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Training program for clinical master of Internal Medicine

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Rotation arrangement**

Relative subject rotation period is 24 months. After the rotation, attending to the relative clinical skills training time should not be less than 9 months.

Rotation departments and schedules:

|  |  |  |
| --- | --- | --- |
| **Department** | **Time (Month)** |  |
| Cardiovascular medicine (include ECG room) | 4 | The clinical skills  training time should not be less than 9 months in this subject (Third-degree subject). |
| Respiratory Medicine | 3 |
| Gastroenterology | 3 |
| Hematology | 2 |
| Nephrology | 2 |
| Endocrinology and Metabolism | 2 |
| Rheumatology | 1 |
| Infectious Diseases Department | 1 |
| Oncology / Neurology / Psychiatry (including EEG room) (either one) | 1 |
| Emergency | 2 |
| Intensive Care Unit | 1 |
| Medical Imaging | 2 |
| **Total** | **24** |  |

1. **Training contents and requirements**
   1. **Cardiovascular medicine**

4 months (including electrocardiogram room and cardiovascular medicine clinic for 2 weeks)

* + 1. Aim of rotation

To master: Anatomy and physiology of cardiovascular system; the anatomical and functional characteristics of cardiac conduction system; mechanisms of arrhythmia and classification; the pathogenesis, clinical presentation, diagnosis, differential diagnosis and management of common cardiovascular diseases; classification, diagnosis and treatment of acute coronary syndrome (ACS); clinical application of commonly used medications for cardiovascular diseases; X-ray diagnosis for common cardiac diseases; typical diagnostic electrocardiogram; technology of electrical cardioversion.

To understand: Cardiac electrophysiology basics, pericardiocentesis, temporary heart pacing, dynamic electrocardiography, ambulatory blood pressure, echocardiogram and other techniques.

* + 1. Basic requirements
       1. Number of case studying: at least 30 cases; complete 20 medical records.

|  |  |
| --- | --- |
| **Disease** | **Case no. (≥)** |
| Heart failure | 8 |
| Hypertension | 8 |
| Myocarditis and cardiomyopathy | 3 |
| Common arrhythmia | 10 |
| Common valvular diseases | 6 |
| Coronary heart disease (including stable angina, unstable angina, myocardial infarction, acute coronary syndrome, ST segment elevation and non-ST segment elevation) | 10 |
| Diagnosis and management of common heart disease emergency (hypertensive crisis, aortic dissection, acute myocardial infarction, paroxysmal tachycardia, sinus tachycardia, III degree atrioventricular block, acute left heart failure, cardiac arrest). | 10 |

* + - 1. Basic skill requirements

|  |  |
| --- | --- |
| **Skill** | **Case no. (≥)** |
| X-ray image diagnosis of common heart disease | 10 |
| Cardioversion (Defibrillation) | 2 |
| 12-lead ECG operation and typical ECG diagnosis (left and right ventricle hypertrophy, atrial hypertrophy, left and right bundle branch block, myocardial infarction, hypokalemia, hyperkalemia, sinus arrhythmia, Wolff-Parkinson-White syndrome, escape rhythm, AV block, premature systole, paroxysmal supraventricular tachycardia, atrial fibrillation, atrial flutter, ventricular tachycardia, ventricular fibrillation) | 40 |

* + - 1. Further requirements
         1. Diseases to be learned:

|  |
| --- |
| **Diseases** |
| Pericardial disease |
| Infective endocarditis |
| Common adult congenital heart disease |
| Pulmonary vascular disease |

* + - * 1. Clinical knowledge, skill requirements:

|  |  |
| --- | --- |
| **Skill** | **Skill** |
| Pericardiocentesis | Dynamic ECG |
| Temporary cardiac pacing | Echocardiogram |
| Ambulatory blood pressure monitoring | Treadmill exercise test |

* 1. **Respiratory medicine**

3 months (including 2 weeks in fiberobronchoscopy room and respiratory medicine clinic).

* + 1. Aim of rotation

To master: Anatomy and physiology of respiratory system; routine pulmonary tests; analysis of arterial blood gas; CXR examination; chest CT scan examination; cardinal symptoms and signs of respiratory diseases; differential diagnosis of abnormal CXR and chest CT scan images; request to master the mechanism, classification, clinical presentation, diagnosis, differential diagnosis and treatment of diseases; indications and contraindications of bronchoscopy for diagnosis and treatment; common clinical methods of diagnosis and treatment.

To understand: Request to master the related knowledge of following diseases: sarcoidosis, pulmonary fungal disease, benign tumors of the lung, interstitial lung disease, pulmonary embolism, sleep-related breathing disorders and other diseases;understanding the diagnostic and treatment methods of bronchoscopy and bronchoalveolar lavage, lung and bronchial mucosa biopsy, percutaneous lung biopsy, atomization therapy, sleep apnea monitoring, etc.

* + 1. Basic requirements
       1. Diseases to be learned and case requirements: total requirement 80 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case no. (≥)** | **Disease** | **Case no. (≥)** |
| Upper respiratory infection | 5 | Acute bronchitis | 5 |
| Chronic bronchitis | 10 | Community-acquired pneumonia | 10 |
| Chronic obstructive pulmonary disease (COPD) | 10 | Bronchial asthma | 5 |
| Hospital-acquired pneumonia | 5 | Pulmonary abscess | 2 |
| Bronchiectasis | 5 | Bronchogenic carcinoma | 5 |
| Pulmonary tuberculosis | 5 | Respiratory failure | 5 |
| Pleural effusion | 5 | Spontaneous pneumothorax | 2 |
| Corpulmonale | 5 |  |  |

* + - 1. Basic skill requirements: minimal requirement 50 cases.

|  |  |
| --- | --- |
| **Skill** | **Skill** |
| Tuberculin test | Arterial blood sampling (ABG), at least 10 cases |
| Suction of sputum | Posture drainage |
| Reading of CXR (report independently), at least 20 cases | Thoracocentesis, at least 2 cases |
| Rescue suffocation | Oxygen therapy |
| Atomization therapy |  |

* + - 1. Further requirements
         1. Diseases to be learned and case number requirement: To master the knowledge of diseases in basic requirements, and to understand the following diseases:

|  |  |
| --- | --- |
| **Disease** | **Disease** |
| Sarcoidosis | Interstitial pulmonary disease |
| Pulmonary fungal disease | Pulmonary embolism |
| Benign lung tumors | Sleep apnea syndrome |

* + - * 1. Clinical knowledge and skill requirements:

|  |  |
| --- | --- |
| **Skill** | **Skill** |
| Bronchoscopy | Pulmonary function tests |
| Bronchoalveolar lavage | Chest CT scan |
| Bronchoscopic lung biopsy | Percutaneous lung biopsy |
| Sleep apnea monitoring | Application of mechanical ventilation |

* 1. **Gastroenterology**

3 months (including digestive endoscopy room and clinic for 2 weeks)

* + 1. Aim of rotation:

Master:Anatomy, physiology and biochemical function of digestive system (digestive, endocrine, immunity); diagnosis, differential diagnosis and management of functional gastrointestinal diseases; the pathogenesis, clinical presentation, differential diagnosis, complication and management of peptic ulcer disease; the relationship between helicobacter pylori, gastritis and peptic ulcer disease; the pharmacologic action and clinical application of antacid, H2 blocker and proton pump inhibitor; the pharmacological action and clinical effect of gastric mucosal protective agents; treatment of helicobacter pylori; the essential differential diagnosis and treatment of Crohn’s disease and ulcerative colitis; the pathogenesis of liver cirrhosis, manifestation of compensated and decompensated stages; the pathogenesis of hepatic encephalopathy and portal hypertension; the causes of ascites, characteristic laboratory examinations, differential diagnosis and management; difference of interstitial and hemorrhagic necrotizing pancreatitis and their routine management; emergent management of upper gastrointestinal bleeding; the indications and contraindications to arrest bleeding by Sengstaken-Blakemore tube; the indications, contraindications and complications of liver biopsy; the indications and contraindications of roentgenography of digestive system.

Understand:Differential diagnosis of intestinal tuberculosis and Crohn’s disease; differential diagnosis of tuberculous peritonitis; common causes and management of chronic diarrhea; etiology and management of chronic hepatic diseases; recognition of common endoscopic images; other diagnostic and treatment technologies.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: at least 100 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case no. (≥)** | **Disease** | **Case no. (≥)** |
| Gastroesophageal reflux | 15 | Esophageal carcinoma | 2 |
| Chronic gastritis | 5 | Functional GI disease | 5 |
| Peptic ulcer disease | 5 | Gastric cancer | 2 |
| Colorectal cancer | 2 | Acute pancreatitis | 5 |
| Post-hepatitis cirrhosis | 5 | Chronic pancreatitis | 1 |
| Hepatocellular carcinoma | 2 | Hepatic encephalopathy | 1 |
| Jaundice | 5 | Chronic liver disease (alcoholic cirrhosis, primary biliary cirrhosis) | 5 |
| Acute biliary infection | 5 | Ascites | 3 |
| Inflammatory bowel disease (ulcerative colitis & Crohn’s disease) | 5 | Common causes of UGI bleeding (acute gastric mucosal lesion, bleeding peptic ulcer, gastroesophageal varices) | 10 |

* + - 1. Basic skill requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no. (≥)** |
| Abdominal paracentesis | 5 |
| Interpretation of digestive CT, MRI images | 20 |
| Interpretation of endoscopy report | 20 |

* + 1. Further requirements
       1. Diseases to be learned:

|  |
| --- |
| **Disease** |
| Peritoneal tuberculosis (intestinal tuberculosis and tuberculous peritonitis) |
| Chronic diarrhea |
| Others |

* + - 1. Clinical knowledge and skill requirements:

|  |  |
| --- | --- |
| Skill | Skill |
| Gastroscopy and endoscopic ultrasonography (50-100 cases) | Liver biopsy |
| Endoscopic Retrograde Cholangiopancreatography (ERCP) | Mucosectomy and mucosal dissection |
| Colonoscopy | Enteroscopy |

* 1. **Hematology**

2 months (including hematologic medicine clinic for 1 week)

* + 1. Aim of rotation

Master: Etiology, clinical manifestation, basis of diagnosis, differential diagnosis, and essence of treatment of various anemia; normal mechanism of hemostasis and coagulation; classification, characteristic and principle management of hemorrhagic diseases; the clinical manifestation, laboratory examinations, basis of diagnosis, common therapeutic medications and treatment strategy of acute and chronic leukemia; classification, staging, basis of diagnosis and treatment of lymphoma; indications and contraindications of bone marrow aspiration and biopsy.

Understand: Classification and treatment principle for myelodysplastic syndrome (MDS); laboratory examination and rescue of disseminated intravascular coagulation; indication of component blood transfusion and management of various transfusion reaction; clinical presentation, diagnosis and differential diagnosis of myeloproliferative neoplasms and common coagulopathy disorders; application of immnophenotypic, cytogenetic and molecular biology in blood disorders; principle of examination methods and clinical meanings for various hemolytic, bleeding and coagulation laboratory studies; other blood disorders.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: At least 10 in-patients and 20 out-patients.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case no. (≥)** | **Disease** | **Case no. (≥)** |
| Iron deficiency anemia | 5 | Megaloblastic anemia | 1 |
| Aplastic anemia | 3 | Hemolytic anemia | 2 |
| Idiopathic autoimmune thrombocytopenia | 3 | Allergic purpura | 2 |
| Acute leukemia | 3 | Chronic leukemia | 1 |
| Lymphoma | 2 | Leukopenia and agranulocytosis | 3 |

* + - 1. Basic skill requirement

|  |  |
| --- | --- |
| **Skill** | **Case no. (≥)** |
| Bone marrow aspiration | 10 |
| Bone marrow biopsy | 10 |

* + 1. Further requirements
       1. Diseases to be learned

|  |
| --- |
| **Disease** |
| Congenital coagulation factor deficiency |
| Myelodysplastic syndrome (MDS) |
| Myeloproliferative neoplasms (polycythemia vera, primary myelofibrosis, primary thrombocytosis) |
| Multiple myeloma |
| Disseminated intravascular coagulopathy (DIC) |
| Component blood transfusion and transfusion reaction |

* + - 1. Clinical knowledge and skill requirements: general interpretation of blood smear and bone marrow smear.
  1. **Nephrology**

2 months (including 1 week in clinic, 1 week in hemodialysis room).

* + 1. Aim of rotation

To master: Physiology of nephron and kidney; etiology, pathogenesis, clinical classification, clinical presentation, diagnosis, differential diagnosis and treatment of glomerular disease; application of corticosteroids, immunosuppressant and anticoagulants; diagnosis, differential diagnosis and management of acute and chronic pyelonephritis; etiology, pathogenesis, diagnosis and treatment of acute and chronic renal failure; the purpose and demand of nutritional treatment in non-dialysis therapy; indications for hemodialysis and peritoneal dialysis; application of renal function tests and results interpretation.

To understand: Pathologic classification of glomerular disease; indications for renal biopsy; etiology, pathogenesis and treatment principle of renal tubular disease and interstitial nephritis; kidney transplant anti-rejection therapy; other clinical diagnosis and treatment techniques.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: At least 20 cases and complete 2 medical records.

|  |  |
| --- | --- |
| **Disease** | **Case no. ()** |
| Secondary glomerulonephritis (lupus nephritis, anaphylactic purpura nephritis) | 1 |
| Urinary tract infection | 1 |
| Acute renal failure | 1 |
| Chronic renal failure | 3 |
| Primary glomerulonephritis (acute nephritis, rapidly progressive glomerulonephritis, chronic nephritis, nephrotic syndrome, latent nephritis) | 10 |
| Tubular interstitial disease (acute interstitial nephritis, chronic tubulointerstitial disease) | 1 |
| Diabetic nephropathy | 2 |

* + - 1. Basic skill requirements: Urine sediment microscopy: 10 cases.
    1. Further requirements
       1. Diseases to be learned: Rapidly progressive glomerulonephritis.
       2. Skill requirements: Renal biopsy
  1. **Endocrinology and Metabolism**

2 months (including endocrinology clinic for 1 week)

* + 1. Aim of rotation

Master: Etiology, clinical manifestation, laboratory examination and treatment of hyperthyroidism; classification, etiology, diagnostic criteria, clinical presentation, and treatment of diabetic mellitus, principle of diet control, food calorie calculation and application essentials; chronic complications of diabetes; diagnosis and rescue of diabetic ketoacidosis and hyperosmolar coma; methods and significance of oral glucose tolerance test.

Understand: Diagnosis and principle of treatment for other endocrine diseases; principles, procedures and clinical significance of hormone immunoassays;endocrine function tests (including the principles, steps and significance of excitement and inhabitation tests).

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: At least 30 cases and complete more than 3 medical records.

|  |  |
| --- | --- |
| **Disease** | **Case no. (≥)** |
| Diabetic mellitus | 5 |
| Hyperthyroidism (Grave’s disease, etc.) | 3 |
| Diabetic ketoacidosis and diabetic hyperosmolar coma | 3 |
| Thyroid nodule | 3 |
| Various thyroiditis | 3 |

* + - 1. Basic skill requirements

|  |  |
| --- | --- |
| **Skill** | **Case no. (≥)** |
| Oral glucose tolerance test | 3 |
| Blood and urine specimen collection for various hormones concentration determination | 3 |
| Measurement of waist and hip circumference | 10 |
| Determination of peripheral blood sugar | 20 |
| Diabetes nutrition diet prescription | 5 |

* + 1. Further requirements
       1. Diseases to be learned

|  |  |
| --- | --- |
| **Disease** | **Disease** |
| Cushing’s syndrome | Pheochromocytoma |
| Diabetes Insipidus | Hyperlipidemia and hyperproteinemia |
| Prolactinoma | Primary adrenal insufficiency (Addison’s disease) |
| Gout | Other hyperthyroidism diseases |
| Primary aldosteronism |  |

* + - 1. Clinical knowledge, skill requirements: Dexamethasone suppression test; Water deprivation test; continuous blood sugar monitoring; adjustment insulin dose of an insulin pump.
  1. **Rheumatology**

1 month (including 1 week in rheumatologic clinic).

* + 1. Aim of rotation

Master: Specialist theory, clinical presentation, basis of diagnosis, differential diagnosis and treatment principle for common rheumatic diseases; action mechanism, usage and adverse reaction of common anti-rheumatic medications.

Understand: The principle of autoantibodies and related subjects’ detection in common rheumatic diseases; normal joint structure and imaging manifestations of common joint disease; understanding of rheumatic disease in interaction with other disciplines, and establish an overall concept for diagnosis and treatment of disease.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: At least 25 cases. In charge of inpatient 8-10 cases.

|  |  |
| --- | --- |
| **Disease** | **Case no. (≥)** |
| Systemic lupus erythematosus | 5 |
| Rheumatoid arthritis | 5 |
| Inflammatory myopathy | 2 |
| Osteoarthritis | 5 |
| Ankylosing spondylitis | 5 |
| Sjogren's syndrome | 2 |
| Gout | 2 |

* + - 1. Basic skill requirements: Master the principle of various rheumatic related antibodies tests, results interpretation and their clinical significance; basic examination methods for joints.
    1. Further requirements (5 cases of other diseases)
       1. Diseases to be learned

|  |
| --- |
| **Disease** |
| Adult-onset Still’s disease |
| Systemic sclerosis |
| Reactive arthritis or undifferentiated spondyloarthropathy |
| Psoriatic arthritis |
| Behcet’s disease |
| Systemic vasculitis |

* + - 1. Clinical knowledge and skill requirements: Pathologic characteristics of various arthritis; joint aspiration, synovial fluid analysis and its clinical significance; correctly identify the imaging features of rheumatoid arthritis (RA), osteoarthritis (OA), ankylosing spondylitis (AS) and other rheumatic diseases.
      2. Read the “ChineseRheumatology”, “Diagnostic Guidance of Rheumatology”, and “Minimal Invasive Rheumatology”.
  1. **Infectious Diseases Department**

1 month (including 2 weeks in hepatitis ward, 2 weeks in other infectious diseases ward).

* + 1. Aim of rotation

Master:Pathogenesis, clinical presentation, basis of diagnosis, differential diagnosis and treatment of viral hepatitis;know the identical transmission route of intestinal infectious diseases such as typhoid fever, dysentery, amoebiasis, bacterial food poison, etc., and their diagnostic basis, differential diagnosis and specific management; pathogenesis and anti-shock therapy for septicemia and septic shock; antibiotic selection, evolution and clinical application of antibacterial drugs;treatment of parasitic diseases; diagnosis and differential diagnosis of prolonged fever of unknown origin, its diagnostic thinking process and strategy of treatment; indications for lumbar puncture; pathogenesis, clinical presentation, diagnostic basis, differential diagnosis and management of acquired immunodeficiency syndrome (AIDS); rules and procedures for disinfection and isolation.

Understand: Action mechanism and selection of antifungal drugs; clinical epidemiology and prevention of nosocomial infection; action mechanism and selection of antiviral drugs; indications and contraindications of liver biopsy.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: at least 20 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case no. (≥)** | **Disease** | **Case no. (≥)** |
| Viral hepatitis | 5 | Epidemic hemorrhagic fever | 1 |
| Measles | 2 | Typhoid fever | 1 |
| Bacterial dysentery | 3 | Sepsis, septic shock | 3 |
| Viral encephalitis | 2 | Tuberculosis | 2 |
| Bacterial food poisoning | 3 |  |  |
| Optional according on regional difference: | | | |
| Encephalitis B |  | Leptospirosis |  |
| Cholera |  | Epidemic mumps |  |
| Amoebiasis |  | Epidemic cerebrospinal meningitis |  |
| Liver abscess |  | Schistosomiasis |  |
| Malaria |  | Fever of unknown origin |  |
| Toxoplasmosis |  | Brucellosis |  |

* + - 1. Basic skill requirements: Rules and procedures of disinfection and isolation; master the principle, results interpretation and clinical significance of common etiological examinations for infectious diseases.
    1. Further requirements
       1. Diseases to be learned

|  |  |
| --- | --- |
| **Disease** | **Disease** |
| Infectious mononucleosis syndrome | Nosocomial infection |
| Rabies | Influenza and bird flu |
| Severe fever with thrombocytopenia syndrome | Mycosis |

* + - 1. Clinical knowledge and skill requirements: Liver biopsy, artificial liver.
  1. **Oncology**

1 month (including oncologic clinic 1 week)

* + 1. Aim of rotation

To master: Anatomy and physiology of digestive system; electrolytes analysis; chest and abdominal x-ray and CT scan; master the etiology, mechanism, classification, clinical presentation, pathology, differential diagnosis, treatment and prognosis of diseases; indications and contraindications of pleural and peritoneal lavage therapy; common clinical diagnosis and treatment methods.

To understand:Diagnosis and treatment of pleural and peritoneal mesothelioma;diagnosis and treatment of Ewing's Sarcoma;chest and abdominal CT interpretation;other diagnostic and treatment technologies.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: at least 40 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case no. (≥)** | **Disease** | **Case no. (≥)** |
| Lung cancer | 6 | Pancreatic cancer | 3 |
| Breast cancer | 3 | Ovarian cancer | 3 |
| Esophageal cancer | 3 | Prostate cancer | 1 |
| Gastric cancer | 8 | Urinary bladder cancer | 2 |
| Hepatocellular carcinoma | 2 | Osteosarcoma | 2 |
| Colorectal cancer | 5 | Soft-tissue sarcoma | 2 |

* + - 1. Basic skill requirements: at least 20 cases.

|  |  |
| --- | --- |
| **Skill** | **Case no. (≥)** |
| Abdominal paracentesis | 8 |
| Thoracocentesis | 8 |
| Respiratory and digestive system CT scan interpretation | 8 |
| MR/PET interpretation | 8 |

* + 1. Further requirements
       1. Diseases to be learned

|  |
| --- |
| Disease |
| Mesothelioma |
| Ewing’s sarcoma |
| Others |

* + - 1. Clinical knowledge and skill requirements: Central venous catheterization.
  1. **Neurology and Psychiatry**

1 month (including 1 week in neurologic clinic, psychiatric clinic and EEG room).

**Neurology**

* + 1. Aim of rotation

Master: The cardinal symptoms and signs of nervous system damage; principles of localized and qualitative diagnosis of nervous system diseases; Applied anatomy of the 12 pairs of cranial nerves; classification, localization and qualitative diagnosis of sensory and motor disorders; clinical presentation, diagnosis, differential diagnosis, and treatment principle of acute inflammatory demyelinating polyneuropathy; common causes, clinical presentation, diagnosis, differential diagnosis and therapeutic principle of cerebral thrombosis, cerebral embolism, cerebral hemorrhage and subarachnoid hemorrhage; pathology and clinical presentation of Parkinson’s disease; clinical manifestation, diagnosis of epilepsy and rescue of status epilepticus; pathogenesis and clinical presentation of myasthenia gravis; indications, contraindications and complications of lumbar puncture.

Understand:Treatment and nursing of acute myelitis; main components of extrapyramidal system and symptoms of their disorders; etiology, classification and mechanism of epilepsy; clinical application of electroencephalogram and electromyogram.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case No. (≥)** | **Disease** | **Case No. (≥)** |
| Facial neuritis | 2 | Trigeminal neuralgia | 2 |
| Sciatica | 2 | Spinal cord compression | 3 |
| Cerebral infarction | 5 | Cerebral hemorrhage | 3 |
| Subarachnoid hemorrhage | 1 | Parkinson’s disease | 3 |
| Epilepsy & status epilepticus | 3 | Migraine | 3 |
| Multiple sclerosis | 1 | Myasthenia gravis | 1 |
| Acute inflammatory demyelinating polyneuropathy | 1 |  |  |

* + - 1. Basic skill requirements: lumbar puncture 3 cases.
    1. Further requirements
       1. Diseases to be learned: Acute myelitis, polyneuritis, periodic paralysis, Parkinson's syndrome and Parkinsonism-Plussyndrome.
       2. Clinical knowledge and skill requirements

|  |  |
| --- | --- |
| **Skill** | **Skill** |
| Electroencephalogram | Electromyogram |

**Psychiatry**

* + 1. Aim of rotation

Master: Psychiatric interview skills; clinical manifestations, diagnosis, differential diagnosis and management of common diseases; classification, clinical characteristics and application of commonly used antipsychotics, antidepressants, anti-anxiety drugs, and management of their side effects; concepts and common types of psychosomatic diseases.

Understand: Etiology and mechanism of psychiatric diseases; concepts and types of mood stabilizer medications; the concept of biopsychosocial medical model; the descriptive definition of hyperkinetic and mood disorders in children and adolescents; the concepts and common types of psychometrics;other therapies for psychiatric disease (such as electroconvulsive therapy and psychotherapy).

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case No.(≥)** |
| Panic attack | 2 |
| Somatization disorder | 2 |
| Depressive disorder | 2 |
| Generalized anxiety disorder | 2 |
| Organic mental disorder/ Mental disorder due to physical illness (including Alzheimer’s disease) | 2 |

* + - 1. Basic skill requirements:

|  |
| --- |
| **Skill** |
| Psychiatric examination and description |
| Disease diagnostic procedures |
| Supportive psychotherapy, Management and intervention of common psychiatric emergency |
| SAS (self-rating anxiety scale) |
| Application and evaluation of SDS (self-rating depression scale) |

* + 1. Further requirements
       1. Diseases to be learned:

|  |
| --- |
| **Disease** |
| Schizophrenia |
| Bipolar affective disorder |
| Eating disorders |
| Psychoactive substances induced mental disorders |
| Addiction, stress-related disorders, neurological disorders |
| Disorder of psychological development in children and adolescents |

* + - 1. Clinical knowledge and skill requirements: ECT therapy; cognitive behaviorpsychotherapy; family psychotherapy; psychodynamic (psychoanalytic) psychotherapy; biofeedback; music and recreation therapy; application of intelligent, personality and neuro-psychological measurements.
  1. **Medical Emergency Department**
     1. Aim of rotation

Master: Life support therapy for emergent, dangerous and seriously patient; the basic theories and new developments of cardiopulmonary resuscitation (CPR), including basic life support (BLS), advanced cardiac life support (ACLS), basic trauma life support (BTLS) and advanced trauma life support (ATLS); etiology, clinical presentation and standardized management of common emergency; indications for selection of common examinations for emergency, clinical significance and results interpretation; indications, effect, side effect and application method of common emergency medications (Cardio-pulmonary resuscitation and vasoactive drugs, cardiotonics and diuretic, antispasmodic and anti-asthmatic drugs, analgesics, hemostatic, antiarrhythmic drugs, etc.).

Understand: The pathogenesis, etiology, diagnostic criteria and principles of management of multiple organ dysfunction syndrome (MODS);mechanisms of reperfusion injury and its clinical significance; principles of treatment of various crisis (hypertensive crisis, hyperthyroidism crisis), severe disorders of water-electrolyte and acid-base balance.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: At least 50 cases.

|  |  |
| --- | --- |
| **Disease** | **Case No. (≥)** |
| Common acute fever | 10 |
| Dyspnea | 5 |
| Acute chest pain | 10 |
| Coma | 5 |
| Syncope | 5 |
| Cardiac respiratory arrest | 5 |
| Shock | 5 |
| Hemorrhage (hemoptysis, hematemesis, hematuria, etc.) | 5 |
| Various intoxication | 5 |
| Fatal (malignant) arrhythmia | 5 |

* + - 1. Basic skill requirements: At least 20 cases.

|  |  |
| --- | --- |
| **Skill** | **Skill** |
| Cardiopulmonary resuscitation | Thoracocentesis, Paracentesis |
| Gastric lavage | Lumbar puncture |
| Urinary catheterization | EKG monitoring |
| Defibrillation | Compression hemostasis by Sengstaken-Blakemore tube |
| Tracheal intubation | Use of ventilator |
| Arterial and venous puncture | Life support techniques (including CPR and trauma life support) |

* + 1. Further requirements
       1. Diseases to be learned and case requirement: Multiple organ dysfunction syndrome 3 cases.
       2. Clinical knowledge and skill requirements: Commonly used mechanical ventilation modes.
  1. **Intensive Care Unit**

1 month.

* + 1. Aim of rotation

Master: Diagnosis and urgent management of common diseases; indications, side effect and clinical application of common emergency medications (Cardio-pulmonary resuscitation and vasoactive drugs, antihypertensive, antiarrhythmic drugs, antispasmodic and anti-asthmatic drugs, antiepileptic drugs); clinical application of antibacterial drugs; indications of blood transfusion; indication and clinical application of nutritional support; arterial blood gas analysis.

Understand: Theories and advancement of SIRS and multiple organ dysfunction syndrome (MODS).

* + 1. Basic requirements
       1. Diseases to be learned and case number requirement: At least 30 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case No. (≥)** | **Disease** | **Case No. (≥)** |
| Serious pneumonia | 2 | Myocardial infarction | 2 |
| Cerebrovascular accident | 3 | Massive UGI bleeding | 2 |
| Diabetic ketoacidosis | 2 | Status epilepticus | 2 |
| Acute serious pancreatitis | 2 | Tension pneumothorax | 1 |
| Spinal cord injury and spinal shock | 2 | Cardiac tamponade | 2 |
| Intracranial hypertension | 2 | Shock | 5 |
| Serious electrolyte disturbances, acid-base imbalance | 3 | Acute respiratory failure, Acute respiratory distress syndrome | 2 |
| Acute heart failure | 3 | Acute renal failure | 2 |
| Disseminated intravascular coagulopathy | 3 | Multiple organ insufficiency | 1 |
| Acute hepatic failure | 2 | Fatal arrhythmia | 3 |
| Coma | 2 |  |  |

* + - 1. Basic skill requirements

|  |  |
| --- | --- |
| **Skill** | **Case No. (≥)** |
| Cardiopulmonary resuscitation (including defibrillator) | 3 |
| Advance cardiac life support (ACLS) | 3 |
| Tracheal intubation | 2 |
| EKG monitoring | 5 |
| Heart and lung x-ray images | 10 |
| Compression hemostasis by Sengstaken-Blakemore tube | 2 |
| Use of ventilator | 5 |

* + - 1. Further requirements
         1. Techniques to be learned: Postoperative monitoring, respiratory monitoring, cerebral monitoring.
         2. Clinical knowledge and skill requirements:

|  |
| --- |
| **Skill** |
| Deep venous puncture |
| Arterial puncture |
| Tracheal intubation or Tracheostomy |
| Mechanical ventilation |
| Intraaortic balloon counterpulsation |
| Thoracocentesis and Chest drainage |
| Pericardiocentesis |
| Interpretation of brain, chest and abdominal CT scan |

* 1. **Department of Medical Imaging**

2 months (including ultrasound and nuclear medicine)

* + 1. Aim of rotation

Master:

Normal anatomy, basic pathologic lesion presentation, essential diagnosis and differential diagnosis of common diseases of respiratory, cardiovascular, digestive and neurologic systems by x-ray and/or CT and/or MRI.

Normal anatomy of ultrasound imaging; basic principle of color Doppler; Ultrasonic diagnosis of common digestive, cardiovascular and urologic diseases.

The characteristics and principles of nuclear medicine imaging; application of thyroid scan, whole body bone scan, myocardial perfusion imaging,renal scintigraphy,and liver blood pool scan, and their manifestations in common diseases.

Understand: Fundamentals of CT and MRI and application of “M spot”; indication of angiography in gastrointestinal bleeding and common diseases; The manifestations of ERCP and MRCP in common pathologic lesions; application of cerebral vascular DSA; Fundamentals of diagnostic ultrasonography; 2D sonography, M-mode echocardiography, color Doppler flow imaging (CDFI), interventional sonography, endoluminal ultrasound, etc.; the principles and applications of gastrointestinal bleeding imaging, cerebral perfusion imaging, testicular blood pool imaging and salivary gland imaging.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case No.(≥)** | **Disease** | **Case No.(≥)** |
| Roentgenography: | | | |
| Pneumonia | 5 | Pulmonary abscess | 2 |
| Pulmonary TB | 5 | Pulmonary neoplasm | 5 |
| Chronic bronchitis and emphysema | 5 | Bronchiectasis | 2 |
| Hypertensive heart disease | 2 | Pulmonary heart disease, rheumatic heart disease, pneumothorax | 2 |
| Intestinal obstruction | 2 | Esophageal cancer | 2 |
| Esophageal varices | 2 | Gastroduodenal ulcer | 3 |
| Gastric cancer | 2 | Colorectal cancer | 3 |
| Liver cirrhosis | 5 | Liver cancer | 5 |
| Liver hemangioma | 5 | Cholelithiasis | 5 |
| Pancreatic cancer | 3 | Cerebrovascular accident | 5 |
| Ultrasonography: | | | |
| Cholelithiasis | 5 | Liver cirrhosis | 3 |
| Liver cancer | 3 | Renal stone | 3 |
| Coronary heart disease | 5 | Cardiomyopathy | 2 |
| Hypertensive disease | 5 | Rheumatic heart disease | 2 |
| Ventricular septal defect | 2 | Atrial septal defect | 2 |
| Nuclear Medicine | | | |
| Thyroid scan | 5 | Whole body bone scan | 3 |
| Myocardial perfusion scan | 3 | Renal scintigraphy | 3 |
| Liver blood pool imaging | 2 |  |  |

* + - 1. Basic skill requirements: Selection and general application of various imaging methods in various systems (10 cases); interpretation of roentgenogram and CT scan for common diseases (50 cases); interpretation of ECT for common diseases (10 cases).
      2. Further requirements
         1. Cases to be learned:

|  |  |
| --- | --- |
| **Disease** | **Disease** |
| Roentgenography: | |
| Rheumatic heart disease | Congenital heart disease |
| Crohn’s disease | Intestinal tuberculosis |
| Cholangiocarcinoma | Chronic pancreatitis |
| Urolithiasis | Urological neoplasm |
| Adrenal diseases | Thyroid diseases |
| Intracranial infection | Nervous system tumors |
| Nuclear Medicine: | |
| Gastrointestinal bleeding imaging | Cerebral perfusion imaging |
| Testicular blood pool imaging | Salivary gland imaging |

* + - * 1. Clinical knowledge and skill requirements:Basic operation of various imaging examination method; echo-guide and CT-guide organ biopsy (1 case); imaging of the digestive system (1 case), angiography of the nervous system (1 case), and the application of internal radionuclide irradiation therapy (1 case).

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities.Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Surgery

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Rotation arrangement**

Relative subject rotation period should not be less than 24 months. After the rotation, attending to the discipline clinical skills training time should not be less than 9 months.

Rotation departments and schedules are as follows.

|  |  |  |
| --- | --- | --- |
| **Department** | **Time (Month)** |  |
| General Surgery | 10 | The clinical skills  training time should not be less than 9 months in this discipline. |
| Orthopedics | 3 |
| Urology | 2 |
| Cardiothoracic Surgery | 2 |
| Neurosurgery | 2 |
| Burn and Plastic Surgery | 1 |
| Anesthesiology | 1 |
| Surgical Intensive Care Unit (SICU) | 1 |
| Surgical Emergency | 2 |
| **Total** | **24** |  |

1. **Contents of training and requirements**
   1. **General Surgery**

10 months (including gastrointestinal, hepatobiliary and pancreas, mammary and thyroid sections and clinics) (including 1 month in general surgery clinic, under the guidance of a senior surgeon)

* + 1. Aim of rotation
       - 1. Master: Fundamentals and basic knowledgeof disinfection and aseptic techniques, water and electrolytes disturbance, surgical shock, multiple organ dysfunction, trauma, surgical infection, CPR, surgical nutrition, preoperative preparation and postoperative management. Be familiar with: Pathogenesis, clinical characteristics, diagnosis, differential diagnosis, principles of treatment and follow up for common diseases of general surgery; basic medications in surgery; fundamentals and essential practice of laparoscopic surgery.
         2. Understand:Clinical characteristics, diagnosis, differential diagnosis and principles of treatment for rare diseases of general surgery; the advancements of organ transplantation; principles of resuscitation for surgical critical ill patients.
    2. Basic requirements

Master the skills of change dressing, surgical wound incision, exposure, suture, ligature, and hemostasis. Be familiar with common diagnostic and treatment procedures, such as urinary catheterization, venous cut-down, measurement of central venous pressure, sigmoidoscopy and biopsy, etc.Understand specific diagnostic methods and techniques, such as needle aspiration biopsy, paracentesis, etc.Complete at least 30 progress notes and at least 8 admission notes.

* + - 1. Diseases to be learned and case number requirement: at least 100 cases

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Boil and Furunculosis | 5 |
| Tetanus | 1 |
| Carbuncle | 1 |
| Acute mastitis | 1 |
| Acute cellulitis, erysipelas | 3 |
| Systemic acute purulent infection | 2 |
| Acute lymphangitis, lymphadenitis | 3 |
| Anal diseases, anal papillitis, perianal infection | 3 |
| Phlebitis | 3 |
| Internal and external hemorrhoids | 5 |
| Abscess | 3 |
| Skin tumors | 10 |
| Acute appendicitis | 3 |
| External abdominal scar | 3 |
| Thyroid tumor or goiter | 3 |
| Hyperplasia of mammary glands | 3 |
| Breast cancer | 3 |
| Gallbladder stone | 3 |
| Gastrointestinal tumor | 3 |
| Intestinal obstruction | 3 |

* + - 1. Clinical skills requirements:
         1. Under the guidance of a senior surgeon, finish the following surgeries:

|  |  |
| --- | --- |
| Operation | Case No.(≥) |
| Hernia repair | 3 |
| Appendectomy | 3 |
| Superficial tumor biopsy | 3 |
| Thyroid surgery | 3 |

* + - * 1. Participate in the following surgeries:

|  |  |
| --- | --- |
| Operation | Case No.(≥) |
| Bilateral subtotal thyroidectomy | 5 |
| Colectomy | 3 |
| Modified radical mastectomy or radical mastectomy | 3 |
| Cholecystectomy | 5 |
| Subtotal gastrectomy | 3 |
| Intestinal obstruction, bowel resection with anastomosis | 1 |
| Exploration of CBD, choledochojejunostomy | 1 |

* 1. **Orthopedics**

3 months (including 2 weeks in orthopedic clinic)

* + 1. Aim of rotation
       - 1. Master: Pathogenesis, clinical characteristics, diagnosis, differential diagnosis and principles of management of common orthopedic diseases.
         2. Be familiar with: Fundamentals and basic knowledge of orthopedic specialty; orthopedic examination methods for fracture, dislocation, lumbar intervertebral disc herniation, cervical spondylosis, arthritis and bone tumor; orthopedic-related imaging and laboratory studies.
    2. Basic requirements
       - 1. Master: General manipulation of splint, plaster, bone traction fixation and other common orthopedic skills, prevention of complication and their principles of management; the meaning and operation method of blocking therapy, prevention of complication and their management.
         2. Be familiar with: Common treatment and manipulation for orthopedic trauma (mainly fracture and dislocation); principles of open wound debridement and closure; application and manipulation key point for arthroscopy and discoscopy.
         3. Understand: Basic techniques for debridement of hand injury, repair of skin defect, tendon anastomosis and internal fixation; methods and basis of conservative treatment for lumbar intervertebral disc herniation, cervical spondylosis, lumbar sprain, stenosing tenosynovitis, meniscal injuries, frozen shoulder, and tennis elbow.
         4. Write 20 progress notes and at least 5 admission notes.
       1. Diseases to be learned and case number requirement:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Common fractures | 5 |
| Common dislocation | 5 |
| Chronic injury of motor system | 3 |
| Lumbar intervertebral disc herniation | 2 |
| Cervical spondylosis | 2 |
| Infection of bone and joint | 2 |
| Neoplasm of bone | 1 |

* + - 1. Clinical skill requirements
         1. Under guidance of a senior surgeon, finish the following operations:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Manipulative reduction, splint and plaster fixation of common fractures | 3 |
| Manipulative reduction of common joint dislocation | 3 |
| Skeletal traction for common location | 3 |

* + - * 1. Participatein the following operations:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Debridement, suture, repair skin defect and tendon anastomosis of hand injury | 5 |
| Debridement, open reduction internal fixation of open fracture | 5 |
| Cervical or lumbar spine surgery | 4 |
| Prosthetic replacement of joints | 3 |
| Common skeletal and soft tissue neoplasms of extremities | 2 |

* 1. **Urology**

2 months, including 2 weeks in urological clinic.

