# Risk Stratification for TAVR
## *Is my patient too sick, old or frail?*

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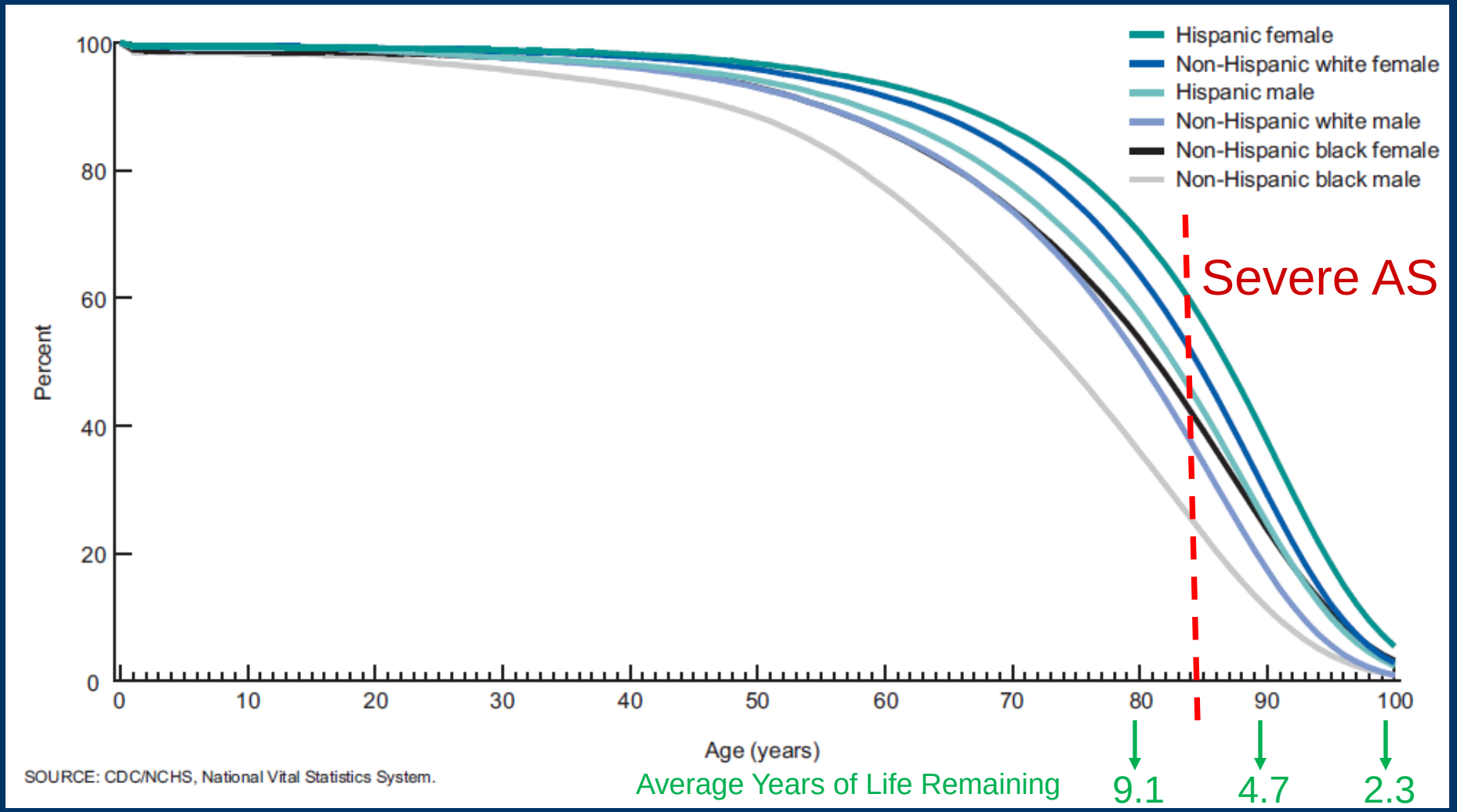
# Patient Selection and Evaluation:

## Too sick, old or frail for what……

- Relieve Aortic Stenosis
- Feel Better (Improve QoL)
- Live Longer (Longer ≠ Forever)

