State of the Art: Updates in VADs and Transplant for Advanced Heart Failure

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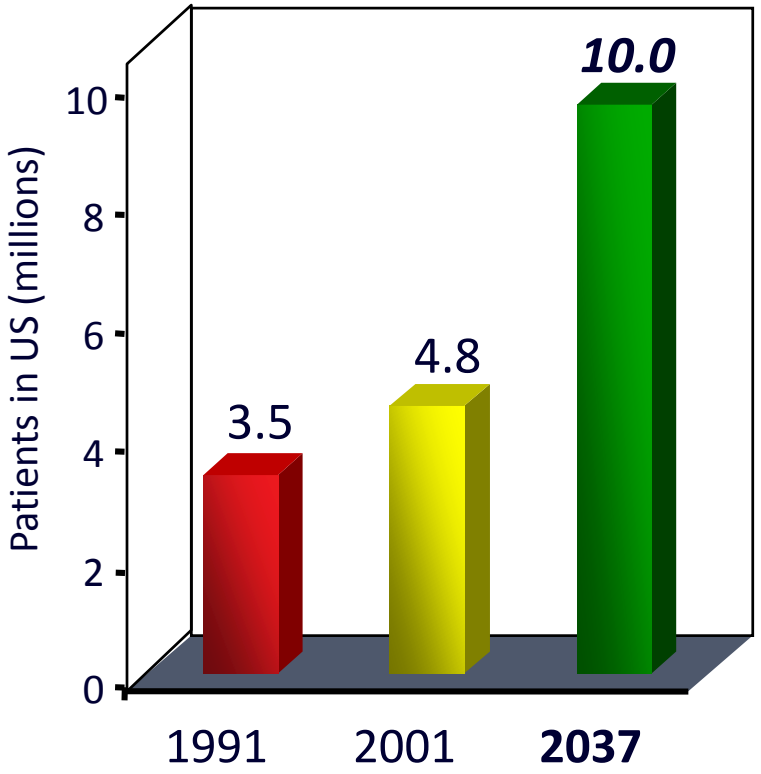
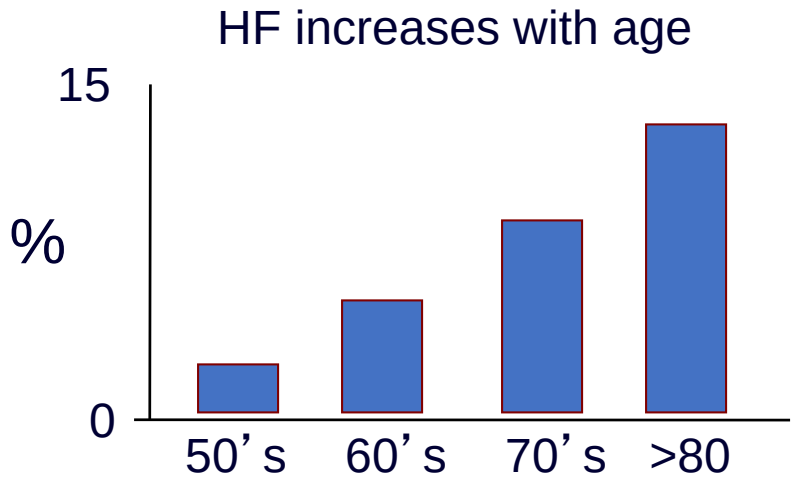
Disclosures

- Medtronic, Abbott: Consultant

Heart Failure: Scope of the Problem

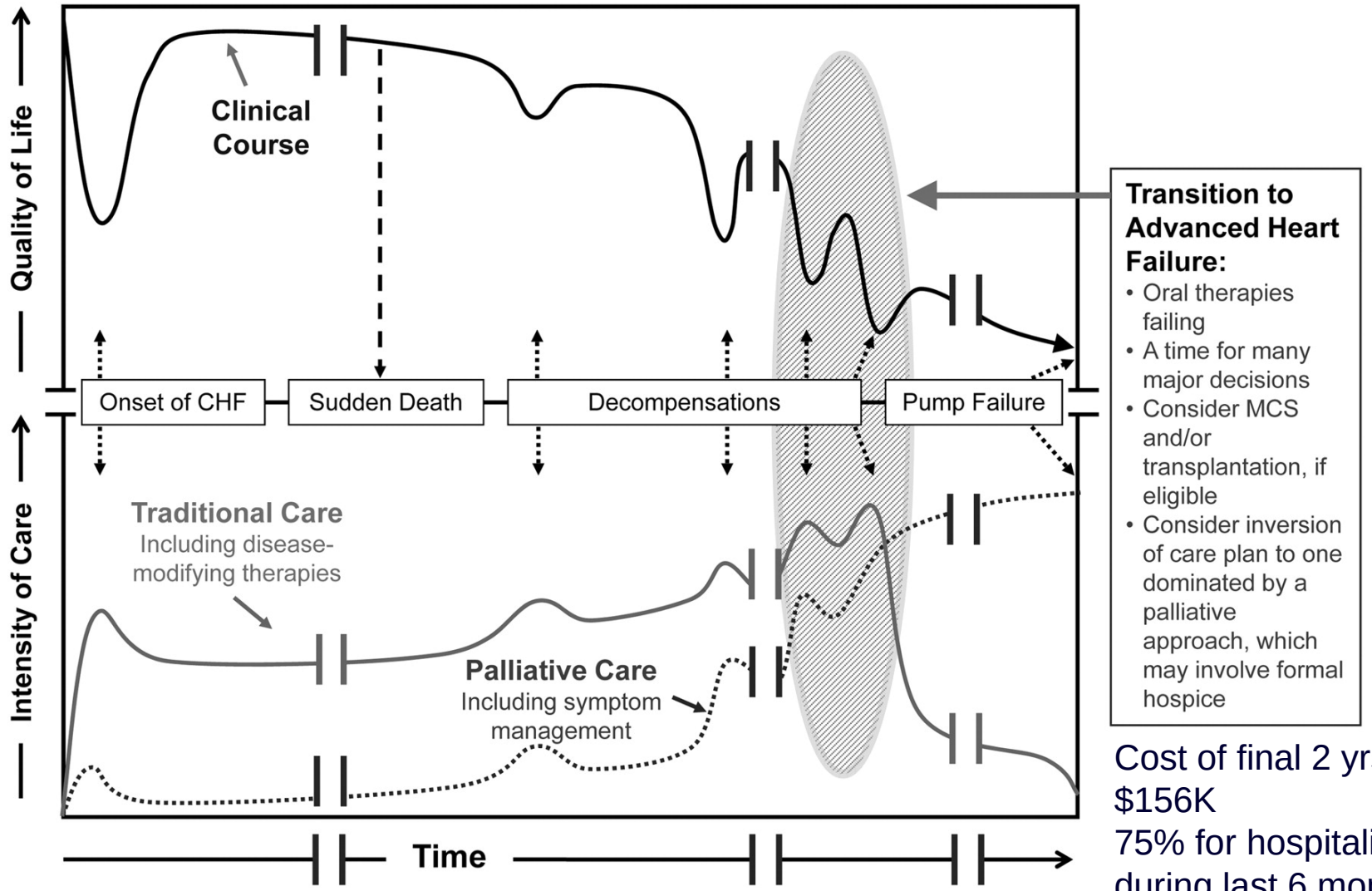


- US prevalence*: 5.8 million
- US annual incidence: 670,000
- Annual mortality: 282,754
  - 5-10% depending on severity
- Cost: $39.2 billion
  - 53% of cost due to hospitalization



AHA Statistical Update. *Circulation.* 2010;121:e46-e215.
Croft JB et al. *J Am Geriatr Soc.* 1997;45:270–275. Rich M. *J Am Geriatric Soc*. 1997;45:968–974.

