

NEPHROLOGY ASSOCIATES CHATTANOOGA, TENNESSEE



Nephrology Associates is committed to providing quality care in a convenient and patient-focused environment. They deliver all aspects of patient's kidney care, from education in early disease states to pre-emptive support, including diabetes and anemia management.

Comprehensive patient care is critical in this patient population. According to the National Kidney Foundation, 26 million Americans have chronic kidney disease (CKD) and millions of others are at risk for developing renal-related conditions. The nephrologists lead a team of over 70 clinical, technical and administrative personnel to provide quality care for the growing patient population.



PUTTING PATIENTS' NEEDS FIRST

Nephrology Associates consists of three freestanding offices in Chattanooga, TN. They have been in practice for over 40 years and serve patients across Tennessee, Georgia and Alabama. The laboratory has a robust menu and performs most of its testing on-site, unlike most kidney centers that outsource their lab services.

The laboratory runs an average of 75 CBCs per day which is almost 18,000 per year. The on-site laboratory capability is far more efficient for the practice and more convenient for patients.

- When patients come for a scheduled appointment, they get their laboratory tests done and see their practitioner during the same visit.
- Patients don't have to make two trips or wait several days to obtain results which often trigger medication changes.
- Practitioners feel they can achieve better compliance and results when they have access to the most recent laboratory data, so the plan of care can be immediately implemented.

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NEPHROLOGY ASSOCIATES OVERVIEW



LABORATORY TESTING AND AUTOMATION

Laboratory automation is a key focus of testing sites in today's market. Laboratories implement automation to reduce errors, improve clinical data turnaround time and reduce overall operational costs. To screen and manage patients at risk for anemia, practitioners can use the comprehensive reticulocyte panel, which is part of the Sysmex expanded CBC results.

The additional data includes reticulocyte number, reticulocyte percentage, immature reticulocyte fraction (IRF), and reticulocyte hemoglobin equivalent (RET-He). The expanded parameters are easy to obtain, inexpensive to run, and do not require additional blood samples or laboratory resources.

ANEMIA IN KIDNEY DISEASE

There is a high prevalence of anemia in patients with kidney disease mainly because of insufficient production of intrinsic erythropoietin. Erythropoietin (EPO) is a hormone produced by the kidney that promotes the formation of red blood cells in the bone marrow. Damaged kidney cells don't produce adequate amounts of EPO, which leads to anemia. Patients with anemia develop symptoms of lethargy, shortness of breath, and have difficulty carrying out activities of daily living.

To correct this, patients may be given recombinant erythropoietin drugs known as erythropoietin-stimulating agents (ESAs). These drugs are given by injection and work to stimulate the production of red blood cells. The red blood cells are then released from the bone marrow into the bloodstream. When indicated, supplemental iron must be given with ESA therapy to ensure adequate hemoglobinization of the new red cells.

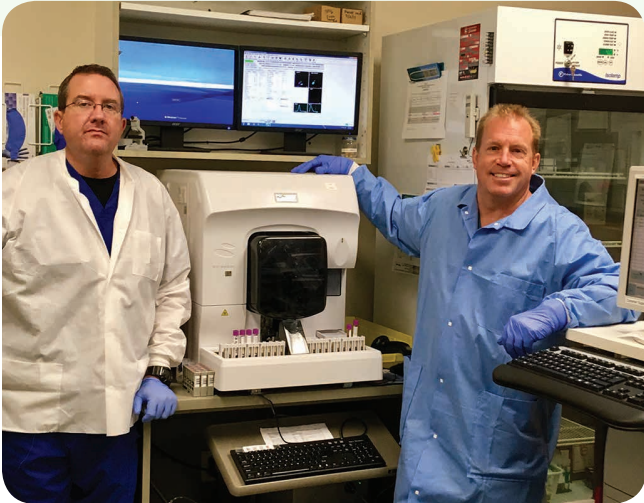
Nephrology Associates' practice offers infusion clinics for patients requiring both iron and ESA therapy. Shannon Sizemore, LPN-C, is the nurse who oversees the iron infusion clinic. She provides iron therapy to approximately 100 patients per month (1,200 per year) and the ESA clinic provides care for 175 patients monthly (2,100 per year).

Shannon states, *"The iron and ESA injections significantly improve a patient's quality of life, and the combined therapy has reduced the need for blood transfusions. At the beginning of therapy the patients are lethargic and weak but after 3-6 weeks their energy level significantly improves. RET-He test results can show whether a patient is responding to iron therapy by the second treatment, which is really helpful. RET-He also helps determine the need for oral versus IV iron. Our goal is to get our patients feeling better as soon as possible."*

VALUE OF RETIC PANEL IN ANEMIA MANAGEMENT

RET-He is a measurement of the hemoglobin content of the developing reticulocyte population. RET-He is measured at the cellular level, reflects hemoglobinization changes within 3-5 days of therapy, and is not impacted by inflammatory processes.

