

Mandatory criteria for passing the course „Internal Medicine “

1. Attendance-requiring courses and lectures:

Practical course physical examination, 5th Sem., Mo through Thurs 14-17 pm, Fr 13-16 pm
Clinical practical training and tutorial, 6th Semester Tue and Fr 13 -15 pm;
7. Semester Mo and Thur 13-15 pm,

2. Main lectures:

“Internal medicine”, 6th + 7th Sem., Tue + Thursday 10-12 pm

3. Proof of performance:

Written examination at the end of the 6th term,
Written examination at the end of the 7th term

4. Goals in Teaching Internal Medicine

A) Medical History and Clinical Examination

B) Subdivisions and Specific Learning Goals

Endocrinology
Gastroenterology
Hematology /Oncology
Cardiology /Angiology
Nephrology
Psychosomatics
Pneumonology

C) Interdisciplinary-Subdivisions

Intensive Care Medicine

A) Medical History and Clinical Examination

1. Medical History

- Objectives and functions of medical history taking
- Practical approach to history taking (questions, behaviour, physician - patient interaction)
- Contents of medical history taking (current complaints, personal medical history, vegetative symptoms, medication, social history, family background)
- Possible difficulties in medical history taking (children, emergencies, unconsciousness)
- subjective versus objective data
- Documentation and recording of medical history
- interpretation of the given information, developing a diagnostic hypothesis, Differential diagnostics

2. Clinical Examination

- Assessing the physical status, general approach

- General examination

Inspection, palpation, percussion, auscultation, functional assessment

- General state of health

Weight, posture, motor activity, fluid balance, lymphatic nodes, eu/dyspnoe, vital signs

- Skin

Inspection: colour (pallor, cyanosis and jaundice), moisture, pigmentation, hair, rashes

Palpation, temperature

- Head

Inspection: skull shape, nose, ears, eyes (exophthalmia, conjunctivae, sclerae, xanthomas), lips, tongue (wet, dry, reddened, atrophic), teeth, throat / tonsils

Palpation: Para nasal sinuses, nerve exit points

Functional Testing: vision, hearing, breathing, pupil reaction to light and convergence, ophthalmoplegic signs, strabismus,

- Neck

Inspection: Jugular venous pressure, thyroid

Palpation: lymphatic nodules, thyroid (goitre, thyroid nodules, sounds)

- Auscultation: thyroid, carotid

- Heart

- Inspection: Voussure, pulsation

- Palpation: apex beat

- Percussion: technique of percussion, heart damping (absolute / relative)

- Auscultation: murmurs (systolic, diastolic), grading sites, duration during cycle

- Functional testing: heart rate, heart rhythm,

- Circulation

- Inspection: skin colour, venous pulse

- Palpation: Arterial pulses (carotid, brachial, radial, femoral, popliteal arteries, arteriae tibialis posterior and dorsalis pedis),

- Auscultation: vascular sounds

- Functional testing: blood pressure measurement, Schellong test

Ratschow test, Allen test, Perthes-/Trendelenburg-test

- Chest / lung

- Inspection: thoracic shape, breathing movements (in-/exspirium)

- Palpation: comparing both sides, fremitus

- Percussion: percussion sounds, lung borders, dampings,

- Auscultation: respiratory noise qualities (vesicular / bronchial),

Respiratory sounds (dry, wet), stridor, pleural rub

- Functional testing: pathological types of breathing

- Abdomen

- Inspection: skin, surgical scars, striae, liver, skin signs, contours, navel, anal region, genital region

- Auscultation: bowel sounds (eg increased peristalsis, ileus), vascular bruit (eg renal artery stenosis)

- Palpation: resistance, herniae, organ assessment: localization / size / consistency / surface (liver, spleen), muscular defense, different forms of abdominal pain (gallbladder, appendix spleen, kidney), ascites (fluctuation); digital rectal examination, genital organs (scrotum)
- Percussion: Localization / size of abdominal organs, meteorism, ascites

