YHPHO

NHS
Northern and Yorkshire
Cancer Registry and Information Service

NHS
Yorkshire Cancer Network

Inequalities in prostate cancer treatment in the Yorkshire Cancer Network

Cuthbertson, S (YCN, NYCRIS, YHPHO); Pollock, C (YHPHO); Brook, C (NYCRIS); Aravani, A (NYCRIS); Taylor, F (NYCRIS); Duffy, S (YCN)

Background

In order to improve patient outcomes, we must seek to ensure that all patients receive the best possible treatment once diagnosed. The aim of this project is to highlight inequalities and variations in prostate cancer treatment across the Yorkshire Cancer Network (YCN) to form a pre-Urology Improving Outcomes Guidance (IOG) baseline assessment prior to its full implementation.

Methods

Based on initial definitive treatment, as captured by NYCRIS, we looked at proportions of prostate cancer patients within the YCN by treatment type, for patients diagnosed 2005-2007. The analysis was split in two, to describe both combinations of treatment (all mutually exclusive) and also individual treatments (any occurrence of a specific treatment modality recorded). We looked at each of these definitions of treatment by hospital trust of diagnosis, and by PCT of patient residence.
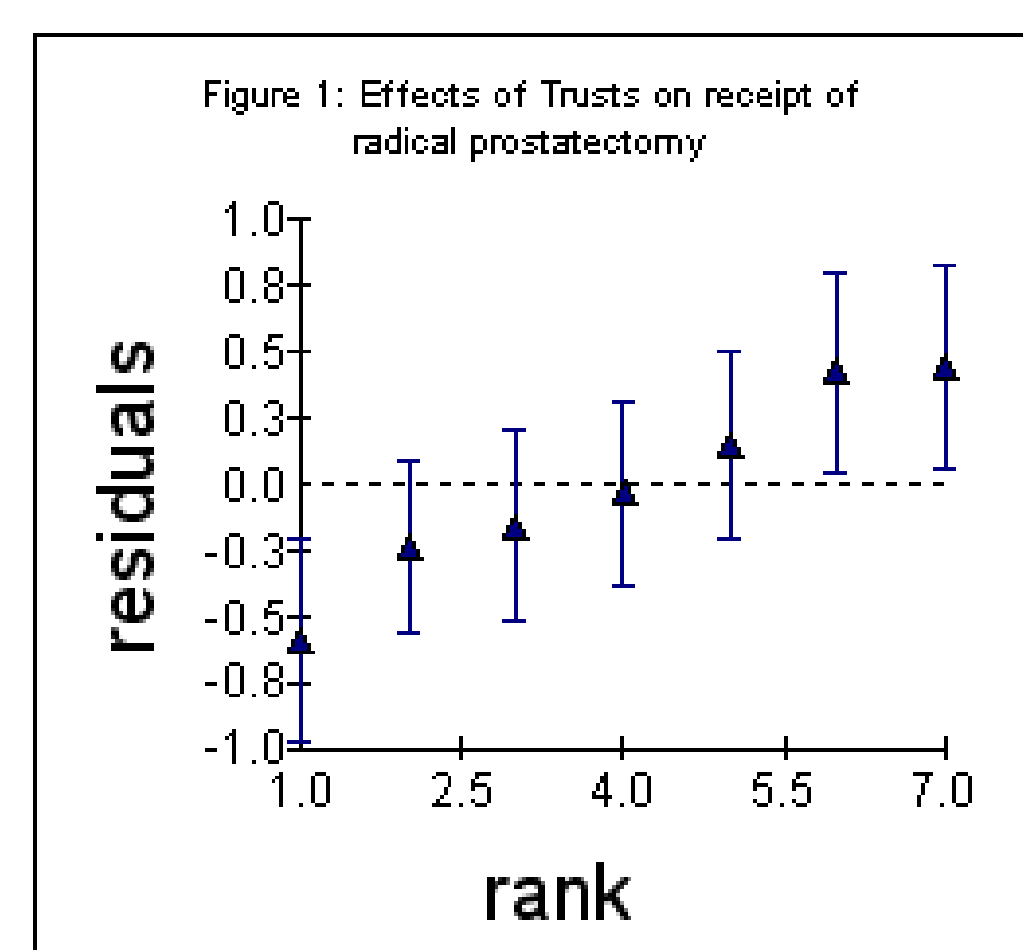
Age standardised incidence rates (ASIRs) of prostate cancer were calculated by PCT to compare treatment rates against background incidence.

