Table S1: Missing information on variables and imputation method.

Missing Analyses

Although each KDRI factor had <10% missing values, for some factors these appeared not completely at random (see Table below). Donors with missing KDRI values were more frequently hypertensive (33.9% vs. 23.4%), less likely to be a DCD donor (29.5% vs. 43.6%), had a higher percentage of 0 mismatches on HLA-B (29.0 vs. 22.3) and HLA-DR (43.4% vs. 34.7%), and higher median CIT (17.6h vs 16.7h). Recipients with missing KDRI values were more frequent diabetic (19.8% vs. 13.8%), higher percentage had >0% panel reactive antibodies (PRA) (16.3% vs. 11.8%), and median follow-up was lower (4.1 years vs. 5.1 years). Missing information on variables are not likely to be completely at random (MCAR). Therefore, a complete case analysis is likely to return bias in results. The imputation method chosen for the analyses can handle both missing at random (MAR) and missing not at random (MNAR).

Imputation method

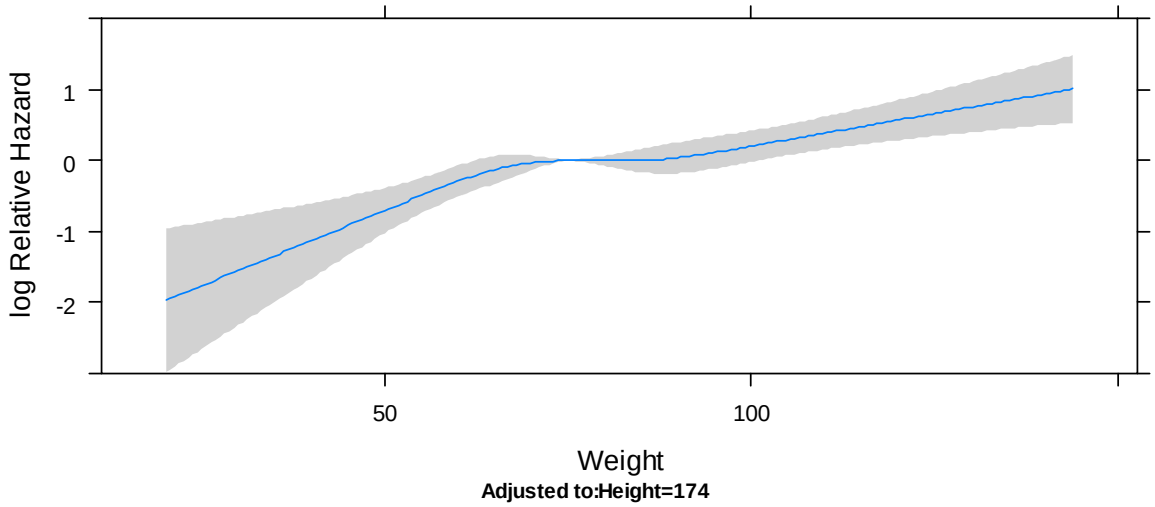
We chose to impute missing values by using the Multivariate Imputation by Chained Equations (MICE) algorithm with a predictive mean matching (PMM) modeling type.[30] Each missing variable in MICE is treated as an outcome, and missing data are predicted from the remaining variables. The PMM method ensures that imputed values are plausible, as this method might be more appropriate than the regression method if the normality assumption is violated.[31] We created 10 imputed datasets and combined the estimates to take different imputed values into account with appropriate methods[32].

Descriptive statistics of KDRI risk factors in Dutch population (n=3201 transplantations).