# US Life Expectancy: CDC Life Tables-2009

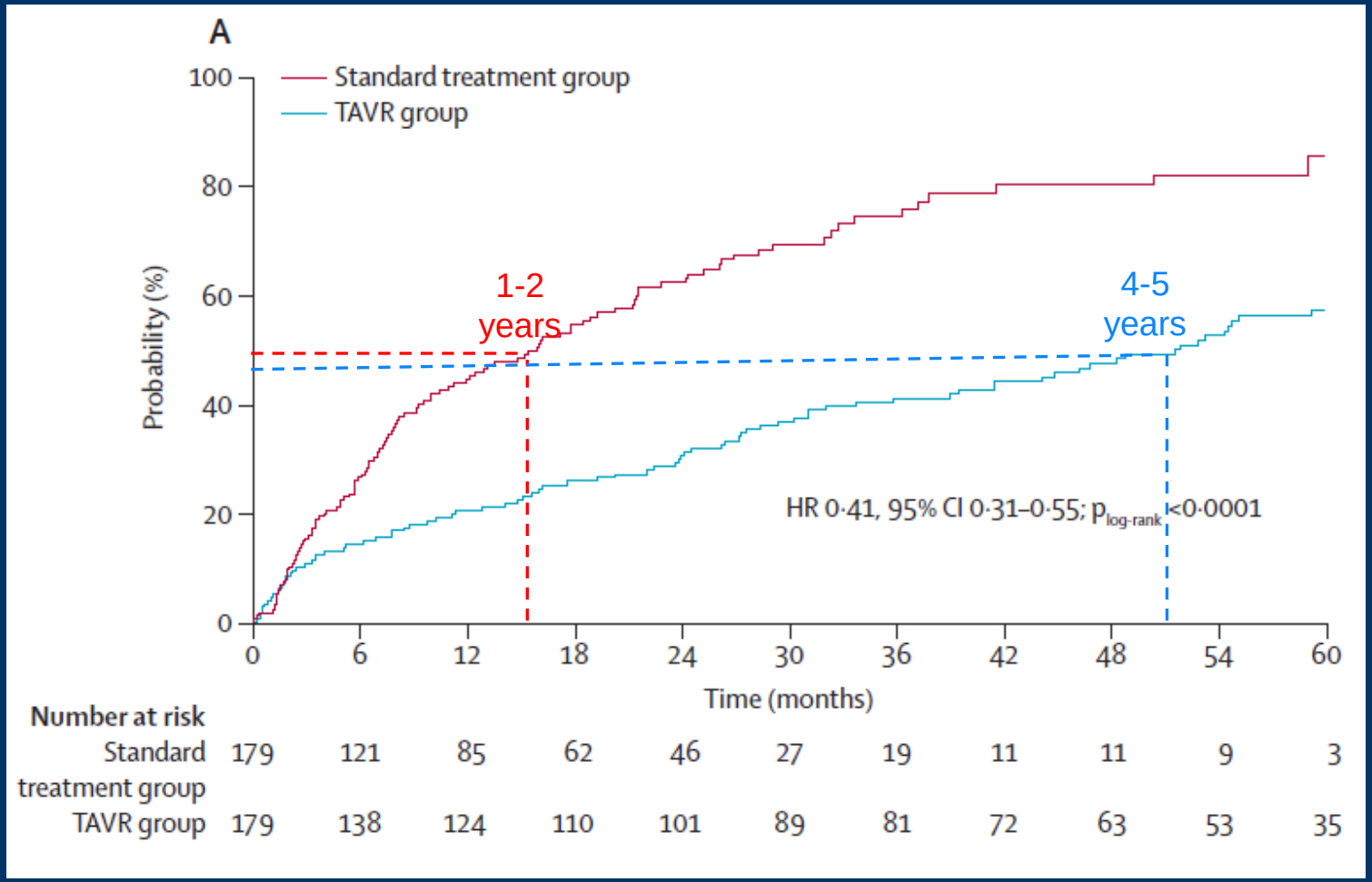



http://eprognosis.ucsf.edu/ (Lee index, iFlacker ndex, Palliative Performance Scale, Walter Index, Gagne Index)

REF: www.cdc.gov/nchs/fastats/lifexpec.htm (accessed Dec 2015),

# AS – Natural History from Cohort B

US population (age 85) – Life Years Remaining ~ 6 to 7






REF: Kapadia, Lancet 2015:385:2485-91

# Patient Selection - Competing Risks for Mortality

- High STS Risk Score (STS PROM >15%)
- Cardiac Morbidity
  - Severe MR, HF, Myocardial fibrosis
  - Low flow gradient <20mmHg, SVI <36ml/m2)
- Non-CV Comorbidity burden (multimorbidity)
  - Severe lung disease (COPD, 02, PASP >60mmHg)
  - CKD stage IV-V
  - Liver disease or active malignancy
- Frailty, Disability, Cognitive function
  - Gait speed <0.5m/sec, Disability (>1 ADLs), MMSE <27

