



National Cancer Registration and Analysis Service Short Report: Chemotherapy, Radiotherapy and Surgical Tumour Resections in England: 2013-2014

Produced as part of the Cancer Research UK - Public Health England Partnership

Summary

Cancer survival in the UK is lower than in many comparable countries. Possible causes for this include stage at diagnosis and access to treatment.

For the first time, population-based registration data has been used to show an overview of treatments received by patients in England, by cancer site and stage at diagnosis, for the majority of cancers. This has been possible due to the improved collection of treatment and staging data. These analyses show how anti-cancer treatments are used individually and in combination.

This is a crucial step towards understanding how early diagnosis impacts on cancer treatment. It provides the foundation for future research to improve care and outcomes for patients.

This report aims to 1) explain how the data should be interpreted, 2) summarise key results from the accompanying excel workbook, and 3) highlight the methodology used.

Interpreting the data

Many factors are taken into account when clinicians recommend a treatment for a patient. These include the location of the tumour, whether a patient has other long term health conditions, is well enough to tolerate the treatment, and their age and

Key messages

- Improved data collection has enabled analysis of the cancer treatments patients across England are receiving
- Tumour resections are more common in patients diagnosed at stages 1 & 2, while chemotherapy is less common
- For radiotherapy, the pattern by stage varies greatly depending on the cancer site

prognosis. Patient choice also has an important impact, although this is difficult to quantify¹.

Generally, tumour resections are more common in early stage disease, with chemotherapy more common in late stage disease. These differences reflect that early stage cancers are localised so tumour resections are a potentially successful treatment option for many cancer sites. As the stage of disease progresses, chemotherapy is more commonly used in conjunction with surgery to systemically treat cancer that has spread, or to ease cancer symptoms as part of palliative treatment. For some cancer sites, however, chemotherapy is used as the primary treatment option for either early stage or all stages of disease (for example, lymphoma). It is also important to recognise, that some patients, even with early stage cancer, will need more complex treatments, often receiving chemotherapy in combination with surgery and radiotherapy. These combinations of treatment types are also included in the analyses.

The proportion of patients receiving radiotherapy varies greatly by cancer site. This reflects the fact that radiotherapy can be used in various ways, depending on the location of the tumour and stage at diagnosis. For example, it may be used as a primary curative treatment for early stage disease, as neoadjuvant therapy to shrink the cancer before resection, as adjuvant therapy to prevent recurrence after resection, or as a palliative therapy for late stage (stage 4) metastatic cancers.

For the majority of cancers, treatment options change for stage 4 disease as the cancer has spread to other organs. The prognosis is poorer, and the treatments are more of a palliative nature with only modest survival benefits.

A proportion of tumours in this analysis received “other care”: they did not have a record of receiving chemotherapy, radiotherapy or a surgical tumour resection in the timeframe assessed. However, the vast majority of these patients, around 95%, were seen in secondary care in the months following diagnosis. These patients may have other treatment not included here, such as hormonal therapy, or some of the rarer modalities which include high intensity focused ultrasound, cryotherapy or brachytherapy. Some patients will be put on active monitoring, such as for early stage prostate cancer in elderly males where monitoring the growth of the cancer is the best management option for the health and care of the patient. Also, for some patients, supportive care without any specific anti-cancer therapy is entirely appropriate.

¹ Munro AJ (2005) Keynote comment: Deprivation and survival in patients with cancer: we know so much, but do so little. *Lancet Oncol* 6(12):912-3, doi: 10.1016/S1470-2045(05)70436-8

Key results

Variation by cancer site

The 22 cancer sites for which tumour resections have been defined account for 77% of all newly diagnosed primary cancers. The combined group of these 22 cancer sites are referred to as “selected cancers combined²”. “All cancers combined” refers to all malignant cancers excluding non-melanoma skin cancer.

