NDRS
NATIONAL DISEASE REGISTRATION SERVICE

NHS England

Endometrial Cancer Audit Pilot

Third Report: Route to diagnosis, tumour genomic testing and immunotherapy use

May 2026

About the NDRS

The National Disease Registration Service (NDRS) is part of NHS England. Its purpose is to collect, collate and analyse data on patients with cancer, congenital anomalies, and rare diseases. It provides robust surveillance to monitor and detect changes in health and disease in the population. NDRS is a vital resource that helps researchers, healthcare professionals and policy makers make decisions about NHS services and the treatments people receive.

The NDRS includes:

- the National Cancer Registration and Analysis Service (NCRAS) and
- the National Congenital Conditions and Rare Disease Registration Service (NCARDRS)

Healthcare professionals, researchers and policy makers use data to better understand population health and disease. The data is provided by patients and collected by the NHS as part of their care and support. The NDRS uses the data to help:

- understand cancer, rare diseases, and congenital anomalies
- improve diagnosis
- plan NHS services
- improve treatment
- evaluate policy
- improve genetic counselling

This piece of work was done in partnership with the following organisations:

For queries relating to this document, please contact: england.ndrsanalysis@nhs.net

Contents

Introduction

Background

This third report is part of the Endometrial Cancer Audit Pilot (ECAP) and follows the ECAP Baseline Profile Report (published April 2025) and the ECAP Treatment Report (published January 2026). Full details of the ECAP, along with its publications and outputs, can be accessed online via https://digital.nhs.uk/ndrs/our-work/ncras-partnerships/endometrial-cancer-audit-pilot

This report focuses on three outstanding areas of need for patients diagnosed with endometrial cancer: pathways to diagnosis, nationwide tumour genomic testing and access to the latest immunotherapies. To explore this, findings are shown based on routinely collected cancer registration and linked routes, tumour genomic testing and treatment data. See Appendix 1 for details of the registration data used; information on specific data sources used for each area covered is provided within the corresponding section of the report.

The ECAP is overseen by a Project Steering Group comprising representatives from the National Disease Registration Service (NDRS), Health Data Insight (HDI), the British Gynaecological Cancer Society (BGCS), the British Association of Gynaecological Pathologists (BAGP), and The Eve Appeal and Peaches Womb Cancer Trust charities. The project is funded by a collaboration of the BGCS and the charities.

This work uses data that has been provided by patients and collected by the NHS as part of their care and support. The data are collated, maintained and quality assured by the National Disease Registration Service, which is part of NHS England.

Project aims

The aims of this project were to provide information on the following elements of the diagnostic and clinical care pathway for women diagnosed with endometrial cancer in England:

1. Routes to diagnosis;
2. Tumour genomic testing activity;
3. Utilisation of recent immunotherapy treatment options.

For each aim, differences between geographies (based on Cancer Alliances and Integrated Care Boards; ICBs) in England will be described. Where feasible, we will also explore the extent to which any variation might be explained by patient and tumour characteristics.

Appendix 2 provides a glossary of terms used within the report.

Defining the cohort

Information is presented for women who were diagnosed with endometrial cancer in England. See Appendix 1 for details of the registration data used. Appendix 3 provides details of the full inclusion and exclusion criteria. The time period of diagnoses included for each aim is described in the corresponding section of the report. Appendix 4 provides full information on how cancer stage was defined and Appendix 5 describes how each tumour morphology was defined. Appendix 6 provides details of how each ethnic group was defined.

Route to diagnosis

Background

The hallmark symptom of endometrial cancer is abnormal vaginal bleeding, most commonly comprising post-menopausal bleeding. Generally, women present to their general practitioner (GP) to report post-menopausal bleeding, prompting investigation by the urgent suspected cancer (known as two-week-wait; TWW) referral pathway. However, presentation can be complicated by hormone replacement therapy (HRT) which can be associated with bleeding as a side effect, and abnormal bleeding relating to possible uterine malignancy can also be more difficult to identify for pre-menopausal / peri-menopausal women.

Understanding the routes through which women are diagnosed with endometrial cancer is important for improving clinical outcomes and patient experience. Previous research across cancer types has demonstrated that route to diagnosis is closely associated with both stage at presentation and subsequent survival: in particular, emergency presentations are linked to more advanced disease at diagnosis and worse outcomes.[1]

While routes to diagnosis can be influenced by patient behaviour and clinical factors (such as cancers for which symptoms may not always be apparent until the disease is already advanced), they also reflect how the healthcare system responds to symptoms or investigation findings at the point of presentation. For clinicians, information on routes to diagnosis can help highlight patterns in diagnostic practice, recognition of symptoms, and potential missed opportunities for earlier identification. For patients, the route to diagnosis shapes their journey, influencing levels of anxiety, the timeliness of treatment, and prognosis. Identifying variation in diagnostic routes may therefore help to pinpoint where improvements in symptom recognition, patient referral, or system processes could have the greatest impact for patients, supporting more equitable and timely diagnosis.

While large numbers of women are referred through urgent suspected cancer (TWW) referral pathways, around 97% of referrals do not result in a diagnosis of gynaecological cancer.[2] This highlights the non-specific nature of presenting symptoms and the importance of accessible diagnostic pathways to support timely reassurance and early cancer detection. However, despite this diagnostic activity, a notable percentage of cancers continue to be diagnosed following an emergency presentation, suggesting missed opportunities for earlier identification. For uterine cancer, 8.4% of cancers diagnosed in 2019 were via emergency presentation.[3]

As endometrial cancer is such a dominant subtype, accounting for the majority of uterine cancer, overall patterns for uterine cancer are likely to broadly reflect those of endometrial cancer. However, the small proportion of non-endometrial uterine cancers may disproportionately influence certain categories — for example, higher emergency presentations.

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[1] Herbert A, Abel GA, Winters S, McPhail S, Elliss-Brookes L, Lyratzopoulos G. (2019) Cancer diagnoses after emergency GP referral or A&E attendance in England: determinants and time trends in Routes to Diagnosis data, 2006-2015. Br J Gen Pract. 69(687):e724-e730. doi: 10.3399/bjgp19X705473; McPhail S, Elliss-Brookes L, Shelton J, et al. Emergency presentation of cancer and short–term mortality. Br J Cancer 2013; 109(8): 2027–2034. doi: 10.1038/bjc.2013.569

[2] NHS Digital. Cancer Waiting Times (CWT) urgent suspected cancer referrals: referral, conversion and detection rates. Available at: https://nhsd-ndrs.shinyapps.io/cwt_referral_conversion_detection/

[3] NHS Digital. Routes to Diagnosis Data. Available at: https://nhsd-ndrs.shinyapps.io/routes_to_diagnosis/; Cancer Research UK. Early Cancer Diagnosis Data Hub. Available at: https://crukcancerintelligence.shinyapps.io/EarlyDiagnosis

The findings presented in the subsequent pages of this chapter explore the full range of routes to diagnosis among women diagnosed with endometrial cancer. In doing so we provide a comprehensive picture of how patients were diagnosed and where differences occurred. In the second part of the work particular focus is given to emergency presentations, with the aim of generating insights to inform service improvements and changes to reduce emergency diagnoses.

Defining route to diagnosis within the data

The NDRS captures data on the route by which patients accessed secondary care prior to their cancer diagnosis.[4] Route to diagnosis was defined based on information in the FINAL_ROUTE variable within the CAS RTD (route to diagnosis) table. Detail on how these data are compiled, and how each route is defined, is available via https://digital.nhs.uk/ndrs/data/data-outputs/cancer-data-hub/cancer-routes-to-diagnosis

Information on route to diagnosis was not available for patients diagnosed beyond 2020, so this analysis only includes patients diagnosed from 2017 to 2019. This aligns with the cohort of patients included in both the ECAP Baseline Report and the ECAP Treatment Report.[5] As such it provides important context for the findings published in both.

Distribution of route to diagnosis

There were 23,388 women diagnosed with endometrial cancer in England from 2017 to 2019.

This section describes the distribution of routes to diagnosis for the cohort overall, as well as by year of diagnosis and across patient subgroups.

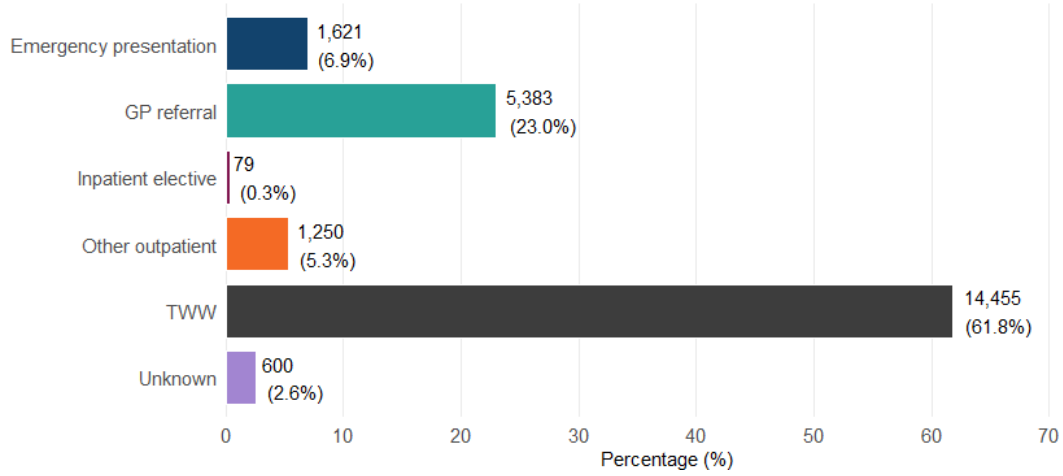
Figure 1 presents the overall distribution of route to diagnosis for the cohort.

Most commonly, women were diagnosed following a TWW referral from a GP for a specialist appointment to investigate potential cancer symptoms (N = 14,455; 61.8%). The second most common route was following an alternative form of GP referral, including routine referrals to general gynaecology clinics, referrals to other specialties in secondary care or urgent referrals where the patient was not referred under the TWW referral route, recorded for 5,383 (23.0%) women. The third most common route to diagnosis was emergency presentation, recorded for 1,621 (6.9%) women.

[4] Elliss-Brookes L, McPhail S, Ives A, Greenslade M, Shelton J, et al. (2012) Routes to diagnosis for cancer - determining the patient journey using multiple routine data sets. Br J Cancer. 8, 1220-6. doi: 10.1038/bjc.2012.408.

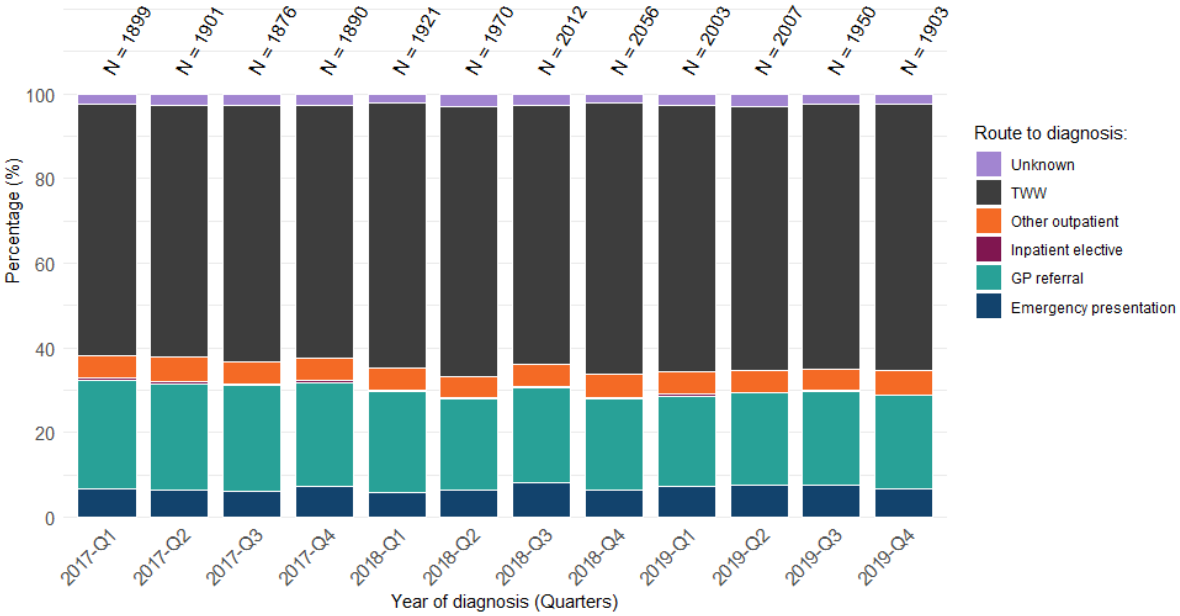
[5] https://digital.nhs.uk/ndrs/data/data-outputs/cancer-publications-and-tools/ecap-baseline-report; https://digital.nhs.uk/ndrs/data/data-outputs/cancer-publications-and-tools/ecap-treatment-report

Figure 1 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019



There was little difference in the distribution of route to diagnosis by year of diagnosis based on quarters (Figure 2). Full details of the distributions presented in Figure 2 are provided in the accompanying Excel workbook (Table RTD_Year).

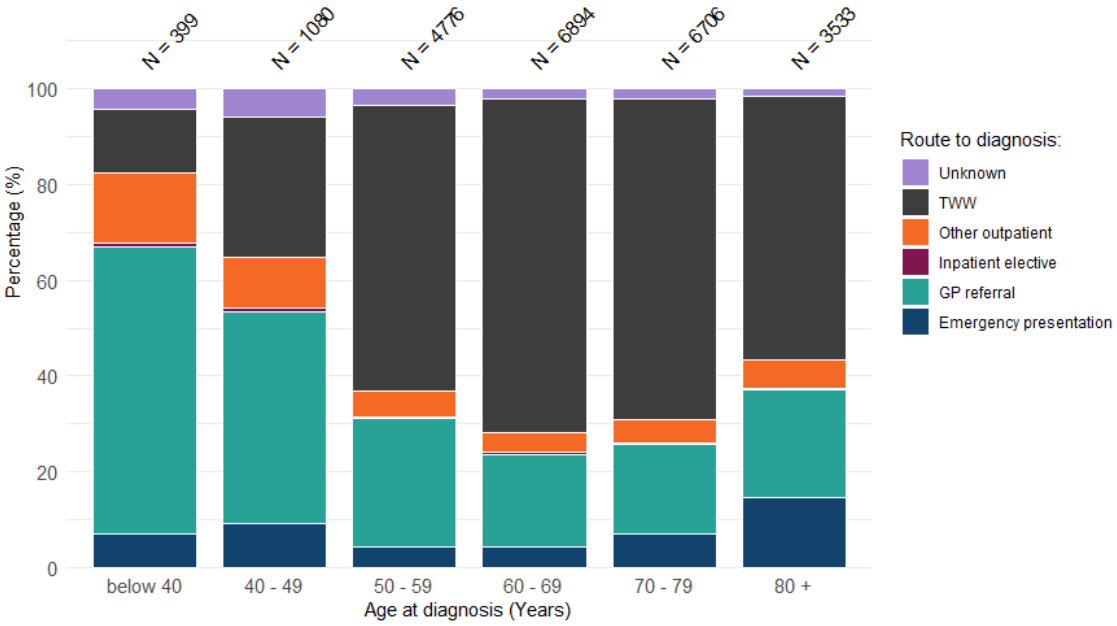
Figure 2 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by year of diagnosis (quarters)



There were notable differences in the distribution of route to diagnosis by age at diagnosis (Figure 3). Full details of the distributions presented in Figure 3 are provided in the accompanying Excel workbook (Table RTD_Age).

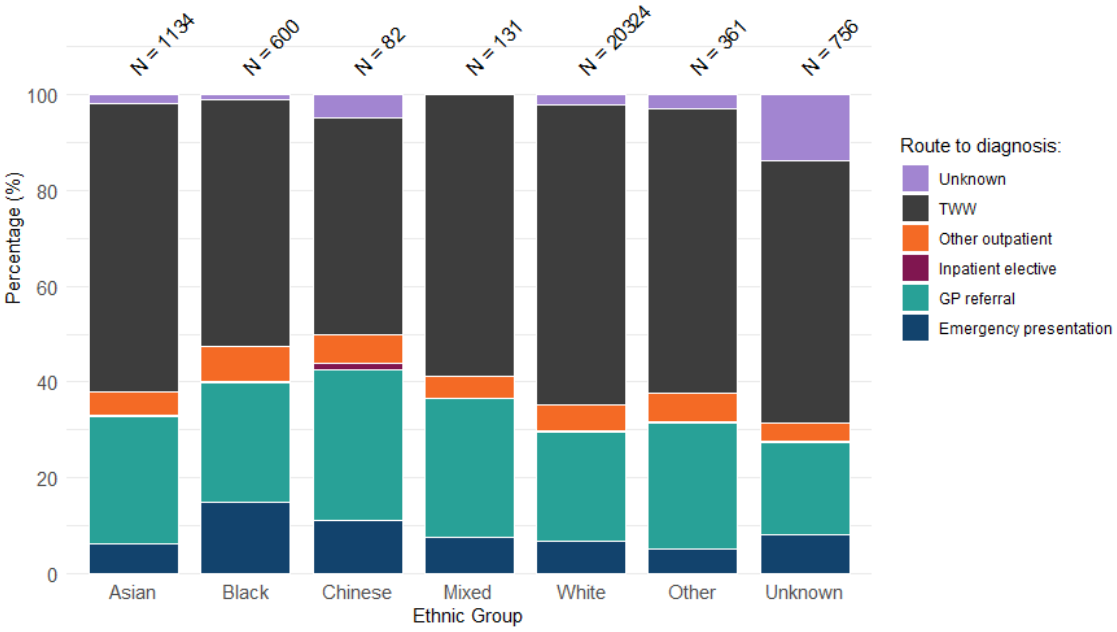
Emergency presentation percentages were highest among women aged 80+ years (14.6%; N = 515). For other routes there was a distinct age pattern when comparing the TWW and GP referral percentages, with suspected cancer TWW referral more common among older women and other forms of GP referral being more common among younger women. This likely relates to referral by primary care to general gynaecology and fertility clinics for pre-menopausal women with abnormal bleeding patterns, where malignancy was not initially suspected as the underlying cause.

Figure 3 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by age at diagnosis



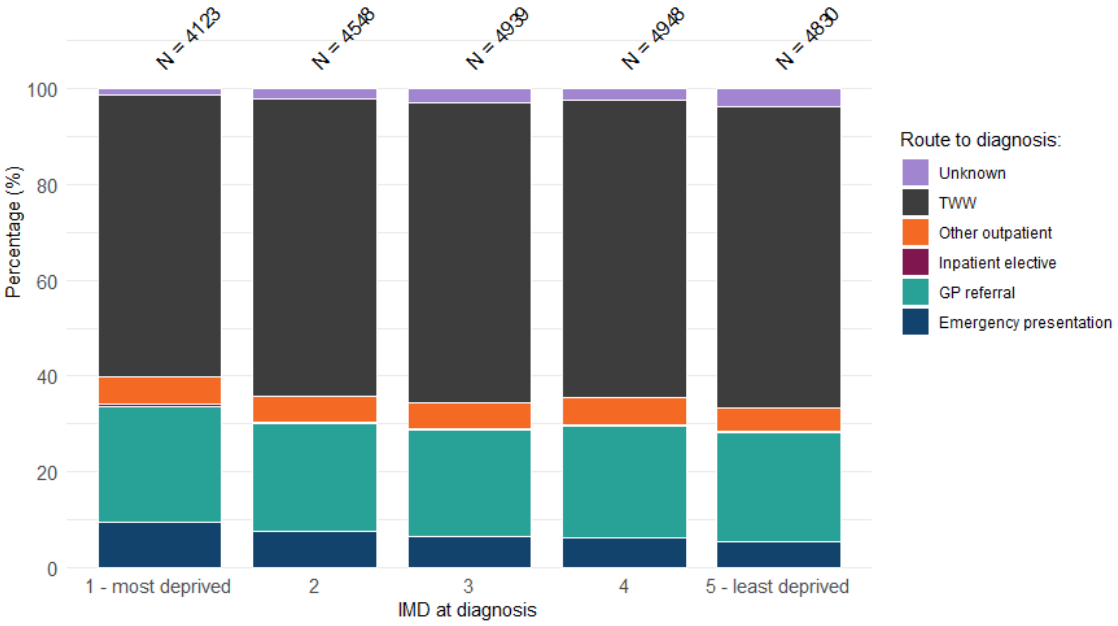
There was some difference in distribution of route to diagnosis by ethnic group, although numbers in some groups were small (Figure 4). Emergency presentations were most common among women in the black ethnic group (14.8%; N = 89). Full details of the distributions presented in Figure 4 are provided in the accompanying Excel workbook (Table RTD_Ethn).

