

## Introduction

- Renal transplantation is the first choice in treatment of pediatric patients with end stage renal disease<sup>1</sup>.
- Renal biopsies are a well-established tool in assisting diagnostic decisions and treatment plans for renal diseases; this study will provide an analysis of patients who have undergone one or more targeted renal biopsies<sup>2</sup>.

## Aim

- To profile both therapeutic and graft outcomes in post-transplant patients who have undergone a renal biopsy in a national single center in Ireland.

## Methods

- A retrospective review of 138 renal transplants from 2003-2019 was analyzed
- Patients who underwent at least one renal biopsy at Temple Street Children's University Hospital were included
- Data collected: demographic data, clinical indications, lab values, biopsy and histological findings
- Data analysed via Microsoft Excel 2019 and SPSS v26
- The Human Research Ethics Committee approved this project

## Citations

- Chacko B, Rajamanickam T, et al. Pediatric renal transplantation—a single center experience of 15 yr from India, *Pediatr Transplant*, 2007 Dec; 11(8):844-9
- Grams ME, Massie AB, et al. Trends in the Timing of Pre-emptive Kidney Transplantation, *J A Soc Nephrol*. 2011 Sep; 22(9):1615-1620.

## Results: Patient Population Characteristics

\*The following figures are representative of all 43 initial biopsies

**Patient Demographics Table**

Male, n (%)	n=29 (74.4%)
Female, n (%)	n=10 (25.6%)
Median age at Transplant (tx) (years)	9 (quartile range: 5-12)
Median age at 1 <sup>st</sup> Biopsy (bx) (years)	12 (quartile range: 8-14)
Median (days) between tx and bx	771 (quartile range: 40-1577)