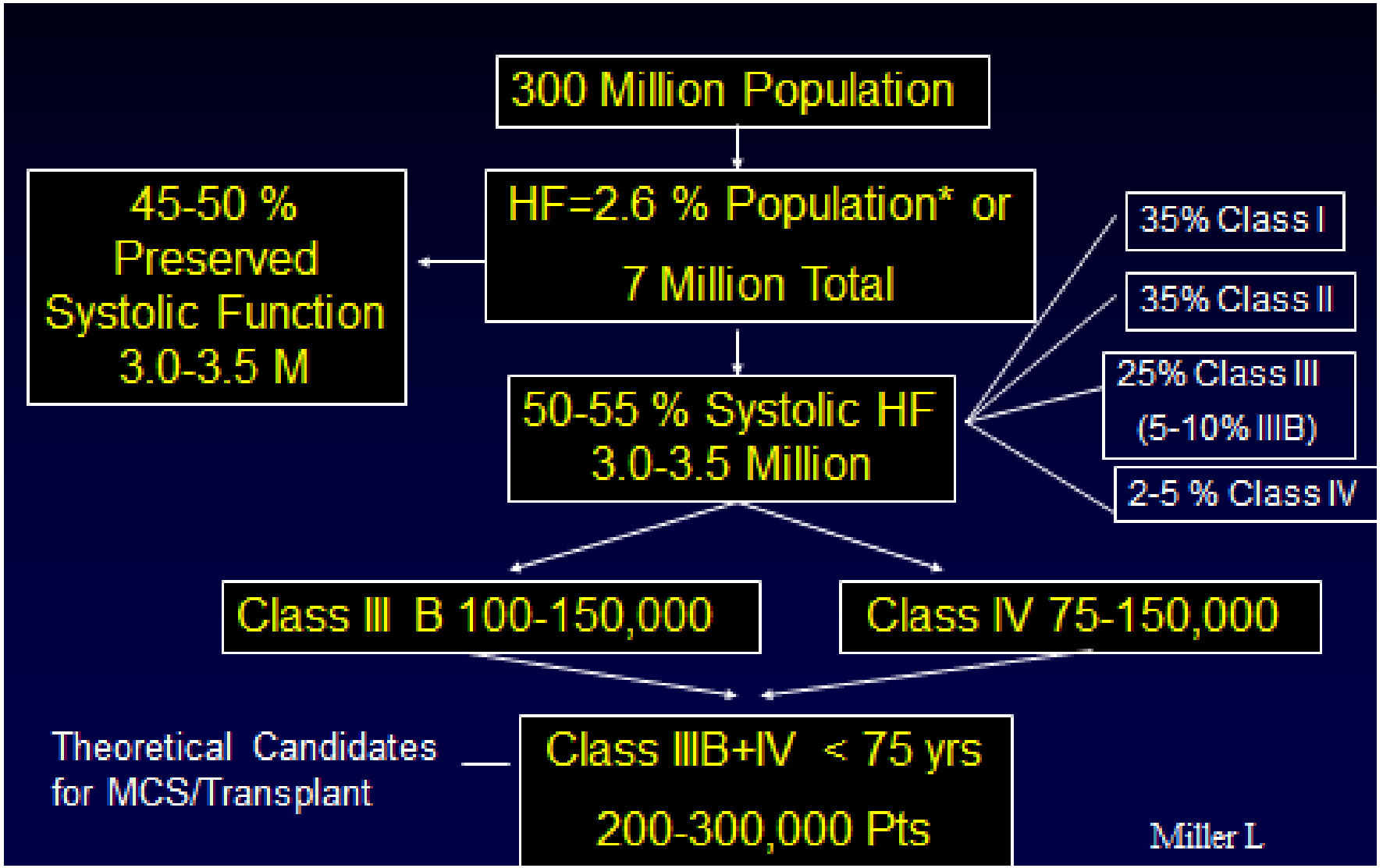
The Clinical Course of Heart Failure



Cost of final 2 yrs of life: $156K
75% for hospitalizations during last 6 months

Allen L A et al. Circulation. 2012;125:1928-1952

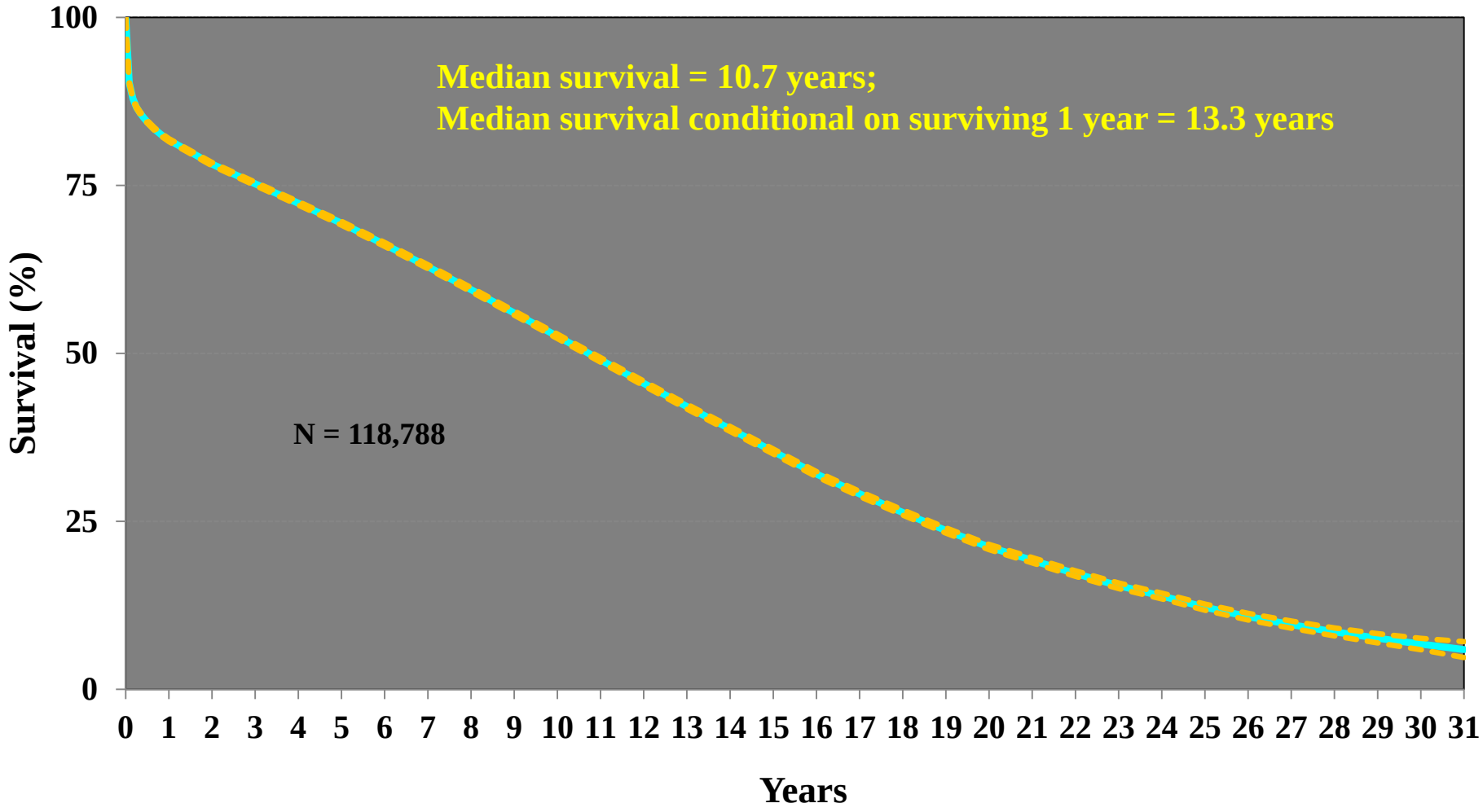
Current Estimates of Advanced HF Pts



Adult and Pediatric Heart Transplants

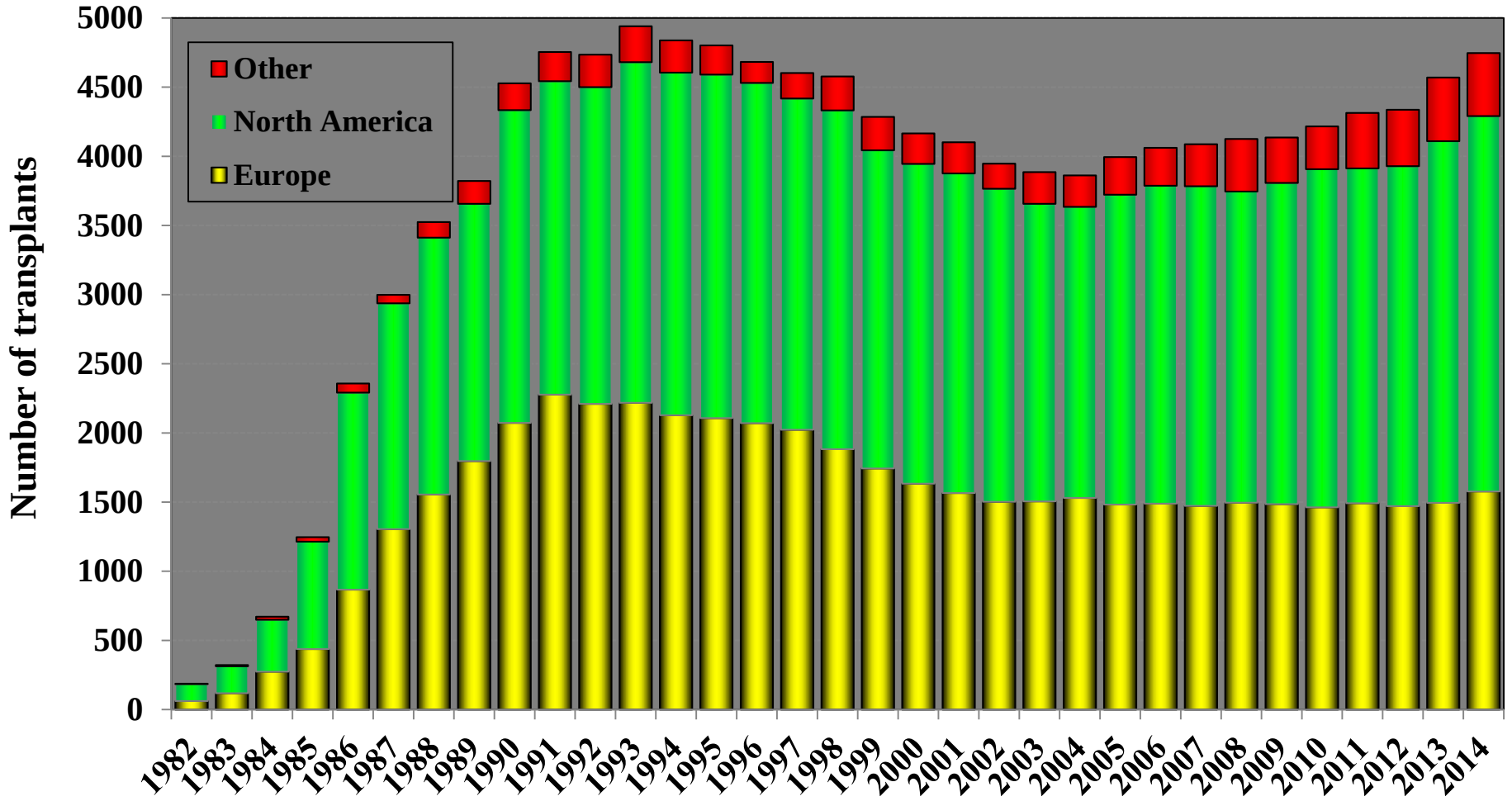
Kaplan-Meier Survival

(Transplants: January 1982 – June 2015)



ISHLT • INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION

Adult and Pediatric Heart Transplants
Number of Transplants by Year and Location



ISHLT • INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION

NOTE: This figure includes only the heart transplants that are reported to the ISHLT Transplant Registry. As such, the presented data may not mirror the changes in the number of heart transplants performed worldwide.


LIFE ON EARTH
by Ham
search ID: hkhm129
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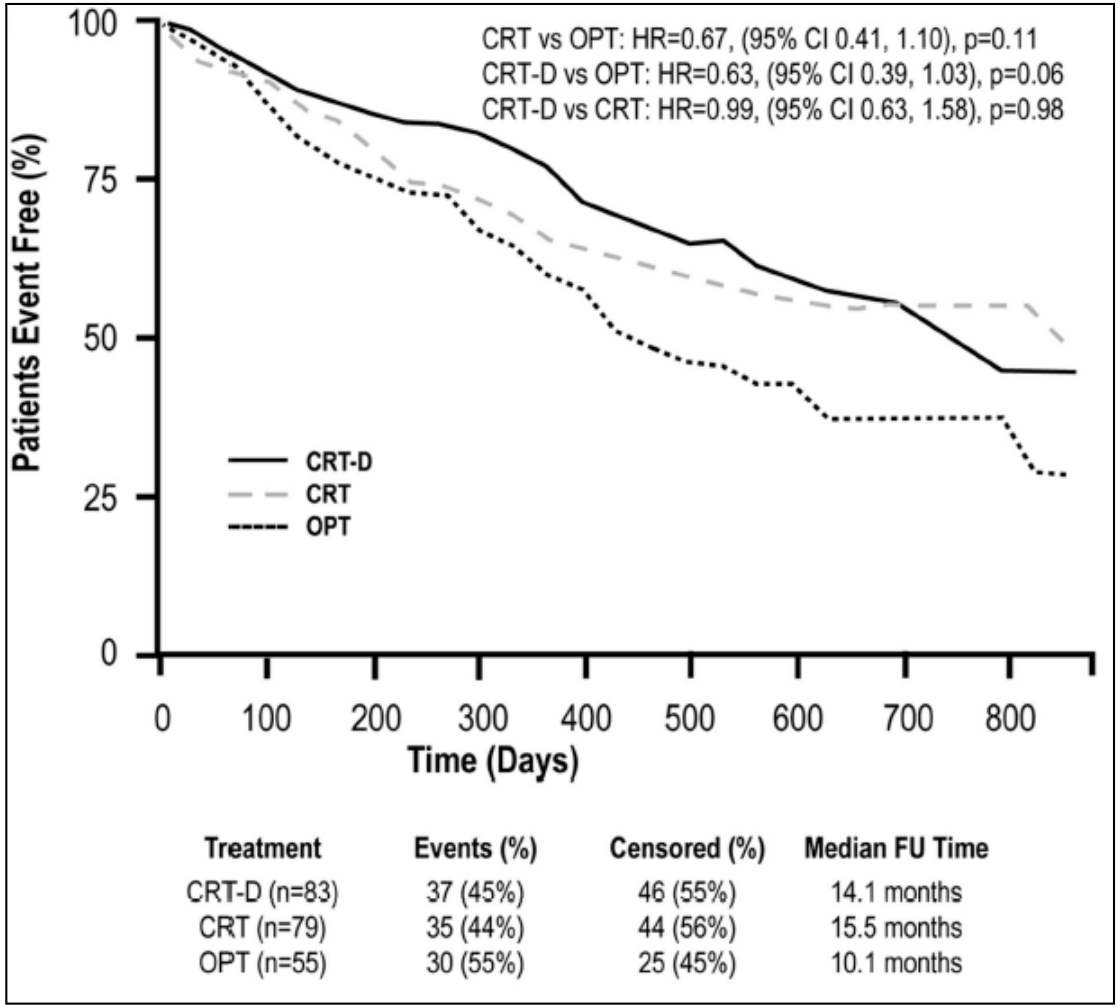
CRT-D in NYHA IV



Treatment	Events (%)	Censored (%)	Median FU Time
CRT-D (n=83)	37 (45%)	46 (55%)	14.1 months
CRT (n=79)	35 (44%)	44 (56%)	15.5 months
OPT (n=55)	30 (55%)	25 (45%)	10.1 months

Lindenfeld et al. Circulation 2007;115:204-212.

