CONCEPT OF HEALTH

Definition (WHO, 1948)

"Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity."

This means that **health** is not just the freedom from illness but a **balanced condition** in which an individual is able to:

- Realize their aspirations,
- Fulfill their needs, and
- Cope effectively with the environment.

In other words, **health** is a **positive state of well-being**, influenced by biological, psychological, and social factors.

Determinants of Health

1. **Genetic factors** – inherited traits and diseases
2. **Environmental factors** – pollution, housing, sanitation
3. **Lifestyle factors** – diet, exercise, smoking, alcohol
4. **Socioeconomic factors** – education, employment, income
5. **Healthcare services** – availability and accessibility

Screening and Monitoring

Screening

Screening refers to the **examination of a group of usually asymptomatic individuals** to detect those with a **high probability of having a specific disease**, using **simple, rapid, and inexpensive diagnostic tests.**

Example:
Blood pressure measurement in apparently healthy people to identify hypertension.

Monitoring

Monitoring is the **continuous observation or periodic assessment** of a patient's health status **after diagnosis or treatment**, to evaluate disease progression or response to therapy.

Example:
Monitoring blood glucose levels in diabetic patients to adjust insulin therapy.

Difference Between Screening and Monitoring

Parameter	Screening	Monitoring
Purpose	Early detection of undiagnosed disease	Ongoing assessment after diagnosis
Target group	Asymptomatic individuals	Diagnosed patients
Frequency	Usually once or at long intervals	Repeated periodically
Outcome	Identification of cases	Evaluation of treatment and prognosis

3. Health Screening Services

Health screening services are healthcare programs aimed at **evaluating the health status of individuals** — with or without symptoms — to identify diseases or risk factors at an early stage.

These services are usually provided by **hospitals, community health centers, or private diagnostic clinics**.

Objectives of Health Screening Services

- Detect diseases at an **early, treatable stage**.
- Promote **preventive health behavior**.
- Reduce **morbidity and mortality** associated with chronic diseases.
- Provide **peace of mind** through reassurance of good health.
- Support **economic benefit** by preventing advanced disease and costly treatments.

Importance of Health Screening

1. **Early Detection Saves Lives**
   - Identifies conditions like hypertension, diabetes, or dyslipidemia before complications occur.
   - Enables simple, cost-effective interventions.
2. **Improves Quality of Life**
   - Early treatment prevents disability or chronic complications (e.g., kidney failure, heart disease).
3. **Peace of Mind and Reassurance**
   - Screening gives confidence about one's health status.
4. **Economic Benefit**
   - Prevents long-term hospitalization and reduces the overall burden of healthcare costs.
5. **Public Health Benefit**
   - Detecting diseases early helps control epidemics and protect community health.

Example:
Regular cancer screening (e.g., Pap smear, mammogram) helps detect precancerous conditions that can be cured with early intervention.

. Characteristics of an Ideal Screening Test

An ideal screening test should be:

- **Simple** and easy to perform
- **Inexpensive** and affordable
- **Reliable and valid** (few false positives or negatives)
- **Non-invasive and painless**
- **Acceptable** to individuals and communities
- **Sensitive** enough to detect disease and **specific** enough to exclude healthy individuals

Classification of Health Screening Packages

Based on the **extent and complexity of tests**, health screening services are commonly divided into:

1. **Standard Health Screen**
2. **Premium Health Screen**
3. **Executive Health Screen**

Each package includes a set of investigations tailored to individual risk and age group.

Standard Health Screen

Purpose: For general healthy individuals as a basic preventive check-up.

Includes:

1. Consultation with health professional
2. **Blood glucose test** – detects diabetes or prediabetes
3. **Blood cholesterol test** – measures total cholesterol levels
4. **Blood pressure measurement** – identifies hypertension
5. **Body Mass Index (BMI)** – assesses obesity or malnutrition
6. **Cardiac risk assessment** – evaluates heart disease risk
7. **Comprehensive urine analysis** – checks for protein, sugar, or blood in urine (possible kidney issues)

Goal: Early detection of metabolic and cardiovascular risk factors.

Premium Health Screen

Purpose: For individuals at moderate health risk or with family history of chronic disease.

Includes all Standard tests, plus:

1. **Pulmonary function test (PFT)** – measures lung capacity; screens for asthma, COPD.

2. **Liver function tests (LFTs)** – assesses enzyme levels for liver health.
3. **More comprehensive urine analysis** – detects infections or kidney disease.

Goal: Detects respiratory, liver, or kidney abnormalities along with metabolic screening.

