National Audit of Breast Cancer in Older Patients

Part of the National Clinical Audit and Patient Outcomes Programme

2021 Annual Report

Results of the prospective audit in England and Wales for women diagnosed between 1 January 2014 and 31 July 2020 (published August 2021)

Understanding variation in the presentation and treatment of breast cancer in older women in England and Wales

NA BCOP | National Audit of Breast Cancer in Older Patients

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We would also like to extend our thanks to the members of the Project Board and the Clinical Steering Group for their advice and contributions to the audit (see **Appendix 1**). These groups have members from patient associations, medical associations, multidisciplinary experts in the area of breast cancer and medical care of the older person, and policy makers.

This work uses patient data that has been provided by, or derived from, patients and collected by the NHS as part of their care and support. The data are collated, maintained and quality assured by the National Cancer Registration and Analysis Service, which is part of Public Health England (PHE). Access to the data was facilitated by the PHE Office for Data Release. Data from the Cancer Network Information System Cymru (CaNISC) and Patient Episode Database for Wales are used with permission from the WCN and DHCW Informatics Services.

Foreword

The NABCOP 2021 Annual Report shows the impact of the early part of the pandemic on women aged 50 years and over, diagnosed and treated for breast cancer. Despite the pressures on staff, timely data were made available to the NABCOP on patients diagnosed with breast cancer. This is a great achievement and is due to the enormous efforts of the cancer intelligence analysts and cancer information specialists at the National Cancer Registration and Analysis Service (NCRAS) in England and the Wales Cancer Network (WCN). They supplied data on women diagnosed during the COVID-19 pandemic in 2020 using the Rapid Cancer Registration Dataset introduced by NCRAS and the preliminary Welsh dataset provided by the WCN. They are to be congratulated on their efforts.

2020 has been a hard and tiring year for all working in healthcare, but it has been especially difficult for patients. Older patients, especially those with co-morbidities had the added worry of balancing the risk of catching COVID-19 against the benefit of accessing healthcare if they left the house; many were understandably very frightened.

As expected, the audit shows that between April and July 2020, due to the pause in routine breast screening services (locally in England; nationally in Wales), there was a decrease in the number of patients diagnosed with breast cancer. Due to the 'stay at home, stay safe and protect the NHS' message early on in the pandemic, there was concern that older patients may have avoided attending hospital. Reassuringly, despite a decrease in the number of symptomatic cancers diagnosed in this early phase of the pandemic, the number of patients aged 70 years and over diagnosed with breast cancer in July 2020 was similar to pre-pandemic levels.

Although there was an initial drop in the number of women having surgery, with many women being started on bridging endocrine therapy, the percentage of women who had surgery within six months of diagnosis remained high, with only a slight reduction compared to the previous year.

The NABCOP was established in 2016 to evaluate age disparity in the care received by women diagnosed with breast cancer in NHS hospitals within England and Wales. At that time, there was a wide variation among units in the numbers of older women undergoing surgery as their initial treatment.

The 2021 audit reports survival outcomes among women diagnosed between January 2014 and December 2018. The relative 5-year survival among older patients who received surgery was found to be similar to patients aged 50–69 years. Patients with severe comorbidity and/or frailty had comparatively poor relative 5-year survival of less than 60%, regardless of age. It is therefore essential that we identify all older patients who are fit enough to undergo surgery and the NABCOP fitness tool helps us with this. We also need to identify better ways of treating the frail patient with breast cancer.

Disappointingly, in the organisational audit conducted by the NABCOP only 27% of units reported using the NABCOP fitness tool for patients older than 70 in the first diagnostic clinic, with 31% of those units not using it because they were unaware of the tool. Low use may also be explained at the start of the pandemic when many post-menopausal patients with estrogen receptor positive disease were started on bridging endocrine therapy as a temporising measure, so the tool was not used at the initial visit. This tool is however extremely useful in the clinic and the Association of Breast Surgery (ABS) encourages the use of this tool in every patient aged 70 years and over to ensure that all appropriate patients are offered surgical treatment.

COVID-19 has allowed us to develop new and better ways of working many of which will stay, including telephone and video consultations which many patients prefer, virtual Multidisciplinary Team meetings which save clinicians time travelling to different sites, and more flexible, adaptable working which will hopefully help us to retain staff.

One area of clinical practice which has radically changed is radiotherapy delivery. Based on the FAST and FAST-Forward trials early on in the pandemic, the Royal College of Radiologists (RCR) recommended that radiotherapy be delivered in 5 fractions for all patients with node-negative tumours requiring radiotherapy with no boost. Options included 28–30 Gray in once weekly fractions over 5 weeks or 26 Gray in 5 daily fractions over 1 week. The NABCOP 2020 organisational audit demonstrated an increased use of hypofractionated radiotherapy. 74% of units have delivered hypofractionated radiotherapy and the majority of units are planning to continue using this regime moving forward.

In the COVID-19 recovery period we all have a huge challenge ahead of us, but we must continue the work achieved by NABCOP to date, ensuring that women aged 70 years and over receive the most appropriate treatment, which is surgery for the majority of patients with early breast cancer.

Julie Doughty
President, Association of Breast Surgery

Executive Summary

Background

The National Audit of Breast Cancer in Older Patients (NABCOP) was established in 2016 to evaluate the process of care and outcomes for women diagnosed with breast cancer in NHS hospitals within England and Wales, specifically older women (aged 70+ years), compared with women aged 50–69 years.

The NABCOP is a collaboration between the Clinical Effectiveness Unit at the Royal College of Surgeons of England (RCS) and the Association of Breast Surgery (ABS). The audit is commissioned by the Healthcare Quality Improvement Partnership (HQIP). The audit works in partnership with the National Cancer Registration and Analysis Service (NCRAS), Public Health England (PHE) and the Wales Cancer Network (WCN), and uses the routine data collected by these national bodies.

The NABCOP aims to support patients, clinicians, healthcare providers, and commissioners in order to improve breast cancer care, as well as publish comparative information on outcomes and care processes from English NHS trusts and Welsh local health boards, referred to as NHS organisations throughout this report. This report presents results for women, aged 50 years and over, diagnosed with breast cancer in England and Wales since January 2014. It is written primarily for health care professionals, clinical commissioners and breast cancer service providers. A separate version is written for patients and the wider public, containing key findings and recommendations. Supplementary material from the report, including tables containing individual NHS organisation results, are available on the NABCOP website (www.nabcop.org.uk)

Data collection and analysis

The NABCOP uses patient data routinely collected by the national cancer registration service in England and the Wales Cancer Network.

At the start of the COVID-19 pandemic, local clinical audit teams were permitted to prioritise clinical care where necessary over the collection and submission of cancer registration and clinical audit data; but NHS organisations were encouraged to continue submitting data where possible. This affected the speed at which national cancer registration data for cancers diagnosed after January 2019 could be provided to third-parties like the NABCOP.

For this annual report, as the usual cancer registration data were unavailable, the NCRAS provided data for women (aged 50+ years) diagnosed between 1 January 2019 and 31 July 2020, from the Rapid Cancer Registration Dataset (RCRD). This dataset contained fewer data items than the usual registration dataset and was estimated to represent 88% of the patients that would have been registered by standard means.

Data on patients diagnosed and treated in Welsh local health boards were provided by the WCN using the Cancer Network Information System Cymru (CaNISC) patient record system. To cover the same time period up to 31 July 2020, data were released prior to all data being reviewed in the usual quarterly Health Board MDT validation exercise.

Key findings from the 2021 report

Prospective audit

The audit received patient-level data on the process of diagnosis and treatment for women diagnosed in England and Wales between January 2019 and July 2020.

Between April and July 2020, there was a 49% reduction in the number of women aged 50+ years diagnosed with breast cancer, compared with the same period in 2019, principally from the pausing of routine breast screening in England (locally) and Wales (nationally). Specifically, there was a 90% reduction in numbers diagnosed via screening, and just a 22% reduction in numbers with non-screen detected cancer. We note that the AgeX[1] trial stopped in May 2020, which may have contributed to the reduced number of patients diagnosed with breast cancer via screening. By July 2020, among patients aged 70+ years, numbers diagnosed were similar to pre-pandemic levels (1191 in July 2020; 1494 in July 2019).

Among women diagnosed between April and July 2020, there was a 60% reduction in the number who had surgery within six months of diagnosis, compared with the same period in 2019, which was expected due to the lower number of diagnoses. The percentage who had surgery remained high (80% April to July 2020; 86% April to July 2019). Few women had a mastectomy with immediate breast reconstruction.

[1] Details of the AgeX trail, assessing the benefit of extending breast screening to women before age 50 and after age 70, can be found at http://www.agex.uk/; this also includes information on its randomisation stopping permanently in May 2020.

There was a dramatic alteration in radiotherapy delivery during the first wave of the COVID-19 pandemic, with many multidisciplinary teams (MDT) adopting the hypofractionated regimens (which delivers 26 Grays (Gy) in 5 visits (fractions, F) instead of 40Gy in 15F). From April to July 2020, over 70% of patients who had radiotherapy had the 26Gy/5F regimen (compared to 0% in April to July 2019).

Primary care prescriptions

The audit received data on endocrine therapy (ET) prescribed within primary care and dispensed in community pharmacies, recorded within the Primary Care Prescription Database (PCPD), for patients diagnosed and treated in England. While other national databases collect data on ET, these were found to be less complete than the PCPD. Data on primary care ET prescriptions was not available for those women diagnosed and treated in Wales.

For women diagnosed in England over the four years from January 2014 to December 2017, the PCPD revealed that 90% of patients who had estrogen (oestrogen) receptor (ER) positive breast cancers were prescribed ET, a level of prescribing observed for women at all ages (older than 50) and consistent with national guideline recommendations. There was variation among regions in tamoxifen prescribing in patients receiving ET.

Outcomes following treatment for breast cancer

Outcomes were examined among women diagnosed between January 2014 and December 2018.

Among 106,644 women in England and Wales who had breast conserving surgery (BCS) as their initial surgery, 15% had at least one subsequent breast reoperation (either BCS or mastectomy) within three months. Women with ductal carcinoma in situ (DCIS) were more likely to have at least one reoperation compared with women with early invasive disease (25% vs 13%, P<0.001).

Among women diagnosed and treated in England, who started adjuvant chemotherapy for early invasive breast cancer, 29% had at least one treatment-related overnight hospital admission within 30 days of a chemotherapy cycle. The most common reasons for admission were infection (23%) and neutropenia (17%). There was variation between NHS breast units in the rates of admission within 30-days of chemotherapy.

Among women receiving surgery in England and Wales, the 5-year relative survival for patients aged 70+ years was found to be similar to patients aged 50–69 years. Patients with severe comorbidity and/or frailty had comparatively poor relative 5-year survival regardless of age.

2020 Organisational Audit

The 2020 Organisational Audit (OA) was distributed, as an online survey, to NHS breast units in England and Wales in October 2020, with responses permitted until January 2021.

Respondents reported that patients with recurrent disease were routinely discussed at breast MDT meetings, and 76% reported that information on patients with a new recurrence is routinely uploaded to the national cancer registration systems. This is not reflected in the levels of data observed in national dataset outputs.

When asked about use of the NABCOP fitness assessment form, 27% of responding NHS organisations use the form. However, of those who did not, this is because 31% were unaware of the assessment form.

Three in four responding NHS Organisations reported introducing hypofractionated radiotherapy (HFRT) during the COVID-19 pandemic and were planning to continue. A further nine breast units had introduced HFRT but planned to return to pre-pandemic regimens.

When asked about the recovery of breast cancer services after the first wave of the COVID-19 pandemic, one in five respondents reported having major concerns about reduced staff numbers and increased numbers of patients requiring assessment & treatment.

The NABCOP will continue to analyse and report on available routine data to assess the impact of the COVID-19 pandemic and highlight areas where attention or extra resource may be required.

Fitness assessment for older women in breast clinics

Frailty and cognitive impairment are more prevalent among older patients, but these characteristics are not easily discerned within current national datasets. Because of this, the NABCOP developed a fitness assessment form for use in breast clinics when patients aged 70+ years are referred for suspected breast cancer. The form comprises the Clinical Frailty Scale, the Abbreviated Mental Test Score, and screening questions on significant medical problems.

Among NHS organisations in England and Wales responding to the OA, 46% reported that the NABCOP had changed their approach to recording of patient fitness for data returns at the initial MDT.

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Further information

Annual Report 2021

The aim of the NABCOP is to evaluate process of care and outcomes for women, aged 70 years and over, diagnosed with breast cancer in England & Wales, compared with women aged 50-69 years.

Diagnosis and treatment in 2019 & 2020: England and Wales

Results from the English and Welsh Cancer Datasets (comparing diagnosis and treatment among women aged 50+ years), and the NABCOP 2020 Organisational Audit.

Comparing women diagnosed between 1 April and 31 July 2020, with the same period in 2019:

→ There was a **49% reduction** in the **number** of women **diagnosed**.

→ 90% fewer women were diagnosed via screening, reflecting local (in England) and national (in Wales) pausing of routine breast screening services (due to COVID-19) - most visible in women aged 50-69 years.

→ 22% fewer women were diagnosed by non-screening pathways.

→ There was a **60% reduction** in the **number** of women having **surgery**.

→ but the overall percentage having surgery remained high (**80%** in 2020; **86%** in 2019).

→ National radiotherapy data showed an increase in use of HFRT; **72%** of women **having radiotherapy had HFRT** (0% in 2019).

74% of NHS breast units responding to the OA reported using hypofractionated radiotherapy during the COVID-19 pandemic and were planning to continue.

1 in 5 NHS breast units responding to the OA reported "major concerns" about 'reduced number of core staff' and 'numbers of patients requiring assessment & treatment', when asked about the biggest challenges to services returning to pre-COVID-19 levels of workload.

Outcomes following treatment

Among women diagnosed between 2014-2018:

29% of women in England having adjuvant chemotherapy for EIBC had at least one unplanned overnight hospital admission related to a side effect.

15% of women who had initial BCS for DCIS / EIBC in England and Wales had a reoperation within 3 months.

Endocrine therapy prescriptions

Among women diagnosed with estrogen receptor positive invasive breast cancer in England between 2014-2017, we found:

90% had an ET prescription dispensed in 2018, recorded in the Primary Care Prescription Database*. **For this report, PCPD data was only provided for 2018*

ET use did not vary by age or frailty.

There was geographical variation in tamoxifen prescribing.

Glossary

Endocrine therapy: anti-estrogen therapy used to treat hormone positive breast cancer.

Hypofractionated radiotherapy: a radiotherapy regimen where the total dose is divided into larger portions, and given over fewer days than the standard regimen.

Abbreviations

BC: breast cancer
BCS: breast conserving surgery
DCIS: ductal carcinoma in situ
EIBC: early invasive breast cancer
ET: endocrine therapy
HFRT: hypofractionated radiotherapy
OA: Organisational Audit
PCPD: Primary Care Prescription Database

Recommendations 2021

Findings	Recommendations	Where in this report	Primary audience to action recommendation
Recording of routine data items			
Linkage of patient records from NCRAS data sources and the Primary Care Prescription Database highlighted low rates of data completeness on the use of endocrine therapy in the NCRAS secondary care data sources. Overall, levels of data completeness were related to age at diagnosis.	1. Ensure information on endocrine therapy treatment started in secondary care is recorded within routine data submissions to NCRAS (COSD) and WCN databases.	Chapter 4	Breast care teams in NHS organisations[2]
76% of NHS organisations who responded to the NABCOP 2020 Organisational Audit (OA) reported that information on patients with a new recurrence is routinely uploaded to the national cancer registration systems. The NABCOP 2020 Annual Report found low levels of reporting of recurrence in routine national data for England and Wales, even among women who had died of breast cancer.	2. Investigate consistency between recording of recurrence in Breast Units and the low percentages of recurrence found in national datasets, by reviewing the process of capturing these data within a breast unit, and ensuring these data are uploaded to cancer registration.	Chapter 6, and NABCOP 2020 Annual Report[3] Chapter 10	Breast care teams in NHS organisations
	3. In order to improve recurrence information in cancer registration datasets: a) Continue to monitor and report on patterns of recurrence at a national level and by NHS organisation. b) Share knowledge on successful ways to upload recurrence information with NHS organisations, such as identifying exemplars of good practice.		The NABCOP, National Cancer Registration and Analysis Service (NCRAS), and Wales Cancer Network (WCN)
In response to previous NABCOP recommendations NCRAS implemented new COSD data items in 2020 to record whether patients had a Triple Diagnostic Assessment in a single visit and the results of fitness / frailty assessments.	4. Improve levels of data completeness within COSD data returns, where required, particularly for: a) The triple diagnostic assessment in a single visit indicator; b) The NABCOP fitness assessment indicators.	Chapter 6 & Chapter 7	Breast care teams in NHS organisations in England
Equitable care for older patients with breast cancer			
The NABCOP was able to produce timely information on the impact of the COVID-19 pandemic using the Rapid Cancer Registration Dataset provided by NCRAS, and the Welsh dataset provided by WCN.	5. Work with NCRAS and WCN to support the development of contemporaneous data collections on breast cancer diagnoses and treatment across England and Wales.	Chapter 3	The NABCOP, NCRAS, and WCN, other key users of national cancer datasets

Continued on next page…

[2] NHS organisations refer to both English trusts and Welsh local health boards.

[3] https://www.nabcop.org.uk/reports/nabcop-2020-annual-report/

…continued from previous page

Findings	Recommendations	Where in report	Primary audience to action recommendation
Equitable care for older patients with breast cancer			
During the initial wave of the COVID-19 pandemic, the number of women with newly diagnosed cancers decreased, particularly from breast screening. The numbers of outpatient referrals and the numbers of women diagnosed with breast cancer are both likely to increase as cancer services recover and women seek care as before.	6. Provide updated reports on patterns of newly diagnosed patients with breast cancer by age group and route of diagnosis to support local and national decision making in response to changes in demand.	Chapter 3	The NABCOP
Outcomes for patients with breast cancer			
29% of women having adjuvant chemotherapy for early invasive breast cancer in England had 1+ unplanned overnight chemotherapy-related hospital admission.	7. Breast cancer oncology teams should review chemotherapy associated morbidity in their units, with the aim of reducing unplanned chemotherapy-related admission rates.	Chapter 5	Breast care teams in NHS organisations in England
15% of women having initial breast conserving surgery for DCIS or early invasive breast cancer had a subsequent reoperation within 3 months.	8. Breast cancer surgical teams should examine their reoperation rates after breast conservation surgery to determine if optimal practice is being implemented and to reduce their reoperation rate.	Chapter 5	Breast care teams in NHS organisations
Fitness assessment for older patients with breast cancer			
Relative survival of fit older women receiving surgery was found to be comparable to that of younger women.	9. Use the NABCOP fitness-frailty assessment for all newly diagnosed women 70 and over, and – where relevant – upload with the routine data returns (such as COSD for England).	Chapter 5	Breast care teams in NHS organisations
	10. Disseminate findings on relative survival through publications and communications.		The NABCOP
The NABCOP 2020 OA found 31% of responding NHS organisations who did not use the NABCOP fitness assessment form were unaware of it.	11. Promote awareness of the fitness assessment form among breast units, for all patients aged 70 and over attending the first diagnostic clinic.	Chapter 6 & Chapter 7	The NABCOP, NCRAS, and WCN

1. The National Audit of Breast Cancer in Older Patients

1.1. Introduction

The **National Audit of Breast Cancer in Older Patients (NABCOP)** was established in April 2016 to evaluate the process of care and outcomes for women aged 70+ years, diagnosed with breast cancer and treated in NHS hospitals within England and Wales. Breast cancer is the most common female cancer in the UK. Over 50,000 women have a new diagnosis of breast cancer each year in England and Wales. About one-third of such cancers are in women aged 70+ years [Office for National Statistics 2019; Welsh Cancer Intelligence and Surveillance Unit 2021].

The audit was commissioned because there was growing evidence of unexplained variation in the management of breast cancer among women aged 70+ years, compared with women aged under 70 years [Bates *et al* 2014; Lavelle *et al* 2014; Richards *et al* 2016]. More recently, concerns have been raised about the impact of the COVID-19 pandemic on the delivery of breast cancer care.

The basic approach adopted by the audit to investigate quality of care is to examine whether the treatment received by older women diagnosed with breast cancer is consistent with national recommendations as described by (among others) the NICE guideline NG101 [NICE 2018a]. The audit covers the care pathway from initial diagnosis to the end of primary therapy, and contrasts how these patterns of care differ for women aged 70 years and over, compared with women aged 50–69 years. The assessment of the patterns of care since the arrival of COVID-19 in early 2020 has adopted a different approach, which is based on comparing patterns of care observed after the start of the first wave of the COVID-19 pandemic, with the patterns observed before then.

The NABCOP is a collaboration between the Association of Breast Surgery and the Clinical Effectiveness Unit of the Royal College of Surgeons of England (RCS). It is commissioned by the Healthcare Quality Improvement Partnership as part of the National Clinical Audit and Patient Outcomes Programme, which is funded by NHS England and the Welsh Government. The audit is overseen by a Project Board and supported by a Clinical Steering Group, whose role includes advising on the priorities for the audit and helping with the interpretation of the results. The Clinical Steering Group has members from patient associations, medical associations, multidisciplinary experts in the area of breast cancer and medical care of the older person, and policy makers (see **Appendix 1**). More information about the audit can be found on the NABCOP website: www.nabcop.org.uk.

1.2. Overview of the 2021 Annual Report

This fifth NABCOP Annual Report contains information on:

- The diagnosis and treatment patterns for women diagnosed in the nineteen months between January 2019 and July 2020 in England and Wales
- Endocrine therapy (ET) prescribed within primary care and dispensed in community pharmacies, for women diagnosed over the four years from January 2014 to December 2017, using data from the Primary Care Prescription Database.
- Outcomes following treatment for breast cancer for women diagnosed over the five years from January 2014 to December 2018 (as reported on in the NABCOP 2020 Annual Report).
- Organisational aspects related to the delivery of breast cancer care, as reported by units in the NABCOP 2020 Organisational Audit (opened October 2020 and closed to responses January 2021).
- The use of fitness assessment for older women in breast clinics.

The report is written for individuals who provide, receive, commission and regulate breast cancer care. This includes clinicians and other healthcare professionals working within hospital cancer units, clinical commissioners, and regulators, as well as patients and the public who are interested in knowing how breast cancer services are delivered within the NHS. A separate report for patients and the public, aimed specifically at older patients receiving breast cancer care, their families and caregivers is published on the NABCOP website.

The NABCOP uses patient data routinely collected by the national cancer registration service in England and the Wales Cancer Network.

1.3. Changes to breast cancer services during the COVID-19 pandemic

NHS health services in England and Wales, including those units that provide breast cancer services, were greatly affected by the COVID-19 pandemic that arrived in early 2020. **Figure 1.1** summarises changes to breast cancer services due to the COVID-19 pandemic during 2020 and this sets the scene for the results reported in **Chapter 3** on the diagnosis and treatment patterns in 2019 and 2020, for England and Wales, and in **Chapter 6** from the NABCOP 2020 Organisational Audit.

Work is underway to help NHS cancer services recover from the impact of the pandemic [NHS England 2020]. An important consequence of the COVID-19 pandemic was fewer women being diagnosed via screening[4] pathways between April and June 2020, following the UK-wide lockdown (see **Chapter 3**). Breast screening services were paused at a local level across England [NHS England 2020] and nationally across Wales [Public Health Wales, 2020]. Although breast screening resumed in July 2020 in England and Wales [Public Health Agency 2020], many screening units were only operating at approximately 60% of previous activity, as of April 2021. Current estimates suggest screening services might achieve pre-COVID-19 levels of activity in 2022.

1.4. Other information produced by the audit

Supplementary materials for the report, including tables containing individual NHS organisation results, and further information about the audit, can be found on the website: www.nabcop.org.uk .

The NABCOP website also contains:

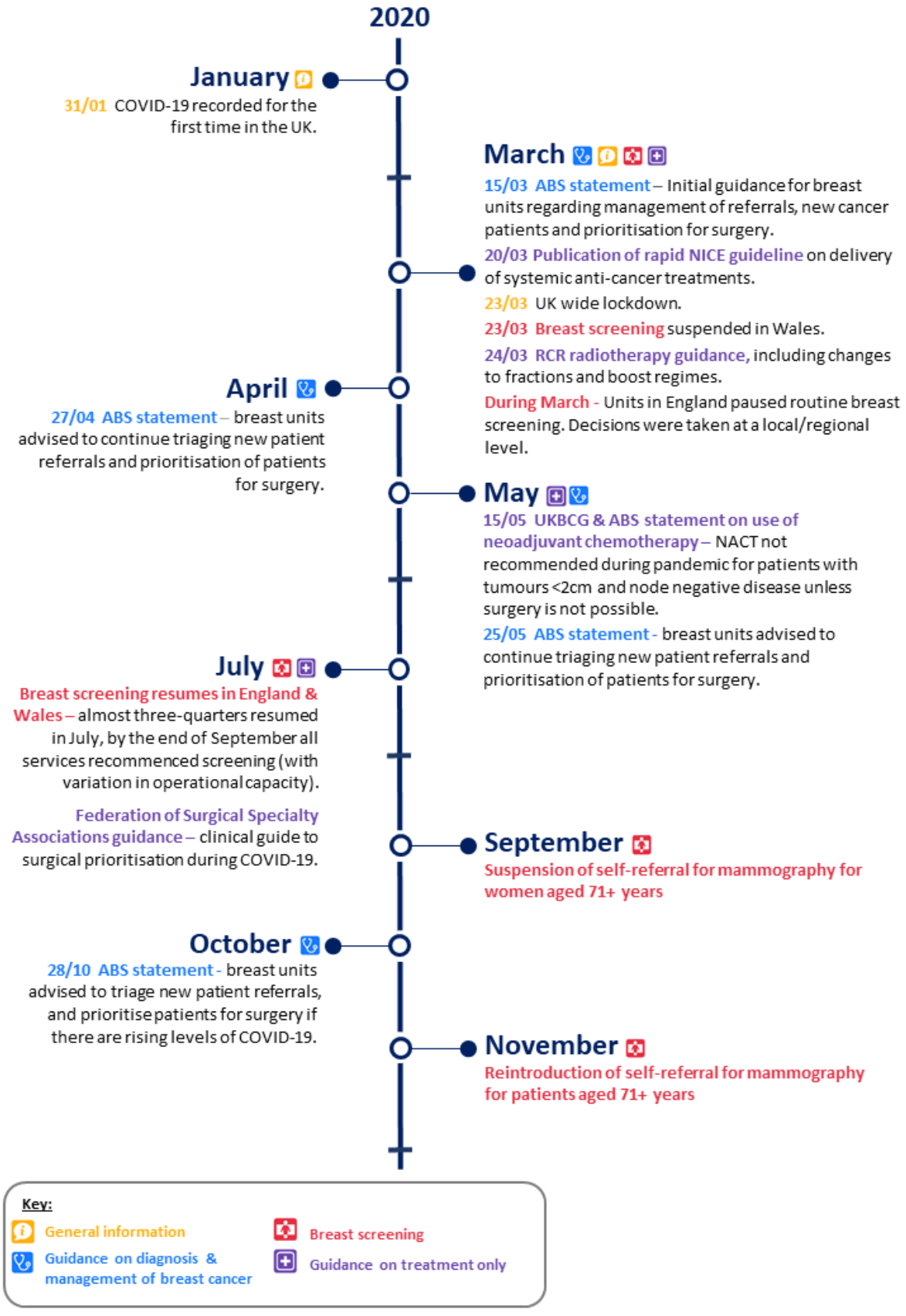
- Annual Reports from previous years
- Patient versions of the Annual Reports
- Links to resources that support local services' quality improvement initiatives
- Links to other sources of information about breast cancer such as Cancer Research UK

In addition, the CancerStats website produced by the National Cancer Registration and Analysis Service (NCRAS) contains information for English NHS breast units on the completeness of their Cancer Outcomes and Services Dataset (COSD) submissions, and performance indicators similar to those published in the NABCOP Annual Report but based on real-time data submissions.

The results from the audit are also used by various other national health care organisations. In particular, the NABCOP team has worked with HQIP and the Care Quality Commission (CQC) intelligence team to create a slide set to support the CQC hospital inspections.

[4] breast screening is offered to women between 50 and <71 years (up to their 71st birthday)

Figure 1.1 Timeline of changes to breast cancer services due to the COVID-19 pandemic during 2020



Abbreviations: *ABS = The Assocation of Breast Surgery; NACT = neoadjuvant chemotherapy; RCR = The Royal College of Radiologists; UKBCG = UK Breast Cancer Group*

2. Audit methods

For full details of the data and methods used within this report, please see the most recent version of the NABCOP Annual Report Methodology document, available online (www.nabcop.org.uk).

2.1. Data sources for 2019/20 findings

The NABCOP uses patient data routinely collected by the national cancer registration service in England and the Wales Cancer Network (WCN).