How about Continuous Inotropes?

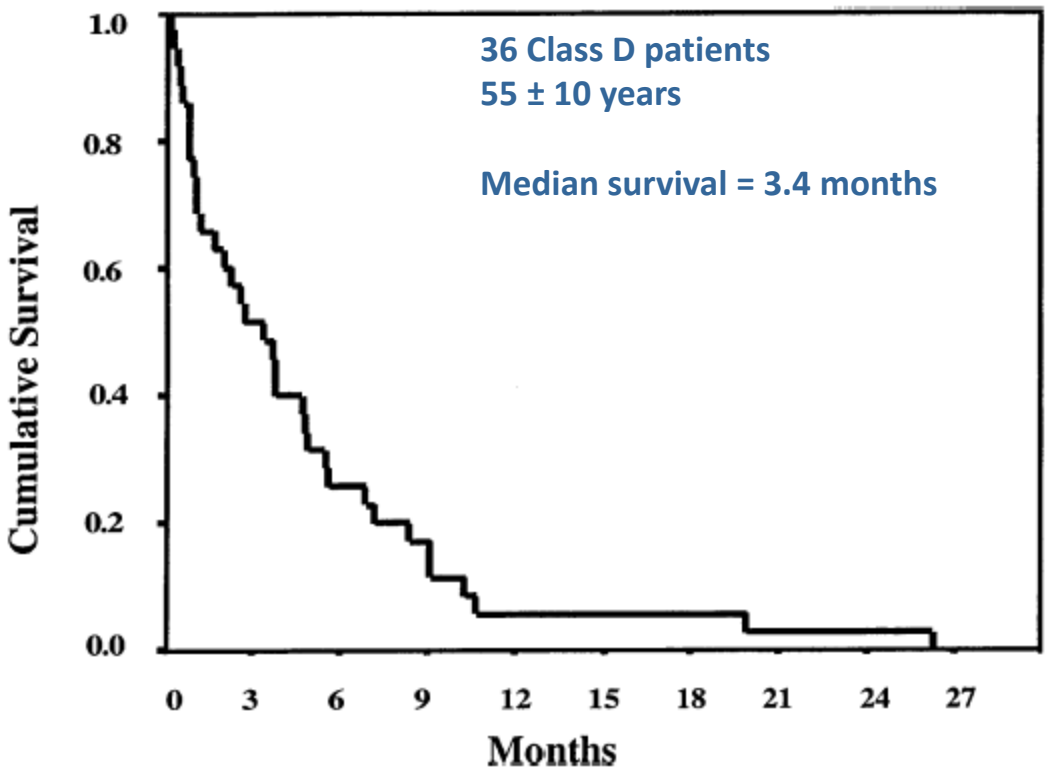
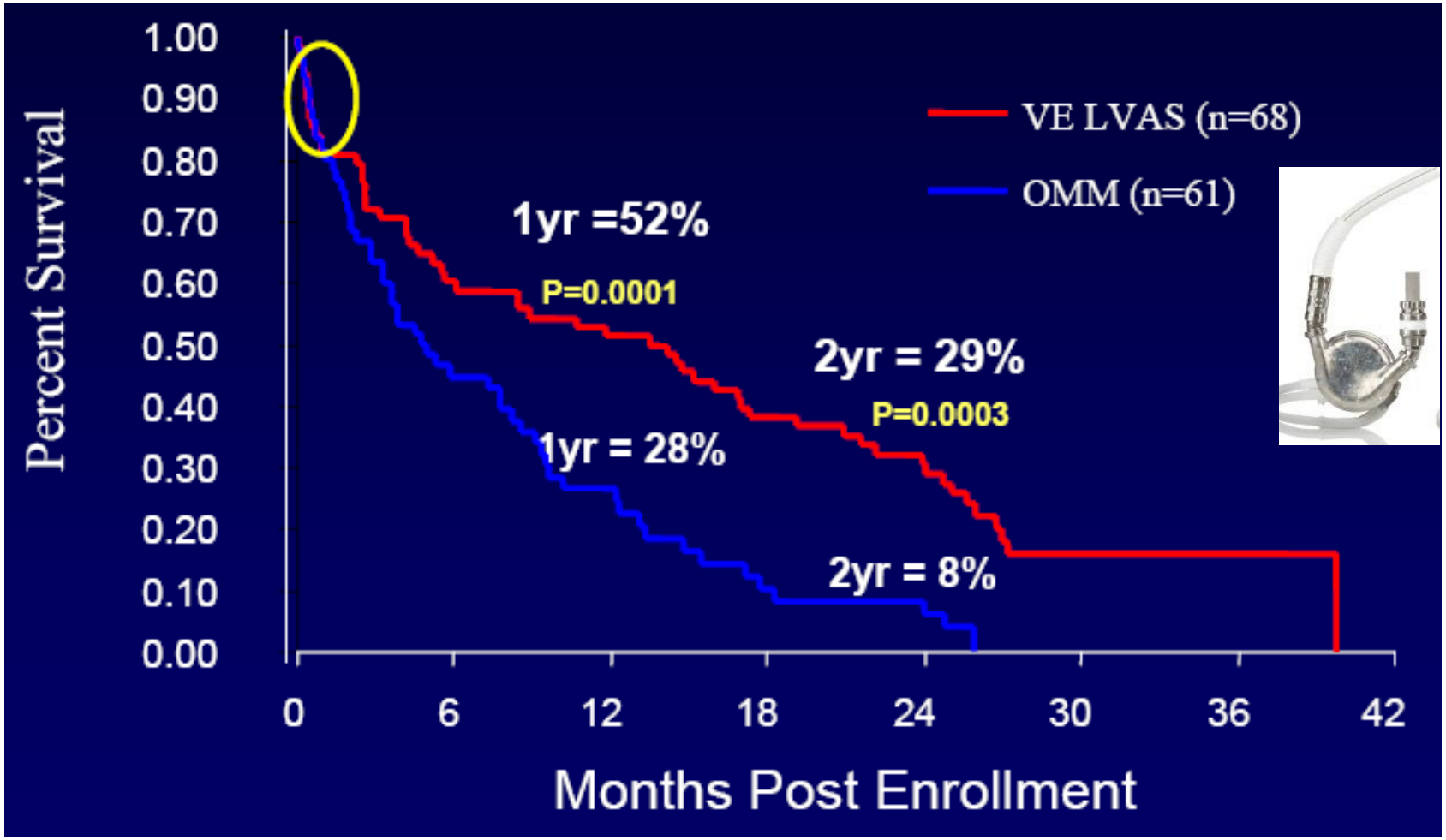


Fig. 1. The probability of survival is plotted over time; 3-, 6-, and 12-month survivals were 51%, 26%, and 6%, respectively. One subject who underwent aortic valve replacement after 2.4 months of COSI has not been included in this analysis.

Mechanical Circulatory Support (REMATCH) Trial

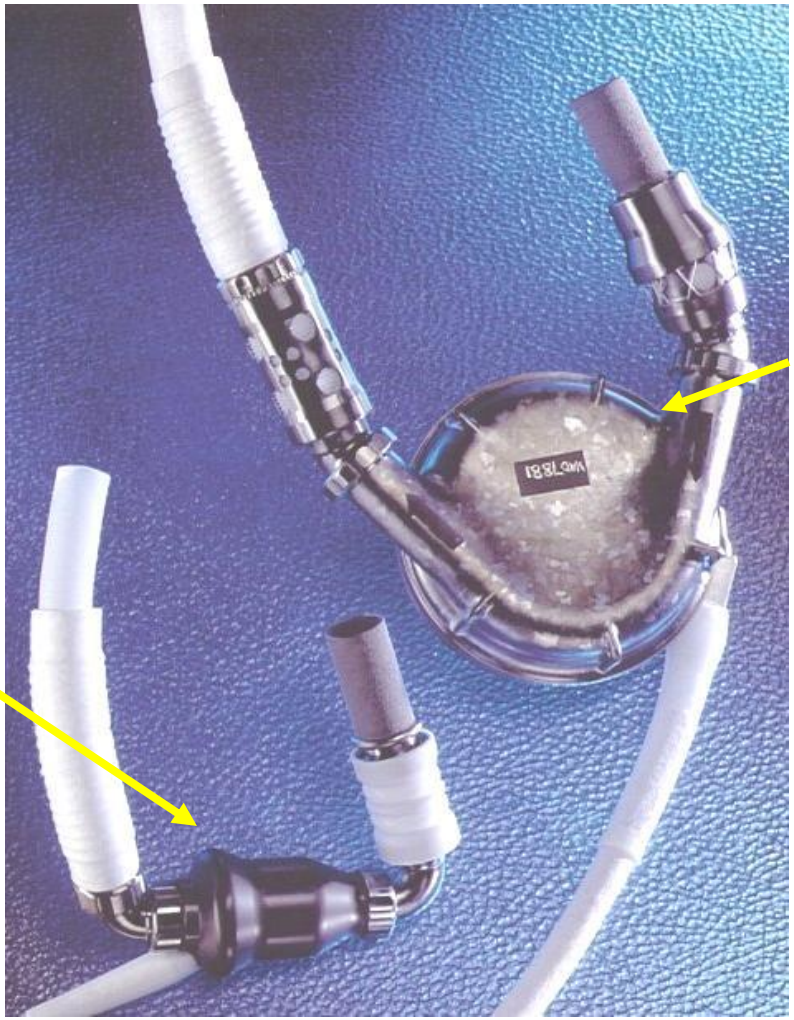


Rose, EA et al. NEJM, 2001.