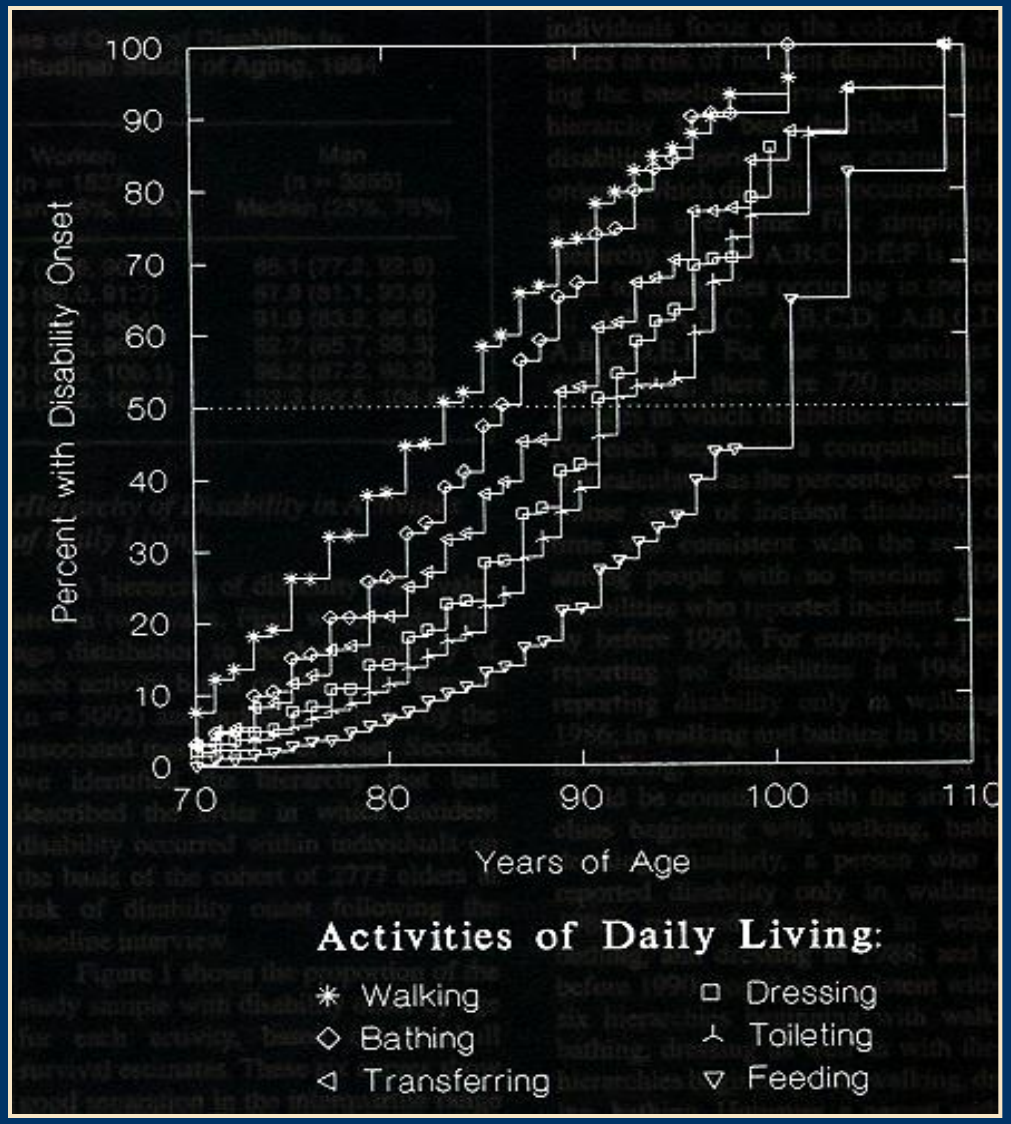
# Frailty and TAVR Outcomes

- PARTNER Sub-study: (3 sites; N=244, age 85)
  - 45% frail (composite albumin, handgrip strength, gait speed, and Katz ADL)
  - Frail mortality 32.7%  at 1 year vs.15.9%, p= 0.004.
  - Poor outcome (death, KCCQ<60 or ↓ 10), Frail 50.0% vs. 31.5%, p= 0.02.
- Canadian Registry: (N=339 non-operable high risk, age 81)
  - 25% frail (clinical scale)
  - Frail mortality 55% at 42±15 mo -  Adj. HR = 1.41 (1.02–1.96)
  - Cause of death; 58% non-cardiac, 23% cardiac, 17% unknown
- Swiss Registry (N=100, age 83.7yr )
  - 49% Frailty Scale >3 (and 32% MMSE<27)
  - Cognitive impairment – Adj HR Mortality  4.12 (1.48 – 11.5)
  - Frailty – Adj HR Mortality 4.48 (1.48 – 13.4)
- ACC/STS TVTR: Gait Speed (N=8,039, age 84, Gait = 0.64m/sec)
  - Slowest <0.5 m/sec have 35% higher adj. 30 day mortality
  - 11% increase mortality for each 0.2 m/s decrease in gait speed

REF: Green Am J Cardiol 2015;116:264-269); Rodes-Cabau JACC 2012; 60: 1864-75; Stortecky S, JACC Interventions 2012;5:489-96; Alfredsson, Under Review

# ADLs - Onset (Hierarchy) of Disability

Longitudinal Study of Aging (N=5,151 Community-dwelling ≥ 70 yrs)