For England, the NCRAS provide data from its cancer analysis system, which collates patient data from a range of national data feeds across all NHS acute hospitals. For this annual report the NCRAS provided data from the Rapid Cancer Registration Dataset (RCRD) as the usual Cancer Registration data was unavailable; more details are provided within **Chapter 3** (see **Appendix 2** for details of the data provided). Refreshed vital status, Hospital Episodes Statistics (HES), Systemic Anti-Cancer Therapy (SACT) and the national Radiotherapy Data Set (RTDS) were also provided for analyses looking at outcomes.

For Wales, updated data for patients diagnosed and treated in Welsh local health boards were provided by the WCN using the Cancer Network Information System Cymru (CaNISC) electronic patient record system.

The NCRAS and the WCN extracted details of women aged 50 years and over who were diagnosed with breast cancer in England and Wales. The most recent data provided for both England and Wales covered women diagnosed over the 19-month period between 1 January 2019 and 31 July 2020 (being the latest data available at the time of analysis); findings within this cohort of women are presented in **Chapter 3**. In addition, for England data from the RCRD were provided for women diagnosed in 2018 to enable comparison with the usual cancer registrations and determine case ascertainment of the RCRD in this cohort.

Direct comparisons made of 2020 with 2019 consider the four month time period from 1 April to 31 July. A starting point of 1 April was chosen due to April 2020 being the first full month following the pause in routine breast screening services (locally in England; nationally in Wales), guidance had been issued on prioritisation of patients for treatment and England and Wales had entered a national lockdown.

2.2. Patient cohort

The patients and timeframes covered in each chapter are indicated in the appropriate section.

Types of breast cancer

Within the report, where we distinguish between groups of women with breast cancer based on type these are defined as:

- non-invasive/ductal carcinoma in situ (DCIS; stage 0)
- early invasive breast cancer (stages 1–3A)
- metastatic breast cancer (stage 4).

Age groups

Age disparity is investigated by presenting three main subgroups of age: 50–69 years; 70–79 years; 80+ years. The older age groups are combined and reported on as 70+ years where the number of patients within the eldest subgroup is insufficient to draw valid conclusions or where the findings were similar in the two older age groups.

2.3. Measurement of patient fitness

The datasets available for this annual report contain a limited number of data items on patient fitness. Specifically, the World Health Organization (WHO) performance status instrument, which measures the functional status of patients on a scale from 0 to 4, was only available within the data provided for women diagnosed in Wales. Unfortunately, this data item is poorly completed for breast cancer patients in the cancer datasets (**Table 3.2**). The report therefore uses two other approaches to measure patient fitness. These are:

- the RCS Charlson Comorbidity Index [Armitage *et al* 2010]
- the Secondary Care Administrative Records Frailty (SCARF) Index [Jauhari *et al* 2020].

For both measures, conditions/deficits are identified using the International Statistical Classification of Diseases and Related Health Problems (ICD-10) codes, captured within the diagnosis fields of the hospital admissions data.

2.4. Endocrine therapy (primary care) prescriptions for invasive breast cancer in England

Data on endocrine therapy (ET) prescribed within primary care and dispensed in community pharmacies within England are recorded within the Primary Care Prescriptions Database (PCPD). PCPD data on ET prescriptions dispensed in 2018 were provided by the NCRAS.

Analysis included women diagnosed over the four years from 1 January 2014 to 31 December 2017, as reported on in the NABCOP 2020 Annual Report. Women diagnosed in 2018 were not included in order to allow for time for ET to be initiated and then prescribed within primary care.

Chapter 4 presents initial analysis of these data looking at the feasibility of linking to the NABCOP cohort of women with invasive breast cancer, comparing the level of ET use within the PCPD with the recording of ET within the secondary care data sources the NABCOP receives from the NCRAS. Further analysis looked at variation in the use of ET according to age, disease group, diagnosing organisation.

2.5. Outcomes following treatment for breast cancer

Analyses looking at early outcomes following treatment for breast cancer (**Chapter 5**) include the cohort of women reported on in the NABCOP 2020 Annual Report. This included women diagnosed from 1 January 2014 to 31 December 2018.

Chemotherapy toxicity

Short term morbidity following adjuvant chemotherapy looks at treatment related overnight hospital admissions within 30 days of a cycle, for women diagnosed and treated in England only.

Data on hospital admissions were derived from diagnosis codes for an admission recorded in the Hospital Episodes Statistics (HES) Admitted Patient Care (APC) data, whilst date of chemotherapy cycles were derived from the Systemic Anti-Cancer Therapy (SACT) data. Full details of the ICD-10 codes considered to be treatment related can be found in **Appendix 2**.

Rates of treatment related hospital admissions with an overnight stay among women who received adjuvant chemotherapy were looked at by measures of patient fitness, to understand the impact on this outcome, as well as looking at variation across NHS breast units.

Reoperations

Reoperation rates following initial breast conserving surgery (BCS) looked at the percentage of women with DCIS or early invasive breast cancer having a subsequent operation within three months. Operations within one week of the initial BCS were excluded, based on the assumption these were most likely to be for postoperative complications.

All data on surgical operation were derived from the HES APC data for England, and the Patient Episode Database for Wales (PEDW) data for Wales.

Relative survival

Graphical plots of relative survival following treatment among disease subgroups are presented in order to show the impact of breast cancer on subsequent survival among those women receiving treatment. Plots of relative survival by patient fitness show the additional impact of fitness level on subsequent survival. Estimates of relative survival use population mortality data from ONS to provide the baseline survival.

2.6. NABCOP 2020 Organisational Audit

From October 2020 to January 2021 the NABCOP undertook its second Organisational Audit (OA), since the NABCOP launched in 2016, using an online survey. Findings are presented within **Chapter 6**.

The OA was undertaken to evaluate various aspects of the care provided by breast cancer services at NHS organisations in England and Wales; with particular emphasis on services relevant to older patients.

The first OA of breast cancer services by the NABCOP took place in 2016–2017, and provided an initial insight into the structure and range of breast cancer services available at NHS trusts and Welsh local health boards, with particular emphasis on services relevant to older patients. The results of this were presented in the 2017 NABCOP Annual Report.

Full details on how the OA was developed, distributed and analysed can be found via the NABCOP website (www.nabcop.org.uk).

3. Diagnosis and treatment patterns in 2019 and 2020, for England and Wales

3.1. Introduction

This section of the NABCOP 2021 Annual Report focuses on those elements of diagnosis that illustrate aspects of the care pathway for women diagnosed with breast cancer (BC) in England and Wales. It covers women diagnosed in 2019, being the most up-to-date year prior to the COVID-19 pandemic, as well as the first seven months of 2020, which includes the first wave of COVID-19.

Specifically, the chapter describes temporal changes in the route by which women were diagnosed and the subsequent treatment(s) received. It adds to existing publications on this period [Dave *et al* 2021] by revealing how women of different ages were affected.

3.2. Methods

Data Source

For England, the results were derived from the Rapid Cancer Registration Dataset (RCRD), provided by NCRAS. The RCRD represents a relatively new initiative aiming to provide much more timely data on cancer diagnoses than has previously been possible. This is the first time this data source has been used within the NABCOP and was provided for analysis as the usual Cancer Registration data[5] for patients in England was unavailable. Treatment data was provided as usual, based on Hospital Episodes Statistics (HES) data, Systemic Anti-Cancer Therapy (SACT) data and the national Radiotherapy Data Set (RTDS). Data were provided for women aged 50+ years, diagnosed with breast cancer (identified via proxy tumour registration[6] defined using an algorithm that approximates the cancer registration process using the most rapidly available data based on COSD returns) within England from January 2018 up to July 2020 (being the latest data available at the time of analysis). Death certificate only cases were not included. Details of the RCRD datasets and data items provided for England can be found in **Appendix 2**.

The results for Wales were derived from the usual data sources. The Wales Cancer Network provided data on women aged 50+ years diagnosed with breast cancer within Wales from January 2019 up to July 2020, from the Cancer Network Information System Cymru (CaNISC) recording system. But, in order to provide data for the same time frame as that covered by the RCRD for England, data were released prior to being fully validated, so this should be taken into consideration. There may therefore be different levels of data quality and completeness, when compared with previous years.

The course of treatment offered to patients with breast cancer is largely determined by patient characteristics (health and fitness), patient preference and tumour characteristics (molecular markers, grade and stage at diagnosis). For England, while the RCRD is timelier than the traditional NCRAS datasets, there was no information on molecular markers or grade. This information was provided within the data for Wales.

The analyses presented within the following sections align with the NABCOP core indicators, although analyses by patient subgroups defined by ER/HER2 status were largely not feasible. The results describing the treatment received are presented at a national level, and give trends over time, stratified by age group, breast cancer group and patient fitness/frailty (as this was calculated from the usual hospital admissions data) where relevant.

Participating NHS organisations

Information from 119 English NHS trusts and six Welsh local health boards is included within this chapter. Due to several trust mergers, there are fewer trusts in this report than in the 2020 Annual Report. Findings are not presented at organisation-level, rather a national picture is presented. Any geographical breakdown of findings is presented by Cancer Alliance.

[5] Details of the Cancer Registration data can be found at: https://www.gov.uk/guidance/national-cancer-registration-and-analysis-service-ncras; a full list of data usually received by the NABCOP can be viewed at: https://www.nabcop.org.uk/resources/nabcop-combined-data-specification/

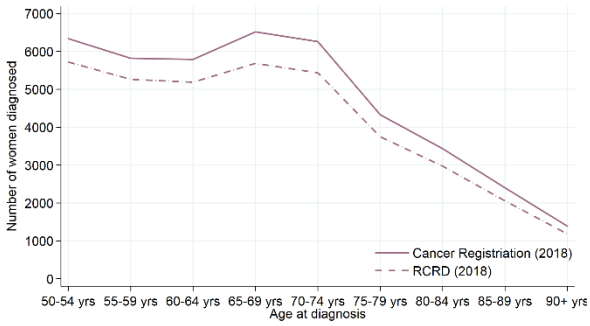
[6] Details of the proxy-registration process used by NCRAS to identify women diagnosed with breast cancer from routine secondary care data can be found in guidance published at http://www.ncin.org.uk/collecting_and_using_data/rcrd; this also includes information on data quality and caveats.

Comparison of RCRD with Cancer Registration identified patients with breast cancer in England in 2018

Figure 3.1 presents the (absolute) numbers of women with a diagnosis of breast cancer in 2018, in England, registered with Cancer Registration compared with those identified within the RCRD, by age at diagnosis.

Overall numbers of women identified within the RCRD diagnosed in 2018 were 12% lower than numbers in Cancer Registration records. There was little difference in ascertainment by age.

Figure 3.1. Numbers of women diagnosed with breast cancer in 2018 in England: comparison of Cancer Registration and the RCRD



3.3. Patient Characteristics

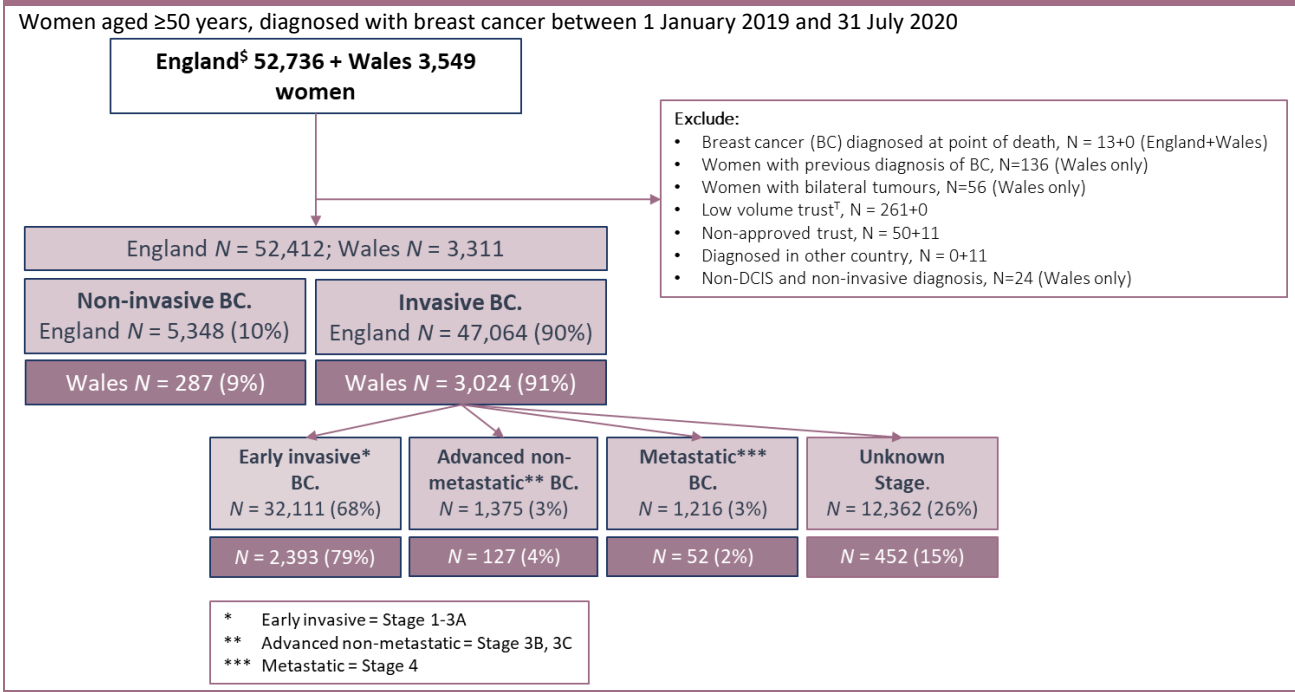
Figure 3.2 describes how the cohort of patients was prepared for analysis. The cohort includes the patient group of women aged 50 years and over diagnosed with breast cancer in England and Wales from January 2019 to July 2020. Numbers are shown separately for each country.

An overview of the basic patient and tumour characteristics of the women diagnosed across the two years in the months from January to July, broken down by age, is provided for England in Table 3.1 and for Wales in Table 3.2.

The tables also provide information about data completeness. Of note:

- All items in the English RCRD are less complete for patients diagnosed in 2020.
- Within the data for Wales, fewer women diagnosed in 2020 had information on stage reported, compared with those diagnosed in 2019. These lower levels of completeness for stage were seen across all age groups.
- In addition, recorded WHO Performance Status was lower among women diagnosed in 2020.

Figure 3.2. Flow diagram of women diagnosed with breast cancer in 2019 and 2020, and included within the NABCOP group



Note: *$ Source = RCRD - It was not possible to identify women with a previous diagnosis of breast cancer, with bilateral tumours or with multiple cancer components (e.g. both invasive and non-invasive components or records separating lobular and ductal carcinoma).*
T – Low volume trusts were those trusts diagnosing <30 pts per year as defined in the NABCOP 2020 Annual Report.

Table 3.1. Patient and tumour characteristics for women aged 50 years and over diagnosed with breast cancer in England between January and July in 2019 and 2020, by age at diagnosis						
Month/Year of diagnosis	**Jan–Jul 2019**			**Jan–Jul 2020**		
Age at diagnosis	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**
Number of women	**12907 (60%)**	**4884 (23%)**	**3802 (18%)**	**8689 (56%)**	**3709 (24%)**	**2989 (19%)**
Date of diagnosis (Quarters)						
Q1 (Jan–Mar)	5223	1987	1548	5384	2014	1508
Q2 (Apr–Jun)	5575	2115	1647	2370	1112	947
Q3 (Jul only)	2109	782	607	935	583	534
Route to diagnosis						
% with route reported	97%	98%	99%	92%	92%	90%
Screening	6989	1456	140	3343	674	75
Emergency presentation	173	165	401	86	97	187
GP referral	591	249	260	219	130	149
Inpatient elective	12	4	5	8	2	2
Other outpatient	221	133	82	93	58	57
Two week wait	4536	2801	2889	4235	2455	2232
Type of breast cancer						
% with stage reported or IDC10=D05	82%	80%	64%	78%	72%	58%
Non-invasive	1656	421	135	1025	273	126
Early invasive	8407	3215	1978	5337	2185	1368
Advanced M0	249	146	179	183	115	131
Advanced M1	227	137	130	190	97	118
Ethnicity						
% with ethnicity reported	88%	90%	90%	82%	86%	86%
White	91%	95%	96%	90%	95%	97%
Mixed	1%	0%	0%	1%	0%	0%
Asian	4%	2%	2%	4%	3%	2%
Black	2%	1%	1%	3%	1%	1%
Other	2%	1%	1%	2%	1%	1%
Index of multiple deprivation 2019						
1 Most deprived	15%	14%	14%	15%	14%	13%
2	18%	18%	18%	18%	17%	18%
3	21%	21%	23%	21%	20%	22%
4	23%	23%	23%	23%	24%	24%
5 Least deprived	23%	24%	23%	23%	24%	22%
Charlson Comorbidity Index						
% with CCI calculated	97%	97%	90%	95%	94%	83%
0	89%	78%	57%	89%	76%	55%
1	8%	14%	19%	8%	14%	21%
2+	3%	9%	23%	3%	10%	24%
SCARF Index						
% with SCARF calculated	97%	97%	90%	95%	94%	83%
Fit	84%	68%	43%	83%	66%	39%
Mild-moderate	15%	26%	34%	16%	26%	34%
Severe	2%	7%	23%	2%	8%	27%

Table 3.2. Patient and tumour characteristics for women aged 50 years and over diagnosed with breast cancer in Wales between January and July in 2019 and 2020, by age at diagnosis						
Month/Year of diagnosis	**Jan–July 2019**			**Jan–July 2020**		
Age at diagnosis	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**
Number of women	**768 (57%)**	**333 (25%)**	**245 (18%)**	**543 (55%)**	**262 (26%)**	**186 (19%)**
Date of diagnosis (quarters)						
Q1 (Jan–Mar)	315	138	88	346	131	92
Q2 (Apr–Jun)	319	140	107	146	92	59
Q3 (Jul only)	134	55	50	51	39	35
Route to diagnosis						
% with route reported	100%	100%	100%	100%	100%	100%
Screening	472	114	19	239	45	9
Emergency presentation	4	6	5	3	8	1
GP referral	258	176	190	272	186	149
Other speciality	16	23	25	23	19	23
Other	18	14	6	6	4	4
Type of breast cancer						
% with stage reported or IDC10=D05	96%	90%	80%	84%	82%	62%
DCIS	97	19	5	42	8	4
Early invasive	612	257	168	386	189	99
Advanced M0	20	17	19	19	11	9
Advanced M1	5	7	5	7	6	3
Invasive grade of disease*						
% with grade reported	99%	98%	98%	99%	98%	96%
1	20%	17%	14%	17%	15%	16%
2	48%	53%	60%	49%	50%	57%
3	31%	29%	23%	34%	32%	24%
Not assessable	0%	1%	2%	0%	3%	3%
ER status						
% with ER status reported	85%	90%	86%	87%	90%	88%
Positive	83%	83%	87%	83%	83%	90%
Negative	17%	17%	13%	17%	17%	10%
HER2 status						
% with HER2 status reported	80%	79%	76%	79%	84%	75%
Positive	14%	11%	13%	16%	12%	7%
Negative	86%	89%	87%	84%	88%	93%
Charlson Comorbidity Index						
% with CCI calculated	99%	98%	87%	96%	92%	78%
0	92%	79%	68%	91%	78%	60%
1	6%	14%	17%	6%	17%	20%
2+	2%	7%	15%	3%	5%	21%
SCARF Index						
% with SCARF calculated	99%	98%	87%	96%	92%	78%
Fit	88%	72%	50%	87%	71%	45%
Mild-moderate	12%	22%	33%	12%	24%	40%
Severe	1%	5%	17%	1%	4%	16%
WHO performance status						
% with WHO PS reported	12%	16%	27%	9%	14%	9%
0	91%	67%	22%	82%	68%	44%
1	8%	21%	38%	10%	14%	25%
2-4	1%	12%	40%	8%	19%	31%

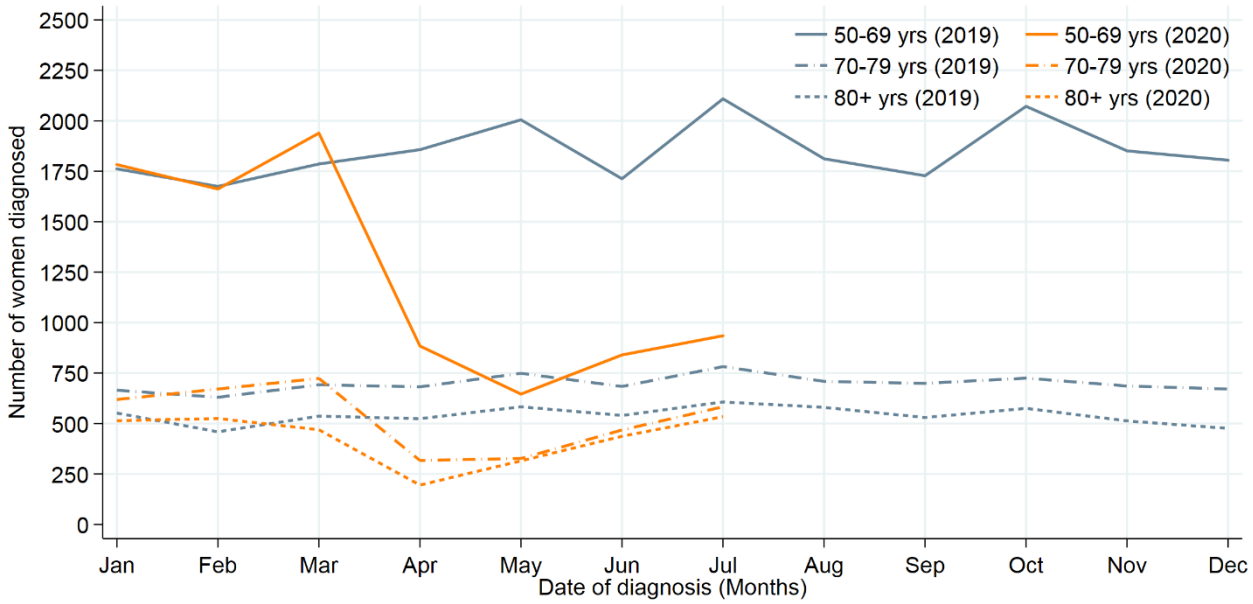
***Notes**: *grade reported only among women with invasive disease. This data source did not have information on referrals via the two week wait pathway.*

Patient numbers were much lower for 2020, particularly among women aged 50–69 years, also shown in **Figure 3.3**. This becomes apparent in the number of patients diagnosed from April 2020 onwards (Q2 and Q3 in the table) and reflects the pause in routine breast screening services (locally in England; nationally in Wales). The number of women diagnosed via screening in 2020 is much lower than for the same period in 2019.

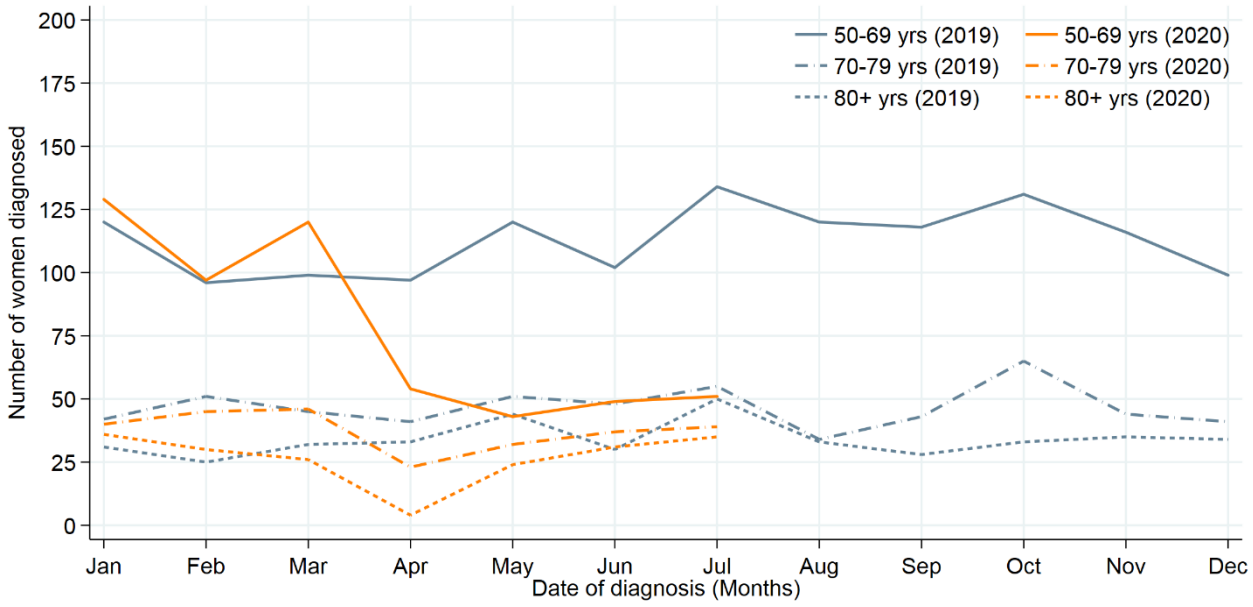
The percentage of women with no stage information is higher among those diagnosed in England in 2020, and increases with age, with only 58% of women aged 80+ years having stage information to classify their breast cancer. Overall, among invasive breast cancers diagnosed in England 26% had unknown stage (15% in Wales); more than three times the 8% of invasive breast cancers reported within the Cancer Registration data used in the NABCOP 2020 Annual Report.

Figure 3.3. Number of women diagnosed with breast cancer, by year of diagnosis and age at diagnosis

Women diagnosed in England *Source = RCRD Basic diagnosis data*



Women diagnosed in Wales *Source = Wales Cancer Network data*



3.4. Route to diagnosis

This section covers the route by which women presented to breast cancer services across 2019 and the first seven months of 2020.

Numerator	Number diagnosed after: 1. referral from screening 2. referral from GP 3. two week wait *(England only)* 4. an emergency presentation
Denominator	All women
Country	England & Wales
Timeframe	*January 2019 – July 2020*

What do we see within this audit group?

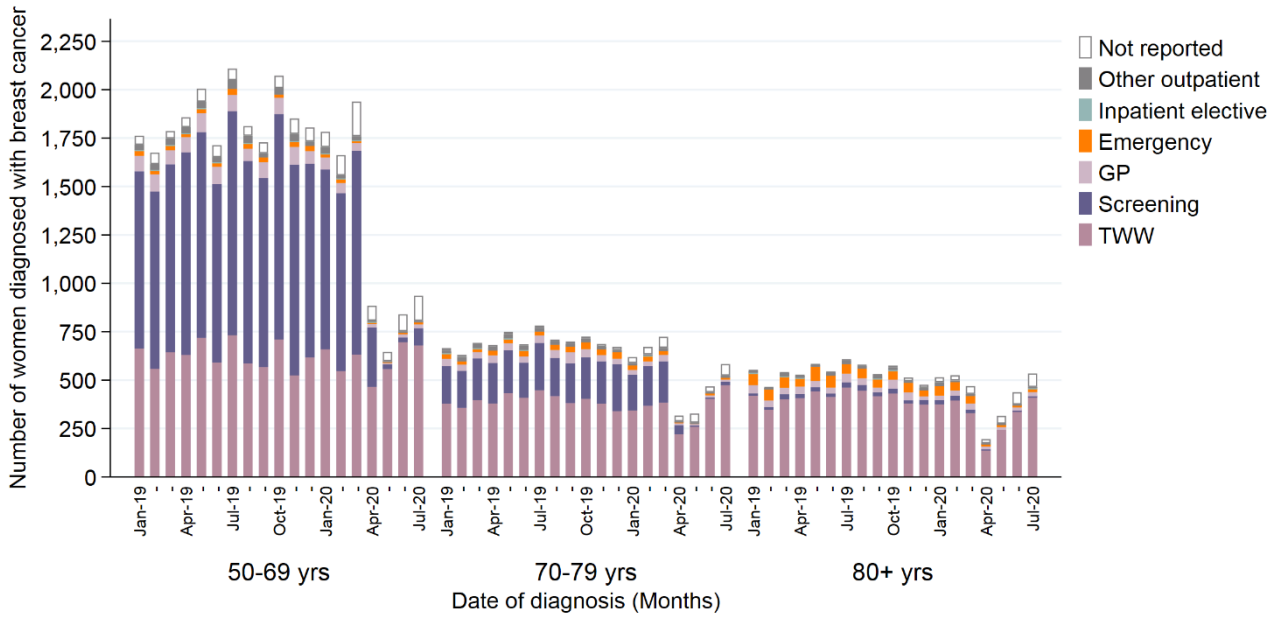
For England, among women aged 50–69 years, similar numbers of women were diagnosed via Two Week Wait (TWW) regardless of date of diagnosis (Figure 3.4). Reduced numbers of women diagnosed with breast cancer from April to July 2020 are primarily attributed to the drop in numbers usually diagnosed via NHS screening, as routine screening services were paused (locally in England; nationally in Wales) during the initial wave of the COVID-19 pandemic.

