KIDNEY TRANSPLANT CANDIDATE GUIDELINES

KDIGO

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DISCLOSURES

- None

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OUTLINE OF THE TALK

- Equitable access to transplantation
- Purpose of the guidelines
- Specific focus:

1. Age criteria
2. Co-morbidities – cardiovascular disease, diabetes and cancer,
3. Adherence

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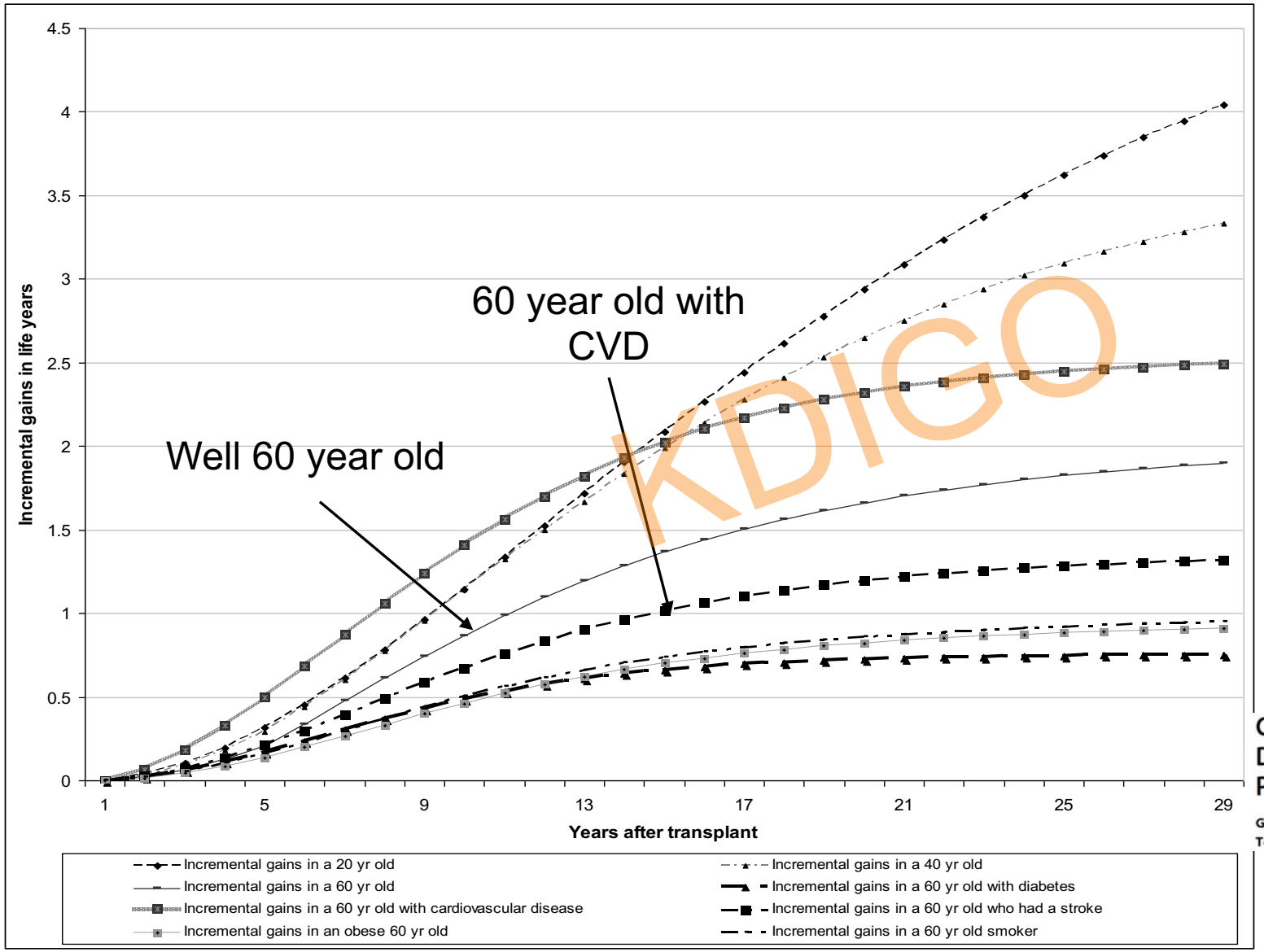
Transplantation saves lives

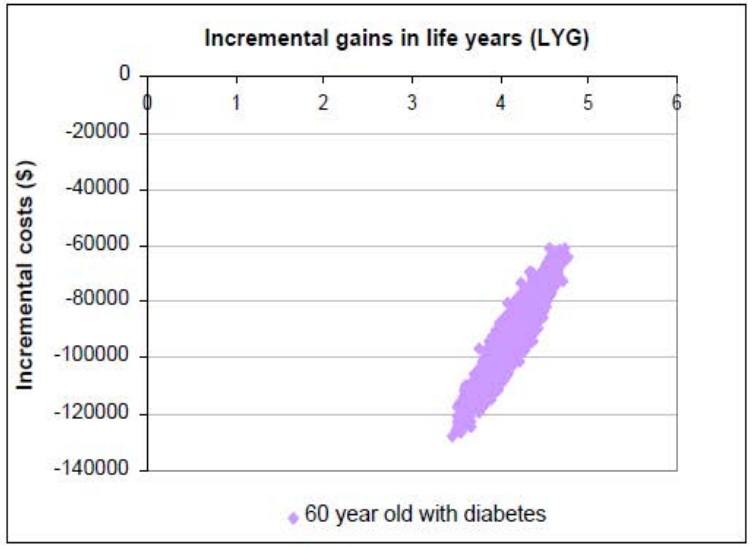


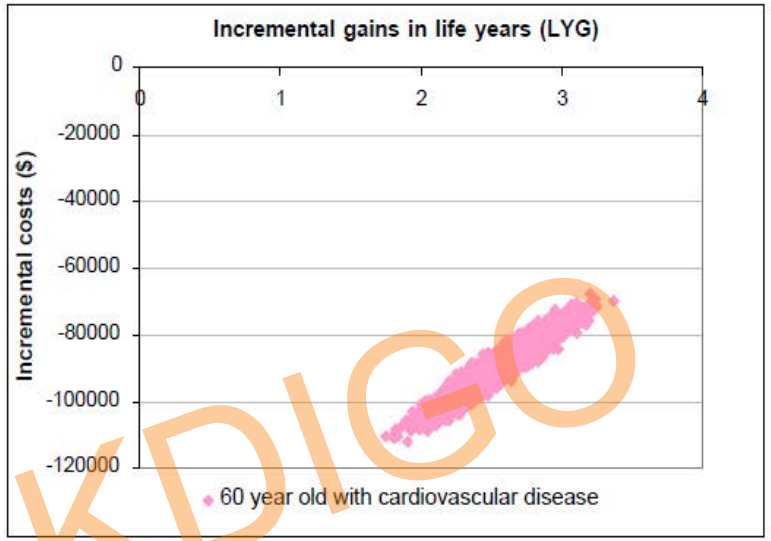
Comparative Survival and Economic Benefits of Deceased Donor Kidney Transplantation and Dialysis in People with Varying Ages and Co-Morbidities

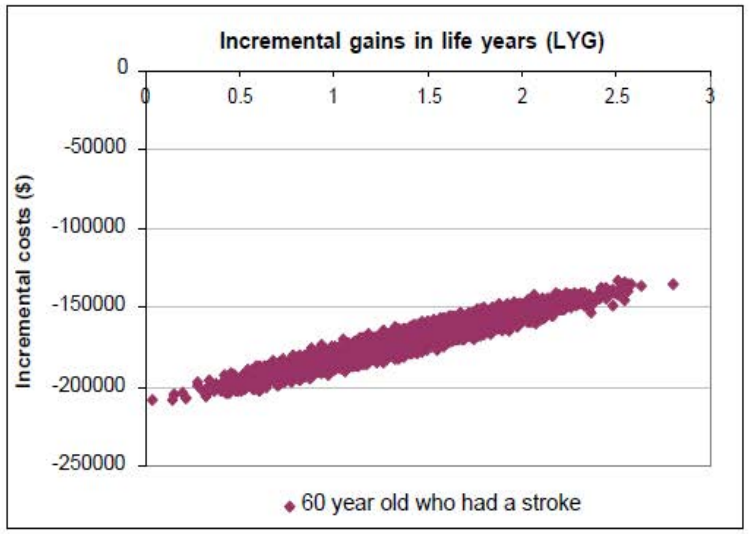
Germaine Wong[1,2,3]*, Kirsten Howard[2], Jeremy R. Chapman[3], Steven Chadban[4], Nicholas Cross[5], Allison Tong[1], Angela C. Webster[1,2,3], Jonathan C. Craig[1,2]

