

Background:

In the UK, the Health and Social Care Act 2012, places duties on the NHS Commissioning Board and Clinical Commissioning Groups (CCG) to have regard to the need to reduce variations in access to, and outcomes from, health care services for patients¹. There are well known geographical variations in the uptake of common surgical procedures including knee replacement². Much less is known about variations in outcomes of surgery and factors that can explain why such variation exists.

Objectives:

Our aim was to explore variation in patients' outcomes for primary total or unicompartmental knee replacement (TKR/UKR) surgery across CCGs, and to identify whether patient, surgical and hospital factors can explain why such variation exists.

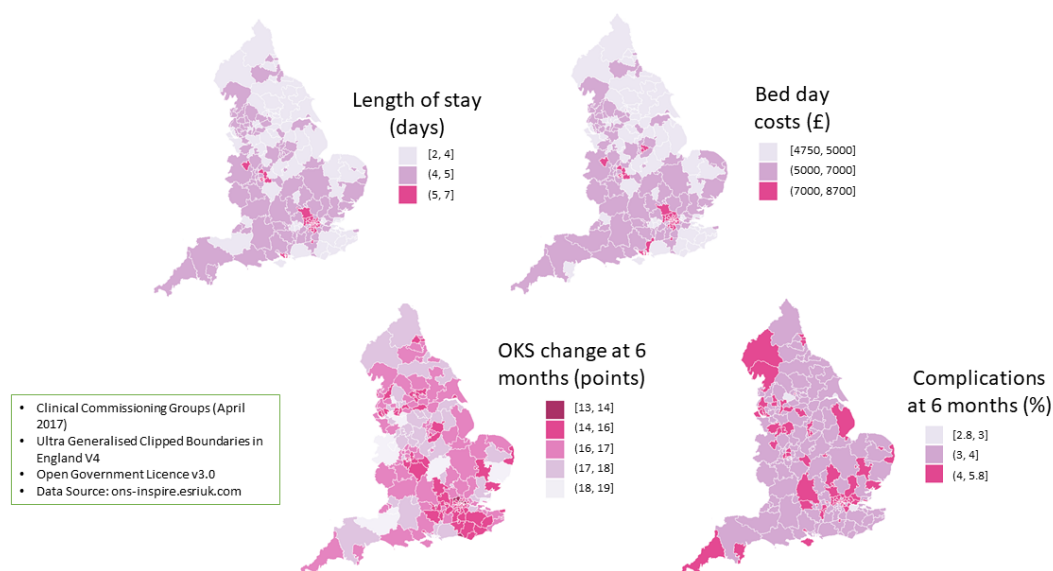
Methods:

We used the National Joint Registry, which incorporates data on knee replacement surgeries. Primary operations were linked with Hospital Episode Statistics data which contains records of all inpatient episodes undertaken in NHS hospitals, and Patient Reported Outcome Measures (PROMs). Primary TKR/UKR in people aged 18 years or over between 2014 and 2016 were identified. Multilevel regression models were generated for the following outcomes: length of stay (LOS), bed costs, change in Oxford knee score (OKS) 6-months after surgery, and complication by 6 months. Models included a wide range of patient, surgical and hospital organisation factors. Geographical Information Systems are used to display maps describing adjusted estimates of variation in outcomes across NHS CCG areas.

Results:

210,725 primary TKR/UKR were identified nested in 207 clinical commissioning group areas. 57% of patients were women, with an average age 70 years (SD ± 9 years). Whilst we identified a number of factors that predicted outcomes of surgery (e.g. age, gender, co-morbidity, deprivation, baseline function, surgical volume, numbers of orthopaedic surgeons, beds, operating theatres), these factors did not explain the observed geographical variations in outcomes of surgery across CCGs. The absolute predicted change in OKS varied from 13.0 to 18.8, predicted 6-month complication rate from 2.9% to 5.8%, predicted revision from primary TKR/UKR undertaken in 2014-2016 0.7% to 1.8%, predicted mean length of stay 2.9 to 6.6 days, bed-day cost £4758 to £8693 (Figure).

Variation in outcome of surgery across Clinical Commissioning Groups (2014-2016)



Conclusion:

We have identified potentially unwarranted variations in patient outcomes of knee replacement surgery. This variation cannot be explained by differences in patients case mix, surgical factors, or hospital organisational factors. This information is informative to patients in making a decision in where they have their surgery, and to commissioners in monitoring variations in outcomes of surgery.

References:

- 1 Geographic Variations in Health Care. What Do We Know and What Can Be Done to Improve Health System Performance?2014:23.
2. Judge A, Welton NJ, Sandhu J, et al. Equity in access to total joint replacement of the hip and knee in England: cross sectional study. BMJ 2010;341 doi: 10.1136/bmj.c4092