Executive Health Screen

Purpose: Designed for senior executives or individuals over 40 years of age, often under high stress, with lifestyle-related risks.

Includes all Premium tests, plus:

1. **Comprehensive consultation** (detailed history, family risk, lifestyle evaluation)
2. **12-lead ECG** – measures electrical conduction of the heart, detects arrhythmias or ischemia
3. **Renal profile** – assesses kidney function through serum creatinine, BUN, and electrolytes
4. **Bone profile** – calcium, phosphate, and alkaline phosphatase levels
5. **Full blood count (CBC)** – measures hemoglobin, red/white cell counts, platelet levels
6. **Ferritin blood test** – detects iron storage levels and hereditary disorders (e.g., hemochromatosis)
7. **Healthy body fat percentage** – determines fitness status
8. **Pulmonary and liver function tests** – detailed assessment
9. **Urine analysis** – to rule out renal or urinary infections

Goal: Provide a **comprehensive overview of all organ systems** and early diagnosis of silent conditions like diabetes, liver dysfunction, or coronary artery disease.

Advantages of Health Screening Services

Benefit	Explanation
Early disease detection	Conditions like diabetes, hypertension, and cancer are identified early.
Prevention of complications	Timely intervention reduces risk of organ damage.
Peace of mind	Reassurance of good health encourages healthy living.
Economic saving	Prevents costly treatments in advanced disease.
Lifestyle modification	Screening motivates individuals to exercise, eat better, and stop smoking.
Public health impact	Helps control disease burden in society through preventive strategies.

Limitations / Considerations

- False positives or negatives can cause unnecessary anxiety or missed diagnosis.

- Over-diagnosis may lead to unnecessary investigations.
- Requires **trained professionals** for interpretation and follow-up.
- Must be followed by **confirmatory tests** and appropriate management.

Role of Pharmacists in Health Screening

Pharmacists play an expanding role in **community-based health screening** programs by:

- Conducting BP, blood sugar, and BMI checks in community pharmacies.
- Identifying at-risk patients for referral to physicians.
- Educating patients about disease prevention and lifestyle modification.
- Monitoring ongoing therapy for chronic diseases (diabetes, asthma, hypertension).
- Recording data and participating in public health awareness campaigns.

Example:
A community pharmacist organizing a "Diabetes Awareness Camp" to measure fasting glucose levels and counsel patients on diet and medication adherence.

Blood Pressure and Blood Sugar Monitoring

1. Blood Pressure (BP)

Definition

Blood Pressure (BP) — also known as *arterial blood pressure* — is the **pressure exerted by circulating blood upon the walls of blood vessels**.

During each heartbeat, the heart contracts and relaxes:

- **Systolic Pressure:** the **maximum pressure** in the arteries during ventricular contraction (systole).
- **Diastolic Pressure:** the **minimum pressure** when the ventricles are relaxed (diastole).

BP is measured in millimeters of mercury (mm Hg).

Normal Values

Type	Normal Range
Systolic BP	110 – 130 mm Hg
Diastolic BP	70 – 85 mm Hg
Average BP	120/80 mm Hg
Pulse Pressure	≈ 40 mm Hg *(difference between systolic and diastolic pressure)*

Physiology and Determinants of Arterial Pressure

Several **physical factors** determine arterial blood pressure:

Determinant	Description
Blood Volume	The amount of blood in the circulation. Increased volume → higher BP.
Blood Viscosity	Thicker blood (e.g., in polycythemia) → greater resistance and BP.
Cardiac Output	Amount of blood pumped per minute (HR × stroke volume).
Elasticity of Arteries	Healthy arteries expand and recoil easily; loss of elasticity (arteriosclerosis) increases BP.
Peripheral Resistance	Narrowed vessels (vasoconstriction) raise BP.
Flexibility of Vessel Walls	Stiff or hardened arteries elevate pressure.

Physiological Variations in BP

BP is dynamic and changes with body activities:

Condition	Effect on BP
Exercise, excitement, fear, stress	↑ BP due to adrenaline release
Sleep or relaxation	↓ BP
Pregnancy or aging	May alter BP regulation
Posture changes	Slight differences between lying, sitting, and standing positions

Pulse

Pulse is the **alternate expansion and elastic recoil** of an artery with each heartbeat (systole).

- **Normal Pulse Rate:** 70 – 90 beats/min (approximately equal to heart rate).
- **Tachycardia:** > 100 beats/min (e.g., in fever, anxiety, hyperthyroidism).
- **Bradycardia:** < 60 beats/min (e.g., in athletes, hypothyroidism, heart block).

