National Audit of Breast Cancer in Older Patients

Part of the National Clinical Audit and Patient Outcomes Programme

2022 Annual Report

Results of the prospective clinical audit of care received by women
diagnosed with breast cancer in England and Wales between 1 January 2014 and 31 December 2020
Published May 2022

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

This report was prepared by the members of the NABCOP project team at the Royal College of Surgeons

Clinical Effectiveness Unit, Royal College of Surgeons of England

Mrs Melissa Gannon	NABCOP Research fellow / methodologist
Miss Katie Miller	NABCOP Clinical research fellow
Ms Jibby Medina	Programme Manager
Prof David Cromwell	Director, Clinical Effectiveness Unit

Clinical leads

Prof Kieran Horgan	Clinical lead, surgery. Leeds Teaching Hospitals NHS Trust
Prof David Dodwell	Clinical lead, oncology. University of Oxford

With support from

National Cancer Registration and Analysis Service (NCRAS), NHS Digital
Karen Clements, NABCOP Project Manager for NCRAS

Wales Cancer Network
Julie Cowling, Cancer Information Specialist
Anne Lane, Cancer Information Specialist

The members of the NABCOP Clinical Steering Group and Project Board

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The Association of Breast Surgery is a registered charity dedicated to advancing the practice of breast surgery and the management of breast conditions for the benefit of the public. It is a multi-professional membership association, which promotes training, education, clinical trials and guideline composition and adoption. For further information, please refer to the website www.associationofbreastsurgery.org.uk.

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The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes.

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Published by the National Audit of Breast Cancer in Older Patients
Clinical Effectiveness Unit
The Royal College of Surgeons of England
35–43 Lincoln’s Inn Fields
London WC2A 3PE

T: 020 7869 6139
E: nabcop@rcseng.ac.uk
W: http://www.nabcop.org.uk/

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Contents

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We are grateful to the National Audit of Breast Cancer in Older Patients (NABCOP) data collection partners including the National Cancer Registration and Analysis Service (NCRAS), which is part of the National Disease Registration Service (NDRS), NHS Digital and the Wales Cancer Network (WCN), Public Health Wales (PHW) for supporting data submissions from trusts and local health boards and for supplying data for this report. We particularly appreciate the efforts of the cancer intelligence analysts and cancer information specialists at the NCRAS and the WCN who supplied data during 2021.

We would like to acknowledge:

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- Lucy Davies (Association Manager) from the Association of Breast Surgery, for help publicising the existence of the NABCOP and its publications.

We would like to commend the efforts made by many individuals at NHS organisations submitting data, and engaging in improving routine data submissions, to cancer registration services in England and Wales, throughout the life of this audit.

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, breast cancer charities, medical associations, multidisciplinary experts in the area of breast cancer and medical care of the older person, and policy makers.

We would like to thank Stanley Ralph for his contribution to the Clinical Steering Group on behalf of Age Anaesthesia.

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 NCRAS, which is part of NHS Digital. Access to the data was facilitated by the NDRS at NHS Digital. Data from the Cancer Network Information System Cymru (CaNISC) and Patient Episode Database for Wales are used with permission from the WCN and DHCW.

We would like to extend our gratitude to the patients whose data are used in NABCOP reports.

We would like to take this opportunity to remember Maggie Wilcox, who passed away in December 2021[1]. She was the founder of Independent Cancer Patients' Voice (ICPV) as well as a founding member of “use MY data” (www.usemydata.org). Maggie was a highly effective patient advocate and served as a member of the audit’s Project Board and the Clinical Steering Group for the first three years of the NABCOP (from 2016-2019). She was passionate about ensuring that older patients with breast cancer receive equitable care compared to younger patients. We are grateful that she brought her experience and insight to our project and we greatly valued her input. She will be hugely missed.

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[1] https://www.nature.com/articles/s41416-022-01760-3

Forewords

Foreword from Chris Holcombe
President, Association of Breast Surgery

It is difficult to overstate the importance and quality of the body of work that makes up the National Audit of Breast Cancer in Older Patients (NABCOP), and I am very pleased to welcome the 2022 report and commend it to you.

Approximately one third of patients diagnosed with breast cancer (BC) are over 70, and as the population ages this is a growing portion of those being diagnosed with BC. The NABCOP team are to be congratulated on once again producing a report that is clinically relevant, and accessible; giving very practical advice on how to improve the care for patients aged 70+ years with BC. As with previous reports the recommendations are supported by a wealth of data detailing national practice and outcomes, which is linked to the individual performance in every breast unit in England and Wales.

As a clinician or commissioner, the greatest compliment you can pay to the NABCOP team is to read the report, but then, importantly, to find out the data for your own unit, and then, even more importantly, to put in place an action plan to improve the care of those patients aged 70+ years in your unit. Do access the Data Viewer and local action plan template for helpful guidance.

Looking through this 2022 report, it is gratifying to see modest improvements in treatment and data collection over the life of the audit, but there is more to be done.

There is no single way to treat BC in the older patient; the ageing process is unique to each individual, and while comorbidities, frailty, and geriatric conditions become more common with advancing age, their prevalence will vary widely between older patients. Therefore, it is important that treatment decisions are based on an objective assessment of overall health rather than on chronological age alone.

Frailty: in the same way that we would not treat BC without knowing the ER and HER2 status, we should not treat BC in those aged 70+ years without a formal assessment of frailty. Use the NABCOP fitness assessment form for all patients aged 70+ years. This should be assessed prior to multidisciplinary team (MDT) discussion so it can be used to guide treatment decisions. Do make sure your MDT coordinator is recording these results and they're part of COSD data returns in England.

Triple Diagnostic Assessment in a single visit: this is best practice, valued by patients and recommended by NICE, but achieved for only 69% of patients, and not at all in some units. There is currently an enormous pressure on new referrals to the breast clinic, and with radiological shortages and COVID-19 absences, achieving this is perhaps more difficult than ever; but it is valued, it is recommended and in this era of radiological shortages it is important to remember that this is also cost effective.

Surgery for ER positive early invasive breast cancer (EIBC): surgical excision in combination with systemic endocrine therapy (ET) is superior in preventing recurrence and improving survival, compared with primary ET alone. It is gratifying to see a small increase (from 62% to 69%) in rates of surgery for those aged 80+ years during the lifetime of the audit. However, for those over 80 (when average life expectancy is still 8 years, and within the time frame when the patient might get a recurrence or metastatic spread) it would appear that surgical decisions are still often being made on the basis of age not an objective assessment of fitness. For fit women with ER positive (ER+) EIBC, the excision rate is 68% compared to 92% for ER negative (ER-) EIBC; it is only 51% in mild-moderately frail women with ER+ EIBC vs 85% for ER- EIBC. Once again, there is even larger variation in individual units.

Reoperation rates following initial breast-conserving surgery (BCS): 1 in 7 patients undergo further operation following initial BCS, rising to 1 in 4 for those with DCIS. There have been small improvements during the lifetime of the audit, but intra-operative margin assessment remains a considerable challenge.

The COVID-19 pandemic: this audit presents data for the period of diagnosis and treatment during the first phase of the COVID-19 pandemic. There was a reduction in numbers of cancers diagnosed, particularly those diagnosed through the breast screening programme as this was paused (locally in England; nationally in Wales).

For many, the pandemic has been the most difficult period of their professional life, with profound effects on every aspect of life. But in the midst of this there were examples of how clinicians worked together rapidly and effectively to appropriately modify patient care to maximise good care and minimise harm. The rapid introduction of hypofractionated radiotherapy (given over one week) is one such extraordinary example; following publication of the data a change from 15 to 5 fractions was adopted almost universally in the space of a month, as demonstrated by the data in the report.

The Future: this is the final NABCOP report as this audit transitions to two newly commissioned audits of primary and metastatic breast cancer respectively. I would like to take the opportunity to wish the teams awarded the contracts for these new audits all the very best and hope that both of these will build on the fantastic work done by the NABCOP team.

Foreword from Jan Rose, Sophia Turner and Carla Whitbread

NABCOP Patient Representatives,
Independent Cancer Patients' Voice (ICPV) and
Força - strength against cancer

For the last 6 years, NABCOP has existed to assess the processes of breast cancer care and outcomes for women aged 70 years and over in England and Wales and works to achieve fair and unbiased treatment for all, regardless of age.

We have worked alongside the various stakeholders on NABCOP since the audit's inception with the aim to ensure that the voice and experience of the patient is well represented. The late Maggie Wilcox was the first Patient Representative to serve on NABCOP and is remembered fondly by all for her invaluable contributions.

Age alone should not influence the treatment a patient receives. However, the audit highlighted that there was a discrepancy in the treatment older women received compared to their younger counterparts and this in turn affected the outcome of their treatment. With these findings in mind, the Fitness Assessment Form was created as a tool to standardise how frailty and cognition are measured for an older patient in breast clinics. We consider this a key achievement for NABCOP as it paves the way for the medical team to discuss the best and most appropriate treatment for a patient. The assessment enables patients to be treated as individuals and not just according to their age, hence treating the older and younger women equally and fairly.

Having a Public and Patients version of the NABCOP report that explains the findings in a user-friendly, concise manner is important for patients. We have worked with the NABCOP team to ensure that clear language is used and that the report contents are relevant for patients.

In 2020, the NABCOP team developed the 'Guide to the Breast Cancer Pathway for Older Women' as a way to guide patients to ask important questions along the breast cancer care pathway. This guide emerged from an idea put forward by the patient representatives who were involved in the design and content of this guide. It can provide the basis for discussion of key elements of a woman's treatment enabling decisions to take place between the older patient and the health professionals as to appropriate treatment.

We have played a role in disseminating the NABCOP reports to our patient networks linking with patients, health professionals and charities. Despite our efforts, we feel this needs more attention.

By highlighting discrepancies, NABCOP has made headway in closing the gap in the treatment and care received by women aged 70 years and over compared to younger women. However, more work needs to be done to ensure that every woman in England and Wales, regardless of age or where treatment is received, gets the best care possible tailored to them to guarantee the best outcome possible.

Going forward, we acknowledge that auditing data for primary and metastatic breast cancer should be given attention. The question of 'age bias' should not be forgotten.

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 older women (aged 70+ years) diagnosed with breast cancer in NHS hospitals within England and Wales, 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 works in partnership with the National Cancer Registration and Analysis Service (NCRAS), NHS Digital 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. It publishes comparative information on outcomes and care processes from English NHS trusts and Welsh local health boards, referred to as NHS organisations throughout this report.

Final NABCOP Annual Report

NHS England and the Welsh Government are commissioning a new National Cancer Audit Collaborating Centre which will undertake a variety of new national cancer audits. This initiative will include audits of both primary breast cancer and metastatic breast cancer in women and men of all ages.

Commissioners and the NABCOP team will work together during 2022 to enable an effective transition from the NABCOP to the future national breast cancer audit programme.

This final NABCOP Annual 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 containing key findings and recommendations is written for patients and the wider public.

Supplementary material from the report (including tables containing individual NHS organisation results) is available on the NABCOP website (www.nabcop.org.uk)

Data collection and analysis

The NABCOP uses patient data routinely collected by NCRAS in England and the WCN in Wales.

For this annual report, the NCRAS provided cancer registration data on women (aged 50+ years) diagnosed between 1 January 2014 and 31 December 2019, along with data on women (aged 50+ years) diagnosed between 1 January 2019 and 31 May 2021 from the Rapid Cancer Registration Dataset (RCRD).

Data on women (aged 50+ years) diagnosed in Welsh local health boards between 1 January 2014 and 31 December 2020 were provided by the WCN using the Cancer Network Information System Cymru (CaNISC) patient record system.

Key findings from the 2022 report

WOMEN DIAGNOSED WITH BREAST CANCER IN ENGLAND AND WALES FROM 2014–2019

Chapter 3 reports on data completeness, diagnosis and treatment patterns for women diagnosed in England and Wales between January 2014 and December 2019.

Data completeness

The availability of core data items across 2014–2019 remains variable, but there have been improvements in data on clinical nurse specialist (CNS) contact (65% in 2014 to 76% in 2019) and WHO performance status (34% in 2014 to 65% in 2019).

Diagnosis and supportive care

Among women diagnosed in 2019 with early invasive breast cancer (EIBC) not detected at screening, 69% received triple diagnostic assessment (TDA) in a single visit. Variation remains by NHS organisation, with 37% of breast units having less than 70% of patients having TDA in a single visit.

Where data were available, recorded contact with a breast CNS for women diagnosed in 2019 was very high in England (96%) and Wales (99%).

Treatment for women with DCIS

Surgery: Among women diagnosed with DCIS between 2014 and 2019, use of surgery:

- Decreased with age at diagnosis (94% for 50–69 years; 91% for 70–79 years; 60% for 80+ years).
- Increased over 2014–2019 for women aged 80+ years who were fit or had mild-moderate frailty (from 62% in 2014 to 72% in 2019).
- Varied across NHS organisations, particularly among women aged 70+ years; this variation did not appear to be related to the volume of patients treated in an individual NHS organisation.

Radiotherapy: 60% of women aged 50–69 years received radiotherapy after breast-conserving surgery (BCS) compared with 50% aged 70–79 years and 27% aged 80+ years. There was considerable variation in use by NHS organisation regardless of age.

Treatment for women with early invasive breast cancer (EIBC)

Surgery: Among women diagnosed with EIBC between 2014 and 2019, use of surgery:

- Decreased with age at diagnosis (97% for 50–69 years, 91% for 70–79 years, 55% for 80+ years).
- Increased over 2014–2019 among women 80+ years who were relatively fit or had mild-moderate frailty (62% in 2014 to 69% in 2019); particularly with ER positive EIBC.
- Decreased more markedly with age at diagnosis among ER positive EIBC compared with ER negative EIBC, regardless of overall fitness.

Radiotherapy:

- For women with low risk EIBC where omission of radiotherapy can be considered[2], rates of radiotherapy reduced over time (from 89% in 2014 to 70% in 2019).
- Use of post-mastectomy radiotherapy among women with high-risk EIBC varied by NHS organisation, regardless of age.

Chemotherapy:

- Use of adjuvant chemotherapy among women aged 50–69 years with ER negative EIBC has increased from 61% in 2014 to 81% in 2019 (29% to 46% among women aged 70–79 years).
- In the cohort of women with ER negative, HER2 negative, node-positive EIBC, use of chemotherapy decreased with age (74% for 50–69 years, 47% for 70–79 years, 5% for 80+ years).
- 70% of women aged 50–69 years with HER2 positive EIBC received adjuvant chemotherapy plus trastuzumab compared with 49% for 70–79 years; 10% for 80+ years. There was considerable variation by NHS organisation.

Women with a diagnosis of metastatic breast cancer (MBC) at initial presentation

- Among women diagnosed with invasive breast cancer between 2014 and 2019, the percentage with MBC increased with age: 3% for 50–69 years; 6% for 70–79 years; 8% for 80+ years.
- 25% received chemotherapy within six months of diagnosis; use decreased with age (41% for 50–69 years; 21% for 70–79 years; 6% for 80+ years).

Outcomes following a diagnosis of breast cancer

Reoperation rates following initial BCS:

- Among women diagnosed with DCIS or EIBC in England and Wales from 2014–2019, who had BCS as their initial surgery, 15% had at least one subsequent breast reoperation (either BCS or mastectomy) within three months.
- Reoperation rates were higher among women with DCIS versus EIBC (25% vs 13%), and have fallen over time for both groups (most notably for DCIS from 27% in 2014 to 23% in 2019; from 14% in 2014 to 12% in 2019 for EIBC).

Short-term morbidity following adjuvant chemotherapy for EIBC (England only):

- Among women diagnosed from 2014–2019 who started adjuvant chemotherapy for EIBC, 28% had at least one treatment-related overnight hospital admission within 30 days of any chemotherapy cycle.
- Rates have fallen from 30% (2014) to 24% (2019).

Short-term mortality following (adjuvant) chemotherapy for invasive breast cancer (England only), among women diagnosed from 2014–2019:

- 30-day mortality following any adjuvant chemotherapy cycle for EIBC was around 1% or less.
- For women with MBC, 30-day mortality following palliative chemotherapy was around 13%.

Recording of recurrence:

- Only 4% of women diagnosed in England and Wales from 2014–2019 had a recording of any breast cancer recurrence.
- Reported recurrence rates were low even among women recorded as having died from their breast cancer (22%).

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[2] Details of the cohort defined as low risk can be found via: https://www.nice.org.uk/guidance/ng101/chapter/Recommendations#radiotherapy

Relative survival:

- Among women receiving surgery for EIBC in England and Wales, the 5-year relative survival for patients aged 70–79 years and 80+ years was similar to patients aged 50–69 years. Patients with severe frailty had more than 20% excess mortality from around 3.5 years after surgery, regardless of age.

Patient experience

Patient-level data from the Cancer Patient Experience Surveys (CPES) for 2015—2019 were linked to data on women aged 50+ years who were diagnosed and treated in England from 2014–2019. They showed:

- Improvements over time in relation to patients feeling supported and informed about their cancer and treatment options.
- Only 33% of women aged 80+ years in 2019 said they had all of the information they needed about their chemotherapy treatment beforehand.

PRIMARY CARE PRESCRIPTIONS

Chapter 4 presents findings from analysis of data from the Primary Care Prescription Database (PCPD). The PCPD captures therapies prescribed within primary care and dispensed in community pharmacies within England. The PCPD presents a potential valuable data source for information on cancer treatment prescribed in primary care and identification of comorbidity where this is pharmacologically managed.

PCPD data on endocrine therapy (ET), bisphosphonates, anticoagulant medication and dementia-related medication, dispensed between April 2015 and March 2021, were linked to data on women aged 50+ years and over diagnosed in England from 2014–2019. We found that, compared with secondary care data sources, the PCPD identified:

- An additional 45% of women with ER positive EIBC and 25% of women with ER positive MBC who had an ET prescription;
- An additional 20% of women with invasive breast cancer who had a bisphosphonate prescription - in addition to the 9% recorded within the Systemic Anti-Cancer Therapy (SACT) dataset;
- An additional 1.2% of women with an anticoagulant prescription in the 2 years prior to diagnosis – in addition to 4.8% of women with conditions routinely requiring anticoagulant therapy recorded within the Hospital Episode Statistics (HES) dataset;
- An additional 0.6% of women with a dementia-related prescription in the 2 years prior to diagnosis – in addition to 1.8% of women a with dementia diagnosis recorded in HES.

WOMEN DIAGNOSED WITH BREAST CANCER IN ENGLAND AND WALES IN 2020 (AND UP TO MAY 2021 - ENGLAND ONLY)

Chapter 5 reports on women aged 50+ years diagnosed with breast cancer in 2020 (and up to May 2021 in England). Figures from 2019 were used as a reference to understand the impact of COVID-19.

Comparing April–December 2020 with the same months in 2019:

- There was a 30% reduction in the number of women aged 50+ years diagnosed with breast cancer (61% reduction in numbers diagnosed via screening; 7% reduction in numbers diagnosed via non-screening pathways)[3];
- 79% received surgery within six months of diagnosis, compared with 86% (2019);
- 72% of patients who had radiotherapy for non-invasive or EIBC had the hypofractionated 26Gy/5F regimen (0% in April—December 2019).

FITNESS ASSESSMENT FOR OLDER WOMEN IN BREAST CLINICS

Chapter 6 describes the NABCOP fitness assessment form, developed to capture elements of frailty and cognitive impairment present at the point of a breast cancer diagnosis. It is for use in breast clinics when patients aged 70+ years are referred for suspected breast cancer.

To understand how frailty influences treatment decisions among women with breast cancer, the items on the fitness assessment form were incorporated into COSD Version 9.0 (released in 2020) and are now required for submission by English NHS trusts. Current levels of data completeness across all six fitness items are low (<2%) which may have been influenced by the pressures on trusts during the COVID-19 pandemic.

NABCOP ACHIEVEMENTS

Chapter 7 reflects on NABCOP's achievements in the context of this last year of NABCOP reporting and the transition to newly commissioned audits of both primary and metastatic breast cancer in women and men of all ages.

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[3] We note that the AgeX trial stopped in May 2020, which may have partially contributed to the reduced number of patients diagnosed with breast cancer via screening. Details of the AgeX trail, can be found at http://www.agex.uk/

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Further information

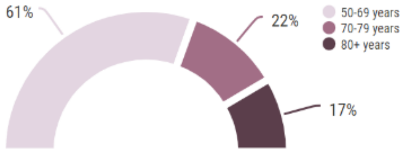
Annual Report 2022

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.

The audit received information about

224,049

women aged 50+ years diagnosed with breast cancer across England and Wales in **2014–2019**.



Processes of care in 2019

TDA in a single visit = 69%
Increased from 58% in 2014 to 68% in 2019 for women in Wales.*

CNS contact = 96%
(Where data existed) Increased from 78% in 2014 for women in England.[†]

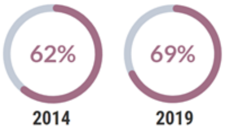
Overall care rated as 10 (very good) = 47%
(Results from the English National CPES) Increased from 35% in 2014.

** TDA % not shown for England as performance has remained at around 69% since 2015.*
[†] Contact with a CNS % not shown for Wales as this has been consistently high at nearly 100% (where data existed) since 2014.

Treatment allocation by type of breast cancer diagnosed between 2014 and 2019

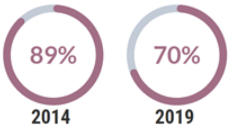
Early invasive breast cancer (EIBC) *165,118 women*

Surgery: use increased over time for women aged **80+ years** who were fit or with mild/moderate frailty.



Surgery: use decreased as age at diagnosis increased. This was most marked among women aged **75+ years** with **ER positive EIBC**, with considerable regional variation.

Radiotherapy: use reduced over time among women at low risk of recurrence (in line with NICE guidelines).



Chemotherapy*: use increased over time.

For women with **ER negative** EIBC:

	50-69 years		70+ years	
	61%	81%	29%	46%
	2014	2019	2014	2019

For women with **HER2 positive** EIBC:

53%	62%
2014	2019

**chemotherapy + trastuzumab for HER2+ EIBC*

Ductal carcinoma in situ (DCIS) *23,901 women*

Surgery: use increased over time for women aged **80+ years** who were fit or with mild/moderate frailty.

62% *in 2014* → **72%** *in 2019*

Metastatic breast cancer *(at initial presentation) 9,642 women*

25% had **chemotherapy** within 6 months of diagnosis.

Outcomes following treatment

Among women aged 50+ diagnosed in 2019:

Reoperation rates after breast-conserving surgery:

DCIS = 23%
Decreased from 27% in 2014

EIBC = 12%
Decreased from 14% in 2014

Overnight hospital admission rates to hospital (within 30 days of a chemotherapy cycle):

EIBC = 24%
Decreased from 30% in 2014

Glossary:
CNS – clinical nurse specialist; **COSD –** Cancer Outcomes and Services Dataset; **CPES –** Cancer Patient Experience Survey; **ER -** estrogen receptor; **HER2 -** human epidermal growth factor receptor 2; **NICE -** National Institute for Health and Care Excellence; **TDA** - triple diagnostic assessment

Trends in breast cancer care in 2020*

Among women aged 50+ diagnosed with non-invasive or invasive breast cancer between April–December 2020:

79% had surgery

(compared with **86%** for the same months in 2019)

**2019 is used as a reference to understand the impact of COVID-19*

Recording of routine data items

Among women aged 50+ diagnosed from 2014–2019, recorded rates of recurrence remain low at **4%.**

<2% of women aged 70+, diagnosed in England from October 2020 to September 2021, had data from the NABCOP Fitness Assessment Form recorded in COSD Version 9.0.

Recommendations 2022

Finding / basis	Recommendation	Where in this report	Primary audience to action recommendation
Equitable care for older patients with breast cancer			
Among older women responding to CPES, the percentage who said they 'completely' had all of the information they needed about their chemotherapy treatment beforehand has reduced over time from 81% in 2014 to 75% in 2019.	1. Ensure older patients have sufficient information about their care and treatment(s) and are engaged in a shared decision-making process by encouraging wide adoption of use of "The NABCOP guide to the breast cancer pathway for older women".[4]	Chapter 3	Breast care teams in NHS organisations[5]. Professional bodies such as the Association of Breast Surgery (ABS) and the UK Breast Cancer Group (UKBCG).
The NABCOP Annual Reports have highlighted variation in the care of older women diagnosed with breast cancer across England and Wales.	2. Ensure key cancer care information continues to be collected and made available for the older patient, to understand and address persistent unexplained variation in the management of breast cancer among older patients – including the promotion, maintenance and updating of "The NABCOP guide to the breast cancer pathway for older women".[3]	Chapter 3, 4, 5 & 6	Audit of primary and metastatic (secondary) breast cancer.
Fitness assessment for older patients with breast cancer			
Relative survival of fit older women (70–79 years & 80+ years) receiving surgery was comparable to that of younger women (50–69 years). Nevertheless, women with severe frailty who received surgery had more than 20% excess mortality from around 3.5 years after surgery. Records from CancerStats for English NHS trusts showed that less than 2% of patients aged 70+ years had at least one data item from the NABCOP Fitness Assessment Form completed in COSD V9.0.	3. Encourage adoption of "The NABCOP Fitness Assessment For Older Patients" form into routine use among breast units, for all patients aged 70 and over attending the first diagnostic clinic, and – where relevant – upload with the routine data returns (such as COSD for England).	Chapter 3 & 6	Audit of primary and metastatic (secondary) breast cancer. Breast care teams in NHS organisations. Professional bodies such as the ABS and the UKBCG.

Continued on next page…

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[4] "The NABCOP guide to the breast cancer pathway for older women" can be downloaded via: https://www.nabcop.org.uk/resources/the-nabcop-guide-to-the-breast-cancer-pathway-for-older-women/

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

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Outcomes for patients with breast cancer			
15% of women having initial breast-conserving surgery for DCIS or EIBC had a subsequent reoperation within 3 months.	4. Breast cancer surgical teams should examine their reoperation rates after breast conservation surgery to identify areas where reoperation rates can be reduced, whilst supporting safe breast conservation.	**Chapter 3**	Breast care teams in NHS organisations. Professional bodies such as the ABS and the UKBCG.
28% of women having adjuvant chemotherapy for EIBC in England had 1+ unplanned overnight chemotherapy-related hospital admission(s).	5. Breast cancer oncology teams should review chemotherapy associated morbidity in their units, with the aim of reducing unplanned chemotherapy-related admission rates.	**Chapter 3**	Breast care teams in NHS organisations in England.
Recording of routine data items			
Data completeness of ER and HER2 status has not improved for women diagnosed in more recent years in both England and Wales. Completeness of individual data items on patient fitness within COSD V9.0 was found to be low among all NHS trusts in England.	6. Ensure a clinician is identified to take responsibility for reviewing data returns and feeding back to staff within their breast units. This review should cover key cancer care information, including full tumour characterisation, ER and HER2 status (for patients with invasive breast cancer), WHO performance status, whether or not a TDA was completed, the NABCOP fitness assessment indicators (for patients aged 70+ years).	**Chapter 3 & 6**	Breast care teams in NHS organisations.
Levels of data completeness for recurrence are low.	7. Investigate consistency between (1) discussion of patients with recurrence at MDTs in breast units, (2) recording of recurrence by Breast Units and (3) 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 3**	Breast care teams in NHS organisations.
	8. In order to improve recurrence information on patients with breast cancer in cancer registration datasets: a) Continue to monitor and report on patterns of breast cancer 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.		Audit of primary and metastatic (secondary) breast cancer. National Cancer Registration and Analysis Service (NCRAS), and Wales Cancer Network (WCN).
Comparison of NCRAS data sources linked to the Primary Care Prescription Database highlighted low rates of data completeness on the use of endocrine therapy and bisphosphonate treatment in the NCRAS secondary care data sources.	9. Ensure information on the initiation of endocrine therapy treatment, and use of bisphosphonates for disease modification, in secondary care is recorded within routine data submissions to NCRAS (COSD, SACT) and WCN databases.	**Chapter 4**	Breast care teams in NHS organisations.

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 (women aged 50–69 years were included for comparison).

Breast cancer is the most common female cancer in the UK, with over 55,000 new diagnoses each year. About one-third of such cancers are in women aged 70+ years [Cancer Research UK 2021].

The audit was commissioned to address the evidence of unexplained differences 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 ongoing impact of the COVID-19 pandemic on the delivery of breast cancer care.

The approach adopted by the audit to investigate quality of care was to examine whether the treatment received by older women diagnosed with breast cancer was 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 required a different approach, and 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 (in patients diagnosed and receiving treatment in 2019).

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 (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP), 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 (CSG), whose role includes advising on the priorities of the audit and helping with the interpretation of the results. The CSG 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 2022 Annual Report

This sixth, final, NABCOP Annual Report contains information on:

- Characteristics, treatment patterns and outcomes following treatment for women aged 50+ years newly diagnosed with breast cancer over the six years from January 2014 to December 2019.
- Patient experience across 2015 to 2019, for women diagnosed with breast cancer in England from 2014–2019.
- Prescribing patterns for endocrine therapy (ET), bisphosphonate therapy, anticoagulant medication and dementia-related medication, recorded within primary care and dispensed in community pharmacies, for women diagnosed with breast cancer in England from 2014–2019.
- The diagnosis and treatment patterns for women diagnosed in 2020 in England and Wales (up to 31 May 2021 in England).
- The use of fitness assessment for older women in breast clinics.
- A reflection on key achievements of the NABCOP, since its inception in 2016.

The report is written for individuals who provide, receive, commission or 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.

1.3. 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
- Links to peer-reviewed publications and presentations given by members of the NABCOP Project Team

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 (see **Appendix 2** for the NABCOP core indicators) 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.

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

NHS health services in England and Wales were greatly affected by the COVID-19 pandemic that arrived in early 2020, and work continues to help NHS cancer services recover [NHS England December 2020]. One consequence of the COVID-19 pandemic was fewer women were diagnosed through screening[6] pathways, following the UK-wide lockdown (see **Chapter 5**) and breast screening services being paused at a local level across England [NHS England December 2020] and nationally across Wales [Public Health Wales 2020]. Breast screening resumed in July 2020 in England and Wales [Public Health Agency 2020], and current estimates suggest screening services might achieve pre-COVID-19 levels of activity in 2022.

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

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

This work uses data that has been provided by patients and collected by the NHS as part of their care and support. This report can therefore only describe patient and tumour characteristics, along with patterns of care, based on the information that is available. The data are collated, maintained and quality assured by the National Disease Registration Service (NDRS), which is part of NHS Digital (NHSD), for patients in England and the Wales Cancer Network (WCN) for patients in Wales.

Details of the data used and associated patient cohorts are included within each of the subsequent chapters.

2.2. Patient cohort

Within the report, we distinguish between three groups of women with breast cancer:

- Non-invasive/ductal carcinoma in situ (DCIS; stage 0)
- Early invasive breast cancer (EIBC; stages 1–3A)
- Metastatic breast cancer (MBC; stage 4).

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

Age groups

The effect of age is typically displayed using three main subgroups of age: 50–69 years; 70–79 years; 80+ years. The older age groups are combined and reported as 70+ years where the number of patients within the 80+ years 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, notably, the World Health Organization (WHO) performance status instrument, which measures the functional status of patients on a scale from 0 to 4. Unfortunately, this data item remains poorly completed for breast cancer patients in the cancer datasets, though return rates have increased over time (**Table 3.3.1**). 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].

The comorbid conditions covered by the Charlson Index and the frailty deficits used by the SCARF Index are identified using the International Statistical Classification of Diseases and Related Health Problems (ICD-10) codes that are captured within the diagnosis fields of the hospital admissions data.

3. Characteristics and care among women newly diagnosed with breast cancer from 2014–2019

This chapter includes information on women aged 50 years and over who were diagnosed with breast cancer in England and Wales, during the six years between 1 January 2014 and 31 December 2019. The data were primarily collected as part of the national cancer registration process in England and Wales.

3.1. Methods

Data sources

For English patients, the NCRAS provided data from its cancer analysis system, which collates patient data from a range of national data feeds across all NHS acute hospitals. Data on Welsh patients 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 over the six-year period between 1 January 2014 and 31 December 2019. Full details on the release of data to the NABCOP for annual reports, along with relevant timelines, can be found online at: https://www.nabcop.org.uk/resources-home/.

Participating NHS organisations across England and Wales

Information from 117 English NHS trusts and six Welsh local health boards were included in this chapter.

NHS trusts at which fewer than 180 patients were diagnosed over the six-year period (i.e. 30 patients/year), or where fewer than 30 patients were diagnosed in the most recent year this chapter presents data on (i.e. 2019) are not included.

Presentation of small numbers by NHS organisation

Within figures showing findings by NHS organisation, percentages are not presented for those NHS organisations with less than 10 patients within the patient group of interest, over the six-year period.

