Socioeconomic deprivation is associated with lower rates of pre-emptive kidney transplantation

Keith A Gillis[1], Jennifer Lees[1], Maximilian Ralston[2], Siobhan K McManus[2], Marc Clancy[2], James P Traynor[2], Patrick B Mark[1]

1. University of Glasgow

2. Glasgow Renal and Transplant Unit

Introduction

Pre-emptive transplantation is the optimal method of treating end stage kidney disease

Medical factors including comorbidity and BMI affect likelihood of pre-emptive transplantation

System and referral factors can influence ability to complete donor and recipient assessments

Non-medical factors including socioeconomic and demographic factors have recently shown to influence likelihood of transplant listing and live donor transplantation

1. Barriers to living donor kidney transplantation in the United Kingdom: a national observational study. Wu et al. NDT 2017
2. Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014. Purnell et al. JAMA 2018.

Aims

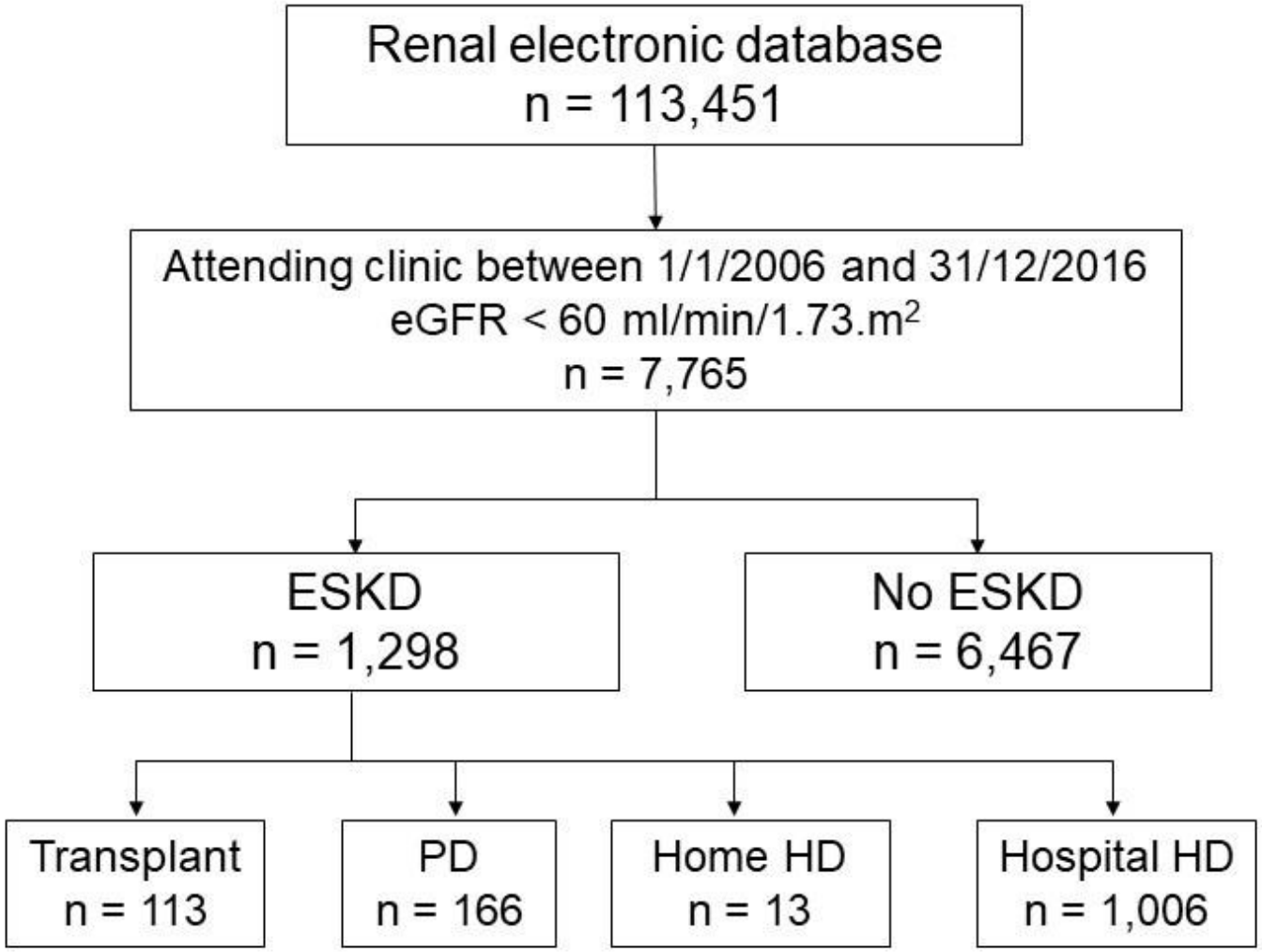
1. **Investigate the influence of socioeconomic deprivation on the likelihood of pre-emptive transplantation for end stage kidney disease**

