Clearance Tests

PROTOCOLS FOR PERFORMING CLEARANCE TESTS (RENAL FUNCTION)

I. INTRODUCTION

Described in this section are the sample requirements, patient preparation instructions, dosages of substances to be administered, protocols for collecting specimens, time intervals for collecting specimens etc., for Clearance Tests. The performance and accuracy of these tests is directly dependent upon the protocols herein described. Therefore, it is extremely important that the integrity of these protocols be maintained. The best analytical procedures and techniques cannot compensate for poor patient preparation or deviation from the standard operating procedure. By not following the protocols and directions described will lead to inaccurate results at best or harm to the patient at worst.

The protocols for performing Clearance Tests outlined in this manual are considered by the Department of Pathology to be the standard procedures. If a physician wishes to modify these protocols to suit his own needs, he may do so at his discretion. However, if the physician does make some modifications in a particular protocol, it is in his and the patient?s best interest that the physician describes these changes as clearly as possible, in writing, so that the laboratory is well informed of the changes and is thus able to respond without confusion as to the physician?s wishes. The proper communication between the physician and the laboratory is of paramount importance if the test is to be conducted properly and in accordance with the physician?s wishes.

II. CREATININE CLEARANCE TEST: 24 Hour

Rationale:

Creatinine is produced as a waste product primarily as a function of muscle metabolism. Creatinine produced by muscular activity is eliminated from the plasma predominantly by glomerular filtration. Creatinine is produced and released at a constant rate with normal activity and its plasma levels are maintained within normal limits if renal function is normal. Therefore, measurement of the rate at which creatinine is cleared from the blood into the urine affords a measure of glomerular filtration rate (GFR). Creatinine clearance is a very reliable indicator of renal disease, particular those, which affect the glomerulus, and is the most frequently used test in the evaluation of renal disease.

The measurement of the clearance of creatinine has several advantages over other clearance tests (e.g. urea clearance) because it is much less subject to the rate of urine flow as dictated by fluid intake. A second advantage is that the test is an endogenous clearance test in which no material of drug has to be administered for most accurate results, the 24-hour Creatinine Clearance Test is recommended.

Recommended Protocol

1. Notify the laboratory on the day prior to the test. Record or indicate patient?s current height and weight on the order. Obtain a collection container for 24-hour collection. Refrigerate urine during collection. No preservative is required.

2. Maintain patient on a normal prescribed diet prior to the test.

3. Collect a 24-hour urine using the standard protocol

4. A serum or plasma sample is to be drawn at some time during the course of the 24-hour collection. It doesn?t make any difference if it is drawn at the beginning or the end of the collection unless the collection is to be done over the weekend and there will be a delay in returning the urine to the lab. In that case, the specimen should be drawn when the urine collection container is given to the patient. The patient is to be
impressed with the importance of starting the urine collection as soon as possible such as the next morning.

5. Upon the conclusion of the 24-hour urine collection, the urine is to be returned to the laboratory as soon as possible for analysis and calculation of the Creatinine Clearance.

III. CREATININE CLEARANCE TEST: 12 Hour

Rationale:
Same as for the 24 Hour Creatinine Clearance.

Recommended Protocol

1. Notify the laboratory on the day prior to the test. Record or indicate patient’s current height and weight on the order. Obtain a collection container for 12-hour collection. Refrigerate urine during collection. No preservative is required.

2. Maintain patient on a normal prescribed diet prior to the test.

3. Collect a 12-hour urine using the standard protocol

4. A serum or plasma sample is to be drawn at some time during the course of the 12-hour collection. It doesn’t make any difference if it is drawn at the beginning or the end of the collection unless the collection is to be done over the weekend and there will be a delay in returning the urine to the lab. In that case, the specimen should be drawn when the urine collection container is given to the patient. The patient is to be impressed with the importance of starting the urine collection as soon as possible such as the next morning.

Samples can be drawn within 12 hours before or 12 hours after the urine collection time. (This gives a 36-hour window)

5. Upon the conclusion of the 12-hour urine collection, the urine is to be returned to the laboratory as soon as possible for analysis and calculation of the Creatinine Clearance.