Numbers saw a similar drop in April 2020 for women aged 70–79 years and 80+ years, due to both a reduction in numbers referred via TWW and screening (where relevant). Numbers for women aged 70+ years were similar to pre-pandemic levels by July 2020 (1,191 in July 2020; 1,494 in July 2019), primarily due to an increase in TWW referrals.

Similar patterns were seen for women diagnosed in Wales (Figure 3.5) with a reduction in the number of patients diagnosed with breast cancer via screening seen from April 2020 onwards for women aged 50–69 years. The TWW breakdown of GP referrals was not available for women diagnosed in Wales, and so GP referrals includes both urgent and non-urgent cases.

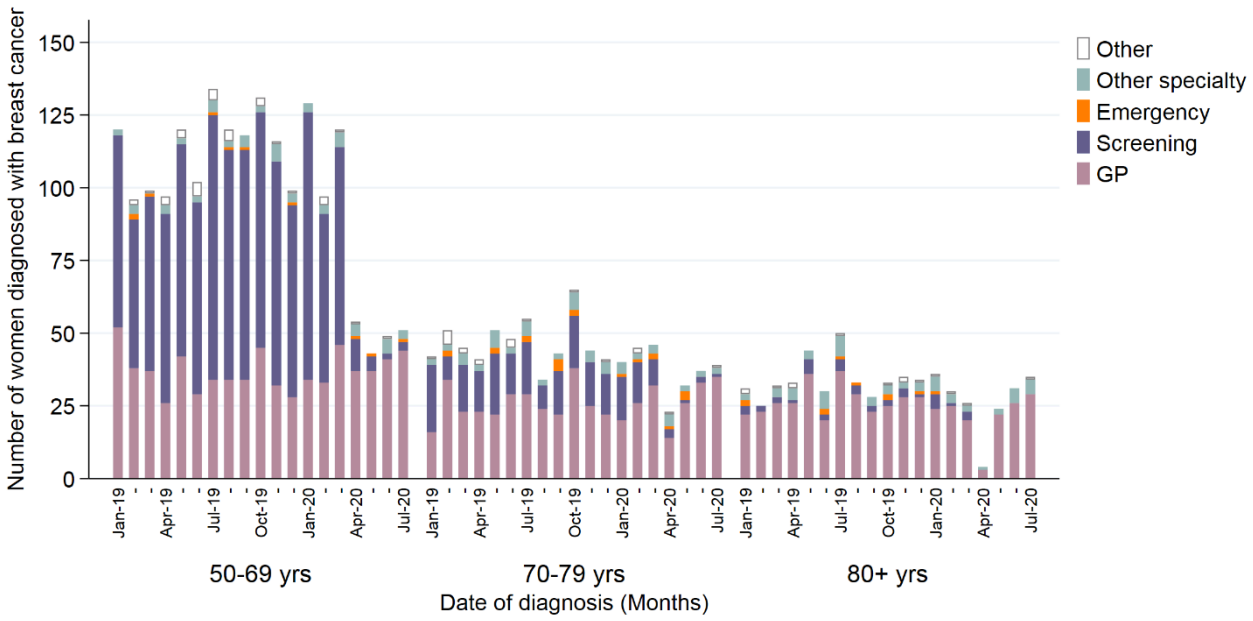
Very few women aged 80 and over were diagnosed in April 2020 when compared with previous months, but this did return to average levels by May.

Figure 3.4. Route to diagnosis among women diagnosed in England in 2019 and 2020, by month & age at diagnosis



Note: *Source = RCRD Basic diagnosis data, Route To Diagnosis data item.*
TWW = Two week wait (urgent GP referrals with a suspicion of cancer);
GP = General Practitioner (routine and urgent referrals where patient not referred under the TWW referral route)

Figure 3.5. Route to diagnosis among women diagnosed in Wales in 2019 and 2020, by month & age at diagnosis



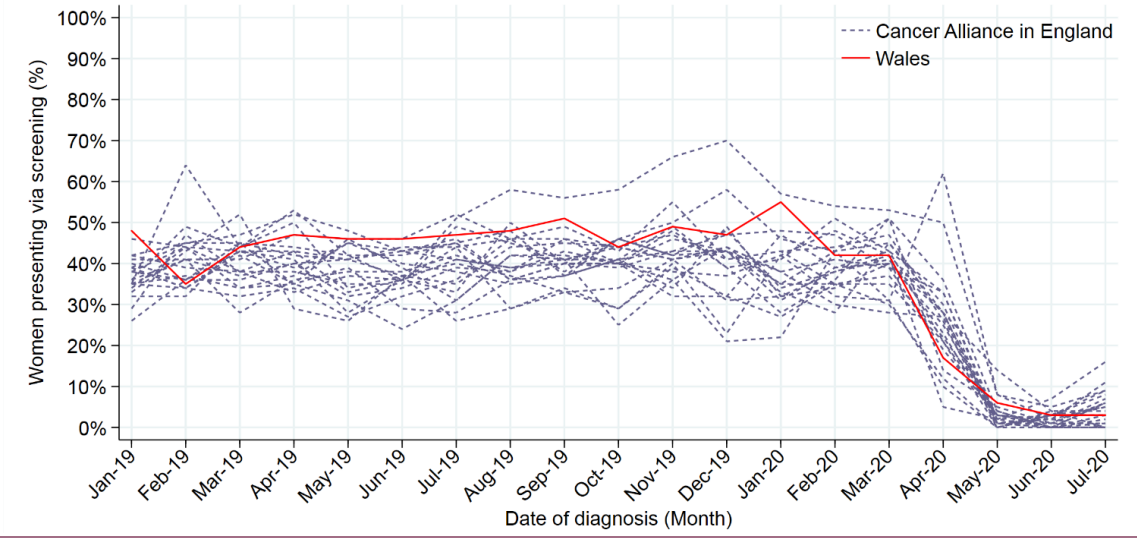
Note: *Source = Wales Cancer Network data; information taken from data items of referral source and screen detected status. This data source did not have information on referrals via the two week wait pathway. GP = General Practitioner*

Considering route to diagnosis by stage, a reduction in numbers diagnosed most obviously affected those women diagnosed with DCIS or early invasive breast cancer, both in England and Wales.

The change in rates of women presenting via screening was seen across all Cancer Alliances (**Figure 3.6**). Among women aged 50–69 years diagnosed in England between April and July 2020 13% presented via screening, compared with 54% between April and July 2019. For Wales, among women aged 50–69 years, 11% of those diagnosed between April and July 2020 presented via screening compared with 65% between April and July 2019.

Overall numbers diagnosed via screening in England and Wales saw a 90% reduction[7], from 5,503 between April and July 2019 to 555 between April and July 2020. There was a 22% reduction in numbers with non-screen detected cancer; 6,348 diagnosed April to July 2020 compared with 8,137 April to July 2019.

Figure 3.6. Percentage of women diagnosed via screening, by Cancer Alliance



[7] Consideration: The AgeX trail, assessing the benefit of extending breast screening to women before age 50 and after age 70, stopped in May 2020. This may have contributed to the reduced number of patient diagnosed via screening. Further information is found at http://www.agex.uk/

3.5. Triple diagnostic assessment in a single visit (Wales only)

This section describes the percentage of patients diagnosed in Wales who were calculated to have received the standard triple diagnostic assessment in a single visit; defined as when the mammogram imaging date and the biopsy or cytology date were reported and were the same.

Women diagnosed at screening will have the imaging and biopsy components of the triple diagnostic assessment performed according to screening protocols, where those with initial mammographic abnormalities are recalled to have assessment with further imaging and biopsies. Such women are therefore not included within this assessment of performance.

Triple diagnostic assessment (TDA) in a single visit is a key tenet of breast cancer service provision [NICE 2016].

Numerator	Women receiving triple diagnostic assessment in a single visit
Denominator	Women with non-screen detected early invasive breast cancer
Country	Wales
Timeframe	*January 2019 – July 2020*

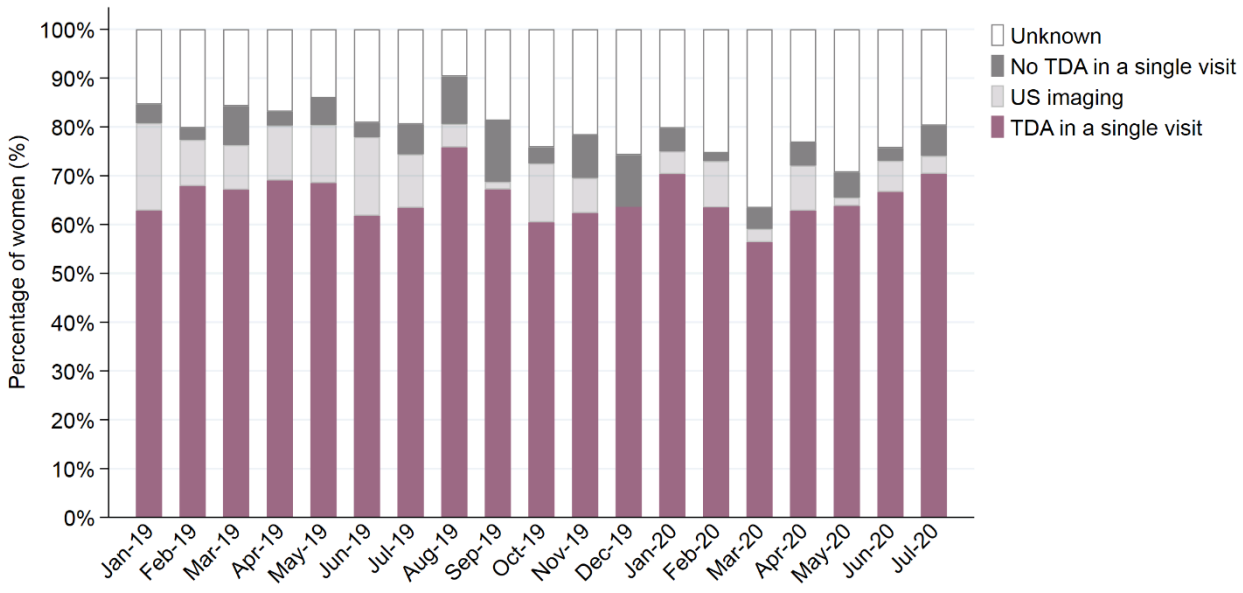
What do we see within this audit group?

Among women diagnosed with non-screen detected early invasive breast cancer in Wales between January 2019 and July 2020 65% were estimated to have received TDA in a single visit (**Figure 3.7**). This is an improvement on the 59% among women diagnosed in Wales in 2018, as reported in the NABCOP 2020 Annual Report.

Comparing women diagnosed between April and July 2020 with those diagnosed between April and July 2019 there was no difference in estimated receipt of TDA in a single visit with rates being 67% and 66% respectively. Rates were broadly comparable by age at diagnosis.

There was little difference by month of diagnosis with just a small decrease in the percentage of women estimated as receiving TDA in a single visit for March 2020 (56%). This quickly picked back up with fewer women being diagnosed with breast cancer from this time point onwards. By July 2020 70% of women were estimated to have received TDA in a single visit.

Figure 3.7. Receipt of TDA among women with non-screen detected early invasive breast cancer diagnosed in Wales



Note: *Figure contains women diagnosed with non-screen detected early invasive breast cancer only.*
US imaging = ultrasound imaging, and refers to women who were calculated to have matching ultrasound and biopsy dates.

3.6. Involvement of a breast clinical nurse specialist or key worker (Wales only)

What does the guidance say?

All people with breast cancer should have a named clinical nurse specialist or other specialist key worker with equivalent skills, who will support them throughout diagnosis, treatment and follow-up [NICE 2018a].

Numerator	Women seen by a breast clinical nurse specialist/named key worker
Denominator	All women
Country	Wales
Timeframe	*January 2019 – July 2020*

What do we see within this audit group?

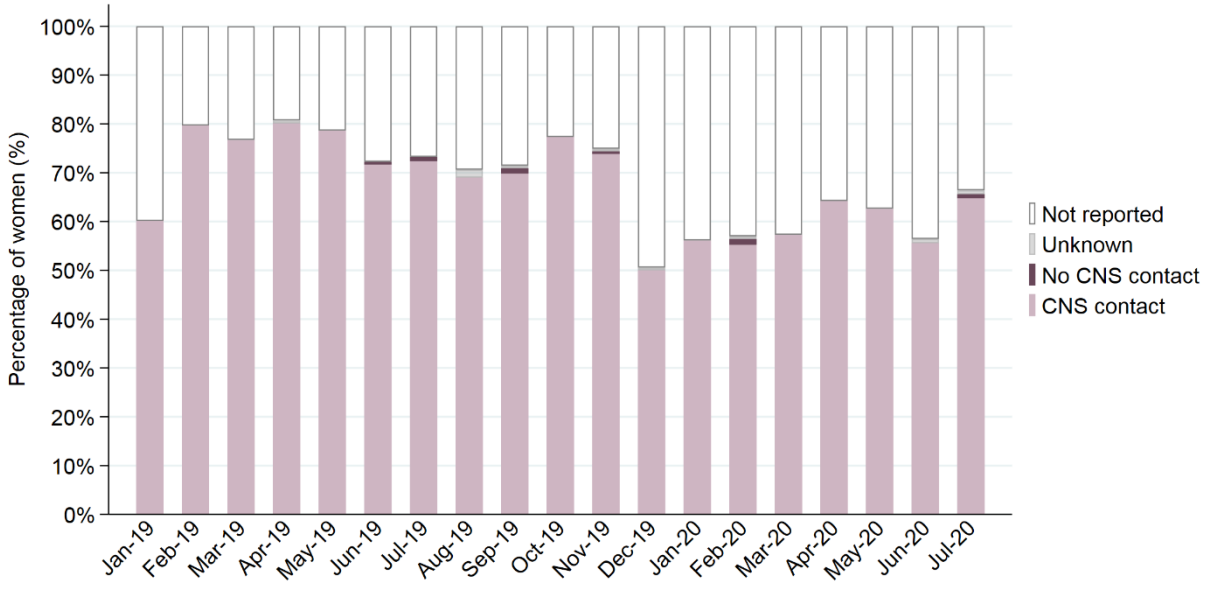
Data on clinical nurse specialist (CNS) contact were reported for 68% of women (aged 50+ years) who were diagnosed in Wales from January 2019 to July 2020.

Comparing submissions on women diagnosed from April to July 2019 with those diagnosed April to July 2020, data completeness had decreased from 76% to 62% (Figure 3.8). However, data completeness was seen to be much improved from the 52% among women diagnosed in 2018, as reported in the NABCOP 2020 Annual Report.

For both timeframes, completeness was slightly higher among women aged 70 years and over, compared with women aged 50–69 years (79% vs 74% for women diagnosed April to July 2019; 64% vs 61% for women diagnosed April to July 2020).

Among women diagnosed from January 2019 to July 2020, for whom data existed, 99% had contact with a CNS. Rates of contact were comparable by age at diagnosis and by month of diagnosis.

Figure 3.8. Reported contact with a breast clinical nurse specialist among women diagnosed in Wales, by date of diagnosis



Note: *CNS = clinical nurse specialist. Unknown = contact is specifically reported as "unknown"*

3.7. Surgery

This section covers the use of surgery for women diagnosed with non-invasive or early invasive BC in 2019 and the first seven months of 2020.

Numerator	Women who had (mastectomy or breast conserving) surgery within 6m of diagnosis
Denominator	Women diagnosed with non-invasive or early invasive BC
Country	England & Wales
Timeframe	*January 2019 – July 2020*

What does the guidance say?

Due to the disruption of breast units being able to provide standard surgical services caused by COVID-19, initial guidance from the Association of Breast Surgery (ABS) on 15 March 2020 gave advice on prioritising patients for surgery, dependent on the availability of theatre space:

"surgical priority given to ER negative patients first…HER2+ patients...pre-menopausal ER+ patients.
For DCIS patients if theatre space available prioritise high grade DCIS.
No immediate breast reconstruction. Mastectomy and delayed reconstruction being offered at a later date.
If insufficient theatre capacity, post menopausal ER+ patients to be commenced on primary endocrine. If not enough theatre capacity premenopausal ER+ patients may also have to be commenced on primary endocrine therapy"

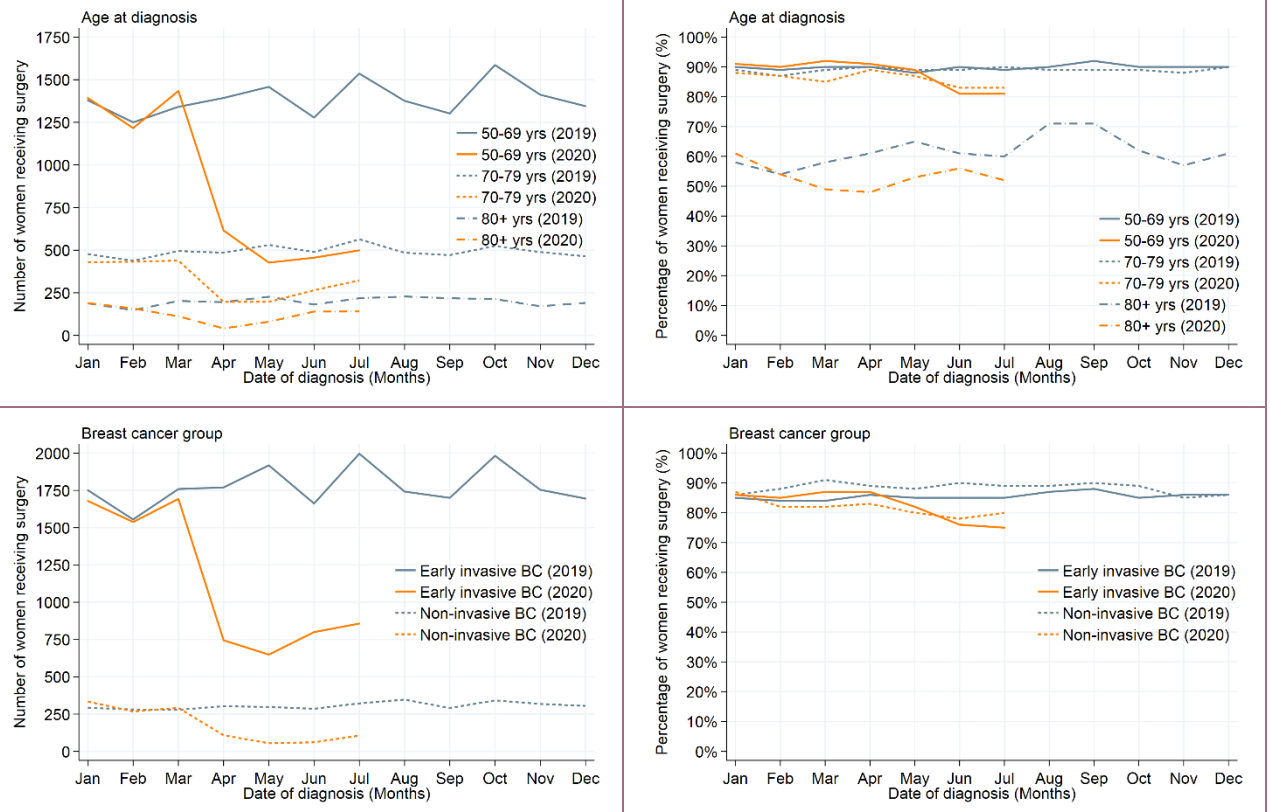
What do we see within this audit group?

Comparing women diagnosed with early invasive breast cancer or non-invasive breast cancer from April–July 2020 with the same time period in 2019, there was a 60% reduction in the number of patients having surgery (Figure 3.9). This is consistent with and partly explained by the decrease in numbers of women diagnosed.

Absolute numbers were most reduced among those with early invasive BC, but the percentage reduction was larger for non-invasive BC (73%).

Additionally the reduction was larger among younger women (65% 50-69 years; 52% 70+ years). However, all age groups had reduced numbers of women, and this mirrors the drop we see in numbers of women diagnosed in this time period.

Figure 3.9. Number/percentage of women having surgery (within 6 months of diagnosis) for non-invasive or early invasive BC, by breast cancer group and age at diagnosis



Note: *Source = Surgery recorded in HES Admitted Patient Care or Cancer Waiting Times (CWT), for patients in England; Surgery recorded in Patient Episode Database for Wales (PEDW), for patients in Wales.*

The percentage of women receiving surgery remained high in general, with only a slight reduction from June 2020, and an earlier drop in rates among women aged 80+ years.

Among women diagnosed in England and Wales between April and July 2020, 80% received surgery compared with 86% of women diagnosed April to July 2019. Rates were comparable among women aged 50–69 years and 70–79 years, with a larger difference seen for women aged 80+ years (53% April to July 2020 compared with 62% April to July 2019).

Looking by Cancer Alliance all regions saw a reduction in the numbers of women receiving surgery from April to July 2020 compared with the same months in 2019 (Figure 3.10).

Interestingly, rates of surgery were higher among women aged 80 years and over diagnosed between April and July 2020, compared with the same months in 2019, in nearly a third of alliances (data not shown).

Type of surgery

Among women receiving surgery within six months of diagnosis, rates of mastectomy with immediate reconstruction were lower in April and May 2020 (Figure 3.11). This was regardless of age. Rates of mastectomy with immediate reconstruction are typically low among older women.

Among women aged 50–69 years diagnosed in England and Wales and receiving surgery, rates of mastectomy increased from 14% among women diagnosed between April–July 2019, up to 24% among women diagnosed between April–July 2020. With older women more likely to have mastectomy, rates were largely comparable for women aged 70+ years, being 32% among women diagnosed April–July 2019 and 38% April–July 2020.

Among women receiving surgery rates of mastectomy with immediate reconstruction across England and Wales decreased from 5% among women diagnosed April–July 2019 down to 2% April–July 2020. Rates were particularly low among women aged 70+ years, at 1% among women diagnosed April–July 2019, dropping to less than 0.2% April–July 2020.

Figure 3.10. Number of women receiving surgery for non-invasive or early invasive BC, by Cancer Alliance

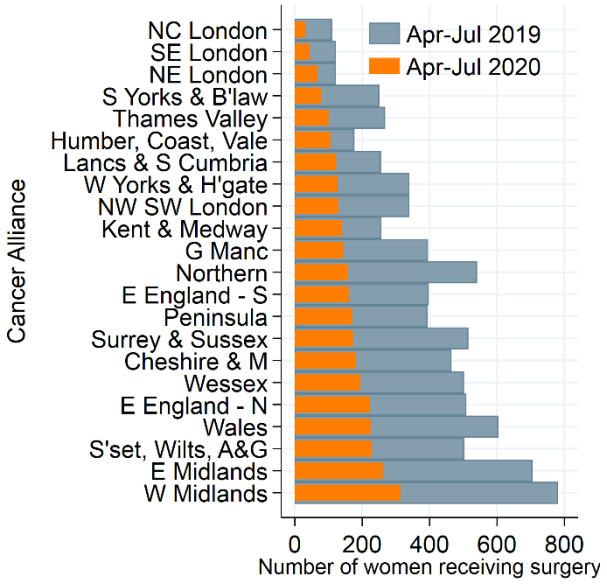
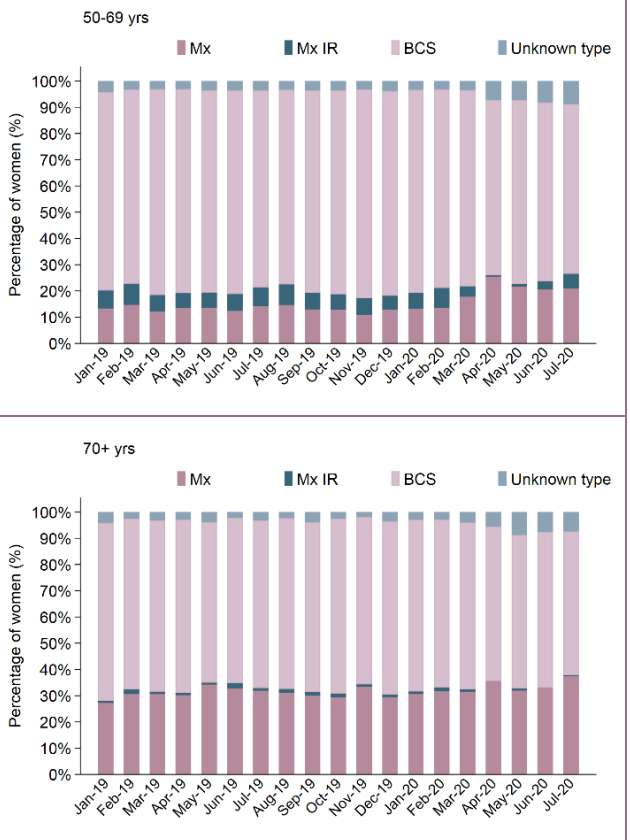


Figure 3.11. Type of surgery among women having surgery for non-invasive or early invasive BC, by surgery date



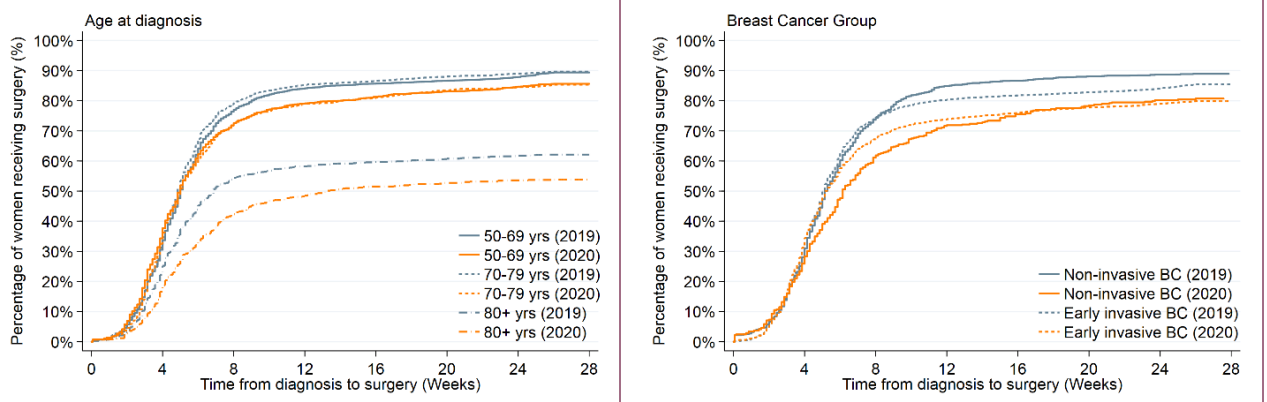
Note: *Source = Surgery recorded in HES Admitted Patient Care or CWT, for patients in England; Surgery recorded in PEDW, for patients in Wales.*
Mx = mastectomy; Mx IR = mastectomy with immediate reconstruction; BCS = breast conserving surgery; Unknown type = surgery reported only in CWT for patients in England.

Timing of surgery

Comparing women diagnosed from April to July 2020, with the same months in 2019, median time from diagnosis to surgery remained comparable at around 5 weeks, with 75% of patients receiving surgery within 6–7 weeks.

Delays in receiving surgery over six weeks from diagnosis were most evident among patients aged 80 years and over and those diagnosed with non-invasive breast cancer (Figure 3.12), along with those with some degree of frailty (data not shown).

Figure 3.12. Time from diagnosis to surgery for non-invasive or early invasive BC, among women diagnosed April–July 2020 compared with April–July 2019



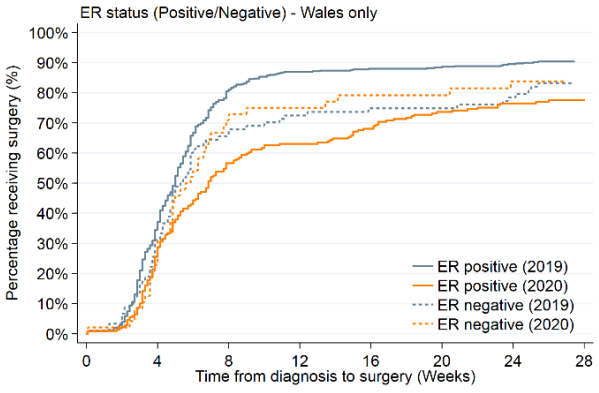
Note: *Source = Surgery recorded in HES Admitted Patient Care or CWT, for patients in England; Surgery recorded in PEDW, for patients in Wales. Patients with no record of surgery are censored.*

Subgroups by ER status (Wales only)

The data for women diagnosed and treated in Welsh local health boards during the pandemic included ER status (something unavailable within the RCRD data provided for women diagnosed in England).

Looking at time from diagnosis to surgery, by ER status suggests the longer time intervals were more evident among women with ER positive breast cancer, for whom PET is a treatment option (Figure 3.13). This is consistent with guidance on prioritisation of patients for surgery where surgical capacity was reduced.