3.2. Overview of data completeness

The type of treatment offered to patients with breast cancer is influenced by the characteristics of their cancer (molecular markers, grade and stage at diagnosis), patient characteristics (general health and fitness) and patient preference. The recording of this information in national routine cancer datasets is therefore vital to understand patterns of care across NHS organisations.

Figure 3.2.1 shows the availability of a selection of core data items, for women diagnosed each year from 2014 to 2019, by age at diagnosis and country of diagnosis. Largely, data have tended to be more complete for younger women (aged 50–69 years) over this time period. Data were available for women diagnosed in Wales in 2020 and are included within Figure 3.2.1 and demonstrate continued improvements for Wales' data completeness in many areas.

Completeness of the following data items has improved over the audit period:

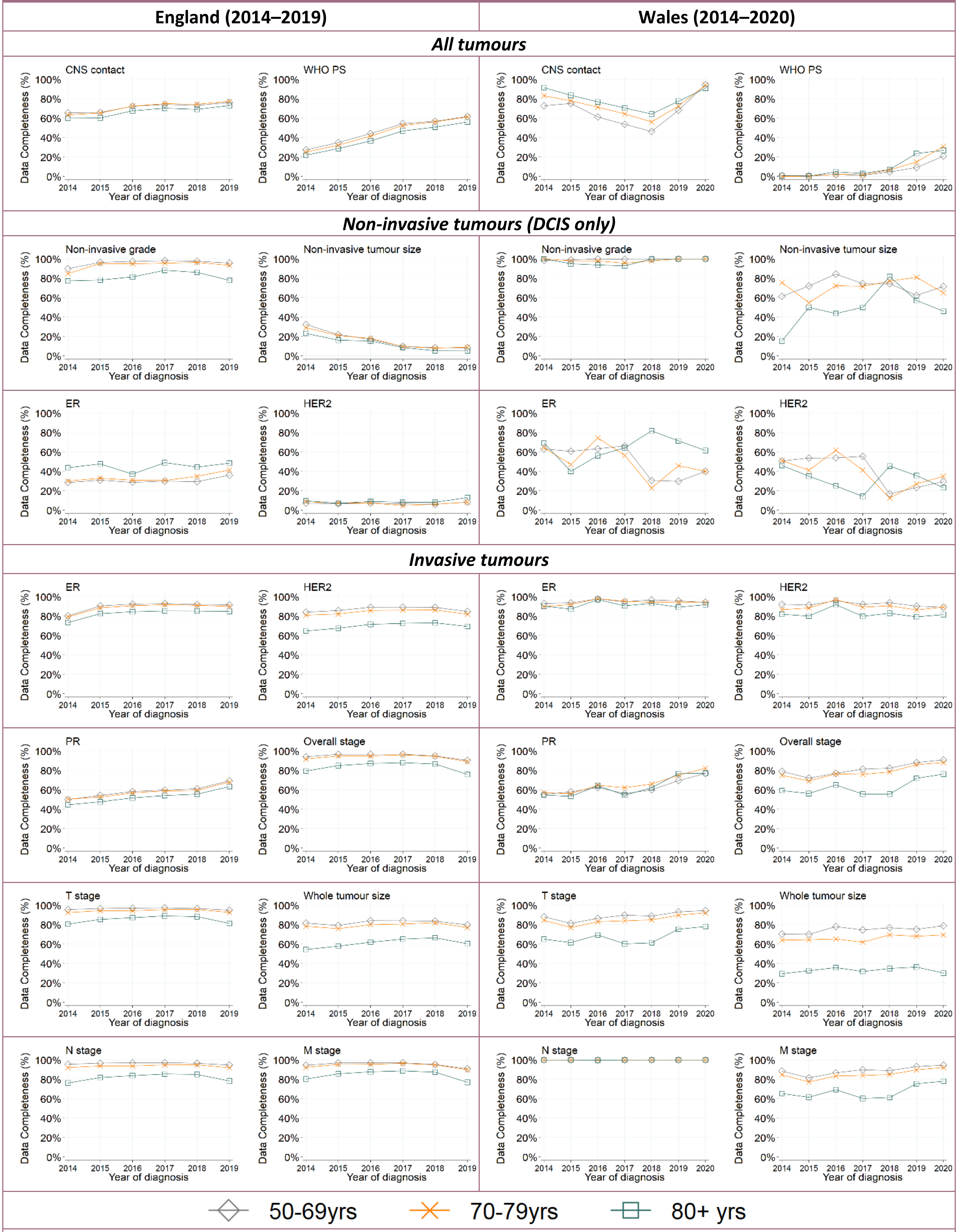
- CNS contact (overall 65% in 2014 to 76% in 2019).
- WHO performance status (overall 34% in 2014 to 65% in 2019).

Further work is needed to improve the completeness of key data items within NCRAS and Canisc, and this will enable future breast cancer audits to more accurately report on patterns of care.

The NABCOP website provides a selection of resources for NHS organisations across England and Wales to use to review their levels of data completeness (https://www.nabcop.org.uk/resources), including:

- The NHS organisation data viewer, which contains a full list of the NHS organisations with data provided for analysis and NHS organisation-level completeness of key NABCOP data items.
- A guide to improving data completeness, which contains information on how trusts in England can access CancerStats to interrogate their COSD returns in real time, as well as information on the national processes within Wales to aid local health boards to improve their data returns.

Figure 3.2.1. Availability of core data items over the audit period in England and Wales, by age at diagnosis



Notes: *Cancer Registration data were available for women diagnosed in Wales in 2020 and are included, and demonstrate continued improvements for Wales' data completeness in many areas. Cancer Registration data were not available for women diagnosed in England in 2020.*

WHO performance status reported within two months of diagnosis and prior to primary treatment starting.

For patients diagnosed in Wales overall stage is determined from the reported T, N, M stage components within the data provided.

N stage completeness based on reported N stage, augmented with details from reported number of malignant nodes and determined to be N0 where nodal stage still missing but the reported diagnosis code is DCIS. For M stage a recording of 'MX' within the data received is interpreted as intentionally unmeasured and not counted as missing.

Data completeness for invasive grade is not shown as this is nearly 100% across the audit period for England and Wales.

3.3. The NABCOP population

The cohort presented in this chapter includes women diagnosed with breast cancer in England and Wales between January 2014 and December 2019, and captures the care received by patients newly diagnosed with a single primary breast cancer, with or without distant metastatic disease. Details of how the cohort of patients were prepared for analysis can be found in **Appendix 3**.

An overview of the patient and tumour characteristics of women newly diagnosed with breast cancer across the six-year period is provided in **Table 3.3.1**, subdivided by age, type of tumour and disease stage. In total, there were 224,049 women diagnosed with breast cancer of all stages between 2014 and 2019:

- 61% were aged 50–69 years;
- 39% were aged 70+ years (the sum of 22% 70–79 years and 17% 80+ years).

The cohort was predominantly of white ethnicity, where this information was reported (England only; data on ethnicity available for 94% of patients). The percentage of white ethnicity rose as age at diagnosis increased.

Among all breast cancer groups (defined by stage), where information was recorded, as age at diagnosis increased women were more likely to have poorer levels of fitness (measured by WHO performance status, Charlson Comorbidity Index and SCARF [frailty] index).

DCIS

Among women aged 50–69 years, 14% were diagnosed with DCIS. This decreased to 8% in women aged 70–79 years and 3% among women aged 80 years and over. Differences in DCIS tumour characteristics, by age at diagnosis, included lower reported tumour grade and larger reported tumour size as age increased (**Table 3.3.1**). Around 1 in 5 women diagnosed with DCIS were reported to have had surgery to assess their lymph node status.

Invasive Breast Cancer

For women aged 50–79 years with invasive breast cancer, age did not affect the proportional distribution of many key tumour features (**Table 3.3.1**):

- Nodal status;
- Tumour grade: tumours tended to be predominantly grade 2;
- Similar percentages of women had ER positive tumours, where reported;
- Similar percentages of women had HER2 negative tumours, where reported.

The percentage of women aged 50–79 years with T1 tumours, where reported, tended to decrease with increased age at diagnosis.

Route to diagnosis

Table 3.3.1 shows the route to diagnosis for women aged 50 years and over diagnosed in England and Wales between 2014 and 2019, by breast cancer group (defined by stage) and age at diagnosis. Route to diagnosis was strongly influenced by age and was related to disease stage at diagnosis.

Among women diagnosed with DCIS those aged 50–69 years were more likely to be diagnosed via the NHS screening programme (87%), whilst women aged 80+ years were more likely to be diagnosed via referral from their GP (72%). Among women aged 70–79 year, 28% were diagnosed via screening (67% via GP referral). Rates of emergency presentation were low for all age groups (<1%).

Among women diagnosed with early invasive breast cancer similar patterns of referral were seen as described above for women diagnosed with DCIS.

Among women newly diagnosed with metastatic breast cancer the percentages diagnosed following GP presentation were similar across the age groups. As age at diagnosis increased women were more likely to have been diagnosed following referral from other specialities (19–26%) or after emergency presentation (6–12%). As would be expected, very few women aged 70–79 years (4%) were diagnosed following referral from the screening programme, in contrast to 34% among women EIBC, and 0% of women aged 80+ years were diagnosed via this route.

Table 3.3.1. Patient and tumour characteristics, and treatment received, for women aged 50 years and over newly diagnosed with breast cancer between January 2014 and December 2019, split by breast cancer group and age at diagnosis

	DCIS (n = 23,901)			Early invasive (n = 165,118)			Metastatic (n = 9,642)		
Characteristic at diagnosis	50–69 years	70–79 years	80+ years	50–69 years	70–79 years	80+ years	50–69 years	70–79 years	80+ years
Number of women	18693 (78%)	3910 (16%)	1298 (5%)	102511 (62%)	37347 (23%)	25260 (15%)	3991 (41%)	2791 (29%)	2860 (30%)
% screen detected cancer	15689 (84%)	2512 (64%)	193 (15%)	59662 (58%)	12160 (33%)	1089 (4%)	501 (13%)	95 (3%)	9 (0%)
Country of diagnosis									
England	17385	3636	1210	97106	35289	24150	3867	2704	2765
Wales	1308	274	88	5405	2058	1110	124	87	95
Year of diagnosis – number of women diagnosed									
2014	3022	540	198	16527	5814	4108	645	473	497
2015	2896	576	217	17106	5870	4246	704	466	490
2016	3109	545	172	17449	5835	4143	674	444	499
2017	3065	617	210	17278	6194	4200	674	486	523
2018	3169	852	256	17174	7269	4433	686	468	456
2019	3432	780	245	16977	6365	4130	608	454	395
Route to diagnosis *(Core Indicator #1)*									
% with route reported	*97%*	*96%*	*90%*	*97%*	*96%*	*94%*	*89%*	*87%*	*80%*
GP presentation	11%	28%	72%	37%	60%	85%	59%	62%	59%
NHS screening programme	87%	67%	17%	60%	34%	5%	14%	4%	0%
Referral from other specialties	2%	4%	10%	3%	5%	8%	19%	23%	26%
After emergency presentation	0%	0%	1%	0%	0%	1%	6%	8%	12%
Other	0%	0%	1%	0%	1%	1%	2%	3%	2%
Ethnicity									
% with ethnicity reported	*84%*	*87%*	*89%*	*89%*	*90%*	*92%*	*91%*	*90%*	*90%*
White	89%	93%	95%	92%	95%	96%	89%	95%	96%
Mixed	1%	0%	0%	1%	0%	0%	1%	0%	0%
Asian	5%	4%	3%	4%	2%	2%	5%	3%	1%
Black	3%	2%	2%	2%	1%	1%	3%	2%	1%
Other	2%	1%	0%	2%	1%	1%	2%	1%	1%
Index of multiple deprivation									
1 Most deprived	15%	12%	15%	15%	14%	15%	19%	17%	16%
2	17%	17%	17%	18%	17%	18%	20%	21%	19%
3	21%	20%	20%	21%	21%	21%	20%	21%	21%
4	23%	23%	22%	23%	23%	22%	20%	21%	21%
5 Least deprived	25%	27%	25%	23%	25%	24%	21%	20%	23%

Table 3.3.1. *…continued from previous page*

	DCIS (n = 23,901)			Early invasive (n = 165,118)			Metastatic (n = 9,642)		
	50–69 years	70–79 years	80+ years	50–69 years	70–79 years	80+ years	50–69 years	70–79 years	80+ years
WHO performance status[a]									
% with WHO PS reported	*32%*	*32%*	*28%*	*47%*	*46%*	*43%*	*50%*	*41%*	*31%*
0	93%	80%	48%	90%	72%	40%	65%	40%	25%
1	6%	15%	27%	8%	20%	29%	20%	31%	26%
2+	1%	5%	25%	2%	8%	31%	16%	29%	50%
Charlson Comorbidity Index (CCI)									
% with CCI calculated	*97%*	*98%*	*96%*	*98%*	*98%*	*95%*	*97%*	*97%*	*96%*
0	90%	80%	64%	91%	81%	65%	82%	65%	53%
1	8%	14%	22%	7%	12%	18%	13%	20%	23%
2+	2%	6%	14%	2%	7%	17%	6%	15%	24%
Secondary Care Administrative Records Frailty (SCARF) Index									
% with SCARF index calculated	*97%*	*98%*	*96%*	*98%*	*98%*	*95%*	*97%*	*97%*	*96%*
Fit	85%	70%	48%	86%	71%	52%	71%	51%	34%
Mild–moderate frailty	14%	26%	38%	13%	24%	32%	26%	38%	41%
Severe frailty	1%	4%	14%	1%	4%	16%	3%	11%	24%
Grade of disease – DCIS | Invasive									
% with grade reported	*96%*	*94%*	*83%*	*100%*	*100%*	*100%*	*100%*	*99%*	*100%*
Low | 1	10%	11%	17%	19%	15%	13%	4%	5%	5%
Intermediate | 2	30%	35%	40%	54%	57%	59%	46%	47%	46%
High | 3	60%	54%	43%	27%	27%	24%	39%	34%	27%
Not assessable	0%	0%	0%	1%	1%	4%	12%	15%	23%
Tumour size (cm)									
% with tumour size reported	*20%*	*19%*	*14%*	*87%*	*86%*	*73%*	*34%*	*34%*	*31%*
> 0.1 to 2	53%	52%	41%	65%	55%	40%	20%	15%	16%
> 2 to 5	34%	36%	42%	31%	40%	55%	55%	62%	60%
> 5	12%	12%	16%	4%	4%	5%	25%	23%	24%
Lymph node examination									
% with nodes examined	21%	23%	20%	83%	79%	44%	18%	13%	7%
Number of malignant lymph nodes (if examined)									
% with malignant nodes reported	*N/A*	*N/A*	*N/A*	*100%*	*100%*	*100%*	*98%*	*96%*	*97%*
0 malignant nodes	N/A	N/A	N/A	76%	74%	68%	15%	11%	13%
1–3 malignant nodes	N/A	N/A	N/A	21%	21%	25%	48%	49%	50%
4–9 malignant nodes	N/A	N/A	N/A	4%	5%	7%	21%	21%	18%
10+ malignant nodes	N/A	N/A	N/A	0%	0%	0%	16%	19%	19%

Note:

[a] *WHO performance status reported within two months of diagnosis and prior to primary treatment starting.*

Table 3.3.1. *…continued from previous page*	DCIS (n = 23,901)			Early invasive (n = 165,118)			Metastatic (n = 9,642)		
	50–69 years	70–79 years	80+ years	50–69 years	70–79 years	80+ years	50–69 years	70–79 years	80+ years
ER status *(Core Indicator #3)*									
% with ER status reported	*29%*	*33%*	*45%*	*92%*	*91%*	*88%*	*79%*	*77%*	*70%*
Positive	81%	82%	85%	87%	87%	87%	78%	78%	80%
Negative	19%	18%	15%	13%	13%	13%	22%	22%	20%
HER2 status *(Core Indicator #3)*									
% with HER2 status reported	*4%*	*5%*	*8%*	*89%*	*87%*	*75%*	*75%*	*72%*	*57%*
Positive	33%	18%	15%	12%	10%	9%	24%	18%	15%
Negative	58%	72%	78%	79%	81%	80%	67%	72%	74%
Borderline	9%	10%	8%	9%	9%	11%	9%	10%	11%
CNS contact *(Core Indicator #5)*									
% with CNS contact reported	*58%*	*57%*	*51%*	*74%*	*75%*	*72%*	*63%*	*62%*	*53%*
Yes	91%	92%	91%	92%	92%	90%	86%	84%	81%
No	1%	1%	1%	1%	1%	2%	2%	3%	5%
Unknown	8%	7%	8%	7%	7%	8%	12%	13%	14%

3.4. Triple diagnostic assessment in a single visit

This indicator describes the percentage of patients aged 50 years and over who were calculated to have received triple diagnostic assessment (TDA) in a single visit. This is defined as when the mammogram imaging date (or date first seen) and the biopsy or cytology date were reported and were the same. No single data item recording TDA in a single visit was available for this group of women (diagnosed prior to the implementation of COSD Version 9.0 in 2020).

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

What is the evidence base for this process?

Triple diagnostic assessment in a single visit is associated with higher diagnostic accuracy and high levels of patient satisfaction, as well as being cost effective [NICE 2002].

What does the guidance say?

Since 2002, it has been regarded as best practice for patients with suspected breast cancer to undergo a 'triple diagnostic assessment' at their first clinic visit. This comprises the following three elements, as required:

- Clinical assessment –a full history is taken and a physical examination performed.
- Imaging – imaging assessment may consist of mammography and/or ultrasound, depending on certain patient characteristics and symptoms at presentation. The axilla may also be imaged.
- Histopathology assessment – tissue biopsies are obtained from areas in the breast (± axilla) that are suspicious of cancer.

  '*Giving people with suspected breast cancer the triple diagnostic assessment at a single hospital visit will help to ensure rapid diagnosis. It will also help to reduce the anxiety and stress associated with multiple visits for different parts of the triple diagnostic assessment.'* [NICE 2016]

Numerator *(Core Ind #2)*	Women receiving triple diagnostic assessment in a single visit
Denominator	Women with non-screen detected early invasive breast cancer
Country	England & Wales
Timeframe	*Women diagnosed in 2019*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with non-screen detected EIBC in 2019, 69% were calculated to have received triple diagnostic assessment (TDA) in a single visit. There was little difference by age at diagnosis:

- 68% among women aged 50–69 years;
- 70% among women aged 70+ years;
  - 69% for women aged 70–79 years;
  - 71% for women aged 80+ years.

There was no difference in the estimates according to country of diagnosis:

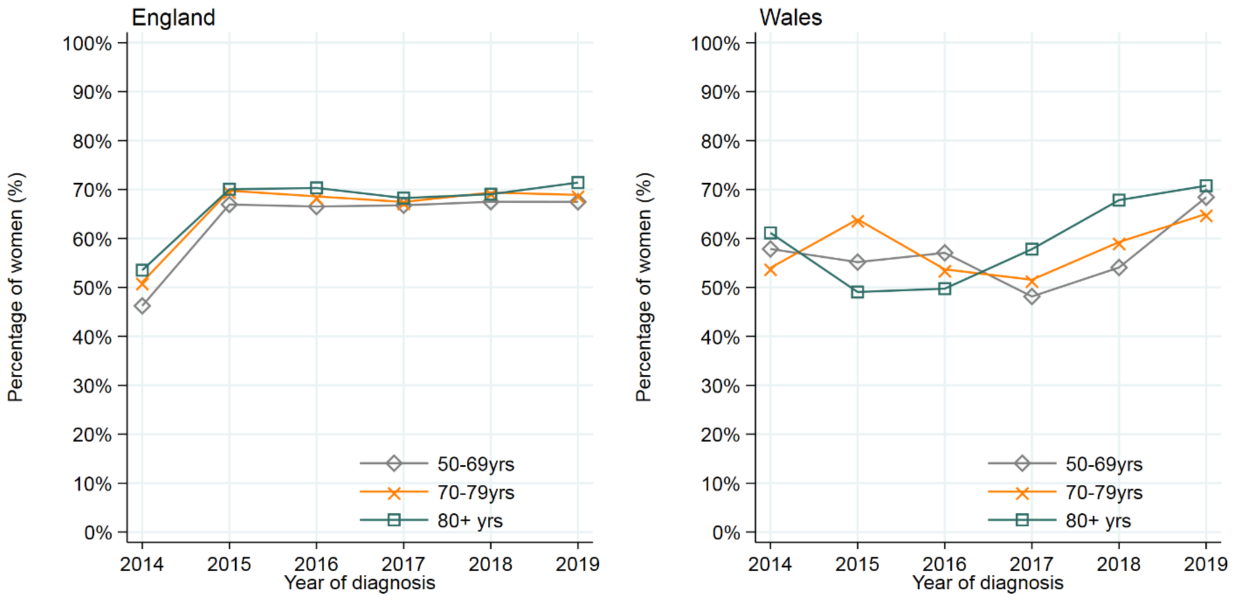
- 68% for women diagnosed in Wales;
- 69% for women diagnosed in England.

Looking at the change in percentage of women estimated as receiving TDA in a single visit over the audit period (2014–2019) there has been an improvement over time for Wales (from 58% in 2014), whilst for England performance has remained at around 69% since 2015 (**Figure 3.4.1**).

There was marked variation by NHS organisation with 37% of NHS organisations having less than 70% of patients estimated as receiving TDA in a single visit based on our criteria (**Figure 3.4.2**).

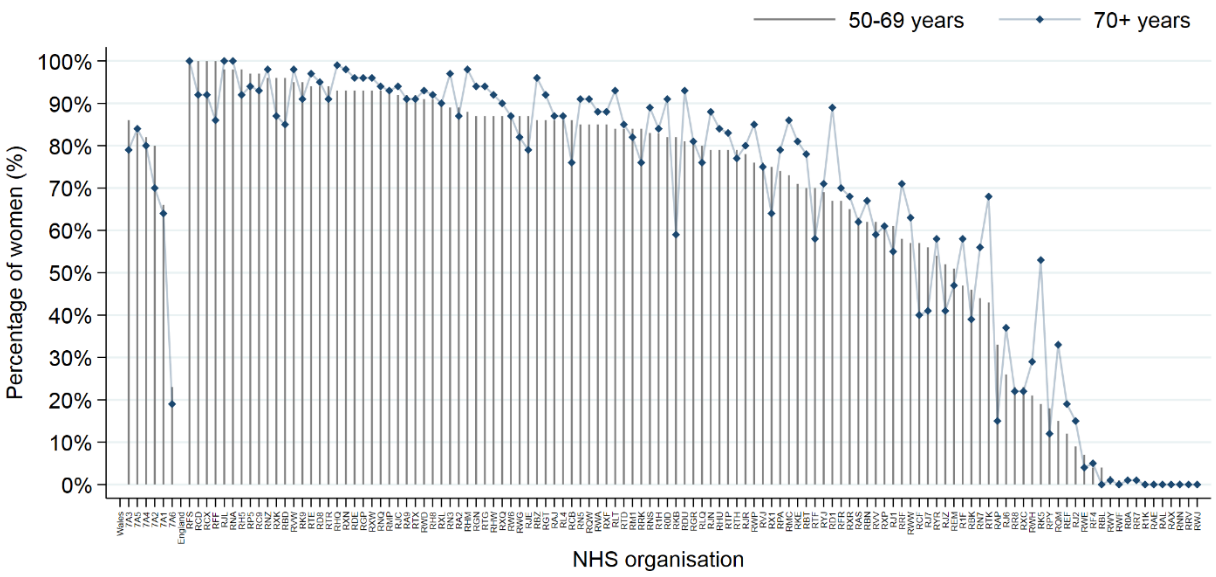
For 8% of women a mammogram and/or biopsy date were missing; in 71% of such cases the biopsy date was missing.

Figure 3.4.1. Receipt of triple diagnostic assessment in a single visit among women with non-screen detected early invasive breast cancer in England and Wales, by age at diagnosis and year of diagnosis



The provision of timely triple diagnostic assessment is a basic tenet of modern breast cancer care and compliance should be accurately recorded. Confirmation as to whether triple diagnostic assessment happened in a single visit was therefore added to COSD Version 9.0, and collected from September 2020 for women diagnosed in an NHS organisation in England. This data item should be available for women diagnosed with breast cancer from 2020 onwards and will be available for analysis within future breast cancer audits.

Figure 3.4.2. Estimated receipt of triple diagnostic assessment in a single visit among women with non-screen detected early invasive breast cancer diagnosed in 2019, by diagnosing NHS organisation and age at diagnosis



Note: *Within each age group, NHS organisations with <10 patients with non-screen detected early invasive breast cancer diagnosed in 2019 are not shown. Welsh local health boards are shown on the left-hand side of the figure.*

3.5. Involvement of a breast clinical nurse specialist or key worker

For women diagnosed with breast cancer, NICE guidance (NG101) states:
'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 2009a, NICE 2018a].

Numerator *(Core Ind #5)*	Women seen by a breast clinical nurse specialist/named key worker
Denominator	All women
Country	England & Wales
Timeframe	*Women diagnosed in 2019*

What do we see within this audit group?

- Among women aged 50 years and over diagnosed in 2019, data on clinical nurse specialist (CNS) contact were available for 76%.
- Data completeness, among women diagnosed in 2019, differed by country of diagnosis:
  - 71% of women diagnosed in Wales;
  - 76% of women diagnosed in England.

Completeness increased with age among women diagnosed in Wales (68%; 73% and 78% for age groups 50–69; 70–79 and 80+ years respectively).

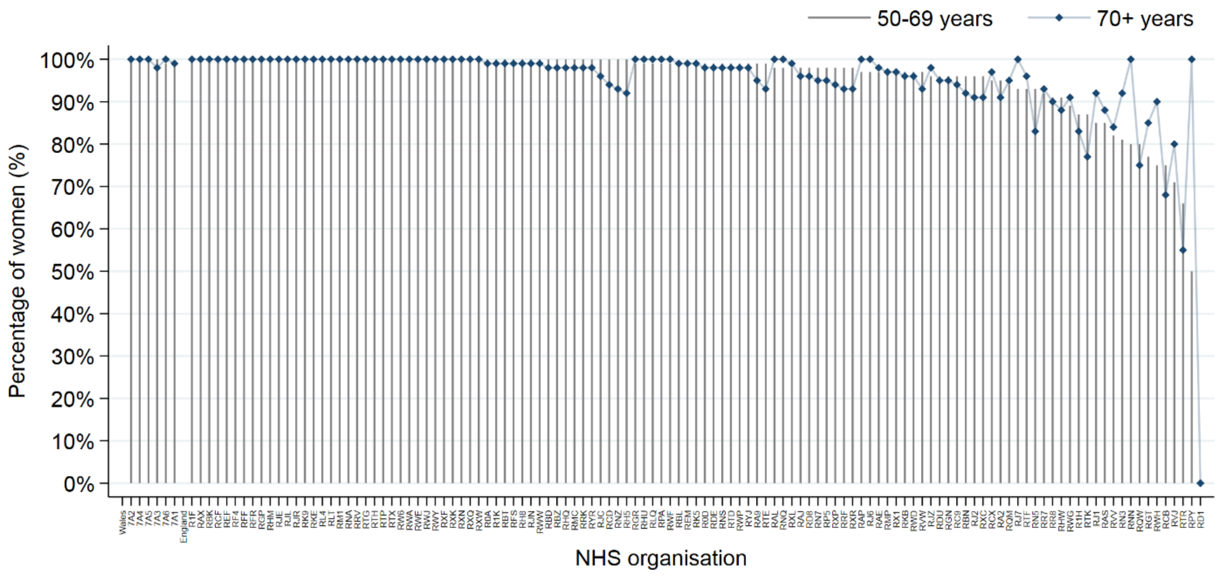
Among women aged 50 years and over diagnosed in 2019, for whom data existed, 96% had contact with a CNS. Rates of contact were similar by age and by country of diagnosis:

- 99% of women diagnosed in Wales;
- 96% of women diagnosed in England.

Among women aged 50 years and over diagnosed in 2019, where data existed, there was variation across a proportion of NHS organisations in the percentage of women with CNS contact recorded as "Yes" (Figure 3.5.1).

The percentage of women recorded as having contact with a CNS has improved over the audit period (2014–2019) among women diagnosed in England (from 78% in 2014), whilst for Wales contact with a CNS has been consistently high at nearly 100% since 2014.

Figure 3.5.1. Percentage of women diagnosed in 2019 in contact with a breast clinical nurse specialist, by diagnosing NHS organisation and age at diagnosis (where data existed)



Note: *Within each age group, NHS organisations with <10 patients diagnosed in 2019 and with data on CNS contact are not shown. Welsh local health boards are shown on the left-hand side of the figure.*

3.6. Treatment following a new diagnosis of ductal carcinoma in situ

This section describes the use of primary surgery and adjuvant radiotherapy for those women aged 50 years and over diagnosed with ductal carcinoma in situ (DCIS). These women account for approximately 10% of the patients included within the NABCOP cohort.

DCIS is typically diagnosed among women aged between 50 and <71 years as a consequence of their participation in population-level breast screening programmes and the use of digital mammography [Kerlikowske 2010]. The AgeX trial in England aims to evaluate the benefit of extending the screening age beyond 70 years and completed recruitment in May 2020; the first results are expected in 2026.

Surgical resection is the most important treatment for women with DCIS. Women may have either a mastectomy or breast-conserving surgery, depending on the disease extent and patient preference.

Surgical treatment for DCIS

Numerator *(Core Ind #7)*	Women who had mastectomy or breast-conserving surgery within 12m of diagnosis
Denominator	Women diagnosed with DCIS
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

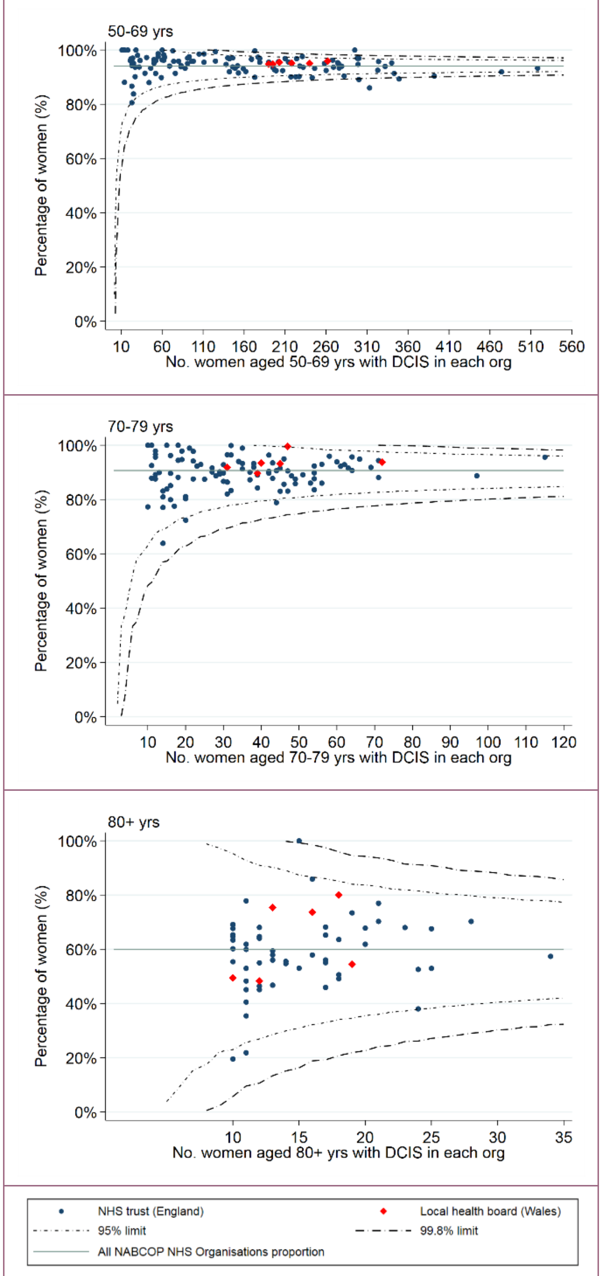
Among women aged 50 years and over diagnosed with DCIS from 2014–2019, 92% received surgery within 12 months of diagnosis. The percentage decreased according to age at diagnosis:

- 94% among women aged 50–69 years;
- 83% among women aged 70+ years;
  - 91% for women aged 70–79 years;
  - 60% for women aged 80+ years.

Rates of surgery differed by country of diagnosis: 95% among patients diagnosed in Wales; 92% among patients diagnosed in England.

There was similarity in surgical rates among women aged 50–69 years, but increasing variation between NHS organisations in the rate of surgery as age increased (Figure 3.6.1). The rate of surgery was not associated with the number of women diagnosed with DCIS in each NHS organisation (unit volume).

