Public Health England

Interpreting geographic variation in cancer stage

National Cancer Intelligence Network Data Briefing

Key messages

- the proportion of cancers diagnosed at early stage in 2012 data varies by CCG
- the variation appears to be largely due (around 85%) to variation in the overall stage completeness and the mix of cancers diagnosed in each CCG

Introduction

The registration function of the eight former regional cancer registries in England merged in April 2013 to form Public Health England's National Cancer Registration Service (NCRS). Due to improvement in the completeness of the stage of diagnosis in cancer registration data it is now feasible, for the first time, to examine cancer stage by Clinical Commissioning Group (CCG). The proportion of cancers classed as early stage is now published as an indicator in the Public Health Outcomes Framework[1]. This proportion and an additional indicator measuring the completeness of staging across all cancer types (excluding non-melanoma skin cancer) are available on the Cancer Commissioning Toolkit[2] and are examined in more detail here. Data are shown for 2012 by CCG and are also assigned to their former cancer registry area (identified by regional names here). 2012 was a transition year (of registration data) between the eight former registries and the NCRS and further improvement in stage completeness can be expected.

Complete and early stage indicators

Figure 1.0 Percent of cases flagged as having completed stage, all cancers (excl. C44), England, 2012

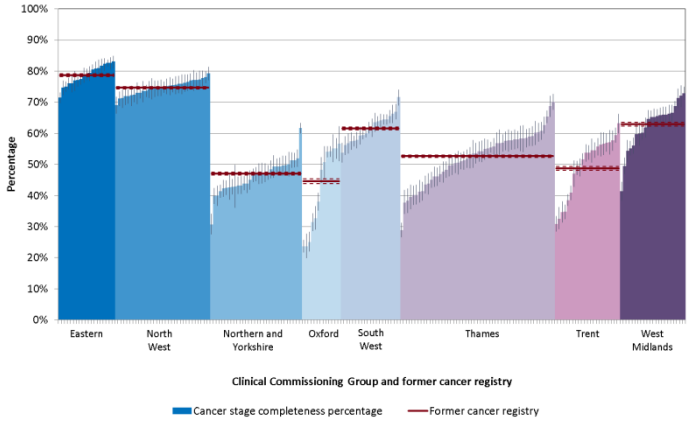
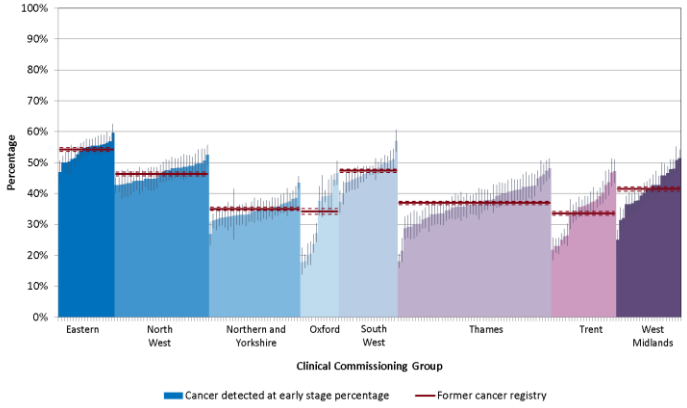
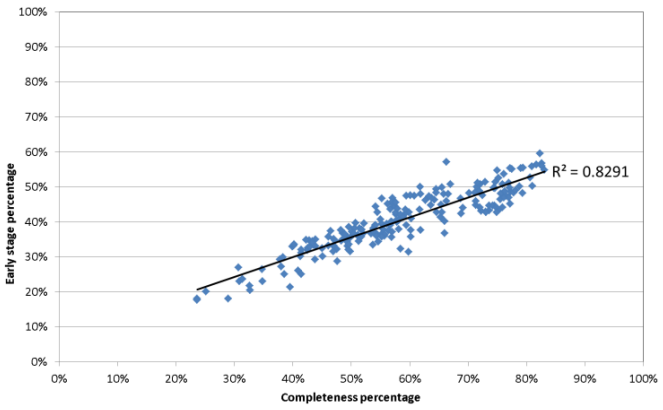


Figure 2.0 Percent of cases flagged as being early stage, invasive malignancies of breast, prostate, colorectal, lung, bladder, kidney, ovary, uterus, non-Hodgkin lymphoma and invasive melanomas of skin, England, 2012



The proportion of cancers assigned a complete stage varies greatly by CCG, Figure 1.0, ranging from 24% to 83%. Variation also exists between the former cancer registry areas, from 45% to 79%. Differences between CCGs within the former registry areas can also be seen, with variation being greater in those areas with a lower proportion of completed staging and, conversely, lower for those with a higher proportion complete. For example, there is a greater difference between the lowest and highest CCGs in Trent compared to the North West area.

Figure 3.0 Proportion of completeness and early stage cases by CCG, England, 2012



Similar trends can be seen in Figure 2.0 for early stage. Variation is seen by former cancer registry area and by CCG within each area. The variation is generally not as large as seen for completeness, with the difference between the lowest and highest CCG being 42% and the difference between the lowest and highest registry areas being 21%. A linear regression between completeness and early stage, Figure 3.0, shows the proportion of early stage tumours and the overall completeness to be highly correlated, with an R^2 value of 0.83. A two way Analysis of Variance (ANOVA) looking at the proportion of early staged cancers, former registry area and cancer type suggests both cancer type and former registry area account for a large proportion of the variance, with only 15% not being explained by these factors.

The variation in the proportion of early stage cancers appears to be mainly driven by residual differences in registration practice and completeness from prior to the creation of the NCRS. Case mix by cancer type across the CCGs also appears responsible for some of the variation, for example, affluent areas will see more early stage breast cancer and less late stage lung cancer. Further work from the NCIN will examine cancer stage and survival in detail.

1. http://www.phoutcomes.info/
2. https://www.cancertoolkit.co.uk/

FIND OUT MORE:

These data are available from the Cancer Commissioning Toolkit:
https://www.cancertoolkit.co.uk/

Other useful resources within the NCIN partnership:

What cancer statistics are available and where can I find them?
http://www.ncin.org.uk/publications/reports/

Public Health England's National Cancer Intelligence Network (NCIN) is a UK-wide initiative, working to drive improvements in cancer awareness, prevention, diagnosis and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research.

PHE publications gateway number: 2014158
Published: June 2014