Work up for transplantation: the ERBP guideline

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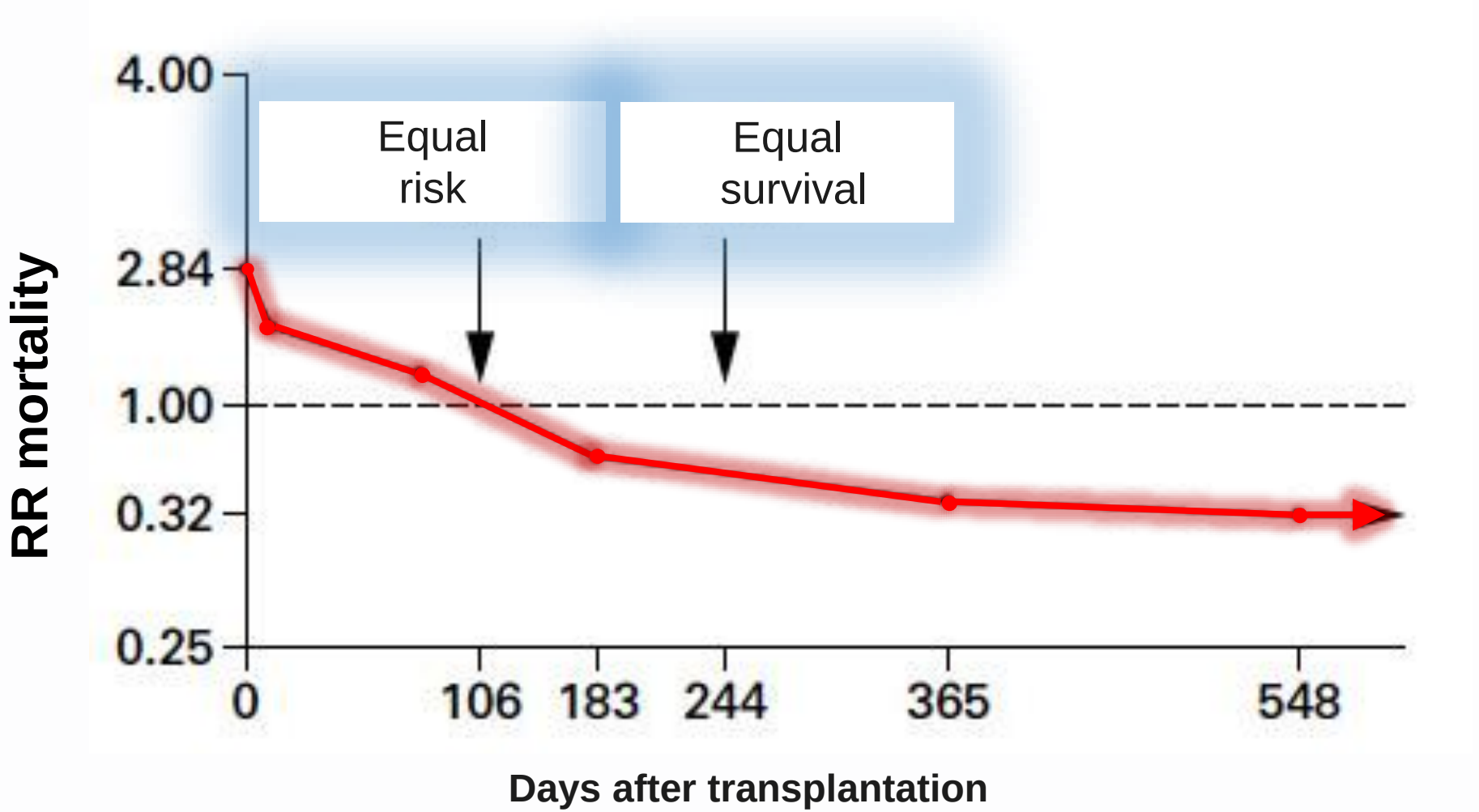
Ghent University Hospital

BANTAO October 8 2017

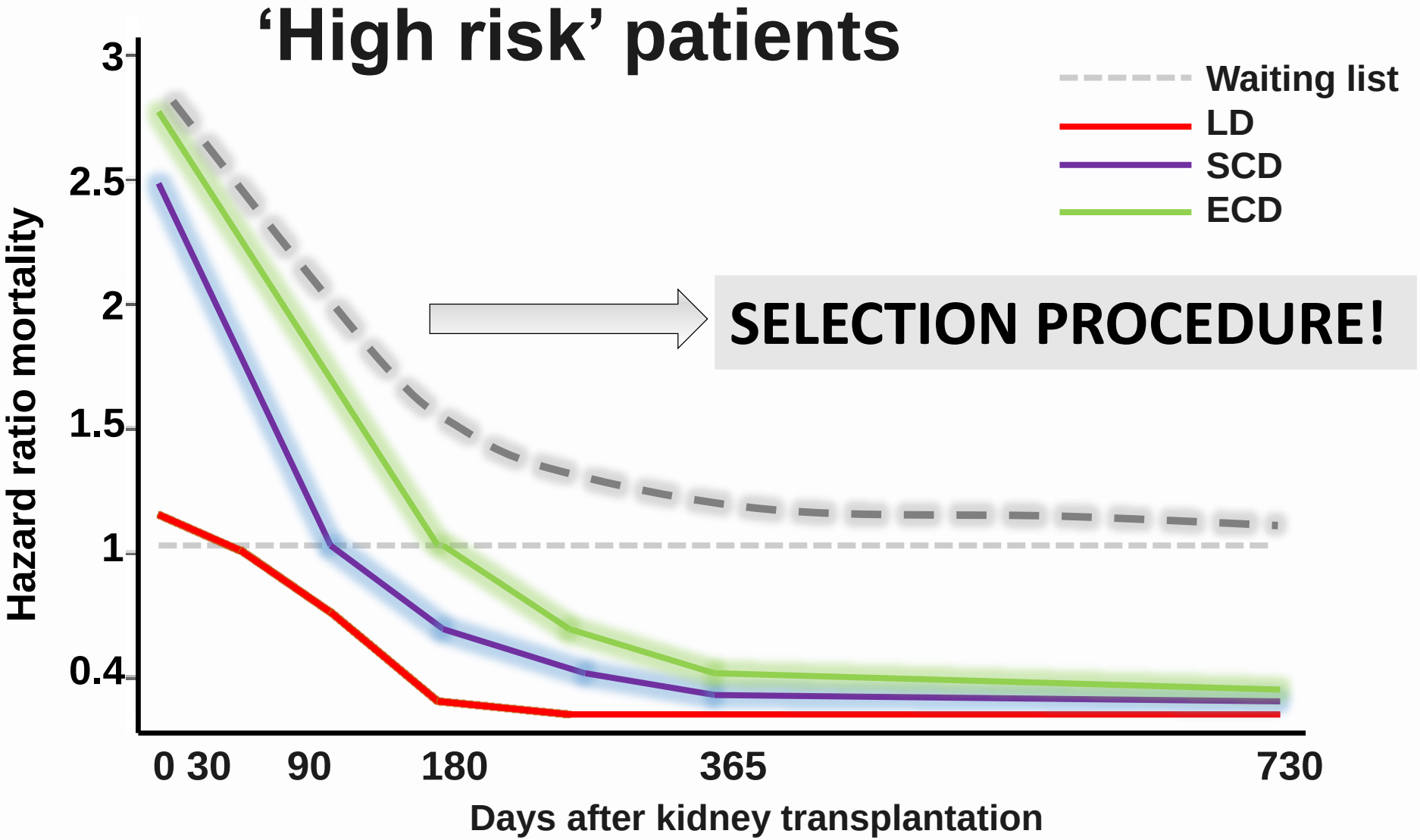
It is all about asking the right questions

Kidney transplantation: life-extending?



