



UNMC CLS Program Clinical Immunohematology (Blood Banking) Course Overview

Clinical Immunohematology (Blood Banking) (6 modules)

Immunology Review (3 CEU)

- Innate and acquired immunity; cell-mediated and humoral immunity; primary vs. secondary humoral response; phagocytosis; inflammation; major histocompatibility complex; pathogen recognition; T lymphocyte subsets
- Immunoglobulins – definitions, structures, classes and characteristics; antigens – definitions, characteristics, immunogenicity, and antigenicity; antigen-antibody reactions – definitions, reactions and influencing conditions; immunology vs. serology; test methods for visualizing Ag-Ab reactions – agglutination-based, neutralization, precipitation-based and labeled methods
- Complement components; functions; activation pathways – classical, alternative, and lectin; deficiencies; pathologic conditions

Genetics Review (1 CEU)

- Definition of chromosomes, genes, locus, alleles, homozygous, heterozygous, genotype, phenotype, dominant, recessive and codominant; predicting genotypes; sex-linked inheritance; Hardy-Weinberg equation; gene frequency

The Antiglobulin Test (3 CEU)

- Anti-human globulin (AHG) reagents – descriptions, types, controls; Direct antiglobulin test (DAT) - description, procedure, causes, implications, significance; Indirect antiglobulin test (IAT) – description, procedure, applications, influencing factors, significance
- AHG production, contents and action; Coombs control cells; Hemolytic transfusion reaction; hemolytic disease of the fetus and newborn; drug induced hemolytic anemia; autoimmune hemolytic anemia; zeta potential; low ionic strength solution (LISS); Polyethylene glycol (PEG); Polybrene; enzymes; potentiators; sources of error in the antiglobulin test
- How to grade agglutination reactions – tube method, microscopically, Rouleaux, mixed field, and documentation

ABO System (2 CEU)

- Clinical importance; blood group distribution; genetics/inheritance – A, B, H genes, ABO genetic pathway; ABH antigens; phenotypes/subgroups of A and B; Bombay phenotype; antibodies – Landsteiner's law; ABO testing – front typing vs. back typing, polyclonal vs. monoclonal reagents



Rh System (3 CEU)

- Clinical importance; inheritance; nomenclature systems and converting between systems; antigens, compound antigens, deletions & Rh null; relationship of LW to Rh; determining genotypes; weak D theory and testing; antibody characteristics; Rh testing – reagents, controls, troubleshooting discrepant results

Other Systems (3 CEU)

- Characteristic of antigens and antibodies of the remaining major blood group systems; nomenclature; definitions of terms used in discussing antigens and antibodies; classifying antibodies as immune or naturally occurring, autoantibody or alloantibody; reaction characteristics of antibodies in the major systems; clinical significance; high incidence and low incidence antigens & their antibodies; HTLA antibodies; significance of HLA system in transfusion medicine