

The Australian Corneal Graft Registry 2018 Annual Report



Presented by *Miriam Keane, PhD*

ACGR Executive Director

At the Australia and New Zealand Cornea Society Meeting

March 7th 2019



Major events

- **2018 ACGR Report released July 2018**
 - USB posted to contributors with individual feedback
 - Available freely online: <http://hdl.handle.net/2328/37917>
- **Collaboration on eye module of the Electronic Donor Record**
 - No changes to information provided by surgeons
 - All registration forms to be returned to Eye Banks
- **Qualified Privilege Attained**
 - Suggested at ANZCSM in 2015 and granted on December 12th 2018
 - Greater level of protection for recipients, donors, surgeons and eye banks
 - Identified data cannot be released without written permission from identified parties, or Ministerial permission



Qualified Privilege

► We can still

- Work with eye banks to identify missing graft registrations
- Request follow-up on identified patients via mail and phone
- Provide an identified list of recipients for which follow-up is still sought
- Produce reports based on amalgamated data
- Provide individual feedback to surgeons and eye banks for personal audit
- Link with the National Death Index

► We cannot

- Provide individual feedback that may enable inadvertent identification of individual surgeons, eye banks or recipients by any other entity
- Any external attempt to do so will be a breach of the Act

The ACGR Database – 15th February 2019

1985
onwards

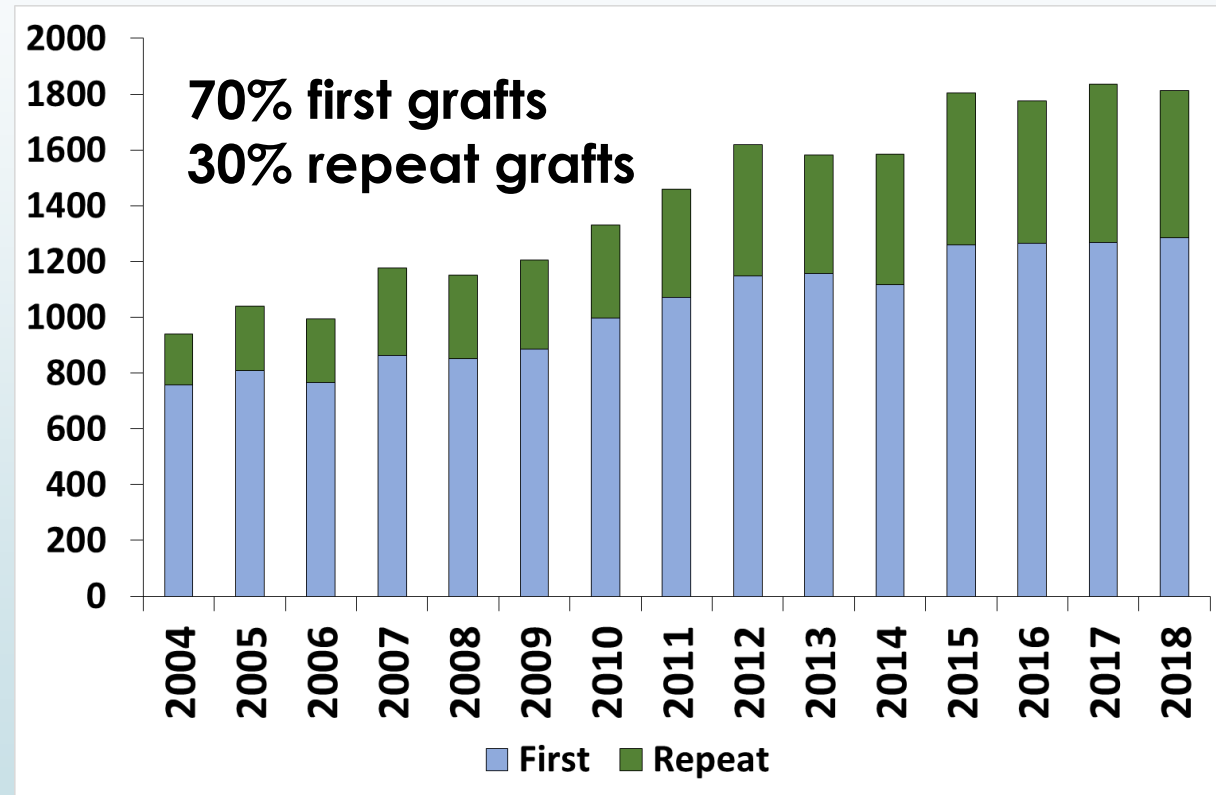
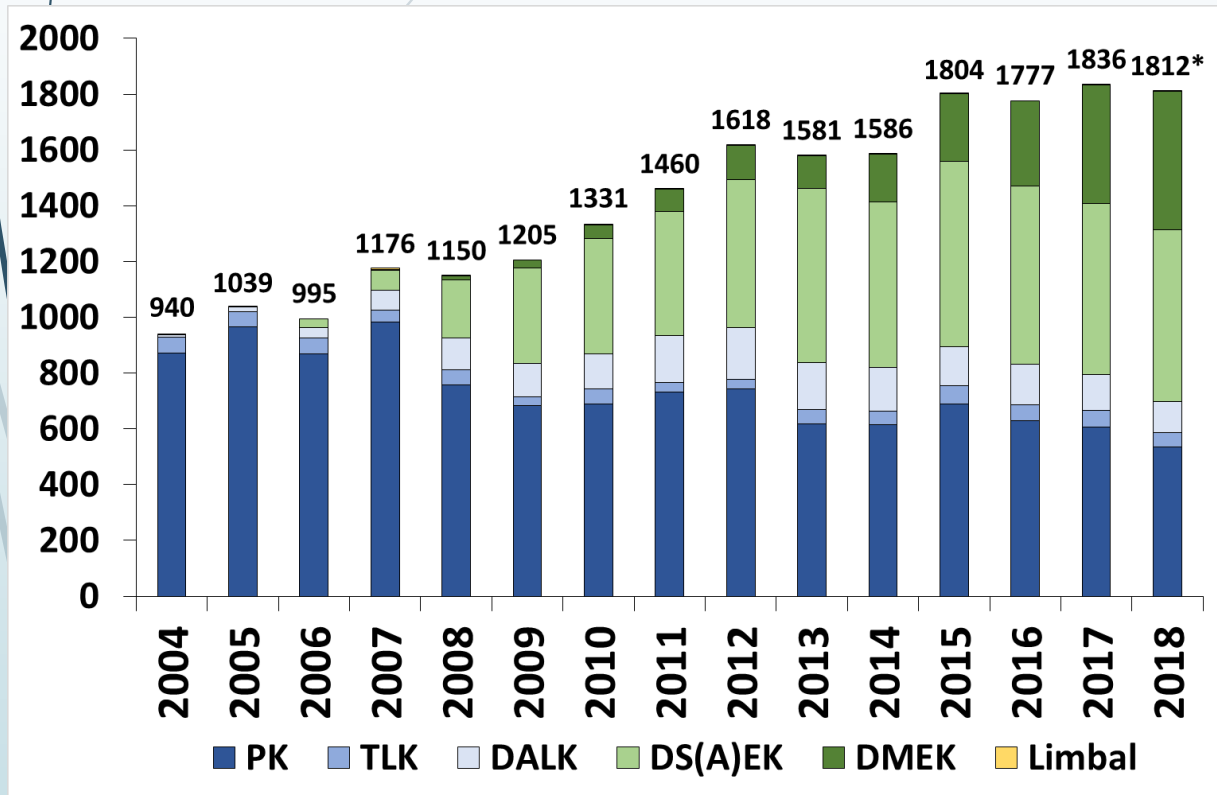
2000
2006
2007
onwards

| | Registered | Followed | Failed | EGF* | PNF* |
|----------------|-------------|----------|--------|------|------|
| Total | 37014 | 76% | 21% | 3% | 2% |
| PK | 25777 (70%) | 82% | 23% | 2% | <1% |
| Other lamellar | 1578 (4%) | 74% | 20% | 7% | 1% |
| Limbal | 86 (<1%) | 73% | 35% | 6% | 1% |
| | | | | | |
| DALK | 1728 (5%) | 58% | 7% | 2% | <1% |
| DS(A)EK | 5797 (16%) | 68% | 18% | 5% | 5% |
| DMEK | 2048 (6%) | 47% | 18% | 12% | 10% |