2. **Explore the factors which may explain differences in transplantation across socioeconomic groups**

Methods

- **Retrospective cohort study using routinely collected health care data in a single Scottish health board 2006 – 2017 from renal EPR**
- **Biochemistry and anthropometry at time of referral**
- **CKD EPI eGFR from measured creatinine**
- **Socioeconomic deprivation measured by postcode of residence based criteria (SIMD)**
- **1 = most deprived; 10 = least deprived**
- **Competing risks survival analysis of time to ESKD and death**
- **Logistic regression analysis of independent predictors of pre-emptive transplantation**

Results


Renal electronic database
n = 113,451
Attending clinic between 1/1/2006 and 31/12/2016
eGFR < 60 ml/min/1.73.m2
n = 7,765
ESKD
n = 1,298
No ESKD
n = 6,467
Transplant
n = 113
PD
n = 166
Home HD
n = 13
Hospital HD
n = 1,006

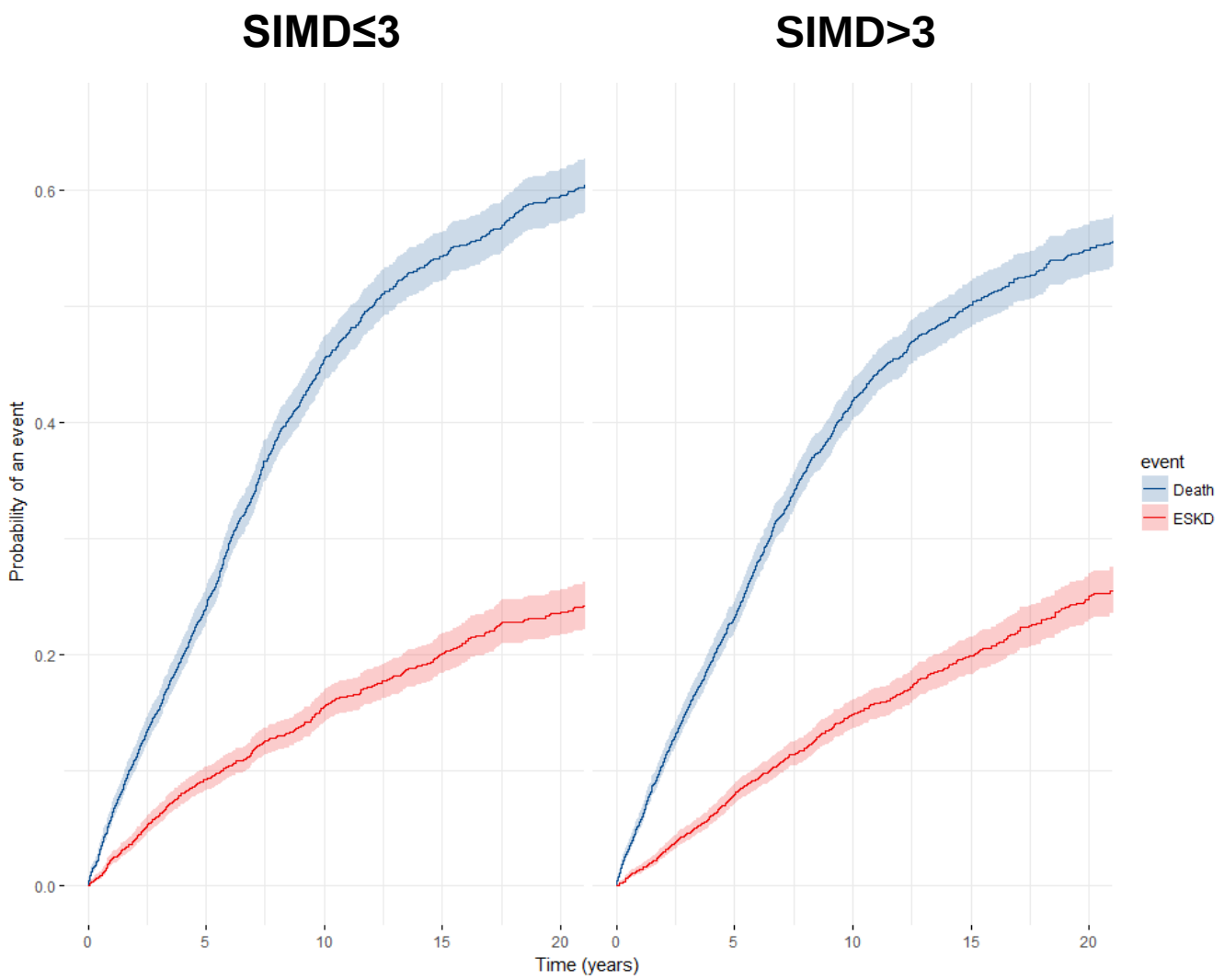
Results

	PET n = 113	Other RRT n = 1185	p value
SIMD	5 ± 7	4 ± 5	0.003
BMI (kg/m^2)	25.6 ± 6.6	27.7 ± 8.7	0.003
Referral age (years)	36.5 ± 19.5	58.2 ± 24.6	<0.001
Referral eGFR (ml/min/1.73m^2)	39.7 ± 39.8	30.5 ± 26.3	0.001
Referral BP (mmHg)	138/82 ± 32/17	150/82 ± 34/18	<0.001
Referral proteinuria (mg/mmol)	75.5 ± 150.2	163.8 ± 330.3	<0.001
RRT eGFR (ml/min/1.73m^2)	9.3 ± 5.7	7.0 ± 3.8	<0.001
Cardiovascular disease (%)	6	22	<0.001
Diabetes (%)	15	37	<0.001
Malignancy (%)	3	12	0.004