Overall, tumours diagnosed in England in 2013-2014 received the following as part of the patient’s primary cancer treatment (Figure 1):

- 45% of selected cancers combined received a tumour resection
- 28% of all cancers combined received chemotherapy
- 27% of all cancers combined received radiotherapy

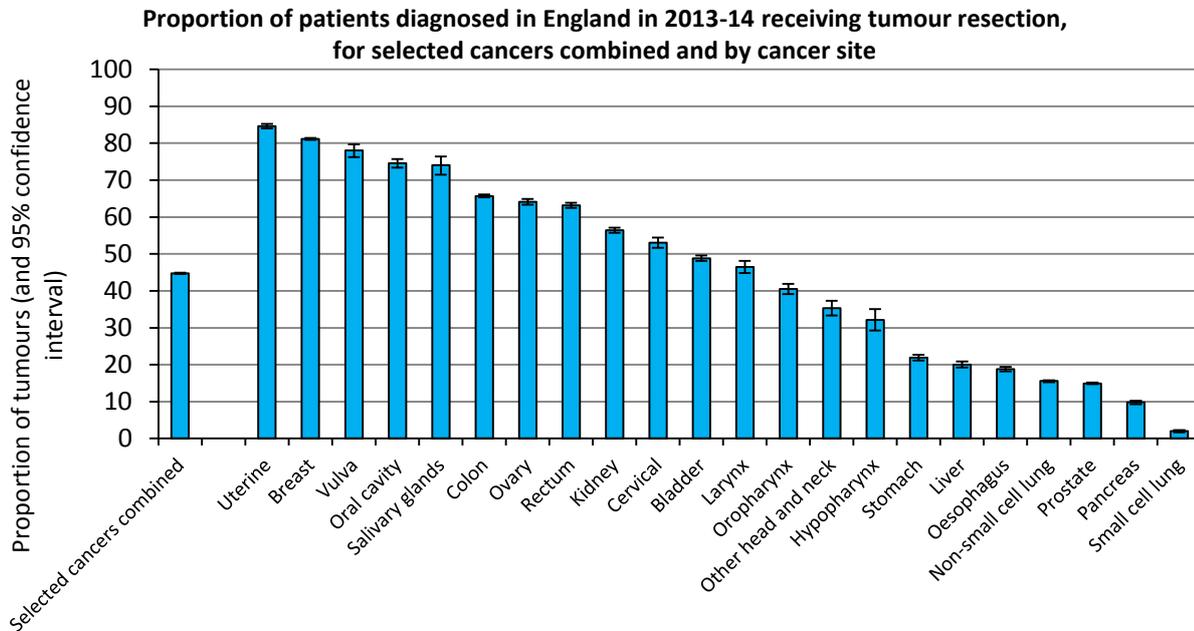
33% of tumours in this analysis received “other care”: they did not have a record of receiving chemotherapy, radiotherapy or a surgical tumour resection in the timeframe assessed.

The proportion of tumours receiving each of the different treatments varies widely by cancer site, as shown by Figure 1.

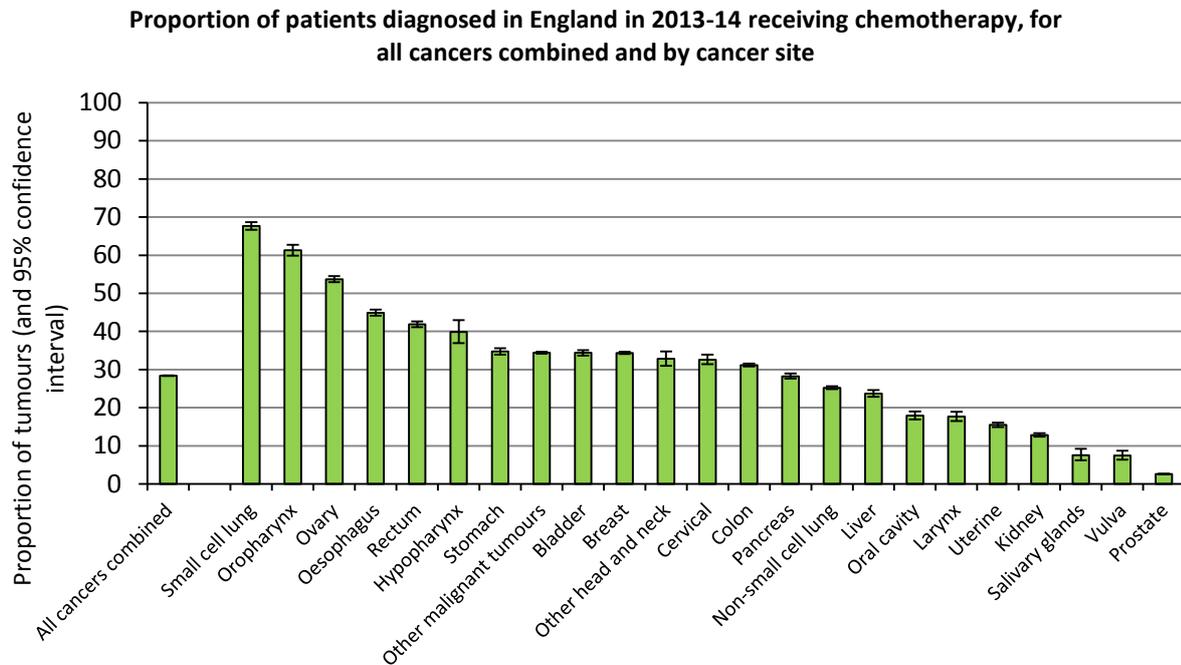
² Bladder, breast, cervical, colon, rectum, hypopharynx, larynx, liver, Non-small cell lung, small cell lung, oesophagus, oral cavity, oropharynx, other head and neck, ovary, pancreas, prostate, salivary glands, stomach, uterine, vulva (ICD-10: C00-97, excl C44, C17, C21, C23-C24, C26, C37-C49, C58, C60, C62-C63, C70-C97).

