Epidemic Diabetes

Orlando, Florida
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Disclaimer

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Objectives

• Understand the extent of the epidemic of diabetes in the U.S. and the world

• Understand the terminology, pathophysiology and clinical approach to diabetes

• Diabetes & obesity – incidence, relationship

• Concepts of pathophysiology and terminology are key to understanding CPT®, ICD-9, and preparation for ICD-10
Pathophysiology of Diabetes

• Why should a coder understand the pathophysiology of diabetes?
• Anatomy & physiology
• Terminology
Diabetes

Why this topic?
- Informed patients
- Preventive medicine
- ICD-10-CM changes
Quiz

All of the following are true statements regarding diabetes, except:

A. It is a serious chronic disease without a cure
B. Organ damage and failure is often due to vascular and microvascular damage over time
C. Acute complications are due to severe hyperglycemia
D. It is a result of a strict vegetarian diet
Quiz - answer

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Diabetes Mellitus

“Diabetes” (DM)
Carbohydrate metabolism
• Glycogen, starch, cellulose, simple sugars
Etiology - insulin
• Insufficient secretion
• Abnormal function at the cellular level
Terms synonymous for hyperglycemia include all, except:
A. Elevated blood sugar
B. Elevated serum glucose
C. Elevated blood glucose
D. Elevated serum blood
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A. Elevated blood sugar  
B. Elevated serum glucose  
C. Elevated blood glucose  
D. Elevated serum blood***
Diabetes Mellitus

Characteristics

• Hyperglycemia
• Glycosuria
• Ketoacidosis
• Coma
Diabetes is the leading cause of all of the following, except:
A. Blindness in adults
B. Potter’s disease
C. Non-traumatic limb amputation
D. Kidney failure
Quiz - answer

Diabetes is the leading cause of all of the following, except:

A. Blindness in adults

B. Potter’s disease*** (renal agenesis)

C. Non-traumatic limb amputation

D. Kidney failure
Diabetes Mellitus

Serious complications

- Nervous system – neuropathy
- Eyes – retinopathy (blindness)
- Kidneys – nephropathy

Vascular damage

Infection
Diabetes Mellitus

- Chronic illness
- No cure
- Effective treatment
Diabetes Mellitus

Serious health issues
• Blindness
• Kidney failure
• Limb amputation

Team of health care professionals
Diabetes Mellitus

Obesity

• Changes or swings in either direction
Prevalence of obesity in U.S. 2008 (CDC):

- Women - 35.5%
- Children age 2 to 19 – 16.9%
- Men - 32.2%
## Obesity in Children

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Quiz

Body Mass Index or BMI:
A. Can only be calculated using the metric system
B. Compares mass or weight (numerator) to height (denominator)
C. Is not useful in classifying individuals or groups
D. Is used the same in adults and children
Quiz - answer

Body Mass Index or BMI:

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Methods of Evaluating

- Body Mass Index (BMI)
- Waist to Height Ratio (WHtR)
- Pinch test
- Hydrostatic weighing
- Waist to hip circumference ratio (WHR)
Body Mass Index (BMI)

The formula for BMI calculation is:

metric system: units are kg/m²

• BMI = mass (kg)/ (height (m)) ² or “body weight in kilograms divided by height in meters squared”

• Metric calculation
Body Mass Index (BMI)

or using pounds and inches: units are lb/in²

\[
\text{[mass (lb)/ (height(in))^2]} \times 703; \text{ or “body weight in pounds divided by height in inches squared times 703”}
\]
Body Mass Index (BMI)

using pounds and feet: units are \( \text{lb/ft}^2 \)

mass (lb)/(height (ft))^2 \times 4.88, or “body weight in pounds divided by height in feet squared times 4.88”
Sample BMI Calculation

- For a sample calculation, suppose you are 5’4” tall and weigh 152 pounds, the calculation of BMI is:

- \[(152 \times 703)/(64 \times 64) = \text{BMI of 26}\]
Body Mass Index

- BMI less than 18.5 - underweight
- BMI of 18.5 – 25 indicates optimal weight, normal or “healthy weight”
- BMI 25 to 30 – overweight
- BMI 30 to 35 – moderately obese
- BMI 35 to 40 – severely obese
- BMI over 40 – very severely obese (morbid)
BMI and Health Risk

• BMI of 23.0 to 27.4 – person has a moderate risk of heart disease, hypertension, diabetes, and stroke
• BMI of 27.5 or above – high risk of heart disease, hypertension, diabetes and stroke
Classification of Obesity

