

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 1 «Gastric Ulcer. Secondary Iron Deficiency Anemia».**

**For the student**

You are the doctor of Primary Health Care Center. Your patient is M., 42 years old. Complaints: heartburn, nausea, vomiting, paroxysmal stabbing epigastric pain, evolving within 20-30 minutes after meals and at night. The patient reports being ill for about 3 months. Last 6 months he spent in a military action zone. He applied for medical care for the first time.

Status: The skin and mucous membranes (conjunctiva and soft palate) are pale in color. Vesicular breathing, no wheezing, RR 19 per minute. Heart rhythm normal, clear tones, BP 120/80 mm Hg, HR 78 bpm. Abdomen: soft, pain reported in the epigastrium. Liver and spleen are not enlarged.

**Hemogram**

Parameter	Result	Reference values
Rbc	$4.2 \times 10^{12} / l$	$4.5 - 5.5 \times 10^{12} / l$
Hb	132 г / l	140 - 160 г / l
Color index	0.80	0.85 - 1.05
Wbc	$7.8 \times 10^9 / l$	$4.0 - 9.0 \times 10^9 / l$
ESR	12 mm / hr	Up to 16 mm / hr

**Gregersen's reaction** (++++).

**Gastric X-ray (native X-ray, see appendix).**

Tasks:

1. Name the main clinical syndromes.
2. Evaluate the general blood test and Gregersen's reaction.
3. Evaluate the X-ray of the stomach (see appendix).
4. Establish the diagnosis.
5. Indicate the necessary additional investigations.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 1 «Gastric Ulcer. Secondary Iron Deficiency Anemia».**

1. The main clinical syndromes: - dyspeptic; - anemic.
2. Hemogram signs of hypochromic anemia. Gregersen's reaction: blood in feces (gastrointestinal bleeding).
3. X-ray of the stomach: niche symptom.
4. Diagnosis: gastric ulcer, secondary iron deficiency anemia.
5. Necessary additional studies: fibroesophagogastroduodenoscopy, *Helicobacter pylori* presence determination.

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 2 «Acute glomerulonephritis».**

**For the student**

You are the doctor of Primary Health Care Center. Your patient is Z., 33 years. Complaints: fever up to 38.2 ° C, weakness, nausea, vomiting, headache, swelling of the face, meat slops like urine, dull pain in the lumbar region, increase of blood pressure up to 150/100 mm Hg. Symptoms onset: 2 weeks ago after a sore throat episode.

Status: general condition of moderate severity. Skin and visible mucous membranes are pale and dry. The face is swollen. Vesicular breathing, no wheezing, RR 19 per minute. Normal heart rhythm, dull tones, BP 155/100 mm Hg, pulse 88 bpm. The abdomen is soft, the liver and spleen are not enlarged. The positive symptom of tapping on the lumbar region on both sides is determined. Face, legs and feet are pasty.

Urinalysis: amount 90 ml, color brown, turbid, weight 1030, acidic reaction, protein 0.66 g / l, red blood cells - n/a, leukocytes 8-12 visible, flat epithelium - 2-4 cells visible, hyaline cylinders 5-8 cells visible.

Daily diuresis - 400 ml.

**Tasks:**

1. Evaluate the urinalysis and daily diuresis.
2. Establish the leading clinical laboratory syndrome.
3. Establish the diagnosis.
4. Name one of the methods for examining urinary sediment.
5. Specify groups of drugs for treatment.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 2 «Acute glomerulonephritis».**

1. General urine analysis: gross hematuria, proteinuria, cylindruria. Daily diuresis: oliguria.
2. The leading clinical and laboratory syndrome: nephritic syndrome.
3. Acute glomerulitis.
4. The study of urinary sediment (Ambourget's, Nechiporenko's, Kakovsky-Addis tests).
5. Antibiotics, inhibitors of the angiotensin-converting enzyme, disaggregants, diuretics (salidiuretics).

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 3 «Myocardial infarction».**

**For the student**

Patient L., aged 62, applied to reception of a multidisciplinary hospital.  
Complaints: increasing intensive pressing pain behind the sternum, irradiating to the left hand. Symptoms duration 8 hours; nitroglycerin treatment would not help.

Diagnosis “angina pectoris” has been established 3 years ago.

History: smoking, blood pressure elevated for 15 years. Two years ago, diabetes mellitus type 2 was diagnosed.