Figure 1: Proportion of patients diagnosed in 2013 - 2014 receiving each treatment, for all/ selected cancers combined and by cancer site

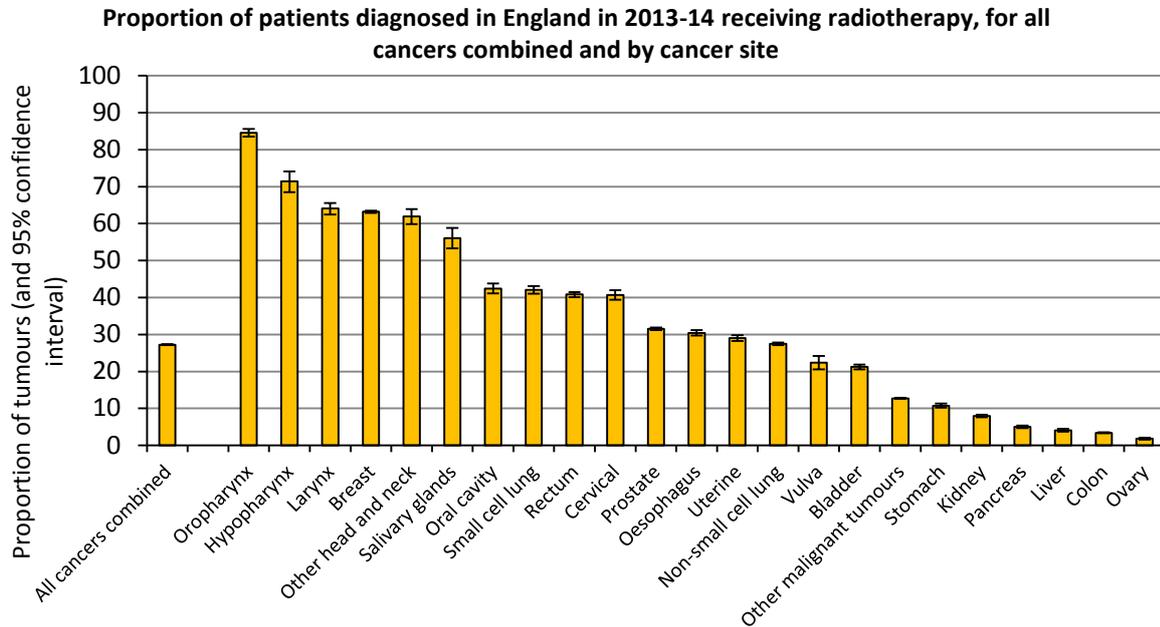
a) Tumour resection



b) Chemotherapy



c) Radiotherapy



Variation by stage at diagnosis

For the selected cancers combined, a significantly higher proportion of patients diagnosed at an early stage (stages 1 & 2) had a **tumour resection** (68%), compared to those diagnosed at a late stage (stages 3 & 4) (28%) (Figure 2a). This was the case for each of the 22 cancer sites, with the exception of patients diagnosed with hypopharyngeal or laryngeal cancer.