Figure 3.6.1. Risk-adjusted rates of surgery for DCIS across NHS organisations, by age at diagnosis



Note: *DCIS = ductal carcinoma in situ. Yrs = years.*
Risk-adjusted percentages are from logistic regression models, adjusted for influential patient and tumour characteristics.
Within each age group, NHS organisations with <10 patients diagnosed with DCIS are not shown.

In considering the percentage of women receiving surgery for DCIS over the audit period (2014–2019), among older women (80+ years) who were fit or had mild-moderate frailty, there has been an increase in the rate of surgery from 62% in 2014 to 72% in 2019. This pattern was observed for both England and Wales. Rates were high among women aged 50–69 and 70–79 years, diagnosed across 2014–2019, at 96% and 93% respectively.

Radiotherapy treatment for DCIS

For women who have surgery, NICE guidance (NG101) states:
'Consider adjuvant radiotherapy for women with DCIS following breast-conserving surgery with clear margins, and discuss with them the possible benefits and risks of radiotherapy.' [NICE 2018a]

Recommendations on the management of older patients with DCIS issued by the International Society of Geriatric Oncology and European Society of Breast Cancer Specialists support this statement, and note that there is a lack of strong clinical trial-based evidence to support DCIS treatment decisions in older women [Biganzoli *et al* 2021].

Numerator *(Core Ind #11)*	Women who received adjuvant radiotherapy
Denominator	Women who had breast-conserving surgery for DCIS
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with DCIS from 2014–2019 and who received breast-conserving surgery (BCS) 58% went on to receive radiotherapy. The percentage decreased with age at diagnosis:

- 60% among women aged 50–69 years;
- 46% among women aged 70+ years;
  - 50% of women aged 70–79 years;
  - 27% of women aged 80+ years.

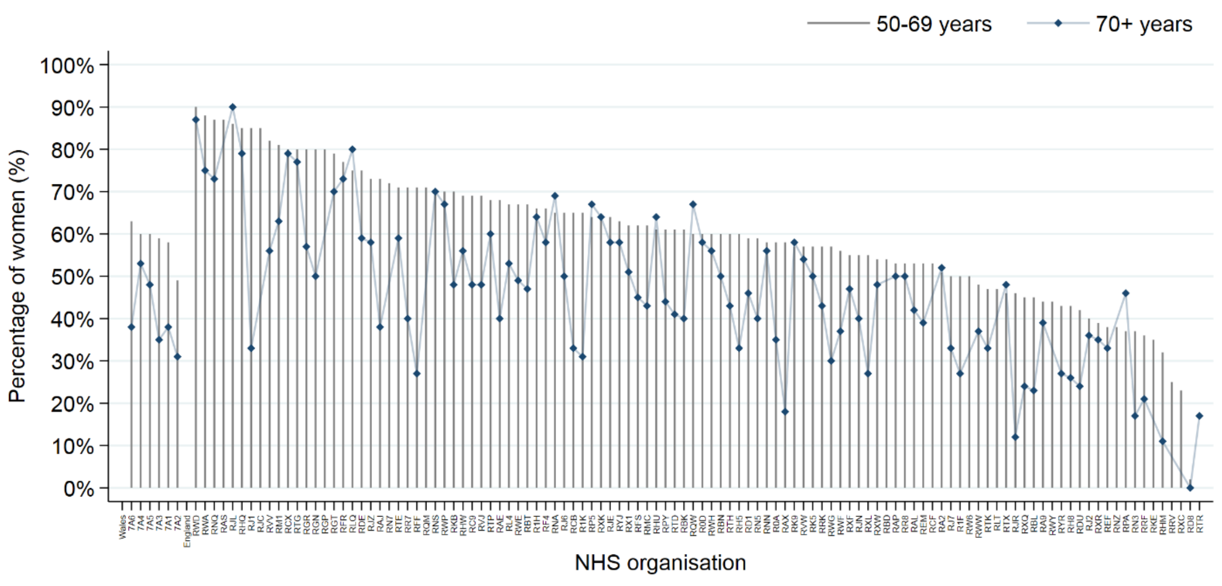
Use of radiotherapy was greater among women with high-grade DCIS, at 78%, but a similar pattern by age at diagnosis was seen:

- 80% among women aged 50–69 years;
- 68% among women aged 70+ years;
  - 72% of women aged 70–79 years;
  - 43% of women aged 80+ years.

There was marked practice variation between NHS organisations in the use of radiotherapy following BCS for DCIS, as seen in **Figure 3.6.2**. This may reflect the uncertainty concerning which patient subgroups derive the most benefit from radiotherapy and differing perceptions of the value of this treatment.

There was no change in the percentage of women receiving radiotherapy following BCS for DCIS over the audit period (2014–2019), regardless of age at diagnosis.

Figure 3.6.2. Observed percentage of women with DCIS receiving radiotherapy after breast-conserving surgery, by diagnosing NHS organisation and age at diagnosis



Note: *Within each age group, NHS organisations with <10 patients having breast-conserving surgery for DCIS are not shown. Welsh local health boards are shown on the left-hand side of the figure.*

3.7. Treatment following a new diagnosis of early invasive breast cancer

This section focuses on women aged 50 years and over diagnosed with early invasive breast cancer (EIBC), defined as stage 1–3A, and their use of primary surgery, adjuvant radiotherapy and chemotherapy. Women with EIBC form three-quarters of the NABCOP patient cohort.

Surgical treatment for early invasive breast cancer

What does the guidance say?

Surgical resection is a central treatment for EIBC, with NICE guidance (NG101) recommending:

> *'Treat patients with early invasive breast cancer, irrespective of age, with surgery and appropriate systemic therapy, rather than endocrine therapy alone, unless significant comorbidity precludes surgery.'* [NICE 2018a]

Guidelines on the management of older patients with breast cancer issued by the International Society of Geriatric Oncology and European Society of Breast Cancer Specialists advise that 'Surgery remains the choice of primary treatment in the majority of older patients with early breast cancer.' [Biganzoli *et al* 2021].

What is the evidence base for treatment decisions?

Surgical excision, along with adjuvant therapies, is standard of care for most women diagnosed with EIBC. Although women with ER positive breast cancer are suitable for primary endocrine therapy, surgical excision in combination with systemic endocrine therapy is superior in the prevention of recurrence and improving survival, compared with primary endocrine therapy alone [Ward *et al* 2018].

Numerator *(Core Ind #7)*	Women who had mastectomy or breast-conserving surgery within 12m of diagnosis
Denominator	Women diagnosed with early invasive breast cancer
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with EIBC from 2014–2019, 89% received surgery within 12 months of diagnosis. The percentage decreased with age at diagnosis:

- 97% among women aged 50–69 years;
- 77% among women aged 70+ years;
  - 91% for women aged 70–79 years;
  - 55% for women aged 80+ years.

Rates of surgery differed by county of diagnosis: 93% among patients diagnosed in Wales; 89% among patients diagnosed in England.

The decrease in rates of surgery with increasing age at diagnosis was observed to be more marked for women with ER positive breast cancer aged 75 years and over (**Figure 3.7.1**).

Looking at the percentage of fit or mild-moderately frail women receiving surgery for EIBC over the audit period (2014–2019 there has been an increase in the rate of surgery among women aged 80+ years, from 62% in 2014 to 69% in 2019. This was primarily among women with ER positive EIBC (**Figure 3.7.2**).

The receipt of primary surgery among women varied with different levels of fitness and ER status (**Table 3.7.1** & **Figure 3.7.3**). As age at diagnosis increased, those with ER negative EIBC were more likely to receive surgery compared with those with ER positive cancer, regardless of fitness. However:

- Rates of surgery diminished as levels of fitness decreased;
- Overall, the reduction in the rate of surgery was much larger for older women with ER positive breast cancer.

There was variation across NHS organisations in the percentage of older women who received surgery for EIBC, according to ER status (**Figure 3.7.4**).

Figure 3.7.1. Observed receipt of surgery for women with early invasive breast cancer, by ER status, age at diagnosis (5-year age bands) and type of surgery

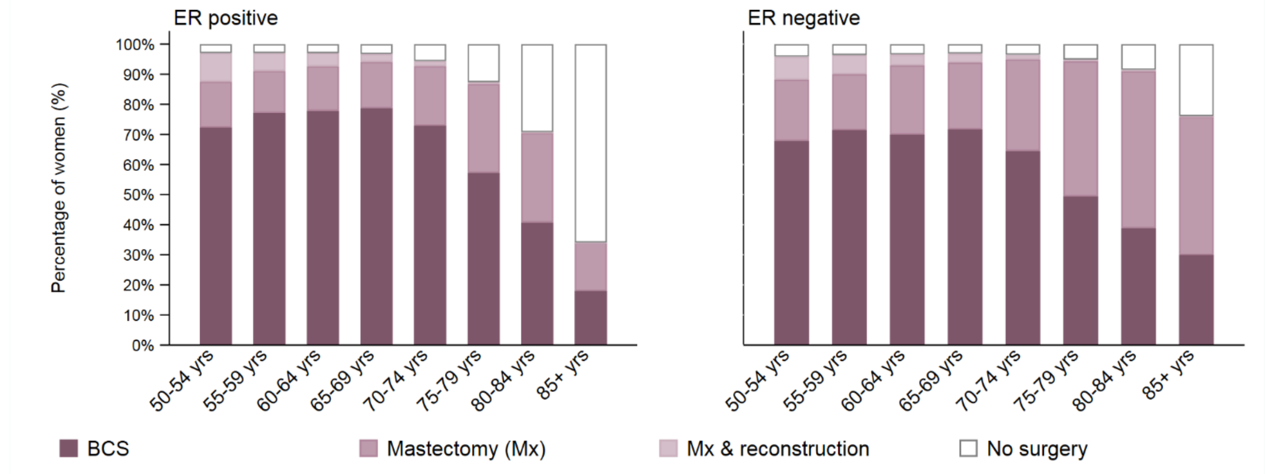


Figure 3.7.2. Receipt of surgery for EIBC over time, among fit or mild–moderately frail women, by ER status and age at diagnosis

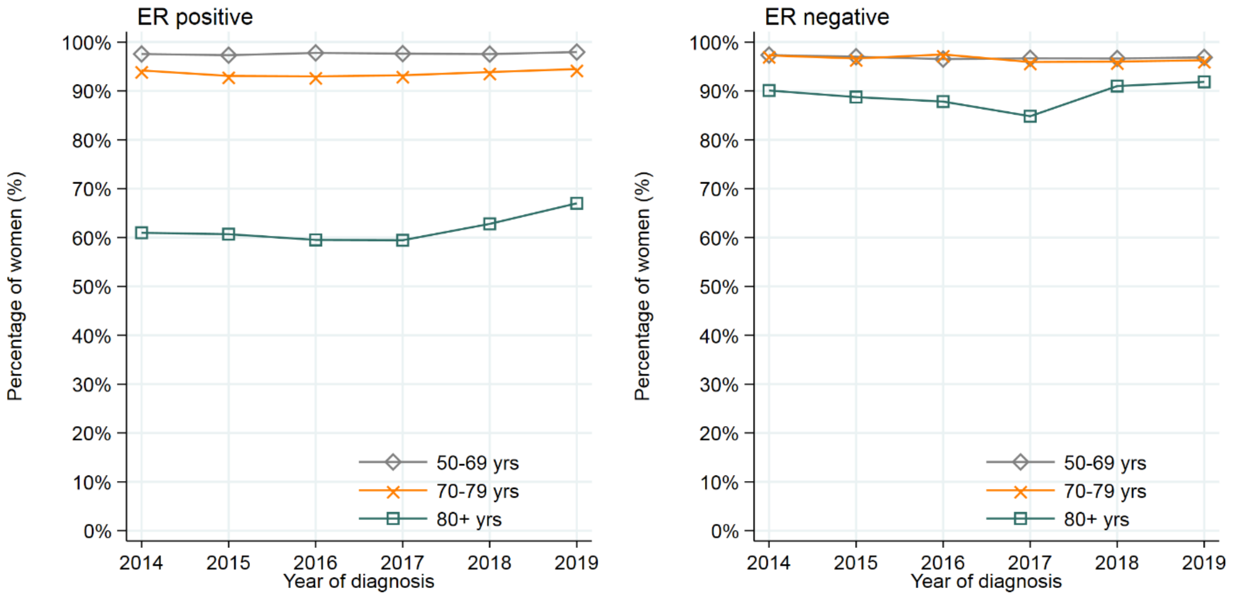
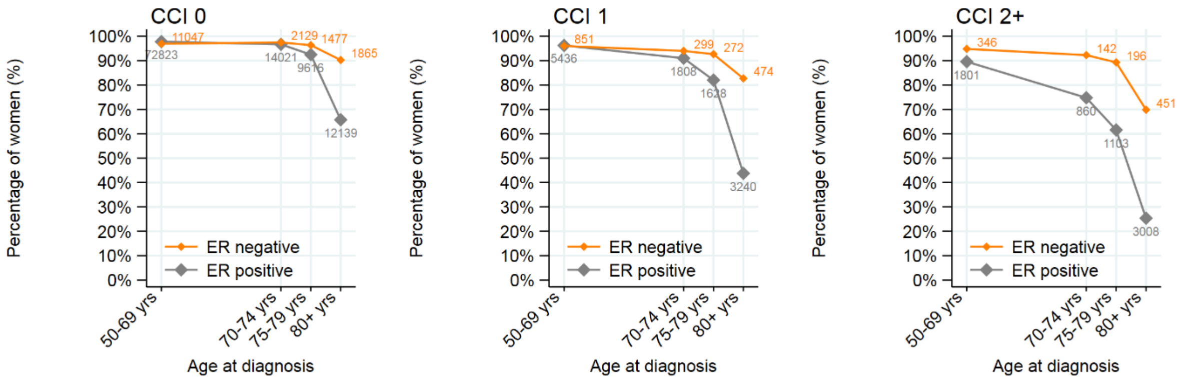
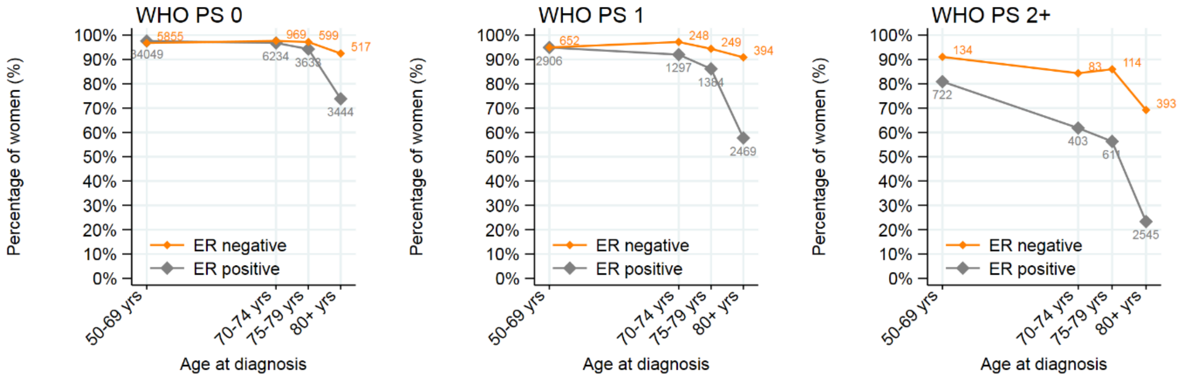


Figure 3.7.3. Impact of patient fitness on the likelihood of receiving surgery for early invasive breast cancer, as measured by three different metrics, by age at diagnosis and ER status

Charlson Comorbidity Index



WHO performance status



SCARF Index

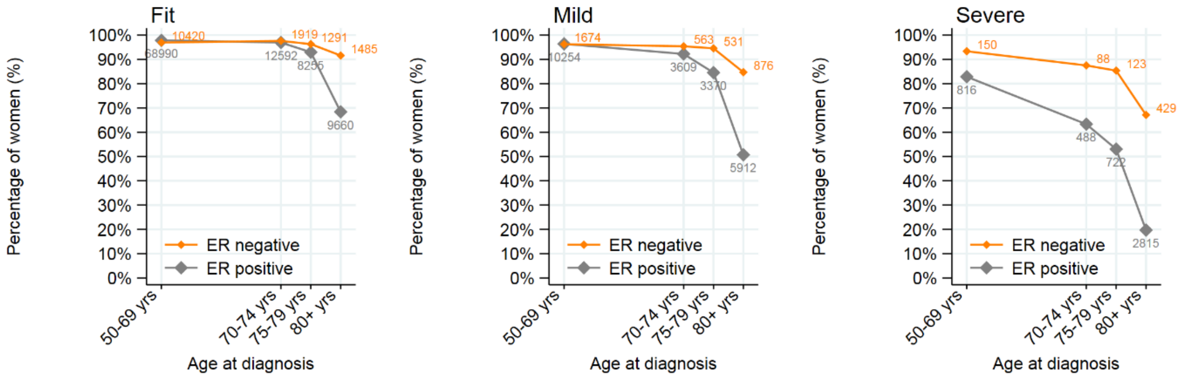
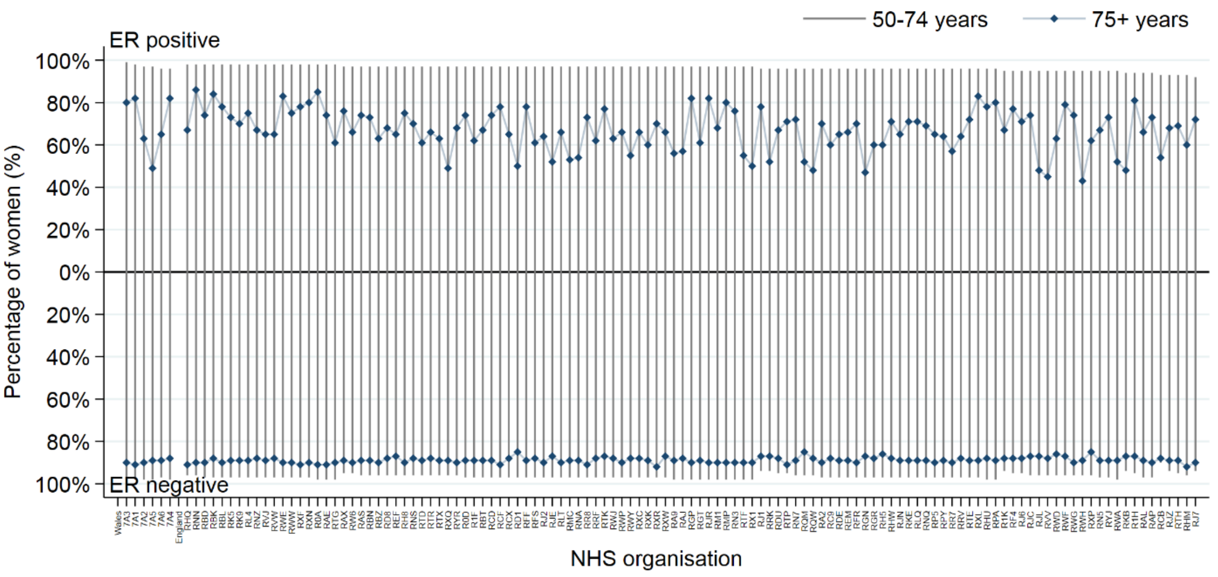


Table 3.7.1. Impact of patient fitness on the likelihood of receiving surgery for early invasive breast cancer, as measured by three different metrics, by ER status and age at diagnosis

Measure of fitness	ER positive						ER negative					
	50–69 years		70–79 years		80+ years		50–69 years		70–79 years		80+ years	
	Total no. of women	% surg	Total no. of women	% surg	Total no. of women	% surg	Total no. of women	% surg	Total no. of women	% surg	Total no. of women	% surg
All women	81649	97%	29501	91%	19338	53%	12395	96%	4560	96%	2846	84%
Charlson Comorbidity Index												
0	72863	98%	23644	95%	12142	66%	11047	97%	3606	97%	1865	90%
1	5441	96%	3438	87%	3242	44%	851	96%	571	93%	474	83%
2+	1802	90%	1963	67%	3010	25%	346	95%	338	91%	451	70%
Unknown	*1543*	*69%*	*456*	*44%*	*944*	*4%*	*151*	*66%*	*45*	*69%*	*56*	*20%*
WHO performance status												
0	34059	98%	9868	96%	3444	74%	5855	97%	1568	97%	517	92%
1	2911	95%	2681	89%	2469	58%	652	95%	497	96%	394	91%
2+	722	81%	1014	58%	2545	23%	134	91%	197	85%	393	69%
Unknown	*43957*	*97%*	*15938*	*91%*	*10880*	*52%*	*5754*	*96%*	*2298*	*96%*	*1542*	*84%*
SCARF Index												
Fit	69025	98%	20853	95%	9663	68%	10420	97%	3210	97%	1485	92%
Mild–moderate frailty	10264	96%	6982	89%	5914	51%	1674	96%	1094	95%	876	85%
Severe frailty	817	83%	1210	57%	2817	20%	150	93%	211	86%	429	67%
Unknown	*1543*	*69%*	*456*	*44%*	*944*	*4%*	*151*	*66%*	*45*	*69%*	*56*	*20%*

Note: *This table does not include the 14,608 women with no recorded/unknown ER status.*
% surg = percentage of women receiving surgery

Figure 3.7.4. Risk-adjusted percentage of women receiving primary surgical treatment for early invasive breast cancer, by diagnosing NHS organisation, age at diagnosis and ER status



Note: *ER = estrogen receptor;*
Risk-adjusted percentages are from random effects logistic regression model, adjusted for influential patient and tumour characteristics; NHS organisation included as a level.
Within each age and ER status group, NHS organisations with <10 patients diagnosed with early invasive breast cancer are not shown.
Welsh local health boards are shown on the left-hand side of the figure.

Radiotherapy treatment for early invasive breast cancer

The use of radiotherapy after surgery depends on the type of operation performed. Postoperative radiotherapy is recommended for the majority of women with early invasive breast cancer who receive breast-conserving surgery, whilst post-mastectomy radiotherapy is only recommended for women considered to be at moderate or high risk of recurrence.

What is the evidence base for treatment decisions?

Compared with breast-conserving surgery alone, the combination of breast-conserving surgery and postoperative radiotherapy has been shown to significantly reduce the risk of cancer recurrence within the affected breast and also decrease the risk of breast cancer death [Early Breast Cancer Trialists' Collaborative Group 2011].

What does the guidance say?

NICE guidance (NG101) states:

> *'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]

Guidelines recommend that postoperative external beam radiotherapy should be considered for all patients undergoing breast-conserving surgery for early invasive breast cancer. Clinical trials have demonstrated that omission of radiotherapy after breast-conserving surgery in low risk (e.g. N0, T0-3, ER+, HER2-, G1/2) patients aged 65+ years is reasonable and does not impact 10 year overall survival [Kunkler *et al* 2015]. This is reflected in the Royal College of Radiologists' (RCR) Consensus Statements on Breast Radiotherapy and in NICE guidance (NG101) [RCR November 2016, NICE 2018a].

The use of radiotherapy after mastectomy is recommended for patients with invasive breast cancer who are considered to have a moderate or high risk of recurrence (N+ or T3–4 N0) [NICE 2018a].

Numerator *(Core Ind #11)*	Women receiving radiotherapy to the: 1. breast after breast-conserving surgery 2. chest wall after mastectomy
Denominator	Women diagnosed with EIBC who had surgery
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with EIBC from 2014–2019 who had breast-conserving surgery, 87% were recorded to have received postoperative radiotherapy. The percentage decreased with age:

- 90% among women aged 50–69 years;
- 81% among women aged 70+ years;
  - 84% for women aged 70–79 years;
  - 71% for women aged 80+ years.

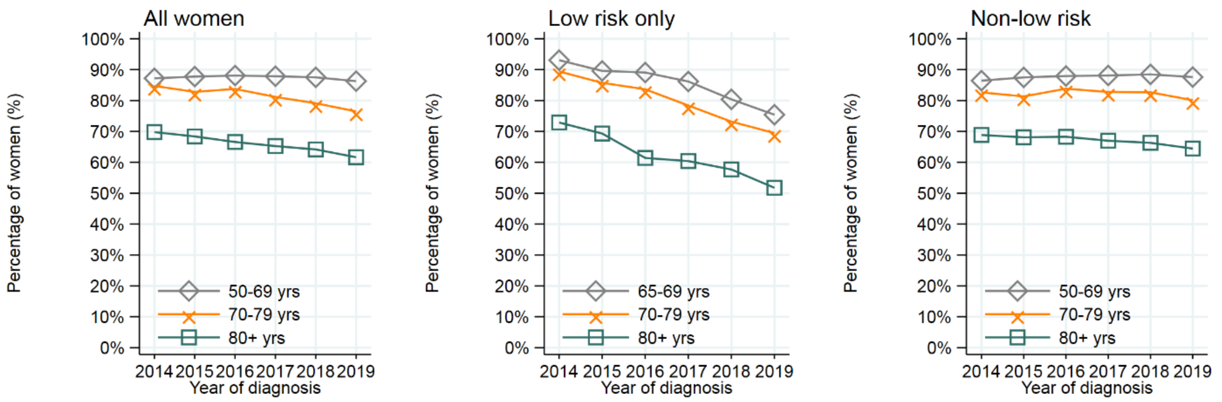
Among women aged 50 years and over diagnosed with high-risk (N+ or T3 N0) EIBC receiving mastectomy, 66% received post-mastectomy radiotherapy. The percentage decreased with age:

- 69% among women aged 50–69 years;
- 61% among women aged 70+ years;
  - 65% for women aged 70–79 years;
  - 54% for women aged 80+ years.

Over the audit period (2014–2019), there has been a reduction in the use of postoperative radiotherapy among women with low risk EIBC, from 89% in 2014 to 70% in 2019 (**Figure 3.7.5**). This may have been influenced by the publication of the PRIME II trial (in 2015) and NICE guidance on omission of radiotherapy in patients at low risk of recurrence [Kunkler *et al* 2015, NICE 2018a].

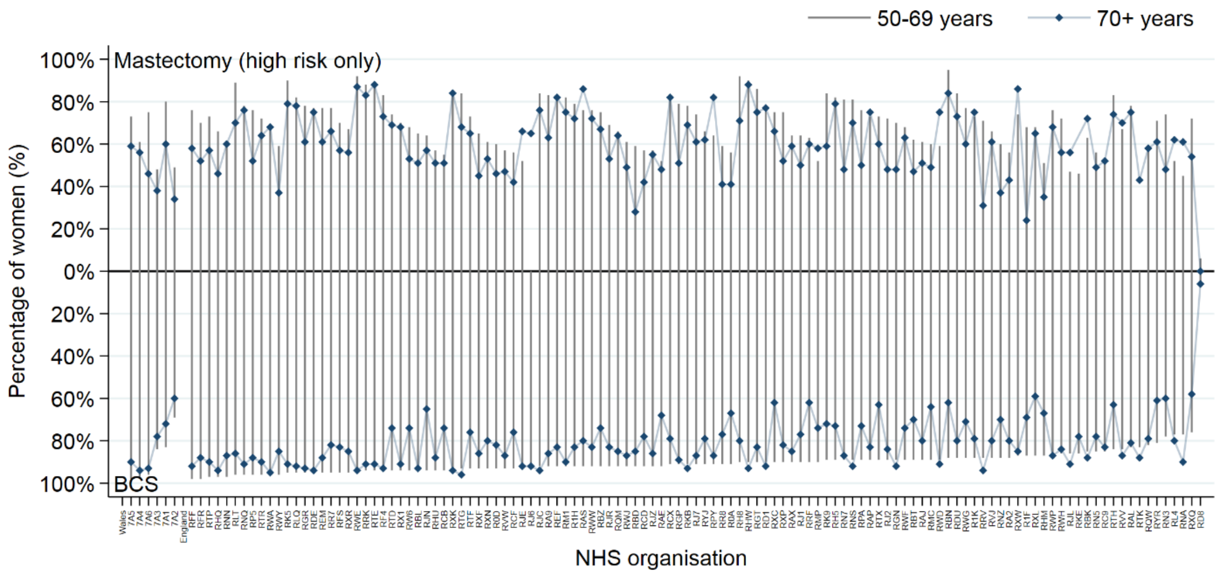
There was variation by NHS organisation in use of radiotherapy regardless of age (**Figure 3.7.6**). This was most marked for women whose primary surgery was mastectomy. Additionally, rates of radiotherapy after BCS were high for women aged 50–69 years, whereas there was large variation across NHS organisations for older women.

Figure 3.7.5. Observed percentage of women with early invasive breast cancer receiving radiotherapy over time, by age at diagnosis



Note: *RT = radiotherapy.*
"All women" includes post-mastectomy radiotherapy in women with node-positive EIBC or node-negative T3 EIBC and women having breast-conserving surgery.
Low risk group defined based on PRIME trial inclusion criteria: breast-conserving surgery, age at diagnosis >= 65yrs, T≤30mm, no nodal involvement, ER positive, HER2 negative, Grade 1 or 2. Receipt of endocrine therapy was not accounted for.

Figure 3.7.6. Observed percentage of women with early invasive breast cancer receiving radiotherapy after breast-conserving surgery or mastectomy (high-risk only), by diagnosing NHS organisation and age at diagnosis



Note: *BCS = Breast-conserving surgery.*
Post-mastectomy radiotherapy in women with node-positive early invasive breast cancer or node-negative T3 early invasive breast cancer.
Within each age group and type of surgery, NHS organisations with <10 patients having surgery for early invasive breast cancer are not shown.
Welsh local health boards are shown on the left-hand side of the figure.

Chemotherapy treatment for early invasive breast cancer

Adjuvant chemotherapy is a well-established treatment for early breast cancer, with evidence of its effectiveness from multiple randomised trials and meta-analyses [Early Breast Cancer Trialists' Collaborative Group 2012]. This section examines the use of adjuvant chemotherapy (CT) for women with early invasive breast cancer among:

1. all women;
2. women with ER negative, HER2 negative breast cancer and malignant lymph nodes (N+); and
3. women with HER2 positive breast cancer for whom guidelines recommend use of adjuvant chemotherapy plus trastuzumab.

Adjuvant chemotherapy improves disease-free survival and overall survival in patients with EIBC. It is effective regardless of ER status, but the absolute benefit may be less among patients with ER positive breast cancer who also receive endocrine therapy. Among older patients, decision making for adjuvant chemotherapy should not be based on chronological age alone. In addition, chemotherapy is likely to be most beneficial for patients with ER negative, and/or HER2 positive, and/or node-positive disease [Biganzoli *et al* 2021].

What does the guidance say?

Adjuvant chemotherapy decisions should be based on an understanding of the balance between the risks and benefits particularly in patients with comorbidities [NICE 2018a]. European Society for Medical Oncology guidelines recommend treating all patients with HER2 positive cancer with chemotherapy and anti-HER2 treatment such as trastuzumab [Cardoso *et al* 2019].

NICE guidance recommends that ER and HER2 status be obtained for all patients with invasive breast cancer [NICE 2018a].

Numerator *(Core Ind #12)*	Women who receive adjuvant CT
Denominator	Women diagnosed with EIBC who had surgery (no neoadjuvant CT)
Country	England & Wales (England only - HER2 positive analysis)
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

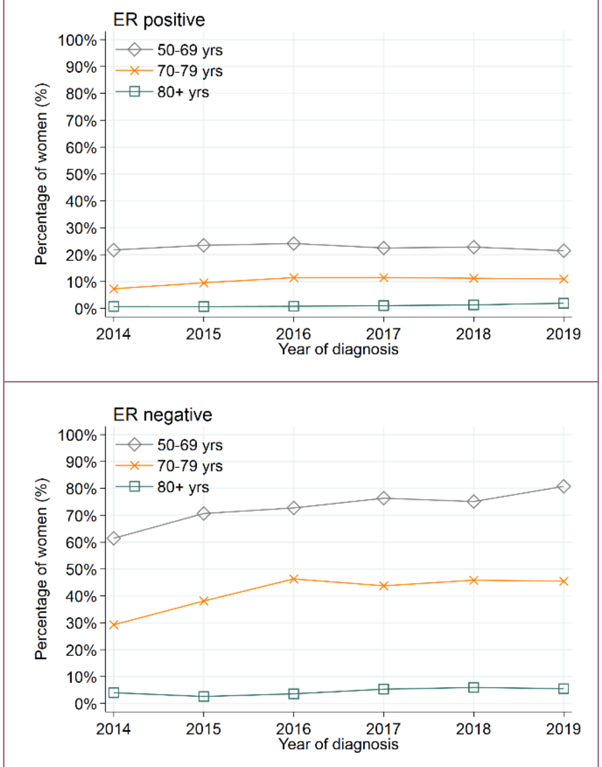
(1) Among women aged 50 years and over diagnosed with EIBC from 2014–2019, who received primary surgery, overall rates of recorded adjuvant chemotherapy were considerably higher among younger women with ER negative EIBC (51%) compared with ER positive EIBC (17%). For women aged 50–69 years with ER negative EIBC rates have increased from 61% among women diagnosed in 2014 to 81% in 2019 (29% to 46% among women aged 70–79 years; **Figure 3.7.7**).