- Back
 - Inspection: spinal shape (scoliosis, kyphosis, lordosis), muscles, posture
 - Palpation: Detecting anatomical reference points, the different forms of back pain tense muscles
 - Functional testing: spinal mobility (Schober index), Spinal roots and dermatomes

- Arms und Legs
 - Inspection: skin, joints, bones, muscles, varicose veins, scars, size
 - Functional Testing: posture and walking

- Nervous system
 - Inspection: paralysis, muscular atrophy
 - Functional testing: cranial nerve, muscle reflexes, motility, muscle tone, Coordination, sensitivity

B) SUBDIVISIONS AND SPECIFIC LEARNING OBJECTIVES

ENDOCRINOLOGY AND DIABETES

1. General Endocrinology

- Hormonal analysis, assay problems
- Diagnosis of endocrine function, feedback loop analysis
- Hormone activation / inactivation, selective receptor agonists / modulators, Hormone receptor antagonists

2. Hypothalamic / pituitary

- Polydipsia / polyuria, diabetes insipidus, SIADH
- Hypopituitarism
- Acromegalie
- Prolaktinoma

3. Thyroid

- Diffuse goiter, nodular goiter, prophylaxis with iodine
- Isolated thyroid nodules, thyroid carcinoma
- Autoimmune thyreoiditis
- Inflammation of the thyroid gland (acute, subacute)
- Hyperthyroidism, thyrotoxic crisis
- Hypothyroidism, hypothyroid coma

4. Adrenal

- Adrenal insufficiency
- Cushing's syndrome, Cushing's disease, ectopic ACTH secretion
- Incidentaloma, adrenal carcinoma
- Hyperaldosteronismus and other forms of mineralocorticoid dysfunction

- Congenital adrenal hyperplasia (CAH)
- Pheochromocytoma

5. Gonads (male + female)

- male hypogonadism (primary and secondary or tertiary)
- Pubertas tarda
- Transsexualism
- Hyperandrogenism in women, hirsutism, PCO syndrome, hormonal cycle disorders
- Hormone therapy-dependent tumors

6. Calcium metabolism / osteopathy

- Hypercalcemia, hypercalcemic crisis, primary hyperparathyroidism, vitamin D intoxication, hyperkalzämia of malignancy
- Hypocalcemia-hypoparathyroidism, Pseudohypoparathyroidism
- Osteomalacia, phosphate diabetes
- Osteoporosis (primary, secondary)
- M. Paget and rare metabolic osteopathies

7. Diabetes mellitus / hypoglycemia

- Type 1 diabetes, type 2 diabetes mellitus, metabolic syndrome, complications (coma, hypoglycemia)
- Diabetic organ complications (such as retinopathy, diabetic foot syndrome etc.)
- Diabetes mellitus and pregnancy, gestational diabetes
- Diet principles, training, self-control, social problems
endogenous hypoglycemia, insulinoma

8. Other metabolic disorders

- Obesity, genetic and acquired disorders
- Lipid disorders, atherosclerotic risk assessment, classification
- Hyperuricemia, gout
- Porphyria and secondary porphyria
- Hemochromatosis

9. Polyglandular Endokrinopathies

- Polyglandular autoimmune endocrinopathies (types I to IV)
- Multiple endocrine neoplasia (MEN I, IIa and IIb)

GASTROENTEROLOGY / HEPATOLOGY

1. Clinical findings

- Abdominal pain including acute abdomen
- Hematemesis / hämatochezia / positive fecal occult blood test
- Jaundice
- Ileus
- Acute / chronic diarrhea

2. Technical diagnostic and therapeutic procedures

- Diagnostic Endoscopy
- Functional testing in gastroenterology (Manometry, pH-metry)
- Diagnostic and interventional ultrasound
- Diagnostic and Interventional Radiology in Gastroenterology and Hepatology
- Invasive endoscopic procedures (e.g. hemostatic techniques, sclerotherapy,

Stents, gallstone therapy)