HeartMate II vs. HeartMate XVE LVAD

Continuous-flow VAD (HM II)

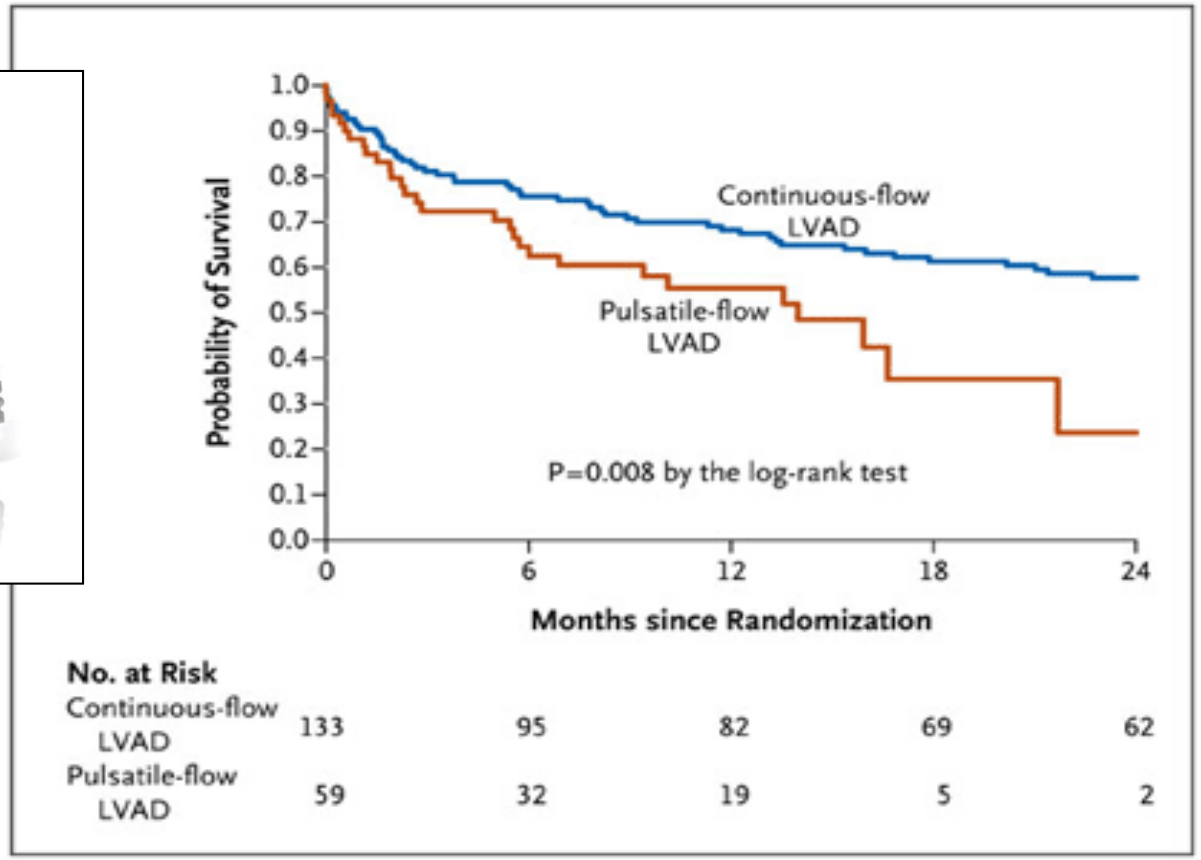
- 1/7 size; 1/4 weight
- Quiet
- 40% smaller perc lead
- One moving part
- Long term durability



Pulsatile-flow VAD (XVE)

- Large size
- Noisy
- Large percutaneous lead
- Limited durability

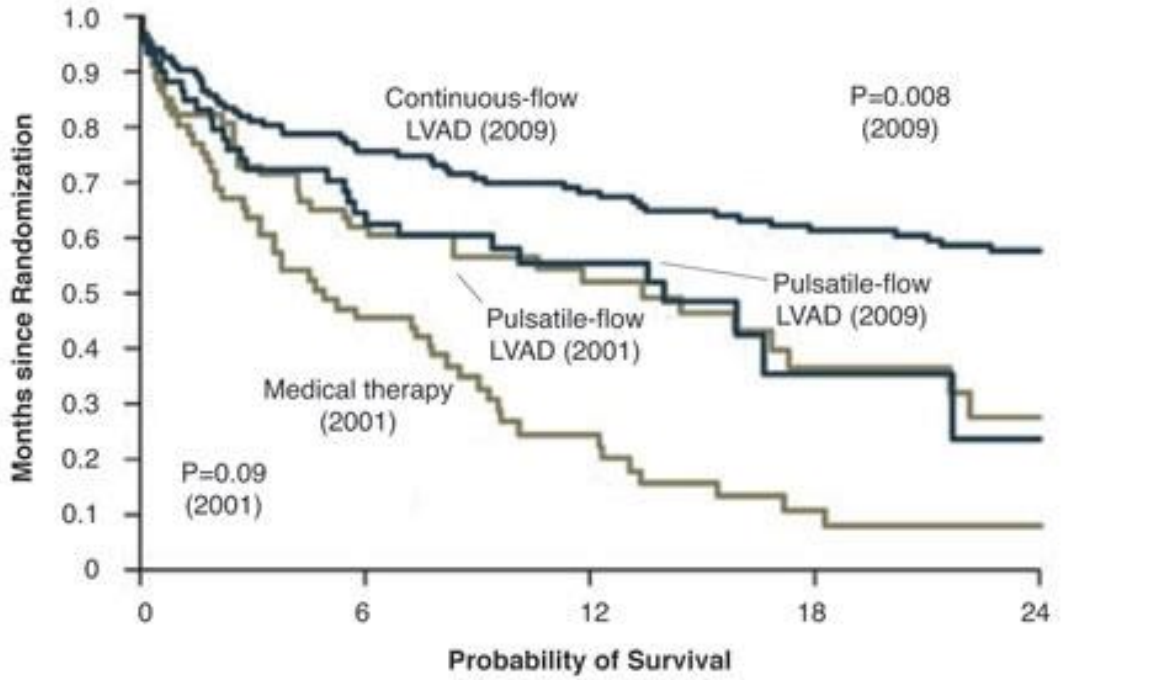
HeartMate II Trial



Slaughter M et al. NEJM 2009;361:2241-51

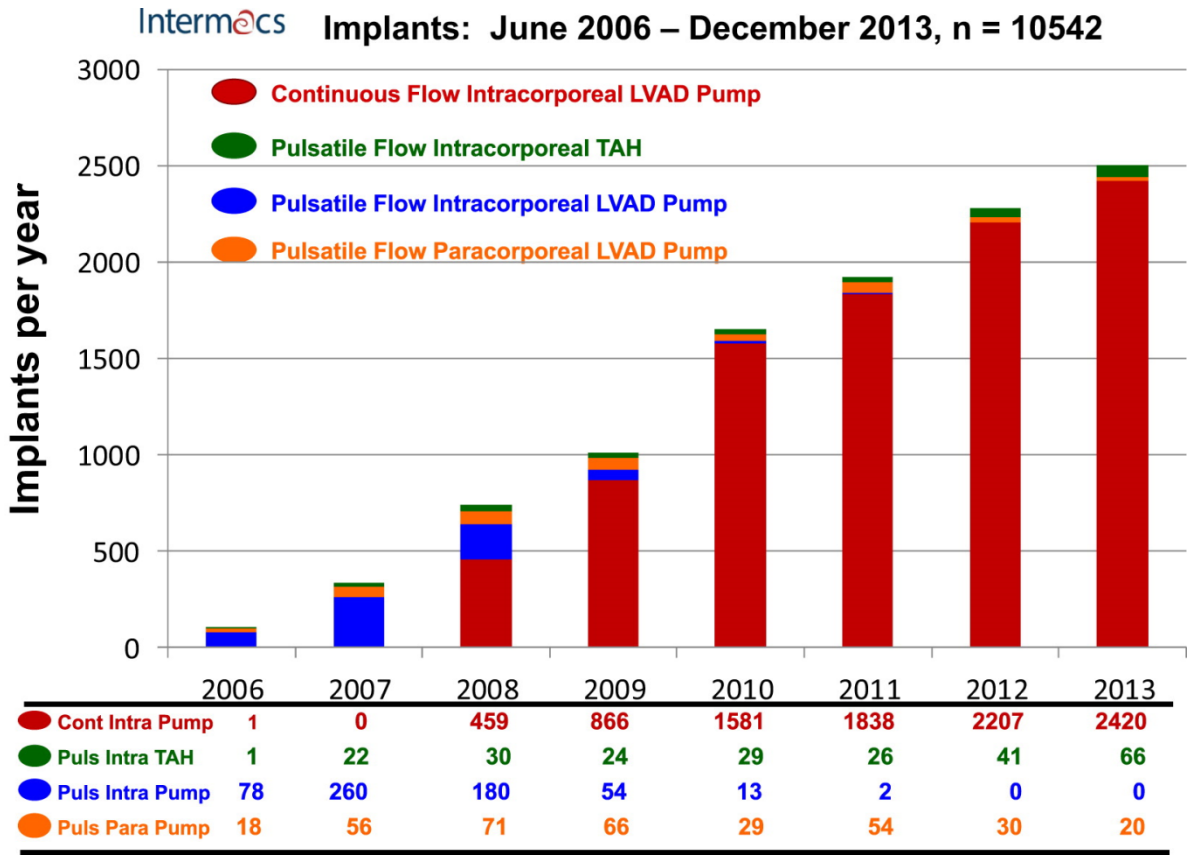
The Rise of the Machines

FIGURE 1
SURVIVAL RATES IN LVAD CLINICAL TRIALS

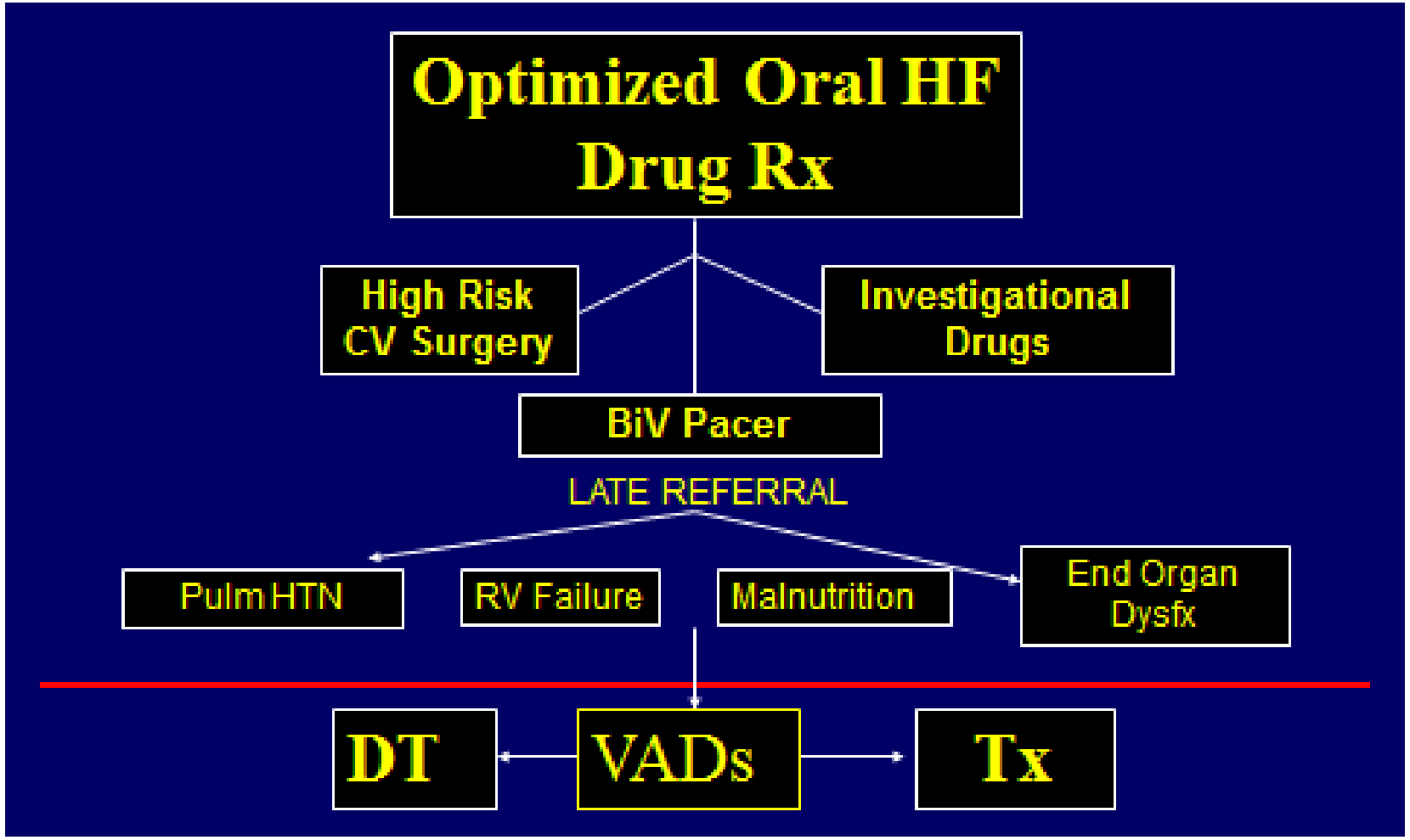


SOURCE: James C. Fang, "Editorial: Rise of the Machines—Left Ventricular Assist Devices as Permanent Therapy for Advanced Heart Failure," *New England Journal of Medicine* 361 (2009): 2282–85.