* + 1. Aim of rotation
       - 1. Master: Urologic specialty history taking, analysis and medical recording; pathogenesis, clinical characteristics, common examinations, diagnosis, indications and principles of treatment for common urologic diseases.
         2. Be familiar with: Diagnosis, differential diagnosis and principles of management for common urologic emergencies (e.g. renal colic, acute urinary retention, kidney contusion, urinary bladder and urethral injury etc.); causes, clinical presentations and principles of treatment for acute renal failure.
         3. Understand: Fundamentals and methods of endoscopic urologic surgery, including various TUR operation, percutaneous renal surgery, ureteroscopic surgery, and laparoscopic surgery; fundamentals of ESWL and operation method; evolution of andrology, diagnosis and treatment of common andrologic diseases.
    2. Basic requirements
       - 1. Master: Common urologic skills for diagnosis and therapy, including determination of residual urine volume of bladder, prostatic fluid collection and microscopic examination, urinary catheterization, cystostomy.
         2. Be familiar with: Purposes and usage of various urologic catheters (include various Foley catheter, cystostomy and nephrostomy tubes, D-J stenting tube and various drainage tubes); application of various medical imaging studies (urologic plain film, contrast radiography, CT, MRI, B-mode sonography and nuclear medicine examination).
         3. Understand: Application and operation for special urologic diagnostic and therapeutic methods, including dilatation of urethra by metallic bougie and filiform probe, needle aspiration and puncture biopsy of prostate, urodynamic study, cystoscopy, etc.
         4. Write 10 progress notes and 5 admission notes.
       1. Diseases to be learned and case requirements

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Inflammation of genitourinary system | 8 |
| Hydrocele | 1 |
| Prostate hyperplasia | 3 |
| Cryptorchidism | 1 |
| Varicocele | 2 |
| Urolithiasis | 5 |
| Urinary bladder cancer | 3 |
| Neoplasms of kidney and adrenal gland | 1 each |
| Prostate cancer | 1 |

* + - 1. Clinical skill requirements
         1. Under the guidance of a senior surgeon, finish the following operations:

|  |  |  |
| --- | --- | --- |
| Operation | | Case No.(≥) |
| Cystostomy | 1 | |
| High ligation of varicocele | 1 | |
| Eversion of tunica vaginalis | 1 | |
| Cystoscopy and ureteroscopy | 2 | |

* + - * 1. Participatein the following operations:

|  |  |
| --- | --- |
| Operation | Case No.(≥) |
| Orchiectomy | 1 |
| Partial cystectomy | 1 |
| Nephrectomy | 1-2 |
| Nephrolithotomy or ureterolithotomy | 2 |
| Surgery for hyperplasia or neoplasm of prostate | 2 |
| Surgery for urethral stricture | 1 |
| Genitourinary reconstruction | 1 |
| Endoscopic urologic surgery | 1-2 |
| Surgery for adrenal neoplasm | 1 |

* 1. **Cardiothoracic Surgery**

2 months (including 2 weeks in cardiothoracic clinic)

* + 1. Aim of rotation
       - 1. Master: Physiology of chest cavity, surgical anatomy of esophagus, heart and lung; fundamentals, clinical characteristics, examination methods, diagnosis procedure and principles of management for common cardiothoracic diseases; identification of normal and abnormal CXR films.
         2. Be familiar with: Pathogenesis and principles of treatment of chest trauma, esp. hemopneumothorax; indications and essentials of surgeries for common cardiothoracic diseases.
         3. Understand: Application and operation of most commonly used examinationsfor cardiothoracic surgery department, e.g. CXR, chest CT, coronary angiography, gastroscopy, bronchoscopy,thoracoscopy; common chemotherapy regimen for chest neoplasms.
    2. Basic requirements
       - 1. Master: Principles of treatment for common chest trauma; the essentials of thoracotomy and wound closure.
         2. Be familiar with: Thoracentesis, closed thoracic drainage.
         3. Write 8 progress notes and 4 admission notes.
       1. Diseases to be learned and case number requirement

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Esophageal (gastric cardia) cancer | 1-2 |
| Lung cancer | 1-2 |
| Chest trauma, hemothorax, pneumothorax | 2 |
| Other common chest diseases | 2 |
| Common congenital heart diseases | 2 |
| Valvular diseases | 1 |
| Other cardiovascular diseases | 1 |

* + - 1. Clinical skill requirements
         1. Under guidance of asenior surgeon, finish the following operations:

|  |  |
| --- | --- |
| Operation | Case No.(≥) |
| Thoracentesis | 2 |
| Closed thoracic drainage | 2 |
| Thoracotomy | 2 |

* + - * 1. Participate in the following operations:

|  |  |
| --- | --- |
| Operation | Case No.(≥) |
| Esophageal, gastric cardia cancer surgery | 2 |
| Pulmonary lobectomy | 2 |
| Surgery for congenital heart diseases | 2 |
| Other cardiac surgeries | 1-2 |

* 1. **Neurosurgery**

2 months

* + 1. Aim of rotation
       - 1. Master: Pathogenesis, clinical characteristics, diagnosis, differential diagnosis and principles of management for common neurosurgical diseases.
         2. Be familiar with: Principles of emergency management of traumatic brain injury; clinical diagnosis and elementary treatment of increased intracranial pressure.
         3. Understand: Clinical characteristics, diagnosis, differential diagnosis and treatment principles for intracranial / intraspinal tumors and vascular diseases.
    2. Basic requirements
       - 1. Master: Examination methods for nervous system diseases; the basic technique of debridement and suturing for scalp laceration; technique of lumbar puncture; the diagnosis and treatment principles for traumatic brain injury; skilled in the diagnosis and treatment of cerebral vascular diseases, accurate and prompt treatment of emergent cerebrovascular accidents.
         2. Be familiar with: Clinical application and fundamentals for skull surgery.
         3. Understand: Application and essentials of ventricular puncture.
         4. Write 4 progress notes and 2 admission notes.
       1. Diseases to be learned and case number requirement:

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Traumatic brain injury | 3 |
| Neural neoplasm | 1 |
| Cerebrovascular diseases | 1 |
| Spinal medullary lesions | 1 |

* + - 1. Basic skill requirements
         1. Under the guidance of a senior surgeon, finish the following operations:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Debridement and suturing of open craniocerebral injury | 1-2 |
| Lumbar puncture | 2 |

* + - * 1. Participate in the following operations:

|  |  |
| --- | --- |
| Operation | Case No. (≥) |
| Craniotomy | 1-2 |
| Ventricular puncture | 2 |

* 1. **Burn and Plastic Surgery**

1 month (including 1 week in clinic)

* **Section of burn injury**
  + 1. The theoretical knowledge

Master the basic knowledge of shock, infection, water electrolytes and acid-base balance, wound repair, nutritional support, and internal organs complications after burn injury. Familiar with basic theories associated with burns and plastic surgery after late stage of burn injury. Understand the pathomorphologic changes in cardiovascular, microcirculation, renal function, endocrine, digestive system, liver function, metabolic, immunity and others after burn injury. Familiar with the theory of wound healing.

* + 1. Clinical skills
       1. Master venous cut-down, escharotomy for decompression, early escharectomyand autologous skin grafting for medium sized III-degree burn injury, mesh autologous skin grafting, stamp autologous skin grafting.
       2. Master the methods for the prevention of burn shock and infection.
       3. Master the accurate diagnosis and treatment for electrical burn and burn inhalation injury.
       4. Accurately manage small and medium sized various burn wounds and hard-healing wounds of late stage.
       5. Participate in the treatment for complicated burn injuries and/or large area burn injuries (1-2 cases).
       6. Understand the principles of surgical treatment for chronic wounds such as diabetic foot.
       7. Complete 2-5 cases of skin grafting on granulated wound.
       8. Complete 2-5 plastic surgeries for various post-burn scar contracture.
       9. Write 2 progress notes and 1-2 admission notes.
* **Section of Plastic Surgery**
  + 1. The theoretical knowledge

Master: The diagnosis, treatment principles and prevention of complication of common diseases in plastic surgery and cosmetic surgery (including congenital and acquired defects or malformations); surgical anatomy of common plastic surgeries; surgical fundamentals, indications, design principles, survival processes, and complication treatment for plastic surgeries, such as free-skin grafting, skin flap transposition, tissue and biological material transplantation; the pathophysiologic knowledge of scar hyperplasia and the principles of prevention and methods.

Be familiar with the psychology of plastic surgery and cosmetic surgery.

Understand new knowledge and new technology developments in plastic surgery.

* + 1. Clinical skills
       - 1. Capably manage common plastic diseases under the guidance of a senior surgeon.
         2. Master basic plastic surgery skills and operations, such as skin harvest, flap formation and transfer, skin expansion, etc.
         3. Master escharotomy, escharectomy and skin grafting, and three-stage cheiloplasty.
         4. Be familiar with the principles of common cosmetic surgeries, such as upper eyelid blepharoplasty, rhinoplasty, breast augmentation, etc.
         5. Participate in surgeries of ear and nose reconstruction, huge breast reduction operation, rhytidectomy, etc.
         6. Operate the following surgeries: Escharotomy or escharectomy with skin grafting (1-2 cases), escharectomy with flap transfer (1-2 cases), skin expander implantation (1-2 cases), repair of cleft lip or secondary deformity of cleft lip (1-2 cases).
         7. Participatein at least 10 major or minor surgeries.
         8. Write 2 progress notes and 1-2 admission notes.
         9. Understand microanastomosis of small vessel.
  1. **Anesthesiology Department** -1 month
     1. Aim of rotation
        + 1. Master: Fundamentals of anesthesiology, basic content and tasks.
          2. Be familiar with: Application and management of common anesthesia; clinical application of common monitoring techniques; indications of general anesthesia, epidural anesthesia, spinal anesthesia, sacral anesthesia, cervical plexus and brachial plexus anesthesia.
          3. Understand: Pre-operative preparations for various anesthesia; cardiopulmonary cerebral resuscitation; management principles for post-anesthesia complications; evolution of pain therapy.
     2. Basic requirements
        + 1. Master: Atraumatic monitoring of ECG, blood pressure, pulse, respiration and body temperature; techniques of arterial puncture cannulation and deep venous puncture; techniques of cardiopulmonary cerebral resuscitation.
          2. Be familiar with: Techniques of subarachnoid and epidural puncture; intraoperative anesthesia management and coordination skills; be familiar with the dosage, usage, adverse effects and their management of anesthesia medications.
          3. Understand: the usage of ventilator.
     3. Skill requirements: Under the guidance of a senior doctor, finish the following operations:

|  |  |
| --- | --- |
| Skill | Case No.(≥) |
| Deep venous puncture, central venous pressure monitoring, or arterial puncture | 5 |
| Pre-operative visit and anesthesia | 20 |
| On duty and night shift | 5 |
| Mask ventilation, mechanical ventilation | 10 |
| Complete the following anesthesia records and summary | |
| Spinal anesthesia | 5 |
| Endotracheal general anesthesia | 5 |

* 1. **Surgical Intensive Care Unit (SICU)** – 1 month
     1. Aim of rotation
        + 1. Master: Indications and basic methods of respiratory therapy (including oxygen therapy, chest physical therapy and mechanical ventilation) and circulation therapy, and the application of common medications.
          2. Be familiar with: Postoperative physiologic function change in critical patients, including respiratory, circulatory, hepatic and renal functions, water electrolytes changes and general stress reaction; monitoring and management of critically ill patients; the complete procedures of resuscitation for acute serious patients.
          3. Understand: Indications for common measurement techniques, their operations and clinical application.
     2. Basic requirements
        + 1. Masterthe techniques for artificial respiration, external cardiac message, defibrillation, and common resuscitation skills.
          2. Be familiar with the operation techniques of common monitoring skills.
          3. Understand the application and operation of ventilator.
          4. Under the guidance of a senior doctors: Participate in bedside care of 10 critical patients and complete medical records on time; mechanical ventilation support for 5 patients and complete medical records.
  2. **Surgical Emergency** – 2 months

**General Surgery** (mainly abdominal surgery)

* + 1. Aim of rotation
       - 1. Master: The etiology, clinical manifestations, diagnosis, differential and surgical management of common abdominal injury, acute abdomen (such as acute appendicitis, inguinal hernia, gastrointestinal perforation, intestinal obstruction, acute hemorrhagic necrotizing pancreatitis, acute obstructive suppurative cholangitis, peritonitis)and gastrointestinal bleeding; basic surgical operations (such as incision, hemostasis, ligation, debridement and suturing); evaluation and estimation of the area and depth of burn injury and its emergent management; peripheral venous cut-down; aseptic techniques; wound dressing change; urinary catheterization; diagnostic abdominal paracentesis, etc.
         2. Be familiar with: Diagnosis and surgical management of acute cholecystitis, cholelithiasis, peptic ulcers, urolithiasis, etc.; exploratory laparotomy; interpretation of abdominal imaging (plain x-ray film, B-mode ultrasonography, CT, etc.).
         3. Understand: Diagnosis and principles of management of abdominal neoplasms.
    2. Basic requirements
       1. Diseases to be learned and case number requirements are as follows; and complete at least 5 admission notes.

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Abdominal trauma | 5 |
| Burn injury | 2 |
| Acute appendicitis | 5 |
| Inguinal hernia | 1 |
| Acute cholecystitis | 2 |
| Acute intestinal obstruction | 2 |
| Gastrointestinal perforation | 2 |
| Acute hemorrhagic necrotizing pancreatitis | 2 |
| Acute obstructive suppurative cholangitis | 2 |
| Acute peritonitis | 2 |
| Acute massive upper gastrointestinal bleeding | 2 |

* + - 1. Clinical skills requirements

|  |  |
| --- | --- |
| Operation | Case no. |
| Appendectomy (operator or 1st assistant) | 5 |
| Inguinal hernia repair (operator or 1st assistant) | 5 |
| Cut-down of artery or vein (operator) | 5 |
| Diagnostic abdominal paracentesis | 5 |
| Urinary catheterization | 15 |
| Exploratory laparotomy (1st assistant) | 2 |
| Repair of gastrointestinal perforation (1st assistant) | 5 |

* + - 1. Further requirements
         1. Diseases to be learned and case requirements:

|  |  |
| --- | --- |
| Disease | Case no. |
| Cholelithiasis | 2 |
| Peptic ulcer disease | 2 |
| Urolithiasis | 2 |
| Abdominal neoplasm | 4 |

* + - * 1. Clinical knowledge and skill requirements:

|  |  |
| --- | --- |
| Operation | Case no. |
| Cholecystectomy (2nd assistant) | 4 |
| Exploration of CBD (2nd assistant) | 2 |
| Exploratory laparotomy for liver and spleen rupture | 5 |

**Orthopedics, Neurosurgery, Cardiothoracic Surgery, etc.**

* + 1. Aim of rotation
       - 1. Master: The pathophysiology, clinical presentations, diagnosis and management of common closed and open trauma (such as skull, spine, extremities, chest); evaluation the severity of trauma; first-aid techniques; methods of examinations and diagnostic imaging of various sections; debridement and suturing.
         2. Be familiar with: Diagnosis and management of severe multiple and combined trauma; interpretation of medical images (MRI, CT, etc.).
         3. Understand: Internal cardiac message.
    2. Basic requirements
       1. Diseases to be learned and case number requirements are as follows; and complete at least 5 admission notes.

|  |  |
| --- | --- |
| Disease | Case No. |
| Craniocerebral injury | 4 |
| Thoracic injury | 4 |
| Fracture of extremities | 4 |
| Joint dislocation | 2 |
| Pelvic fracture | 2 |
| Spinal injury | 2 |
| Urologic system injury | 2 |
| Facial injury | 2 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| Operation and skills | Case no. |
| Trauma severity evaluation (Trauma score, Glasgow score) | 10 |
| Debridement and suturing | 5 |
| Reduction of dislocation | 5 |
| Immobilization of cervical spine | 4 |
| Reduction and fixation of fracture of extremities (1st assistant) | 10 |
| Thoracic closed drainage (operator or 1st assistant) | 5 |

* + - 1. Further requirements
         1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no. |
| Severe multiple trauma | 2 |
| Severe combined trauma | 2 |
| Traumatic shock | 3 |
| Fat embolism syndrome | 1 |

* + - * 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| Operation | Case no. |
| Skull drilling operation (1st assistant) | 5 |
| Thoracotomy (1st assistant) | 5 |

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidatesmust participate invarious academic activities (case discussion, consultation, lectures, book and literature reading, academic conferences, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, andcultivate clinical thinking abilities and analytical abilities. Under the guidance of a mentor,they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Pediatrics (Medicine)

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year. Complete 60 admission notes, at least 5 admission notes for each subspecialty (not fewer than 5 types of diseases/subspecialties).

1. **Rotation arrangement**

Relative subject rotation period is 24 months. After the rotation, attending to the relative clinical skills training time should not be less than 9 months.

Rotation departments and schedules:

|  |  |  |
| --- | --- | --- |
| **Department** | **Time (Month)** |  |
| Neonatal | 2 | The clinical skills  training time should not be less than 9 months in this subject. |
| Respiratory Medicine | 2 |
| Gastroenterology | 2 |
| Cardiovascular Medicine | 2 |
| Neurology | 2 |
| Infectious Diseases | 2 |
| Metabolism and Endocrinology | 2 |
| Hematology | 2 |
| Nephrology | 2 |
| Rheumatic and Immunity | 1 |
| Child Health | 3 |
| Intensive Care | 1 |
| Paramedical units (Radiology, ECG room) | 2 weeks/each |  |
| **Total** | **24** |  |

1. **Training content and requirements**
   1. **Neonatal Department** – 2 months
      1. Aim of rotation
         1. Master: Classification of neonates; anatomical and physiological characteristics and nursing characteristics for full term infants, premature infants, post-term infants, and giant babies; history taking and medical records of neonates; the etiology, pathogenesis, clinical presentations, diagnosis, treatment and prevention of common neonatal diseases.
         2. Be familiar with: Essentials of feeding, medications (including antibiotics) and fluid supplement for newborns and premature infants.
      2. Basic requirements
         1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No. |
| Neonatal pneumonia | 3 |
| Neonatal sepsis | 3 |
| Neonatal necrotizing enteritis and colitis | 1 |
| Neonatal congenital syphilis | 1 |
| Neonatal hypoglycemia | 1 |
| NeonatalABO incompatibility hemolysis | 1 |
| Neonatal polycythemia | 1 |
| Neonatal intracranial hemorrhage | 3 |
| Neonatal respiratory distress syndrome | 1 |
| Meconium aspiration syndrome | 3 |
| Neonatal suppurative meningitis | 3 |
| Neonatal cold injury syndrome | 3 |
| Neonatal hyperglycemia | 1 |
| TORCH infection | 1 |

* + - 1. Basic skill requirements: Complete more than 3 cases of general neonatal physical examination correctly.
  1. **Department of Respiratory Medicine** – 2 months
     1. Aim of rotation

Master: Characteristics of anatomy and physiology of the respiratory system in children; clinical presentations, diagnosis, differential diagnosis, complications, treatment and prevention of common respiratory diseases in children.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Acute laryngitis | 2 |
| Acute bronchitis | 5 |
| Capillary bronchitis | 3 |
| Bronchial asthma | 3 |
| Pleural effusion | 2 |
| Various pneumonia (lobar pneumonia, bronchopneumonia, staphylococcal pneumonia, viral pneumonia, mycoplasmal pneumonia) | 5 |

* + - 1. Basic skill requirements: Thoracentesis ≥ 1 case; oxygen therapy.
  1. **Department of Gastroenterology** – 2 months
     1. Aim of rotation

Master: Characteristics of anatomy and physiology of the digestive system in children; clinical presentations, diagnosis, differential diagnosis, complications, treatment and prevention of common digestive diseases in children; etiology, clinical presentations, diagnosis, differential diagnosis and treatment (including fluid supplement, management of electrolyte disturbance and acid-base imbalance) of diarrhea.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Neonatal hepatitis syndrome | 3 |
| Gastritis | 3 |
| Diarrhea | 3 |
| Gastroesophageal reflux | 2 |
| Peptic ulcer | 3 |

* + - 1. Basic skill requirements: Nasogastric intubation ≥ 1 case.
  1. **Department of Cardiovascular Medicine** – 2 months
     1. Aim of rotation

Master: Characteristics of anatomy and physiology of cardiovascular system in children, significance and method of physical examination; the characteristics of history, symptoms and signs, ECG, echocardiography and CXR for common congenital heart diseases, with their diagnosis and differential diagnosis; diagnosis and management of common arrhythmia; diagnosis and management of myocarditis; management before and after cardiac catheterization and angiography.

Be familial with: Cardiac catheterization and angiography.

* + 1. Basic requirements:
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Ventricular septal defect | 1 |
| Atrial septal defect | 1 |
| Patent ductus arteriosus | 1 |
| Tetralogy of Fallot | 1 |
| Pulmonary stenosis | 1 |
| Cerebral hypoxia attack | 1 |
| Viral myocarditis | 1 |
| Common arrhythmia | 2 |
| Heart failure | 1 |

* + - 1. Basic skill requirements: Operation and analysis of ECG≥ 5 cases, venous puncture ≥ 5 cases.
  1. **Department of Neurology** – 2 months
     1. Aim of rotation

Master: Characteristics of anatomy and physiology with examination method for nervous system in children; clinical presentations, diagnosis, differential diagnosis and management of common neurologic diseases in children.

Be familiar with: Diagnosis and management of hereditary neurologic diseases in children; understand the relationship between EEG and clinical manifestations.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Epilepsy | 5 |
| Myelitis | 1 |
| Common myopathy | 1 |
| Viral encephalitis | 3 |
| Suppurative meningitis | 3 |
| Multiple radiculitis | 1 |

* + - 1. Basic skill requirements: Neurologic examination ≥ 5 cases; lumbar puncture ≥ 3 cases.
  1. **Department of Infectious Diseases** (Infective and parasitic diseases) – 2 months
     1. Aim of rotation
        1. Master: The pathogenesis, clinical presentations, diagnosis, differential diagnosis, treatment and prevention of common infectious diseases in children.
        2. Be familiar with: Clinical presentation, diagnosis, treatment and prevention of sexual transmitted diseases (such as AIDS, gonorrhea, syphilis etc.) in children; clinical presentations, diagnosis and treatment of severe acute respiratory syndrome (SARS or infective atypical pneumonia).
     2. Basic requirements

Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No. |
| Measles | 2 |
| Urticaria | 2 |
| Roseola infantum | 2 |
| Chickenpox | 2 |
| Epidemic mumps | 2 |
| Whooping cough | 1 |
| Malaria | 1 |
| Ascariasis | 3 |
| Taeniasis | 1 |
| Various TB, toxic bacillary dysentery, salmonella infection, cholera | 2 |
| Hepatitis A, B, C | 3 |
| Epidemic encephalitis B | 1 |
| Meningococcal meningitis | 2 |
| Bacillary dysentery | 3 |
| Pinworm infection | 3 |
| HIV/AIDS, gonorrhea, syphilis | 1 per each |

* 1. **Department of Metabolism and Endocrinology** – 2 months
     1. Aim of rotation

Master the clinical presentations, diagnosis, differential diagnosis and management of classic common diseases.

* + 1. Basic requirements

Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Diabetes in children | 1 |
| Diabetic ketoacidosis | 1 |
| Congenital hypothyroidism | 1 |
| Hyperthyroidism | 1 |
| Congenital adrenal hyperplasia | 1 |
| Diabetes insipidus | 1 |
| Sexual precocity | 1 |
| Short stature | 1 |
| Obesity | 1 |
| Down’s syndrome | 1 |

* 1. **Department of Hematology (and Oncology)** – 2 months
     1. Aim of rotation
        1. Master: Characteristics of embryonic hematopoiesis, hematopoietic after birth and hemogram in different ages; mechanism of hemostasis and coagulation; the etiology, pathogenesis, classification, treatment and prevention of common hematologic diseases in children.
        2. Be familiar with: Differential diagnosis and treatment principles of hemorrhagic and hemolytic diseases; diagnosis and treatment of leukemia and lymphoma.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Nutritional iron deficiency anemia | 1 |
| Nutritional megaloblastic anemia | 1 |
| Idiopathic Thrombocytopenic Purpura | 1 |
| Leukemia | 1 |
| Lymphoma | 1 |

* + - 1. Basic skill requirements: Bone marrow puncture ≥ 2 cases.
  1. **Department of Nephrology** – 2 months (including 1 week in clinic, 1 week in dialysis unit)
     1. Aim of rotation
        1. Master: Physiology of nephron and kidney; the etiology, pathogenesis, clinical classification, clinical presentation, diagnosis, differential diagnosis and treatment of glomerular diseases; application of corticosteroids, immunosuppressive drugs and anticoagulants; diagnosis, differential diagnosis and treatment of acute and chronic pyelonephritis; the etiology, pathogenesis, diagnosis and treatment of acute and chronic renal failure; the purposes and requirements of nutrition therapy in non-dialysis therapy; indications of hemodialysis and peritoneal dialysis; application and interpretations of renal function tests.
        2. Understand: The pathologic classification of glomerular diseases; indications of renal puncture; the etiology, pathogenesis, diagnosis and treatment principles of glomerulus diseases and interstitial nephritis; anti-rejection therapy of renal transplantation; other clinical diagnoses and treatment techniques.
     2. Basic requirements
        1. Diseases to be learned and case number requirements: at least 20 cases.

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Nephrotic syndrome | 3 |
| IgA nephropathy | 2 |
| Secondary glomerulonephritis (Lupus nephritis and Henoch-Schonlein Purpura nephritis) | 1 |
| Urinary infection | 1 |
| Acute renal failure | 1 |
| Chronic renal failure | 3 |
| Primary glomerulonephritis (acute nephritis, rapidly progressive glomerulonephritis, chronic nephritis, latent nephritis) | 3 |
| Renal tubular interstitial disease (acute interstitial nephritis, chronic interstitial tubular disease) | 3 |

* + - 1. Basic skill requirements: Urine sediment microscopic examination: 10 cases.
      2. Further requirements
         1. Disease to be learned: Rapidly progressive glomerulonephritis.
         2. Skin requirements: Renal puncture.
  1. **Department of Rheumatology** – 1 month (including 1 week in clinic)
     1. Aim of rotation

Master: Clinical presentations, basis of diagnosis, differential diagnosis and treatment principles of common rheumatic diseases; the clinical significance of rheumatic related laboratory studies; the mechanism, usage and adverse reaction of common anti-rheumatic drugs.

To understand: The principles of related test methods for autoantibodies of rheumatic diseases; normal structure of joints and the image presentations of common joint diseases; understanding of rheumatic diseases in interaction with other disciplines, and an overall concept of diagnosis and treatment of diseases.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: at least 20 cases.

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| Systemic lupus erythematosus (SLE) | 3 |
| Rheumatoid arthritis | 3 |
| Osteoarthritis | 5 |
| Ankylosing spondylitis | 5 |
| Sjogren’s disease | 2 |
| Rheumatic fever | 1 |
| Henoch-Schonlein Purpura | 2 |
| Mucocutaneous lymph node syndrome | 1 |

* + - 1. Basic skill requirements: To master the principles, results interpretations and clinical significance of related test methods for antibodies of various rheumatic diseases; the basic examination of joints.
    1. Further requirements
       1. Diseases to be learned:

|  |
| --- |
| Disease |
| Still’s disease |
| Inflammatory myopathy |
| Systemic sclerosis |
| Reactive arthritis |
| Psoriatic arthritis |
| Behcet’s disease |
| Systemic vasculitis |

* + - 1. Clinical knowledge and skill requirements:
         1. Pathologic characteristics of various arthritis.
         2. Joint aspiration, synovial fluid analysis and its clinical significance.
         3. Identification of the image characteristics of rheumatoid arthritis, osteoarthritis, ankylosing spondylitis and other rheumatic diseases.
  1. **Department of Child Health** – 3 months
     1. Aim of rotation
        1. Master:The rhythm of growth and development of children, methods of evaluation of development;basic knowledge of nutrition and proper feeding practices in children; the content of schedule immunization, its common contraindications and treatment; the prevention and treatment of the Children’s Four Diseases (rickets, anemia, pneumonia, diarrheal diseases); diagnosis and prevention of common diseases in children: malnutrition, zinc deficiency, obesity, attention deficit hyperactivity syndrome, enuresis, etc.
        2. Be familiar with: Various psychological testing methods in their corresponding ages, explanation and assessment of the results; management of scattered living children and grouped children; differential diagnosis of short stature, anorexia, and growth retardation; assessment, counselling and intervention of early childhood development, health education of children’s health.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Malnutrition | 1-2 |
| Attention deficit hyperactivity syndrome | 1-2 |
| Vitamin D deficiency rickets | 1-2 |
| Anemia | 1-2 |
| Enuresis | 1-2 |
| Obesity | 1-2 |

* + - 1. Basic skill requirements: Common anthropometric measurements (e.g. body weight, height, circumferences of head, chest and upper arm, subcutaneous fat).
  1. **Intensive Care** Unit– 1 month
     1. Aim of rotation
        1. Master: Observation of changes of vital signs;diagnosis and treatment of common diseases in emergency and master critical illness scoring; interpretation and preliminary treatment according to the results of blood gas analysis, electrolytes, liver, kidney function tests.
        2. Be familiar with: First-aid medications and dosage.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case No.(≥) |
| CPR (cardiac arrest, apnea) | 1-2 |
| Serous asthma | 1-2 |
| Arrhythmia | 1-2 |
| Acute increase intracranial pressure | 1-2 |
| Status epilepticus | 1-2 |
| Acute respiratory failure | 1-2 |
| Heart failure | 1-2 |
| Shock | 1-2 |
| Acute renal failure | 1-2 |
| Multiple organs dysfunction syndrome | 1-2 |
| Various intoxications | 1-2 |

* + - 1. Basic skills requirements: capably operate monitors; perform endotracheal intubation ≥ 3 cases; CRP.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, book or literature reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Pediatrics (Surgery)

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Rotation arrangement**

Total rotation time is at least 24 months. After the rotation of the related subjects, attending to the discipline clinical skills training time should not be less than 9 months.

Rotation departments and schedules:

|  |  |  |
| --- | --- | --- |
| **Department** | **Time (Month)** |  |
| General Surgery | 4 | The clinical skills  training time should not be less than 9 months in this discipline. |
| Orthopedics | 2 |
| Neonatal Surgery | 3 |
| Urology | 2 |
| Burns and Plastic Surgery | 4 |
| Cardiothoracic Surgery | 2 |
| Neurosurgery | 2 |
| Surgical Clinic and Emergency Department | 1 |
| Anesthesiology | 2 |
| Medical Imaging | 2 |
| **Total** | **24** |  |

1. **Training content and requirements**
   1. **General Surgery**
      1. Training requirements
         1. Perform as a first-line duty doctor in specialized ward of general surgery.
         2. Accept and manage patients in general surgery ward, write medical records.
         3. Participate in the ward round of general surgery.
         4. Under the guidance of a senior doctor, complete minor surgeries.
      2. Be able to master the following general surgery techniques independently:
         * 1. Physical examination in child patients;
           2. Pre-operative and post-operative management of child patients: pre-operative orders and preparations, post-operative orders and management of complications;
           3. Gastrointestinal decompression, indwelling urinary catheter;
           4. Dressing change and removal of stitches for various wounds;
           5. Venous puncture and cut-down;
           6. Removal of biliary drainage tube and abdominal drainage tube;
           7. Nutritional support therapy in pediatric surgery;
           8. Abdominal paracentesis and drainage;
           9. Aspiration and/or incision of drainage of abscesses;
           10. Reduction of incarcerated hernia;
           11. Reduction of intussusception by air enema under fluoroscopy.
      3. Under the guidance of a senior surgeon, finish the following operations:

|  |  |
| --- | --- |
| Operation | Case No. |
| Appendectomy | 1 |
| Incision and reduction of incarcerated hernia | 1 |
| Manipulative reduction of intussusception | 1 |
| Lymph node biopsy | 1 |
| High ligation of inguinal hernia sac | 2 |

* + 1. Participate in critical rescue in the specialty of general surgery:
       - 1. Shock: septic shock, hemorrhagic shock;
         2. Congenital megacolon with enterocolitis;
         3. Cardio-pulmonary-cerebral resuscitation;
         4. Digestive tract surgery combined with severe paralytic ileus;
         5. Water, electrolytes, and acid-base disturbance;
         6. Massive GI bleeding;
         7. Combined trauma.
    2. Diagnosis and treatment of following pediatric surgery diseases:
       - 1. Thyroglossal cyst and fistula;
         2. Parotid cyst and fistula;
         3. Appendicitis;
         4. Pancreatitis;
         5. Cholecystitis;
         6. Incarcerated hernia;
         7. Inguinal hernia;
         8. Intussusception;
         9. Various intestinal obstruction;
         10. Peritonitis;
         11. Gastrointestinal perforation;
         12. Various acute abdomen;
         13. Congenital megacolon;
         14. Colorectal polyps;
         15. Anal fistula;
         16. Constipation;
         17. Anal incontinence;
         18. Congenital choledochal cyst;
         19. Portal hypertension in children;
         20. Vitelline duct abnormality: umbilical sinus, vitelline-intestinal fistula, vitelline duct cyst, Meckel's diverticulum;
         21. Mesenteric cyst;
         22. Omental cyst;
         23. Intraabdominal, retroperitoneal and sacral neoplasms.
  1. **Orthopedics**
     1. Training requirements
        1. Perform as a first-line duty doctor in specialized ward of orthopedics.
        2. Accept and manage patients in orthopedics ward, write medical records.
        3. Participate in the ward round of orthopedics.
        4. Under the guidance of a senior doctor, perform orthopedics surgeries.
     2. Be able to master the following orthopedics techniques independently:
        + 1. Physical examination in child patients;
          2. Pre-operative and post-operative management of child patients: pre-operative orders and preparations, post-operative orders and management of complications;
          3. Joint puncture;
          4. Immobilization by splints;
          5. Skin traction, bone traction;
          6. “Figure-8” bandage immobilization for clavicle fracture;
          7. Manipulative reduction of radial head subluxation;
     3. Under the guidance of a senior surgeon, perform the following operations:

|  |  |
| --- | --- |
| Operation | Case no. |
| Lysis of stenosing tenosynovitis | 1 |
| Excision of polydactyly | 1 |
| Sternocleidomastoid muscle transection | 1 |
| Incision and drainage of blood-borne osteomyelitis | 0-1 |

* + 1. Preliminarily master specialized critical rescuein orthopedics:
       1. Post-operative monitoring of thoracic or combined thoraco-abdominal surgeries;
       2. Post-operative monitoring of posterior approach spinal scoliosis surgery;
       3. Rescue and treatment of complex bone trauma.
    2. Diagnosis and treatment of specialized orthopedic diseases in pediatrics:
       - 1. Congenital muscular torticollis;
         2. Stenosing tenosynovitis;
         3. Radial head subluxation;
         4. Acute and chronic blood-borne osteomyelitis;
         5. Acute suppurative arthritis;
         6. Atlanto-axial subluxation;
         7. Spinal scoliosis;
         8. Kyphosis, developmental dysplasia of hip;
         9. Congenital clubfoot;
         10. Genu varum and Genu valgum;
         11. Gluteal muscle contracture;
         12. Popliteal (Baker’s) cyst;
         13. Polydactyly and syndactyly;
         14. Sequelae of cerebral palsy;
         15. Limb length discrepancy;
         16. Congenital pseudarthrosis of tibia;
         17. Osteochondroma;
         18. Bone cyst;
         19. Traumatic and pathologic fractures.
  1. **Neonatal Surgery**
     1. Training requirements
        1. Perform as a first-line duty doctor in specialized ward of neonatal surgery.
        2. Accept and manage patients in neonatal surgery ward, write medical records.
        3. Participate in the ward round of neonatal surgery.
        4. Under the guidance of a senior doctor, perform various neonatal surgical procedures.
     2. Be ble to master the following neonatal surgical techniques independently:
        + 1. Physical examination in neonates;
          2. Fluid therapy in neonatal surgery;
          3. Neonatal surgical nutrition support, including fundamentals of parenteral nutrition and enteral nutrition;
          4. Pre-operative and post-operative management of neonatal surgeries: Pre-operative orders and preparations, post-operative order and management of complications.
     3. Under the guidance of a senior surgeon, complete the following neonatal surgeries:

|  |  |
| --- | --- |
| Operation | Case no. |
| Pyloromyotomy | 1 |
| Perineal anoplasty for low imperforate anus | 1 |
| Incision and drainage of perianal abscess | 1 |
| Incision and drainage of subcutaneous gangrene | 1 |

* + 1. Be familiar with the following neonatal surgical critical rescue:
       - 1. Neonatal cardio-pulmonary-cerebral resuscitation;
         2. Neonatal megacolon crisis;
         3. Syncope;
         4. Neonatal stress ulcer;
         5. Neonatal shock;
         6. Neonatal monitoring.
    2. Diagnosis and treatment of specialized neonatal surgical diseases:
       - 1. Congenital esophageal atresia and tracheoesophageal fistula;
         2. Congenital hypertrophic pyloric stenosis;
         3. Congenital intestinal malrotation;
         4. Congenital intestinal atresia and intestinal stricture;
         5. Congenital megacolon;
         6. Congenital anorectal deformity;
         7. Omphalocele and gastroschisis;
         8. Biliary atresia;
         9. Neonatal omphalitis;
         10. Neonatal subcutaneous gangrene;
         11. Neonatal birth injuries;
         12. Neonatal hemorrhagic necrotizing enteritis;
         13. Annular pancreas;
         14. Congenital diaphragmatic hernia;
         15. Neonatal disgestive tract perforation;
         16. Peritonitis;
         17. Acute abdomen;
         18. Intraabdominal, retroperitoneal, sacral neoplasms.
  1. **Urology**
     1. Training requirements
        1. Perform as a first-line duty doctor in specialized ward of urology.
        2. Accept and manage patients in urology ward, write medical records.
        3. Participate in the ward round of urology department.
        4. Under the guidance of a senior doctor, perform minor pediatric urologic surgeries.
        5. Master the basic content and principles of diagnosis and treatment in pediatric urology.
     2. Be able to master the following neonatal surgical techniques independently:
        + 1. Physical examination in pediatric urologic patients;
          2. Pre-operative and post-operative management of pediatric urology: Pre-operative orders and preparations, post-operative order and management of complications;
          3. Preputial adhesion separation technique;
          4. Removal of catheters of cystostomy, nephrostomy and ureteral stents;
          5. Voiding cystourethrography;
          6. Various urologic radiography and interpretations.
     3. Complete the following urologic operations independently:

|  |  |
| --- | --- |
| Operation | Case No. |
| Circumcision | 1-2 |
| Cystostomy | 0-1 |
| Orchidopexy | 1-2 |
| High ligation of processus vaginalis | 1-2 |
| Under the guidance of a senior surgeon, perform various minor pediatric urologic surgeries | 5 |