	Available data N=3201		Complete Case on KDRI factors N=2554[A]	N=647[B]	p value[C]
Donor parameters	**Median(IQR) / N(%)**	**Missing (%)**	**Median(IQR) / N(%)**	**Median(IQR) / N(%)**	
Age (yr)	51 (40-60)	0	51 (40-60)	51 (41-59)	.628
Serum creatinine (mg/dL)	0.78 (0.61-0.98)	10 (0.3%)	0.78 (0.61-0.98)	0.79 (0.61-0.98)	.868
Hypertension (yes)	727 (24.7%)	263 (8.2%)	597 (23.4%)	130 (33.9%)	<.001
Diabetes (yes)	133 (4.4%)	184 (5.7%)	108 (4.2%)	25 (5.4%)	.268
Cause of death (CVA)	1752 (57.9%)	176 (5.5%)	1466 (57.4%)	286 (60.7%)	.187
Height (cm)	174 (168-180)	0	174 (168-180)	174 (168-180)	.635
Weight (kg)	75 (65-85)	2 (0.0%)	75 (65-85)	75 (67-85)	.480
Donation after circulatory death (yes)	1304 (40.7%)	0	1113 (43.6%)	191 (29.5%)	<.001
HCV positivity	5 (0.2%)	0 (0.0%)	5 (0.2%)	0 (0.0%)	.590
Double or En-bloc	27 (0.1%)	0 (0.0%)	19 (0.7%)	8 (1.2%)	.229
Transplant parameters					
HLA-B mismatch		187 (5.8%)			.003
- 0	707 (23.5%)		558 (22.3%)	149 (29.0%)	
- 1	1593 (52.9%)		1350 (54.0%)	243 (47.4%)	
- 2	714 (23.7%)		593 (23.7%)	121 (23.6%)	
HLA-DR		199 (6.2%)			.001
- 0	1086 (36.2%)		864 (34.7%)	222 (43.4%)	
- 1	1630 (54.3%)		1387 (55.7%)	243 (47.5%)	
- 2	286 (9.5%)		239 (9.6%)	47 (9.2%)	
Cold ischemia time (hrs)	16.9 (13.3 – 21.0)	291 (9.1%)	16.7 (13.2-20.7)	17.6 (14.2-22.3)	<.001
Recipient parameters					
Dialysis vintage (years)	3.8 (2.5 – 5.1)	112 (3.5%)	3.8 (2.5-5.0)	3.7 (2.2-5.1)	.139
Cause of renal failure		0			.002
- Polycystic kidney disease	472 (14.7%)		378 (14.8%)	94 (14.5%)	
- Glomerulonephritis	623 (19.5%)		515 (20.2%)	108 (16.7%)	
- Renal vascular disease	559 (17.5%)		458 (17.9%)	101 (15.6%)	
- Diabetes	481 (15.0%)		353 (13.8%)	128 (19.8%)	
- Chronic renal failure, etiology unknown	498 (15.6%)		385 (15.1%)	113 (17.5%)	
- Pyelonephritis	191 (6.0%)		152 (6.0%)	39 (6.0%)	
- Other	377 (11.8%)		313 (12.3%)	64 (9.9%)	
Panel Reactive Antibodies		35 (1.0%)			.004
- 0	2763 (87.3%)		2250 (88.1%)	513 (83.7%)	
- >0 – 50	345 (10.9%)		264 (10.3%)	81 (13.2%)	
- >50	58 (1.8%)		39 (1.5%)	19 (3.1%)	
Height (cm)	172 (165 – 178)	120 (3.8%)	172 (165-179)	170.5 (165-178)	.145
Weight (kg)	75 (65 – 85)	77 (2.4%)	75 (65-85)	74 (65-84)	.155
Age (yr)	55 (45 – 63)	0	55 (45-63)	54 (45-62)	.317
Follow-up (years)	5.0 (3.0-8.0)		5.1 (3.0-8.3)	4.1 (3.0-7.0)	<.001
KDRI score	1.2 (0.9 – 1.5)	647 (20.2%)	1.2 (0.9 – 1.5)	n.a.	n.a.

Note: Complete cases based on NL-KDRI score: 3201 – 647 = 2554 (79.8%). N.a. = not applicable due missing information. [A] = In complete cases every KDRI factor within an individual is known. [B] = value from the individuals that have that variable measured, but are not complete cases due to missing on other KDRI factors. [C] = Compares median or number of cases of variables in complete case on KDRI *vs*. not missing on that single variable.

Figure S1: Effect of donor weight (while adjusted for a donor length of 170 cm), and effect of donor length (while adjusted for a donor weight of 80 kg) on graft loss (presented as the log of the hazard ratio). Note that the risk for graft loss increases if donor weight increases below 80 kg (and after 80 kg).



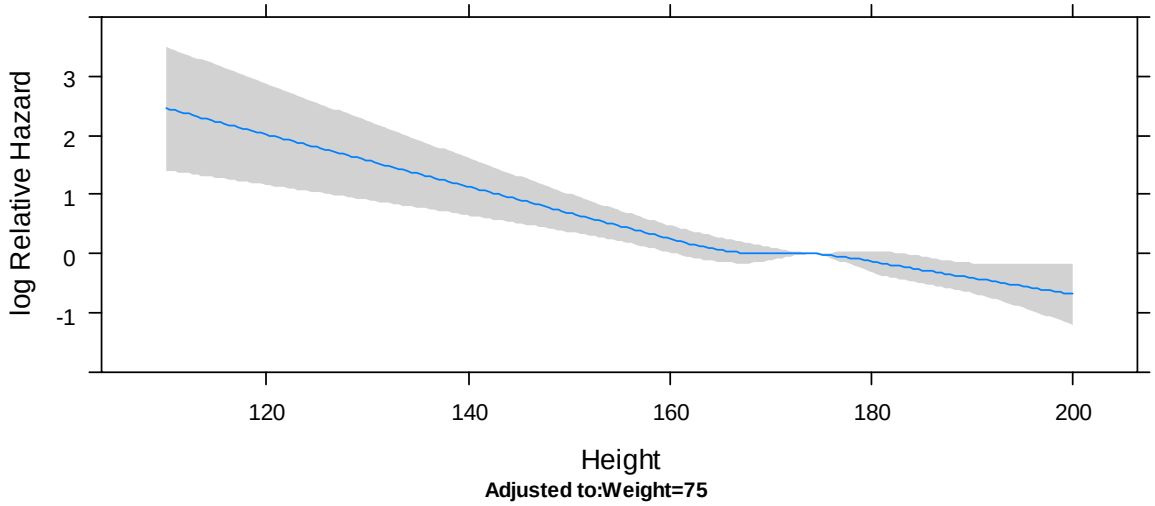


Figure S2: Number of DCD and DBD donor registrations, effectuated donors for transplantation, and number of transplanted kidneys. More DCD donors are discarded in the selection process for transplantation than DBD donors. We were not able to retrospectively analyze KDRI/KDPI of discarded kidneys.