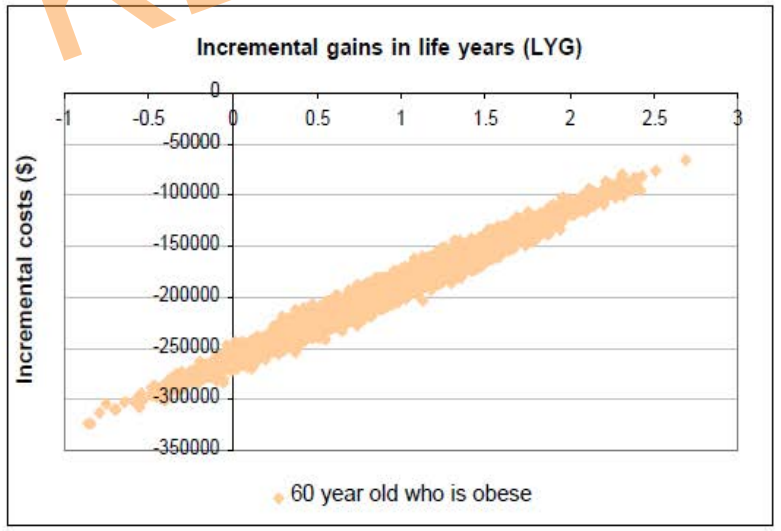
PLoS ONE | www.plosone.org

And cost savings – despite comorbidities









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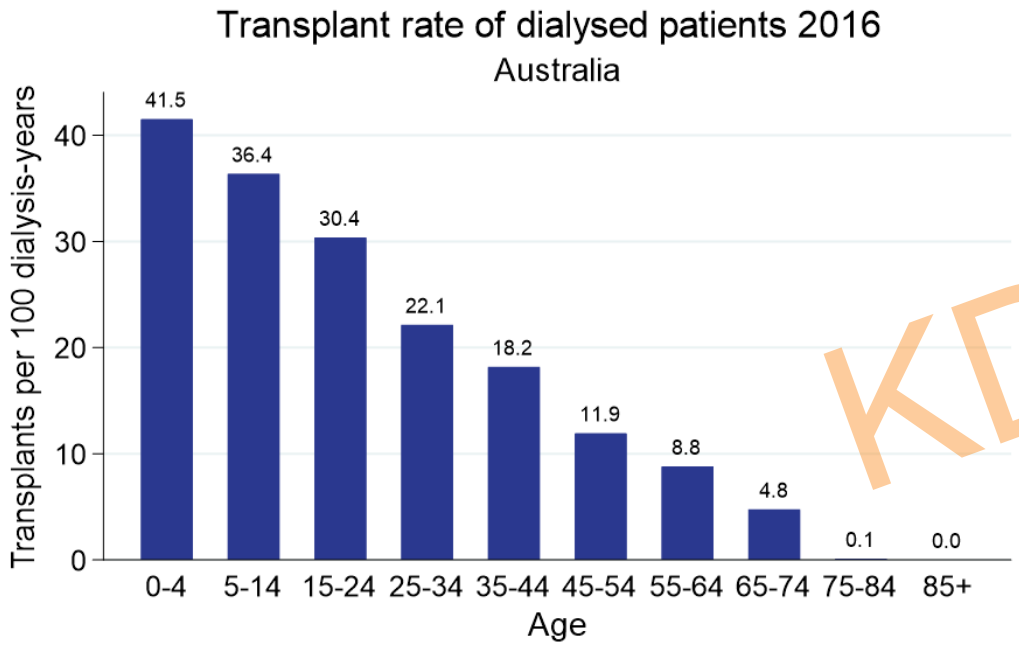
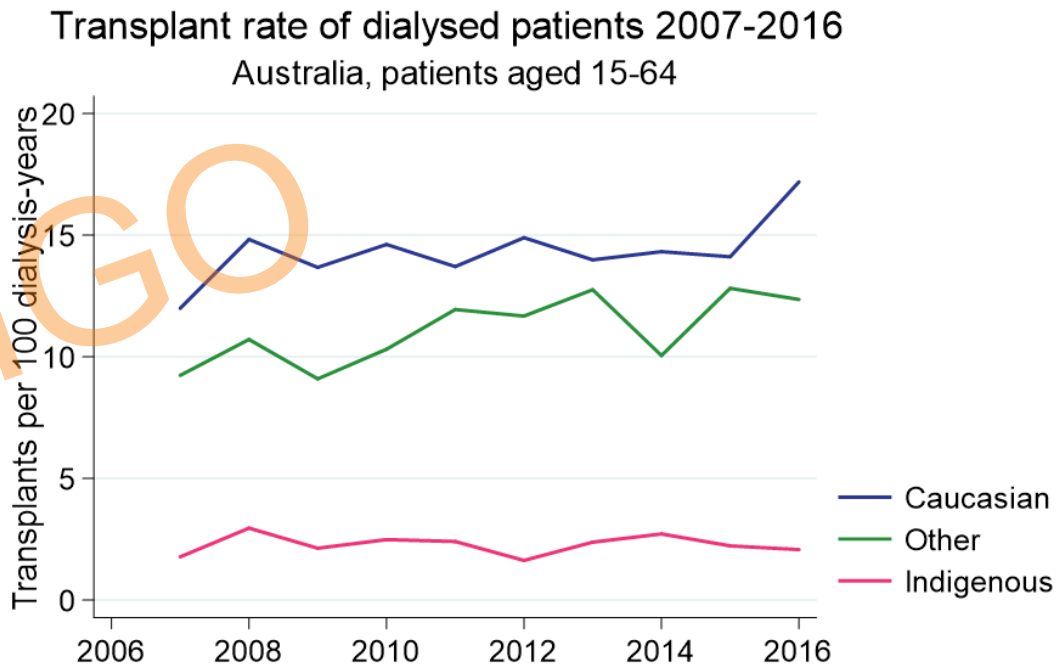
In highly selected group of patients!

Disparities in access to transplantation



2017 ANZDATA Annual Report, Figure 7.4.1



2017 ANZDATA Annual Report, Figure 7.5.1

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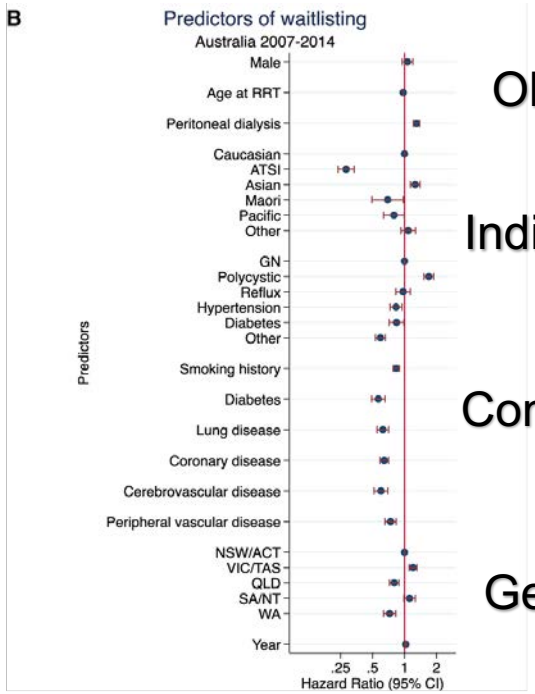
Age

Ethnicity

Disparities to listing

Obesity and gender-biased access to deceased donor kidney transplantation

Maleeka Ladhani[1,2,3], Jonathan C. Craig[2,4] and Germaine Wong[1,2,5]



Older

Indigenous

Comorbidities

Geography

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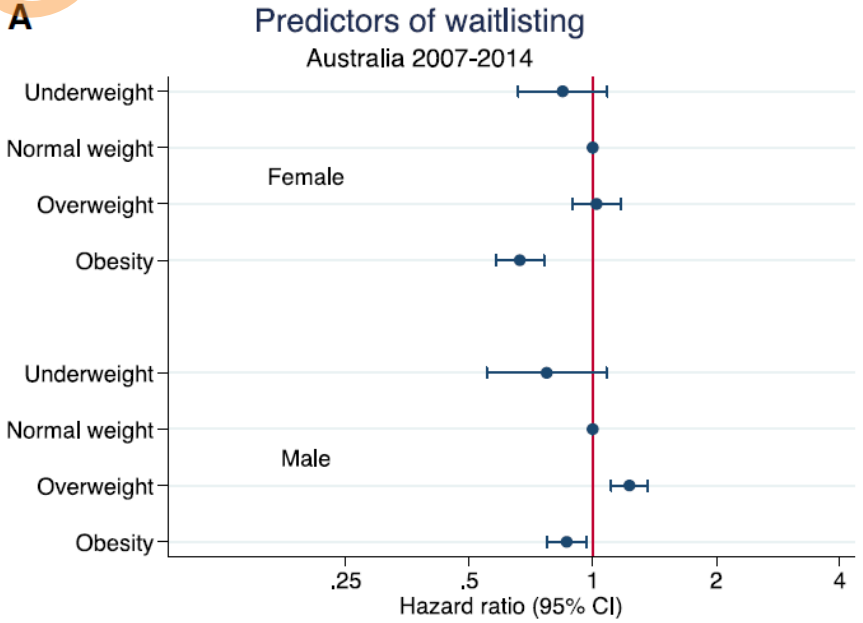
Obese women



Summary of the Kidney Disease: Improving Global Outcomes (KDIGO) Clinical Practice Guideline on the Evaluation and Management of Candidates for Kidney Transplantation

Steven J. Chadban, BMed, PhD,[1*] Curie Ahn, MD, PhD,[2] David A. Axelrod, MD, MBA,[3] Bethany J. Foster, MD, MSCE,[4] Bertram L. Kasiske, MD,[5] Vijah Kher, MD, DM,[6] Deepali Kumar, MD, MSc,[7] Rainer Oberbauer, MD, PhD,[8] Julio Pascual, MD, PhD,[9] Helen L. Pilmore, MD,[10] James R. Rodrigue, PhD,[11] Dorry L. Segev, MD, PhD,[12] Neil S. Sheerin, BSc, PhD,[13] Kathryn J. Tinckam, MD, MMSc,[7] Germaine Wong, MD, PhD,[14] Ethan M. Balk, MD, MPH,[15] Craig E. Gordon, MD, MS,[16] Amy Earley, BS,[17] Valerie Rofeberg, ScM,[15] and Gregory A. Knoll, MD, MSc[18*]

Transplantation ■ April 2020 ■ Volume 104 ■ Number 4

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Working Group
Co-Chairs: Steve Chadban and Greg Knoll

Evidence review team led by Ethan Balk

RATIONALE FOR CLINICAL PRACTICE GUIDELINES

- Systematically developed statements to assist practitioner and patient decisions about **appropriate health care for specific clinical circumstances**
- Potential to **improve the quality, delivery and process of** care with the ultimate objective of improving **overall patient outcomes**.
- Guidelines **summarize the current medical knowledge**, weigh the benefits and harms of diagnostic procedures and treatments, and give specific recommendations based on this information.
- At the same times, guidelines should provide relevant information about the **scientific evidence-base** supporting these recommendations..

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KDIGO NOMENCLATURE AND DESCRIPTION FOR GRADING GUIDELINE RECOMMENDATIONS

- The strength of the recommendation is indicated as **Level 1 or 2 or not graded**
- The quality of the supporting evidence is shown as **A, B, C or D**

GRADE	Patients	Clinicians	Policy
Level 1			
We **recommend**	**Most** people would want the recommended course of action and **only a few would not**.	**Most patients** should receive the recommended course of action	The recommendation can be evaluated as a candidate for **developing a policy or performance measure**
Level 2			
We **suggest**	**Majority** of people would want the recommended course of action but **many would also not**	**Different choices for different patients**. Important to consider patient's values and preferences	The recommendation is likely to generate **substantial debate** and involvement of key stakeholders before policy can be determined.

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KDIGO NOMENCLATURE AND DESCRIPTION FOR GRADING GUIDELINE RECOMMENDATIONS

Grade	Quality of evidence	Meaning
A	High	We are absolutely confident that the true effect lies close to the estimate of the effect.
B	Moderate	The true effect is likely to be close to the estimate of effect, but there is a possibility that it is substantially different.
C	Low	The true effect may be substantially different from the estimate of effect.
D	Very low	The estimate of effect is very uncertain, and often will be far from the truth.