* + 1. Master the skills applied to pediatric urologic emergency and critical rescue:
       - 1. Incarceration of phimosis;
         2. Acute urinary retention;
         3. Various scrotal emergencies;
         4. Preliminary management of genitourinary injuries.
    2. Diagnosis and treatment of specialized urologic diseases:
       - 1. Phimosis
         2. Hidden penis
         3. Hydrocele
         4. Spermatic varices;
         5. Congenital hydronephrosis
         6. Vesicoureteric reflux
         7. Posterior urethral valve syndrome
         8. Anterior urethral valve and diverticulum
         9. Renal, ureteral duplication
         10. Ectopic opening of ureter
         11. Congenital megalo-ureter
         12. Hypospadias
         13. Nephroblastoma
         14. Adrenal neoplasms
         15. Genitourinary and pelvic cavity rhabdomyosarcoma
         16. Testicular neoplasms
         17. Urethral stricture
         18. Sex deformity
         19. Various genitourinary injuries
         20. Epispadias,bladder exstrophy
  1. **Burns and Plastic Surgery**
     1. Training requirements
        1. Perform as a first-line duty doctor in burns unit.
        2. Accept and manage pediatric burns and plastic surgical patients, write medical records.
        3. Participate in the ward round of burns and plastic surgery department.
        4. Under the guidance of a senior doctor, manage large-area burns wound and perform various skin grafting and plastic surgeries.
     2. Be able to master the following burns and plastic surgical techniques independently:
        + 1. Physical examination in pediatric burns and plastic surgical patients;
          2. Fluid therapy of pediatric burn injuries.
          3. Pre-operative and post-operative management of pediatric burns patients: pre-operative orders and preparations, post-operative order and management of complications.
          4. Dressing change of ordinary burn wound.
     3. Under the guidance of a senior doctor, complete the following operations:

|  |  |
| --- | --- |
| Operation | Case No. |
| Escharectomy and grafting | 2 |
| Skin tumor excision | 2 |
| Excision of polydactyly | 1 |
| Simple plastic surgery for post-burn scar contractures | 1 |

* + 1. Participate in burns critical rescue
       - 1. Burn shock
         2. Large area burn injury
         3. Burn sepsis
         4. Burn combined with stress ulcer
    2. Diagnosis and treatment of specialized diseases of burns and plastic surgery:
       - 1. Flame burn
         2. Scald burn
         3. Chemical burn
         4. Electric injury
         5. Superficial hemangioma
         6. Skin tumors
         7. Polydactyly
         8. Scars contracture
  1. **Cardiothoracic Surgery**
     1. Training requirements
        1. Perform as a first-line duty doctor in the ward of cardiothoracic surgery.
        2. Accept and manage cardiothoracic patients, write medical records.
        3. Participate in the ward round of cardiothoracic surgery department.
        4. Under the guidance of a senior doctor, perform various pediatric cardiothoracic surgeries.
        5. Master the pathophysiology of pediatric congenital heart diseases.
     2. Be able to master the following basic techniques of cardiothoracicsurgery independently:
        + 1. Physical examination in pediatric cardiothoracic surgical patients;
          2. Pre-operative and post-operative management of pediatric cardiothoracic patients: pre-operative orders and preparations, post-operative order and management of complications.
          3. Perform thoracentesis and drainage, pericardial and mediastinal drainage, 2 cases, respectively.
          4. Perform 5 cases of thoracotomy and thoracotomy closure, respectively.
     3. Be familiar with critical rescue in cardiac specialty:
        + 1. Early diagnosis and preliminary management of cardiogenic shock and cardiac tamponade.
          2. Acute and chronic heart failure, cardioversion of rapid arrhythmia, management of cardiopulmonary resuscitation.
     4. Complete the following operations independently:

|  |  |
| --- | --- |
| Operation | Case no. |
| Closed thoracic drainage | 1-2 |
| Removal of pins of funnel chest | 1-2 |
| Under the guidance of seniors, perform other cardiothoracic surgeries |  |

* + 1. Preliminarily master critical rescue of thoracic surgical diseases
       - 1. Pneumothorax
         2. Hemothorax
         3. Early diagnosis and preliminary management of cardiogenic shock and cardiac tamponade
         4. Acute and chronic heart failure, cardioversion of rapid arrhythmia, management of cardiopulmonary resuscitation
    2. Diagnosis and treatment of specialized cardiothoracic surgical diseases
       - 1. Various congenital heart diseases
         2. Chest wall deformity: funnel chest, pectus carinatum
         3. Congenital diaphragmatic hernia: Thoraco-abdominal hiatal hernia, retrosternal hernia, hiatal hernia
         4. Congenital eventration of diaphragm
         5. Congenital pulmonary cystic degeneration
         6. Isolated lungs
         7. Mediastinal mass: neoplasms and cysts
         8. Emphysema
         9. Suppurative pericarditis
  1. **Neurosurgery**
     1. Training requirements
        1. Perform as a first-line duty doctor in the ward of neurosurgery.
        2. Accept and manage neurosurgical patients, write medical records.
        3. Participate in the ward round of pediatric neurosurgical department.
        4. Participate in pediatric neurosurgical operations.
     2. Be able to master the following basic techniques of neurosurgery independently:
        + 1. Physical examination in pediatric neurosurgical patients.
          2. Pre-operative and post-operative management of pediatric neurosurgical patients: pre-operative orders and preparations, post-operative order and management of complications.
          3. Lumbar puncture.
     3. Familiar with following pediatric neurosurgical operations

|  |  |
| --- | --- |
| Operation | Case no. |
| Subdural cavity puncture and drainage | 1-2 |
| Puncture and drainage of lateral ventricle | 1-2 |

* + 1. Be familiar with critical rescue of pediatric neurosurgery
       - 1. Post-operative monitoring of craniocerebral surgery
         2. Post-operative monitoring of spinal surgery
         3. Rescue and care of status epilepticus
         4. Rescue and monitoring of increased intracranial pressure and cerebral herniation
    2. Diagnosis and treatment of specialized pediatric neurologic diseases:
       - 1. Spinal meningocele and myelomeningocele
         2. Cranial meningocele and encephalocele
         3. Hydrocephalus
         4. Spinal cord embolization syndrome
         5. Intracranial hemorrhage
         6. Intracranial occupying lesions
         7. Spinal neoplasm
         8. Craniocerebral injury
         9. Spinal injury
         10. Spinal bifida
  1. **Anesthesiology**
     + 1. Master the techniques of oxygen supplement, artificial ventilation and controlling of respiration, and cardiac monitoring.
       2. Be familiar with the indications and contraindications of various anesthesia methods, pre-operative preparations and the technique of endotracheal intubation.
       3. Understand the structural principles and application method of ventilator.
       4. Be familiar with the operation methods and management of general anesthesia, regional block anesthesia (epidural, spinal, and sacral anesthesia, etc.) and other common anesthesia. Under the guidance of seniors, perform 5 cases of the above anesthesia.
       5. Master the techniques of arterial puncture, arterial blood gas analysis, and central venous puncture. Perform 3 cases of these techniques,respectively.
       6. Understand the common anesthesia of pediatric surgery.
  2. **Department of Medical Imaging**
     1. Radiology
        1. Understand the exposure techniques of roentgenography, CT scan and MRI and the digital processing techniques.
        2. Be familiar with the principles and application of the commonly used machines for x-ray, CT and MRI in pediatric surgery.
        3. Master the radiation protection rules and requirements.
        4. Be familiar with the radiation protection rules and application for patients.
        5. Preliminarily master the normal anatomic characteristics of various systems in different ages by x-ray, CT and MRI imaging.
        6. Master the writing standards of x-ray, CT and MRI reports.
        7. Basically master the indications and methods of common contrast radiography. Capably make diagnosis for common acute abdomen and trauma.
     2. Ultrasonography
        1. Understand the principles of ultrasound and the characteristics of instruments, basic operation and diagnostic knowledge of abdominal ultrasonography.
        2. Basically master the indications and anatomy of abdominal ultrasonography.
        3. Be familiar with the presentation, diagnosis and differential diagnosis by abdominal ultrasonography for common pediatric surgical diseases.
        4. Perform 3 cases of echo-guided puncture of various cavities.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training.At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn datacollecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highlyrelated to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Otorhinolaryngology

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

The rotation time in related subjects are 12 months. After the rotation of related subjects, attending to the discipline’s clinical skills training time should not be less than 22 months.

Rotation departments and schedules:

|  |  |  |
| --- | --- | --- |
| Departments | Time (Month) |  |
| Cardiovascular Medicine | 3 | The training time for clinical skills in this discipline should not be less than 22 months. |
| General Surgery | 3 |
| Medical Imaging | 2 |
| Anesthesiology | 2 |
| Neurosurgery | 2 |
| Total | 12 |

1. **Training content and requirements in each subject**
   1. **Cardiovascular Medicine**
      1. Aim of rotation

To learn the diagnosis and treatment of common cardiovascular diseases, understand their relationship with otorhinolaryngology.

* + - 1. Master: Clinical presentations and essentials of treatment of common cardiovascular diseases; interpretation and analysis of ECG examination; diagnosis and treatment of electrolyte disturbance and shock; cardiopulmonary resuscitation.
      2. Be familiar with: The diagnosis and treatment of otorhinolaryngologicallyrelated heart diseases (e.g. myocarditis, rheumatic heart disease etc.); the management of perioperative cardiac emergency in the field of otorhinolaryngology.
      3. Understand: The types, usage, dosage and adverse reaction of common medications of cardiovascular diseases.
    1. Basic requirements:
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no. (≥) |
| Coronary heart diseases (angina, myocardial infarction) | 10 |
| Hypertension | 20 |
| Myocarditis | 5 |
| Common arrhythmia | 10 |
| Common valvular heart diseases | 5 |
| Common cardiac emergency (cardiac arrest and Adams syndrome, acute left heart failure, hypertension crisis, severe arrhythmia) | 10 |

* + - 1. Basic skills operations and case number requirements:

|  |  |
| --- | --- |
| Skill | Case no. (≥) |
| 12-lead ECG | 10 |
| Common classic diagnosis of ECG | 15 |
| Cardiac monitoring | 10 |

* 1. **General Surgery**
     1. Aim of rotation
        1. Master: Basic surgical skills (incision, exposure, ligation, hemostasis, aseptic technique, etc.); basic methods and clinical application of post-operative monitoring techniques for critically ill patients.
        2. Be familiar with: Fundamentals and theories of surgery; first-aid procedures and methods for post-operative critically ill patients, hemorrhage shock, septic shock, etc.; the usage, dosage and adverse reactions of common first-aid medications.
        3. Understand: Diagnosis, differential diagnosis and treatment of common diseases, acute abdomen, and abdominal or thoracic injuries.
     2. Basic requirements:
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Tetanus | 1-2 |
| Acute cellulitis, erysipelas | 2-3 |
| Acute appendicitis | 5 |
| Intestinal obstruction | 5 |
| Thyroid diseases | 15 |
| Abdominal trauma | 5 |

* + - 1. Common skills and case number requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Venous cut-down | 3 |
| Urinary catheterization | 3 |
| Needle aspiration biopsy | 3 |
| Abdominal puncture | 3 |
| Post-operative critical care (usage of various monitoring instruments and results analysis) | 3 |

* + - 1. Participate in operations and case number requirements:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Appendectomy | 5 |
| Thyroid surgeries | 15 |
| Intestinal anastomosis, gastrointestinal anastomosis | 5 |

* 1. **Anesthesiology**
     1. Aim of rotation
        1. Master: Fundamentals of anesthesiology; pharmacologic knowledge of related medications; basic knowledge of clinical anesthesia and resuscitation (cardiopulmonary cerebral resuscitation).
        2. Be familiar with: Basic clinical operation skills and monitoring techniques of anesthesiology; characteristics of changes of respiratory and circulatory function in patients after surgery, and their common treatment methods,
        3. Understand: Management of post-operative critical patients (respiratory failure, electrolyte disturbance, acid-base imbalance, arrhythmia, heart failure, shock, CPR).
     2. Basic requirements
        1. Methods of anesthesia to be learned and case number requirements:

|  |  |
| --- | --- |
| Method of anesthesia | Case no.(≥) |
| Cervical plexus and brachial plexus block | 5/each |
| Intravenous combined anesthesia | 10 |
| Epidural block anesthesia | 5 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Endotracheal intubation | 10 |
| Intraoperative, post-operative monitoring (rescue of post-operative critically-ill patients) | 10 |
| Common pain control techniques and post-operative pain control | 10 |

* 1. **Department of Medical Imaging**
     1. Aim of rotation
        1. Master: Normal radiographic anatomy (x-ray, CT, MRI) of ear, nose, pharynx, throat, trachea and esophagus.
        2. Be familiar with: Radiologic image diagnosis of inflammation, neoplasm and trauma of the above organs.
        3. Understand: Basic knowledge of x-ray, CT and MRI and diagnostic images of various diseases; methodology of X-ray, CT and MRI examinations.
     2. Basic requirements:

Total rotation time for X-ray, CT and MRI is one month.

* + - 1. Diseases to be learned and case number requirements:

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Case no.(≥) | | |
| X-ray | CT | MRI |
| Normal radiographic anatomy of middle and inner ear | 3 | 5 | 5 |
| Normal radiographic anatomy of nose and nasal sinuses | 3 | 5 | 5 |
| Normal radiographic anatomy of throat | 3 | 3 | 3 |
| Deformity of middle and inner ear | 3 | 3 | 3 |
| Otitis media | 5 | 5 | 3 |
| Middle ear neoplasm |  | 3 | 3 |
| Diseases of nose and nasal sinuses (inflammation, neoplasm, trauma) | 3 | 5 | 3 |
| Diseases of throat (inflammation, neoplasm) | 3 | 5 | 3 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Method of CT scan (cross, coronal, and sagittal plane) | 5 |
| Contrast enhanced scan | 5 |
| Operation of X-ray machine and radiation protection methods | 5 |
| Common specialized exposure techniques | 5 |
| Methods of MRI examination for ENT, head and neck | 5 |

* 1. **Neurology**
     1. Aim of rotation
        1. Master: The pathogenesis, clinical characteristics, diagnosis, differential diagnosis and treatment principles of common neurosurgical diseases.
        2. Be familiar with: Principles of first-aid management of common craniocerebral injuries; the clinical diagnosis and preliminary management of increased intracranial pressure.
        3. Understand: The clinical characteristics, diagnosis, differential diagnosis and management of intracranial and intraspinal neoplasms, and intracranial and intraspinal vascular diseases.
     2. Basic requirements
        1. Master: Examination methods for neurological diseases; basic operations of debridement and suturing of scalp laceration; operation techniques of lumbar puncture.
        2. Be familiar with: Application and basic operation of cranial surgeries.
        3. Understand: Application and operation essentials of ventricular puncture.
        4. Write 4 progress notes and 2 admission notes.
           1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Craniocerebral injury | 1 |
| Neurologic neoplasm | 1 |
| Cerebral vascular disease | 1 |
| Spinal lesion | 1 |

* + - * 1. Clinical operation techniques requirements:

Under the guidance of seniors, perform the following operations:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Operation for scalp injury | 1-2 |
| Lumbar puncture | 2 |

Participate in the following operations:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Craniotomy | 1-2 |
| Ventricular puncture | 2 |

* 1. **The specialty (Otorhinolaryngology)**
* Otorhinolaryngology clinic: 4 months
  + 1. Aim of rotation
       1. Master: 1. anatomy and physiology of ENT, head and neck, basic knowledge of common diseases; 2. routine examination and application of examination instruments of ENT; 3. normal morphologic anatomy and landmarks of ENT; 4. symptomatology of ENT and related structures of head and neck; 5. diagnosis, differential diagnosis and management of common diseases; 6. accurate medical recording in the clinic; 7.the usage, dosage and side effects of local applied, generally applied medications and anesthetics of ENT department.
       2. Be familiar with: 1. ear, nose and throat endoscopy method; 2. pure tone audiometry and result analysis; 3. examination of the neck; 4. diagnosis and management of some emergencies, such as epistaxis, laryngeal obstruction, foreign body in trachea and esophagus, etc.
       3. Understand: 1. imaging methods of ENT and head and neck (X-ray, CT, MRI); 2. electric response audiometry and vestibular function examination; 3. management of common injuries of ENT and head and neck.
    2. Basic requirements
       1. Disease to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Acute, chronic suppurative otitis media | 10/each |
| Secretory otitis media | 10 |
| Deafness | 15 |
| Eardrum injury | 10 |
| Acute and chronic rhinitis | 10/each |
| Allergic rhinitis and nasal polyps | 10/each |
| Acute and chronic nasal sinusitis | 10/each |
| Epistaxis | 10 |
| Acute and chronic pharyngitis | 10/each |
| Acute and chronic laryngitis | 10/each |
| Acute laryngotracheobronchitis (croup) in children | 5 |
| Laryngeal polyp | 10 |
| Cholesteatoma of external auditory meatus | 5 |
| Acute and chronic tonsillitis | 10/each |
| Adenoids | 5 |
| Laryngeal obstruction | 5 |
| Congenital diseases of ENT | 5 |
| Otitis externa and furuncle | 10 |

* + - 1. Common basic skills for diagnosis and treatment and their case number requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Examination of external nose and nasal cavity | 30 |
| Examination of nasal sinuses | 30 |
| Simple olfactory tests | 10 |
| Examination of ear | 50 |
| Examination of pharynx (nasopharynx, oropharynx, laryngopharynx) | 50 |
| Examination of larynx | 50 |
| Anesthesia of larynx | 20 |
| Laryngeal cavity instillation therapy | 20 |
| Eustachian tube blowing (balloon method, catheter method) | 20 |
| Cerumen removal, irrigation of external ear canal | 20 |
| Injection of inferior turbinate | 10 |
| Maxillary sinus puncture | 10 |
| Displacement method | 10 |
| Nasal drip method | 20 |
| Dressing change of ear and nose region | 20 |
| Packing of nasal cavity and posterior nasal packing | 20/each |
| Aspiration of peritonsillar abscess | 10 |
| Removal of foreign body from ear, nose, and throat | 5/each |
| Biopsy of ear, nose and throat | 5/each |

* + - 1. Operations and case number requirement (perform as an operator)

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Tonsillectomy | 5 |
| Retropharyngeal and parapharyngeal abscess incision and drainage | 3/each |
| Nasal bone fracture reduction | 50 |
| Partial resection of inferior turbinate | 5 |
| Excision of nasal polyps | 5 |
| Excision of small benign pharyngeal, nasal, ear tumors | 5 |

* + - 1. Further requirements
         1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Laryngeal cancer | 10 |
| Benign and malignant tumors of nasopharynx | 10 |
| Malignant tumors of nose and nasal sinuses | 10 |
| Meniere’s disease | 5 |
| Intracranial and extracranial complications of otitis media | 5 |
| Foreign bodies in trachea, esophagus | 5 |

* + - * 1. Operationsand case number requirements (perform as an operator):

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Myringotomy | 2 |
| Tympanostomy tube placement | 5 |
| Congenital preauricular fistula excision | 5 |
| Adenoid resection | 10 |
| Tonsil squeezing method | 5 |
| Throat polyp excision (under indirect laryngoscopy) | 5 |
| Epiglottic cyst excision | 5 |
| Application of microwave and laser in epistaxis | 10 |

* In ward of ENT: 18 months (6 months in ear, nose and throat (head and neck),respectively)
  + 1. Aim of rotation
       1. Master: 1. anatomy and physiology of ear, nose, throat, trachea and esophagus; basic knowledge and theories of related diseases; 2. diagnosis, differential diagnosis and management of common diseases and emergency of ENT; 3. common diagnostic techniques and operations of ENT, their indications and contraindications; 4. dethodology of recording medical documents, such as admission notes, progress notes, operation notes, discharge notes and others.
       2. Be familiar with: 1. theory, method and clinical significance of pure tone audiometry, acoustic impedance, brainstem auditory evoked potentials, otoacoustic emissions and vestibular function examination, method and its clinical significance; 2. indications and method of use of nasal endoscopy, video laryngoscope, and strobe laryngoscope; 3. clinical applications of laser, microwave and low temperature plasma treatment apparatus.
       3. Understand: knowledge of cochlear implantation surgery; 2. integrated treatment of ENT, head and neck malignant neoplasms; 3. sleep monitoring results analysis, diagnosis and treatment of obstructive sleep apnea; 4. particular inflammation of the ear, nose, throat, head and neck (rhinoscleroma, tuberculosis, diphtheria, leprosy, syphilis, etc.); 5. presentations of AIDS in ENT.
    2. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Chronic suppurative otitis media | 30 |
| Intracranial/extracranial complications of suppurative otitis media | 3 |
| Congenital deformities of external and middle ear | 3 |
| Suppurativeperichondritis of auricular | 3 |
| Meniere’s disease | 5 |
| Deafness (acoustic, neurologic, mixed) | 20 |
| Peripheral facial palsy | 5 |
| Neoplasms of external and middle ear (benign, malignant) | 10 |
| Secretory otitis media | 10 |
| Trauma of neck (closed, open) | 5 |
| Ear barotrauma | 3 |
| Tracheal, esophageal foreign bodies | 5/each |
| Keratosis and leukoplakia of larynx | 5/each |
| Laryngeal nerve motor neuropathy | 5 |
| Obstruction of larynx | 10 |
| Acutelaryngotracheobronchitis in children | 5 |
| Acute epiglottitis | 5 |
| Trauma of larynx | 5 |
| Congenital diseases of larynx | 5 |
| Laryngeal cancer | 10 |
| Acute, chronic tonsillitis | 20 |
| Pharyngeal abscess (peritonsillar, retropharyngeal, pharynx) | 10 |
| Acute, chronic nasal sinusitis | 20 |
| Inflammation of nose (nasal Furuncle), nasal vestibulitis | 5 |
| Nasal sinus cyst | 5 |
| Epistaxis | 10 |
| Nasal septum deviation | 10 |
| Allergic rhinitis | 20 |
| Hypertrophic rhinitis | 10 |
| Injuries of nose | 10 |

* + - 1. Basic skills requirements:
         1. Management of 3-5 sick beds. The total sick bed in charge should reach 100 in the 2nd -3rd year. Complete 80-100 qualified medical records. Complete admission notes, progress notes, discharge notes and other medical documents accurately. Report to seniors about clinical changes of patients on time, able to provide preliminary diagnosis and management opinions.
         2. Common medical techniques and case number requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Post-operative wound dressing change of ENT | 50 |
| Tympanic membrane puncture | 10 |
| Myringotomy | 2 |
| Tympanostomy tube placement | 5 |
| Injection of inferior turbinate | 10 |
| Fistula test | 10 |
| Tuning fork tests | 10 |
| Maxillary sinus puncture | 10 |
| Reduction of nasal bone | 10 |
| Incision and drainage of nasal septal hematoma and abscess | 2 |
| Incision of drainage of peritonsillar abscess | 3 |
| ENT foreign body extraction | 10 |
| Biopsy of ENT tumor | 20 |
| Laryngoscopy | 10 |
| Neck tumor puncture, biopsy | 10 |
| Endoscopy for ear, nose, throat | 20/each |
| Throat swabs and other infective lesions bacteria culture and drug sensitive test | 20 |

* + - 1. Operations (perform as an operator or a participant) and case number requirements:

|  |  |  |
| --- | --- | --- |
| Operation | Operator no. | Participant no. |
| Tonsillectomy | 20 |  |
| Adenoid resection | 20 |  |
| Partial resection of inferior turbinate | 10 |  |
| Excision of nasal polyps | 10 |  |
| Nasal septum submucosal resection | 10 |  |
| Maxillary sinus radical operation | 5 |  |
| Ligation of external carotid artery | 2 |  |
| Various maxillectomy for maxillary sinus carcinoma |  |  |
| Resection of ethmoidal sinus (maxillary sinus, nasal surgery, sinus) |  | 5 |
| Frontal sinusotomy (endoscopic) |  | 10 |
| Maxillary sinusotomy (endoscopic) |  | 10 |
| Uvula pharyngoplasty |  | 10 |
| Resection of malignant tonsillar neoplasm |  | 5 |
| Excision of Thyroglossal cyst |  | 5 |
| Routine tracheostomy | 10 |  |
| Resection of benign laryngeal cleft tumor | 2 | 10 |
| Various laryngectomy of laryngeal carcinoma |  | 2 |
| Laryngotracheoplasty |  | 2 |
| Surgery for acute injury of throat |  | 10 |
| Cervical lymph node dissection |  | 10 |
| Removal of foreign body by bronchoscope |  | 5 |
| Rigid esophagoscopy and removal of foreign body |  | 5 |
| Resection of preauricular fistula | 5 |  |
| Radical operation of otitis media /tympanoplasty |  | 10 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Anterior skull base tumor | 5 |
| Lateral skull base tumor | 5 |
| Intracranial and extracranial complications of suppurative otitis media | 2 |
| Intracranial and extracranial complications of sinusitis | 2 |
| Thyroid diseases | 5 |
| Diseases of parotid and submandibular glands | 5 |
| AIDS (presentations in ENT, head and neck) | 1 |
| Tuberculosis of ENT | 1 |

* + - 1. Participate in the following surgical operations and case number requirements:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Excision of external ear canal benign tumors | 1 |
| Mastoidectomy for chronic otitis media | 5 |
| Surgery for sigmoid sinus thrombophlebitis | 1 |
| Partial maxillectomy for maxillary sinus carcinoma | 3 |
| Resection of nasopharyngeal angiofibroma | 3 |
| Rapid percutaneous tracheostomy and cricothyroidotomy | 3 |
| Total laryngectomy for laryngeal cancer | 3 |
| Lateral rhinotomy | 5 |

1. **Research training (specific requirements see general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Obstetrics and Gynecology

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements see also the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training requirements**

Rotation and schedules:

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) |  |
| Gynecology, obstetric clinic | 6 | Clinical training time in this discipline cannot be less than 9 months. |
| Obstetric ward | 6 |
| Gynecologic ward | 6 |
| Family planning ward and clinic | 5 |
| Reproductive medicine (optional) | 1 |
| Total | 24 |

1. **Rotation department, training content and requirements**
   1. **Gynecology, obstetric clinic: 6 months**
      1. Master the following fundamental knowledge
         1. Fundamental theory and knowledge in this specialty.
         2. Pathogenesis, clinical presentations, diagnosis and principles of treatment of gynecological common outpatients and common emergent diseases.
         3. Principles of rescue management of emergent critical patients and the normal values in critical monitoring.
      2. Clinical skills
         1. Be able to complete qualified and accurate medical records. The first visit medical records should include chief complaint, present illness, menstruation history, pregnancy and birth history, contraception history, past history, personal history and family history, etc.
         2. Master:
            1. General physical examination, pelvic examination (including bimanual and vagino-rectal-abdominal examination) methods and the judgement of abnormal situations. Obstetric examinations: abdominal examination, four-step palpation, listening to the fetal heart, pelvis inlet and outlet measurements, drawing and application of pregnogram.
            2. Gynecologic auxiliary diagnostic methods, such as trichomonas, candida yeast, examination of cervical mucus, gonococcus, chlamydia and mycoplasma sampling, screening methods for cervical cancer, etc.
            3. The diagnosis, differential diagnosis and principles of management for common diseases in this specialty, such as early pregnancy, abortion, middle and late pregnancy, various inflammations of reproductive tracts, injuries, gestational trophoblastic disease, vulvar disease, menstrual disorders, gynecological tumors, and acute abdomen (e.g. ectopic pregnancy, torsion of ovarian cyst, endometriosis, etc.).
            4. Indications and contraindications of minor surgeries and surgical aseptic techniques for outpatients, such as endometrial biopsy, fractional diagnostic curettage with biopsies, hysterosalpingography, Bartholin's gland cyst and abscess incision and drainage or marsupialization, curettage of incomplete abortion,suture repair of vulva laceration, excision of cervical polyp, physical therapy of cervical pseudo-erosion (cauterization,cryotherapy, laser, etc.), and so on.
            5. Antenatal healthcare knowledge, including prenatal care and evaluation, prenatal education, maternal nutrition, medication during pregnancy, etc.
            6. Identification and treatment of normal and abnormal pregnancy, high-risk pregnancy management and emergency treatment of pregnancy complications, common pregnant symptoms and management.
         3. Understanding of the new theories in the specialty, new methods of diagnosis and treatment of illnesses and colposcopy.
   2. **Obstetric Ward (6 months)**
      1. Master:
         1. Knowledge of the maternal physiological changes during pregnancy and postpartum period.
         2. The physiology and development of fetus, function of amniotic fluid and placenta, knowledge of physiological characteristics of newborn and breastfeeding.
         3. Essentials and mechanisms of delivery,diagnosis and principles of management of dystocia and breech.
         4. Diagnosis and principles of management of common obstetric comorbidities and high-risk pregnancy complications.
         5. Perinatal care and fetal monitoring methods.
      2. Clinical skills
         1. Be able to complete qualified and accurate medical records.
         2. Master:
            1. Monitoring and management of pregnant women, diagnosis and treatment of obstetric physiology and obstetrics pathology, indications and methods of obstetric vaginal examinations.
            2. Management of normal delivery, observation of birth process, drawing and applying of partogram,prompt detection and treatment of fetal distress and various abnormalities.
            3. Conventional management of normal newborns and high-risk infants, rescue of neonatal asphyxia, management of premature infants, diagnosis and management of physiological and pathological jaundice in newborn.
            4. Methods of fetal heart beat monitoring and judgement of abnormal situations.
         3. Be familiar with:
            1. Identification and principles of management of common medical and surgical comorbidities.
            2. The indications for cesarean section and forceps delivery and pre-and post-operative treatment. (Be an assistant of cesarean section, forceps delivery and postpartum sterilizationin the first year, then become an operator gradually)
            3. Indications and methods of labor induction, postpartum management.
            4. Operation methods for artificial rupture of membranes, manual dissection of placenta, amniocentesis and other techniques.
            5. Understanding of diagnosis and management of difficult diseases in this specialty.
            6. Operation requirements: management of at least 30 cases of normal delivery independently, at least 20 cases of lateral episiotomy and suturing, at least 30 cases of cesarean section.
   3. **Gynecologic Ward (6 months)**
      1. Fundamental knowledge
         1. Master
            1. Basic specialized theories and knowledge, anatomy and physiology of female reproductive system.
            2. The pathogenesis, diagnosis, differential diagnosis and management of common gynecological diseases.
            3. The diagnosis and treatment of common gynecological malignant neoplasms.
            4. The diagnosis, differential diagnosis and management of gynecological acute abdomen.
            5. The diagnosis, differential diagnosis and management of common gynecological comorbidities and complications.
         2. To understand new theories and new knowledge in the specialty.
      2. Clinical skills
         1. Be able to complete qualified and accurate medical records.
         2. Master:
            1. Aseptic techniques; indications, pre-operative preparation and post-operative management of gynecological surgeries; incision, removal of suturing and stitches of abdominal and perineal wounds; dressing change of infected wounds and other techniques.
            2. Dilation and curettage, resection of adnexal tumor, simple hemi-hysterectomy and total hysterectomy.
         3. Be familiar with:
            1. Chemotherapy methods of gynecological malignancy.
            2. The indications and clinical significance of common auxiliary examination methods (such as puncture of posterior fornix, B-ultrasound, laparoscopy, hysteroscopy, vaginoscopy, cytology and measurement of hormones, etc.)
         4. Operation requirements: As an operator, participate in at least 20 cases of dilation and curettage and adnexal tumor excision; as a first assistant or operator, participate in at least 20 cases of hemi-hysterectomy and total hysterectomy.
   4. **Ward and Clinic of Family Planning (5 months)**
      1. Fundamental knowledge

Master:

* + - 1. Physiology of female reproductive system
      2. The principles and various methods of common female contraception
      3. The principles of termination of early and middle pregnancy
      4. Complications and their treatment of various female family planning methods
    1. Clinical skills
       1. Master
          1. The usage, complications and their management of various contraception methods, such as oral contraceptives and intrauterine device.
          2. Indications, contraindications, diagnosis and treatment of perioperative and post-operative complications of induced abortion; the usage of medical abortion (including medications, method of application, and management of complications).
          3. Inducing abortion for complicated early pregnancy.
       2. Be familiar with the indication and procedure for inducing abortion for middle pregnancy and abdominal sterilization, etc.
       3. Operation requirements: inducing abortion for at least 50 cases; insertion and removal of intrauterine device for at least 20 cases (including various types of intrauterine devices).
  1. **Reproductive medicine** (optional, suggestion for hospital with reproductive medicine department)
     + 1. Systemically master the fundamental knowledge of reproductive medicine.
       2. Master the procedures of diagnosis and treatment of infertility.
       3. Be familiar with methods of artificial insemination.
       4. Be familiar with ovarian stimulation, egg retrieval and embryo incubation methods.
       5. Understandthe technical method of embryo reduction.

1. **Research training (specific requirements seen in the general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally,being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Psychiatry and Mental Health

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training requirements**

Rotation and schedules: Rotation time in related disciplineshould be at least 9 months. After that, the clinical skills training for this discipline should not be less than 12 months.

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) |  |
| Neurology | 3 | Clinical skill training for this discipline should not be less than 12 months. |
| Applied Psychology | 3 |
| Cardiovascular Medicine | 2 |
| Respiratory Medicine | 1 |
| Total | 9 |

1. **Rotation department, training content and requirements**
   1. **Neurology**
      1. Theory knowledge
         1. Systemically master the basic knowledge and theory of neurology.
         2. Master the neurologic examination methods, localization and quantitative diagnostic methods.
         3. Be familiar with the diagnosis and principles of treatment of common neurologic diseases.
      2. Clinical practice
         1. Master the history taking and recording methods of the specialty of neurology. Complete 20 qualified neurologic medical records.
         2. Master the technique of lumbar puncture; interpretations of the normal and abnormal findings of common diseases of skull and spinal CT, MRI and EEG.
   2. **Applied Psychology**
      1. Master:
         1. The diagnosis, differential diagnosis and treatment of common diseases in medical psychological ward, such as depression, anxiety disorder, obsessive compulsive disorder, somatoform disorder, neurasthenia, social anxiety disorder, dissociative disorder, conversion disorder, eating disorders, etc.
         2. The fundamentals of psychotherapy, such as psychoanalytic theory, Beck's cognitive theory, behavioral theory, etc.
         3. General process and basic principles of psychotherapy, esp. reception of first visit patients, considerations of intake conversation, mastering the techniques of relaxation training, behavior analysis, and free association.
      2. Sick bed number in charge: 4-5; complete 10-12 qualified medical records.
   3. **Cardiovascular Medicine**
      1. Aim of rotation:
         1. Master: specialized examinations for cardiac signs; ECG examination.
         2. Be familiar with: etiology, pathogenesis, clinical presentation, diagnosis and management of common diseases; interpretations of imaging studies of common heart diseases.
      2. Basic requirements
         1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Hypertension | 5 |
| Coronary heart disease | 4 |
| Myocarditis and cardiomyopathy | 3 |
| Heart failure | 5 |
| Arrhythmia | 3 |

* + - 1. Basic skills requirements:
         1. Incharge of no less than 4sick beds; receive at least 15 new patients and complete their admission noteson the same day; complete 8 qualified medical records; the total number of patient care should not be less than 15.
         2. ECG examinations and interpretations of the results for at least 20 cases.
         3. Interpretations of 10 medical image studies of cardiac diseases.
  1. **Respiratory Medicine**
     1. Aim of rotation
        1. Master: The clinical presentations, diagnosis and management of chronic obstructive pulmonary disease, lung cancer and bronchiectasis.
        2. Be familiar with: The clinical presentations, diagnosis and management of other common respiratory diseases; imaging studies of common respiratory diseases; the technique of respiratory function test.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Chronic obstructive pulmonary disease | 3 |
| Bronchiectasis | 2 |
| Asthma | 2 |
| Lung cancer | 2 |
| Acute pulmonary embolism | 1 |

* + - 1. Basic skills requirements:Bein charge of at least 3 sick beds; receive at least 6 new patients and complete their admission notes on the same day; complete 4 qualified medical records; deal with at least 10 patients; deal with at least 2 cases of thoracocentesis; interpret CXR for least 20 cases.
  1. **Psychiatry and Mental Health**
     1. Fundamental knowledge
        1. Master the symptomatology, the introduction of psychopharmacology and the clinical presentations, diagnosis and management of common psychologic diseases.
        2. Be familiar with the basic knowledge of general psychology, neuropsychology and related clinical sections (internal medicine, neurology, emergent medicine).
        3. Understand the latest developments and trends of psychiatry and mental health clinical research.
     2. Clinical skills requirements
        1. Master:
           1. Psychiatric clinical basic skills, including admissions, history taking, establishment of a good doctor-patient relationship, comprehensive systemic psychiatric examination, observation of patient conditions and patient management,etc.
           2. Descriptive medical recording in the specialty of psychiatrics; accurate recording of the chief complaints, presentations of illnesses, past history, personal and family history; detailed recording of the results of psychiatric and physical examinations; comprehensive systemic analysis of the clinical information, establishment of clinical symptomatological and nosological diagnosis and the suggestion for management.
           3. The clinical characteristics, diagnosis, differential diagnosis and medical treatment of schizophrenia, affective disorder and psychogenic mental disorder.
           4. The methods of medical physical examination and neurologic examination.
        2. Be familiar with:
           1. The clinical characteristics, diagnosis, differential diagnosis and medical treatment for organic mental disorders, mental and behavioral disorders due to psychoactive substance use, paranoid personality disorder, neurosis, and other common diseases; the management of severe adverse effects of common psychiatric medications.
           2. General psychotherapy, integrated traditional Chinese and Western medicine therapy, biofeedback therapy, electroconvulsive therapy, occupational therapy, etc.
           3. Psychological tests, inspection techniques of symptom rating scale and clinical common diagnostic scale, such as Merriam Webster intelligence test, MMPI and neuropsychological tests, all kinds of depression scales, anxiety scales, the Brief Psychiatric Rating Scale, side effect scale, and other common scales, the EEG.
           4. Technique of lumbar puncture.
           5. Interpretation of EEG, brain CT and MRI.
           6. Interpretation of common blood and spinal fluid tests and their significance.
        3. Understand:
           1. Clinical features, diagnosis and treatment of various mental retardation and common mental disorders,psychophysiological disorders and personality disorder in children.
           2. The rescue techniques of intoxication of psychotropic drugs and other medications.
           3. Basic techniques of cardio-pulmonary-cerebral resuscitation.
     3. Other requirements
        1. Complete at least 25 psychiatric medical records.
        2. Management of the following diseases: schizophrenia ≥ 40 cases, affective mental disorder ≥ 10 cases, other specific diseases ≥ 10 cases (including at least 2 cases of alcohol and drug dependence), neurosis ≥ 8 cases.
        3. Complete the following operations: Lumbar puncture ≥ 5 (or completewhile rotating to the department of neurology), special psychotherapy ≥ 2, electroconvulsive shock ≥ 10, various major clinical scale tests ≥ 50 cases.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review,they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, cultivation of clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Physical Medicine and Rehabilitation

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training requirements**

Rotation time in related disciplines is 9 months. After that, they participate in clinical skills training for this discipline should not be less than 21 months.