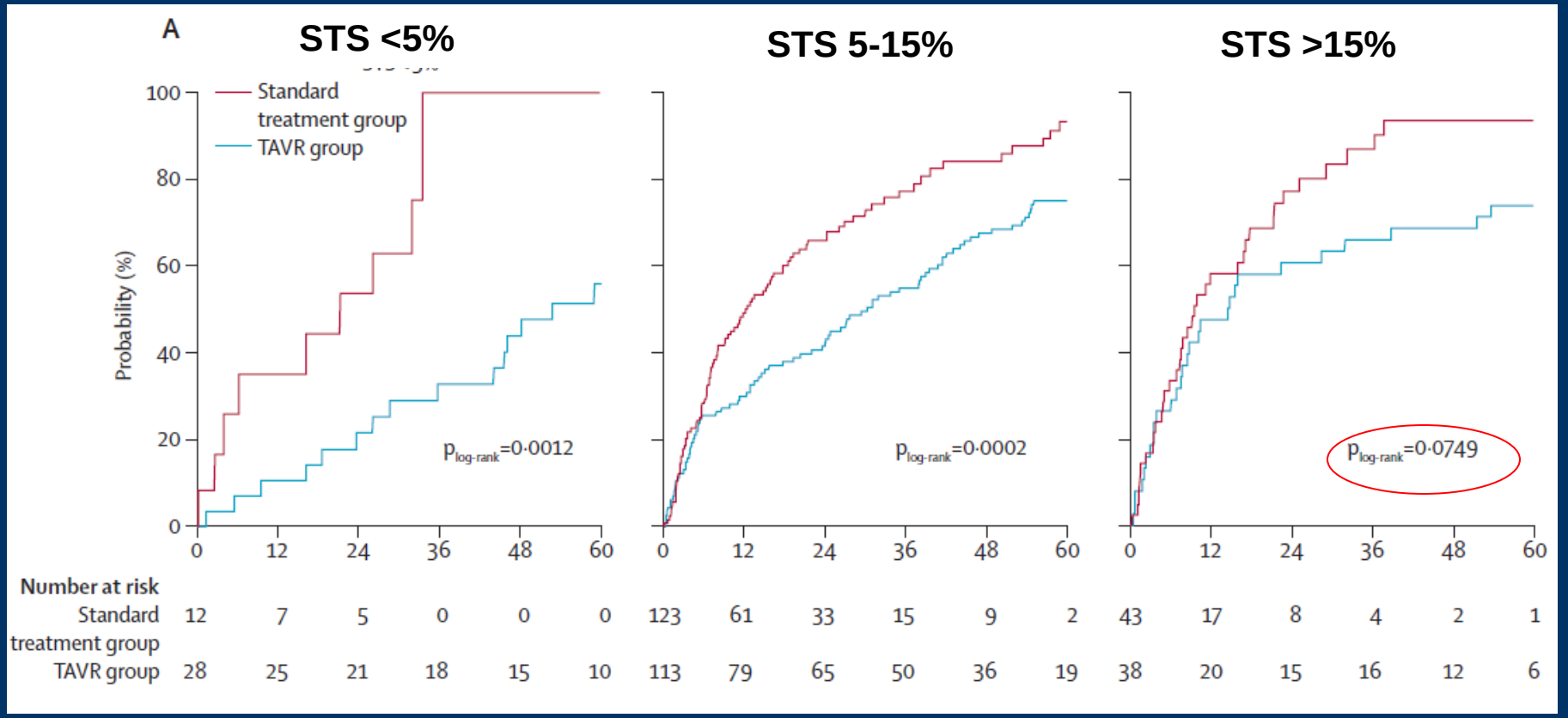

| ADL | Median Age (yrs) |
|---|---|
| Walking | 83.9 |
| Bathing | 86.9 |
| Transferring | 89.7 |
| Dressing | 91.8 |
| Toileting | 92.7 |
| Feeding | 99.6 |