*EGF = Early graft failure, failed within 3 months of graft

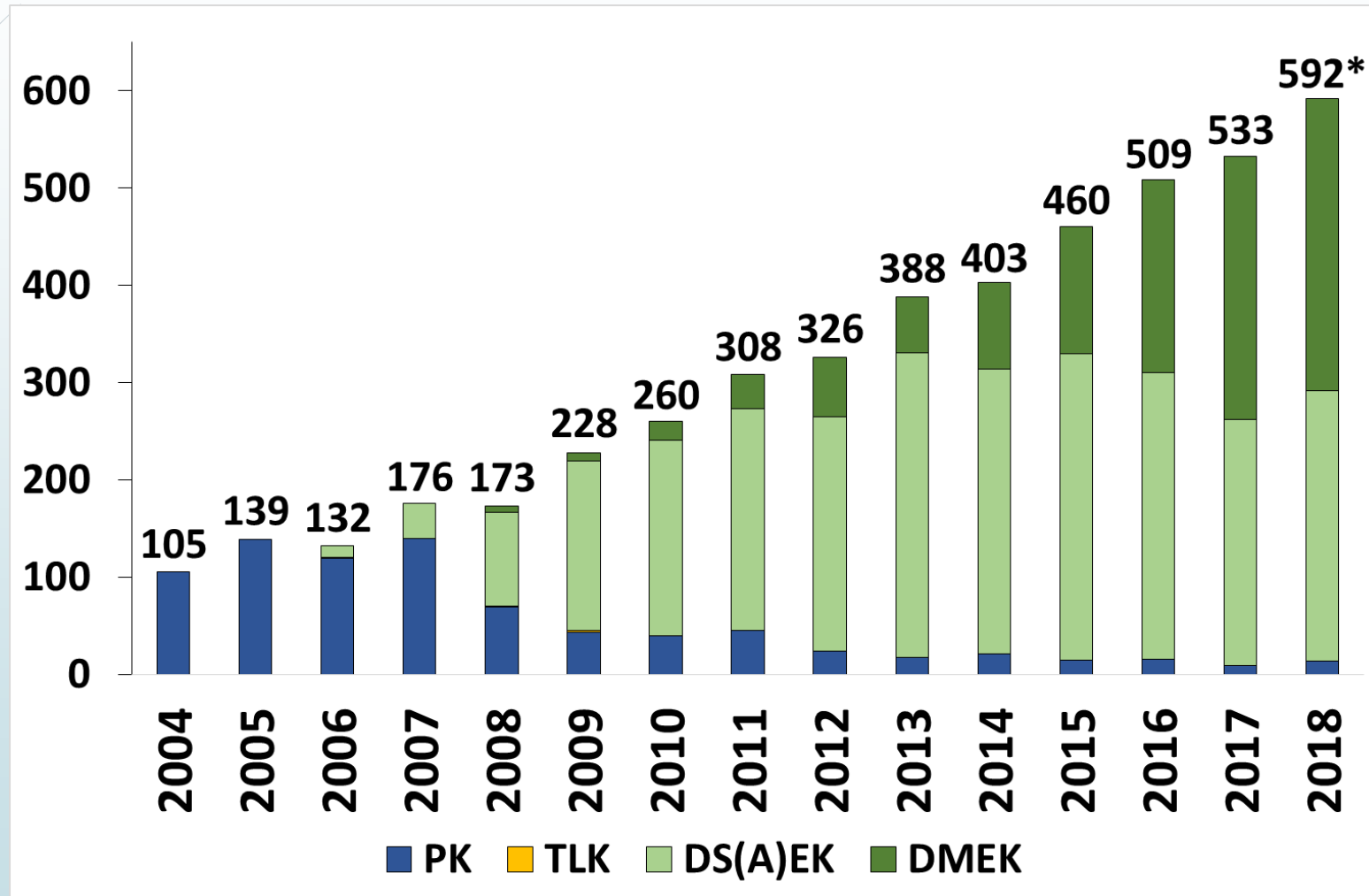
PNF = Primary non-functioning graft, surgeon specified that graft never cleared/attached

