

## Understanding and using Urological Cancer Profiles

### Tools available

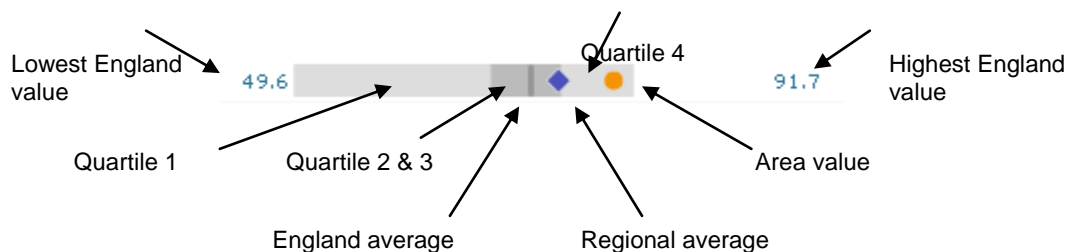
The urological cancer profiles are interactive web-based tools which show both numerical data and maps. Profiles are presented at three different geographical levels:

- Cancer Networks: 28 organisations responsible for co-ordinating the delivery of cancer services through hospital trusts, primary care and in the community.
- Primary Care Trusts: 152 organisations which are responsible for providing primary care for their residents, and commissioning secondary care services.
- Local/Unitary Authorities: 354 organisations responsible for providing public services. *Note that LA/UA boundaries prior to the April 2009 reclassification are used.*

Data is shown in thematic maps, as a bar chart or in the spine chart section. In the majority of cases, indicator data will include a rate, confidence intervals, numerator data, regional averages and the England average.

### The spine chart

When an area is selected the spine chart is populated for all indicators. Columns will be filled with (from left to right): the area name, rate for that area, numerator, rate for England and significance compared to England. A graphic is displayed which indicates a number of properties:



The England, regional and area values are denoted on a background which indicates the range and distribution of values nationwide. Quartiles are the range of values which contain one-quarter of the areas displayed, hence quartiles 2 and 3 contain half the areas of interest.

## Indicators

The urological cancers have been split into six major groups:

- Prostate (ICD-10 code C61)
- Bladder (ICD-10 code: C67)
- Kidney (ICD-10 code: C64)
- Testicular (ICD-10 code: C62)
- Penile (ICD-10 code: C60)
- Renal Pelvis + Ureter (ICD-10 codes: C65 +C66)

For each group the main summary statistics have been extracted from the National Cancer Information System (NCIS), namely: incidence, mortality, 5-year relative survival and 1-year relative survival. These are separated by sex where appropriate.

In line with United Kingdom Association of Cancer Registries (UKACR) guidance, numerators of less than five have been suppressed, along with rates and other data based on those numerators. These are labelled in the charts.

At smaller geographies, and for the rarer cancers, there may be many areas which are suppressed. If too many areas are suppressed the indicator is less meaningful and is not displayed in the tool, this is generally done when over half the areas have suppressed data.

In addition to specific cancer data there are certain associated indicators listed, where available. These are intended to give context to the cancer-related indicators by summarising the general health of an area, or highlighting risk factors.

## Survival

The survival data in these profiles is relative survival. This compares the mortality rate after diagnosis with the overall mortality rate experienced by all persons of the same age and sex, in the same time period. Hence, 100% relative survival does not indicate that there were no deaths in the period of interest, rather that the number of deaths was the same as would be expected from applying the overall population mortality rates.

Survival from prostate cancer is known to be affected by increased PSA testing in primary care. Prostate cancer is generally slow growing and may not present any symptoms hence detection through PSA testing plus biopsy could impart significant lead-time bias to survival results. Lead-time bias is the impression that survival has increased, due to earlier detection without subsequent delay in mortality. However, early detection may delay also mortality if it means treatment is easier or more successful, so the relationship between earlier detection and survival is complex.

## Confidence intervals and significance

Indicator data is presented with 95% confidence intervals, which are displayed on the bar chart. A confidence interval is a statistical expression of uncertainty of a number, which can be interpreted in two ways:

- If taking a sample of measurements from a group, the 95% confidence intervals denote a range of values in which, 19 times out of 20, the true value would fall if we repeated the sample many times.

- When looking at a value in a population at a given time, the 95% confidence intervals denote a range of values in which, 19 times out of 20, the true value would fall if the same population were followed over the same time. This is due to natural fluctuations in rates of disease which always occur.

The second interpretation is most appropriate in this instance. The width of the confidence intervals depends on the number of people or cases taken into account, and become larger for smaller numbers. This is why it is difficult to assess whether there is any true change in a rate of rare diseases, or in small areas, beyond natural fluctuation.

More information is available in this APHO technical briefing: ['Commonly used public health statistics and their confidence intervals'](#)

Statistical significance is an expression of whether we can understand two numbers to be truly different or not. It can be crudely derived by assessing whether the confidence intervals on a number overlap. More correctly it can be assessed by tests which take into account the numerators involved and the standard errors. For the rates displayed in the urological cancer profiles a z-test of the rate ratios is used to determine statistical significance compared to the England average (Kirkwood & Sterne, 2003).

The calculated statistical significance is denoted by a red circle if worse than the England average, a green diamond if better, and a grey line if there is no significant difference. If the significance column is blank then no statistical significance could be calculated or it was suppressed because of small numbers.

## References

Kirkwood, B., & Sterne, J. (2003). *Medical Statistics*. Oxford: Blackwell Science.