REF: Dunlop, Am J Public Health. 1997;87:378-383

# Mortality Benefit w/ TAVR by STS Score

5 year Partner B – Cause of Death mostly Non-Cardiovascular



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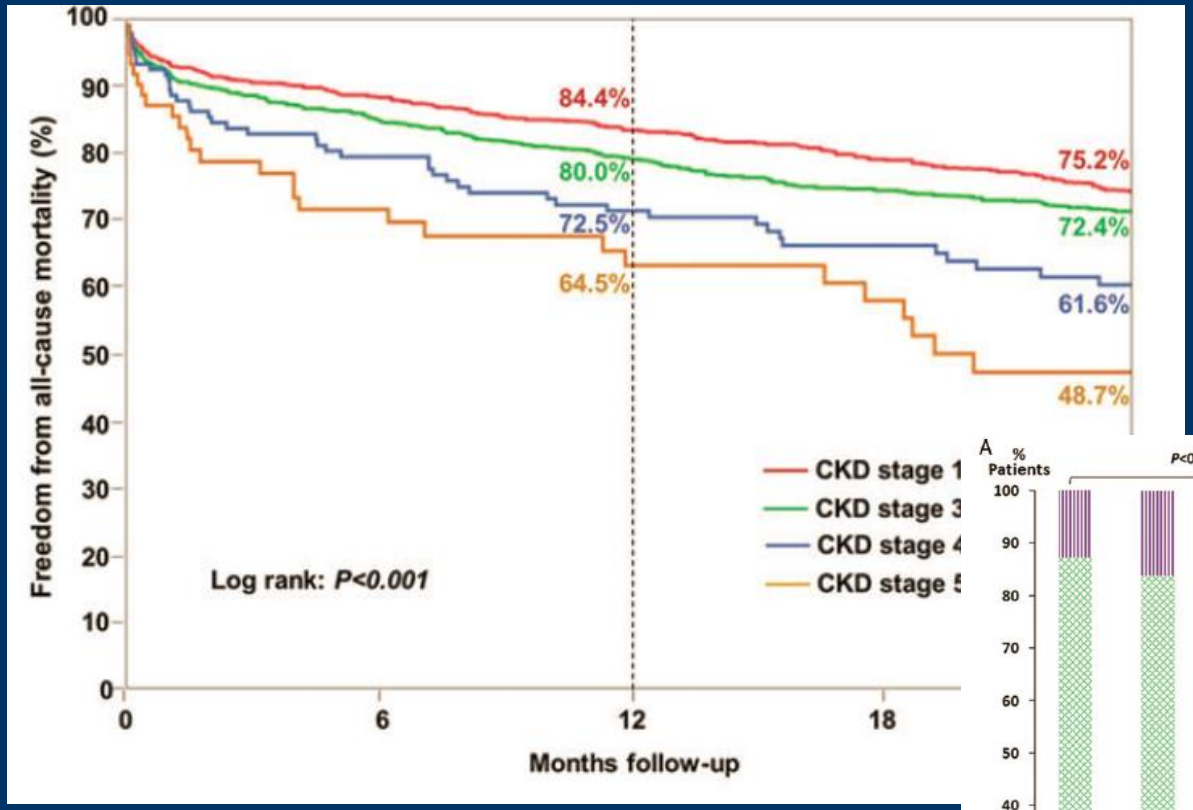
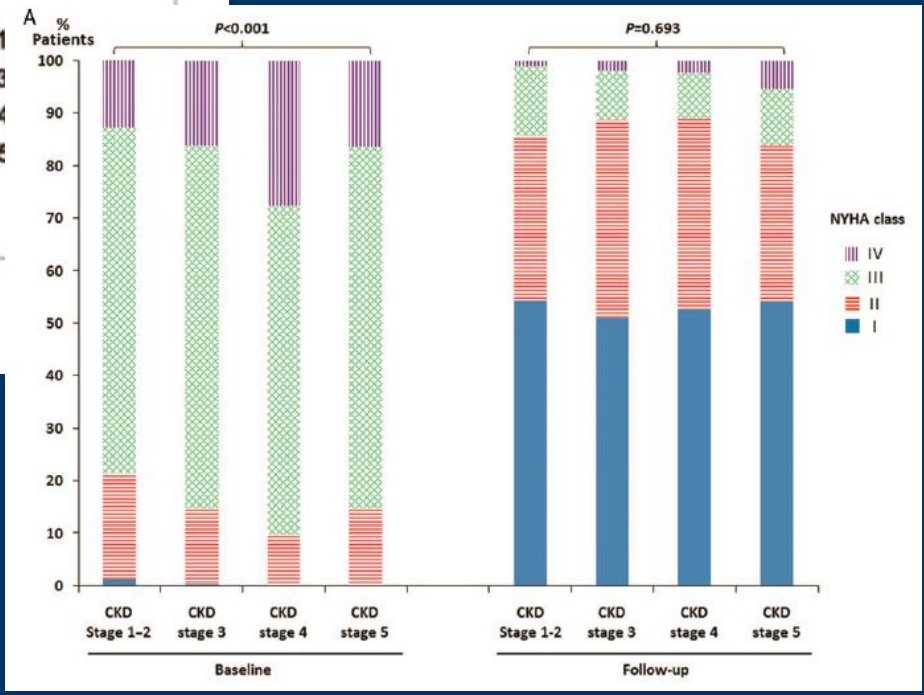
# Mortality Benefit of TAVR by CKD Stage

