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OPTIMIZING OUTPATIENT REFERRAL PATTERN FOR MONOCLONAL GAMMOPATHY AT A SAFETY-NET HOSPITAL

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INTRODUCTION

Serum monoclonal protein (SPEP) testing using an expanded panel that includes free light chains (FLC) aids in the diagnosis and monitoring of monoclonal gammopathies, which are precursor conditions to myeloma. Any values outside of reference ranges for serum kappa FLC (κ) (3.3-19.4 mg/L) and lambda FLC (λ) (5.7-26.3 mg/L) and FLC ratio (R) (0.26-1.65) can trigger referrals to hematology.

JPS is a safety-net hospital in north Texas. A group of 5 general hematology-oncology physicians and 7 mid-level providers manage care of patients with all malignancies, benign hematology, and precursor conditions.

AIM

To compare the current standard FLC results of patient samples at John Peter Smith (JPS) hospital against the revised definition presented at the American Society of Hematology 2023 conference by the Istoppm study group.

The Istopmm group's revised definition includes K 6.3-39.0 mg/L, L 5.9-36.7 mg/L, and R 0.44-2.16 mg/L for patients under 70 years. For patients over 70 years, the definition includes K 7.0-55.8 mg/L, L 6.4-48.0 mg/L, and R 0.46-2.59 mg/L. R is evaluated based on creatinine clearance.

METHOD

We conducted a retrospective study (North Texas IRB # 2188238-1) using data from JPS Data Analytics. All SPEP results, including FLC, were obtained from 1/1/2022 to 12/31/22. We analyzed κ, λ, and R using standard criteria from outpatient orders placed by rheumatology, nephrology, neurology and all others excluding oncology. We then used the revised FLC definition and algorithm and compared the number of abnormal tests and referrals to hematology.

Main Outcome Measure: Change in FLC ratio and referral pattern based on revised definition.

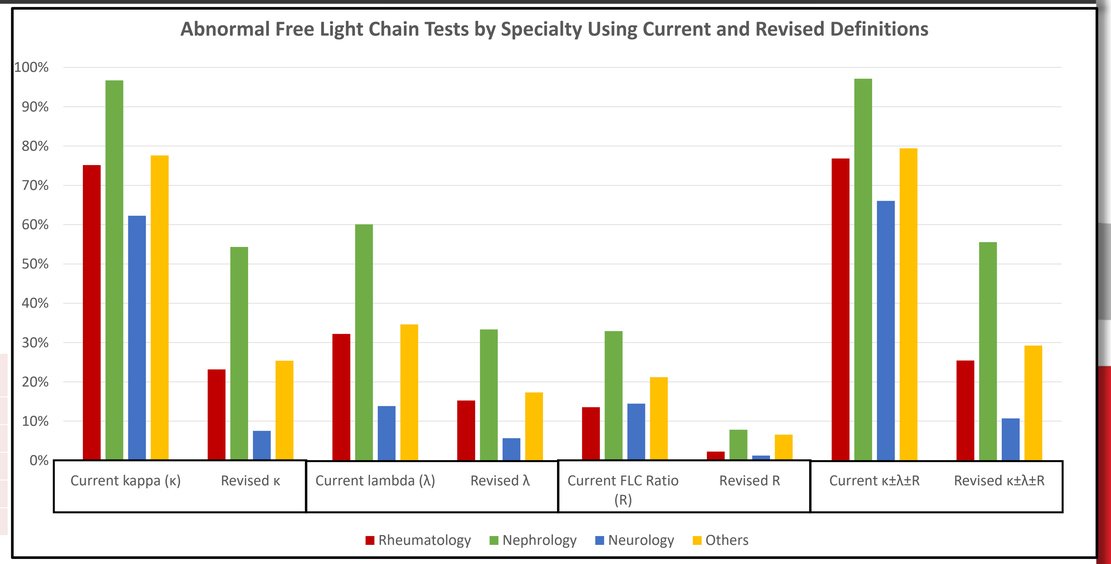
RESULTS

1028 samples involving 763 patients were included. 114 samples without free light chains were excluded.

Overall, 81.3% of all FLC samples and 21.7% of R were abnormal by current criteria. Using the revised criteria, 47 samples had an abnormal R, as opposed to 198 with the current criteria, a 76.7% decrease.

Table 1: Abnormal Free Light Chain Test Results by Specialty Using Current and Revised Definitions

	Current κ	Revised κ	Current λ	Revised λ	Current R	Revised R	Current κ±λ±R	Revised κ±λ±R	Total
Rheumatology	133	41	57	27	24	4	136	45	177
Nephrology	235	132	146	81	80	19	236	135	243
Neurology	99	12	22	9	23	2	105	17	159
Others	260	85	116	58	71	22	266	98	335
Total	727	270	341	175	198	47	743	295	914



Using current criteria

Referrals	Total	MM	SM	MGUS (>0.1g/dL)	Polyclonal	Trace band	Reduction (%) using revised FLC*
Rheumatology	47	0	0	5	12	10	9 (19%)
Nephrology	43	0	0	3	0	4	14 (33%)
Neurology	38	0	1	1	1	0	18 (47%)
Others	60	2	0	6	20	5	8 (13%)

Table 2: Referral Patterns for Abnormal SPEP

* Excluding any of the other 13 out of 16 abnormal SPEP components
- Previously, 191 referrals were placed to hematology. 3 patients were excluded. Using revised FLC criteria, there would be a 26% decrease in referrals placed.

CONCLUSIONS

Applying the revised Istoppm FLC definition significantly decreased the number of abnormal results. This would decrease the number of unnecessary referrals to hematology while ensuring that the patients who have true myeloma precursor conditions are referred and followed appropriately.

We also noticed referrals for insignificant elevations of several other SPEP components, and we plan to continue our work to optimize referral patterns.

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