Figure 3.13. Time from diagnosis to surgery for non-invasive or early invasive BC, among women diagnosed in Wales, April–July 2020 compared with April–July 2019, by ER status



Note: *Source = Surgery recorded in PEDW. ER status recorded in Wales Cancer Network data.Patients with no record of surgery are censored.*

3.8. Radiotherapy

The use of radiotherapy (RT) after surgery is recommended for the majority of women who receive breast conserving surgery (BCS), with post-mastectomy RT recommended for women considered to be at moderate or high risk of recurrence. Women receiving standard adjuvant therapy have RT 5 days a week for 3 weeks.

What does the guidance say?

On 24 March 2020 initial guidance from the Royal College of Radiologists (RCR) was published on the use of RT for breast cancer during the COVID-19 pandemic [RCR March 2020].

Based on the FAST and FAST-Forward trials, the RCR recommended that RT be delivered in 5 fractions for all patients with node-negative tumours requiring RT with no boost. Options included 28–30 Gray in once weekly fractions over 5 weeks or 26 Gray in 5 daily fractions over 1 week [Brunt *et al* 2020a; Brunt *et al* 2020b**]**.

Early figures of RT use for breast cancer in England demonstrated fewer courses of RT were delivered during the initial wave of COVID-19, and increased use of hypofractionated regimens was seen [Spencer *et al* 2021]. We therefore investigated how patterns of RT changed for patients across 2019 and the first seven months of 2020, to understand the impact of COVID-19 on radiotherapy treatment courses.

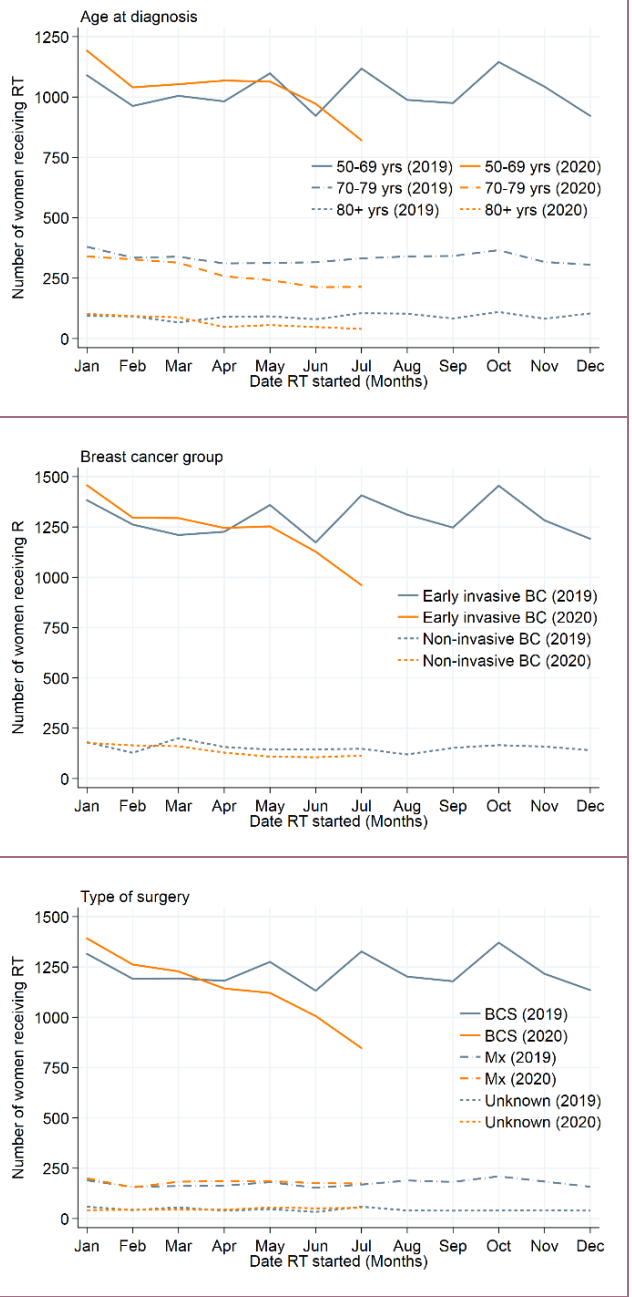
Numerator	Women who had radiotherapy
Denominator	Women having surgery for non-invasive or early invasive BC
Country	England & Wales
Timeframe	*January 2019 –July 2020*

What do we see within this audit group?

Comparing numbers of women with non-invasive or early invasive breast cancer receiving radiotherapy across April–July 2020, with the same time period in 2019, there was a 12% reduction in the number of patients having radiotherapy.

Use was most reduced among older patients (5% 50–69 years; 27% 70–79 years; 48% 80+ years), those with non-invasive BC (23%) and those women having BCS (16%) (**Figure 3.14**).

Figure 3.14. Number of women having radiotherapy for operable non-invasive or early invasive BC, by start date of radiotherapy



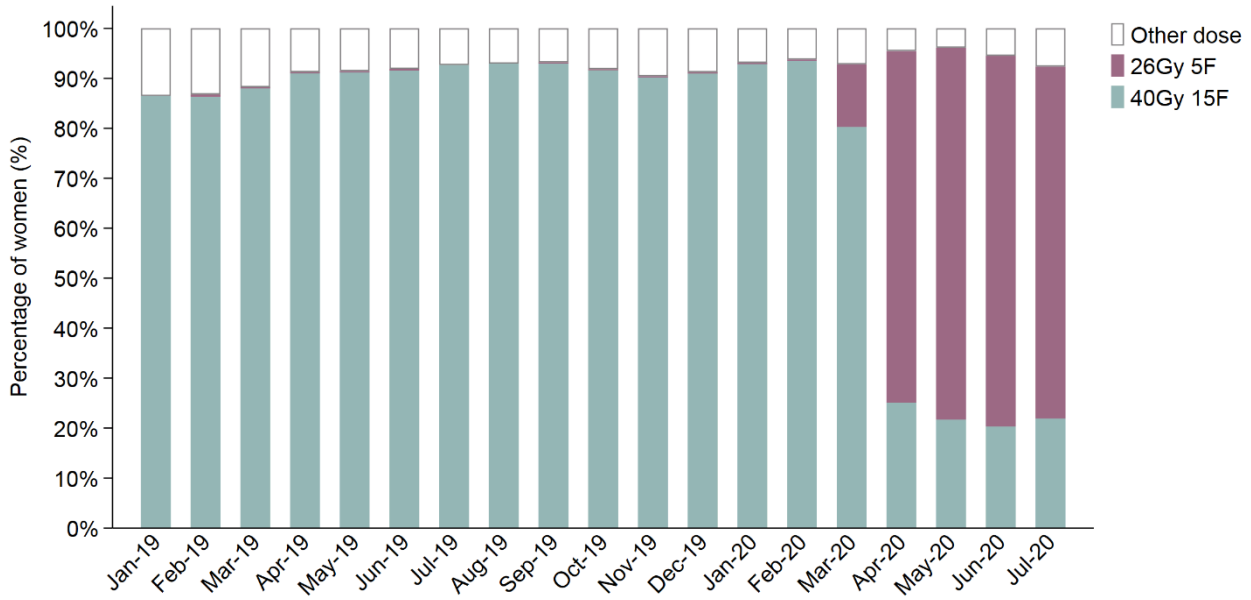
Note: *BCS = breast conserving surgery; Mx = mastectomy; Unknown = surgery reported only in CWT for patients in England.*

Although numbers receiving adjuvant RT remained similar, for most patients there was a change in RT dose from 40Gy in 15F (standard regimen) to 26Gy in 5F (hypofractionated regimen) (**Figure 3.15**). This change in dosing was seen for both younger and older women.

Among women receiving radiotherapy for operable non-invasive or early invasive breast cancer uptake of hypofractionated regimens occurred rapidly during the initial wave of the pandemic from March to July 2020. Going from 13% of women receiving 26Gy in 5F in March 2020, increasing to 72% across April to July 2020 (compared with 0% April to July 2019).

The swift uptake of this new regimen occurred across all geographical regions, following the change in RCR guidelines, reflecting how NHS organisations adapted to continue providing treatment.

Figure 3.15. Prescribed radiotherapy dose among women starting radiotherapy for operable non-invasive or early invasive BC, by start date of radiotherapy



Note: *GY = Grays; F= Fractions.Other dose = RT dose not reported or different to 40Gy 15F and 26Gy 5F. Denominator is all women receiving RT.*

3.9. Chemotherapy

Systemic anti-cancer treatment, such as chemotherapy, aims to improve survival and reduce risk of breast cancer recurrence. Chemotherapy given prior to surgery is used to facilitate breast-conserving surgery or enable locally advanced tumours to become operable. Other publications have reported a change in chemotherapy use overall [Clark *et al* 2020], but did not describe patterns of use by age.

This section looks at the use of chemotherapy from January 2019 to July 2020, both for women having surgery and not having surgery.

What does the guidance say?

On 15 May 2020, the ABS and UK Breast Cancer Group (UKBCG) issued a joint statement on the use of neoadjuvant chemotherapy (NACT) during the COVID-19 pandemic. Notably that:

- NACT was not recommended for patients with tumours <2cm and node negative, unless surgery was not possible.
- NACT should only be given where chemotherapy is indicated and would be given in the adjuvant setting.

Numerator	Women who had chemotherapy
Denominator	Women diagnosed with invasive BC
Country	England & Wales
Timeframe	*January 2019 – July 2020*

What do we see within this audit group?

Comparing women having chemotherapy for invasive breast cancer from April–July 2020, with the same time period in 2019, there was a 28% reduction in the number of patients having chemotherapy. Use was most reduced among women aged 70+ years (42%) and those with early invasive BC (32%).

This was largely explained by low use in April 2020, with activity subsequently increasing (Figure 3.16).

Among women having surgery for invasive breast cancer, the use of NACT was noticeably lower in 2020, with very few women receiving NACT from April 2020 onwards. Low use of NACT was seen regardless of disease stage (Figure 3.17). Similar patterns were seen across both England and Wales.

Figure 3.16. Number of women having chemotherapy for invasive breast cancer, by start date of chemotherapy

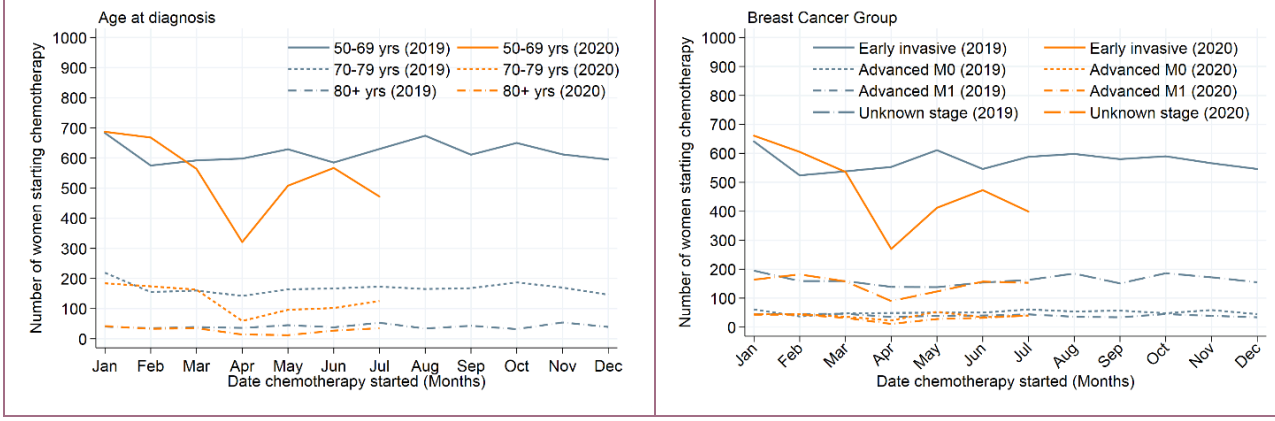
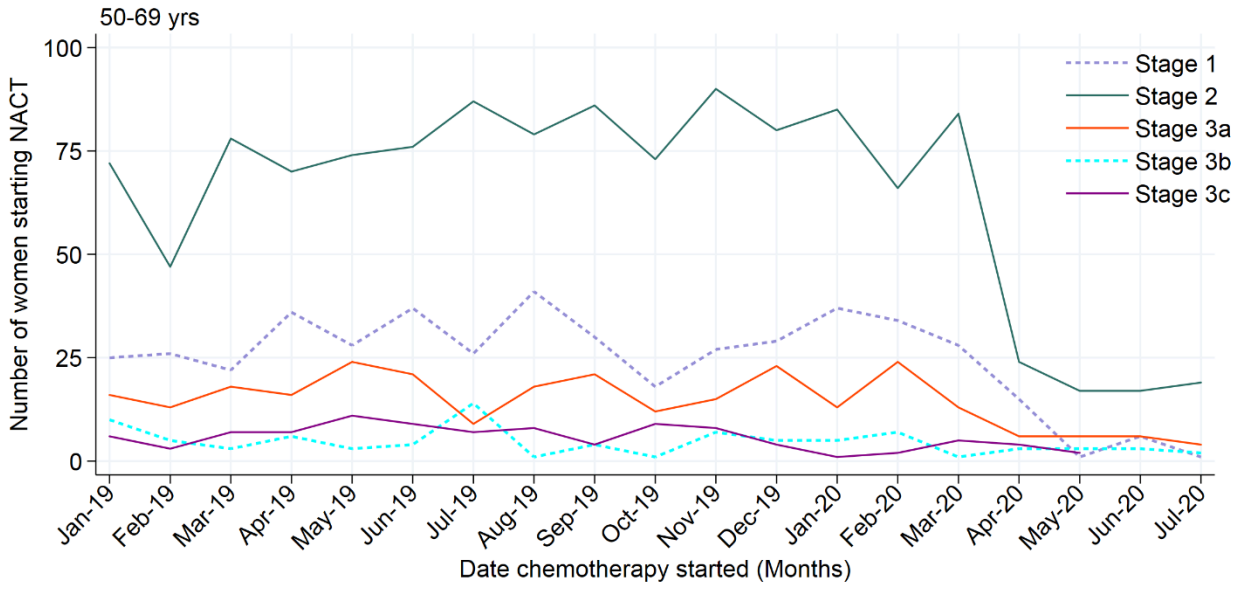
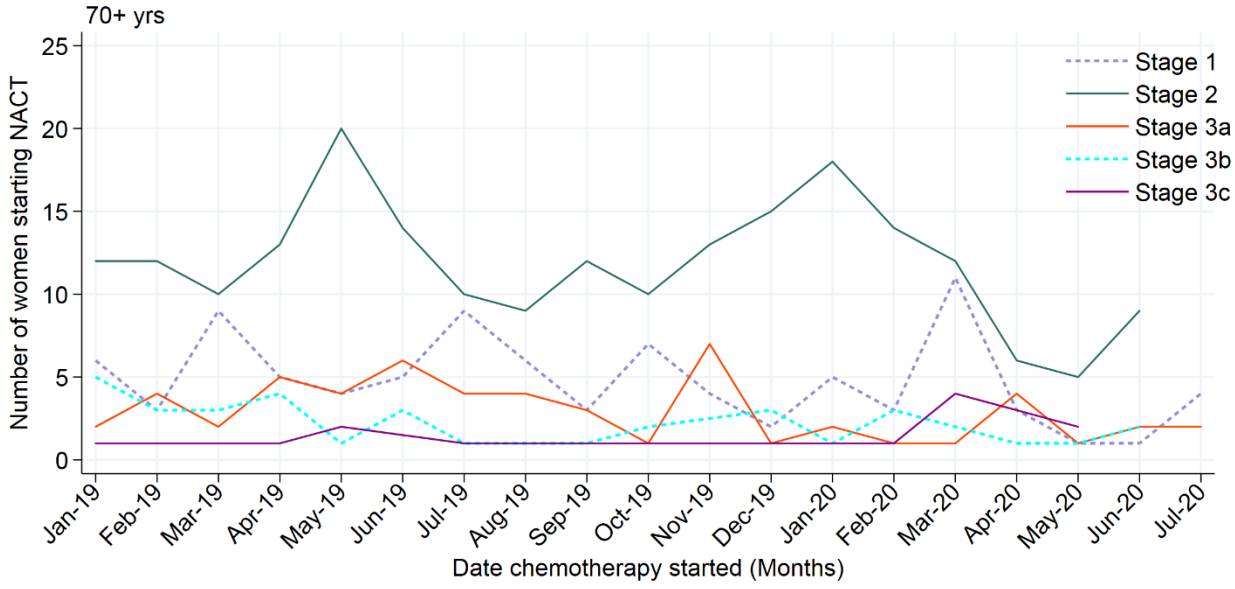


Figure 3.17. Number of women starting neoadjuvant chemotherapy (NACT) for operable invasive breast cancer, by age at diagnosis and stage





Recommendations

- ✓ The NABCOP will work with NCRAS and WCN to support the development of contemporaneous data collections on breast cancer diagnoses and treatment across England and Wales. (Rec #5)
- ✓ The NABCOP will provide updated reports on patterns of newly diagnosed patients with breast cancer by age group and route of diagnosis to support local and national decision making in response to changes in demand. (Rec #6)

4. Endocrine therapy prescriptions for invasive breast cancer in England

This chapter describes the use of endocrine therapy among patients with invasive breast cancer (stages 1–4). Specifically, it looks at the information provided within routinely collected data on primary care dispensed prescriptions in England.

A snapshot of prescriptions dispensed in 2018, from the Primary Care Prescription Database (PCPD) was made available to the NABCOP in June 2020 as part of a collaborative feasibility study between the NABCOP and NCRAS. The PCPD has population coverage and captures community pharmacy dispensed prescriptions [Henson *et al* 2018; Emanuel *et al* 2019]. Amongst the prescriptions which are routinely recorded is endocrine therapy (ET), one of the main treatments given for women with estrogen receptor (ER) positive invasive breast cancer.

Patient-level cancer registration records for women aged 50 years and over diagnosed with invasive breast cancer from 2014 to 2017 were linked to PCPD data on ET prescriptions dispensed in 2018. The data were provided by NCRAS for English patients.

What is the evidence base for treatment decisions?

NICE Evidence Review found that use of adjuvant endocrine therapy for 5 years in women newly-diagnosed with estrogen receptor positive (ER positive) early stage invasive breast cancer reduces recurrence rates by approximately half and breast cancer mortality by approximately a third [NICE 2018b].

Tamoxifen, is a selective ER modulator which is effective regardless of the menopausal status of the patient. Aromatase inhibitors are also widely used in postmenopausal women to reduce the non-ovarian production of estrogen and the stimulation of ER positive breast cancer.

What does the guidance say?

Guidelines on the management of older patients with breast cancer, issued by the International Society of Geriatric Oncology (SIOG) and European Society of Breast Cancer Specialists (EUSOMA), advise that primary endocrine therapy without surgery should only be offered to women with 'a strongly ER-positive tumour and short life expectancy (no more than 5 years)' [Biganzoli *et al* 2021].

Clinical guidelines for the management of (elderly) patients with breast cancer outline that "age alone" should not dictate any aspect of management for older individuals with breast cancer.

Numerator	Women who had an endocrine therapy prescription dispensed in 2018
Denominator	Women diagnosed with invasive breast cancer
Country	England
Timeframe	*Women diagnosed from 2014–17*

Why do we look at this in the NABCOP?

- To present the value of the PCPD in informing on rates of endocrine therapy use for women diagnosed with invasive breast cancer.
- To provide contemporary national figures for these rates.
- To investigate whether use of endocrine therapy differed according to whether women did or did not have surgery and was similar among women with the same level of fitness, regardless of chronological age.
- To investigate any variation in use of endocrine therapy by age and by NHS organisation.

What differences do we see in rates of endocrine therapy reported across primary and secondary care data sources?

There are several areas where (intended) use of endocrine therapy (ET) is captured within routine secondary care data sources. Specifically, within the data the NABCOP receives from NCRAS for women diagnosed and treated within English NHS trusts, information on ET use is recorded in the following places:

- Cancer Outcomes and Services Dataset (COSD) Planned cancer treatment type – COSD CR0470
- COSD Cancer treatment modality – COSD CR2040
- Cancer Registry event
- Systemic Anti-Cancer Therapy (SACT) drug group – reports of anastrozole, exemestane, fulvestrant, goserelin, letrozole, leuprorelin, megestrol, medroxyprogesterone, tamoxifen

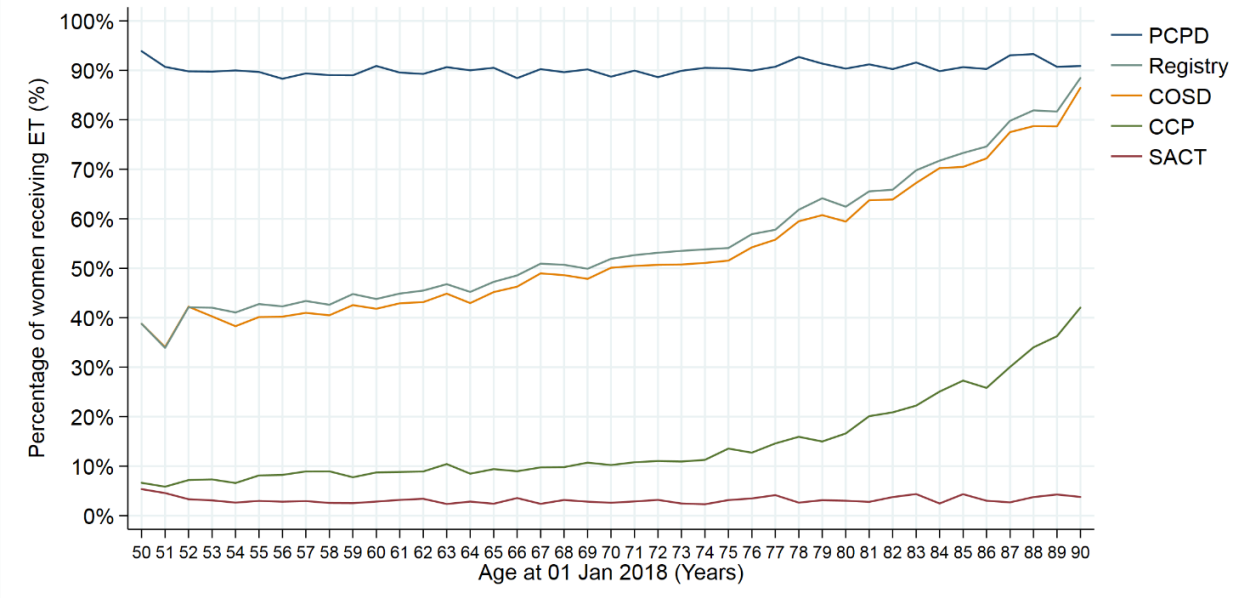
Figure 4.1 shows the reporting of ET use by data source and age, among 84,718 women diagnosed with ER positive invasive breast cancer between 2014 and 2017.

Both the COSD and Cancer Registry datasets recorded the use of ET in just over half of patients (51% & 53% respectively), whilst ET as a planned treatment was recorded for only 13% of patients. For each of these sources older patients were more likely to have ET recorded compared with younger women (ET use was recorded in COSD for 44% 50–69 years; 55% 70–79 years; 76% 80+ years). This was not seen for all NHS trusts with some areas having ET use recorded in COSD, which was comparable to that in the PCPD.

As a secondary care data source for prescribed ET use, SACT provided little information, with less than 4% of women recorded as having ET.

In contrast, 90% were recorded in the PCPD as having an ET prescription dispensed within a community pharmacy in 2018. This level of prescribing was observed for women at all ages (90% 50–69 years; 91% 70–79 years; 91% 80+ years).

Figure 4.1. Use of endocrine therapy identified within PCPD 2018 dispensed prescriptions compared with recording in routine secondary care sources, by age at 01 Jan 2018 - among patients with ER positive invasive breast cancer



Note: *ER = estrogen receptor*
PCPD = Primary Care Prescriptions Database (ie ET use recorded in PCPD dispensed prescriptions in 2018)
Registry = ET recorded as delivered in Cancer Registry treatment data
COSD = ET recorded as delivered in the Cancer Outcomes and Services Dataset
CCP = ET recorded as a planned treatment in the COSD Cancer Care Plan data
SACT = ET recorded as prescribed within the Systemic Anti-Cancer Therapy data

What do we see within this audit group?

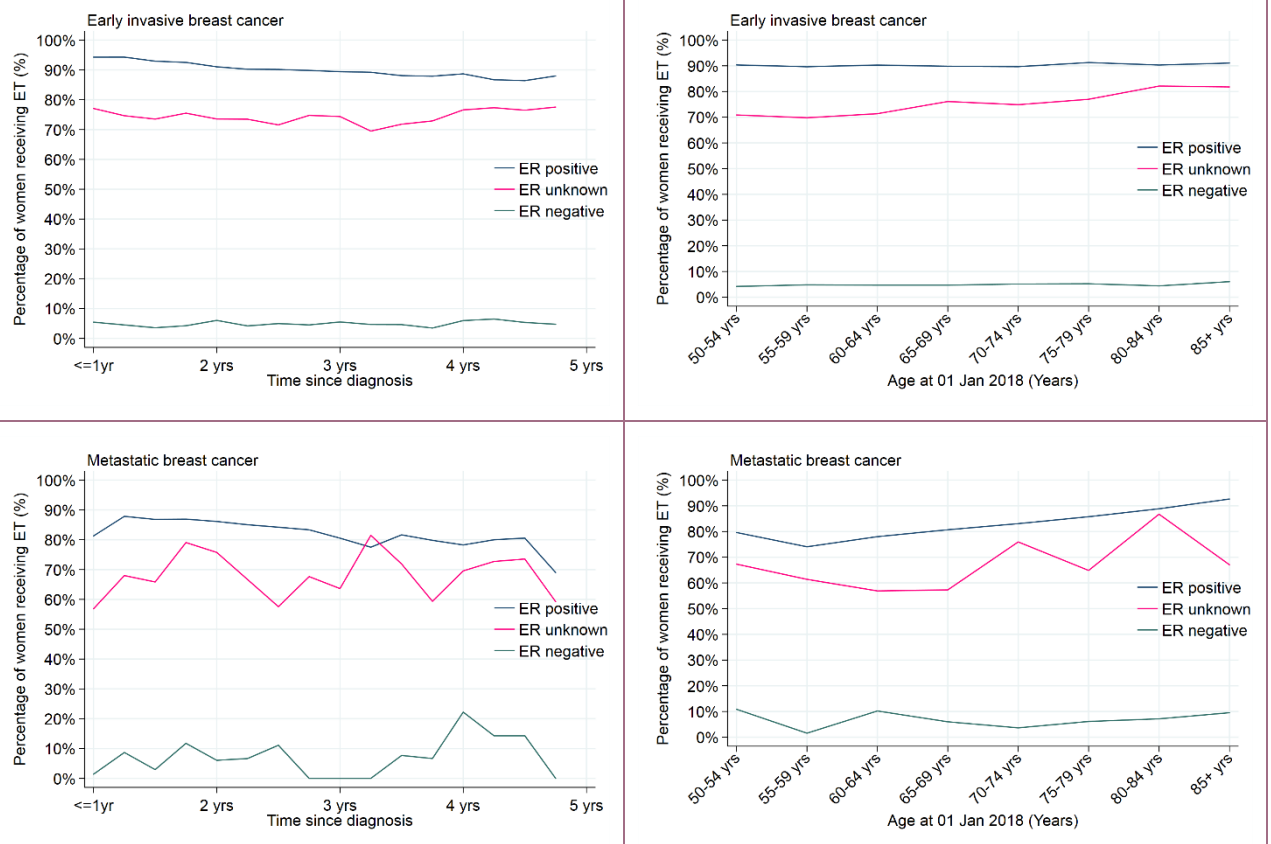
Among 109,425 patients with invasive breast cancer (IBC) diagnosed between 2014 and 2017, 77% had ER positive breast cancer (with the remaining 11% ER negative and 11% ER unknown).

Overall, 78% of all women with a registered diagnosis of breast cancer were recorded in the PCPD as having been prescribed ET during 2018. Use of ET was as expected, highest among patients with ER positive IBC at 90% and low for ER negative IBC (of those receiving ET 31% had PR positive IBC and 31% had PR unknown IBC) (Figure 4.2).

This pattern of use was observed regardless of use of surgery. ET use was high for all age groups and seemed to be unaffected by patient fitness, among women diagnosed with ER positive IBC

Rates of ET prescriptions dispensed in 2018 were seen to be low among women recently diagnosed with breast cancer (28%; data not shown); this is likely to be due to the shorter time since diagnosis, the sequence of treatments and the likelihood that initial ET would be prescribed in secondary care for patients with invasive breast cancer.

Figure 4.2. Impact of ER status on use of endocrine therapy, by (a) time since diagnosis and (b) age at 01 Jan 2018, among women diagnosed with invasive breast cancer in England from 2014–17



***Note**: ET use recorded in PCPD dispensed prescriptions in 2018*

Among 12,204 women with IBC and an unknown ER status 72% received ET. Patterns of ET use for such patients were comparable to those with ER positive IBC, although with some increase in ET use with increasing age (Figure 4.2). Further investigation showed that of these women, 99% also had an unknown PR status for their breast tumour.

