

Diabete mellito

Systematic: Samuele Iesari e Quirino Lai (L'Aquila)

Linee Guida ERBP 2013

3.5. On which criteria should we select living kidney donors to optimize the risk–benefit ratio of their donation?

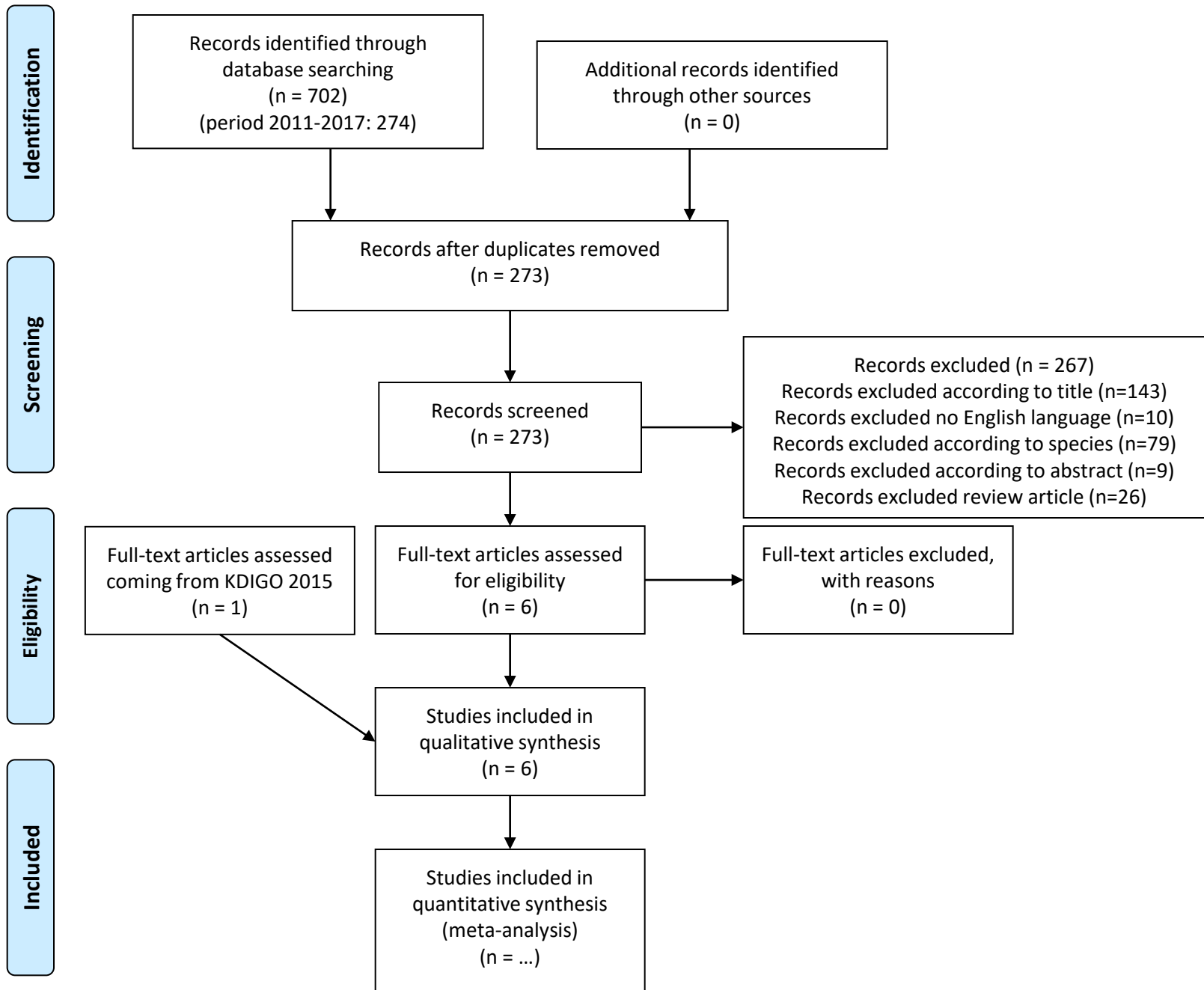
We recommend that the simultaneous presence of more than one risk factor (hypertension, obesity, proteinuria, impaired glucose tolerance, haematuria) precludes donation. (Ungraded Statement)

[...]