Figure 4 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by ethnic group



While the distribution of route to diagnosis was largely similar across Index of Multiple Deprivation (IMD 2019) quintiles (Figure 5), the percentage of women diagnosed following an emergency presentation was highest among those in the most deprived IMD quintile (9.4%; N = 386) and lowest among those in the least deprived IMD quintile (5.3%; N = 255). Full details of the distributions presented in Figure 5 are provided in the accompanying Excel workbook (Table RTD_IMD).

Figure 5 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by IMD quintile at diagnosis



There was clear variation in the distribution of route to diagnosis by Charlson comorbidity score at diagnosis (Figure 6). Full details of the distributions presented in Figure 6 are provided in the accompanying Excel workbook (Table RTD_CC).

The percentage of women diagnosed via the TWW referral pathway decreased with increasing Charlson comorbidity score, with emergency presentations showing the reverse pattern. This finding may in part reflect a greater likelihood of incidental findings in women admitted to hospital for the emergency treatment of unrelated pathologies.

Figure 6 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by Charlson comorbidity score at diagnosis

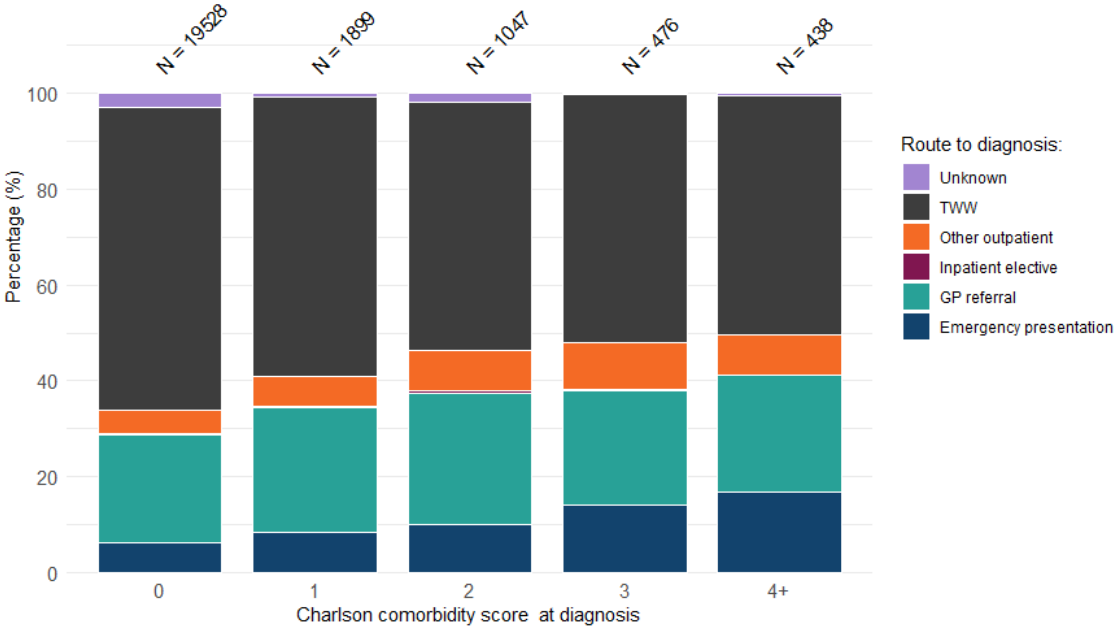


Figure 7 presents the distribution of route to diagnosis by stage at diagnosis. Percentages of women diagnosed following an emergency presentation tended to increase with stage, being highest among stage 4 (25.2%; N = 414) and lowest among stage 1 (3.2%; N = 521). Full details of the distributions presented in Figure 7 are provided in the accompanying Excel workbook (Table RTD_Stage).

Figure 7 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by stage at diagnosis

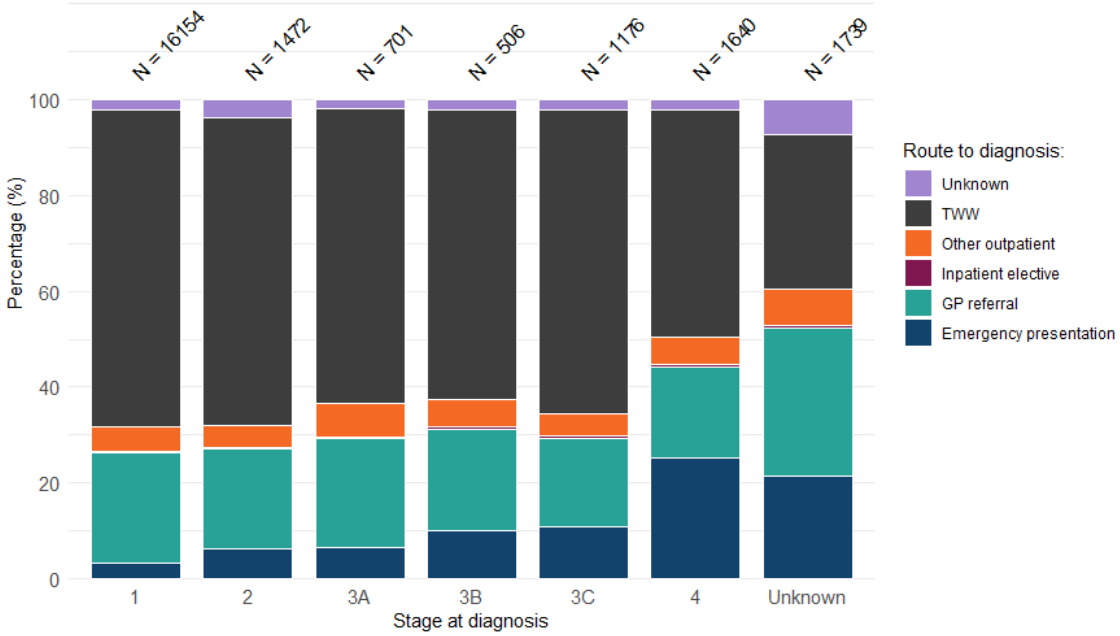
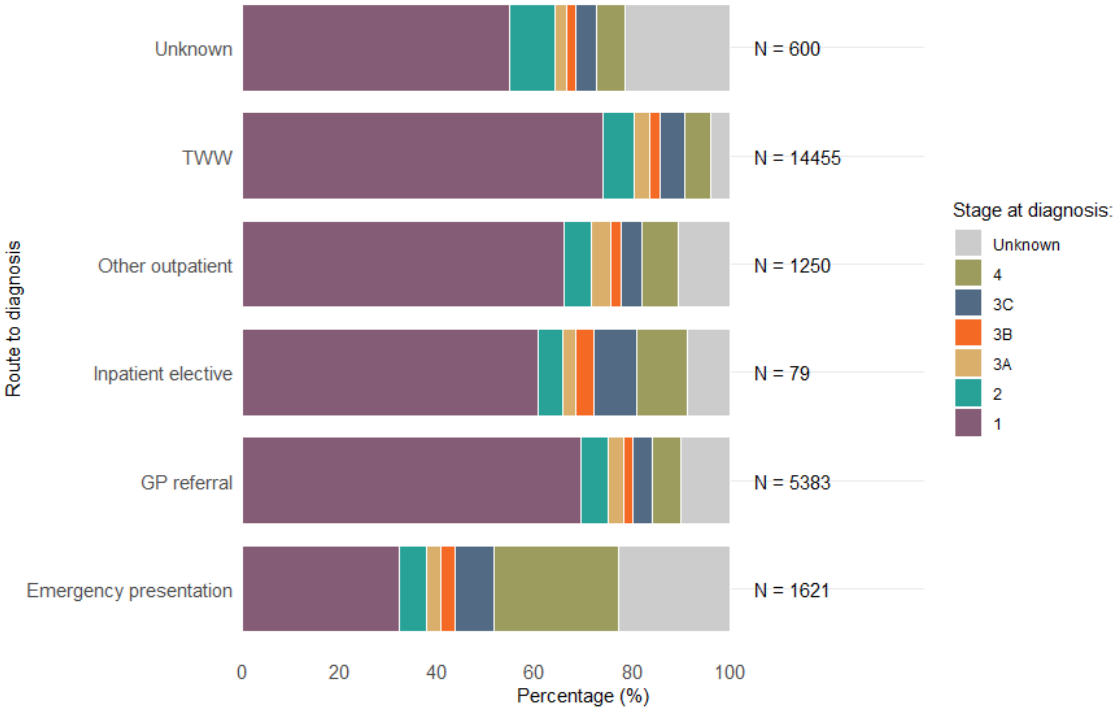


Figure 8 presents the distribution of stage at diagnosis within each route to diagnosis category. As stage is determined following the cancer diagnosis this figure provides a clearer picture of how route to diagnosis and stage at diagnosis are likely to be crudely associated, given their temporal relationship. Full details of the distributions presented in Figure 8 are provided in the accompanying Excel workbook (Table Stage_RTD).

The percentage of women diagnosed with stage 4 disease was substantially higher among those women who were diagnosed following an emergency presentation (25.5%) than across non-emergency routes (5.6%). Stage was also more frequently not known among women diagnosed following an emergency presentation (22.8%) compared with recorded non-emergency routes (5.9%). This suggests that diagnoses of endometrial cancer were not made until it had significantly impacted the wellbeing of women, requiring emergency admission to hospital for assessment and treatment of complications of advanced disease. Many of the cases which remained unstaged may equate to women who were too unwell at the time of diagnosis to undergo routine staging procedures and standard treatment pathways.

Figure 8 : Distribution of stage at diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by route to diagnosis



Route to diagnosis by geographical region

This section explores geographical variation in the distribution of route to diagnosis, presented by Cancer Alliance and Integrated Care Board (ICB) according to the trust of diagnosis. See Appendix 7 for more information on the geographical groupings (Cancer Alliance or ICB) used in this report.

There was variation in routes by both Cancer Alliance (Figure 9) and ICB (Figure 10), with emergency presentation ranging from 5.1% to 11.4% and TWW from 50.5% to 70.5% across Cancer Alliances (ranges were similar across ICBs). Full details of the distributions presented in Figures 9 and 10 are provided in the accompanying Excel workbook (Tables RTD_CAL and RTD_ICB).

Figure 9 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by Cancer Alliance at diagnosis

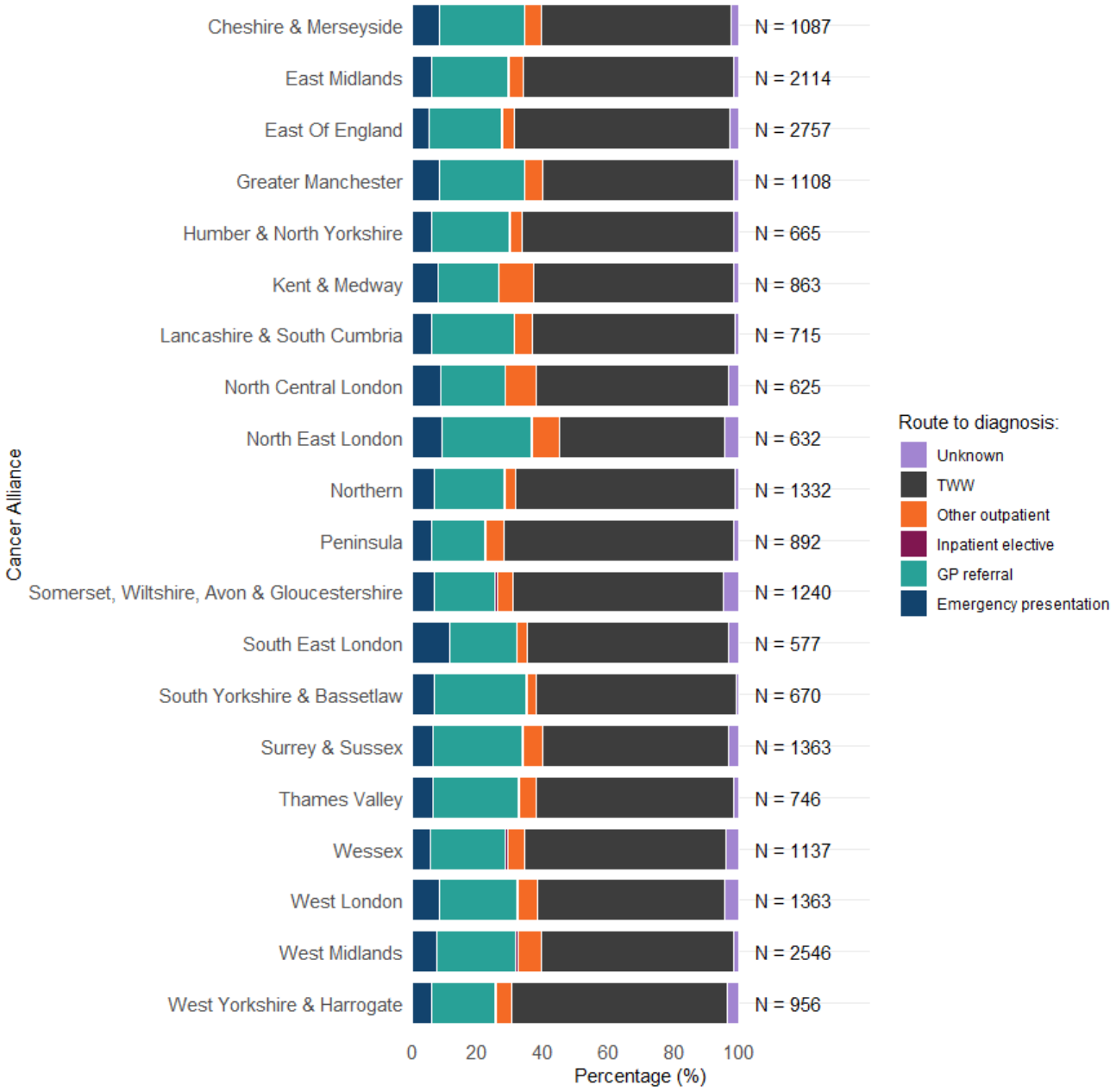
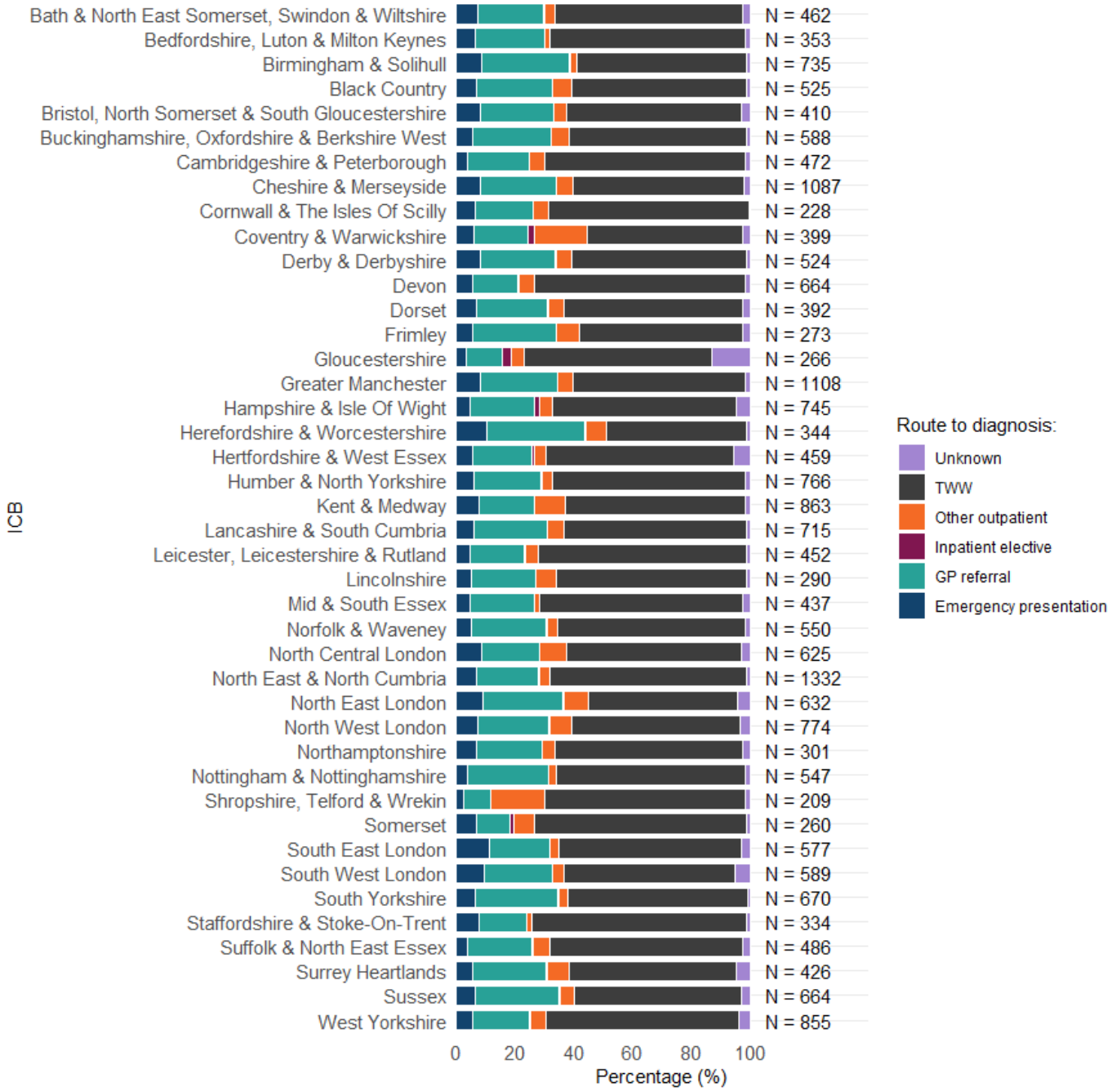


Figure 10 : Distribution of route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019, by Integrated Care Board (ICB) at diagnosis



Emergency presentation route to diagnosis

Emergency presentation is generally associated with a higher proportion of cases diagnosed at an advanced stage and with poorer prognosis, compared with diagnosis following outpatient referral from primary care to investigate symptoms suggestive of endometrial cancer, including via the urgent suspected cancer (TWW) referral pathway.

Accordingly, this section looks in more detail at the factors associated with women being diagnosed following an emergency presentation versus other routes.

Results are presented with and without adjustment for patient-level factors measured prior to or independent of the diagnostic route (age at diagnosis, ethnic group, IMD quintile, Charlson comorbidity score, year of diagnosis).

Among the 23,388 women who were diagnosed with endometrial cancer in England from 2017 to 2019, 6.9% (N = 1,621) had emergency presentation recorded as their final route to diagnosis. Factors associated with emergency presentation as the route to diagnosis are shown in Table 1 below. Specifically, we report the odds of emergency presentation as the final route to diagnosis for each level of a factor.

