Addition of FEV$_1$ Drop to LAS May Improve Access of CF Patients to Transplant

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Disclosures

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I have no financial relationships to disclose within the past 12 months relevant to my presentation. The ACCME defines 'relevant' financial relationships as financial relationships in any amount occurring within the past 12 months that create a conflict of interest.

SR TR SCIENTIFIC REGISTRY OF TRANSPLANT RECIPIENTS

Background

- In the US, the lung allocation score (LAS) ranks candidates aged ≥ 12 years based on waitlist (WL) mortality and posttransplant survival, in a 2:1 ratio.

- Factors that increase WL mortality risk increase LAS; factors that increase posttransplant mortality risk reduce LAS.

- To identify novel predictors of WL and posttransplant outcomes, SRTR and Cystic Fibrosis Foundation Patient Registry (CFFPR) data were linked.

- Prior work identified drop in FEV_1 as a predictor of WL mortality in this linked data set.

Linked data

SRTR:
- O_2/vent status
- 6-minute walk
- PCO_2
- PAP, CI, CVP
- Creatinine
- Posttransplant outcomes
- And more!

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CFFPR:
- Exacerbation history
- Pre-listing PFTs
- Comorbidity
- Microbiology
- And more!

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A broader data set of CF patients

Methods

- We identified 1853 cystic fibrosis (CF) lung transplant recipients aged ≥ 12 years who underwent transplant 2006-2014 and had data in both datasets.

- Using Kaplan-Meier time-to-event analysis, we identified univariate effect of FEV_1 drop on 1-year patient survival.

- Using Cox proportional hazard regression, we identified several risk factors for 1-year posttransplant death.

Baseline characteristics of matched transplant cohort

Characteristic	N	Percent
Age: 12-17 years	176	9%
Age: 18-25 years	323	30%
Age: 26-30 years	382	21%
Age: ≥ 31 years	736	40%
Any Burkholderia species	98	5.3%
Chronic pseudomonas	1189	64%
Oral corticosteroids	408	22%
FEV$_1$ drop ≥ 20% predicted	334	18%
6-min walk distance, ft (mean & SD)	856	496
Serum creatinine, mg/dl (mean & SD)	.68	.42
All recipients	1853	100%