Impaired glucose tolerance

1. We recommend diabetes mellitus is a contraindication to donation, other than in exceptional circumstances. (1D)
2. We suggest impaired glucose tolerance is not an absolute contraindication to donation. (2C)

[...]



Studi selezionati

Study
Grams ME, Sang Y, Levey AS, Matsushita K, Ballew S, Chang AR, Chow EK, Kasiske BL, Kovesdy CP, Nadkarni GN, Shalev V, Segev DL, Coresh J, Lentine KL, Garg AX; Chronic Kidney Disease Prognosis Consortium.. Kidney-Failure Risk Projection for the Living Kidney-Donor Candidate. N Engl J Med. 2016 Feb 4;374(5):411-21.
Ferreira-Hermosillo A, Valdez-Martínez E, Bedolla M. Ethical issues relating to renal transplantation from prediabetic living donor. BMC Med Ethics. 2014 Jun 16;15:45. doi: 10.1186/1472-6939-15-45. PubMed PMID: 24935278; PubMed Central PMCID: PMC4065609.
Chandran S, Masharani U, Webber AB, Wojciechowski DM. Prediabetic living kidney donors have preserved kidney function at 10 years after donation. Transplantation. 2014 Apr 15;97(7):748-54. doi: 10.1097/01.TP.0000438625.91095.8b. PubMed PMID: 24342975.

Kidney-Failure Risk Projection for the Living Kidney-Donor Candidate.

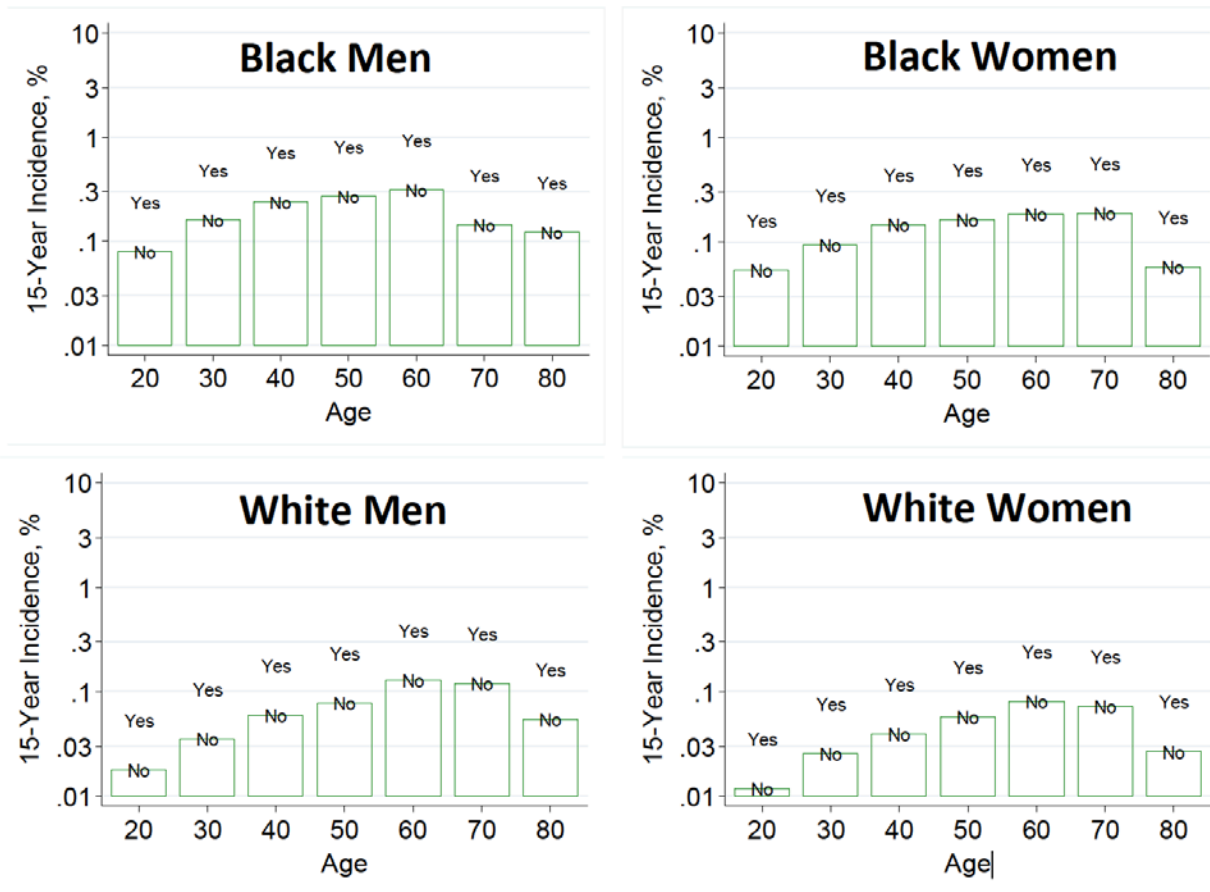
Grams ME, Sang Y, Levey AS, et al. N Engl J Med. 2016 Feb 4;374(5):411-21.