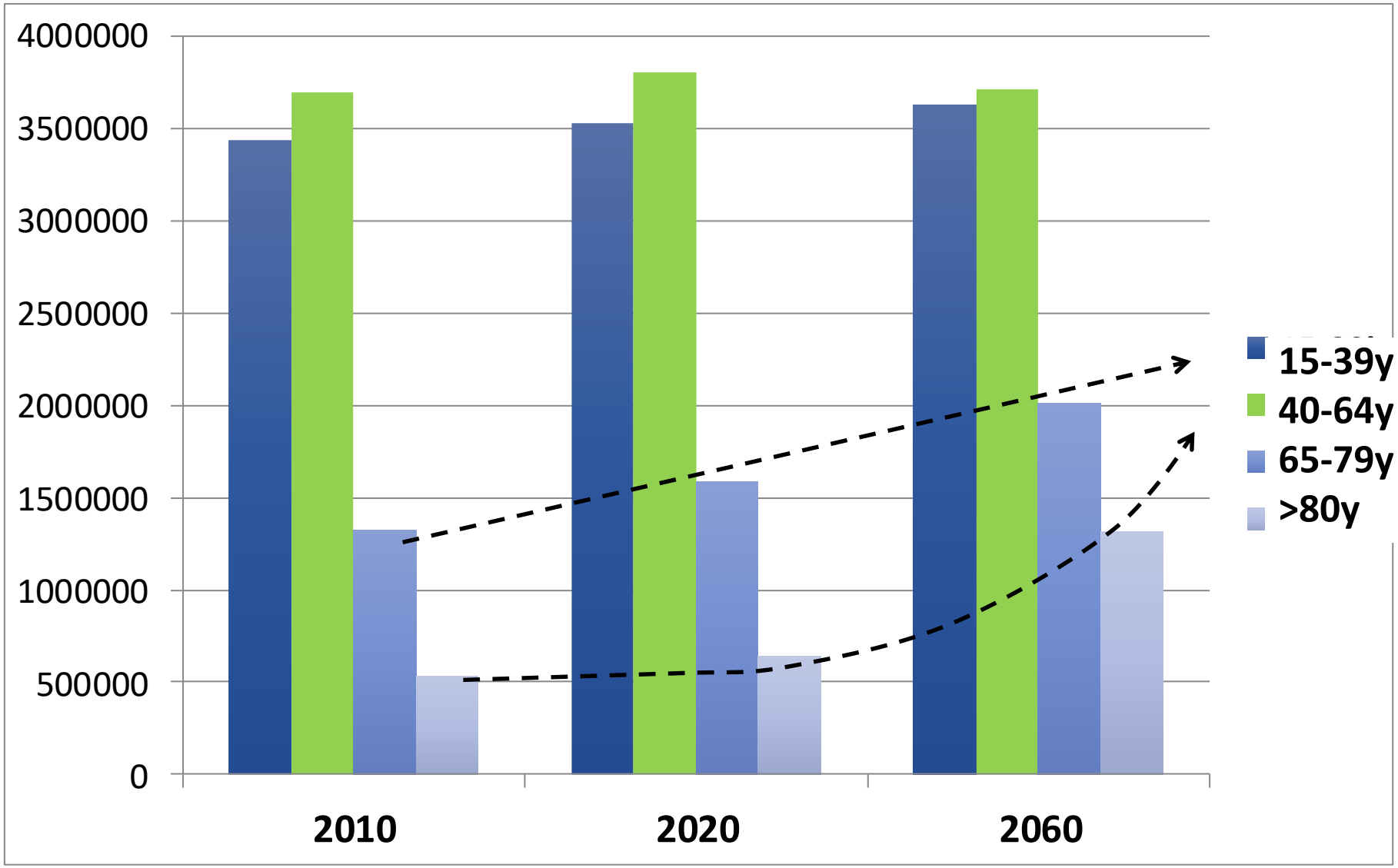
Wolfe et al. NEJM 1999

…despite the initial period of risk



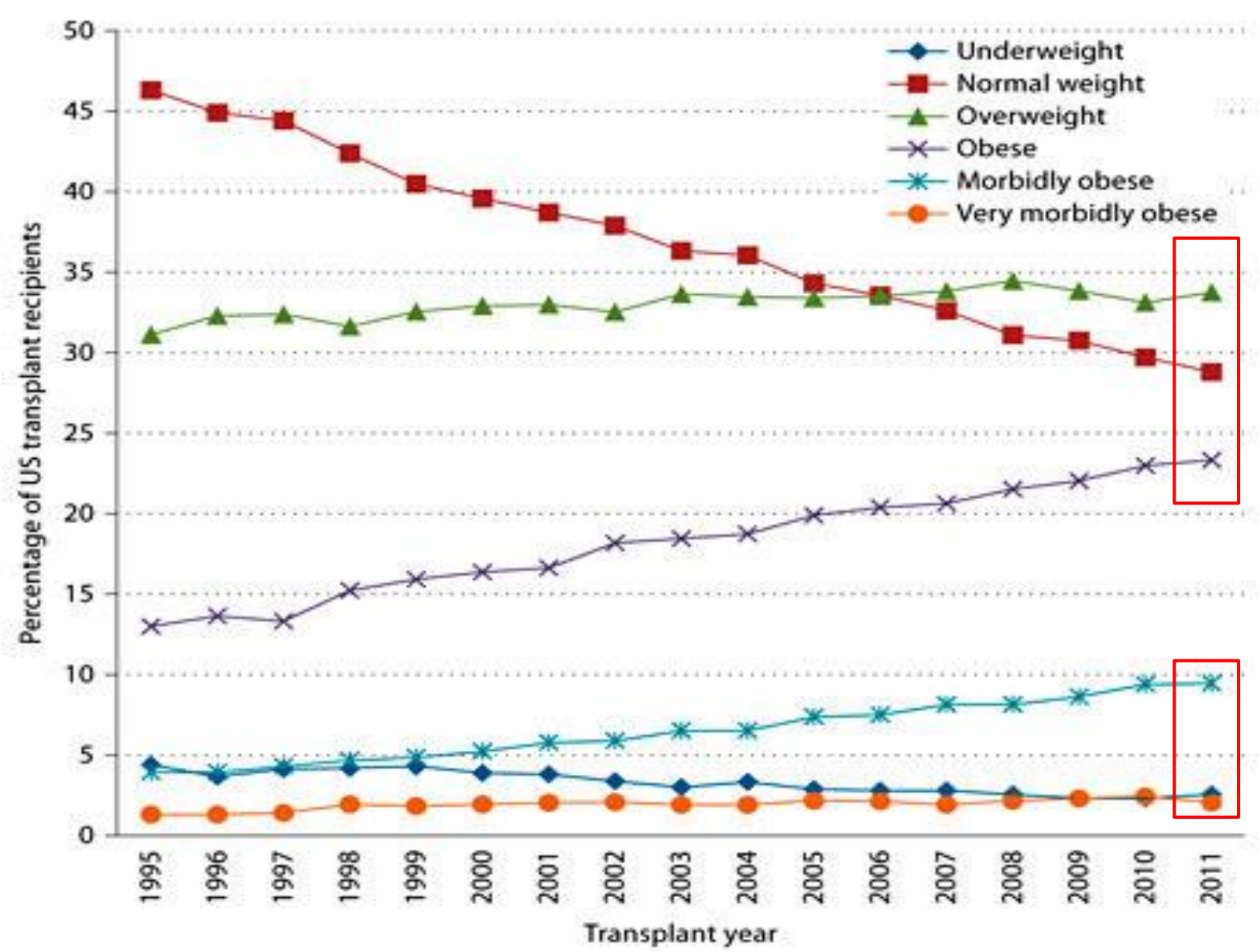
Gill et al. AJT 2013

…despite changing demographics



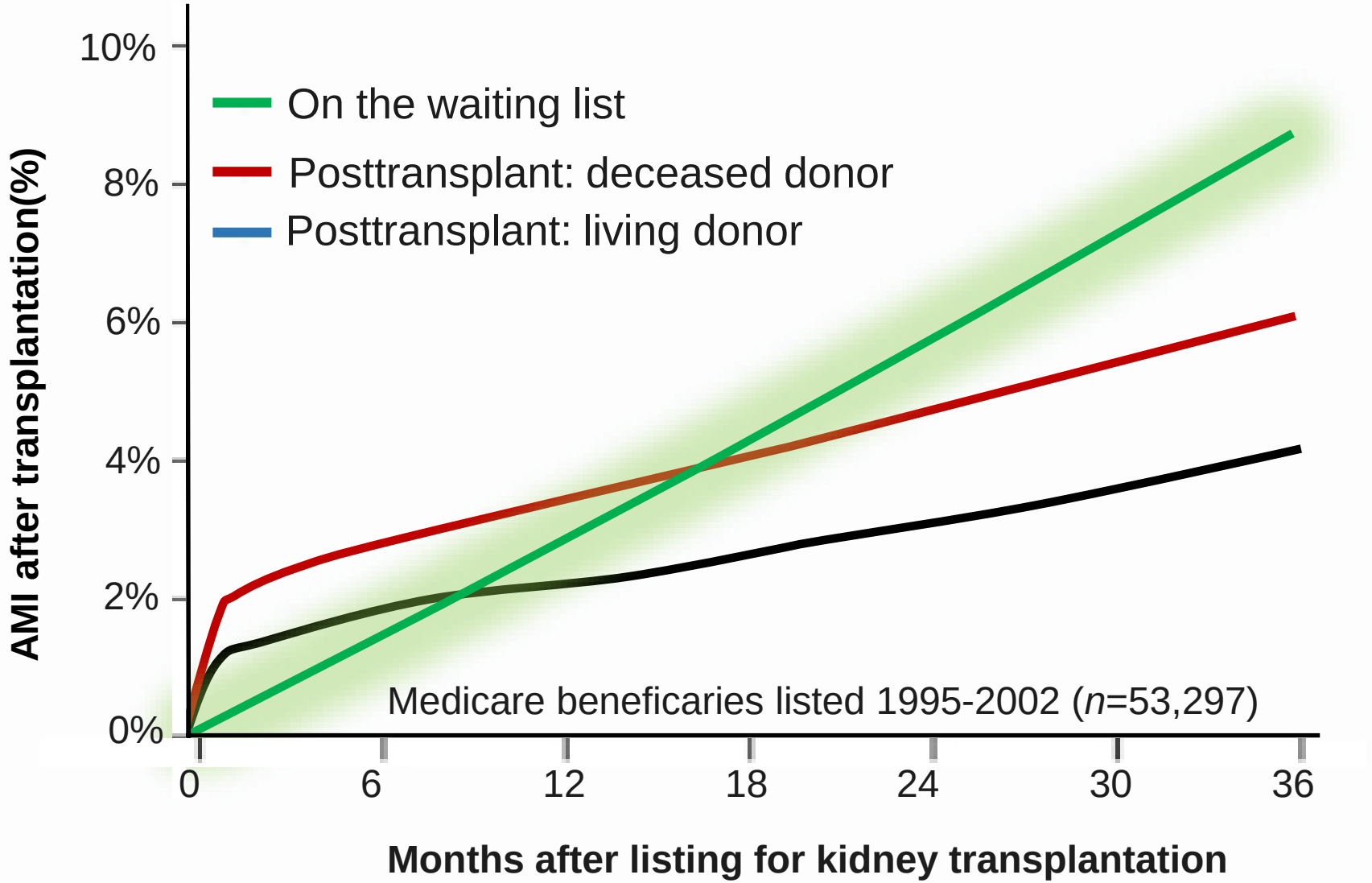
Source: BELFIUS BANK BELGIUM

…despite changing demographics



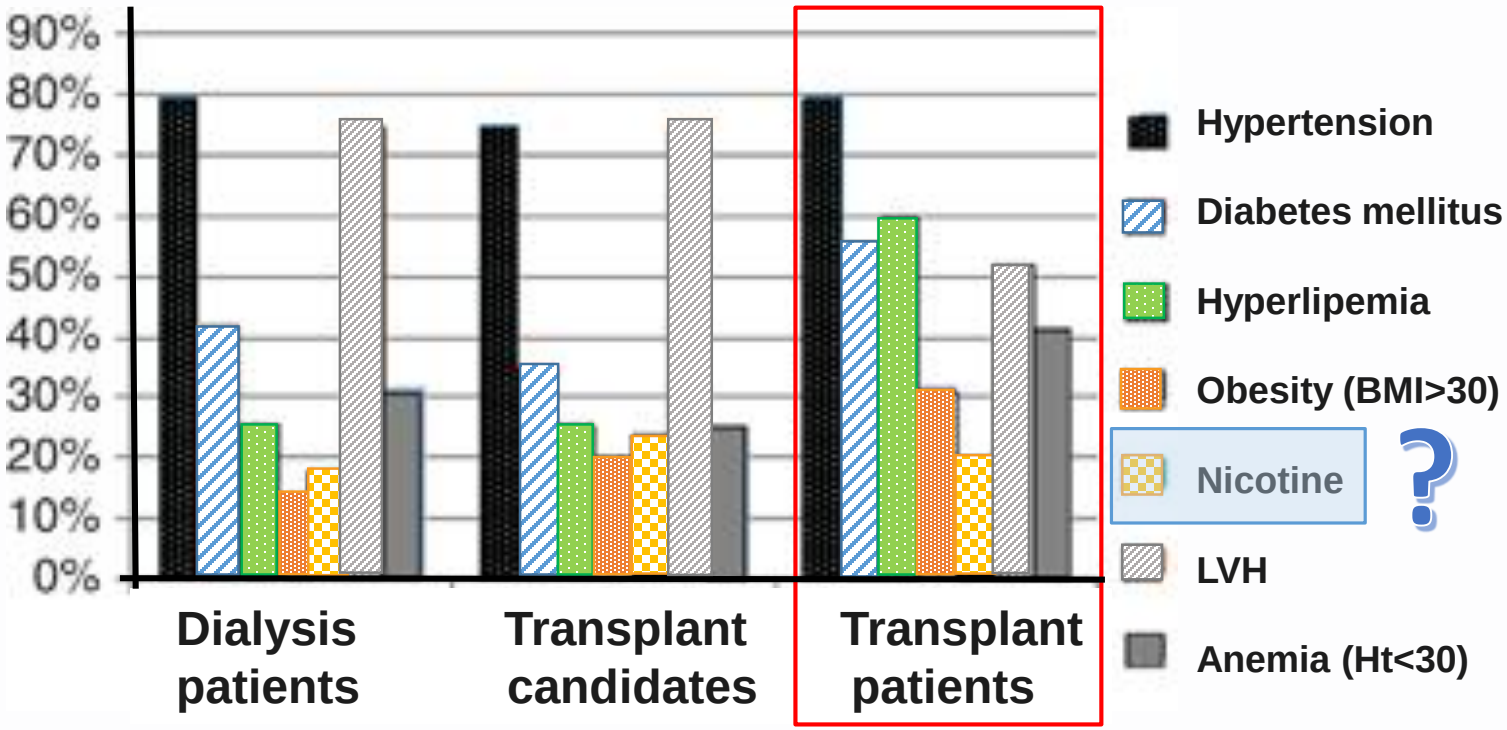
Lentine et al. Am J Nephrol 2012

Myocardial infarction after kidney transplantation



Kasiske et al. JASN 2006