The odds of emergency presentation varied by patient characteristics at diagnosis, including age, IMD quintile, Charlson comorbidity score and ethnic group (Table 1). With respect to ethnic group, the data highlight variation in the percentage of women diagnosed following an emergency presentation, with the highest observed rates and largest odds of diagnosis via emergency presentation being among women in the black ethnic group compared with women in the white ethnic group (OR 2.29, 95% CI [1.79, 2.89]). There were similarly elevated odds among women in the Chinese ethnic group, however underlying numbers were small. There was no evidence that the odds of emergency presentation varied over time (based on year of diagnosis in quarters)

Table 1: Adjusted associations between patient characteristics and emergency presentation route to diagnosis among women diagnosed with endometrial cancer from 2017 to 2019

	Emergency Presentation Route to Diagnosis		Adjusted Logistic Regression Model Results		
Factor	No N = 21,767[1]	Yes N = 1,621[1]	OR	95% CI	p-value
Age group					<0.001
below 40	371 (93.0%)	28 (7.0%)	0.92	0.61, 1.35	
40 - 49	982 (90.9%)	98 (9.1%)	1.24	0.98, 1.55	
50 - 59	4,569 (95.7%)	207 (4.3%)	0.58	0.49, 0.68	
60 - 69	6,601 (95.7%)	293 (4.3%)	0.57	0.49, 0.66	
70 - 79	6,226 (92.8%)	480 (7.2%)	1.00	—	
80 +	3,018 (85.4%)	515 (14.6%)	2.16	1.89, 2.47	
Deprivation (IMD quintile)					<0.001
1 - most deprived	3,737 (90.6%)	386 (9.4%)	1.00	—	
2	4,200 (92.3%)	348 (7.7%)	0.79	0.67, 0.92	
3	4,613 (93.4%)	326 (6.6%)	0.67	0.57, 0.79	
4	4,642 (93.8%)	306 (6.2%)	0.62	0.53, 0.73	
5 - least deprived	4,575 (94.7%)	255 (5.3%)	0.53	0.45, 0.62	
Charlson Comorbidity Score					<0.001
0	18,309 (93.8%)	1,219 (6.2%)	1.00	—	
1	1,741 (91.7%)	158 (8.3%)	1.21	1.01, 1.43	
2	943 (90.1%)	104 (9.9%)	1.36	1.09, 1.68	
3	409 (85.9%)	67 (14.1%)	1.83	1.38, 2.38	
4+	365 (83.3%)	73 (16.7%)	2.01	1.52, 2.60	
Ethnic group					<0.001
Asian	1,062 (93.7%)	72 (6.3%)	0.98	0.76, 1.26	
Black	511 (85.2%)	89 (14.8%)	2.29	1.79, 2.89	
Chinese	73 (89.0%)	9 (11.0%)	2.22	1.02, 4.27	
Mixed	121 (92.4%)	10 (7.6%)	1.28	0.63, 2.35	
White	18,963 (93.3%)	1,361 (6.7%)	1.00	—	
Other	342 (94.7%)	19 (5.3%)	0.83	0.50, 1.29	
Unknown	695 (91.9%)	61 (8.1%)	1.52	1.15, 1.98	
Year of diagnosis (Quarters)					0.095
2017-Q1	1,770 (93.2%)	129 (6.8%)	1.00	—	
2017-Q2	1,779 (93.6%)	122 (6.4%)	0.94	0.73, 1.22	
2017-Q3	1,761 (93.9%)	115 (6.1%)	0.91	0.70, 1.18	
2017-Q4	1,754 (92.8%)	136 (7.2%)	1.07	0.83, 1.38	
2018-Q1	1,806 (94.0%)	115 (6.0%)	0.87	0.67, 1.13	
2018-Q2	1,846 (93.7%)	124 (6.3%)	0.93	0.71, 1.20	
2018-Q3	1,845 (91.7%)	167 (8.3%)	1.23	0.96, 1.57	
2018-Q4	1,925 (93.6%)	131 (6.4%)	0.93	0.72, 1.20	
2019-Q1	1,854 (92.6%)	149 (7.4%)	1.11	0.87, 1.43	
2019-Q2	1,853 (92.3%)	154 (7.7%)	1.17	0.91, 1.50	
2019-Q3	1,800 (92.3%)	150 (7.7%)	1.14	0.89, 1.46	
2019-Q4	1,774 (93.2%)	129 (6.8%)	0.97	0.75, 1.26	

[1]n (%)

Abbreviations: CI = Confidence Interval, OR = Odds Ratio

Notes:

Odds ratios are adjusted for all other factors presented in the table and represent conditional associations, not independent causal effects. Global p-values are from Type II likelihood-ratio χ^2 tests, assessing whether each factor considered as a whole is associated with emergency presentation.

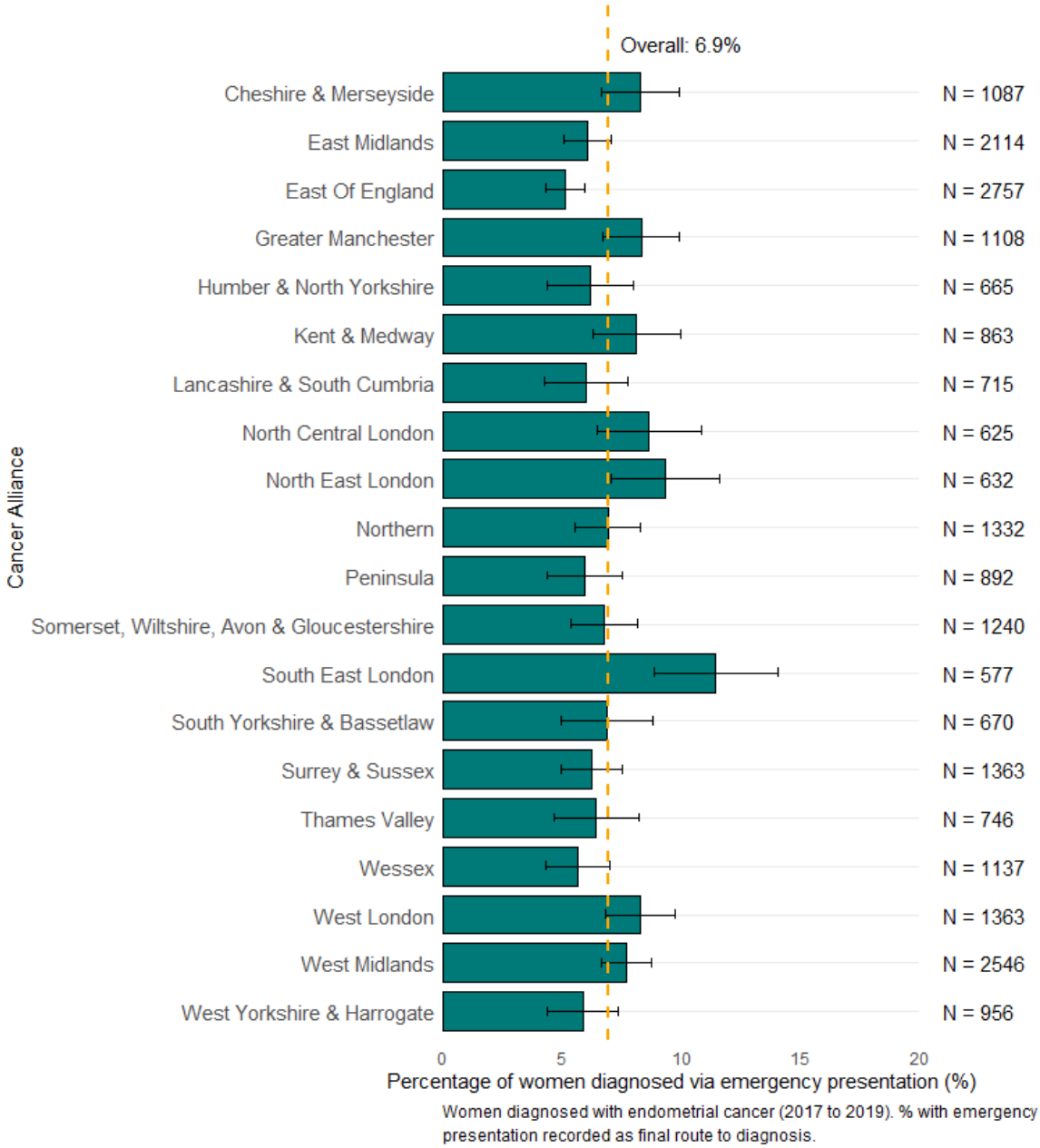
Emergency presentation route to diagnosis by geographical region

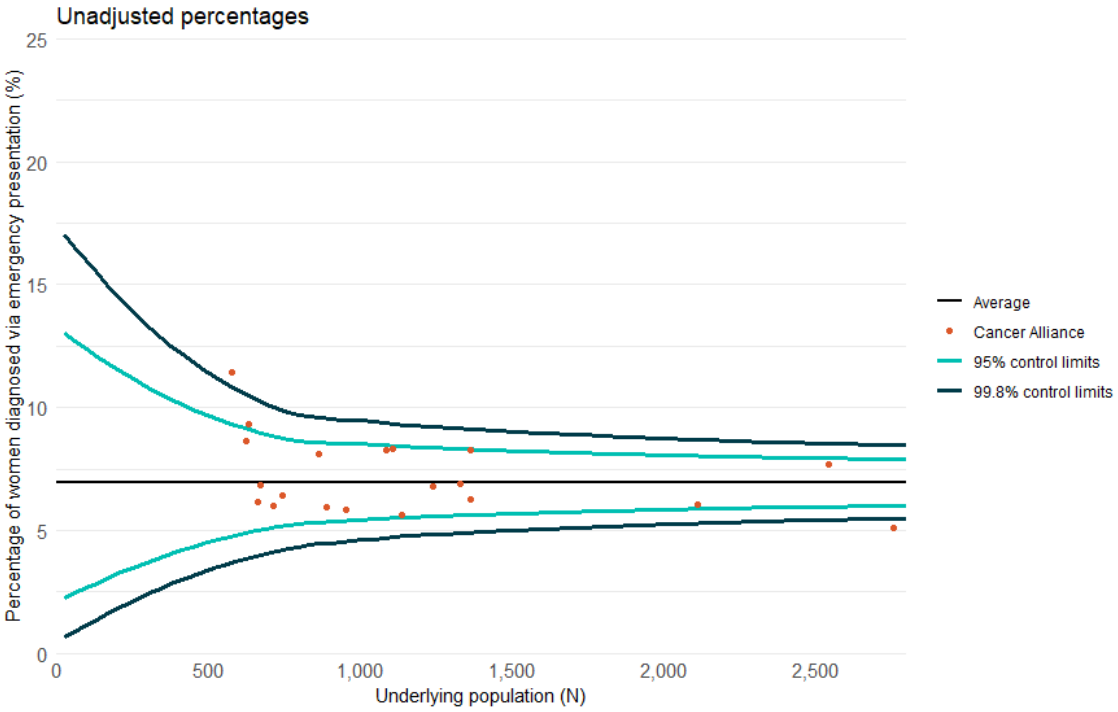
The plots in Figures 11 and 12 illustrate geographic variation in the percentages of women with Emergency Presentation recorded as their final route to diagnosis, with and without adjustment for the factors reported in Table 1, across Cancer Alliances and Integrated Care Boards (ICBs), based on the trust of diagnosis (note: bar charts show unadjusted percentages). Full details of the distributions presented in Figures 11 and 12 are provided in the accompanying Excel workbook (Tables EP_CAL and EP_ICB).

On the funnel plots each point represents an individual Cancer Alliance or ICB. The horizontal axis shows the size of the underlying cancer population (the number of women diagnosed with endometrial cancer from 2017 to 2019 within the respective geography), and the vertical axis displays the corresponding unadjusted or risk-adjusted percentage. The average emergency presentation rate across England is shown on the plot by the horizontal black line. Some random variation in rates between areas is expected, but the estimate of the emergency presentation rate is likely to be more precise for a larger area than for a smaller one. The precision level is represented by the curved 'funnel' lines, which show 95% control limits (2 standard deviations; SD5) and 99.8% control limits (3SD6). Points that lie outside of these 'funnel' lines indicate that such variation may not be explained solely by randomness but may be due to real differences in emergency presentation rates between areas. See Appendix 7 for more information on the geographical groupings (Cancer Alliance or ICB) used in this report.

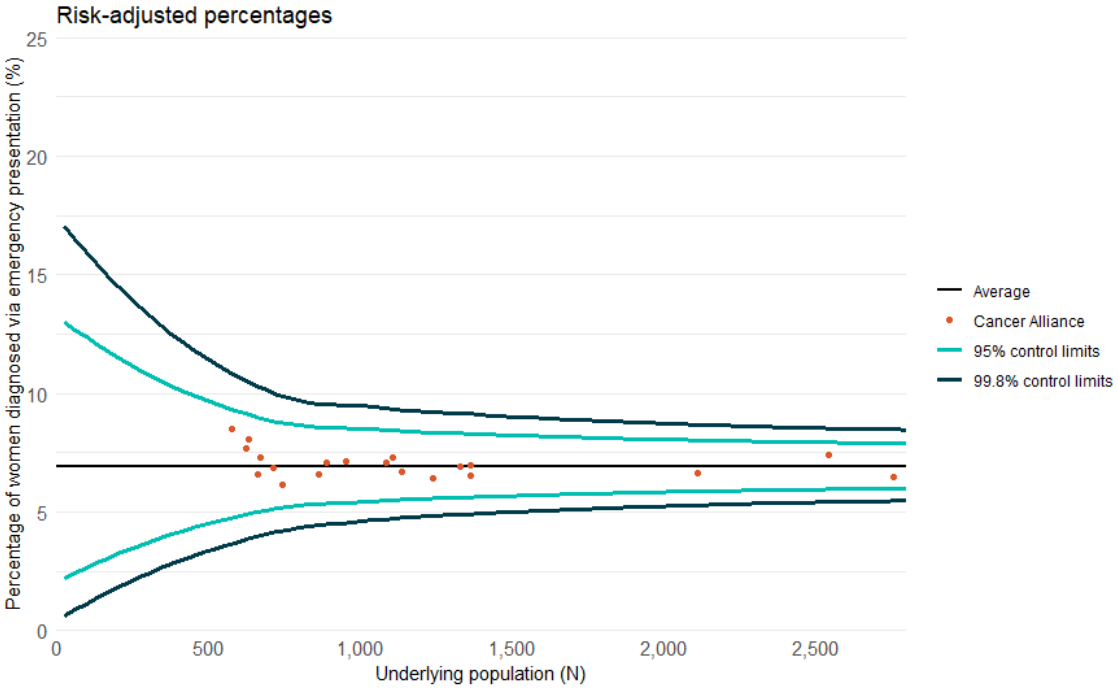
Overall, there was little variation across England, with only one Cancer Alliance and one ICB (geographically aligned with the Cancer Alliance) with unadjusted percentages of emergency presentation more than three standard deviations above the national average. However, rates were within the expected range after adjusting for the patient characteristics presented in Table 1. This suggests that much of the variation observed was explained by differences in the patient cohorts across regions.

Figure 11 : Percentage of women diagnosed with endometrial cancer from 2017 to 2019 with emergency presentation recorded as the final route to diagnosis, by Cancer Alliance at diagnosis



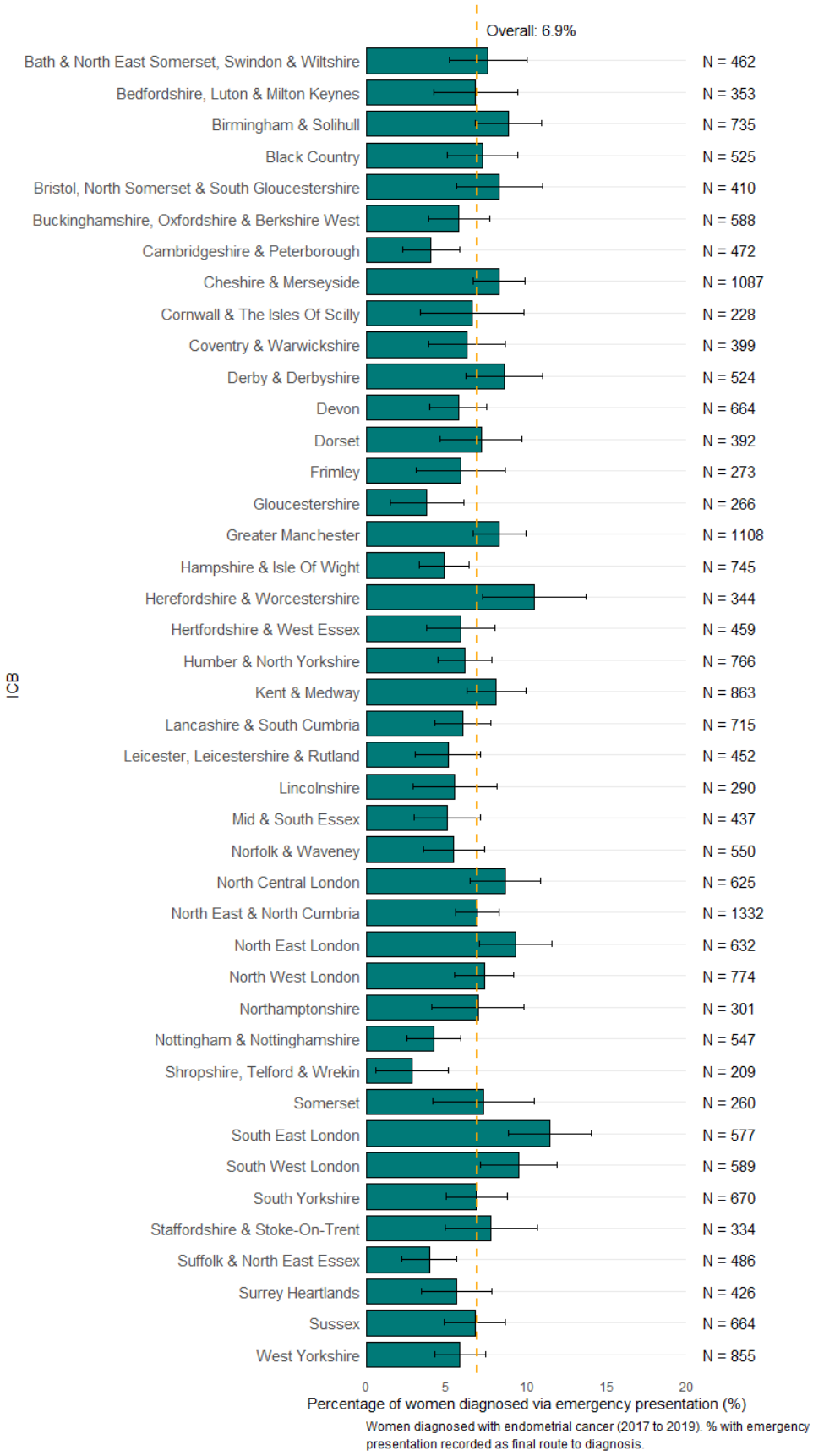


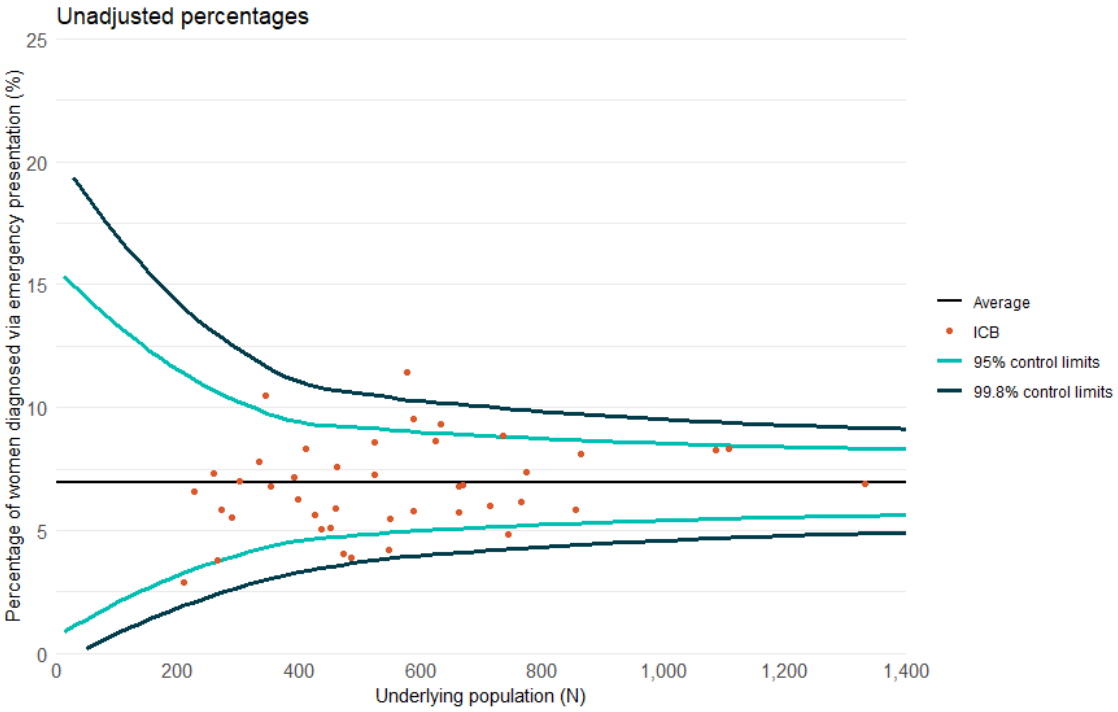
Women diagnosed with endometrial cancer (2017 to 2019). % with emergency presentation recorded as final route to diagnosis.