- 4,933,314 participants from seven cohorts, followed for a median of 4 to 16 years.
- For a 40-year-old person with health characteristics that are similar to those of age-matched kidney donors, the 15-year projections of the risk of ESRD, in the absence of donation, varies according to race and sex.
- The risk was 0.24% among black men, 0.15% among black women, 0.06% among white men, and 0.04% among white women.
- Risk projections are higher in the presence of:
 - lower estimated glomerular filtration rate,
 - higher albuminuria,
 - hypertension,
 - current or former smoking,
 - diabetes,
 - obesity.
- Noninsulin-dependent diabetes is associated with a higher risk of ESRD: adjusted hazard ratio for the comparison with no diabetes 3.01; 95%CI 1.91-4.74.

[Kidney-Failure Risk Projection for the Living Kidney-Donor Candidate.](#)

Grams ME, Sang Y, Levey AS, et al. N Engl J Med. 2016 Feb 4;374(5):411-21.

(F) Non-insulin Dependent Diabetes Mellitus



[Ethical issues relating to renal transplantation from prediabetic living donor.](#)

Ferreira-Hermosillo A, Valdez-Martínez E, Bedolla M. BMC Med Ethics. 2014 Jun 16;15:45.

- Diabetes is an absolute contraindication for donating a kidney.
- Many transplant protocols do not consider prediabetes as an exclusion criterion, a controversy stemming from 3 elements:
 1. Prevailing notion that prediabetes is a “healthy” condition;
 2. Lack of evidence about long-term outcomes of prediabetic kidney donors and consequences of diminished renal tissue;
 3. Lack of evidence about the development of diabetic nephropathy in prediabetic individuals.
- Considering the ethical implication as well as the clinical and epidemiological evidence, the authors conclude that prediabetic individuals are not suitable candidates for kidney donation.

[Ethical issues relating to renal transplantation from prediabetic living donor.](#)

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Studies linking glucose level with the development of kidney damage.