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SCOPE of the guideline

- **Access**
- **Age**
- **Adherence**
- Psychosocial factors
- Paediatric issues
- Smoking
- Surgical issues including obesity
- **Diabetes**
- Infections
- **Cardiovascular disease**
- **Cancer**
- Causes of kidney failure
- Pulmonary disease
- Peripheral vascular disease
- Gastrointestinal and liver disease
- Haematological disorder
- Bone and mineral metabolism
- Immunological assessment

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Age criteria

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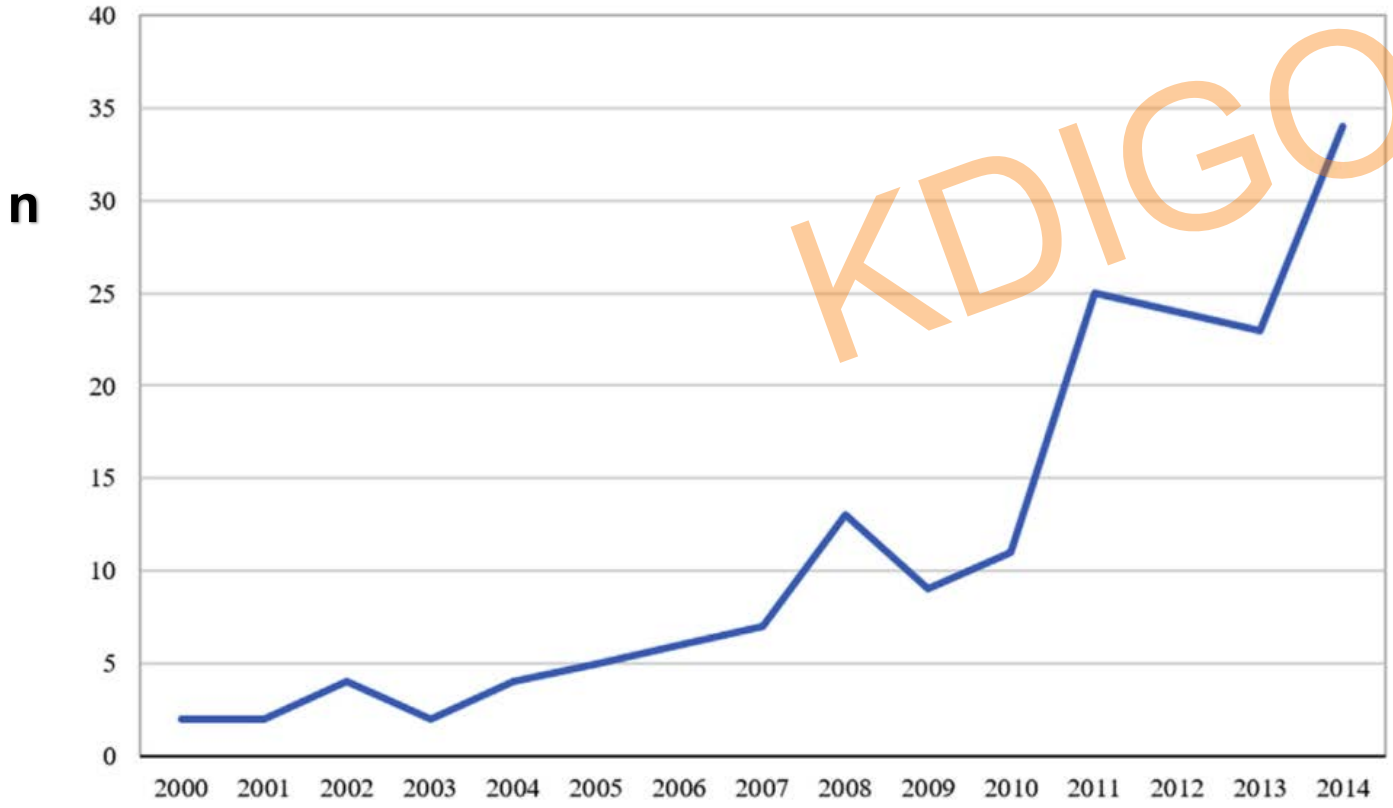
Age criteria

Risk Factors for Early Graft Failure and Death After Kidney Transplantation in Recipients Older Than 70 Years

Increase in the transplantation rate of older patients in France



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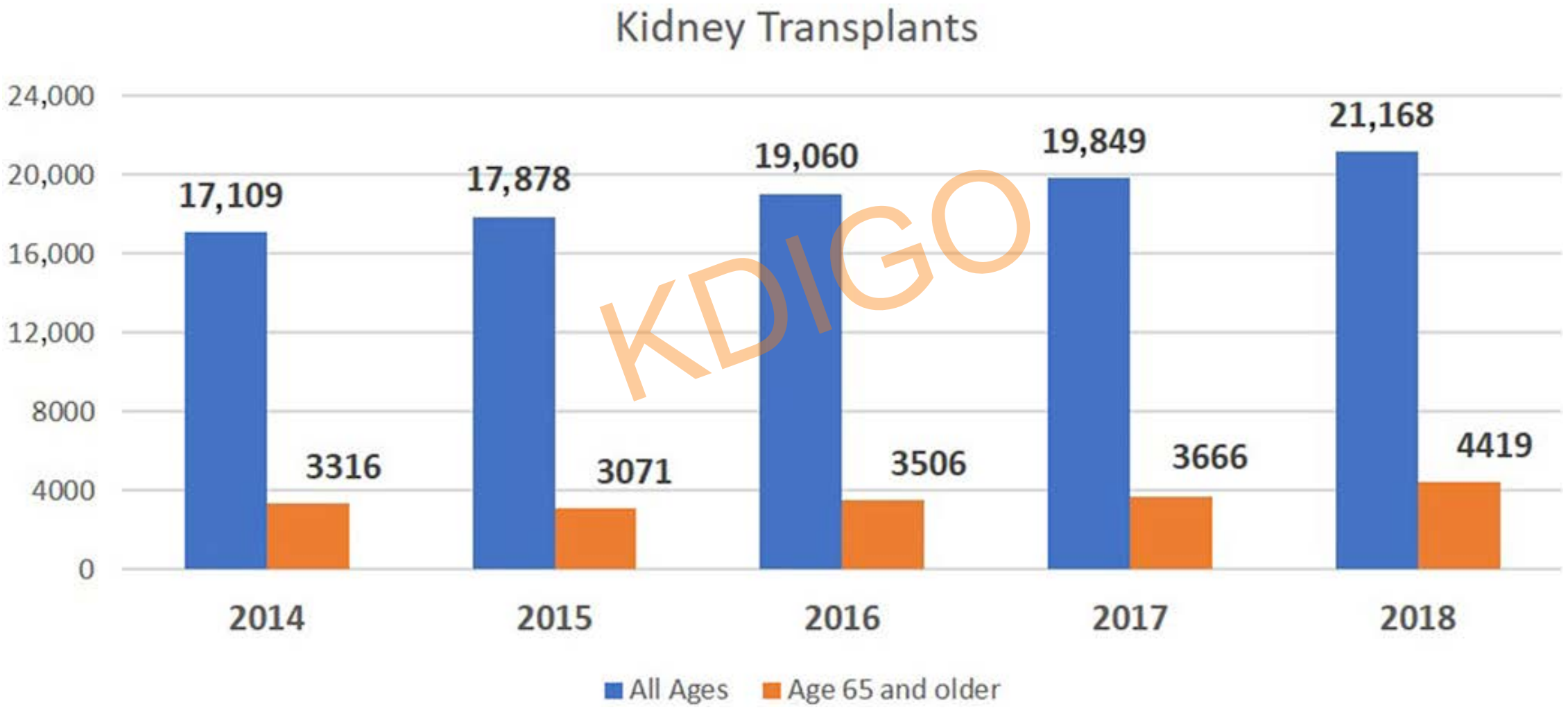
Kidney Int Rep (2019) **4,** 656–666; https://doi.org/10.1016/j.ekir.2019.01.014

Similar patterns are observed in the US



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Risk factors for early graft failure and death after kidney transplantation in recipients older than 70 years

Study Population

171 patients receiving a kidney transplant over 4y period

Mean age : 73.3 ± 2.5 years

Patient & Graft Survival

	Patient Survival	Graft Survival
1y	90.1%	82.6%
3y	82.5%	78.7%
5y	68.1%	75.4%

Risk factors for death or graft failure during the first year post-transplant

	Risk Factor	OR (95% CI)
Baseline	Arrhythmia	2.26 (1.08-4.80)
Baseline	LVEF <56%	2.38 (1.18-4.83)
Baseline	HLA Antibodies	2.10 (1.04-4.20)
Post-Transplant	Deceased CV Donor	5.18 (1.22-22.2)
Post-Transplant	Acute Rejection	2.77 (1.20-6.30)

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CONCLUSION:

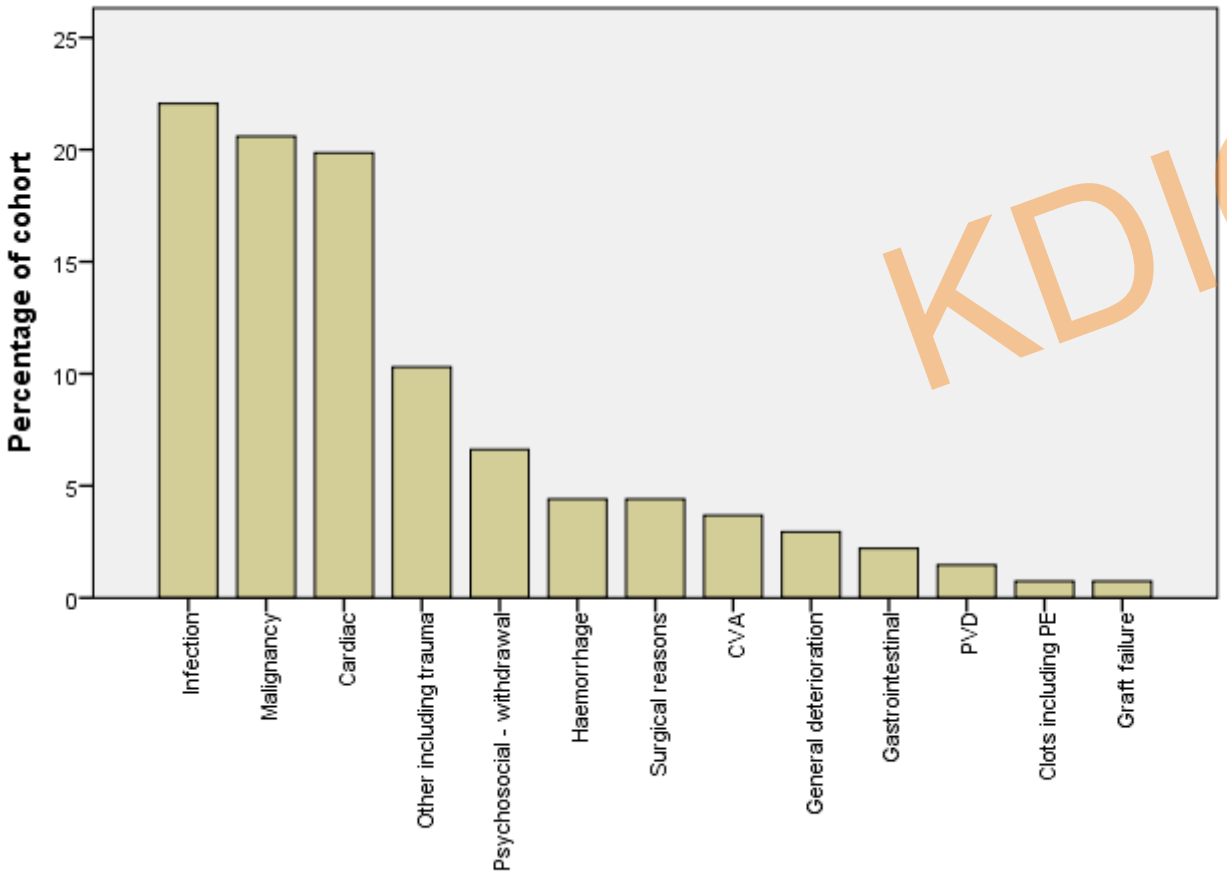
In kidney transplant recipients older than 70, cardiac evaluation and immunosuppression optimization seem to be crucial to improve short-term patient and graft survival.