Cardiovascular risk factors after transplantation



Young J et al. Kidney Int 2010

Patient selection= optimization short/longterm outcome

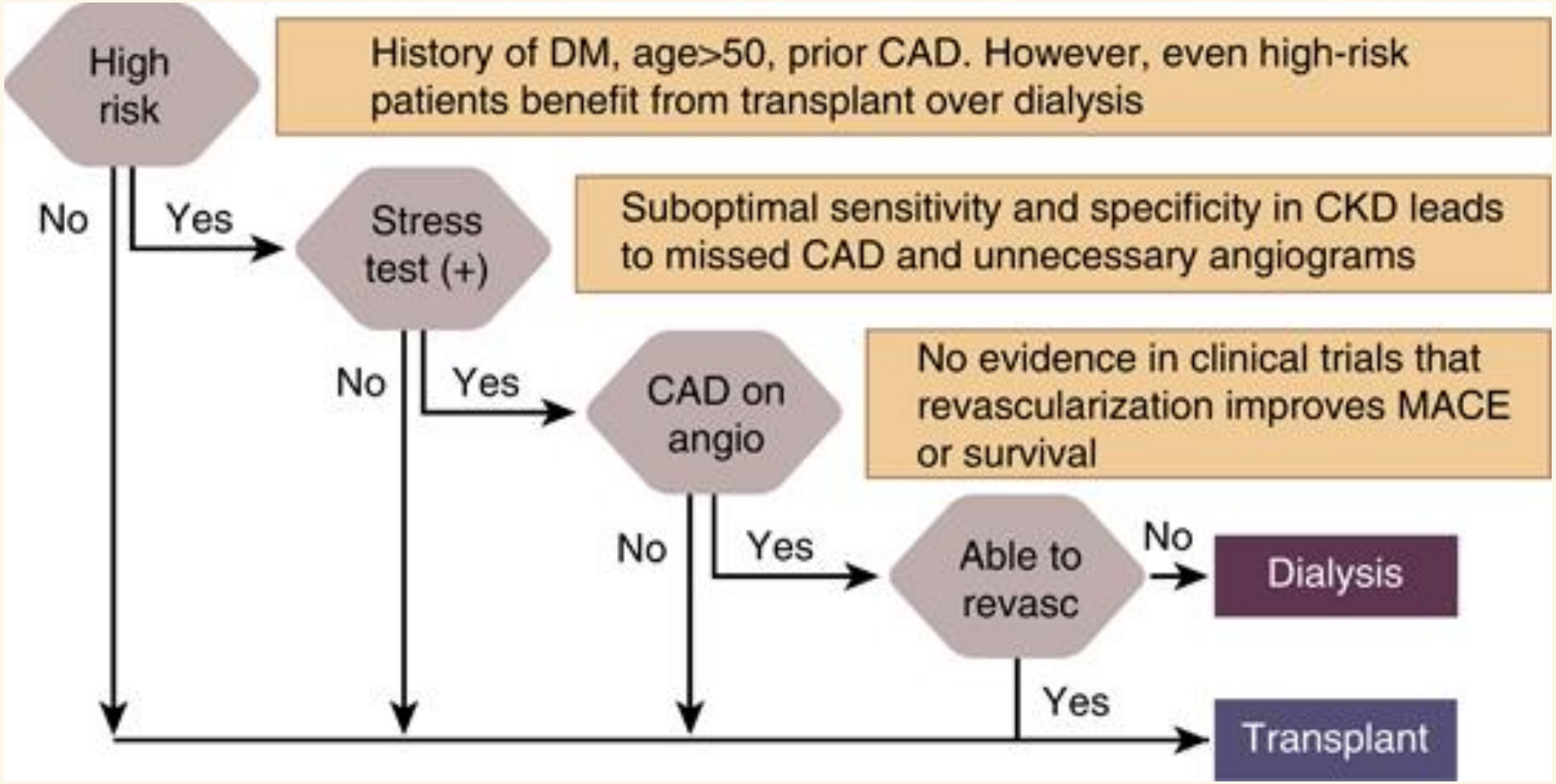
SCARCITY OF DONOR ORGANS

UTILITARIANISM

NEED FOR GUIDANCE

Problems with cardiac screening in KTR

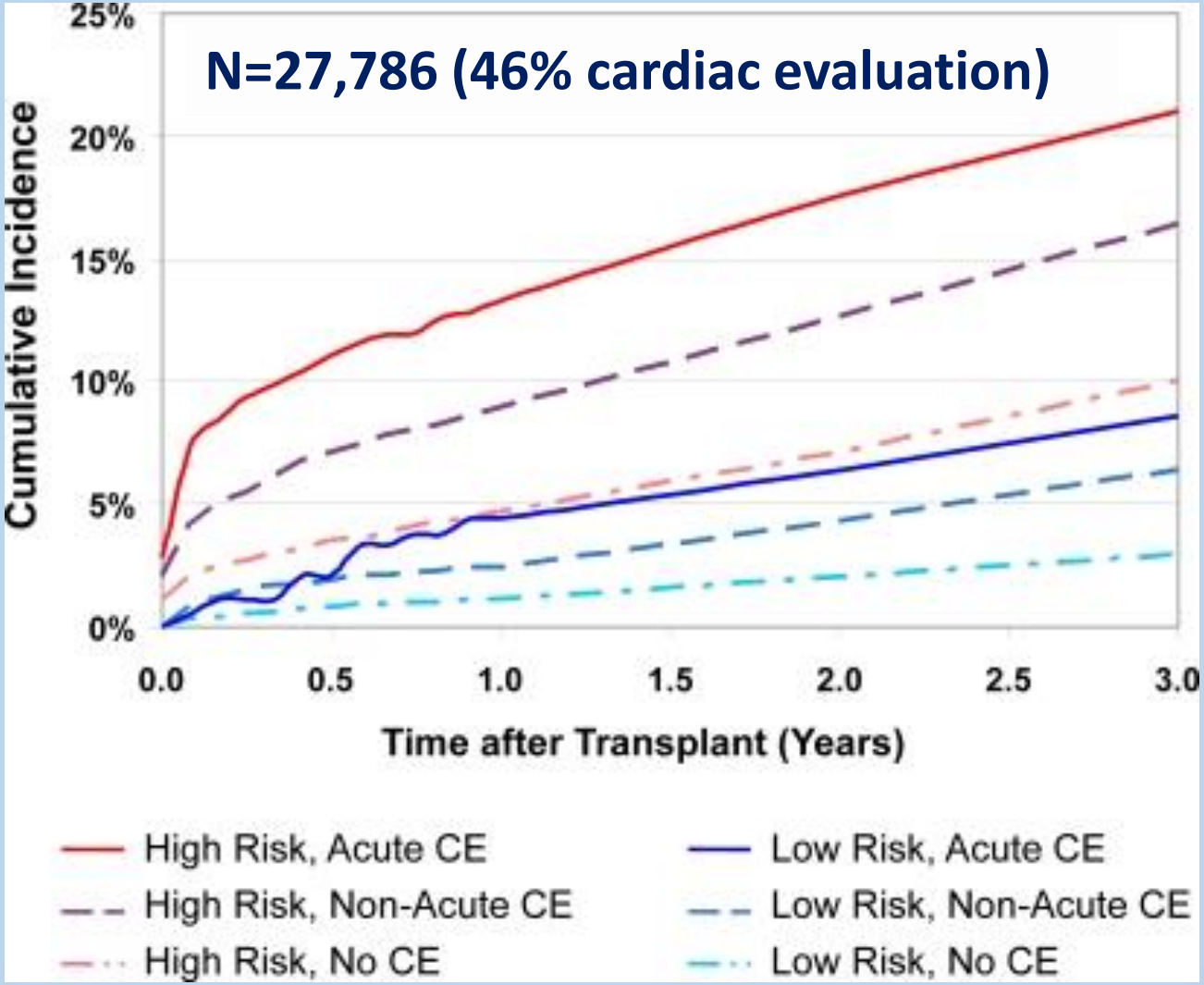
STRENGTH OF EVIDENCE?
EXTERNAL VALIDITY STUDIES?



Hart A et al. Kidney Int 2014

Incidence of AMI according to CV risk+ evaluation

SELECTION !