Registered Graft Numbers



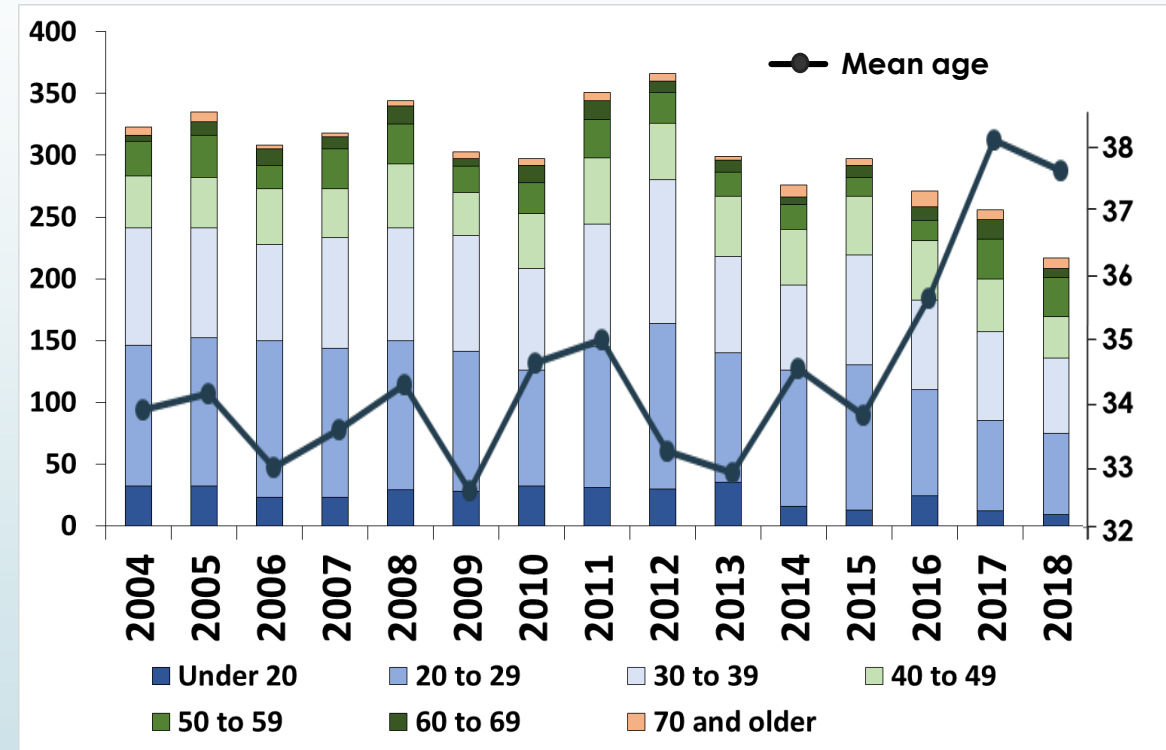
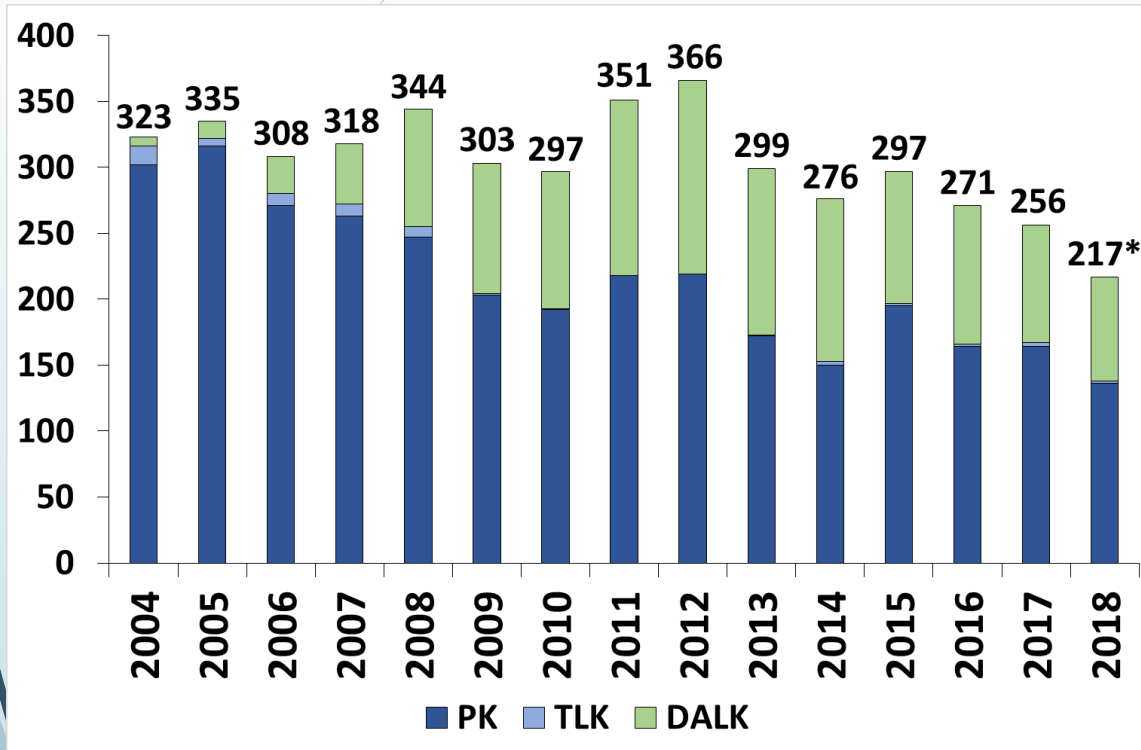
*As received by 15th February 2019

