

# Cancer Incidence and Progression To Mortality Among Kidney Allograft Recipients In England: A Population-Cohort Analysis Between 2003 and 2013.

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## Introduction:

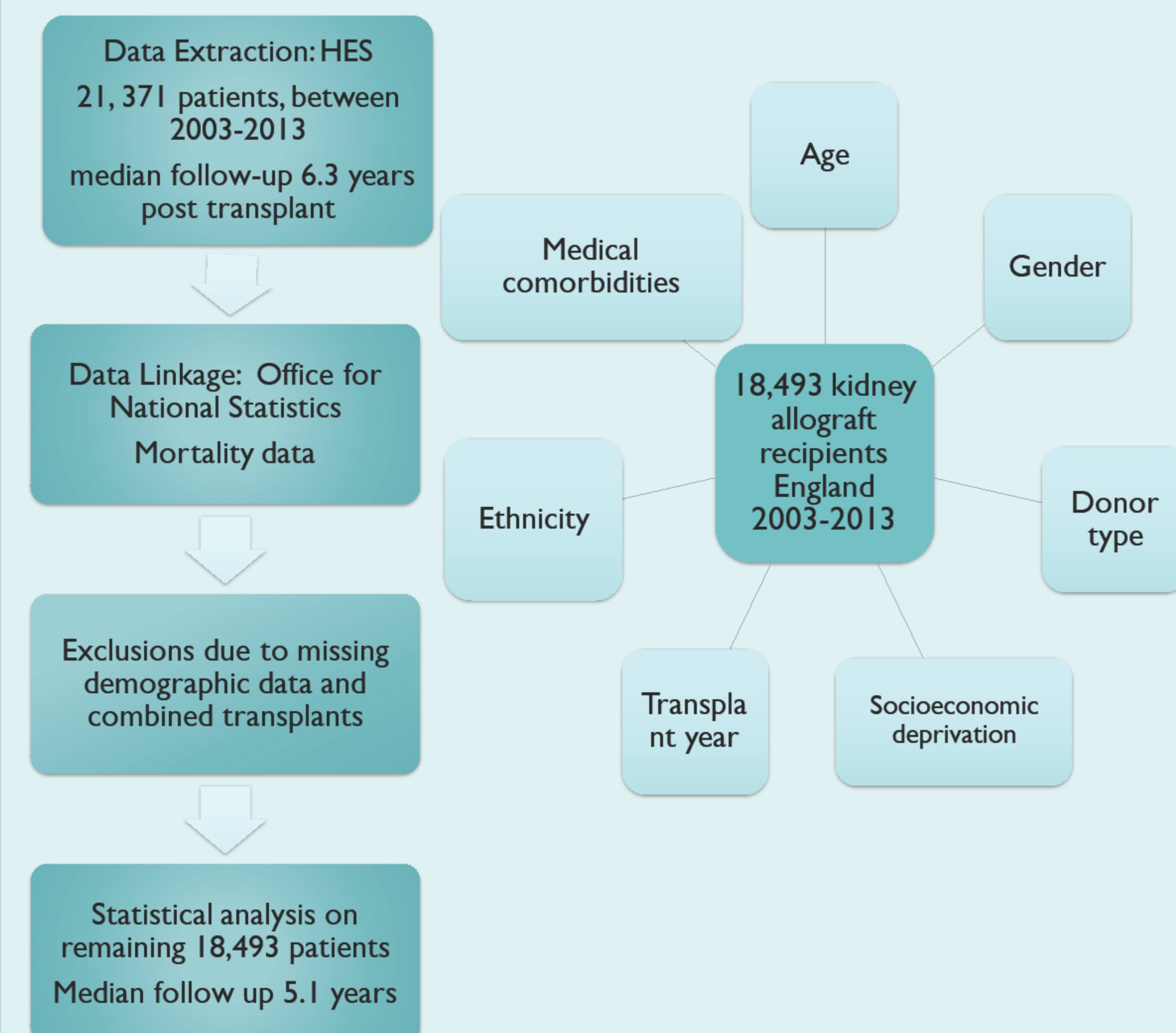
Cancer-related incidence and mortality for kidney allograft recipients are raised compared the general population due to the burden of immunosuppression.<sup>1,2</sup> While our understanding of cancer-related epidemiology has increased over the last decade, no study has ever documented the risk of cancer-incidence post kidney transplantation progressing to cancer-related mortality within the same cohort. In this population-based cohort study, we sought to understand the risk of cancer developing post-transplantation and how this relates to the risk of cancer progression to mortality (both all-cause and cancer-related deaths).

## Aims:

1. To understand the risk of cancer developing post-kidney transplantation in a population cohort.
2. To see how this cancer incidence relates with risk of progression to mortality (for both all-cause mortality and cancer-related mortality).

## Methods:

- Data was obtained from Hospital Episodes Statistics for every kidney-alone transplant procedure performed in England between 2003 and 2013.
- Patient demographics included were: age, gender, donor type (living or deceased), socioeconomic deprivation, transplant year, medical co-morbidities (using ICD-10 linked cancer codes) and ethnicity.
- Then data was linked to the Office for National Statistics for mortality data (including causality from death certification).



## Results:

- **Post-transplant admissions with a cancer diagnosis** occurred in 10.6% (n=1,965)
  - Most common locations: skin (4.6%), PTLD (1.4%), unspecified (1%), kidney (0.6%), digestive (0.6%)
- **All-cause mortality** (including cancer) n=2,140
- **Cancer-specific mortality** n=399
  - Most common locations of cancer mortality: lung, digestive, mesothelial (all > 40%)
- For patients with post-transplant cancer diagnosis, by median follow up, 19.2% had died from cancer-related deaths (n=377) and 9.1% had died from non-cancer related deaths (n=179).

### Likelihood of cancer progression to cancer-related mortality:

Cancers of **digestive and respiratory system** = strong risk (>70% risk by median follow up)

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Cancer Type	Incidence	Mortality
Cancer -Any	1,965 (10.63%)	377 (19.19%)
<b>Digestive organs</b>	119 (0.64%)	<b>88 (73.95%)</b>
<b>Respiratory and intrathoracic organs</b>	73 (0.39%)	<b>72 (98.63%)</b>
<b>Melanoma/ other skin malignancy</b>	848 (4.59%)	17 (2.00%)

## Discussion:

This population-cohort study in England has demonstrated discordant rates of cancer incidence versus mortality in the contemporary era of immunosuppression. This is the first to highlight cancer occurrence post kidney transplantation and risk of progression to all-cause or cancer-related mortality demonstrating the competing risks for death for kidney allograft recipients after development of cancer and reinforces the need to further our understanding of cancer epidemiology post-transplantation to optimise care. Our results should help in the risk stratification of kidney allograft recipients who develop cancer after transplantation and guide targeted patient counselling.

## References:

1. Webster AC, Craig JC, Simpson JM, Jones MP, Chapman JR. Identifying High Risk Groups and Quantifying Absolute Risk of Cancer After Kidney Transplantation: A Cohort Study of 15 183 Recipients. *American Journal of Transplantation*. 2007;7(9):2140-51.
2. Collett D, Mumford L, Banner NR, Neuberger J, Watson C. Comparison of the Incidence of Malignancy in Recipients of Different Types of Organ: A UK Registry Audit. *American Journal of Transplantation*. 2010;10(8):1889-96.