KI REPORTS
KIReports.org

Lemoine et al., *Kidney Int Rep*. 2019

Australian Data

Causes of death in patients over age 65 years



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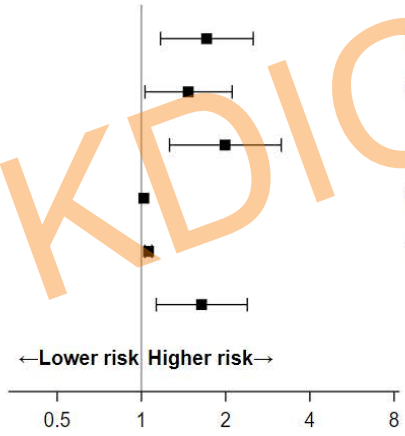
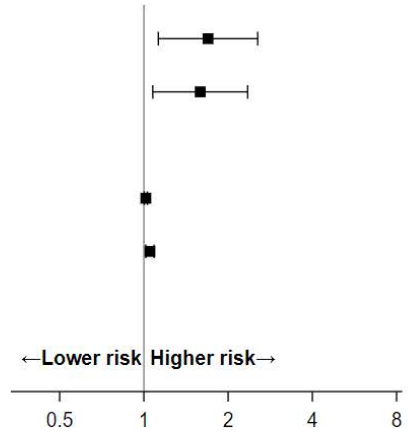
Australian data

Risk factors of death in older transplant recipients

	Overall Death		Death with Functioning Graft	
	HR (95% CI)	P value	HR (95% CI)	P value
PD vs HD	1.71 (1.17 - 2.51)	0.01	1.69 (1.13 - 2.55)	0.01
Cardiovascular disease	1.47 (1.03 - 2.11)	0.03	1.59 (1.08 - 2.35)	0.02
Cerebrovascular disease	1.99 (1.26 - 3.16)	<0.01	-	-
Donor age (per year)	1.02 (1.01 - 1.03)	<0.01	1.02 (1.00 - 1.03)	0.02
Ischaemia time (per hour)	1.06 (1.03 - 1.09)	<0.001	1.05 (1.02 - 1.09)	<0.01
Delayed graft function	1.64 (1.13 - 2.39)	0.01	-	-





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How do frail people do with a kidney transplant evaluation?

CJASN
Clinical Journal of American Society of Nephrology

7078 kidney transplant candidates

3 centers over 10 years

Fried Physical Frailty Score

- unintentional weight loss
- grip strength
- walking speed
- exhaustion
- activity level

	Getting Listed	If listed, getting Transplanted
Frail	0.62	0.68
	95%CI: 0.56-0.69	95%CI: 0.58-0.81
Not Frail	1.0 ref	1.0 ref

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Conclusions Frailty is associated with lower chance of getting listed for a kidney transplant and subsequently a lower chance of actually getting a kidney transplant.

Christine Haugen, Nadia Chu, Hao Ying, Fatima Warsame, et al. ***Frailty and Access to Kidney Transplantation.*** CJASN doi: 10.2215/CJN.12921118. **Visual Abstract by Joel Topf, MD, FACP**

Age criteria

- Do not exclude patients from kidney transplantation because of age alone, but rather consider the context of other comorbidities, including frailty, that may impact on outcomes about the suitability of kidney transplantation (ungraded)

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Shared-decision making process for older transplant candidates

- Expected survival on dialysis
- Expected quality of life on dialysis
- Expected survival with a functioning graft
- Post-transplant expectations
- Balancing the risk of over vs. under immunosuppression

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Diabetes and Cardiovascular disease

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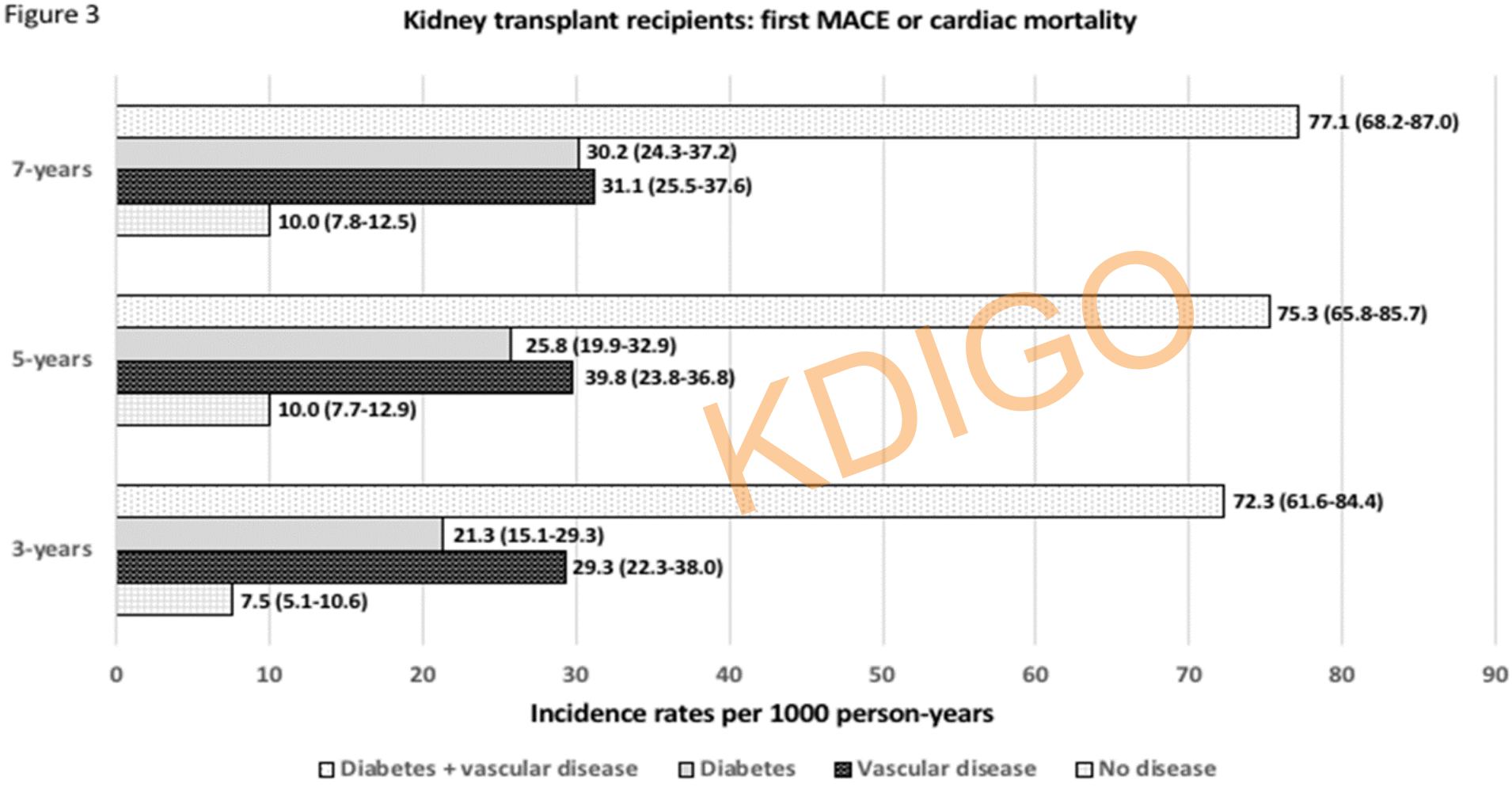
Diabetes and CVD

Figure 3



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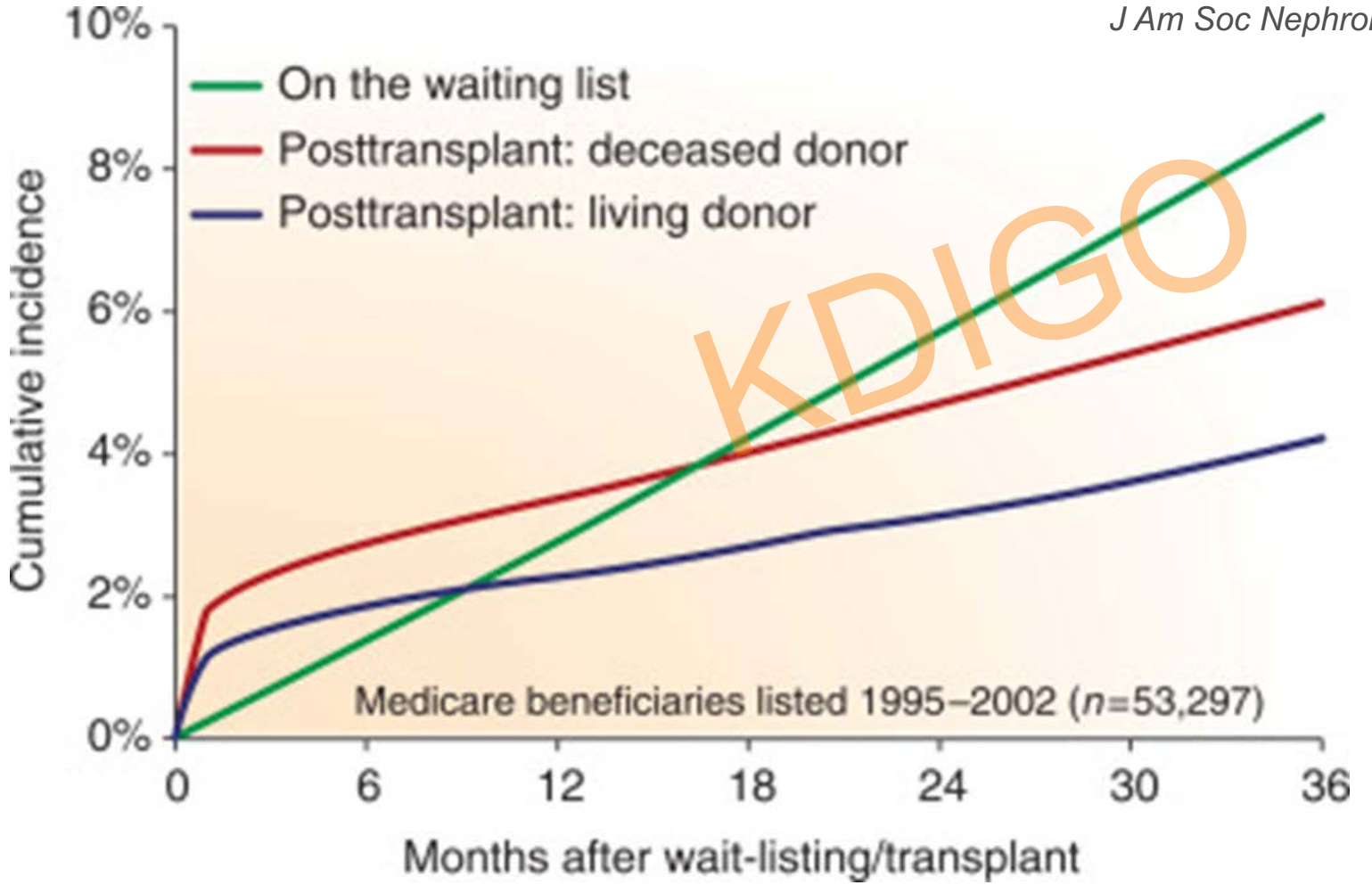
Lim WH et al manuscript submitted. Incidence rates of major adverse cardiovascular events (MACE) and cardiac mortality of kidney transplant recipients using data from linked administrative healthcare databases from Ontario, Canada (2005-2014, follow-up until 2018).