Table 1. Biopsy patient demographics

### Underlying Diagnosis of Patients needing a Renal Biopsy, n=43

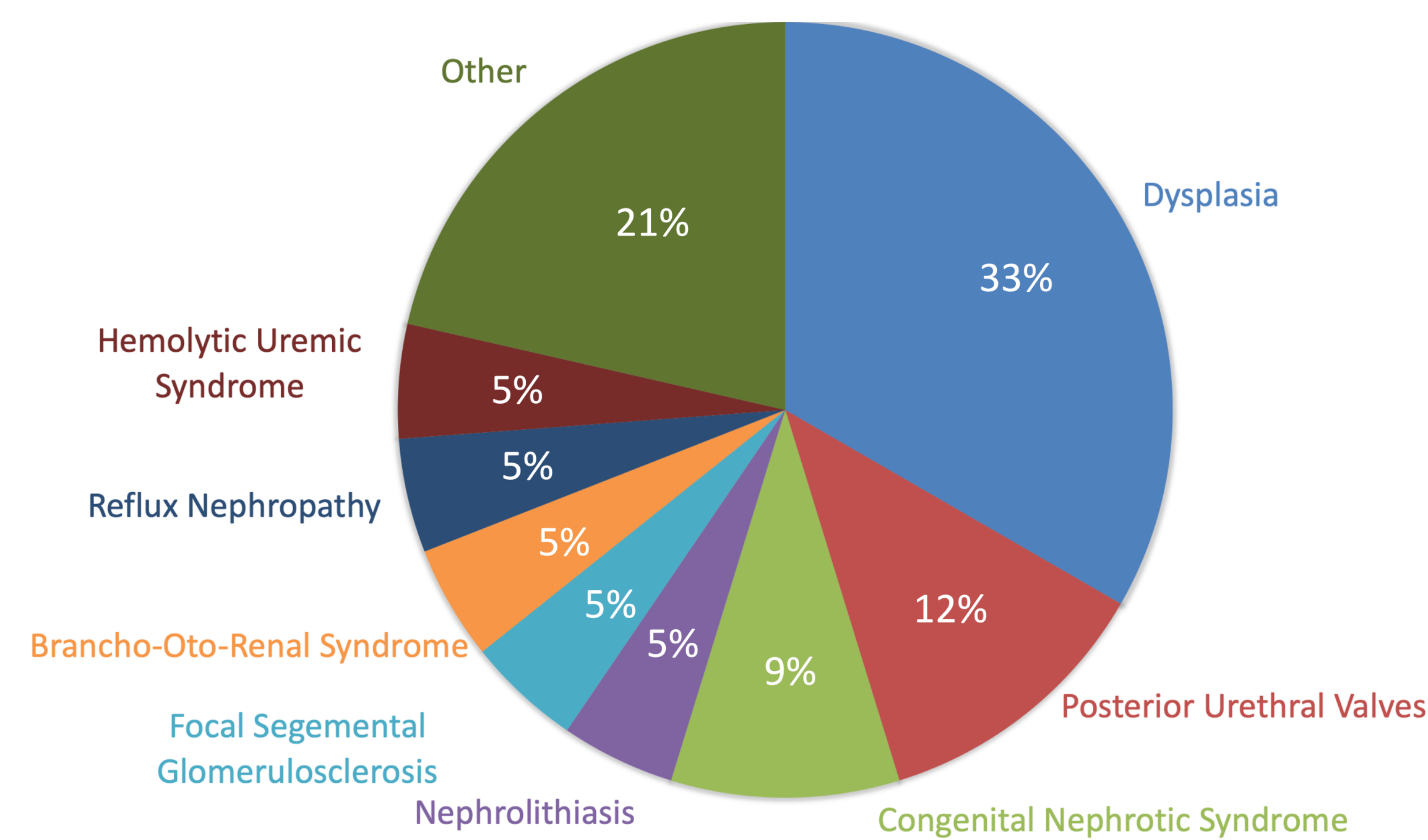


Figure 1. The most predominant being dysplasia (33%). The "other" category consists of renal agenesis, obstructive uropathy, polycystic kidney, Alport's syndrome, etc.

- Of these 138 transplants, 43 (39 patients) had one or more biopsies taken
  - 26 of the transplants had only one biopsy, whereas, nine transplants had more than one biopsies taken (range: 1-4)
- The predominant indication for taking a biopsy was due to elevated creatinine levels (47% of biopsies)
  - Median=135 umol/L (quartile range=112-201)
- Nine patients (23%) lost their graft, of which four (44%) had a re-transplant
  - Four transplant glomerulopathy (7y), one thrombosis (24hr), one noncompliance (3y), one ATN (7m), one acute humoral rejection (27 d), one recurrence of disease (5y)

