

Monitoring Graft Function in Pediatric Kidney Transplant Recipients

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**Mount
Sinai**

Monitoring Graft Function in Pediatric Kidney Transplant Recipients

Pre-Transplant

- Donor

- Recipient

Peri-Transplant

Early Post Transplant

Late Post Transplant

- Recipient

Monitoring Graft Function in Pediatric Kidney Transplant Recipients

Not Just Serum Creatinine

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Donor

Living

Deceased

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Living Donor

Serum Creatinine
eGFR

Dipstick for protein
24h urine

Radiologic imaging
Serologies

Biopsy – Never
HLA

Deceased Donor

As with a living donor

But no radiologic imaging

**And depending on donor & center biopsy may be
performed**

Cherry picking for pediatric recipients

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Recipient

**Pre-emptive - eGFR \leq 20
ml/min/1.73 m²**

**Crossmatch between Donor and
Recipient**

HLA

DSA

non HLA Ab

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Peri Transplant

Urine Output

Fall In Serum Creatinine

Proteinuria – Disease Recurrence

Time Zero Biopsy?

Ultrasound?

Immunosuppressive Drug Levels - Therapeutic Drug Monitoring

Immunosuppression

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Early Post Transplant

As with peri transplant

+ eGFR

DSA

Viral PCR – CMV, EBV, BKV

Cystatin C

BP Monitoring

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Early Post Transplant, cont'd

Protocol Biopsy

- **Generally not done**
 - **Minimal risk**
 - **Uncertain Benefit**
- **No randomized Trials in pediatric patients**

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Comment from Birk's Paper

“The main impediment to the implementation of surveillance biopsies as the standard of care is the lack of demonstrable benefit of early histological detection on long-term outcome. The considerable debate surrounding this issue highlights the need for multicenter, prospective, and randomized studies.”

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Early Post Transplant, cont'd

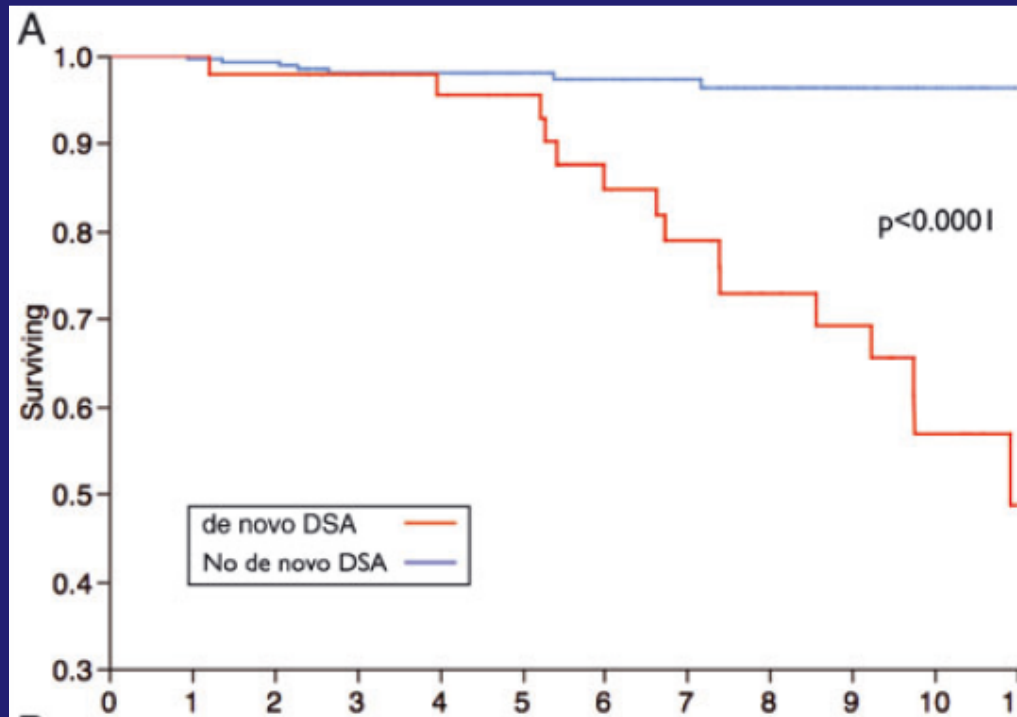
Rising S. Creatinine

- Adherence
 - US
- Drug levels
- Viral studies
 - DSA
- Indicated Biopsy

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Evolution and Clinical Pathologic Correlations of *De Novo* Donor-Specific HLA Antibody Post Kidney Transplant

C. Wiebe^{a,†}, I. W. Gibson^{b,c,†},
T. D. Blydt-Hansen^d, M. Karpinski^e, J. Ho^e,
L. J. Storsley^e, A. Goldberg^d, P. E. Birk^d,
D. N. Rush^e and P. W. Nickerson^{a,c,*}