3. Major diseases of the digestive organs

(Etiology, pathogenesis, symptoms, diagnosis, therapeutical basics, prognosis, prevention)

3.1 Esophagus

- Achalasia as a model of a motility disorder
- Gastro-esophageal reflux disease, Barrett's esophagus, adenocarcinoma of the distal esophagus
- Squamous cell carcinoma of the esophagus

3.2 Stomach

- Gastric ulcer / duodenal ulcer, role of *Helicobacter pylori* and non-steroidal anti-inflammatory drugs
- Gastric cancer, gastric lymphoma

3.3 Small / Large intestine

- Gluten-sensitive enteropathy as a model disease for malabsorption
- Inflammatory Bowel Diseases (Crohn's Disease, Ulcerative Colitis)
- Diverticulosis, diverticulitis
- Colonic adenoma, colorectal cancer, molecular pathogenesis (adenoma-carcinoma sequence), the role of measures for early detection, preventive measures
- Hereditary colonic cancer (hereditary non-polyposis colorectal cancer, familial adenomatous polyposis)
- Functional gastrointestinal disorders (example.g. irritable bowel syndrome)

3.4 Liver

- Acute viral hepatitis
- Chronic viral hepatitis B / C
- Toxic liver diseases including alcoholic liver disease
- Autoimmune hepatitis
- Genetic liver disease (hemochromatosis, Wilson's Disease)
- Cirrhosis as the common end stage of chronic liver diseases (including typical complications such as ascites or esophageal varices, hepatic encephalopathy, hepatorenal syndrome, hepatocellular carcinoma)

3.5 Biliary system

- Cholecystolithiasis, choledocholithiasis
- Acute cholecystitis
- Neoplasm of the bile ducts
- Cholestatic liver diseases (PSC, PBC)

3.6 Pancreas

- Acute pancreatitis
- Chronic pancreatitis
- Carcinoid syndrome and gastrinoma as examples of neuroendocrine tumors
- Pancreatic cancer

4. Enteral alimentation

- Enteral nutrition: tube alimentation, application systems (including PEG)
- Parenteral nutrition: substrate components, supply routes

HEMATOLOGY/ONCOLOGY

1. General Oncology

- Tumor biology (molecular biology, cell proliferation, cell differentiation,

Metastasis, tumor angiogenesis)

- Epidemiology and Prevention
- Principles of medical oncology (chemotherapeutic drugs, growth factors, Monoclonal Antibodies, supportive therapies, accompanying measures)
(Diagnostics, differential diagnosis, epidemiology, biology, treatment, aftercare)
- Lung cancer, mesothelioma
- Gastrointestinal cancers (esophageal, stomach, pancreatic, - colorectal, Bile duct - gall bladder carcinoma,
- Neuroendocrine tumors
- Renal cell carcinoma; germinocytal tumors,
- Bone tumors, sarcoma
- CUP

3.1 General Hematology

- Functional structure of hematopoiesis and the lymphatic system
- Stem cell biology
- Hematological diagnostical procedures • (cytology, cytochemistry, flow, cytogenetics, molecular genetics)
- Bone marrow, stem cell transplants

3.2 Benign haematological diseases

- Anemia (iron deficiency, thalassemia, hemoglobinopathias, megaloblastic anemia, Hemolytic anemia, secondary anemias)
- Thrombocytopenia (hematopoetic disorders, increased degradation, maldistribution)
- Hemorrhagic diathesis
- Granulocytopenia

3.3 malignant hematology and lymphatic diseases

- Biology, epidemiology, diagnosis, diff. Diagnosis, treatment, aftercare
- ALL adults, AML, myelodysplastic syndromes
- Myeloproliferative syndromes (CML, ET, PV, OMF)
- NHL, Hodgkin's disease, multiple myeloma
- Hematologic/oncologic emergencies
- Upper venous congestion, hypercalcemia, tumor lysis syndrome, DIC, intracranial pressure

