



# Use of Laboratory Studies in the Clinical Management of the Kidney Transplant Recipient (KTR)

Brandi Copenhaver, RN, Kelly Rotondo, DNP, MSN, RN-BC, and Sandra Ryan, MSN, RN  
Department of Transplant Surgery

## Objectives

The learner will be able to:

- 1.) Identify commonly ordered laboratory studies in the post-op kidney transplant patient.
- 2.) Integrate laboratory results into the plan of care for the patient.
- 3.) Prioritize laboratory values of critical importance to patient outcomes.

## Introduction

It is important for the direct care nurse, whether working in intensive care or medical-surgical units to understand the post-operative clinical management for the kidney transplant recipient (KTR). There are two phases:

- 1.) **The Early Post-Operative Phase:** acute rejection, graft function, and prevention of infection are crucial elements in the plan of care.
- 2.) **Late Post-Operative Phase:** the goal here is to preserve good graft function and prevent long-term consequences of immunosuppression, which are infection, malignancy, and premature cardiovascular disease.

Laboratory studies are essential in both phases because they guide the medication regimen and clinical treatment plan. The nurse must communicate the laboratory values to the physicians and be able to relate them to the physiological manifestations and complications the patient is experiencing.

The authors raised the following PICO question: In the KTR, does frequent laboratory testing compared to limited/no laboratory testing impact complication rates (such as infection, malignancy, rejection, graft function, etc.)?

## Case Study

**The early Post op phase:** Patient J is a 29 year old male who received a transplant in 2006. He complied with the twice weekly lab draws and weekly clinic schedule initially.

**Late post op phase:** In 2008, he began to miss labs frequently. Noncompliance was observed. In 2009, BUN and creatinine levels were found to be elevated. Based on his laboratory studies it was recommended the patient undergo diagnostic testing to determine possible rejection. Transplant Surgery protocol required a kidney biopsy to be obtained to accurately and definitively diagnose and grade potential rejection. The patient chose to delay biopsy and laboratory studies at this time.

Later, patient did undergo diagnostic biopsy and rejection was diagnosed. Patient was resistant to recommended treatments. He was educated on the risks associated with noncompliance and his plan of care was reviewed.

**Update on Condition:** Patient continues to be noncompliant with lab draws and medical interventions as prescribed. He continues to delay treatment to monitor kidney function and is currently facing loss of graft function, potential relisting for kidney transplant, dialysis, or death.

### References:

Andrews, P. (2011). Renal Association Clinical Practice Guideline on Post-operative Care of the Kidney Transplant Recipient. *Nephron Clinical Practice*, 118(Supplement 1), c311.

Changes in anti-HLA antibody titers more than 1 year after desensitization therapy with rituximab in living-donor kidney transplantation. (2010). *Transplant Immunology*, 23(4), 220-223. doi:10.1016/j.trim.2010.06.005

## Common Lab Studies and Medications

After reviewing the Renal Association Clinical Practice Guidelines on Post-operative Care of the KTR, the suggested laboratory studies for a KTR are: screenings for dyslipidemia, diabetes mellitus, BUN, Creatinine, cytomegalovirus (CMV), BK viral load (PCR urine or serum), human leukocyte antigens (HLA), donor specific antibody (DSA), immunosuppression trough levels (see list below \*), hyperparathyroidism (PTH levels), anemia, Epstein Barr Virus (EBV), Varicella Zoster Virus (VZV), urinalysis/urine cultures, ImmuKnow level, and polycythemia.

Immunosuppression medications of: \*tacrolimus (Prograf), \*Cyclosporine (Neoral/Gengraf), Mycophenolate Mofetil (Cellcept), Mycophenolic Acid (Myfortic), Prednisone taper, and \*Rapamune (Sirolimus) are constantly being correlated to lab studies.

## Results

It is evident that frequent laboratory testing leads to early invention and decreased complication rates. Correlating laboratory results to the clinical picture is a multi-disciplinary approach, which includes: physicians, nurses, transplant coordinators, pharmacists, nutritionists, and social workers. Medication management is based on laboratory results and quick action is necessary to promote positive outcomes and therapeutic immunosuppression for the KTR.

## Conclusion

It is critical the KTR continues with outpatient follow-up and frequent laboratory studies. A transplant program needs to have a clear, organized system in place for laboratory testing, clinic follow-up, and access to transplant coordinators. These are keys for the success, health, and well-being of the KTR. During hospital admissions the direct care nurse needs to educate the KTR, communicate with the transplant team, and reinforce the importance of follow-up after discharge.