Content Specifications are intended to guide diplomates in selecting their MOC Part II and Part IV activities. They are not intended to be study guides for the MOC Part III exam, although the exams may include some questions on topics and references included in the Content Specifications. Please refer to the MOC Study Guides for exam preparation

New Validated Practical Knowledge

I. Quantitative real time PCR methods and data interpretation

II. Molecular monitoring of minimal residual disease

III. Specific HLA association and adverse drug reactions
   HLAB*1502 linkage to Stevens-Johnson syndrome and toxic epidermal necrolysis in patients receiving carbamazepine
   HLAB* 5701 linkage to abacavir hypersensitivity
   HLAB* 5801 linkage to allopurinol-induced cutaneous adverse reactions

IV. Quantitative DNA sequence-based BCR/ABL mutation analysis in patients with chronic myelogenous leukemia who become resistant to Gleevec and related compounds

V. Rh antigen genotyping

VI. Role of HLA loci and allelic mismatches and bone marrow transplant outcome

VII. Standardized recommendations for HER2 tissue fixation, testing and reporting

VIII. JAK2 mutations in myeloproliferative disease

IX. FLT-3 Testing

X. Utility of nucleic acid testing in evolving strategy of treatment for chronic Hep C

XI. Utility of high risk HPV genotype detection in screening cervical pap smear samples of women > 30 years of age

XII. Evolving models of nucleic acid testing in bacterial infections
    Detection of antibiotic resistant strains
MRSA
VRE
Detection of toxin producing strains
C. difficile

XIII. Detection of specific translocations and other mutations for the diagnosis and management of solid tumors
Role of KRAS testing in colon and lung carcinoma.
EGFR mutation testing in lung carcinoma
BRAF mutation testing

XIV. Fluorescence in situ hybridization (FISH) methods and applications

XV. Next generation sequencing

XVI. Array based copy number variation associated with disease

XVII. Multiplex ligation-dependent probe analysis (MLPA)

Fundamental Knowledge

I. Types of mutations and their consequences

II. Roles of oncogenes, tumor suppressor genes, and changes in gene expression in cancer

III. Approaches to diagnosing viral infections, especially HPV

IV. Nucleic acid structural features

V. Biochemistry of nucleic acid synthesis

VI. Different nucleic acid detection chemistries and relative sensitivities
Signal amplification methods vs. target amplification

VII. Risk calculations following genetic testing

VIII. Genotype/phenotype correlations

IX. Regulatory aspects of laboratory certification

X. Interpretation of DNA sequence-based testing
XI. Biochemistry of protein synthesis and degradation

XII. Immunoglobulin and T-Cell receptor gene rearrangement

XIII. Epigenetics and DNA methylation in cancer

XIV. Expression arrays and array-based comparative genomic hybridization

REFERENCES


