

Utilising National Data in Health Service Research for Proton Therapy, a Paediatric Example

Thomas Mee^{1,2}, Norman F. Kirkby^{1,2}, Neil G. Burnet^{1,2}, Ed Smith^{1,3}, Adrian Crellin⁴, Karen J. Kirkby^{1,2}

¹Division of Cancer Sciences, School of Medical Sciences, Faculty of Biology, Medicine & Health, University of Manchester, UK,
²The Christie NHS Foundation Trust, Manchester Academic Health Science Centre, Wilmslow Road, Manchester, UK,
³Clinical Director, Proton Therapy Centre, The Christie NHS Foundation Trust, Manchester, UK
⁴NHS England National Clinical Lead Proton Beam Therapy

Purpose

Data plays a key role in service planning and health service research. Although there is a limited quantity of proton therapy (PBT) data available, there is a wealth of incidence and conventional radiotherapy (CRT) data.

We investigate how Public Health England (PHE) paediatric incidence and CRT data can be used to inform the national proton therapy (PBT) service by investigating variations across England.

Methodology

- PBT-relevant incidence and patient data obtained from PHE, excluding NHS Proton Overseas Programme activity.
- Paediatric incidences (age<16) were extracted.
- The data was grouped by clinical network (CN) and the following calculated:
 1. Age-standardised rates (ASR) = incidences per 100k under-16 population.
 2. Conventional RT utilisation (CRTU) = number of incidences with an RT record divided by the total number of incidences.
- The results heat-mapped for England.

Results

There are clear variations in PBT relevant incidence rates between Cancer Networks, shown in Figure 1.

Highest ASR - Wessex with 20.5 incidence per 100k.

Lowest ASR – East Midlands with 16.7 incidence per 100k.

There are variations in CRTU across England, during the PBT overseas program, shown in Figure 2.

Lowest CRTU - Thames valley with only 20% receiving CRT.

Highest CRTU - Northern England has the highest with 37.7%.