(2) Among 2,242 women aged 50 years and over diagnosed with ER negative, HER2 negative, N+ EIBC from 2014–2019, who received primary surgery, 53% were identified as having received adjuvant chemotherapy.

Numbers were too low to look at variation by NHS organisation, but we do see that rates of treatment varied by age, with lower reported use of chemotherapy as age increased:

- 74% among women aged 50–69 years
- 31% among women aged 70+ years
    - 47% for women aged 70–79 years;
    - 5% for women aged 80+ years.

Figure 3.7.7. Observed percentage of women with early invasive breast cancer receiving adjuvant chemotherapy over time, by ER status and age at diagnosis



Among 10,363 women aged 50 years and over diagnosed with HER2 positive EIBC in England from 2014–2019, who received primary surgery without preceding neoadjuvant chemotherapy, 59% were identified as having received adjuvant chemotherapy plus trastuzumab. The percentage decreased with age:

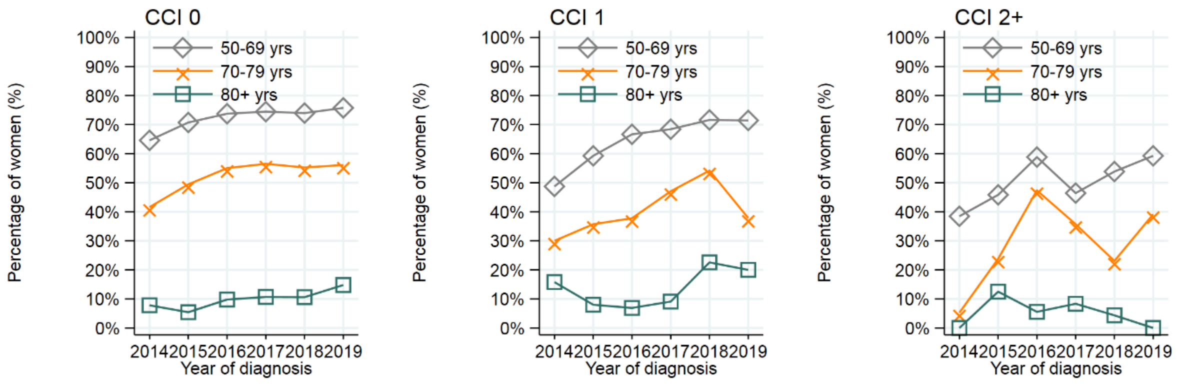
- 70% among women aged 50–69 years
- 37% among women aged 70+ years
  - 49% for women aged 70–79 years;
  - 10% for women aged 80+ years.

Recorded rates were observed to have increased over the six-year audit period (from 53% in 2014 to 62% in 2019). This trend was seen regardless of age and patient fitness (**Figure 3.7.8**).

Variation by NHS organisation was observed regardless of age (**Figure 3.7.9**). The reasons for this variation may involve a combination of factors including patient and clinician preferences.

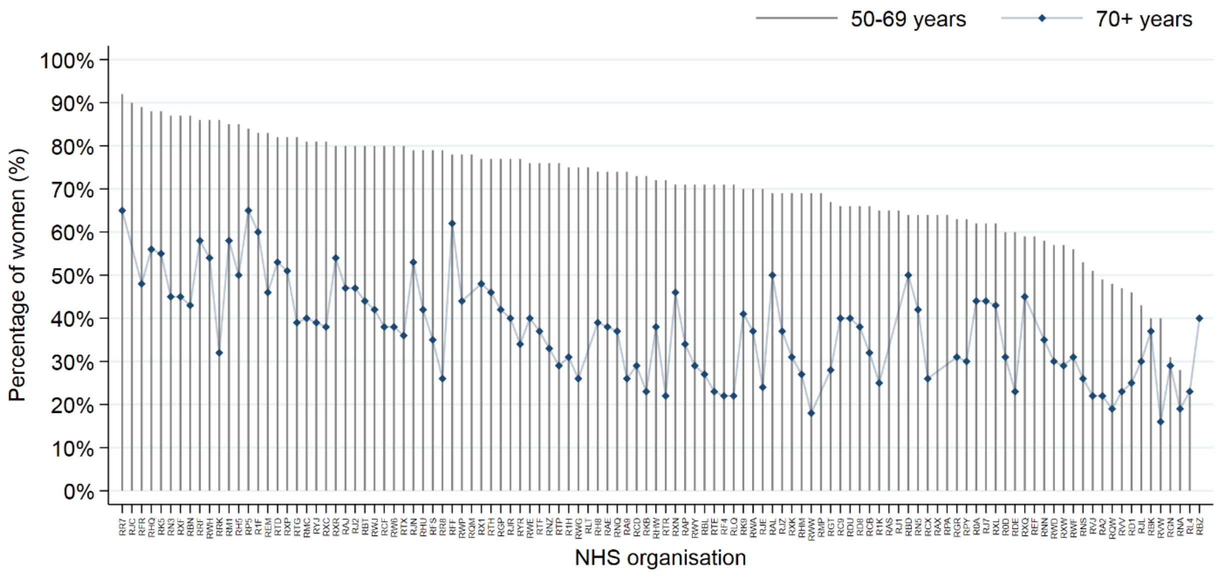
Note: Data completeness of HER2 status was lower among women aged 80+ years, compared with women aged 50–79 years (**Figure 3.2.1** & **Table 3.3.1**).

Figure 3.7.8. Observed percentage of women with HER2 positive early invasive breast cancer in England receiving adjuvant chemotherapy plus trastuzumab over time, by Charlson Comorbidity Index and age at diagnosis



Note: *CCI = Charlson Comorbidity Index.*

Figure 3.7.9. Risk-adjusted percentage of women with HER2 positive early invasive breast cancer in England receiving adjuvant chemotherapy plus trastuzumab, by diagnosing NHS organisation and age at diagnosis



Note: *Risk-adjusted percentages are from random effects logistic regression model, adjusted for influential patient and tumour factors; NHS organisation included as a level.*

Within each age group, NHS organisations with <10 patients having surgery for HER2 positive early invasive breast cancer are not shown.

3.8. Women with a diagnosis of metastatic breast cancer at initial presentation

This section focuses on women aged 50 years and over, diagnosed with metastatic breast cancer (MBC), defined as stage 4 disease.

Despite MBC being incurable, survival has improved substantially over time as systemic treatment options have expanded and therapies have become more effective. The incidence of initial presentation with metastatic breast cancer increases with age [Cancer Research UK 2021].

What does the guidance say?

NICE guideline (CG81) recommendations on systemic disease modifying therapy include [NICE 2009b]:

> *'1.3.1. Offer endocrine therapy as first-line treatment for the majority of patients with ER-positive advanced breast cancer.*
>
> *1.3.2. Offer chemotherapy as first-line treatment for patients with ER-positive advanced breast cancer whose disease is imminently life-threatening or requires early relief of symptoms because of significant visceral organ involvement, providing they understand and are prepared to accept the toxicity.*
>
> *1.3.3. For patients with ER-positive advanced breast cancer who have been treated with chemotherapy as their first-line treatment, offer endocrine therapy following the completion of chemotherapy.'*

The International Society of Geriatric Oncology and the European Society of Breast Cancer Specialists also specifically recommend chemotherapy should be considered 'in suitable older patients with hormone receptor-negative disease, hormone receptor-positive disease resistant to endocrine therapy or with rapidly progressive disease, or extensive visceral involvement, and based on geriatric assessment and patient preferences.' [Biganzoli *et al* 2021].

Numerator *(Core Ind #4)*	Women with metastatic breast cancer at initial presentation
Denominator	Women diagnosed with invasive breast cancer
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with invasive breast cancer from 2014–2019, 5% had metastatic breast cancer. This percentage increased with age:

- 3% among women aged 50–69 years
- 7% among women aged 70+ years;
  - 6% for women aged 70–79 years;
  - 8% for women aged 80+ years.

The increase in percentage by age was largely due to the impact of screening in younger women. Among women with non-screen detected invasive breast cancer, there was little difference by age (7% 50–69 years; 8% 70+ years).

Among women aged 50 years and over newly diagnosed with metastatic breast cancer from 2014–2019, 25% received chemotherapy within six months of diagnosis. The percentage decreased with age at diagnosis:

- 41% among women aged 50–69 years
- 13% among women aged 70+ years;
  - 21% for women aged 70–79 years;
  - 6% for women aged 80+ years.

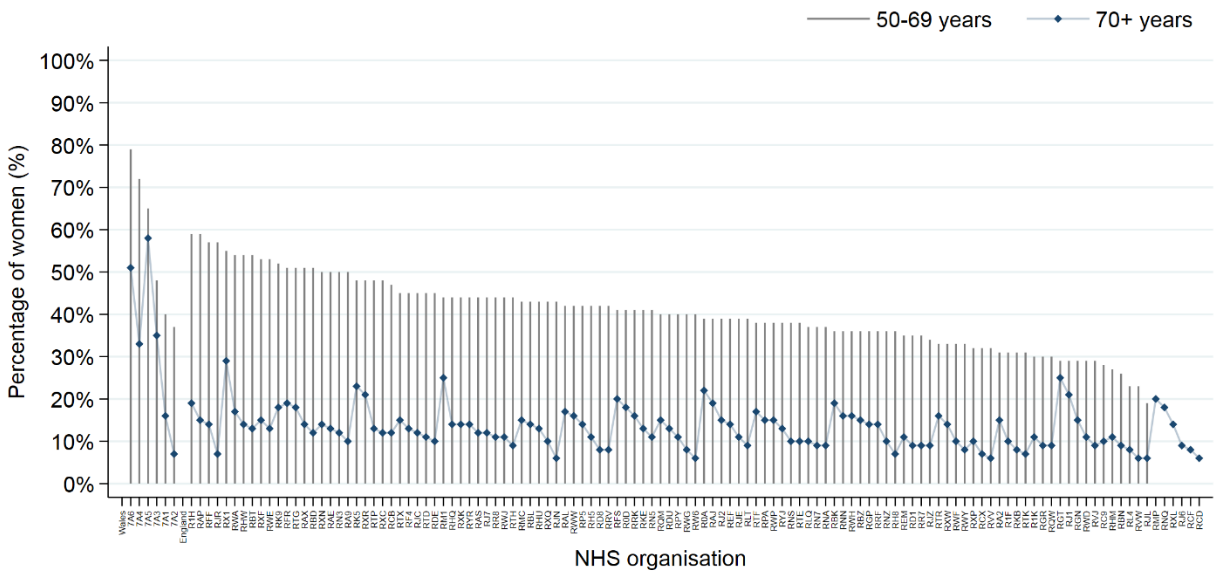
This pattern was observed irrespective of ER status and patient fitness.

Considering the percentage of women receiving chemotherapy over the audit period (2014–2019), there has been little change in the recorded use, from 22% among women diagnosed in 2014 to 2% in 2019.

Rates of chemotherapy use tended to be higher among patients diagnosed in Wales (53%), compared to England (24%), regardless of age.

There was variation by NHS organisation regardless of age (**Figure 3.8.1**)

Figure 3.8.1. Risk-adjusted percentage of women with newly diagnosed metastatic breast cancer receiving chemotherapy, by age at diagnosis



Note: *Risk-adjusted percentages are from random effects logistic regression model, adjusted for influential patient and tumour characteristics; NHS organisation included as a level.*

Within each age group, NHS organisations with <10 patients diagnosed with metastatic breast cancer at initial presentation are not shown.

Welsh local health boards are shown on the left-hand side of the figure.

3.9. Outcomes following a diagnosis of breast cancer

This section presents short and long-term outcomes for women with breast cancer diagnosed over the six-year audit period from 2014 to 2019.

Reoperation rates following initial breast-conserving surgery

The use of breast-conserving surgery (BCS) is common among women with DCIS or operable invasive breast cancer, accounting for 3 out of 4 initial surgical procedures in women aged 50 years and with newly diagnosed DCIS or EIBC.

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]

Around 1 in 5 patients who have BCS will require at least one reoperation, due to inadequate resection margins shown on histological examination, 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 has a negative impact on quality of life [Heil *et al* 2012].

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

Numerator	Women who had a subsequent BCS or mastectomy reoperation within 3 months[7]
Denominator	Women receiving BCS for DCIS or EIBC
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with DCIS or EIBC from 2014–2019, who had breast-conserving surgery as their initial surgery, 15% (n=18,725) had at least one subsequent breast reoperation (either BCS or mastectomy) within three months[1]. This percentage decreased with age:

- 15% among women aged 50–69 years
- 13% among women aged 70+ years;
  - 14% for women aged 70–79 years;
  - 11% for women aged 80+ years.

Reoperation rates varied between women with DCIS versus EIBC 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 more likely than women with EIBC to have at least one reoperation (17% vs 10%, P<0.001).

Reoperation rates tended to be lower among patients diagnosed in Wales (7%), compared to England (15%), regardless of age or disease stage.

Of those women with DCIS having a reoperation, 84% had just one reoperation, compared with 88% of women with EIBC. Among these women with just one reoperation the type of subsequent operation (BCS or mastectomy) was similar according to the invasive status of the primary tumour, with the majority having another breast conservation procedure (83%). This percentage differed by age with a higher percentage of older women having a mastectomy as a subsequent operation. For DCIS and EIBC respectively these were:

- 18% & 16% among women aged 50–69 years;
- 20% & 19% among women aged 70–79 years;
- 31% & 26% among women aged 80+ years.

Among women who had two or more reoperations, 33% of women with DCIS had a mastectomy as the second reoperation compared with 38% of women with EIBC. Again, this was more likely among older women.

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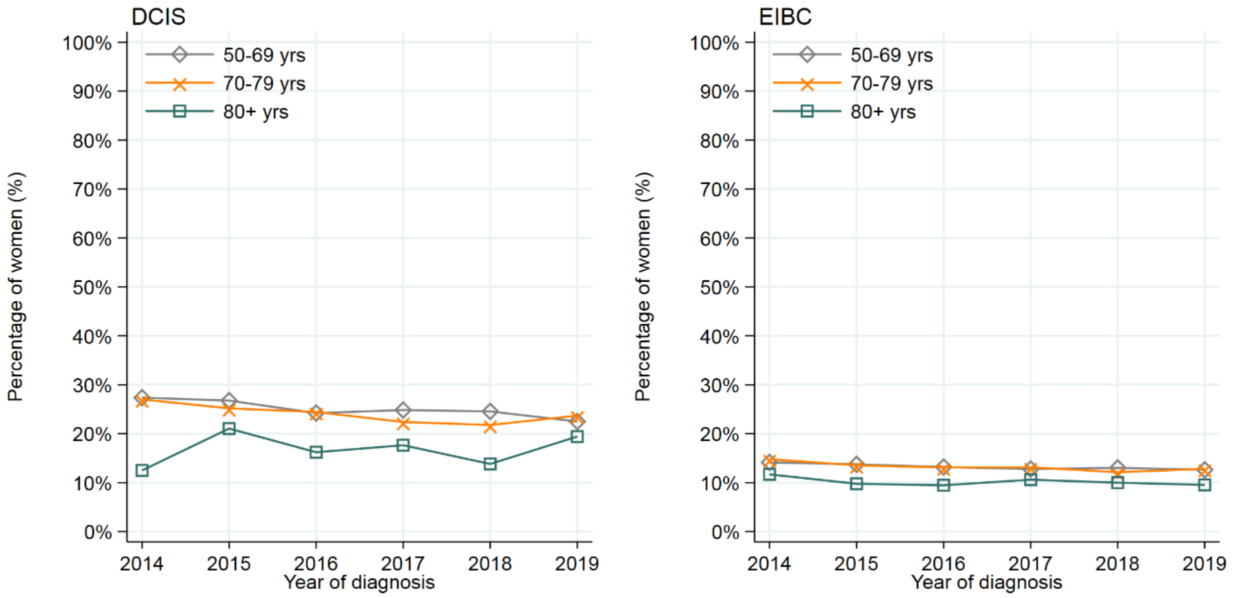
[7] Operations within one week of the initial BCS were excluded, based on the assumption these were most likely to be for postoperative complications. Data on surgical operation were derived from the Hospital Episodes Statistics Admitted Patient Care data for England, and the Patient Episode Database for Wales.

Looking at the rates of reoperation over the audit period (2014–2019), among women having surgery for DCIS there is a downward trend with rates having decreased over time from 27% in 2014 to 23% in 2019 (**Figure 3.9.1**). Among women having surgery for EIBC rates showed little change, from 14% to 12%.

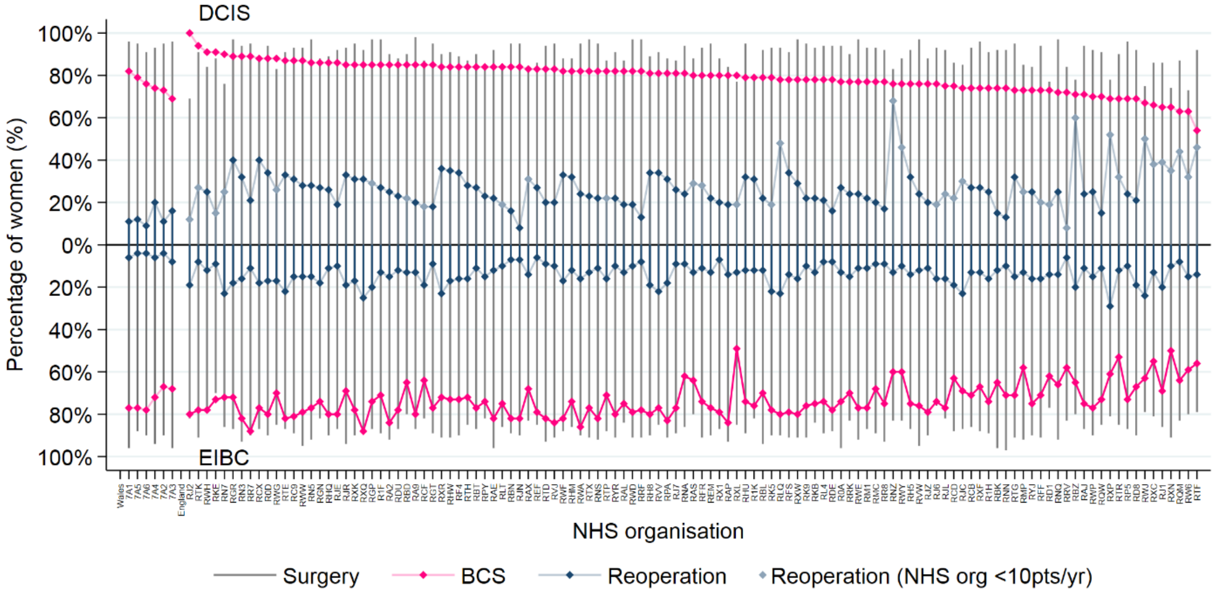
There was geographical variation in reoperation rates (**Figure 3.9.2**). For women aged 70+ years this variation was not beyond what would be expected given the numbers having an initial BCS within each NHS organisation.

Figure 3.9.1. Observed percentage of women having breast-conserving surgery and a subsequent breast reoperation over time, by breast cancer group and age at diagnosis



Note: *DCIS = ductal carcinoma in situ; EIBC = early invasive breast cancer.*
Denominators for percentages shown are women having breast-conserving surgery.

Figure 3.9.2. 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: *BCS = breast-conserving surgery. DCIS = ductal carcinoma in situ; EIBC = early invasive breast cancer. Reoperation (NHS org <10pts/yr) = Organisations with <10 pts receiving BCS for DCIS each year.*
Denominators for percentages shown are: surgery = all women; BCS = women having surgery; Reoperation = women having BCS.
Welsh local health boards are shown on the left-hand side of the figure. All but 6 NHS organisations include screening units.

Short-term morbidity following adjuvant chemotherapy for early invasive breast cancer (England only)

Chemotherapy in early invasive breast cancer, as adjuvant or neo-adjuvant therapy aims to reduce the risk of recurrence and improve survival.

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 quality of life, as well as compromising delivery of treatment and increasing healthcare resource use. Toxicity related symptoms can range from mild to severe side effects (such as infection requiring hospitalisation).

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, as well as considering variation across NHS breast units.

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 adverse events after chemotherapy in the general population may be higher than the figures reported in clinical trials.

For this section, only those women diagnosed and treated within England are included as dates of chemotherapy cycle were required, and this information is not available for those women diagnosed and treated in Wales.

Numerator	Women with a treatment-related overnight hospital admission
Denominator	Women receiving adjuvant chemotherapy for EIBC
Country	England
Timeframe	*Women diagnosed from 2014–19*

A treatment-related overnight hospital admission was defined as a hospital admission with an overnight stay within 30 days of a chemotherapy cycle[8], 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 treatment-related visits can be found online in the NABCOP Annual Report Methodology document.

What do we see within this audit group?

Among 25,444 women aged 50 years and over diagnosed with EIBC in England from 2014–2019, who started adjuvant chemotherapy, 28% had at least one treatment-related overnight hospital admission within 30 days of a chemotherapy cycle. The most common individual toxicities recorded were infection (22%) and neutropenia (16%). Rates of infection were slightly higher among women undergoing taxane-based chemotherapy, being 23% compared with 20%.

As overall fitness worsened, treatment-related hospital admissions appeared to increase (Table 3.9.1). Rates of admission tended to be lower among women aged 75 years and over.

There was some geographical variation in the rates of overnight admission (Figure 3.9.3). Given the number of patients treated within each NHS organisation, this variation was largely within expected limits (data not shown).

There was a downward trend in the rates of overnight admission over the audit period, with rates decreasing from 30% among women diagnosed in 2014 to 24% in 2019.

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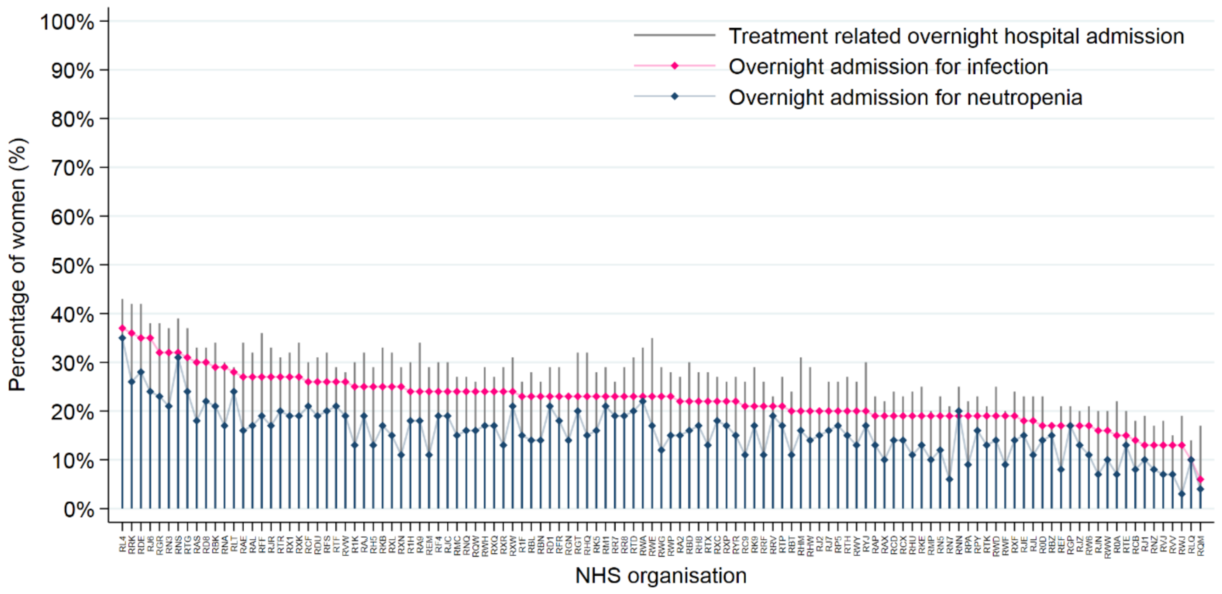
[8] Data on hospital admissions were derived from diagnosis codes for an admission recorded in the Hospital Episodes Statistics Admitted Patient Care data, whilst date of chemotherapy cycles were derived from the Systemic Anti-Cancer Therapy data.

Table 3.9.1. 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	11783	27.8%	9478	28.7%	2853	27.7%	1330	25.4%
SCARF Index = Fit	10537	26.9%	7989	27.2%	2247	27.2%	1014	23.8%
CCI = 0	10990	27.2%	8568	27.8%	2510	27.5%	1134	23.9%
WHO PS = 0	5517	26.9%	4145	27.8%	1167	25.1%	510	25.3%
SCARF Index = Mild–Mod	1193	35.2%	1409	36.2%	574	28.9%	293	30.4%
CCI = 1	653	36.8%	696	34.6%	267	27.3%	146	32.9%
WHO PS 1	358	34.4%	435	31.0%	277	28.5%	165	26.7%
SCARF Index = Severe	46	52.2%	73	54.8%	31	38.7%	23	39.1%
CCI = 2+	133	39.8%	207	48.8%	75	36.0%	50	40.0%
WHO PS = 2+	46	32.6%	63	31.7%	25	24.0%	28	28.6%

Note: *SCARF Index = Secondary Care Administrative Records Frailty index (categories: Fit, Mild-Moderate frailty, Severe frailty). Mod = Moderate.*
CCI = Charlson Comorbidity Index; WHO PS = World Health Organization Performance Status.
Percentages are presented to one decimal place due to the narrow range of values.

Figure 3.9.3. 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.

Short-term mortality following (adjuvant) chemotherapy for invasive breast cancer (England only)

The use of chemotherapy in early invasive breast cancer, as adjuvant or neo-adjuvant therapy to improve survival, or as palliative treatment for advanced metastatic breast cancer, has increased in recent decades. The use of chemotherapy in older women tends to be reserved for those with higher levels of fitness and those with higher risk cancers.

For this section, only those women diagnosed and treated within England are included as date of last chemotherapy cycle was required, and this information is not available for those women diagnosed and treated in Wales.

30-day mortality following chemotherapy is considered a useful indicator of avoidable harm and treatment futility. Monitoring this outcome provides valuable information to clinicians making treatment decisions and can contribute to efforts to improve patient outcomes. Previous research has reported 30-day mortality rates following anti-cancer treatment with curative intent to be less than 1% (7% where treatment intent was palliative) among patients aged 24 years and over [Wallington *et al* 2016].

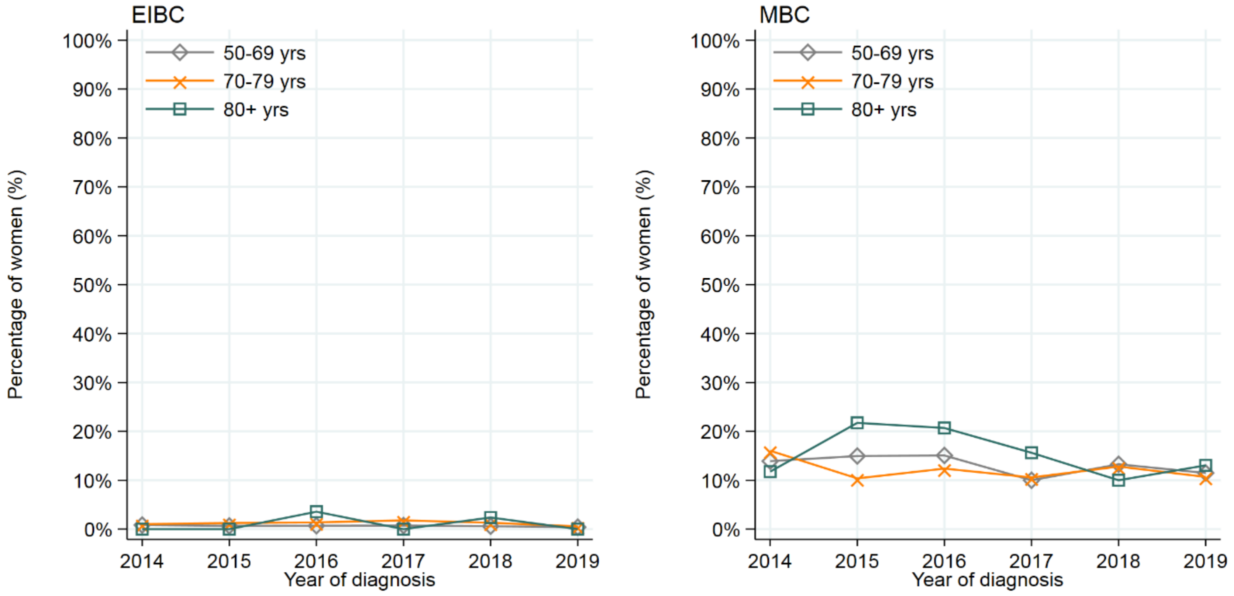
Numerator	Women who died within 30 days of their last reported cycle of chemotherapy
Denominator	Women receiving chemotherapy for invasive breast cancer
Country	England
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among 26,237 women aged 50 years and over diagnosed with EIBC in England from 2014–2019, 30-day mortality following adjuvant chemotherapy was observed to be around 1% or less (Figure 3.9.4). Including subgroups of those women defined as 'fit' by three different measures.

Among 2,729 women aged 50 years and over diagnosed with metastatic breast cancer in England from 2014–2019, 30-day mortality rates, following palliative chemotherapy, were around 13%, with little difference by age. 30-day mortality rates were observed to decrease over time for this group of women (Figure 3.9.4). Rates among women defined as 'fit' were comparable regardless of measure of fitness.

Figure 3.9.4. Percentage of women with invasive breast cancer diagnosed and treated in England, who died within 30 days of their last recorded cycle of (adjuvant/palliative) chemotherapy, over time, by stage of breast cancer and age at diagnosis



Note: *EIBC = early invasive breast cancer. MBC = metastatic breast cancer.*
Denominators for percentages shown are all women receiving adjuvant chemotherapy for EIBC/MBC as appropriate.

Recorded rates of recurrence of breast cancer

Building on work reported within the NABCOP 2020 Annual Report we report on the availability of data on recurrence within the datasets that the NABCOP receives for patients aged 50 years and over diagnosed in England and Wales from 2014 to 2019.

Data relating to any breast cancer recurrence, for women diagnosed and treated in England, is collected within the Cancer Outcomes and Services Dataset (COSD) and forms part of the datasets that the NABCOP receives. Specifically, there are fields that can provide us with detail of the date and type of recurrence. Similar data fields are collected within the data for those women diagnosed and treated in Wales. In England, the COSD field indicating care plan for recurrence allows for entry of “not for recurrence”; completion of this field was used to determine the level of completion and return for data items on recurrence.

Accurate data on recurrence would enable benchmarking of outcomes at breast unit level and assist in efforts to improve patient care.

Numerator	Women with a reported breast cancer recurrence
Denominator	All women
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

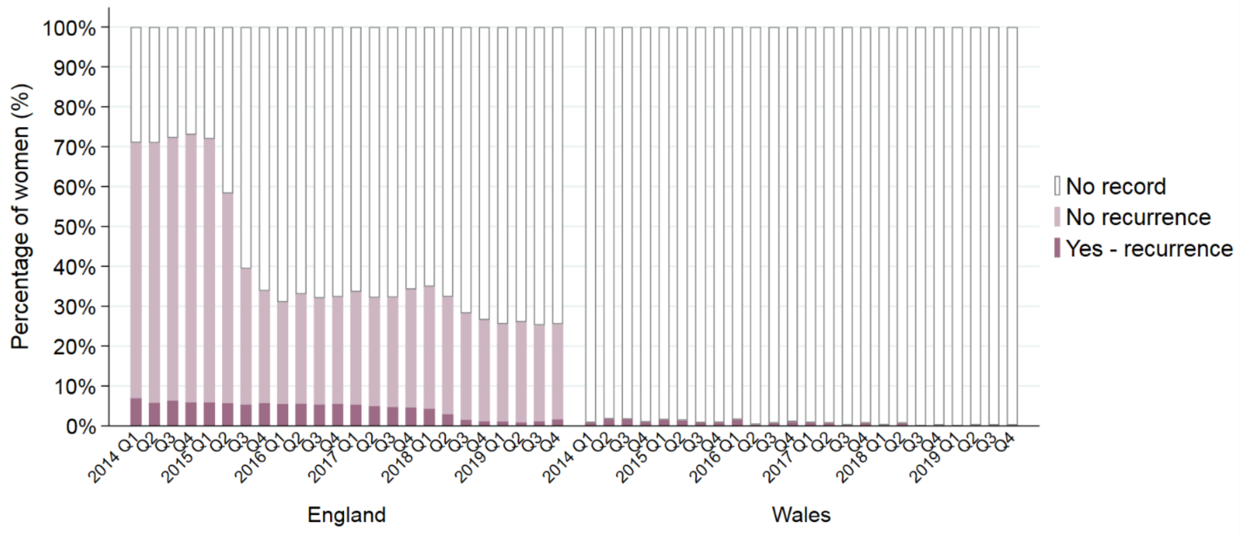
What do we see within this audit group?