Univariate posttransplant patient survival by FEV$_1$ drop

Log-rank P=0.0187

88%

84%

% died

Days posttransplant

drop<20%   drop>=20%
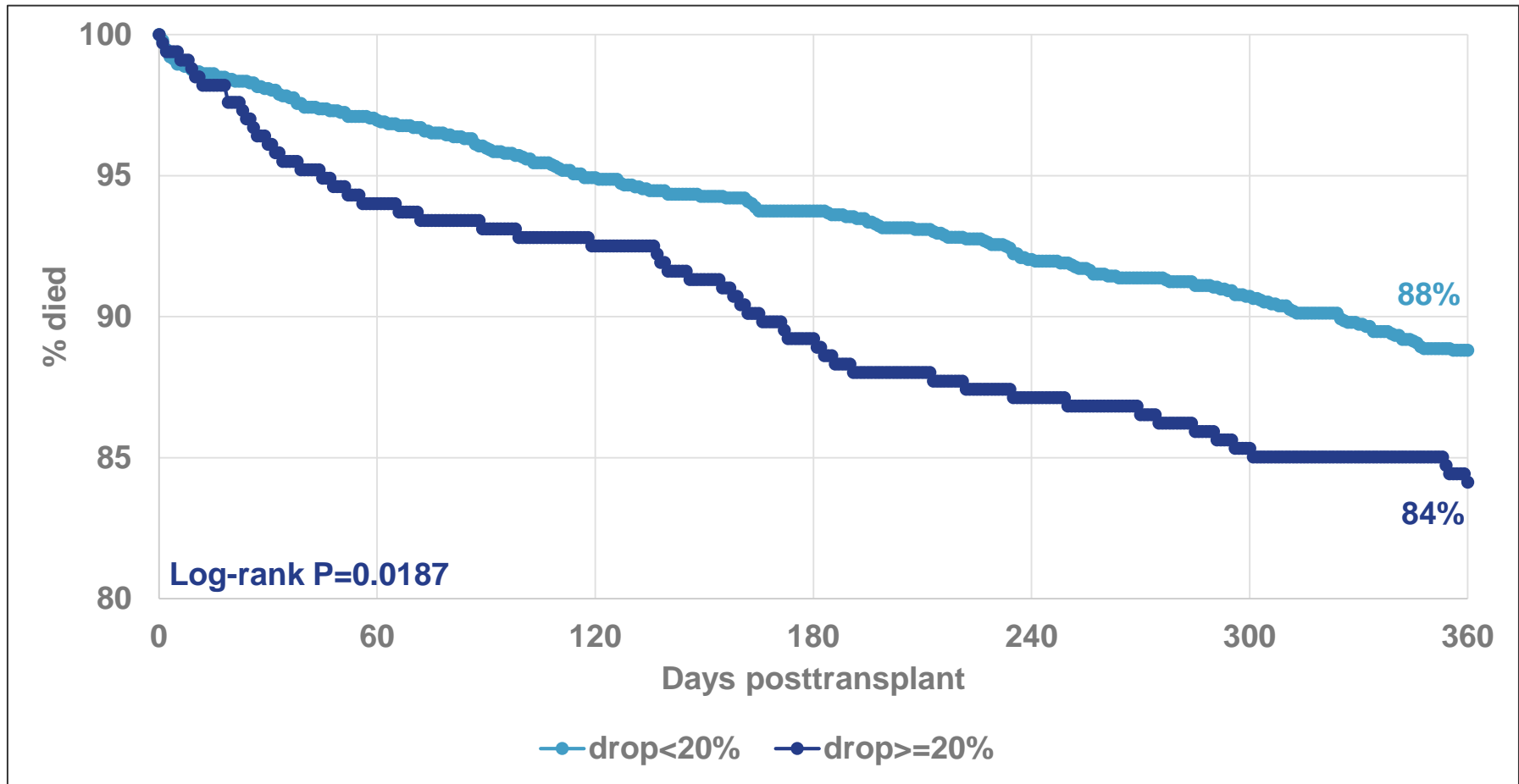
