

# Donor specific antibodies to DQ antigens are rare in DR antigen matched kidney transplants

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## Background:

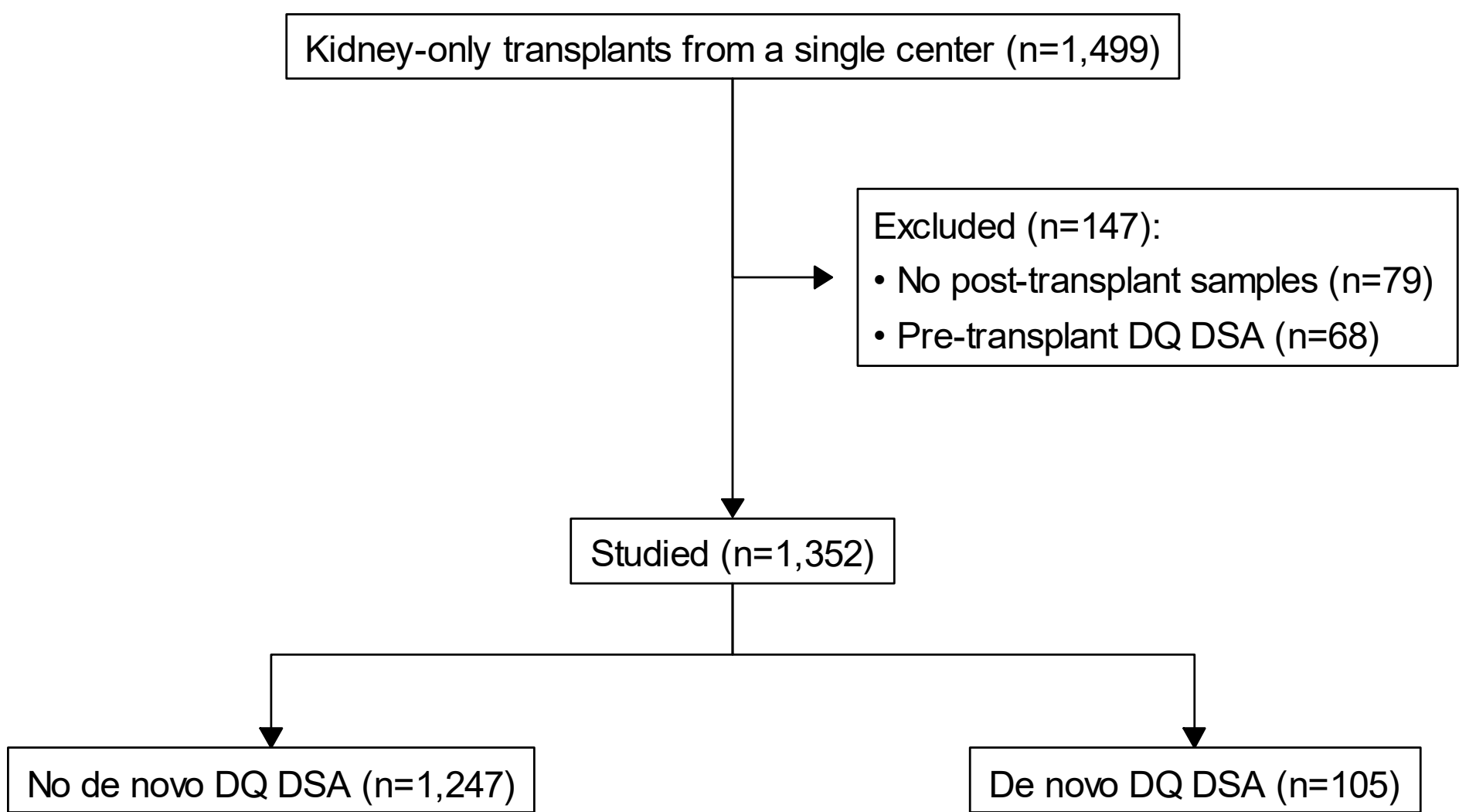
- HLA-A, B, and DRB1 matching is prioritized in deceased donor kidney transplantation
- Donor specific antibodies to DQ are most frequent post-transplant, and have highest risk
- There have been suggestions to include DQ matching in organ allocation
- However, a recent OPTN/SRTR analysis did not show that DQ matching was correlated with transplant outcomes



**Aim:** Since DR and DQ are in high linkage disequilibrium, how frequent is de novo DQ DSA formation in relation to DR matching?

## Methods:

- Kidney-only transplants from a single center
  - Transplants from 2017 to 2023
  - Both living and deceased donors
- Excluded transplants without post-transplant samples
- Excluded transplants with pre-transplant DQ DSA
- The remaining transplants were studied for de novo DQ DSA formation



## Results

### DR matching of transplants with DQ DSAs

DR antigen MMs	Transplants with DQ DSA
2	57
1	44
0	4

### Risk of de novo DQ DSA with DR antigen mismatch

DR Antigen MM	Transplants	DQ antigen MM transplants	De novo DQ DSA transplants	Unadjusted hazard ratio
Any MM	1151	994	101	1.626
No MM	201	64	4	1 (reference)

### 0-DR antigen mismatched transplants with DQ DSA

Case	Recipient genotype	Donor genotype*	DSA	Imputed high resolution DR mismatch*
1	DR13 DQ6	DR13 DQ7, 6	DQ7: DQB1*03:19-DQA1*05	DRB1*13:04
2	DR7, 11 DQ6, 8	DR7, 11 DQ7, 9	DQ7: DQB1*03:01/19-DQA1*05	Possibly: DRB1*11:04/03#
3	DR11, 15 DQ6	DRB1*11:04, 15:01 DQB1*03:01 (DQ7), 06:02 (DQ6)	DQ7: DQB1*03:01-DQA1*05:05	DRB1*11:04 + DRB1*15:01
4	DR17, 7 DQ6	DRB1*03:01, 07:01 DQB1*02:01 (DQ2), 03:03 (DQ9)	DQ9: DQB1*03:03-DQA1*02:01	Possibly: DRB1*07:04#

\*Mismatches in red; high resolution typing available for two donors. #Low probability of DRB1 MM for these transplants.

## Conclusions:

- Nearly all instances of de novo DQ DSA also had a DRB1 antigen or probable DRB1 allele mismatch.
- We hypothesize the risk of de novo DQ DSA is enhanced by DR mismatching, with an unadjusted hazard ratio of 1.626.
- Further increasing allocation priority for DR antigen matching may have an unanticipated benefit of reducing de novo DQ DSA.
- We are leading a multicenter study to refine associations of HLA mismatching with allograft survival and DSA formation.