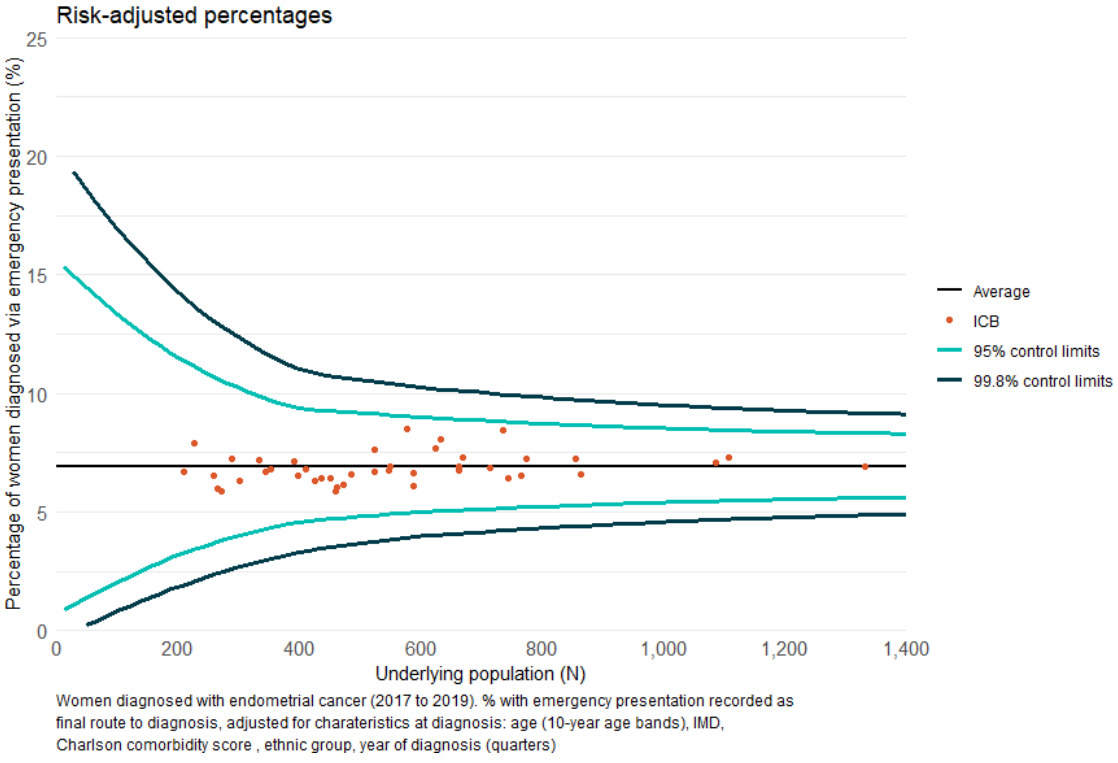
Women diagnosed with endometrial cancer (2017 to 2019). % with emergency presentation recorded as final route to diagnosis, adjusted for charateristics at diagnosis: age (10-year age bands), IMD, Charlson comorbidity score , ethnic group, year of diagnosis (quarters)

Figure 12 : Percentage of women diagnosed with endometrial cancer from 2017 to 2019 with emergency presentation recorded as the final route to diagnosis, by Integrated Care Board (ICB) at diagnosis





Women diagnosed with endometrial cancer (2017 to 2019). % with emergency presentation recorded as final route to diagnosis.



Women diagnosed with endometrial cancer (2017 to 2019). % with emergency presentation recorded as final route to diagnosis, adjusted for charateristics at diagnosis: age (10-year age bands), IMD, Charlson comorbidity score , ethnic group, year of diagnosis (quarters)

Tumour genomic testing

Background

The management of endometrial cancer is evolving with the increasing awareness of molecular subtypes, which are associated with different recurrence risk profiles and treatment responses. The use of molecular profiling is also expanding to identify patients eligible for immunotherapy or targeted therapies, such as dostarlimab or pembrolizumab in mismatch repair deficient (dMMR) disease. National guidance on tumour genomic testing for endometrial cancer was published from 2018.[6]

This chapter examines the availability and completeness of tumour genomic testing data for women diagnosed with endometrial cancer in England, with a particular focus on regional variation. The aim is to identify potential gaps in data capture and highlight areas where further support with implementing tumour genomic testing, improved data flows or greater standardisation of reporting may be required.

Defining tumour genomic testing within the data

This report only considered MMR and PD-L1 testing. Evidence of such tumour genomic testing was determined from pathology test records submitted by hospital pathology laboratories and captured in the table AT_GENE_PATH_ENGLAND. Data within this table are available from 2019 onwards and form the sole basis for identifying tumour genomic testing activity in this report. In line with this, and the publication of the national guidance on tumour genomic testing for endometrial cancer, the analyses presented focus on women diagnosed with endometrial cancer from 2019 to 2023.

Data were included for any test dated within 31 days pre-diagnosis and up to any point post-diagnosis. This interval was used to allow for tumour genomic testing carried out any time after diagnosis, such as when considering treatment options for recurrent disease.

Data quality considerations and limitations

When interpreting the findings, it is important to note that reported percentages may be affected by incomplete capture of testing within the available data. Several factors may contribute to the observed percentages:

- The test may not have been requested and therefore not performed;
- The test may have been requested and performed, but the pathology report containing the test result was not submitted to, or received by, the NDRS and therefore was not available in data.

Incomplete capture may be particularly relevant for mismatch repair (MMR) testing, which is frequently undertaken after the initial diagnostic pathology report has been issued and may be

[6] TBD; NHS England. National genomic test directory [Internet]. NHS England; first published 3 Aug 2018, updated 28 Aug 2025. Available from: https://www.england.nhs.uk/publication/national-genomic-test-directories/

documented in addendum or supplementary reports that are not consistently returned to the NDRS.

Interpretation of findings

As a result of these limitations, it is not possible to distinguish between true variation in clinical practice (for example, non-compliance with guidance on tumour genomic testing) and variation arising from incomplete or inconsistent data submission.

The findings in this briefing should therefore be interpreted as an assessment of data completeness and quality, rather than definitive measures of testing uptake. They are intended to support providers with reviewing their local data submissions and identifying opportunities to improve data capture. Providers are encouraged to compare these results with local clinical practice using the CancerStats2 portal (ECAP section) to assess whether the percentages of women with recorded tumour genomic test results reflects local testing activity.

Tumour genomic testing over time

This section describes trends over time in the recorded availability of tumour genomic testing data for women diagnosed with endometrial cancer.

Analyses included patients diagnosed from January 2019 to September 2023 (Q1 2019 to Q3 2023). The year 2019 represents the first diagnosis year for which molecular and MMR-related testing data were available in the dataset. Tumour genomic test records were available up to the end of Q1 2024; therefore, diagnoses made in Q4 2023 were excluded to allow a minimum follow-up period of six months for pathology testing, reporting and data submission.

Figure 13 presents the percentage of women with a recorded tumour genomic test by year of diagnosis (in quarters). A marked increase in the percentage with at least one tumour genomic test record was observed from 2020 to 2021, followed by a plateau in more recent years, with approximately 80% of women diagnosed in 2023 having a test recorded. This sharp increase coincides with the publication of NICE Diagnostic Guidelines DG42[7] in October 2020, following the 2019 recommendations by the Manchester International Consensus Group[8], as well as the launch of the NHS Lynch Syndrome transformation project in May 2021[9], which provided additional impetus and practical support to expand MMR testing. The observed pattern may therefore reflect a combination of policy-driven implementation of tumour genomic testing in clinical practice and improvements in data submission.

[7] NHS England (2020) Testing strategies for Lynch syndrome in people with endometrial cancer. Available at: https://www.nice.org.uk/guidance/DG42

[8] Crosbie EJ, Ryan NAJ, Arends MJ, Bosse T, Burn J, Cornes JM, et al. The Manchester International Consensus Group recommendations for the management of gynecological cancers in Lynch syndrome. Genet Med. 2019;21(10):2390–2400. doi:10.1038/s41436-019-0489-y

[9] Monahan KJ, Ryan N, Monje-Garcia L, Shenton A, Side L, Ghafoor S, et al. The English National Lynch Syndrome transformation project: an NHS Genomic Medicine Service Alliance (GMSA) programme. BMJ Oncol. 2023;2:e000124. doi:10.1136/bmjonc-2023-000124

Figure 13 : Records of tumour genomic testing over time among women diagnosed with endometrial cancer from January 2019 to September 2023

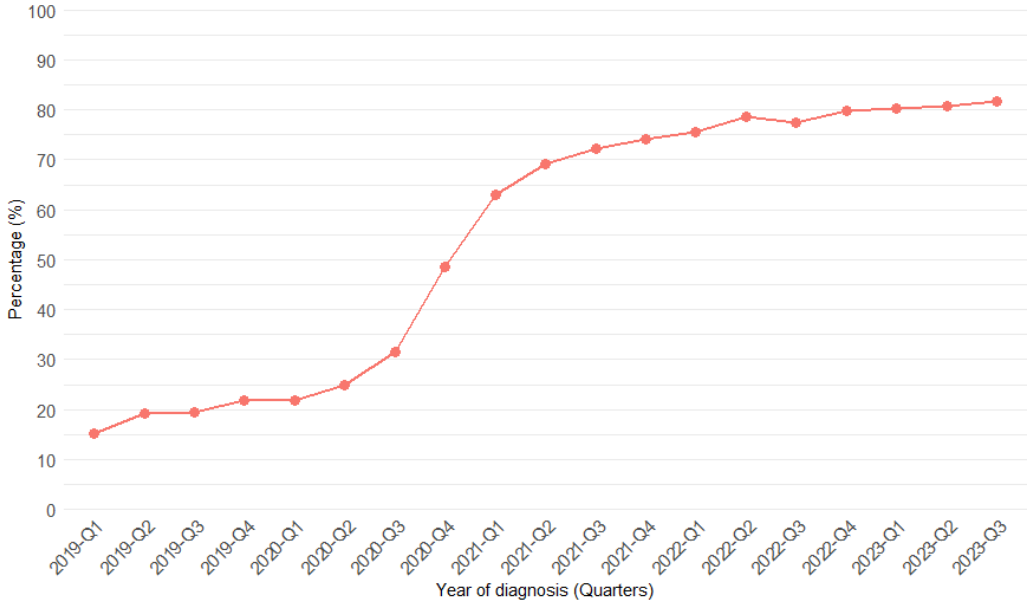
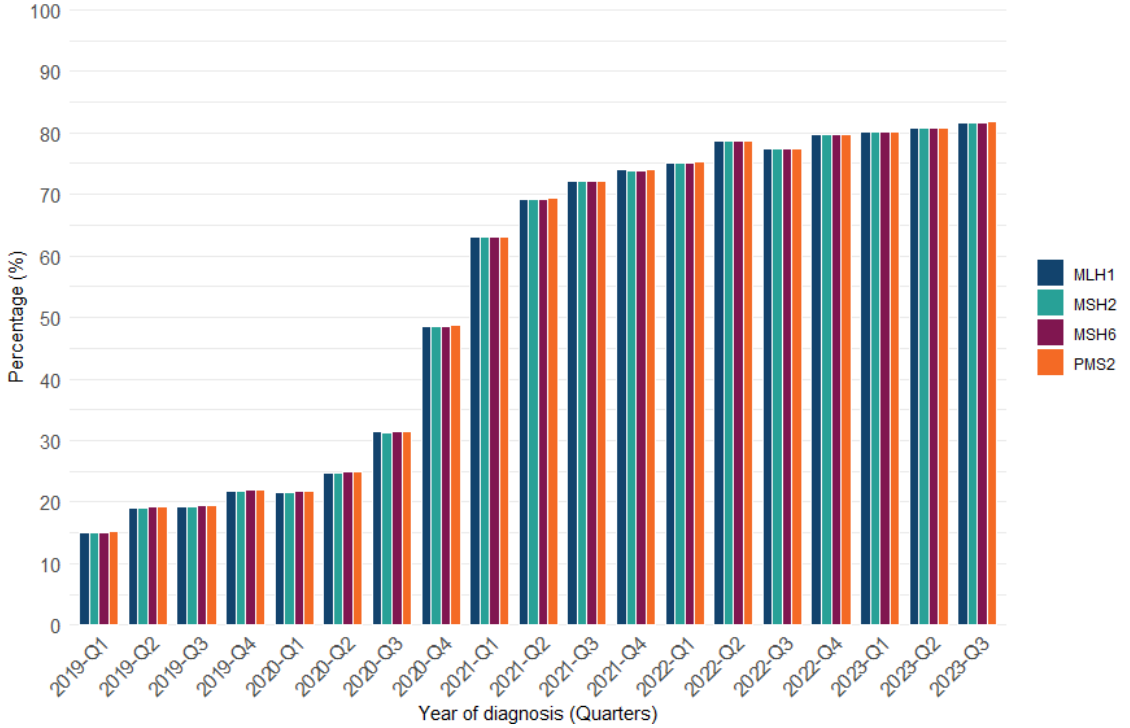


Figure 14 shows the distribution of recorded tumour genomic tests over time by gene. Consistent with expectations for this cohort, the most frequently recorded tests were those used to assess MMR status: MLH1, MSH2, MSH6 and PMS2. The predominance of these tests supports the clinical relevance of the data captured; however, variation over time may still be influenced by differences in reporting practices, completeness of pathology submissions and follow-up time. There were 55 patients with PD-L1 tests recorded, and so too few to show on the figure.

Figure 14 : Records of tumour genomic testing over time among women diagnosed with endometrial cancer from January 2019 to September 2023, broken down by the gene recorded



As with all analyses in this chapter, observed trends should be interpreted as reflecting changes in recorded data completeness as well as potential changes in clinical practice.

Tumour genomic testing by geographical region

This section explores geographical variation in the recorded availability of tumour genomic testing data, presented by Cancer Alliance and Integrated Care Board (ICB), based on the trust of diagnosis. See Appendix 7 for more information on the geographical groupings (Cancer Alliance or ICB) used in this report.

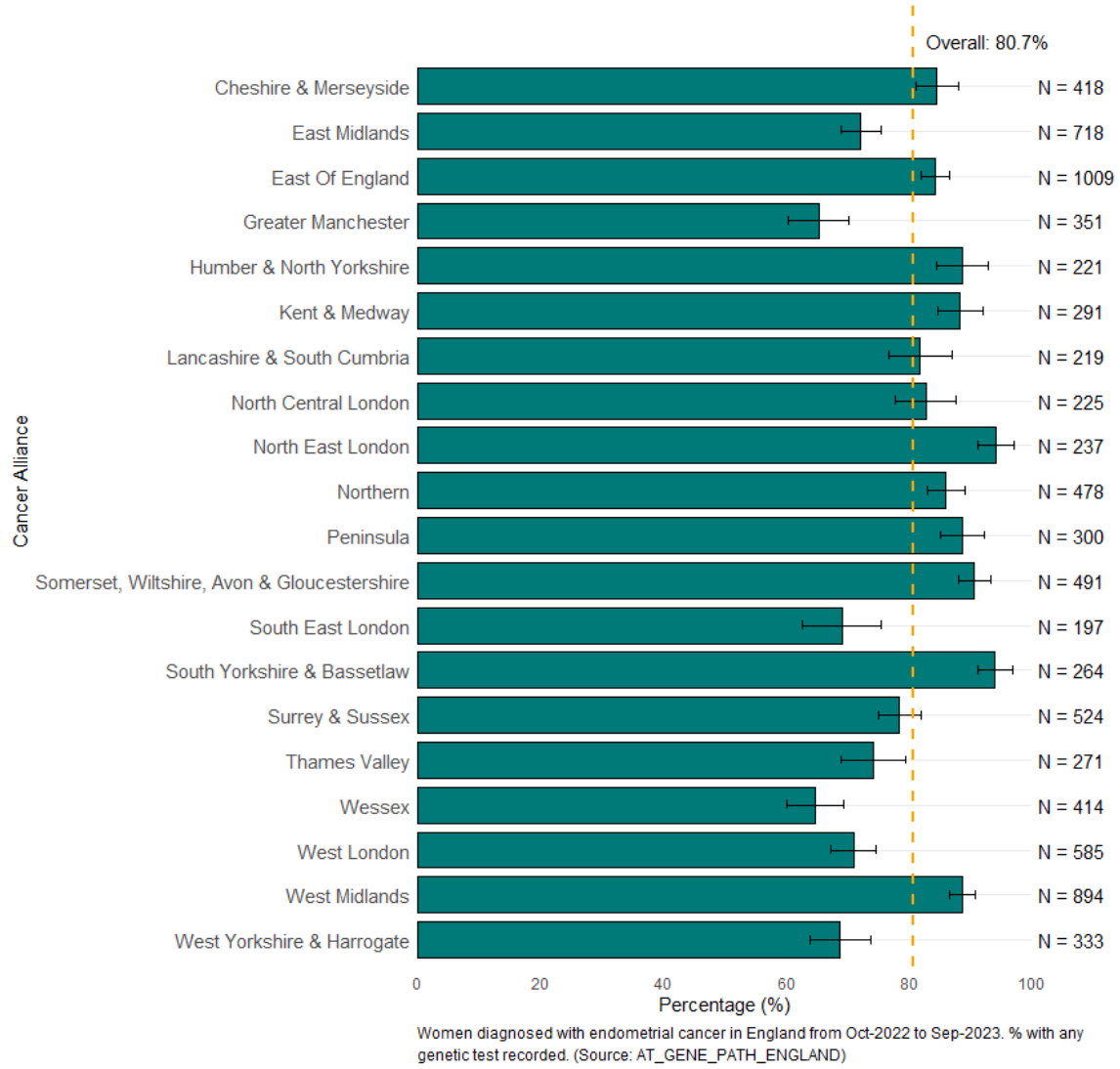
To support more meaningful comparison between regions, the analysis was restricted to the most recent 12-month diagnosis period, representing the time during which the percentage of women with a recorded tumour genomic test had stabilised. Earlier diagnosis years reflect a likely implementation or "run-in" period following the publication of national guidance on tumour genomic testing in 2019, during which both clinical practice and data submission processes were still becoming established. Focusing on the most recent stable period therefore reduces the influence of temporal variation when comparing percentages across geographies.

Percentages were calculated for women diagnosed with endometrial cancer from October 2022 to September 2023 (Q4 2022 to Q3 2023). The cut-off of September 2023 was selected to allow sufficient follow-up time within the test data available for patients to be diagnosed, have tumour genomic tests requested and performed, and for the resulting pathology reports to be submitted and captured in the AT_GENE_PATH_ENGLAND table.

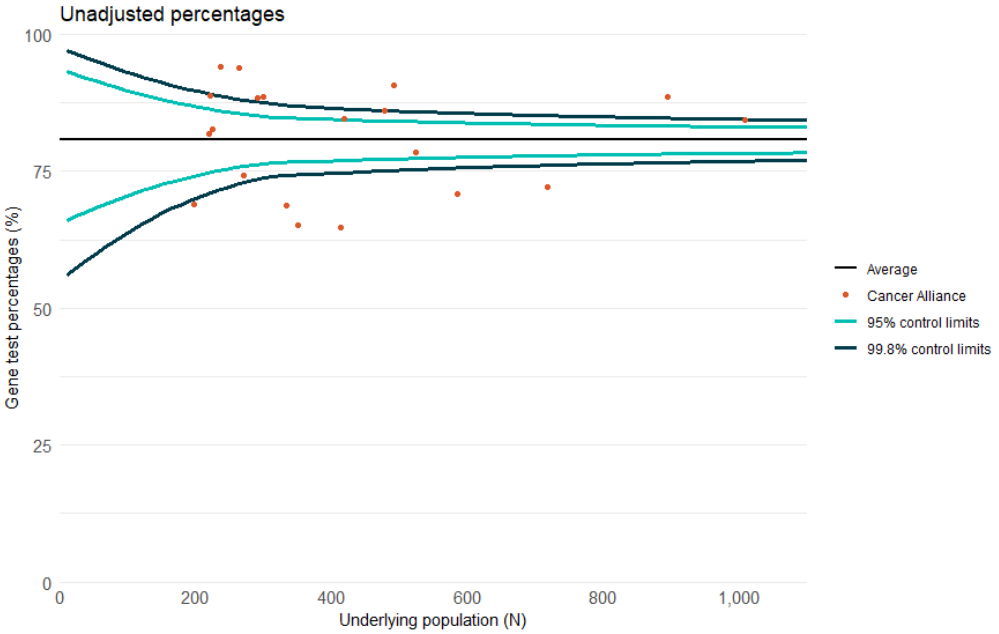
There were 8,440 women diagnosed with endometrial cancer during this 12-month period. Of these, 6,813 (80.7%) had at least one tumour genomic test recorded in the available data.

