CLINICAL PATHOLOGY CONTENT SPECIFICATIONS
CHEMICAL PATHOLOGY

I. Cardiovascular

Biochemical markers for myocardial damage (troponins, CK-MB)
Biochemical markers of heart failure (BNP, NT-proBNP)
Risk assessment (lipid testing, inflammatory markers, hsCRP, homocysteine)
D-dimer
National Cholesterol Education Program (NCEP) Guidelines

II. Endocrine

Diabetes - glucose point-of-care testing, HbA1c; Fructosamine; Blood glucose control in ICUs
Thyroid – interpretation of thyroid panels, ultrasensitive TSH
Adrenal – diagnosis of adrenal cortical hyperfunction (eg, Cushing's, Conn's) and hypofunction (eg. Addison's, congenital adrenal hyperplasia); ACTH stim test to evaluate adrenal reserves in ICU; Salivary cortisol
Interpretation of tests for pheochromocytoma (urine and serum catecholamines and metanephrines, VMA)
Pituitary – testing for hormone-secreting pituitary tumors (especially prolactinomas), testing for selective or generalized pituitary gland failure
Parathyroid - intraoperative PTH

III. Obstetric

Prenatal screen advances: first trimester testing/integrated 1st and 2nd trimester screening; dimeric inhibin A for Down syndrome detection (quad screening tests)
Neonatal screening for most common metabolic diseases
Fetal fibronectin for premature labor

IV. Urinary System

Microalbumin
Use of estimating equations to predict glomerular filtration rate (eGFR) that use only measured serum creatinine and patient specific demographic factors (age, sex, race) to detect early renal disease

V. Electrolytes

Point-of-care testing
Interpretation of anion gap (clinical and for QC)
Interpretation of electrolyte abnormalities
Osmolality; osmolar gap calculation (as surrogate for alcohol/methanol measurement)

VI. Markers for Neoplasia

CEA, AFP, CA 15-3/27.29, CA125, CA 19-9, total and free PSA, β-hCG
her2/neu
Work-up of suspected monoclonal gammopathy (serum free Ig light chain assays in the diagnosis of plasma cell dyscrasias, including AL) amyloidosis
General interpretation of IFEs and SPEPs
PSA role and limitations

VII. Nutrition and Anemia (overlap with Heme)

New testing methods for folate and B12 deficiency
HPLC for hemoglobinopathies
Iron overload disorders
Thalassemia heterogeneity and lab diagnosis

VIII. Toxicology, New Drugs and Adulterants

Screening vs. confirmation for drugs of abuse
Drugs of abuse masking agents
Use of genetic tests to predict patient-specific pharmokinetic responses to drugs (i.e. pharmacogenetics/pharmacogenomics), example: warfarin metabolism and appropriate initial dosing
TDM-sample timing relative to PK, common drugs, transplant Immunosuppression drug monitoring
Principles of TDM

IX. Methodologies

Tandem mass spectroscopy-technology, common applications
Electrophoresis—general interpretation of SPEPs and IFEs: e.g. IgG-specific isoelectric focusing for multiple sclerosis capillary zone electrophoresis
HCV and cryoglobulin evaluation
Immunosubtraction
HbA1c limitations with hemoglobinopathies, eg sickle trait, HbC trait
RAST
General understanding of modern clinical laboratory instrumentation (e.g. spectrophotometry, ISE's, ELISA and RIA techniques, etc)
Methods and method interferences
    PCR/RT-PCR
    FISH
    HPLC
    ELISA
    Spectrophotometric analysis

X. Administration and Management

Point of Care testing