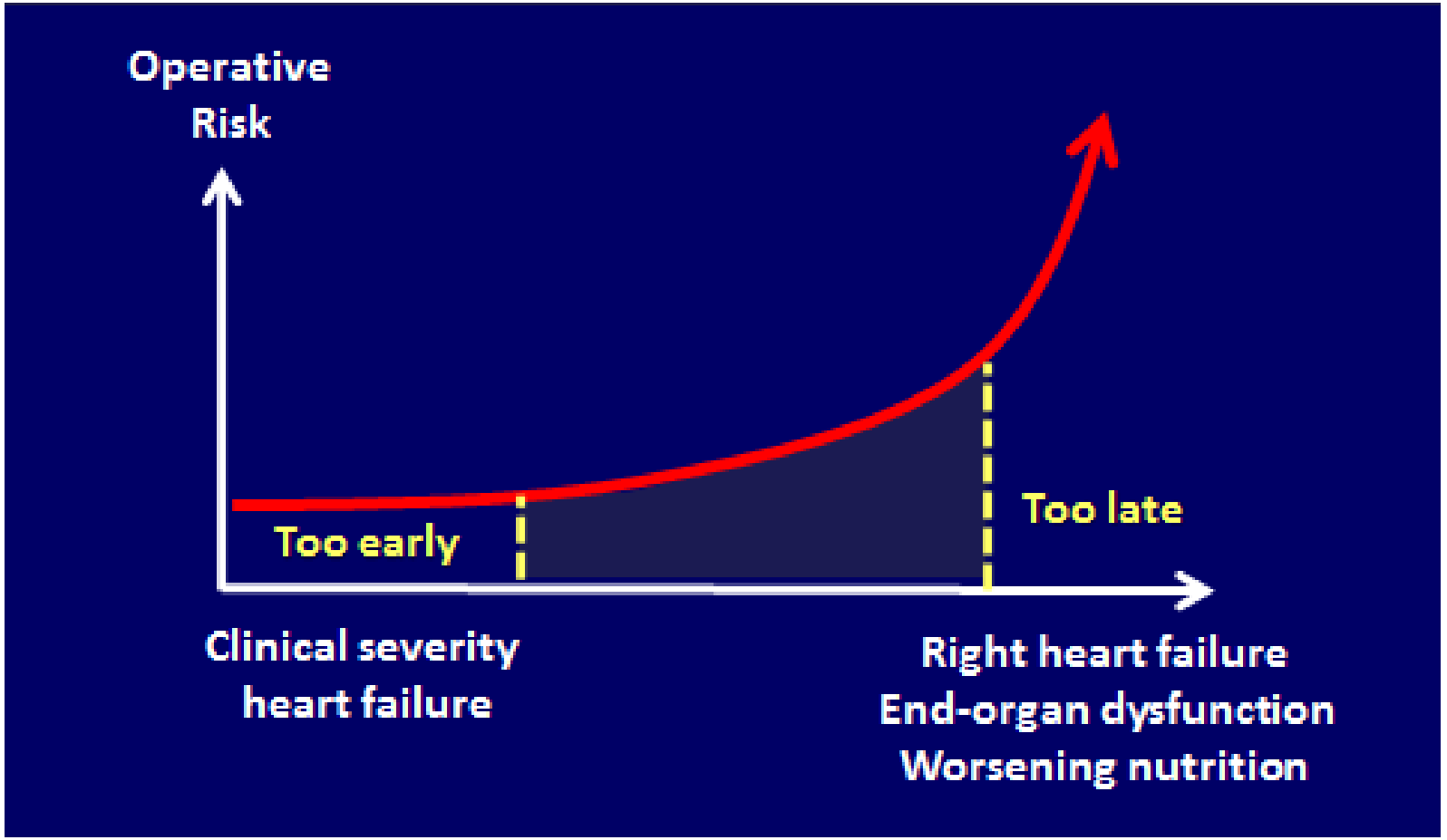
The Rise of the Machines



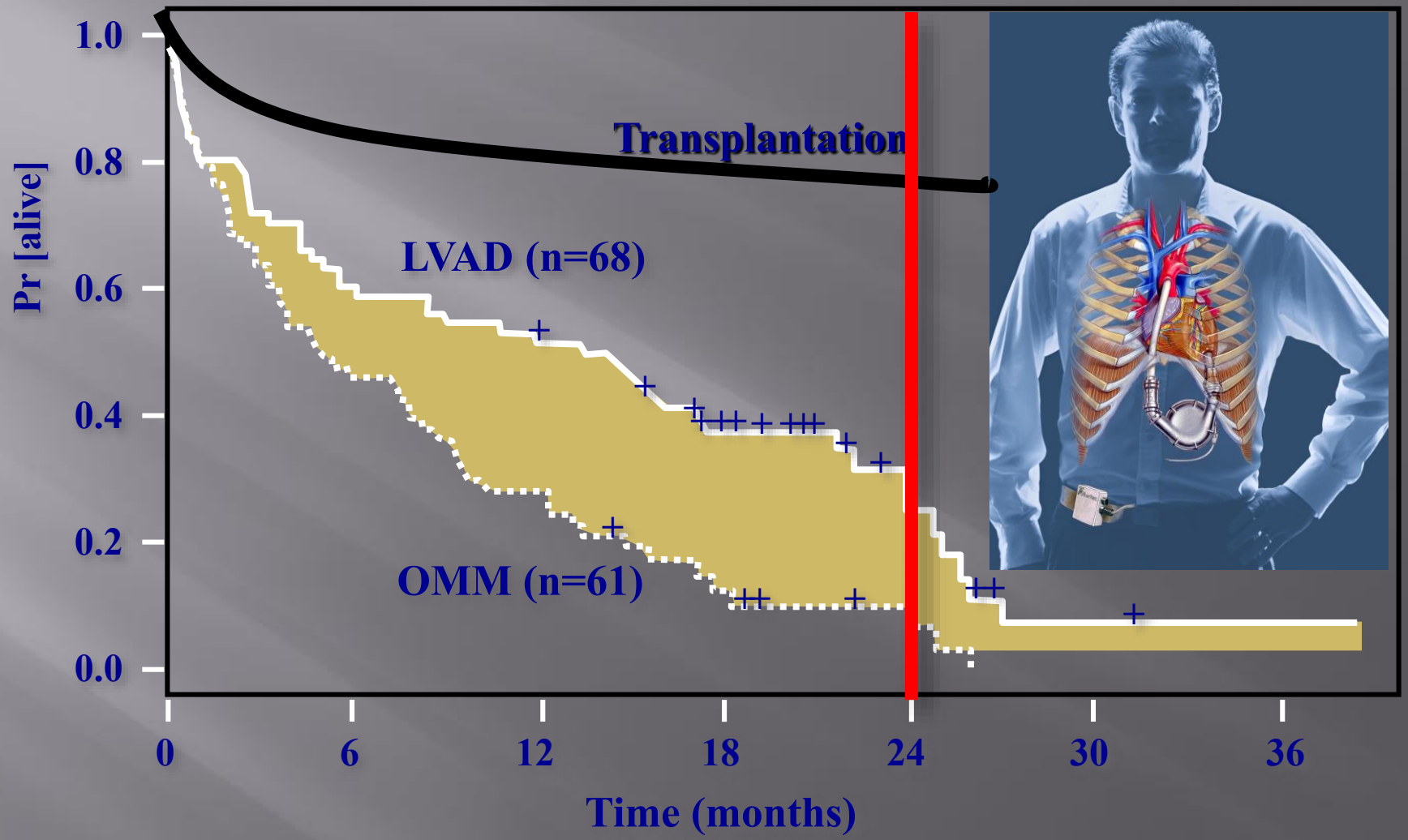
Current Management of Advanced Stage HF



The Right Time for LVAD or Transplant: The “Perfect Window”

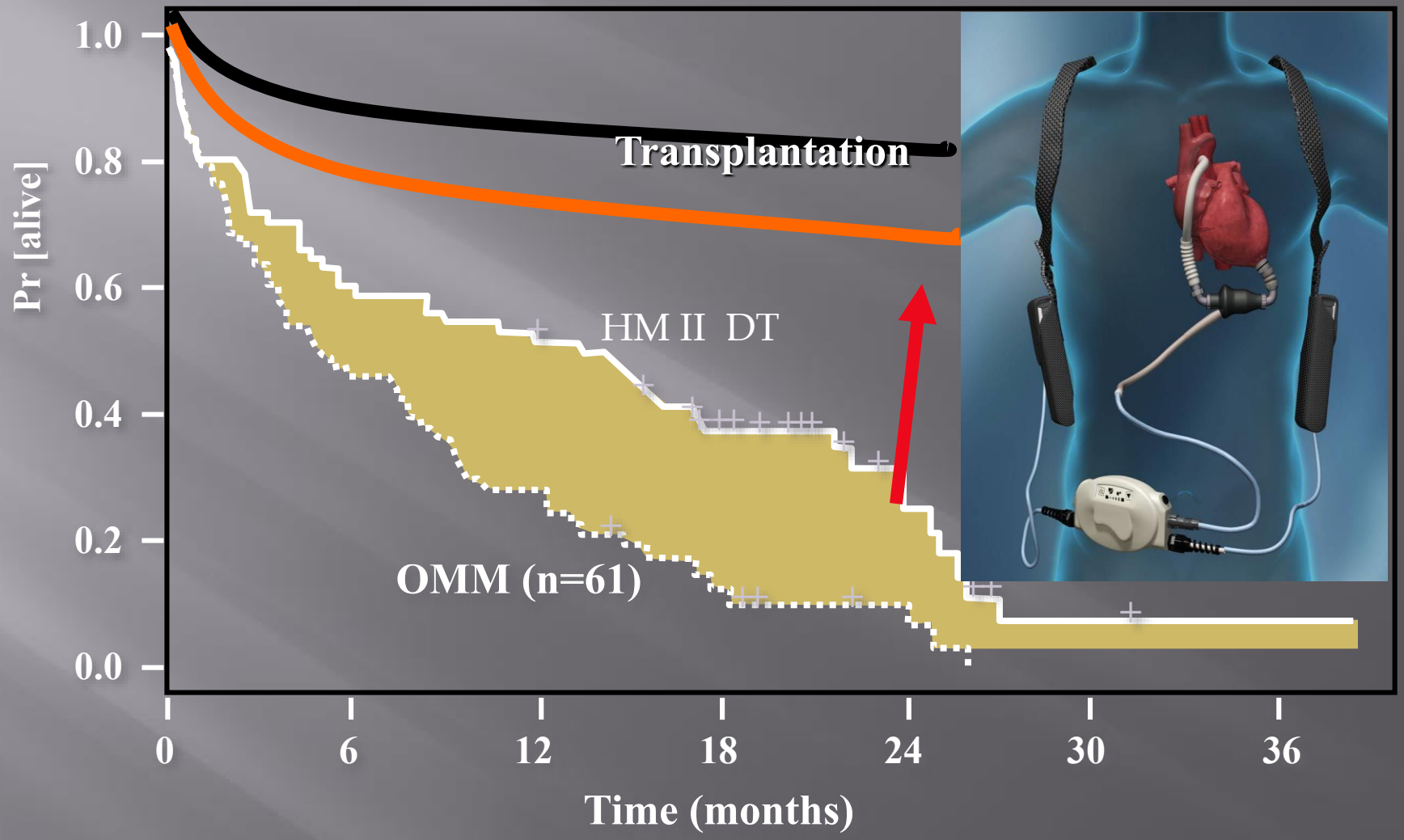


DT REMATCH (PAST DT EXPERIENCE*)



