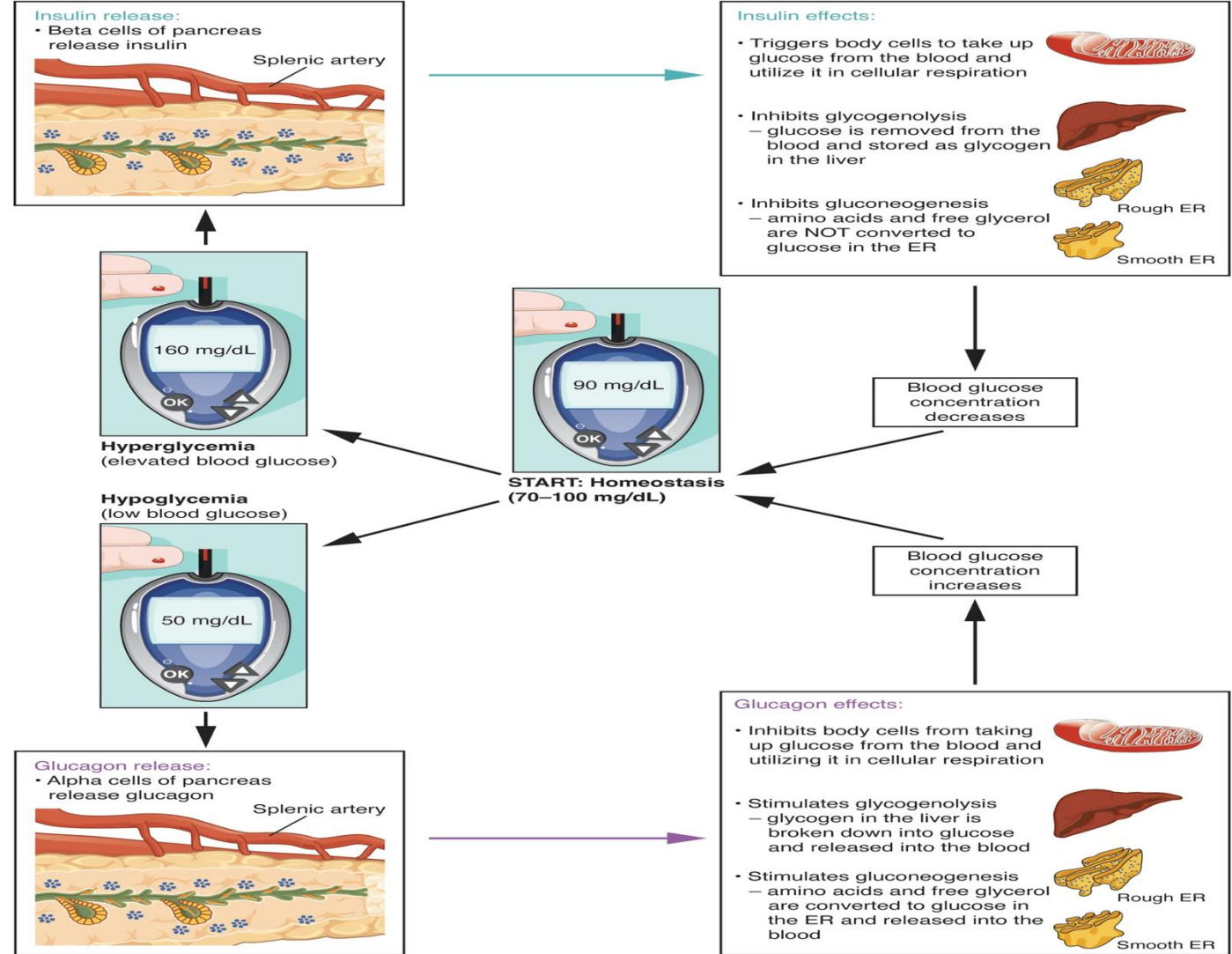
Openstax (2023)

Normal Glucose Regulation

Blood glucose levels are controlled by hormones produced by the pancreas. After a meal, rising glucose stimulates pancreatic beta cells to release insulin. Insulin enables body cells to absorb glucose for energy and promotes storage of excess glucose as glycogen in the liver and muscles.

Between meals, glucagon is released to increase blood glucose by stimulating glycogen breakdown.