The aim of rotation to related departments is to understand and master the basic diagnosis and treatment methods of neurology, neurosurgery, orthopedics and internal medicine, etc.

Rotation to related departments and schedules:

|  |  |
| --- | --- |
| Department | Time (Month) |
| Neurology | 2 |
| Neurosurgery | 1 |
| Orthopedics (including spinal injury) | 2 |
| Endocrinology (diabetes, mainly) | 1 |
| Cardiovascular Medicine | 1 |
| Respiratory Medicine | 1 |
| Rheumatology | 1 |
| Total | 9 |

Specialized rotation divisions include rehabilitation therapy, clinical inpatient rehabilitation (including neurological rehabilitation, orthopedic rehabilitation, internal medicine and pediatric rehabilitation, etc.) and clinic of department of rehabilitation medicine (including pain clinic).

Training schedules of specialized rehabilitation medicine:

|  |  |
| --- | --- |
| Specialties | Time (Month) |
| Physical therapy | 2 |
| Occupational and speech therapy | 2 |
| Neurological rehabilitation | 4 |
| Internal medicine and pediatric rehabilitation | 2 |
| Clinic of rehabilitation medicine | 2 |
| Total | 16 |

1. **Training content and requirements**
   1. **Neurology and Neurosurgery (3 months)**
      1. Master: The significance of localization and quantitative diagnosis and treatment for common cerebral and spinal cord injuries; neurological physical examinations; interpretation of the results of CT, MRI, electromyography and other neurophysiological examinations.
      2. Be familiar with: Common neurological medications; prevention and treatment of neurological comorbidities and complications.
      3. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Cerebrovascular diseases (cerebral hemorrhage, cerebral infarction, cerebral embolism, TIA, etc.) | 15 |
| Craniocerebral injury | 5 |
| Peripheral neuropathy (Including Guillain-Barre syndrome etc.) | 4 |
| Spinal cord disorders (including spinal cord injury, acute and chronic myelitis, arachnoiditis of spinal cord, etc.) | 5 |
| Parkinson’s disease | 2 |
| Alzheimer’s disease | 2 |
| Electromyography and other neurophysiological examinations (perform and report under the guidance of seniors | 3 |

* 1. **Orthopedics (1 month)**
     1. Master: Diagnosis and treatment of fracture of various locations, amputation, hand injuries, joint replacement, cervical spondylopathy, lumbar intervertebral disc lesion, and spinal cord injury, etc.
     2. Be familiar with: Orthopedic physical examinations, interpretation of x-ray films, CT, and MRI for common orthopedic diseases.
     3. Understand: Surgical indications, pre-operative and post-operative management of common orthopedic diseases (fracture, cervical spondylopathy, low back pain, joint replacement).
     4. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Cervical spondylopathy | 5 |
| Low back pain | 5 |
| Fracture (various locations) | 4 |
| Spinal injury | 3 |
| Hand injury | 2 |
| Joint replacement | 1 |
| Amputation | 1 |

* 1. **Internal Medicine (4 months)**

Master the fundamentals of clinical examinations, diagnosis and treatment of common medical diseases.The following content has to be mastered.

* + 1. Cardiology: Principles of diagnosis and treatment of hypertensive disease and coronary heart disease; management of arrhythmia; basic principles of electrocardiogram and interpretation for common diseases; techniques of cardiopulmonary resuscitation.
    2. Respiratory medicine: Principles of diagnosis and treatment of COPD.
    3. Endocrinology: Diagnosis, treatment and prevention of diabetes mellitus.
    4. Rheumatology: Principles of diagnosis and treatment of osteoarthritis, rheumatoid arthritis, ankylosing spondylitis.
    5. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Primary hypertension | 10 |
| Coronary heart disease | 5 |
| Arrhythmia | 3 |
| COPD | 5 |
| Diabetes mellitus | 5 |
| Osteoarthritis | 5 |
| Rheumatoid arthritis | 2 |
| Ankylosing spondylitis | 2 |

* + 1. Related skills training:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Interpretation of ECG | 6 |
| Techniques of CPR | 2 |

* 1. **Training content and requirements for Rehabilitation Medicine**
     1. Through systemic studying, master the basic theories, knowledge and skills of rehabilitation medicine;
     2. Master the principles of assessment and treatment of common diseases in this specialty, be familiar with the characteristics, indications and precautions of commonly used physical therapy, occupational therapy, speech therapy, and prosthesis and orthosis assembly;
     3. Be familiar with the characteristics of medical records in this specialty, beable to collect medical history, perform functional examinations and evaluation, and complete medical records;
     4. Advanced training of clinical rehabilitation in the late stage of this training program can further establish the foundation of clinical rehabilitation for them, improve their abilities in assessment, planning and therapy for common injuries, diseases, and disabilities.
     5. At the end of this training program, they reach the level of arehabilitation medicine specialist, with apreliminary mastery of the clinical research and teaching methods and an understanding ofthe working characteristics of the rehabilitation medical team.
        1. **Rehabilitation therapy (4 months)**
           1. Training schedules for rehabilitation skills:

|  |  |
| --- | --- |
| Skill | Time (month) |
| Physical therapy | 2 |
| Occupational and speech therapy | 2 |

* + - 1. **Neurological rehabilitation (4 months)**
         1. Master the basic principles and methods of assessment for neurological rehabilitation;
         2. Be able to develop a comprehensive rehabilitation plan;
         3. Master the means and methods of rehabilitation therapy;
         4. Specialized rehabilitation skills for following diseases and requirements (including completing medical records):

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Cerebrovascular disease | 20 |
| Peripheral neuropathy | 5 |
| Craniocerebral injury | 8 |

* + - 1. Orthopedic rehabilitation (2 months)
         1. Master the basic principles and methods of orthopedic rehabilitation therapies;
         2. Specialized rehabilitation skills for following diseases and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Lumbar intervertebral disc disease | 5 |
| Cervical spondylopathy | 5 |
| Spinal cord injury | 5 |
| Fracture | 5 |
| Hand injury | 2 |
| Peripheral nerve injury | 2 |
| Amputation | 1 |
| Joint replacement | 1 |

* + - * 1. Training for rehabilitation of chronic pain can be combined with the skill training course of orthopedic rehabilitation.
      1. **Internal medicine and pediatric rehabilitation (2 months)**
         1. Master the basic principles and methods of assessments for rehabilitation of common internal medicine diseases;
         2. Be able to develop a comprehensive rehabilitation plan;
         3. Master the assessment, principles of planning and methods of rehabilitation therapy for pediatric cerebral palsy;
         4. Specialized pediatric rehabilitation skills for following diseases and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Hypertension (various types) | 3 |
| Coronary heart disease (various types) | 3 |
| COPD | 2 |
| Diabetes mellitus | 4 |
| Rheumatoid arthritis | 4 |
| Cerebral palsy (various types) | 4 |

Notice: The above mentioned rotation time, sequence, type of disease and other indicators can be appropriately adjusted according to specific situations of each training base, but it cannot be omitted for anyone. The total training time and total number of cases cannot be less than the required.

* + - 1. **Rehabilitation clinic (2 months)**
         1. Master: Assessment and treatment of outpatient rehabilitation for orthopedics, internal medicine and pediatric common diseases; assessment, principles of planning, and methods of rehabilitation therapy (including local nerve block therapy and other pain therapies, 8 cases) of pain rehabilitation; electromyographic biofeedback training method (operate for 2 cases); the principles and methods of wearing a prosthetic limb, be able to prescribe prosthetic limb and orthotics (5 different types).

Through the above rehabilitation trainingfrom a specialist, trainees must master basic theories, knowledge and skills of the relevant sections, be familiar with the diagnosis and treatment of common diseases and stabilize their conditions in order to create conditions for intensive rehabilitation. They must master rehabilitation assessment methods, producing a complete rehabilitation plan, and can lead the entire rehabilitation medicine team to perform rehabilitation treatment, and reach a predetermined result of rehabilitation.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review,they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research,and cultivatetheir clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally,being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Geriatrics

1. **Training period: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations).**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

Total rotation time in each internal medicine department (third-degree subjects, professional) or in sub-sections of geriatrics should not be less than 15 months.Upon the completion of the rotation in related subjects, they participate in the discipline of clinical skills training which should not be less than one year.

Rotation schedules:

|  |  |  |
| --- | --- | --- |
| Department | Time (month) |  |
| Cardiovascular Medicine (including ECG room) | 4 | Clinical skills training time for this discipline should not beless than 9 months. |
| Respiratory Medicine | 3 |
| Gastroenterology | 3 |
| Hematology | 2 |
| Nephrology | 2 |
| Endocrinology and Metabolism | 2 |
| Rheumatology | 1 |
| Infectious Disease | 1 |
| Neurology and Psychiatry (including EEG room) | 1 |
| Emergent Medicine | 2 |
| Intensive Care Unit | 1 |
| Medical Imaging | 2 |
| Total | 24 |

1. **Training content and requirements**
   1. **Cardiovascular Medicine**

4 months (including 2 weeks in ECG room and cardiovascular clinic)

* + 1. Aim of rotation

To master: Anatomy and physiology of cardiovascular system; the anatomical and functional characteristics of cardiac conduction system; mechanisms of arrhythmia and classification; the pathogenesis, clinical presentations, diagnosis, differential diagnosis and management of common cardiovascular diseases; classification, diagnosis and treatment of acute coronary syndrome (ACS); clinical application of commonly used medications for cardiovascular diseases; X-ray diagnosis for common cardiac diseases; typical diagnostic electrocardiogram; technology of electrical cardioversion.

To understand: Cardiac electrophysiology basics, pericardiocentesis, temporary heart pacing, dynamic electrocardiography, ambulatory blood pressure, echocardiogram and other techniques.

* + 1. Basic requirements
       1. Diseases to be learned and requirements: at least 40 cases

|  |  |
| --- | --- |
| Diseases | Case no.(≥) |
| Heart failure | 10 |
| Common arrhythmia | 15 |
| Hypertension | 10 |
| Common valvular disease | 1 |
| Myocarditis and cardiomyopathy | 1 |
| Coronary heart disease (including stable angina) | 10 |
| Dyslipidemia | 10 |
| Acute coronary syndrome (including unstable angina& acute myocardial infarction) | 10 |
| Diagnosis and treatment of common cardiac emergency (hypertension crisis, aortic aneurysm, AMI, paroxysmal tachycardia, sinus tachycardia, III-degree AV block, acute left heart failure, cardiac arrest) | 10 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| X-ray diagnosis for common heart diseases (report independently) | 20 |
| Cardioversion (Defibrillation) | 2 |
| 12-lead ECG operation and common classic ECG diagnosis (including ventricular hypertrophy, atrial hypertrophy, left and right bundle branch block, AMI, hypokalemia, hyperkalemia, sinus arrhythmia, preexcitation syndrome, escape rhythm, AV block, premature contractions, paroxysmal supraventricular tachycardia, atrial fibrillation, atrial flutter, ventricular tachycardia and ventricular fibrillation)(report independently) | 40 |

* + - 1. Further requirements
         1. Diseases to be learned:

|  |
| --- |
| Disease |
| Pericardial diseases |
| Infective endocarditis |
| Common adult congenital heart diseases |
| Pulmonary vascular disease |

* + - * 1. Clinical knowledge and skills requirements:

|  |
| --- |
| Skill |
| Pericardiocentesis |
| Dynamic electrocardiogram |
| Temporary heart pacing |
| Echocardiography |
| Ambulatory blood pressure monitoring |
| Treadmill exercise test |

* 1. **Respiratory Medicine**

2 months (including 2 weeks in bronchoscope room and clinic)

* + 1. Aim of rotation

Master: Anatomy and physiology of respiratory system; routine pulmonary tests; analysis of arterial blood gas; chest roentgenography; cardinal symptoms of respiratory diseases and differential diagnosis of abnormal chest roentgenography; the mechanism, classification, clinical presentations, diagnosis, differential diagnosis and treatment of diseases; indications and contraindications of bronchoscopy for diagnosis and treatment; common clinical methods of diagnosis and treatment.

To understand: the related knowledge of following diseases: sarcoidosis, pulmonary fungal disease, benign tumors of lung, interstitial lung disease, pulmonary embolism, sleep-related breathing disorders and other diseases;the advanced diagnostic and treatment methods of bronchoscopy and bronchoalveolar lavage, lung and bronchial mucosa biopsy, chest CT, percutaneous lung biopsy, atomization therapy, sleep apnea monitoring, etc.

* + 1. Basic requirements
       1. Diseases to be learned and case requirements: total requirement 80 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Case no. (≥) | Disease | Case no. (≥) |
| Upper respiratory infection | 10 | Acute bronchitis | 10 |
| Chronic bronchitis | 10 | Community-acquired pneumonia | 10 |
| COPD | 10 | Bronchial asthma | 3 |
| Hospital-acquired pneumonia | 10 | Pulmonary abscess | 2 |
| Bronchiectasis | 3 | Bronchogenic carcinoma | 10 |
| Pulmonary tuberculosis | 3 | Respiratory failure | 6 |
| Pleural effusion | 3 | Spontaneous pneumothorax | 1 |
| Corpulmonale | 6 | Hemoptysis | 3 |

* + - 1. Basic skills requirements: at least 50 cases.

|  |  |
| --- | --- |
| Skill | Skill |
| Tuberculin test | Arterial puncture (ABG), at least 10 cases |
| Suction of sputum | Posture drainage |
| Reading of CXR (report independently), at least 20 cases | Thoracentesis, at least 2 cases |
| Rescue suffocation | Oxygen therapy |

* + - 1. Further requirements
         1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Disease |
| Sarcoidosis | Interstitial lung disease |
| Pulmonary fungal disease | Pulmonary embolism |
| Benign pulmonary tumor | Sleep apnea syndrome |

* + - * 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| Skill | Skill |
| Bronchoscopy | Atomization therapy |
| Bronchoalveolar lavage | Chest CT scan |
| Bronchoscopic lung biopsy | Percutaneous lung biopsy |
| Sleep respiratory monitoring | Pulmonary function test |
| Application of mechanical ventilation |  |

* 1. **Gastroenterology**

3 months (including 2 weeks in endoscopy room and clinic)

* + 1. Aim of rotation

Master: Anatomy, physiology and biochemical function of digestive system (digestion, endocrine, immunity); diagnosis, differential diagnosis and management of functional gastrointestinal diseases; the etiology and diagnostic methods for chronic gastritis; the pathogenesis, clinical presentations, differential diagnosis, complications and management of peptic ulcer disease; the relationship between helicobacter pylori, gastritis and peptic ulcer disease; the pharmacologic action and clinical application of antacid, H2 blocker and proton pump inhibitor; the pharmacological action and clinical effect of gastric mucosal protective agents; treatment of helicobacter pylori; the essential differential diagnosis and treatment of Crohn’s disease and ulcerative colitis; the pathogenesis of liver cirrhosis, manifestation of compensated and decompensated stages; the pathogenesis of hepatic encephalopathy and portal hypertension; the causes of ascites, characteristic laboratory examinations, differential diagnosis and management; difference of interstitial and hemorrhagic necrotizing pancreatitis and their routine management; emergent management of upper gastrointestinal bleeding; the indications and contraindications to arrest bleeding by Sengstaken-Blakemore tube; the indications, contraindications and complications of liver biopsy; the indications and contraindications of roentgenography of digestive system.

To understand: Differential diagnosis of intestinal tuberculosis and Crohn’s disease; differential diagnosis of tuberculous peritonitis; common causes and management of chronic diarrhea; etiology and management of chronic hepatic diseases; recognition of common endoscopic images; other diagnostic and treatment techniques.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 100 cases.

|  |  |
| --- | --- |
| Disease | Case no. (≥) |
| Gastroesophageal reflux disease | 10 |
| Esophageal cancer | 4 |
| Chronic gastritis | 5 |
| Functional gastrointestinal disease | 10 |
| Peptic ulcer | 5 |
| Gastric cancer | 8 |
| Colorectal cancer | 4 |
| Acute pancreatitis | 1 |
| Chronic pancreatitis | 1 |
| Viral cirrhosis | 5 |
| Primary hepatocellular carcinoma | 6 |
| Hepatic encephalopathy | 2 |
| Jaundice | 2 |
| Chronic liver disease (alcoholic cirrhosis, primary biliary cirrhosis | 2 |
| Acute biliary infection | 5 |
| Ascites | 3 |
| Inflammatory bowel diseases (ulcerative colitis and Crohn’s disease) | 1 |
| Common diseases of UGI bleeding (acute gastric mucosa lesion, bleeding peptic ulcer, gastroesophageal varices rupture) | 6 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| Skill | Case no. (≥) |
| Abdominal paracentesis | 5 |
| Sengstaken-Blakemore tube compression | 3 |
| Digestive system roentgenography (interpretation) | 20 |
| Endoscopy (interpretation) | 20 |

* + 1. Further requirements
       1. Diseases to be learned

|  |
| --- |
| Disease |
| Abdominal tuberculosis (intestinal TB & tuberculous peritonitis) |
| Chronic diarrhea |
| Others |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| Skill | Skill |
| Gastroscopy | Liver puncture biopsy |
| ERCP | Gastric juice analysis & duodenal drainage |
| Colonoscopy | Concentrated ascites reinfusion therapy |

* 1. **Hematology**

2 months (1 week in hematological clinic)

* + 1. Aim of rotation

Master:

* + - 1. Etiology, clinical manifestation, basis of diagnosis, differential diagnosis, and essence of treatment of various kinds of anemia;
      2. Normal mechanism of hemostasis and coagulation; classification, characteristics and principle management of hemorrhagic diseases;
      3. The clinical manifestation, laboratory examinations, basis of diagnosis, common therapeutic medications and treatment strategies of acute and chronic leukemia;
      4. classification, staging, basis of diagnosis and treatment of lymphoma;
      5. Indications and contraindications of bone marrow aspiration and biopsy.

Understand:

* + - 1. Classification and treatment principle for myelodysplastic syndrome (MDS);
      2. Laboratory examination and rescue of disseminated intravascular coagulation;
      3. Indication of component blood transfusion and management of various transfusion reactions;
      4. Clinical presentations, diagnosis and differential diagnosis of myeloproliferative neoplasms and common coagulopathy disorders;
      5. Application of immnophenotypic, cytogenetic and molecular biology in blood disorders;
      6. Principles of examination methods and clinical significance for various hemolytic, bleeding and coagulation laboratory studies;
      7. Other blood disorders.
    1. Basic requirements
       1. Disease to be learned and case number requirements: At least 10 in-patients and 20 out-patients.

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Case no. (≥) | Disease | Case no. (≥) |
| Iron deficiency anemia | 8 | Megaloblastic anemia | 1 |
| Aplastic anemia | 1 | Hemolytic anemia | 1 |
| Idiopathic autoimmune thrombocytopenia | 2 | Allergic purpura | 2 |
| Acute leukemia | 2 | Chronic leukemia | 3 |
| Lymphoma | 4 | Leukopenia and agranulocytosis | 6 |

* + - 1. Basic skill requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Bone marrow aspiration | 10 |
| Bone marrow biopsy | 10 |

* + 1. Further requirements:
       1. Diseases to be learned

|  |
| --- |
| Disease |
| Congenital coagulation factor deficiency |
| Myelodysplastic syndrome (MDS) |
| Myeloproliferative neoplasms (polycythemia vera, primary myelofibrosis, primary thrombocytosis) |
| Multiple myeloma |
| Disseminated intravascular coagulopathy (DIC) |
| Component blood transfusion and transfusion reaction |

* + - 1. Clinical knowledge and skills requirements: blood and bone marrow smear techniques and general skill for interpretation.
  1. **Nephrology**

2 months (including 1 week in nephrology clinic, 1 week in hemodialysis)

* + 1. Aim of rotation

Master: Physiology of nephron and kidney; etiology, pathogenesis, clinical classification, clinical presentation, diagnosis, differential diagnosis and treatment of glomerular disease; application of corticosteroids, immunosuppressant and anticoagulants; diagnosis, differential diagnosis and management of acute and chronic pyelonephritis; etiology, pathogenesis, diagnosis and treatment of acute and chronic renal failure; the purpose and demand of nutritional treatment in non-dialysis therapy; indications for hemodialysis and peritoneal dialysis; application of renal function tests and results interpretation.

Understand: Pathologic classification of glomerular disease; indications for renal biopsy; etiology, pathogenesis and treatment principle of renal tubular disease and interstitial nephritis; anti-rejection therapy for kidney transplant; Other clinical diagnoses and treatment techniques.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 20 cases.

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Nephrotic syndrome | 1 |
| IgA nephropathy | 1 |
| Secondary glomerulonephritis (lupus nephritis, anaphylactoid purpura nephritis) | 1 |
| Urinary tract infection | 6 |
| Acute renal failure | 1 |
| Chronic renal failure | 10 |
| Primary glomerulonephritis (acute nephritis, rapidly progressive glomerulonephritis, chronic nephritis, latent nephritis) | 2 |
| Renal tubular interstitial disease (acute interstitial nephritis, chronic interstitial tubular disease) | 1 |
| Diabetic nephropathy | 10 |

* + - 1. Basic skills requirements: Urine sediment microscopic examination: 10 cases.
    1. Further requirements
       1. Diseases to be learned: Rapidly progressive glomerulonephritis
       2. Skill requirement: Renal puncture.
  1. **Endocrinology and metabolism**

2 months (including 1 week in endocrinology clinic)

* + 1. Aim of rotation

Master: Etiology, clinical manifestation, laboratory examination and treatment of hyperthyroidism; classification, etiology, diagnostic criteria, clinical presentation, and treatment of diabetic mellitus, principle of diet control, food calorie calculation and application essentials; chronic complications of diabetes; diagnosis and rescue of diabetic ketoacidosis and hyperosmolar coma; methods and significance of oral glucose tolerance test.

Understand: Diagnosis and principles of treatment for other endocrine diseases; principles, procedures and clinical significance of hormone immunoassays; endocrine function tests (including the principles, steps and significance of excitement and inhabitation tests).

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 30 cases.

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Diabetes mellitus | 20 |
| Hyperthyroidism (Graves’ disease, etc.) | 1 |
| Diabetic ketoacidosis and diabetic hyperosmolar coma | 2 |
| Nodular goiter | 10 |
| Various types of thyroiditis | 2 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Oral glucose tolerance test | 6 |
| Blood and urine specimen collection for various hormones’ concentration determination | 3 |
| Measurement of waist and hip circumferences | 10 |
| Prescription of nutrition diet for patients of diabetes | 5 |

* + 1. Further requirements
       1. Diseases to be learned:

|  |  |
| --- | --- |
| Disease | Disease |
| Cushing’s syndrome | Pheochromocytoma |
| Diabetes Insipidus | Hyperlipidemia and hyperproteinemia |
| Prolactinoma | Primary adrenal insufficiency (Addison’s disease) |
| Gout | Other types of hyperthyroidism |
| Primary aldosteronism |  |

* + - 1. Clinical knowledge and skills requirements: Dexamethasone suppression test; water deprivation test.
  1. **Rheumatology**

1 month (1 week in clinic)

* + 1. Aim of rotation

Master: The clinical presentation, basis of diagnosis, differential diagnosis and treatment principles for common rheumatic diseases; the clinical significance of rheumatic related laboratory examinations; action mechanism, usage and adverse reaction of common anti-rheumatic medications.

Understand: The principle of autoantibodies and related subjects’ detection in common rheumatic diseases; normal joint structure and imaging manifestations of common joint diseases; understanding of rheumatic diseases in interaction with other disciplines, and establishment of anoverall concept for diagnosis and treatment of diseases.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 20 cases.

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Systemic lupus erythematosus | 3 |
| Rheumatoid arthritis | 3 |
| Osteoarthritis | 5 |
| Ankylosing spondylitis | 5 |
| Sjogren's syndrome | 2 |
| Gout | 2 |

* + - 1. Basic skills requirements: To master the detection theory of various rheumatic related antibodies, results interpretation and clinical significance; basic examinations of joints.
    1. Further requirements
       1. Diseases to be learned:

|  |
| --- |
| Disease |
| Adult-onset Still’s disease |
| Inflammatory myopathy |
| Systemic sclerosis |
| Reactive arthritis |
| Psoriatic arthritis |
| Behcet’s disease |
| Systemic vasculitis |

* + - 1. Clinical knowledge and skills requirements: Pathologic characteristics of various arthritis,joint aspiration, synovial fluid analysis and its clinical significance, accurate identification of the image characteristics of rheumatoid arthritis, osteoarthritis, ankylosing spondylitis, and other rheumatic diseases.
  1. **Infectious disease**

One month (including 2 weeks in hepatitis ward, 2 weeks in other wards of infectious diseases)

* + 1. Aim of rotation

Master: Pathogenesis, clinical presentation, basis of diagnosis, differential diagnosis and treatment of viral hepatitis; knowing the identical transmission route of intestinal infectious diseases such as typhoid fever, dysentery, amoebiasis, bacterial food poison, etc., and their diagnostic basis, differential diagnosis and specific management; pathogenesis and anti-shock therapy for septicemia and septic shock; antibiotic selection, evolution and clinical application of antibacterial drugs; treatment of parasitic diseases; diagnosis and differential diagnosis of prolonged fever of unknown origin, its diagnostic thinking process and strategy of treatment; indications for lumbar puncture; etiology, clinical presentations, diagnostic basis, differential diagnosis and management of acquired immunodeficiency syndrome (AIDS); procedures for disinfection and isolation.

Understand: The general situation of anaerobic bacteria infection and the selection of therapeutic drugs; clinical epidemiology and prevention of nosocomial infection; action mechanism and selection of antiviral drugs; indications and contraindications of liver puncture.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 20 cases.

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Case no. | Disease | Case no. |
| Viral hepatitis | 5 | Epidemic hemorrhagic fever | 1 |
| Measles | 2 | Typhoid fever | 1 |
| Bacillary dysentery | 3 | Septicemia, septic shock | 3 |
| Viral encephalitis | 2 | Tuberculosis | 2 |
| Bacterial food poisoning | 3 | AIDS |  |
| Optional according to region differences: | | | |
| Encephalitis B | | Leptospirosis | |
| Cholera | | Epidemic mumps | |
| Amoebiasis | | Epidemic cerebrospinal meningitis | |
| Liver abscess | | Schistosomiasis | |
| Malaria | |  | |

* + - 1. Basic skills requirements: Procedures for disinfection and isolation.
    1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Disease |
| Infectious mononucleosis | Nosocomial infection |
| Toxoplasmosis | Rabies |
| Brucellosis |  |

* + - 1. Clinical knowledge and skills requirements: Liver puncture, artificial liver.
  1. **Neurology and Psychiatry**

One month (Including neurology clinic, psychiatry clinic and EEG room, 1 week)

**Neurology**

* + 1. Aim of rotation

Master: The cardinal symptoms and signs of nervous system damage; principles of localization and qualitative diagnosis of nervous system diseases; applied anatomy of the 12 pairs of cranial nerves; classification, localization and qualitative diagnosis of sensory and motor disorders; clinical presentations, diagnosis, differential diagnosis, and treatment principles of acute inflammatory demyelinating polyneuropathy; common causes, clinical presentations, diagnosis, differential diagnosis and therapeutic principles of cerebral thrombosis, cerebral embolism, cerebral hemorrhage and subarachnoid hemorrhage; pathology and clinical presentations of Parkinson’s disease; clinical manifestation, diagnosis of epilepsy and rescue of status epilepticus; pathogenesis and clinical presentations of myasthenia gravis; Indications, contraindications and complications of lumbar puncture.

Understand: Treatment and nursing of acute myelitis; main components of extrapyramidal system and symptoms of their disorders; etiology, classification and mechanism of epilepsy; clinical application of electroencephalogram and electromyogram.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Case no.(≥) | Disease | Case no.(≥) |
| Facial neuritis | 2 | Trigeminal neuralgia | 2 |
| Sciatica | 2 | Spinal cord compression | 1 |
| Cerebral infarction | 15 | Cerebral hemorrhage | 3 |
| Subarachnoid hemorrhage | 1 | Parkinson’s disease | 10 |
| Epilepsy &status epilepticus | 3 | Migraine | 3 |
| Multiple sclerosis | 1 | Myasthenia gravis | 1 |
| Acute inflammatory demyelinating polyneuropathy | 1 |  |  |

* + - 1. Basic skill requirement: Perform lumbar puncture for 3 cases.
    1. Further requirements:
       1. Diseases to be learned and case number requirements: Acute myelitis, polyneuritis, periodic paralysis, Parkinson's syndrome and Parkinsonism-Plus syndrome.
       2. Clinical knowledge and skills requirements:

Electroencephalography

Electromyography

**Psychiatry**

* + 1. Aim of rotation

Master: Psychiatric interview skills; clinical manifestations, diagnosis, differential diagnosis and management of common diseases; classification, clinical characteristics and application of commonly used antipsychotics, antidepressants, anti-anxiety drugs, and management of their side effects; concepts and common types of psychosomatic diseases.

To understand: Etiology and mechanism of psychiatric diseases; concepts and types of mood stabilizer medications; the concept of biopsychosocial medical model; the descriptive definition of hyperkinetic and mood disorders in children and adolescents; the concepts and common types of psychometrics; other therapies for psychiatric diseases, such as electroconvulsive therapy and psychotherapy.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Panic attack | 2 |
| Somatization disorder | 2 |
| Depressive disorder | 2 |
| Generalized anxiety disorder | 2 |
| Organic mental disorder/ Mental disorder due to physical illness (including Alzheimer’s disease) | 2 |

* + - 1. Basic skills requirements:

|  |
| --- |
| Skill |
| Psychiatric examinations and descriptions  Diagnostic procedures of diseases  Supportive psychotherapy, management and intervention of common psychiatric emergency  SAS (self-rating anxiety scale)  Application and evaluation of SDS (self-rating depression scale) |

* + 1. Further requirements
       1. Diseases to be learned:

|  |
| --- |
| Disease |
| Schizophrenia  Bipolar affective disorder  Eating disorders  Psychoactive substances induced mental disorders  Addiction, stress-related disorders, neurological disorders  Disorder of psychological development in children and adolescents |

* + - 1. Clinical knowledge and skills requirements: ECT therapy; cognitive behavior psychotherapy; family psychotherapy; psychodynamic (psychoanalytic) psychotherapy; biofeedback; music and recreation therapy; application of intelligence, personality and neuro-psychologicalmeasurements.
  1. **Emergency Medicine (2 months)**
     1. Aim of rotation

Master: Life support therapy for emergent, dangerous and seriouspatients; the basic theories and new developments of cardiopulmonary resuscitation (CPR), including basic life support (BLS), advanced cardiac life support (ACLS), basic trauma life support (BTLS) and advanced trauma life support (ATLS); etiology, clinical presentations and standardized management of common emergency; indications for selection of common examinations for emergency, clinical significance and results interpretations; indications, effect, side effect and application method of common emergency medications (cardio-pulmonary resuscitation and vasoactive drugs, cardiotonics and diuretic, antispasmodic and anti-asthmatic drugs, analgesics, hemostatic, antiarrhythmic drugs, etc.).

Understand: The pathogenesis, etiology, diagnostic criteria and principles of management of multiple organ dysfunction syndrome (MODS); mechanisms of reperfusion injury and its clinical significance; principles of treatment of various crises (hypertensive crisis, hyperthyroidism crisis), severe disorders of water-electrolyte and acid-base balance).

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 80 cases.

|  |  |  |
| --- | --- | --- |
| Diseases | Case no. (≥) | |
| Common acute fever | | 10 |
| Acute abdomen | | 10 |
| Acute chest pain | | 10 |
| Dyspnea | | 5 |
| Syncope | | 5 |
| Coma | | 5 |
| Varioustypes of intoxication | | 5 |
| Hemorrhage (hemoptysis, hematemesis, hematuria, etc.) | | 5 |
| Fatal (malignant) arrhythmia | | 5 |

* + - 1. Basic skills requirements: At least 20 cases.

|  |  |
| --- | --- |
| Skill | Skill |
| Lumbar puncture | Thoracocentesis, Abdominal paracentesis |
| Gastric lavage | Cardiopulmonary resuscitation |
| EKG monitoring | Urinary catheterization |
| Defibrillation | Compression hemostasis by Sengstaken-Blakemore tube |
| Tracheal intubation | Arterial and venous puncture |
| Use of ventilator | Life support techniques (including CPR and trauma life support) |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements: Multiple organ dysfunction syndrome – 3 cases.
       2. Clinical knowledge and skill requirement: Frequently used ventilation mode of ventilator.
  1. **Intensive care unit (1month)**
     1. Aim of rotation

Master: Diagnosis and urgent management of common diseases; indications, side effect and clinical application of common emergency medications (cardio-pulmonary resuscitation and vasoactive drugs, antihypertensive, antiarrhythmic drugs, antispasmodic and anti-asthmatic drugs, antiepileptic drugs); clinical application of antibacterial drugs; indications of blood transfusion; indications and clinical application of nutritional support; arterial blood gas analysis.

Understand: Theories and advancement of SIRS and multiple organ dysfunction syndrome (MODS).

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements: At least 30 cases.

|  |  |
| --- | --- |
| **Disease** | **Case No. (≥)** |
| Serious pneumonia | 2 |
| Cerebrovascular accident | 3 |
| Diabetic ketoacidosis | 2 |
| Acute serious pancreatitis | 2 |
| Spinal cord injury and spinal shock | 2 |
| Intracranial hypertension | 2 |
| Serious electrolyte disturbances, acid-base imbalance | 3 |
| Acute cardiac insufficiency | 3 |
| Disseminated intravascular coagulopathy | 3 |
| Acute hepatic failure | 2 |
| Coma | 2 |
| Myocardial infarction | 2 |
| Massive UGI bleeding | 2 |
| Status epilepticus | 2 |
| Tension pneumothorax | 1 |
| Cardiac tamponade | 2 |
| Shock | 5 |
| Acute respiratory failure, acute respiratory distress syndrome | 2 |
| Acute renal failure | 2 |
| Multiple organ insufficiency | 1 |
| Fatal arrhythmia | 3 |

* + - 1. Basic skillsrequirements

|  |  |
| --- | --- |
| **Skill** | **Case No. (≥)** |
| Cardiopulmonary resuscitation (including defibrillator) | 3 |
| Advanced cardiac life support (ACLS) | 3 |
| Tracheal intubation | 2 |
| EKG monitoring | 5 |
| Heart and lung x-ray images | 10 |
| Compression hemostasis by Sengstaken-Blakemore tube | 2 |
| Use of ventilator | 5 |

* + 1. Further requirements
       1. Skills to be learn: Post-operative monitoring; respiratory monitoring; cerebral monitoring.
       2. Clinical knowledge and skills requirements:

|  |
| --- |
| Skill |
| Deep venous puncture |
| Arterial puncture |
| Mechanical ventilation |
| Pericardiocentesis |
| Endotracheal intubation or tracheostomy |
| Intraaortic balloon counterpulsation |
| Thoracocentesis and chest drainage |
| Interpretation of skull, chest and abdominal CT scans |

* 1. **Medical Imaging – 2 months (including ultrasonography and nuclear medicine)**
     1. Aim of rotation
        1. Master:
           1. Normal anatomy, basic pathologic lesion presentation, essential diagnosis and differential diagnosis of common diseases of respiratory, cardiovascular, digestive and neurologic systems by x-ray and/or CT and/or MRI.
           2. Normal anatomy of ultrasound imaging; basic principle of color Doppler; ultrasonic diagnosis of common digestive, cardiovascular and urologic diseases.
           3. The characteristics and principles of nuclear medicine imaging; application of thyroid scan, whole body bone scan, myocardial perfusion imaging, renal scintigraphy, and liver blood pool scan, and their manifestations in common diseases.
        2. Understand:
           1. Fundamentals of CT and MRI and application of “M spot”;
           2. Indication of angiography in gastrointestinal bleeding and common diseases; the manifestations of ERCP and MRCP in common pathologic lesions;
           3. Application of cerebral vascular DSA;
           4. Fundamentals of diagnostic ultrasonography;
           5. 2D sonography, M-mode echocardiography, color Doppler flow imaging (CDFI), interventional sonography, endoluminal ultrasound, etc.;
           6. The principles and applications of gastrointestinal bleeding imaging, cerebral perfusion imaging, testicular blood pool imaging and salivary gland imaging.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Case No.(≥)** | **Disease** | **Case No.(≥)** |
| Roentgenography: | | | |
| Pneumonia | 5 | Pulmonary abscess | 2 |
| Pulmonary TB | 5 | Pulmonary neoplasm | 5 |
| Chronic bronchitis and emphysema | 5 | Bronchiectasis | 2 |
| Hypertensive heart disease | 2 | Pulmonary heart disease, rheumatic heart disease, pneumothorax | 2 |
| Intestinal obstruction | 2 | Esophageal cancer | 2 |
| Esophageal varices | 2 | Gastroduodenal ulcer | 3 |
| Gastric cancer | 2 | Colorectal cancer | 3 |
| Liver cirrhosis | 5 | Liver cancer | 5 |
| Liver hemangioma | 5 | Cholelithiasis | 5 |
| Pancreatic cancer | 3 | Cerebrovascular accident | 5 |
| Ultrasonography: | | | |
| Cholelithiasis | 5 | Liver cirrhosis | 3 |
| Liver cancer | 3 | Renal stone | 3 |
| Coronary heart disease | 5 | Cardiomyopathy | 2 |
| Hypertensive disease | 5 | Rheumatic heart disease | 2 |
| Ventricular septal defect | 2 | Atrial septal defect | 2 |
| Nuclear Medicine | | | |
| Thyroid scan | 5 | Whole body bone scan | 3 |
| Myocardial perfusion scan | 3 | Renal scintigraphy | 3 |
| Liver blood pool imaging | 2 |  |  |

* + - 1. Basic skills requirements: Selection and general application of various imaging methods in various systems (10 cases); interpretation of roentgenogram and CT scan for common diseases (50 cases); interpretation of ECT for common diseases (10 cases).
    1. Further requirements
       1. Diseases to be learned:

|  |  |
| --- | --- |
| **Disease** | **Disease** |
| Roentgenography: | |
| Rheumatic heart disease | Congenital heart disease |
| Crohn’s disease | Intestinal tuberculosis |
| Cholangiocarcinoma | Chronic pancreatitis |
| Urolithiasis | Urological neoplasm |
| Adrenal diseases | Thyroid diseases |
| Intracranial infection | Nervous system tumors |
| Nuclear Medicine: | |
| Gastrointestinal bleeding imaging | Cerebral perfusion imaging |
| Testicular blood pool imaging | Salivary gland imaging |

* + - 1. Clinical knowledge and skills requirements: A basic mastery of various imaging examination method; Echo-guide and CT-guide organ biopsy (1 case); imaging of the digestive system (1 case), angiography of the nervous system (1 case), and the application of internal radionuclide irradiation therapy (1 case).
  1. **Geriatrics (Your tutor should be in this section)**
     1. Theories: Basic theory of the etiology, pathogenesis, clinical presentation, diagnosis, treatment, risk factors and prevention of cerebrovascular disease, Alzheimer's disease, Parkinson's disease, diabetes, osteoporosis, coronary heart disease, and chronic hypoxia-related pulmonary heart disease.
     2. Skills: Proficiency in medical system examinations.
     3. Clinical training and evaluation: Training in geriatric-related specialized department for at least 12 months;fundamental knowledge and clinical skills training requirements and evaluation according to respective specialized department’s requirements.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research,and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment,they can apply for the dissertation defense.