**ECG (native ECG, see appendix).**

**Tasks:**

1. ECG registration (on manikin).
2. Give an assessment of an ECG (see the appendix).
3. Establish a diagnosis of the underlying disease.
4. Make a plan of laboratory tests for the diagnosis of myocardial infarction.
5. Identify the group of drugs for the treatment of the underlying disease.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 3 «Myocardial infarction».**

1. ECG registration - positioning of electrodes in 12 standard leads (on a manikin).
2. ECG evaluation: acute Q myocardial infarction located on anterior and lateral LV wall.
3. Coronary artery disease: acute Q myocardial infarction located on anterior and lateral LV wall.
4. Plan of investigations: Troponin, MV fraction of creatine phosphokinase.
5. Nitrates, morphine, angiotensin-converting enzyme inhibitors, antiplatelet agents, direct anticoagulants.

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 4 «Type 2 diabetes mellitus».**

**For the student**

You are the doctor of the Primary Health Care Center. Your patient is K., aged 57 years, complaining of dry mouth, thirst, general weakness, an increase in diuresis volume up to 3 l / day.

Symptoms onset: 6 months ago.

Status: the general condition - satisfactory. The skin is clean, normal color, dry. Patient is overweight (height 155 cm, body weight 83 kg). Vesicular breathing, no wheezing. Dull heart sounds, loud II tone over aorta. Pulse - 80 bpm, Normal rhythm. Liver and spleen are not enlarged. No peripheral edema.

Urinalysis: relative density - 1032, slightly alkaline reaction, leukocytes - 10-12 visible, bacteria +++, protein - traces, sugar reaction (+++).

**Plasma glucose** – 12,4 mmol/l.

**Tasks:**

1. Evaluate complaints, case history and physical examination data. What disease do they correspond to?
2. Which laboratory studies confirm the preliminary conclusion regarding the type of disease.
3. Establish a diagnosis of the underlying disease.
4. Indicate the required additional laboratory test.
5. Assign the necessary consultations of medical specialists.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 4 «Type 2 diabetes mellitus».**

1. Diabetes mellitus type 2.
2. Hyperglycemia, glycosuria.
3. Type 2 diabetes mellitus, newly diagnosed, moderate severity, decompensation.
4. Glycylated hemoglobin.
5. Medical consultations: endocrinologist, ophthalmologist, neurologist, cardiologist.



**Station «Internal medicine»: skills and manipulations**  
**Scenario № 5 «Thyrotoxicosis».**

**For the student**

You are the doctor of Primary Health Care Center. Your patient is J., 30, complaining of thirst, increased appetite, palpitations, irritability, trembling of the whole body, pain in the eyes. Disease onset: over 2 months ago, after a sore throat episode. During this time, body weight decreased by 10 kilograms.

Status: general condition - satisfactory. Body temperature 37.2 C. Patient is fussy, fine tremor of the fingers of outstretched arms reported, glitter of eyes, winking is rare. Strip of sclera between the upper eyelid and the iris is visible when a patient looks down. Mood swings are reported. Increased size of the isthmus of the thyroid gland is palpated. Skin is wet and warm. Borders of the heart: normal range, pronounced heart tones. Pulse 126 bpm. BP - 160/50 mm Hg. Vesicular respiration. The abdomen is soft, painless, the liver and spleen are not enlarged. Tendency to diarrhea. Urination – no disorders. No peripheral edema

The levels of tri-iodineoethyronine (T3) and tetra-iodineoethyronine (T4), respectively, are 1.5 and 2 times higher than normal, the level of thyroid-stimulating hormone (TSH) is reduced.

**Tasks:**

1. Indicate the degree of enlargement of the thyroid gland (goiter).
2. Establish a syndrome-based diagnosis.
3. Justify the diagnosis based on laboratory analysis data.
4. Make a plan for additional research.
5. Choose the groups of drugs for treatment.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 5 «Thyrotoxicosis».**

1. I stage.
2. Thyrotoxicosis.
3. The increase in levels of T3, T4, a decrease in the level of TSH.
4. Ultrasound examination of the thyroid gland, ECG, Echo - cardioscopy.
5. Thyreostatics (merkazolil), beta-blockers.

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 6 «Iron deficiency anemia».**

**For the student**

You are the doctor of Primary Health Care Center. Your patient is B., 45, complaining of weakness, palpitations, shortness of breath with moderate exertion, dizziness, increased fatigue, tinnitus, urge to eat chalk.