8
graft losses

14
graft losses

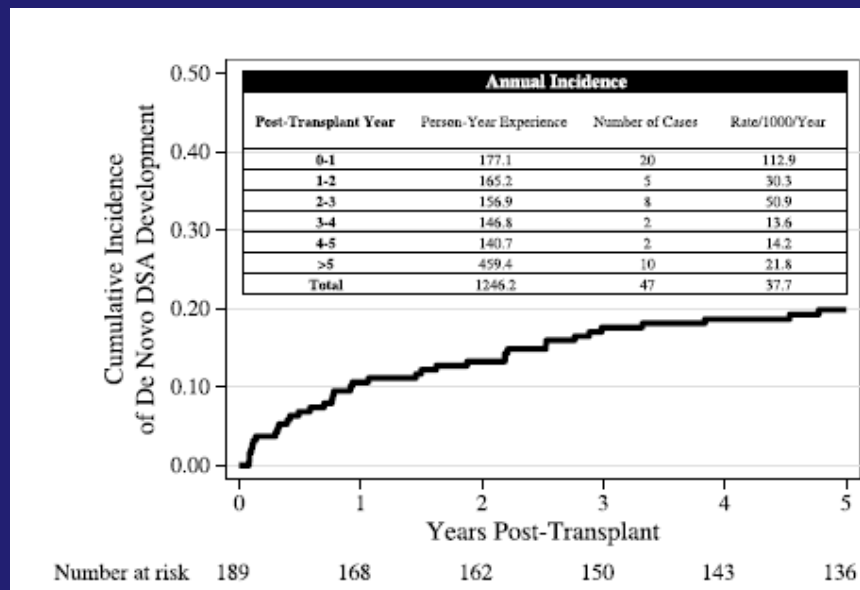
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Incidence and Impact of De Novo Donor-Specific Alloantibody in Primary Renal Allografts

Matthew J. Everly,^{1,7} Lorita M. Rebellato,² Carl E. Haisch,³ Miyuki Ozawa,⁴ Karen Parker,⁵ Kimberly P. Briley,² Paul G. Catrou,² Paul Bolin,⁵ William T. Kendrick,⁶ Scott A. Kendrick,⁶ Robert C. Harland,^{3,5} and Paul I. Terasaki¹

1. **11%** of 189 patients developed dnDSA in the **first post-Tx year**.
2. **20%** within **5 years** and
3. **25%** within **10 years**



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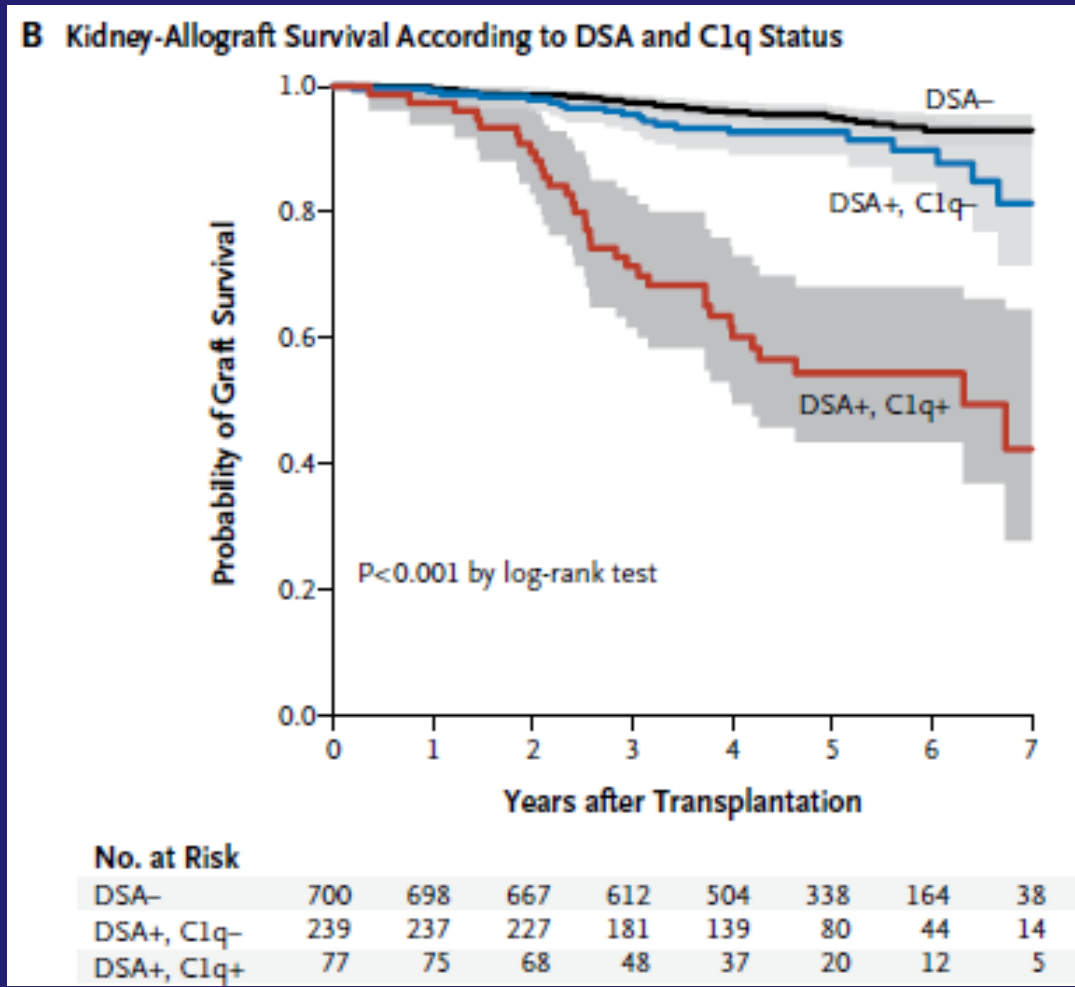
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From DSA appearance,

1. **9%** of patients lost their graft at 1-year
2. **24%** at 3-years

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Immunologic Monitoring

urinary CXCL 9, allospecific CD154+TcM

- Still a work in progress

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Late post transplant

Same as early post transplant

+ Chronic allograft injury/disease recurrence

Side effects of medication

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Conclusions

- 1. Monitoring graft function in the pediatric kidney recipient includes evaluation of the donor prior to the transplant.**
- 2. Renal function analysis in the recipient goes beyond simple serum creatinine and includes**
 - Ultrasound**
 - Proteinuria**
 - Therapeutic Drug Monitoring**
 - DSA**
 - Biopsy (Indicated/Protocol)**
 - Assessment for adherence**
 - Immunologic Monitoring**