Risk of MACE on the waiting list and after transplantation

Acute myocardial infarction and kidney transplantation.
J Am Soc Nephrol. 2006; **17**: 900-907



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Issues to consider during work-up for diabetic patients

- We recommend that candidates with type 1 or type 2 DM be considered for kidney transplantation (1B)
- We suggest that asymptomatic candidates at high risk for coronary artery disease (e.g. diabetes, previous CAD or with poor functional capacity) undergo **non-invasive CAD screening (2C**)
- We recommend that asymptomatic candidates with known CAD **not be revascularized exclusively to reduce perioperative cardiac events (1B)**
- Diabetes associated with higher risk of wound complications (not graded)

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Screening for CVD in high-risk transplant candidates

- **WHO criteria**
- Condition must be **an important health problem**
- Condition should be a **recognizable latent or early symptomatic stage**
- **Natural history of the condition**, including development from latent to declared disease, should be adequately understood
- An **accepted treatment for patients** with recognized disease
- **Suitable test or examination** that has a high level of accuracy
- **Acceptable** to the population
- **Cost-effectiveness of the screening program**
- Screening should be a **continuing process**

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Screening for CVD in high-risk transplant candidates

- **WHO criteria**
- Condition must be **an important health problem** — **Yes**
- Condition should be a **recognizable latent or early symptomatic stage**
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- An **accepted treatment for patients** with recognized disease
- **Suitable test or examination** that has a high level of accuracy
- **Acceptable** to the population
- **Cost-effectiveness of the screening program**
- Screening should be a **continuing process**

Uncertain

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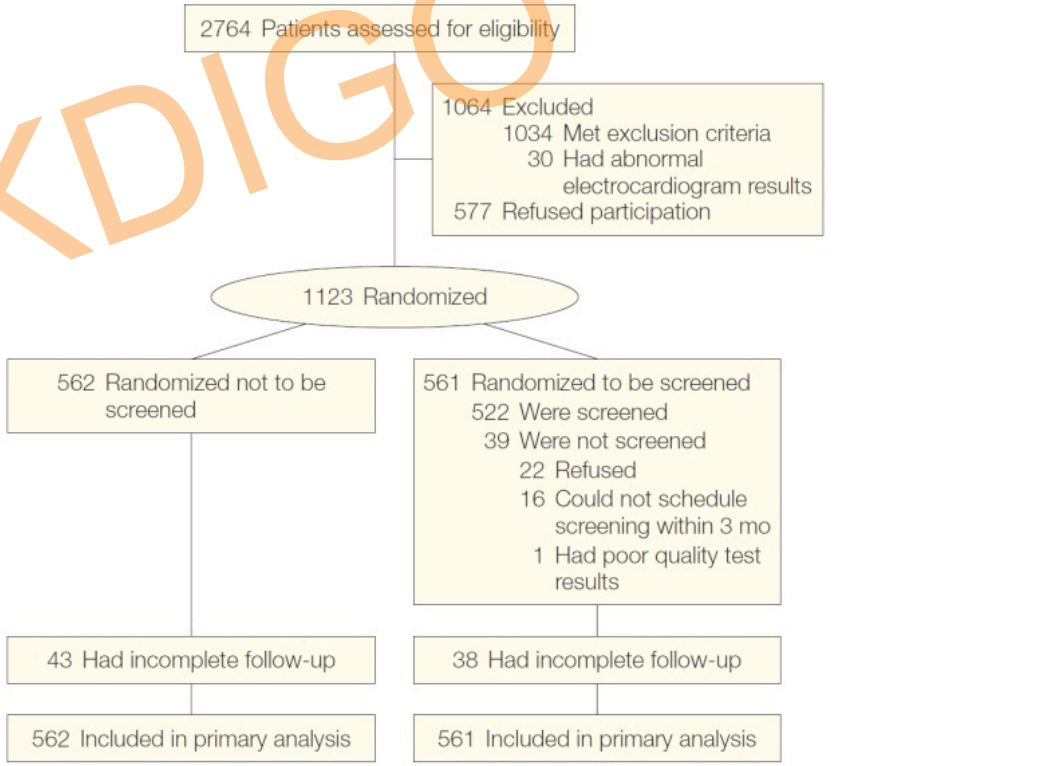
Evidence

Cardiac Outcomes After Screening for Asymptomatic Coronary Artery Disease in Patients With Type 2 Diabetes

The DIAD Study: A Randomized Controlled Trial

JAMA, April 15, 2009—Vol 301, No. 15

Figure 1. Flow of Study Participants



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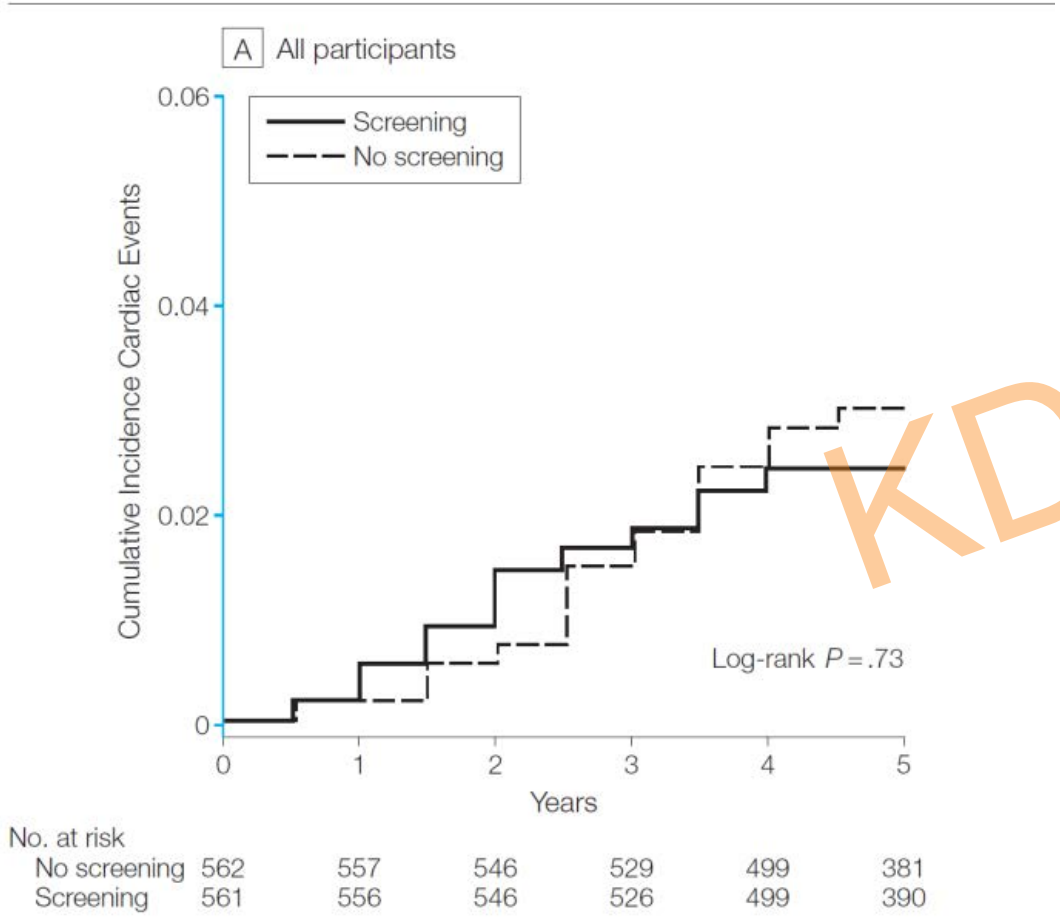
Evidence



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Does not appear to have any benefits from routine screening in asymptomatic diabetic patients

But this trial exclude patients with kidney disease !!!

Eagerly await for the results of the CARSK trial

CARSK stands for the "**C**anadian-**A**ustralasian **R**andomised Trial for **S**creening **K**idney Transplant Recipients for Coronary Artery Disease."