Observed variation between geographical areas (Figures 15 and 16) should be interpreted with caution. Differences may reflect genuine variation in clinical practice; however, they may also be influenced by local testing pathways, reporting practices, turnaround times for tumour genomic testing, or completeness of supplementary pathology data submission to the NDRS. The results should therefore be viewed primarily as an assessment of data completeness and consistency across regions, rather than a definitive measure of compliance with testing guidance. Full details of the distributions presented in Figures 15 and 16 are provided in the accompanying Excel workbook (Tables CAL_gene and ICB_gene).

Figure 15 : Percentages with tumour genomic testing recorded among women diagnosed with endometrial cancer from October 2022 to September 2023, by Cancer Alliance at diagnosis

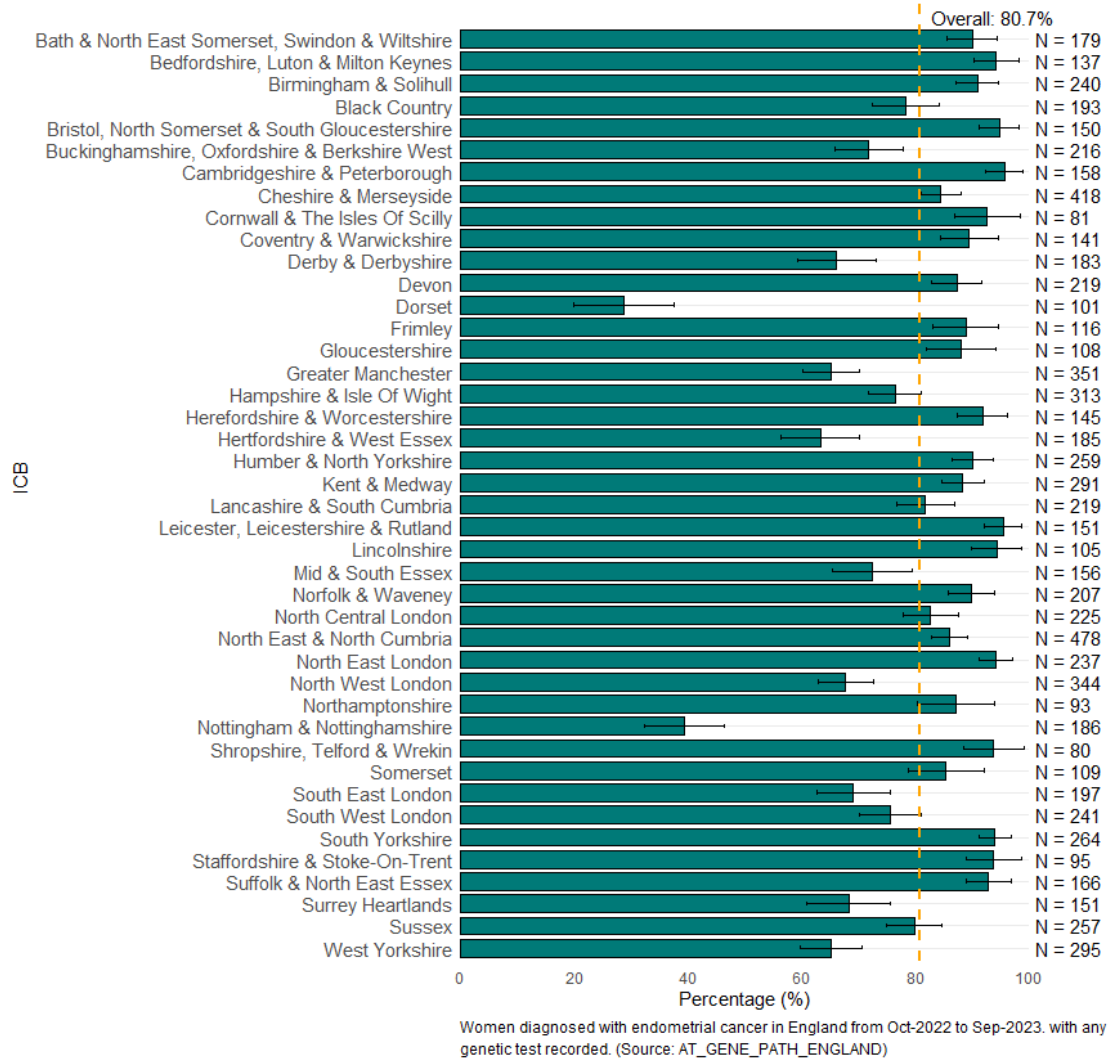


Women diagnosed with endometrial cancer in England from Oct-2022 to Sep-2023. % with any genetic test recorded. (Source: AT_GENE_PATH_ENGLAND)

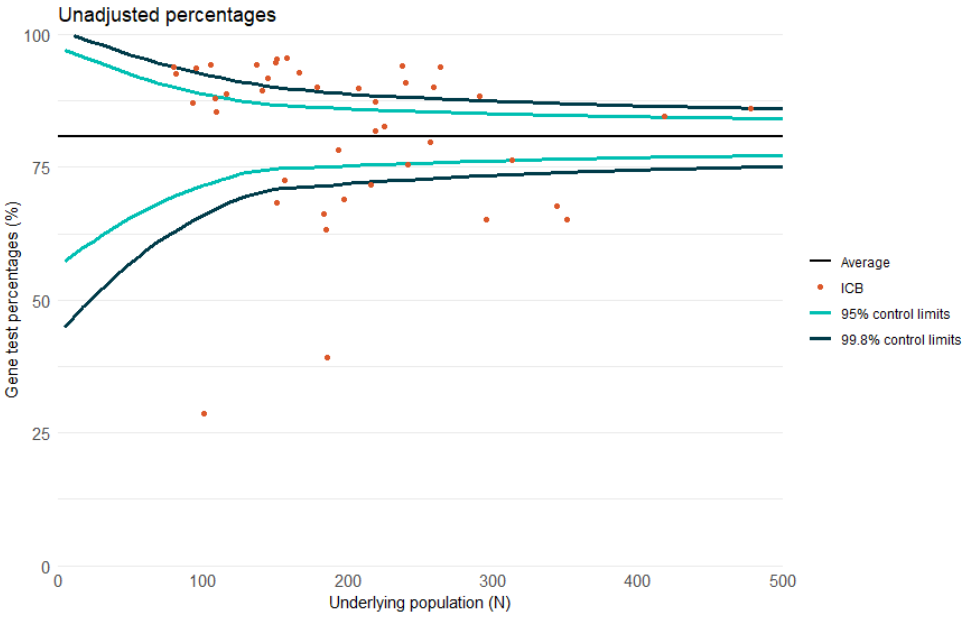


Women diagnosed with endometrial cancer in England from Oct-2022 to Sep-2023. % with any genetic test recorded. (Source: AT_GENE_PATH_ENGLAND)

Figure 16 : Percentages with tumour genomic testing recorded among women diagnosed with endometrial cancer from October 2022 to September 2023, by Integrated Care Board (ICB) at diagnosis



Women diagnosed with endometrial cancer in England from Oct-2022 to Sep-2023. with any genetic test recorded. (Source: AT_GENE_PATH_ENGLAND)



Women diagnosed with endometrial cancer in England from Oct-2022 to Sep-2023. % with any genetic test recorded. (Source: AT_GENE_PATH_ENGLAND)

Immunotherapy treatment

Background

Immunotherapy and targeted therapy represent recent additions to the treatment landscape for endometrial cancer. The introduction of immune checkpoint inhibitors, a type of immunotherapy, has provided new treatment options for patients with advanced or recurrent disease, particularly those with high microsatellite instability (MSI-H) or mismatch repair deficiency (dMMR).

Use of nivolumab became part of interim clinical practice in 2020 during COVD-19, following NHS England and NICE systemic anticancer treatment guidelines designed to enable more flexible patient management during service disruption.[10]

Building on this, dostarlimab was initially approved in 2022 for previously treated advanced or recurrent endometrial cancer with MSI-H or dMMR (TA779).[11] This was later expanded to first-line use in combination with platinum-based chemotherapy, initially through the Cancer Drugs Fund (CDF) in 2024 (TA963) and subsequently through routine commissioning in 2025 (TA1064).[12] This marked an important expansion of access, reflecting growing recognition of the clinical benefit of immunotherapy in molecularly defined subgroups.

Most recently, toward the end of 2025, NICE published guidance expanding first-line treatment options recommending the use of pembrolizumab (TA1092) or dostarlimab (TA1117) in combination with carboplatin and paclitaxel for patients with primary advanced or recurrent endometrial cancer irrespective of MMR status.[13]

Published studies suggest that the adoption of immunotherapy in endometrial cancer is increasing in other countries, both as monotherapy and in combination with chemotherapy, supported by accumulating evidence of durable responses and survival benefit in appropriately selected patients.[14]

The ECAP previously published a separate report that examined established treatment modalities for endometrial cancer, including hysterectomy, chemotherapy, radiotherapy and hormone therapy. In contrast, this current chapter focuses on more recent developments in the treatment landscape, specifically the introduction of novel immunotherapy options. The analyses presented explore patterns of immunotherapy use across England among women diagnosed from 2017 to 2023, providing early insight into: how these novel treatments are being implemented in practice;

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[10] NHS England (2020) Interim treatment options during the COVID-19 pandemic. Available at: https://www.nice.org.uk/guidance/ng161/resources/nhs-englandinterim-treatment-changes-during-the-covid19-pandemic-pdf8715724381; McGrane J, Eastlake L, Hadjiyiannakis D, Lalondrelle S, Bowen R., et al. (2025) Real World Multi-centre UK Review of Nivolumab Monotherapy in Metastatic Endometrial Cancer With Mismatch Repair Deficiency During COVID-19. Clin Oncol (R Coll Radiol), 45, 103899. doi: 10.1016/j.clon.2025.103899

[11] NICE (2022) Dostarlimab for previously treated advanced or recurrent endometrial cancer with high microsatellite instability or mismatch repair deficiency (TA779). Available at: https://www.nice.org.uk/guidance/ta779

[12] Mirza MR, Chase DM, Slomovitz BM, dePont Christensen R, Novák Z, Black D, et al.; RUBY Investigators. (2023) Dostarlimab for Primary Advanced or Recurrent Endometrial Cancer. N Engl J Med. 23, 2145-2158. doi: 10.1056/NEJMoa2216334; National Institute for Health and Care Excellence (NICE) (2024). Dostarlimab with platinum-based chemotherapy for treating advanced or recurrent endometrial cancer with high microsatellite instability or mismatch repair deficiency (TA963.) Available at: https://www.ncbi.nlm.nih.gov/books/NBK612987/; NICE (2025) Dostarlimab with platinum-based chemotherapy for treating primary advanced or recurrent endometrial cancer with high microsatellite instability or mismatch repair deficiency (TA1064). Available at: https://www.nice.org.uk/guidance/ta1064

[13] NICE (2025) Pembrolizumab with carboplatin and paclitaxel for untreated primary advanced or recurrent endometrial cancer (TA1092). Available at: https://www.nice.org.uk/guidance/ta1092; NICE (2025) Dostarlimab with platinum-containing chemotherapy for treating primary advanced or recurrent endometrial cancer with microsatellite stability or mismatch repair proficiency (TA1117). Available at: https://www.nice.org.uk/guidance/ta1117

[14] Adekanmbi V., Guo F., Hsu C.D., Gao D., Polychronopoulou E., et al. (2024) Temporal Trends in Treatment and Outcomes of Endometrial Carcinoma in the United States, 2005-2020. Cancers (Basel). 16(7), 1282. doi: 10.3390%2Fcancers16071282

how access aligns with tumour genomic testing data; and where further audit or service development may be required to ensure consistent and equitable availability of emerging therapies.

Defining immunotherapy treatment within the data

Evidence of immunotherapy treatment was determined based on records within the Systemic Anti-Cancer Therapy dataset (SACT), along with information from the treatment table of the National Cancer Registration Dataset (NCRD). SACT records were considered if they referenced “dostarlimab”, “pembrolizumab”, or “nivolumab” as monotherapy or in combination with other drugs. In turn, immunotherapy records in the NCRD treatment table were included where “Anti-cancer drug regimen (Immunotherapy)” was recorded in the Cancer Treatment Modality field.

Use of immunotherapy was defined based on the first recorded cycle date or administration date within a regimen (regimen start date was used where no cycle or administration dates were available) in SACT, or date of immunotherapy captured in the NCRD treatment table. Information was included where immunotherapy treatment occurred within 31 days pre-diagnosis and any point thereafter. This time frame was used to capture immunotherapy treatment given either as part of the patient’s primary course of treatment or as treatment for recurrence.

Immunotherapy treatment over time

This section describes trends over time in the use of immunotherapy treatment for women diagnosed with endometrial cancer.

Analyses include diagnosis years from 2017 to 2023. There were 55,678 women diagnosed with endometrial cancer during this period. Of these 1,377 (2.5%) had immunotherapy treatment recorded in the data.

Figure 17 presents the percentage of women with immunotherapy treatment recorded in the data by year of diagnosis (in quarters). Although numbers were small, the percentage of women with evidence of immunotherapy treatment increased over time from 1.1% in 2017 to 3.5% in 2023.

Figure 17 : Use of immunotherapy over time among women diagnosed with endometrial cancer from 2017 to 2023

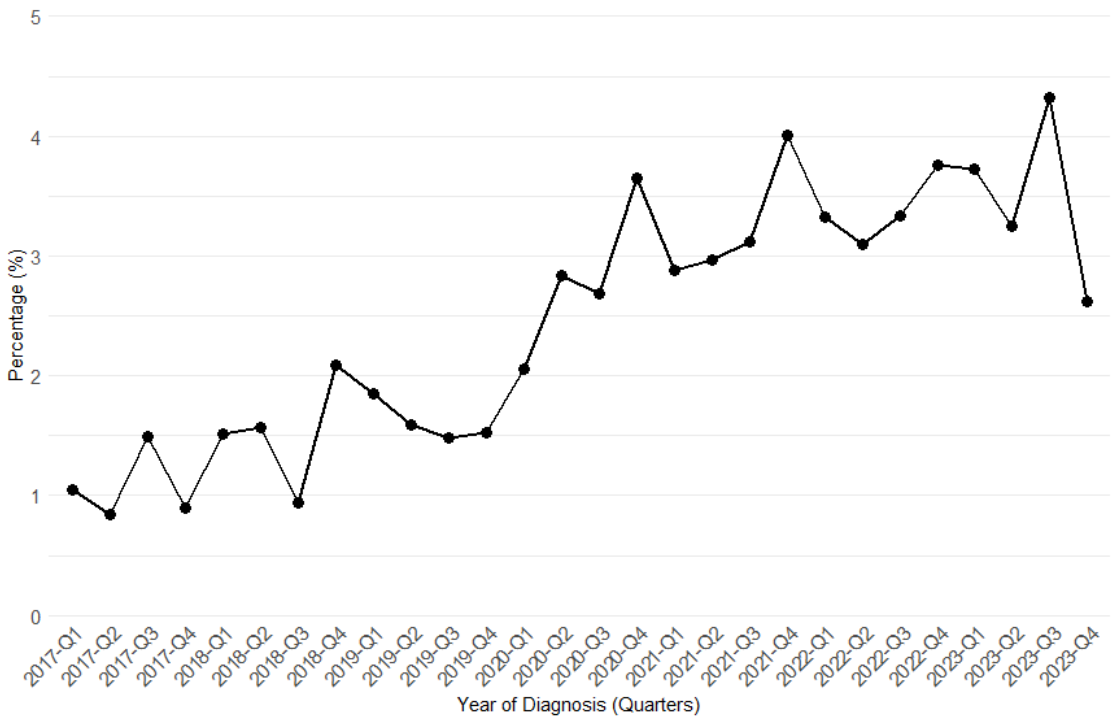
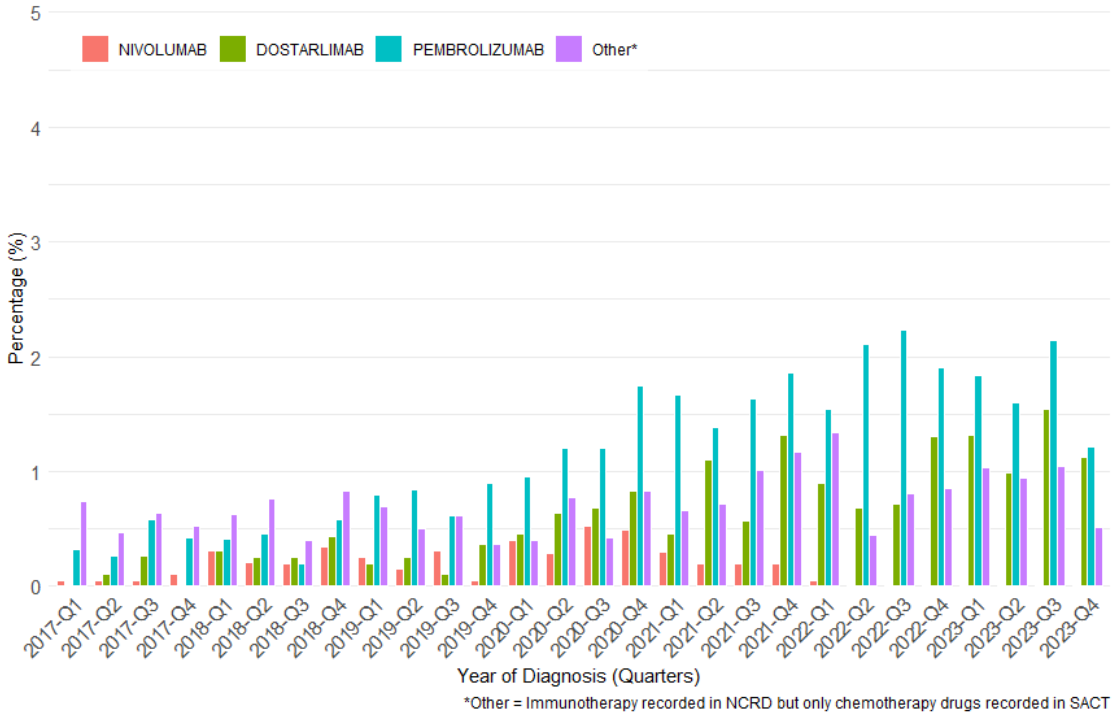


Figure 18 shows the distribution of recorded immunotherapy treatment over time by drug. Drugs described as 'Other' were from the NCRD where no drug name was recorded.

Consistent with changes to immunotherapy treatment guidelines, there was little evidence of nivolumab beyond 2022 whilst use of dostarlimab and pembrolizumab had gradually increased over time. Of note is that this figure was based on date of diagnosis rather than date of treatment, so women who received pembrolizumab and were diagnosed prior to the NICE guidance publication were likely to have received it for recurrent cancer, whilst use of dostarlimab among women in this cohort may either have been through early access via the CDF or for the treatment of recurrent disease.

Figure 18 : Use of immunotherapy over time among women diagnosed with endometrial cancer from 2017 to 2023, broken down by the type of immunotherapy recorded



Factors measured at diagnosis associated with receipt of immunotherapy are shown in Table 2 below. Specifically, we report the odds of immunotherapy for each level of a factor.

The odds of receiving immunotherapy varied by age, IMD quintile, Charlson comorbidity score, ethnic group, stage, grade, morphology and year of diagnosis (quarters). Some of this variation could be attributed to fitness for combination treatments and differences in histological subtypes within ethnic groups, for instance, the adjusted odds of receiving were low among patients in the oldest age category and those with a high burden of comorbid disease.