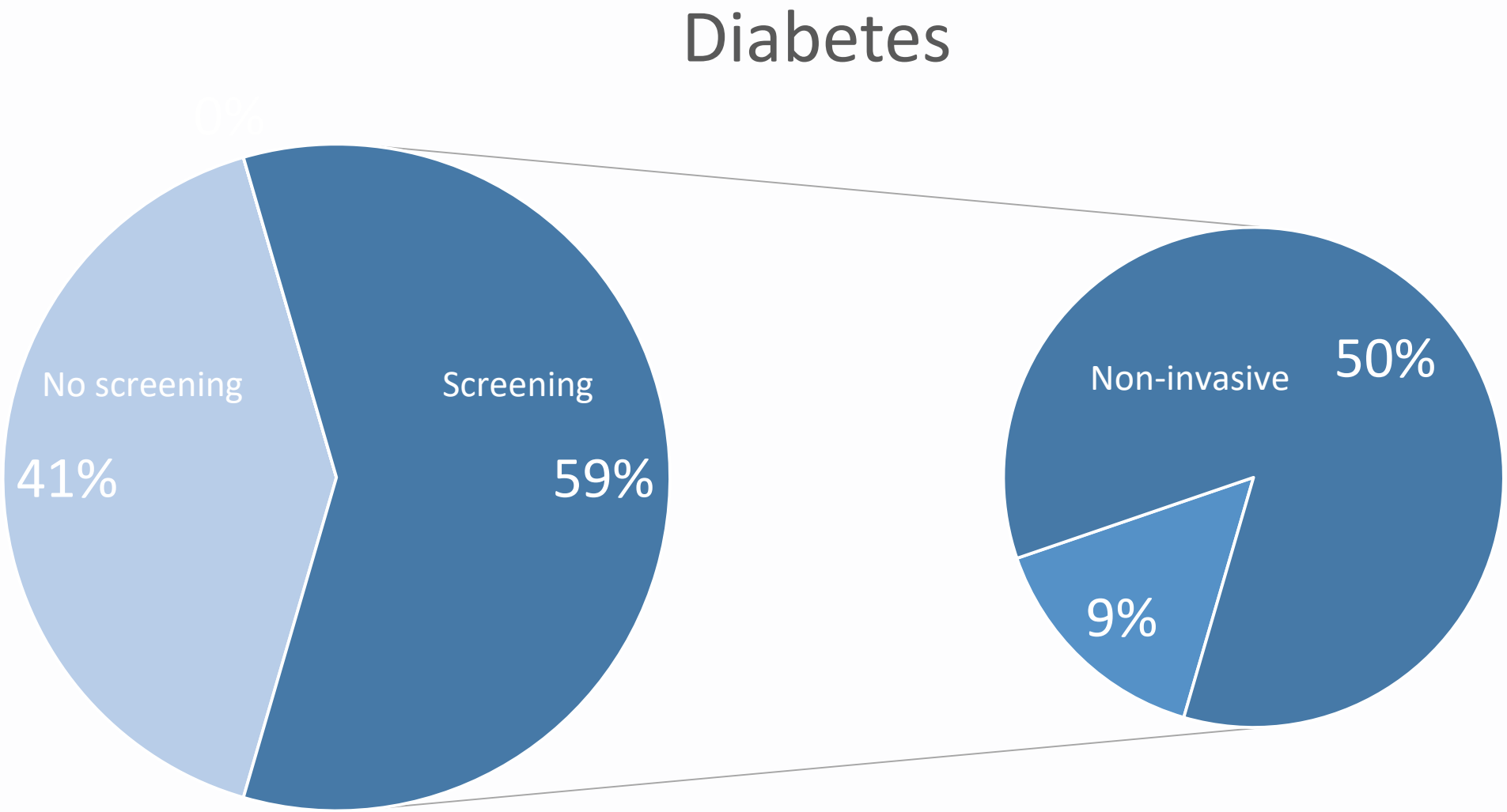


10% revascularization

0.3% revascularization

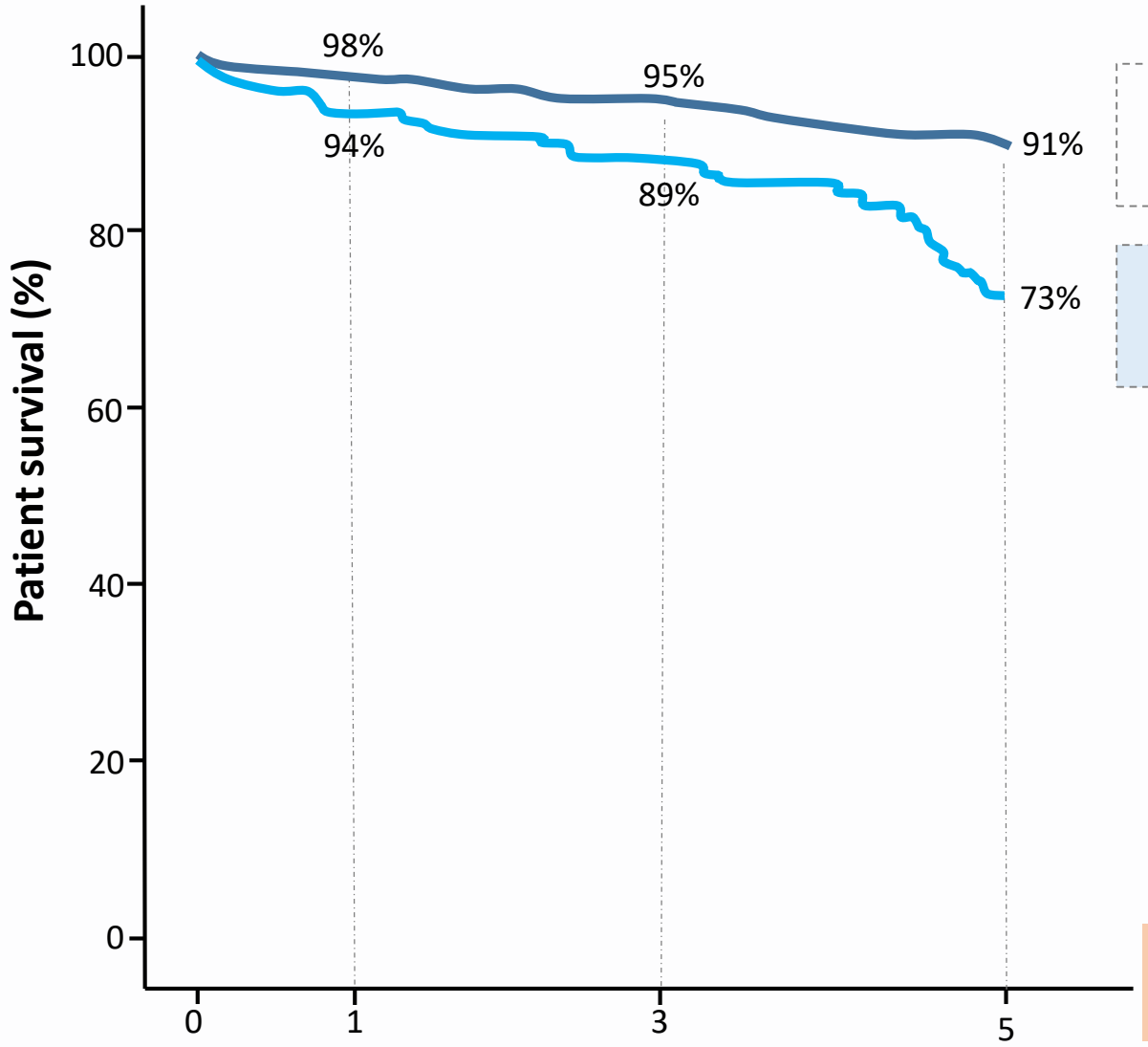
Lentine et al. cJASN 2008

Practice variation between centres



Lentine et al. cJASN 2008

It makes sense to scrutinize screening in diabetic KTR



No diabetes at the time of transplantation

Diabetes at the time of transplantation

Universitair Ziekenhuis Gent

N=1012
2003-2016

Variability cardiac screening?

KDOQI

AST

Lisbon

AHA

American Heart Association®

100%

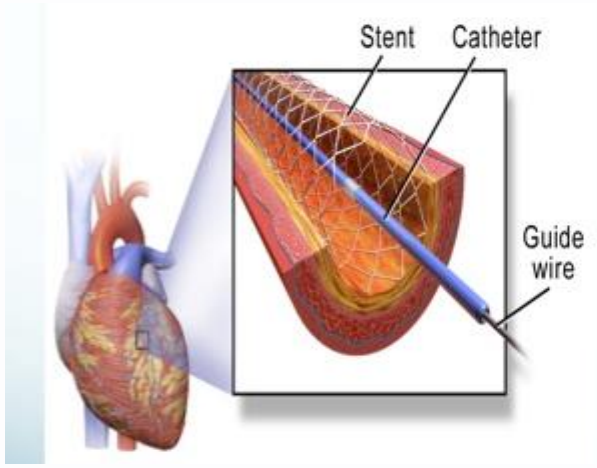
92%

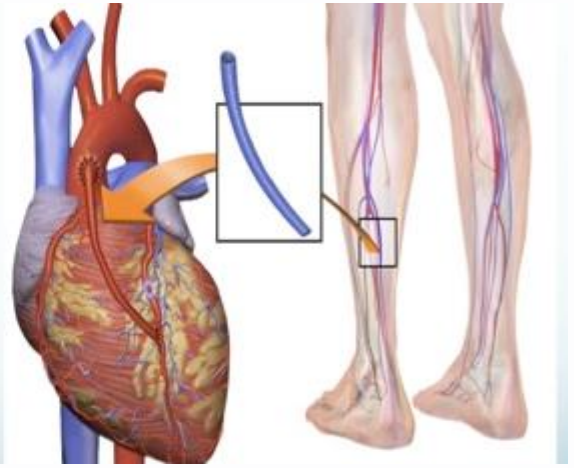
68%

20%

ISCHEMIA

9.6% (N=17)