Author and publication year	Study type and follow – up period	Place and population of study	Form of evaluation	Results
Fehrman-Ekholm et al. 2001	Cohort study with a follow up of 12 years (April 1964 – December 1995)	Sweden 348 relative living donors (93.5% inbreeding)	Normal initial OGTT	Six developed T2DM
Aroda et al. 2008	Review study. Information from the National Centre for Chronic Disease Prevention and Health Promotion (2008)	USA National Study	Fasting plasma glucose levels and OGTT	Risk of T2DM development: 0.7% normoglycemic, and 5 – 10% IFG and IGT
Nichols et al. 2007	Cohort studies with a follow time of 9 years (January 1994 – December 2003)	USA 5,452 members from the Kaiser Permanente Northwest	Fasting plasma glucose levels between 100–109 mg/dl and 110–125 mg/dl	From people with glucose levels between 100–109 mg/dL, 8.1% developed T2DM. From people with glucose levels between 110–125 mg/dl, 24.3% developed T2DM
Fox et al. Framingham (Follow up) 2005	Cohort studies. Initial time: 1991–1995. Follow up period: 1998 – 2001	USA 2,398 persons	Fasting plasma glucose levels and OGTT	Risk of 65% to develop CKF on people with IFG and IGT in comparison with control group
Azar et al. 2007	Cohort study with a follow up of 3 years	Iran. Tabriz Medical Sciences University 86 non-related living donors	Clinical and biochemical record	55% presented hypertension. 7% Increased creatinine concentrations 10% presented severe depression

[Prediabetic living kidney donors have preserved kidney function at 10 years after donation.](#)

Chandran S, Masharani U, Webber AB, et al. Transplantation. 2014 Apr 15;97(7):748-54.

- Retrospective study in 143 kidney donors from 1994 to 2007 with predonation impaired fasting glucose (IFG).
 - Comparison between 45 of these IFG donors and 45 matched control donors with normal predonation fasting glucose (NFG).
 - Main outcomes: vital status and ESRD
 - Secondary outcomes: development of DM, eGFR and level of albumin excretion
 - Mean follow up of 10.4 years
 - 4 deaths documented in the entire 143 IFG donors group. No ESRD cases.
 - The majority (57.8%) of IFG donors reverts to NFG. Compared with NFG donors, a higher proportion of IFG donors develops DM (15.56% vs. 2.2%, P=0.06).
 - eGFR (70.7 ± 16.1 mL/min/1.73 m² vs. 67.3 ± 16.6 mL/min/1.73 m², P=0.21) and albumin excretion (urine albumin/ creatinine 9.76 ± 23.6 mg/g vs. 5.91 ± 11 mg/g, P=0.29) are similar in IFG and NFG donors.
 - Mean eGFR and the presence or level of albuminuria are not significantly different in those who develop DM versus those who remain IFG or regain NFG.
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- Is the study underpowered to detect a difference between the 2 study groups?

[Prediabetic living kidney donors have preserved kidney function at 10 years after donation.](#)

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Current health status of IFG and control donors				
Variable	IFG donors n=45	Control donors n=45		P
Development of diabetes (%)	7 (15.56%)	1 (2.2%)		0.06
Development of hypertension (%)	16 (35.6%)	10 (22.2%)		0.16
Body mass index (kg/m ²)	27.9±4.86	25.9±5.09		0.048
Fasting plasma glucose (mg/dL)	104.7±33.2	90.0±6.5		0.0045
Hemoglobin A1c (%)	5.97±1.26	5.58±0.233		0.027
eGFR (mL/min/1.73 m ²)	70.7±16.1	67.3±16.6		0.21
Albumin/ creatinine ratio (mg/g)				
Mean	9.76±23.6	5.91±11		0.29
Median	3 (0.0-150)	2 (0.0-54)		
Current health status of initially IFG donors subdivided by current fasting plasma glucose (FPG)				
	Normal FPG	IFG	Diabetes	
Variable	(<100 mg/dL) n=26	(100-125 mg/dL) n=12	(>126 mg/dL) n=7	P
Current BMI (kg/m ²)	27.8±5.52	27.8±4	28.5±4.02	0.82
Hemoglobin A1c (%)	5.63±0.253	5.63±0.352	7.77±2.59	0.0006
eGFR (mL/min/1.73 m ²)	72.1±17.6	64.5±12.4	76.3±14	0.25
Albumin/creatinine ratio (mg/g)				
Mean	6.85±10.7	4.01±4.16	30.4±54.6	0.70
Median	3 (0-50)	3 (0-13)	11 (0-150)	