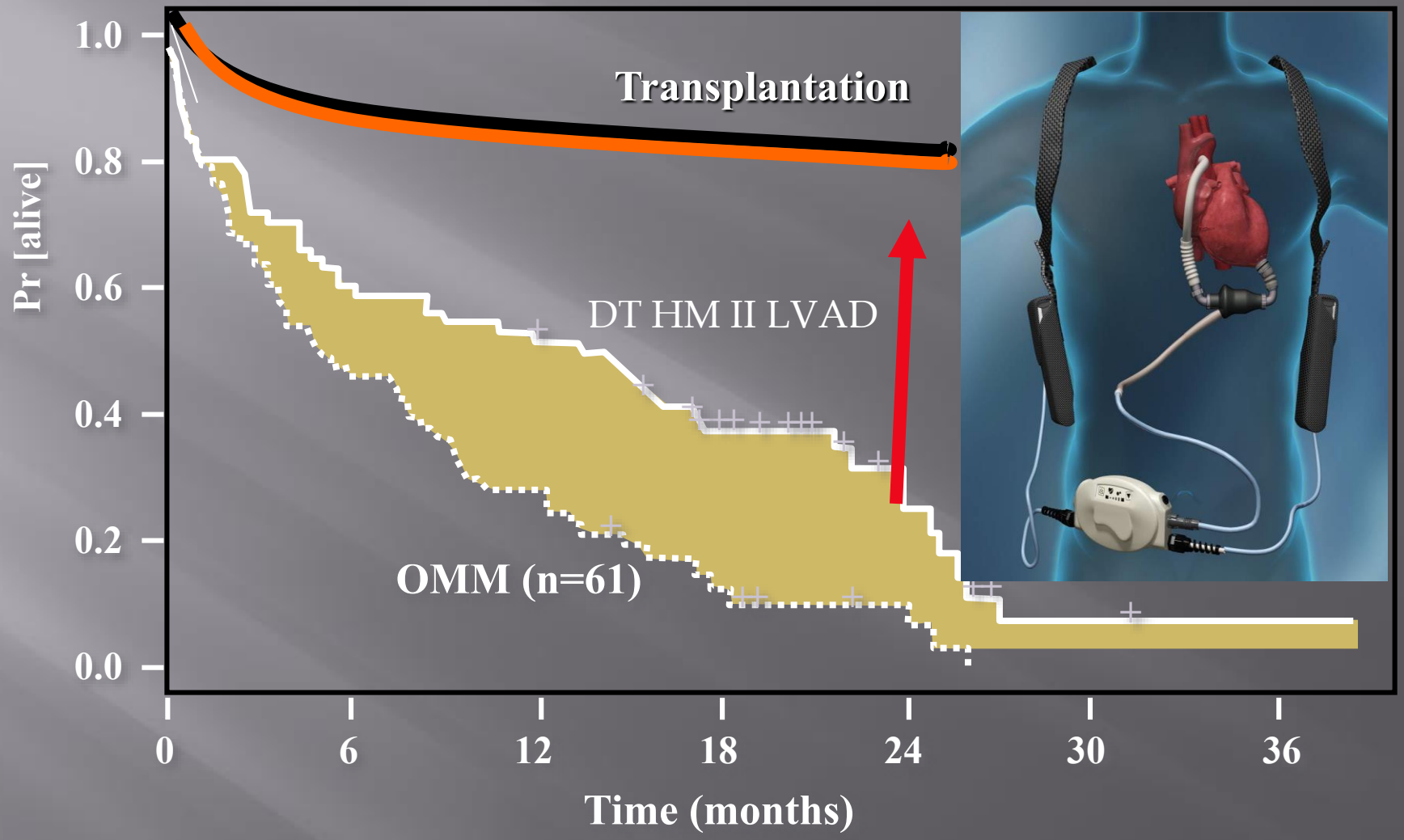
* Rose et al, Long-term mechanical left ventricular assist for end-stage heart failure. N Eng J Med.,2001;345:1435-1443

RECENT DT HM II EXPERIENCE



Slaughter,et al NEJM 2009

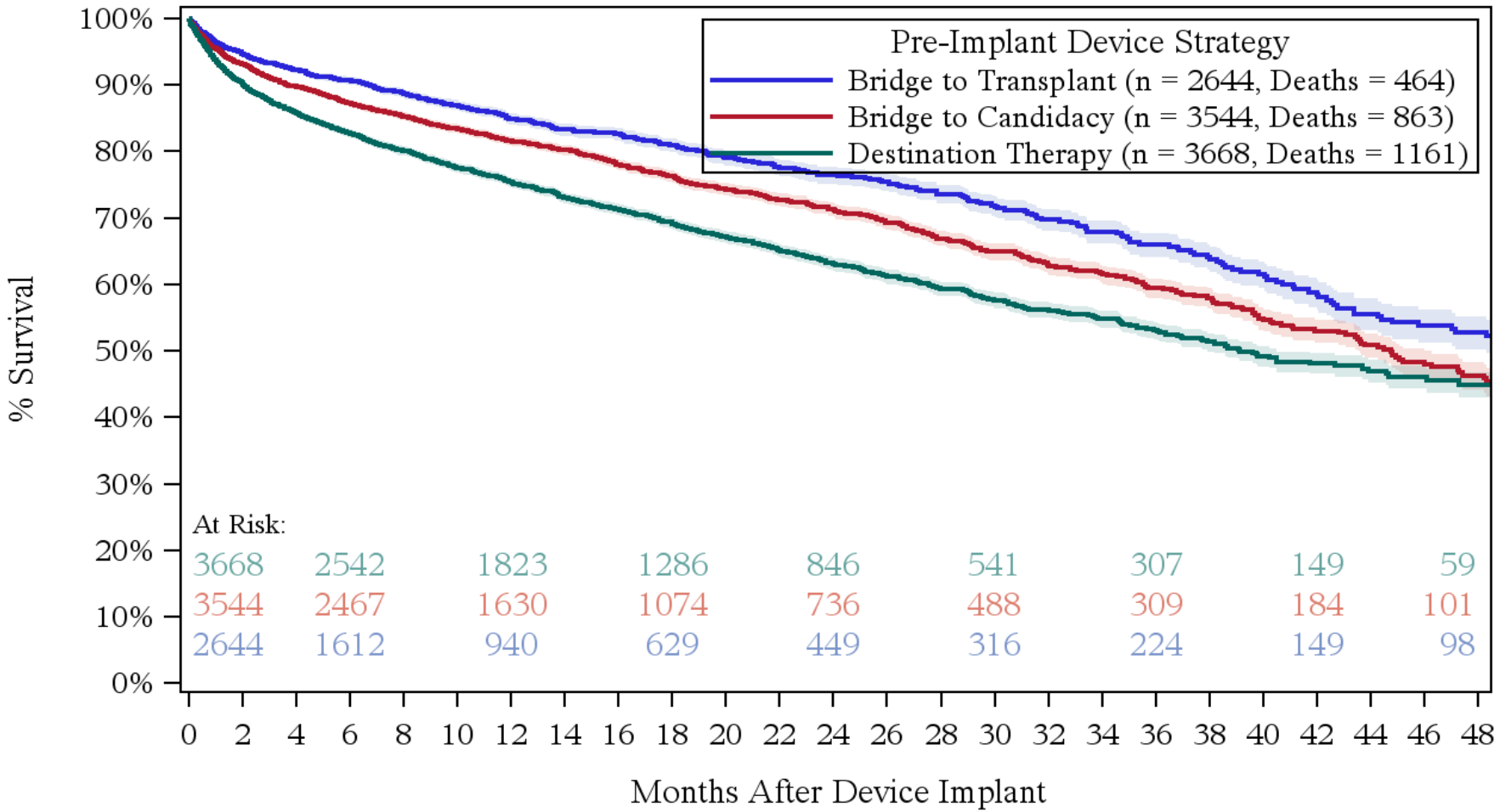
PRESENT BTT and DT HMII EXPERIENCE



Select centers reported 2012

INTERMACS - Kaplan-Meier Survival for Continuous Flow LVADs (with or without RVAD implant at time of LVAD operation) by Pre-Implant Device Strategy

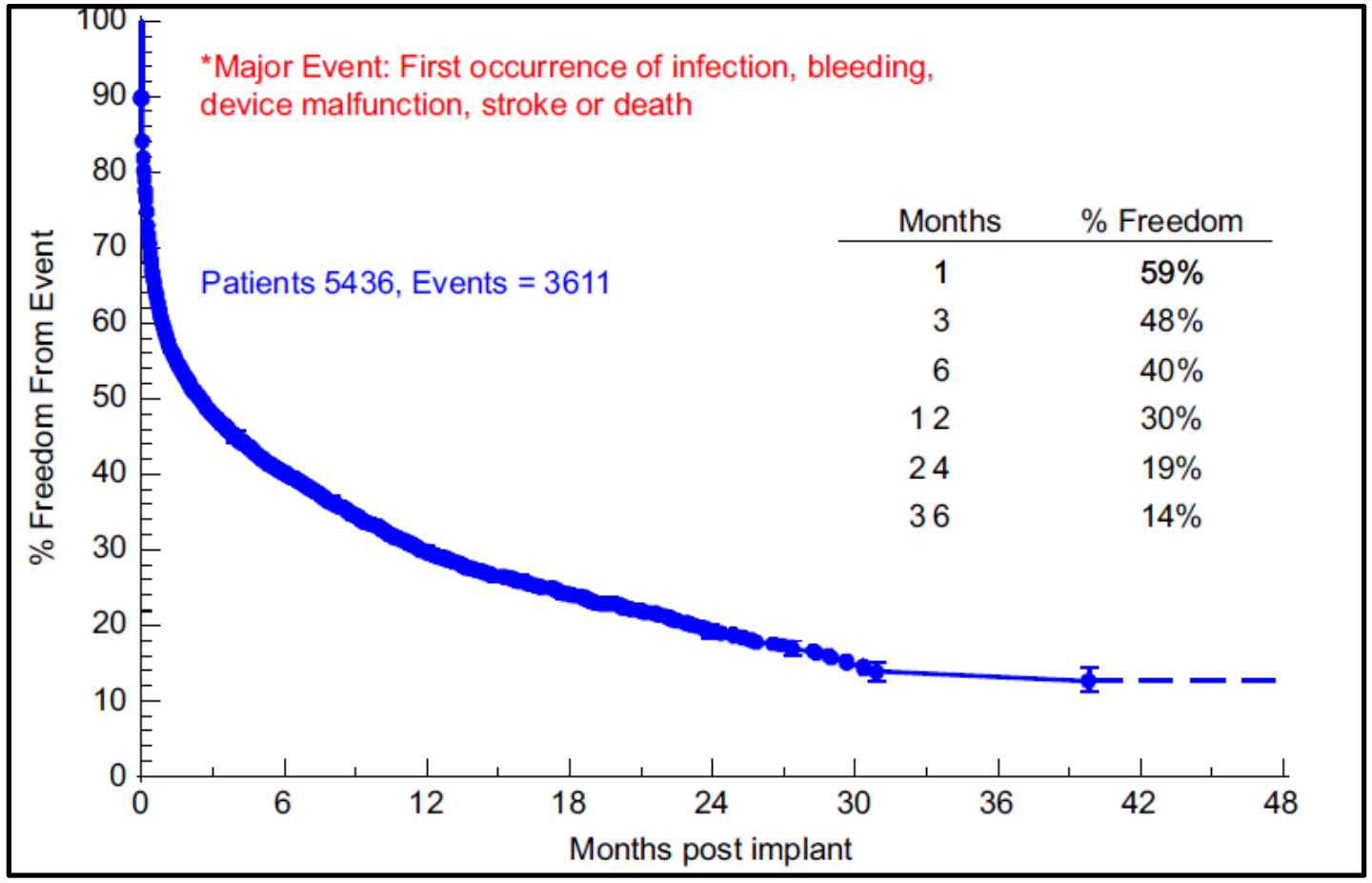
Primary Prospective Implants: June 23, 2006 to March 31, 2014