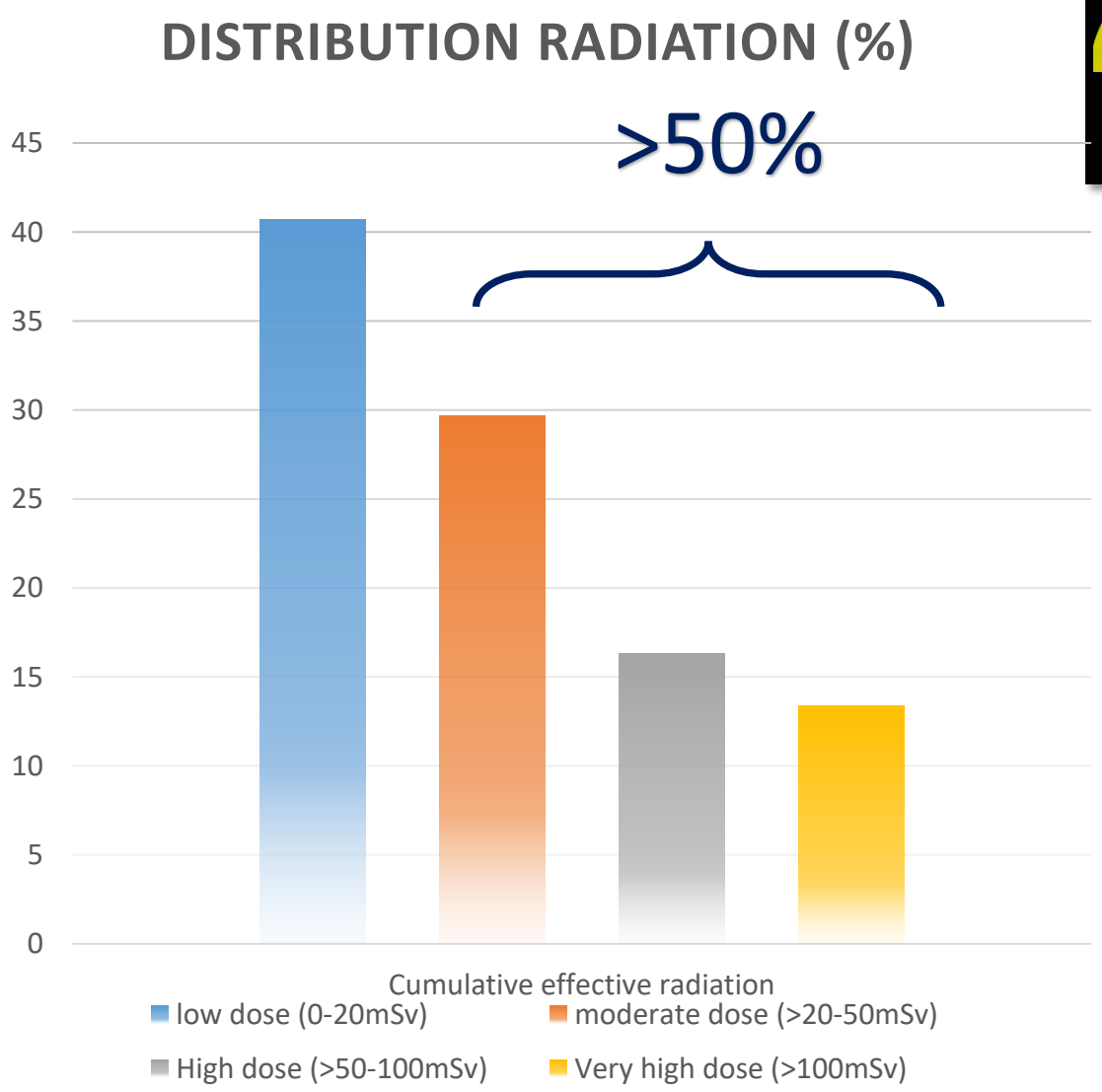


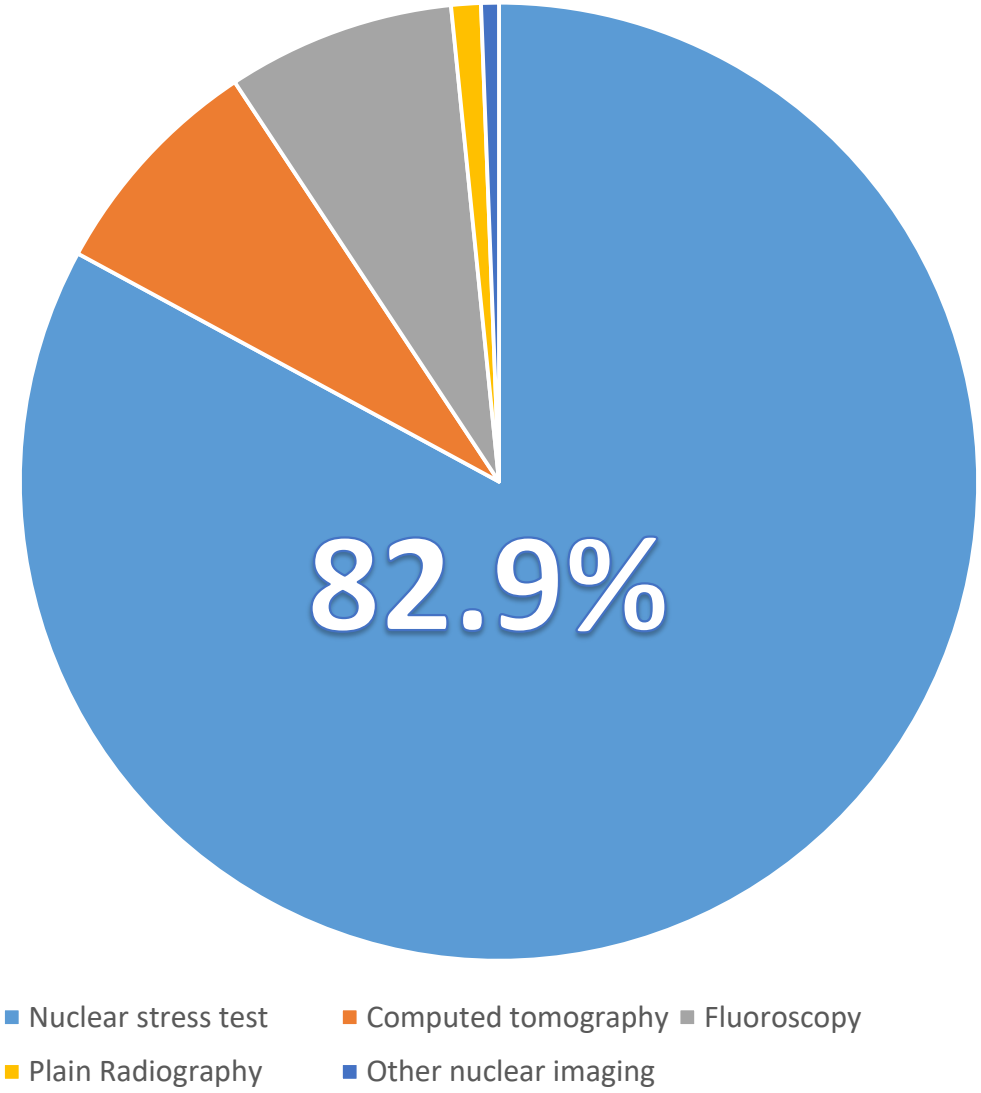
10

4

Friedman et al. cJASN 2011

Ionizing radiation exposure-pretransplant evaluation





Nguyen KN et al. cJASN 2013

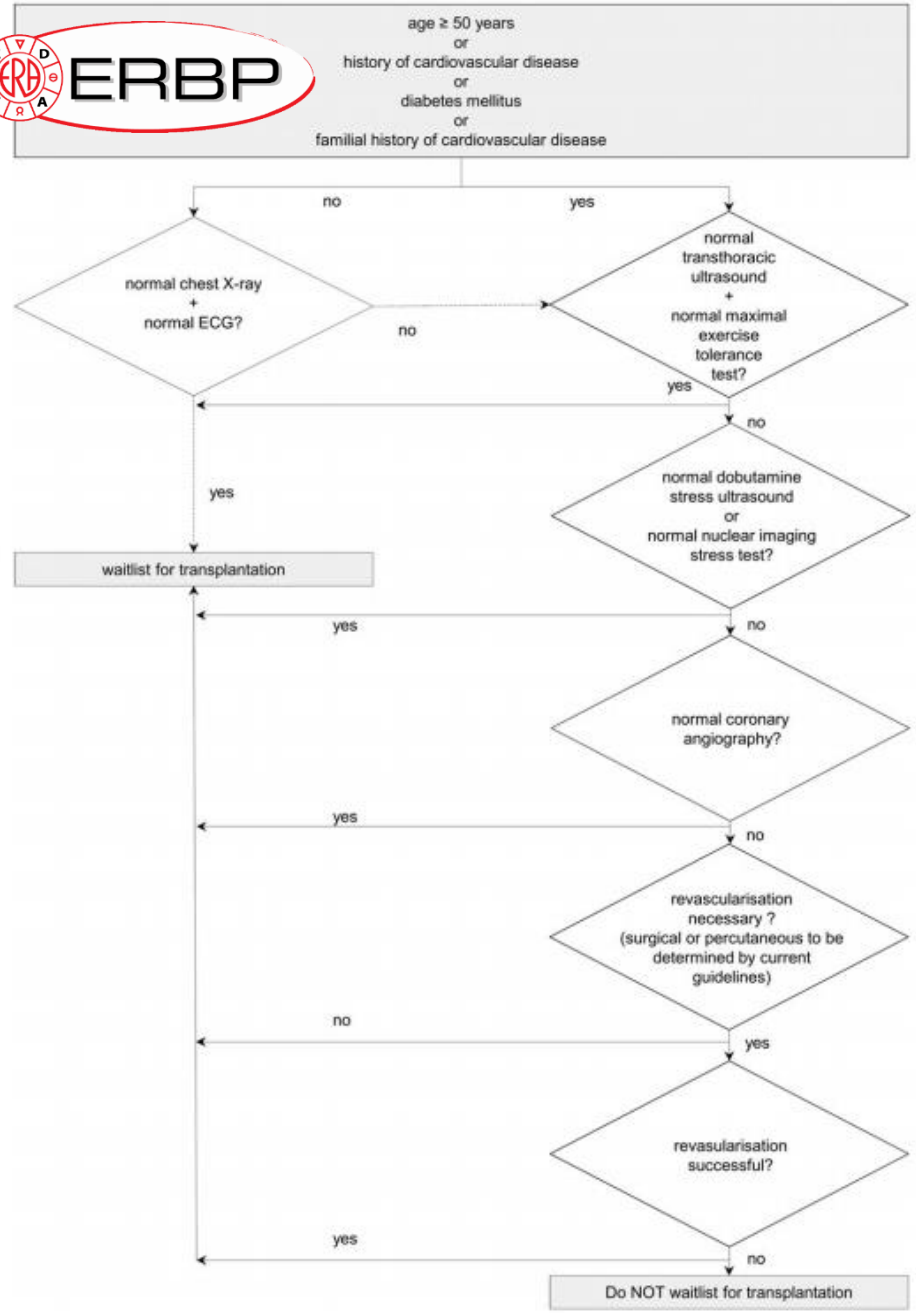
The guidelines

We recommend that basic clinical data, physical examination, resting ECG and chest X-ray are a sufficient standard work-up in asymptomatic low-risk kidney transplant candidates. (**1C**)

We recommend performing a standard exercise tolerance test and cardiac ultrasound in asymptomatic high-risk patients (older age, diabetes, history of cardiovascular disease). In patients with a negative test, further cardiac screening is not indicated. (**1C**)

We recommend performing further cardiac investigation for occult coronary artery disease with non-invasive stress imaging (dobutamine stress echocardiography or myocardial perfusion scintigraphy) in kidney transplant candidates with high risk and a positive or inconclusive exercise tolerance test. (**1C**)

We recommend performing coronary angiography in kidney transplant candidates with a positive test for cardiac ischaemia. Further management should be according to the current cardiovascular guidelines. (**1D**)



http://ndt.oxfordjournals.org/content/28/suppl_2/ii1.full.pdf+html

American Heart Association

Noninvasive stress testing may be considered in kidney transplantation candidates with no active cardiac conditions based on the presence of multiple CAD risk factors regardless of functional status. Relevant risk factors among transplantation candidates include diabetes mellitus, prior cardiovascular disease, more than 1 year on dialysis, left ventricular hypertrophy, age greater than 60 years, smoking, hypertension, and dyslipidemia. The specific number of risk factors that should be used to prompt testing remains to be determined, but the committee considers 3 or more as reasonable (*Class IIb; Level of Evidence C*).

http://circ.ahajournals.org/content/126/5/617.full#sec-3

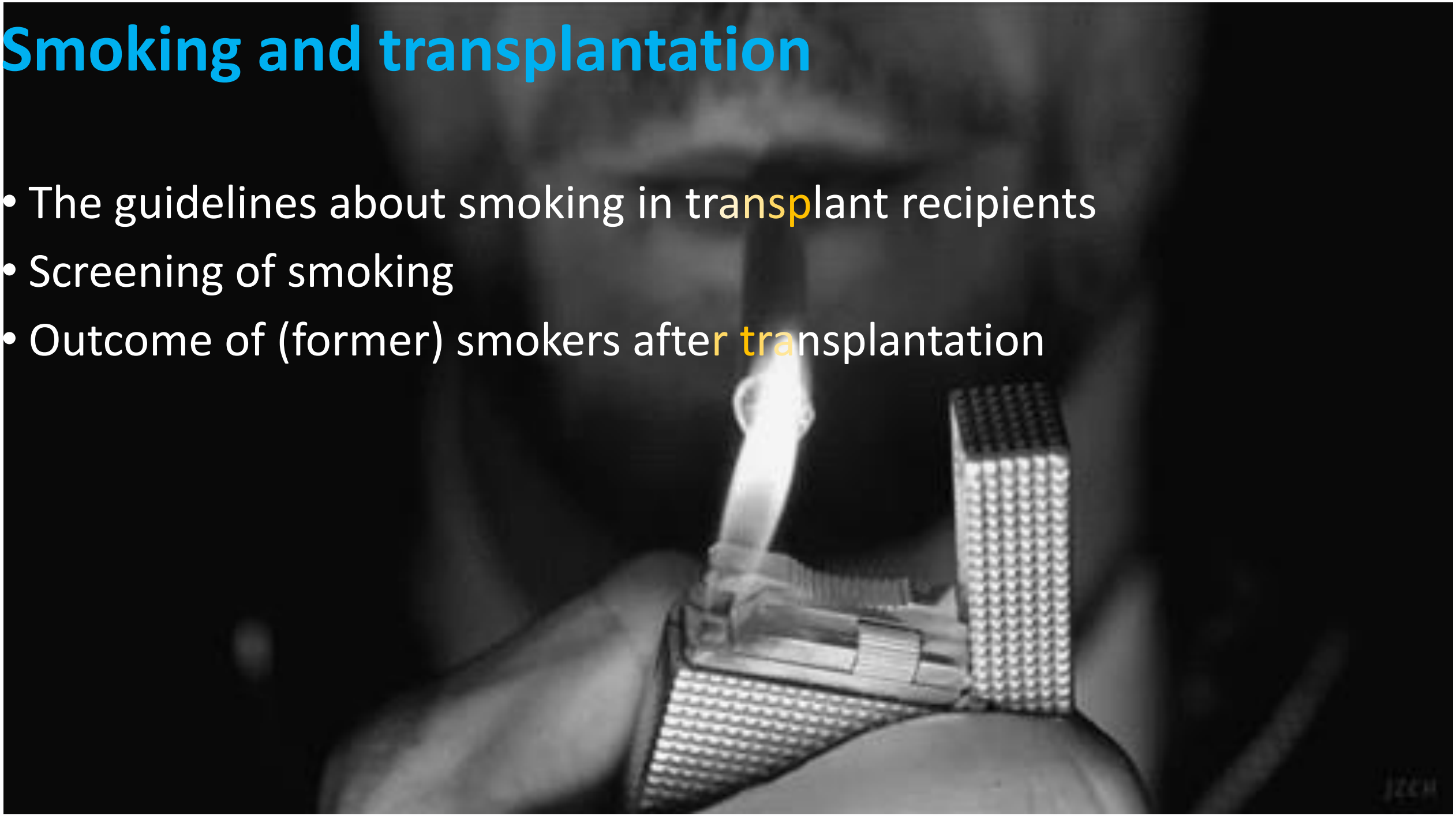
The main messages…

- Probably not very useful to screen people at ‘low’ risk for CAD
  - Screening has imperfect sensitivity and specificity, with limited gain in post-test probability in either direction
  - Unnecessary coronary angiograms with inherent risks for adverse events

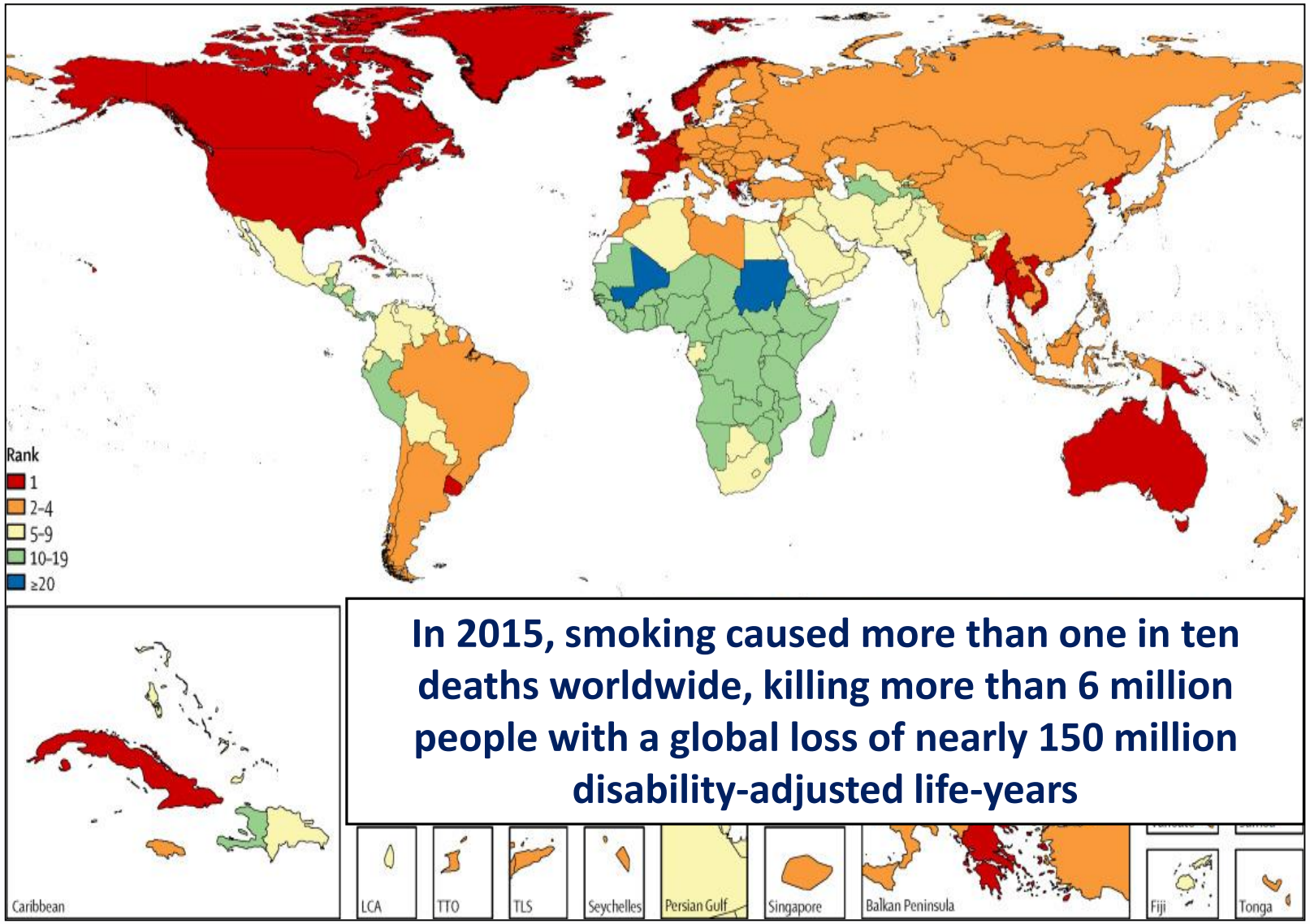
- Unclear how to differentiate ‘high’ from ‘low’ risk
  - Source of variability between international guidelines

Smoking and transplantation

- The guidelines about smoking in transplant recipients
- Screening of smoking
- Outcome of (former) smokers after transplantation



Smoking and attributable disease burden



In 2015, smoking caused more than one in ten deaths worldwide, killing more than 6 million people with a global loss of nearly 150 million disability-adjusted life-years

GBD Tobacco collaborators. The Lancet 2017

What do the transplant guidelines say exactly?