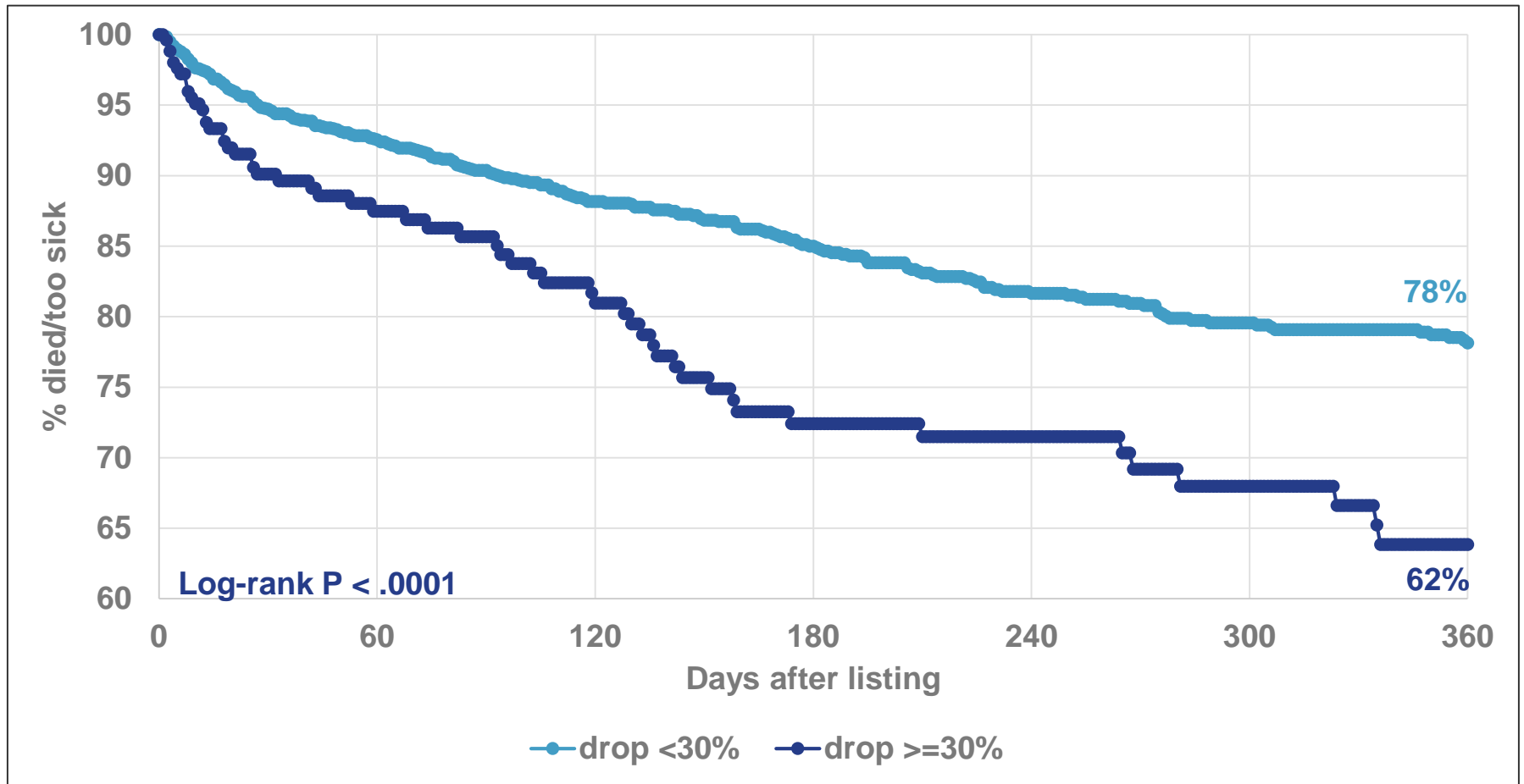# Predictors of 1-year posttransplant death
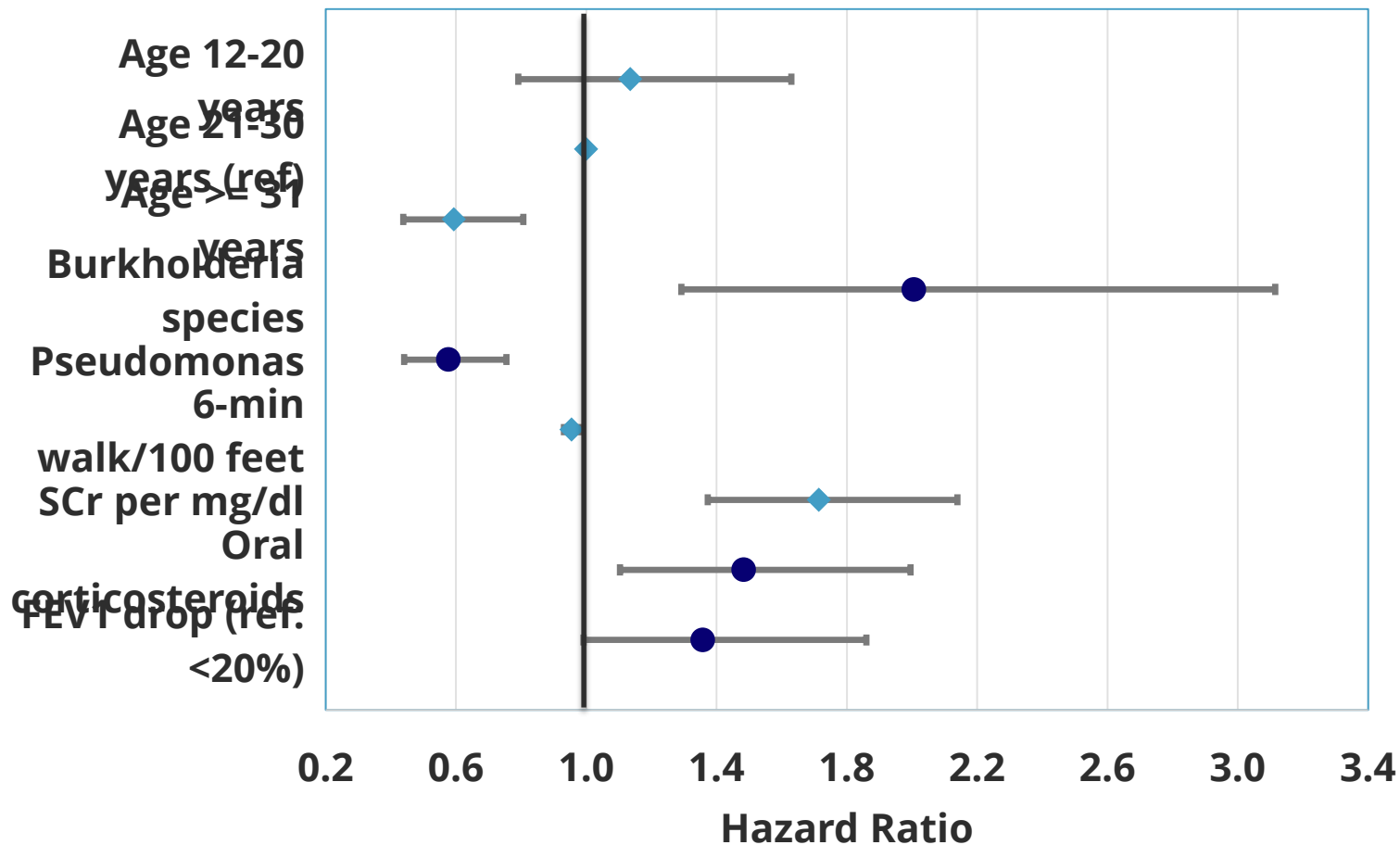
Predictors of 1-year posttransplant death