The percentage of women with ER unknown status has decreased over time from 20% in 2014, to less than 8% in 2017 among women diagnosed with invasive breast cancer.

Among 2,155 women with ER positive metastatic breast cancer 83% had an ET prescription in 2018. This varied by age at diagnosis, being 78% for women aged 50–69 years up to 91% among women aged 80+ years.

Type of ET and geographical variation

Among 76,294 women with ER positive IBC receiving ET, aromatase inhibitors (AIs) were the most commonly prescribed ET, with 80% having a record of an AI prescribed at least once in the year (with 39% of these being prescribed anastrozole). However, this differed by age.

Among women younger than 55 years at diagnosis, tamoxifen was more likely to be prescribed. 55% of women aged 50–55 years received tamoxifen, compared with 15% of women aged 85 years and over.

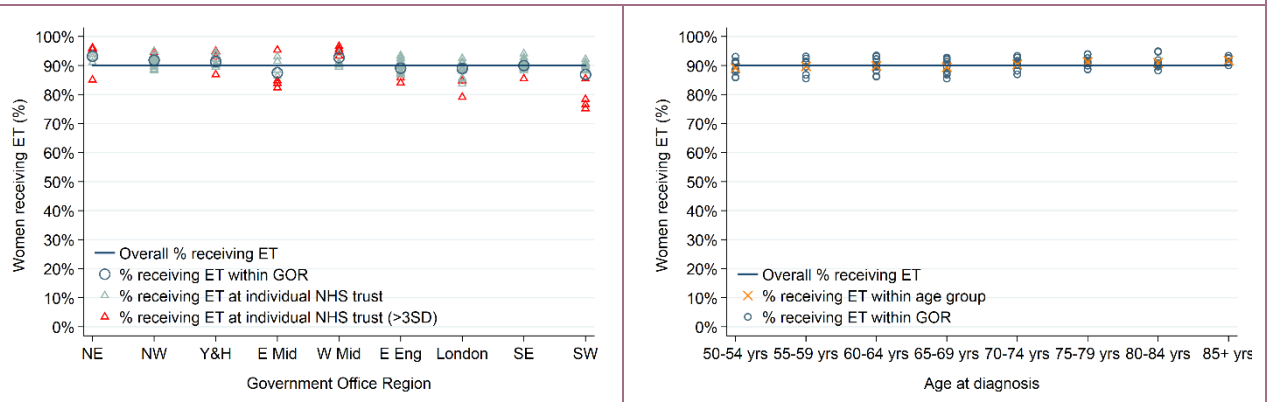
Within the timeframe of prescriptions provided (Jan–Dec 2018) only 2% of those initially on tamoxifen switched to an aromatase inhibitor at some point.

Looking at geographical variation in prescribing, ET use was consistently high across all regions and NHS trusts (**Figure 4.3**).

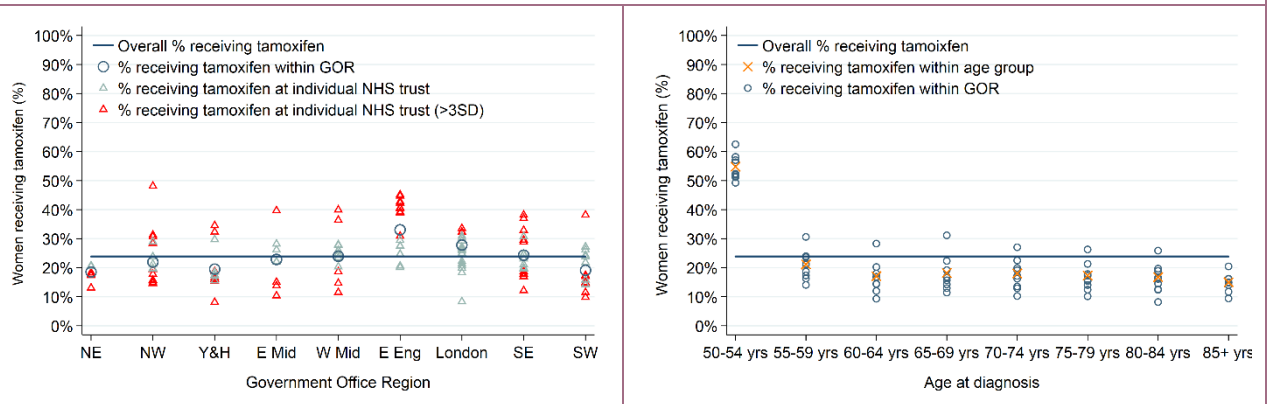
Looking at the type of ET prescribed, among those women receiving ET, there was some variation observed in the proportionate use of tamoxifen. **Figure 4.3** highlights that variation between geographical regions (identified here by Government Office Region) was small compared with the variation between individual NHS trusts.

Figure 4.3. Variation in use of ET and tamoxifen dispensed in 2018, by Government Office Region and age at diagnosis (among patients with ER positive invasive breast cancer diagnosed in England from 2014–17)

Use of endocrine therapy (ET)



Use of tamoxifen, among women receiving ET



Note: *ET use recorded in PCPD dispensed prescriptions in 2018.*
GOR = Government Office Region; 3SD = trusts where % of patients receiving ET/tamoxifen is more than 3 standard deviations away from the overall %.NE = North East; NW = North West; Y&H = Yorkshire & Humberside; E Mid = East Midlands; W Mid = West Midlands; E Eng = East of England; SE = South East; SW = South West.

Implications for Wales

Although this chapter investigates the use of ET among patients diagnosed in England only, information on the use of ET is important for all patients diagnosed with ER positive breast cancer.

Recommendation

✓ Breast care teams in NHS organisations should ensure information on endocrine therapy treatment started in secondary care is recorded within routine data submissions to NCRAS (COSD) and WCN databases. (Rec #1).

5. Outcomes

This chapter considers short and long-term outcomes for women with breast cancer diagnosed over the five-year audit period from 2014–2018. Using five years of data helps to ensure that analyses within subgroups of age and other clinical or patient factors include enough patients for reporting purposes.

5.1. Reoperation rates following initial breast conserving surgery

The use of breast conserving surgery (BCS) is routine clinical practice among women with DCIS or operable invasive breast cancer, accounting for 3 out of 4 initial procedures in women aged 50+ years newly diagnosed with DCIS or early invasive breast cancer.

What does the guidance say?

NICE guidance (NG101) recommends that further surgery is offered:

> *'where invasive cancer and/or DCIS is present at the radial margins ('tumour on ink'; 0 mm).'* [NICE 2018a]

Approximately 20% of patients who receive BCS will require at least one reoperation, due to inadequate resection margins, and this has previously been shown to vary by NHS organisation [Jeevan *et al* 2012]. It is also reported that BCS followed by re-excision is associated with poorer cosmetic outcomes, whilst adding to the treatment burden and a negative impact on quality of life [Heil *et al* 2012].

Numerator	Women who had a subsequent BCS or mastectomy reoperation within 3 months
Denominator	Women receiving breast conserving surgery for DCIS or early invasive breast cancer
Country	England & Wales
Timeframe	*Women diagnosed from 2014–18*

Why do we look at this in the NABCOP?

Reoperation following primary breast conserving surgery (BCS) may result in delays to adjuvant treatment, with evidence of increased rates of local and distant recurrence as a result. Previous research has shown reoperation rates to be lower among older women.

What do we see within this audit group?

Among 106,644 women who had breast conserving surgery as their initial surgery, 15% had at least one subsequent breast reoperation (either BCS or mastectomy) within three months.

Reoperation rates varied between women with ductal carcinoma in situ (DCIS) and early invasive disease (Table 5.1), with women with DCIS more likely to have at least one reoperation (25% vs 13%, P<0.001).

Reoperation rates were slightly lower among women aged 80+ years. Overall, 11% of women had a reoperation in this age group; with women with DCIS still more likely than women with early invasive breast cancer to have at least one reoperation (17% vs 10%, P<0.001).

Of those women with DCIS having a reoperation, 84% had just one reoperation (Table 5.1), compared with 88% of women with early invasive breast cancer. Among such women the type of subsequent operation (BCS or mastectomy) was similar when looking by invasive status of the primary tumour, with the majority having another breast conservation procedure (82%). There was however a difference by age with a greater percentage of older women having a mastectomy. For DCIS and early invasive disease respectively these were:

- 19% & 17% among women aged 50–69 years;
- 20% & 19% among women aged 70–79 years;
- 32% & 27% among women aged 80+ years.

Among women who had two or more reoperations, 35% of women with DCIS had a mastectomy as the second reoperation compared with 41% of women with early invasive breast cancer. Again, this was more likely among older women.

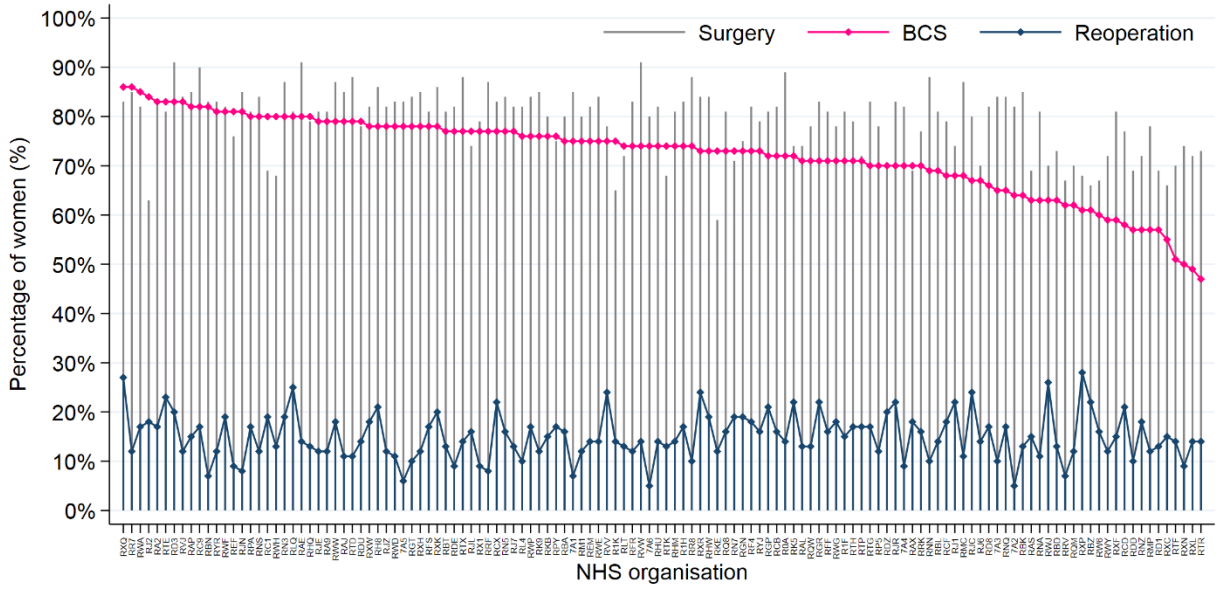
There was geographical variation in reoperation rates (Figure 5.1). For women aged 70+ years this variation was not beyond what would be expected given the numbers having an initial BCS within each NHS organisation (Figure 5.2).

Table 5.1. Observed percentage of women having subsequent breast reoperation within three months of initial breast conserving surgery (BCS), by DCIS/early invasive breast cancer and age at diagnosis

	All women		50–69 years		70–79 years		80+ years	
	Total	%	Total	%	Total	%	Total	%
DCIS								
Women having BCS	14,523		11,774		2,304		445	
No reoperation	10,910	75.1%	8,778	74.6%	1,761	76.4%	371	83.4%
One reoperation	3,029		2,505		458		66	
BCS	2,441	16.8%	2,028	17.2%	368	16.0%	45	10.1%
MX	588	4.0%	477	4.1%	90	3.9%	21	4.7%
2+ reoperations	584	4.0%	491	4.2%	85	3.7%	8	1.8%
Early invasive breast cancer								
Women having BCS	92,121		65,772		20,285		6,064	
No reoperation	80,060	86.9%	57,010	86.7%	17,610	86.8%	5,440	89.7%
One reoperation	10,579		7,654		2,359		566	
BCS	8,691	9.4%	6,371	9.7%	1,905	9.4%	415	6.8%
MX	1,888	2.0%	1,283	2.0%	454	2.2%	151	2.5%
2+ reoperations	1,482	1.6%	1,108	1.7%	316	1.6%	58	1.0%

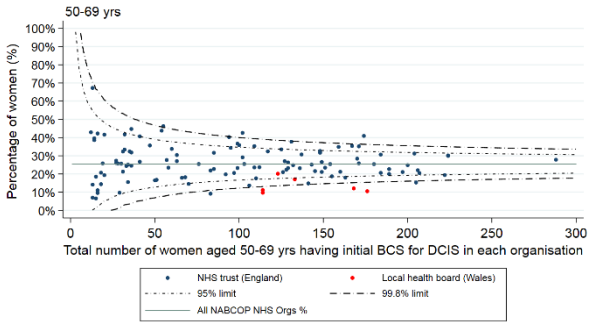
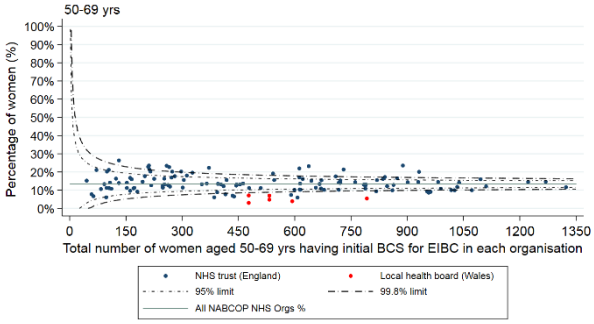
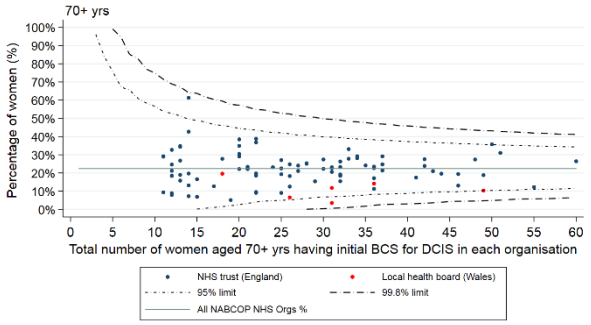
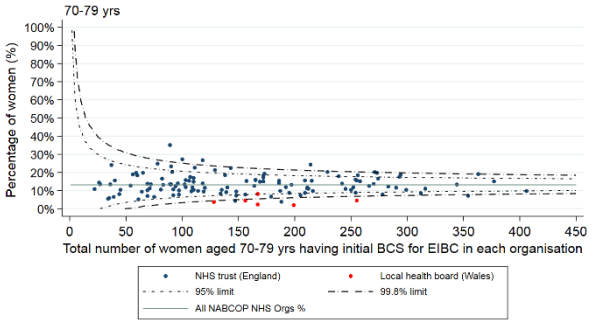
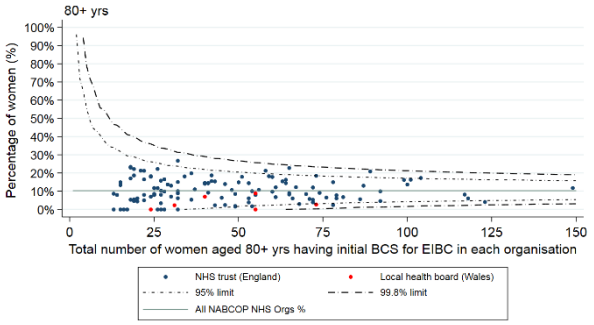
Note: *Percentages may not add up to 100% due to rounding.*

Figure 5.1. Observed percentage of women having breast conserving surgery, for DCIS or early invasive breast cancer, and a subsequent breast reoperation within three months, by diagnosing NHS organisation



Note*: DCIS = ductal carcinoma in situ; BCS = breast conserving surgery.*
Denominators for percentages shown are: surgery = all women; BCS = women having surgery; Reoperation = women having BCS

Figure 5.2. Risk-adjusted percentage of women having subsequent breast reoperation within three months of initial breast conserving surgery (BCS) for DCIS or early invasive breast cancer, within diagnosing NHS organisation, by age at diagnosis

DCIS	Early invasive breast cancer
	
	
	

***Note**: BCS = breast conserving surgery; DCIS = Ductal carcinoma in situ; EIBC = early invasive breast cancer.*
NHS organisations with <10 patients having initial BCS within the corrsponding plotted age group are not included within the figures above.
The number of patients having initial BCS for DCIS in the 80+ years age group was too small when plotted by NHS organisation, so these patients were grouped with those aged 70–79 years to create the 70+ years age group.
For DCIS, risk-adjusted percentages are adjusted for age at diagnosis (capped at 90 years), whole tumoursize, non-invasive grade, estrogen receptor (ER) status, screening status, deprivation and Secondary Care Administrative Records Frailty (SCARF) index.
For EIBC, risk-adjusted percentages are adjusted for age at diagnosis (capped at 90 years), whole tumoursize, number of positive nodes, invasive grade, ER status, human epidermal growth receptor 2 (HER2) status, use of neoadjuvant chemotherapy, deprivation and SCARF index.

5.2. Short-term morbidity following (adjuvant) chemotherapy for early invasive breast cancer

Giving chemotherapy in early invasive breast cancer, as adjuvant or neo-adjuvant therapy aims to reduce the risk of recurrence and improve survival. Its use has increased in recent decades.

What does the guidance say?

NICE guidance (NG101) recommends:

> *'Consider adjuvant therapy after surgery for people with invasive breast cancer, and ensure that recommendations are recorded at the multidisciplinary team (MDT) meeting. Base recommendations about adjuvant therapy on MDT assessment of the prognostic and predictive factors, and the possible risks and benefits of the treatment. Make decisions with the person after discussing these factors.'*
> [NICE 2018a]

Chemotherapy-related toxicity can impact on a patient's quality of life, as well as compromising delivery of treatment and increasing healthcare resource use. Chemotherapy toxicity can also result in women experiencing an adverse reaction, such as fever or infection.

Why do we look at this in the NABCOP?

The NABCOP has found lower use of adjuvant chemotherapy among older women, and it tends to be reserved for those with high levels of fitness. Investigation of chemotherapy-related adverse events is important to understand the impact of treatment among such women receiving chemotherapy.

Reporting on the occurrence of treatment related adverse events among different patient populations can inform local policy, and enable informed decision-making about treatment options. Previous research suggests rates of treatment associated adverse events among women with breast cancer in the general population may be higher than the figures reported in clinical trials.

Numerator	Women with a treatment related overnight hospital admission
Denominator	Women receiving adjuvant chemotherapy for early invasive breast cancer
Country	England
Timeframe	*Women diagnosed from 2014–18*

Treatment related overnight hospital admission was defined as a hospital admission with an overnight stay within 30 days of a chemotherapy cycle, recorded with at least one of the following diagnostic codes associated with the admission:

- Neutropenia
- Fever
- Infection
- Gastrointestinal toxicity
- Other related to systemic treatment

Details of the ICD-10 codes used to identify such visits can be found in **Appendix 2**.

What do we see within this audit group?

Among 21,579 women who started adjuvant chemotherapy for early invasive breast cancer, 29% had at least one treatment related overnight hospital admission within 30 days of a chemotherapy cycle. The most common individual toxicities recorded were infection (23%) and neutropenia (17%). Rates of infection were slightly higher among women undergoing taxane-based chemotherapy, being 24% compared with 21%.

As fitness worsened or comorbidity increased, treatment related hospital admissions appeared to increase (**Table 5.2**). Rates of admission tended to be lower overall among women aged 75 years and over.

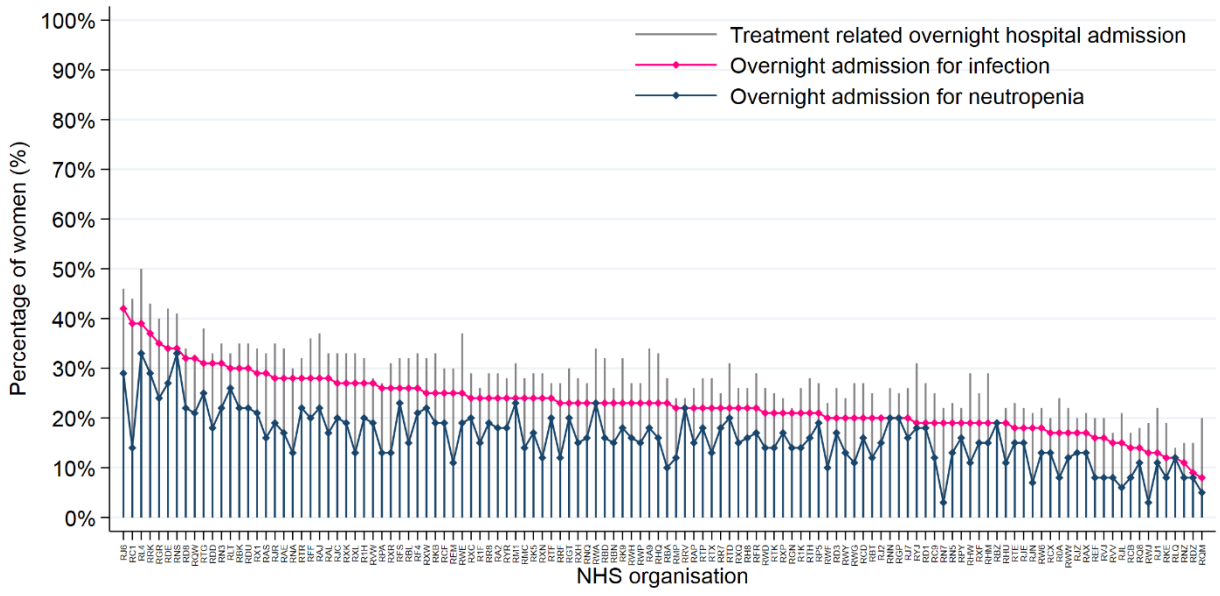
There was some geographical variation in the rates of admission (**Figure 5.3**). Funnel plots of observed rates by unit volume show that, given the number of patients treated within each NHS organisation, this variation was largely within expected limits (**Figure 5.4**).

Table 5.2. Impact of patient fitness on the observed percentage of women with a treatment related overnight hospital admission within 30 days of adjuvant chemotherapy for early invasive breast cancer diagnosed and treated in England, by age at diagnosis

	50–59 years		60–69 years		70–74 years		75+ years	
	Total no. of women receiving chemo	% chemo related hospital admission	Total no. of women receiving chemo	% chemo related hospital admission	Total no. of women receiving chemo	% chemo related hospital admission	Total no. of women receiving chemo	% chemo related hospital admission
All women	10,020	28.7%	8,064	29.3%	2,397	28.5%	1,098	25.4%
Frailty = Fit	9,006	27.8%	6,840	27.7%	1,895	27.9%	836	24.0%
CCI = 0	9,358	28.1%	7,311	28.4%	2,109	28.5%	936	23.8%
WHO PS = 0	4,287	27.8%	3,214	28.3%	881	25.8%	377	23.6%
Frailty = Mild-Moderate	968	36.7%	1,153	37.3%	479	30.7%	242	28.9%
CCI = 1	540	37.6%	579	35.4%	226	26.5%	124	32.3%
WHO PS 1	358	32.7%	403	33.5%	243	25.5%	132	28.0%
Frailty = Severe	34	47.1%	60	56.7%	20	35.0%	18	44.4%
CCI = 2+	110	40.0%	163	51.5%	59	37.3%	36	44.4%
WHO PS = 2+	41	29.3%	55	43.6%	28	21.4%	25	32.0%

Note: *Frailty measure calculated using the SCARF Index.*

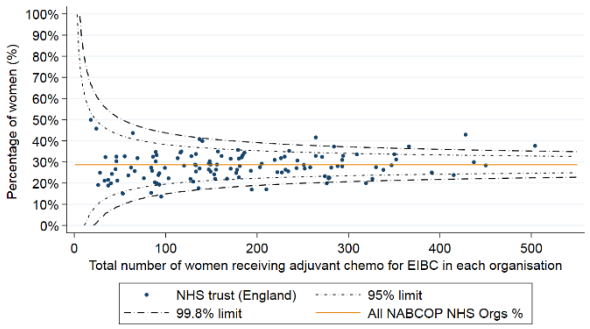
Figure 5.3. Observed percentage of women with a treatment related overnight hospital admission within 30 days of adjuvant chemotherapy for early invasive breast cancer diagnosed and treated in England (overall, for infection, for neutropenia), by trust of diagnosis



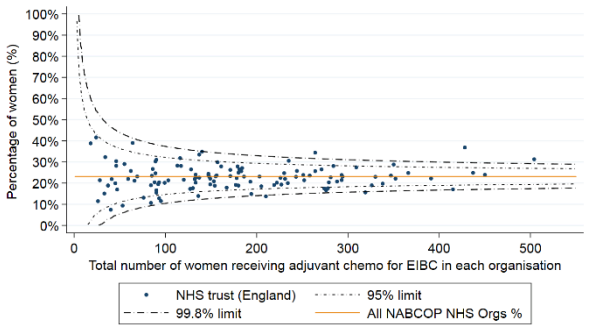
Note*: denominators for percentages shown are all women receiving adjuvant chemotherapy for early invasive breast cancer. Some patients may have more than one toxicity recorded.*

Figure 5.4. Observed percentage of women with a treatment related overnight hospital admission within 30 days of adjuvant chemotherapy for early invasive breast cancer diagnosed and treated in England, by trust of diagnosis

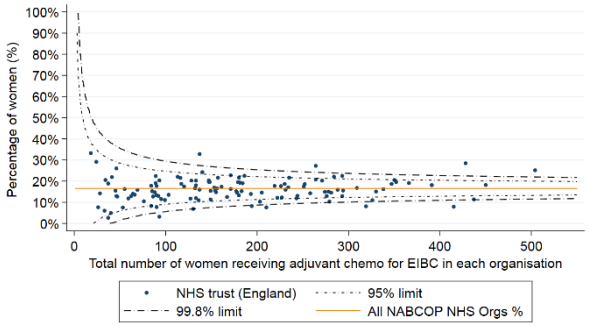
Overall treatment related overnight admission within 30 days



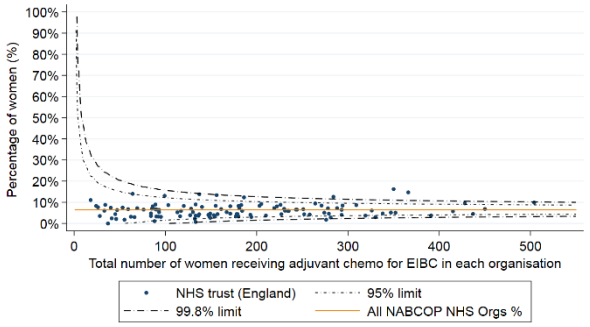
Overnight admission for infection



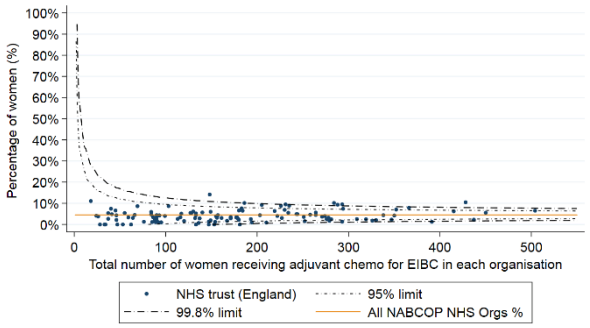
Overnight admission for neutropenia



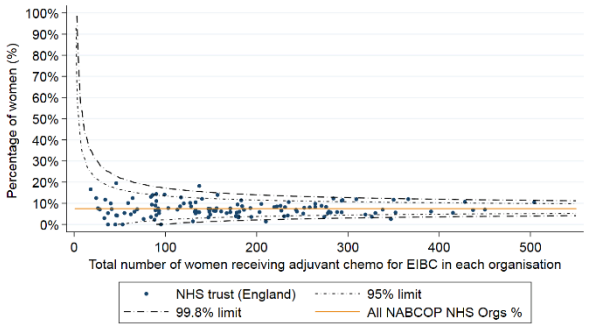
Overnight admission for gastrointestinal (GI) toxicity



Overnight admission for fever



Other overnight admission related to systemic treatment



***Note**: EIBC = early invasive breast cancer.*
NHS organisations with <10 patients receiving adjuvant chemotherpy for EIBC within the plotted age group are not included within the figures above.

5.3. Relative survival

Relative survival, as described by the National Cancer Institute, is "*a way of comparing the survival of people who have a specific disease with those who don't, over a certain period of time…It is calculated by dividing the percentage of patients with the disease who are still alive at the end of the period of time by the percentage of people in the general population of the same sex and age who are alive at the end of the same time period. The relative survival rate shows whether the disease shortens life*."

Here, we compare the survival of those women diagnosed with breast cancer, with survival in the general population, matched on age, year of treatment and sex, to give a direct estimate of excess mortality due to the breast cancer, without requiring cause of death information.