The **pulse pressure** (difference between systolic and diastolic pressures) averages around **40 mm Hg** and reflects arterial elasticity.

Hypertension (High Blood Pressure)

Hypertension is a condition in which arteries have **persistently elevated blood pressure**, usually **≥ 140/90 mm Hg**.

Each time the heart beats, it pumps blood through arteries. When resistance is high or arteries are stiff, the heart must work harder — leading to complications.

Causes of Hypertension

1. Lifestyle and Behavioral Causes

- Smoking
- Obesity and overweight
- High salt (sodium) intake
- Physical inactivity
- Stress, tension, or fear
- High alcohol consumption
- Poor diet (low in potassium, calcium, magnesium)

2. Medical and Biological Causes

- **Diabetes mellitus**
- **Aging** (arterial stiffness increases with age)
- **Certain medications** (e.g., oral contraceptives, corticosteroids)
- **Pregnancy** (gestational hypertension)
- **Genetic predisposition**
- **Chronic kidney disease**
- **Endocrine disorders** (thyroid, adrenal tumors)

Classification

Type	Description	Examples
Primary (Essential) Hypertension	90–95% of cases; no identifiable cause; related to lifestyle, genetics, age	Common in adults
Secondary Hypertension	5–10% cases; caused by underlying conditions	Kidney disease, endocrine disorders, drugs

Complications of Untreated Hypertension

- Stroke or transient ischemic attacks
- Myocardial infarction (heart attack)
- Heart failure
- Chronic kidney disease
- Retinopathy (eye damage)
- Aneurysm or arterial rupture

Hypotension (Low Blood Pressure)

Hypotension means the **blood pressure is lower than normal**, often **< 90/60 mm Hg**.

Causes

- **Dehydration** (inadequate fluid intake)
- **Blood loss or trauma** (hemorrhage, burns)

- **Endocrine disorders** (thyroid or adrenal insufficiency)
- **Heart diseases** (arrhythmia, heart failure)
- **Medications** (antihypertensives, diuretics)
- **Prolonged fasting or malnutrition**
- **Severe infections (septicemia)**
- **Depression or emotional stress**

Symptoms

- Dizziness or fainting
- Blurred vision
- Fatigue and weakness
- Nausea
- Cold, clammy skin

Persistent low BP can lead to **shock** if not corrected

Measuring Blood Pressure

Instrument: *Sphygmomanometer* (Mercury, Aneroid, or Digital)
Accessory: *Stethoscope*

Procedure (Auscultatory Method)

1. **Patient Position:**
   - Seat patient comfortably with arm supported at heart level.
   - Ensure the patient is relaxed, legs uncrossed, and has not consumed caffeine or smoked for 30 minutes.
2. **Apply Cuff:**
   - Wrap the cuff snugly around the upper arm (2 cm above the elbow crease).
   - Place the stethoscope diaphragm over the brachial artery (just below the cuff).
3. **Inflate the Cuff:**
   - Inflate to about **180 mm Hg** (above expected systolic level) to temporarily stop blood flow.
4. **Deflate Slowly:**
   - Release air gradually while listening for **Korotkoff sounds**.
5. **Interpretation:**
   - **First sound heard → Systolic BP.**
   - **Disappearance of sound → Diastolic BP.**

Record as Systolic/Diastolic mm Hg (e.g., 120/80 mm Hg).

Precautions

- Ensure correct cuff size.
- Avoid measuring immediately after exercise or stress.

- Repeat 2–3 readings for accuracy.
- Measure in both arms during initial evaluation.

Blood Sugar (Blood Glucose)

The **blood sugar concentration (glucose level)** is the amount of glucose present in the blood. It is tightly regulated as part of **metabolic homeostasis** by insulin and other hormones.

Abnormal glucose levels indicate potential metabolic diseases such as **diabetes mellitus**.

Units of Measurement

- **mg/dL (milligrams per deciliter)** — common in the United States and India.
- **mmol/L (millimoles per liter)** — international standard.

Conversion:
1 mmol/L = 18 mg/dL

Normal Fasting Blood Glucose Levels

Condition	Range
Normal (fasting)	70 – 110 mg/dL (4.4 – 6.1 mmol/L)
Prediabetes	111 – 125 mg/dL
Diabetes	≥ 126 mg/dL (on two separate occasions)

Abnormalities in Blood Sugar Levels

Hyperglycemia (High Blood Sugar)

Persistent elevation of blood glucose, most commonly due to **diabetes mellitus**.