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Accuracy of the screening tests

Cardiac Testing for Coronary Artery Disease in Potential Kidney Transplant Recipients: A Systematic Review of Test Accuracy Studies

Louis W. Wang, MM(ClinEpi)(Hons),[1] Magid A. Fahim, MD,[2] Andrew Hayen, PhD,[1] Ruth L. Mitchell, MA(Inf),[3] Stephen W. Lord, DM,[4] Laura A. Baines, MD,[5] Jonathan C. Craig, PhD,[1,3] and Angela C. Webster, PhD[1,3,6]

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Test	No. of Studies	Sensitivity (95% CI)	Specificity (95% CI)	DOR (95% CI)	AUC	Variance of Random Effects of log(DOR)	*P* for Difference in Accuracy[a]
Overall Results (all studies)							
MPS	7	0.69 (0.48-0.85)	0.77 (0.59-0.89)	7.68 (1.99-29.67)	0.80	0.2763	}0.07
DSE	11	0.80 (0.64-0.90)	0.89 (0.79-0.94)	30.98 (10.66-90.03)	0.92	0.2224	
Only Studies With Reference Standard Threshold ≥70% Coronary Artery Stenosis							
MPS	6	0.68 (0.43-0.85)	0.80 (0.60-0.91)	8.15 (1.58-42.00)	0.81	0.3487	}0.2
DSE	8	0.78 (0.59-0.90)	0.87 (0.75-0.94)	24.40 (7.19-82.78)	0.90	0.2492	
Only Studies in Which Partial Verification Was Avoided							
MPS	7	0.68 (0.43-0.85)	0.80 (0.60-0.91)	8.15 (2.56-25.93)	0.81	0.3487	}0.1
DSE	9	0.74 (0.52-0.88)	0.88 (0.74-0.95)	20.41 (6.46-64.50)	0.89	0.2571	
Only Studies That Avoided Partial Verification and Had Reference Standard Threshold ≥70% Coronary Artery Stenosis							
MPS	6	0.68 (0.43-0.85)	0.80 (0.60-0.91)	8.15 (2.56-25.93)	0.81	0.3487	}0.2
DSE	8	0.78 (0.59-0.90)	0.87 (0.75-0.94)	24.40 (7.19-82.78)	0.90	0.2492	

Reasonable test overall test accuracies

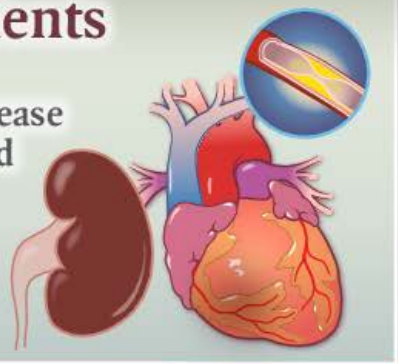
ISCHEMIA CKD study

The NEW ENGLAND JOURNAL of MEDICINE

Managing Coronary Disease in Advanced Kidney Disease

OPEN-LABEL RANDOMIZED, CONTROLLED TRIAL

777 Patients with stable coronary disease and advanced CKD



	Invasive Strategy	Conservative Care
	+ Medical therapy (N=388)	Medical therapy (N=389)
Death or nonfatal MI	123	129
	Adjusted HR 1.01; 95% CI, 0.79–1.29; P=0.95	
Angina-related health status	No difference in Seattle Angina Questionnaire summary score	

Invasive treatment did not reduce the rate of death or nonfatal MI or improve angina-related health status

S. Bangalore et al. 10.1056/NEJMoa1915925

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Limitations and applicability in transplant candidates

- Not really applicable to our candidates
- Early deaths from CVD occur in the peri-operative periods
- Transplantation surgery is complex
- Hemodynamic changes
- Blood loss and other factors may potentially influence the outcomes

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Cancer

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POTENTIAL CANDIDATE WITH A PRIOR CANCER

TYPE	STAGE	GUIDELINE: AST	CARI	B&D	CST	EBPG	MMOH
Renal cell carcinoma	Small or disovered incidentally	0 years	0 years	0 years			0 years
	Symptomatic	Minimum 2 years	Minimum 5 years	Minimum 2 years		Minimum 2 years	
	Large or Invasive	Minimum 5 years		Minimum 2 years			2-5 years
Bladder cancer	In-situ or non-invasive papilloma	0 years	0 years	0 years	0 years	Minimum 2 years	0 years
	Invasive	Minimum 2 years	Minimum 2 years	Minimum 2 years	Minimum 2 years	Minimum 5 years	Minimum 2 years
Breast Cancer (a,b)	Stage 0-2 (including early stage)	Minimum 2 years	2-5 years	2-5 years	Minimum 2 years	Minimum 5 years	2-5 years
	Stage 3-4 (advanced/invasive)	Minimum 5 years	Contraindicated	2-5 years	Contraindicated	Minimum 5 years	2-5 years
Colorectal Cancer (c)	Duke A or B1	Minimum 2 years	Minimum 2 years		2-5 years	Minimum 2 years	Minimum 2 years
	Duke C		Minimum 5 years			Minimum 2 years	Minimum 2 years
	Duke D		Contraindicated			Minimum 2 years	Minimum 2 years
	Patients with a history of colorectal cancer	Minimum 5 years			Minimum 5 years		
Uterine Cancer	Cancer of the uterine body	Minimum 2 years	Minimum 2 years			Minimum 2 years	Minimum 2 years
	Cervical cancer in-situ	2-5 years	0 years	0 years	Minimum 2 years	Minimum 2 years	0 years
	Invasive cervical cancer		Minimum 5 years	2-5 years		Minimum 5 years	Minimum 5 years
Prostate Cancer	Localised	0 years	0 years				
	Invasive	Minimum 2 years	Minimum 2 years	Minimum 2 years		Minimum 2 years	Minimum 2 years
Melanoma	In-situ	Minimum 2 years	Minimum 2 years	Minimum 5 years	Minimum 2 years		Minimum 5 years
	Invasive	Minimum 5 years	Minimum 5 years	Minimum 5 years	Minimum 5 years	Minimum 2 years	Minimum 5 years
Non-melanoma skin cancers	Basal Cell Carcinoma					Minimum 2 years	
	Squamous Cell Carcinoma						Minimum 2 years
Leukemia		Minimum 2 years			Minimum 2 years		
Lung Cancer		Minimum 2 years			Minimum 2 years		
Lymphoma		Minimum 2 years	Minimum 2 years	2-5 years	Minimum 2 years		Minimum 2 years
Multiple Myeloma			Contraindicated		Contraindicated		
Testicular Cancer		Minimum 2 years	Minimum 2 years				Minimum 2 years
Thyroid Cancer		Minimum 2 years	Minimum 2 years				Minimum 2 years
Wilms Tumour		Minimum 2 years	Minimum 2 years	Minimum 2 years			Minimum 2 years

- Recommendations/suggested waiting times from various clinical practice guidelines
- Based on largely observational data on cancer recurrence rates

	Recommendation
0 years	
Minimum 2 years	
2-5 years	
Minimum 5 years	
Contraindicated	
No recommendation (or insufficient evidence)	

Batabyal et al., 2012 Transplantation

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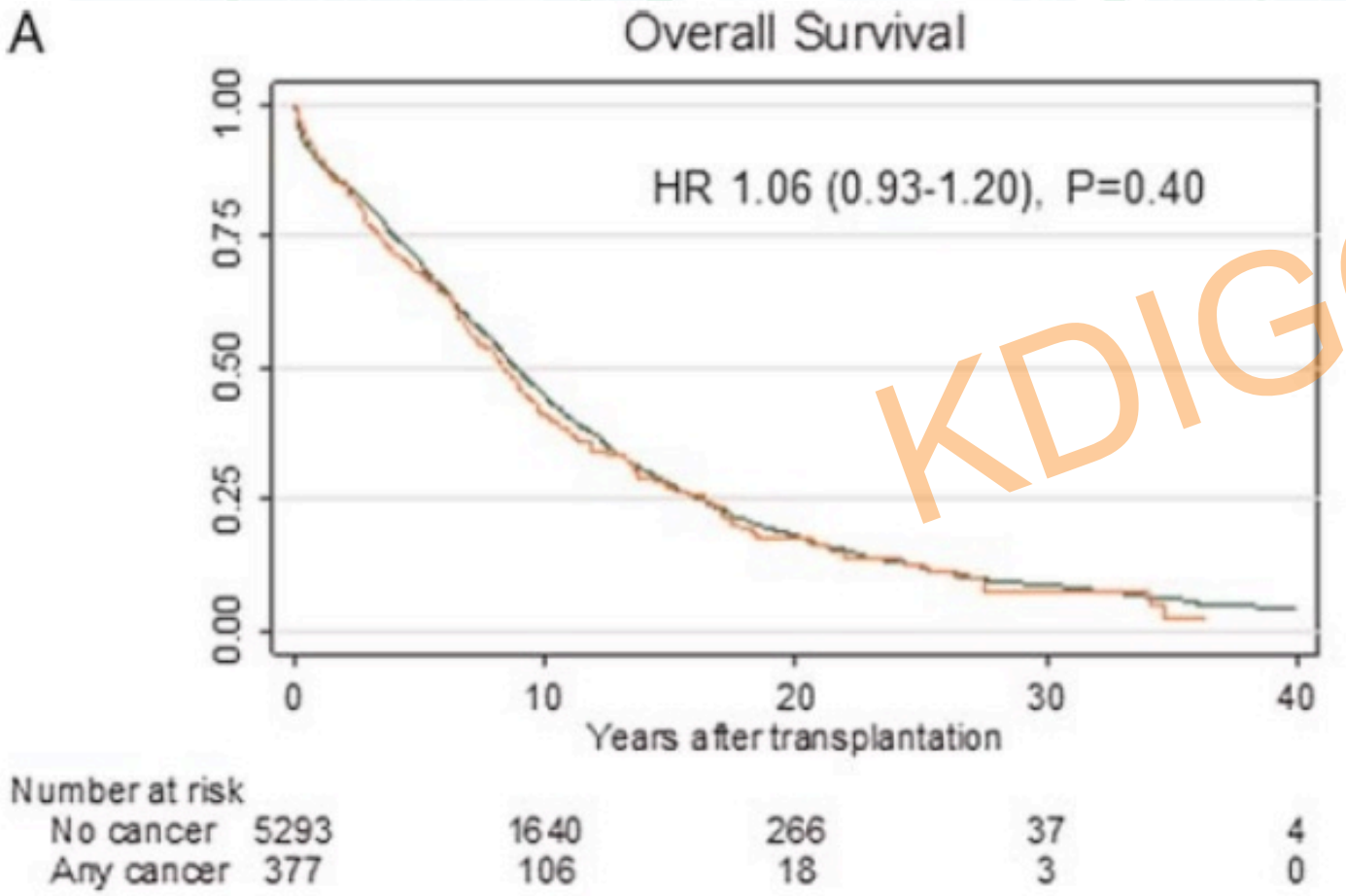
PRIOR CANCER AND OVERALL SURVIVAL POST-TRANSPLANT



