

## **SUPPLEMENTARY MATERIALS AND METHODS**

### ***Explanatory variable***

The construction of the EDI is based on a selection of a combination of variables which reflects, at best, the individual experience of deprivation within his structural environment.

The variables associated with objective and subjective poverty at the individual level in the 2006 EU-SILC survey (European Union Statistics on Income and Living) and which were also available at the ecological level in national population census have been selected and dichotomized.

The only variables retained in the final model were those that were correlated between the individual level and the ecological level. They have been weighted using the regression coefficients.

This methodology can be applied to all the countries that participated to the EU-SILC survey, but the variables and the number of variables that will constitute the EDI can be different depending on the country, because the correlation between individual and ecological levels can differ from one country to another.

### ***Potential confounders and mediators***

#### ***Potential confounders***

(i) Age. It has been shown that social deprivation was more frequent among young people, for instance among dialysis and transplanted patients. In France in 2019, the median age was 56.2 years for patients already wait-listed, 55.2 years for the newly registered patients vs. 53.6 years for transplanted patients. Younger age was associated with higher registration rate on the waiting list in a recent French study.

(ii) Sex. Female gender is associated with social deprivation. In 2019 in France, male represented 61.1% of the patients already listed for renal transplantation, 64.9% of newly registered subjects and 56% of transplanted patients. Couchoud *et al.* demonstrated that women had a lower likelihood of being registered on the transplant waiting list and spent more time on dialysis until registration.

(iii) Diabetes. Diabetes mellitus is associated with social deprivation. The registration rate for a patient without diabetes is 50% higher compared to a subject with diabetes.

(iv) Cardiovascular disease. Cardiovascular disease is associated with social deprivation and with a reduced access to the kidney transplantation waiting list.

(v) Mobility. Mobility disability is associated with neighborhood deprivation and may complicate access to registration.

(vi) BMI > 30 kg/m<sup>2</sup>. Obesity is associated with SES and with a lower likelihood of registration.

(vii) Underlying nephropathy, that may be influenced by SES and influences access to registration.

### *Potential mediators*

(i) Emergency start of dialysis. Emergency start of dialysis is associated with socioeconomic status (SES). It has been shown that socially deprived patients more often started dialysis in an unplanned manner since it is known that unplanned beginning dialysis is associated with a lower chance of registration.

(ii) Hemoglobin level < 11 g/dL and/or lack of EPO. We assumed that socially deprived patients had a higher risk of uncontrolled anemia since it is known that SES is associated with more advanced chronic kidney disease at nephrology referral, and that late

referral to nephrologist may delay the initiation of erythropoietin treatment. Moreover, hemoglobin < 11 g/dL was a proxy of predialysis care in a recent study of our team. The lack of predialysis care might reduce access to the transplant waiting list.

(iii) Albumin level < 30 g/dL. Following to the same logic, we hypothesized that hypoalbuminemia may suggest a poorer control of the underlying glomerulopathy or an uncared undernutrition of the most deprived patients, that may reflect a lack of pre-dialysis care leading to lower chance of wait-listing. Moreover, a recent French study found that emergency start of dialysis was associated hemoglobin < 11 g/dL and serum albumin < 30 g/L.

## **SUPPLEMENTARY RESULTS**

### ***1. Bivariate analysis***

In the bivariate analysis, age (OR 0.94 [0.93-0.94]), mobility (OR 0.09 [0.06-0.12]), cardiovascular disease (OR 0.23 [0.21-0.25]), BMI (OR 0.74 [0.66-0.83]), tobacco (OR 0.88 [0.80-0.97]), diabetes (OR 0.35 [0.31-0.38]), chronic respiratory failure (OR 0.36 [0.30-0.44]), underlying nephropathy, albumin (OR 0.38 [0.33-0.45]), hemoglobin (OR 0.62 [0.59-0.72]), dialysis modality (self-care hemodialysis OR 2.81 [2.48-3.19] and PD OR 2.74 [2.41-3.12]), emergency start (OR 0.33 [0.29-0.37]) and start on a catheter (OR 0.31 [0.28-0.34]) were associated with wait-listing (Table S5).