First Grafts – Fuchs' Endothelial Dystrophy



*As received by 15th February 2019

First Grafts - Keratoconus



- Reduced numbers overall in latest years
- Decrease in both PK and DALK

- Decrease in recipients aged <30
- Increase in mean age from 33 to 35 (2004 to 2015) to 37/38 in 2017/2018

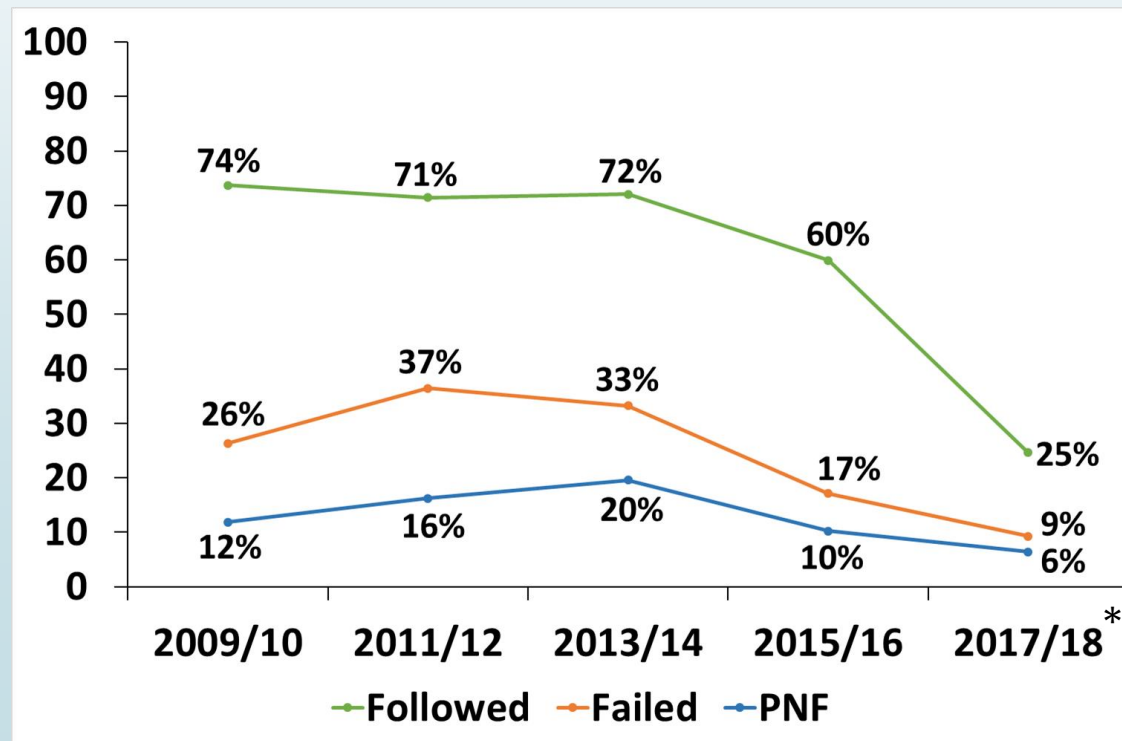
*As received by 15th February 2019

Corneal Grafts in Eyes with a History of CCXL

- ▶ **57 first grafts for keratoconus**
 - ▶ Earliest reported in 2012
 - ▶ 31 PK, 25 DALK, 1 limbal
 - ▶ 1 patient with bilateral first DALK
 - ▶ Median age: 29 years, range 16 to 60
 - ▶ Median age no CCXL, from 2012: 32 years, range 10 to 94, n=1983
 - ▶ 25/57 (44%) followed – median: 2y5m, range: 5m to 5y3m
 - ▶ 1 failure to date (rejection @ 5m)
- ▶ **12 other indications for first graft**
 - ▶ pellucid marginal degeneration (3); infections (2 bacterial, 1 fungal); ectasia following LASIK (3); keratoglobus (1); corneal scarring (1); pseudophakic bullous keratopathy (1)

DMEK results update

- At the census date for the 2018 Report (31 July 2017)
 - 1250 registered, 600 followed
- Now 2048 registered, 966 followed