History: uterine fibroids with hemorrhagic syndrome (with frequent bleeding).

Status: the skin is pale. Peripheral lymph nodes are not enlarged. Vesicular breathing. Pulse 96 bpm., BP 110/80 mm Hg; heart tones are rhythmic, dull, with systolic sound at all points of auscultation of the heart. Tongue is clean, tongue papillae smoothened (lacquered tongue symptom). The abdomen is soft and painless. The liver and spleen are not enlarged.

**Hemogram**

Parameter	Result	Reference values
Rbc	$2.9 \times 10^{12} / l$	$4.5 - 5.5 \times 10^{12} / l$
Hb	72 г / l	120 - 140 г / l
Color index	0.70	0.85 – 1.05
Reticular cells	0.5%	Up to 1%
ESR	12 mm / hr	Up to 16 mm / hr
Microanizocytosis, poikilocytosis		

Serum iron level – 6  $\mu\text{mol} / l$  (reference values for females – 9–27  $\mu\text{mol} / L$ ).

**Tasks:**

1. Make a conclusion regarding the general blood analysis and the serum iron level.
2. Establish a diagnosis of the underlying disease.
3. Indicate (on the manikin) auscultation points of the heart and explain the reason for the formation of systolic sound.
4. Identify the possible symptoms related to skin and its appendages.
5. Provide recommendations for nutrition and indicate the main group of drugs for treatment.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 6 «Iron deficiency anemia».**

- 1 Hypochromic anemia. Reduced serum iron levels.
2. Iron deficiency anemia.
3. 5 points of auscultation of the heart. Changes of the rheological properties of blood.
4. Dry skin, striped and brittle nails, hair loss.
5. A balanced diet with the inclusion of red meat. 2 valent iron based drugs.

## Scenario № 7 «Mitral valve stenosis».

### For the student

You are the doctor of the Primary Health Care Center. The patient is G., 26 years old. Complaints: fatigue, shortness of breath with little exertion, cough, recurrent pain in the heart, palpitations, feeling of heaviness in the right hypochondrium, edema of the feet. Medical history: diagnosis of rheumatism established at 12 years of age.

Status: the skin is pale, cheeks are blushing, wheezing over the lower parts of the lungs, the expansion of the boundaries of relative cardiac dullness: upwards and to the right side. At the apex, I tone enhancement (“clapping” I tone), and diastolic sound, with clicking of the opening of the mitral valve are heard. Loud II tone over the pulmonary artery is reported.

Extract from the echo cardioscopy protocol:

Opening amplitude of mitral valve during diastole - 20 mm (normal value > 25mm);

Unidirectional movement of the mitral valve (normal value - multidirectional movement of the mitral valve);

The area of the mitral orifice is 2.5 cm<sup>2</sup> (normal value is 4-6 cm<sup>2</sup>);

Pressure gradient on the mitral valve - 16 mm Hg (normal value <7mm Hg).

### Tasks:

- 1 Perform auscultation of heart (on the manikin) and make a conclusion
- 2 Provide an interpretation of the results of Echo - cardioscopy
- 3 Establish a diagnosis of the underlying disease
- 4 Specify the complications of the underlying disease
- 5 Assign the necessary consultations with specialists

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 7 «Mitral stenosis».**

1. I tone is enhanced, diastolic sound, clicking of the mitral valve.
2. Signs of stenosis of the left atrio-ventricular orifice: left atrial hypertrophy, right ventricular hypertrophy, pulmonary hypertension.
3. Rheumatic fever. Mitral stenosis.
4. Circulatory failure II B stage, Functional class III.
5. Cardiac surgeon.

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 8 «Community acquired pneumonia»**

**For the student**

Patient K., 38 years old. Complaints: weakness, loss of appetite, headache, fever of 38.5 ° C, cough with sputum for 3 days. Disease onset after hypothermia (walk in the forest). Status: general condition of moderate severity. Body temperature 38.7 ° C. The skin and visible mucous membranes are pale. RR - 22 per 1 minute. Enhanced pectoral fremitus below the angle of the right scapula, in the same area - dullness of percussion sound; auscultation - weakened breathing with fine wheezing sounds.

