5. Analysis of sensitivity of multiple imputation approach (comparison of results from multiple imputation after randomly deleting data and non-randomly deleting data)

To assess the sensitivity of the multiple imputation approach on the assumption of randomly missing data, we used the following procedure:

First, two new data sets were generated by doubling the amount of missing data in the variables coronary heart disease, cardiomyopathy, cerebrovascular disease, peripheral arterial disease, cholesterol, hemoglobin and mean arterial pressure (MAP). In the first set, missing values were generated randomly. In the second data set, only data above the median value of cholesterol level, hemoglobin level or MAP or with presence of heart disease or vascular disease were deleted.

Variable with missing values introduced…	… randomly		… non-randomly	
	Total N	% or Mean (SD)	Total N	% or Mean (SD)
Coronary heart disease (%)	779	26%	753	42%
Cardiomyopathy (%)	779	16%	753	26%
Cerebrovascular disease (%)	671	12%	654	22%
Peripheral arterial disease (%)	671	19%	654	36%
Mean cholesterol level (SD)	1269	206 (74)	1323	220 (75)
Mean hemoglobin level (SD)	1444	10.8 (2.7)	1469	11.1 (2.8)
Mean arterial pressure (SD)	1452	101 (51)	1483	105 (49)

Results from MSM after multiple imputation:

	Missing data generated	
	randomly	non-randomly
Outcome	Hazard ratio (95% confidence limits)	Hazard ratio (95% confidence limits)
Patient survival	0.65 (0.47, 0.89)	0.67 (0.49, 0.93)
Actual graft survival	0.71 (0.57, 0.90)	0.72 (0.57, 0.91)
Functional graft survival	0.83 (0.60, 1.16)	0.80 (0.57, 1.11)