Causes:

- Insulin deficiency (Type 1 diabetes)
- Insulin resistance (Type 2 diabetes)
- Pancreatic disorders, stress, or steroid use

Complications:

- Cardiovascular diseases
- Nephropathy (kidney damage)
- Retinopathy (eye damage)
- Neuropathy (nerve damage)

Hypoglycemia (Low Blood Sugar)

Dangerous condition where blood glucose drops below **70 mg/dL**.

Causes:

- Overdose of insulin or oral antidiabetic drugs
- Skipping meals or prolonged fasting
- Excessive exercise
- Alcohol consumption without food

Symptoms:

- Sweating, shaking, anxiety
- Fatigue, confusion, blurred vision
- Aggressive behavior, dizziness
- In severe cases: seizures or loss of consciousness

Measurement of Blood Glucose

A. Sample Type

Glucose can be measured in:

- **Whole blood**
- **Plasma**
- **Serum**

Modern laboratories usually report **plasma glucose**, as it's more stable and standardized.

Sample Handling

- Blood collected in **clot tubes** for serum chemistry analysis should be processed quickly.
- **Red blood cells** continue to metabolize glucose, reducing levels if not separated promptly.
- Use **fluoride tubes (gray-top)** when sample transportation is delayed — fluoride inhibits glycolysis.
- At **refrigerator temperature**, glucose remains stable for several hours.

Measurement Techniques

1. Chemical (Classical) Methods

- Based on **reducing property** of glucose reacting with indicator substances.
- Prone to errors (5–15 mg/dL deviation) due to interference from other reducing agents (e.g., urea).
- Now largely replaced by enzymatic methods.

2. Enzymatic Methods (Modern)

- Use **specific enzymes** to oxidize or phosphorylate glucose:
  - **Glucose oxidase method**
  - **Hexokinase method**
- Highly accurate and specific; minimal interference.

Modern blood glucose meters and automated analyzers use these enzyme-based reactions.

Clinical Relevance of BP and Blood Sugar Monitoring

Parameter	Purpose	Clinical Significance
Blood Pressure	Detect hypertension or hypotension	Prevents stroke, heart failure, kidney disease
Blood Sugar	Detect diabetes or hypoglycemia	Prevents complications like retinopathy, nephropathy, neuropathy

Pharmacists and healthcare providers use these **screening tools** to:

- Identify undiagnosed conditions,
- Counsel on lifestyle modification, and
- Monitor response to therapy.

Role of Pharmacist in BP & Glucose Monitoring

- Conduct community or hospital **screening programs**.
- Educate patients on **self-monitoring** (home BP or glucometer use).
- Advise on **lifestyle changes** — diet, exercise, weight management.
- Ensure **adherence to antihypertensive and antidiabetic therapy**.
- Report abnormal results to physicians for further evaluation.
- Maintain proper **documentation** of readings and follow-up outcomes.

Summary Table

Parameter	Normal Range	Abnormality	Clinical Condition
Systolic BP	110–130 mm Hg	> 140 mm Hg	Hypertension
Diastolic BP	70–85 mm Hg	< 60 mm Hg	Hypotension
Pulse Pressure	~ 40 mm Hg	↑ in stiffness	Atherosclerosis
Fasting Glucose	70–110 mg/dL	> 126 mg/dL	Diabetes
Postprandial Glucose	< 140 mg/dL	< 70 mg/dL	Hypoglycemia

Clinical Laboratory and Diagnostic Tests in Health Screening

Blood Glucose Laboratory Tests

Monitoring blood glucose levels is **essential for diagnosing, managing, and preventing diabetes mellitus** and related metabolic disorders.
Various laboratory and patient-side tests are used to assess short- and long-term glycemic control.

Fasting Blood Sugar (FBS) Test

Definition:
Measures blood glucose levels after the patient has **fasted for at least 8 hours** (no food or drink except water).

Purpose:
To assess baseline glucose concentration without influence of recent meals.

Normal Range:
70 – 110 mg/dL (4.4 – 6.1 mmol/L)

Clinical Interpretation:

- 111 – 125 mg/dL → *Impaired fasting glucose* (prediabetes)
- ≥ 126 mg/dL (on two occasions) → *Diabetes mellitus*

Pharmacist note: FBS is often part of routine health screening packages; results help identify undiagnosed diabetic patients.

Two-Hour Post-Prandial Blood Sugar (2-h PPBS)

Definition:
Measures glucose **2 hours after a regular meal or 75 g glucose intake**.