ERBP

We recommend patients stop smoking before transplantation. (**1B**)
Smoking cessation programmes should be offered. (***Ungraded Statement***)

THE RENAL ASSOCIATION
founded 1950

BTS
British Transplantation Society

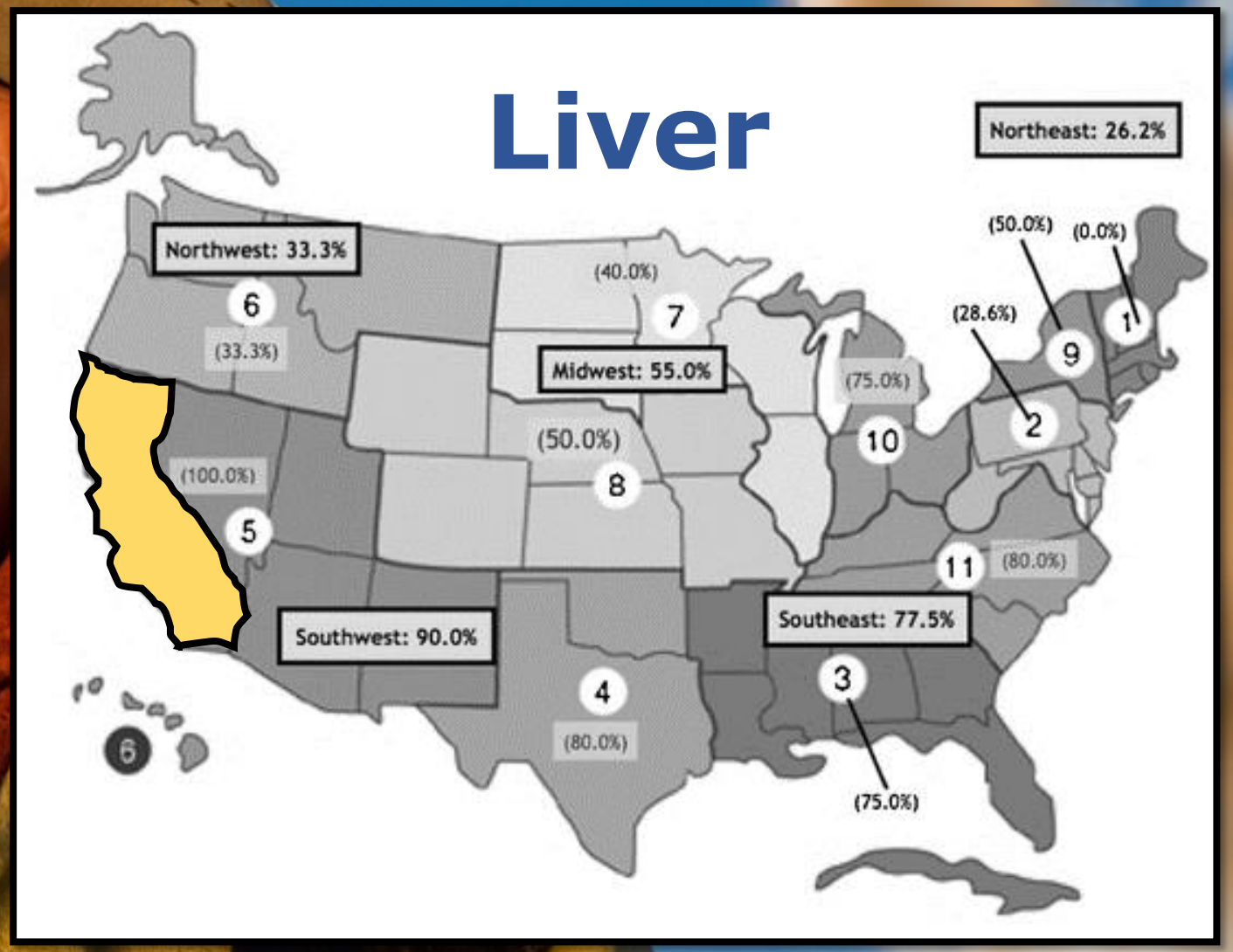
We recommend that patients should be strongly encouraged to stop smoking before and after transplantation.
Formal smoking cessation programmes should be offered and accessed in primary care. (**1A**)

KIDNEY DISEASE · IMPROVING GLOBAL OUTCOMES
KDIGO

Screen and counsel all KTRs, including adolescents and children, for tobacco use, and record the results in the medical record. (***Not Graded***)
Screen during initial transplant hospitalization. Screen at least annually, thereafter.
Offer treatment to all patients who use tobacco. (***Not Graded***)

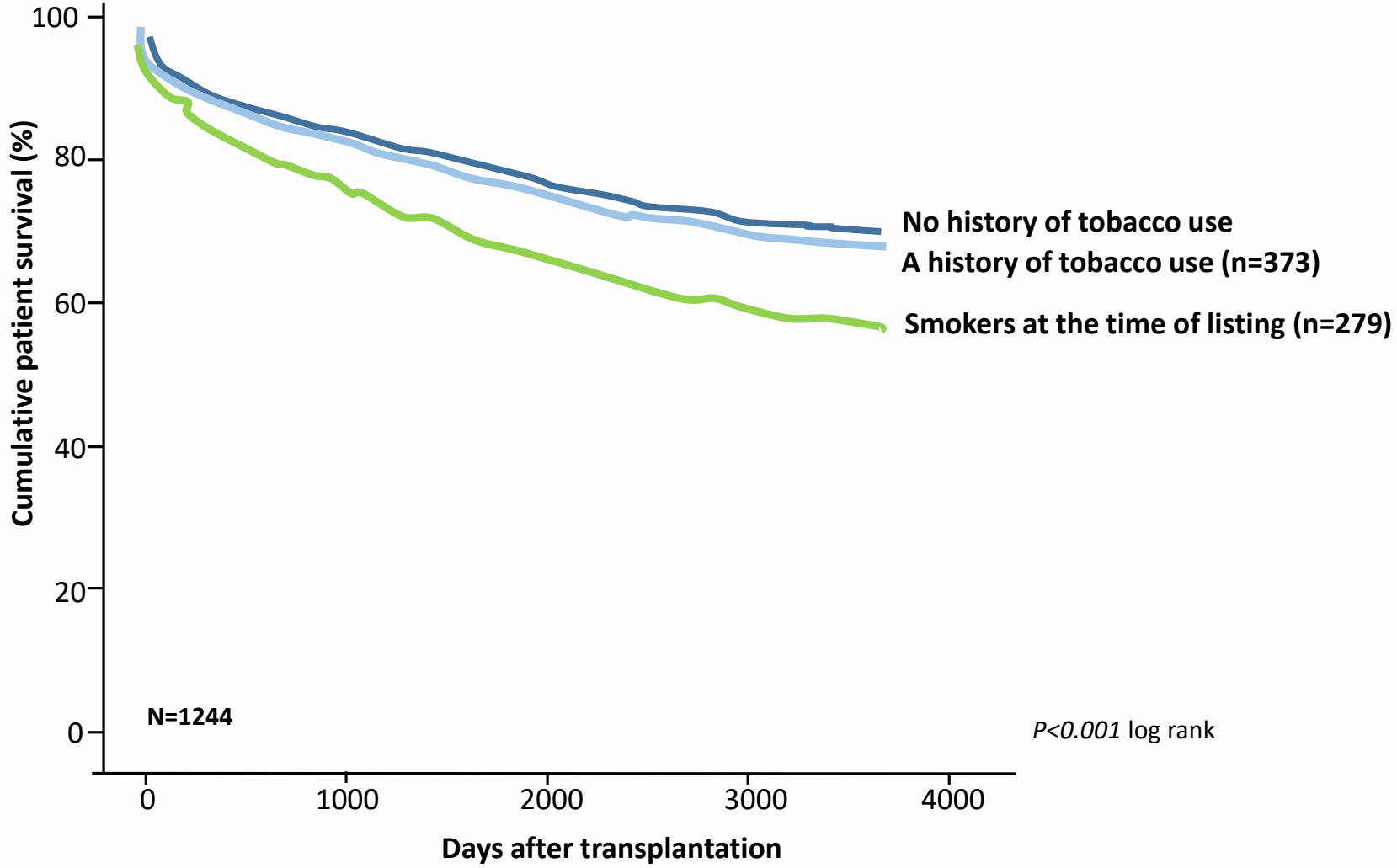
10-40% PREVALENCE OF SMOKING AFTER KIDNEY TRANSPLANTION REPORTED

Smoking cessation before transplantation



Fleetwood VA et al. J of Gastrointestinal Surgery 2015

Smoking cessation: before transplantation!

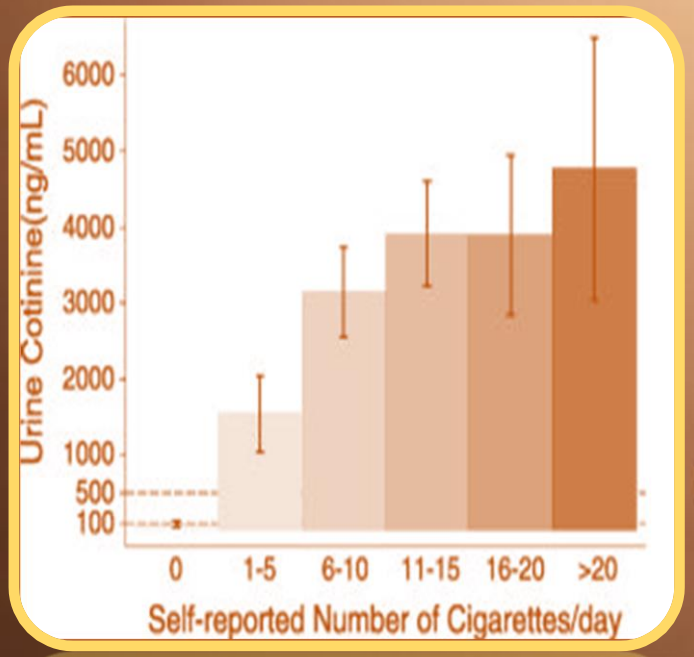


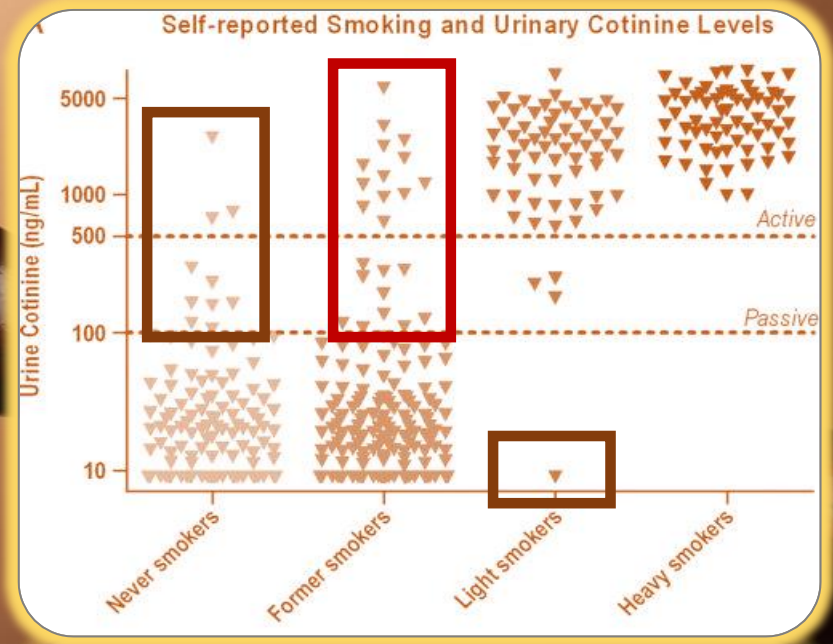
Adjustment for MELD, age acceptor, year of transplant, DCD, donor age, HCV

Mangus R et al. Transplantation 2015

How to screen for smoking status ?

Cotinine screening after kidney transplantation?