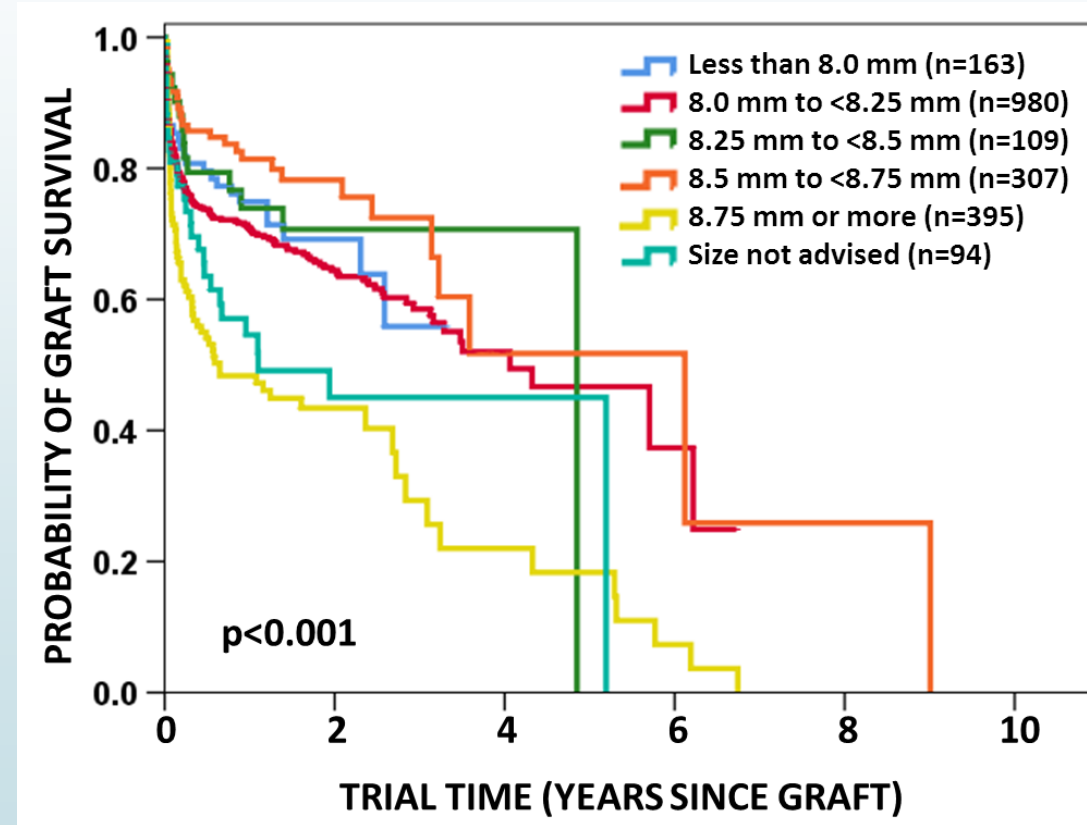
*As received by 15th
February 2019

DMEK multivariate Results Update

- **New, stronger multivariate model derived**
 - **Chi²= 162.72, p<0.0001, n=2048**
 - **Pre-cut cornea by eye bank no longer retained**
 - **4 new variables now included in model**
 - **Storage medium and length of storage, p=0.004**
 - **Donor/recipient sex match/mismatch, p=0.009**
 - **Graft size, p<0.001**