Purpose:
Evaluates how efficiently the body metabolizes glucose after eating.

Normal Range:
< 140 mg/dL (7.8 mmol/L)

200 mg/dL indicates diabetes.

Oral Glucose Tolerance Test (OGTT)

Measures the body's response to a standard oral glucose load **(usually 75 g).**
Blood samples are taken at fasting and at intervals (30 min, 1 hr, 2 hr, 3 hr).

Clinical Use:

- Diagnosis of **gestational diabetes**
- Confirmation of **borderline diabetes**

Interpretation (2-hour value):

- < 140 mg/dL → Normal
- 140 – 199 mg/dL → Impaired glucose tolerance
- ≥ 200 mg/dL → Diabetes mellitus

Intravenous Glucose Tolerance Test (IVGTT)

Definition:
Glucose is administered intravenously instead of orally; blood samples are drawn at fixed intervals.

Purpose:
Used when gastrointestinal absorption is impaired or in research settings.

Glycosylated Hemoglobin (HbA_1C)

Definition:
Measures the **percentage of hemoglobin irreversibly bound to glucose**, reflecting the **average blood glucose level over 2–3 months**.

Normal Range:

- < 5.7 % → Normal
- 5.7 – 6.4 % → Prediabetes
- ≥ 6.5 % → Diabetes

Clinical Importance:

- Long-term indicator of glycemic control.
- Used to monitor diabetes management and therapy effectiveness.

Pharmacist's Role: Reinforce medication adherence and lifestyle modification if HbA_1C remains high.

Self-Monitoring of Blood Glucose (SMBG)

Patient-performed test using portable glucometers with finger-prick blood.

Advantages:

- Immediate results
- Guides insulin dosing and dietary adjustment
- Encourages patient involvement

Random Blood Sugar (RBS)
Blood glucose measured at any time of the day**, regardless of meals.**

Interpretation:
≥ 200 mg/dL with symptoms (polyuria, polydipsia, weight loss) → Diagnostic of diabetes.

Correlation with HbA_1C (Average Blood Glucose)

HbA_1C (%)	Estimated Avg. Glucose (mg/dL)
5 %	97
6 %	126
7 %	154
8 %	183
9 %	212

Clinical Correlation

- **High FBS / PPBS / HbA_1C** → Diabetes, insulin resistance, or metabolic syndrome.
- **Low glucose** → Hypoglycemia due to insulin overdose, fasting, or endocrine disorders.
- **Monitoring** helps prevent complications like nephropathy, neuropathy, retinopathy.

Lung Function Tests (Pulmonary Function Tests – PFTs)

Pulmonary Function Tests measure **how efficiently the lungs inhale, exhale, and exchange gases** ($O_2 \leftrightarrow CO_2$).

Results are compared with *predicted normal values* (based on age, height, sex, and ethnicity). Deviations are expressed as **percent of predicted** to grade disease severity.

Purpose

- Diagnose respiratory disorders (asthma, COPD, restrictive diseases).
- Evaluate pre-operative respiratory fitness.
- Monitor disease progression or treatment response.

Main Types of Pulmonary Function Tests

Test	Principle / What it Measures
Spirometry	Measures amount (volume) and speed of air inhaled/exhaled. Determines FEV_1 (Forced Expiratory Volume in 1 sec) and FVC (Forced Vital Capacity).
Body Plethysmography	Measures total lung volume including air not exhaled (residual volume).
Lung Diffusion Capacity (DLCO)	Evaluates how well O_2 moves from alveoli to bloodstream.

Arterial Blood Gas (ABG)	Determines O_2 and CO_2 partial pressures and acid–base balance.
Airway Reactivity Tests	Challenge tests using methacholine or exercise to diagnose asthma.
Cardiopulmonary Exercise Test	Assesses overall heart–lung efficiency during physical exertion.

Primary Lung Volumes

Symbol	Name	Description
VT	Tidal Volume	Air inhaled/exhaled during quiet breathing
IRV	Inspiratory Reserve Volume	Extra volume inhaled after a normal inspiration
ERV	Expiratory Reserve Volume	Extra volume exhaled after normal expiration
RV	Residual Volume	Air remaining in lungs after maximal exhalation

Lung Capacities (Combinations of Volumes)

Symbol	Capacity	Formula / Explanation
TLC	Total Lung Capacity	Sum of all four primary volumes (VT + IRV + ERV + RV)
VC	Vital Capacity	Maximum air exhaled after maximum inspiration
FRC	Functional Residual Capacity	Volume left in lungs after normal exhalation
IC	Inspiratory Capacity	Max volume inhaled from FRC (VT + IRV)

Spirometry – Procedure

1. The patient breathes through a mouthpiece wearing a nose clip.
2. Inhale deeply and exhale **as forcefully and quickly as possible** into the spirometer.
3. Repeat 3 or more times for accuracy.
4. Results plotted on a **spirogram** curve (volume vs. time).

