Danbury Hospital
Department of Pathology & Laboratory Medicine
Technically Speaking

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Free Kappa and Free Lambda

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The Immunology section of the laboratory is pleased to offer a sensitive and specific assay for measuring free light chains (flc) in serum and urine. In past quantitation of kappa and lambda, it was not possible to differentiate *bound* light chains from *free* light chains. The new test allows for this differentiation and should prove useful in diagnosing and monitoring patients with malignant plasma cell proliferation. In healthy individuals the majority of light chains exist covalently linked to a heavy chain. However, low levels of free light chains are found in the serum of normal individuals due to the production and secretion of flc by the plasma cells. Elevated serum levels of monoclonal flc are associated with malignant plasma cell proliferation (eg. Multiple myeloma, primary amyloidosis and light chain deposition disease). Increased serum levels of polyclonal flc can be associated with autoimmune disease such as systemic lupus erythematosus. An IFE *(immunofixation electrophoresis)* can determine clonality.

Flcs in urine are low due to the selective reabsorbtion of flc by the kidney tubules. Their presence in the urine is probably due to secretion into the urinary tract. The molecular weight of both light chains is ~22.5D. However, the serum kappa flc exists predominantly as a monomer and lambda flc as a covalently linked dimer. This leads to a differential glomerular filtration rate and may explain the observed ratio of kappa flc to lambda flc of 0.625 in serum compared to a ratio of bound kappa to lambda of 2.

The appearance of elevated concentrations of flc in the urine may be indicative of kidney disease or malignant lymphoproliferative disease such as multiple myleloma. The monoclonal urinary flc associated with lymphhoid malignancy is called Bence Jones protein.

Studies have proven that quantitation of serum flc correlate linearly on a log-log scale with changes in urinary excretion in patients with light chain multiple myeloma (LCMM) (Clin. Chem. 48, No. 4, 2002). The availability of serum flc is a preferable alternative to monitoring patients with LCMM than a 24-hour urine collection, which is inconvenient and can be prone to inaccuracies due to incorrect collection. Studies have also proven that serum flc rises months before urinary levels. Monitoring serum flc offers the physician a method of monitoring the progression of disease and the foresight to alter treatment to avoid kidney damage. Serum flc may also be useful in monitoring patients with nonsecretory multiple myeloma (NSM) (Blood, 1 May 2001.Vol 97, No. 9). In the past, diagnosing and monitoring patients with NSM depended on clinical assessment and bone marrow biopsies. In one study, increased concentration of either kappa or lambda flc were detected in the sera of 19 of 28 patients with NSM.

The Immunology section of the laboratory will offer free kappa and free lambda testing for serum and 24 hour urine samples. The physician will have the choice of ordering it alone (for monitoring patients) or with an IFE (for diagnosing patients).

Reference Ranges:

Serum	Urine
Free Kappa: 3.30 - 19.40 mg/L	Free Kappa: 1.35 - 24.19 mg/L
Free Lambda: 5.71 - 26.30 mg/L	Free Lambda: 0.24 - 6.66 mg/L
Kappa/Lambda ratio: 0.26 - 1.65	Kappa/Lambda ratio: 2.04 - 10.37

Questions regarding the free kappa and free lambda testing may be referred to the Immunology section of the laboratory at (203)797-7390.

References:
1. Roshini S. et al. Correlation of Serum Immunoglobulin Free Light Chain Quantifaication with Urinary Bence Jones Portein in Light Chain Myeloma. Clin Chem 48, No. 4, 2002.
2. Drayson, M. et al. Serum free light-chain measurements for identifying and monitoring patients with nonsecretory multiple myeloma. Blood, 1 May 2001, Vol 97, No. 9.

MEDICARE CODING UPDATES

Due to a recent change in the Medicare NCD policy, pre-op diagnosis codes V72.81 – V72.84 are no longer acceptable for Protimes (INR) and APTT. While still acceptable for pre-op clearances, these codes will no longer cover the cost of PT or APTT. If no other coverable diagnosis code is provided, the doctor's office must provide the laboratory with a signed and dated ABN which notifies the patient of their financial responsibility. To verify diagnosis codes for pre-op categories, please visit the Medicare Website (cms.hhs.gov), go to Topics and chose Coverage. This site includes all NCD policies. Questions regarding this policy or any Medicare coverage issue may be directed to the laboratory billing office at 797-7319 or 797-7694.

FYI: V70.0 (Routine Medical Examine) is not an acceptable dx code when billing Medicare.

Screening Pap Smears, Pelvic and Breast Examination

A screening Pap smear and pelvic examination (including clinical breast examination) are covered by Medicare every 2 years for every female beneficiary. Medicare will not pay for an additional exam if, during the preceding 23 months, Medicare covered a screening and pelvic examination which was normal. An ABN must be obtained if less than 23 months have passed since the patient's last examination.

Screening PSA

Screening PSA tests are covered at a frequency of once every **12** months for men who have attained the age of **50,** if at least **11** months have passed following the month in which a Medicare-covered screening PSA test was performed last.
An **ABN** must be obtained if less than **11** months have passed since the patient's last PSA test.

It is acceptable to collect an ABN for a PAP or PSA if you are unsure of when the last test was performed because of "frequency".

Laboratory Coding Updates

Laboratory coding updates may be found on the following websites:
LMRP at ***(www.empiremedicare.com), NCD*** *at* ***(cms.hhs.gov). Go*** *to* ***Topics*** *and* ***choose*** *Coverage.*