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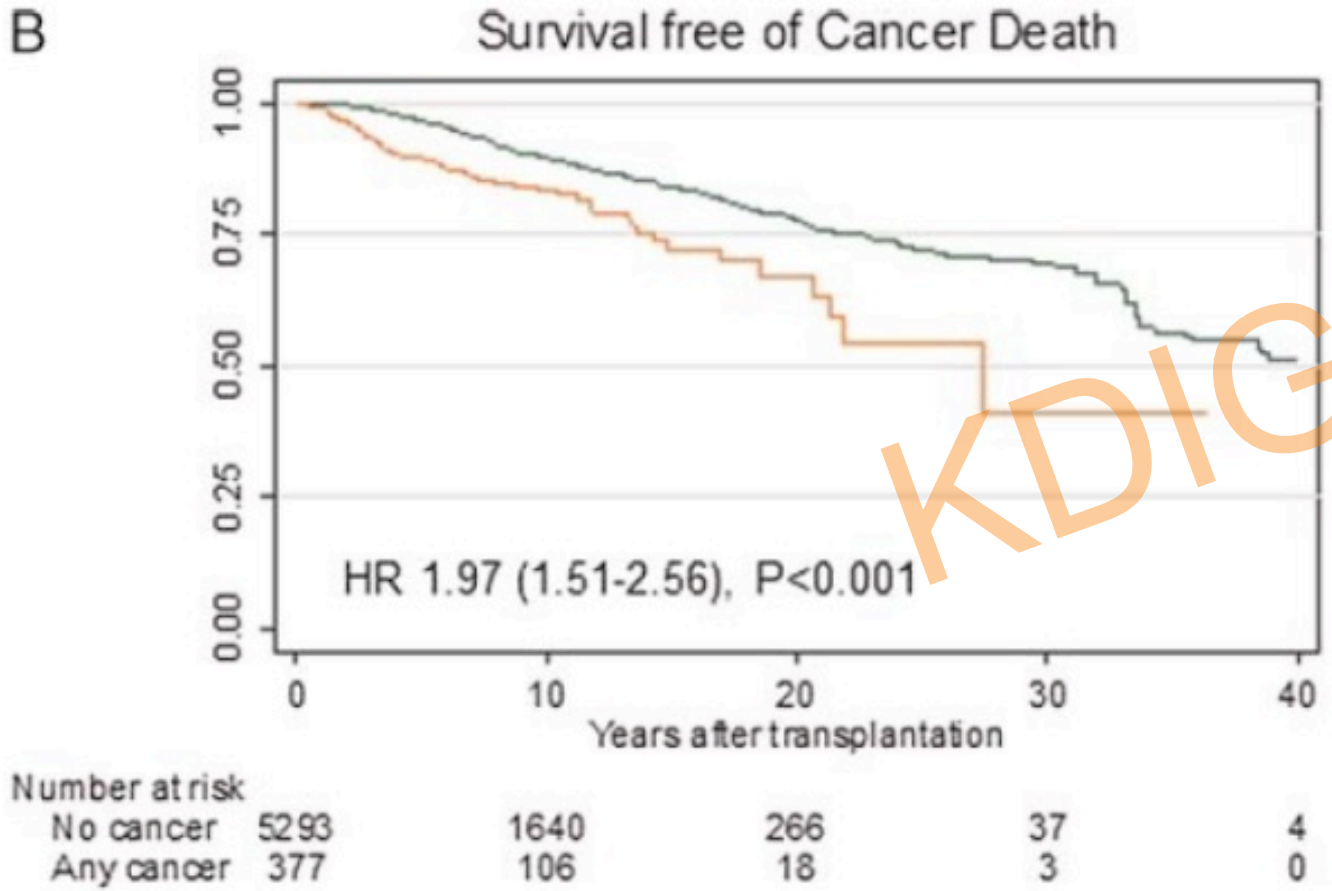
Norwegian Study
Policy of 1 year waiting period
(except NMSC and prostate cancer)

Matched analysis comparing with and without Hx of cancer

No difference in overall and graft survival

Dahle et al., 2017 Transplantation

PRIOR CANCER AND CANCER SPECIFIC DEATH



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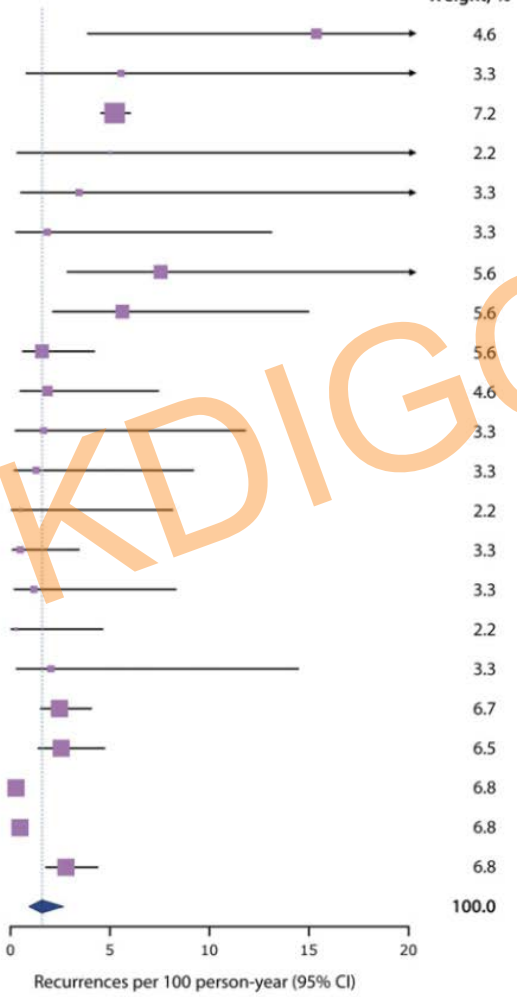
- Higher risk of cancer-related death among those with a prior cancer

Dahle et al., 2017 Transplantation

CANCER RECURRENCE AFTER KIDNEY TRANSPLANTATION

Study	Year	Recurrences	Total Person-years	Estimate (95% CI)		Weight, %
Alamartine et al[53]	1991	2	13	15.4	(3.9 to 61.5)	4.6
Dillon et al[52]	1991	1	18	5.6	(0.8 to 39.4)	3.3
Penn et al[38]	1993	185	3,533	5.2	(4.5 to 6.1)	7.2
Dousset et al[51]	1995	0	10	5.0	(0.3 to 79.9)	2.2
Goldstein et al[50]	1996	1	29	3.5	(0.5 to 24.5)	3.3
Levitt et al[35]	1996	1	54	1.9	(0.3 to 13.2)	3.3
Koerner et al[49]	1997	4	53	7.6	(2.8 to 20.1)	5.6
Kelly et al[48]	1998	4	71	5.6	(2.1 to 15.0)	5.6
Danpanich al[47]	1999	4	251	1.6	(0.6 to 4.3)	5.6
Saigal et al[46]	2001	2	107	1.9	(0.5 to 7.5)	4.6
Grande et al[45]	2003	1	60	1.7	(0.2 to 11.8)	3.3
Ward et al[44]	2004	1	77	1.3	(0.2 to 9.2)	3.3
Ladowski et al[43]	2006	0	98	0.5	(0.0 to 8.2)	2.2
Benten et al[42]	2008	1	204	0.5	(0.1 to 3.5)	3.3
Jain et al[41]	2009	1	85	1.2	(0.2 to 8.4)	3.3
Fernandez al[39]	2010	0	171	0.3	(0.0 to 4.7)	2.2
Metcalfe al[40]	2010	1	49	2.0	(0.3 to 14.5)	3.3
Sigurdardottir et al[32]	2012	15	607	2.5	(1.5 to 4.5)	6.7
Chung et al[28]	2014	10	390	2.6	(1.4 to 4.8)	6.5
Viecelli et al[27]	2014	19	6,770	0.3	(0.2 to 0.4)	6.8
Singh et al[26]	2015	18	3,718	0.5	(0.3 to 0.8)	6.8
Hellstrom et al[23]	2016	18	646	2.8	(1.8 to 4.4)	6.8
Overall		**289**	**17,014**	**1.6**	**(1.0 to 2.6)**	**100.0**

$I^2 = 87.3\%$, $P<0.001$



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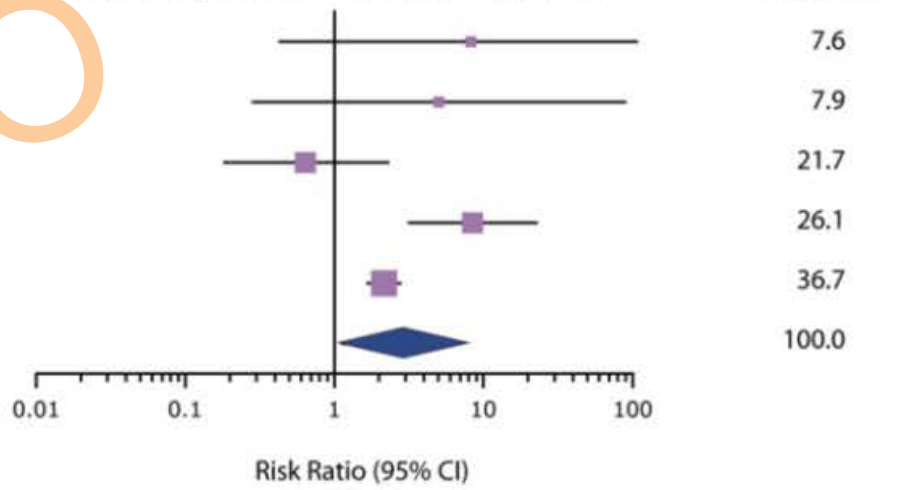
- Systematic review of 57 studies
  Meta-analysis of 39 studies
- Overall estimated recurrence rate: **1.6 per 100 person-years**
- Substantial heterogeneity between studies

Acuna et al., 2017 Transplantation Reviews

WAITING TIME AND CANCER RECURRENCE AFTER KIDNEY TRANSPLANTATION

Study	TCT<5 years Recurrences	TCT<5 years Total	TCT≥5 years Recurrences	TCT≥5 years Total	Risk Ratio IV, Random, 95% CI
Desai et al[30]	2	13	0	22	8.21 (0.42 to 158.96)
Desai et al[29]	2	8	0	8	5.00 (0.28 to 90.18)
Hellstrom et al[23]	5	38	7	57	0.64 (0.18 to 2.33)
Sigurdardottir et al[32]	20	42	4	71	8.45 (3.10 to 23.05)
Hanaway et al[36]	165	466	56	340	2.15 (1.64 to 2.81)
Overall	**192**	**567**	**67**	**498**	**2.80 (1.12 to 7.01)**
I^2=65%, p=0.03					



Note – high heterogeneity

A **higher risk of cancer recurrence in patients who have waited shorter than 5 years after cancer remission**

Acuna et al., 2017 Transplantation Reviews

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KDIGO RECOMMENDATIONS

- 11.2.1: We recommend that candidates with **acute malignancy be excluded** from kidney transplantation except for those with indolent and low-grade cancers such as prostate cancer (Gleason score ≤ 6), superficial non-melanoma skin cancer, and incidentally detected renal tumors (≤ 1 cm in maximum diameter) (1B)
- 11.2.2: **Timing of kidney transplantation** after potentially curative treatment for cancer **is dependent on the cancer type and stage at initial diagnosis** (not graded) (**Table 14**)
- 11.2.3: We recommend no waiting time for candidates with curatively treated (surgically or otherwise) non-metastatic basal cell and squamous cell carcinoma of the skin; melanoma in-situ; small renal cell carcinoma (< 3 cm); prostate cancer (Gleason score ≤ 6cm), carcinoma-in-situ; thyroid cancer (follicular/papillary <2 cm of low grade histology) and superficial bladder cancer (1C).
- 11.2.4: Decisions about transplantation for candidates in remission from cancer should be made collaboratively with oncologists, transplant nephrologists, patients and their caregivers (not graded)

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TABLE 14.