Logistic regression modelling was used to obtain direct estimates (odds ratios) of the effect of "Trust of diagnosis" on the outcome (radical prostatectomy, radiotherapy, hormone therapy and no treatment planned). Multilevel binary logistic regression models were then built to determine the association of Trust with receipt of the various treatments, in relation to the YCN average. This allowed us to make comparisons between Trusts by estimating the individual Trust residuals (distance between the real value and its estimated value).

Proportions of prostate cancer patients by treatment type, trust and deprivation tertile were also calculated to investigate any effect of deprivation.

Results by Trust

Compared with the YCN average when controlling for patient age and tumour grade: Figure 1 shows patients in Airedale and Bradford Trusts are significantly more likely to have radical prostatectomy, and patients in Harrogate Trust are significantly less likely. Figure 2 shows patients in Airedale Trust are significantly more likely to have hormone therapy, and patients in Harrogate Trust are significantly less likely. Figure 3 shows no statistically significant differences in the likelihood of having radiotherapy. Figure 4 shows patients in Leeds and Harrogate Trusts are significantly more likely to have no treatment planned, and patients in Airedale Trust are significantly less likely.

Figure 1: Effects of Trusts on receipt of radical prostatectomy

Figure 2: Effects of Trusts on receipt of hormone therapy

Figure 3: Effects of Trusts on receipt of radiotherapy

Figure 4: Effects of Trusts on receipt of no planned treatment

- Order of Trusts as shown on chart:
  - Harrogate
  - Leeds
  - York
  - Mid Yorkshire
  - Calderdale
  - Bradford
  - Airedale
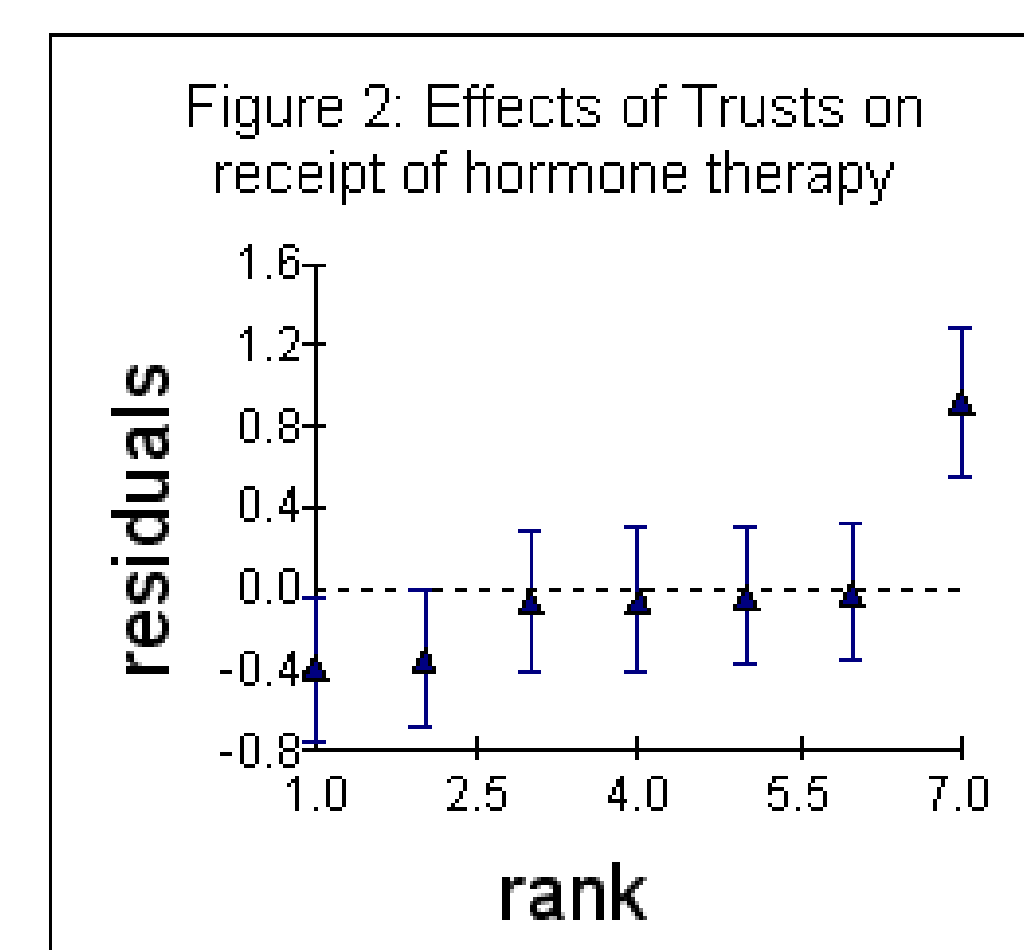
- Order of Trusts as shown on chart:
  - Harrogate
  - Leeds
  - Calderdale
  - Bradford
  - Mid Yorkshire
  - York
  - Airedale
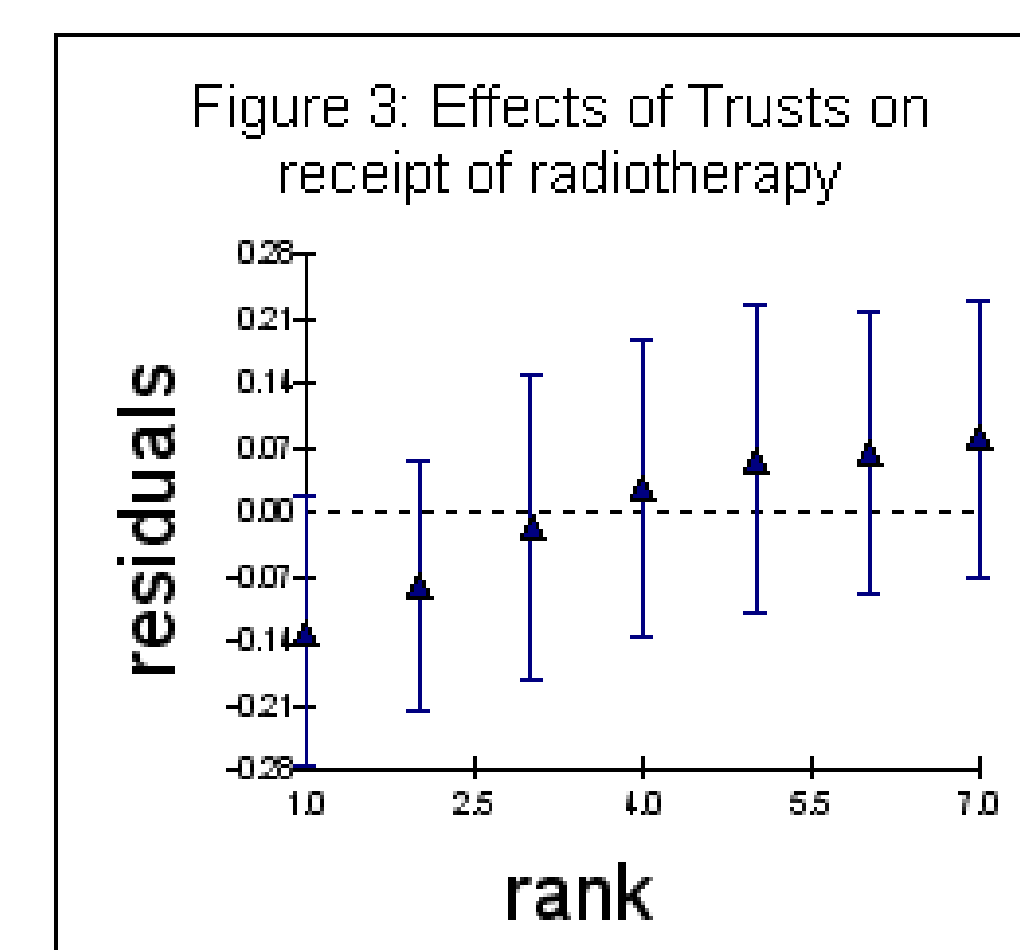
- Order of Trusts as shown on chart:
  - Mid Yorkshire
  - Leeds
  - Harrogate
  - Bradford
  - Airedale
  - York
  - Calderdale
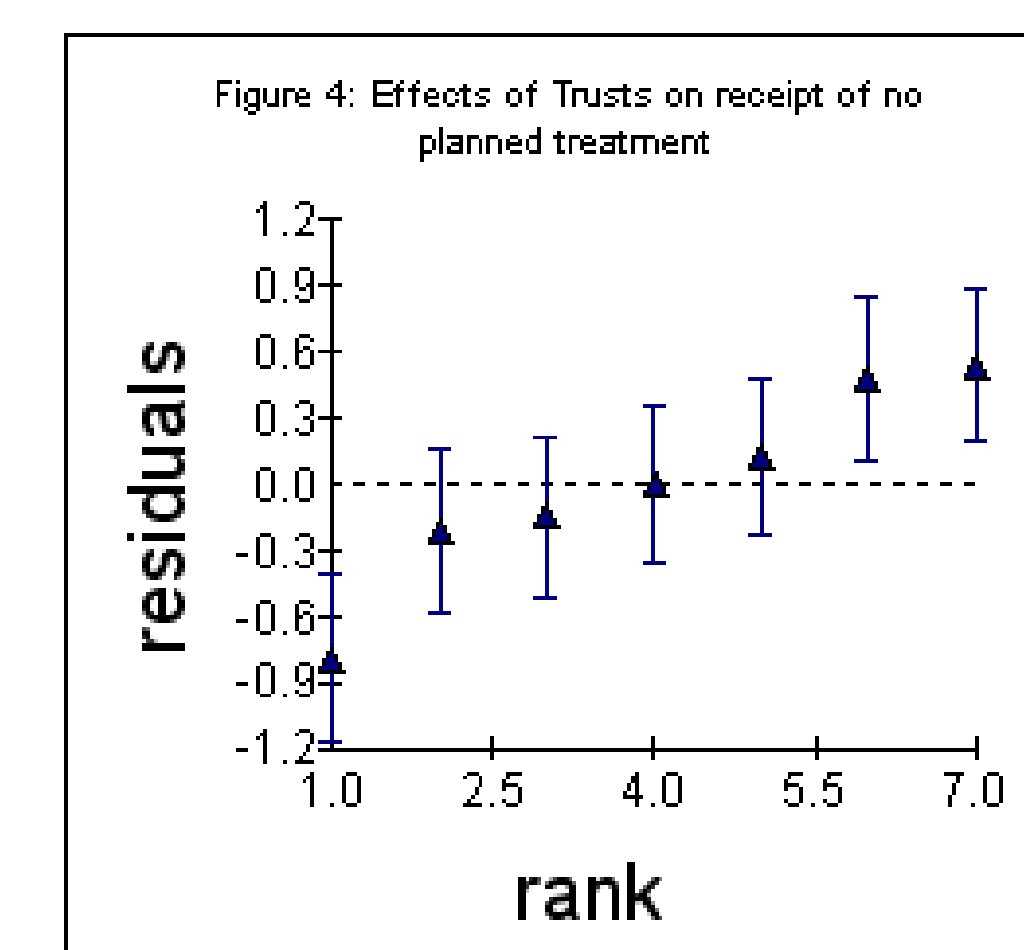
- Order of Trusts as shown on chart:
  - Airedale
  - Bradford
  - Calderdale
  - York
  - Mid Yorkshire
  - Harrogate
  - Leeds