Overall, for all cancers combined, a significantly lower proportion of patients diagnosed at an early stage (stages 1 & 2) received **chemotherapy** (20%), compared to those diagnosed at a late stage (stages 3 & 4) (42%). The proportion receiving chemotherapy was particularly low amongst patients diagnosed at stage 1 (12%) (Figure 2b).

This increase in chemotherapy use by stage was evident for each of the 22 cancer sites, with the exception of patients diagnosed with bladder and pancreatic cancer which both had a higher proportion receiving chemotherapy at an early stage compared to late stage. For small cell lung and liver cancer, there was no significant difference in the use of chemotherapy at early and late stages. In addition, for 13 of

the 22 cancer sites, the proportion of patients receiving chemotherapy was highest amongst those diagnosed at either stage 2 or 3³.

For all cancers combined, a slightly higher proportion of patients diagnosed at an early stage (stages 1 & 2) had **radiotherapy** (32%), compared to those diagnosed at a late stage (stages 3 & 4) (31%) (Figure 2c). However, examining individual cancer sites, this was only the case for breast, oesophagus and small cell lung cancer, and different patterns were evident for the other cancer sites.

A significantly lower proportion of patients diagnosed at an early stage (stages 1 & 2) had radiotherapy, compared to those diagnosed at a late stage (stages 3 & 4), for bladder, cervical, colon, kidney, laryngeal, liver, non-small cell lung, oral cavity, oropharyngeal, 'other' head and neck, ovarian, prostate, rectal, salivary gland, uterine and vulva cancer.

The proportion of patients who received radiotherapy was similar for those diagnosed at an early stage (stages 1 & 2) to those diagnosed at a late stage (stages 3 & 4), for hypopharyngeal, pancreatic and stomach cancer.

Radiotherapy was rarely used for colon and ovarian cancers (and is not a recommended treatment in respective NICE Guidelines⁴). For 15 of the remaining 20 cancer sites, the proportion of patients receiving radiotherapy was highest amongst those diagnosed at either stage 2 or 3⁵.

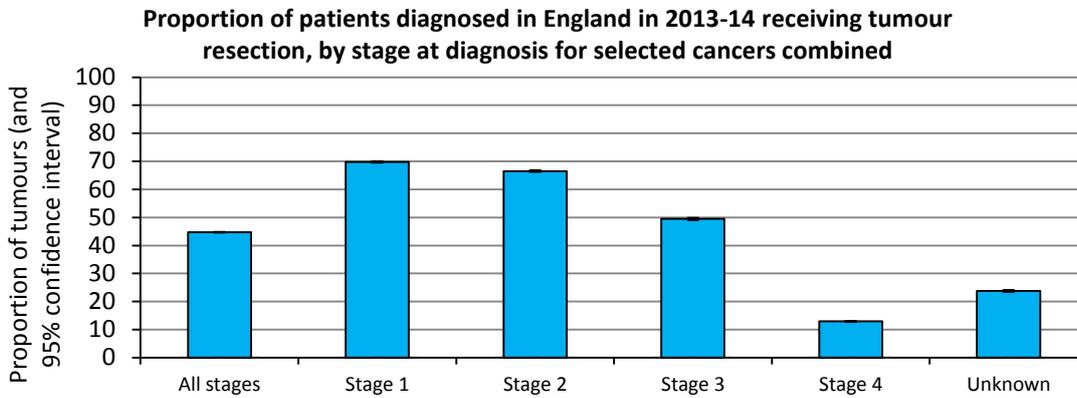
³ Statistical significance was not assessed

⁴ The National Institute for Health and Care Excellence. Cancer Treatment Guidelines. <https://www.nice.org.uk/guidance/conditions-and-diseases/cancer>. Accessed 18/09/2017