Table 2: Adjusted associations between patient and tumour characteristics and receipt of immunotherapy, among women diagnosed with endometrial cancer from 2017 to 2023

	Immunotherapy Treatment		Adjusted Logistic Regression Model Results		
Factor	No N = 54,301[1]	Yes N = 1,377[1]	OR	95% CI	p-value
Age group					<0.001
below 40	1,040 (97.8%)	23 (2.2%)	1.39	0.87, 2.12	
40 - 49	2,568 (97.9%)	55 (2.1%)	1.09	0.80, 1.45	
50 - 59	11,236 (97.7%)	261 (2.3%)	1.20	1.01, 1.41	
60 - 69	15,718 (96.7%)	542 (3.3%)	1.49	1.30, 1.70	
70 - 79	15,533 (97.2%)	446 (2.8%)	1.00	—	
80 +	8,206 (99.4%)	50 (0.6%)	0.20	0.14, 0.26	
Deprivation (IMD quintile)					<0.001
1 - most deprived	9,497 (97.9%)	205 (2.1%)	1.00	—	
2	10,539 (97.3%)	287 (2.7%)	1.28	1.07, 1.55	
3	11,454 (97.7%)	265 (2.3%)	1.16	0.96, 1.41	
4	11,586 (97.4%)	312 (2.6%)	1.37	1.13, 1.65	
5 - least deprived	11,225 (97.3%)	308 (2.7%)	1.50	1.25, 1.82	
Charlson Comorbidity Score					<0.001
0	45,395 (97.3%)	1,242 (2.7%)	1.00	—	
1	4,189 (98.3%)	71 (1.7%)	0.69	0.54, 0.88	
2	2,422 (98.2%)	45 (1.8%)	0.79	0.57, 1.06	
3	1,185 (98.8%)	14 (1.2%)	0.52	0.29, 0.86	
4+	1,110 (99.6%)	5 (0.4%)	0.23	0.08, 0.50	
Ethnic group					0.001
Asian	2,806 (97.1%)	83 (2.9%)	1.16	0.91, 1.46	
Black	1,481 (95.4%)	71 (4.6%)	1.08	0.82, 1.39	
Chinese	197 (95.6%)	9 (4.4%)	1.75	0.80, 3.35	
Mixed	357 (97.0%)	11 (3.0%)	0.85	0.43, 1.52	
White	46,199 (97.6%)	1,114 (2.4%)	1.00	—	
Other	990 (95.3%)	49 (4.7%)	1.62	1.17, 2.18	
Unknown	2,271 (98.3%)	40 (1.7%)	0.63	0.45, 0.86	
Stage at diagnosis					<0.001
1	37,136 (99.0%)	383 (1.0%)	1.00	—	
2	3,278 (97.0%)	100 (3.0%)	2.82	2.24, 3.53	
3A	1,588 (95.0%)	84 (5.0%)	4.69	3.64, 5.98	
3B	1,104 (93.4%)	78 (6.6%)	6.42	4.91, 8.29	
3C	2,762 (91.3%)	263 (8.7%)	6.80	5.70, 8.10	
4	3,644 (90.1%)	400 (9.9%)	7.90	6.71, 9.32	
Unknown	4,789 (98.6%)	69 (1.4%)	1.59	1.20, 2.06	
Tumour grade					<0.001
Low	36,158 (98.7%)	476 (1.3%)	1.00	—	
High	13,557 (94.8%)	747 (5.2%)	1.84	1.56, 2.16	
Unknown	4,585 (96.8%)	154 (3.2%)	1.55	1.23, 1.94	
Missing	1 (100.0%)	0 (0.0%)	0.00		
Morphology					<0.001
Endometrioid Adenocarcinoma	40,107 (98.4%)	655 (1.6%)	1.00	—	
Serous	5,170 (93.0%)	387 (7.0%)	1.59	1.33, 1.89	
Carcinosarcoma	3,066 (97.3%)	86 (2.7%)	0.59	0.45, 0.76	
Miscellaneous and Unspecified	856 (99.2%)	7 (0.8%)	0.41	0.17, 0.83	

Factor	Immunotherapy Treatment		Adjusted Logistic Regression Model Results		
	No N = 54,301[1]	Yes N = 1,377[1]	OR	95% CI	p-value
Clear Cell	1,024 (94.6%)	58 (5.4%)	1.45	1.06, 1.96	
Undifferentiated/differentiated Carcinoma	409 (94.2%)	25 (5.8%)	1.02	0.64, 1.55	
Other Classified & Unclassified Carcinoma	3,669 (95.8%)	159 (4.2%)	1.37	1.12, 1.67	
Year of diagnosis (Quarters)					<0.001
2017-Q1	1,879 (98.9%)	20 (1.1%)	1.00	—	
2017-Q2	1,885 (99.2%)	16 (0.8%)	0.81	0.41, 1.58	
2017-Q3	1,848 (98.5%)	28 (1.5%)	1.45	0.81, 2.64	
2017-Q4	1,873 (99.1%)	17 (0.9%)	0.88	0.45, 1.70	
2018-Q1	1,892 (98.5%)	29 (1.5%)	1.59	0.89, 2.89	
2018-Q2	1,939 (98.4%)	31 (1.6%)	1.55	0.88, 2.80	
2018-Q3	1,993 (99.1%)	19 (0.9%)	0.94	0.49, 1.79	
2018-Q4	2,013 (97.9%)	43 (2.1%)	2.10	1.23, 3.68	
2019-Q1	1,966 (98.2%)	37 (1.8%)	1.75	1.01, 3.11	
2019-Q2	1,975 (98.4%)	32 (1.6%)	1.68	0.96, 3.03	
2019-Q3	1,921 (98.5%)	29 (1.5%)	1.54	0.87, 2.80	
2019-Q4	1,874 (98.5%)	29 (1.5%)	1.67	0.94, 3.04	
2020-Q1	1,949 (97.9%)	41 (2.1%)	2.12	1.24, 3.74	
2020-Q2	1,372 (97.2%)	40 (2.8%)	2.97	1.73, 5.26	
2020-Q3	1,852 (97.3%)	51 (2.7%)	2.53	1.51, 4.39	
2020-Q4	1,981 (96.4%)	75 (3.6%)	3.74	2.29, 6.37	
2021-Q1	1,921 (97.1%)	57 (2.9%)	2.96	1.78, 5.11	
2021-Q2	2,028 (97.0%)	62 (3.0%)	2.88	1.75, 4.95	
2021-Q3	2,020 (96.9%)	65 (3.1%)	3.39	2.06, 5.82	
2021-Q4	1,963 (96.0%)	82 (4.0%)	4.36	2.69, 7.40	
2022-Q1	1,945 (96.7%)	67 (3.3%)	3.36	2.04, 5.75	
2022-Q2	1,973 (96.9%)	63 (3.1%)	3.13	1.90, 5.37	
2022-Q3	2,032 (96.7%)	70 (3.3%)	3.44	2.10, 5.87	
2022-Q4	1,923 (96.2%)	75 (3.8%)	3.82	2.35, 6.51	
2023-Q1	2,044 (96.3%)	79 (3.7%)	3.91	2.41, 6.65	
2023-Q2	2,052 (96.7%)	69 (3.3%)	3.50	2.14, 5.99	
2023-Q3	2,103 (95.7%)	95 (4.3%)	4.42	2.75, 7.46	
2023-Q4	2,085 (97.4%)	56 (2.6%)	2.42	1.46, 4.19	

[1]n (%)

Abbreviations: CI = Confidence Interval, OR = Odds Ratio

Notes:

Odds ratios are adjusted for all other factors presented in the table and represent conditional associations, not independent causal effects. Global p-values are from Type II likelihood-ratio χ^2 tests, assessing whether each factor considered as a whole is associated with receipt of immunotherapy.

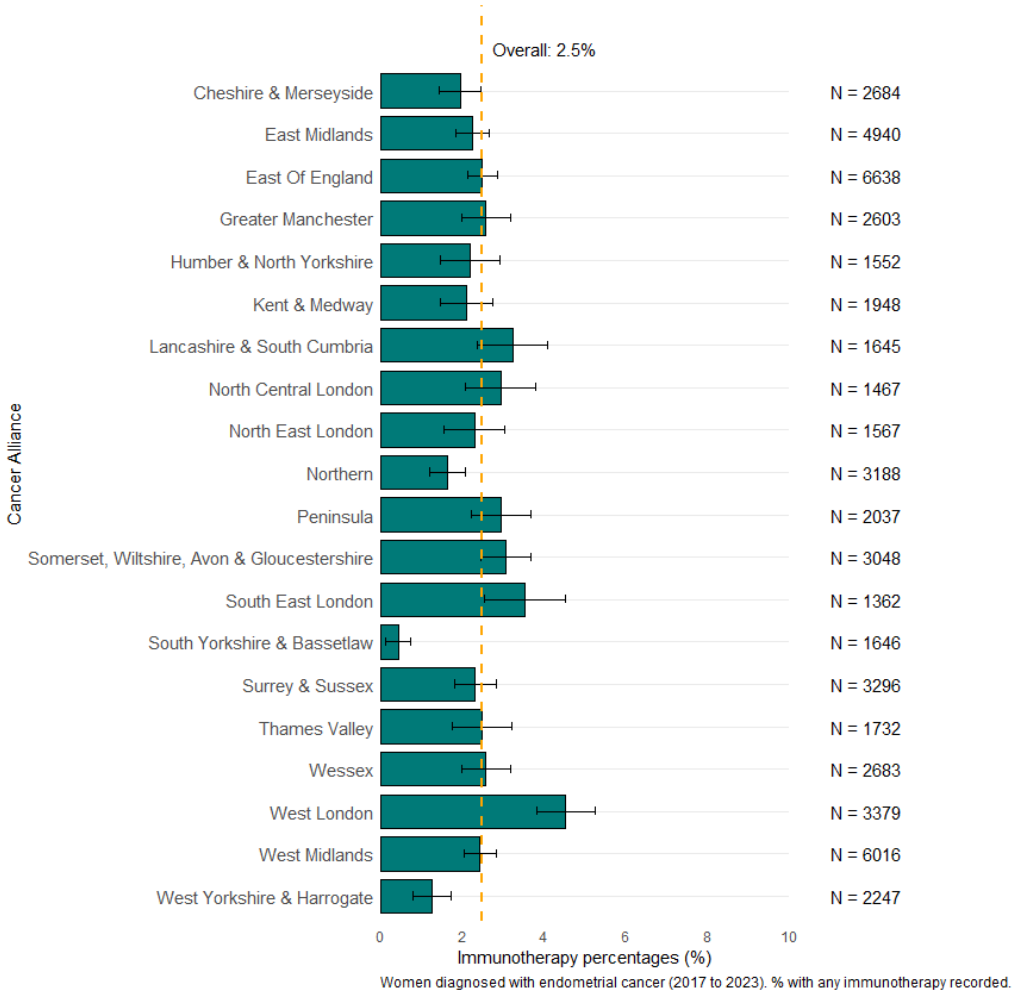
Immunotherapy utilisation by geographical region

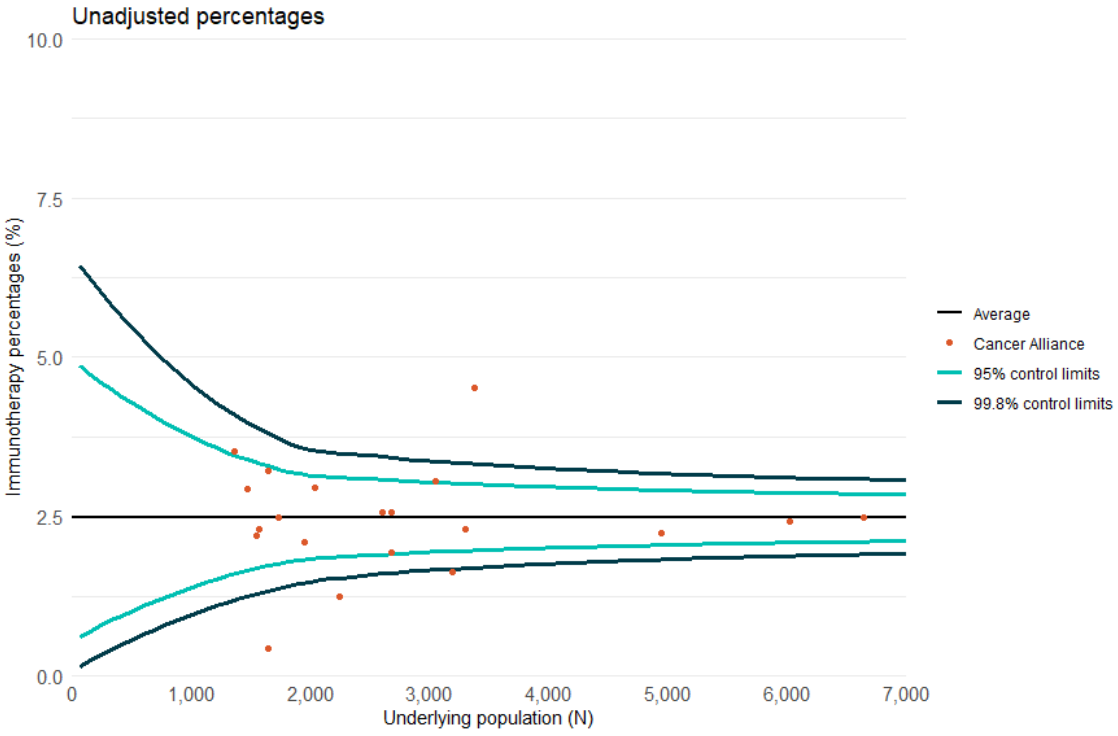
This section explores geographical variation in the percentages of women with a record of having received immunotherapy treatment at any point from one month prior to diagnosis, presented by Cancer Alliance and Integrated Care Board (ICB), based on the trust of diagnosis. See Appendix 7 for more information on the geographical groupings (Cancer Alliance or ICB) used in this report.

The plots in Figures 19 and 20 illustrate variation in the percentages of women who received immunotherapy treatment, with and without adjustment for the factors reported in Table 2, across Cancer Alliances and ICBs (note: bar charts show unadjusted percentages). Full details of the distributions presented in Figures 19 and 20 are provided in the accompanying Excel workbook (Tables CAL_immuno and ICB_immuno).

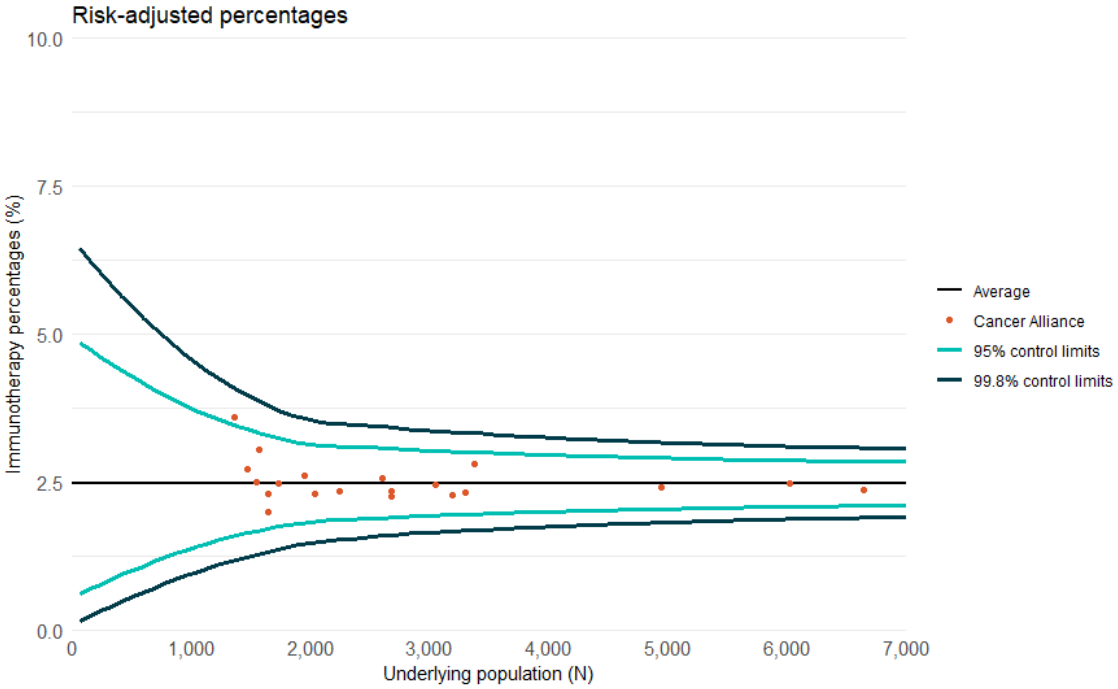
Overall, the percentage of women who received treatment with immunotherapy across England varied little beyond what would be expected given the size of the underlying cancer population. Much of the difference in immunotherapy treatment rates between different Cancer Alliances and ICBs were explained by differences in the cohorts of patients between the various geographies and therefore there was no variation beyond what would be expected following adjustment for the factors in Table 2.

Figure 19 : Use of immunotherapy among women diagnosed with endometrial cancer from 2017 to 2023, by Cancer Alliance at diagnosis



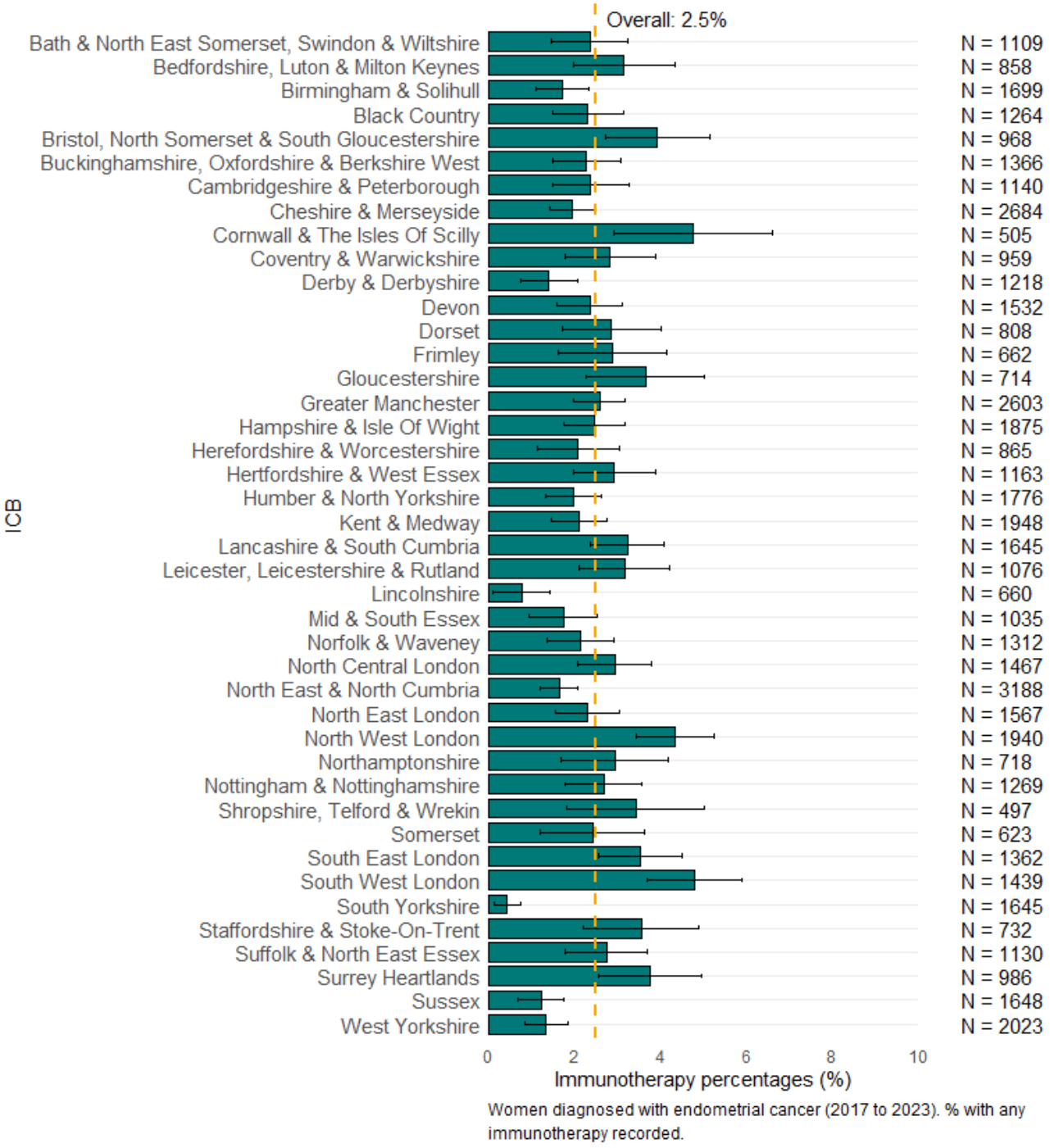


Women diagnosed with endometrial cancer (2017 to 2023). % with any immunotherapy recorded.