Among 224,049 women aged 50 years and over diagnosed in England and Wales from 2014–2019, 4% had a record of any recurrence reported. This percentage varied by disease group and slightly by age at diagnosis (Table 3.9.2). Rates of recorded recurrence were lower among women diagnosed in Wales, at less than 1%.

By year of diagnosis (Figure 3.9.5), rates of reported recurrence are 1% among women diagnosed more recently in 2019 to 6% among women diagnosed in 2014.

Among women recorded as having died from their breast cancer, 22% had a prior recurrence recorded. We would expect the majority of these women to have had a recurrence. The recorded rates of recurrence are likely to be considerably lower than rates of recurrence in practice. Additionally, recorded rates were low across all geographical regions, suggesting that most NHS organisations are poor at recording this information.

Figure 3.9.5. Percentage of women with any reported recurrence, by country and year of diagnosis



__Note__: No recurrence = Care plan for recurrence field completed as "not for recurrence". [CR0450; CORE - DIAGNOSTIC - NON PRIMARY CANCER PATHWAY DETAILS (RECURRENCE); CANCER RECURRENCE CARE PLAN INDICATOR; An indication of whether a diagnosis of recurrence has been recorded for which a new Cancer Care Plan is required. A new record should be completed for a recurrence.- up to COSD V9.0]

Table 3.9.2. Percentage of women with any reported recurrence, by breast cancer group and age at diagnosis, for all patients diagnosed from 2014–2019

	50–59 years		60–69 years		70–79 years		80+ years	
	Total no. of women	% with reported recurrence	Total no. of women	% with reported recurrence	Total no. of women	% with reported recurrence	Total no. of women	% with reported recurrence
All women	66253	3.9%	69419	3.4%	49509	4.8%	38868	4.6%
DCIS	9758	0.8%	8935	0.8%	3910	0.6%	1298	1.2%
Early Invasive	49232	3.0%	53279	2.4%	37347	2.8%	25260	2.9%
Advanced M0	1718	12.5%	1713	11.6%	2018	10.9%	2754	6.1%
Unknown Stage	3697	3.3%	3349	3.0%	3443	3.9%	6696	2.3%

***Note**: DCIS = ductal carcinoma in situ. M0 = non-metastatic.*

Percentages are presented to one decimal place due to the narrow range of values.

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 by age and year of treatment, to give a direct estimate of excess mortality due to breast cancer, without requiring cause of death information. Estimates of relative survival use population mortality data from the Office for National Statistics to provide the baseline 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. Plots of relative survival by patient fitness show the additional impact of fitness level on subsequent survival up to six years from treatment, by grouped age at diagnosis, for the following patients:

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

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

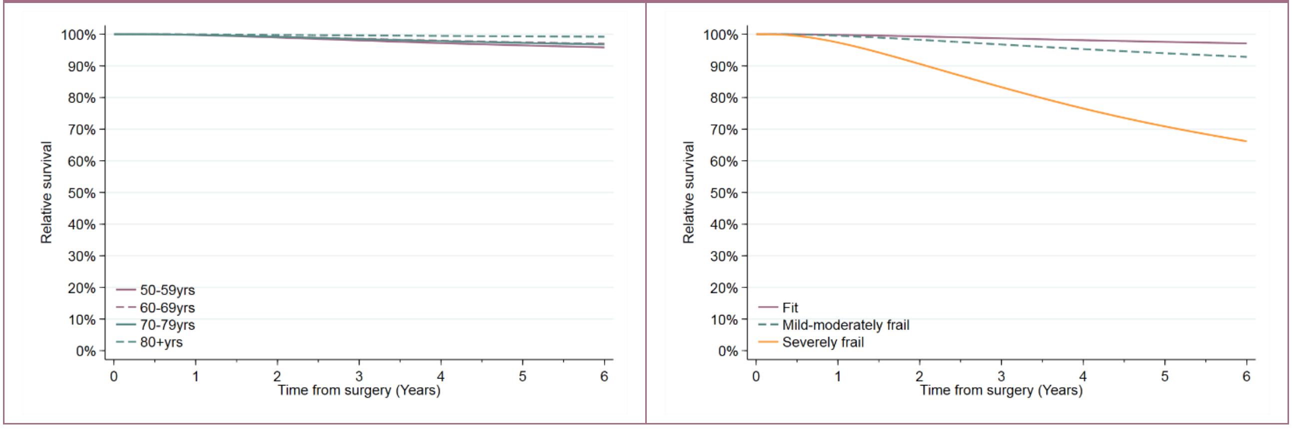
Numerator	Women recorded as having died
Denominator	(1) Women receiving surgery for EIBC (2) Women receiving chemotherapy for newly diagnosed metastatic BC
Country	England & Wales
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among women aged 50 years and over diagnosed with EIBC from 2014–2019 and receiving surgery, relative survival is comparable to that of the general population within the 12–15 months following surgery, regardless of a woman's age (**Figure 3.9.6**).

Looking at the additional influence of patient fitness, among women receiving surgery who are considered to be "fit" or have only mild-moderate frailty, as defined by the SCARF index, relative survival is high (**Figure 3.9.6**). Among women with severe frailty, who receive surgery there was more than 20% excess mortality from around 3.5 years after surgery. These patterns were seen regardless of age.

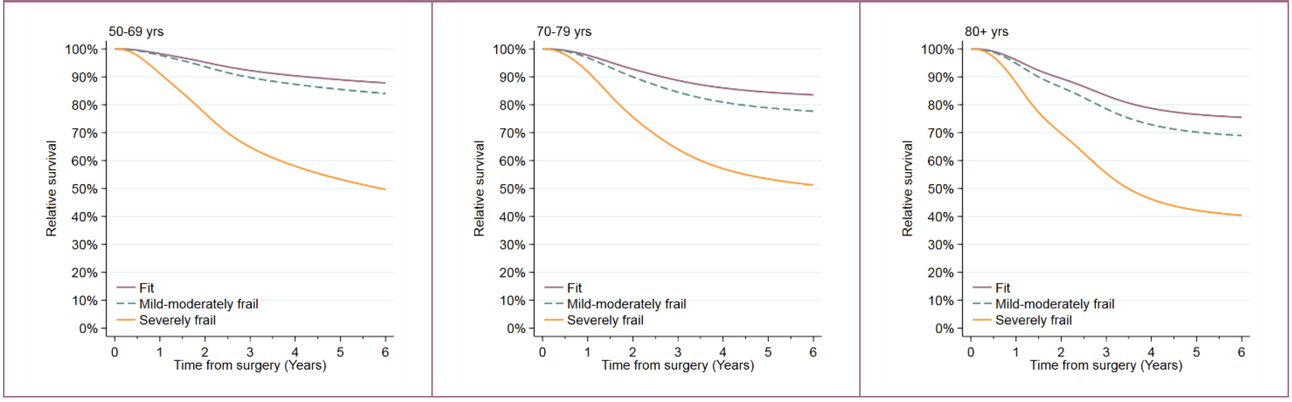
Figure 3.9.6. Relative survival of women diagnosed with EIBC who received surgery, by age at diagnosis (left) and by SCARF index (right)



For those women with ER positive or unknown ER status, receiving surgery, relative survival was high and comparable to that in the general population. In addition to surgery, the majority of these women received endocrine therapy 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 women with ER negative disease.

Among women with ER negative early invasive breast cancer, receiving surgery, relative survival is similar among those who are considered to be fit or having low levels of frailty, regardless of age (**Figure 3.9.7**). Relative survival was poor among women with severe frailty, regardless of age at diagnosis. Unlike women with ER positive disease, treatment with endocrine therapy was not an option.

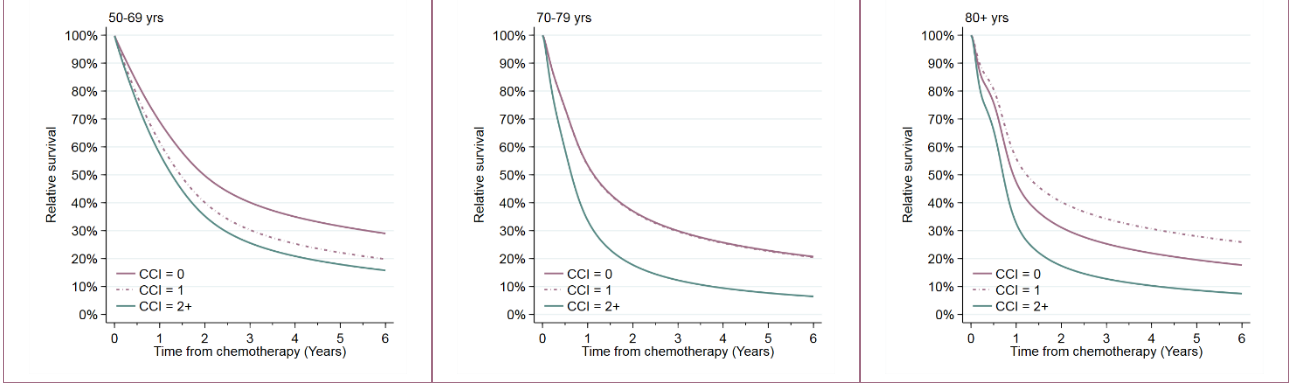
Figure 3.9.7 Relative survival of women diagnosed with ER negative early invasive breast cancer who received surgery, by SCARF index and age at diagnosis



What do we see for metastatic breast cancer?

Among women newly diagnosed with ER negative metastatic breast cancer and receiving chemotherapy, relative survival was poor. Considering the additional impact of comorbidity, women with no comorbidity burden or only one comorbidity had better outcomes than those with two or more comorbid conditions (**Figure 3.9.8**).

Figure 3.9.8. Relative survival of women diagnosed with ER negative metastatic breast cancer who received chemotherapy, by Charlson Comorbidity Index (CCI) age at diagnosis



3.10. Patient Experience (England only)

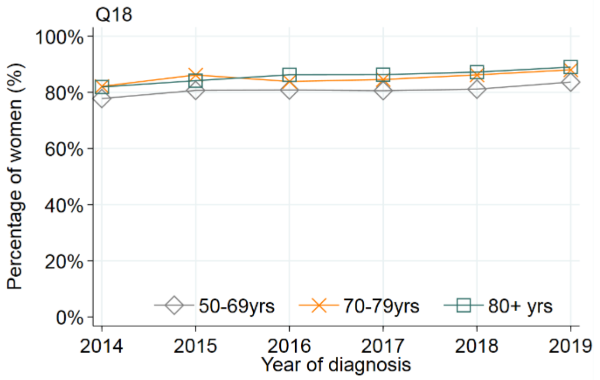
The English National Cancer Patient Experience Survey (CPES) is an annual questionnaire aimed at providing insight into the care experienced by cancer patients across England. All adult patients (aged 16 and over), with a primary diagnosis of cancer, who have been admitted to hospital as inpatients for cancer related treatment, or who were seen as day case patients for cancer related treatment, and have been discharged between April and June each year are invited to respond to the survey.

For this annual report, CPES data on 40,416 surveys completed between 2015 and 2019 were linked to the NABCOP cohort of women aged 50 years and over diagnosed with breast cancer in England from 2014 to 2019. Full details of the CPES and analysis methods can be found online in the most recent version of the NABCOP Annual Report Methodology document.

Among women aged 50 years and over diagnosed with breast cancer in England from 2014–2019, 18% had taken part in at least one of the CPES annual surveys. Participation decreased with age: 21% among women aged 50–69 years; 17% for 70–79 years; 6% for 80+ years.

Responses to selected questions describing patient experience on their involvement in treatment decisions, information received and provision of support were analysed by age at diagnosis and year of diagnosis to look at patient experience in this population over time.

Figure 3.10.1. Percentage of CPES respondents who said they were definitely involved in decisions about their care and treatment over time, by age at diagnosis

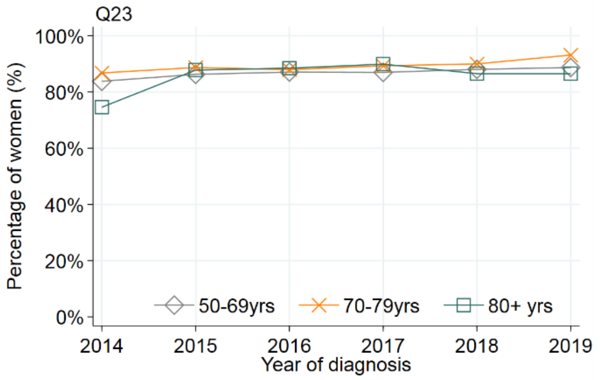


Q18: Were you involved as much as you wanted to be in decisions about your care and treatment?

Involvement in treatment decisions (Qs 14–16, 18)

- 87% of respondents said their treatment options were 'completely' explained to them before their cancer treatment started (Q14).
- 76% of respondents said the possible side effects of treatment(s) were 'definitely' explained in a way they could understand (Q15).
- 97% of respondents said they either 'definitely' or 'to some extent' were offered practical advice and support in dealing with the side effects of the treatment(s).
- When asked about being involved in decisions about their care and treatment, 82% said 'yes, definitely' (Q18). This had improved over time, from 79% among women diagnosed in 2014 to 85% in 2019; this was similar by age. (Figure 3.10.1).

Figure 3.10.2. Percentage of CPES respondents who said hospital staff discussed or gave them information about the impact cancer could have on their day-to-day activities over time, by age at diagnosis

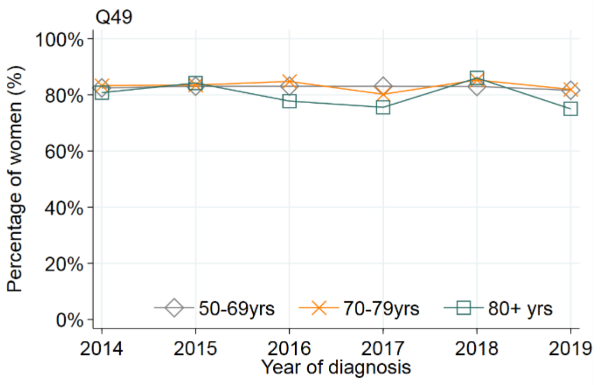


Q23: Did hospital staff discuss with you or give you information about the impact cancer could have on your day to day activities?

Support (Qs 22, 23, 41)

- 92% of respondents said 'yes', they were given information about support or self-help groups for people with cancer, by hospital staff (Q22). This had improved over time from 87% in 2014 to 94% in 2019.
- 87% of respondents said hospital staff discussed or gave them information about the impact cancer could have on their day-to-day activities (Q23). This had improved over time from 84% among women diagnosed in 2014 to 90% in 2019. (Figure 3.10.2)
- 97% of respondents said hospital staff told them who to contact if they were worried about their condition or treatment after leaving hospital (Q41).

Figure 3.10.3. Percentage of CPES respondents who said they had completely had all of the information they needed about their chemotherapy treatment beforehand over time, by age at diagnosis

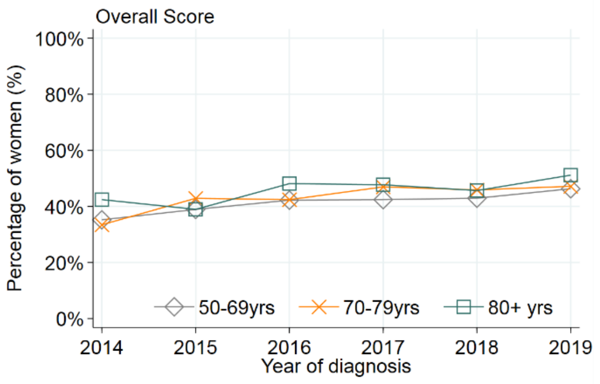


Q49: Beforehand, did you have all of the information you needed about your chemotherapy treatment?

Information about treatment (Qs 46, 49)

- Among respondents that had had radiotherapy as an outpatient or day case in the 12 months prior to responding, 88% said they 'completely' had all of the information they needed about their radiotherapy treatment beforehand (Q46). This had not changed over time.
- Among respondents that had had chemotherapy as an outpatient or day case in the 12 months prior to responding, 83% said they 'completely' had all of the information they needed about their chemotherapy treatment beforehand (Q49). This had changed little over time and had reduced among women aged 80+ years (81% in 2014 to 75% in 2019). (**Figure 3.10.3**)

Figure 3.10.4. Percentage of CPES respondents rating their overall care as 10 over time, by age at diagnosis



% = Overall care rated as 10

Home and overall care (Qs 53 & 61)

- Once their cancer treatment was finished, 43% of respondents said they were given enough care and support from health or social services (Q53). This had changed little over time.
- When respondents were asked to rate their overall care (Q61) on a scale from 0 to 10 (where 10 is very good), 42% rated their overall care as 10. This has increased over time from 35% among women diagnosed in 2014 to 47% in 2019. This increase over time was seen for all three age groups (**Figure 3.10.4**):
  - 50–69 years: 35% in 2014 to 46% in 2019;
  - 70–79 years: 34% in 2014 to 47% in 2019;
  - 80+ years: 42% in 2014 to 51% in 2019.

4. Primary care prescriptions among women diagnosed with breast cancer in England from 2014–2019

This chapter describes the use of drug therapies provided to women aged 50 years and over diagnosed with breast cancer in England. Specifically, it looks at the information captured within routinely collected data on primary care dispensed prescriptions in England.

Data from the Primary Care Prescription Database (PCPD) were made available to the NABCOP in December 2021 to carry out further work as part of a collaborative (feasibility) study between the NABCOP and the NCRAS. The PCPD has population coverage of drug therapies prescribed within primary care and dispensed in community pharmacies within England [Henson *et al* 2018, Emanuel *et al* 2019]. The NABCOP received data on endocrine therapy, bisphosphonates, anticoagulants and dementia-related prescriptions dispensed from April 2015 to March 2021, linked to the cohort of women aged 50 years and over diagnosed with breast cancer between 1 January 2014 and 31 December 2019, as described in **Chapter 3**.

4.1. Endocrine therapy prescriptions

Endocrine therapy (ET) is one of the most important treatments for women with estrogen receptor (ER) positive invasive breast cancer. Preliminary work looking at linkage of the NABCOP cohort to a snapshot of ET prescriptions dispensed in 2018 and recorded in the PCPD was presented in the NABCOP 2021 Annual Report. Rates of ET prescribing among women diagnosed with ER positive invasive breast cancer between 2014 and 2017 were found to be high, at 90% overall. This work demonstrated a level of ET prescribing that was consistent with national guidelines and that was comparable for women of all ages (50 years and over). The level of information on ET in the PCPD was substantially better than seen in secondary care derived datasets. This exploratory project provided confidence that the PCPD would be a valuable data asset for NABCOP analyses.

Analyses carried out for this NABCOP 2022 Annual Report extend these findings. With data made available on ET prescriptions dispensed between April 2015 and March 2021, it was possible to consider the use of ET in this NABCOP population in greater depth.

Numerator	Women with an ET prescription dispensed from 2015–2021
Denominator	Women diagnosed with ER positive invasive breast cancer
Country	England
Timeframe	*Women diagnosed from 2014–19*

What do we see within this audit group?

Among 123,043 women aged 50 years and over diagnosed with ER positive EIBC in England from 2014–2019, 95% had an ET prescription recorded in the PCPD as dispensed between April 2015 and March 2021. This was similar regardless of year of diagnosis (**Figure 4.1.1**) and age.

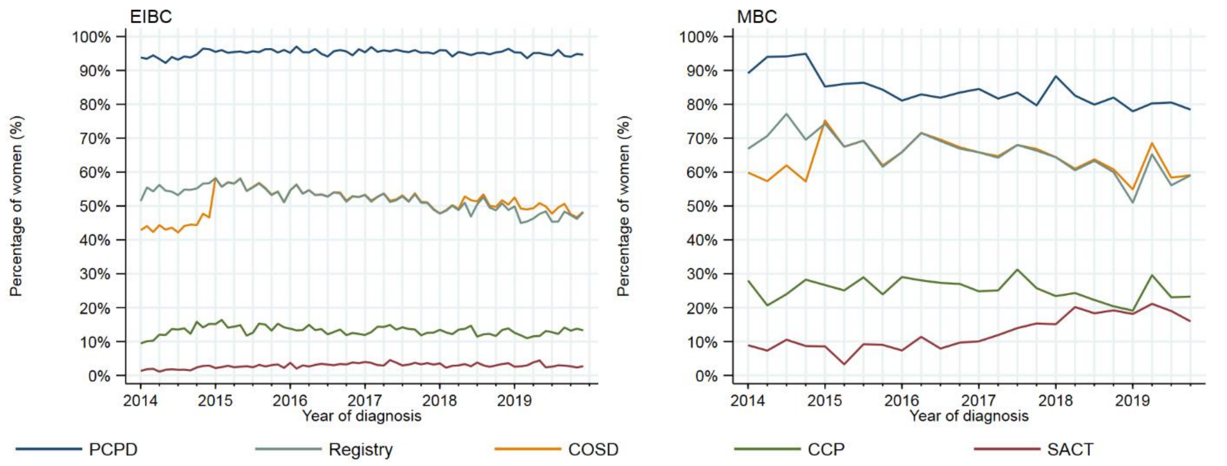
Among women with ER positive EIBC, 51% had a record of ET in COSD. There was 54% concordance between the PCPD and COSD. 98% of patients with ET in COSD also had ET in the PCPD, whilst only 53% of patients with ET in the PCPD also had ET in COSD. The PCPD identified an extra 45% of women having ET for EIBC.

Among 5,251 women aged 50 years and over diagnosed with ER positive metastatic breast cancer (MBC) from 2014–2019, 84% had an ET prescription recorded in the PCPD as dispensed between April 2015 and March 2021. This was similar across the age groups but decreased with year of diagnosis (**Figure 4.1.1**), from 93% among women diagnosed in 2014 to 79% among women diagnosed in 2019.

Among women with ER positive MBC, 65% had a record of ET in COSD. There was 70% concordance between COSD and the PCPD. 91% of patients with ET in COSD also had ET in the PCPD, whilst 70% of patients with ET in the PCPD also had ET in COSD. The PCPD identified an extra 25% of women having ET for MBC.

COSD records the intent to give ET, whereas PCPD records ET that was dispensed.

Figure 4.1.1. Use of ET identified within PCPD dispensed prescriptions compared with recording in routine secondary care sources, by year of diagnosis and breast cancer group - among women with ER positive BC



Note: *ER = estrogen receptor; EIBC = early invasive breast cancer; MBC = metastatic breast cancer*
PCPD = Primary Care Prescription Database (ie ET use recorded in PCPD dispensed prescriptions from April 2015 – March 2021)
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

Duration of ET prescribed in primary care

A NICE Evidence Review states that use of adjuvant endocrine therapy for five years in women newly diagnosed with ER positive early stage invasive breast cancer reduces recurrence rates by approximately half and breast cancer mortality by approximately a third [NICE 2018b].

Among women diagnosed with ER positive invasive breast cancer from April–December 2015 and who were alive at 01 April 2021, so could have received 5 years of ET, median duration of ET prescribed in primary care was 5 years. There was little difference by stage or age at diagnosis (**Figure 4.1.2**).

Type of ET and geographical variation

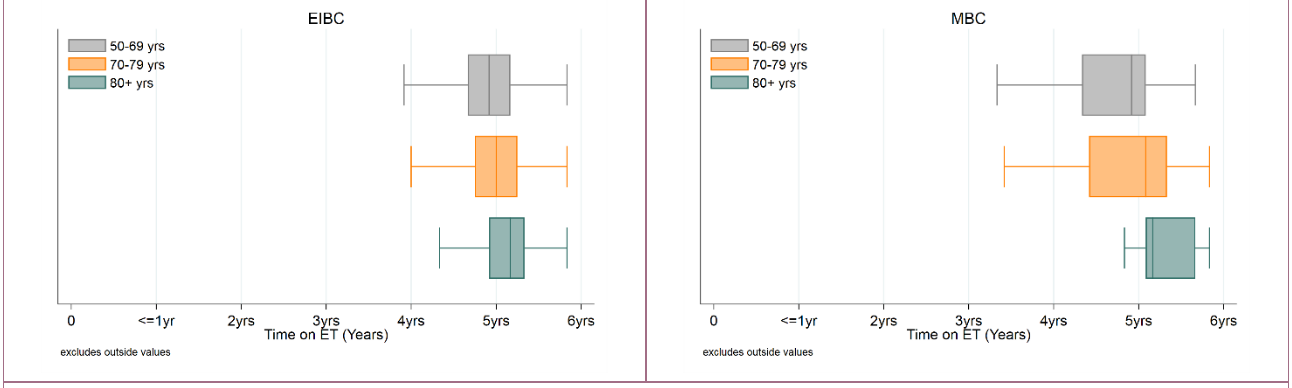
Tamoxifen is a selective ER modulator which is effective regardless of the menopausal status of the patient. Aromatase inhibitors are widely used as the anti-oestrogen of choice in postmenopausal women to reduce the non-ovarian production of estrogen and the stimulation of ER positive breast cancer.

Among women with ER positive invasive breast cancer diagnosed from April 2015 onwards and with ET recorded in the PCPD, aromatase inhibitors (AIs) were the most commonly prescribed ET, with 87% having a record of an AI prescribed. This is consistent with AI being the recommended choice of ET for postmenopausal women, who make up the largest part of the NABCOP cohort.

Looking at the type of initial ET prescribed, among those women receiving ET, the first prescription was tamoxifen for 17%; use decreased with age, from 55% among women aged 50–54 years to 8% of women aged 85+ years. There was variation in the use of tamoxifen (**Figure 4.1.3**). Variation between geographical regions (identified here by Government Office Region) was small compared individual NHS trusts, where there was marked variation regardless of age. Prescribing of tamoxifen has decreased over time for all age groups whilst prescribing of AIs has increased, although only rates of letrozole prescribing have increased; the percentage of women prescribed anastrozole (27%) or exemestane (0.4%) has largely remained constant.

Only 5% of those initially on tamoxifen were switched to an aromatase inhibitor at some point; more than half of these patients were aged less than 55 years (55%).

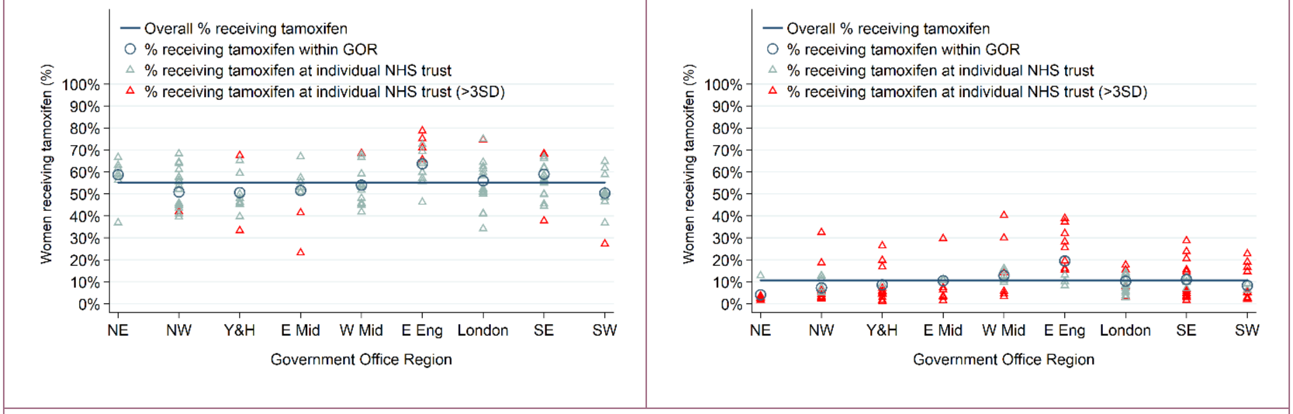
Figure 4.1.2. Time on ET recorded within PCPD dispensed prescriptions, by breast cancer group and age - among women with ER positive BC



Note: *ER = estrogen receptor; EIBC = early invasive breast cancer; MBC = metastatic breast cancer*
Plots include women diagnosed from 01/04/2015 to 31/12/2015 and who were alive at 01/04/2021.

Figure 4.1.3. Percentage of women prescribed tamoxifen, by age at diagnosis, trust and Government Office Region - among women with ER positive invasive BC

50-54 years	55 years and over



Note: *ER = estrogen receptor.*
Plots include women diagnosed from 01/04/2015.
GOR = Government Office Region; 3SD = trusts where % of patients receiving 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.

4.2. Bisphosphonate prescriptions

Bisphosphonates are used to prevent or reduce the loss of bone mineral density and osteoporosis which is common in the general population of postmenopausal women and which can also occur with the use of aromatase inhibitors. In addition to these roles, there is evidence that bisphosphonates can reduce the risk of breast cancer spreading to the bone in postmenopausal women, potentially making bisphosphonates an effective adjuvant treatment for some patients with early breast cancer, improving survival outcomes [Early Breast Cancer Trialists' Collaborative Group 2015].

NICE guidance recommends bisphosphonates are offered as adjuvant treatment for postmenopausal women with node-positive invasive breast cancer, or those with node-negative invasive breast cancer at high risk of recurrence [NICE 2018a].

Bisphosphonates can be given as oral medication or intravenously, depending on the indication and type of bisphosphonate prescribed. Within routine secondary care data, information on bisphosphonate use as a supportive therapy as part of treatment for breast cancer is recorded within the Systemic Anti-Cancer Therapy (SACT) data. Bisphosphonates, including those given as part of treatment for breast cancer, are most commonly prescribed in primary care. The PCPD is therefore a potentially valuable additional source of data to identify individuals with breast cancer who are prescribed bisphosphonates in primary care.

We received data on prescriptions categorised as bisphosphonate in the PCPD. These medications were also identified and coded within the SACT database. Women were considered to have been prescribed a bisphosphonate for their breast cancer, only where the first recorded prescription was after the date of breast cancer diagnosis. As the PCPD does not contain information on drug indication we were unable to directly identify bisphosphonates prescribed as part of breast cancer treatment. To allow a suitable comparison of bisphosphonate prescriptions in the PCPD with bisphosphonate information captured within the SACT dataset (where the treatment indication is for cancer), women with a bisphosphonate prescription in the PCPD dated prior to diagnosis were not included in the analysis.

To understand the additional value of the PCPD in identifying bisphosphonates as part of cancer treatment for women aged 50 years and over diagnosed with EIBC in England, we compared:

- the number of women with bisphosphonate recorded in the SACT data; and
- the number of women with a bisphosphonate prescription recorded in the PCPD.

The cohort was restricted to women diagnosed from April 2015 onwards, to enable a look at bisphosphonate use from the point of diagnosis.

Since the PCPD is comprised of community-based prescriptions, it will only consider prescriptions for bisphosphonates which were prescribed in tablet form.

Numerator	Women with a bisphosphonate prescription dispensed after breast cancer diagnosis from 2015–2021
Denominator	Women diagnosed with early invasive breast cancer
Country	England
Timeframe	*Women diagnosed from 2015 – 2019*

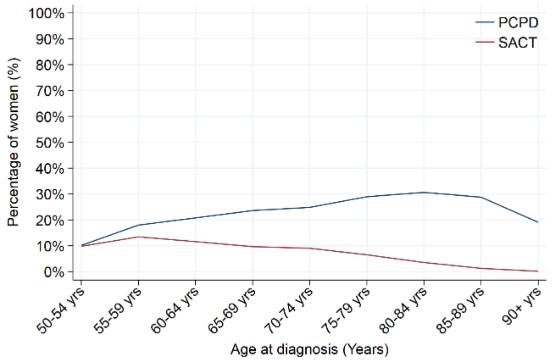
What do we see within this audit group?

Among 118,132 women diagnosed with EIBC in England from 2015–2019, 9% of women had a record of bisphosphonate in SACT after diagnosis (**Figure 4.2.1**). This decreased by age at diagnosis (11% 50–69 years; 8% 70–79 years; 2% 80+ years).

In contrast, 21% had a record of a bisphosphonate prescription in the PCPD after diagnosis; this increased with age at diagnosis (18% 50–69 years; 27% 70–79 years; 28% 80+ years). The PCPD provided bisphosphonate information on an additional 20% of patients.