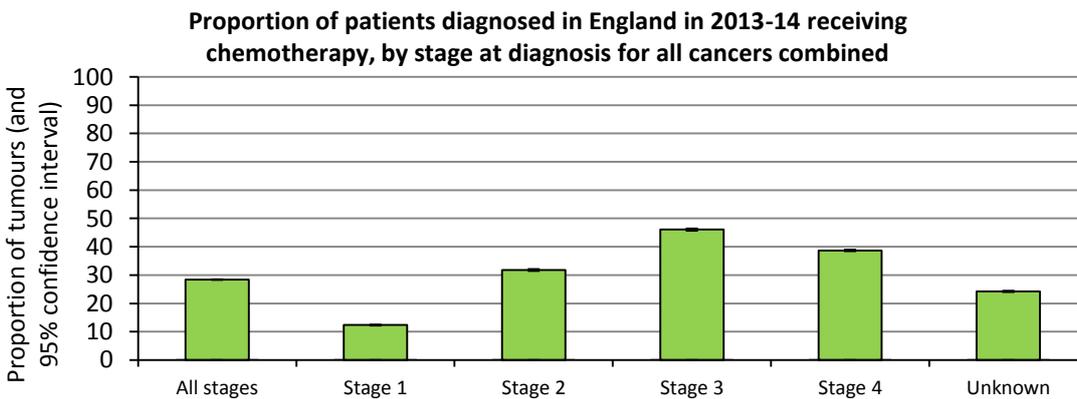
⁵ Statistical significance was not assessed

Figure 2: Proportion of patients diagnosed in 2013 -2014 receiving each treatment, by stage at diagnosis for all/ selected cancers combined

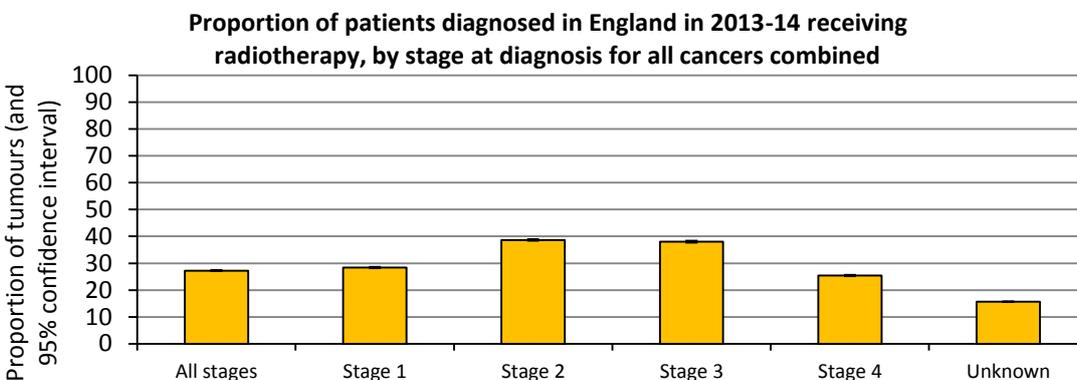
a) Tumour resection



b) Chemotherapy



c) Radiotherapy



Methodology

The treatments received as part of the primary course of treatment were defined as follows:

- **Tumour resection:** Any surgical attempt to remove the whole of the primary cancer, occurring within a designated time period following diagnosis.
- **Chemotherapy:** Includes both curative and palliative chemotherapy (excluding hormonal therapy, and other supportive drugs such as zoledronic acid, pamidronate, denosumab), started within a designated time period following diagnosis.
- **Radiotherapy:** Includes both curative and palliative teletherapy procedures (excluding brachytherapy or contact radiotherapy) started within a designated time period following diagnosis.

The time period following diagnosis within which most patients' first course of treatment occurs varies by cancer site and treatment type. A data-driven approach was used in consultation with clinical experts to identify the appropriate time period to include post-diagnosis for each cancer site. For more information, and a sensitivity analysis showing the effect on the results of varying the time periods, see the accompanying Standard Operating Procedure CAS-SOP # 4.

Limitations include that the methodology aims only to capture primary treatment of the cancer, and does not differentiate between treatment carried out with curative and palliative intent. These data also do not capture treatment in a private setting, nor patients treated outside the specified timeframe around diagnosis (for later tumour progression or recurrence for example).

FIND OUT MORE:

Accompanying excel workbook for full results: www.ncin.org.uk/item?rid=3460

CAS-SOP #4 for detailed methods: www.ncin.org.uk/item?rid=3461

Other useful resources: Cancer statistics: availability and location
www.ncin.org.uk/publications/reports/

This work uses data collected by the NHS, as part of the care and support of cancer patients.