 - **Surgeon volume and level of follow-up, p<0.001**
 - **Influence of graft year has changed**

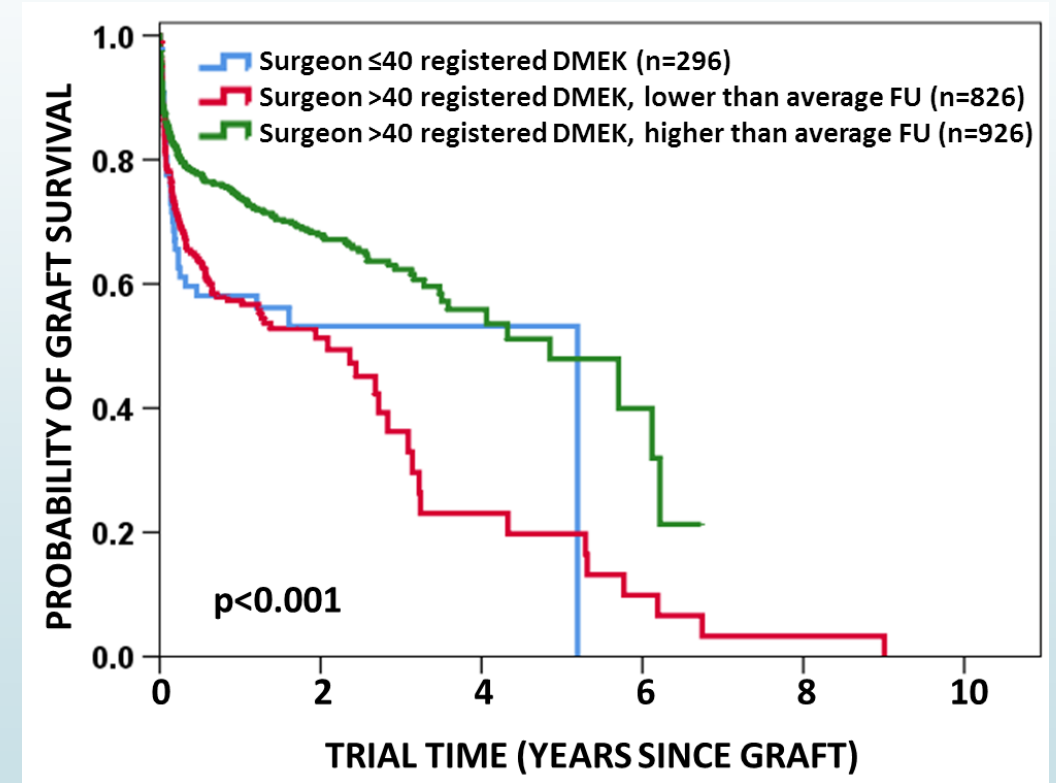
DMEK - Graft Size

- ▶ In multivariate model $p < 0.001$
 - ▶ Best survival was for DMEK which were 8.5 mm to 8.75 mm (orange line)
 - ▶ DMEK that were 8.75 mm or more (yellow line) did not have significantly worse survival than other groups
 - ▶ Worst survival was for DMEK which were < 8.0 mm (blue line)