**Hemogram**

<b>Parameter</b>	<b>Result</b>	<b>Reference values</b>
Rbc	4.5 x 10 <sup>12</sup> /l	4.5 – 5.5 x 10 <sup>12</sup> /l
Hb	130 g/l	120-140 g/l
Color index	0.9	0.85 – 1.05
Wbc	12.0 x 10 <sup>9</sup> /l	4.0 – 9.0 x 10 <sup>9</sup> /l
ESR	24 mm/hr	Up to 10 mm/hr

X-ray of the chest (native X-ray, see appendix).

**Tasks:**

1. Perform auscultation of the lungs (on the manikin) and make a conclusion.
2. Evaluate the X-ray (see annex).
3. Establish the diagnosis.
4. Treatment regimen.
5. Criteria for recovery.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 8 «Community acquired pneumonia».**

1. Fine wheezing sound.
2. Foci of infiltration in the lower lobe of the right lung.
3. Community acquired pneumonia with localization in the lower lobe of the right lung.
4. Antibiotics. Expectorants.
5. Normalization of temperature for 4 days. Normalization of the content of leukocytes in the blood. Lack of infiltration on the control X-ray.



**Station «Internal medicine»: skills and manipulations**  
**Scenario № 9 «Chronic obstructive airways disease».**

**For the student**

You are the doctor of Primary Health Care Center. Your patient is B., 50 years old, complaining of a paroxysmal painful cough with small amount of viscous sputum (up to 30 ml per day), shortness of breath with moderate exertion.

History: smoking for 25 years. For the last 10 years reported cough with sputum in the morning. Experienced episodes of pneumonia several times.

Status: diffuse warm cyanosis. Observations: intercostal spaces widened. Palpation: pectoral fremitus weakened. Percussion: lung mobility reduced, box-like sound. RR - 22 per 1 min. Auscultation: respiratory sound in the upper parts of the lungs is enhanced, over the other parts - weakened, dry whistling scattered wheezing, exhalation is extended. Pulse - 90 bpm., normal rhythm. BP - 120/80 mm Hg. Heart tones - dull. The abdomen is soft and painless.

**Hemogram**

Parameter	Result	Reference values
Rbc	$5.0 \times 10^{12}/l$	$4.5 - 5.5 \times 10^{12}/l$
Hb	170 g/l	140-160 g/l
Color index	1.1	0.85 - 1.05
Wbc	$10.0 \times 10^9/l$	$4.0 - 9.0 \times 10^9/l$
Platelets	$240 \times 10^9/l$	$180-320 \times 10^9/l$
ESR	18 mm/hr	Up to 10 mm/hr

Spiro pneumotachometry: the vital capacity of the lungs is 2.9 liters (normal value 3.5-5 liters), the forced expiratory volume in 1 second is 59% (normal value 80%).

**Tasks:**

1. Perform auscultation of lungs (on the manikin) and make a conclusion.
2. Perform a spiro pneumotachometry (the student being examined participates as a patient).
3. Explain the results of spiro pneumotachometry
4. Establish a diagnosis of the underlying disease.
5. Indicate the main groups of drugs for treatment.

**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 9 « Chronic obstructive airways disease ».**

1. Whistling dry sounds. The exhalation is extended.
2. The correct conduct of the test with the definition of VC and FEV for 1s.
3. A moderate decrease in respiratory function of restrictive type and a pronounced decrease of obstructive type.
4. Chronic obstructive airways disease.
5. Antibiotics, bronchodilators, expectorants, antihistamine drugs.

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 10 «Arterial hypertension».**

**For the student**

You are the doctor of the Primary Health Care Center. Your patient is L., 56 years old. Complaints: headache in the occipital-parietal region in the morning, dizziness, decreased working ability, recurring episodes of increased blood pressure up to 200/110 mm Hg. Arterial hypertension reported for 12 years. Irregular treatment reported. The patient's mother also had hypertension.

Status: satisfactory. The patient is overweight, facial hyperemia. Pulse - 90 bpm., heart rhythm normal, intensive pulse. Blood pressure on both hands is 180/100 mm Hg. The left border of the heart is 1.0 cm outwards from the left medio-clavicular line, the right and upper heart borders are normal. Accent of the II tone over the aorta. Abdomen - no pathological changes.

Electrocardiogram (native ECG, see appendix). Extract from the Echo-CS protocol: 1) the thickness of the interventricular septum - 13 mm (normal value 6-11 mm);

2) the thickness of the posterior wall of the left ventricle - 13 mm (normal value 6-11 mm).