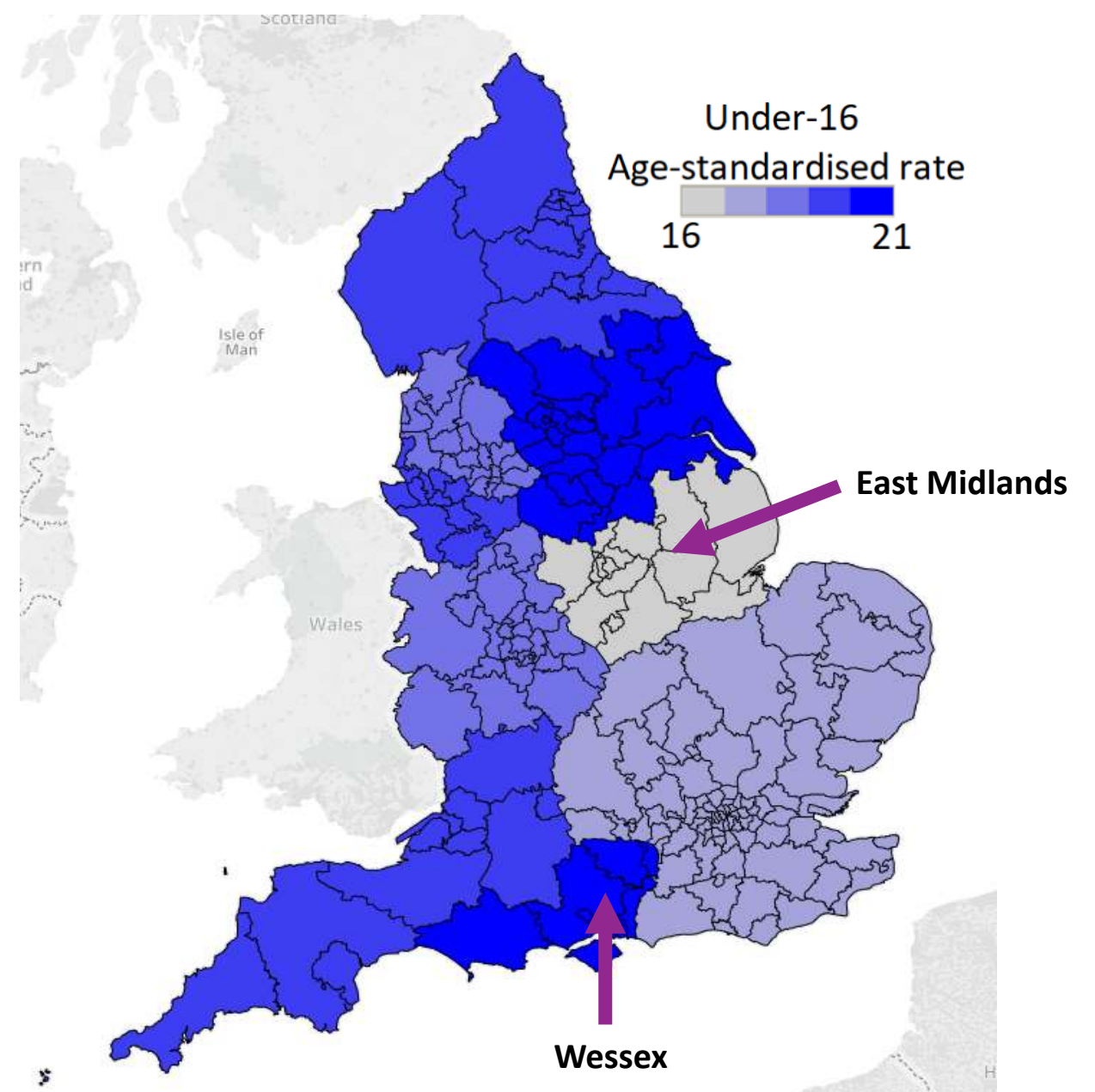


Figure 1. Age standardised rates, grouped by CN, for paediatric cancer incidences of relevance to the NHS PBT service.

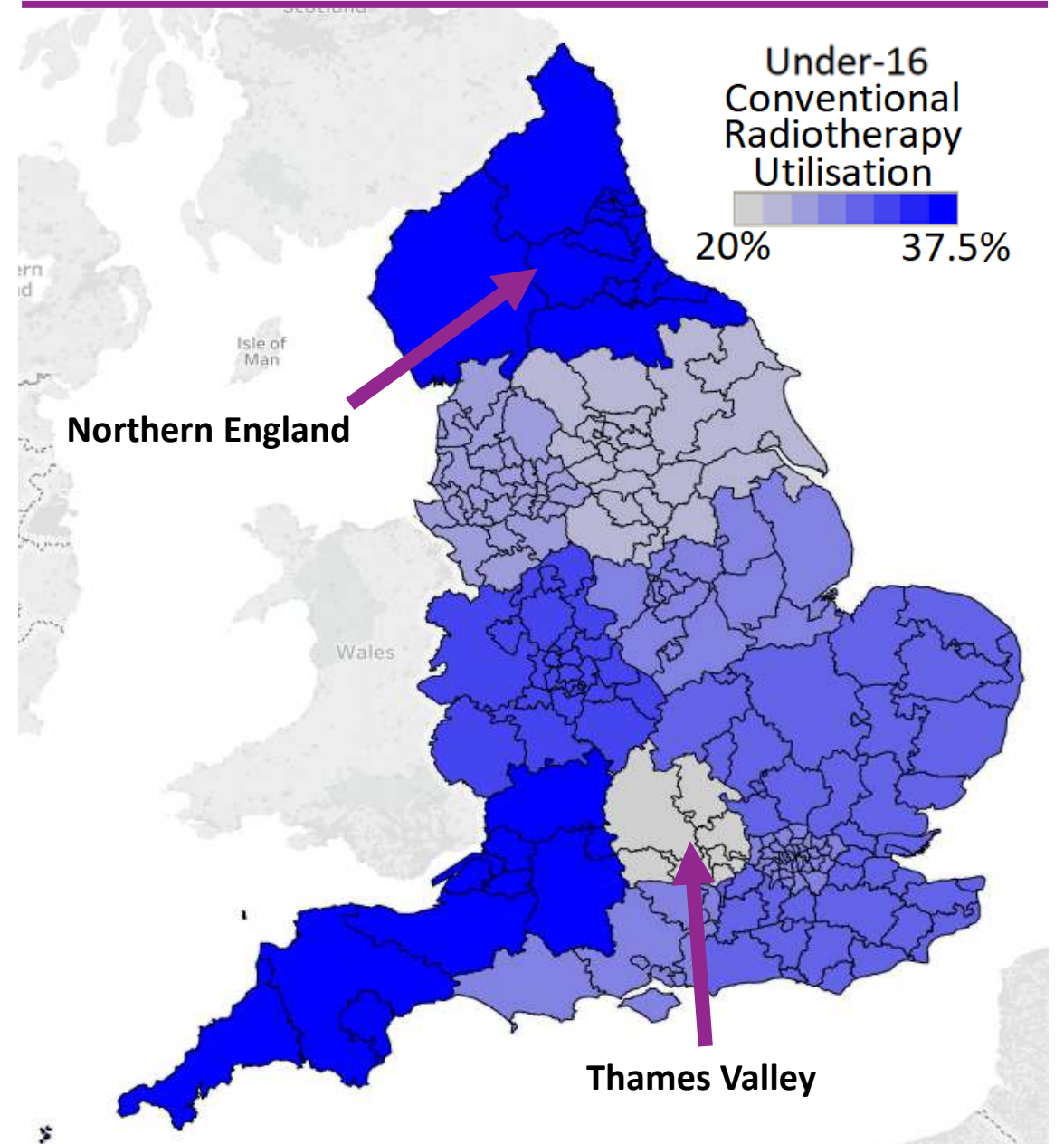


Figure 2. Radiotherapy utilisation rates (excluding overseas proton treatments) for paediatric incidences of relevance to the NHS PBT service.

Conclusions

- National cancer data has increased in quality and granular data can assist in PBT health service research.
- Data can estimate additional PBT referral numbers or potential current under-referral numbers, by looking at proportions of PBT relevant patients who are still treated with radiotherapy
- The inclusion of geographical factors in analysis can help ensure equity of access.