Training program for clinical master of Anesthesiology

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**
   1. **Non-anesthetic department rotation schedules**

|  |  |
| --- | --- |
| Department | Time (Month) |
| General Surgery | 1.5 |
| Cardiovascular Medicine | 2 |
| Respiratory Medicine | 2 |
| Medical Imaging | 0.5 |
| Total | 6 |

After the above rotation, they participate in the training for basic anesthetic skills (mainly anesthesia for general surgery, urology and orthopedics) and rotate to anesthetic subspecialized departments, pain clinic and intensive care units (ICU).

* 1. **Rotation schedules in anesthetic subspecialized departments**

|  |  |
| --- | --- |
| Subspecialized Department | Time (Month) |
| Basic anesthetic skills (mainly anesthesia for general surgery, urology and orthopedics) | 3 |
| Anesthesia of Ophthalmology and ENT | 1 |
| Anesthesia of Stomatology | 1 |
| Anesthesia of Neurosurgery | 2 |
| Anesthesia of Thoracic and Cardiovascular Surgery | 2 |
| Anesthesia of Obstetrics and Gynecology | 2 |
| Anesthesia of Pediatric Surgery | 2 |
| Outpatient and anesthesia outside the operation room | 1 |
| Anesthetic recovery room | 1 |
| Pain therapy (Pain clinic and/or Pain ward can be a choice/choices) | 1 |
| Total | 16 |

1. **Training content and requirements**
   1. **General Surgery**
      1. Aim of rotation
         1. Master: The clinical presentation, diagnosis and principle of treatment for common general surgical diseases; methods of examinations and common diagnostic imaging in general surgery.
         2. Be familiar with: The pathophysiologic change, surgical treatment and postoperative complications of common general surgical diseases esp. acute peritonitis, obstructive cholangitis and acute necrotizing pancreatitis.
         3. Understand: Etiology and postoperative complications of common diseases of general surgery.
      2. Basic requirements
         1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Surgical gastrointestinal diseases | 5 |
| Surgical thyroid and breast diseases | 6 |
| Surgical hepatobiliary and pancreatic diseases | 5 |

* + - 1. Basic skills (operation) requirements:

|  |  |
| --- | --- |
| Skill or Operation | Case no.(≥) |
| Sick bed management | 3 |
| Entire medical record writing | 5 |
| Preoperative workout and consent form | 5 |
| Participation in general surgery operations | 15 |
| Discussion of difficult and mortality cases | 1-2 |

* 1. **Cardiovascular Medicine**
     1. Aim of rotation
        1. Master: The diagnosis and treatment of hypertension, and management of hypertensive crisis; diagnosis and selection of treatment for coronary heart disease and acute myocardial infarction; diagnosis and management of common arrhythmia.
        2. Be familiar with: The pathophysiologic change and imaging characteristics of heart failure, arrhythmia and common cardiovascular diseases.
        3. The etiology and pathogenesis of common cardiovascular diseases; balloon dilatation of mitral valve; radiofrequency; understanding of the indications of interventional treatment for congenital heart disease.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Primary hypertension | 10 |
| Coronary heart disease | 10 |
| Rheumatic heart disease | 10 |
| Arrhythmia | 10 |

* + - 1. Basic skillsrequirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Sick bed management | 4 |
| Entire medical record writing | 5 |
| Participation in resuscitation | 5 |
| 12-lead EKG (operate independently) | 10 |
| Discussion of difficult and mortality cases | 5 |

* 1. **Respiratory Medicine**
     1. Aim of rotation
        1. Master: The clinical presentation, diagnosis and treatment of spontaneous pneumothorax, pleural effusion, respiratory failure and other common respiratory diseases; interpretation of CXR and chest CT; the skills of pulmonary function test, bronchoscopy, arterial blood sampling, thoracocentesis, methods for inhalation medications, mechanical ventilation and oxygen therapy.
        2. Be familiar with: The pathophysiologic change and differential diagnosis of common respiratory diseases.
     2. Basic requirements
        1. Diseases to be learned and case requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Chronic bronchitis, bronchial asthma, and bronchiectasis | 10 |
| Pulmonary infection, pneumonia, lung abscess, pulmonary TB, pulmonary fungal infection and pulmonary infection of immunocompromised patients | 20 |
| Lung cancer | 5 |
| Spontaneous pneumothorax, pleural effusion | 3 |
| Respiratory failure | 5 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| Skill | Case no.(≥) |
| Sick bed management | 4 |
| Entire medical record writing | 5 |
| Inhalation medication | 5 |
| Oxygen therapy | 10 |
| Participation in resuscitation | 5 |
| Interpretation of CXR | 30 |
| Interpretation of chest CT | 30 |
| Pulmonary function test | 10 |
| Discussion of difficult and mortality cases | 5 |

* 1. **Medical Imaging**

Master: Interpretation of CXR, chest CT scan, and CT scan for spinal injury.

* 1. **Anesthesiology**
     1. Aim of rotation
        1. Master:
           1. Fundamental theories of anesthesiology including clinical anesthesiology, critical care medicine, pain medicine and resuscitation, and the combination of knowledge and practical work;
           2. Basic knowledge of clinical anesthesiology, critical care medicine, and pain-related diseases;
           3. History collection and assessment before anesthesia;
           4. Principles of anesthesia plan establishment and complication prevention;
           5. Operations and procedures of anesthesia and monitoring techniques;
           6. Regulation of basic life function during operation;
           7. Accurate management of common anesthetic complications and intraoperative emergency;
           8. Postoperative pain therapy and their strategy;
           9. The diagnosis and principle of treatment of chronic pain, principle of management of cancer pain;
           10. Monitoring vital signs of critically ill patient, judgement and supporting the function of important organs;
           11. Technology, process and organization of emergency resuscitation.
        2. Be familiar with:
           1. The basic working principle of monitor instruments and anesthesia machine;
           2. Anesthetic risks of critical and difficult patients, intraoperative management and prevention;
           3. Etiology and differential diagnosis of chronic pain;
           4. Nutritional support for ICU patient;
           5. Determination of brain death.
        3. Understand:
           1. The new advancement of anesthesiology, critical care medicine and pain management home and abroad, frontier monitoring and treatment techniques;
           2. The method of anesthesia-assisted opioid detoxification for drug withdrawal.
     2. Basic requirements
        1. Basic anesthesia methods:

|  |  |
| --- | --- |
| Techniques | Case no.(≥) |
| General anesthesia | 200 |
| Spinal anesthesia | 80 |
| Saddle anesthesia, caudal anesthesia, combined spinal and epidural anesthesia | 5 |
| Nerve block and local anesthesia | 30 |
| Monitored anesthesia care (MAC) | 40 |

* + - 1. Rotation to subspecialized anesthesia:

|  |  |
| --- | --- |
| Techniques | Case no.(≥) |
| Anesthesia for general surgery | 200 |
| Anesthesia for ENT | 80 |
| Anesthesia for neurosurgery | 60 |
| Anesthesia for thoracic and cardiovascular surgery | 60 |
| Anesthesia for OBS/GYN | 60 |
| Anesthesia for somatology | 30 |
| Pediatric anesthesia | 120 |
| Outpatient and/or anesthesia outside the operation room | 50 |
| In-hospital resuscitation | 10 |
| ICU | 20 |
| Pain clinic / pain ward | 40 |
| Post-anesthesia care unit (PACU) | 40 |

* + - 1. Special skillsof anesthesia:

|  |  |
| --- | --- |
| Techniques | Case no.(≥) |
| Arterial puncture | 30 |
| Central venous puncture | 30 |
| Bronchoscopy | 3 |
| Laryngeal mask | 5 |
| Double lumen endobronchial tube placement | 10 |
| Blind orotracheal or nasotracheal intubation | 2 |
| Nasotracheal intubation under direct vision | 2 |
| Controlled hypotension | 2 |

* + - 1. ICU skills:

|  |  |
| --- | --- |
| Skills | Case no.(≥) |
| Ventilator management | 30/day |
| Tracheostomy | 2 |
| Thoracocentesis | 2 |
| Abdominal paracentesis | 2 |
| Puncture subarachnoid space | 2 |
| Change surgical wound dressing | 10 |

* + - 1. Studying of theories: Learning via case discussion, book reading, special lectures and various forms of studying.

1. **Research training (specific requirements seen ingeneral regulations)**

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master degree students.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Dermatology and Venereology

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements see also the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skill training**
   1. Rotation schedules in related departments

|  |  |
| --- | --- |
| Department | Time (Month) |
| Cardiovascular Medicine | 1 |
| Rheumatology& Immunology | 1 |
| Nephrology | 1 |
| Gynecological clinic | 0.5 |
| Urological clinic | 0.5 |
| General Surgery | 1 |
| Burn and Plastic Surgery | 1 |
| Total | 6 |

Initially, rotation to other dermatology related specialize departments is required. Rotation to cardiovascular medicine, respiratory medicine, clinic of gynecology and urology, and rheumatology for 1 month, respectively, is required. Total rotation time should not be less than 6 months. Then rotation to clinic, ward and emergent section of dermatology and venereology, for learning of basic specialized clinical knowledge and skillsis required. In the meantime, rotation to the laboratory, therapeutic room and pathology of dermatology and venereology for one month, respectively, is required.

* 1. **Rotation schedules in dermatology related departments**

|  |  |
| --- | --- |
| Department | Time (Month) |
| Work in the ward | 9 |
| Work in the outpatient departments (including pathology, biopsy room, laboratory, therapeutic room) | 9 |
| Total | 18 |

1. **Training content and requirements**
   1. **The rotation schemes in relevant clinical departments and requirements**
      1. Aim of rotation
         1. Master: The diagnosis and principle of treatment for common medical and surgical diseases; the principle of critical-ill resuscitation in relevant departments of internal medicine; basic operation skills of surgical departments.
         2. Be familiar with: The diagnosis and routine treatment of dermatology related diseases, such as SLE, interstitial pneumonia, respiratory tract infection, nephritis, chronic renal failure, peptic ulcers, lymphoma, etc.; the first-aid management of dangerous serious patient; skin flap and techniques of skin grafting.
      2. Basic requirements
         1. Diseases to be learned and case number requirements:
            1. Fixed rotation departments:

|  |  |  |
| --- | --- | --- |
| **Department** | **Disease** | **Case no.(≥)** |
| Cardiovascular Medicine (mainly in ward) | Cardiac insufficiency | 5 |
| Hypertension | 10 |
| Coronary heart disease | 5 |
| Shock | 3 |
| Arrhythmia | 5 |
| Valvular disease | 3 |
| Nephrology (mainly in ward) | Lupus nephritis | 5 |
| Henoch-Schoenlein Purpura Nephritis | 5 |
| Renal failure | 5 |
| Glomerulonephritis | 10 |
| Urinary tract infection | 5 |
| Urology (mainly OPD) | Male genitourinary infection | 10 |
| Hematuria | 5 |
| Urethral stricture | 3 |
| Benign prostate hypertrophy | 5 |
| Gynecology (mainly OPD) | Fungal vaginitis | 5 |
| Trichomonas vaginitis | 5 |
| Chronic cervicitis | 10 |
| Vulvar disease | 10 |
| General Surgery | Common operations of surgery | 20 |
| Burn and Plastic | Superficial tumor excision | 20 |

* + - 1. Basic skills requirements:Be familiar with the diagnosis and treatment of above diseases; be familiar with techniques for routine diagnosis and treatment, such as application of ECG machine, ventilator and ECG monitoring system; a mastery of basic techniques of puncture, CPR and resuscitation; be familiar with the use of glucocorticoids and antibiotics.
  1. **Dermatology Clinic and Emergent Tasks (9 months) (including 3 months in pathology, laboratory and therapeutic room)**
     1. Aim of rotation
        1. Master: The basic examination skills of dermatology and venereology, identification and description of skin lesions accurately, accurate professional terminology to write complete outpatient medical records of the dermatology and venereology under the guidance of seniors; the diagnosis and treatment of common dermatology diseases; the diagnosis, treatment and emergency management of emergent dermatologic diseases.
        2. Be familiar with: The differential diagnosis and treatment of common dermatologic and venereal diseases; the principles, indications, and contraindications of common therapeutic techniques in dermatologic outpatient department, including cryotherapy, skin biopsy, electro-desiccation, photodynamic therapy, ultraviolet therapy and borehole biopsy.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Superficial mycosis | 150 |
| Warts | 100 |
| Herpes zoster, herpes simplex | 60 |
| Impetigo | 30 |
| Dermatitis and eczema | 200 |
| Urticaria | 80 |
| Drug eruption | 60 |
| Scabies | 30 |
| Erythema erythema | 60 |
| Psoriasis | 100 |
| Lichen moss | 30 |
| Pityriasisrosea | 30 |
| Discoid lupus erythematosus | 20 |
| Alopecia | 200 |
| Acne | 200 |
| Skin pruritus | 60 |
| Syphilis | 20 |
| Gonorrhea | 20 |
| Non-gonococcal urethritis | 40 |
| Condylomaacuminatum | 40 |
| Genital herpes | 20 |
| Pigmented skin diseases, such as vitiligo, chloasma | 240 |
| Benign skin tumors, such as nevus, syringoma, seborrheic keratosis, skin fibroma, keloid | 300 |
| Malignant skin tumors, such as basal cell carcinoma, squamous cell carcinoma, granuloma fungoides, etc. | 60 |
| Non-infectious granuloma (including sarcoidosis, granuloma annulare, etc.) | 10 |
| Infectious skin diseases (skin tuberculosis, deep mycosis, etc.) | 10 |
| Cutaneous vasculitis diseases (such as Sweet disease, panniculitis, etc.) | 10 |
| Erythroderma | 10 |
| Genodermatosis | 20 |
| Connective tissue diseases (such as pemphigus, bullous pemphigoid, etc.) | 10 |
| Malignant skin tumor | 20 |

* + - 1. Basic skills requirements:Be able to collect history, identify and describe patients’ skin lesions correctly, write outpatient medical records in a standardized way; master the basic dermatologic examination skills, such as Wood's lamp examination, diascopy, skin scratch test, etc.; after 3 months working in the clinic, under the guidance of seniors, participate in the emergency tasks and emergency duty of dermatology; participate indiscussion of the dermatologic difficult cases, collect and report patients’ history and provide individual opinions; record the consultation opinions, treat patients according to the opinions and follow up.
    1. Further requirements
       1. Diseases to be learned and case number requirements:
          1. Under the guidance of seniors,be familiar with the treatment of severe and/or rare dermatologic diseases:

|  |  |
| --- | --- |
| Disease | Case no. |
| Connective tissue diseases (SLE, Dermatomyositis, Scleroderma, etc.) | 20 |
| Bullous skin diseases (such as pemphigus, cicatricial pemphigoid, etc.) | 10 |
| Severe psoriasis (erythrodermic, arthropathic) | 10 |
| Rare infectious skin diseases, such as AIDS, non-tuberculous mycobacterial infectious diseases, chronic mucocutaneous candidiasis, etc. |  |
| Rare skin tumors, such as vascular endothelial cell sarcoma, malignant melanoma, skin metastasis, etc. |  |

* + - * 1. After working for 3 months in out-patient department, under the guidance of seniors, participate in emergency duty:

|  |  |
| --- | --- |
| Disease | Case no. |
| Acute urticaria | 20 |
| Insect bite dermatitis | 20 |
| Drug eruption | 10 |
| Herpes zoster | 10 |
| Contact dermatitis | 10 |

* + - 1. Clinical knowledge and skills requirements:Treatment of common dermatologic diseases; participation in discussion of the difficult cases and report of the medical records, records of consultation, patients’ follow up and regular submission of the patients’ conditions for clinical discussion; attendance and participation in the work of skin surgery.
  1. **Rotation to pathology, laboratory and therapeutic room of dermatology (3 months)**
     1. Aim of rotation
        1. Dermatopathology: Master the selection and techniques of biopsy methods; preliminarily master the characteristics of basic skin pathologic changes; understand the pathological characteristics of common skin diseases with diagnostic value; understand the diagnostic significance of common special stains, such as PAS, Alcian Blue, Congo red.
        2. Laboratory: Master commonly used examination techniques and their clinical application for dermatologic and venereal diseases, such as patch test, photopatch test, etc.; master the specimen sampling method for patients with venereal diseases and direct microscopic examinations of Neisseria gonorrhoeae;master the techniques of direct microscopic examinations andinoculation cultures for fungus; be familiar with the techniques and clinical application of the direct and indirect immunofluorescence; be familiar with allergen inspection techniques, such as patch test, scratch test, intradermal test; be familiar with syphilis serological examination technology, using the kit to detect common pathogens of urogenital tract (such as chlamydia, mycoplasma, etc.); participate in relevant laboratory work to appropriately establish the foundation for the future professional development.
        3. Therapeutic room: To master the skills of changing wound dressing, wet dressing, intra-lesional injection, cryotherapy, skin scraping, electrocautery, etc.
     2. Basic requirements

Basic diseases and skills requirements:

|  |  |
| --- | --- |
| Diseases and skills | Case no.(≥) |
| Direct microscopic examinations of the pathogens of superficial mycosis | 200 |
| Skin biopsy | 30 |
| Pathological reading (including dermatitis, eczema, psoriasis, erythema, lichen, lupus erythematosus, vasculitis, cicatricial skin disease, common skin tumors, etc. | 300 |
| Various therapeutic skills (changing dressing, intra-lesional injection, cryotherapy, scraping, electrocautery, carbon dioxide laser, etc.) | 10/each |
| Patch test | 30 |
| Photopatch test | 20 |
| Inoculation and culture of fungus | 30 |
| Identification of common classic pathogens | 20 |
| Direct microscopic examination of Neisseria gonorrhoeae | 30 |
| Microscopic examination of Demodexfolliculorum | 30 |

* + 1. Further requirements
       1. Skills to be learned and number requirements:

|  |  |
| --- | --- |
| Skill | Case no. |
| Ultraviolet phototherapy including photochemical therapy (PUVA) | 50 |
| Carbon dioxide laser | 50 |

* + - 1. Clinical knowledge and skill requirement for skin pathologic slide production and conventional dyeing technology; be familiar with the basic principlesand methods of pathological biopsy specimen’s fixation, dehydration, paraffin embedded, sectioned and H&E stain; be familiar with the basic principles and technology of immunohistochemically stain.
  1. **Dermatology ward rotation (9 months)**
     1. Aim of rotation

Be trained for the basic skills under the guidance of the superior doctor, through the clinical practice. Be able to write complete and clear inpatient medical records with strong scientific and logical thinking. For the clinical characteristics, diagnosis, differential diagnosis and treatment of common dermatologic diseases, be able to make preliminary accurate analysis and judgment and show in the medical records;basically master the diagnosis and treatment of common dermatologic and venereal diseases seen in the ward.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Dermatitis and eczema | 10 |
| Psoriasis vulgaris and erythrodermic psoriasis | 10 |
| Herpes zoster | 10 |
| Pemphigus or pemphigoid | 5 |
| Cutaneous vasculitis (such as erythemanodusum, erythema induratum, anaphylactoid purpura, etc.) | 10 |
| Drug eruption | 5 |
| Erythroderma | 8 |
| Bacterial dermatoses | 5 |
| Dermatomyositis | 2 |
| Cutaneous lymphoma (such as MF) | 3 |
| Pustular psoriasis &psoriatic arthritis | 6 |
| Erythroderma | 6 |
| Serious drug eruption | 6 |
| Bullous dermatosis | 3 |
| Connective tissue diseases | 3 |

* + - 1. Basic skills requirements: Complete 50 admission notes; take care of admission patients ≥ 50; be familiar with the monitoring and treatment of adverse reactions of patients treated with large dosage of glucocorticoid; be familiar with the indications, methods and precautions in the treatment of glucocorticoid pulse therapy; be familiar with the application and precautions of commonly used immunosuppressive drugs indermatology; be familiar with the principles and scheme of chemotherapy for cutaneous lymphoma.
    1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no. |
| Connective tissue diseases (SLE, scleroderma, dermatomyositis, etc.) | 8 |
| Specific psoriasis (pustular psoriasis, psoriatic arthritis, etc.) | 5 |
| Severe drug eruption (severe erythema multiforme, poisoning necrotizing epidermolyticepispasis, exfoliative dermatitis, etc.) | 6 |
| Skin neoplasms (MF, lymphoma, etc.) | 2 |
| Participation inthe resuscitation of severe dermatologic patients | 1 |

* + - 1. Clinical knowledge and skills requirements: To master the techniques of changing dressing for dermatologic diseases, especially changing dressing for a large area ulcerative wound; under the guidance of seniors, follow the principles of evident base medicine, provide reasonable effective plans of examination and treatment for patients; participate in presenting the patient’s history and recording the discussion for difficult cases;master bone marrow aspiration techniques, biopsy of small skin lesions.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn datacollecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master degree students.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical master of Neurology

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

Total rotation time should beat least 7 months. After rotation to related departments, participation in the clinical skill training in this discipline should not be less than 12 months.

Rotation and schedules in departments:

|  |  |  |
| --- | --- | --- |
| **Department** | **Time(Month)** | Neurologic clinical skills training time should not be less than 26 months, in which, the time in Neurologic ICU or Emergent Room should not be less than 3 months. |
| Cardiovascular medicine (including ECG and echocardiography) | 2 |
| Respiratory medicine | 2 |
| Metabolism and Endocrinology | 1 |
| Neurosurgery | 1 |
| Medical Imaging | 1 |
| Total | 7 |

1. **Training content and requirements**
   1. **Cardiovascular Medicine(2 months)**
      1. Aim of rotation

Preliminarily master the diagnosis, differential diagnosis and management of common cardiovascular diseases; accurately apply anti-arrhythmia medications; be familiar with the cardiac physical examinations and interpretation of ECG.

* + 1. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Myocardial infarction | 10 |
| Heart failure | 10 |
| Arrhythmia | 10 |
| Primary hypertension | 15 |
| Rheumatic heart disease | 3 |

* + - 1. Basic skill requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Operation of ECG machine | 30 |
| 24-hour dynamic ECG monitoring | 10 |
| Cardioversion | 2 |

* 1. **Respiratory Medicine (2 months)**
     1. Aim of rotation
        1. Master the diagnosis, differential diagnosis and treatment of common respiratory diseases; be familiar with the changes of medical imaging of common respiratory diseases; be able to interpret the results of ABG test and sputum culture accurately; be familiar with the application of antibiotics.
        2. Complete 10 medical records.
     2. Basic requirements
        1. Diseases to be learned and case number requirements

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Upper respiratory infection | 10 |
| Pneumonia | 10 |
| Acute or chronic bronchitis | 5 |
| Chronic pulmonary obstructive disease | 5 |
| Respiratory failure | 5 |

* + - 1. Basic skills requirements

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Sputum suction | 10 |
| Thoracocentesis | 2 |
| Interpretation of CXR | 20 |
| Interpretation of chest CT | 20 |
| Operation of ventilator | 5 |

* 1. **Metabolism and Endocrinology (1 month)**
     1. Aim of rotation
        1. Master the principles of usage of medications for diabetes and the method of usage of insulin.
        2. Master diet therapy for diabetes patients, be familiar with food calorie calculation and rapid blood glucose determination;
        3. Key point: diagnosis and treatment of diabetic ketoacidosis;
        4. Complete 5 medical records.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Diabetes mellitus | 10 |
| Diabetic ketoacidosis or non-ketotichyperosmolar diabetic coma | 2 |
| Hyperthyroidism | 2 |

* + - 1. Basic skills requirements

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Rapid blood glucose determination | 5 |
| Glucose tolerance test | 5 |

* 1. **Neurosurgery (1 month)**
     1. Aim of rotation

Understand the clinical presentation, diagnosis, differential diagnosis and treatment principles of common neurosurgical diseases.

* + 1. Basic requirements

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Craniocerebral injury | 3 |
| Aneurysm | 2 |
| Glioma | 2 |
| Meningioma | 2 |
| Brain abscess | 1 |
| Pituitary tumor | 1 |
| Spinal cord tumor | 1 |

* 1. **Medical Imaging (1 month)**
     1. Aim of rotation
        1. Master the standardized and systemic methods of interpretation of CT and MRI.
        2. Master the neurologic image manifestation of common neurological diseases.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Diseases** | **Case no.(≥)** |
| Cerebral infarction | 20 |
| Cerebral hemorrhage | 20 |
| Subarachnoid hemorrhage | 10 |
| Intracranial and spinal tumors | 10 |
| Encephalitis | 10 |
| Cerebral vascular malformations | 10 |
| Multiple sclerosis | 5 |
| Meningitis | 5 |
| Demyelinating disease of the central nervous system | 5 |
| Intervertebral disc herniation | 5 |
| Parasitic Encephalopathy | 3 |
| Craniocerebral and spinal injury | 3 |
| Syringomyelia | 2 |

* 1. **Neurology (not less than 12 months)**
     1. Aim of rotation
        1. Preliminarily master the pathogenesis, clinical presentations, diagnosis (localization and quantitative diagnosis), differential diagnosis and principles of treatment of common neurologic diseases.
        2. Complete at least 30 medical records.
     2. Basic requirements
        1. Diseases to be learned and case number requirement:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Cerebral infarction | 30 |
| Cerebral hemorrhage | 20 |
| Subarachnoid hemorrhoid | 5 |
| Viral encephalitis | 10 |
| Meningitis | 10 |
| Epilepsy | 10 |
| Migraine | 3 |
| Parkinson’s disease | 5 |
| Subacute combined degeneration | 3 |
| Guillain-Bane syndrome | 5 |
| Mononeuropathy or polyneuropathy | 5 |

* + - 1. Basic skills requirements

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Standardized complete neurologic physical examinations and localization | 60 |
| Lumbar puncture | 15 |
| Interpretation of EEG | 20 |
| Interpretation of electromyography | 20 |
| Interpretation of skull and spine CT | 80 |
| Interpretation of skull and spine MRI | 80 |

A neurologist must be able to perform standardized and systemic neurologic physical examinations, master the indications, contraindications and correct operation procedures of lumbar puncture. They are also able to identify the normal head CT, MRI image localization, and the imaging changes in cerebral vascular diseases.

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Alzheimer’s disease | 3 |
| Motor neuron disease | 5 |
| Multiple system atrophy | 3 |
| Progressive muscular dystrophy | 3 |
| Polymyositis | 3 |
| Cerebral cysticercosis | 4 |

* + - 1. Clinical knowledge and further skills requirements:
         1. On the basis of the basic standards, master the pathogenesis;further master the clinical manifestations, diagnosis, differential diagnosis and treatment of inflammatory and degenerative nervous system diseases in a higher standard.
         2. Be familiar with EEG changes of encephalitis, epilepsy and other neurological disorders.
         3. Master the image manifestation of inflammatory and degeneration of nervous system, and the clinical significance of examination results of transcranial Doppler ultrasound.
  1. **Neurologic ICU or Emergency (3 months)**
     1. Aim of rotation
        1. Be familiar with the diagnostic and therapeutic procedures of common diseases in neurological ICU or emergency room, emphatically master the diagnosis and emergency treatment of multiple organ failure, status epilepticus, increased intracranial pressure and cerebral herniation.
        2. Understand the reasonable application of anti-infective medications.
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Increased intracranial pressure and cerebral herniation | 5 |
| Status epilepticus | 5 |
| Multiple organ dysfunction syndrome | 5 |
| Respiratory pump failure and lung failure | 5 |

* + - 1. Basic skills requirements:Be able to perform CPR and endotracheal intubation skillfully, and master the correct use of ventilator.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training.At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review,they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor,they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, beingoff-the-job to finish their dissertation should not bearranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Ophthalmology**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitalsin the second academic year.

1. **Clinical skill training**

**Rotation and schedules in departments**

|  |  |  |
| --- | --- | --- |
| **Department** | **Time (Month)** | Clinical skill training time for ophthalmic discipline should not be less than 27 months. |
| Oral-maxillofacial surgery | 2 |
| ENT | 2 |
| Neurology | 2 |
| Total | 6 |

1. **Training content and requirements**
   1. **Oral-maxillofacial surgery**
      1. Master the etiology, pathogenesis, clinical presentations, diagnosis, differential diagnosis, principles and methods of treatment of common diseases of oral and maxillofacial surgery.
      2. Know the relationship between orbit and adjacent organs and their imaging diagnosis, the reconstruction of orbital deformity and emergency treatment of trauma. Learn the diseases and their theoretical knowledge.
   2. **ENT**
      1. Have the knowledge of applied anatomy and physiology of ENT, head and neck organs. Have the basic knowledge of common ENT diseases.
      2. Know the standardized examination methods and the application of examination instruments of ENT.
      3. Learn to identify the normal anatomy, morphology and landmarks of ENT.
      4. Master the diagnosis, differential diagnosis and treatment of common diseases.
   3. **Neurosurgery**
      1. Leaning of theories
         1. Systemically master the basic knowledge and theory of neurosurgery.
         2. Master the methods of nervous system examinations and localization and quantitative diagnosis.
         3. Be familiar with the diagnosis and principles of treatment of common neurosurgical diseases.
      2. Clinical practices
         1. Master the skills of writing a medical record correctly; learn to master the skills of neurosurgical history taking and recording.
         2. Master the technique of lumbar puncture, interpretation of skull, spinal CT and MRI of common diseases.
   4. **Ophthalmology**

Rotation to the following ophthalmologic divisions or subspecialized sections: Outpatient examination room, cornea section, ocular optic section, ocular muscle section, glaucoma section, uveitis section, fundus section, neuro-ophthalmology section, laboratory and ward; auxiliary examinations (ultrasound, visual field, ocular electrophysiology, fundus fluorescein angiography and coherent optical tomography); before performing outpatient minor surgery and microscopic surgery, complete more than 100 eye surgeries in experiments with animals.

* + 1. Aim of rotation
       1. Master the anatomy, histo-embryologic and physiochemical knowledge of eye.
       2. Master the clinical presentation, diagnosis, differential diagnosis and treatment of common and partial difficult diseases of ophthalmology.
       3. Master the mechanism, application and side effects of common ophthalmologic medications.
       4. Master the ocular manifestations of systemic diseases
       5. Master the basic skills and techniques of ophthalmologic microscope.
    2. Basic requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Chalazion | 10 |
| Hordeolum | 10 |
| Blepharitis | 5 |
| Blepharelosis | 5 |
| Ectropion | 5 |
| Ptosis | 5 |
| Chronic dacryocystitis | 5 |
| Bacterial conjunctivitis | 10 |
| Trachoma | 10 |
| Viral conjunctivitis | 10 |
| Pterygium | 10 |
| Bacterial keratitis | 10 |
| Episcleritis | 5 |
| Senile cataract | 20 |
| Acute primary angle closure glaucoma | 5 |
| Ridocyclitis | 10 |
| Ametropia | 20 |
| Concomitant strabismus | 10 |
| Amblyopia | 10 |
| Foreign body on ocular surface | 5 |
| Eyelid tumor | 5 |
| Phlyctenularkeratoconjunctivitis | 5 |
| Stromal keratitis | 5 |
| Neuroparalytic keratitis | 5 |
| Congenital cataract | 5 |
| Traumatic cataract | 5 |
| Complicated cataract | 5 |
| Lens luxation | 5 |
| Vitreous opacity | 10 |
| Secondary glaucoma | 10 |
| Congenital glaucoma | 5 |
| Fuchs heterochromiciridocyclitis | 5 |
| Congenital anomaly of uvea | 5 |
| Retinal artery occlusion | 5 |
| Retinal vein occlusion | 10 |
| Diabetic retinopathy | 10 |
| Hypertensive retinopathy | 10 |
| Central serous chorioretinopathy | 10 |
| Myopic macular degeneration | 5 |
| Macular hole | 5 |
| Macular epiretinal membranes | 5 |
| Retinal detachment | 5 |
| Retrobulbar neuritis | 5 |
| Papilledema | 5 |
| Ischemic optic neuropathy | 5 |
| Anisometropia | 5 |
| Low vision | 10 |
| Non-Concomitant strabismus | 5 |
| Orbital cellulitis | 2-5 |
| Eyeball rupture | 2-5 |
| Penetrating injury of eyeball | 2-5 |
| Intraocular foreign body | 2-5 |
| Chemical injury of eye | 2-5 |
| Physical injury of eye | 2-5 |

* + - 1. Clinical basic skill requirements:
         1. Master methods for the measurement of visual acuity, intraocular pressure (IOP); master the use of direct ophthalmoscope and slit lamp microscope;
         2. Master the methods of optometry, strabismus and diplopia examinations;
         3. Master the operation of microscope and the maintenance methods; Master the procedures in the operating room in ophthalmology;
         4. Master the examination method of preset lens, indirect ophthalmoscope, gonioscope and three mirror lens;
         5. Master the examination methods and report the results of ocular ultrasound, visual field, ocular electrophysiology, fundus fluorescein angiography and coherent optical tomography;
         6. Master the examination methods of optometry, strabismus and diplopia.

|  |  |
| --- | --- |
| Technique | Case no.(≥) |
| Gonioscope | 20 |
| Three-mirror lens | 20 |
| Ocular ultrasonography | 20 |
| Visual field | 20 |
| Ocular electrophysiology | 15 |
| Fundus fluorescein angiography | 20 |
| Manifest refraction | 30 |
| Autorefraction | 30 |
| Retinoscopy | 30 |
| Strabismus examination | 20 |
| Diplopia examination | 20 |

* + - 1. Surgical training: After passing amicrosurgery in an animal experiment, trainees can participate in the clinical practice. They should be able to complete the following operations:

|  |  |
| --- | --- |
| Operation | Case no.(≥) |
| Irrigation of lacrimal passage | 10 |
| Subconjunctival injection | 10 |
| Superficial foreign body of conjunctiva and cornea | 10 |
| Incision and drainage of hordeolum | 10 |

Under the guidance of supervisor and doctors, perform or participatein the following surgeries:

|  |  |  |
| --- | --- | --- |
| Surgery | Perform (≥) | Participate (≥) |
| Excision of chalazion | 10 | 15 |
| Excision of pterygium | 5 | 10 |
| Repair of ectropion | 5 | 10 |
| Excision of small eyelid tumor | 5 | 10 |
| Excision of lacrimal sac | 2 | 5 |
| Dacryocystorhinostomy | 2 | 5 |
| Ciliary body cryotherapy | 2 | 5 |
| Strabismus surgery | 2 | 5 |
| Repair of corneal penetrating injury | 2 | 5 |
| Ophthalmectomy | 2 | 5 |
| Iridectomy | 2 | 5 |
| Trabeculectomy | 5 | 10 |
| Cataract extraction | 5 | 10 |
| Intraocular lens implantation | 5 | 10 |
| Orbital implant implantation | 2 | 5 |
| Corneal transplantation | 0 | 5 |
| Retinal reposition | 0 | 5 |
| Vitrectomy | 0 | 5 |

* + 1. Further requirements
       1. Diseases to be learnedand case number requirements:

|  |  |
| --- | --- |
| Disease | Case no.(≥) |
| Sjogren's syndrome | 5 |
| Mooren's ulcer | 5 |
| Proliferative vitreoretinopathy | 5 |
| Normal tension glaucoma | 5 |
| VKH disease | 5 |
| Behcet’s disease | 5 |
| Periphlebitis retinae | 5 |
| Age-related macular degeneration | 5 |
| Retinoblastoma | 2-5 |
| Choroidal melanom | 2-5 |
| Retrobulbar neuritis | 5 |
| Retinitis pigmentosa | 2-5 |
| Exophthalmos | 2-5 |

* + - 1. Clinical knowledge and skill requirement: To understand the methods and reporting of the results of ultrasound biomicroscopy and coherent optical tomography.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, beingoff-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Medical Imaging and Nuclear Medicine**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skill training**
   1. Rotation and schedules in Medical Imaging and Nuclear Medicine Department

|  |  |
| --- | --- |
| Subspecialized Section | Time (Month) |
| Imaging technology section | 1 |
| Specialized sections of diagnostic imaging (Nerve, chest, abdomen, bone and joint sections, each for one month) | 4 |
| Intervention section | 3 |
| Ultrasonography section | 3 |
| Nuclear medicine section | 3 |
| Total | 14 |

* 1. Rotation and schedules in related departments

|  |  |
| --- | --- |
| Related Department | Time (Month) |
| Internal medicine | 2 |
| Surgery | 2 |
| Other non-specific departments (including pediatrics, OBS/GYN, neurology, neurosurgery, ENT, stomatology, etc.) | 2 |
| Total | 6 |

Rotation to the subspecialized sections of medical imaging departmentfor 14 monthsis initially required. Then, according to the specific circumstances of the trainees and clinical training base, rotation to related departmentsis feasible. Rotation to internal medicine, surgery, and other non-specific departments for 2 months, respectively, (according to the departments includedin the professional arrangement, including pediatrics, obstetrics and gynecology, neurology and neurosurgery, ear, nose and throat (ENT), and stomatology, etc.)is required. Finally, according to the tutor’s specialty, the trainees continue the training rotation in radiology (including X-ray, CT, MRI and Intervention), ultrasound, and nuclear medicine for a total of 13 months.

1. **Training content and requirements**
   1. **Aim of rotation in the discipline of medical imaging:**
      1. Master and be familiar with the basic theory, basic skills, the basic principles of diagnosis and treatment of common diseases and frequently occurring diseases that are involved in this subject. Understand the daily work procedures, content and related clinical knowledge of each section.
      2. Basic requirements
         1. **Medical imaging (including interventional therapy)**
            1. Master: The basic principle of medical imaging, including imaging principles and methods of X-ray, CT and MRI; writing principles of diagnostic reports of medical imaging, and completionof the reports requirements as listed in Table 1. The trainees have to complete at least 50 diagnostic reports weekly.
            2. Be familiar with the observation and analysis methods of medical imaging and its diagnostic principles, and to understand the clinical application value and limitation of diagnostic medical imaging.
            3. Understand: The operation methods of roentgenography, CT and MRI examinations.