Shaded areas indicate 70% confidence limits
p (log-rank) = <.0001
Event: Death (censored at transplant or recovery)

Intermacs

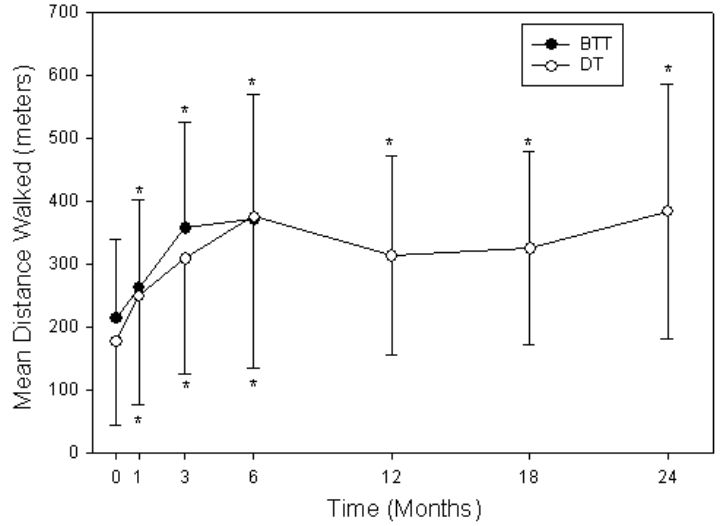
The Major Challenge Facing LVADs in 2017 is not Survival: It is Complications



Kirklin JHLT 2013

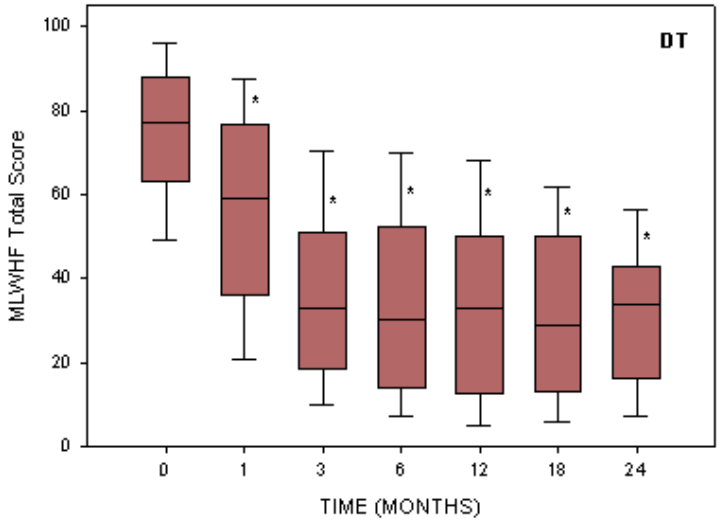
Quality of Life in LVADs

6 Minute Walk Distance

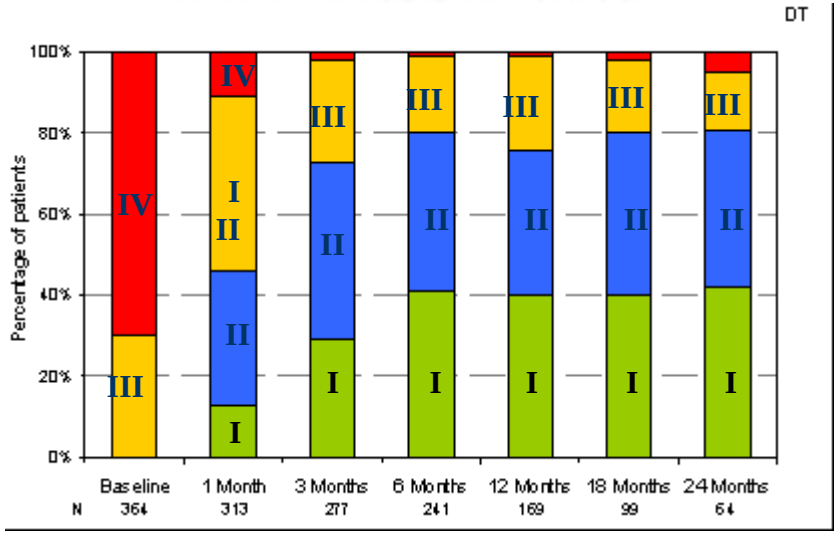


*: p< 0.05 compared to baseline.