'URINARY OR PLASMA COTININE OUTPERFORMS SELF-REPORTING (DIGIT OR RECALL BIAS) in KTR'

12% MISCLASSIFICATION RATE

UNSCHEDULED TESTING vs. PRICE 28 EURO

Hellemons ME et al. Transplantation 2015

(Un)listing based upon cotinine

ANY NEGATIVE DECISION BASED UPON A FALSE TEST RESULT IS UNACCEPTABLE

CAVEAT RENAL CLEARANCE OF COTININE AND METABOLISM CYP2A6

Unethical not to waitlist active smokers?

THE YOUNG PEOPLE

?

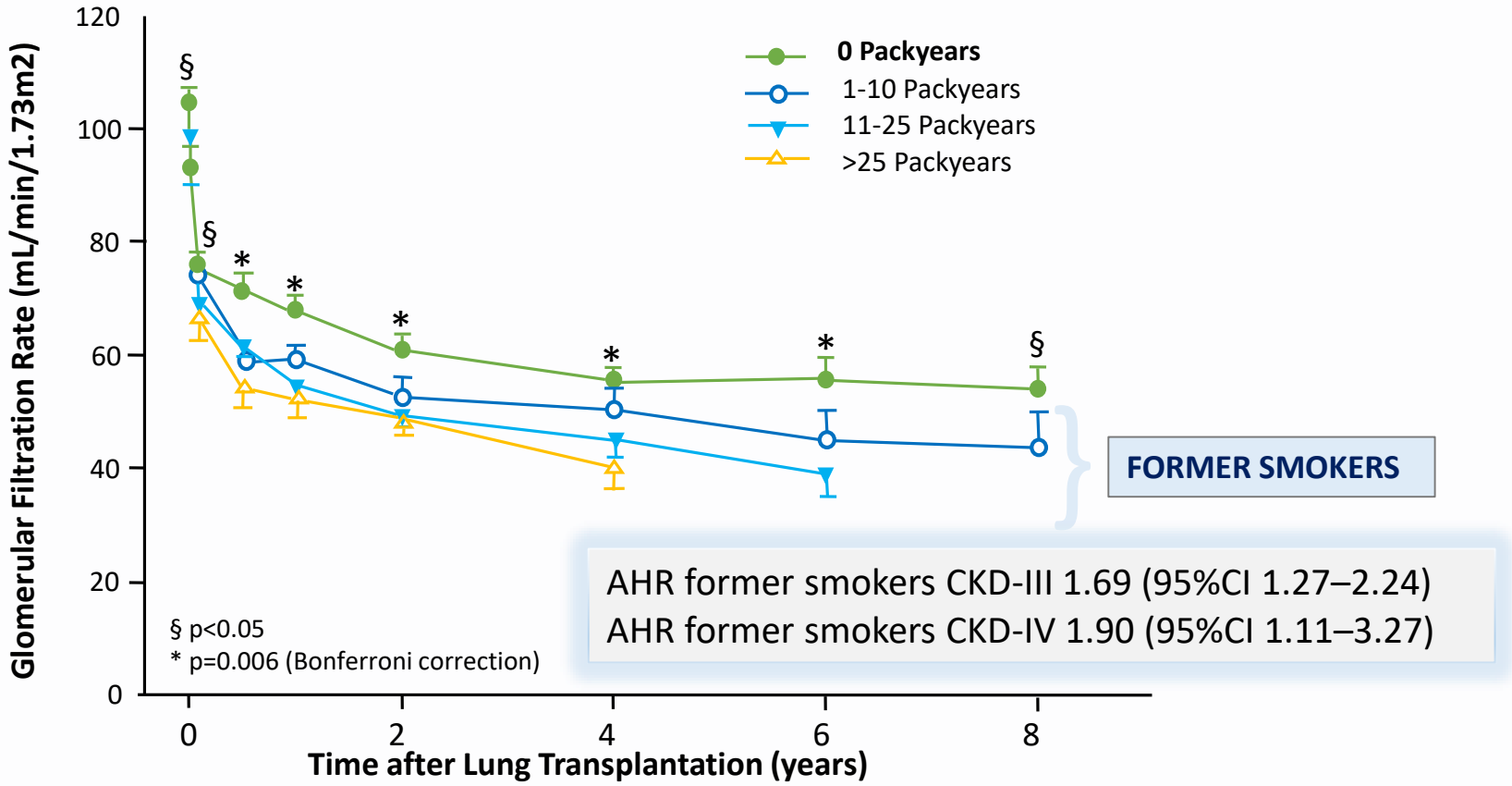
FEW CIGARETTES

?

HOW MANY GRAFT YEARS LOST ACCEPTABLE?

?

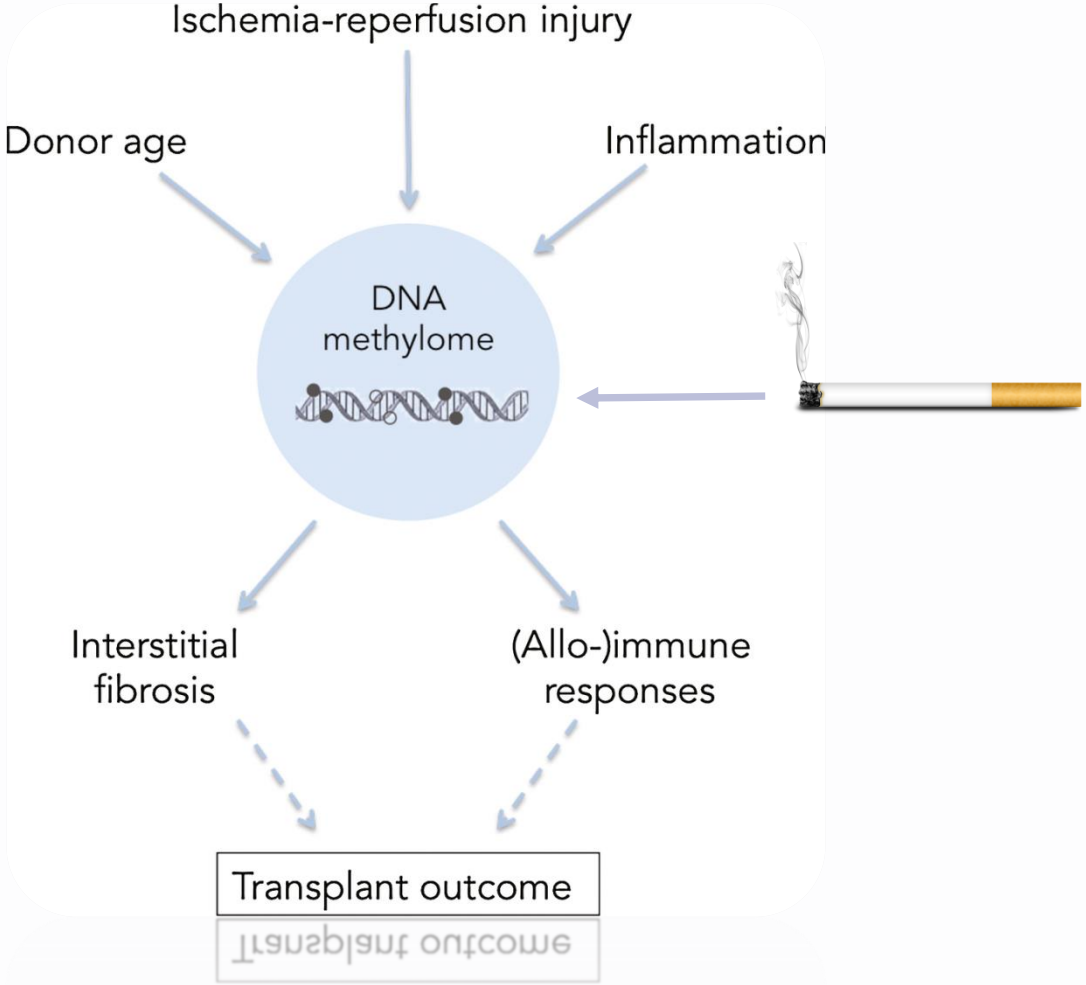
The problem with ‘former smoking’



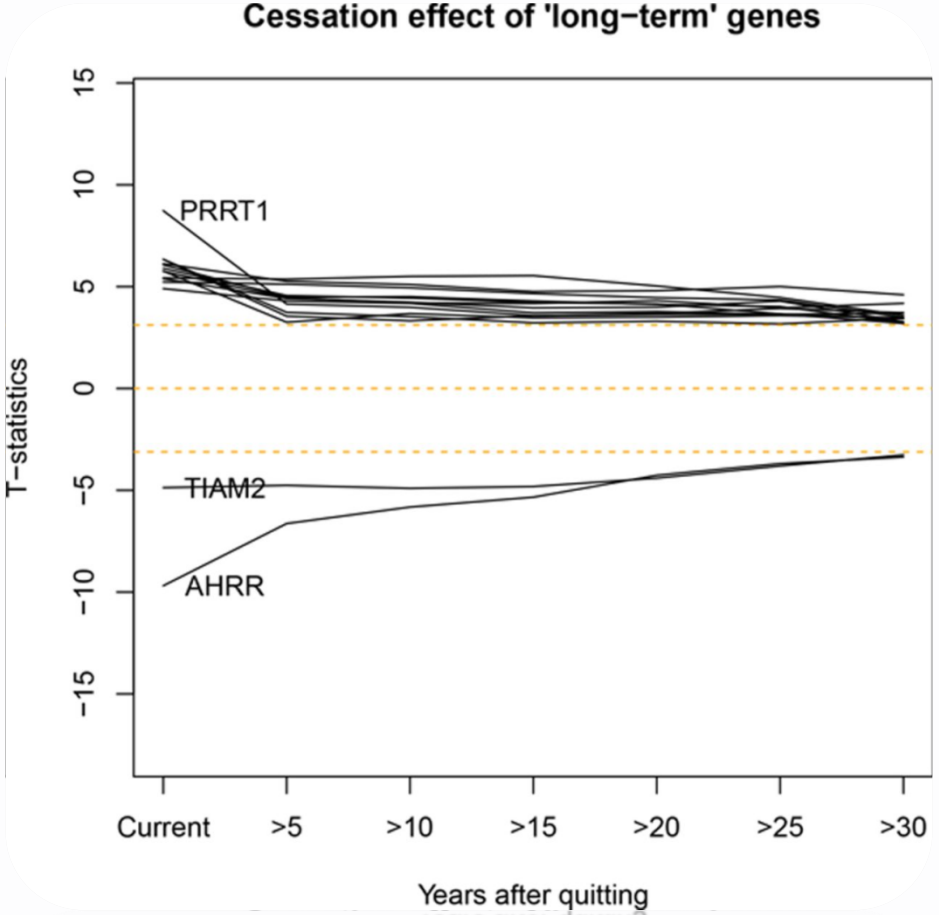
0 Packyears	118	83	83	68	50	28	19
1-10 Packyears	56	47	47	32	27	28	10
11-25 Packyears	67	64	58	39	28	20	<10
>25 Packyears	51	41	39	38	30	<10	<10

Hellemons ME et al. AJT 2011

DNA methylation: the missing link?