## SUPPLEMENTARY TABLES

### TABLES

**Table S1.** Description of missing data for variables of Table 1.

	Missing data
<b>Age</b>	-
<b>Sex</b>	-
<b>National quintile of the EDI</b>	1342 (11%)
<b>Cardiovascular disease</b>	352 (3%)
<b>BMI <math>\leq</math> 30 kg/m<sup>2</sup></b>	1630 (14%)
<b>Tobacco</b>	1777(15%)
<b>Diabetes</b>	84 (1%)
<b>Chronic respiratory failure</b>	287 (2%)
<b>Underlying nephropathy</b>	-
<b>eGFR</b>	1089 (9%)
<b>Albumin</b>	3188 (27%)
<b>Hemoglobin</b>	1232 (11%)
<b>EPO at dialysis start</b>	1548 (13%)
<b>Dialysis modality</b>	-
<b>Emergency start</b>	464 (4%)
<b>Start on a catheter</b>	946 (8%)

**Table S2.** Patient characteristics according to their registration status: other available data.

	<b>Complete cohort</b> N=11655	<b>Not registered</b> N=9245	<b>Registered</b> N=2410
<b>Patient characteristics and comorbidities</b>			
<b>Occupational status</b>			
Active	1646 (18%)	851 (11%)	795 (43%)
Inactive	7641 (82%)	6595 (89%)	1046 (57%)
<i>missing = 2368, 20%</i>			
<b>Mobility</b>			
Without help	9362 (87%)	7169 (84%)	2193 (98%)
Assistance or inability	1369 (13%)	1332 (16%)	37 (2%)
<i>missing = 924, 8%</i>			
<b>Number of nephrology consultations</b>			
<b>during the year preceding dialysis</b>	4 [2-6]	4 [1-6]	5 [4-8]
<i>missing = 4763, 41%</i>			
<b>Time between dialysis onset and registration (months)</b>	4.405 [-3.94-11.51]	-	4.405 [-3.94-11.51]
<b>Outcome at 6 months</b>			
<b>Death</b>	749 (6%)	732 (8%)	17 (1%)
<b>Dialysis withdrawal</b>	414 (4%)	401 (4%)	13 (1%)
<b>Preemptive registration</b>	1481 (13%)	-	1481 (61%)
<b>Transplantation</b>	297 (3%)	-	297 (12%)

*Continuous variables are described by median and [interquartile range] and categorical variables are described by frequencies and (percentage).*

**Table S3.** Factors associated with missing EDI.

	OR [95% CI]
<b>Registration</b>	0.52 [0.37-0.72]*
<b>Patient characteristics and comorbidities</b>	
<b>Age</b>	0.99 [0.99-1.00]
<b>Sex</b>	
Female	ref
Male	1.23 [0.99-1.53]*
<b>Mobility</b>	
Without help	ref
Assistance or inability	1.50 [1.15-1.93]*
<b>Cardiovascular disease</b>	0.91 [0.73-1.13]
<b>BMI</b>	
≤ 30 kg/m <sup>2</sup>	ref
> 30 kg/m <sup>2</sup>	1.07 [0.85-1.33]
<b>Tobacco</b>	
Non smoker	ref
Former or active smoker	0.76 [0.61-0.94]*
<b>Diabetes</b>	0.96 [0.74-1.24]
<b>Chronic respiratory failure</b>	1.04 [0.76-1.39]
<b>Underlying nephropathy</b>	
PKD	ref
Glomerulonephritis	0.94 [0.56-1.62]
Vascular	1.48 [0.94-2.43]
Diabetic	1.29 [0.78-2.21]
Pyelonephritis	0.82 [0.41-1.63]
Other/Unknown	0.79 [0.49-1.32]
<b>Biological characteristics</b>	
<b>Albumin</b>	
< 30 g/L	1.10 [0.89-1.37]
≥ 30 g/L	ref
<b>Hemoglobin</b>	
< 11 g/dL	1.34 [1.06-1.72]*
≥ 11 g/dL	ref
<b>Dialysis characteristics</b>	
<b>Dialysis modality</b>	
In center hemodialysis	ref
Self-care hemodialysis	0.77 [0.54-1.08]
Peritoneal dialysis	1.07 [0.65-1.66]
<b>Emergency start</b>	1.39 [1.12-1.73]*
<b>Start on a catheter</b>	1.08 [0.87-1.35]

OR: Odds Ratio; CI: Confidence Interval; EDI: European Deprivation Index; BMI: Body Mass Index; PKD: Polycystic Kidney Disease.