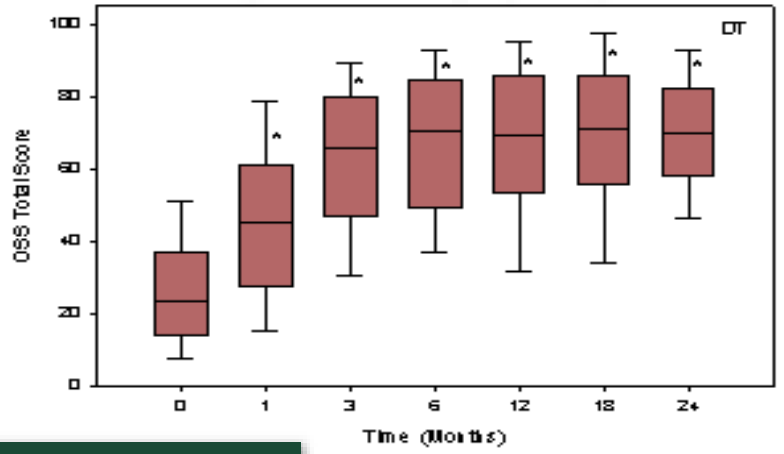
Minnesota Living with Heart Failure



NYHA Functional Class



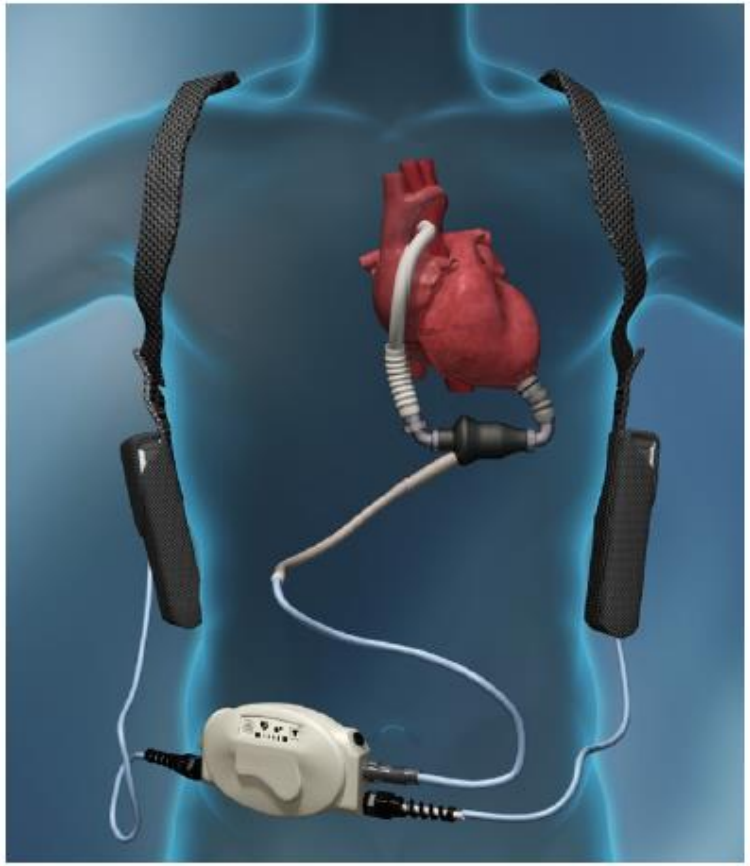
Kansas City Cardiomyopathy Score



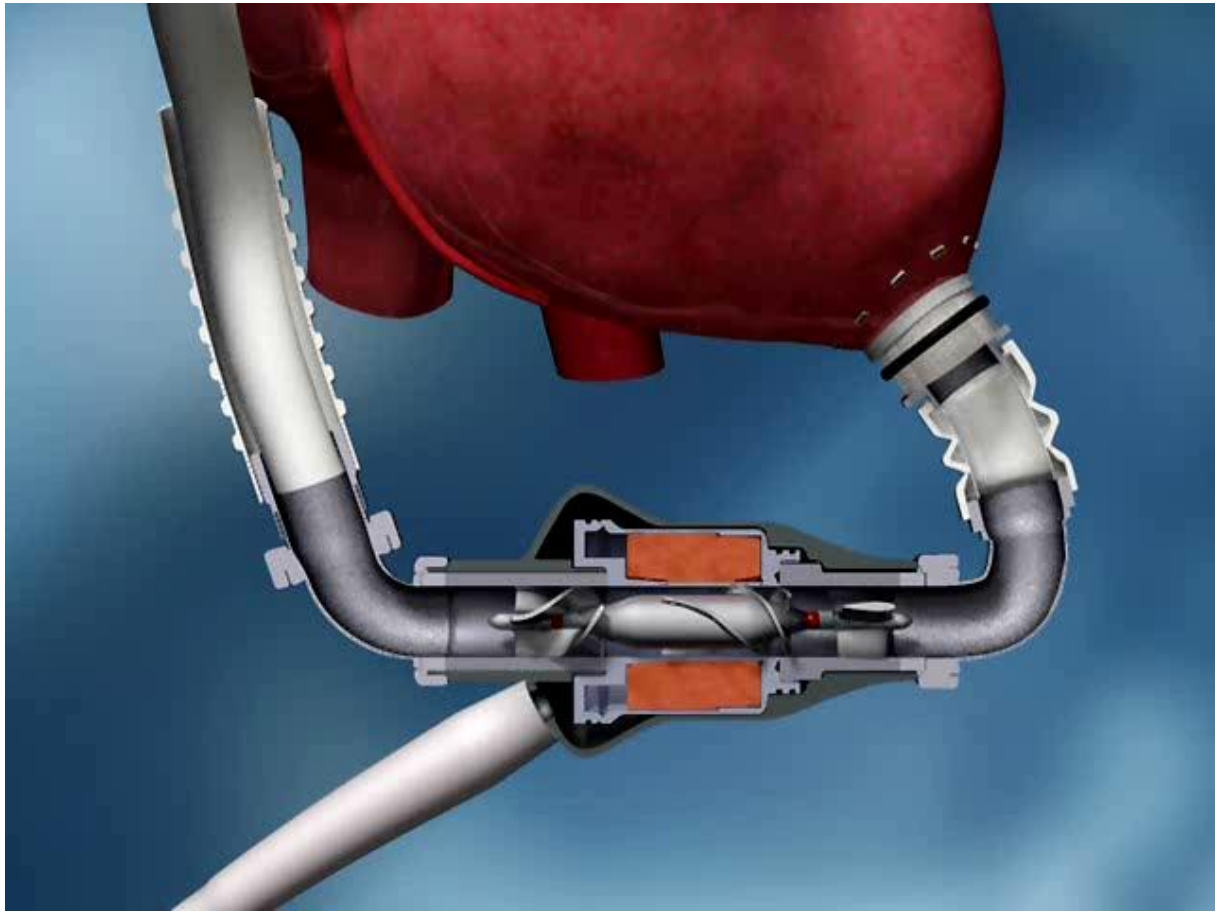
*** p<0.05 vs. baseline**

J Am Coll Cardiol 2010; 55: 1826-34

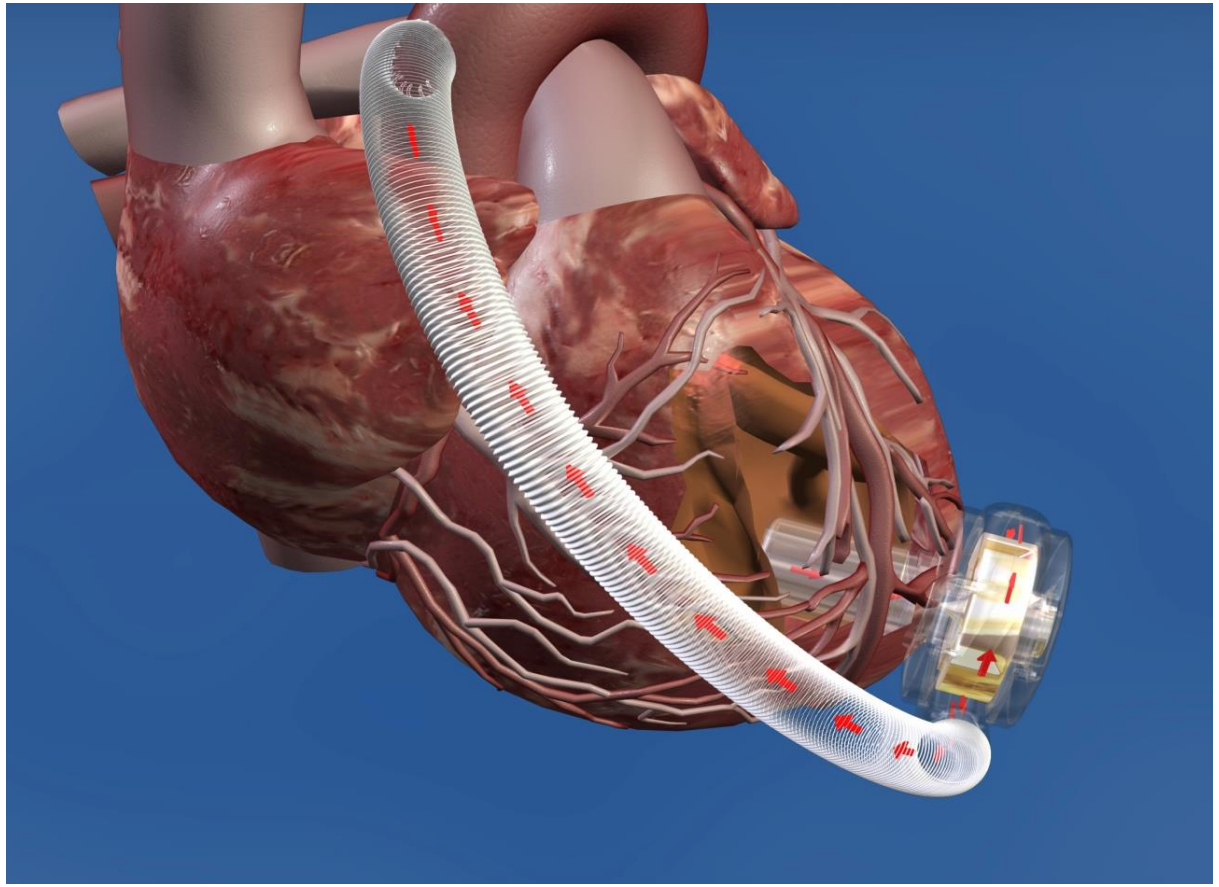
The Heartmate II LVAD



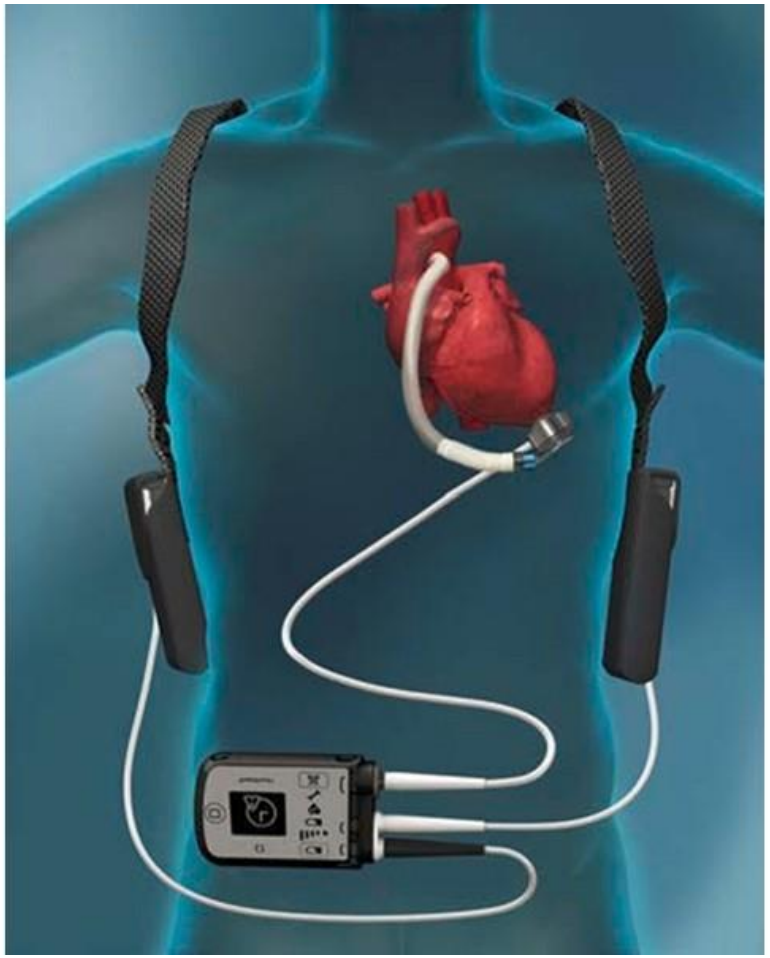
The Heartmate II LVAD



The Heartware HVAD

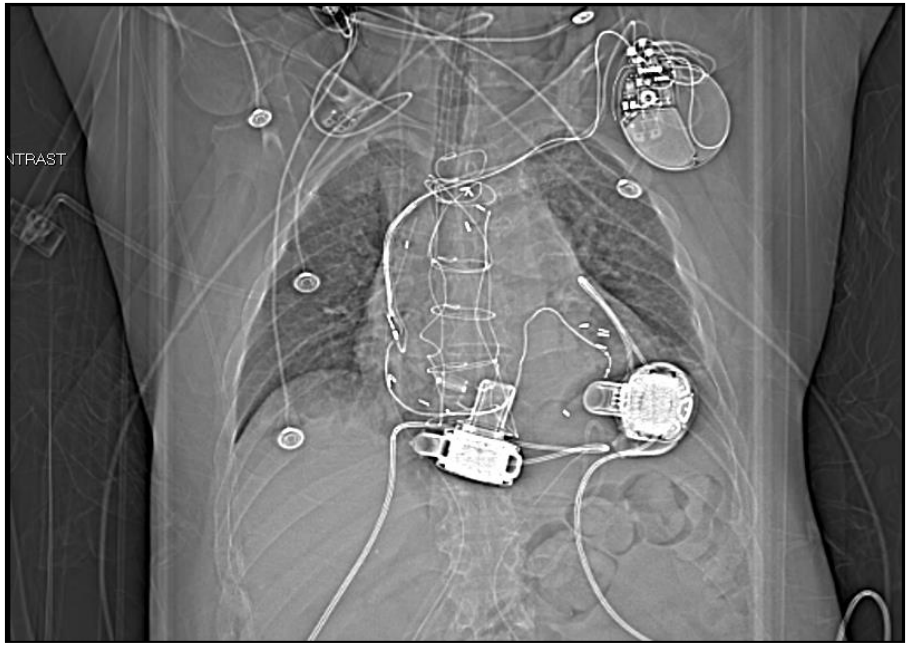


The Heartmate 3 LVAD

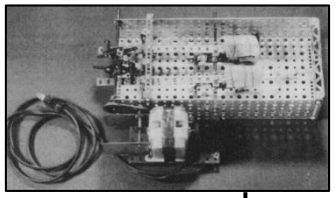


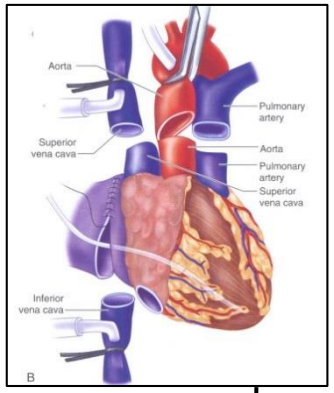
Heartware HVAD Implant

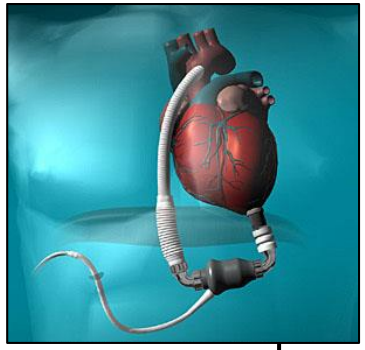
Patient with HVAD BIVADs



Mechanical Circulatory Support







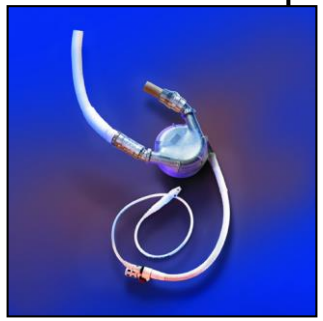
1940

1960

1980

2000

2020



The Future (is here!)

Heartmate III™

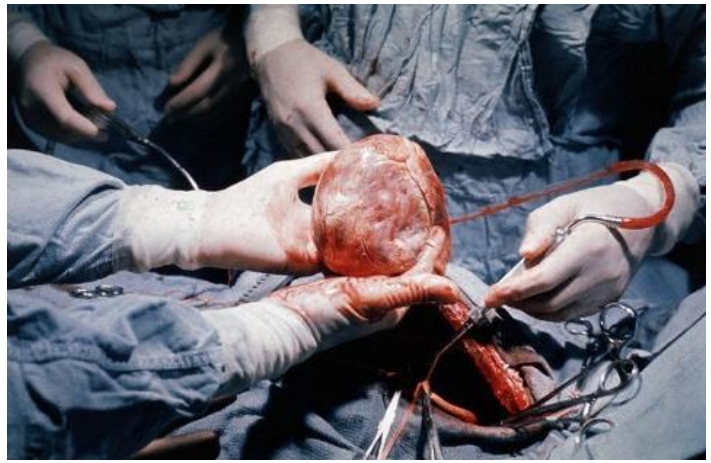
MVAD™

Circulite™


Titleist


KUIPERS
FAMILY
FARM

Advanced Heart Failure: Therapeutic Options



“And in the end, it’s not the years in your life that counts, it’s the life in your years.”

Abraham Lincoln


THANK YOU!