Looking at geographical variation in overall prescribing of bisphosphonates, there was minimal variation between geographical regions, identified by Government Office Regions (**Figure 4.2.2**). The percentage of women prescribed bisphosphonates within each region was similar regardless of age at diagnosis.

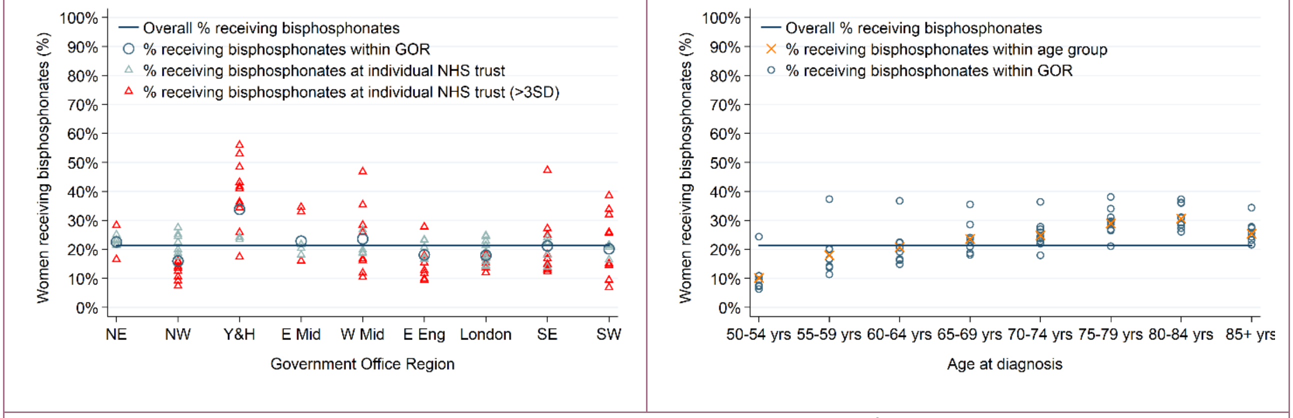
Figure 4.2.1. Percentage of women with a bisphosphonate prescription in the PCPD compared with bisphosphonate treatment recorded in SACT, by age at diagnosis - among women with EIBC



Note: *PCPD = Primary Care Prescription Database; SACT = Systemic Anti-Cancer Therapy data.*

Drugs considered were: zoledronic acid, ibandronic acid, pamidronic acid, alendronic acid, strontium ranelate, risedronate sodium, sodium clodronate and denosumab

Figure 4.2.2. Variation in prescribed bisphosphonates at any point after diagnosis (identified in the PCPD), by Government Office Region and age at diagnosis - among women with EIBC



Note: *PCPD = Primary Care Prescription Database. Bisphosphonate use recorded in PCPD dispensed prescriptions from April 2015 to March 2021. GOR = Government Office Region; 3SD = trusts where % of patients receiving bisphosphonates 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.*

4.3. Anticoagulant prescriptions

It is important to build an accurate picture of individual patient fitness, since medical conditions (comorbidities) can influence decisions around breast cancer treatment. Drug prescriptions dispensed for patients with medical conditions in primary care may be able to provide information about what comorbidities a patient has, alongside a diagnosis of breast cancer, in addition to that information already identified within hospital admission data. Therefore, the NABCOP explored the value of the PCPD to provide additional information about specific cardiovascular comorbidities, which require anticoagulant medication, among older patients diagnosed with breast cancer in England from 2017–2019.

The British National Formulary (BNF) and the NICE Clinical Knowledge Summaries provide guidance on prescribing anticoagulant treatment. Among other indications, warfarin and direct oral anticoagulants are licensed for the prophylaxis and treatment of pulmonary embolism and deep vein thrombosis, prophylaxis after insertion of a prosthetic heart valve (warfarin only) and for the prevention of stroke among patients with atrial fibrillation and specific risk factors [NICE Clinical Knowledge Summaries 2021b].

The Hospital Episodes Statistics Admitted Patient Care (HES APC) dataset can be used to identify information on conditions routinely requiring anticoagulant therapy (CRRAT; where ICD-10 codes were recorded against an admission: I26, I80.1 – I80.3, I80.8, I80.9, I82.8, I82.9, I48, Z95.2). The ability to identify CRRAT is reliant on this information being entered into one of the diagnosis fields. Many aspects of treatment for CRRAT are managed within the primary care setting, and so data on anticoagulant prescriptions recorded in the PCPD may identify individuals with CRRAT who are not identified within HES APC.

To understand the additional value of the PCPD in identifying patients with CRRAT at diagnosis, among women aged 50 years and over diagnosed with breast cancer in England, we compared:

- the number of women with a diagnosis of a CRRAT recorded in HES APC data; and
- the number of women with an anticoagulant prescription recorded in the PCPD.

The cohort was restricted to women diagnosed from April 2017 onwards, to allow comparison looking at records in the two years prior to diagnosis, to understand the percentage of women with a CRRAT at diagnosis.

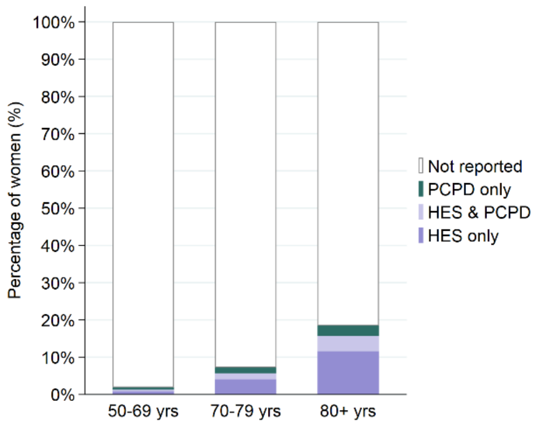
Numerator	(i) Women with an anticoagulant prescription dispensed from 2015–2021 recorded in the PCPD (ii) Women with a condition routinely requiring anticoagulant therapy recorded in HES
Denominator	All women
Country	England
Timeframe	*Women diagnosed from 2017–19*

What do we see within this audit group?

Among 99,120 women aged 50 years and over diagnosed with breast cancer in England from 2017–2019, 4.8% had a record of a CRRAT within HES, in the 2 years prior to diagnosis; this increased with age at diagnosis (1.3% 50–69 years; 5.8% 70–79 years; 15.7% 80+ years).

By comparison, 2.6% had a prescription for an anticoagulant within the PCPD, in the 2 years prior to diagnosis (1.1% 50–69 years; 3.1% 70–79 years; 6.8% 80+ years). 53% of these patients were already identified within the HES APC data. The PCPD therefore identified an extra 1.2% of women with a CRRAT at diagnosis (Figure 4.3.1).

Figure 4.3.1. Percentage of women with an anticoagulant prescription in the PCPD compared with recording of CRRAT in HES, by age at diagnosis



Note: *HES= Hospital Episode Statistics; PCPD= Primary Care Prescriptions Database. CRRAT = Conditions routinely requiring anticoagulant therapy.*

PCPD prescriptions were for: warfarin, direct oral anticoagulants (DOACs; dabigatran, rivaroxaban, edoxaban, apixaban), and low molecular weight heparins (LMWH; tinzaparin and enoxaparin).

4.4. Dementia-related prescriptions

Little is known about the effect of dementia on breast cancer treatment and subsequent outcomes, and no guidelines exist to guide care [Caba *et al* 2021]. Alzheimer's disease is the most common form of dementia, comprising approximately 50–75% of cases [NICE Clinical Knowledge Summaries 2021a]. For the NABCOP, being able to identify patients with (a diagnosis of) dementia is an important step in understanding the influence of dementia on processes of care and treatment decisions among older patients with breast cancer.

NICE guidelines recommend pharmacological interventions as an option for managing mild-moderate Alzheimer's disease, whilst pharmacological management among patients with non-Alzheimer's dementia, is dependent on the severity of the condition, as well as the form of dementia [NICE 2018c]. Estimates from 2015 of what percentage of people with dementia receive pharmacological interventions varied from 36% to 72% [Alzheimer's Research UK 2018, Donegan *et al* 2017].

Within the HES APC dataset, patients with dementia can be identified using the ICD-10 codes recorded against an admission (ICD-10 codes: F00, F01, F02, F03, F05.1, G30, G31) as long as this diagnosis is entered into one of the diagnosis fields associated with an episode. With (the treatment of) dementia primarily managed within the primary care setting data on dementia-related prescriptions recorded in the PCPD is potentially valuable to identify individuals with a diagnosis of dementia, in the cases where this is being pharmacologically managed.

To understand the additional value of the PCPD in identifying patients with dementia at diagnosis, among women aged 50 years and over diagnosed with breast cancer in England, we compared:

- the number of women with a diagnosis of dementia recorded in HES APC data; and
- the number of women with a dementia-related prescription recorded in the PCPD.

The cohort was restricted to women diagnosed from April 2017 onwards because the comparison relied on records in the two years prior to the cancer diagnosis to understand the percentage of women with dementia.

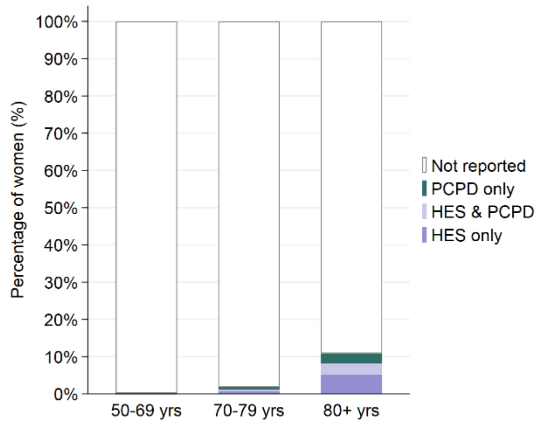
Numerator	(i) Women with a prescription for dementia medication dispensed from 2015–2021 recorded in the PCPD (ii) Women who had an ICD-10 code for dementia recorded in HES
Denominator	All women
Country	England
Timeframe	*Women diagnosed from 2017–19*

What do we see within this audit group?

Among 99,190 women aged 50 years and over diagnosed with breast cancer in England from 2017–2019, 1.8% had a record of dementia within HES, in the 2 years prior to diagnosis. As expected this increased with age at diagnosis (0.1% 50–69 years; 1.2% 70–79 years; 8.2% 80+ years).

By comparison, 1.3% had a prescription for dementia-related medication within the PCPD, in the 2 years prior to diagnosis (0.1% 50–69 years; 1.1% 70–79 years; 5.7% 80+ years). Half of these patients were already identified within the HES APC data. The PCPD therefore identified an extra 0.6% of women with dementia at diagnosis (Figure 4.4.1).

Figure 4.4.1. Percentage of women with a dementia-related prescription in the PCPD compared with recording of a dementia diagnosis in HES, by age at diagnosis



Note: *HES: Hospital Epidsode Statistics; PCPD: Primary Care Prescriptions Database.*

PCPD prescriptions were for: donepezil, galantamine, rivastigmine (known as acetylcholinesterase inhibitors), memantine.

5. Diagnosis and treatment patterns across 2020 into 2021

This chapter of the NABCOP 2022 Annual Report covers the presentation, diagnosis and management of women diagnosed in England and Wales in 2020, which includes the first wave of COVID-19 (March–May 2020) and part of the second wave (September 2020 to April 2021)[9]. Data for England also include the number of women diagnosed from January–May 2021. The numbers of women diagnosed and receiving treatment in 2019 are used as a reference to understand the impact of COVID-19.

The changes over time in the referral route by which women were diagnosed and the subsequent treatment(s) received are presented. It adds to existing literature on breast cancer care during this period [Dave *et al* 2021, Spencer *et al* 2021] and the NABCOP 2021 Annual Report, providing further detail on how women of different ages were affected by the COVID-19 pandemic.

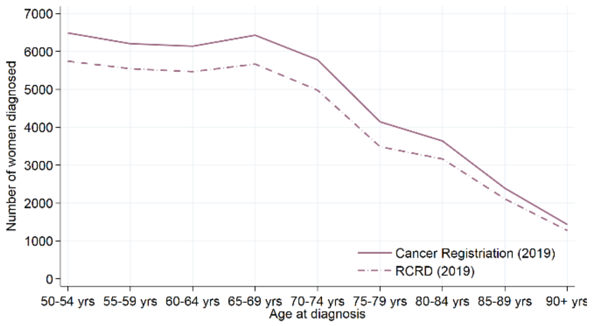
5.1. Methods

Data Sources

For England, the results were derived from the Rapid Cancer Registration Dataset (RCRD), provided by the NCRAS. The RCRD provides more timely data on cancer diagnoses than was previously possible with cancer registration data. This is the second time the RCRD has been used within the NABCOP and it was provided for analysis because the usual Cancer Registration data[10] for patients diagnosed in England in 2020 were unavailable. Treatment data were provided based on Hospital Episodes Statistics (HES) data, Systemic Anti-Cancer Therapy (SACT) data, the national Radiotherapy Data Set (RTDS) and Cancer Waiting Times (CWT). Data were provided for women aged 50 years and over, diagnosed with breast cancer (identified via proxy tumour registration[11]) within England from January 2019 up to May 2021 (being the latest data available at the time of analysis). Women identified from death certificates only were not included. Data from the RCRD provided for women diagnosed in 2019 enabled comparison with the usual cancer registrations and were used to determine case ascertainment of the RCRD in this cohort. **Figure 5.1.1** presents the (absolute) numbers of women with a diagnosis of breast cancer in 2019 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 2019 were 12% lower than numbers in Cancer Registration records. There was little difference in ascertainment by age.

Figure 5.1.1. Numbers of women diagnosed with breast cancer in 2019 in England: comparison of Cancer Registration and the RCRD



The results for Wales were derived from the usual data sources. The WCN provided fully validated data on women aged 50 years and over diagnosed with breast cancer from January 2019 up to December 2020 from the CaNISC recording system.

The course of treatment offered to patients with breast cancer is largely determined by tumour characteristics (molecular markers, grade, and stage at diagnosis), patient characteristics (health and fitness), and patient preference. For England, there was no information on molecular markers or grade. However, this information was provided within 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 not feasible. The results describing treatment received are presented at a national level, and give trends over time, stratified by age group and

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[9] https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19infectionsurveytechnicalarticle/wavesandlagsofcovid19inenglandjune2021

[10][10] 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/

[11] Proxy registration is defined using an algorithm that approximates the standard cancer registration process, using the most rapidly available data based on COSD returns. 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.

breast cancer group (defined by stage). To understand how diagnosis and treatment were affected by the pandemic, comparisons are made with patterns of care in 2019. For comparisons of 2020 with 2019 a starting point of 1 April was used, 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, England and Wales had entered a national lockdown.

Participating NHS organisations

Information from English NHS trusts and Welsh local health boards is included within this chapter. Findings are presented at a national level.

5.2. Patient Characteristics

The cohort includes women aged 50 years and over diagnosed with breast cancer in Wales, from January 2019 to December 2020, and in England, from January 2019 to May 2021. Details of how the cohort of patients was prepared for analysis can be found in **Appendix 3**. The numbers of women diagnosed and receiving treatment in 2019 are used as a reference to understand the impact of COVID-19 among women aged 50 years and over diagnosed with breast cancer across 2020.

An overview of the patient and tumour characteristics of the women diagnosed, broken down by age, is provided for England (comparing the months of January to May each year) and for Wales (comparing January to December each year) in **Appendix 4**.

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

- All items in the English RCRD are less complete for those women diagnosed in 2021 (compared to women diagnosed in 2019 and 2020), with information on stage also being less complete among older women, regardless of year.
- Within the Welsh data, there was improved data completeness for stage, ER status, HER2 status and WHO performance status for women diagnosed in 2020 compared to 2019. Similar to England, however, there were lower levels of completeness for stage among older women, regardless of year.

Figure 5.2.1 presents the numbers of women diagnosed throughout 2019 and 2020 (up to May 2021 in England) by country and age at diagnosis.

Compared to women diagnosed from January–December in 2019, the number of women diagnosed with breast cancer was 22% lower for the same months in 2020 (39,509 vs 30,685). This was similar in both England and Wales and differed by age:

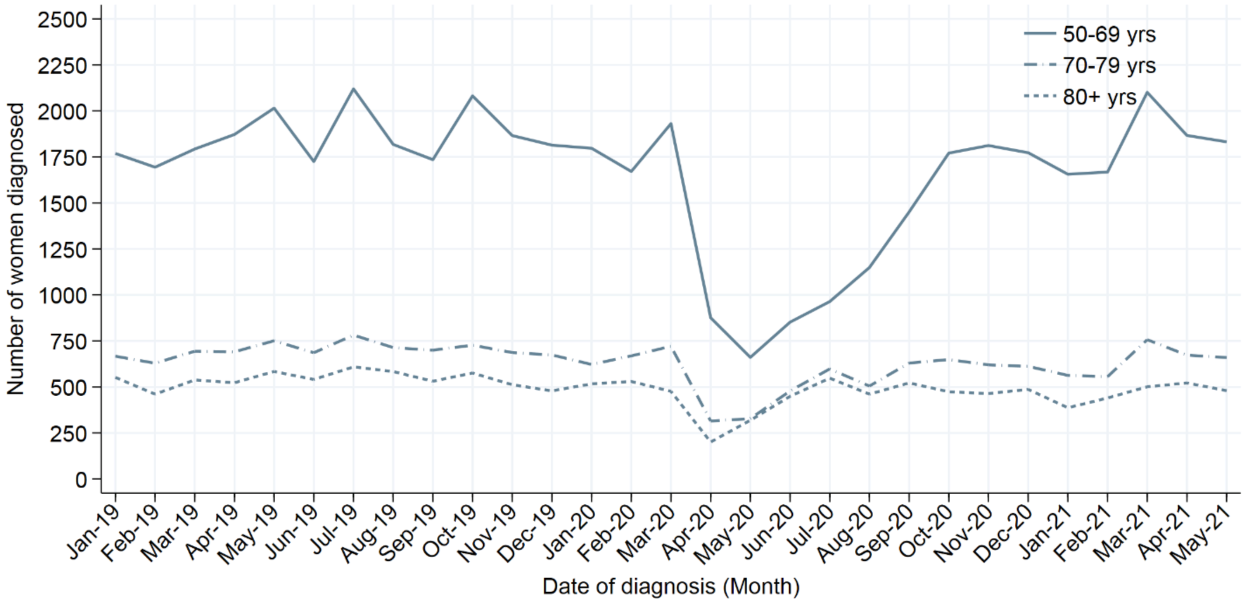
- 25% lower among women aged 50–69 years;
- 19% lower among women aged 70–79 years;
- 16% lower among women aged 80+ years.

In England, on average, 3,100 women aged 50 years and over were diagnosed each month in 2019. In 2020, the monthly average was 2,409, which includes those months of April to September where numbers diagnosed were considerably reduced (1,885 per month in 2020 vs 3,164 per month in 2019). This increased to 2,933 per month across January to May 2021, returning to levels comparable to the 2019 monthly average.

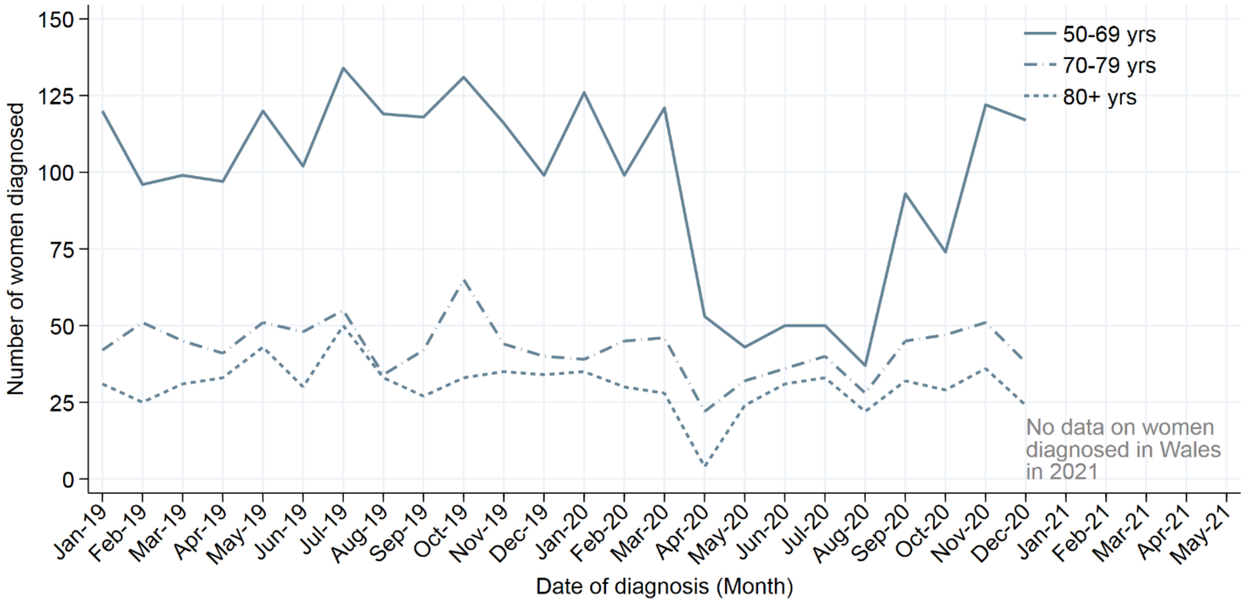
In Wales, on average, 193 women aged 50 years and over were diagnosed each month in 2019. In 2020, the monthly average was 149, although the number of women diagnosed in November and December 2020 was similar to the number diagnosed in November and December 2019.

Figure 5.2.1. Number of women diagnosed with breast cancer, by age at diagnosis

Women diagnosed in England *Source = RCRD diagnosis data*



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



5.3. Route to diagnosis

This section covers the route by which women presented to breast cancer services across 2020 and the first five months of 2021.

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	*Women diagnosed in 2019 & 2020 (and up to May 2021 in England)*

What do we see within this audit group?

Figures 5.3.1 & 5.3.2 present route to diagnosis by age in England and Wales from 2019 onwards. Comparing April–December 2020 with the same months in 2019, there was a 30% reduction in the number of women diagnosed (21,182 vs 30,172). This differed by age at diagnosis:

- 34% reduction among women aged 50–69 years;
- 26% reduction among women aged 70–79 years;
- 21% reduction among women aged 80+ years.

And differed by route to diagnosis:

- 61% reduction in numbers diagnosed via screening[12];
- 7% reduction in numbers diagnosed via non-screening routes.

There was a larger change in the numbers diagnosed via screening in Wales (71% reduction from 836 to 242) and a 4% increase (from 938 to 971) in numbers diagnosed via non-screening routes.

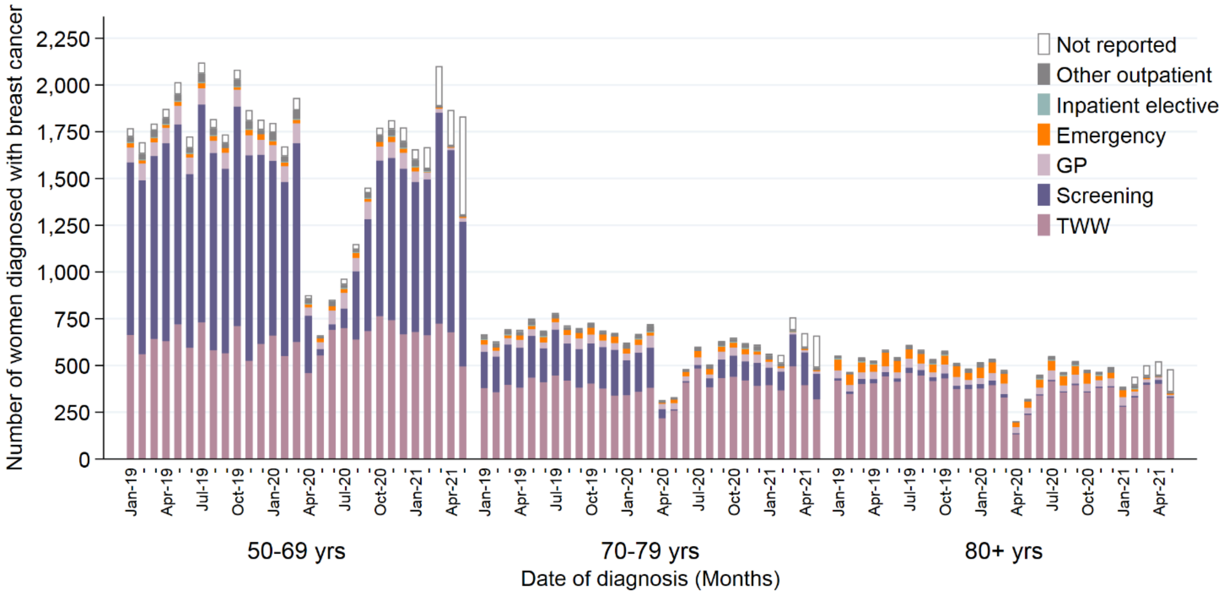
The change in numbers of women aged 50+ years diagnosed with breast cancer via screening was seen across all Cancer Alliances (Figure 5.3.3)

For women diagnosed in England, route to diagnosis data included the Two Week Wait (TWW) pathway. This is typically the primary referral route, for symptomatic breast cancer, accounting for 47% of women diagnosed April–July 2019; for the same months in 2020, 75% of women diagnosed with cancer were referred for diagnosis via the TWW.

In Wales, GP referrals accounted for 83% of women diagnosed April–July 2020 (44% April–July 2019).

Despite major challenges in the health environment, and changes to the available routes through which breast cancer is diagnosed, the number of women referred for diagnosis via emergency presentation remained low.

Figure 5.3.1. Route to diagnosis among women diagnosed in England from Jan 2019 to May 2021, by month & age at diagnosis



Note: Source = RCRD 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)

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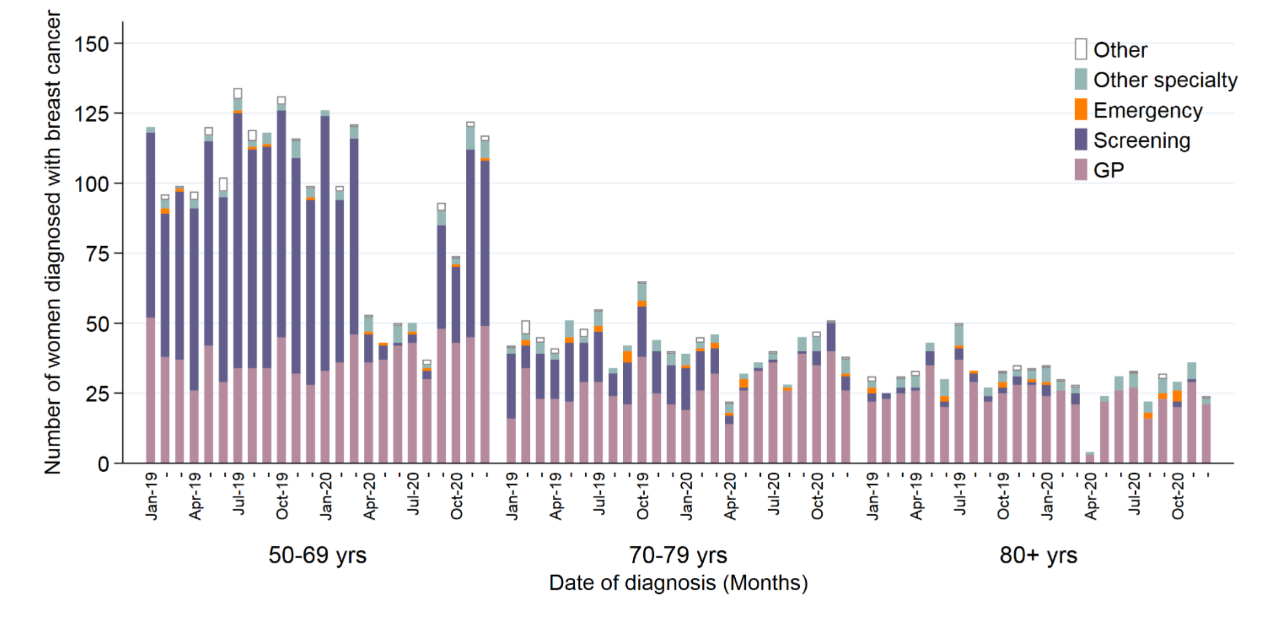
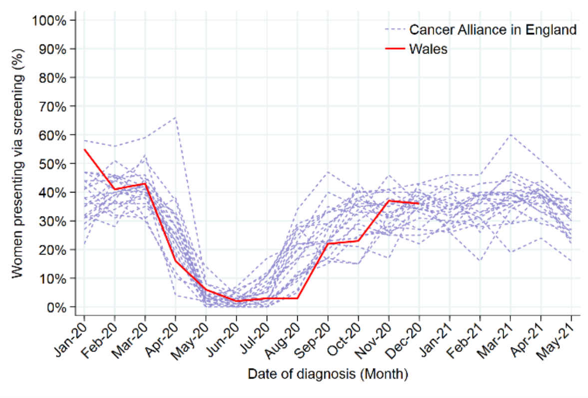
[12] Consideration: The AgeX trial, assessing the benefit of extending breast screening to women before age 50 and after age 70, stopped in May 2020. This may have contributed to the reduced number of patient diagnosed via screening. Further information is found at http://www.agex.uk/

Figure 5.3.2. 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*

Figure 5.3.3. Percentage of women diagnosed via screening, by Cancer Alliance



For England and Wales, there was a difference in the numbers of patients referred via screening or non-screening routes by age, across April–December 2020 compared with the same months in 2019. For numbers diagnosed via screening, there was a:

- 59% **reduction** among women aged 50–69 years (4,233 vs 10,222);
- 72% **reduction** among women aged 70–79 years (589 vs 2,083);
- 84% **reduction** among women aged 80+ years (37 vs 227).

For numbers diagnosed via non-screening routes, there was a:

- 2% **reduction** among women aged 50–69 years (7,715 vs 7,861);
- 6% **reduction** among women aged 70–79 years (4,485 vs 4,749);
- 18% **reduction** among women aged 80+ years (4,123 vs 5,030)**.**

January to May 2021 (England only)

For England, data were provided on women diagnosed up to May 2021. Comparing route to diagnosis in England between January and May 2021 with the same months in 2019, among women aged 50–69 years there was:

- a 9% **reduction** in numbers diagnosed via screening (4,510 vs 4,959);
- a 10% **increase** in the number of women diagnosed via non-screening routes (4,614 vs 4,184).

For women aged 70–79 years, these percentages were 35% **reduction** and 6% **increase**, respectively; for women aged 80 years and over, the numbers were **reduced** regardless of route to diagnosis (44% and 11% respectively).

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

This section describes the percentage of patients diagnosed in Wales in 2019 and 2020 who were calculated to have received the standard triple diagnostic assessment in a single visit; defined as when the imaging date and the biopsy or cytology date were reported to be the same. These data were only available for women diagnosed in Wales.

Women diagnosed at screening have the imaging and biopsy components of the triple diagnostic assessment performed according to screening protocols, where patients 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.

What is the evidence base for this process?

Triple diagnostic assessment (TDA) in a single visit is a key tenet of breast cancer service provision [NICE 2016]. Performance of triple assessment in a single visit is associated with higher diagnostic accuracy and high levels of patient satisfaction, as well as being cost-effective [NICE 2002].

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

What do we see within this audit group?

Figure 5.4.1 shows the percentages of women diagnosed with non-screen detected early invasive breast cancer in Wales estimated to have received TDA in a single visit. Overall, these were:

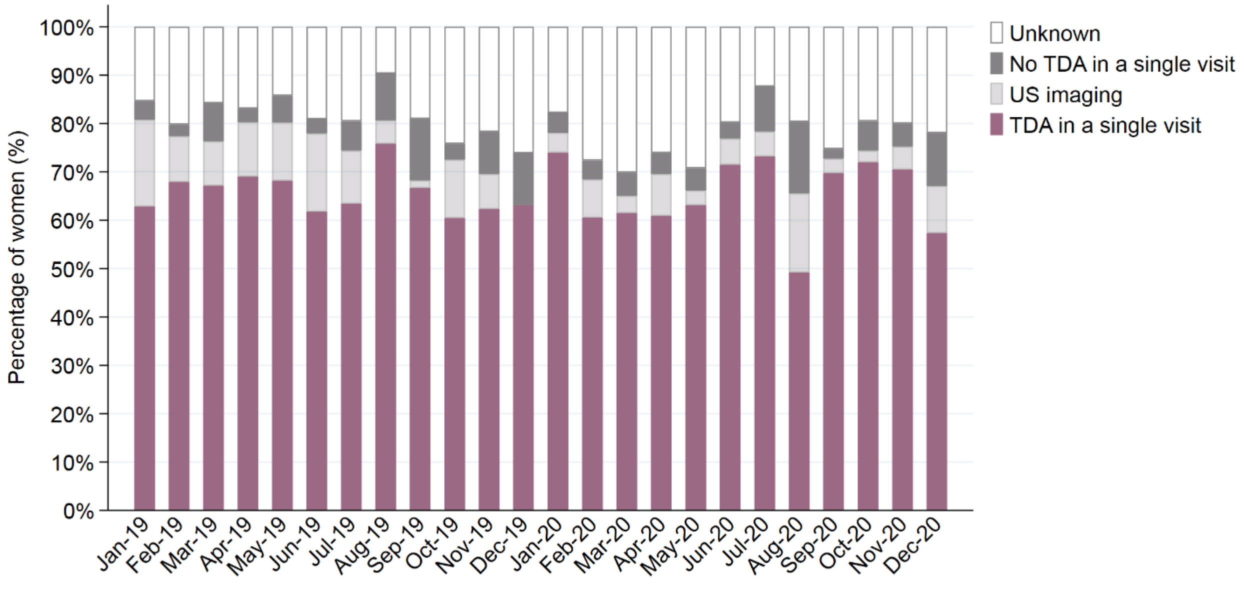
- 66% among women diagnosed in 2019;
- 66% among women diagnosed in 2020.