CARDIOLOGY / ANGIOLOGY

1. General Cardiology

- Medical history
- Physical examination of the heart and large vessels (including cardiac auscultation)
- Cardiac diagnostics: ECG, 24-hour ECG, Stress ECG, (tilting table examination)
- Diagnostic imaging: transthoracic and transesophageal echocardiography, myocardial radionuclide imaging, CT, NMR
- Invasive procedures: catheterization and intervention, electro physiological investigation and therapy
- Special laboratory diagnosis: cardiac enzymes, new cardiac markers (BNP, CD40-ligand)

2. Arterial hypertension

- Primary arterial hypertension
- Secondary arterial hypertension
 - renal causes for hypertension
 - endocrine causes for hypertension
 - other forms (e.g. Aortic isthmus stenosis)

3. Coronary heart disease

- Cardiovascular risk Factors
 - hypertension
 - nicotine --
 - hypercholesterolemia
 - diabetes / abnormal glucose tolerance
 - family history
- Stable angina pectoris
- Acute coronary syndrome (ACS)
 - unstable angina
 - NSTEMI - acute non-ST-elevation myocardial infarction
 - STEMI - acute ST-elevation myocardial infarction

4. Heart Failure

- Acute heart failure
- Chronic heart failure
 - left-ventricular failure (clinic / causes / therapy)
 - right-ventricular failure (clinic / causes / therapy)
 - global insufficiency

5. Mycardiopathies

- Dilated cardiomyopathy (DCM)
- Hypertrophic (non-obstructive/obstructive) cardiomyopathy (HNOCM) / HOCM
- Toxic cardiomyopathy (alcohol, lead, chemotherapeutics)
- Genetic causes
- Restrictive and infiltrative cardiomyopathies

6. Myocarditis

- Viral (including enteroviruses / Coxsackie-B; diagnosis, therapy)
- Bacterial (including mycobacteria, spirochetes, diagnosis, therapy)
- Other (parasites, including Chagas disease)

7. Endocarditis

- Infectious (diagnosis, therapy, prevention)
- Rheumatic (diagnosis, therapy, prevention)
- Other (including Libman-Sacks, E. fibroplastica Loeffler)

8. Pericardic Diseases

- Pericarditis
 - infectious
 - metabolic
 - toxic / physically (radiation)
 - (para-) neoplastic
- Pericardial effusion / cardiac tamponade
- Constrictive pericarditis

9. Right Ventricular diseases of the heart

- Acute pulmonary embolism, cor pulmonale
- Chronic cor pulmonale
- Arrhythmogenic right ventricular dysplasia (ARVCM)

10. Tumors of the heart

- Benign (atrial Myxoma, Fibroma)
- Malignant (fibrosarcoma)
- Metastatic (caused by lymphomas, melanomas)

11. Acquired Heart Valve Defects

- Aortic stenosis
- Aortic insufficiency
- Mitral stenosis
- Mitral insufficiency
- Alterations of the right atrioventricular valve
- Diseases of the pulmonary valve
- Patients with valvular operation

12. Congenital Defects of the Heart and Large Vessels in Adulthood

- Left and right obstructions
 - bicuspid aortic valve
 - congenital aortic stenosis
 - aortic isthmus stenosis
 - pulmonary stenosis
- Cardial shunts
 - atrial septum defect (ASD)
 - ventricular septum defect (VSD)
 - ductus arteriosus Botalli
- Complex heart defects
 - tetralogy of Fallot
 - transposition of the great vessels

13. Bradyarrhythmias

- Sinus node syndrome
- Sinuatrial block
- Carotid sinus syndrome
- Atrioventricular conduction disturbances
- Intraventricular blocks
- Drug-induced arrhythmias
- Bradycardia due to electrolyte shifts