In contrast, overall survival is defined as "*The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that patients diagnosed with the disease are still alive*."

Why do we look at this in the NABCOP?

The NABCOP advocates the use of appropriate treatment for those older women considered suitably fit. We therefore present relative survival rates, by age, among those women receiving surgery for early invasive breast cancer and chemotherapy for metastatic breast cancer.

This section provides estimated overall and relative survival up to 5 years from treatment, by grouped age at diagnosis, for the following patients:

- women receiving surgery for early invasive breast cancer;
- women receiving chemotherapy for metastatic breast cancer.

Numerator	Women recorded as having died
Denominator	All women
Country	England
Timeframe	*Women diagnosed from 2014–18*

What do we see within this audit group?

Among 115,002 women receiving surgery for early invasive breast cancer, we see that relative survival is comparable to that of the general population within the 12–15 months following surgery, regardless of a woman's age (Figure 5.5).

Figure 5.6 presents the additional impact of frailty, on relative survival following surgery for early invasive breast cancer. For women who are fit or have only mild-moderate frailty, relative survival is high. Among women with severe frailty, relative survival was poor with just over 40% excess mortality at five years after surgery.

Figure 5.5. Overall (left) and relative (right) survival of women diagnosed with early invasive breast cancer who received surgery, by age at diagnosis

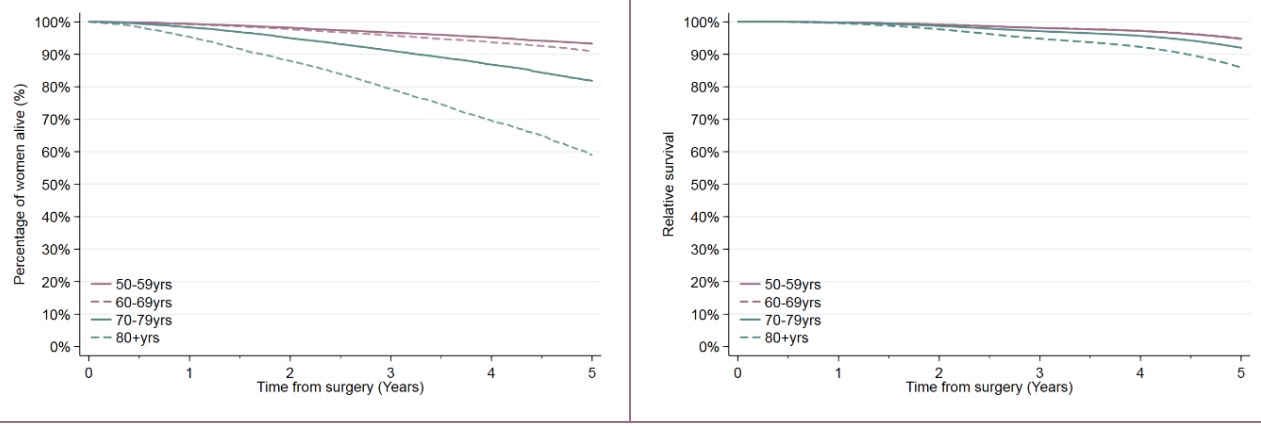
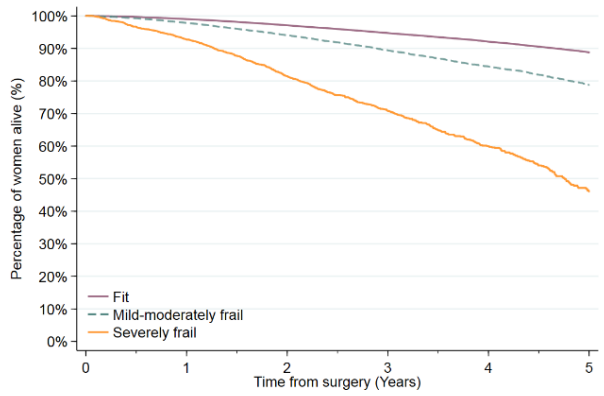
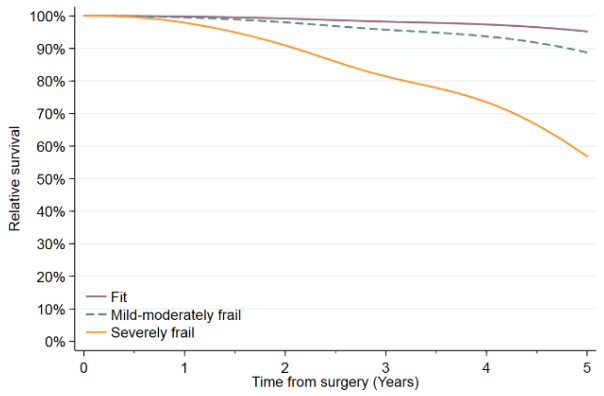


Figure 5.6. Overall (left) and relative (right) survival of women diagnosed with early invasive breast cancer who received surgery, by SCARF index

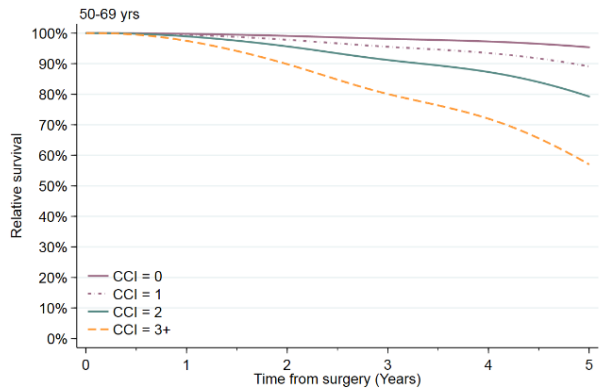


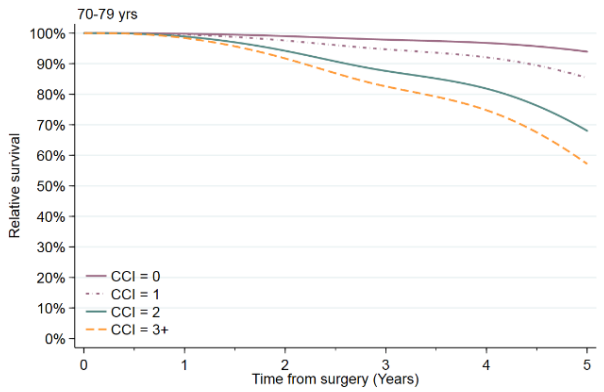


The following sets of figures present the additional influence of comorbidity (**Figure 5.7**), frailty (**Figure 5.8**) and ER status (**Figure 5.9**) on relative survival within age subgroups among women who received surgery for early invasive breast cancer.

For those women with no comorbidity or considered to be "fit", as defined by the SCARF index, survival is comparable to that in the general population. As fitness decreases excess mortality in these patient subgroups increases. Among women who are fit relative survival is good. These patterns are seen regardless of age.

Figure 5.7. Impact of patient fitness on relative survival of women diagnosed with early invasive breast cancer who received surgery, by Charlson Comorbidity Index (CCI) and age at diagnosis





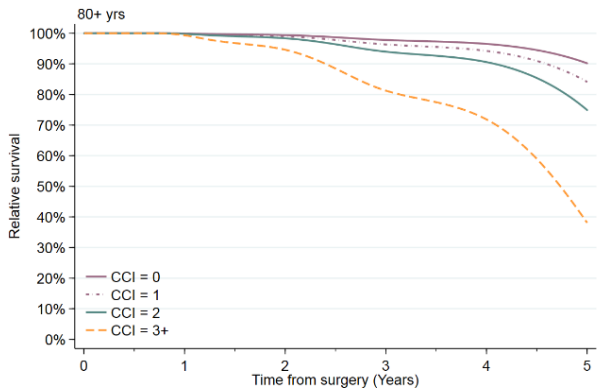
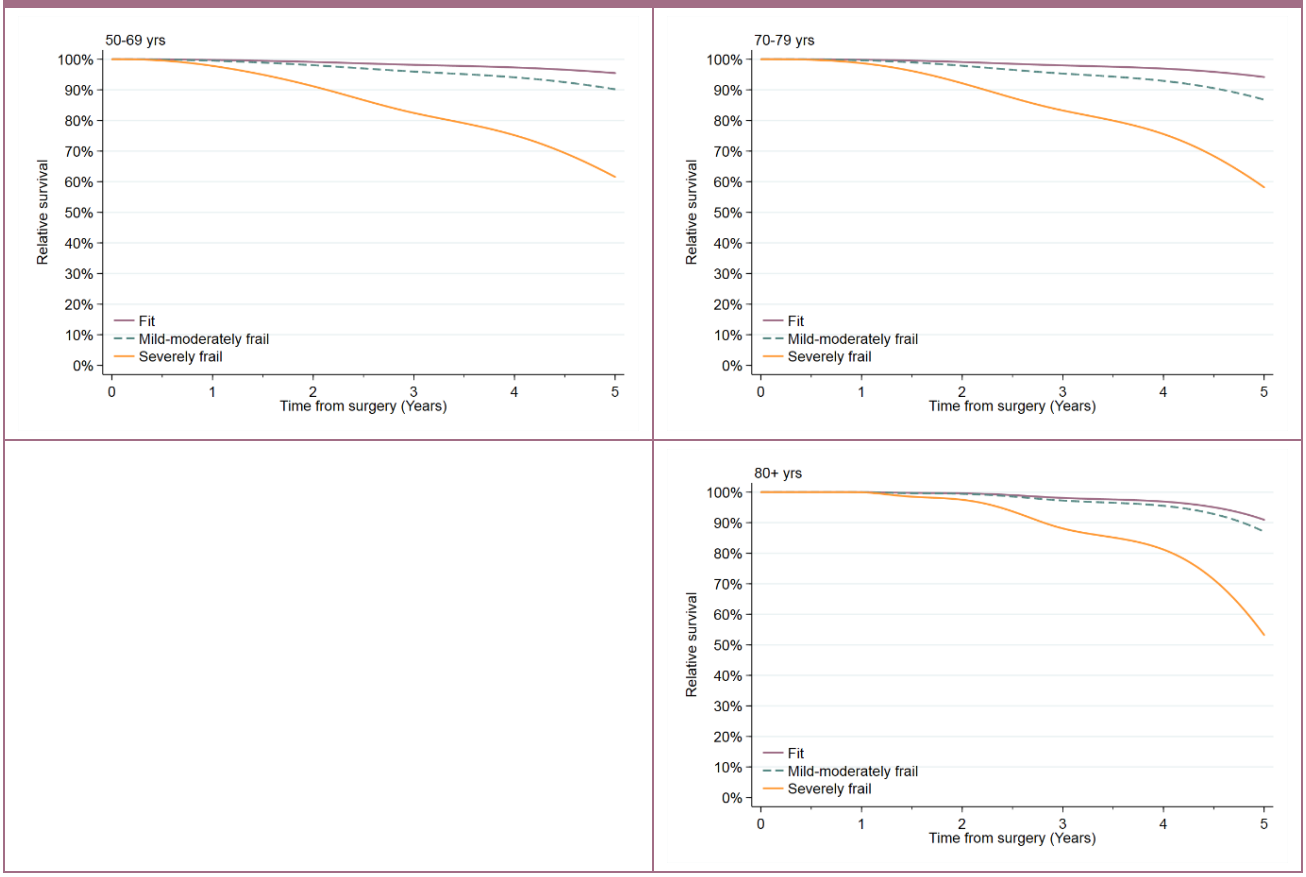
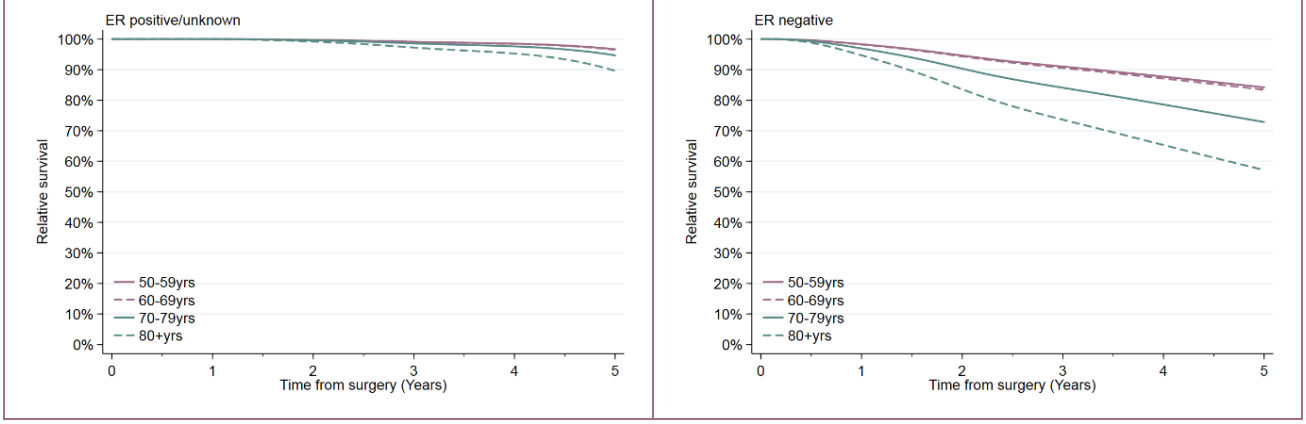


Figure 5.8. Impact of patient fitness on relative survival of women diagnosed with early invasive breast cancer who received surgery, by SCARF index and age at diagnosis



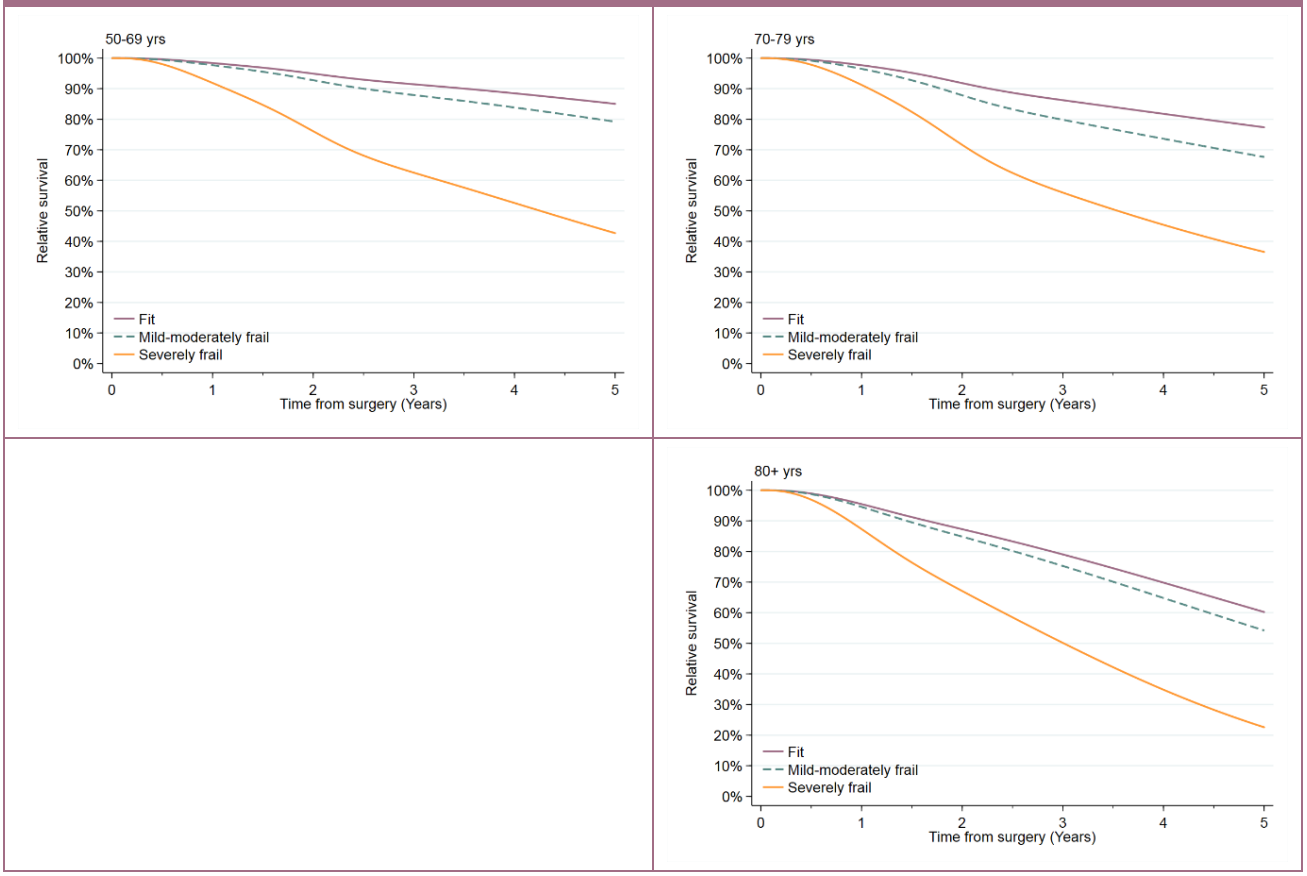
For those women with ER positive or unknown ER status, receiving surgery, relative survival is high and comparable to that in the general population (**Figure 5.9**). The majority of these women received endocrine therapy, in addition to having surgery, which is not a treatment option for those with ER negative disease and goes some way to explaining the higher relative survival among women with ER positive/unknown disease compared to that among ER negative disease.

Figure 5.9. Relative survival of women diagnosed with early invasive breast cancer who received surgery, by ER status and age at diagnosis



Among women with ER negative early invasive breast cancer, receiving surgery, relative survival is comparable among those who are considered to be fit or having low levels of frailty (Figure 5.10). Relative survival was poor among women with severe frailty. Unlike those women with a positive ER status, treatment with endocrine therapy was not an option, as described above.

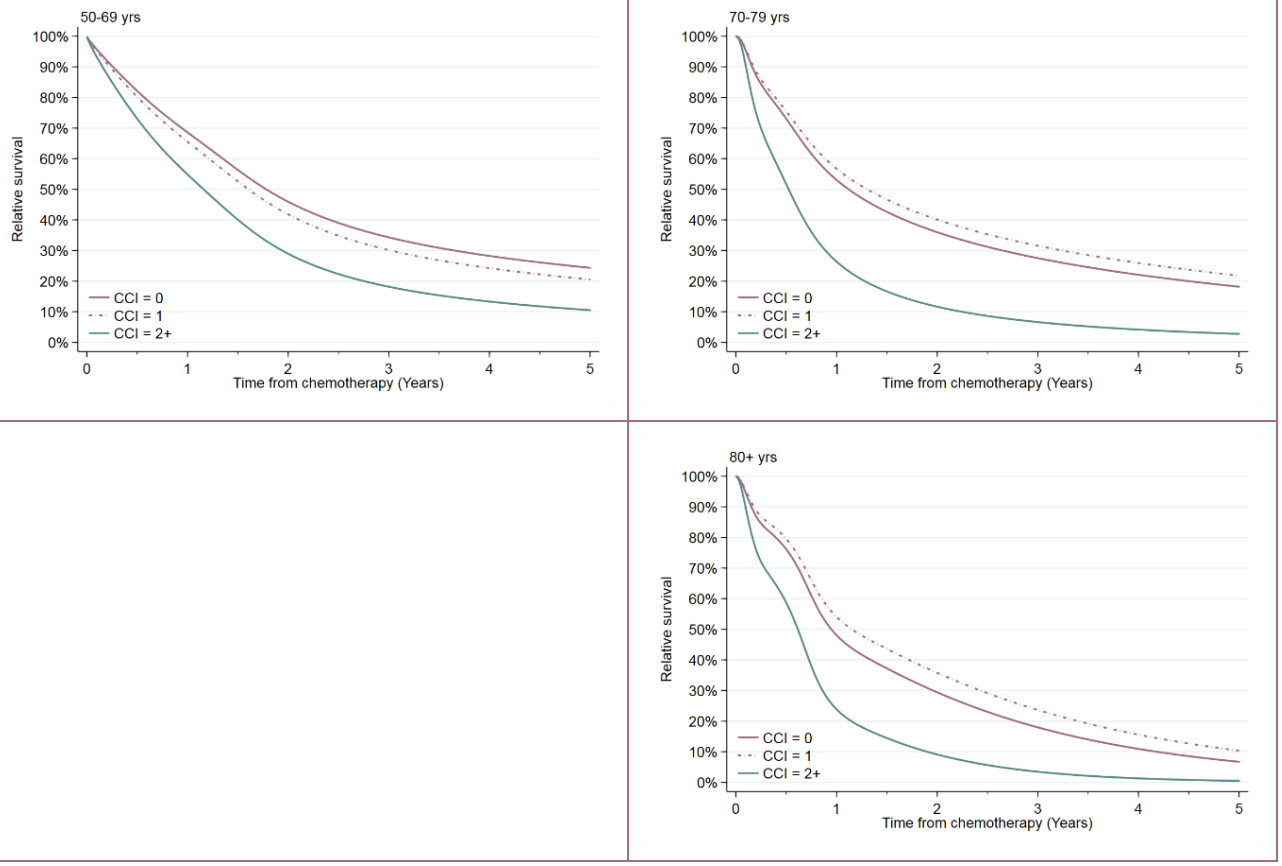
Figure 5.10. Relative survival of women diagnosed with ER negative early invasive breast cancer who received surgery, by SCARF index and age at diagnosis



What do we see for metastatic breast cancer?

Among women with ER negative metastatic breast cancer receiving chemotherapy, relative survival was poor (Figure 5.11). Women with no comorbidity burden or only one comorbidity had better outcomes than those with two or more comorbid conditions.

Figure 5.11. Relative survival of women diagnosed with ER negative metastatic breast cancer who received chemotherapy, by Charlson Comorbidity Index (CCI) age at diagnosis



Recommendations

- ✓ Breast care teams in NHS organisations should use the NABCOP fitness-frailty assessment for all newly diagnosed women 70 and over, and – where relevant – upload with the routine data returns (such as COSD for England). (Rec #9).
- ✓ The NABCOP will disseminate findings on relative survival through publications and communications. (Rec #10).
- ✓ Breast cancer oncology teams should review chemotherapy associated morbidity in their units, with the aim of reducing unplanned chemotherapy-related admission rates. (Rec #7)
- ✓ Breast cancer surgical teams should examine their reoperation rates after breast conservation surgery to determine if optimal practice is being implemented and to reduce their reoperation rate. (Rec #8)

6. Results from the NABCOP 2020 Organisational Audit

6.1. Introduction

This chapter presents the findings from the NABCOP 2020 Organisational Audit (OA), conducted between October 2020 and January 2021.

The OA was carried out as an online survey questionnaire, sent to NHS breast units in England and Wales. The questions asked within this OA were shaped by the variation identified in previous NABCOP annual reports. In addition, with the emergence of the COVID-19 pandemic in 2020, the OA included questions about the challenges faced by breast cancer units during the initial wave of the pandemic.

In particular, the OA was designed:

- To provide insight into patterns of data collection for important indicators, such as breast cancer recurrence;
- To assess how NABCOP resources were being used by NHS organisations in the management of older patients with breast cancer;
- To understand the fitness assessment processes used within different NHS organisations;
- To describe how the COVID-19 pandemic affected breast cancer services for older patients.

The findings from this second OA provide a context for the interpretation of other findings on the management of older patients with breast cancer throughout the COVID-19 pandemic. Alongside the wider prospective audit findings, they should also stimulate discussion and analysis about what improvements in the organisation of services are required to improve clinical outcomes for older patients.

6.2. Participation

Overall, 96 (75%) out of 128 NHS organisations who were contacted participated in the 2020 OA (see online survey protocol and organisation responses). Ninety-one responses were from English NHS trusts, and five were from Welsh local health boards.

Invitations for completion of the online survey were directed at breast cancer Multidisciplinary Team (MDT) Leads. The majority of respondents reported their job title to be "breast surgeon" (Table 6.1).

Table 6.1. The job title of respondents completing the 2020 Organisational Audit online survey

Job title	N	%
Breast Surgeon	68	71%
Breast Clinical Nurse Specialist (CNS)	7	7%
Clinical Oncologist	5	5%
Medical Oncologist	3	3%
MDT coordinator	2	2%
Other	11	11%
Total	**96**	**100%**

Recommendations

- ✓ Breast care teams in NHS organisations should: Investigate consistency between recording of recurrence in Breast Units and the low percentages of recurrence found in national datasets, by reviewing the process of capturing these data within a breast unit, and ensuring these data are uploaded to cancer registration. (Rec #2)
- ✓ The NABCOP, NCRAS, and WCN: In order to improve recurrence information in cancer registration datasets:
  - a) Continue to monitor and report on patterns of recurrence at a national level and by NHS organisation.
  - b) Share knowledge on successful ways to upload recurrence information with NHS organisations, such as identifying exemplars of good practice. (Rec #3)
- ✓ The NABCOP, NCRAS, and WCN will promote awareness of the fitness assessment form among breast units, for all patients aged 70 and over attending the first diagnostic clinic. (Rec #11)

6.3. Routine data collection

Breast cancer recurrence is poorly reported within routine cancer data across England and Wales, as exploratory work demonstrated in the NABCOP 2020 Annual Report. Completeness and accuracy of information on recurrence, submitted to routine cancer databases, is required to understand the effectiveness of treatment for breast cancer among different patient subgroups.

The first set of questions within the OA looked to understand practices among NHS organisations of recording breast cancer recurrence, and how this might be improved within routine data sources.

All responders reported that patients with a breast cancer recurrence were discussed in an MDT meeting, either on a case-by-case basis (17%) or always (83%).

92% of responding NHS organisations (n=88/96) reported that patients with a new breast cancer recurrence were routinely recorded in an electronic IT system (Table 6.2).

Whilst reassuring for the NABCOP it is important that this is reflected within national routine data.

Key OA Finding

76% of responding NHS organisations (n=73/96) reported that information on new recurrences is routinely uploaded to the national cancer registration systems (Table 6.2).

This appears to conflict with findings presented in the NABCOP 2020 Annual Report, which showed low reporting of breast cancer recurrence, with many women who had died from their breast cancer having no record of recurrence.

It is important for the NABCOP to understand data flows between NHS organisations and cancer registration services, as this is the main source of data for the NABCOP annual reports. Suggestions from NHS organisations as to how recording of breast cancer recurrence could be improved in routine cancer data included:

- Improving current software or reporting systems to streamline and simplify the data entry (n=25/96).
- Improving data input at the MDT meeting (such as a dedicated recurrence or metastatic MDT, and live recording of information) (n=19/96).
- Improved definition of recurrence (n=5/96).

Table 6.2. Recording of breast cancer recurrence at NHS organisations and routine upload to the national cancer registration systems (Responses = 96)

Response to whether recurrence is routinely recorded onto an electronic IT system		**Type of system reported** *(multiple reponses possible)*	
Yes	92%	Cancer management system (e.g. Somerset, Infoflex)	93%
		Hospital clinical system (e.g. radiology information system)	13%
		Electronic medical record system (e.g. Cerner Health Information Exchange)	20%
No	4%	N/A	
Other	4%	N/A	

***Note**: Responses to Q6. In your NHS Trust/Health Board, are patients with a new breast cancer recurrence diagnosis (locoregional or distant) routinely entered into an electronic IT system? (Tick all that apply).*

Response to whether data on recurrence are routinely uploaded to national cancer registration systems		**How data are uploaded** *(multiple responses possible)*	
Yes	76%	In required data returns (e.g. COSD)	99%
		Using data from radiology system (e.g. to national diagnostic imaging dataset)	5%
Data on recurrence are not routinely uploaded	4%	N/A	
Unsure/don't know	20%	N/A	

***Note**: Responses to Q7. In your NHS Trust/Health Board, is information on recurrence routinely uploaded into the national cancer registration system? (Tick all that apply).*

6.4. Impact of the NABCOP on breast cancer care

The second set of questions in the OA looked to understand how NHS organisations have engaged with the NABCOP reports and resources, to understand if these had helped improve care for patients, and to highlight areas for the NABCOP to improve.

Key OA Finding

86% of responding NHS organisations (n=80/93) reported that over the past two years they had reviewed the NABCOP Annual Report results within their breast unit.

10% (n=9/93) said they had not reviewed the results.