This is an improvement on the 59% among women diagnosed in Wales in 2018, as reported in the NABCOP 2020 Annual Report, and demonstrates Welsh local health boards continued to provide the same level of TDA in 2020.

Rates in 2019 and 2020 were broadly comparable by age at diagnosis, with slightly higher rates in 2020 among older women:

- 65% vs 62% for women aged 50–69 years;
- 64% vs 69% for women aged 70–79 years;
- 68% vs 70% for women aged 80+ years.

Figure 5.4.1. 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.

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

This section looks at whether women diagnosed in 2019 and 2020 had contact with a clinical nurse specialist. These data were only available for women diagnosed in Wales.

For women diagnosed with breast cancer, NICE guidance (NG101) states:
'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 2009a, 2018a].

Numerator	Women seen by a breast clinical nurse specialist/named key worker
Denominator	All women
Country	Wales
Timeframe	*Women diagnosed in 2019 & 2020*

What do we see within this audit group?

Among women aged 50 years and over, diagnosed in Wales in 2019 and 2020, data on clinical nurse specialist (CNS) contact were available for 81%.

Comparing submissions on women diagnosed in 2019 with those diagnosed in 2020, data completeness had improved considerably from 71% to 94% (Figure 5.5.1).

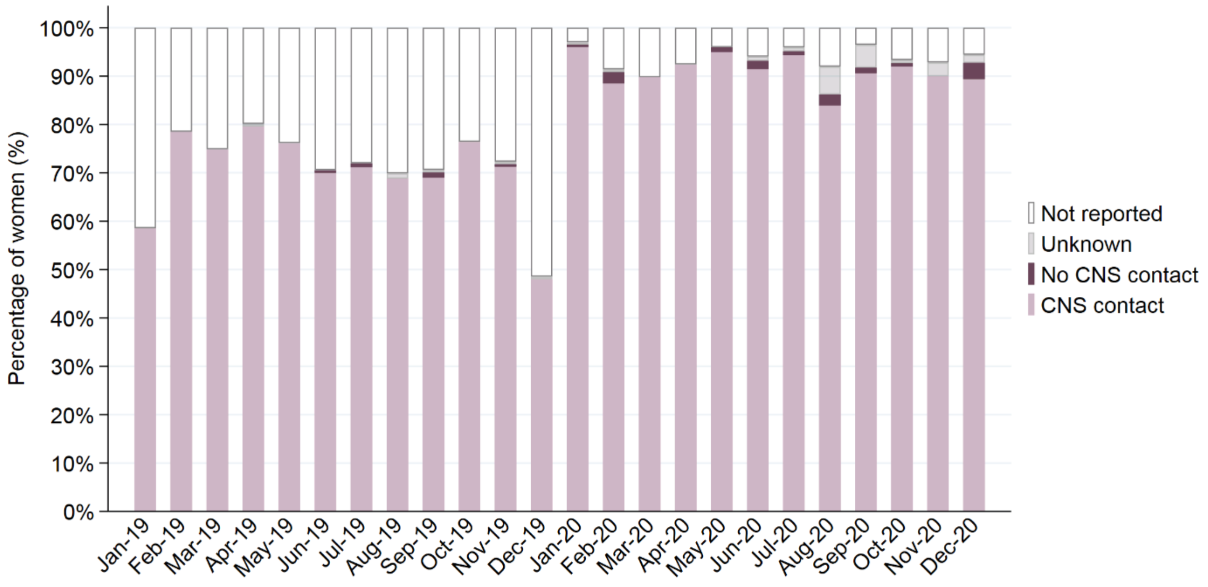
Among women diagnosed in 2019 completeness differed by age (50–69 years: 68%; 70+ years: 75%).

For women diagnosed in 2020 completeness was high regardless of age (50–69 years: 95%; 70+ years: 93%).

Among women with data, on whether or not there was CNS contact, 98% had contact with a CNS. Rates of contact were above 90% across all age groups and months of diagnosis, and demonstrates Welsh local health boards continued to provide the same level of CNS contact in 2020.

There was variation across Welsh NHS organisations in the completeness of these data on women diagnosed in 2019, ranging from 15% to 94%. All Welsh NHS organisations had improved data quality for women diagnosed in 2020, with data completeness ranging from 78% to 99%; the largest change was an increase from 15% to 96% for one Welsh NHS organisation.

Figure 5.5.1. 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"*

5.6. Surgery

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

What did the initial guidance say?

Due to the disruption of surgical services caused by COVID-19, guidance from the Association of Breast Surgery (ABS) on 15 March 2020 gave advice on prioritising patients for breast cancer surgery, dependent on the availability of theatre space. Among patients with ER positive breast cancer, endocrine therapy was advised as either a 'bridging' therapy while surgery was awaited, or in a neoadjuvant setting to downsize the tumour. The Federation of Surgical Specialty Associations (FSSA) provided a clinical guide on surgical prioritisation which has been regularly updated throughout the pandemic, with breast cancer surgery recommended as priority 2 or 3 [FSSA November 2021].

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	*Surgery in 2019 & 2020*

What do we see within this audit group?

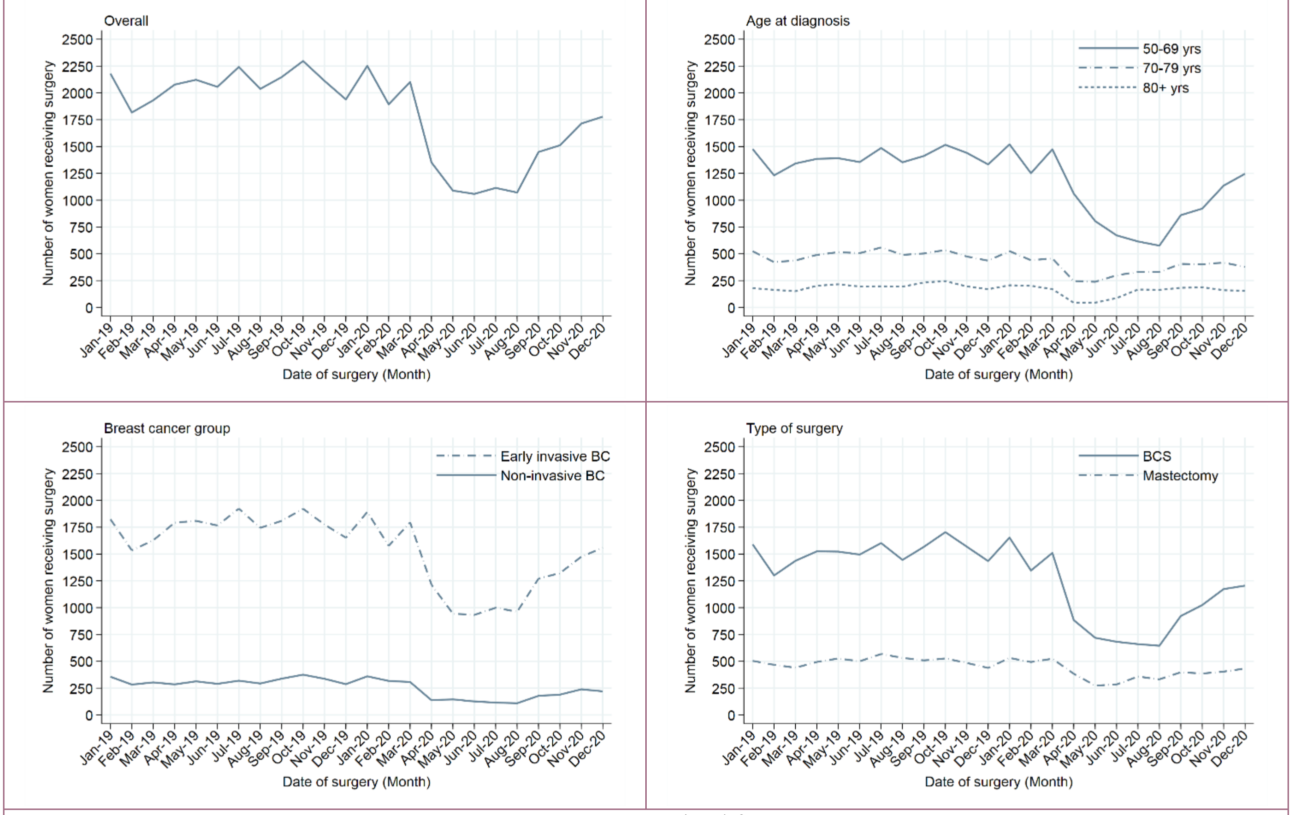
Comparing April–December 2020 with the same months in 2019, there was a 36% reduction (12,135 vs 19,029) in the number of women receiving surgery for non-invasive breast cancer or EIBC, within six months of diagnosis (**Figure 5.6.1**).

The reduction differed by:

- Country – 44% (Wales), 36% (England);
- Breast cancer group – 49% (non-invasive), 34% (EIBC);
- Type of surgery – 43% (BCS), 29% (mastectomy).

There was little difference in the reduction by age.

Figure 5.6.1. Number of women having surgery (within 6 months of diagnosis) for non-invasive or early invasive BC, overall and by age at diagnosis, breast cancer group and type of surgery.



__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.

A major contributor to the reduction in the absolute numbers of women receiving surgery within six months of diagnosis will be the reduced number of women aged 50 years and over diagnosed with breast cancer across April–September 2020.

Among women diagnosed in England and Wales between April and December 2020 79% received surgery within six months of diagnosis, compared with 86% of women diagnosed from April to December 2019. Rates of surgery were lower for women aged 80+ years, regardless of year of diagnosis.

Type of surgery

Among women receiving surgery within six months of diagnosis, rates of mastectomy with immediate reconstruction were reduced across April–December 2020 at 3%, compared with 5% for the same months in 2019 (**Figure 5.6.2**). Rates of mastectomy with immediate reconstruction were at their lowest (<1%) in April and May 2020. This was most noticeable within the younger age group (50–69 years).

Among women aged 50–69 years diagnosed in England and Wales and receiving surgery, rates of mastectomy increased from 14% among women receiving surgery between April–December 2019, up to 19% among women receiving surgery between April–December 2020. Older women were more likely to have mastectomy and rates were comparable for women aged 70+ years in 2019 and 2020.

Subgroups by ER status (Wales only)

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

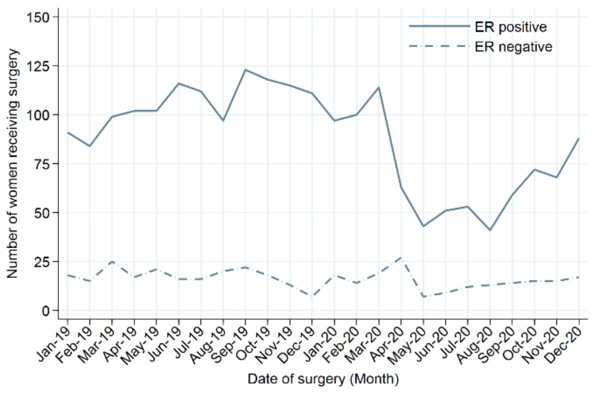
Comparing April–December 2020 with the same months in 2019, there was a 46% reduction (538 vs 996) in the number of women in Wales receiving surgery for ER positive non-invasive or early invasive breast cancer; the group of patients for whom primary endocrine therapy is a treatment option (**Figure 5.6.3**). This is consistent with guidance on prioritisation of patients for surgery where surgical capacity was reduced and also reflects the reduced number of women diagnosed.

In comparison, there was a 14% reduction (129 vs 150) in the number of women in Wales receiving surgery for ER negative breast cancer.

Figure 5.6.2. 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 + recon = mastectomy with immediate reconstruction; BCS = breast-conserving surgery; Unknown type = surgery reported only in CWT for patients in England.

Figure 5.6.3. Number of women having surgery (within 6 months of diagnosis) for non-invasive or early invasive BC, by ER status for women diagnosed in Wales



***Note:** Source = Surgery recorded in PEDW. ER status recorded in Wales Cancer Network data.*

5.7. Radiotherapy

This section covers the use of postoperative radiotherapy in 2019 and 2020 for women diagnosed with non-invasive or early invasive breast cancer. The use of radiotherapy after surgery is recommended for most women who receive breast-conserving surgery (BCS), with post-mastectomy radiotherapy recommended for women considered to be at moderate or high risk of recurrence.

What does the guidance say?

Initial guidance on the use of radiotherapy for breast cancer during the COVID-19 pandemic, from the Royal College of Radiologists (RCR), published on 24 March 2020, recommended that radiotherapy be delivered in 5 fractions (F) for all patients with node-negative tumours requiring radiotherapy with no boost, based on results from the FAST and FAST-Forward trials [RCR March 2020, Coles *et al* 2020].

Options included 28–30 Gray (Gy) 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].

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

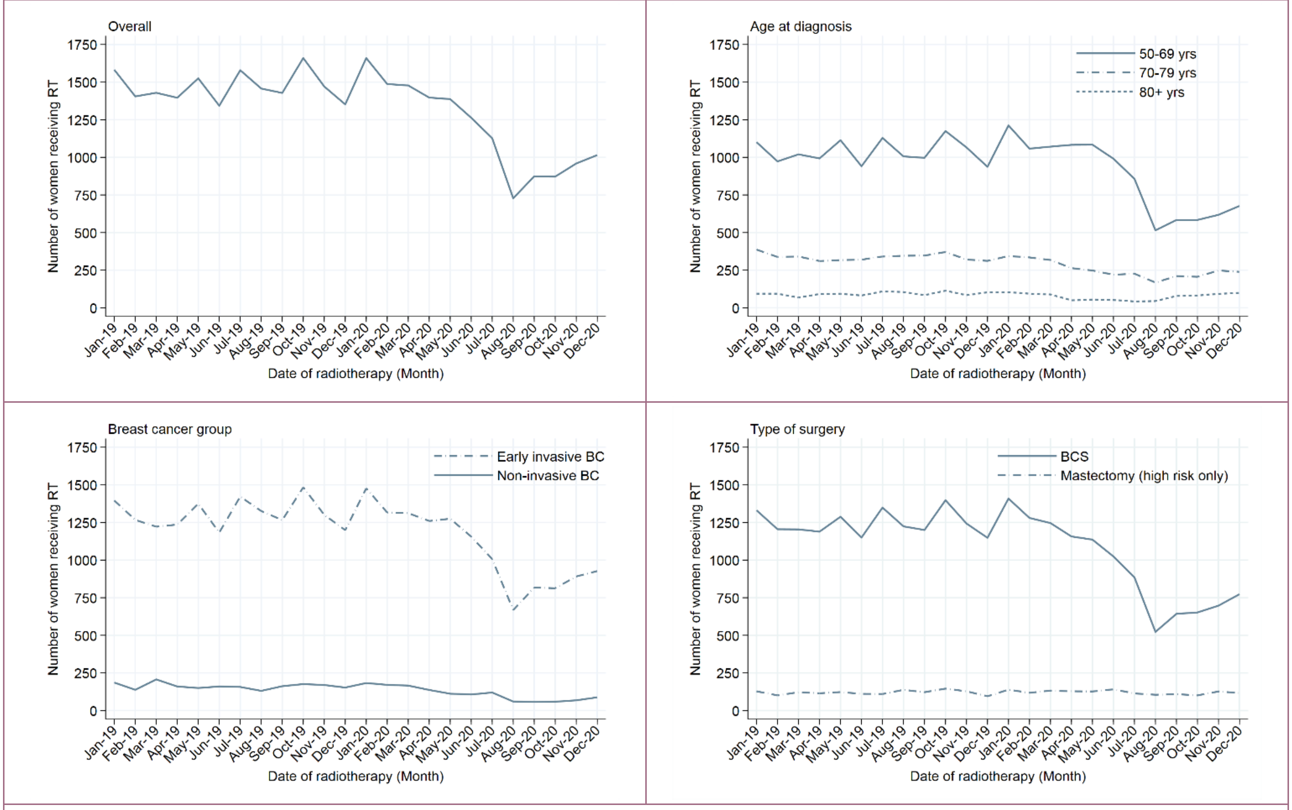
What do we see within this audit group?

Comparing numbers of women with non-invasive or EIBC receiving radiotherapy across April–December 2020, with the same months in 2019, there was a 28% reduction in the number of patients having radiotherapy (9,455 vs 13,096). This reduction is related to the reduced number of women aged 50 years and over diagnosed across April–September 2020. The reduced numbers of women receiving radiotherapy (Figure 5.7.1) differed by:

- Age – 26% (50–69 years), 33% (70–79 years), 32% (80+ years);
- Breast cancer group – 44% (non-invasive), 26% (EIBC).

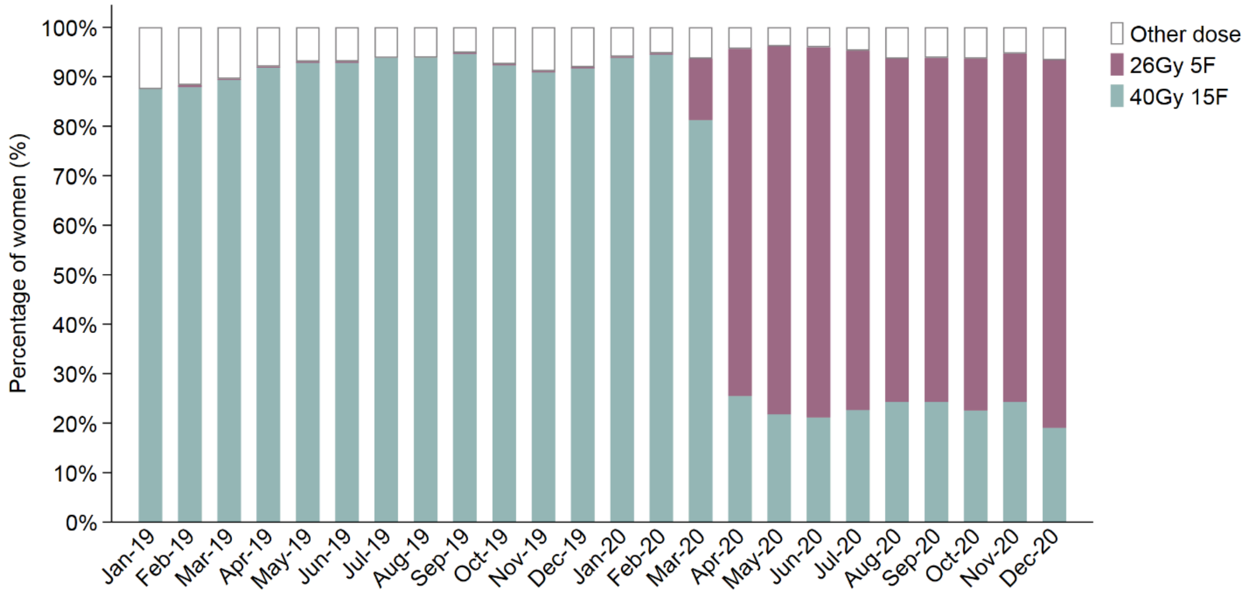
In line with national guidance confined to radiotherapy after BCS to reduce the duration of postoperative radiotherapy, numbers were mostly reduced among women having BCS (33%, compared with 2% following mastectomy for high risk EIBC).

Figure 5.7.1. Number of women having radiotherapy for operable non-invasive or early invasive BC, overall and by age at diagnosis, breast cancer group and type of surgery.



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. High-risk defined as N+/T3N0, for women diagnosed in Wales, Stage 2b/3a, for women diagnosed in England*

Figure 5.7.2. Prescribed radiotherapy dose among women starting radiotherapy for operable non-invasive or early invasive BC, by start date of radiotherapy

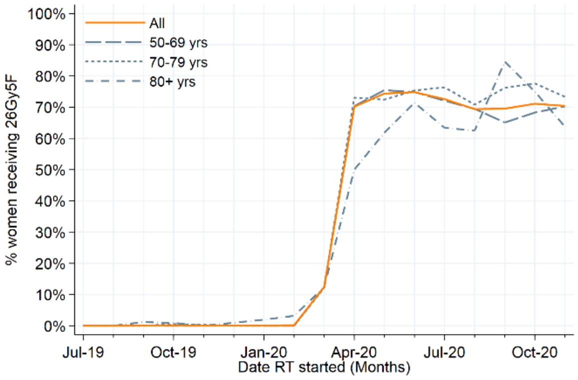


Note: *GY = Grays; F= Fractions.Other dose = RT dose not reported or different to 40Gy 15F and 26Gy 5F. Denominator is all women receiving radiotherapy.*

Following a decrease in number of women starting radiotherapy from May to August 2020, numbers increased from September 2020.

Among those women who received postoperative radiotherapy in 2020, there was a marked change in dose and scheduling from 40Gy in 15F (standard regimen) to 26Gy in 5F (hypofractionated regimen) (**Figure 5.7.2**). The use of hypofractionated radiotherapy continued to be high at 72% across April–December 2020 (compared with 0% for the same months in 2019). This change in radiotherapy regimen was seen for all ages (**Figure 5.7.3**) and was comparable across England and Wales.

Figure 5.7.3. Reported use of 26Gy5F radiotherapy regimen among women receiving post-operative radiotherapy between July 2019 and December 2020, overall and by age at diagnosis.



Note: *Denominator is all women receiving radiotherapy.*

5.8. Chemotherapy

Systemic anti-cancer treatments, such as cytotoxic chemotherapy, aim to improve survival and reduce the risk of breast cancer recurrence in patients diagnosed with early invasive breast cancer. Chemotherapy given prior to surgery is used to facilitate breast-conserving surgery (neo-adjuvant chemotherapy) or enable patients with locally advanced tumours to have surgery. Chemotherapy is also used to provide symptom palliation and extend survival in patients with advanced disease.

This section looks at the use of chemotherapy for invasive breast cancer (Stage 1–4) in 2019 and 2020.

What did the guidance say?

From March 2020, the ABS in conjunction with the UK Breast Cancer Group issued guidance on the use of systemic anti-cancer treatment, including neo/adjuvant chemotherapy during the COVID-19 pandemic. This provided recommendations for prioritisation of systemic treatment and has been regularly updated.

Numerator	Women who had chemotherapy
Denominator	Women diagnosed with invasive BC (Stage 1–4)
Country	England & Wales
Timeframe	*Chemotherapy in 2019 & 2020*

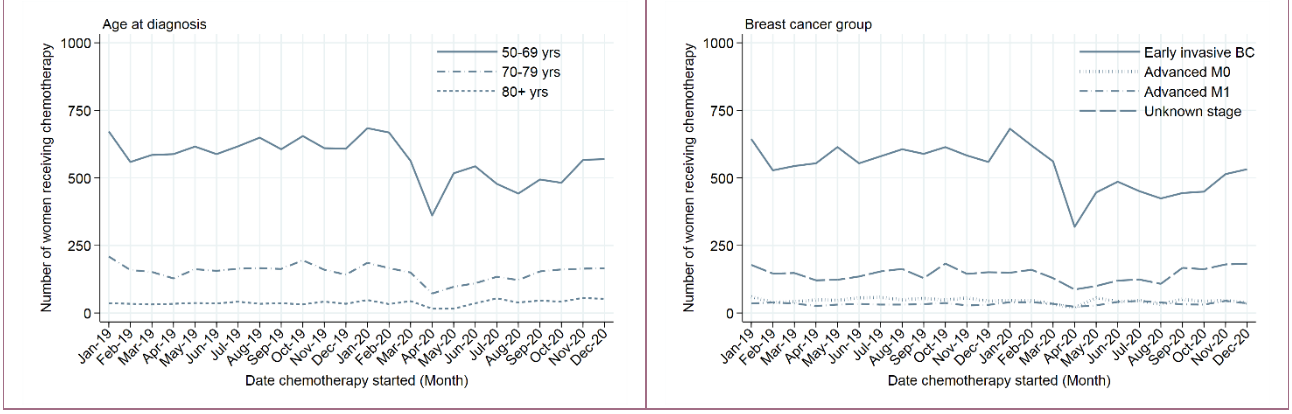
What do we see within this audit group?

There was an 18% reduction (5,989 vs 7,299) in the number of women with invasive breast cancer who received chemotherapy from April–December 2020, compared with the same months in 2019 (**Figure 5.8.1**). This reduction will be influenced by the reduced number of women aged 50 years and over diagnosed across April–September 2020.

The reduction differed by:

- Country – 7% (Wales), 19% (England);
- Age at diagnosis – 20% (50–69 years), 18% (70–79 years), 10% increase (80+ years);
- Breast cancer group – 23% (EIBC), 19% (Advanced M0), 14% increase (Advanced M1), 6% (Unknown stage).

Figure 5.8.1. Number of women having chemotherapy for invasive BC, by age at diagnosis and breast cancer group.



6. Frailty-Fitness assessment for older women in breast clinics

6.1. Background

Around one-quarter of patients newly diagnosed with breast cancer are aged 75 and over [Cancer Research UK 2021]. While older patients are less likely to receive breast cancer treatment that is in line with national guidelines when compared with younger women [van de Water *et al* 2012], standard breast cancer treatment regimens may not be appropriate for some older patients who are frail or have medical conditions. These comorbidities can increase the risk of treatment related adverse events and lead to poor outcomes [Tang *et al* 2018].

The ageing process is unique to each individual, and while comorbidities, frailty, and geriatric conditions become more common with advancing age, their prevalence varies widely between older patients. Therefore, it is important that treatment decisions are based on an objective assessment of overall health, rather than on chronological age alone.

What does the guidance say?

Breast cancer guidelines emphasise that treatment should be based on clinical need and patient fitness, rather than on chronological age alone.

NICE guidance (NG101) recommends:

> *'Treat people with invasive breast cancer, irrespective of age, with surgery and appropriate systemic therapy… unless significant comorbidity precludes surgery.'* [NICE 2018a]

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

> *'Younger patients should not be overtreated because they are 'young', just as 'older' patients should not be undertreated solely based on their age.'*
>
> *'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) provide 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]

Assessing and documenting information on patient fitness early in the breast cancer pathway provides important benefits, such as:

- optimising medical conditions prior to treatment commencing, to improve the range of feasible therapeutic options and reduce the risk of complications; and
- patients who have additional medical, social or psychological needs can be supported where required.

Alongside identifying patients with frailty or comorbidities, fitness assessment tools are valuable to identify older patients who have good levels of overall health and can therefore proceed on standard treatment pathways. By incorporating an objective assessment of patient fitness into oncological treatment decisions, the risk of under or over treatment can be minimised.

6.2. The NABCOP Fitness Assessment Form

In 2018, a multidisciplinary sub-group of the NABCOP Clinical Steering Group developed a fitness assessment form in order to provide an objective and standardised approach to evaluating overall health and fitness among older women (**Appendix 5**).

The form was designed for use among women aged 70 and over with breast cancer, and consists of two validated instruments to assess frailty (the Clinical Frailty Scale [Rockwood *et al* 2005]) and cognitive ability (the Abbreviated Mental Test Score (AMTS) [Hodkinson 1972]) and three screening questions on medical and cognitive comorbidities.

The form, along with an information leaflet on its use by healthcare professionals, is available to download via the NABCOP website: https://www.nabcop.org.uk/resources/fitness-assessment-tool/.

To provide a practical solution to the shift to paperless notes' systems in many NHS organisations, the fitness assessment form is also available as an 'editable' PDF.

The NABCOP fitness assessment form is intended to be completed at the initial diagnostic clinic, for all women aged 70 and over who are presenting with symptoms and signs suspicious of breast cancer. This allows for early identification of patients who are frail, or who may require additional support throughout treatment. By completing the form at this point in the patient pathway, the results will be available for discussion at the initial multidisciplinary meeting (MDT) and contribute to treatment planning. In cases where the form highlights potential concerns around comorbidities or frailty, this should stimulate the onward referral of patients to appropriate services, to determine if further management is needed. **Box 6.2.1** contains links to websites where health care professionals can access information on the assessment and management of patients with frailty, as well as useful resources to assist in the management of older patients.

Box 6.2.1. Tools and resources

The following websites provide information for health care professionals on frailty, as well as 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 can 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/

The NABCOP have produced a guide to the breast cancer pathway for older women, which includes question prompts for patients to discuss key aspects of their care with their breast cancer team. The guide is available for download at: https://www.nabcop.org.uk/resources/the-nabcop-guide-to-the-breast-cancer-pathway-for-older-women/

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

The Cancer Outcomes and Services Dataset (COSD) is the national reporting standard for cancer in NHS trusts across England, and one of the main datasets received by the NABCOP. It provides information on patient characteristics, tumour factors, and treatment. The items on the NABCOP fitness assessment form have been incorporated into the updated COSD Version 9.0 dataset for NHS trusts in England, released in 2020 (**Appendix 5**). These items may be incorporated into the new cancer informatics system for patients diagnosed in Wales in the near future.

NHS trusts in England can review their COSD data returns and monitor levels of data completeness via the CancerStats portal. This online platform provides feedback on levels of data completeness (including the NABCOP fitness assessment form data items) for national cancer datasets (including COSD) for patients diagnosed in England: https://www.nabcop.org.uk/resources/cancerstats-area/.

What are current levels of completeness for the NABCOP fitness assessment data items?

Using data returns from the CancerStats portal, we looked at the completeness of each of the NABCOP fitness assessment form data items among women diagnosed with breast cancer in England between October 2020 and September 2021.

Only NHS trusts known to be submitting COSD V9.0 data returns were included; this was ascertained using the completion of triple diagnostic assessment (TDA) in a single visit, another NABCOP data item added to COSD V9.0 and which generally has high levels of data completeness in NHS trusts able to enter COSD V9.0 data.

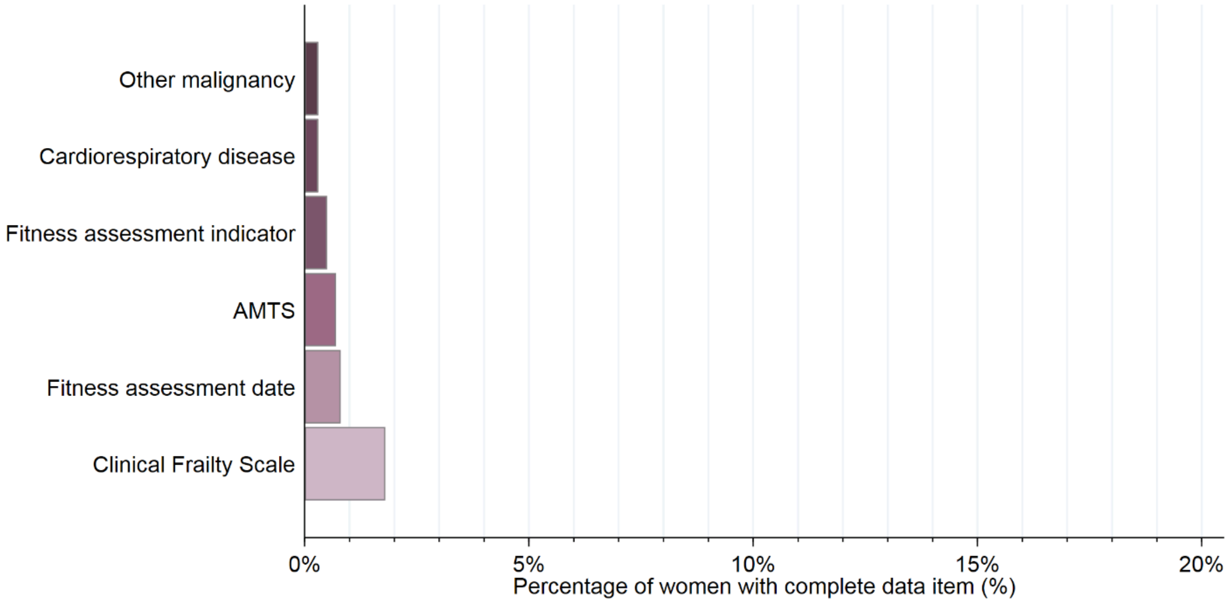
We identified 87 NHS trusts submitting COSD V9.0 data. Among these, 24% (n=21 trusts) had submitted at least one of the NABCOP fitness assessment form data items for women aged 70 and over diagnosed with breast cancer at their trust.