14. Tachyarrhythmias

- Supraventricular arrhythmias
 - sinustachykardie
 - atrial flutter
 - atrial fibrillation
 - atrial tachycardia
 - AV-node tachycardia
 - preexcitation syndromes (WPW, LGL)
- Ventricular arrhythmias
 - ventricular extrasystole
 - ventricular tachycardia/ ventricular fibrillation
 - torsade de pointes tachycardia
- Drug-induced arrhythmias
- tachycardia due to electrolyte shifts

15. Heart Disease due to extracardiac Causes

- Diabetes and other endocrine disorders (including acromegaly, thyroidal diseases)
- Collagenosis
- Neuromuscular disorders
- Connective tissue diseases (Marfan syndrome, Ehlers-Danlos)
- Lues, AIDS
- Hematological disorders (including anemia, polycythemia)
- Oncologic diseases

- Contusio cordis

16. Heart Disease and Pregnancy

17. Diseases of the Arterial Vessels

- Peripheral arterial embolism
- (Chron.) peripheral arterial occlusive disease
- Abdominal aortic aneurysma
- Aortic dissection (Stanford A / B)
- Raynaud's syndrome
- Thrombangiitis obliterans
- Vasculitis
- Angiodysplasia, AV fistulas
- Tumors of the arterial vessels

18. Venous Diseases

- Varicosis
- Thrombophlebitis
- Venous thrombosis
- Chronic venous insufficiency
- Paget-von-Schrötter Syndrome

19. Lymphatic Diseases

- Lymphangiitis
- Lymphedema
- Tumors of the lymphatic vessels

NEPHROLOGY, INCLUDING SECONDARY HYPERTENSION

1. General nephrology, diagnostic of renal diseases

- Function of the kidney
- Diagnosis of kidney function, detection of renal insufficiency
- Urine sediment, albuminuria, proteinuria, nephrotic syndrome
- Kidney biopsy, technical diagnosis of renal dysfunction

2. Acute kidney insufficiency (AKI)

- Pre-, intra- and postrenal causes of kidney failure, oligouria, anuria
- Equilibration, conservative therapy, indication for dialysis
- Acute renal failure caused by multi-organ failure, methods of dialysis

3. Acute glomerulonephritis

- Poststreptococcal glomerulonephritis
- Benign forms of glomerulonephritis, clinical characteristics
- Rapid progressive glomerulonephritis (M. Wegener, microscopic polyangiitis, Other forms of vaskulitis, IgA glomerulonephritis, systemic disorders, Goodpasture syndrome

4. Chronic glomerulonephritis

- Mesangioproliferative glomerulonephritis (GN), membranous GN, membrano-proliferative GN, minimal change glomerulonephritis, focal segmental-glomerulosclerosis (FSGS)
- Progression of glomerulonephritis, progression factors (proteinuria, hypertension, smoking)
- Therapy (RAAS blockade, lowering blood pressure, diets, immunosuppression)

5. Acute and chronic kidney disease

- Interstitial nephritis (bacterial, not bacterial, toxic, analgesic nephropathy, hantavirus infection)
- pyelonephritis, reflux nephropathy
- Hereditary kidney disease (such as autosomal polycystic kidney disease -ADPKD) polycystic kidney degeneration, Alport syndrome)
- Medullary sponge kidney, horseshoe kidneys, renal agenesis
- Thrombotic microangiopathy, haemolytic uraemic syndrome
- Amyloidosis of the kidney, kidney myeloma, Bence-Jones plasmacytoma
- Tubulopathies

6. Diabetic nephropathy

- From metabolic syndrome to microalbuminuria, stages of diabetic nephropathy
- Proteinuria, delaying progression, target blood pressure
- Prevention, large clinical trials
- Contrast medium and the kidney, diabetic nephropathy

7. Chronic kidney disease (CKD)

- Diagnose, Stages of CKD, glomerular filtration rate
- Endocrine disorders (anemia, vitamin D, mineral bone disorders, dyslipidemia)
- Renal acidosis, uremia, progressive atherosclerosis - risk factors
- Renal osteodystrophy (sekundary hyperparathyroidism)
- Preparation of the patients for renal replacement therapy