Table 1: Diseases to be learned and case number requirements:

|  |  |  |
| --- | --- | --- |
| System (Technique) | Disease (Operation) | Case no.(≥) |
| Nerve system (mainly CT & MRI) | Cerebral hemorrhage | 10 |
| Cerebral infarction | 10 |
| Brain tumor | 10 |
| Cerebral injury | 10 |
| Respiratory system (mainly roentgenography and CT) | Pulmonary tuberculosis | 10 |
| Lung tumor | 10 |
| Bronchiectasis | 5 |
| Pneumonia | 10 |
| Mediastinal tumor | 2 |
| Pleural effusion | 5 |
| Rheumatic valvular disease | 1 |
| Pericardial effusion | 2 |
| Digestive and urologic systems (mainly CT and MRI) | Hepatic tumor | 10 |
| Cirrhosis | 5 |
| Pancreatic tumor | 5 |
| Pancreatitis | 5 |
| Biliary system neoplasm | 10 |
| Renal tumor | 10 |
| Adrenal tumor | 2 |
| Prostatic diseases | 5 |
| Urinary bladder tumor | 5 |
| Ovary, uterine tumors | 5 |
| Digestive tumors (contrast radiography) | 5 |
| Bone and joint system | Bony fracture | 10 |
| Bone tumor | 5 |
| Infection | 5 |
| Spine and joint diseases | 5 |

Be familiar with the basic principles and application of interventional radiology, and its basic operation techniques.

* + - 1. **Department of Ultrasound**
         1. Master the basic knowledge of ultrasonic medicine, including the principles of ultrasonic medicine, the diagnostic basis and principles of ultrasonography, the type, principle and structure of the ultrasonic diagnostic apparatus.
         2. Be familiar with the steps of ultrasound diagnosis, image analysis, including preparation, operation procedure and technique, observation content and index, analysis and diagnosis.
         3. Learn and try to be familiar with the recording method of ultrasound image data,be able towrite diagnostic reports correctly, and complete the diagnostic reports as listed in the following table.

Diseases to be learned and case number requirements:

|  |  |  |
| --- | --- | --- |
| System | Disease/Operation | Case no.(≥) |
| Digestive system | Hepatitis, cirrhosis, fatty liver, hepatic cyst, liver abscess, hepatic hemangioma, hepatocellular carcinoma | 5/each |
| Cholelithiasis, bile duct stone, acute and chronic cholecystitis, gallbladder cancer, cholecystic hyperplasia diseases | 5/each |
| Acute and chronic pancreatitis, pancreatic cancer | 2/each |
| Splenomegaly, splenic lymphoma | 2/each |
| Urologic system | Congenital renal dysplasia (ectopic kidney, renal fusion, renal agenesis), hydronephrosis, renal cyst, renal cell carcinoma, renal pelvic carcinoma, renal stones, nephritis, adrenal adenoma, pheochromocytoma | 2/each |
| Ureteral stone, hydroureter, ureteral neoplasm | 5/each |
| Residual urine test, bladder stones, bladder diverticulum, bladder tumor | 2/each |
| Reproductive system | Normal early, mid-term and late pregnancy, ectopic pregnancy, abortion, placenta previa, polyhydramnios, hypamnion, congenital uterine malformation, uterine fibroma, uterine adenomyosis, endometrial cancer, ovarian cysts and tumors (common type), pelvic inflammatory masses, benign prostatic hyperplasia, prostate cancer, prostatitis, testicular tumor (common type) | 2/each |
| Cardiovascular system | Congenital heart disease (common types), rheumatic valvular heart disease, dilated cardiomyopathy, hypertrophic cardiomyopathy, pericardial effusion, atherosclerotic occlusion of carotid, spinal and extremities artery, venous thrombosis of extremities | 2/each |
| Endocrine system | Goiter (simple, diffuse, nodular), hypothyroidism, thyroiditis, thyroid adenoma, thyroid cancer, parathyroid hyperplasia, parathyroid adenoma | 2/each |
| Others | Mastitis, breast fibroadenoma, breast hyperplasia, breast cancer, parotid gland cyst, mixed tumor of parotid gland, parotid gland | 1/each |

Note: The types of diseases and number can be altered according todifferent regions and hospitals, but the total number of cases and types of diseases should not be reduced.

* + - 1. **Nuclear Medicine**
         1. Preliminarily master the principles and operation of the imaging devices (SPECT or gamma camera); to master the principle of the nuclide generator,be able to carry out the labeling of commonly used radioactive drugs independently.
         2. Be familiar with the basic principles of radiation protection and the specific measures of internal and external protection.
         3. Preliminarily master the principle, operation and clinical significance of the uptake rate of 131I iodine. Understand the principle and operation of renogram, preliminarily master the analysis of common images.
         4. Understand the principle and progress of in vitro labeling immunoassay, the basic types and basic operation techniques of in vitro radioassay.
         5. In terms of radionuclide imaging,it is required to preliminarily master the imaging principle, methods, clinical application and image analysis of brain blood flow imaging, myocardial perfusion imaging, lung perfusion imaging, thyroid imaging and parathyroid imaging, andthebone imaging of whole body. Be familiar with the principle and clinical value of radionuclide imaging for neoplasms.
         6. Preliminarily master the mechanism of radionuclide therapy and the characteristics of various therapeutic nuclides. Master the principle, indication and contraindication of 131I therapy for hyperthyroidism, and be able to estimate the dosage accurately.
         7. Master the basic principles of protection of radionuclides.
         8. Complete the techniques of operation and report writing as listed in the following table.

|  |  |
| --- | --- |
| Disease/Operation | Case (Times) no.(≥) |
| Practical demonstration of radiation protection principles | 5 |
| Elution operation of radionuclide generator | 5 |
| Labeling of tracer | 5 |
| Determination of 131I uptake rate | 5 |
| Measurement of renogram and report writing | 5 |
| Participation in the dosage calculation of 131I therapy for hyperthyroidism | 5 |
| Participation in in vitro analysis (immunoassay or radioassay are preferred) | 5 |
| Operation of SPECT (under guidance of seniors) | 10 |
| Imaging preparation, collection, report of thyroid | 5 |
| Bone scan preparation, collection, report | 5 |
| Static myocardial imaging preparation, collection, report | 2 |
| Neoplastic FDG imaging preparation, collection, report | 2 |
| Imaging preparation, collection, report of lung perfusion | 2 |
| Imaging preparation, collection, report of cerebral blood perfusion | 2 |

Note: The types of diseases and number can be altered according to different regions and hospitals, but the total number of cases and types of diseases should not be reduced.

* 1. **Rotation in related departments**

According to the specific situations of trainees and training bases, continue the training in this discipline or rotation in the related departments.

* + 1. Aim of rotation
       1. Expand the scope of knowledge of medical imaging and nuclear medicine department;be familiar with the clinical knowledge related to the field of medical imaging; clarify the value and limitation of medical imaging and nuclear medicine in clinical diagnosis and treatment.
       2. On the basis of professional knowledge, be familiar with the diagnosis of clinical manifestations of various diseases in the field of medical imaging and nuclear medicine (symptoms, signs and laboratory tests), clarify their value for diagnosis and differential diagnosis of these diseases.
       3. Understand the clinical presentations of various diseases which can be diagnosed or treated by interventional radiology and nuclear medicine, and understand their application value and treatment method.
    2. Basic requirements
       1. **Rotation for internal medicine for 2 months**: To master the skill of routine history taking and physical examination, and be familiar with the clinical presentations, signs, laboratory tests and diagnosis of the following diseases:

|  |  |
| --- | --- |
| System | Disease |
| Respiratory, circulatory system | Bronchiectasis, bacterial pneumonia, lung abscess, pulmonary TB, lung cancer, rheumatic valvular heart disease, coronary heart disease, pericarditis |
| Digestive, renal system | Peptic ulcer (gastric and duodenal ulcer), digestive tract neoplasms (gastric and colorectal cancer), cirrhosis, hepatocellular carcinoma, pancreatitis, pancreatic cancer, various types of nephritis, renal failure, cystitis |
| Endocrinesystem | Various types of goiter, thyroid adenoma, thyroid cancer, metabolic diseases of bone, endocrine bone diseases |

* + - 1. **Rotation for surgery for 2 months**: It is required to master the aseptic technique, and be familiar with the clinical presentations, signs, laboratory tests, diagnosis, types of surgical treatment and the procedures for the following listed diseases:

|  |  |
| --- | --- |
| System | Disease |
| Thoracic and cardiac surgery | Lung cancer, esophageal cancer, mediastinal neoplasm, breast cancer, chest trauma, mitral valve replacement, aortic aneurysm |
| General surgery and urology | Gastric cancer, gastric ulcer, colorectal cancer, intestinal obstruction, cholecystitis and gallstone, biliary neoplasms, hepatocellular carcinoma, pancreatitis, pancreatic cancer, spleen injury, renal tumor, renal injury, adrenal tumor, bladder tumor |
| Orthopedics | Fracture (manual reduction, internal fixation), meniscus tear, intervertebral disc herniation, development adverse and congenital deformity, joint disease, bone infection, bone tumor or tumor-like lesions |

* + - 1. **Rotation in other departments for 2 months**: According to the profession of the trainees in the future, rotation in optional departments (choose 2 departments, including pediatrics, obstetrics and gynecology, neurology, neurosurgery, ENT, stomatology, ophthalmology)for 2 months is required.
         1. **Rotation in the department of pediatrics for 1 month**: To understand the characteristics of common pediatric diseases, the differences of presentations from those of adults, and be familiar with the clinical presentations, signs, laboratory tests and diagnosis of the following diseases:

|  |  |
| --- | --- |
| System | Disease |
| CNS | Intracranial infection (meningitis, brain abscess), intracranial tumor (common types), extrapyramidal system lesion (hepatolenticular degeneration) |
| Respiratory, circulatory system | Pediatric pneumonia, pediatric bronchiectasis, pediatric congenital heart diseases (common types) |
| Digestive, urologic system | Congenital digestive tract deformity (common types), pediatric acute abdomen (common types), hepatoblastoma, neuroblastoma, nephroblastoma |

* + - * 1. Rotation in the department of OBS/GYN for 1 month: To understand the methods of physical and laboratory examinations, and be familiar with the clinical presentations, signs, laboratory studies, diagnosis and treatment of the following listed diseases:

|  |  |
| --- | --- |
| Section | Disease |
| Obstetrics | Early pregnancy, ectopic pregnancy, fetal malformation, abnormal placenta, pregnancy complications (common types) |
| Gynecology | Endometriosis, uterine neoplasms (common types), ovarian neoplasms and tumor-like lesions (common types) |

* + - * 1. Rotation in the department of n**eurology for 1 month**: Be familiar with neurologic physical examination skills and common laboratory examinations, and the clinical presentations, signs, laboratory studies, diagnosis and treatment of the following listed diseases:

|  |  |
| --- | --- |
| Category | Disease |
| Cerebrovascular diseases | Cerebral hemorrhage |
| Cerebral infarction |
| Cerebral atrophy |
| Congenital craniocerebral abnormalities | Congenital brain anomalies (common types), Neurocutaneous syndromes (common types) |
| Cerebral degenerative diseases | Alzheimer’s disease, Parkinson’s disease |
| Demyelinating diseases | Wilson’s disease, multiple sclerosis |

* + - * 1. Rotation in the department of **neurosurgery for 1 month**: Be familiar with the clinical presentations, signs, laboratory studies, diagnosis and treatment of the following listed diseases:

|  |  |
| --- | --- |
| Category | Disease |
| Brain tumor | Glioma |
| Meningioma |
| Pituitary tumor |
| Metastatic tumor |
| Craniocerebral injury | Cerebral contusion and laceration |
| Intracerebral hematoma |
| Epidural and subdural hematoma |
| Intracranial infection and parasitic diseases | Brain abscess |
| Cerebral cysticercosis |
| Spinal cord diseases | Intraspinal tumor |
| Spinal cord injury |

* + - * 1. Rotation in the department of **ENT and stomatology for 1 month**: To understand the methods of routinephysical examination and endoscopic examinations of ENT and stomatology, and be familiar with the clinical presentations, signs, laboratory studies, diagnosis and treatment of the following listed diseases:

|  |  |
| --- | --- |
| Organ | Disease |
| Eye and orbital cavity | Inflammatory pseudotumor, retinoblastoma, lacrimal gland tumors, orbital foreign body |
| Ear | Congenital middle and inner ear malformations, otomastoiditis, middle ear cancer, temporal bone fracture |
| Nose and nasal sinuses | Acute and chronic sinusitis, sinus cysts and polyps, nasal and sinus tumors (common types) |
| Pharynx | Pharyngeal and parapharyngeal abscess, nasopharyngeal carcinoma |
| Larynx | Laryngeal carcinoma, laryngeal trauma |
| Oral and maxillofacial region | Odontogenic cyst, ameloblastoma, benign and malignant parotid tumors (common types) |

* + 1. **Specialized training in the tutor’s discipline**
       1. Aim of training

Further consolidate and enrich the professional theoretical knowledge, improve clinical practical abilities.

* + - * 1. Be able to understand the latest development of this specialty;
        2. Be able to preliminarily master the diagnosis and differential diagnosis of common diseases in this specialty, and accumulate the knowledge and practical experience about the therapeutic skills and operations.
        3. Understand and learn the professional scientific research methods, and under the guidance of a supervisor physician, do simple scientific research work.
      1. Basic requirements
         1. **Diagnostic medical imaging (including interventional therapy)**: Continue the rotation training in the five specialized groups (nerve, chest, abdomen, bone and joint, and interventional therapy) for 2-3 months for each group. Requirements are as follows:

Be able to further understand and master the theoretical knowledge of various imaging techniques, especially the function of post-processing of spiral CT, imaging principles, methods and clinical applications of various MRI sequences.

Be familiar with various quality control standards in order to further raise the level of imaging examination and diagnosis.

Preliminarily master the best choice of imaging study for different systems and different common diseases.

Be familiar with the diagnosis and differential diagnosis of the diseases listed in the following table (quantitative indicators), and to understand the best imaging method for the diagnosis of these diseases.

During the training period, the trainees are required to complete no less than 50 cases independently in digestive tract radiography.

For the interventional radiology,be familiar with the principles, instruments, materials, and basic operation procedures of intravascular interventional therapy and non-vascular interventional treatment, and as an assistant participating in interventional therapy, master the basic techniques of puncture, intubation, selective arteriography and puncture biopsy.

Completion of the following listed operations and reports writing is required.

Diseases to be learned and case number requirements:

|  |  |  |
| --- | --- | --- |
| System | Disease/Operation | Number of report/operation (≥) |
| Skull and CNS (mainly CT & MRI) | Brain tumor, glioma, meningioma, pituitary tumor, metastatic tumor | 5/each |
| Cerebrovascular disease: cerebral hemorrhage, cerebral infarction | 5/each |
| Head injury: intracranial hematoma, cerebral contusion and laceration | 5/each |
| Intracranial infection: brain abscess, meningitis, Cerebral cysticercosis | 2/each |
| Spine & spinal cord disorders: spinal stenosis, intervertebral disc herniation, intraspinal tumor | 2/each |
| The middle ear and mastoid lesions: acute and chronic inflammation, cholesteatoma | 5/each |
| Sinus disorders: sinusitis, sinus tumors, pharyngeal lesions | 2/each |
| Pharynx and larynx disorders: proliferation of adenoid hypertrophy, nasopharyngeal carcinoma, laryngeal cancer | 2/each |
| Orbital disorders: trauma, orbital tumors | 2/each |
| Respiration& circulation (mainly plain films and CT, MRI for mediastinal lesions) | Pleural disorders: pleural effusion; pneumothorax and liquid pneumothorax; pleural adhesions, hypertrophy and calcification | 2/each |
| Bronchial disorders: bronchiectasis, bronchial foreign body | 2/each |
| Pneumonia: lobar pneumonia, bronchial pneumonia, lung abscess, pulmonary TB | 2/each |
| Mediastinal tumors: thymoma, lymphoma, neurogenic tumor | 2/each |
| Heart & aorta disorders: hypertensive heart disease, rheumatic valvular heart disease, atrial septal defect, pericardial effusion, aneurysm, aortic dissection | 2/each |
| Digestive, urogenital system (mainly contrast radiography, CT and MRI) | Acute abdomen mainly with plain film and CT: Gastrointestinal perforation, intestinal obstruction, abdominal trauma, acute pancreatitis | 2/each |
| GI lesions mainly with radiography: esophageal varices, esophageal cancer, gastric and duodenal ulcers, gastric cancer, colorectal cancer | 2/each |
| Hepatobiliary and pancreatic diseases mainly with CT and MRI: Hepatocellular carcinoma, cavernous hemangioma of the liver, liver cirrhosis, biliary obstruction, pancreatic cancer | 2/each |
| Adrenal tumor, bladder cancer, benign prostate hyperplasia, prostate cancer, renal cancer, renal cyst, renal stone | 2/each |
| Pelvic disorders (mainly CT and MRI) | Uterine tumor, ovarian tumor | 2/each |
| Bone & Joint system (mainly Plain X-ray, CT, supplemented by MRI) | Trauma: fracture, joint dislocation | 2/each |
| Suppurative infection of bone and joint: pyogenic arthritis, pyogenic osteomyelitis, tuberculosis of joint and spine | 2/each |
| Bone tumors: osteoma, osteochondroma, giant cell tumor, osteosarcoma, bone metastases | 2/each |
| Degenerative joint disease: cervical spondylosis, lumbar degenerative changes, knee degenerative changes, femoral head necrosis | 2/each |
| Interventional operation | Intravascular: hepatic tumor, lung cancer, vascular stenosis | 2/each |
| Non-vascular: liver biopsy, transhepatic therapy, treatment for biliary stricture | 2/each |

* + - * 1. **Sonography**: Training in this specialized section to raise the abilities of clinical practice.

Requirements are as follows:

Further study and master the basic theory and clinical knowledge of this specialty, including interventional ultrasound and ultrasound therapy.

Combining with clinical practice, preliminarily master the operation method of interventional ultrasound; to understand the indication, value and limitation of ultrasound therapy for diseases of various systems.

Study and be familiar with clinical diagnostic ultrasound, diagnosis, differential diagnosis and writing reports for common diseases.

Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| Digestive System | |
| Disease | Case No.(≥) |
| Hepatitis, cirrhosis, fatty liver, liver abscess, hepatic hemangioma, hepatocellular carcinoma, liver metastasis | 3/each |
| Intrahepatic hematoma, hydatid disease of liver, liver schistosomiasis | 1/each |
| Gallbladder stone, bile duct stone, acute and chronic cholecystitis, gallbladder cancer, cystic hyperplasia disease | 3/each |
| Acute and chronic pancreatitis, pancreatic cancer | 1/each |
| Islet cell tumor, pancreatic metastasis | 1/each |
| Splenomegaly, splenic lymphoma | 3/each |
| Congenital anomaly of spleen (absence, polysplenia syndrome), splenic cyst, hemangioma of spleen, splenic metastasis | 1/each |
| Urologic System | |
| Disease | Case No.(≥) |
| Hydronephrosis, renal cysts, renal cell cancer, renal pelvic carcinoma, renal calculus, nephritis | 5/each |
| Congenital renal abnormalities (ectopic kidney, renal fusion, renal agenesis), renal ptosis and nephrospasis, perinephric abscess, renal tuberculosis, renal transplantation and its complications, renal failure | 1/each |
| Ureteral stone, hydroureter, ureteral neoplasm | 5/each |
| Ureteral stricture, ureteral cyst | 2/each |
| Bladder tumor, bladder stones, bladder diverticulum | 5/each |
| Adrenal tumor, adrenal metastasis | 3/each |
| Adrenocortical carcinoma, adrenal cysts, adrenal myelolipoma, adrenal tuberculosis | 1/each |
| Reproductive System | |
| Disease | Case No.(≥) |
| Normal early pregnancy, mid-term pregnancy and late pregnancy, abnormal pregnancy (various abortions, ectopic pregnancy, multifetation, post-term pregnancy and fetal growth retardation, fetal malformation, polyhydramnios, oligohydramnios, placenta previa, placental abruption, placenta increta), gestational trophoblastic diseases (hydatidiform mole, malignant hydatidiform mole, choriocarcinoma), congenital uterine malformation, uterine fibroids, uterine adenoma, adenomyosis, endometrial hyperplasia, endometrial cancer, ovarian cysts and tumors (common types), pelvic inflammatory masses, benign prostatic hyperplasia, prostatitis, prostate cancer, testicular tumor (common types) | 4/each |
| Cryptorchidism, testicular hypoplasia, epididymitis, orchitis, seminal vesicle cyst | 1/each |
| Cardiovascular System | |
| Disease | Case No.(≥) |
| Congenital heart disease (common types), rheumatic valvular disease, dilated and hypertrophic cardiomyopathy, pericardial effusion | 3/each |
| Pulmonary heart disease, coronary heart disease, constrictive pericarditis | 1/each |
| Atherosclerotic occlusion of the carotid, spinal and extremities arteries, venous thrombosis of extremities | 3/each |
| Carotid body tumor, thrombotic occlusive phlebitis | 1/each |
| Endocrine System | |
| Disease | Case No.(≥) |
| Goiter (simple, diffuse and nodular), hypothyroidism, thyroiditis, thyroid adenoma, thyroid cancer | 4/each |
| Parathyroid hyperplasia, parathyroid adenoma | 2/each |
| Others | |
| Disease | Case No.(≥) |
| Mastitis, breast hyperplasia, breast fibroadenoma, breast cancer | 3/each |
| Mumps, parotid mixed tumor, parotid gland carcinoma | 2/each |
| Salivary gland calculi, thyroglossal cyst | 2/each |
| Interventional Ultrasound (under the guidance of seniors) | |
| Disease | Case No.(≥) |
| Abdominal abscess aspiration drainage and tube drainage, renal biopsy, renal cyst puncture and sclerotherapy, prostate biopsy, amniotic cavity puncture, chorionic villi sampling, intravascular ultrasound | 1/each |

* 1. **Nuclear medicine: Continue training in the specialized discipline**
     1. Radionuclide imaging:
        1. Further master the principles and operation of imaging instruments (SPECT, gamma camera);
        2. Master the basic principles of radiation protection, the specific measures of internal and external protection, and the management principles after the leakage of radionuclides;
        3. Master the principles of SPECT cerebral blood flow imaging and image features of common diseases, be familiar with the principles and clinical application of cerebral metabolic imaging;
        4. Master the principles, methods and image analysis of thyroid imaging, be familiar with the principles, methods and image analysis of parathyroid gland and adrenal imaging;
        5. Be familiar with the principles and methods of myocardial perfusion imaging and the imaging features of common diseases;
        6. Be familiar with the principles and methods of pulmonary perfusion and pulmonary ventilation imaging and the diagnosis of pulmonary infarction;
        7. Understand the principles and method of bone imaging, the characteristics and clinical application of bone imaging;
        8. Be familiar with the principles and main indications of 18F-FDG positron emission tomography.
     2. Functional imaging:To be familiar with the principles, operation and clinical significance of 131I uptake rate measurement; master the principles, operation and common graphic analysis of the renogram.
     3. In vitro diagnosis:Be familiar with the principles, types and operation techniques of in vitro analysis, and master the clinical significance of the in vitro analysis of thyroid disease.
     4. Radionuclide therapy:Be familiar with the principles, indications and contraindication of 131I therapy for hyperthyroidism and estimate the dosage correctly. Understand the principles, indications and contraindication of 131I therapy for thyroid cancer.
     5. Complete the training of the following skills and reports writing.

Basic skill requirements and case requirements:

|  |  |  |
| --- | --- | --- |
| Disease/Operation | Case No.(≥) | |
| Management of simulated radionuclide contamination | | 5 |
| Patient tracer injection | | 10 |
| 131I uptake rate determination and reporting independently | | 5 |
| Performance of renogram and reporting independently | | 5 |
| 131I dosage measurement for therapy of hyperthyroidism | | 5 |
| 131I therapy for thyroid cancer | | 2 |
| SPECT operation independently | | 10 |
| Reports writing of thyroid scan | | 10 |
| Reports writing of parathyroid or adrenal scan | | 5 |
| Reports writing of bone scan | | 10 |
| Reports writing of static myocardial perfusion scan | | 5 |
| Reports writing of exercise stress or pharmacologic stress Myocardial perfusion imaging | | 5 |
| Myocardial viability detection | | 2 |
| Reports writing of FDG imaging for pulmonary neoplasms | | 5 |
| Reports writing of FDG imaging for other neoplasms | | 5 |
| Reports writing of lung perfusion scan for pulmonary embolism | | 5 |
| Reports writing of cerebral perfusion scan for epilepsy | | 2 |
| Brain metabolism or brain receptor imaging | | 2 |

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Oncology**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen inthe general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

Participate in the basic specialized training in oncology and general internal medicineis required. Master the basic clinical knowledge and skills of oncology and internal medicine. Complete medical records during the training course, be able to take history accurately, observe the change of disease course, perform generalized physical examinations. Be in charge of 1-3 sick beds when the trainees rotate in intensive care units, 6-9 sick beds in others, and be familiar with the routine and techniques of diagnosis and treatment of various departments. Understand the clinical characteristics of oncologic patients. Master the treatment principles of common neoplasms, mechanisms and toxic side effects of common anti-neoplastic medications, the diagnosis and management of complications of radiochemotherapy. Master the diagnosis and treatment of common medical and critical diseases.

**Rotation arrangement in departments:**

|  |  |  |
| --- | --- | --- |
| Department | Time (months) | Specialized training shouldnot beless than 12 months. According to the research direction, training in oncology or other related sections (including radiotherapy) |
| Cardiology (including CCU) | 2 |
| Respiratory Medicine (including RICU) | 2 |
| Gastroenterology | 2 |
| Hematology | 2 |
| ICU | 1 |
| Pathology | 1 |
| Medical Imaging | 1 |
| Total | 11 months |

1. **Training content and requirements**
   1. **Cardiology (including CCU)**
      1. Master the anatomy and physiology of cardiovascular system;understand the anatomy and functional characteristics of cardiac conduction system, basic knowledge of cardiac electrophysiology; understand the classification and mechanisms of arrhythmia.
      2. Master the classification, action characteristics and clinical application of common anti-arrhythmic medications, the role and clinical application of digitalis and other inotropic agents.
      3. Master the pathogenesis, clinical presentations, diagnosis, differential diagnosis and management of common arrhythmia, heart failure, hypertension, coronary heart diseases, valvular heart disease, myocarditis and cardiomyopathy; master the diagnosis and management of common cardiac emergency, such as myocardial infarction, cardiac arrest and Adams Stokes syndrome, acute left heart failure, hypertensive crisis, and hypokalemia or hyperkalemia inducted arrhythmia; master ECG, hemodynamic monitoring technology.
      4. Understand the treatment of pericardial diseases, the modern concept and management of heart failure, the classification and management of unstable angina.
      5. Master the operation of 12-lead ECG, recognize the artifacts and false impression, common ECG diagnosis (left and right ventricular hypertrophy, atrial hypertrophy, left, right bundle branch block, myocardial infarction, hypokalemia, hyperkalemia, sinus arrhythmia, sick sinus syndrome, escape rhythm, AV block, various premature beat, supraventricular tachycardia, atrial fibrillation, ventricular tachycardia, ventricular fibrillation), determination of peripheral venous pressure and X-ray image diagnosis of common heart diseases.
      6. Understand cardioversion, pericardial puncture, dynamic ECG, dynamic blood pressure and other non-invasive cardiac examination techniques.
      7. The requirements of work loading: The same as those for the other internal medicine graduates in the same training period.
   2. **Respiratory Medicine (including RICU)**
      1. Master the anatomy and physiology of respiratory system, pulmonary function test, arterial blood gas analysis, and CXR, the main features of respiratory diseases and their differential diagnosis of X-ray examinations.
      2. Master the etiology, pathogenesis, clinical classification and presentation, diagnosis, differential diagnosis and treatment of upper respiratory infection, acute and chronic bronchitis, obstructive emphysema, bronchial asthma, bronchiectasis, bacterial pneumonia, mycoplasma pneumonia, pulmonary fungal infection, benign lung tumor, pulmonary interstitial fibrosis, lung abscess, pulmonary tuberculosis, lung cancer, tuberculosis pleurisy, pneumothorax, hemoptysis, and respiratory failure.
      3. Master the skills of tuberculin test, oxygen supplement, suction of sputum, adjustment of ventilator, posture drainage, thoracocentesis, CXR and interpretation of CXR.
      4. Understand the techniques of fiberobronchoscopy, bronchoalveolar lavage, lung biopsy, and pleural biopsy.
      5. The requirements for the workload: The same as those for the other internal medicine graduates in the same training period.
   3. **Gastroenterology**
      1. Master the anatomy and physiobiological function (digestion, endocrine, immune) of digestive system, the etiology of chronic gastritis, pathogenesis of peptic ulcer,the relationship of Helicobacter pylori and gastritis and peptic ulcer,the pharmacologic function and clinical application of mucosal protectant, H2 blocker and proton pump inhibitor, the treatment of helicobacter pylori infection, the pathogenesis of cirrhosis, hepatic encephalopathy and portal hypertension, the reasons of ascites, its laboratory characteristics, methods of differentiation and management.
      2. Master the clinical presentation, diagnosis, differential diagnosis and treatment of common diseases of digestive system, such as reflux esophagitis, esophageal cancer, chronic gastritis, functional dyspepsia, peptic ulcers, gastric cancer, colorectal cancer, acute pancreatitis, cirrhosis, liver cancer, hepatic encephalopathy, jaundice, upper gastrointestinal bleeding, and tuberculous peritonitis.
      3. Understand the pathophysiology of ulcerative colitis, Crohn’s disease, chronic diarrhea and other common diseases.
      4. Master the techniques of abdominal paracentesis, the indication, contraindication and operation method of Sengstaken-Blakemore tube.
      5. Understand the analysis of gastric juice, the indication, contraindication and complications of duodenal drainage, gastroscopy, sigmoid colonoscopy, ERCP and liver biopsy;the indication and contraindication of concentrated ascites reinfusion therapy and radiography of digestive system.
      6. The requirements for the workload: the same as those for the other internal medicine graduates in the same training period.
   4. **Hematology**
      1. Be familiar with the characteristics of blood diseases and the mechanisms of bleeding and coagulation.
      2. Complete at least 3 medical records.
      3. Be familiar with the clinical presentation, etiology, laboratory studies, diagnosis, differential diagnosis and treatment principles of common diseases, including iron deficiency anemia, aplastic anemia, megaloblastic anemia, hemolytic anemia, etc.
      4. Master the etiology, diagnosis and treatment of thrombocytopenic purpura, laboratory examination and rescue measures of DIC, the indications of component transfusion and the treatment of various blood transfusion reactions.
      5. Master the principles of diagnosis and treatment of leukemia, the classification, diagnosis and treatment principles of lymphoma, the causes and treatment of bone marrow suppression.
      6. Master the indication, contraindication and operation techniques of bone marrow aspiration and cell morphology.
   5. **ICU**
      1. Master the types and treatment principles of shock; master the cause, clinical presentation, differential diagnosis and management of water electrolyte disorder and acid-base imbalance, and cardiac respiratory arrest.
      2. Master the effect, side effect and specific application method of rescue medications (cardiopulmonary resuscitation and vasoactive drugs, inotropic and diuretic, antispasmodic anti-asthmatic drugs, analgesics, hemostatic, anti-arrhythmic drugs, etc.)
      3. Understand the pathogenesis, etiology, diagnosis and management of multiple organ failure.
      4. Master the techniques of cardiopulmonary resuscitation, urinary catheterization, lumbar puncture, cardioversion, venous and arterial puncture, and intubation, etc.
      5. Understand the indications and methods of liver and kidney replacement therapy.
   6. **Pathology**
      1. Understand the significance and role of pathology in the diagnosis of tumor; understand the cardinal pathologic characteristics of neoplasms, and the main pathologic difference of benign and malignant tumors (including gross and histologic differences); understand and preliminarily master the techniques of pathology.
      2. Complete gross observation of tumor, general characteristic description, specimen sampling and processing; participate in the specimen observation, sampling and processing for 30-40 cases; master pathologic specimen preparation, procedures, and routine pathological techniques.
      3. Master the main pathological features of benign and malignant tumors; understand the pathological features of common neoplasms (breast cancer, lung cancer, gastric cancer and colorectal cancer, etc.), under the guidance of a supervisor, observe and learn 10 cases of each kind of neoplasms.
   7. **Medical Imaging**
      1. Understand radiological diagnostic techniques, routine of various examinations and radiological protection knowledge;preliminarily master the X-ray technology, chest X-ray diagnosis and CT diagnostic techniques.
      2. Master the signs of X-ray and CT scan of common chest, abdominal diseases and benign, malignant neoplasms.
      3. Complete some reports of X-ray and CT scan of chest and abdominal radiologic examinations.
      4. Understand the CT image structure of the pelvic organs and the signs of benign and malignant tumors.
   8. **Oncology: Training content and requirements**

Oncology (Chemotherapy)

* + 1. Fundamentals
       1. Master:
          1. The medical treatment of emergency such as superior vena cava syndrome of lung cancer, gastric cancer, esophageal cancer, breast cancer, colorectal cancer, liver cancer, soft tissue tumor, and malignant lymphoma.
          2. The classification of chemotherapeutic agents and their mechanisms of action.
          3. The basic principles of the design of chemotherapy.
          4. The common toxic side effects of chemotherapeuticagents, their grading and management.
          5. The concept of comprehensive treatment of tumor, the principles of comprehensive treatment of common tumors and the commonly used chemotherapy.
          6. The indication of adjuvant chemotherapy for breast and colorectal cancer.
          7. TNM staging of breast and lung cancer.
          8. Three-step analgesic ladder pain management.
          9. Common tumor markers and their clinical significance.
          10. Cycle theory of cell proliferation, causes of cancer drug resistance and solutions.
          11. The pathologic classification, grading and staging of neoplasms.
          12. Methods of clinical trials for new anti-neoplastic medications.
          13. The indication and method of comprehensive treatment of common neoplasms.
          14. The TNM staging for common neoplasms.
          15. The management after initial treatment failure for common neoplasms.
          16. The less common adverse effectsof anti-neoplastic agents.
          17. Paraneoplastic syndrome.
       2. Understand:
          1. The reason of drug resistance and the solution to the resistance.
          2. Cycle theory of cell proliferation.
          3. Research methods of cancer etiology and epidemiology.
          4. The pathologic classification, histologic grading and staging for common neoplasms.
          5. Gene therapy, target therapy, interventional therapy, immunotherapy, and antiangiogenic therapy for cancer.
          6. Bone marrow transplantation and peripheral blood hematopoietic stem cell transplantation for the treatment of malignant solid tumors.
    2. Clinical skills
       1. Master:
          1. The indications, contraindications and operation methods of bone marrow puncture, thoracic and abdominal paracentesis; interpretation of CXR, chest and abdominal CT, and pelvic CT scan; operations for fine needle aspiration and smear examination.
          2. Accurately completestandardized oncologic admission notes.
       2. Understand:

Indication, contraindication and operation method of the catheter drainage of serous cavity and renal tumor biopsy, interpretation of head and neck CT scan.

* + - * 1. Be familiar with the knowledge of respiratory system, digestive system, gynecologic surgical anatomy and its basic content.
        2. Be familiar with the classification and treatment principles of lung cancer (such as non-small cell lung cancer, small cell lung cancer).
        3. Be familiar with the principles and plans of chemotherapy for common gastrointestinal cancers, such as gastric cancer and colorectal cancer.
        4. Be familiar with the plan of chemotherapy for common homological diseases (such as lymphoma, leukemia).
        5. Be familiar with the plan of chemotherapy and principles of endocrine therapy for breast cancer.
        6. Be familiar with the treatment plans for gynecologic cancers (such as ovarian cancer, cervical cancer).

**Oncology (Radiotherapy)**

* + 1. Fundamentals
       1. Master:
          1. The four principles of clinical dosimetry of radiotherapy, TNM staging of common neoplasms.
          2. The characteristics of lymphatic drainage and clinical presentation of common neoplasms (nasopharyngeal carcinoma, lung cancer, breast cancer, esophageal cancer, malignant lymphoma, colorectal cancer, etc.), the principles, techniques, precautions and management of complications of radiotherapy.
          3. The principles of comprehensive management of common cancers.
       2. Understand:
          1. The physical characteristics and the basic concepts of radiation biology of high energy X-ray and electron line.
          2. The clinical characteristics, treatment principles, principles and techniques of radiotherapy of the head and neck neoplasms (pharynx cancer, laryngeal cancer, maxillary sinus cancer, etc.), tumor of the nervous system, soft tissue sarcoma, pediatric tumor, and gynecologic tumors.
          3. The principles of chemotherapy for common tumors, the mechanisms of common chemotherapeutic drugs and their adverse effects.
    2. Clinical skills
       1. Master:
          1. The correct method for the interpretation of CXR, CT of head and neck, chest, abdomen, pelvic.
          2. Techniques of thoracentesis, abdominal paracentesis, bone marrow aspiration, lumbar puncture and lymph node aspiration.
       2. Understand:
          1. Puncture of subclavian vein, puncture biopsy of deep sited tumor.
          2. The correct method for the interpretation of MRI of common neoplasms.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should notbe arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Emergency Medicine**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations arearranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

**Rotation schedules in related departments:**

|  |  |  |
| --- | --- | --- |
| **Department** | **Time (month)** | Training time for clinical skills of Emergency Medicine should not beless than 22 months. |
| Respiratory Medicine | 2 |
| Cardiovascular Medicine | 2 |
| Neurology | 1 |
| Other internal medicine (digestion, hematology, endocrinology, nephrology (including hemodialysis), etc.) | 2 |
| General Surgery | 2 |
| Orthopedics, Neurosurgery | 1 |
| Anesthesiology | 1 |
| Total | 11 |

Total rotation time should be at least 11 months. After rotation in the related departments,the trainees participate in the clinical skills training of emergency medicine for noless than one year.

1. **Training content and requirements**

General rules: Master the common diseases closely related to emergency medicine and their diagnosis and treatment; be familiar with the diagnosis and treatment of common diseases in each related department although they are not so related to emergency medicine; understand the diagnosis and treatment of rare diseases (including treatment with high risk and high technology).

* 1. **Respiratory Medicine / RICU**
     1. Aim of rotation
        1. Master: The etiology, pathophysiology, clinical presentation, diagnosis, differential diagnosis and treatment of bronchial asthma, bronchiectasis, chronic obstructive pulmonary disease, pulmonary heart disease, hemoptysis, pneumothorax, pleuritis, pleural effusion, acute respiratory distress syndrome (ARDS), respiratory failure, pulmonary thromboembolism, etc.;master the methods of oxygen therapy; master common clinical operation techniques; master arterial blood gas analysis and interpretation the CXR of common lung diseases.
        2. Be familiar with: The clinical presentation, diagnosis and treatment of acute tracheobronchitis, acute pneumonia, and pneumocystis carinii pneumonia, etc;know the clinical significance of common parameters of pulmonary function tests.
        3. Understand: The diagnosis and treatment of sleep apnea syndrome, pulmonary neoplasm, etc.; understand the indication and contraindication of bronchoscopy and bronchoalveolar lavage.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 5 admission notes.