- Grade 1 overweight (called “overweight”) – BMI 25 - 29.9 kg/m²
- Grade 2 overweight (called “obesity”) – BMI 30 - 39.9 kg/m²
- Grade 3 overweight (called “severe” or “morbid obesity”) – BMI greater than or equal to 40 kg/m²
Surgical Classification

• Severe obesity – BMI greater than 40 kg/m²

• Morbid obesity – BMI of 40-50 kg/m²

• Super obese – BMI greater than 50 kg/m²
Coding Obesity

- 278.00 – Obesity, unspecified E66.9
- 278.01 – Morbid obesity (severe obesity) E66.01
- 278.02 – Overweight E66.3
- 278.03 – Obesity hypoventilation syndrome (Pickwickian syndrome) E66.2
- 253.8 - Other disorders of the pituitary and other syndromes of diencephalohypophyseal origin (Adiposogenital dystrophy)
- 259.9 – Unspecified endocrine disorder (Obesity of endocrine origin)
Coding Obesity

• Sequencing Obesity
  – Based on patient’s presenting condition

• BMI coding
  – V85.0 & V85.1 (patients under 20-years-old)
  – V85.21-V85.54 (patients over 20-years-old)
  – Z68 body mass index (BMI); Z68.20 – Z68.45
  – Z68.5 Body mass index (BMI) pediatric Z68.51 - 4
Coding Obesity

• Procedures
  – Gastric restrictive banding
    • 43770-43774 laparoscopic approach
    • 43886-43888 open approach
  – Gastric bypass procedures
    • 43644-43645, 43846
Coding Obesity

• Key elements:
  – Patient’s medical history
  – Patient’s height and weight or BMI number
  – Any co-morbid complications or manifestations
  – Treatment plans
Diabetes Mellitus

Incidence

• 1 in 12 people
• Many are undiagnosed or have “pre-diabetes”
• Significant concern in pregnancy
Diabetes Mellitus

Incidence increases with age
Gestational or pregnancy diabetes
• Maternal issues
• Fetal issues
Diabetes Data

- 79 Million: Prediabetes
- 7.0 Million: Undiagnosed
- 18.8 Million: Diagnosed
- 1.9 Million: New Cases
Diabetes by age and sex

- Under 20 yrs: 0.0%
- Age 20 yrs or older: 10.0%
- Age 65 yrs or older: 25.0%
- Men: 10.0%
- Women: 10.0%

Diabetes by age and sex
Glossary

- Glucosuria
- Glycemia
- Glycogen
- Hyperglycemia
- Hypoglycemia
Glossary

- Polydipsia
- Polyphagia
- Polyuria
Diabetes - Terminology

Old
- Juvenile onset DM (JODM)
- Insulin dependent DM (IDDM)
- Non-insulin dependent DM (NIDDM) also: adult onset DM

Current (“New”)
- Type I DM  I-10 “Type 1”
- Type II DM  I-10 “Type 2”
Diabetes - Terminology

Does taking insulin mean someone is automatically a Type I diabetic?

From a coding standpoint, it is important to know the answer.
Quiz

Insulin:
A. Is a hormone secreted by the beta cells of the pancreas
B. Regulates carbohydrate metabolism
C. Mediates transport of glucose into tissue cells
D. All of the above
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Insulin

Carbohydrate metabolism

Insulin

- Hyperglycemia
- Hypoglycemia

Blood sugar

Blood glucose

Glucose in the blood
Glucose

Storage in the liver
• Glycogen

Blood sugar level
• Pancreas
• Liver
• G.I. tract
Prediabetes

• Abnormal glucose level
• 1 in 4 adults
• ICD-9-CM 790.29
• ICD-10-CM R73.09
Quiz

Prediabetes is:
A. A blood glucose level above normal, not high enough for diabetes
B. Estimated to be present in 5% of the adult population
C. Not likely to develop into type II diabetes
D. Symptomatic with dizziness and fainting
Quiz - answer

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Pancreas
Islets of Langerhans

• A cell (alpha) – glucagon
• B cell (beta) – insulin
• D cell (delta) – somatostatin
• F cell – pancreatic polypeptide

Glucagon
Type I Diabetes

- Autoimmune process
- Viral infection
Ketoacidosis

Diabetic ketoacidosis (DKA)