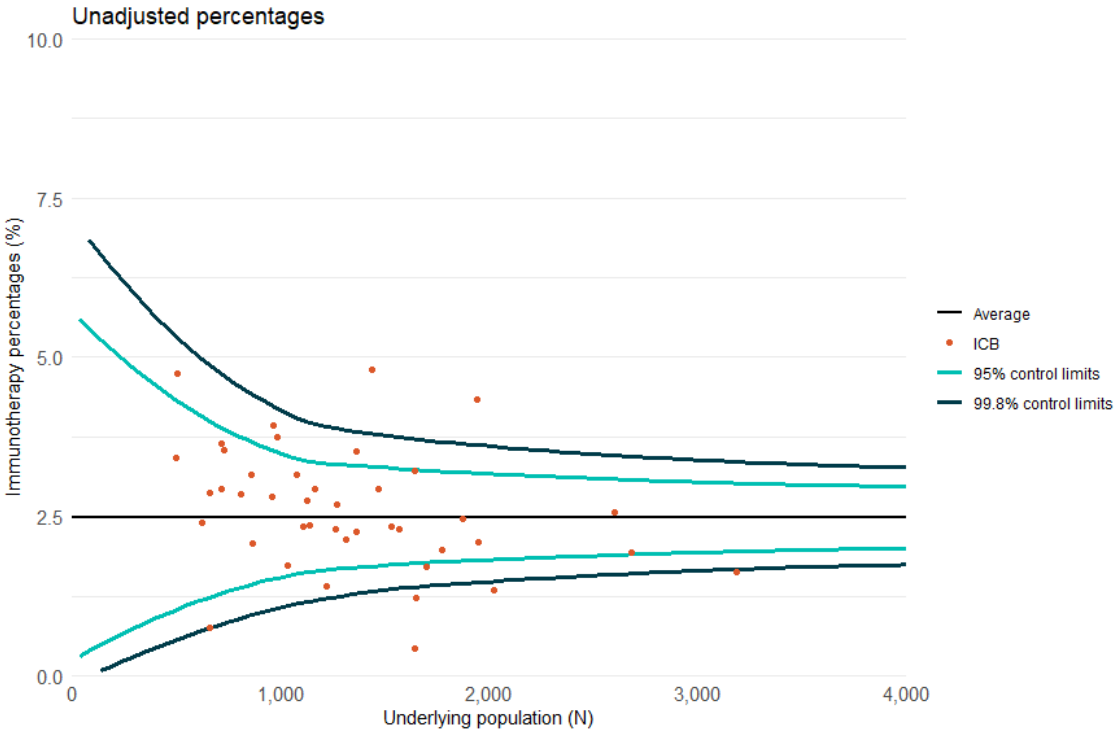


Women diagnosed with endometrial cancer (2017 to 2023). % with any immunotherapy recorded, adjusted for charateristics at diagnosis: age (10-year age bands), IMD, ethnic group, stage, grade, morphology, year of diagnosis (quarters).

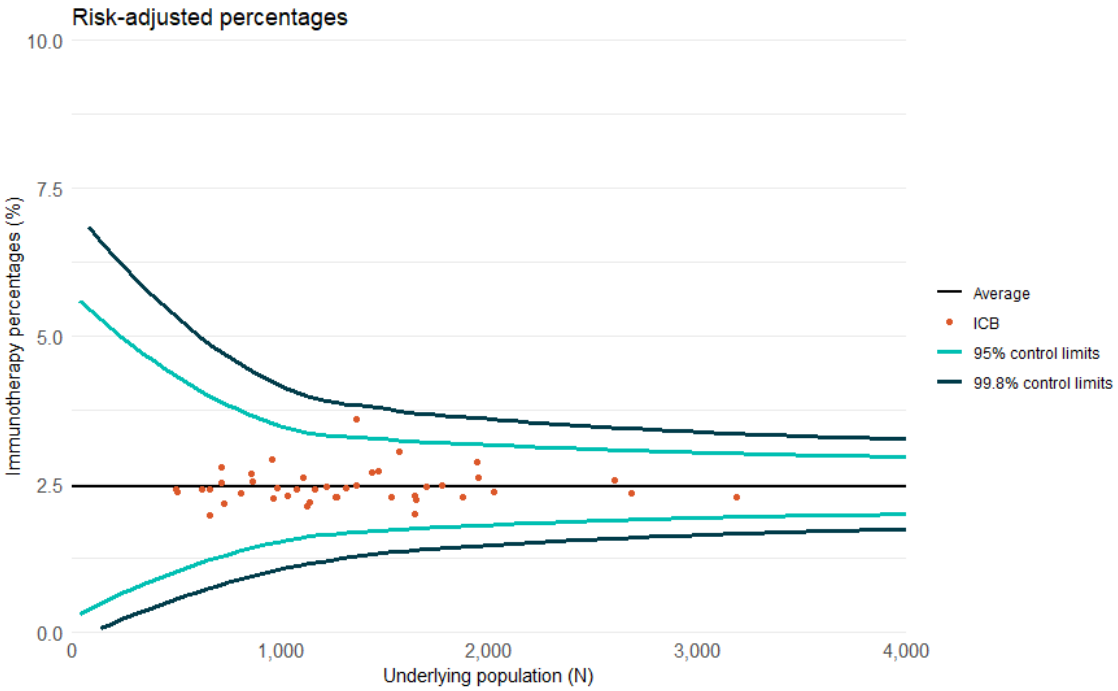
Figure 20 : Use of immunotherapy among women diagnosed with endometrial cancer from 2017 to 2023, by Integrated Care Board (ICB) at diagnosis



Women diagnosed with endometrial cancer (2017 to 2023). % with any immunotherapy recorded.



Women diagnosed with endometrial cancer (2017 to 2023). % with any immunotherapy recorded.



Women diagnosed with endometrial cancer (2017 to 2023). % with any immunotherapy recorded, adjusted for charateristics at diagnosis: age (10-year age bands), IMD, ethnic group, stage, grade, morphology, year of diagnosis (quarters).

Immunotherapy utilisation among patients with dMMR

As dostarlimab and nivolumab were recommended only for patients with evidence of mismatch repair deficient (dMMR) disease, the following findings are presented for the subset of patients with evidence of dMMR as determined based on a record of a positive status for any MMR gene test.

Percentages were calculated for women diagnosed with endometrial cancer from January 2019 to September 2023 who had a record of a positive status for any MMR gene test. The cut-off of September 2023 was selected to allow sufficient follow-up time within the available test data for patients to be diagnosed, have molecular tests requested and performed, and for the resulting pathology reports to be submitted and captured in the AT_GENE_PATH_ENGLAND table. The previous chapter on tumour genomic testing should be referred to for limitations on the testing data available.

There were 5,712 women diagnosed with endometrial cancer from January 2019 to September 2023 who had a record of a positive status for any MMR gene test. Of these, 326 (5.7%) had immunotherapy treatment recorded in the data.

Figure 21 presents the percentage of women with immunotherapy treatment recorded in the data by year of diagnosis. There was little difference across the years, with a slight peak in 2020.

Figure 21 : Use of immunotherapy over time among women diagnosed with endometrial cancer from 2019 to 2023 who had a record of a positive status for any MMR gene test

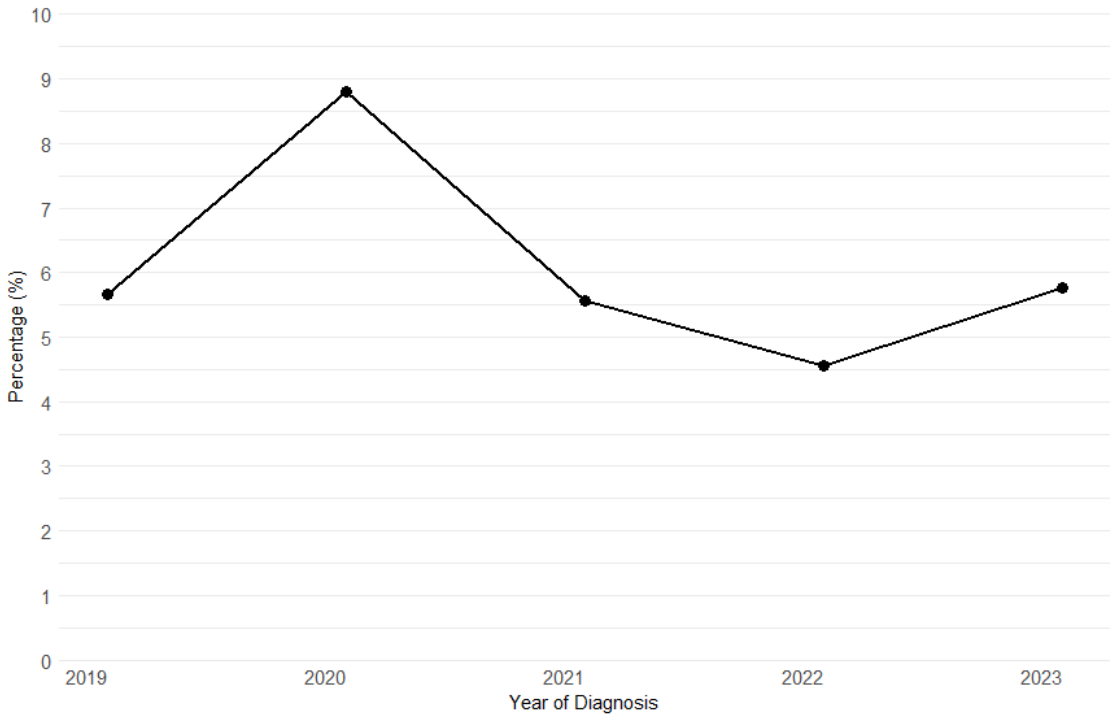
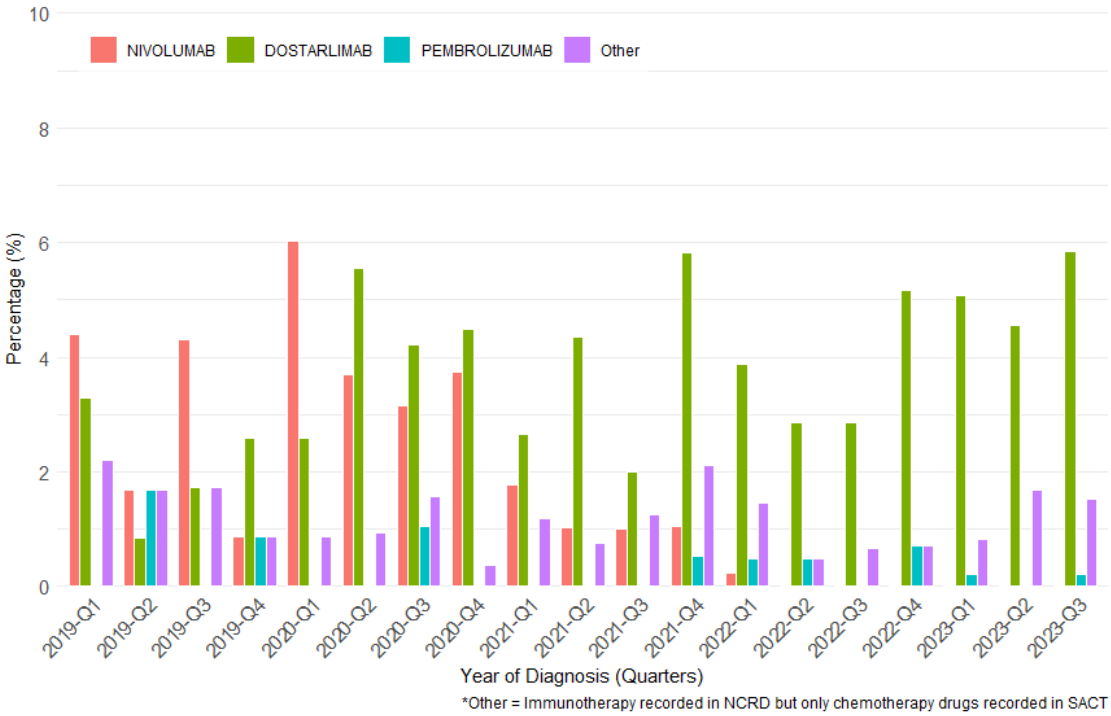


Figure 22 shows the distribution of recorded immunotherapy treatment over time by drug. Drugs described as 'Other' were from the NCRD where no drug name was recorded. Use was highest for nivolumab among people diagnosed in 2019, whilst use of dostarlimab was highest among people diagnosed from 2020 onwards.

Figure 22 : Use of immunotherapy over time among women diagnosed with endometrial cancer from 2019 to 2023 who had a record of a positive status for any MMR gene test, broken down by the type of immunotherapy recorded



Factors measured at diagnosis associated with receipt of immunotherapy, among women diagnosed with endometrial cancer from 2019 to 2023 who had a record of a positive status for any MMR gene test, are shown in Table 3 below. Specifically, we report the odds of immunotherapy for each level of a factor.

The odds of receiving immunotherapy varied by age, IMD quintile, Charlson comorbidity score, stage and morphology. Use was lowest among women age 80+ at diagnosis and also decreased with increasing Charlson comorbidity score. As expected, odds of receiving immunotherapy increased as stage at diagnosis increased, being highest among stage 3A, 3B and 4.

Table 3: Adjusted associations between patient and tumour characteristics and receipt of immunotherapy, among women diagnosed with endometrial cancer from 2019 to 2023 who had a record of a positive status for any MMR gene test

	Immunotherapy Treatment		Adjusted Logistic Regression Model Results		
Factor	No N = 5,386[1]	Yes N = 326[1]	OR	95% CI	p-value
Age group					<0.001
below 40	46 (86.8%)	7 (13.2%)	1.53	0.57, 3.61	
40 - 49	196 (92.9%)	15 (7.1%)	0.64	0.33, 1.16	
50 - 59	1,074 (94.0%)	69 (6.0%)	0.76	0.54, 1.06	
60 - 69	1,573 (94.0%)	101 (6.0%)	0.90	0.67, 1.21	
70 - 79	1,677 (93.2%)	123 (6.8%)	1.00	—	
80 +	820 (98.7%)	11 (1.3%)	0.15	0.08, 0.28	
Deprivation (IMD quintile)					0.017
1 - most deprived	953 (94.6%)	54 (5.4%)	1.00	—	
2	1,052 (93.8%)	69 (6.2%)	1.44	0.96, 2.15	
3	1,177 (95.0%)	62 (5.0%)	1.11	0.74, 1.67	
4	1,223 (95.2%)	62 (4.8%)	1.08	0.72, 1.63	
5 - least deprived	981 (92.5%)	79 (7.5%)	1.79	1.21, 2.66	
Charlson Comorbidity Score					0.010
0	4,498 (93.7%)	300 (6.3%)	1.00	—	
1	414 (96.7%)	14 (3.3%)	0.52	0.28, 0.90	
2	245 (96.8%)	8 (3.2%)	0.51	0.22, 1.03	
3	121 (98.4%)	2 (1.6%)	0.32	0.05, 1.09	
4+	108 (98.2%)	2 (1.8%)	0.37	0.06, 1.26	
Ethnic group					0.221
Asian	320 (94.4%)	19 (5.6%)	1.04	0.60, 1.71	
Black	149 (93.7%)	10 (6.3%)	0.90	0.41, 1.77	
Chinese	14 (73.7%)	5 (26.3%)	4.20	1.09, 13.7	
Mixed	30 (93.8%)	2 (6.3%)	1.03	0.15, 4.14	
White	4,535 (94.3%)	275 (5.7%)	1.00	—	
Other	111 (95.7%)	5 (4.3%)	0.55	0.18, 1.34	
Unknown	227 (95.8%)	10 (4.2%)	0.62	0.29, 1.17	
Stage at diagnosis					<0.001
1	3,884 (97.7%)	90 (2.3%)	1.00	—	
2	351 (92.9%)	27 (7.1%)	3.56	2.22, 5.53	
3A	186 (90.3%)	20 (9.7%)	4.72	2.73, 7.82	
3B	106 (81.5%)	24 (18.5%)	11.4	6.68, 19.0	
3C	307 (80.8%)	73 (19.2%)	10.3	7.28, 14.6	
4	214 (72.1%)	83 (27.9%)	18.6	13.0, 26.7	
Unknown	338 (97.4%)	9 (2.6%)	1.50	0.69, 2.88	
Tumour grade					0.518
Low	3,996 (95.3%)	196 (4.7%)	1.00	—	
High	1,236 (91.5%)	115 (8.5%)	0.84	0.62, 1.13	
Unknown	154 (91.1%)	15 (8.9%)	0.93	0.47, 1.74	
Morphology					0.002
Endometrioid Adenocarcinoma	4,795 (94.9%)	257 (5.1%)	1.00	—	
Serous	73 (78.5%)	20 (21.5%)	4.42	2.24, 8.50	
Carcinosarcoma	126 (91.3%)	12 (8.7%)	1.37	0.66, 2.66	
Clear Cell	39 (86.7%)	6 (13.3%)	2.18	0.72, 5.70	

Factor	Immunotherapy Treatment		Adjusted Logistic Regression Model Results		
	No N = 5,386[1]	Yes N = 326[1]	OR	95% CI	p-value
Undifferentiated/differentiated Carcinoma	85 (88.5%)	11 (11.5%)	1.19	0.55, 2.40	
Other Classified & Unclassified Carcinoma	268 (93.1%)	20 (6.9%)	1.37	0.79, 2.26	
Year of diagnosis (Quarters)					0.098
2019-Q1	84 (92.3%)	7 (7.7%)	1.00	—	
2019-Q2	113 (95.8%)	5 (4.2%)	0.57	0.15, 1.99	
2019-Q3	108 (93.1%)	8 (6.9%)	0.95	0.30, 3.06	
2019-Q4	111 (95.7%)	5 (4.3%)	0.55	0.15, 1.93	
2020-Q1	106 (91.4%)	10 (8.6%)	0.92	0.30, 2.89	
2020-Q2	98 (90.7%)	10 (9.3%)	1.04	0.35, 3.26	
2020-Q3	172 (90.5%)	18 (9.5%)	1.01	0.38, 2.92	
2020-Q4	245 (91.8%)	22 (8.2%)	1.22	0.48, 3.45	
2021-Q1	323 (95.3%)	16 (4.7%)	0.57	0.21, 1.64	
2021-Q2	369 (94.4%)	22 (5.6%)	0.71	0.28, 2.00	
2021-Q3	386 (96.0%)	16 (4.0%)	0.49	0.19, 1.41	
2021-Q4	347 (92.0%)	30 (8.0%)	1.07	0.44, 2.93	
2022-Q1	391 (94.7%)	22 (5.3%)	0.62	0.25, 1.72	
2022-Q2	404 (96.4%)	15 (3.6%)	0.40	0.15, 1.14	
2022-Q3	438 (96.7%)	15 (3.3%)	0.42	0.16, 1.21	
2022-Q4	400 (93.9%)	26 (6.1%)	0.74	0.30, 2.04	
2023-Q1	465 (94.5%)	27 (5.5%)	0.61	0.25, 1.68	
2023-Q2	395 (94.7%)	22 (5.3%)	0.72	0.29, 2.04	
2023-Q3	431 (93.5%)	30 (6.5%)	0.83	0.34, 2.29	

[1]n (%)

Abbreviations: CI = Confidence Interval, OR = Odds Ratio

Notes:

Odds ratios are adjusted for all other factors presented in the table and represent conditional associations, not independent causal effects.

Global p-values are from Type II likelihood-ratio χ^2 tests, assessing whether each factor considered as a whole is associated with receipt of immunotherapy.