Knowing the different ways in which NHS organisations review the results from the NABCOP annual reports provides insight into the audience the NABCOP are able to reach. Responding NHS organisations reported reviewing results of the NABCOP annual reports in a variety of ways:

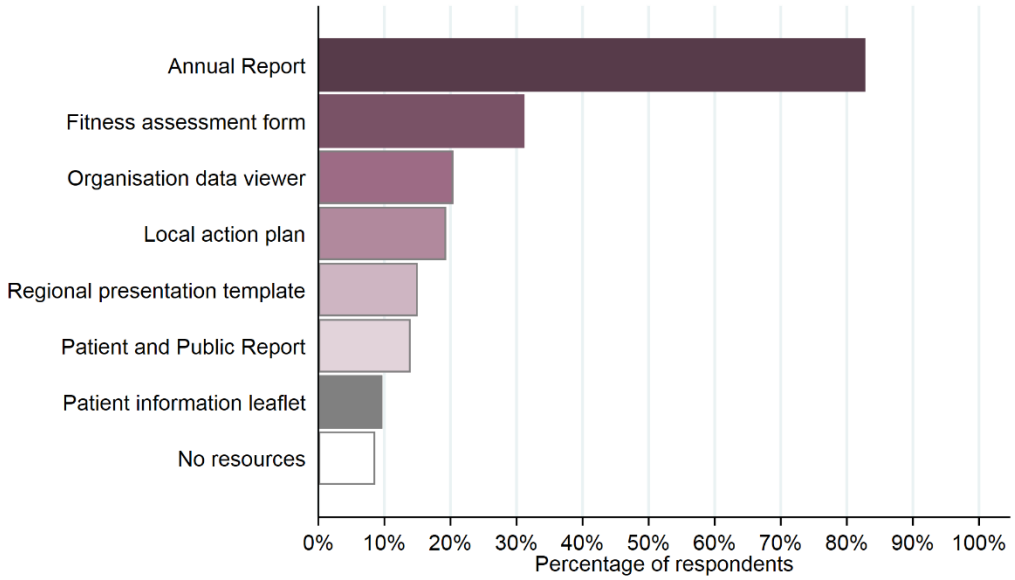
- 46% discussed them in a departmental meeting (n=43/93);
- 37% discussed them in a clinical audit meeting (n=34/93);
- 31% discussed them informally among colleagues (n=29/93).

Very few NHS organisations reported that the NABCOP results were reviewed within MDT meetings (14%; n=13/93).

As well as understanding how the NABCOP results are being discussed by breast units, it is important for the audit to produce relevant and useful products, to support NHS organisations in reviewing their NABCOP results. The results of this survey found that of the audit products, the Annual Report was used by over 80% of responding NHS organisations (**Figure 6.1**).

By contrast, the NABCOP NHS Organisation Data Viewer, local action plan and regional presentation template were used by less than 20% of responding NHS organisations. This feedback highlights areas for improvement, and will require further work with stakeholders to understand reasoning behind low usage of some products.

Figure 6.1. Use of the NABCOP reports and resources within NHS organisations (Responses = 93)



***Note**: Responses to Q11. Which of the following NABCOP resources have you, or members of your breast unit, used (on at least one occasion) at your NHS Trust/Health Board? (Tick all that apply).*

To understand if findings from the NABCOP had influenced change in clinical practice for older patients, NHS providers were asked about six areas of patient management (Figure 6.2).

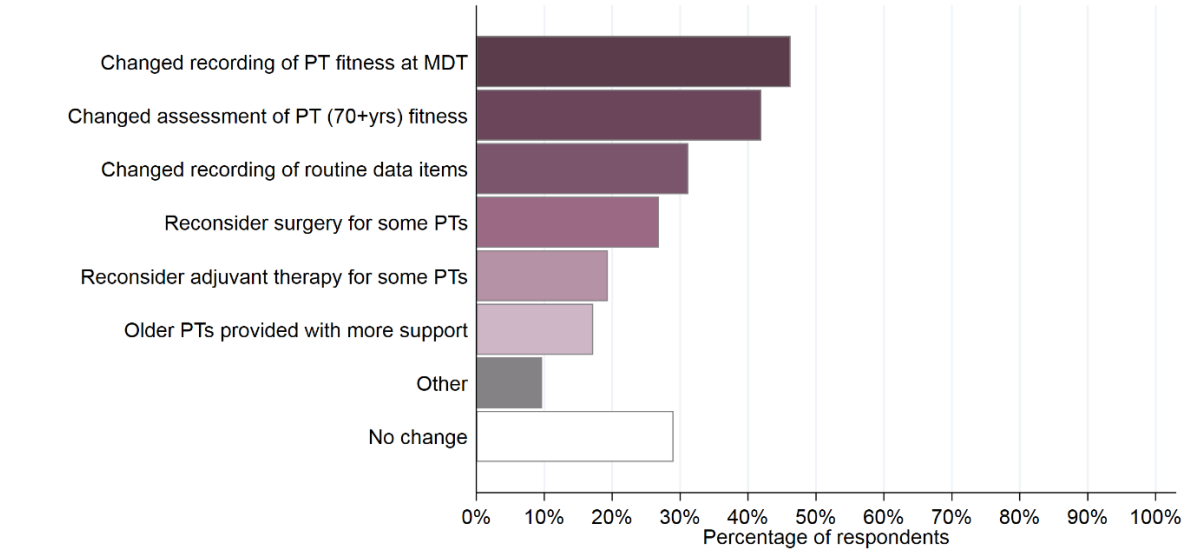
Key OA Finding

Almost half (46%; n=43/93) of responding NHS organisations reported they felt the NABCOP had changed recording of patient fitness for data returns at the initial MDT.

42% (n=39/93) highlighted that routine assessment of patient fitness for older women had changed.

While these results are an encouragement that findings from the NABCOP have changed clinical practice, 29% of responding NHS organisations reported (n=27/93) no change in their clinical practice. It may be that these organisations felt these aspects of care were already being provided, however responses to the following question on the most important way in which their breast unit had responded to results of the NABCOP Annual Reports (open-response answer) demonstrated that some of these organisations had improved aspects such as data collection and local action plans.

Figure 6.2. Impact of NABCOP findings on clinical practice for patients aged 70 and older (Responses = 93)



***Note**: Responses to Q12. Please indicate how you feel findings from the NABCOP have changed clinical practice at your NHS Trust/Health Board for patients aged 70 and over. (Tick all that apply). PT(s) = patient(s)*

Across responding NHS organisations, the assessment of patient fitness and improved recording of data items were highlighted as being the most important change for 25% (n=16/63) and 33% (n=21/63) of NHS organisations respectively (Table 6.3).

Overall, responding NHS organisations reported the information produced by the NABCOP had positively affected care or stimulated improvement.

Table 6.3. The most important way NHS organisations have responded to the NABCOP Annual Reports (Responses = 62)

Theme	***N***
Improved recording of patient data	21
Assessment of patient fitness or frailty	16
Utilising NABCOP products or outputs	11
Highlighted areas of practice to improve	6
Changes to treatment decisions for older patients	4
Supported provision of geriatric services	3
Highlighted areas of good care	2
Total	**63**

***Note**: Responses to Q13. If applicable, please summarise the most important way in which your NHS Trust/Health Board has responded to the findings in the NABCOP Annual Reports.*

6.5. Care of the elderly and fitness assessment

The third set of questions in the OA looked at whether NHS organisations have a formal process for assessing patient fitness prior to treatment and to understand the impact the COVID-19 pandemic had on this process. Formal fitness assessment excluded pre-operative anaesthetic assessment, as this should be offered to all patients who undergo surgery.

Key OA Finding

Less than half (42%; n=39/93) of responding NHS organisations reported their unit currently used a formal pre-treatment fitness assessment, regardless of fitness concerns (Figure 6.3):

- 24 performed it for all women;
- 9 assessed only patients aged 70+ years;
- 6 described using a specific tool or method such as WHO performance status.

35% (n=33/93) only assessed patients where there were specific fitness concerns regardless of age.

Of the 23% (n=21/93) of responding NHS organisations who reported having no formal assessment process to determine patient fitness prior to treatment, seven reported that COVID-19 had affected the process of assessing the fitness or frailty of older patients prior to treatment. Respondents either hoped to introduce an assessment (n=4), used a surgical guideline (n=1) or did not have the resource/had not yet decided which to use (n=2).

In 2019 the NABCOP released a fitness assessment form aimed at encouraging units to assess and record fitness levels in older women presenting at a breast clinic, in order to gain a measure of fitness prior to treatment and to contribute to treatment decisions.

Key OA Finding

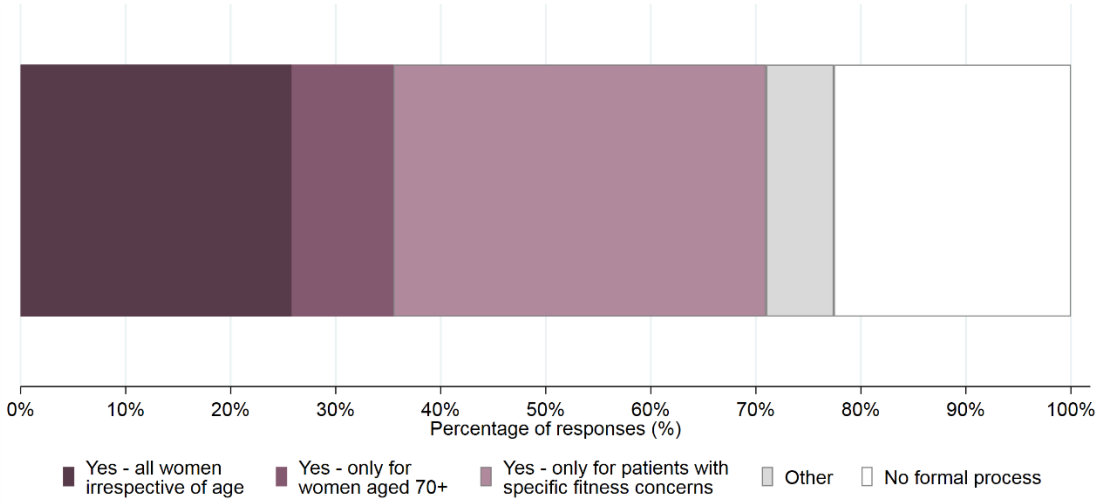
Less than one-third of responding NHS organisations (27%; n=25/93) reported using the NABCOP fitness assessment form in the first diagnostic clinic, with a further 10% (n=9/93) unsure if it was used.

Of those who reported not using the form, 31% (n=18/59) were unaware of the form (Figure 6.4).

Although reported use of the NABCOP fitness assessment form is currently low, it is in the early stages of implementation and more widespread introduction may have been delayed during COVID-19 related alterations in clinical practice. The NABCOP will reflect on the feedback from breast units, while continuing to encourage its implementation.

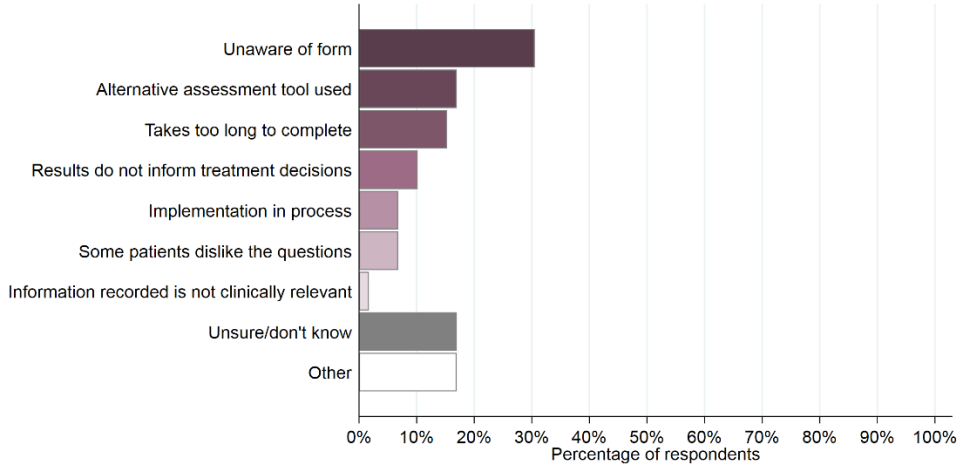
Despite the low reported use of the NABCOP fitness assessment form, encouragingly 14 units reported that an alternative fitness assessment tool or process was already in place, or the form was in the process of being implemented (Figure 6.4).

Figure 6.3. Assessment of patient fitness for breast cancer treatment (Responses = 93)



***Note**: Responses to Q14. Does your NHS Trust/Health Board currently use a formal assessment process to determine patient fitness for breast cancer treatment (not including pre-operative anaesthetic assessment), prior to treatment commencing?*

Figure 6.4. Reported reasons NABCOP fitness assessment form is not used within breast units (Responses = 59)



***Note**: Responses to Q17. Please describe why the NABCOP fitness assessment form is not used within your NHS Trust/Health Board (Tick all that apply).*

6.6. Impact of COVID-19 on breast cancer services during April 2020

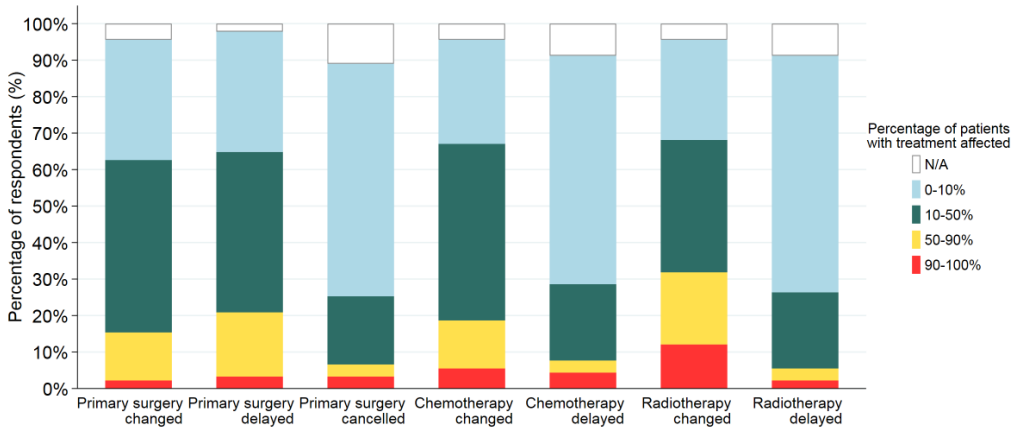
A fourth set of questions asked NHS organisations about the impact of the first COVID-19 wave on the provision of breast cancer services, specifically in April 2020, including triple diagnostic assessment (TDA) and treatment. A snapshot of the month of April was chosen as the period when services were likely to have been most affected by the initial wave of COVID-19.

With the pandemic restricting physical consultations to a minimum, the ABS provided advice for health care professionals on the triage of referrals to breast clinic [ABS March 2020]. 68% of responding NHS organisations (n=62/91) reported implementing protocols at their NHS organisation in April 2020 to determine which older patients (aged 70+) were reviewed face to face in clinic.

74% of responding NHS organisations (n=67/91) reported being still able to provide TDA in a single visit during April 2020. With eight (9%) responding NHS organisations said that either a majority (50—90%) or all patients were unable to receive this during April.

Typically, the largest percentage of women aged 50+ years diagnosed with breast cancer are stage 1–3A (early invasive breast cancer). When asked about the impact of COVID-19 on treatment plans for such patients, the majority of responding NHS organisations reported a minority of patients had their treatment changed or delayed during April 2020 (Figure 6.5). Responding NHS organisations reported the impact of COVID-19, during April 2020, as being high in terms of delays or changes to surgery and changes in chemotherapy and radiotherapy.

Figure 6.5. Impact of COVID-19 on breast cancer treatment among women with early invasive breast cancer, during April 2020 (Responses = 91)



***Note**: Responses to Q20. During April, approximately what proportion of patients with early invasive breast cancer had their treatment affected because of COVID-19? N/A = Not applicable or able to be assessed.*

Key OA Finding

Nearly all of responding NHS organisations (92%; n=84) reported being able to carry out surgical operating lists during April 2020:

- 59 performed surgery by utilising alternative operating sites, including the independent sector;
- 35 used designated COVID-19 free 'cold sites';
- 15 continued surgery as normal within their NHS organisation.

Guidance was issued by national associations including the ABS [ABS March 2020] and the Federation of Surgical Speciality Associations [FSSA July 2020] on the prioritisation of patients for surgical treatment. Accordingly, 81% of responding NHS organisations (n=74) implemented protocols, during April 2020, to prioritise patients for surgery, with:

- 25 units prioritising patients in line with national or regional recommendations;
- 25 units according to tumour biology (including 10 units also incorporating patient fitness).

6.7. Recovery of services from COVID-19

A final set of questions asked NHS organisations about resumption of services after the first COVID-19 wave.

For women having adjuvant radiotherapy, an option for services was to adopt hypofractioned radiotherapy regimens (5 fractions), which involve delivering larger doses across fewer sessions, when compared with standard radiotherapy regimens (15 fractions). These techniques had been shown to be safe and effective [Brunt *et al* 2020a; Brunt *et al* 2020b].

Key OA Finding

Three quarters (74%; n=67/91) of responding NHS organisations used hypofractionated radiotherapy regimens (5 fractions)during the first wave of pandemic, and were planning to continue using them.

A further 10% (n=9/91) of organisations reported that although hypofractionated radiotherapy regimens (5 fractions) had been used, they planned to return to their original (pre-pandemic) radiotherapy protocol.

Key OA Finding

In relation to the provision of breast cancer surgery the majority of responding NHS organisations utilised alternative operating sites to provide surgical treatment during April 2020.

Among 72 responding NHS organisations who had used alternative sites, more than two-thirds (n=50) were planning to continue using them in the future, either just short term or indefinitely (**Figure 6.6**).

To understand the anticipated challenges facing breast units returning to pre-COVID-19 levels of workload, we asked respondents to rate seven statements (listed in **Figure 6.7**), with their level of concern.

Key OA Finding

As part of the recovery of breast cancer services from COVID-19, there was general consensus across responding NHS organisations as to the major concerns for the future (**Figure 6.7**)**:**

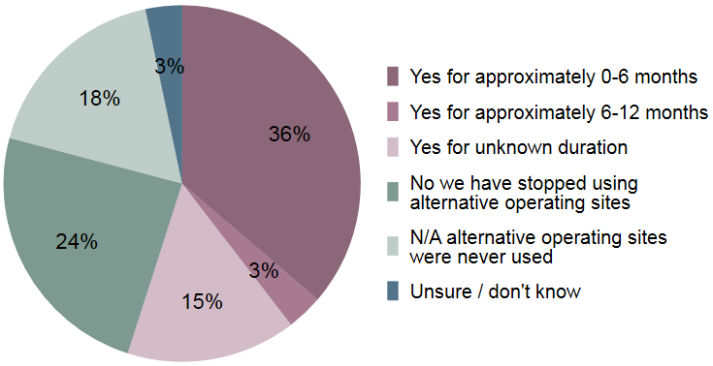
- Almost a third (30%; n=27/91) felt increasing COVID-19 cases overwhelming services was a major concern;
- 25% (n=23/91) reported that reduced service capacity due to social distancing practices was a major concern;
- 20% (n=18/91) were majorly concerned about reduced staff numbers;
- 19% (n=17/91) were majorly concerned about the numbers of patients who would be requiring assessment and treatment.

Finally, the survey asked NHS organisations whether there had been any positive impact to the management of breast cancer care as a result of the COVID-19 pandemic, and that they were planning to take forwards into future practice (**Figure 6.8**).

Among the various practices highlighted by breast units were:

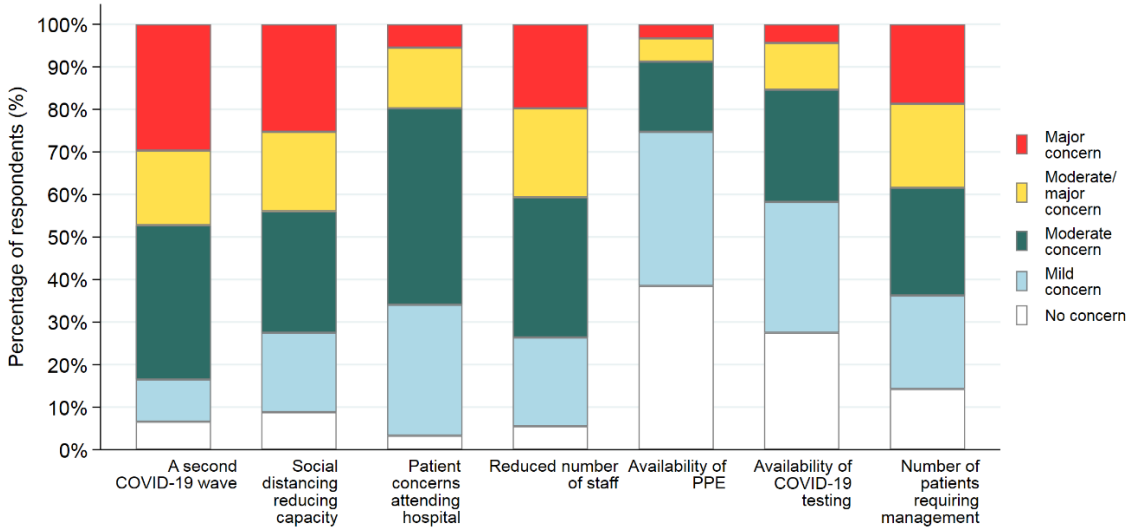
- Video/telephone consultations (80%; n=72)
- Virtual MDT meetings (59%; n=53)
- Flexible working, such as working from home, was also something half of responding NHS organisations (52%; n=47) reported had changed their practice for the better and they would continue to use.

Figure 6.6. Plans to continue using alternative operating sites for the near future (Responses = 91)



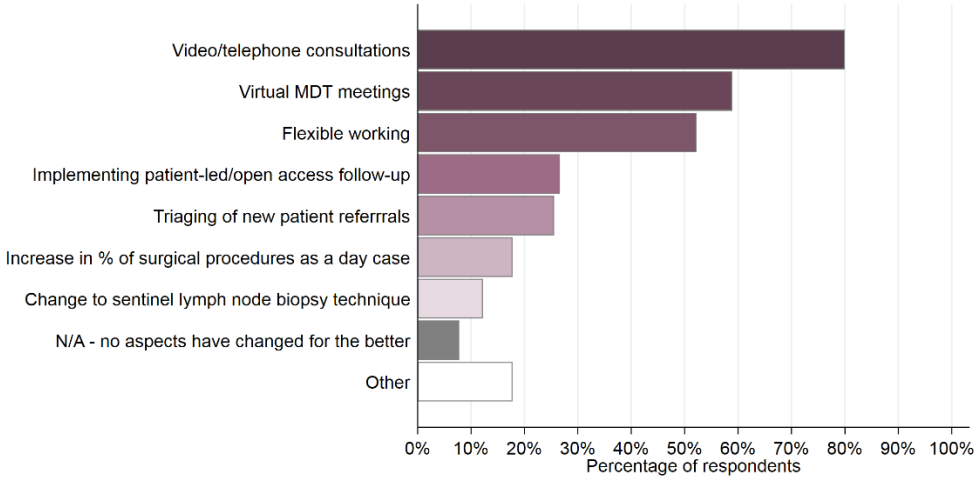
***Note**: Responses to Q24. Does your NHS Trust/Health Board plan to continue using alternative operating sites, such as the independent sector, or a COVID-19 free 'cold site', for the near future?*

Figure 6.7. Challenges facing local breast cancer services returning to normal; concerns rated by survey respondents (Responses = 91)



***Note**: Responses to Q25. What do you consider the biggest challenges to your local breast cancer service returning to normal (i.e. pre-COVID-19 levels of workload)?* Even though the COVID-19 pandemic was a rapidly evolving situation during 2020, survey questions and responses were not updated within the response period of October 2020 to January 2021 to reflect current events, in order to maintain survey continuity.

Figure 6.8. Aspects of service provision which have changed practice for the better, due to COVID-19, that survey respondents will continue to use (Responses = 90)



***Note:** Responses to Q26. Are there aspects of service provision that have changed your practice for the better because of the COVID-19 pandemic, and that your NHS Trust/Health Board will continue to use in the future? (Tick all that apply).*

7. Fitness assessment for older women in breast clinics

7.1. Introduction

Findings from the NABCOP have demonstrated that women aged 70 and over are less likely to receive standardised breast cancer treatment when compared to younger women. The reasons behind treatment variation among older patients are multifactorial, but an important influence is the presence of medical conditions (comorbidities) or patient frailty [Ring *et al* 2013].

Older patients are more likely to have comorbidities, which can significantly influence the safe delivery and completion of breast cancer treatment. Having practical processes to assess and capture information on patient fitness early in the breast cancer pathway provides several benefits:

1. medical conditions can be optimised prior to treatment commencing;
2. additional support can be given where required.

As well as highlighting patients who have additional medical requirements, frailty assessment tools are able to recognise older patients who have good overall fitness levels. This relationship between patient fitness and clinical decision-making is important to understand, as it provides insight into treatment variation amongst older patients.

What does the guidance say?

NICE guidance (NG101) recommends:

'Treat people with invasive breast cancer, irrespective of age … unless significant comorbidity precludes surgery.' [NICE 2018a]

The European Society of Medical Oncology (ESMO) 2019 guidelines for early breast cancer recommend:

'Age should be taken into consideration in conjunction with other factors and should not be the sole determinant for withholding or recommending a treatment.' [Cardoso *et al* 2019]

The International Society of Geriatric Oncology (SIOG) provides recommendations focused on the older breast cancer patient:

"Screening for frailty is recommended for patients aged ≥70 years to identify… increased susceptibility to stressors and adverse outcome; treatment can be tailored based on patients grouping as fit, susceptible or pre-frail, and frail." [Biganzoli *et al* 2021]

7.2. The NABCOP Fitness Assessment Form

In order to support clinicians assessing patients aged 70 and over in clinic, the NABCOP developed a fitness assessment form, which was designed by a multi-disciplinary sub-group and expert guest attendees [NABCOP 2019 Annual Report]. The form contains four sections, including the Clinical Frailty Scale [Rockwood *et al* 2005], Abbreviated Mental Test Score (AMTS) [Hodkinson 1972] and three screening questions on medical or cognitive comorbidities (**Figure 7.1**). The form was first available to download during the pilot in October 2018.

The fitness assessment form aims to provide a standardised measure of frailty and cognition as part of a holistic assessment, which is both informative and efficient to complete in a busy breast cancer clinic. It's available, along with a staff information sheet, via: https://www.nabcop.org.uk/resources/fitness-assessment-tool/. Performing the fitness assessment in the first diagnostic clinic allows early identification of frailty, and stimulates onward referral of those patients to appropriate services, and a temporary delay of treatment to allow amenable comorbidities to be addressed.

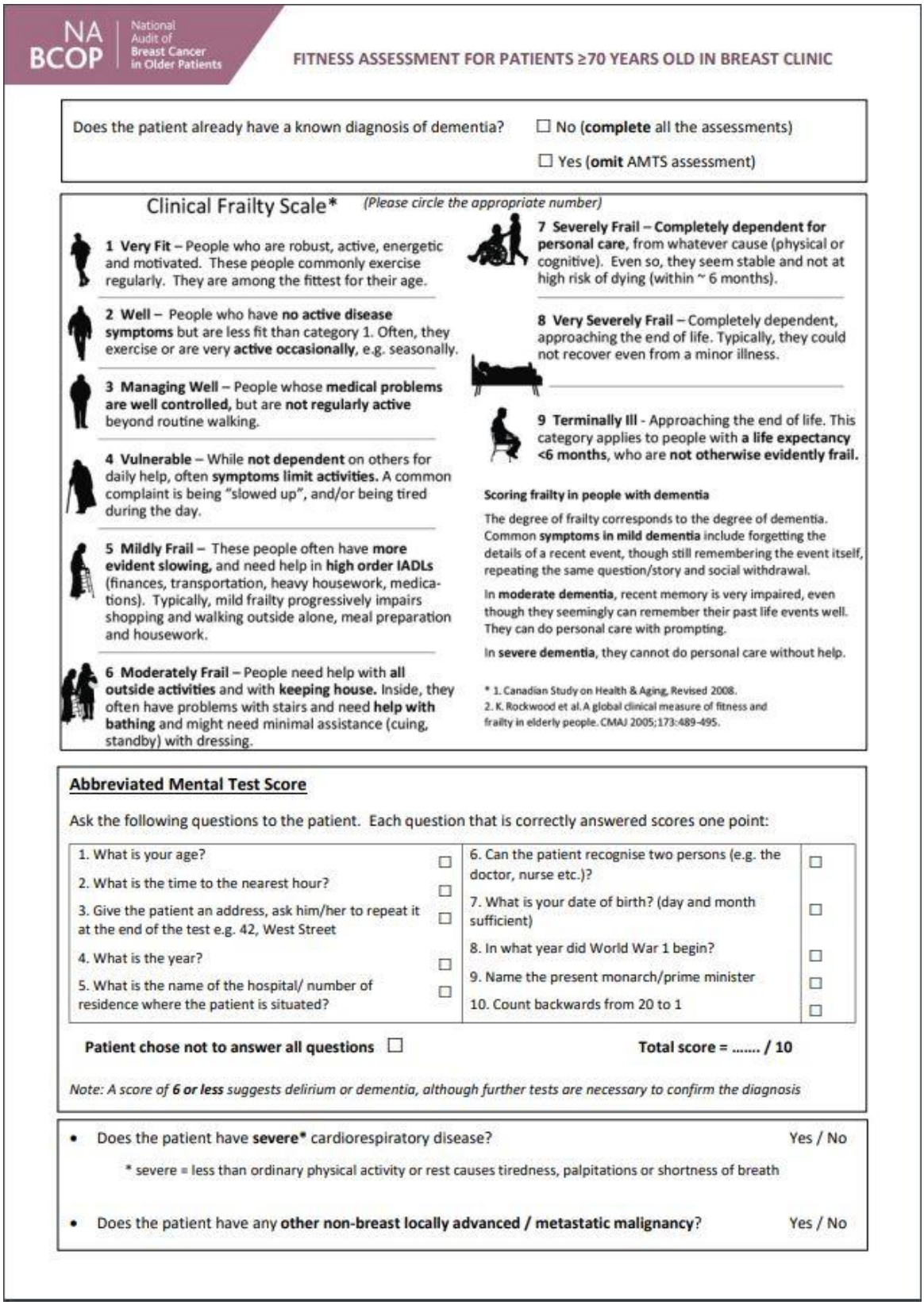
In September 2020, an 'editable' PDF version of the form was created, enabling breast units to complete and store the fitness assessment on electronic devices. We hope that this will provide a practical solution to NHS organisations using paperless notes systems. As more NHS organisations transfer to this electronic way of working, it will require breast units to work alongside their IT department to integrate information on fitness assessments into digital health care systems. By facilitating the recording of patient fitness in IT systems, this information could be readily available at the initial multidisciplinary meeting (MDT) where pivotal treatment decisions are discussed.