• 250.1, 249.1
• E87.2
• Fat broken down to glycerol & fatty acids
• Glycerol – converted to glucose
• Fatty acids – converted to ketones
Ketoacidosis occurs:
A. When the pancreas produces too much insulin
B. When fat is broken down via lipolysis and glycerol and free fatty acids are released
C. Because fatty acids are not converted to ketones
D. Because of prolonged periods of hypoglycemia
Quiz - answer

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Type II Diabetes

- Later in life, older
- Overweight
- Obese
- Sedentary lifestyle
Blood Sugar Testing

• Fasting blood sugar (FBS)
• Glucose tolerance test (GTT)
• Random blood glucose
Abnormal Glucose Testing

• Glucose tolerance test
  – Abnormal test result is blood glucose over 140 or 199 mg/dL depending of the lab (82951-82953)

• Fasting blood sugar (glucose) test
  – Value may be greater than 100mg/dL or 125 mg/dL depending on the lab (82947)

• Testing is not a definitive diabetes diagnosis
  – Do not report using 250.xx unless specifically documented
Hemoglobin A1c

- HBA1c
- HbA1c
- A1C
- A1c
- Glycosylated hemoglobin
- Glycated hemoglobin

CPT® Index: “see”

- Glycohemoglobin
- Glycosylated Hemoglobin
- CPT® 83036
Quiz

Hemoglobin A1c is:
A. A blood test to evaluate blood glucose levels over time (2 to 4 months)
B. A quantitative urine test for insulin levels
C. A synonym for insulin resistance
D. More common in children compared to adults
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Abnormal HbA1c

Microvascular damage

- MI
- Stroke
- Kidney failure
- Retinopathy
Type II Diabetes

Pathophysiology (why it happens)

- Peripheral resistance to insulin (also called: insulin resistance)
- Increased production of glucose by liver
- Alteration of secretion of insulin by pancreas
Type II Diabetes

- Obesity
- Lifestyle changes
- May not be diagnosed for a long time
Gestational Diabetes

- Diabetes of pregnancy
- Congenital malformations
- Fetal macrosomia
- Risk for diabetes in the future

ICD-10-CM
- Chapter 15
- Always sequenced first in the medical record
Insulin Resistance

• Hyperinsulinemia (251.1) (E16.1)
• Hyperglycemia
• Type II diabetes
Insulin Resistance

- Genetic or inherited
- Obesity
- Lifestyle
- Lack of activity and exercise
- Central obesity
- Cardiovascular disease
Symptoms - Acute

- Polydipsia
- Polyuria
- Polyphagia
- Sudden weight loss
- Blurred vision
- Infections – yeast, UTIs
Symptoms - Chronic

Microvascular disease

• Retinopathy (250.5, 249.5; E13.319)
• Nephropathy (250.4, 249.4; E09.21)
• Cardiovascular disease
• Cerebrovascular disease (stroke)
Treatment

• Diet – weight reduction
• Exercise
• At home testing
• Insulin pumps
• Smoking
Medications

Insulin (HCPCS – J1815, J1817)
- Rapid
- Short
- Intermediate
- Long-acting

Combinations
Quiz

Insulin given to diabetics is:
A. From animal sources, bovine and porcine
B. Not given to type II diabetics
C. Administered only by injection
D. Injected intravenously or IV
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Insulin

- Subcutaneous
- subQ
- Insulin pump
Oral Medications

- Sulfonylureas
- Biguanides
- Thiazolidinediones
- Alpha-glucosidase inhibitors
Prevention

• Same strategies as in treatment

• Need to focus on young people

• Life-long problem
Key Documentation Elements

- Key elements for diabetes mellitus are:
  - Type of diabetes (type I or II, secondary, gestational, etc.)
  - Current management practices (diet, injections, pump, etc.)
  - Identify all pertinent associated conditions/manifestations directly related to diabetes
Diabetes & ICD-10-CM

- Type of diabetes mellitus
- Body system affected
- Complications affecting that body system
Diabetes & ICD-10-CM

- E08  Diabetes mellitus due to an underlying condition
- E09  Drug or chemical induced diabetes mellitus
- E10  Type 1 diabetes mellitus
- E11  Type 2 diabetes mellitus
- E13  Other specified diabetes mellitus
Diabetes & ICD-10-CM

Z79.4 (long-term current use of insulin)

• Insulin-requiring
• Non-insulin-requiring
The End, Thank you!