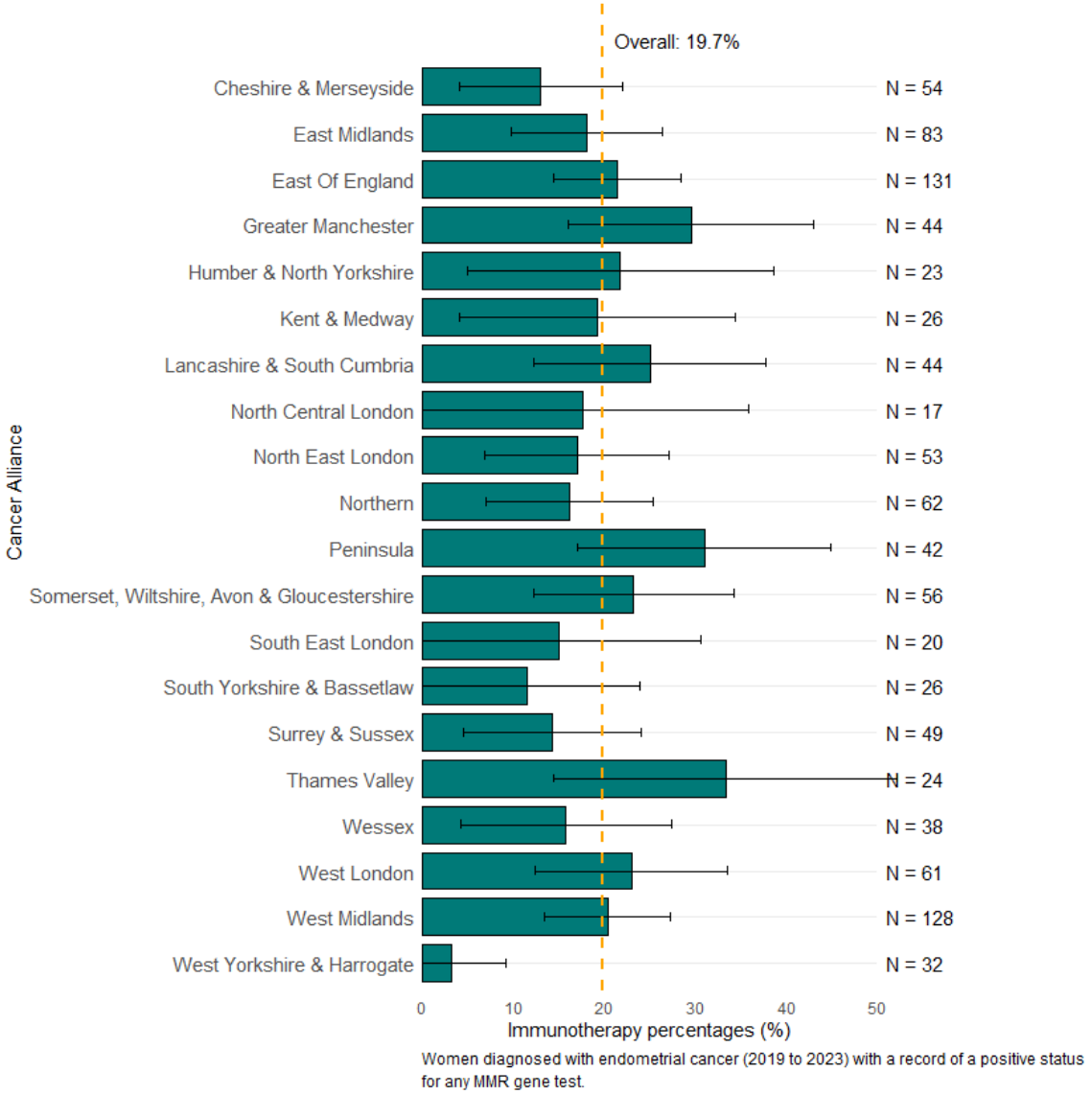
Immunotherapy utilisation by geographical region

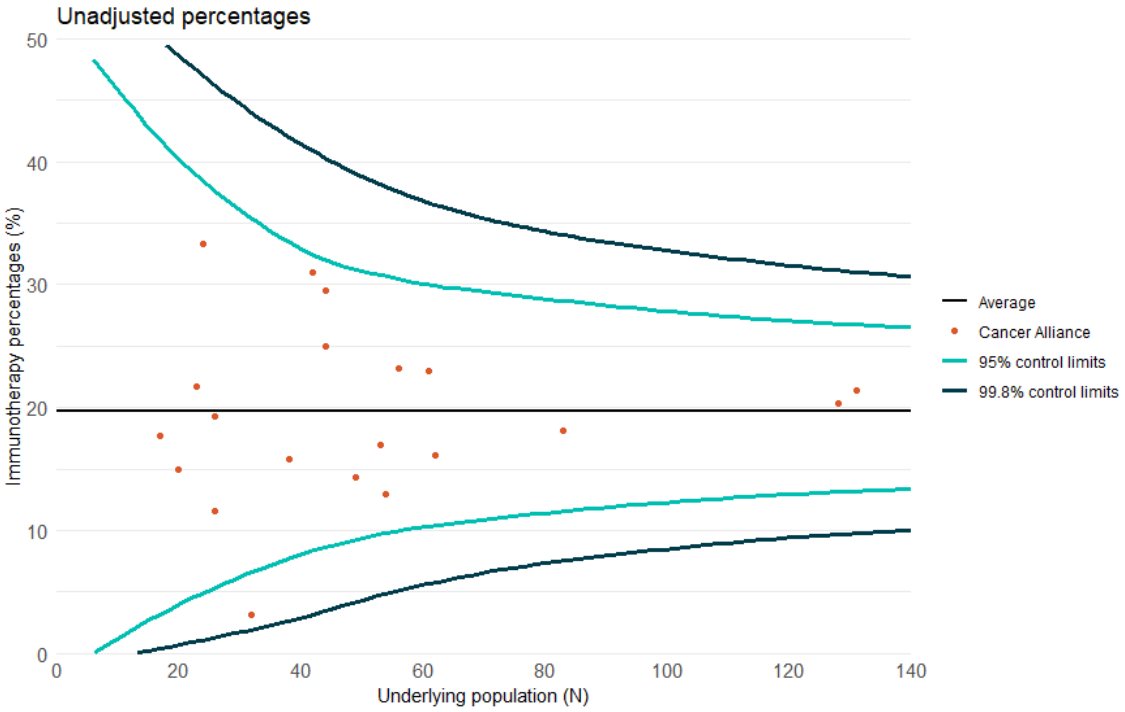
Figure 23 looks at variation in the percentages of women with a record of receiving immunotherapy at any point after diagnosis by geographical region, among women diagnosed with stage 3 or 4 endometrial cancer from 2019 to 2023 who had a record of a positive status for any MMR gene test.

Percentages are presented by Cancer Alliance, based on the trust of diagnosis. See Appendix 7 for more information on the geographical groupings used in this report. Full details of the distributions presented in Figure 23 are provided in the accompanying Excel workbook (Table CAL_immuno_dMMR34).

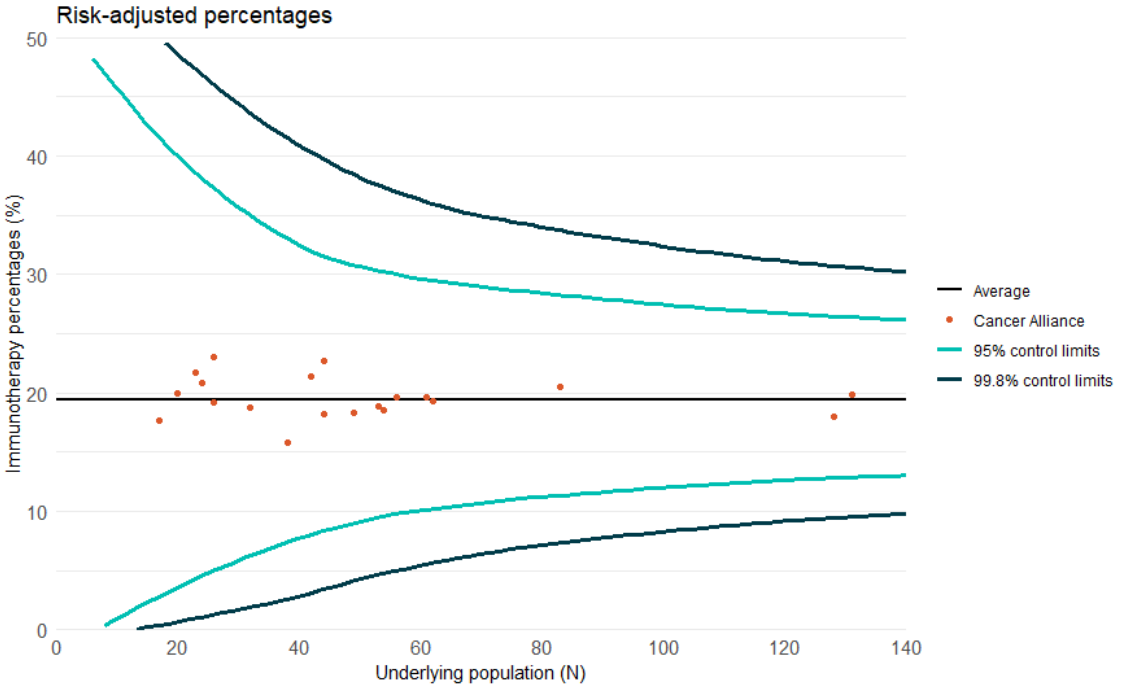
The percentage of women receiving treatment with immunotherapy within each Cancer Alliance did not vary beyond what would be expected given the small size of the underlying cancer population.

Figure 23 : Use of immunotherapy among women diagnosed with stage 3 or 4 endometrial cancer from 2019 to 2023 who had a record of a positive status for any MMR gene test, by Cancer Alliance at diagnosis





Women diagnosed with endometrial cancer (2019 to 2023) with a record of a positive status for any MMR gene test.



Women diagnosed with endometrial cancer (2019 to 2023) with a record of a positive status for any MMR gene test. % adjusted for charateristics at diagnosis: age (10-year age bands), IMD, stage, morphology.

Appendices

Appendix 1: Data sources

The National Cancer Registration Dataset (NCRD) was used to select people with a registered diagnosis of endometrial cancer where the initial diagnosis occurred between 1st January 2017 and 31st December 2023. Death certificate data in the NCRD were used to exclude people with a death certificate only cancer registration.

The Cancer Analysis System (CAS) is the database system maintained and used by the National Cancer Registration and Analysis Service, containing data on all tumours registered in England. Versions of the CAS are indicated by "AV" with a numerical indication of the date of the data. Data in this report were derived from the CAS. Further documentation can be found in the Data Resource Profile: National Cancer Registration Dataset in England which contains information about the registry dataset used for this report. Available at: https://doi.org/10.1093/ije/dyz076.

For the route to diagnosis analysis, registration data were linked at patient level to the CAS RTD (route to diagnosis) table.

For the tumour genomic testing analysis, registration data were linked at patient level to the AT_GENE_PATH_ENGLAND table in CAS.

Analysis looking at use of immunotherapy was based on records within the Systemic Anti-Cancer Therapy dataset (SACT), along with information from the treatment table of the NCRD. Registration data were linked at patient level to both.

Charlson comorbidity score was derived from inpatient Hospital Episode Statistics (HES) data, identifying an inpatient treatment episode within the 27 to 3 months before the diagnosis of endometrial cancer. It should be recognised that this methodology does not capture comorbidity managed in primary care or specialist outpatient clinics and will therefore underestimate the degree of comorbidity of the study population.

Appendix 2: Glossary of terms (ordered alphabetically)

Cancer Drugs Fund - A funding mechanism in England that provides access to certain cancer drugs while additional evidence is collected on their clinical effectiveness and value.

Charlson Comorbidity Score - A scoring system that measures the number and seriousness of a patient's co-existing medical conditions. Higher scores indicate greater comorbidity and are associated with increased risk of mortality.

DNA (Deoxyribonucleic Acid) - The material inside cells that carries genetic information and instructions for how cells grow and function. Changes in DNA can contribute to the development of cancer.

Dostarlimab - An immune checkpoint inhibitor used in the treatment of some cancers, particularly those with mismatch repair deficiency or high microsatellite instability.

Emergency Presentation - A route to diagnosis in which cancer is identified following an unplanned hospital admission or attendance at emergency services, often due to acute symptoms.

General Practitioner (GP) - A doctor based in primary care who provides first-contact medical care, manages ongoing health conditions, and refers patients to specialist services when needed.

High Microsatellite Instability (MSI-H) or Mismatch Repair Deficiency (dMMR) - A tumour characteristic indicating that the DNA mismatch repair system is not working properly. Cancers with MSI-H or dMMR may respond better to certain immunotherapy treatments.

Hospital Pathology Laboratories - Specialist hospital-based laboratories that examine blood, tissue, and other samples to support diagnosis, treatment decisions, and monitoring of disease.

Immune Checkpoint Inhibitors - A type of drug that helps the immune system recognise and attack cancer cells by blocking signals that normally limit immune responses.

Immunotherapy - Treatment that uses the body's own immune system to help fight cancer. Immune checkpoint inhibitors are one type of immunotherapy.

Inpatient Elective - A planned hospital admission where the patient stays at least one night, usually for a scheduled procedure or treatment rather than an emergency.

Mismatch Repair (MMR) Testing - Testing carried out on tumour tissue to assess whether the DNA mismatch repair system is functioning correctly. Abnormal results may indicate inherited conditions and can influence treatment options.

MLH1, MSH2, MSH6 and PMS2 - Genes involved in the DNA mismatch repair system. Testing for the presence or absence of the proteins produced by these genes helps identify mismatch repair deficiency (dMMR) in tumours.

Molecular Testing - Laboratory testing that examines DNA or proteins in tumour or other biological samples to identify molecular features that can help with cancer diagnosis, prognosis, or treatment decisions.

Monotherapy - Treatment using a single drug, rather than a combination of drugs.

NICE Guidance - Recommendations issued by the National Institute for Health and Care Excellence (NICE) on the use of treatments and care pathways, based on evidence of clinical and cost-effectiveness.

Nivolumab - An immune checkpoint inhibitor used to treat certain cancers by helping the immune system recognise and attack cancer cells.

Pathology Test Records - Electronic or paper records that document the results of pathology tests, including details of the tests performed and their findings.

PD-L1 Testing - A laboratory test that measures the expression of the PD-L1 protein in tumour or immune cells. Results may help determine whether a patient is likely to benefit from certain immunotherapy treatments.

Pembrolizumab - An immune checkpoint inhibitor used to treat a range of cancers, including some with high microsatellite instability or mismatch repair deficiency.

Peri-menopausal - The transitional phase leading up to menopause, during which menstrual periods may become irregular and hormonal changes occur.

Post-menopausal - The stage of a woman's life after menopause, defined as having had no menstrual periods for at least 12 consecutive months.

Pre-menopausal - The stage of a woman's life before menopause, when menstrual periods are still occurring.

Primary Advanced or Recurrent Endometrial Cancer - Endometrial cancer that is either advanced at initial diagnosis or has returned after previous treatment.

Primary Care - The first point of contact for patients within the healthcare system. It includes services such as general practice, where health concerns are assessed, managed, and, when necessary, patients are referred to specialist (secondary) care.

Route to Diagnosis - The way in which a patient's cancer was identified, such as through referral from primary care, an emergency admission, or a screening programme.

Secondary Care - Specialist healthcare services provided outside of general practice, usually in hospitals or specialist clinics, following referral from primary care.

Targeted Therapy - Cancer treatment that targets specific molecules or pathways involved in cancer growth, aiming to affect cancer cells while limiting damage to healthy cells.

Tumour Genomic Testing - See Molecular Testing.

Urgent Suspected Cancer Referral (Two Week Wait) - A referral made by a GP or other clinician when cancer is suspected, with the aim that the patient is seen by a specialist within 14 days.

Appendix 3: Ethnic group

This appendix describes the derivation of the seven high-level ethnicity groups used in the analyses, including the mapping of detailed ethnicity codes to each aggregated category.

- Asian
  - Includes ethnicity codes: H, J, K, L
  - (Asian Indian; Asian Pakistani; Asian Bangladeshi; Any Other Asian Background)
- Black
  - Includes ethnicity codes: M, N, P
  - (Black Caribbean; Black African; Any Other Black Background)
- Chinese
  - Includes ethnicity code: R
  - (Chinese)
- Mixed
  - Includes ethnicity codes: D, E, F, G
  - (Mixed White and Black Caribbean; Mixed White and Black African; Mixed White and Asian; Any Other Mixed Background)
- White
  - Includes ethnicity codes: 0, A, B, C
  - (White; White British; White Irish; Any Other White Background)
- Other
  - Includes ethnicity codes: 8, S
  - (Other; Any Other Ethnic Group)
- Unknown
  - Includes ethnicity codes: X, Z, null
  - (Not Known; Not Stated; Missing/Null ethnicity value)

Appendix 4: Cohort definition

The cohort of women studied for this report were selected according to the criteria below.

Inclusion criteria:

1. Confirmed diagnosis of endometrial cancer, defined based on the following combinations of topography (International Classification of Diseases, Tenth Revision [ICD-10]) and morphology (International Classification of Diseases for Oncology, 3rd Edition, first revision [ICD-O3]) codes:

- Malignant neoplasm of the endometrium (C54.1);
- Any malignant neoplasm of the isthmus uteri (C54.0) or fundus uteri (C54.3) or corpus uteri (C54.8, C54.9) that had an epithelial, carcinosarcoma or mullerian mixed tumour morphology (8010-8012, 8014-8035, 8041-8046, 8050-8148, 8160-8231, 8250-8530, 8541, 8550-8576, 8959, 8982, 9110, 8013, 8154, 8246, 8980, 8981 or 8950);
- Unspecified malignant neoplasm of the uterus (C55) with a carcinosarcoma or mullerian mixed tumour morphology (8980, 8981 or 8950).

2. Diagnosis date between 1st January 2017 and 31st December 2023;
3. Resident in England at the time of diagnosis (based on recorded Lower layer Super Output Area; LSOA);
4. Gender self-reported as “Female”;
5. Aged 18 years or over on the date of endometrial cancer diagnosis.
6. Diagnosed via any method other than a death certificate.

Exclusion criteria:

7. Cancer registration record included a morphology code that indicated uterine cancer. Specifically, records for adenosarcoma, endometrial stromal sarcoma, leiomyosarcoma, undifferentiated sarcoma or miscellaneous sarcoma (see below for the associated morphology codes);
8. Gender self-reported not as “Female”, i.e., where the sex-specific diagnosis code does not match the person-stated gender. This may have excluded some people who were transgender or non-binary.

Within each patient, the earliest relevant primary tumour documented between 01 January 2017 and 31st December 2023 was included, unless otherwise specified.

Cases with the following morphology codes were considered to be uterine tumours and therefore excluded:

- Adenosarcoma - 8933;
- Endometrial Stromal Sarcoma - 8930, 8931, 8932, 8935;
- Leiomyosarcoma - 8890-8898;

- Undifferentiated sarcoma - 8800-8805;
- Miscellaneous Sarcoma - 8381, 8806-8858, 8900-8921, 8936, 8961-8974, 9120-9363, 9480-9989, 9364, 9365.

Appendix 5: Cancer stage

Stage presented in this report is the FIGO 2009 stage at diagnosis of the tumour. Tumour stages are numbered from 1 to 4, with higher values indicating more advanced disease. If no staging data were available at the time of analysis, the stage of the corresponding tumour was defined as 'Unknown'.

Appendix 6: Endometrial tumour morphology groups

Each tumour was assigned to distinct morphology groups based on the following criteria:

• Endometrioid Adenocarcinoma: 8380, 8382, 8383, 8430, 8470, 8471, 8560, 8570;

• Serous: 8050, 8441, 8442, 8450, 8451, 8460, 8461, 9014;

• Carcinosarcoma: 8033, 8980, 8981, 8950;

• Clear Cell: 8310, 8443;

• Miscellaneous and Unspecified: 8000-8005, 8580-8790, 8860-8881, 8940, 8941, 8959, 8960, 8983, 9010-9013, 9016-9105, 9370-9474;

• Undifferentiated/differentiated Carcinoma: 8020-8022, 8030-8032, 8034, 8035;

• Other Classified & Unclassified Carcinoma: 8010-8015, 8036-8046, 8051-8131, 8140-8141, 8190-8211, 8230-8231, 8255-8263, 8323, 8384, 8142-8180, 8212-8221, 8240-8254, 8264-8300, 8311-8322, 8324-8375, 8390-8420, 8440, 8452-8459, 8472, 8480-8490, 8500-8508, 8510, 8512-8543, 8550, 8551, 8561, 8562, 8571-8576, 9000, 9015, 9110.

Appendix 7: Geographies

Geographic variation was analysed at the Cancer Alliance and Integrated Care Board (ICB) levels according to borders defined in 2024.

Cancer Alliances are geographic areas that bring together clinicians and managers from different trusts and other health and social care organisations with the aim of coordinating the diagnosis and treatment of people with cancer in the local area.

Established in 2022, ICBs are statutory organisations that bring the NHS together at a local level to improve population health and establish shared strategic priorities within the NHS. England is divided into 42 ICBs.

Each patient was assigned to a Cancer Alliance and ICB based on trust information where the diagnosis was made. For patients with no recorded trust of diagnosis (n = 264) or where the trust recorded was not an English NHS trust (n = 13 with a Welsh local health board assigned) Cancer Alliance and ICB at diagnosis were instead determined from their post code at diagnosis.