(Guyton & Hall, 2021; Marieb & Hoehn, 2019)



OpenStax (2023)

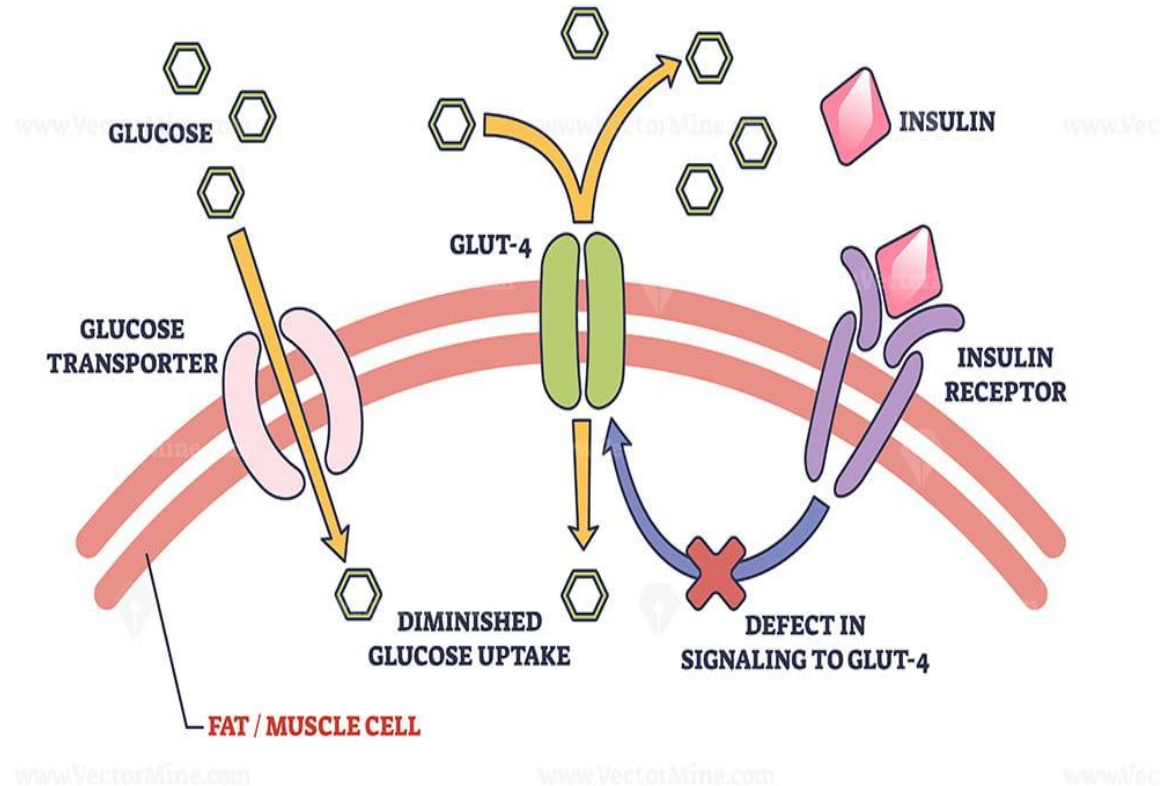
Pathophysiology of Type 2 Diabetes in T2DM

Body tissues become resistant to insulin

Pancreatic beta cells cannot compensate

Hepatic glucose production remains elevated. This results in chronic hyperglycaemia, which damages blood vessels and nerves.

TYPE 2 DIABETES - INSULIN RESISTANCE



Shows how cells stop responding to insulin.

CDC(2024)

Clinical Features of Type 2 Diabetes Mellitus

Common symptoms include:

- Polyuria (frequent urination) due to osmotic diuresis
- Polydipsia (excessive thirst) caused by dehydration
- Fatigue resulting from impaired glucose utilisation
- Blurred vision due to osmotic changes in the lens
- Recurrent infections, particularly skin and urinary infections
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- Many individuals remain asymptomatic and are diagnosed through routine screening.
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- (NICE, 2023; NHS, 2024; WHO, 2023)

Risk Factors for Type 2 Diabetes Mellitus

Non-modifiable factors

Increasing age

Genetic predisposition / family history

Ethnicity (higher risk in South Asian populations)

Modifiable factors

Obesity, particularly central adiposity

Physical inactivity

Diet high in refined carbohydrates and saturated fats

Smoking and excessive alcohol consumption

Mr Patel's sedentary lifestyle and obesity significantly increase insulin resistance and cardiovascular risk.

(NICE, 2023; Diabetes UK, 2024; WHO, 2023)