Box 7.1 contains links to websites where health care professionals can access information on the assessment and management of patients with frailty.

The NABCOP fitness assessment form has been downloaded ***over 500 times*** since it was first published on the NABCOP website in January 2019.

Figure 7.1. The NABCOP fitness assessment form for women aged 70 years and over in breast clinic

For further information or to download a copy of the NABCOP Fitness Assessment Form (available as an editable or plain PDF), please visit the NABCOP website via the link: https://www.nabcop.org.uk/resources/fitness-assessment-tool/



NABCOP National Audit of Breast Cancer in Older Patients

FITNESS ASSESSMENT FOR PATIENTS ≥70 YEARS OLD IN BREAST CLINIC

Does the patient already have a known diagnosis of dementia? ☐ No (**complete** all the assessments) ☐ Yes (**omit** AMTS assessment)

Clinical Frailty Scale* *(Please circle the appropriate number)*

1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 Well – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 Managing Well – People whose **medical problems are well controlled,** but are **not regularly active** beyond routine walking.

4 Vulnerable – While **not dependent** on others for daily help, often **symptoms limit activities.** A common complaint is being "slowed up", and/or being tired during the day.

5 Mildly Frail – These people often have **more evident slowing,** and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 Moderately Frail – People need help with **all outside activities** and with **keeping house.** Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 Severely Frail – **Completely dependent for personal care,** from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9 Terminally Ill - Approaching the end of life. This category applies to people with **a life expectancy <6 months**, who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

Abbreviated Mental Test Score

Ask the following questions to the patient. Each question that is correctly answered scores one point:

1. What is your age?	☐	6. Can the patient recognise two persons (e.g. the doctor, nurse etc.)?	☐
2. What is the time to the nearest hour?	☐	7. What is your date of birth? (day and month sufficient)	☐
3. Give the patient an address, ask him/her to repeat it at the end of the test e.g. 42, West Street	☐	8. In what year did World War 1 begin?	☐
4. What is the year?	☐	9. Name the present monarch/prime minister	☐
5. What is the name of the hospital/ number of residence where the patient is situated?	☐	10. Count backwards from 20 to 1	☐

Patient chose not to answer all questions ☐ **Total score = ... / 10**

*Note: A score of **6 or less** suggests delirium or dementia, although further tests are necessary to confirm the diagnosis*

- Does the patient have **severe*** cardiorespiratory disease? Yes / No

  * severe = less than ordinary physical activity or rest causes tiredness, palpitations or shortness of breath

- Does the patient have any **other non-breast locally advanced / metastatic malignancy**? Yes / No

7.3. Integrating data items on fitness assessment into routine cancer datasets

To capture patient-level fitness information on a national scale, the individual components of the fitness assessment form were integrated into the new Version 9.0 of the Cancer Outcomes and Services Dataset (COSD), which was released in 2020 (**Table 7.1**). COSD is the national reporting standard for cancer in NHS trusts across England and one of the main datasets received by the NABCOP. These data will inform future analysis on receipt of treatment for older women, by providing information on patient fitness at the point of diagnosis.

COSD Version 9.0 was implemented in July 2020, with a further three-month upgrading period for local IT systems to be updated. In a review of data returns within CancerStats, conducted in March 2021[8]:

- Just over 90% of NHS trusts had started submitting COSD Version 9.0 data.
- Between July 2020 and January 2021, 13 NHS trusts had completed at least one fitness data item. We anticipate submission rates will steadily increase over time, with growing user familiarity.

Only English NHS trusts are able to upload the fitness assessment data items via COSD returns. We hope in the near future that these items will be incorporated into routine data collection for patients diagnosed and treated in Wales.

7.4. Measurement of patient frailty using routine cancer registration data

Prior to the introduction of the fitness data items to COSD Version 9.0, national cancer databases contained minimal information about patient fitness or levels of frailty. Core data items within the cancer datasets in England & Wales contain the WHO Performance Status classification, but this provides limited information on functional status, and remains inadequately completed across both countries [NABCOP 2020 Annual Report].

This led to the development of the Secondary Care Administrative Records Frailty (SCARF) index, which uses routine hospital admissions data to construct an individual frailty index score for each patient, and is based on a cumulative deficit model of frailty [Jauhari *et al* 2020]. The SCARF index provides an additional approach to enrich the understanding of how patient fitness and frailty influence breast cancer management, as well as complementing existing comorbidity measures.

Recommendation

✓ Breast care teams in NHS organisations in England should: Improve levels of data completeness within COSD data returns, where required, particularly for:

a) The triple diagnostic assessment in a single visit indicator;

b) The NABCOP fitness assessment indicators.

(Rec #4)

Box 7.1. Tools and resources

The following websites provide information for health care professionals on frailty, as well as educational resources on use of the Clinical Frailty Scale in clinical practice:

- The Specialised Clinical Frailty Network has information and online training on how to use the Clinical Frailty Scale: **https://www.scfn.org.uk/**
- The British Geriatrics Society has a 'Frailty Hub' which contains articles, guidelines, educational resources and research on frailty: **https://www.bgs.org.uk/resources/resource-series/frailty-hub**

The Age Gap Decision Tool is designed to be used by health care professionals to support clinical decisions relating to UK women over the age of 70 with operable breast cancer. Full details and guidance are available at:

- **https://agegap.shef.ac.uk/**

[8] Data provided by NCRAS for 110 English NHS trusts which are included within the NABCOP cohort, and reported on in annual reports.

Table 7.1. Data items on fitness assessment collected within the updated COSD Version 9.0			
Data item no.	**Data item name**	**Description**	**National code definition**
BR4500	FITNESS ASSESSMENT INDICATOR	Indicate if there was a fitness assessment carried out on the patient. If yes, please complete the following data items. These assessments and questions are for patients aged 70 and over at diagnosis.	Yes
			No
BR4510	FITNESS ASSESSMENT DATE	The date the fitness assessment was completed.	Date
BR4520	CLINICAL FRAILTY SCALE	Record the point on the Clinical Frailty Scale, as assigned by the appropriate clinician after discussion with the patient.	1 (very fit) to 9 (terminally ill)
BR4530	ABBREVIATED MENTAL TEST SCORE	Record the total Abbreviated Mental Test Score, this should be a score from 0 to 10.	0 – 10[1]
BR4550	CARDIORESPIRATORY DISEASE	Does the patient have severe cardiorespiratory disease? Severe = less than ordinary physical activity or rest causes tiredness, palpitations or shortness of breath.	Yes
			No
BR4550	OTHER NON BREAST LOCALLY ADVANCED/METASTATIC MALIGNANCY	Does the patient have any other non-breast locally advanced/metastatic malignancy?	Yes
			No

Note: The above table is a summarised version of the COSD Version 9.0 final dataset table published online. For a full list of breast specific data items, and further details on reporting these fitness assessment data items, please consult the online COSD version 9 user guide: http://www.ncin.org.uk/collecting_and_using_data/data_collection/cosd_downloads_v9.

[1]The Abbreviated Mental Test Score (AMTS) score is a cumulative result, one point is given for each question answered correctly.

8. Discussion of findings

Had the COVID-19 pandemic not arisen, the NABCOP 2021 Annual Report would have followed the design of previous reports and reported on the care of older women diagnosed with breast cancer up until 31 December 2019. Instead this NABCOP report used data from the Rapid Cancer Registration Dataset (RCRD) and the usual Welsh data (released prior to being fully validated), on women diagnosed up to 31 July 2020 (being the latest data available at the time of analysis). Although data were subject to limitations (such as limited information on tumour characteristics for women diagnosed in England), the datasets have provided more timely reporting than is usually achievable and represent a positive development. We were reassured that the methods used to generate the RCRD resulted in the identification of just 12% fewer women diagnosed in 2018 when compared against the usual Cancer Registration data, with no obvious proportional differences by patient age at diagnosis. Using data from RCRD also gave us the opportunity to report on the impact of the first wave of the pandemic, and the actions taken by NHS organisations following the call to put steps in place to redirect staff and resources and to reduce more routine NHS activity [NHS England & NHS Improvement March 2020[9]].

Among the lower numbers of women being diagnosed, the NABCOP results show that NHS organisations were able to deliver cancer treatments consistent with the guidance from the associated professions on prioritisation of patients and appropriate treatment alterations during the first COVID-19 wave [ABS March 2020; RCR March 2020; ABS May 2020].

In April 2021, NCRAS launched the COVID-19 Rapid Cancer Registration and Treatment Data Dashboard [NCRAS 2021]. This new resource shows numbers of cancers diagnosed and treated across the COVID-19 pandemic. Additionally, the dashboard provides further evidence of increasing numbers diagnosed with breast cancer from May 2020 onwards, with rates reaching pre-pandemic activity levels towards the end of 2020[10].

As the RCRD data were only available on women diagnosed up to 31 July 2020, at the time of analysis, we were unable to describe the period following the first COVID-19 wave when NHS breast cancer services across England and Wales began to recover. The NABCOP 2020 Organisational Audit (OA) gave insight into how services were responding. It was conducted as an online survey, sent to NHS organisations between October 2020 and January 2021 when NHS organisations were largely through the initial impact of the first wave of the pandemic.

Various risks to the recovery of services associated with a second COVID-19 wave were identified in the OA (notably, reduced service capacity and staff). Since the survey, the NHS Cancer Services Recovery Plan has been published [NHSE December 2020], and this addressed the main concerns highlighted by NHS organisations in the OA, such as: ensuring cancer services have sufficient capacity to manage future demand and looking to work towards reducing any gaps in the workforce and supporting existing staff to continue to deliver care.

8.1. NABCOP Future work

Looking ahead to future work, the NABCOP recognises the importance of supporting NHS organisations to understand the longer-term effects on diagnostic and treatment patterns for older patients, across English and Welsh breast cancer services, as a result of COVID-19. This may include reporting updated findings on those aspects of diagnosis and treatment (surgery, radiotherapy, chemotherapy) which are presented within this report, with analyses to include patients diagnosed beyond July 2020, to allow reporting of breast cancer care among the older population across 2020 and beyond. We hope to continue to develop our reporting of short- and longer-term outcomes following primary and adjuvant treatment, as patient follow-up increases. This is important to understand factors which influence outcomes and to support hospitals and clinicians in quality improvement. We encourage NHS organisations to review and discuss their own outcome data, published within our supplementary materials.

Finally, we would like to extend our sincere gratitude towards all the breast units, associated staff members, and cancer registries who have worked tirelessly whether to provide patient care, submit data returns, and continue to maintain data pathways throughout the COVID-19 pandemic.

[9] Available at: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/20200317-NHS-COVID-letter-FINAL.pdf
[10] Dashboard figures available at: https://www.cancerdata.nhs.uk/covid-19/rcrd

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Appendix 1: Project Board and Clinical Steering Group members

Project Board members (excluding project team)		
Name	**Organisation**	**Role**
Mr Nick Markham	Royal College of Surgeons of England	Project Board Chair
Dr Jacinta Abraham	Velindre NHS Trust	Breast Clinical Oncologist and Medical Director
Ms Karen Clements	National Cancer Registration and Analysis Service, Public Health England	NCRAS Project Manager
Miss Marianne Dillon	Swansea Bay University Health Board Wales Cancer Network	Consultant Breast Surgeon Breast Cancer Site Group Lead
Dr Julie Doughty	Association of Breast Surgery	President
Ms Janice Rose	Independent Cancer Patients' Voice	Patient Representative
Ms Emma Skipper	Healthcare Quality Improvement Partnership	Associate Director
Ms Sophia Turner	Independent Cancer Patients' Voice	Patient Representative
Ms Sarah Walker	Healthcare Quality Improvement Partnership	HQIP Project Manager
Ms Carla Whitbread	força - strength against cancer	Patient Representative

Clinical Steering Group members (excluding project team)		
Name	**Organisation**	**Role**
Dr Nicolò Matteo Luca Battisti	The Royal Marsden NHS Foundation Trust International Society of Geriatric Oncology	Clinical Research Fellow in Medical Oncology President-Elect
Prof. Kwok-Leung Cheung	School of Medicine ,University of Nottingham International Society of Geriatric Oncology	Professor of Breast Surgery and Medical Education UK National Representative
Ms Karen Clements	National Cancer Registration and Analysis Service, Public Health England	NCRAS Project Manager
Miss Marianne Dillon	Swansea Bay University Health Board Wales Cancer Network	Consultant Breast Surgeon Breast Cancer Site Group Lead
Dr Julie Doughty	Association of Breast Surgery	President
Mr Ashu Gandhi	Association of Breast Surgery Manchester University Hospital NHS Foundation Trust NHS Breast Screening Programme & ABS Screening Audit Group	Chair of the Clinical Practice & Standards Committee Oncoplastic Breast and Endocrine Surgeon Chair
Prof. Margot Gosney	Royal Berkshire NHS Foundation Trust.	Professor of Elderly Care Medicine
Ms Lis Grimsey[1]	East Sussex Healthcare NHS Trust	Macmillan Nurse Consultant
Prof. Chris Holcombe	Liverpool University Hospitals NHS Foundation Trust Association of Breast Surgery	Oncoplastic Breast Surgeon Vice President
Miss Tracey Irvine	Getting It Right First Time (GIRFT) Guildford (Royal Surrey NHS Foundation Trust)	Clinical Lead for Breast Surgery Consultant Breast Surgeon
Ms Jacquie Jenkins	Public Health England, Screening Quality Assurance Service	Deputy Director of Quality Assurance
Prof. Ian Kunkler	University of Edinburgh NHS Lothian	Professor of Clinical Oncology Clinical Oncologist

Clinical Steering Group members continues on the next page.

Clinical Steering Group members continued from previous page.

Clinical Steering Group members (excluding project team)		
Name	**Organisation**	**Role**
Mr Andrew Murphy	National Cancer Registration and Analysis Service, Public Health England	Head of Cancer Datasets
Dr Stanley Ralph	Age Anaesthesia Association University Hospitals of Derby and Burton NHS Foundation Trust	Honorary Secretary Anaesthetist
Dr Alistair Ring	The Royal Marsden NHS Foundation Trust	Medical Oncologist
Prof. Tom Robinson	University of Leicester University Hospitals of Leicester NHS Trust NIHR Senior Investigator	Pro Vice Chancellor and Head of the College of Life Sciences and Dean of Medicine Professor of Stroke Medicine Honorary Consultant Stroke Physician
Ms Janice Rose[1]	Independent Cancer Patients' Voice	Patient Representative
Ms Mia Rosenblatt[1]	Breast Cancer Now	Associate Director of Policy, Evidence and Influencing
Dr Nisha Sharma	Leeds Teaching Hospitals NHS Trust British Society of Breast Radiology	Director of Breast Screening (Leeds-Wakefield) and Clinical Lead for Breast Imaging Audit Lead
Dr Richard Simcock	Macmillan Cancer Support	Chair of the Expert Reference Group for Cancer Care in Older People convened by Macmillan
Ms Sophia Turner[1]	Independent Cancer Patients' Voice	Patient Representative
Ms Carla Whitbread[1]	força - strength against cancer	Patient Representative [Member from Dec 2019]
Ms Gail Williams	NHS Wales, Cardiff	Breast care nurse Network Team Lead at NHS Wales
Prof. Lynda Wyld	University of Sheffield Jasmine Breast Centre, Doncaster Bridging the Age Gap Study	Professor of Surgical Oncology Honorary Consultant Breast Surgeon Principal Investigator

Project team		
Name	**Organisation**	**Role**
Prof. Kieran Horgan	Leeds Teaching Hospitals NHS Trust	Consultant Breast Surgeon NABCOP Liaison for the Association of Breast Surgery reporting to the Clinical Standards and Audit Committee Chair Breast Cancer Expert Advisory Group of NCRAS
Prof. David Dodwell	University of Oxford	Consultant Clinical Oncologist Chair, Systemic Anti-Cancer Therapy Executive Committee UK Breast Cancer Group
Prof. David Cromwell	Clinical Effectiveness Unit, RCS	Director
Miss Catherine Foster	Clinical Effectiveness Unit, RCS	Research Coordinator
Mrs Melissa Gannon	Clinical Effectiveness Unit, RCS	Research Fellow/Methodologist
Ms Jibby Medina	Clinical Effectiveness Unit, RCS	Programme Manager
Miss Katie Miller	Clinical Effectiveness Unit, RCS	Clinical Research Fellow

[1]We are grateful to the members of the Public and Patients publications subgroup for their expert input.

Appendix 2: English Rapid Cancer Registration Data and coding for chemotherapy toxicity

The following table provides details of the datasets and associated content provided for patients within the Rapid Cancer Registration Data.

Table A2.1. Individual datasets and associated content for England within the Rapid Cancer Registration Data

Dataset	Time period covered (date used)	Content
Basic diagnosis data	01Jan2018 to 31Jul2020 (diagnosis date)	Data on birth year & month, ethnicity, ICD-10 code, overall stage, IMD 2019, route to diagnosis, tumour morphology, diagnosing trust, CCG and basis of diagnosis.
Cancer waiting times (CWT)	01Jan2018 to 30Sep2020 (treatment date)	Treatment modality, date and trust.
Radiotherapy (RTDS)	04Jan2018 to 31Jul2020 (based on RT start date)	Usual data items.
Systemic therapy (SACT)	04Jan2018 to 31Jul2020 (based on regimen date)	Usual data items.
ONS Vital status	01Jan2018 to 02Nov2020 if died; 14Jan2020 to 01Oct2020 if alive	Vital status and vital status date.
HES inpatient (admitted patient care; APC)	03Jan2016 to 31Aug2020 (admission date)	Usual data items.
HES outpatient (OP)	04Jan2016 to 30Sep2020 (appointment date)	Usual data items.
HES Accident & Emergency (A&E)	12Jan2016 to 31Mar2020 (arrival date)	Usual data items.

The table below provides details of the diagnostic codes used to identify chemotherapy-related acute care visits in administrative data among patients receiving chemotherapy for early-stage breast cancer. The codes were validated in work by Krzyzanowska et al (2018) which looked at using administrative data to accurately identify treatment-related complications.

Table A2.2. ICD-10 codes used to identify chemotherapy-related visits in HES Admitted Patient Care data

Toxicity	Description	ICD-10 code
Neutropenia	Agranulocytosis- Including drug induced	D70
Fever	Other Specified Fever (Chills with fever; Persistent fever; Fever with rigors)	R508
	Fever unspecified (Fever NOS; FUO; Hyperpyrexia NOS ; Pyrexia NOS ; Pyrexia UO)	R509
Infection	Infectious and parasitic diseases	A00-B99
	Line associated Infection	T82.7
	Bronchitis	J20-J22
	Pneumonia	J12-J18
	Kidney Infection	N10, N390
	Acute cystitis	N300
	Cellulitis	L00-L08
	Empyema	J86
	Abscess of lung/mediastium	J85
	Other septicaemia	A41
	Septicaemia unspecified	A419
	Septicaemia other	A418
GI Toxicity	Diarrhea	K52
	Functional diarrhea	K59.1
	Nausea/emesis	R11
	Heartburn	R12
	Constipation	K59.0
	Obstruction	K56
	Stomatitis	K12
	Cachexia	R64.0
	Anorexia	R63.0
Other Systemic Treatment Related	Hyponatremia	E87.1
	Hypokalemia	E87.6
	Electrolyte disorder Magnesium disorder	E87.0, 2, 3, 4, 5, 7, 8 E834
	Dehydration/hypovolemia	E86
	Malaise/Fatigue	R53
	Syncope	R55
	Dizziness	R42
	Hypotension	I959
	Fe deficiency anaemia	D50
	Other deficiency anaemia	D51-D53
	Aplastic anemia	D60, D61
	Other and unspecified anemia	D62-D64
	Thrombocytopenia	D69.5, D69.6
	Other venous embolism and thrombosis	I82
	Rash and non-specific skin eruptions	R21
	Hyperglycemia	R73
	Phlebitis	I808

Note: ICD-10: International Statistical Classification of Diseases and Related Health Problems 10th revision; NOS= not otherwise specified; FUO= fever of unknown origin; UO= unknown origin

Glossary and abbreviations

Adjuvant (treatments) – Treatments (such as chemotherapy or radiotherapy) given after primary treatment, which in the case of breast cancer is surgery, to lower the risk of the cancer coming back.

Aromatase inhibitor – a type of endocrine therapy, used as treatment for post-menopausal patients with hormone positive breast cancer.

Association of Breast Surgery – The association that represents healthcare professionals treating malignant and benign breast disease in the UK, Ireland and worldwide. It focuses on education, audit and guidelines to enhance the treatment of patients with breast disease. Registered charity no: 1135699.

AMTS – Abbreviated Mental Test Score (see **Chapter 7**).

Breast conserving surgery – A procedure to remove a discrete lump or abnormal area of tissue from the breast, without the removal of all breast tissue.

Breast Screening – Breast screening involves women being invited to a breast X-ray (mammogram). It aims to diagnose women early because it can allow clinicians to identify cancers when they are too small to feel. Typically, all women aged between 50 and 70 are invited for breast cancer screening every three years.

Breast Test Wales – The national breast screening programme for Wales, which offers a mammogram every three years for the detection of early breast cancer for women aged over 50.

COVID-19 – an infectious respiratory disease caused by a novel coronavirus, and caused a global pandemic, as declared by the World Health Organisation, on March 11th 2020.

Cancer Outcomes and Services Dataset – The national standard dataset for recording details of cancer patients in England. NHS organisations submit COSD data items to NCRAS who compile the dataset by combining it with information from other NHS systems.

CaNISC – Cancer Network Information System Cymru. An all-Wales electronic patient record used for clinical management of cancer patients.

Charlson Comorbidity Index – This is a commonly used scoring system for medical comorbidities. The score is calculated based on the absence (0) and presence (≥ 1) of specific medical problems.

Chemotherapy – Drug therapy used to treat cancer.

Clinical nurse specialist – Clinical nurse specialists are specially trained nurses who provide an essential role in supporting the various aspects of care for a cancer patient.

Comorbidity – A medical condition that coexists alongside primary breast cancer.

DCIS – Ductal carcinoma in situ. The most common type of non-invasive breast cancer, whereby the abnormal cells are restricted to the walls of the milk ducts (in situ).

Endocrine therapy – Anti-estrogen drug therapy used to treat hormone positive breast cancer. This treatment reduces the levels of estrogen and progesterone in the body or blocks its action.

ER status – Estrogen (oestrogen) receptor status. Breast cancers can grow in response to the sex hormone estrogen. Approximately 70% of invasive breast cancers are 'ER positive' as they have receptors for estrogen. These receptors (often termed molecular markers) are targets for endocrine therapy. Cancers without estrogen (ER negative) will not benefit from anti-estrogenic treatment.

GP – General Practitioners. Doctors in the community who manage common medical conditions.

HER2 – HER2 (human epidermal growth receptor 2) protein, a receptor that is present on normal breast cells. It is involved in the signalling and promotion of cell growth. Breast cancer cells with higher levels of HER2 receptors (HER2 positive) are more aggressive and may grow more quickly. These receptors (often termed molecular markers) are the target of anti-HER2 therapies such as trastuzumab.

Hospital Episode Statistics – A database that contains data on all inpatients treated in NHS trusts in England. This includes details of admissions, diagnoses and treatments.

HQIP – Healthcare Quality Improvement Partnership. Aims to promote quality improvement in healthcare, and in particular to increase the impact of clinical audit on the services provided by the NHS and independent healthcare organisations.

Hypofractionated radiotherapy – a regime where the total dose of radiotherapy is divided into larger portions, and given over a shorter time frame, when compared with standard regimens.

ICD-10 – International Classification of Diseases, 10th Revision. This is the World Health Organization international standard diagnostic classification, which is used to code diagnoses and complications in the Hospital Episode Statistics database of the English NHS and in Patient Episode Database for Wales.

IMD – Index of Multiple Deprivation. This is the official measure of relative deprivation for small areas in England. IMD is often described as a rank within a category of five (quintile), in the order of the most to least deprived. The Welsh IMD is the official measure of relative deprivation for small areas in Wales.

Invasive breast cancer – There is invasion of cancerous cells in the breast beyond the original lining of breast ducts/glands. In this report, early invasive breast cancer is defined as stages 1–3A.

Lymph nodes (glands) – These are part of the lymphatic network in the body, which plays an important role in the immune system. Cancer can spread from its area of origin to other parts of the body via the lymphatic network.

Mastectomy – A type of surgical procedure for breast cancer treatment, which involves removing all tissue from the affected breast.

Multidisciplinary team – A team of specialist healthcare professionals from various backgrounds (e.g. doctors, nurses, administrative staff) who collaborate to organise and deliver care for patients with a specific condition (e.g. breast cancer).

Metastatic breast cancer – Often denoted as M1. This is when cancer has spread from the place in which it started to other parts of the body. It is also referred to as stage 4 cancer.

NCRAS – The National Cancer Registration and Analysis Service. Collects, analyses and reports on cancer data for the NHS population in England.

Neoadjuvant treatments – These are treatments given before the primary treatment. The term usually refers to treatments given before surgery to shrink the cancer, making it easier to remove.

NHS –The National Health Service is the public health service in the United Kingdom.

NICE – The National Institute for Health and Care Excellence. An organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health.

Non-invasive breast cancer – Cancerous cells are restricted to the walls of the breast duct/gland of origin (in situ). 96% of non-invasive breast cancer are ductal carcinoma in situ (DCIS).

Non-screen detected breast cancer – The term used to refer to women who are diagnosed with breast cancer after presenting with symptoms to their GP, by referral from another medical specialty or as an emergency presentation, as opposed to women diagnosed after being screened.

Office for National Statistics – The government department responsible for collecting and publishing official statistics about the UK's society and economy. This includes cancer registration data and the national death register.

Organisational Audit – a survey of the breast cancer services which are provided by NHS organisations in England and Wales.

Patient Episode Database for Wales – A database that contains data on all inpatient and day case activity in NHS Wales hospitals. This includes details of admissions, diagnoses and treatments.

Primary endocrine therapy – Patients are treated with endocrine therapy rather than surgery as their primary treatment for breast cancer.

Radiotherapy – The use of high-energy x-ray beams to kill cancer cells.

(breast) Reconstruction surgery – The surgical recreation of the breast mound (or shape) after some or all of this has been removed (e.g. after breast cancer surgery).

RCS – The Royal College of Surgeons of England is an independent professional body committed to enabling surgeons to achieve and maintain the highest standards of surgical practice and patient care. As part of this it supports audit and the evaluation of clinical effectiveness for surgery.

SCARF index – the Secondary Care Administrative Records Frailty (SCARF) index is a method used by the NABCOP to identify patients with or without frailty.

Systemic anti-cancer therapy – An additional therapy (e.g. chemotherapy, endocrine therapy, HER2 targeting therapy) provided to improve the effectiveness of the primary treatment (e.g. surgery). This aims to reduce the chance of recurrence of the cancer and to improve the patient's overall chance of survival. These treatments may be provided before (neo-adjuvant) or after (adjuvant) surgery.

Temporising measure – An action taken to delay making a decision or committing oneself in order to gain time.

Trastuzumab – A drug therapy (brand name Herceptin®) used to treat breast cancer in women who have tumours that are HER2 positive. It may be used on its own or in combination with other chemotherapy drugs.

Wales Cancer Network – Supports health boards and trusts in Wales to meet the requirements of the Welsh Government's Cancer Delivery Plan, and other national strategic plans and frameworks for cancer. They are responsible for the collection, analysis and reporting of data to support the clinical management of cancer patients in Wales.

WHO performance status – The World Health Organization (WHO) performance status indicator is a measure of how disease(s) impact(s) a patient's ability to manage on a daily basis. It was initially developed in the research setting to standardise the reporting of chemotherapy toxicity and response in clinical trials in cancer patients. However, it is now in the public domain and is routinely used in other research and clinical settings.