MLT 112 - Clinical Urinalysis Lecture

Approval Date: Effective Term:

Department: MEDICAL LABORATORY TECHNICIAN
Division: Allied Health/Public Safety
Units: 1.00
Grading Option: Letter Grade
Transferability: CSU Transferable
Course is: AA/AS Degree
Repeatability:

Contact Hours per Term:
Lecture/Discussion: 1.00

Associate Degree GE Applicability: No
Recommended Class Size: 15
-Rationale: Station limitations.

Discipline/Minimum Qualifications:

Catalog Description:
Presents the properties and constituents of urine, emphasizing the interpretation of qualitative and quantitative clinical analysis of urine, and a comparison of lab results to kidney function.

Schedule Description:
Presents the properties and constituents of urine, emphasizing the interpretation of qualitative and quantitative clinical analysis of urine, and a comparison of lab results to kidney function.

Student Learning Outcome:
1. Summarize the anatomy and physiology of the kidney as related to normal and abnormal test results and clinical diagnosis of disease states.
2. Summarize the main components of a routine urinalysis including interpretation of the chemical tests and microscopic evaluation.

Course Objectives:
1. Compare and contrast the types of quality control required daily and the quality assurance program for urinalysis.
2. Analyze urinalysis data and correlate abnormal results to pathological conditions involving the kidney.
3. Evaluate analysis of extravascular fluids including gross appearance, cells counts, chemistry results, and microbiology studies.
4. Evaluate analysis of miscellaneous specimens including nasal smears, fecal specimens, amniotic fluids, and semen analysis.

Course Content Outline:
A. Renal anatomy and physiology.
1. Formation of urine through the kidney.
2. Physiologic functions of the kidney during urine formation.
3. Substances found in normal urine.
4. Abnormal urine results and the clinical diagnosis.

B. Components of a routine urinalysis.
1. Specimen collection for routine urinalysis including transportation and storage.
   a. Random
   b. Timed
   c. 24-hour
   d. Midstream
   e. Clean catch specimens for males and females
   f. Catheterized
2. Normal and abnormal physical properties in urine specimens and correlating physical findings with chemical and microscopic findings.
3. Use of a multiple-reagent strip, techniques, general procedure and precautions necessary for valid results.
4. Clinical significance, principle of test, specificity and sensitivity, interferences, additional considerations and confirmatory or related follow-up tests for the chemical analysis of a routine urinalysis.
5. Categorization, identification, and description of the urine sediment constituents in the microscopic analysis of the urine, including pathophysiology and clinical importance.
   a. Cellular constituents
   b. Epithelial cells
   c. Other cellular constituents
   d. Casts
   e. Crystals and amorphous material
   f. Contamination and artifacts.

C. Quality control and quality assurance used in the urinalysis department.
1. Quality control in the physical, chemical and microscopic components of the routine analysis.
2. Components of a quality assurance system for urinalysis.

D. Analysis of urinalysis data.
1. Clinical usefulness of urinalysis and classification of tests pertaining to diseases or conditions affecting the kidney, urinary tract and metabolic disease.
2. Evaluation of urinalysis test results and discrepant results.

E. Analysis of extravascular fluids.
1. Components of the routine examination, including gross examination, cell counts, morphologic examination and common chemical test of cerebrospinal fluid.
2. Components of routine examination, including gross examination, cell counts, morphologic examination and common chemical test of serous fluid.
3. Components of routine examination, including gross examination, cell counts, morphologic examination and common chemical test of synovial fluid.

F. Analysis of miscellaneous specimens.
1. Components of routine examination, including gross examination, cell counts, morphologic examination and common chemical test of nasal smears.
2. Clinical significance of tests for fecal occult blood, common interferences, and special dietary considerations necessary for specimen collection. The chemical principle of the common slide tests for fecal occult blood.
3. The significance of testing for the presence of fecal leukocytes and the procedure for slide preparation.
4. The Fern test and the postcoital test for cervical mucus.
5. The components of a qualitative semen analysis.

**Methods of Instruction:**
Lecture:

**Methods of Evaluation:**
Exams/Tests/Quizzes
Case studies

**Typical Assignments:**
Reading:
Textbook chapter assignments Supplemental reference books

Writing, Problem Solving or Performance:
Problem solving for chapter study questions Short essay answers for some exam questions Some calculations

Other:

**Required Materials**

**Examples:**

**Book 1**
Author: McPherson, R.A. & Pincus M.R.  
Title: Henry’s Clinical Diagnosis and Management by Lab Methods  
Publication Date: 2006  
Publisher: Saunders  
Edition: 21

**Book 2**
Author: Strasinger, Susan King and Marjorie Schaub DiLorenzo  
Title: Urinalysis and Body Fluids  
Publication Date: 2008  
Publisher: FA Davis, Co  
Edition: 5th
Course Preparation:
Prerequisite(s): None
Co-Requisite(s): MLT 112L
Recommended: None