- N=2,075 European TAVR Pts - CKD Stage 4 or 5 = 12%



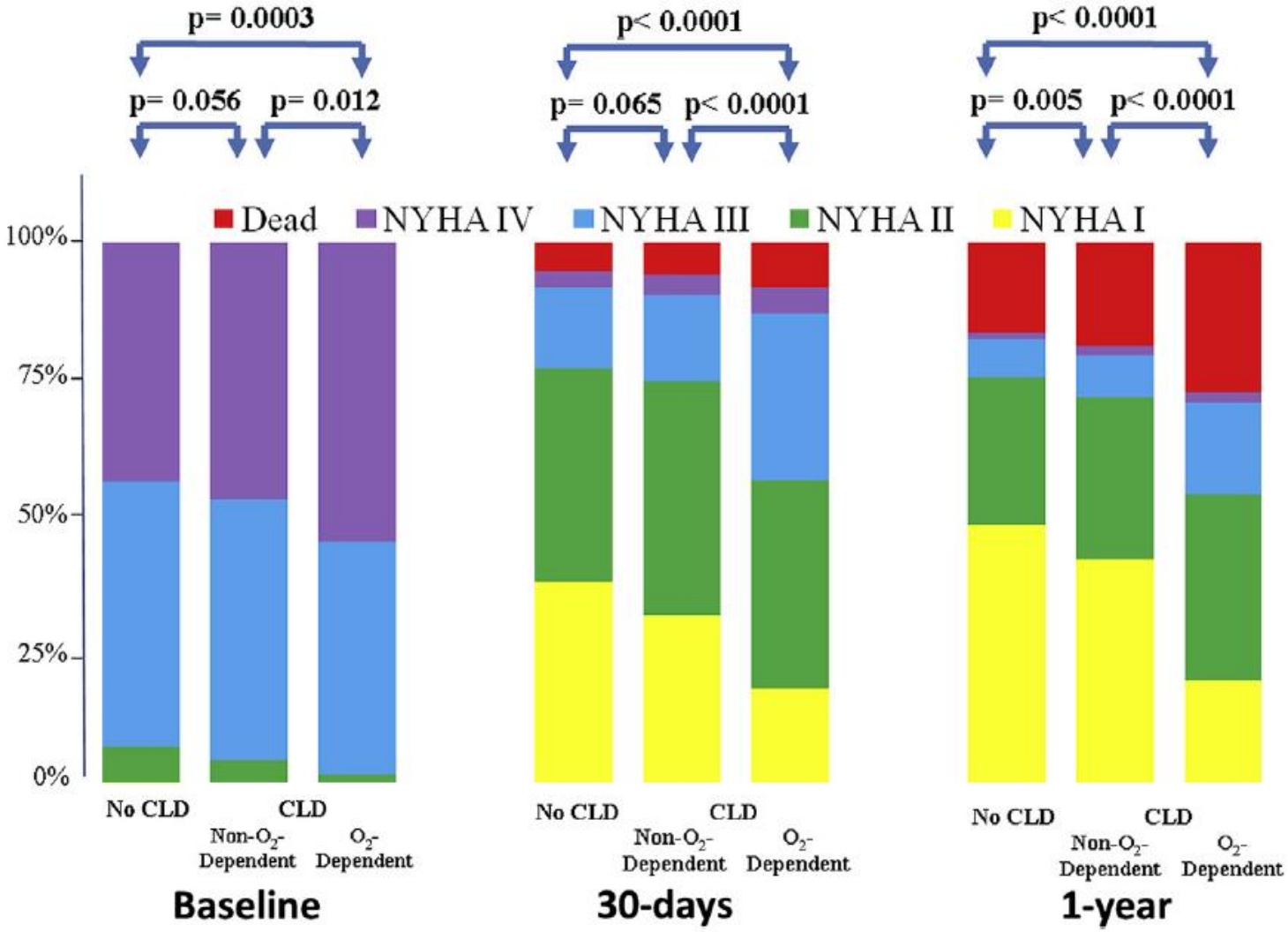






REF: Allende, EHJ 2014

# Symptom Benefit - Moderate to Severe