Characteristic	Level	HR	HR 95% CI	P-value
Age group (ref: 21-30)	12-20 years	1.135	(0.79,1.63)	0.4912
	≥ 31 years	0.594	(0.44,0.81)	0.0009
Burkholderia species (ref: no)	Yes	2.006	(1.29,3.12)	0.0019
Chronic pseudomonas (ref: no)	Yes	0.577	(0.44,0.76)	< 0.0001
6-min walk	per 100 feet	0.955	(0.93,0.98)	0.0006
Serum creatinine	per mg/dl	1.714	(1.37,2.14)	< 0.0001
Oral corticosteroids (ref: no)	Yes	1.483	(1.10,2.00)	0.0091
FEV_1 drop (ref: < 20%)	≥ 20%	1.358	(0.99,1.86)	0.057

Univariate waitlist mortality by FEV$_1$ drop

Log-rank P < .0001

Y-axis: % died/too sick

X-axis: Days after listing

Legend: drop <30% drop >=30%

78%
62%

Summary & Conclusions

- Inclusion of FEV_1 drop in LAS may improve access to transplant for CF patients.

- The addition of chronic infection (*Pseudomonas aeruginosa* and *Burkholderia cepacia* complex) information to OPTN data collection might help produce LAS models that more accurately reflect WL and posttransplant mortality risk in the CF population.

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