UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Laboratory Medicine

1920-4-H4101D262

Aims

The goal of the course is to provide the tools for the correct use of biochemical, microbiological, pathological and genetic tests, and the definition of their indications and interpretation.

Contents

CLINICAL BIOCHEMISTRY 1 AND CLINICAL PATHOLOGY: Lab test in oncology and rheumatology. Inflammation markers. Discussion of clinical reports.

CLINICAL MICROBIOLOGY. Diagnostics of respiratory, CNS, gastro-enteric, genito-urinary infections. Pregnancy and infant infections. Systemic, cardiac, bone, joint and skin infections. Nosocomial infections. Methodologies and diagnostic techniques to use in microbiology, virology, mycology and parasitology. Antibiogram. Discussion of clinical reports.

PATHOLOGY METHODS AND TECHNIQUES 1. Contribution of thelepathology, immunocytochemistry, electron microscopy, and molecular biology to completion of pathology report. Autopsy pathology: objectives, procedures and report. Death certification.

MEDICAL GENETICS. Indications for diagnostic, prognostic and therapeutic genetic tests. Significance of genetic testing, and related Italian laws. Reproductive Genetic Screening, increased genetic risk for prenatal diagnosis (eg. trisomy 21). Use of technology for the detection of genetic diseases and diagnostic applications in cytogenetics and Molecular biology.

Genetic biomarkers in clinical oncology as prognostic, predictive and pharmacodynamics tool. Application of predictive Bayesian statistical models. Appropriate use of specific databases for genetic testing.

Detailed program

Clinical laboratory. Organization principles. Laboratory Informative System.

The correct request of lab tests.

Pre-analytical, analytical and post-analytical variability. Conditions able to affect lab test results.

General rules of Quality assessment and their application in the different sections of lab.

Techniques for the collection of biological fluids/materials to submit to biochemical, microbiological, and genetic tests.

Blood and biological fluid analysis: urines, cerebrospinal fluid, synovial, pleural, pericardic, peritoneal and amniotic fluid collection, analysis.

Auto protection measures.

Application of molecular diagnostics to Clinical Biochemical, Clinical Microbiology, Genetics and Pathology labs.

Case reports of laboratory Medicine

CLINICAL BIOCHEMISTRY AND MOLECULAR BIOLOGY Lab test in oncology and rheumatology.

Inflammation markers.

CLINICAL MICROBIOLOGY 1Direct and indirect techniques in bacteriology, virology, and parasitology.

Evaluation of in vitro sensitivity of microorganisms to antibiotics.

TECHNICAL METHODOLOGY IN PATHOLOGY 1

Histocytopathology: principles and methods of morphological diagnosis.

Applications of telepathology

Autoptic diagnosis. The autopsy request. Differences between medical and legal autopsy.

Immunocytochemistry and molecular biology to completion of pathology report.

MEDICAL GENETICS Relevance and Epidemiology of Genetic Diseases

Genetic tests: which material for which test

Cytogenetics:

- Techniques, applications, indications, limits

- Clinical rounds

Molecular Cytogenetics: FISH, ARRAY CGH, SNP array

- Techniques, applications, indications, limits

- Clinical rounds

Molecular Genetics

- Techniques, applications, indications, limits

- Clinical rounds

Genetic test in the reproductive field:

- Prenatal diagnosis and NIPT

- Pre-implantation tests

Appropriateness of prescription of genetic tests, genetic counseling, validity and utility of genetic tests.

Ethical and social aspects of genetic tests

Genetic tests and complex diseases.

Syndromes of tumor predisposition and interpretation of genetic tests.

Prerequisites

Propaedeutic skills

Teaching form

Lectures, traineeship

Textbook and teaching resource

McPherson RA, Pincus MR Henry's Clinical Diagnosis and Management by Laboratory Methods, 23a English

edition. Ed. Elsevier, 2016

Federici G. Medicina di laboratorio ed McGraw-Hill. IV ed., 2014

Marshall W, Lapsley M., Day A Clinical chemistry ed Mosby. 8a ed. Ed. Elsevier, 2016

Microbiologia Clinica (autori: Mims c., Dockrell HM., Goering RW., Roitt I., Wakelin D., Zuckerman M.) EMSI, 2006, III ed.

Microbiologia Clinica (autore: Cevenini R.) PICCIN.

Kumar V, Abbas A., Aster J.C. Robbins & Cotran Le basi patologiche delle malattie Ed. Masson, 9th ed., 2015
AJCC Cancer Staging Manual 8th ed. Springer, 2017

Mariuzzi, G.M. Anatomia patologica e correlazioni anatomo-cliniche Ed.Piccin, 1° 2007

Robbins e Cotran - Pathologic Basis of Disease/ V. Kumar et al. Elsevier 2014.

Moreover, the teachers will provide educational material.

Semester

First semester

Assessment method

Case report analysis. Written and oral test. Multiple choice test (31 questions)

Office hours

Visits by appointment that can be requested via e-mail