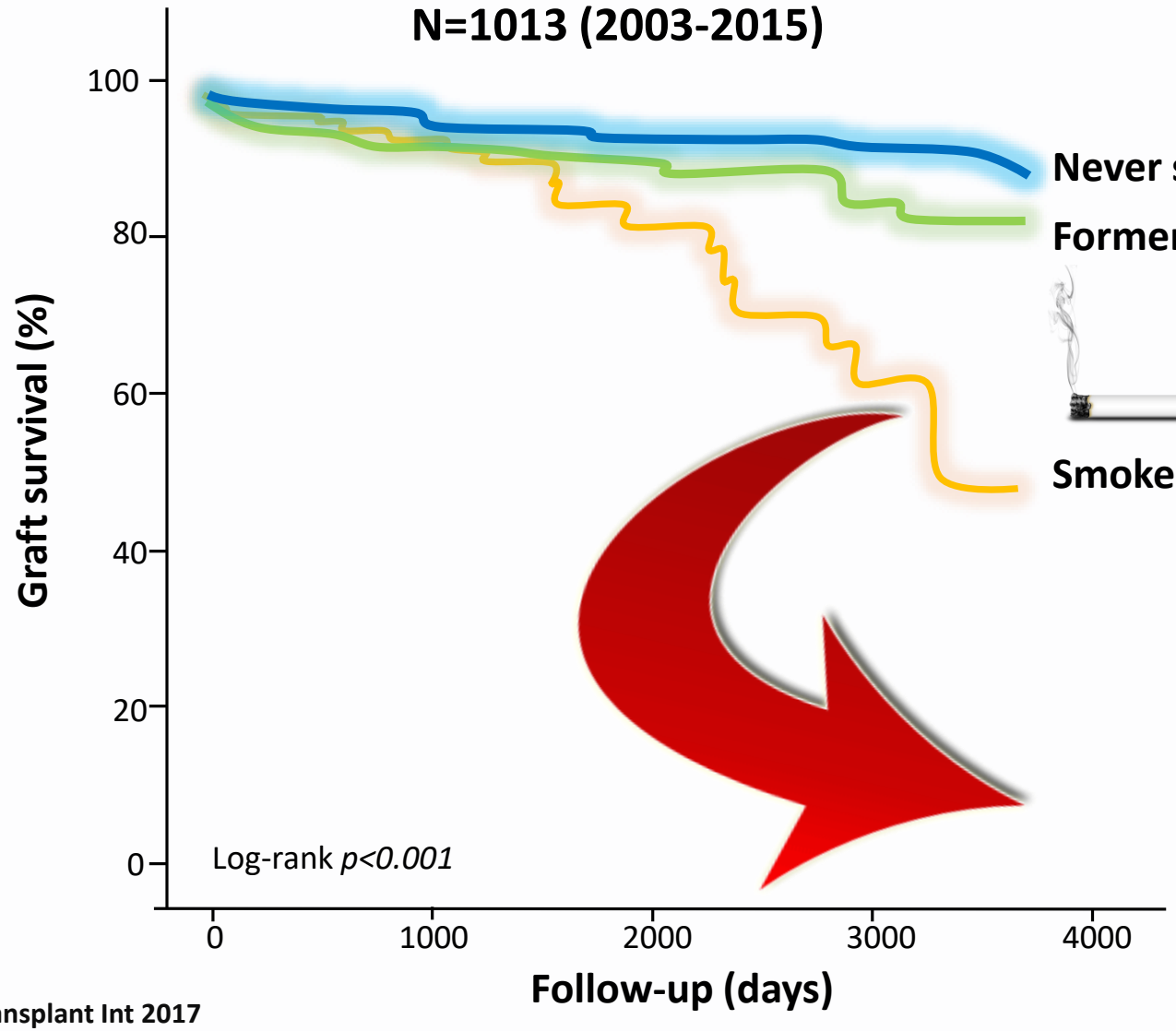


Adapted from Heylen L et al. Am J Transplant 2015



Joehanes R et al. Circ Cardiovasc Genetics 2016

Smoking status and death-censored graft loss

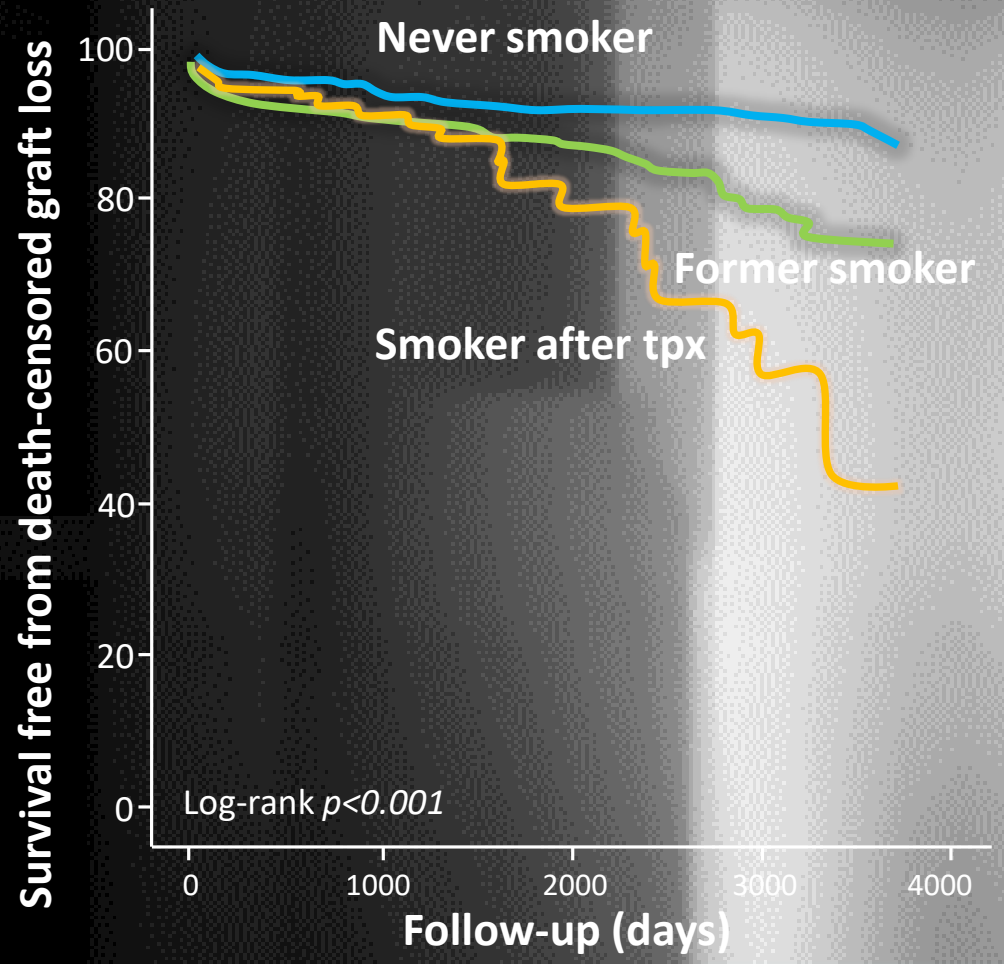


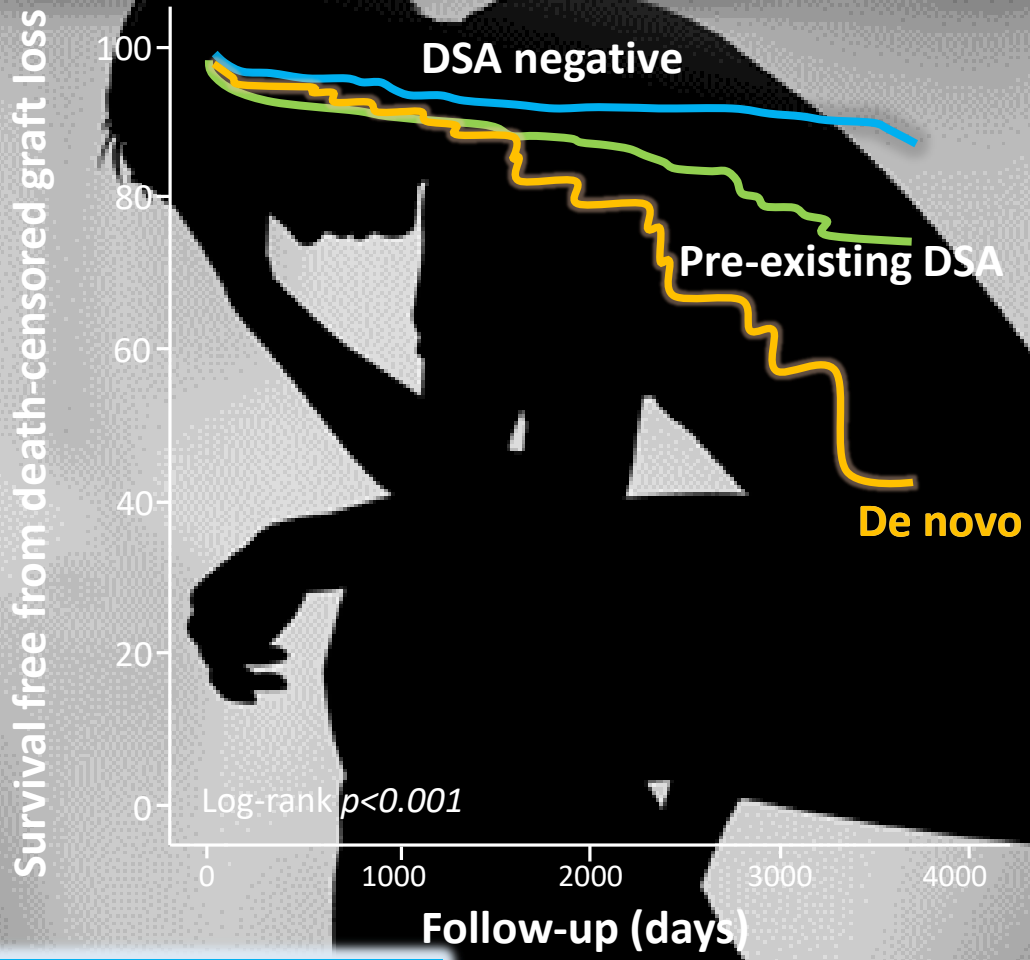
SIX YEARS YOUNGER
MORE MALES
TWICE AS MANY REJECTIONS
LESS DIABETES
MORE CARDIOVASCULAR DISEASE

IMMUNISATION-LONGER WAITING TIME SECOND TPX
COMPROMISED PATIENT OUTCOME

Van Laecke S et al. Transplant Int 2017

The problem with smoking: reluctance

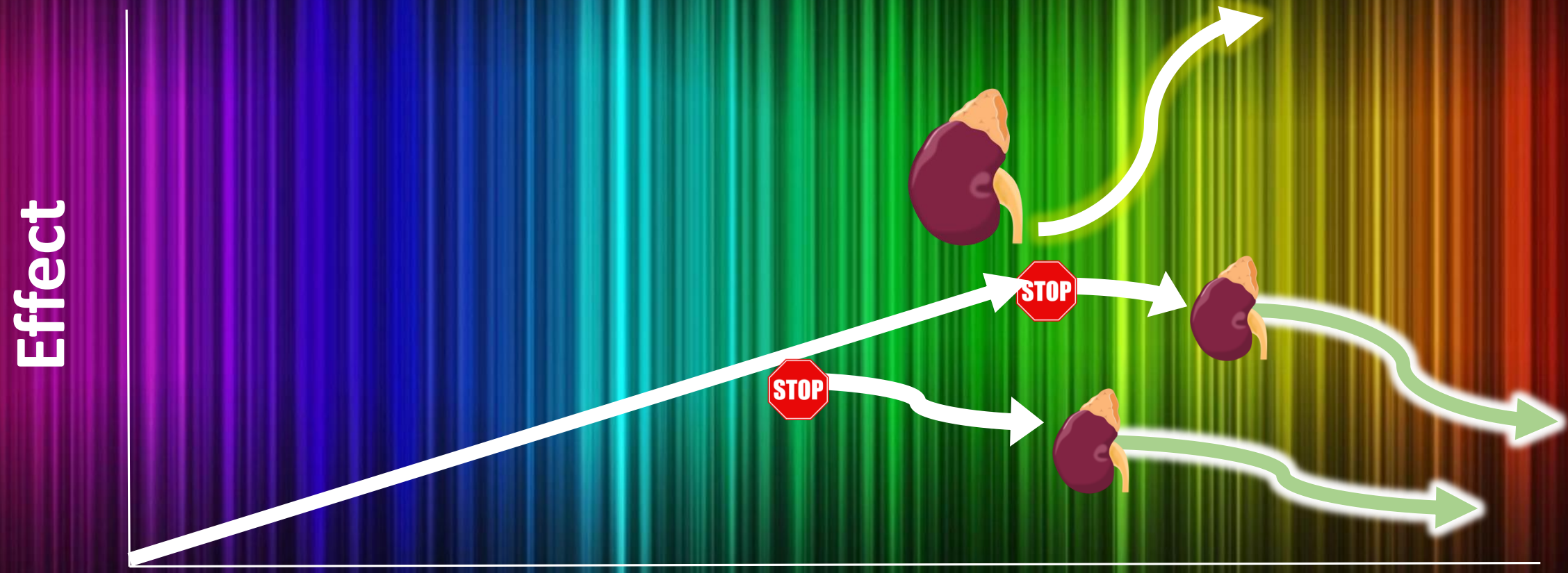




What will worry us the most?

Van Laecke S et al. Transplant Int 2017

The spectrum of smoking exposure: trajectories



Any burning questions?