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Acute tracheobronchitis | 2 |
| Bronchial asthma | 2 |
| Bronchiectasis | 2 |
| Acute pneumonia | 2 |
| COPD / pulmonary heart disease | 2 |
| Hemoptysis | 2 |
| Pleuritis / pleural effusion | 2 |
| Pneumothorax | 1 |
| ARDS / Respiratory failure | 4 |
| Pulmonary thromboembolism | 1 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Sampling of arterial blood | 5 |
| Thoracocentesis (aspiration of air / fluid) | 10 |
| Chest closed drainage | 5 |
| Non-invasive mechanical ventilation | 5 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Lung abscess | 1 |
| Pneumocystis carinii pneumonia | 1 |
| Pulmonary neoplasm | 2 |
| Interstitial pulmonary disease | 2 |
| Sleep apnea syndrome | 1 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Pulmonary function test | 2 |
| Pulmonary thrombolysis | 2 |
| Bronchoscopy (observation) | 2 |
| Bronchoalveolar lavage (observation) | 2 |

* 1. **Cardiovascular Medicine / CCU**
     1. Aim of rotation
        1. Master: The etiology, pathophysiology, clinical presentation, diagnosis, differential diagnosis and treatment of acute coronary syndrome, heart failure, primary hypertension, arrhythmia, acute myocarditis and acute pericarditis;master the indication and application method of common cardiovascular medications; master ECG examination and diagnosis; master antithrombotic and thrombolysis; master defibrillation and cardioversion.
        2. Be familiar with: The etiology, pathophysiology, clinical presentation, diagnosis, and treatment of infective endocarditis, valvular heart diseases, constrictive pericarditis, congenital heart diseases, and peripheral vascular diseases, etc.; be familiar with the indications and principles of emergent percutaneous coronary angioplasty (PTCA) and other interventional therapies; be familiar with dynamic ECG; be familiar with pericardial puncture; be familiar with cardiac pacing.
        3. Understand: The diagnosis and treatment of secondary hypertension, endocarditis due to prosthetic heart valves and intravenous drug abuse, cardiomyopathy, and cardiac neurosis, etc.; understand echocardiography; understand radiofrequency catheter ablation.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 5 admission notes.

|  |  |
| --- | --- |
| **Diseases** | **Case no.(≥)** |
| Acute myocarditis | 2 |
| Acute coronary syndrome | 10 |
| Acute pericarditis | 2 |
| Primary hypertension | 5 |
| Arrhythmia | 5 |
| Heart failure | 5 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| ECG examination | 20 |
| Emergent thrombolysis | 4 |
| Defibrillation and Cardioversion | 5 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Valvular heart disease | 2 |
| Infective endocarditis | 1 |
| Constrictive pericarditis | 1 |
| Congenital heart disease | 2 |
| Peripheral vascular disease | 2 |
| Secondary hypertension | 2 |
| Endocarditis due to prosthetic heart valves and intravenous drug abuse | 1 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Pericardial puncture | 2 |
| Cardiac pacing | 2 |
| Cardiac interventional therapy (observation) | 2 |
| Radiofrequency catheter ablation (observation) | 2 |

* 1. **Neurology**
     1. Aim of rotation
        1. Master: The etiology, pathophysiology, clinical presentation, diagnosis, differential diagnosis and treatment of cerebrovascular accident, increased intracranial pressure, epilepsy, polyradiculitis, and myasthenia gravis, etc.; master systemic neurological physical examinations; master diagnosis of cerebrospinal fluid and neurologic imaging (such as CT); master lumbar puncture.
        2. Be familiar with the etiology, clinical presentation, diagnosis, and treatment of infection of central nervous system, cranial nerve diseases, and demyelinating disease, etc.; be familiar with the clinical application and results analysis of MRI and transcranial Doppler (TCD).
        3. Understand: Diagnosis and treatment of brain tumor; understand interventional therapies of cerebrovascular diseases.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 5 admission notes.

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Cerebral infarction | 5 |
| Cerebral hemorrhage | 5 |
| Subarachnoid hemorrhage | 2 |
| Increased intracranial pressure | 4 |
| Infection of CNS | 2 |
| Polyradiculitis | 1 |
| Myasthenia gravis | 1 |
| Epilepsy | 1 |

* + - 1. Basic skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Systemic neurologic physical examinations (Localization of neuropathy) | 10 |
| Lumbar puncture | 2 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Headache | 5 |
| Cranial nerve disease | 1 |
| Demyelinating disease | 1 |
| Brain tumor | 2 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Interventional therapy (observation) | 2 |
| Thrombolysis | 3 |

* 1. **Other Internal Medicine Sections (gastroenterology, hematology, endocrinology, nephrology, etc.)**
     1. Aim of rotation
        1. Master: The etiology, pathophysiology, clinical presentation, diagnosis, differential diagnosis and treatment of gastrointestinal bleeding, hepatic encephalopathy, acute pancreatitis, DIC, hemorrhagic diseases, diabetes mellitus, hyperthyroidism, and renal failure, etc.; master the methods of abdominal paracentesis and application of Sengstaken-Blakemore tube; master indications, contraindications and operation methods of lumbar puncture.
        2. Be familiar with: The clinical presentation, diagnosis and treatment of peptic ulcer, infectious diarrhea, cirrhosis, anemia, urinary tract infection, SLE, endocrine adenoma, hypersplenism, and thrombocytopenic purpura, etc.; be familiar with the indications, contraindications and complications of gastroscopy and liver biopsy.
        3. Understand: The diagnosis and treatment principles of leukemia, aplastic anemia, glomerulonephritis, various tumors and gout; understand he bone marrow image of hematologic diseases; understand the principles and method of various laboratory examinations for bleeding and coagulation function; understand the requirements of the preservation of endocrine specimens.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 5 admission notes.

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Gastrointestinal bleeding | 2 |
| Cirrhosis and hepatic encephalopathy | 1 |
| Acute pancreatitis | 2 |
| Anemia | 1 |
| Hemorrhagic disease | 1 |
| Diabetes mellitus | 2 |
| Hyperthyroidism | 1 |
| Acute renal failure | 2 |
| DIC | 1 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Abdominal paracentesis | 5 |
| Bone marrow aspiration | 2 |
| Hemostasis by Sengstaken-Blakemore tube | 2 |
| Gastroscopy (as an assistant) | 2 |
| Liver biopsy (observation) | 1 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Peptic ulcer | 1 |
| Infectious diarrhea | 2 |
| Glomerulonephritis | 1 |
| Urinary tract infection | 2 |
| Thrombocytopenic purpura | 1 |
| Leukemia | 1 |
| Hypersplenism | 1 |
| Endocrine adenoma | 1 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Gastroscopy | 2 |
| Liver biopsy (observation) | 1 |

* 1. **General Surgery(mainly abdominal surgery)**
     1. Aim of rotation
        1. Master: The etiology, clinical presentation, diagnosis, differential diagnosis and surgical treatment of common abdominal trauma, acute abdomen (appendicitis, inguinal hernia, hollow organ perforation, intestinal obstruction, acute hemorrhagic necrotizing pancreatitis, acute obstructive suppurative cholangitis, peritonitis, etc.), and gastrointestinal bleeding, etc.; master basic surgical procedures (incision, hemostasis, ligation, debridement and suturing, etc.); master the methods to estimate the area and depth and emergent management of burn injury; master the cut-down of peripheral vein and artery; master aseptic techniques; master the method of wound dressing; master urinary catheterization; master diagnostic abdominal paracentesis, etc.
        2. Be familiar with: The diagnosis and surgical management of acute cholecystitis, cholelithiasis, peptic ulcer, and urolithiasis; be familiar with exploratory laparotomy; be familiar with the interpretation of abdominal imaging studies (plain X-ray film, ultrasonography, CT, etc.).
        3. Understand: Diagnosis and principles of management of abdominal neoplasms.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 5 admission notes.

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Abdominal trauma | 5 |
| Burn injury | 2 |
| Acute appendicitis | 5 |
| Inguinal hernia | 1 |
| Acute cholecystitis | 2 |
| Acute intestinal obstruction | 2 |
| Hollow organ perforation | 2 |
| Acute hemorrhagic necrotizing pancreatitis | 2 |
| Acute obstructive suppurative cholangitis | 2 |
| Acute peritonitis | 2 |
| Acute massive upper GI bleeding | 2 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| **Skill or Operation** | **Case no.(≥)** |
| Appendectomy (operator or first assistant) | 5 |
| Inguinal hernia repair (operator or first assistant) | 5 |
| Cut-down of vein or artery (operator) | 5 |
| Diagnostic abdominal paracentesis | 5 |
| Urinary catheterization | 15 |
| Exploratory laparotomy (first assistant) | 2 |
| Repair of gastrointestinal perforation (first assistant) | 5 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Cholelithiasis | 2 |
| Peptic ulcer | 2 |
| Urolithiasis | 2 |
| Abdominal neoplasm | 4 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill or Operation** | **Case no.(≥)** |
| Cholecystectomy (second assistant) | 4 |
| Exploration of common bile duct (second assistant) | 2 |
| Exploratory laparotomy for liver, spleen rupture (second assistant) | 5 |

* 1. **Orthopedics, Neurosurgery, etc.**
     1. Aim of rotation
        1. Master: The pathophysiology, clinical presentation, diagnosis and management of common close or open injuries (cranial, spinal, extremities, chest, etc.); master the assessment of the severity of trauma; master the emergency scene management; master the examination methods and imaging diagnostic methods of various departments; master debridement and suturing.
        2. Be familiar with: The diagnosis and management of severe multiple trauma and combined injury; be familiar with diagnostic imaging such as MRI and CT.
        3. Understand: open chest cardiac resuscitation.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 5 admission notes.

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Craniocerebral injury | 4 |
| Chest injury | 4 |
| Fracture of extremities | 5 |
| Joint dislocation | 2 |
| Pelvic fracture | 2 |
| Spinal injury | 2 |
| Urologic injury | 2 |
| Maxillofacial injury | 2 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| **Skill or Operation** | **Case no.(≥)** |
| Assessment ofseverity of trauma (trauma score, Glasgow coma score, etc.) | 10 |
| Debridement and suturing | 5 |
| Manual reduction of dislocation | 5 |
| Immobilization of cervical spine | 4 |
| Reduction and fixation fracture of extremities (as first assistant) | 10 |
| Thoracic closed drainage (operator or 1st assistant) | 5 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Severe multiple trauma | 2 |
| Severe combined trauma | 2 |
| Traumatic shock | 3 |
| Fat embolism syndrome | 1 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill or Operation** | **Case no.(≥)** |
| Cranial drilling (as 1st assistant) | 5 |
| Thoracotomy (as 1st assistant) | 5 |

* 1. **Anesthesiology**
     1. Aim of rotation
        1. Master: The indications and methods of local infiltrative anesthesia; master diagnosis and treatment of intoxication of local anesthetics; master determination of the degree of difficulty in tracheal intubation and the method of rapid tracheal intubation; master the techniques of vital signs monitoring; master respiratory and circulatory support technology; master the method and implementation of volume resuscitation.
        2. Be familiar with: The indications, choices of drugs and application methods of common sedatives, analgesics and muscle relaxants; be familiar with emergent management of anesthesia accident.
        3. Understand: Indications and complications of general anesthesia and spinal anesthesia.
     2. Basic requirements
        1. Cases to be learned and number requirements as listed below; complete at least 5 medical records.

|  |  |
| --- | --- |
| **Anesthesia Implementation and Management** | **Case no.(≥)** |
| Management of local anesthesia | 2 |
| Management of spinal anesthesia | 10 |
| Management of general anesthesia | 10 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| **Skill or Operation** | **Case no.(≥)** |
| Peripheral nerve block | 2 |
| Jaw-thrust (open airway) | 10 |
| Manual ventilation (use anesthesia machine) | 5 |
| Balloon mask breathing apparatus | 5 |
| Rapid tracheal intubation | 10 |
| Arterial cannulation | 5 |
| ECG monitoring | 10 |
| Pulse oximetry | 10 |
| Invasive blood pressure monitoring | 10 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Anesthesia Implementation and Management** | **Case no.(≥)** |
| Implementation of spinal anesthesia | 2 |
| Implementation of general anesthesia | 2 |
| Brachial plexus nerve block | 2 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Mechanical ventilation (anesthesia machine) | 10 |
| Controlled hypotension | 2 |
| Central venous catheterization | 2 |

* 1. **Emergency Medicine: Training content and requirements**
     1. Aim of rotation
        1. Master: The differential diagnosis and emergent management of common symptoms such as fever, abdominal pain and conscious disturbance; master diagnosis and emergent management of acute poisoning, cardiac arrest, acute coronary syndrome, acute hypertension crisis, serious arrhythmia, heart failure, aortic dissecting hematoma, cerebrovascular accident, increased intracranial pressure, respiratory arrest, respiratory failure, pulmonary encephalopathy, acute respiratory distress syndrome, status asthmaticus, acute pulmonary embolism, massive gastrointestinal hemorrhage, hepatic coma, ketoacidosis, hyperosmolar coma, renal failure, various endocrine crises, heatstroke and drowning, massive vaginal bleeding, precipitate labor, various shocks, various traumas, and acute abdomen etc.; master the indications, results and clinical significance of the selection of the auxiliary examinations of common emergency; master the indications, effects, side effects and methods of application of commonly used emergency medicines; master common first aid equipment and diagnosis and treatment technology such as basic life support, advanced life support, basic trauma life support, advanced trauma life support, electrocardiogram, tracheal intubation, first aid ventilator, electric defibrillation and percutaneous cardiac pacing, gastric lavage, etc.
        2. Be familiar with: The diagnosis and emergent management of various infectious diseases; be familiar with emergent interventional therapies, techniques of IABP.
        3. Understand: The latest technology and treatment of all kinds of first aid.
     2. Basic requirements
        1. Diseases to be learned and case number requirements as listed below; complete at least 10 inpatient medical records and 10 admission notes.

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Acute poisoning | 10 |
| Cardiac arrest | 10 |
| Acute coronary syndrome | 10 |
| Hypertensive crisis | 5 |
| Serious arrhythmia | 10 |
| Heart failure | 10 |
| Aortic aneurysm hematoma | 2 |
| Cerebrovascular accident | 15 |
| Increased intracranial pressure | 10 |
| Respiratory arrest | 10 |
| Respiratory failure | 10 |
| Pulmonary encephalopathy | 10 |
| Acute respiratory distress syndrome | 10 |
| Status asthmaticus | 10 |
| Acute pulmonary embolism | 5 |
| Massive GI bleeding | 10 |
| Hepatic coma | 5 |
| Ketoacidosis | 5 |
| Hyperosmotic coma | 2 |
| Renal failure | 5 |
| Various endocrine crises | 10 |
| Heatstroke | 2 |
| Drowning | 1 |
| Massive vaginal bleeding | 5 |
| Precipitate labor | 5 |
| Various shocks | 10 |
| Various traumas | 30 |
| Acute abdomen | 15 |

* + - 1. Clinical skill requirement

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Cardiopulmonary resuscitation | 50 |
| Gastric lavage | 5 |
| Thoracocentesis and abdominal paracentesis | 10 |
| Chest closed drainage | 5 |
| Lumbar puncture | 5 |
| Defibrillation / cardiac pacing | 10 |
| Percutaneous cardiac pacing | 2 |
| Tracheal intubation | 10 |
| Emergency percutaneous airway opening | 2 |
| Cricothyrotomy (needle / surgery) | 2 |
| Surgical debridement and suturing | 30 |
| Central venous catheterization (including PICC) | 10 |
| Reduction and fixation of fracture | 10 |
| Hemostatic bandage | 5 |
| Immobilization of spine | 5 |
| Use of balloon respirator | 20 |
| Application of ventilator | 20 |
| Emergent thrombolysis | 10 |
| Fundus examination | 5 |
| Ambulance services | 10 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Various infectious diseases | 100 |
| Neoplastic emergency | 10 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Emergent interventional therapies | 5 |
| Aspiration drainage of intracranial hematoma | 2 |
| Bedside hemodialysis | 5 |

* 1. **ICU (Emergency Medicine)(not less than 3 months)**
     1. Aim of rotation
        1. Master: The etiology, pathophysiology, clinical presentation, diagnosis, differential diagnosis and treatment of shock, acute organ dysfunction, multiple organ dysfunction syndrome, cardiac arrest, respiratory arrest, severe body fluid internal environment disturbance, etc.; master the application of common life support techniques (circulatory respiratory support, nutritional support, etc.) and first-aid skills; master the operation and application of various monitoring instruments and rescue equipment (defibrillator, ventilator, etc.); master the application and operation of common monitoring techniques (body temperature, arterial oxygen saturation, end tidal carbon dioxide partial pressure, ECG, blood pressure, blood gas analysis, etc.)
        2. Be familiar with: The indications and operation methods of blood purification technology (blood perfusion, CRRT, etc.), Swan-Ganz catheter and cardiac output monitoring; be familiar with the indications and application of artificial hypothermia.
        3. Understand: The indications and operation method of intra-aortic balloon pump (IABP).
     2. Basic requirements
        1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| All kinds of organ dysfunction | 10 |
| Acute respiratory distress syndrome (ARDS) | 2 |
| Multiple organ dysfunction syndrome (MODS) | 5 |
| Shock | 5 |
| Cardiac / Respiratory arrest | 5 |

* + - 1. Clinical skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Use of monitoring equipment | 30 |
| Central venous catheterization | 5 |
| Peripheral arterial cannulation | 5 |
| Arterial blood sampling | 10 |
| Use of ventilator | 10 |
| Defibrillation and cardioversion | 2 |

* + 1. Further requirements
       1. Diseases to be learned and case number requirements:

|  |  |
| --- | --- |
| **Disease** | **Case no.(≥)** |
| Post-resuscitation syndrome | 5 |
| Multiple organ dysfunction syndrome | 2 |

* + - 1. Clinical knowledge and skills requirements:

|  |  |
| --- | --- |
| **Skill** | **Case no.(≥)** |
| Blood purification technology | 2 |
| Artificial hypothermia | 2 |
| Temporary cardiac pacing | 2 |

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research,and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

Training program for clinical Master of Medical Laboratory Science

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

It is required to rotate in sections of hematology, infectious diseases, oncology, pathology and blood and bone marrow laboratories before the trainees receivetraining in the discipline of medical laboratory. Totally, seven specialized sections include clinical basics, clinical chemistry, clinical immunology, clinical hematology, clinical microbiology, emergency and molecular biology examination. When they rotate in related departments, they should participate in their ward rounds, mainly for hematology, oncology and infectious diseases. They are required to participate in 12 divisions’ward rounds and 3 departments’ ward rounds within 3 years’ training time.

Rotation schedules:

|  |  |
| --- | --- |
| Department (Specialty) | Time (month) |
| Hematology | 1 |
| Infectious diseases | 1 |
| Oncology | 1 |
| Pathology | 1 |
| Blood laboratory | 1 |
| Clinical basic examination | 3 |
| Clinical chemical examination | 3 |
| Clinical immunologic examination | 3 |
| Clinical hematologic examination | 3 |
| Clinical microbiologic examination | 3 |
| Emergency laboratory | 3 |
| Molecular biologic examination | 3 |

1. **Training content and requirements**
   1. **Clinical basic examination (Routine)**
      1. Fundamentals

Master:

* + - 1. Collection and anticoagulation of blood samples (techniques of capillary and venous sampling, selection of different anticoagulants).
      2. Manual and automatic blood cell analyzer for the examination of red blood cells, hemoglobin, white blood cells and platelets; application and results interpretation of various parameters of blood analysis; quality control and quality control chart for blood cell analysis.
      3. Morphological examination of blood smears, including the changes of white blood cells and abnormal red blood cells in infection, poisoning, etc.; malarial parasite examination.
      4. Erythrocyte sedimentation rate, reticulocytes count and eosinophils count.
      5. Physical and chemical examinations of urine, microscopic examinations of urinary sediment; the characteristics and differential diagnosis of urinary examinations in urologic diseases; pregnancy test with urine; 24h urine protein and sugar quantitative examination; test of chyluria; Bence Jones protein examination; Addis count; Hemosiderin examination.
      6. Application and results interpretation of automatic urine dry biochemical analyzer and urine sediment analyzer.
      7. Stool appearance description and microscopic examination; stool characteristics and differential diagnosis of digestive tract diseases; stool occult blood test.
      8. Determination of the appearance, color, transparency, protein, sugar, and chloride of cerebrospinal fluid; cell count and differential count; differential diagnosis of cerebrospinal fluid in diseases of different nervous systems.
      9. Examination of the appearance, color, specific gravity, protein, cell count and morphology of serous effusion; differentiation of the exudate and transudate.

Understand:

* + - 1. The principle of design, structure and precaution of usage of automatic blood cell analyzer and urine automatic analyzer.
      2. The quality control method of urine examination.
      3. Method and clinical application of examination of gastric juice, duodenal juice and bile.
    1. Basic skills:

Master:

Capillary and venous sampling of blood; calibration of 721 spectrophotometers; calibration, operation and maintenance of automatic blood cell counter; blood cell histogram analysis; calibration of automatic urine analyzer, result analysis, operation and maintenance; application of urine refraction instrument.

Understand:

The principle and application of osmometer and automatic urinary sediment analyzer.

* 1. **Hematologic examination**
     1. Fundamentals

Master:

* + - 1. Theory of blood cell development; changes of blood cell morphology and immune phenotype; the mechanisms, clinical presentations, characteristics of laboratory examinations and differentiation of essentials of various types of anemia; MICM classification theory of leukemia and its clinical application; theory of hemostasis and thrombosis; diagnosis, differential diagnosis and laboratory examinations of platelet dysfunction and various coagulation disorders.
      2. Design principles of coagulation analyzers; Methodology and characteristics of the chromogenic substrate method and turbidimetry for the determination of coagulation factors.

Understand:

* + - 1. The theory and results interpretation of blood rheology;
      2. The principle of flow cytometry and the significance of each parameter.
    1. Basic skills

Master:

* + - 1. Bone marrow smear;
      2. The chemical stain and result interpretation of various cells.
      3. The application and maintenance of coagulation analyzer, platelet adhesion aggregation analyzer and blood viscometer.

To understand: Blood cell immunofluorescence staining.

* 1. **Chemicalexamination**
     1. Fundamentals

Master:

* + - 1. The physiologic changes and the significance of metabolites in the diagnosis of three major metabolism diseases.
      2. Bone metabolism-related elements and major trace elements and vitamin metabolism.
      3. The theory of water, electrolyte and acid-base balance, the determination of their imbalance.
      4. Methodology and principles, reference values, clinical significance and methodological assessment of all biochemical tests.
      5. The occurrence mechanism of abnormal detection values of all biochemical tests.
      6. The theory of serum enzyme and the related theory of enzyme kinetic method determination, experimental design and methodological assessment.
      7. Theory and application of reference values, medical decision level and quality control

Understand:

* + - 1. Changes of physiological metabolism hormones in children and pregnant women and its related reference value and clinical significance.
      2. The relationship between some diseases and genetic phenotype and the related research trends.
      3. Hormone metabolism and regulation and its related diseases.
    1. Basic skills
       1. Master:
          1. The use of analysis balance, pH meter, and centrifuge.
          2. The application and maintenance of automatic analyzer.
          3. Preparation of biochemical reagents.
          4. The indoor and outdoor quality assessment index of biochemical room, problem analysis and improvement measures.
       2. Understand: The program designation of automatic biochemical analyzer.
  1. **Immunologic examination**
     1. Fundamentals
        1. Master:
           1. Antigen specificity, antigenic determinants and classification of antigens.
           2. The structure and function of immunoglobulin.
           3. The activation and suppression of complement system.
           4. The development and function of immune cells.
           5. Types, processes and regulation of immune response.
           6. Various types of allergic reactions.
        2. Understand:
           1. Immunoglobulin supergene family.
           2. Immunoglobulin gene and gene engineering antibody.
           3. Gene rearrangement of immunoglobulin and T cell receptor.
           4. Molecular genetics of MHC.
           5. Function of lymphokines.
           6. Related theories and special examinations of autoimmune diseases, immune proliferation diseases, immune deficiency diseases and transplantation immunity.
     2. Basic skills:
        1. Master:
           1. Preparation of immunogen and antiserum, method for determination of titer.
           2. Preparation technology of monoclonal antibody.
           3. The principle, method of detection and clinical significance of enzyme immunoassay, fluorescence immunoassay, agglutination test, and precipitation reaction.
           4. The techniques of immunohistochemistry.
           5. Testing and application of MHC and HLA.
           6. The principle, operation, and maintenance of the full automatic microplate reading instrument, the fluorescent immunoassay analyzer and the radioimmunoassay analyzer.
           7. Principle, operation, and maintenance of the rate nephelometer.
           8. Immunoelectrophoresis techniques.
           9. Flow cytometry analysis technique and its application.
        2. Understand:
           1. Preparation of solid phase enzyme immunoassay, selection of the optimum working concentration and standardization of the method.
           2. Automated microparticle enzyme immunoassay analyzer.
           3. Isolation techniques of immune cells.
           4. Lymphocyte count and function test.
           5. Phagocytic function test.
           6. Detection and application of autoantibodies.
  2. **Microbiologic examination**
     1. Fundamentals
        1. Master:
           1. Physiology, genetics, variation, morphology, pathogenicity and the influence of the external environment oncommon clinical bacteria.
           2. Physiological classification of common clinical bacteria.
           3. Gram staining and acid fast staining principle, test procedure and interpretation of results.
           4. Process and quality control of examinations for common clinical bacteria.
           5. Classification, characteristics, genetic variation and pathogenicity of common clinical fungi.
           6. The concept of nosocomial infection and its determination index and the common pathogenic bacteria in nosocomial infection.
           7. The methods, principles, results interpretation and influencing factors of bacterial sensitivity test, antibiotic concentration in body fluid and bactericidal level.
           8. Pharmacokinetics of anti-infectious agents: the principles, methods and results interpretation of MIC detection, PAE detection and PASME detection.
        2. Understand:

Classification, characteristics and pathogenicity of the viruses and actinomycetes.

* + 1. Clinical skills:
       1. Master:
          1. Collection and evaluation of microbiological examination specimens, various staining methods.
          2. Preparation of all kinds of culture medium.
          3. Techniques of isolation and culture of bacteria.
          4. Technology for identifying bacteria.
          5. Bacterial sensitivity tests (K-B method, MIC method and E-test method).
          6. Blood culture instrument, CO2 incubator and anaerobic culture operation.
          7. The application of automated microbial identification instrument.
       2. Understand:

Isolation and culture of viruses and the application of PCR technique in virus detection.

* 1. **Molecular biologic examination**
     1. Fundamentals
        1. Master:
           1. The structure and characteristics of prokaryotes and eukaryotes.
           2. The concept, structure, physical and chemical properties, nomenclature, classification, biological characteristics, etc. of plasmid.
           3. The composition and classification of viral genome and its structural characteristics.
           4. The principles and procedures of polymerase chain reaction (PCR).
           5. The principles, procedures and results interpretation of fluorescence quantitative PCR.
        2. Understand:

Basic concepts and research characteristics of proteomics.

* + 1. Clinical skills:
       1. Master:
          1. Separation and purification of nucleic acids.
          2. DNA recombination technology.
          3. Technology of PCR.
          4. Technology of fluorescence quantitative PCR.
          5. Nucleic acid hybridization technique.
          6. The use of PCR instrument and fluorescence quantitative PCR instrument.
       2. Understand:
          1. Nucleic acid sequencing technology.
          2. Biological chip technology.
  1. **Emergencylaboratory skills**
     1. Fundamentals
        1. Master:
           1. Rapid examinations in prescribed time of routine tests of blood, urine, feces and cerebrospinal fluid, determination of serum K, Na, Cl, Ca, serum (plasma) carbon dioxide binding force (CO2-CP), blood sugar (BS), and serum urea, quantitative determination of blood and urine amylase (AMS) and serum cholinesterase (ChE), myocardial enzymes, cardiac troponin I (cTnI) test, myoglobin test (MYO), prothrombin time (PT), etc.
           2. Inoculation and management of culture samples of vibrio cholera.
           3. Critical value reporting system for medical testing.

Understand:

The application of Point of Care Testing (POCT) in emergency laboratory.

* + 1. Basic skills:
       1. Master:

Operation and maintenance of all kinds of emergency laboratory instruments.

* + - 1. Understand:

The overall time arrangement of various items in the process of emergency laboratory examinations.

1. **Research training (specific requirements seen in general regulations)**

The professional clinical medical master’s degree candidates must participate various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, master the thinking process of topic selection method, learn datacollecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor,they complete a dissertationhighlyrelated to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally,beingoff-the-job to finish their dissertation should notbe arrangedfor professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Stomatology (Oral Medicine)**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

**Rotation schedules in departments**

For graduate students of Endodontics / Oral mucosal diseases:

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) | The training in tutor’s department is19 months. |
| Periodontology | 2 |
| Pediatric Dentist and Preventive Dental Care | 3 |
| Oral and Maxillofacial Surgery (OPD) | 3 (minus 1 week) |
| Prosthodontics | 3 |
| Radiology | 1 week |
| Total | 11 |

For graduate students of Periodontology:

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) | The training in tutor’s department is17 months. |
| Endodontics/Oral mucosal disease | 4 |
| Pediatric Dentist and Preventive Dental Care | 3 |
| Oral and Maxillofacial Surgery (OPD) | 3 (minus 1 week) |
| Prosthodontics | 3 |
| Radiology | 1 week |
| Total | 13 |

For graduate students of Pediatric Dentist and Preventive Dental Care:

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) | The training in tutor’s department is 18 months. |
| Endodontics/Oral mucosal disease | 4 |
| Periodontology | 2 |
| Oral and Maxillofacial Surgery (OPD) | 3 (minus 1 week) |
| Orthodontics | 3 |
| Radiology | 1 week |
| Total | 12 |

The above graduate students should rotate in five departments and their total rotation time is 11-13 months. And then the training in tutor’s department should be17-19 months. The selected case for the test on completion of a course accords with the level ofthethird year resident. They master the etiology, pathogenesis, clinical manifestations, diagnosis and differential diagnosis, treatment planning, and management of common diseases in this discipline.Under the guidance of the Guidance Team for Graduate Students, they participate in the research of the related specializedfields, to implement the clinical practice and clinical research based on the problem-based learning model.

1. **Training content and requirements**
   1. **Requirements of clinical training in rotation departments**
      1. **Oral and maxillofacial surgery**
         1. Diseases to be learned:
            1. Master: Periodontitis, connective tissue infection, maxillofacial furuncle and carbuncle, maxillofacial soft tissue injury, inflammation of the salivary gland, cysts of the jaw, salivary gland cyst.
            2. Be familiar with: Jaw fracture, maxillofacial tumor, cleft lip and palate, temporomandibular joint disease.
            3. Understand: Dental maxillofacial deformities, acquired defects, neurological disorders, salivary gland diseases, obstructive sleep disorder.
         2. Theoretical knowledge:
            1. Master: Aseptic principle of maxillofacial region, principle of “no touch” surgical technique, diagnosis and treatment of common diseases, principle of first aid treatment.
            2. Be familiar with: Concept of dental implant surgery, osteomyelitis of jaw, treatment principle ofmaxillofacial injury, sequence therapy of malignant tumor, cleft lip and cleft palate.
            3. Understand: The basic principle of mandibular distraction osteogenesis; principle of functional surgery; principle of computer-assisted surgery; the management of sleep apnea; basic principle of minimal invasive surgery.
         3. Basic skills:
            1. Master: Outpatient medical recording of maxillofacial surgery; Master the skills of simple extraction of teeth, irrigation of pericoronitis, small debridement of oral and maxillofacial wounds, alveolar ridge repair, lip and tongue repair, excision of mucocele, reduction of temporomandibular joint, dental arch splint ligation.
            2. Be familiar with: The skills of complex tooth extraction, medium and big debridement of oral and maxillofacial wounds, and craniomaxillarybandage.
            3. Understand: Implants placement and repair of oromaxillary fistula.
         4. Basic work load:

|  |  |
| --- | --- |
| Project | Workload |
| Outpatient medical recording | 300 |
| Simple tooth extraction | 30 |
| Irrigation of pericoronitis | 30 |
| Small maxillofacial debridement | 2 |
| Alveolar ridge repair | 3 |
| Lip, tongue repair | 3 |
| Excision of mucocele | 3 |
| Dental arch splint ligation | 2 |
| Reduction of temporomandibular joint | 1-2 |

* + 1. **Orthodontics**
       1. Diseases to be learned:
          1. Master: The classification of malocclusion and the principle of itstreatment.
          2. Be familiar with: The maintenance of malocclusion; principles and methods of orthodontic treatment of periodontal diseases; the concept of modern orthodontics and its relationship with other subjects.
          3. Understand: Orthodontic treatment of impacted teeth and pseudoanodontia; orthodontic treatment of cleft lip and palate.
       2. Theoretical knowledge:
          1. Master: The biologic basics of orthodontics; the relationship between maxillofacial development and malocclusion.
          2. Be familiar with: Mechanical principle in orthodontic force control; the relationship between health status and orthodontic treatment.
          3. Understand: The design concept of modern orthodontic treatment.
       3. Basic skills:
          1. Master: The production of orthodontic recording model; manual tracing analysis of cephalometric X-rays; dental radiography; orthodontic clinical medical recording and methods of examinations; the diagnosis and treatment process of orthodontic diseases.
          2. Be familiar with: Diagnostic tooth arrangement test; measurement and analysis of the model; production of simple removable orthodontic appliance.
          3. Understand: The treatment process of fixed orthodontic technology.
       4. Basic workload:
          1. Produce 15 orthodontic recording models;
          2. Do 15 model measurements and analyses;
          3. Do 15 cases ofmanual tracing analysisof cephalometric X-rays, and perform the Downs, Steiner and Tweed analyses;
          4. Complete 15 orthodontic medical records;
          5. Make 10 simple removable orthodontic appliances.
    2. **Prosthodontics**
       1. Diseases to be learned:
          1. Master: The diagnosis and treatment of common prosthodontic diseases, such as fixed prosthesis restoration of dental defect and dentition defect, removable partial denture restoration of dentition defect, complete denture restoration of dentition deletion.
          2. Be familiar with: The new technology of dental repair for common prosthodontic diseases, such as attachment denture.
          3. Understand: Special repair of prosthodontics, such as the repair of temporomandibular joint disorders, repair of periodontal diseases, prosthetic restoration, etc.
       2. Theoretical knowledge:
          1. Master: The treatment principle of common prosthodontic diseases, such as restoration of dental defect and designation of removable partial denture; the indications and contraindications of various methods of restoration.
          2. Be familiar with: The process of production of various types of prosthesis.
          3. Understand: The new technology and material of prosthodontics.
       3. Basic skills:
          1. Master: Commonly used clinical skills of prosthodontics, including preparation of dental body, taking dental impression, recording jaw relations, occlusal adjustment, etc.
          2. Be familiar with: Common complications of various restoration methods and their management.
          3. Understand: The clinical application of various new techniques of prosthodontics.
       4. Workload:

|  |  |
| --- | --- |
| Project | Workload |
| Inlays repair | 2 |
| Full crown restoration | 20 |
| Fixed bridges repair | 10 |
| Removable partial denture repair | 20 |
| Complete denture restoration | 4 |
| Post crown restoration | 5 |
| Partial crown restoration | 1 |

* + 1. **Radiology**
       1. Rotation arrangement (totally one week)
          1. 8:00-8:30, interpretation of clinical X-ray films with tutors.
          2. 8:30-10:00, under the guidance of tutors, take dental radiographs (including digital dental radiographs) and dental pantomography.
          3. Afternoon: observation of sialography and practice radiography.
          4. Last day: Case discussion and examination.
       2. Theoretical knowledge:

Master: Principles and measures of radiological protection; the radiologic manifestations of common oral and maxillofacial diseases.