Results

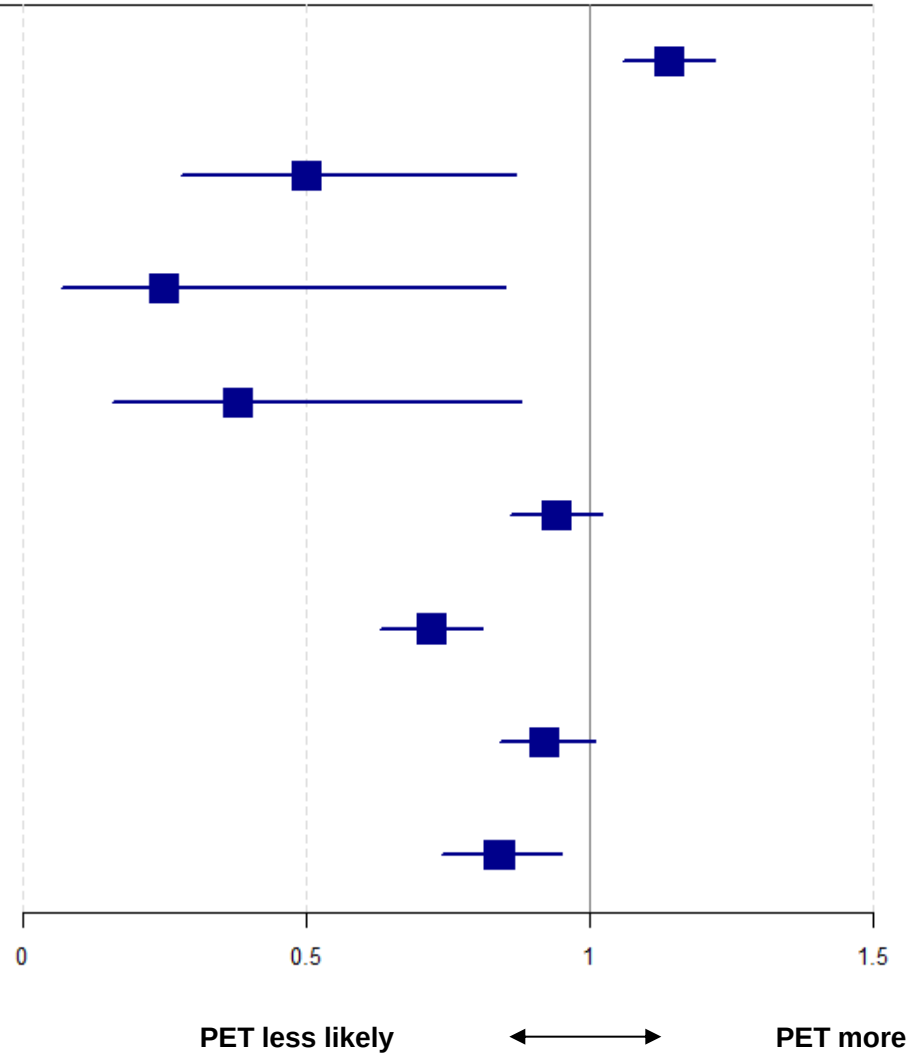
	SIMD≤3 n = 3454	SIMD>3 n = 4170	p value
Pre-emptive transplant (%)	6	10	0.02
Live donor transplant (%)	3	7	0.003
BMI (kg/m^2)	29.0 ± 8.4	28.1 ± 7.3	<0.001
Referral age (years)	68.6 ± 19.2	69.2 ± 19.2	0.02
Referral eGFR ($ml/min/1.73m^2$)	37.0 ± 22.8	36.3 ± 23.2	0.18
Referral BP (mmHg)	148/77 ± 34/19	148/78 ± 35/18	0.69
Referral proteinuria (mg/mmol)	63.0 ± 150.5	59.0 ± 132.8	0.03
RRT eGFR ($ml/min/1.73m^2$)	7.3 ± 4.1	7.0 ± 3.9	0.10
Cardiovascular disease (%)	32	28	<0.001
Diabetes (%)	38	35	0.001
Malignancy (%)	15	17	0.01

Cumulative incidence of death and ESKD by SIMD decile



Results

Parameter	Increment	OR	95% CI
SIMD	1	1.14	1.06, 1.22
Diabetes		0.50	0.28, 0.87
Malignancy		0.25	0.07, 0.85
Cardiovascular disease		0.38	0.16, 0.88
Referral eGFR	10	0.94	0.86, 1.02
Referral age	10	0.72	0.63, 0.81
Referral sBP	10	0.92	0.84, 1.01
Referral uPCR	100	0.84	0.74, 0.95



Limitations

Ethnicity not well documented

Ethnically homogenous and primarily urban population

Single transplant centre

Retrospective analysis of routinely collected data

Conclusions

Patients receiving pre-emptive transplants are referred at younger age, with higher eGFR and lower proteinuria; they have lower incidence of cardiovascular disease

Lower incidence of pre-emptive transplantation in patients with socioeconomic deprivation

Socioeconomic deprivation is associated with higher risk of death but risk of ESKD similar

For each increase in SIMD decile, likelihood of pre-emptive transplant increased 14%

Live donation lower in lower socioeconomic class, which may influence pre-emptive transplantation

University of Glasgow

Thanks

Patients and staff

of the

Glasgow Renal and Transplant Unit