Results by PCT

There is a strong positive correlation between incidence and patients with no treatment planned (r=+0.9) (Figure 5): Patients resident in NHS Leeds have the highest incidence (116.2 per 100,000 population) and the highest proportion of patients who have 'no treatment planned' (38.3%). Patients resident in NHS Bradford and Airedale have the lowest incidence (91.7 per 100,000 population) and the lowest proportion of patients with 'no treatment planned' (22.4%).

There is a strong inverse correlation between incidence and patients who receive any hormone therapy (r=-0.9) (Figure 6): Patients resident in NHS Leeds have the highest incidence and the lowest proportion of patients who receive any hormone therapy (44.4%). Patients resident in NHS Bradford and Airedale have the lowest incidence and the highest proportion of patients who receive any hormone therapy (58.7%).

Figure 5: Prostate cancer initial definitive treatment combination modality, by PCT of patient residence with ASIR comparator (2005-07)
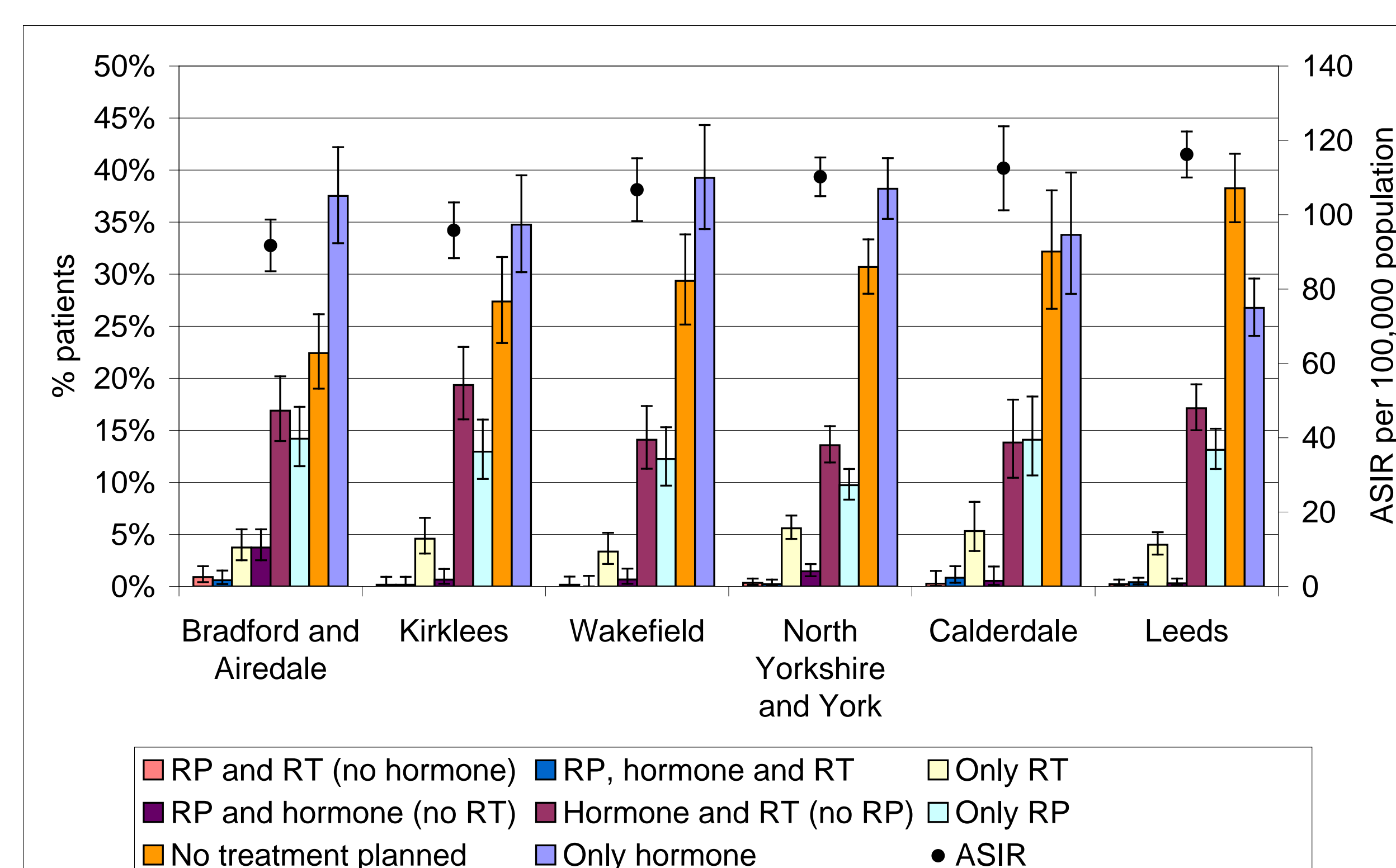