\* p < 0.05

**Table S4.** Patient characteristics according to their registration status (imputed database).

	<b>Complete cohort</b>	<b>Not registered</b> 79%	<b>Registered</b> 21%
<b>Patient characteristics and comorbidities</b>			
<b>Age</b> <i>median [IQR]</i>	69.0 [57.7-77.3]	71.5 [62.7-78.9]	56.3 [46.4-66.0]
<b>Sex</b> %			
Female	36%	36%	37%
Male	64%	64%	63%
<b>Quintile of the EDI</b> %			
Quintile 1	13%	12%	15%
Quintile 2	14%	14%	15%
Quintile 3	16%	16%	19%
Quintile 4	21%	22%	19%
Quintile 5	36%	36%	35%
<b>Mobility</b> %			
Without help	87%	84%	98%
Assistance or inability	13%	16%	2%
<b>Cardiovascular disease</b> %	54%	61%	26%
<b>BMI</b> %			
≤ 30 kg/m <sup>2</sup>	75%	73%	79%
> 30 kg/m <sup>2</sup>	25%	27%	21%
<b>Tobacco</b> %			
Non smoker	56%	55%	58%
Former or active smoker	44%	45%	42%
<b>Diabetes</b> %	48%	53%	28%
<b>Chronic respiratory failure</b> %	11%	13%	5%
<b>Underlying nephropathy</b> %			
PKD	7%	4%	19%
Glomerulonephritis	12%	9%	21%
Vascular	25%	27%	16%
Diabetic	24%	30%	16%
Pyelonephritis	4%	4%	4%
Other/Unknown	28%	30%	24%
<b>Biological characteristics</b>			
<b>Albumin</b> %			
< 30 g/L	25%	28%	13%
≥ 30 g/L	75%	72%	87%
<b>Hemoglobin &lt; 11 g/L and/or lack of EPO</b> %	36%	38%	27%
<b>Dialysis characteristics</b>			
<b>Dialysis modality</b> %			
In center hemodialysis	78%	82%	62%
Self-care hemodialysis	11%	9%	19%
Peritoneal dialysis	11%	9%	18%
<b>Emergency start</b> %	27%	30%	12%
<b>Start on a catheter</b> %	52%	57%	29%



IQR: Interquartile Range; EDI: European Deprivation Index; BMI: Body Mass Index; PKD: Polycystic, Kidney Disease.

**Table S5.** Bivariate analysis. Factors associated with registration.

	OR [95% CI]
<b>Patient characteristics and comorbidities</b>	
<b>Age</b>	0.94 [0.93-0.94]*
<b>Sex</b>	
Female	ref
Male	0.98 [0.89-1.08]
<b>Quintile of the EDI</b>	
Other quintiles	ref
Quintile 5	0.98 [0.89-1.08]
<b>Mobility</b>	
Without help	ref
Assistance or inability	0.09 [0.06-0.12]*
<b>Cardiovascular disease</b>	0.23 [0.21-0.25]*
<b>BMI</b>	
≤ 30 kg/m <sup>2</sup>	ref
> 30 kg/m <sup>2</sup>	0.74 [0.66-0.83]*
<b>Tobacco</b>	
Non smoker	ref
Former or active smoker	0.88 [0.80-0.97]*
<b>Diabetes</b>	0.35 [0.31-0.38]*
<b>Chronic respiratory failure</b>	0.36 [0.30-0.44]*
<b>Underlying nephropathy</b>	
PKD	ref
Glomerulonephritis	0.41 [0.35-0.49]*
Vascular	0.11 [0.09-0.13]*
Diabetic	0.11 [0.09-0.13]*
Pyelonephritis	0.17 [0.13-0.23]*
Other/Unknown	0.15 [0.13-0.18]*
<b>Biological characteristics</b>	
<b>Albumin</b>	
< 30 g/L	0.38 [0.33-0.45]*
≥ 30 g/L	ref
<b>Anemia</b>	
< 11 g/dL and/or lack of EPO	0.59 [0.53-0.65]*
≥ 11 g/dL and/or EPO	ref
<b>Dialysis characteristics</b>	
<b>Dialysis modality</b>	
In center hemodialysis	ref
Self-care hemodialysis	2.81 [2.48-3.19]*
Peritoneal dialysis	2.74 [2.41-3.12]*
<b>Emergency start</b>	0.33 [0.29-0.37]*
<b>Start on a catheter</b>	0.31 [0.28-0.34]*

OR: Odds Ratio; CI: Confidence Interval; EDI: European Deprivation Index; BMI: Body Mass Index; PKD: Polycystic, Kidney Disease.