### Diagnosis Findings from Initial Biopsy, n=43

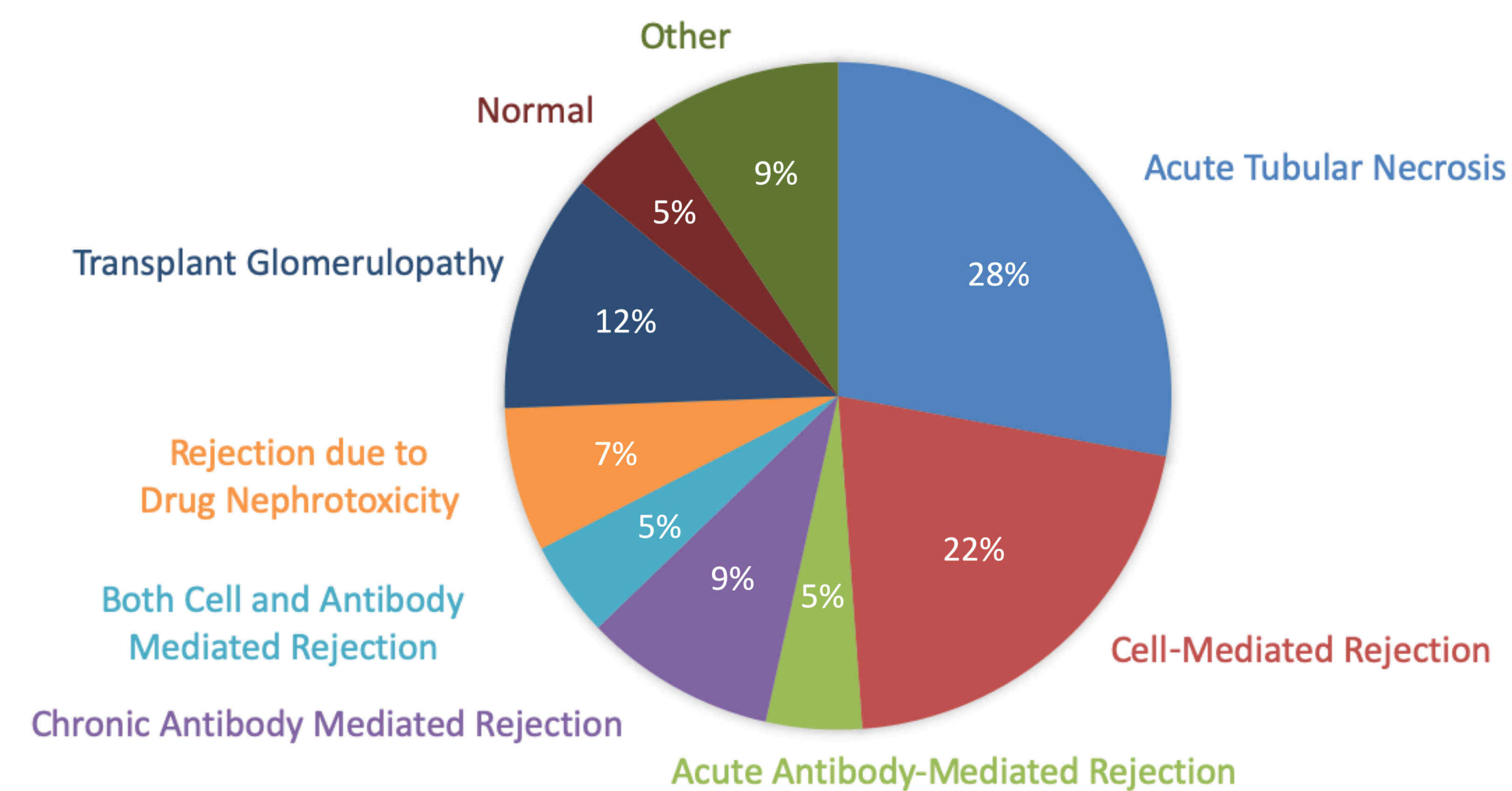
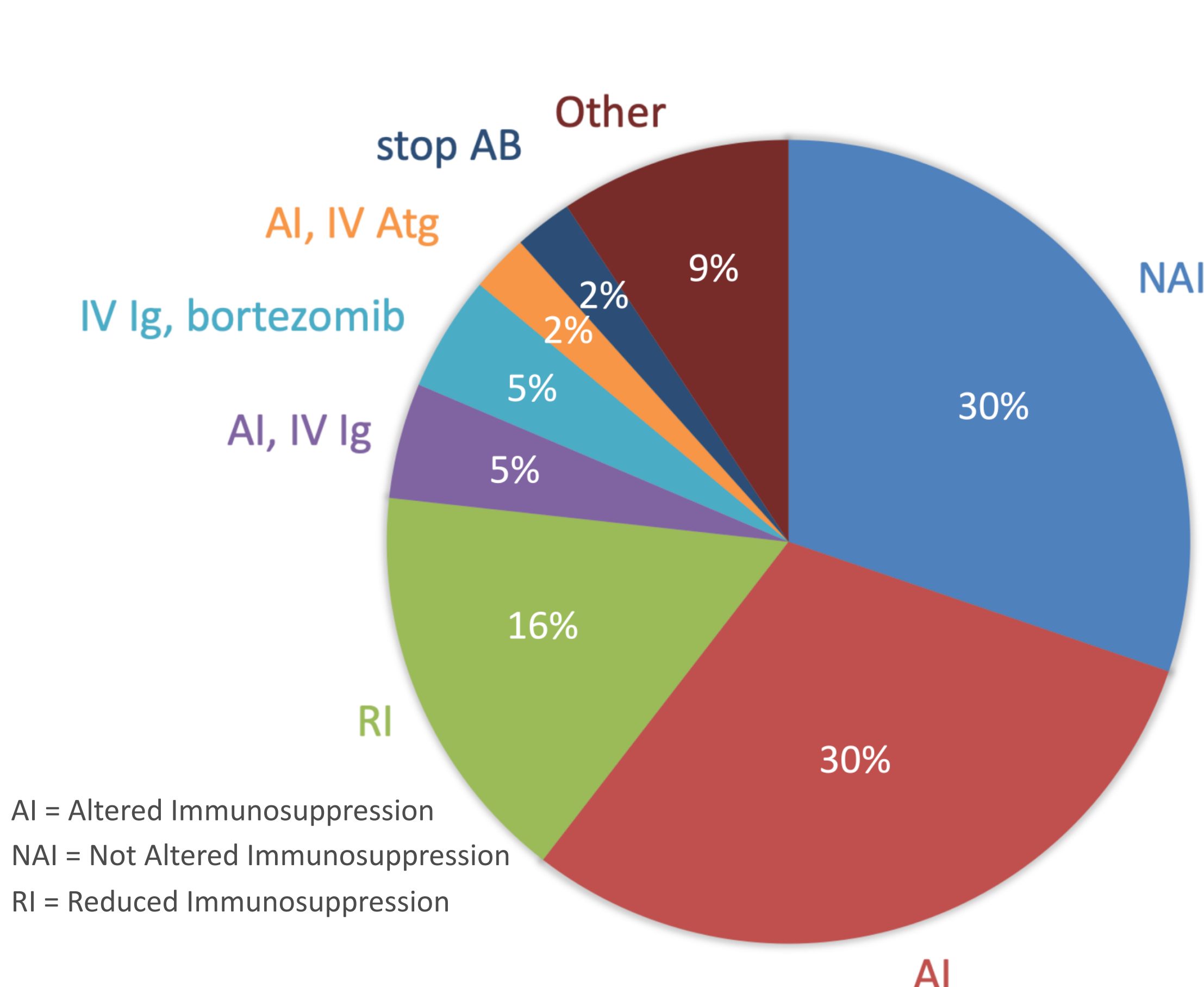