Tasks:

1. Establish a preliminary diagnosis.
2. What ECG changes confirm the diagnosis (native ECG, see appendix)?
3. Make a conclusion on the results of Echo-CS.
4. Additional instrumental studies.
5. Establish the drugs needed for treatment.

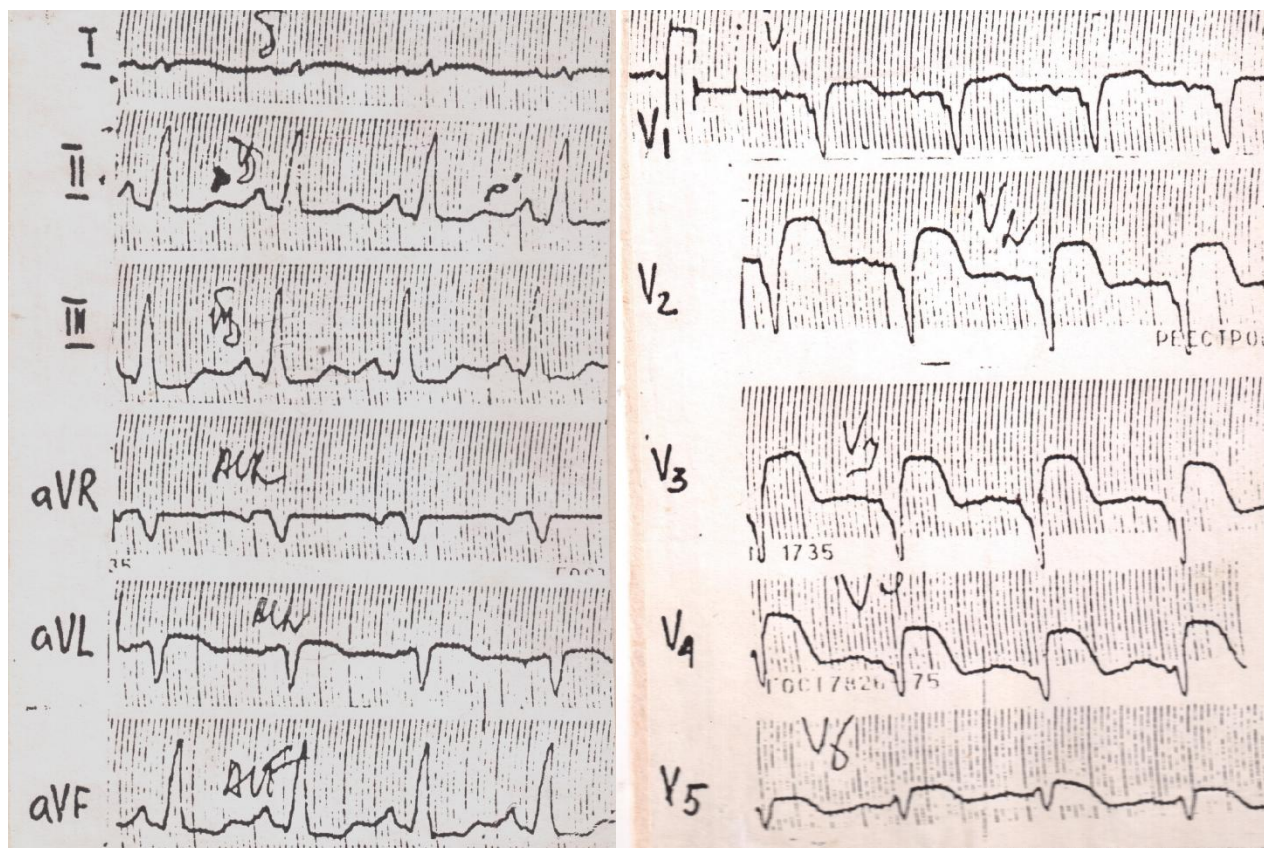
**Station «Internal medicine»: skills and manipulations**  
**Template of answers for station № 10 «Arterial hypertension».**

1. Arterial hypertension.
2. Signs of left ventricular hypertrophy.
3. Left ventricular hypertrophy.
4. Holter monitoring of BP.
5. Angiotensin-converting enzyme inhibitors, AT-2 receptor blockers, calcium antagonists, beta-blockers, diuretics.