Interpretation:

- ↓ FEV_1 / FVC ratio → *Obstructive disease* (asthma, COPD)
- ↓ TLC with normal ratio → *Restrictive disease* (fibrosis, scoliosis)

Clinical Significance

- Detects airflow limitation early.
- Guides bronchodilator therapy.
- Evaluates occupational lung exposure effects.
- Monitors therapy compliance in chronic respiratory illness.

Lipid Profile (Cholesterol Test)

Definition

A **lipid profile** or **cholesterol test** measures the concentration of various lipids (fats) in blood, including total cholesterol, HDL, LDL, VLDL, and triglycerides.

Purpose

- Screen for lipid disorders and cardiovascular risk.
- Monitor response to lipid-lowering therapy (e.g., statins).
- Detect secondary causes of dyslipidemia (diabetes, hypothyroidism, kidney disease).

Key Components and Their Clinical Meaning

Component	Description	Desirable Range
Total Cholesterol	Structural lipid used for hormone synthesis; excess causes arterial plaque	< 200 mg/dL
HDL (High-Density Lipoprotein)	"Good" cholesterol; removes excess cholesterol from tissues to liver	> 40 mg/dL (men); > 50 mg/dL (women)
LDL (Low-Density Lipoprotein)	"Bad" cholesterol; deposits cholesterol in arteries forming plaques	< 100 mg/dL (optimal)
VLDL (Very Low-Density Lipoprotein)	Transports triglycerides from liver to tissues; excess linked to heart disease	< 30 mg/dL
Triglycerides	Fat used for energy; elevated levels increase cardiac risk	< 150 mg/dL

Clinical Importance

- High **LDL** and **triglycerides** → atherosclerosis, stroke, coronary heart disease.
- High **HDL** → protective effect.
- **Total Cholesterol : HDL ratio** indicates overall cardiac risk.

Pharmacist note: Encourage dietary modification, physical activity, and adherence to lipid-lowering drugs.

Indications for Lipid Profile Testing

1. Routine health screening (every 5 years in adults).
2. Family history of cardiovascular disease.
3. Diabetes, obesity, or hypertension.
4. Monitoring lipid-lowering therapy.
5. Evaluating secondary dyslipidemia due to liver/kidney diseases.

Advantages of Cholesterol Testing

- Simple, quick, and reliable.
- Detects risk before symptomatic disease occurs.

- Helps evaluate therapeutic efficacy and adherence.
- Motivates patients toward healthy diet and exercise.

Role of Pharmacist in Health Screening & Monitoring

1. **Counselling:** Educate patients about test preparation (fasting requirements, medication use).
2. **Interpretation Assistance:** Explain meaning of results in understandable terms.
3. **Referral:** Refer patients with abnormal results to physicians for diagnosis and management.
4. **Follow-Up:** Encourage adherence to lifestyle modification and prescribed drugs.
5. **Community Screening:** Conduct BP, blood glucose, cholesterol, and spirometry camps.
6. **Documentation:** Maintain patient records for longitudinal monitoring.

. Summary Table

Test Category	Key Tests	Normal / Target Range	Main Use
Blood Glucose	FBS, PPBS, OGTT, HbA_1C	FBS < 110 mg/dL; HbA_1C < 5.7 %	Detect/monitor diabetes
Pulmonary Function	Spirometry, Plethysmography, DLCO	FEV_1 / FVC > 70 %	Diagnose asthma, COPD
Lipid Profile	TC, HDL, LDL, TG	TC < 200, LDL < 100, HDL > 40 mg/dL	Assess cardiac risk

Conclusion

Routine **biochemical and physiological screening tests**—such as blood glucose estimation, pulmonary function testing, and lipid profiling—form the backbone of preventive and clinical pharmacy services.
Early detection through these tests:

- Prevents complications of chronic diseases,
- Promotes rational therapy adjustments, and
- Enhances patients' overall quality of life.

Pharmacists play a vital role in **educating, monitoring, and motivating** patients to undergo regular screenings and follow healthy lifestyles.

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