COPD

- PARNTER Trial Poor mobility and O2 dependent = Lack of Benefit



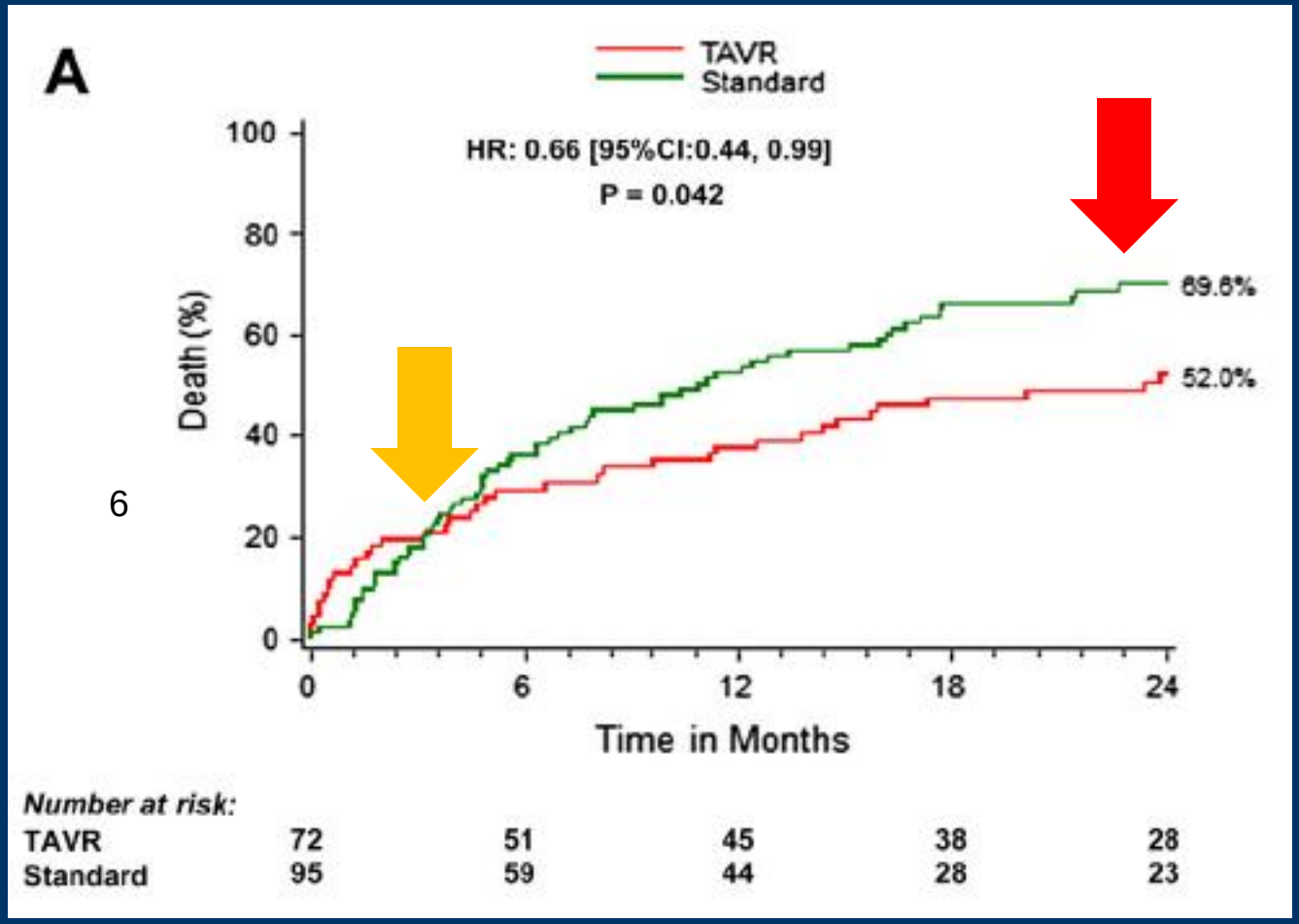



REF: Dvir, J Am Coll Cardiol 2014;63:269–79)