Figure 6: Prostate cancer initial definitive treatment, by PCT of patient residence with ASIR comparator (2005-07)
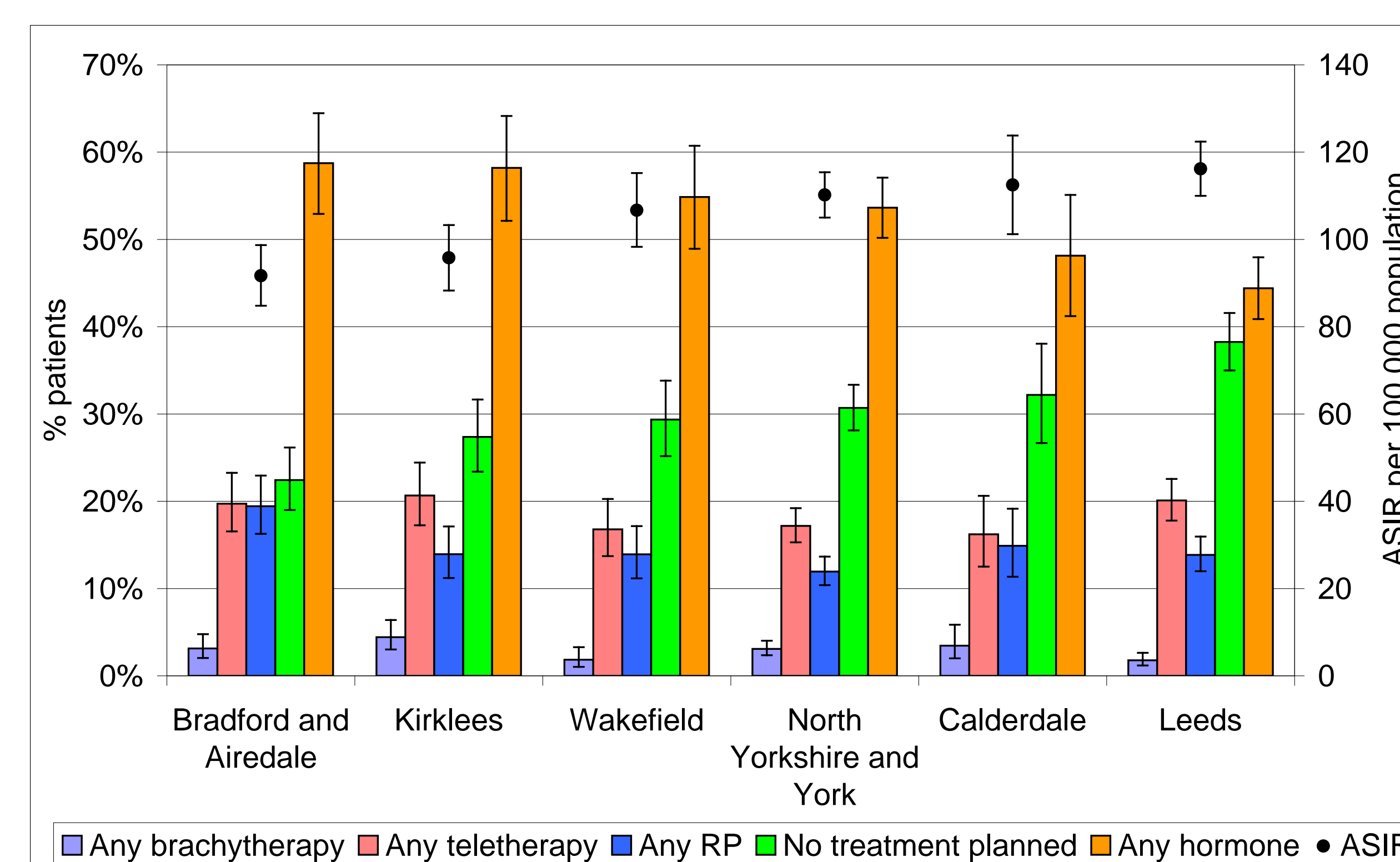
Results by deprivation

Figure 7 shows proportions of prostate cancer patients by, treatment type and deprivation tertile (IMD2007) for the YCN. There are no statistically significant variations in treatment across the Yorkshire Cancer Network related to deprivation.

Figure 7: Treatment type for prostate cancer patients diagnosed in the Yorkshire Cancer Network, by deprivation tertile (2005-07)

Conclusion

This analysis highlights variation in practice around the YCN which remains when controlling for grade and age. Whilst there is some link between treatment options and incidence rates, which is likely to infer links with case mix, it does not seem to explain all the differences seen across the PCTs. Implementation of IOG across YCN is likely to have had some degree of impact on treatment differences seen since 2007. When validated NYCRIS data become available for 2008 cases, then further analysis post-IOG re-configuration can be undertaken.