8. Endstage renal disease - renal replacement therapy

- Indication for renal replacement therapy (dialysis)
- Peritoneal (daily, overnight)
- Hemodialysis (center. vs. home dialysis)
- Kidney transplant, combined kidney-pancreas transplantation
- Transplantation medicine (organ allocation, immunosuppression, infections)

9. Renal Hypertension

- Diagnostic, target values, definitions, incidence
- Renoparenchymal hypertension
- Renovascular hypertension
- Hypertensive nephropathy
- Benign nephrosclerosis
- Sodium and water balance, hypokalemia
- Interventional treatment of secondary hypertension
- Pharmacotherapy, drug interactions

10. Acid-base balance

- Dynamics and regulation
- Metabolic acidosis
- Metabolic alkalosis (secondary hyperaldosteronism)

PSYCHOSOMATICS

1. Diagnostic and Classification

- Psychosomatic anamnesis
- Nomenclature and classification of psychosomatic illnesses
 - Psycho-diagnostic testing (test psychology, standardized survey instruments, questionnaires)
- Diagnosis of psychiatric co-morbidity (depression, anxiety disorders, obsessive compulsive Disorders, personality disorders, addiction; differentiation from psychosis; suicidality)
- International classification systems (ICD-10, DSM-IV)

2. Therapy

- Out-patient psychotherapy (forms of intervention, indications)
- In patient psychotherapy
- Psychosomatic rehabilitation
- Psychosomatic primary care
- Psychotropic drugs
- Psychosomatic consultation
- Psychosomatic day clinic

3. Major psychosomatic illness in internal medicine

- Etiology, pathogenesis, symptoms, diagnosis, therapy, prognosis, prevention, rehabilitation, interaction with medical staff, non-compliance

3.1 Psychosomatics in Cardiology

- Cardiophobia syndrome (functional heart disorder, somatoform Dysfunctions)
- Psychosomatic aspects of hypertension
- Psychosomatic aspects and rehabilitation of coronary heart disease and Heart attack

3.2 Psychosomatics in Gastroenterology / Endocrinology

- Functional dyspepsia, non-ulcer dyspepsia
- Irritable bowel syndrome
- Crohn's disease
- Ulcerative colitis
- Gastric ulcer / duodenal ulcer
- Anorexia nervosa
- Bulimia
- Obesity
- Psychosocial aspects of diabetes mellitus
- Psychosomatic aspects of chronic liver diseases

3.3 Psychosomatics in Pulmonology

- Bronchial asthma
- Hyperventilation syndrome

3.4 Psychosomatics in Rheumatology / Immunology

- Fibromyalgia
- Chronic Fatigue Syndrome
- Psychosomatic aspects of rheumatoid arthritis

3.5 Psychosomatics in Hematology / Oncology

- Psycho-oncology: coping, quality of life, psychotherapeutic support for cancer patients

3.6 General Psychosomatic Disorders

- Chronic pain syndromes
- Sleep disorders
- Sexual disorders
- Post traumatic stress syndrome
- Muenchhausen syndrome

3.7 Psychosomatics and Infection

- HIV infection and AIDS: coping, compliance, quality of life
- Psychosomatic aspects of chronic infections (e.g. hepatitis C)

3.8 Psychosomatic aspects of chronic kidney disease, dialysis,

Organ replacement and organ transplant

PNEUMONOLOGY

1. Guiding symptoms

- Cough (dry, productive)
- Sputum (colour, smell)
- Shortness of breath (classification of the New York Heart Association)
- Chest pain, chest tightness
- Cyanosis, auxiliary respiratory muscles, drumstick fingers, hippocratic nails

2. Diagnostic investigation and therapy

- Lung function
 - spirometry
 - flow -volume analysis
 - whole body plethysmography
- Blood gas analysis, pulse oximetry
- Ergospirometry
- Chest X-ray
- Sonography
- Thoracocentesis
- Thoracic drainage
- Bronchoscopy
 - diagnostic
 - therapeutic.
 - laser surgery
 - endobronchiale brachytherapy
 - stent implantation
- Thoracoscopy

