

# **Medical Test Document**

For Medical Chatbot RAG Testing

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For RAG System Testing

Medical Chatbot

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## 1. HYPERTENSION (High Blood Pressure)

Hypertension is a chronic medical condition where blood pressure is persistently elevated.

### CLASSIFICATION:

- Normal: Systolic <120 mmHg and Diastolic <80 mmHg
- Elevated: Systolic 120-129 mmHg and Diastolic <80 mmHg
- Stage 1: Systolic 130-139 mmHg or Diastolic 80-89 mmHg
- Stage 2: Systolic  $\geq 140$  mmHg or Diastolic  $\geq 90$  mmHg

### RISK FACTORS:

- Age (risk increases with age)
- Family history of hypertension
- Obesity (BMI  $\geq 30$ )
- Physical inactivity
- Tobacco use
- High sodium intake ( $>2$ g/day)
- Excessive alcohol consumption
- Chronic stress

### SYMPTOMS:

Hypertension is often called the silent killer because it typically has no noticeable symptoms. When symptoms occur, they may include:

- Headaches (usually in the morning)
- Dizziness
- Nosebleeds
- Shortness of breath
- Chest pain
- Visual changes

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## TREATMENT OPTIONS:

### 1. Lifestyle Modifications:

- DASH diet (Dietary Approaches to Stop Hypertension)
- Regular aerobic exercise (150 minutes/week)
- Weight reduction (5-10% of body weight)
- Sodium restriction (<1500 mg/day)
- Alcohol moderation
- Smoking cessation

### 2. Medications:

- ACE inhibitors (e.g., Lisinopril)
- ARBs (e.g., Losartan)
- Diuretics (e.g., Hydrochlorothiazide)
- Calcium channel blockers (e.g., Amlodipine)
- Beta blockers (e.g., Metoprolol)

## MONITORING:

- Home blood pressure monitoring recommended
- Regular follow-up every 3-6 months
- Annual kidney function tests
- Regular eye examinations

## COMPLICATIONS (if untreated):

- Heart attack
- Stroke
- Heart failure
- Kidney disease
- Vision loss

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- Metabolic syndrome

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## 2. DIABETES MELLITUS

Diabetes mellitus refers to a group of metabolic disorders characterized by high blood sugar levels.

### TYPES OF DIABETES:

#### 1. Type 1 Diabetes:

- Autoimmune destruction of pancreatic beta cells
- Absolute insulin deficiency
- Usually develops in childhood/adolescence
- Requires insulin therapy

#### 2. Type 2 Diabetes:

- Insulin resistance with relative insulin deficiency
- Most common type (90-95% of cases)
- Strongly associated with obesity
- Progressive beta cell dysfunction

#### 3. Gestational Diabetes:

- Glucose intolerance during pregnancy
- Increases risk of Type 2 diabetes later
- Usually resolves after delivery

### DIAGNOSTIC CRITERIA:

- Fasting plasma glucose  $\geq 126$  mg/dL (7.0 mmol/L)
- Random plasma glucose  $\geq 200$  mg/dL (11.1 mmol/L) with symptoms
- HbA1c  $\geq 6.5\%$  (48 mmol/mol)
- Oral glucose tolerance test: 2-hour plasma glucose  $\geq 200$  mg/dL

### SYMPTOMS:

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- Excessive urination
- Excessive thirst
- Excessive hunger
- Unexplained weight loss
- Fatigue and weakness
- Blurred vision
- Slow wound healing
- Frequent infections

## MANAGEMENT STRATEGIES:

### 1. Medical Nutrition Therapy:

- Carbohydrate counting
- Plate method (1/2 vegetables, 1/4 protein, 1/4 carbs)
- Glycemic index awareness

### 2. Physical Activity:

- 150 minutes moderate exercise per week
- Resistance training 2-3 times weekly
- Avoid prolonged sitting

### 3. Medications:

- Metformin (first-line for Type 2)
- Sulfonylureas
- DPP-4 inhibitors
- GLP-1 receptor agonists
- SGLT2 inhibitors
- Insulin (all types)

### 4. Monitoring:

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- Self-monitoring blood glucose
- Continuous glucose monitoring
- Regular HbA1c testing (every 3-6 months)

## COMPLICATIONS:

Acute:

- Diabetic ketoacidosis (Type 1)
- Hyperosmolar hyperglycemic state (Type 2)
- Hypoglycemia

Chronic:

- Retinopathy (eye damage)
- Nephropathy (kidney disease)
- Neuropathy (nerve damage)
- Cardiovascular disease
- Foot ulcers and amputations

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## 3. ASTHMA

Asthma is a chronic inflammatory disorder of the airways.

### CLASSIFICATION BY SEVERITY:

- Intermittent: Symptoms  $\leq 2$  days/week, nocturnal  $\leq 2$  x/month
- Mild Persistent: Symptoms  $> 2$  days/week but not daily
- Moderate Persistent: Daily symptoms, nocturnal  $\geq 1$  x/week
- Severe Persistent: Continuous symptoms, frequent nocturnal

### COMMON TRIGGERS:

- Allergens (pollen, dust mites, pet dander)
- Respiratory infections
- Exercise (exercise-induced bronchoconstriction)
- Cold air
- Air pollutants and irritants
- Strong emotions and stress
- Medications (NSAIDs, beta-blockers)
- Occupational exposures

### SYMPTOMS:

- Wheezing (high-pitched whistling sound)
- Shortness of breath
- Chest tightness
- Cough (often worse at night/early morning)
- Difficulty breathing during physical activity
- Rapid breathing
- Anxiety due to breathing difficulty



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## DIAGNOSIS:

### 1. Spirometry:

- FEV1/FVC ratio  $<0.75-0.80$
- $\geq 12\%$  improvement in FEV1 after bronchodilator

### 2. Peak Flow Monitoring:

- Daily variability  $>20\%$
- Morning dipping pattern

### 3. Additional Tests:

- Bronchial provocation tests
- Allergy testing
- Chest X-ray (to rule out other conditions)

## TREATMENT APPROACH:

### 1. Controller Medications (Long-term):

- Inhaled corticosteroids (ICS)
- Long-acting beta agonists (LABA)
- Leukotriene modifiers
- Biologic therapies (for severe asthma)

### 2. Reliever Medications (Quick-relief):

- Short-acting beta agonists (SABA)
- Systemic corticosteroids (for exacerbations)

### 3. Non-Pharmacological:

- Asthma action plan
- Trigger avoidance
- Breathing exercises

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- Regular monitoring
- Vaccinations (flu, pneumonia)

## ASTHMA ACTION PLAN:

### Green Zone (Well Controlled):

- No symptoms day or night
- Normal activities possible
- Peak flow >80% of personal best

### Yellow Zone (Caution):

- Cough, wheeze, chest tightness
- Waking at night with symptoms
- Peak flow 50-80% of personal best
- Use reliever medication

### Red Zone (Medical Alert):

- Severe symptoms
- Reliever not helping
- Peak flow <50% of personal best
- Seek emergency medical care