# APPENDIX

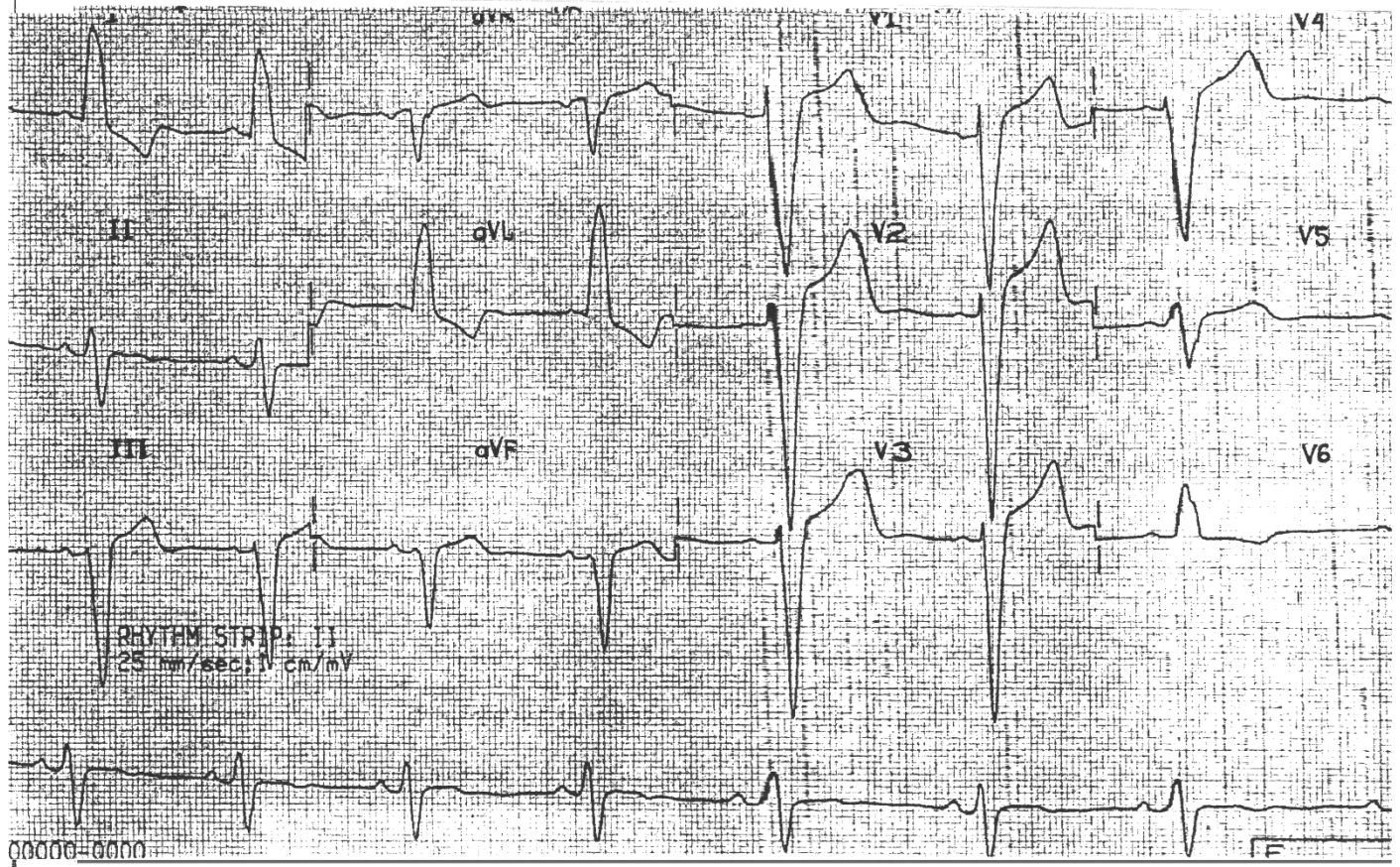
**Station «Internal medicine»: skills and manipulations**  
**Scenario № 3 «Myocardial infarction».**

ECG in patient with Q - myocardial infarction



**Station «Internal medicine»: skills and manipulations**  
**Scenario № 10 «Arterial hypertension».**

ECG in patient with arterial hypertension



**Station «Internal medicine»: skills and manipulations**  
**Scenario № 1 «Gastric Ulcer. Secondary Iron Deficiency Anemia».**

Gastric X-ray in patient with gastric ulcer (native X-ray)

**Station «Internal medicine»: skills and manipulations**  
**Scenario № 8 «Community acquired pneumonia»**

Pneumonogram in patient with pneumonia (native X-ray)