* + - 1. Clinical skills:
         1. Master: Skills of periapical radiography; the normal appearance of oral and maxillofacial radiograph; the indications of various common radiographic examinations.
         2. Be familiar with: Radiographic diagnosis and differential diagnosis of common oral and maxillofacial diseases.
         3. Understand: New progress of diagnostic imaging in oral and maxillofacial region; the clinical application of cone beam CT.
      2. Basic workload:

|  |  |
| --- | --- |
| Project | Workload (≥) |
| Take dental radiography, be able to analyze the reasons of photo defects | 50 |
| Take dental pantomography, be able to analyze the reasons of photo defects | 25 |
| Participate inextraoral radiography, including the clinical examinations and history collection | 2 |
| Interpretations of oral and maxillofacial radiographs | 25 |
| Participate insialography, including the clinical examinations and history collection |  |

* 1. **Stomatology (Oral Medicine)**: The training timein the tutor’s department is 17-19 months, while the training time in non-tutor’s departmentsis 5-7 months.The training requirements are listed below.
     1. Diseases to be learned:
        1. Master: Dental caries, cracked teeth, enamel hypoplasia, central cusp deformity, various types of dental pulp disease, apical periodontal disease, dental trauma, various types of gingivitis, various types of periodontitis, abnormal tooth eruption, recurrent oral ulcers, herpes stomatitis, candida stomatitis, lichen planus, leukoplakia.
        2. Be familiar with: Dental fluorosis, tetracycline stained teeth, dentin hypersensitivity, combined periodontal-endodontic lesions, diabetes periodontitis, leukemia-related periodontal lesion, drug-induced gingival hyperplasia, root bifurcation diseases, premature-loss deciduous tooth, pemphigus, erythema multiforme, allergic stomatitis, chronic discoid lupus erythematosus, non-specific cheilitis.
        3. Understand: Post-treatment endodontic diseases, vertical root fracture, gingival fibromatosis, epulis, the oral signs of systemic diseases and sexual transmitted diseases.
     2. Theoretical knowledge:
        1. Master: The etiology, pathology, clinical presentation and management principle of dental caries, cracked teeth, enamel hypoplasia, central cusp deformity, various types of dental pulp disease, apical periodontal disease, dental trauma, common gingivitis and periodontitis, recurrent oral ulcers, herpes stomatitis, candida stomatitis, lichen planus, and leukoplakia; oral hygiene instruction for children of all ages; pit and fissure sealants; CPI probe; teeth brushing method; oral health education method.
        2. Be familiar with: The etiology, pathology, clinical presentation, and management principle of dentin hypersensitivity,diseases after endodontic therapy, combined periodontal-endodontic lesions, diabetes periodontitis, leukemia-related periodontal lesion, drug-induced gingival hyperplasia, root bifurcation diseases, pemphigus, erythema multiforme, allergic stomatitis, chronic discoid lupus erythematosus, and non-specific cheilitis; the characteristics and principle of treatment of deciduous teeth and young permanent teeth; basic methods of oral health survey, sampling methods.
        3. Understand: Basic theory of other related specialties of oral medicine.
     3. Basic skills:
        1. Master: Dental amalgam fillings for various types of cavity; composite resin fillings; endodontic therapy; supragingival scaling; subgingival scaling; root planning; the plan of treatment and medical treatment of periodontal diseases; oral hygiene instruction content and method; filling of deciduous teeth; endodontic treatment of deciduous teeth; extraction of deciduous tooth; filling of young permanent tooth caries; pulp capping; pit and fissure sealants; use of CPI probe; oral health education and tooth brushing methods; the diagnosis and treatment of recurrent oral ulcers, herpes stomatitis, candida stomatitis, lichen planus, and leukoplakia.
        2. Be familiar with: Treatment of large area tooth defect; endodontic retreatment; gingivectomy; gingival flap surgery; fixation of loose teeth; apexification; occlusal guidance; oral health survey; the diagnosis and treatment of pemphigus, erythema multiforme, allergic stomatitis, chronic discoid lupus erythematosus, and non-specific cheilitis.
        3. Understand: Apical surgery; endodontic microsurgery; restoration of endodontic fiber post; surgical treatment of alveolar bone disease; guided periodontal tissue regeneration; periodontal therapy in patients with systemic diseases; production of gap retainer; ART technique; dietary balance; oral signs of systemic diseases; diagnosis and treatment of the oral signs of sexual transmitted diseases.
        4. Basic workload:

|  |  |
| --- | --- |
| For graduate students of Endodontics | |
| Project | Workload |
| The outpatient number of endodontics | 900 |
| Filling of various cavities | 500 |
| Endodontic therapy | 400 |
| Endodontic retreatment | 8 |
| Repair of largearea dental defect | 15 |
| Restoration of root canal fiber posts | 4 |
| The outpatient number of periodontology | 150 |
| Supragingival scaling | 40 |
| Subgingival scaling and root planning | 15 |
| Periodontal surgery | 2 |
| The outpatient number of pediatric dentistry | 120 |
| Filling of deciduous teeth | 80 |
| Extraction of deciduous teeth | 40 |
| Endodontic therapy of deciduous teeth | 40 |
| Filling of young permanent teeth | 40 |
| Pulp capping | 20 |
| Apexification | 2 |
| Gap retainer | 2 |
| Pit and fissure sealants | 15 |
| Oral health survey | 1 |
| The outpatient number of oral mucosal disease department | 100 |
| Standardized medical records of oral mucosal diseases | 3 |

|  |  |
| --- | --- |
| For graduate students of Periodontology | |
| Project | Workload |
| The outpatient casesof periodontology | 900 |
| Supragingival scaling | 300 |
| Subgingival scaling and root planning | 300 |
| Periodontal surgery | 20 |
| The outpatient number of endodontics | 150 |
| Filling of various cavities | 100 |
| Endodontic treatment | 90 |
| Endodontic retreatment | 2 |
| The outpatient cases of pediatric stomatology | 120 |
| Filling of deciduous teeth | 80 |
| Extraction of deciduous teeth | 40 |
| Endodontic treatment of deciduous teeth | 40 |
| Filling of young permanent teeth | 40 |
| Pulp capping | 20 |
| Apexification | 2 |
| Gap retainer | 2 |
| Pit and fissure sealants | 15 |
| Oral health survey | 1 |
| The outpatient number of oral mucosal disease department | 100 |
| Standardized medical records of oral mucosal diseases | 3 |

|  |  |
| --- | --- |
| For graduate students of Pediatric Oral Medicine | |
| Project | Workload |
| The outpatient number of pediatric stomatology | 900 |
| Filling of deciduous teeth | 600 |
| Extraction of deciduous teeth | 300 |
| Endodontic treatment of deciduous teeth | 250 |
| Filling of young permanent teeth | 150 |
| Pulp capping | 50 |
| Gap retainer | 10 |
| The outpatient number of endodontics | 100 |
| Filling various cavities | 50 |
| Endodontic therapy | 40 |
| Endodontic retreatment | 2 |
| The outpatient numberof periodontology | 150 |
| Supragingival scaling | 40 |
| Subgingival scaling and root planning | 15 |
| Periodontal surgery | 2 |
| Pit and fissure sealants | 15 |
| Oral health survey | 1 |
| The outpatient numberof oral mucosal disease department | 100 |
| Standardize medical records of oral mucosal diseases | 3 |

|  |  |
| --- | --- |
| For graduate students of Oral Mucosal Diseases | |
| Project | Workload |
| The outpatient number of oral mucosal diseases | 500 |
| Standardized medical records of oral mucosal diseases | 20 |
| The outpatient cases of endodontics | 120 |
| Filling of various cavities | 70 |
| Endodontic therapy | 60 |
| Endodontic retreatment | 2 |
| The outpatient number of periodontology | 150 |
| Supragingival scaling | 40 |
| Subgingival scaling and root planning | 15 |
| Periodontal surgery | 2 |
| The outpatient number of pediatric stomatology | 120 |
| Filling of deciduous teeth | 80 |
| Extraction of deciduous teeth | 40 |
| Endodontic therapy of deciduous teeth | 40 |
| Filling of young permanent teeth | 40 |
| Pulp capping | 20 |
| Apexification | 2 |
| Gap retainer | 2 |
| Pit and fissure sealants | 15 |
| Oral health survey | 1 |

|  |  |
| --- | --- |
| For graduate students of Preventive Dental Care | |
| Project | Workload |
| Oral health survey | 3 |
| Preventive oral examinations | 300 |
| Pit and fissure sealants | 300 |
| The outpatient numberof endodontics | 400 |
| Filling of various cavities | 200 |
| Endodontic therapy | 200 |
| Endodontic retreatment | 3 |
| The outpatient numberof periodontology | 150 |
| Supragingival scaling | 40 |
| Subgingival scaling and root planning | 15 |
| Periodontal surgery | 2 |
| The outpatient number of pediatric stomatology | 300 |
| Filling of deciduous teeth | 200 |
| Extraction of deciduous teeth | 100 |
| Endodontic therapy of deciduous teeth | 100 |
| Filling of young permanent teeth | 50 |
| Pulp capping | 20 |
| Apexification | 2 |
| Gap retainer | 2 |

* + - 1. Contents of professional lectures (Choose 2 out of the following topics)
         1. The key points of composite resin repair
         2. The key points of standardized preparations of endodontic therapy
         3. The key points of diagnosis and treatment of deep caries
         4. Prognosis and treatment of periodontal diseases
         5. Periodontal standardized basic treatment
         6. Combined periodontal-pulpal lesions
         7. The process of diagnosis and treatment of common oral mucosal diseases
         8. The diagnosis and management of oral ulcer
         9. The management principles and methods of pediatric dental trauma
         10. Apexification
         11. Management principles and methods of oral health statistical data

1. **Teaching task and scientific research training**

Teaching task requirements:

1. Participate in the experiment teaching of the related specialties of this discipline.
2. Assist in the teaching tasks in clinical internship of undergraduate students.

Scientific research training:

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate theirclinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of stomatology (Oral and Maxillofacial Surgery)**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examination sare arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculumare offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

Rotation and schedules in departments:

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) | The training time is 24 months in the tutor’s department. |
| Endodontics | 3 (minus 1 week) |
| Periodontology | 1 |
| Dental implant and repair | 2 |
| Radiology | 1 week |
| Total | 6 |

After the trainees rotatein the above 4 departments for 6 months, they receivetraining in tutor’s third-degree discipline for 24 months. The selected case for the test on the completion of a course accords with the level of thethird year resident. They master the etiology, pathogenesis, clinical manifestations, diagnosis and differential diagnosis, treatment planning, and management of common diseases in this discipline.Under the guidance of the Guidance Team for Graduate Students, theyparticipate in theresearch of the related specialized fields, to implement the clinical practice and clinical research based on the problem-based learning model.

1. **Training content and requirements**
   1. **Clinical training requirements in rotation discipline**
      1. **Requirements for Oral Medicine (Endodontics 3 months minus 1 week; Periodontology 1 month):**

**[Endodontics]**

* + 1. Diseases to be learned
       1. Master: Dental caries, various pulp diseases, periapical diseases, dental traumas.
       2. Be familiar with: Cracked teeth, enamel hypoplasia, dental fluorosis, tetracycline pigmentation teeth, central cusp deformity, dentin hypersensitivity.
       3. Understand: Post-treatment endodontic diseases, vertical root fracture.
    2. Theoretic knowledge
       1. Master: The etiology, pathology, clinical presentation and treatment principles of dental caries, dental pulp diseases and periapical diseases.
       2. Be familiar with:The etiology, pathology, clinical presentation and treatment principles of common non-carious diseases.
       3. Understand: The etiology, pathology, clinical presentation and treatment principles of other non-carious diseases.
    3. Basic skills
       1. Master: Amalgam filling of various cavities, composite resin filling, endodontic therapy.
       2. Be familiar with: Repair of large area dental defect.
       3. Understand: Periapical surgery, endodontic microsurgery.
    4. Basic workload:

|  |  |
| --- | --- |
| Project | Workload |
| The outpatient cases of endodontics | 100 |
| Filling of various cavities | 50 |
| Endodontic therapy | 30 |

**[Periodontology]**

* + 1. Diseases to be learned
       1. Master: Chronic gingivitis and chronic periodontitis.
       2. Be familiar with: Puberty gingivitis, aggressive periodontitis, combined periodontal-endodontic lesions.
       3. Understand: Diabetic periodontitis, pregnancy gingivitis, drug-induced gingival hyperplasia, acute necrotizing ulcerative gingivitis.
    2. Theoretic knowledge
       1. Master: The etiology, pathology, clinical presentation and treatment principles of inflammatory periodontal diseases.
       2. Be familiar with: The etiology, pathology, clinical presentation and treatment principles of puberty gingivitis and aggressive periodontitis.
       3. Know the factors influencing the prognosis of periodontal diseases.
    3. Basic skills
       1. Master: Oral hygiene instruction content and method, supragingival scaling, medical treatment of periodontal diseases.
       2. Be familiar with: Subgingival scaling and root planning.
       3. Occlusal adjustment and periodontal surgery.
       4. Basic workload:

|  |  |
| --- | --- |
| Project | Workload |
| The outpatient cases of periodontology | 50 |
| Supragingival scaling | 10 |
| Subgingival scaling | 10 |
| Root planning | 4 |

* + 1. **Requirements for Division of Dental Implant and Repair** 
       1. Diseases to be learned
          1. Master: Diagnosis and treatment of common diseases in the division of dental implant and repair, such as fixed repair of dental defect, fixed repair of dentition defect, removable partial denture restoration of dentition defect, and restoration of complete denture with missing teeth.
          2. Be familiar with: New restoration technology of common diseases in the division of dental implant and repair, such as restoration with attachment.
          3. Understand: Specific repair, such as repair and treatment of temporomandibular joint disorders, repair and treatment of periodontal diseases, dental prosthesis repair, etc.
       2. Theoretic knowledge
          1. Master: The principles of diagnosis and treatment of common diseases of the division of dental implant and repair, such as the principle of repair of dental defect and design principle of removable partial denture; master the indication and contraindication of various methods of repair.
          2. Be familiar with: The process of production of various prosthesis.
          3. Understand: The new technology and materials in this field.
       3. Basic skill
          1. Master: Common clinical skills in this field, including tooth preparation, manufacture of impression, model making, recording jaw relation, and occlusal adjustment.
          2. Be familiar with: The management of common complications of various restoration methods.
          3. Understand: The clinical application of all kinds of new technology of restoration.
          4. Basic workload:

|  |  |
| --- | --- |
| Inlay repair | 2 |
| Full crown restoration | 20 |
| Fixed bridge repair | 10 |
| Removable partial denture | 10 |
| Restoration of complete denture | 2 |
| Repair of removable denture | 4 |
| Post crown restoration | 5 |

* + 1. **Radiology**
       1. Rotation arrangement (totally one week)
          1. 8:00-8:30 interpretation of clinical X-ray films with tutors.
          2. 8:30-10:00 under the guidance of tutors, take dental radiographs(including digital dental radiographs) and learn dental pantomography.
          3. Afternoon: observation of sialography and practice of radiography.
          4. Last day: Case discussion and examinations.
       2. Theoretical knowledge:

Master: Principles and measures of radiological protection; master he radiologic manifestations of common oral and maxillofacial diseases.

* + - 1. Clinical skills:
         1. Master: Skills of periapical radiography; master the normal appearance of oral and maxillofacial radiographs; master the indications of various common radiographic examinations.
         2. Be familiar with: Radiographic diagnosis and differential diagnosis of common oral and maxillofacial diseases.
         3. Understand: New progress of diagnostic imaging in oral and maxillofacial regions; understand the clinical application of cone beam CT.
      2. Basic workload:

|  |  |
| --- | --- |
| Project | Workload (≥) |
| Take dental radiographs, be able to analyze the reasons of photo defects | 50 |
| Master dental pantomography, be able to analyze the reasons of photo defects | 25 |
| Participate inextraoral radiography, including the clinical examinations and history collection | 2 |
| Interpretation of oral and maxillofacial radiographs | 25 |
| Participate in sialography, including the clinical examinations and history collection |  |

* 1. **Oral and Maxillofacial Surgery**
     1. Diseases to be learned
        1. Master: Impacted tooth, periodontitis, fascial space infection, osteomyelitis of jaw, oral and maxillofacial soft tissue injury, jaw fracture, injury of alveolar process, maxillofacial benign tumor and tumor-like lesions (epulis, fibroma, odontogenic tumor, vascular tumors and vascular malformations), malignant neoplasms (cancer, malignant lymphoma, malignant melanoma), inflammation of salivary gland, Sjogren’s syndrome, salivary gland tumors (pleomorphic adenoma, Warthin tumor, mucoepidermoid carcinoma, adenoid cystic carcinoma), trigeminal neuralgia, facial paralysis, cleft lip, cleft palate, alveolar cleft.
        2. Be familiar with: Temporomandibular joint disorder, dento-maxillofacial deformities, obstructive sleep apnea, acquired deformity and defect of oral and maxillofacial region.
        3. Understand: Neoplasms of head and neck, diseases of ENT, common general diseases.
     2. Theoretic knowledge
        1. Master: Aseptic principle of maxillofacial regions, basic principle of dressing changing, surgical fluid supplement, principle of blood transfusion, “non-touch” technique, diagnosis and treatment principle of common diseases, principles of first-aid management, treatment principle of osteomyelitis of jaw and maxillofacial injury, the principle of functional surgery, principle of sequence treatment of cleft lip and palate.
        2. Be familiar with: Concept of implant surgery, basic principles of distraction osteogenesis of the jaws, the treatment of obstructive sleep apnea.
        3. Understand: The principles of computer-assisted surgery, the basic principles of microsurgery.
     3. Basic skills
        1. Master: Local anesthesia, dressing changing, bandage techniques, emergency and first-aid management, tooth extraction, debridement of oral and maxillofacial regions, repair of alveolar ridge, lip / lingual frenectomy, excision of mucus cyst, reduction of temporomandibular joint, ligation techniques of dental arch splint, excision of small cyst of jaw, reduction and internal fixation of simple fracture, excision of sublingual gland and submandibular gland, excision of small benign oral and maxillofacial tumors.
        2. Be familiar with: Resection of parotid gland and facial nerve dissection, internal fixation of complex fracture of jaw bone, repair of cleft lip and cleft palate.
        3. Understand: Radical resection of malignant tumor, neck lymph nodes dissection, orthognathic surgery, surgery of temporomandibular joint, cosmetic maxillofacial surgery, repair of acquired maxillofacial deformity and defect.
     4. Basic workload

|  |  |
| --- | --- |
| Project | Workload |
| Inpatients’ medical records of maxillofacial surgery | 200 |
| Outpatients’ medical records of maxillofacial surgery | 300 |
| Extraction of teeth | 200 |
| Oral and maxillofacial debridement | 5 |
| Repair of alveolar ridge | 10 |
| Lip / Lingual frenectomy | 5 |
| Excision of mucus cyst | 5 |
| Ligation techniques of dental arch splint | 5 |
| Sublingual gland excision | 2 |
| Excision of small oral and maxillofacial benign tumor | 5 |
| Submandibular gland excision | 2 |
| Participate in inpatients’ surgery (as an assistant) | 200 |
| Reduction and internal fixation of simple fracture | 5 |

* + 1. Content of specialty lectures:
       1. Specialty lectures of basic theory, basic knowledge and basic skills (choose 2 out of the following):
          1. Complicated tooth extraction
          2. Implant surgery
          3. Surgical treatment of cyst of jaw bone
          4. Excision of sublingual and submandibular gland
          5. Parotidectomy
          6. Tracheostomy
          7. Incision and drainage of abscess
          8. The principles of treatment of trigeminal neuralgia
          9. The principles of treatment of Bell’s palsy
          10. Cardiopulmonary-cerebral resuscitation
          11. Perioperative fluid supplement
          12. Rational application of antibiotics
       2. When they are in charge of cases, the trainees review literatures, give more than five lectures about the new technology and theory of diagnosis and treatment.

1. **Teaching task and scientific research training**

Teaching task requirements:

1. Participate in the experiment teaching of the related specialties of this discipline (9-18 teaching hours).
2. Assist in the teaching tasks in clinical internship of undergraduate students.

Scientific research training:

The professional clinical medical master’s degree candidates must participate invarious academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review, they master the thinking process of topic selection method, learn datacollecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor,they complete a dissertation highlyrelated to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Stomatology (Prosthodontics)**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examinations arearranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skills training**

Rotation schedules in departments:

|  |  |  |
| --- | --- | --- |
| Department | Time (Month) | The training time is 24 months in the tutor’s department. |
| Endodontics | 3 |
| Periodontology | 1 |
| Oral and Maxillofacial Surgery (OPD) | 2 (minus 1 week) |
| Radiology | 1 week |
| Total | 6 |

After they rotatein the above 4 departments for 6 months, they receivetraining in tutor’s third-degree discipline for 24 months. The selected case for the test on the completion of a course accords with the level of the third year resident. They master the etiology, pathogenesis, clinical manifestations, diagnosis and differential diagnosis, treatment planning, and management of common diseases in this discipline.Under the guidance of the Guidance Team for Graduate Students, they participate in the research of the related specialized fields, to implement the clinical practice and clinical research based on the problem-based learning model.

1. **Training content and requirements**

**Clinical training requirements in rotation departments**

* 1. **Oral Medicine**(3 months in Endodontics, 1 month in Periodontology)

**[Endodontics]**

1. Diseases to be learned
   1. Master: Dental caries, various pulp diseases, periapical diseases, dental traumas.
   2. Be familiar with: Cracked teeth, enamel hypoplasia, dental fluorosis, tetracycline pigmentation teeth, central cusp deformities, dentin hypersensitivity.
   3. Understand: Post-treatment endodontic diseases, vertical root fracture.
2. Theoretic knowledge
   1. Master: The etiology, pathology, clinical presentations and treatment principles of dental caries, dental pulp diseases and periapical diseases.
   2. Be familiar with: The etiology, pathology, clinical presentations and treatment principles of common non-carious diseases.
   3. Understand: The etiology, pathology, clinical presentations and treatment principles of other non-carious diseases.
3. Basic skills
   1. Master: Amalgam filling of various cavities, composite resin filling, endodontic therapy.
   2. Be familiar with: Repair of large area dental defect.
   3. Understand: Periapical surgery, endodontic microsurgery.
4. Basic workload:

|  |  |
| --- | --- |
| Project | Workload |
| The outpatient cases of endodontics | 100 |
| Filling of various cavities | 50 |
| Endodontic therapy | 30 |

**[Periodontology]**

1. Diseases to be learned
   1. Master: Chronic gingivitis and chronic periodontitis.
   2. Be familiar with: Puberty gingivitis, aggressive periodontitis, combined periodontal-endodontic lesions.
   3. Understand: Diabetic periodontitis, pregnancy gingivitis, drug-induced gingival hyperplasia, acute necrotizing ulcerative gingivitis.
2. Theoretic knowledge
   1. Master: The etiology, pathology, clinical presentation and treatment principles of inflammatory periodontal diseases.
   2. Be familiar with: The etiology, pathology, clinical presentation and treatment principles of puberty gingivitis and aggressive periodontitis.
   3. Know the factors influencing the prognosis of periodontal diseases.
3. Basic skills
   1. Master: Oral hygiene instruction content and method, supragingival scaling, medical treatment of periodontal diseases.
   2. Be familiar with: Subgingival scaling and root planning.
   3. Occlusal adjustment and periodontal surgery.
4. Basic workload:

|  |  |
| --- | --- |
| Project | Workload |
| The outpatient cases of periodontology | 50 |
| Supragingival scaling | 10 |
| Subgingival scaling | 10 |
| Root planning | 4 |

* 1. **Requirements forOral and Maxillofacial Surgery:**
     1. Diseases to be learned
        1. Master:Pericoronitis, fascial space infection, maxillofacial furuncle and carbuncle, maxillofacial soft tissue injury, inflammation of salivary gland, cyst of jaw bone, cyst of salivary gland.
        2. Be familiar with: Fracture of jaw bone, maxillofacial neoplasm, cleft lip and palate, temporomandibular joint diseases.
        3. Understand:Dento-maxillofacial deformities, acquired defect and deformity, obstructive sleep apnea, neurologic diseases, diseases of salivary gland.
     2. Theoretic knowledge:
        1. Master: Aseptic principles of maxillofacial region, “non-touch” technique, the principles of diagnosis and treatment of common diseases, the principles of first-aid management.
        2. Be familiar with: The concept of implant surgery, osteomyelitis of jaw bone, the treatment principles of maxillofacial injury, sequence therapy of malignant neoplasms, sequence therapy of cleft lip and palate.
        3. Understand:Basic principles of distraction osteogenesis of the jaws, the principles of functional surgery, the principles of computer-assisted surgery, the treatment of obstructive sleep apnea, 他he basic principles of microsurgery.
     3. Basic skills
        1. Master:Medical recordingsof outpatients of oral and maxillofacial surgery, simple tooth extraction, irrigation of pericoronitis, oral and maxillofacial small debridement, repair of alveolar ridge, lip / lingual frenectomy, excision of mucus cyst, reduction of temporomandibular joint, ligation techniques of dental arch splint.
        2. Be familiar with: Complex tooth extraction, oral and maxillofacial medium and large debridement, craniomaxillary bandage techniques.
        3. Understand: Dental implant techniques, repair of oromaxillary fistula.
     4. Basic workload

|  |  |
| --- | --- |
| Project | Workload |
| Outpatients’medical recordings | 300 |
| Simple tooth extraction | 30 |
| Irrigation of pericoronitis | 30 |
| Small debridement of oral and maxillofacial regions | 2 |
| Repair of alveolar ridge | 3 |
| Lip / lingual frenectomy | 3 |
| Excision of mucus cyst | 3 |
| Ligation techniques of dental arch splint | 2 |
| Reduction of temporomandibular joint | 1-2 |

* 1. **Radiology**
     1. Rotation arrangements (totally one week)
        1. 8:00-8:30 interpretation of clinical X-ray films with tutors.
        2. 8:30-10:00 under the guidance of tutors, take dental radiographs(including digital dental radiographs) and learn dental pantomography.
        3. Afternoon: observation of sialography and practice radiography.
        4. Last day: Case discussion and examinations.
     2. Theoretical knowledge:

Master: Principles and measures of radiological protection; the radiologic manifestations of common oral and maxillofacial diseases.

* + 1. Clinical skills:
       1. Master: Skills of periapical radiography; the normal appearance of oral and maxillofacial radiographs; the indication of various common radiographic examinations.
       2. Be familiar with: Radiographic diagnosis and differential diagnosis of common oral and maxillofacial diseases.
       3. Understand: New progress of diagnostic imaging in oral and maxillofacial regions; the clinical application of cone beam CT.
    2. Basic workload:

|  |  |
| --- | --- |
| Project | Workload (≥) |
| Learn dental radiography, be able to analyze the reasonsof photo defects | 50 |
| Learndental pantomography, be able to analyze the reasons of photo defects | 25 |
| Participate inextraoral radiography, including the clinical examinations and history collection | 2 |
| Interpretation of oral and maxillofacial radiographs | 25 |
| Participate in sialography, including the clinical examinationsand history collection |  |

**Clinical training requirements in prosthodontics**

**For graduate students of prosthodontics**

1. Diseases to be learned
   1. Master: The diagnosis and treatment of common diseases in prosthodontics, such as fixed restoration of dental defect, fixed restoration of dentition defect, removable partial denture restoration of dentition defect, complete denture restoration of dentition defect.
   2. Be familiar with: New restoration technology of common prosthodontic diseases, such as treatment of temporomandibular joint disorders, restoration and treatment of periodontal diseases, implant denture restoration, etc.
   3. Understand: Specific restoration, such as restoration therapy of temporomandibular joint disorders, prosthodontic treatment of periodontal diseases, prosthetic repair, etc.
2. Theoretic knowledge
   1. Master: The principles of diagnosis and treatment of common prosthodontic diseases, such as principles of restoration of dental defects, principles of designation of removable partial denture, etc.; master the basic principles of various prosthetic repair, such as physiologic basis of fixed denture, the principles and application of balanced occlusion of complete denture, etc.
   2. Be familiar with: The principles of manufacture and criteria of material selection of various prosthesis; the principles of repair and design of new types of repair, such as implant dentures, attachment dentures and others.
   3. Understand: The latest technology and advancement of materials in prosthodontics.
3. Basic skills
   1. Master: The common clinical skills in prosthodontics, including tooth preparation, manufacture of impression, model making, recording jaw relation, occlusal adjustment, colorimetric test, post and core wax production, etc.
   2. Be familiar with: repair of denture, individual tray production, WAX-UP wax tooth preparation, arrangement of artificial teeth, etc.
   3. Understand: Technology of implantation restoration and CADCAM, skills of productionof various prosthesis, prosthetic impression techniques, etc.
4. Basic workload

|  |  |
| --- | --- |
| Project | Workload |
| Inlay repair | 6 |
| Full crown restoration | 80 |
| Fixed bridge repair | 30 |
| Removable partial denture repair | 50 |
| Complete denture repair | 10 |
| Removable denture repair | 5 |
| Post crown rehabilitation | 30 |
| Partial crown restoration | 5 |
| Telescopic crown restoration | 5 |
| Implant restoration | 3-5 |
| Attachment restoration | 5 |

**For graduate students of the section of implant and repair**

1. Diseases to be learned
   1. Master: The diagnosis and treatment of common diseases in prosthodontics, such as fixed restoration of dental defects, fixed restoration of dentition defects, removable partial denture restoration of dentition defect, complete denture restoration of dentition defects, etc.
   2. Be familiar with: New restoration technology of common prosthodontic diseases, such as fixed removable prostheses.
   3. Understand: Specific restoration, such as restoration therapy of temporomandibular joint disorders, prosthodontic treatment of periodontal diseases, prosthetic repair, etc.
2. Theoretic knowledge
   1. Master: The principles of diagnosis and treatment of common prosthodontic diseases, such as principles of restoration of dental defects, principles of designation of removable partial denture, etc.; master the basic principles of various prosthetic repair, such as physiologic basis of fixed denture, the principles and application of balanced occlusion of complete denture, etc.; master the principles of implant denture repair.
   2. Be familiar with: The principles of manufacture and criteria of material selection of various prosthesis; be familiar with new types of restoration, such as the principles of restoration and designation of attachment.
   3. Understand: The latest technology and advancement of materials in prosthodontics.
3. Basic skills
   1. Master: The common clinical skills in prosthodontics, including tooth preparation, manufacture of impression, model making, recording jaw relation, occlusal adjustment, colorimetric test, post and core wax production, etc. Master the clinical operation method and process of implant and repair.
   2. Be familiar with: Repair of denture, individual tray production, WAX-UP wax tooth preparation, arrangement of artificial teeth, etc.
   3. Understand: Technology CADCAM, skills of production of various prostheses, prosthetic impression techniques, etc.
4. Basic workload

|  |  |
| --- | --- |
| Project | Workload |
| Inlay repair | 6 |
| Full crown restoration | 80 |
| Fixed bridge repair | 30 |
| Removable partial denture repair | 50 |
| Complete denture repair | 10 |
| Removable denture repair | 5 |
| Post crown rehabilitation | 30 |
| Partial crown restoration | 5 |
| Telescopic crown restoration | 5 |
| Implant restoration | 20 |
| Attachment restoration | 5 |

1. Content of specialty lectures (choose 2 out of the following)
   1. The three principles of restoration of dental defects.
   2. Clinical application of different materials of post and core.
   3. Aesthetics designation of anterior prosthesis.
   4. Choice of restoration plans of tooth fracture.
   5. Occlusion balance of single jaw complete dentures.
   6. Management of unstable partial removable denture.
   7. The selection principles of the fixed bridge abutments.
   8. The selection of materials and techniques of various impressions.
   9. The latest advancement of dental bonding technology.
   10. The clinical application of attachment.
   11. Prosthodontic application of CADCAM technology.
   12. Prosthodontic treatment of temporomandibular joint disorders.
   13. The progress and problems of all ceramic restorations.
   14. Foundation and clinical treatment of dental implants.
   15. Related problems of prosthesis restoration.
2. **Teaching task and scientific research training**

Teaching task requirements:

1. Participate in the experiment teaching of the related specialties of this discipline (9-18 teaching hours).
2. Assist in the teaching tasks in clinical internship of undergraduate students.

Scientific research training:

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review,they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment, they can apply for the dissertation defense.

**Training program for clinical master of Stomatology (Orthodontics)**

1. **Training time: 3 years**
2. **Degree curriculum design and teaching arrangement (specific requirements seen in the general regulations)**

Common compulsory courses and optional courses are offered and examination are arranged by the postgraduate office in the first semester of the first academic year. Professional foreign language and curriculum are offered by respective professionals, and examinations are arranged by respective schools or affiliated hospitals in the second academic year.

1. **Clinical skill training**

Rotation departmentsand schedules

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| --- | --- | --- |
| Department | Time (Month) | The training time is 24 months in the tutor’s department. |
| Endodontics | 3 |
| Periodontology | 1 |
| Oral and Maxillofacial Surgery (OPD) | 2 (minus 1 week) |
| Radiology | 1 week |
| Total | 6 |

After the trainees rotate in the above 4 departments for 6 months, theyreceive training in tutor’s third-degree discipline for 24 months. The selected case for the test on completion of a course accords with the level of thethird year resident. They master the etiology, pathogenesis, clinical manifestations, diagnosis and differential diagnosis, treatment planning, and management of common diseases in this discipline.Under the guidance of the Guidance Team for Graduate Students, they participate in the research of the related specialized fields, to implement the clinical practice and clinical research based on the problem-based learning model.

1. **Training content and requirements**
   1. **The training requirements in rotation department**

**Oral Medicine** (Endodontics 3 months, Periodontology 1 month)

**[Endodontics]**

* + 1. Diseases to be learned
       1. Master: Dental caries, various pulp diseases, periapical diseases, dental traumas.
       2. Be familiar with: Cracked teeth, enamel hypoplasia, dental fluorosis, tetracycline pigmentation teeth, central cusp deformities, dentin hypersensitivity.
       3. Understand: Post-treatment endodontic diseases, vertical root fractures.
    2. Theoretic knowledge
       1. Master: The etiology, pathology, clinical presentation and treatment principles of dental caries, dental pulp diseases and periapical diseases.
       2. Be familiar with: The etiology, pathology, clinical presentations and treatment principles of common non-carious diseases.
       3. Understand: The etiology, pathology, clinical presentations and treatment principles of other non-carious diseases.
    3. Basic skills
       1. Master: Amalgam filling of various cavities, composite resin filling, endodontic therapy.
       2. Be familiar with: Repair of large area dental defect.
       3. Understand: Periapical surgery, endodontic microsurgery.
    4. Basic workload:

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| --- | --- |
| Project | Workload |
| Outpatient cases in the department of endodontics | 100 |
| Filling of various cavities | 50 |
| Endodontic therapy | 30 |

**[Periodontology]**

1. Diseases to be learned
   1. Master: Chronic gingivitis and chronic periodontitis.
   2. Be familiar with: Puberty gingivitis, aggressive periodontitis, combined periodontal-endodontic lesions.
   3. Understand: Diabetic periodontitis, pregnancy gingivitis, drug-induced gingival hyperplasia, acute necrotizing ulcerative gingivitis.
2. Theoretic knowledge
   1. Master: The etiology, pathology, clinical presentations and treatment principles of inflammatory periodontal diseases.
   2. Be familiar with: The etiology, pathology, clinical presentations and treatment principles of puberty gingivitis and aggressive periodontitis.
   3. Know the factors influencing the prognosis of periodontal diseases.
3. Basic skills
   1. Master: Oral hygiene instruction content and methods, supragingival scaling, medical treatment of periodontal diseases.
   2. Be familiar with: Subgingival scaling and root planning.
   3. Occlusal adjustment and periodontal surgery.
4. Basic workload:

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| --- | --- |
| Project | Workload |
| Outpatient cases in the department of periodontics | 50 |
| Supragingival scaling | 10 |
| Subgingival scaling | 10 |
| Root planning | 4 |

**Rotation Requirements forOral and Maxillofacial Surgery**

* + 1. Diseases to be learned
       1. Master: Pericoronitis, fascial space infection, maxillofacial furuncle and carbuncle, maxillofacial soft tissue injury, inflammation of salivary gland, cyst of jaw bone, cyst of salivary gland.
       2. Be familiar with: Fracture of jaw bone, maxillofacial neoplasm, cleft lip and palate, temporomandibular joint diseases.
       3. Understand: Dento-maxillofacial deformities, acquired defect and deformities, obstructive sleep apnea, neurologic diseases, diseases of salivary gland.
    2. Theoretic knowledge:
       1. Master: Aseptic principles of maxillofacial region, “non-touch” technique, the principles of diagnosis and treatment of common diseases, the principles of first-aid management.
       2. Be familiar with: The concept of implant surgery, osteomyelitis of jaw bone, the treatment principles of maxillofacial injury, sequence therapyof malignant neoplasms, sequence therapy of cleft lip and palate.
       3. Understand: Basic principles of distraction osteogenesis of the jaws, the principles of functional surgery, the principles of computer-assisted surgery, the treatment of obstructive sleep apnea, the basic principles of microsurgery.
    3. Basic skills
       1. Master: Medical recordingsforthe outpatients of oral and maxillofacial surgery, simple tooth extraction, irrigation of pericoronitis, small debridement of oral and maxillofacial regions, repair of alveolar ridge, lip / lingual frenectomy, excision of mucus cyst, reduction of temporomandibular joints, ligation techniques of dental arch splint.
       2. Be familiar with: Complex tooth extraction, medium and large debridement of oral and maxillofacial regions, craniomaxillary bandage techniques.
       3. Understand: Dental implant techniques, repair of oromaxillary fistula.
    4. Basic workload

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| --- | --- |
| Project | Workload |
| Outpatients’ medical recordings | 300 |
| Simple tooth extraction | 30 |
| Irrigation of pericoronitis | 30 |
| Small debridement of oral and maxillofacial regions | 2 |
| Repair of alveolar ridge | 2 |
| Lip / lingual frenectomy | 2 |
| Excision of mucus cyst | 2 |
| Reduction of temporomandibular joints | 1-2 |

**Oral Radiology**

* + 1. Rotation arrangements (totally one week)
       1. 8:00-8:30 interpretation of clinical x-ray films with tutors.
       2. 8:30-10:00 under the guidance of tutors, take dental radiographs (including digital dental radiographs) and dental pantomography.
       3. Afternoon: observation of sialography and practice radiography.
       4. Last day: Case discussion and examination.
    2. Theoretical knowledge:

Master: Principles and measures of radiological protection; the radiologic manifestations of common oral and maxillofacial diseases.

* + 1. Clinical skills:
       1. Master: Skills of periapical radiography; the normal appearance of oral and maxillofacial radiograph; the indications of various common radiographic examinations.
       2. Be familiar with: Radiographic diagnoses and differential diagnoses of common oral and maxillofacial diseases.
       3. Understand: New progress of diagnostic imaging in oral and maxillofacial regions; T\the clinical application of cone beam CT.
    2. Basic workload:

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| --- | --- |
| Project | Workload (≥) |
| Take dental radiography, be able to analyze the reasonsof photo defects | 50 |
| Take dental pantomography, be able to analyze the reasons of photo defects | 25 |
| Participate inextraoral radiography, including the clinical examination and history collection | 2 |
| Interpret oral and maxillofacial radiographs | 25 |
| Participateinsialography, including the clinical examination and history collection |  |

* 1. **Clinical training and requirements for orthodontics**
     1. Diseases to be learned
        1. Master: The examination, diagnosis, classification and treatment plan of occlusal deformities, correction of common occlusal deformities.
        2. Be familiar with: The principles and methods of orthodontic treatment of periodontal disease. Learn the treatment of embedded and impacted teeth. Know the orthodontic treatment in patients before and after orthognathic surgery.
        3. Understand: Orthodontic therapy for cleft lip and palate.
     2. Theoretic knowledge:
        1. Master: The biological basics of orthodontic therapy, the relationship between craniofacial growth and malocclusion and the principles of mechanics in orthodontic force.
        2. Be familiar with: The design concept of modern orthodontic treatment.
        3. Understand: The latest advancement of orthodontics.
     3. Basic skills
        1. Master: The production of orthodontic record model, manual cephalometric tracing analysis, dentofacial radiography, three dimensional CT reconstruction techniques, orthodontic clinical medical recordings and methods of examination, the diagnostics and treatment process of orthodontics, the process of fixed orthodontic treatment.
        2. Be familiar with: Diagnostic tooth arrangement test, measurement and analyses of the model, production of simple removable orthodontic appliances.
        3. Understand: Production of functional orthodontic appliances.
     4. Basic workload:
        1. Produce 30 orthodontic record models;
        2. Thirty measurements and analyses;
        3. Ten cases of manual cephalometric tracing analyses, and perform the Downs, Steiner and Tweed analyses;twenty cases of computerized cephalometric tracing analyses.
        4. Complete 30 medical records of patients treated by fixed appliances;
        5. Complete 10 treatments by removable orthodontic appliances.
     5. Content of specialty lectures (Choose 1 from a to d, and e is mandatory.)
        1. The design concept of modern orthodontic treatment.
        2. The common methods of cephalometric analyses.
        3. The functional appliances and orthodontic therapy.
        4. The concept and advancement of modern orthodontic treatment.
        5. Review the literature in famous international journals with topics related to this discipline and report once; give one clinical lecture on other specialties.

1. **Teaching task and scientific research training**

Teaching task requirements:

Participate in the experiment teaching of the related specialties of this discipline (9-18 teaching hours).

Scientific research training:

The professional clinical medical master’s degree candidates must participate in various academic activities (case discussion, consultation, lectures, reading, academic conference, etc.) during the period of clinical ability training. At the same time, they should organize and complete at least one case discussion and at least one book reading report. By reading literature and writing of literature review,they master the thinking process of topic selection method, learn data collecting, data processing, statistical analysis and other basic methods of scientific research, and cultivate their clinical thinking abilities and analytical abilities. Under the guidance of a mentor, they complete a dissertation highly related to clinical practice and publish at least one case report (including literature review) in statistical source journals. Generally, being off-the-job to finish their dissertation should not be arranged for professional clinical master’s degree candidates.

1. **Dissertation defense and degree award**

After they meet all the requirements of this professional training program and pass the integrated clinical skills assessment,they can apply for the dissertation defense.