Figure 2. The most common biopsy finding was ATN (28%), followed by acute CMR (21%), and acute and chronic AMR (14%)

### Patient Treatment Changes After Initial Biopsy, n=43



AI = Altered Immunosuppression  
NAI = Not Altered Immunosuppression  
RI = Reduced Immunosuppression

Figure 3. The majority of patients resulted in a form of altered immunosuppression after biopsy findings (37%).

### Donor Specific Antibody (DSA) Values in Antibody-Mediated Rejection (AMR) and Non Antibody-Mediated Rejection after Biopsy

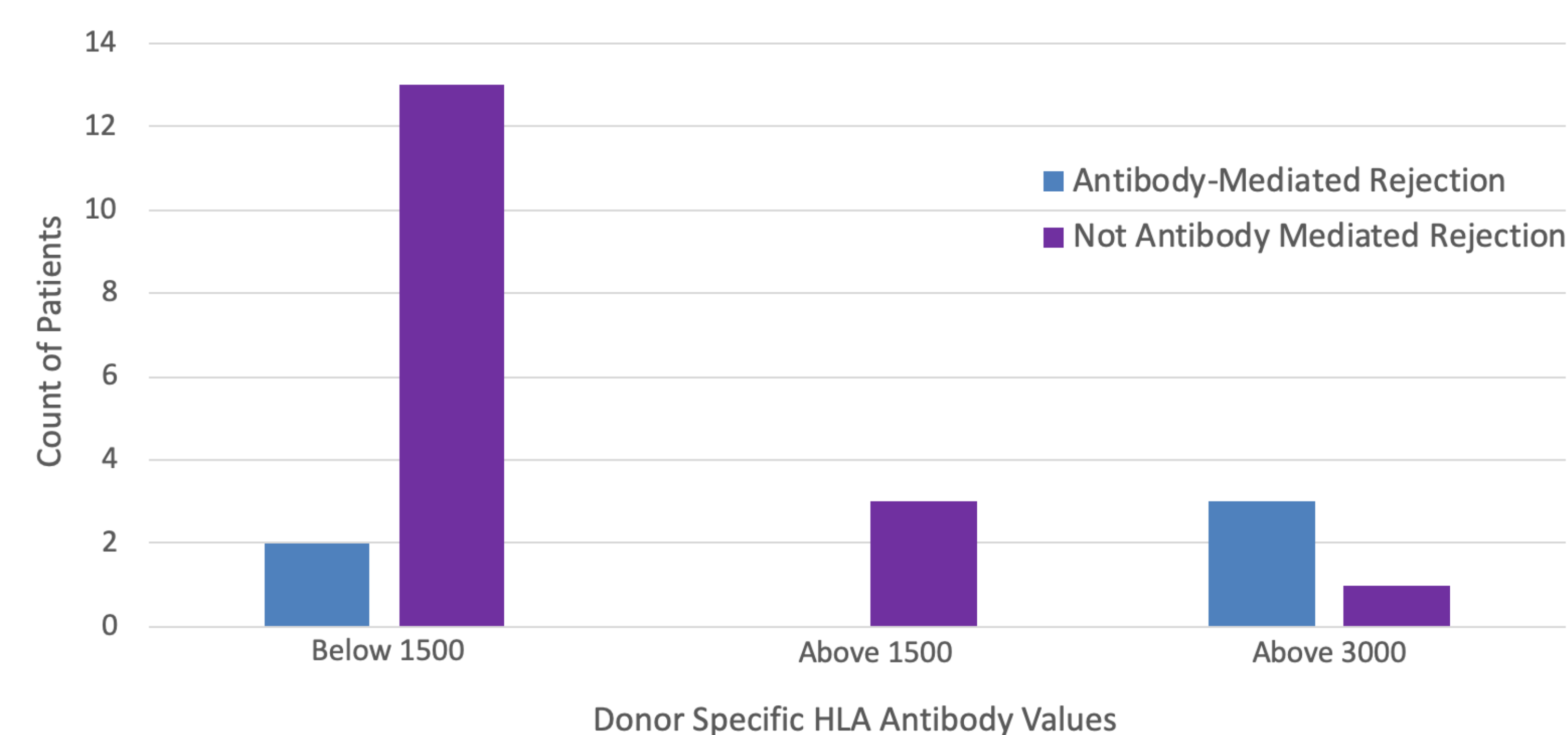


Figure 4. Patients with DSA values above 1500 and 3000 were more likely to have an antibody-mediated rejection diagnosis post first biopsy (P=0.071)

## Results: DSA and Proteinuria

- Two patients with a biopsy diagnosis of antibody-mediated rejection had DSA values above 3000.
- Proteinuria values for these patients at time of biopsy had a median of 321mg/L (range: 104-538) and continued to rise with four years post biopsy data displaying a median of 1924mg/L (range: 1328-2520).
- Two patients with (antibody-mediated rejection with DSA values within range (below 1500) had a median proteinuria value of 580.5mg/L (range: 610-551) taken at biopsy and continued to decline with a value of 139.5mg/L (range: 60-219) after four years.

## Conclusions

- Renal transplantation in pediatric patients has delivered similar results when compared to other single center experiences.
- This study provides data on the epidemiology of renal disease in paediatric Irish patients and can be helpful in formulating guidelines in the future.

## Next Steps

- A long term follow up study of outcomes comparing centers use of biopsy results is recommended.
- Larger studies examining the efficacy DSA values as well as assessing proteinuria and long term graft function are warranted.

## Acknowledgements

Dr. Elaine Kohler Summer Academy of Global Health Research