3 Diseases

3.1 Respiratory disregulation

- Respiratory failure
- Hyperventilation
- Obstructive sleep apnoe

3.2 Respiratory diseases

- Bronchial asthma (allergic, endogenous, exercise-induced, drug induced)
- Bronchitis (acute, chronic) COPD
- Emphysema
- Bronchiectasis

3.3 Pneumonia

- Bacterial pneumonia (outpatient, nosocomial)
- Viral pneumonia
- Pneumonia due to rare pathogens
- Pulmonary abszess
- Tuberculosis

3.4 Interstitial lung diseases [ILD]

- Respiratory
- Non-inhalative
- Secondary (collagenosis, radiation pneumonitis)
- Idiopathic
- Sarcoidosis
- Pneumoconiosis (silicosis)
- Asbestosis

3.5 Diseases of the lung blood vessels

- Acute cor pulmonale, pulmonary embolism
- Chronic cor pulmonale
- Pulmonary hypertension
- Non-cardiac pulmonary edema, ARDS
- Pulmonary vasculitis

3.6 Pleural diseases

- Pneumothorax,
- Pleurisy, pleural effusion
- Pleural empyema
- Pleural mesothelioma

3.7 Lung Cancer

- Small cell lung cancer
- NSCLC
- Round pulmonary lesions, lung metastases
- Prevention of smoking
- Curative and palliative therapies, pain management

C) INTENSIVE CARE MEDICINE

1. Tasks and goals of Intensive Care Medicine

- Monitoring the vital signs
- Goal: an autonomous life

2. Methods in intensive care: monitoring, diagnostics and therapy

- Monitoring (heart rate, blood pressure, oxygen saturation, respiratory rate)
- Diagnostic investigation (ECG, ultrasound, echocardiography, radiology procedures, MR)
- Venous catheters, arterial blood pressure taking
- Shaldon's catheter
- Temporary pacemaker
- Punctures (pleura, ascites, pericardial)
- Detoxication (gastric lavage, medication)
- Cardial therapy (volume replacement, catecholamines)
- Circulatory support (mechanical)
- Intubation and ventilation
- Dialysis, haemoperfusion, plasma separation
- Cardiopulmonary resuscitation
- Cardioversion, defibrillation
- Emergency endoscopy and bronchoscopy

3. Diseases with potential indication for intensive care medicine

3.1 Diseases of the cardiovascular system:

- Coronary heart disease with acute coronary syndrome (instable angina pectoris and myocardial infarction)
- Acute left- and right-heart failure
- Cardiogenic shock
- Acute endocarditis with complications
- Valvular disease with acute complications
- Cardiac arrhythmias
- Arterial aneurysmata, in particular aneurysma dissecans

- Arterial embolism and perforation
- Thrombosis, pulmonary embolism

3.2 Pneumony disorders:

- Pneumonia
- Acute respiratory failure (ARDS)
- Acute exacerbation of chronic obstructive pulmonary disease
- Status asthmaticus
- Respiratory failure

3.3 Gastrointestinal disorders:

- Acute upper or lower gastrointestinal bleeding
- Gastrointestinal ulcers
- Acute cholecystitis
- Acute pancreatitis
- Acute intestinal ischemia

3.4 Kidney disease:

- Acute kidney failure
- Renal embolism
- Catheter thrombosis

3.5 Infections

- Infections of individual organs, including central nervous system
- HIV-infection
- Infection of prosthetic material
- Sepsis

3.6 Endocrinology and Metabolic Diseases:

- Hypoglycemia, Hyperglycemia
- Acute Hyper-or Hypothyroidism
- Acute Cushing's Disease

3.7 Intoxications

3.8 Hämato-oncological diseases:

- Acute tumor caused symptoms
- Acute hemolysis

3.9 Hemostaseology

- coagulopathies