- The use of RET-He in challenging patients is extremely helpful because it can alert practitioners to the presence of iron deficiency anemia when traditional tests such as serum iron, ferritin, and TSAT may be inconclusive.
- The RET-He test can also help assess the effectiveness of treatment earlier than traditional parameters.



Chris Thomas MLT (ASCP) with Lab Manager Todd Norris MT (ASCP)

EMBRACING ADVANCED CLINICAL PARAMETERS (ACPs)

Sysmex Clinical Support was invited to present a talk on the advanced parameters value to 15 Nephrology Associates' team members that included physicians, nurses and laboratorians. Sysmex's expanded CBC parameters were introduced to their team as an additional patient management tool for the challenging CKD patients.

National and global kidney organizations have recognized the value of RET-He in anemia management and have included the parameter in key guidelines.^{1,2,3} Early screening for iron deficiency anemia and efficient disease management can enhance patient outcomes and reduce healthcare costs.

Amanda Gibson, LPN-C, who is the practice's clinical manager explained, *"We started using the advanced parameters to get a better understanding if our anemia treatment therapy was working for the patients. Many have elevated ferritin levels because of their kidney disease, diabetes, and/or autoimmune diseases, which can be challenging. Since RET-He is not affected by inflammation, it provides a better indication of whether iron therapy is working."*

GOALS AND ACHIEVEMENTS

IMPLEMENT SYSMEX RET-He PARAMETER:

- Nephrology Associates provides comprehensive care and treatment to thousands of patients with chronic kidney disease in southeast Tennessee
- Their on-site laboratory promotes efficient care by enabling patients to be seen by their practitioners directly following blood draws.
- Their busy anemia clinic offers ESA and IV iron therapy that drastically improves the quality of life for those suffering from this debilitating condition.
- They incorporated the reticulocyte count and RET-He blood tests into their revised ESA and IV iron infusion protocols for chronic kidney disease patients.
- These added laboratory tests are low-cost, automated, quick, and provide clinically relevant data for iron treatment decisions.

IMMEDIATE BENEFITS:

- Faster turnaround time for results provided to practitioners and patients
- Greater efficiency for patients and practice
- More control over information drives better results
- Improved patient satisfaction by eliminating an additional visit

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NEPHROLOGY ASSOCIATES: IN THEIR WORDS

Process, Implementation and Results

Lab Tests	Pre Therapy	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Normal Range
Hgb	9.9 Low	9.4 Low	8.9 Low	9.0 Low	9.1 Low	8.9 Low	9.1 Low	12.0-16.0 g/dl TARGET >10
RET-H _e	28.5 Low	29.8 Low	36.1	30.7	31.0	30.8	30.0	29.9 - 38.7 pg
IRF	14.8	6.8	6.8	5.6	4.7	11.6	5.8	3.0 - 15.9 %
Ferritin	787.9 High						1213 High	25.0-365.0 ng/ml TARGET >100
TSAT	14.8 Low						20.4 Low end of normal	20.0-50.0 % TARGET >20
Serum iron	36						40	35-150 ug/dl
Treatment		IV Venofer 200 mg	IV Venofer 200 mg	IV Venofer 200 mg	IV Venofer 200 mg	IV Venofer 200 mg	IV Venofer 200 mg	

The views expressed in the following case are those of the medical professionals at Nephrology Associates, Chattanooga, TN. Results of case studies are shared for educational purposes and not predictive of other outcomes so results may vary.

PATIENT HISTORY

68-year-old female CKD stage III with polycystic kidney disease

DIAGNOSIS

Iron deficiency anemia with symptoms of fatigue and difficulty completing activities of daily living.

TREATMENT PLAN

- Completed 5 weeks of IV Venofer with good response as indicated by increased RET-H_e, TSAT, and serum iron. Ferritin inconclusive due to underlying inflammation
- Referred for ESA therapy due to chronically low Hgb to stimulate red blood cell production as indicated by sub-optimal Hgb and IRF levels
- Continue on iron therapy as per protocol

VALUE OF RET-H_e

- Indicates 1-week post treatment that iron is absorbed and treatment is effective
- Well-defined lower range cutoff provides accurate treatment target
- Stable parameter not affected by inflammation/infection
- Less expensive than traditional iron tests without extra resources needed
- Quick and clinically relevant data for iron treatment decisions

1. KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for Anemia in Chronic Kidney Disease. Am J Kidney Dis 2006 May;47(5 Suppl 3):S11-145
2. KDIGO Clinical Practice Guideline for Anemia in Chronic Kidney Disease. August 2012, Vol 2:4
3. Ratcliffe reference here: [http://www.ajkd.org/article/S0272-6386\(15\)01427-4/abstract](http://www.ajkd.org/article/S0272-6386(15)01427-4/abstract)