Recommended waiting times between cancer remission and kidney transplantation[91]

Breast	Early	At least 2 years
	Advanced	At least 5 years
Colorectal	Dukes A/B	At least 2 years
	Duke C	2-5 years
	Duke D	At least 5 years
Bladder	Invasive	At least 2 years
Kidney	Incidentaloma (< 3 cm)	No waiting time
	Early	At least 2 years
	Large and invasive	At least 5 years
Uterine	Localized	At least 2 years
	Invasive	At least 5 years
Cervical	Localized	At least 2 years
	Invasive	At least 5 years
Lung	Localized	2-5 years
Testicular	Localized	At least 2 years
	Invasive	2-5 years
Melanoma	Localized	At least 5 years
	Invasive	Contraindicated
Prostate	Gleason ≤6	No waiting time
	Gleason 7	At least 2 years
	Gleason 8-10	At least 5 years
Thyroid	Papillary/Follicular/ Medullary	
	Stage 1	No waiting time
	Stage 2	At least 2 years
	Stage 3	At least 5 years
	Stage 4	Contraindicated
	Anaplastic	Contraindicated
Hodgkin Lymphoma	Localized	At least 2 years
	Regional	3-5 years
	Distant	At least 5 years
Non-Hodgkin Lymphoma	Localized	At least 2 years
	Regional	3-5 years
	Distant	At least 5 years
Post-transplant lymphoproliferative disease	Nodal	At least 2 years
	Extranodal and cerebral	At least 5 years

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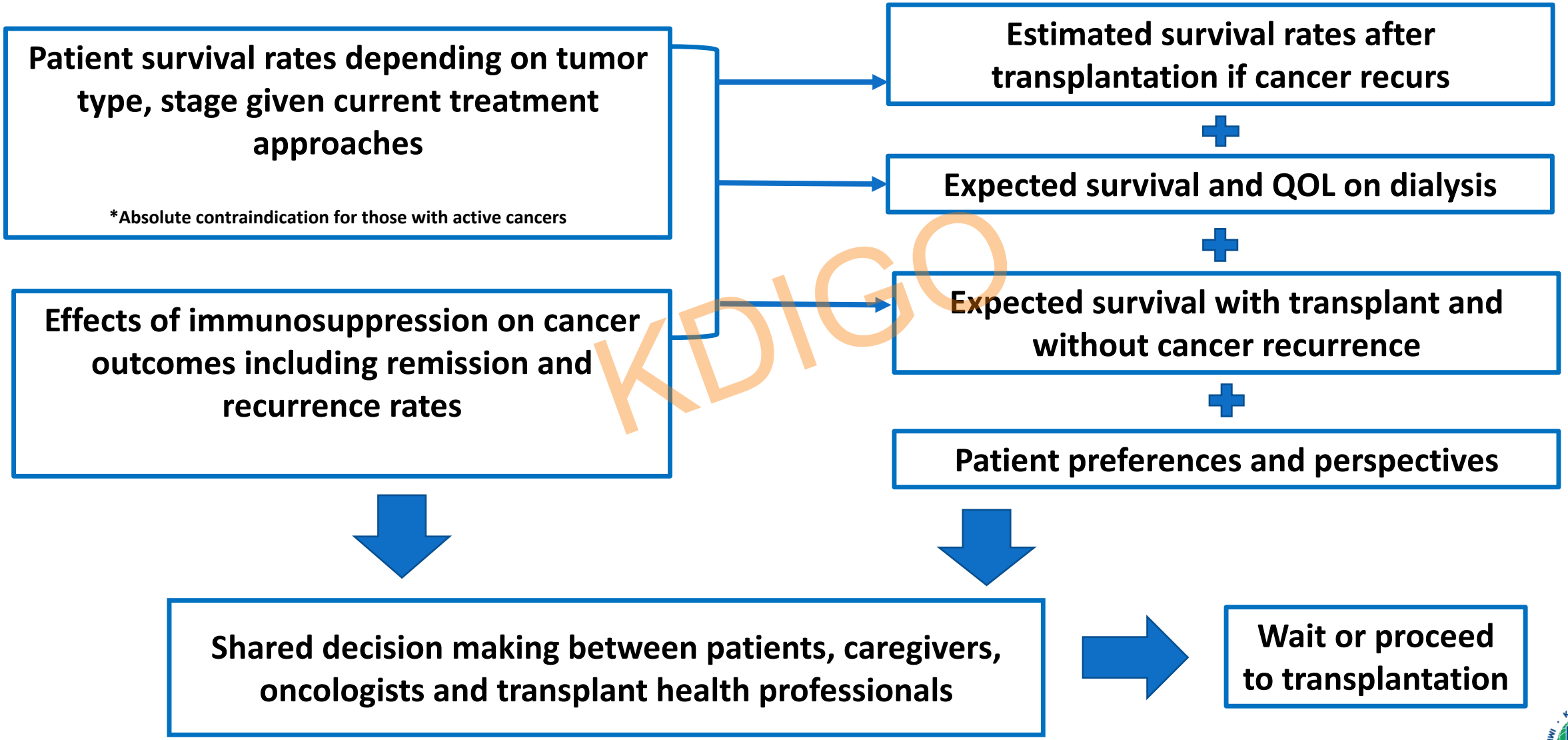
CONSIDERATION FOR TRANSPLANTATION IN CANDIDATES WITH PRIOR CANCERS AND IN COMPLETE REMISSION



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Adherence

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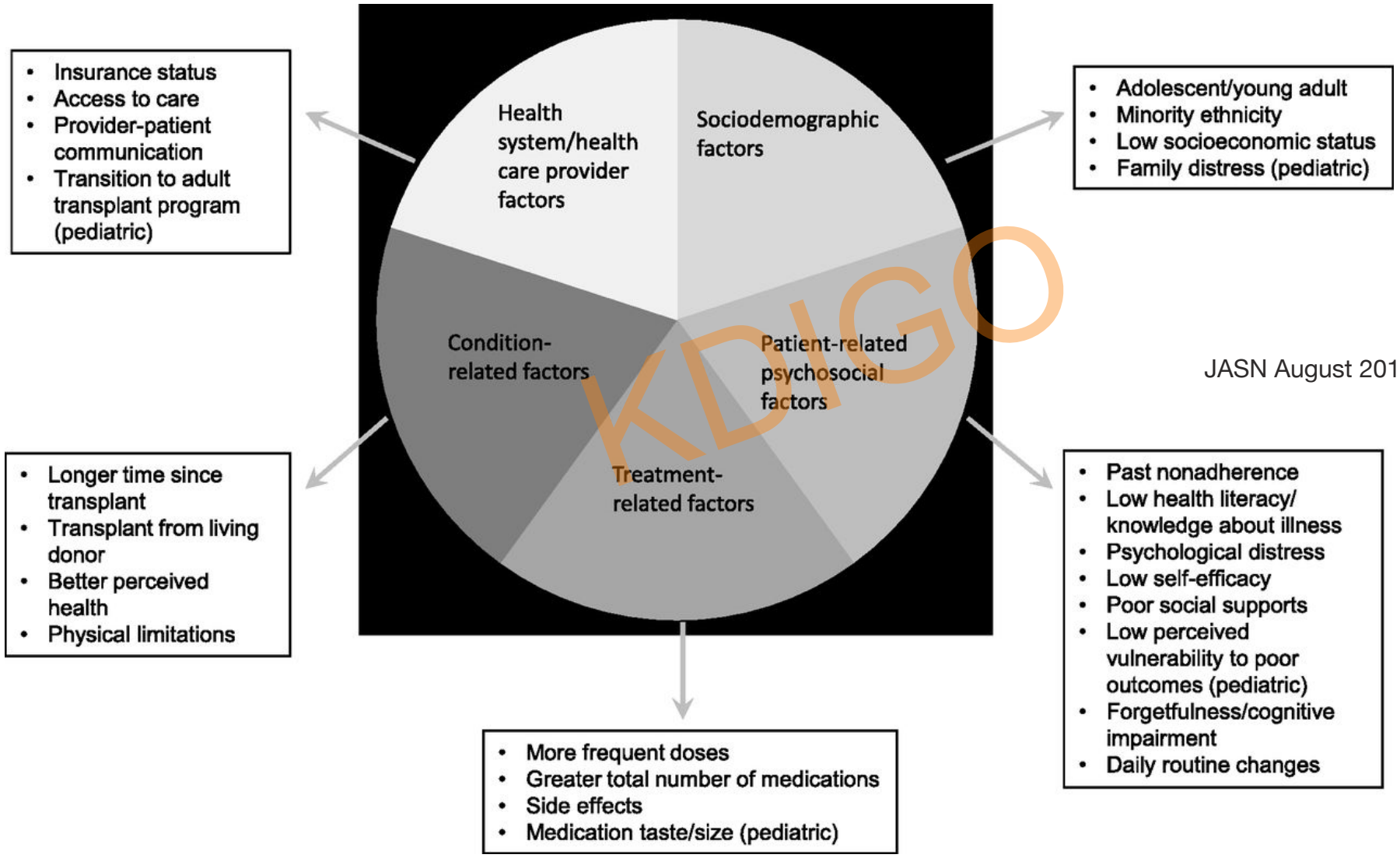
Adherence after transplantation



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JASN August 2017, 28 (8) 2290-2301

KDIGO recommendations

- Assess adherence and adherence barriers pre-transplantation. Appropriate adherence-based education, counselling pre-transplant and post-transplant surveillance should be provided
- Candidates with a history of nonadherence from kidney transplantation should not be excluded except for those with on-going, health-compromising nonadherent behaviour despite education and conselling

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Summary

- Transplant assessment is complex.
- This guideline provides **recommendations for evaluation** of individual aspects of a **candidate's profile** such that each risk factor and comorbidity are considered.
- This guideline is intended to be **global**.
- The goal is to assist transplant professionals to assimilate all data relevant to an individual, consider this within their **local health context**, and make an overall judgment on candidacy for transplantation.

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Thank you very much