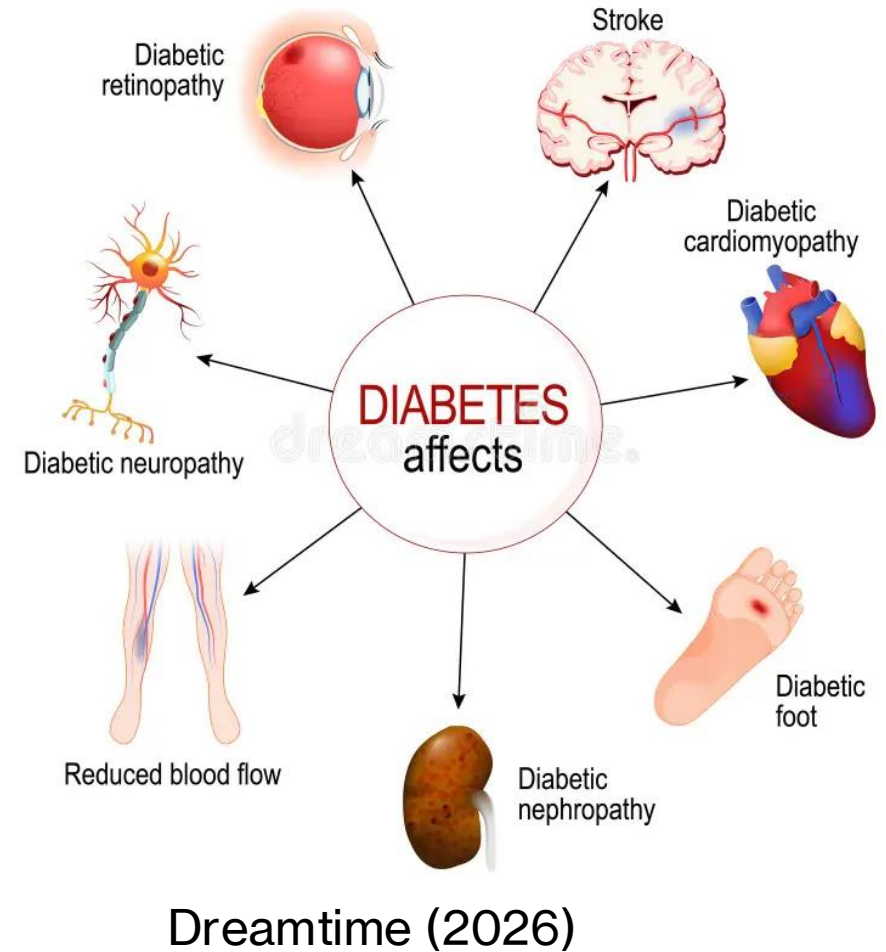


Diabetes UK (2024)

Longterm Complications of Type 2 Diabetes

Long-Term Complications of Type 2 Diabetes

- Chronic hyperglycaemia causes progressive damage to blood vessels and nerves.
- Macrovascular complications
- Coronary heart disease
- Stroke
- Peripheral arterial disease
- Microvascular complications
- Diabetic retinopathy (vision loss)
- Diabetic nephropathy (kidney damage)
- Peripheral neuropathy (nerve damage)
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- These complications significantly increase morbidity, disability and mortality.
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- (WHO, 2023; NICE, 2023; Diabetes UK, 2024)



Care Plan Goals for Mr Patel (Type 2 Diabetes)

Care Plan Objectives

The primary goals of management are to improve glycaemic control, reduce cardiovascular risk and prevent long-term complications.

Key objectives include:

- Achieving target HbA1c levels
- Promoting sustainable weight reduction
- Improving blood pressure and lipid control
- Supporting lifestyle modification and self-management
- Preventing microvascular and macrovascular complications

These goals should be individualised according to the patient's clinical status and preferences.



Lifestyle Management



Key interventions:



Balanced diet with reduced sugar and saturated fat



Increased fibre intake



Regular physical activity (≥ 150 minutes/week)



Weight reduction



Lifestyle change is the cornerstone of treatment.

Pharmacological Management



First-line medication:



Metformin – reduces hepatic glucose production and improves insulin sensitivity



Additional therapies may be required depending on control.

Monitoring and Routine Care



Regular assessments include:



HbA1c every 3–6 months



Blood pressure



Lipid profile



Kidney function



Annual eye screening



Foot examination



Self-monitoring of blood glucose may also be advised.

Communication and Patient Education

Effective management of Type 2 diabetes requires active patient involvement and self-management.

Key aspects include:

- Clear explanation of the condition and treatment plan
- Education on medication use and blood glucose monitoring
- Dietary guidance and lifestyle advice
- Recognition of symptoms of hypo- and hyperglycaemia
- Development of a personalised diabetes action plan
- Communication should be patient-centred and tailored to individual needs.

(NICE, 2023; Diabetes UK, 2024; NHS, 2024)



Ethical Considerations

Healthcare professionals must deliver care that is ethical, equitable and person self centred

Key principles include:

- Respect for patient autonomy and informed consent
- Confidentiality of medical information
- Non-discriminatory access to treatment
- Cultural sensitivity and respect for beliefs
- Supporting patients to make informed decisions
- Ethical practice promotes trust and improves engagement with care.

(NICE, 2023; NHS, 2024)



Conclusion

Type 2 diabetes is a complex chronic condition requiring long-term management.

Key points:

- Caused by insulin resistance and impaired insulin secretion
- Associated with significant complications
- Requires lifestyle modification and pharmacological treatment
- Regular monitoring is essential
- Patient education and support improve outcomes
- Early intervention and personalised care can significantly reduce morbidity and improve quality of life.



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