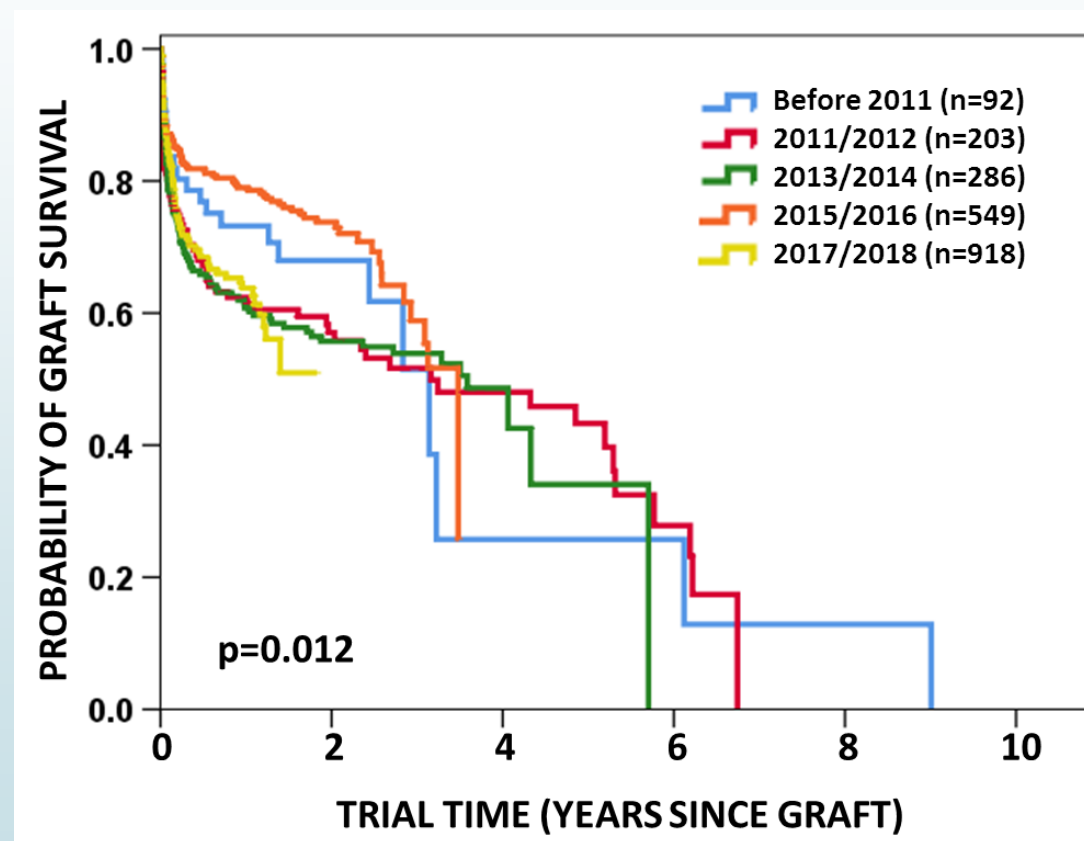
DMEK - Surgeon volume and follow-up

- High volume surgeon cut off is 2% registered DMEK = 41 grafts
- Average follow-up: 47%
 - High follow-up had 78%
- In multivariate model $p < 0.001$
 - High volume surgeons with high follow-up (green line) had significantly better survival than the other two groups
 - No significant difference in survival between low volume surgeons (blue line) and high volume surgeons with low follow-up (red line)



DMEK - Graft Year

- ▶ In multivariate model $p=0.002$
 - ▶ No difference in graft survival for three earliest eras (blue, red, and green lines)
 - ▶ Superior survival for DMEK performed in 2015/2016 (orange line)
 - ▶ Don't yet know about 2017/2018 (yellow line) due to follow-up lag time





DMEK – Summary of New Findings

- ▶ **No significant difference in DMEK survival for corneas pre-cut by eye bank**
- ▶ **Differences across storage practices**
- ▶ **Effect of sex mismatch: female to male have poorest graft survival**
- ▶ **Graft survival improved in 2015/16 compared to earlier cohorts**
- ▶ **Small grafts <8.0 mm do worst, 8.5 mm to 8.75 mm do best**
- ▶ **Differences between high volume and low volume surgeons are confounded by rates of follow-up provided**

Acknowledgments

- **DonateLife – The Australian Government Organ and Tissue Authority**
- **Contributing surgeons, eye banks and follow-up practitioners**

- **Our team**
 - **Miriam Keane – Executive Director**
 - **Nora Coffey – Project Officer**
 - **Vicky Jones – Administrative Officer**
 - **Keryn Williams – Scientific Director**
 - **Richard Mills – Medical Director**



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