# Mortality Benefit – Partner Cohort B with Moderate to Severe Lung Dz

***Lag time to ….***

***Death (%)***

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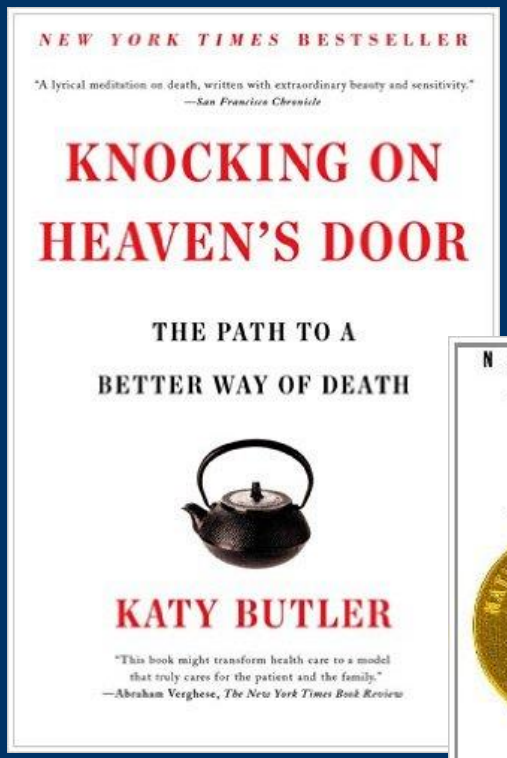
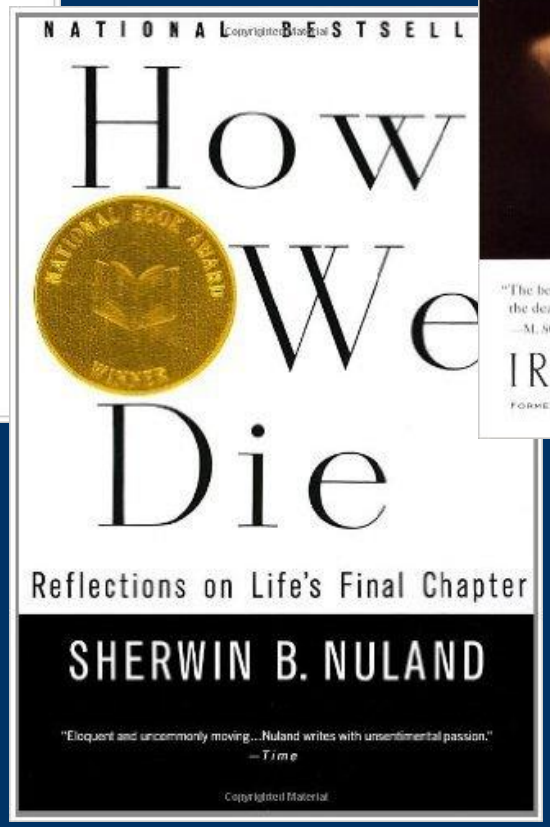
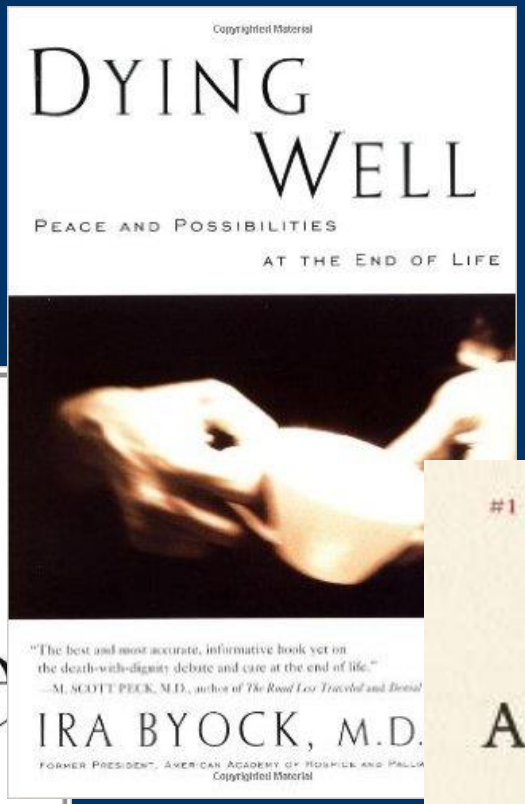
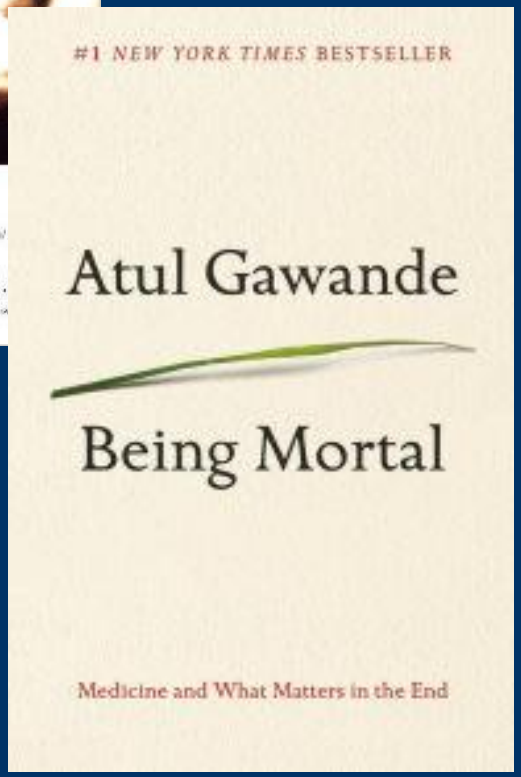
REF: Dvir, J Am Coll Cardiol 2014;63:269–79)

# Goals of Care with AS – Alleviate Suffering



# Patient Selection for TAVR

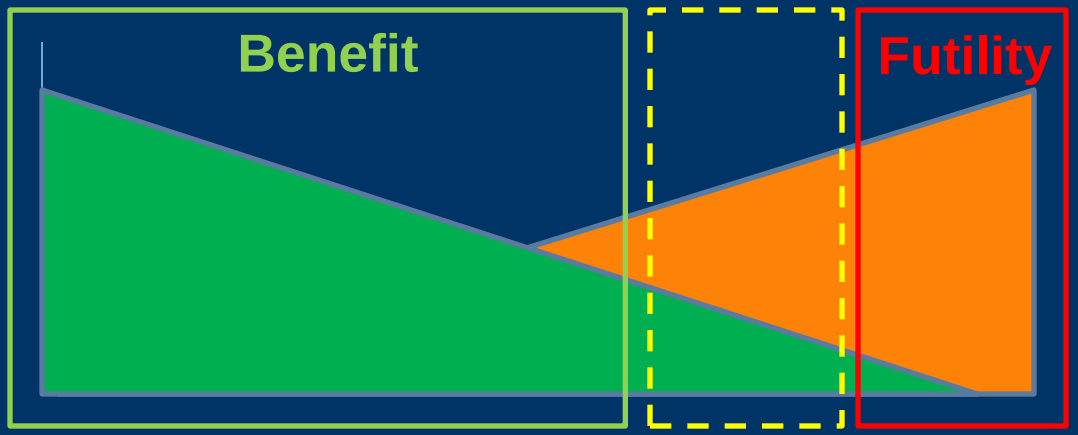
Benefit

+

Competing Risk

- TAVR Benefit and Competing risk
- Patient Goals and Priorities
- Patient expectations
- Agreement between stakeholders

Care Plan
(with or without TAVR)






*Lindman,JACC Intervention* 2014:7; 707-716.