Levels of data completeness across all six fitness assessment items were low among all NHS trusts submitting COSD V9.0 data (**Figure 6.3.1**).

Looking at each item separately, we found that completeness was lowest for the two questions on presence of other malignancy and cardiorespiratory conditions, with this completed for only 0.3% of records respectively. The Clinical Frailty Scale was completed in 1.8% of records.

In contrast, the TDA in a single visit (Yes/No/Not known) data item had comparably high levels of completeness. Among women aged 70 and over this item was completed for 71% of records. Completeness for the TDA indicator demonstrates the feasibility of COSD V9.0 data submission, and should prompt clinical teams to improve data returns for the NABCOP fitness assessment form data items. **Box 6.3.1** describes the data submission process of an NHS organisation with high levels of data completeness for the fitness data items.

Figure 6.3.1 Percentage of women aged 70 and over diagnosed with breast cancer in England between October 2020 and September 2021, with completed NABCOP Fitness Assessment COSD V9.0 data items as recorded within CancerStats.



Abbreviation: AMTS; Abbreviated Mental Test Score.

***Note**: The above figure only includes NHS trusts (n=87) known to be submitting COSD V9.0 data returns; this was ascertained using the completion of the 'triple diagnostic assessment in a single visit' indicator data item.*

Box 6.3.1 Case study: submission of fitness data items – James Paget University Hospital NHS Foundation Trust.

Achieving meaningful levels of data completeness among the fitness assessment items will provide invaluable information to assist understanding of how overall health influences treatment decisions and outcomes among the older population. Here we highlight the data submission process from the breast unit at the James Paget University Hospital NHS Foundation Trust, as an example of achieving high-quality data returns for the fitness assessment data items for women aged 70 and over:

"Our one stop breast clinic proforma were amended to include the components of the NABCOP scoring to ensure the data is captured at the first opportunity in the patient pathway. The data is then extracted live at MDT by our BCNs and entered onto Somerset at the time of their first BCN entry. This approach ensures that all data collection is contemporaneous and accurate. Patients 70+ with any missing data elements are reported from Somerset for completion to the BCN's."

Note: BCN = breast cancer nurse

6.4. Measuring frailty using routine cancer registration data

Prior to the introduction of the fitness data items to COSD V9.0, national cancer databases contained few data items which could provide information on patient fitness or levels of frailty. The core cancer registration data set in England and Wales contains the WHO Performance Status classification, but this describes functional status and remains inadequately completed in England and Wales (**Section 3.2** & **Table 3.3.1**).

It was anticipated that the fitness data items would take time to reach meaningful levels of data completeness, and alternative methods of capturing information on overall patient health were explored by the NABCOP. This led to the development of the Secondary Care Administrative Records Frailty (SCARF) index, which constructs an individual frailty index score for each patient [Jauhari *et al* 2020] using data in national routine hospital datasets (e.g. HES/PEDW). The SCARF index is based on a cumulative deficit model of frailty, where 32 'deficits' covering functional impairment, geriatric syndromes, medical comorbidities, or problems with nutrition, cognition or mood, are aggregated to produce a frailty index. Each deficit is mapped to equivalent ICD-10 codes found within the national hospital datasets, with a 2-year lookback from date of diagnosis. The SCARF index provides an additional approach to enrich the understanding of how patient fitness and frailty influence breast cancer management and outcomes as well as complementing existing comorbidity measures.

6.5. Informing future work on fitness assessment in older patients

Although the work of the NABCOP has improved our understanding on how national treatment patterns are influenced by patient age and fitness, further work is required to build on this success. The evolution of NABCOP into two national audits for breast cancer (for patients with primary or metastatic disease respectively) will enable the quality improvement processes established by the NABCOP to be continued.

Patient fitness and frailty can vary considerably among older women and can affect treatment allocation for breast cancer. It is important that they are systematically assessed and recorded in all older patients. The CFS and AMTS are recognised and validated tools for assessment of older patients and are components on the NABCOP fitness assessment form. The local adoption of the NABCOP fitness assessment form, as a standardised way of measuring frailty and cognition in breast clinics, and subsequent return of the fitness data items within COSD, will be vital for future research and clinical audit, enabling NHS organisations to reflect on how information on a patient's fitness is incorporated into treatment decision-making.

Analyses of CancerStats data returns have revealed low levels of data completeness thus far for the data items on fitness assessment among women aged 70 and over. The reasons behind this are likely to differ between NHS trusts, and stem from several factors. With the emergence of COVID-19 in early 2020, breast cancer teams may have had reduced capacity for engagement in introducing new initiatives as clinical practice focused on delivering safe care to patients while managing the significant challenges brought about by the pandemic. In addition, barriers may exist that prevent data from the NABCOP fitness assessment form from being included in COSD data returns. In the NABCOP 2020 Organisational Audit conducted between October 2020 and January 2021, 27% (n=25/93) of responding NHS organisations reported using the NABCOP fitness assessment form [NABCOP 2021 Annual Report], but this is not reflected in the current levels of data completeness within CancerStats returns.

The NABCOP has also previously described an apparent disparity between reporting practices and recorded data completeness for breast cancer recurrence. Understanding data flows, and any potential challenges to this process between NHS organisations and cancer registration services has been an important aspect of the work of the NABCOP, since these datasets are the main source for the NABCOP reports and future national cancer audits

Therefore, future work should aim to address local barriers to the completion of the fitness data items, as well as supporting breast units within NHS organisations to implement use of the NABCOP fitness assessment form among women aged 70 and over.

7. Reflections on the NABCOP's achievements

The National Audit of Breast cancer in Older Patients (NABCOP) commenced in April 2016. It focused on evaluating the care pathway from the initial point of diagnosis for older women (aged 70 years and over) in NHS hospitals within England and Wales. Through contrasting the care received by older women to that received by women aged 50 to 69 years, the NABCOP has sought to highlight and interrogate variation in the treatments received by older women and to assess subsequent outcomes.

The NABCOP has published the results from five major analyses of patient-level datasets and two organisational surveys, in a series of Annual Reports. These have informed NHS breast units' initiatives to improve the care received by older patients with breast cancer. The NABCOP results have had a wide impact, being embraced by various national audiences beyond the breast cancer clinical community, notably patients, policy makers, NHS regulators, cancer registrations services, charities and the public and brought the attention of a national audience to issues concerning the care of the growing population of older patients with breast cancer through the publication of robust, clinically relevant information at scale.

In the following sections, we reflect on some of the achievements of the NABCOP, and areas where it is hoped to see further improvement in the years to come.

7.1. Using routine data to describe patterns of care and treatment among older women

The use of routinely collected national health care data in the NABCOP has served to highlight the value of these resources to a clinical audience, and to prompt increased engagement from NHS organisations to improve data accuracy and completeness.

Our analyses to describe what proportion of patients had a triple diagnostic assessment (TDA) in a single visit highlighted a gap in routinely collected data and as a consequence, a new data item was incorporated in 2020 into the English COSD V9.0 data returns. Current data completeness levels reported on CancerStats suggest this simple data item is already being well completed, with data reported on TDA in a single visit available for 47% of women aged 50+ years diagnosed between October 2020 and September 2021. There are plans for the data item to be introduced within the Welsh registration dataset.

A large part of the ability to use routine data is having good levels of completeness and quality. This is an area where there is still work to be done, however we note that there have been improvements in completeness and we would commend the efforts made by many individuals at NHS organisations engaging in improving routine data submissions.

The NABCOP has used the available routine data to demonstrate that, among women aged 50–79 years, there were few proportional differences in the patterns of molecular phenotype, grade or stage according to patient age.

The NABCOP annual reports have described marked variation in rates of surgery (including type of surgery and subsequent reoperations), radiotherapy (by type of primary surgery received) and chemotherapy (including short-term morbidity following adjuvant chemotherapy) by age, among women with similar characteristics. Analysis looking at the lack of surgery among older patients has provoked discussion to stimulate increased surgical rates for older patients with ER positive cancers especially in the fitter population, as reflected in the first NABCOP Quality Improvement (QI) goal (**Appendix 6**). Within this NABCOP 2022 Annual Report, it is encouraging to see there have been increases in the rate of surgery among older women diagnosed with ER positive EIBC in more recent years (**Chapter 3**).

The more recent NABCOP Annual Reports have included information on outcomes following a diagnosis of breast cancer. Findings have highlighted consistent underreporting of recurrence, putting a spotlight on the serious gap in routine data. This has contributed to discussions on the recording of recurrence and stimulated work to improve future capture of these important data.

Analyses of the rate of reoperations after breast-conserving surgery have complemented work done by the Getting It Right First Time (GIRFT) team, and it is encouraging to see there have been improvements in the rates of reoperation over the years covered by the audit, although there remains considerable potential for further reductions.

Data collected as part of the National Cancer Patient Experience Survey (CPES), linked at patient-level to the NABCOP cohort, has provided insight into the patient-reported experience of an older patient newly diagnosed with breast cancer. These findings were published in the NABCOP 2019, 2020 and 2022 Annual Reports. It is promising to see improvements reported in the support being provided to older women diagnosed with breast cancer across the audit period.

Endocrine therapy (ET) forms part of treatment for the majority of women diagnosed with ER positive breast cancer. In collaboration with NCRAS, the NABCOP has assessed the value of linking data from the Primary Care Prescription Database (PCPD) to the NABCOP cohort. The PCPD was found to be a valuable additional source of information on prescribed ET for this population of women aged 50 years and over diagnosed with breast cancer. Findings have been published within the NABCOP 2021 Annual Report and also in **Chapter 4**. Use of this data source will be of importance for future breast cancer audits to understand the patterns and use of endocrine therapy in routine care.

7.2. Standardising the assessment of patient fitness

When the NABCOP began reporting in 2017, the availability of data on patient fitness at the point of diagnosis, and therefore the availability of information to understand the subsequent treatment choices for an older patient, was limited to the reporting of WHO performance status (WHO PS) and calculation of the Charlson Comorbidity Index (CCI). Although the completeness of WHO PS data has improved over the years, there was still no easily accessible measure of frailty within secondary care data sources. Development of the Secondary Care Administrative Records Frailty (SCARF) Index by the NABCOP was a first step in using the available data to understand frailty in the population of women aged 50 years and over [Jauhari *et al* 2020]. This index has been used within the NABCOP Annual Reports to present a breakdown of treatment patterns and subsequent outcomes by level of individual patient frailty. Early work on comparative outcomes including overall survival has contributed to understanding the prognosis of fit, older women who received surgery.

The NABCOP has developed with stakeholders a fitness assessment form to be completed at the initial diagnostic clinic, for all women aged 70 and over who are presenting with suspicion of breast cancer. Assessing fitness at this point allows staff to identify early in the care pathway patients who are frail, or who may require additional support throughout treatment, as well as informing treatment planning. Completion of the NABCOP fitness assessment form enables NHS organisations to formally document patient fitness prior to the offer of treatment choices and also provides a standardised way of measuring fitness. This is reflected in the second NABCOP QI goal and it is pleasing that the individual fitness data items are now being collected in England as part of the routine COSD data returns. As a result, these data will be available for future breast cancer audits to understand the levels of frailty among older patients newly diagnosed with breast cancer and how this impacts subsequent treatment choices and outcomes.

7.3. Stimulating quality improvement through relationships with stakeholders

A key goal of the NABCOP is to present and disseminate audit findings in a way which stimulates local quality improvement. To successfully do this there are several groups of stakeholders which the NABCOP has engaged with: healthcare professionals, patient representatives and charities and academic researchers. This has been done in a variety of ways throughout the audit period.

Regular communications

Circulation of the NABCOP quarterly newsletter has been a valuable tool for the audit to engage directly with stakeholders from all key healthcare professions, ranging from breast MDTs to clinical audit teams. The newsletter, in addition to social media such as twitter (@NABCOP_News), has been a productive vehicle for highlighting audit activities, promoting uptake of the report recommendations and increasing engagement with breast cancer teams and the wider clinical community.

Collaboration with patients

The NABCOP has found great value in having a close working relationship with patient charities and representatives on the audit oversight groups, and also having had the opportunity to engage with groups such as the HQIP Service Users Network. Collaborating with this key stakeholder group in producing the patient version of the annual report each year, and more recently in developing 'the NABCOP guide to the breast cancer pathway for older women', the NABCOP has improved the amount and presentation of information available for the older patient around breast cancer diagnosis and treatment. The pathway guide was specifically produced to encourage and guide patients' discussion of key elements of their care and treatment with their wider breast care team, and clinical nurse specialist: https://www.nabcop.org.uk/resources/the-nabcop-guide-to-the-breast-cancer-pathway-for-older-women/

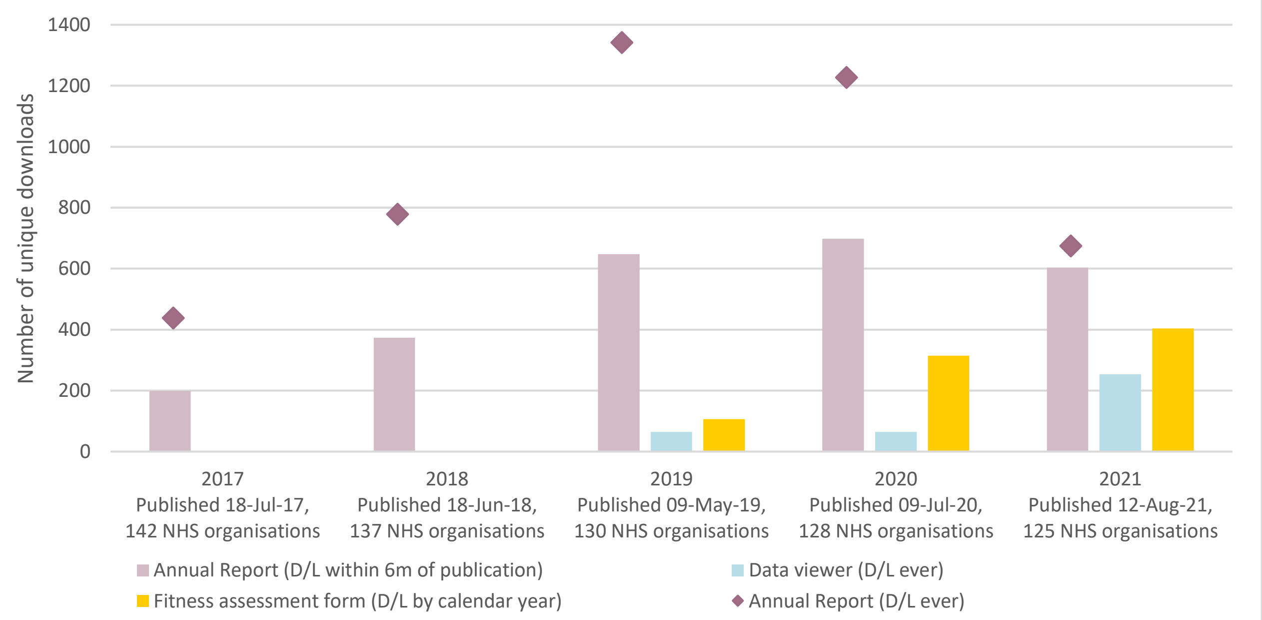
Establishing mechanisms by which NHS organisations can access and review their local results

The NABCOP has worked with NCRAS to develop reports on key data items within a NABCOP-specific section of the CancerStats platform. Level 2 reports enable NHS trusts to assess their completeness of key COSD data items in real time. Quarterly reports are sent directly to NHS trusts to highlight areas to improve completeness of selected data items used within the NABCOP Annual Reports. More recently, information on completeness of TDA in a single visit and the NABCOP fitness assessment form data items has been included in this setting. With CancerStats available to NHS staff and others with a secure N3 connection, this is a valuable resource for engaging organisations with routine data. Full details are available at: https://www.nabcop.org.uk/resources/cancerstats-area/

Publication of organisation-level report findings within a data viewer (released in conjunction with the Annual Report, accessible via the resources section of the NABCOP website) has formed a major contribution to encouraging uptake of report recommendations. It is encouraging to see increasing downloads of the annual reports and the data viewer over the years the audit has been reporting (**Figure 7.3.1**). This is accompanied by a Local Action Plan template for clinical teams, where they can create a strategy for quality improvement, based on the recommendations from the annual report. Additionally, patient-level provision to NCRAS of the NABCOP data used within the annual reports has enabled requesting trusts to view their data for each individual patient in order to more clearly identify local areas for quality improvement.

As part of the annual reporting cycle, findings linked to the NABCOP report recommendations are included within the Care Quality Commission (CQC) inspectors' visits. These visits help prompt actions for local quality improvement as appropriate and the NABCOP has used this opportunity to engage NHS trusts in England in activities to improve data completeness and more recently to review their reoperation rates.

Figure 7.3.1. Download statistics for NABCOP Annual Reports and associated resources by year of publication



Note: *Data on number of downloads from the NABCOP website provided by Google analytics online software; accessed 9th March 2022. D/L = download*

Implementation and dissemination

Integral to improving breast cancer care and outcomes for older women is the provision of user-friendly resources to enable local action. Through facilitating local audit to review and implement NABCOP recommendations as needed, we hope to see more alignment of practice with national guidelines.

Part of the dissemination activities undertaken by the audit have been presenting at prominent national congresses and educational meetings and publishing in academic journals. The audit has produced many peer-reviewed outputs (https://www.nabcop.org.uk/publications-home/). These include the effect of treatment variation, surgical decision-making, development of tools to assess frailty, treatment costs as well as surgical care and the use of adjuvant therapies.

Another key element of increasing engagement with the clinical community concerning the audits' recommendations and report findings was through workshops or webinars. In 2019, the NABCOP co-hosted a symposium on breast cancer in the older patient at the UK Oncology Forum, along with presentation and discussion of the NABCOP data returns. More recently, the NABCOP has sought to connect with junior doctors through the trainee group of the ABS (The Mammary Fold) by presenting a summary of the NABCOP as well as implications for trainees, at the Mammary Fold Autumn webinar series in October 2021.

7.4. Reporting on care and treatment during the COVID-19 pandemic

The past two years have been challenging for the NHS and national clinical audits.

With the availability of Cancer Registration data in England affected by the COVID-19 pandemic, the NABCOP was fortunate to be able to take advantage of the Rapid Cancer Registration Dataset (RCRD). The RCRD included information on women diagnosed in England up to 31 May 2021 (the latest data available at the time of analysis). Although the dataset was more restricted than the standard registration dataset (it had limited information on tumour characteristics), the dataset has provided more timely reporting than is usually achievable and is a positive development.

Using data from the RCRD and from Wales gave the NABCOP the opportunity to report on the impact of the first wave of the pandemic in 2020 and in subsequent waves. We also reported on 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].

The NABCOP audit findings 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 2020a, ABS May 2020b].

With Wales able to provide the usual fully validated dataset for all women aged 50 year and over diagnosed with breast cancer in 2020 it was possible to look at CNS contact, TDA in a single visit and use of surgery within the subgroup of patients with ER positive. It was great to see that CNS contact remained high for women in Wales in 2020, TDA in a single visit continued despite the enormous pressures on health services, and for women with ER positive early breast cancer there appeared to be changes in practice consistent with guidelines on prioritisation of patients for surgery, with the use of bridging endocrine therapy. The ability of the WCN and local health boards in Wales to continue with their process of data submission across 2020 and 2021, so that breast cancer data can be used for audit and still retain the ability to evaluate care within subgroups defined by molecular markers is inspiring and should be recognised as a phenomenal achievement from all involved.

In April 2021, NCRAS launched the COVID-19 Rapid Cancer Registration and Treatment Data Dashboard [NCRAS 2021]. This new resource shows up-to-date information on the numbers of patients with cancers diagnosed and treated within the English NHS. 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[13].

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[13] Dashboard figures available at: https://www.cancerdata.nhs.uk/covid-19/rcrd

8. Future plans for breast cancer audit

NHS England and the Welsh Government are commissioning a number of new national cancer audit topics, which are to be delivered by a new National Cancer Audit Collaborating Centre. This will include audits of both primary breast cancer and metastatic breast cancer in women and men of all ages. The Collaborating Centre is expected to open in Autumn 2022. The NABCOP will work with HQIP during 2022 to ensure an effective and smooth transition to the future breast cancer audit programme.

The audits of both primary and metastatic breast cancer will build on the work of the NABCOP, which has emphasised the importance of supporting NHS organisations to understand:

(a) The short- and longer-term outcomes following primary and adjuvant treatment among the older population, as well as

(b) The longer-term effects on diagnostic and treatment patterns for older patients, across English and Welsh breast cancer services during the COVID-19 pandemic.

We would anticipate that the future audits of both primary and metastatic breast cancer, when aligning themselves with the overall priorities of the NHS England and Welsh Governments, would seek to report on equity of access to health care by age and evaluate whether older patients with breast cancer receive equitable care compared to younger patients.

Finally, we would like to extend our sincere thanks firstly to 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 life of the NABCOP and, in recent years, throughout the COVID-19 pandemic, and secondly to all the patients without whose data the audits would not be possible.

With gratitude,

The NABCOP project team

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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, NHS Digital	NCRAS Project Manager
Miss Marianne Dillon	Swansea Bay University Health Board Wales Cancer Network	Consultant Breast Surgeon Breast Cancer Audit Lead for Wales
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, NHS Digital	NCRAS Project Manager
Miss Marianne Dillon	Swansea Bay University Health Board Wales Cancer Network	Consultant Breast Surgeon Breast Cancer Audit Lead for Wales
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	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
Sue Holcombe	Association of Breast Surgery	Breast cancer nursing representative[Member from Nov 2021]
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 Commissioning and Operations Directorate of the Chief Operating Officer NHS England and NHS Improvement	National Breast Screening Programme Manager

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**
Prof. Ian Kunkler	University of Edinburgh NHS Lothian	Professor of Clinical Oncology Clinical Oncologist
Mr Andrew Murphy	National Cancer Registration and Analysis Service, NHS Digital	Head of Cancer Datasets
Dr Stanley Ralph	Age Anaesthesia Association University Hospitals of Derby and Burton NHS Foundation Trust	Honorary Secretary Anaesthetist [Member until October 2021]
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	Independent Cancer Patients' Voice	Patient Representative
Ms Mia Rosenblatt	Breast Cancer Now	Associate Director of Policy, Evidence and Influencing
Tanuja Shah	Age Anaesthesia Association Derby Teaching Hospitals NHS Foundation Trust	President Age Anaesthesia Association Consultant Anaesthetist & EMSA Core TPD [Member from Nov 2021]
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	Independent Cancer Patients' Voice	Patient Representative
Ms Carla Whitbread	força - strength against cancer	Patient Representative
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 Association of Breast Surgery Breast Cancer Expert Advisory Group of NCRAS	Consultant Breast Surgeon NABCOP Liaison for the ABS reporting to the Clinical Standards and Audit Committee Chair
Prof. David Dodwell	University of Oxford	Consultant Clinical Oncologist
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

Appendix 2: Description of the NABCOP core set of indicators

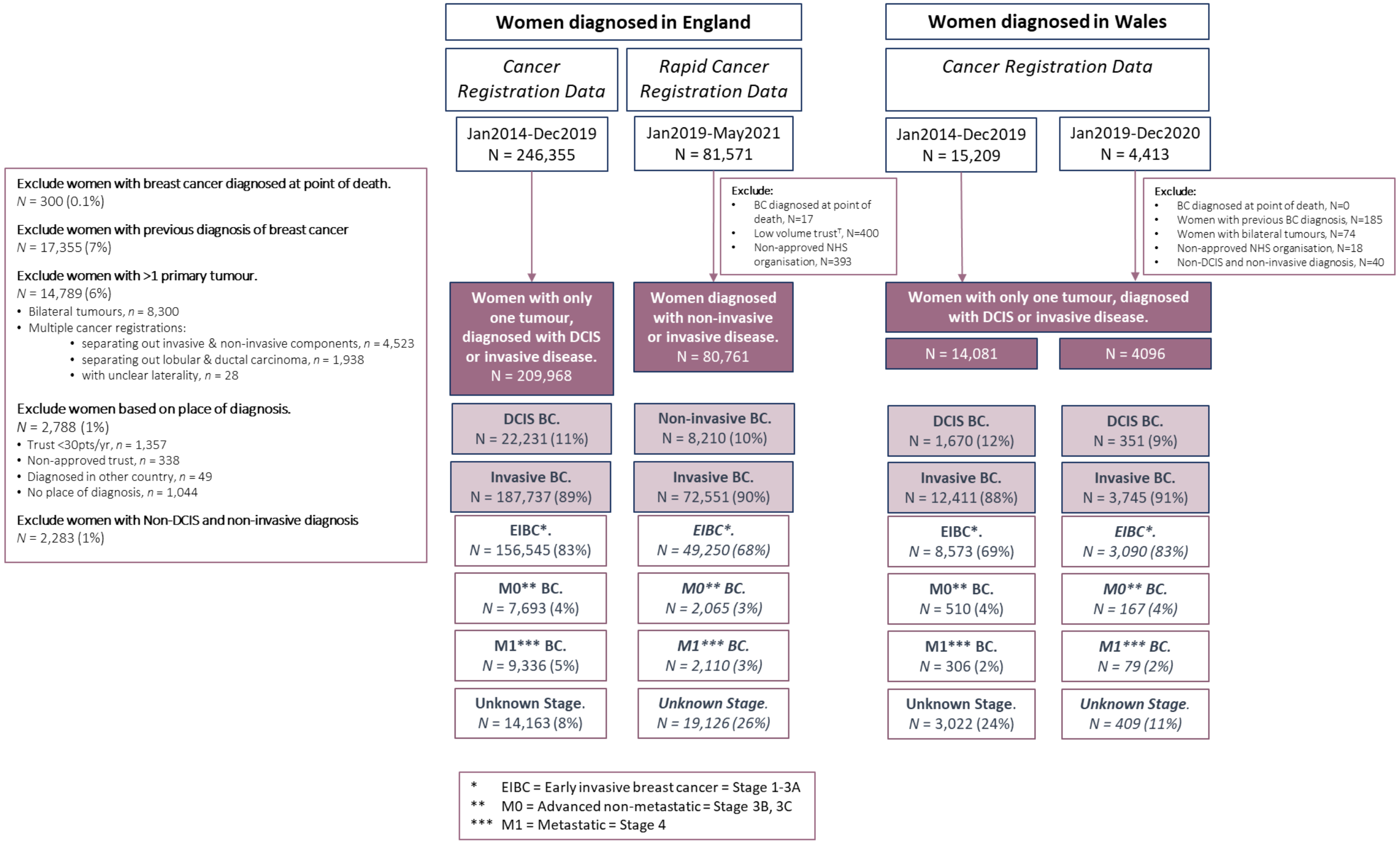
Pathway	Indicator	Denominator	Numerator	Standard/ guideline
Diagnosis and staging	1. Referral route to diagnosis	All women	Women diagnosed after: 1. referral from screening 2. referral from GP 3. referral from other specialities 4. an emergency presentation	NICE CG80, 2009a NICE QS12, 2011
Diagnosis and staging	2. Triple diagnostic assessment in a single visit	Women with non-screen detected early invasive breast cancer	Women who receive triple diagnostic assessment in a single visit	NICE CG80, 2009a NICE QS12, 2011
Diagnosis and staging	3. Recorded molecular marker status	Women with invasive breast cancer	Women with molecular marker status recorded: 1. ER status 2. HER2 status	NICE CG80, 2009a
Diagnosis and staging	4. Metastatic disease at initial presentation	Women diagnosed with invasive breast cancer	Women with metastatic disease at initial presentation	NICE CG81, 2009b
Diagnosis and staging	5. Seen by a breast CNS/named key worker	All women	Women seen by a breast CNS/named key worker	NICE CG80, 2009a NICE CG81, 2009b
Treatment	6. Time to primary treatment	Women who receive surgery or chemotherapy as primary treatment	Time from date of diagnosis to chemotherapy or surgical treatment	DoH 2007 DoH 2011
Surgery	7. Surgery for DCIS or early stage invasive breast cancer	Women with DCIS or early stage invasive breast cancer	Women who receive surgery Two indicators based on denominator: 1. DCIS 2. Early stage invasive breast cancer	NICE CG80, 2009a Biganzoli *et al* 2012

Pathway	Indicator	Denominator	Numerator	Standard/ guideline
Surgery	8. Mastectomy for early invasive breast cancer	Women with early stage invasive breast cancer	Women who receive mastectomy: 1. Proportion of mastectomies by age group 2. Proportion of mastectomies for given total tumour size <15mm	NICE CG80, 2009a Biganzoli *et al* 2012
Diagnosis and staging	9. Any axillary nodal surgery	Women with early invasive breast cancer	Women who received SNB, axillary node sampling or dissection; with recorded lymph node status	NICE QS12, 2011 NICE CG80, 2009a Biganzoli *et al* 2012 NICE DG8, 2013 SIGN 134, 2013
Acute care	10. Length of hospital stay after surgery	Women with DCIS or invasive breast cancer who receive surgery	Length of hospital stay from date of surgery to date of discharge from hospital: 1. Proportion by type of surgery. 1. Proportion who have a prolonged stay after surgery.	NICE QP case study, 2012 SCT, 2016
Radiotherapy	11. Radiotherapy after breast cancer surgery	Women with DICS or early invasive breast cancer who received surgery	Women who receive radiotherapy after surgery: 1. BCS 2. Mastectomy	NICE CG80, 2009a Biganzoli *et al* 2012 SIGN 134, 2013
Chemotherapy	12. Chemotherapy for invasive breast cancer	Women with early invasive breast cancer. Subgroups = 1. ER negative 2. HER2 positive	Women who receive chemotherapy: 1. Neoadjuvant 2. Adjuvant	NICE CG80, 2009a NICE CG81, 2009b Biganzoli *et al* 2012 SIGN 134, 2013
Outcomes	13. Mortality at one, three and five years	All women	Women who die within: 1. One year 2. Three years 3. Five years	DoH Public Health Outcomes Framework 2013-2016 DoH NHS Outcomes Framework 2015–16

Appendix 3: NABCOP cohort flow diagram

Figure A3.1. Flow diagram of patients included within the NABCOP group

Women aged ≥ 50 years, diagnosed with breast cancer between 1 January 2014 and 31 December 2019



Note: Within the Rapid Cancer Registration Dataset (RCRD), it was not possible to identify women with a previous diagnosis of breast cancer, bilateral tumours or 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.

Key:
DCIS = ductal carcinoma in situ (ICD10 = D05.1)

Note: See NHS organisation data viewer for full list of NHS organisations included in this report.
The number of women with a 'Non-approved trust' refers to those where their registered trust of diagnosis has no active breast unit. 'Multiple registrations' may not be registrations with the same date.

Appendix 4: English Rapid Cancer Registration Data

Tables A4.2 and **A4.3** provide information on the patient and tumour characteristics for the cohort of women diagnosed in England and Wales respectively, as analysed within **Chapter 5**.

Table A4.2. Patient and tumour characteristics for women aged 50 years and over diagnosed with breast cancer in England between January and May in 2019, 2020 and 2021, by year and age at diagnosis

Month/Year of diagnosis	**Jan–May 2019**			**Jan–May 2020**			**Jan–May 2021**		
Age at diagnosis	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**
Number of women	9143 (60%)	3432 (23%)	2658 (17%)	6936 (60%)	2655 (23%)	2043 (18%)	9124 (62%)	3209 (22%)	2330 (16%)
Date of diagnosis (Quarters)									
Q1 (Jan–Mar)	5256	1990	1551	5399	2012	1523	5425	1876	1328
Q2 (Apr–May only)	3887	1442	1107	1537	643	520	3699	1333	1002
Route to diagnosis									
% with route reported	97%	98%	99%	97%	98%	99%	88%	88%	87%
Screening	4959	1035	99	3266	663	73	4510	677	55
Emergency presentation	121	112	292	105	106	222	40	33	63
GP referral	423	183	182	358	205	195	158	94	118
Inpatient elective	10	3	5	13	3	0	3	1	1
Other outpatient	152	91	49	144	71	64	63	59	50
Two week wait	3216	1950	2014	2850	1559	1473	3238	1970	1733
Type of breast cancer									
% with stage reported or IDC10=D05	83%	81%	66%	83%	78%	64%	73%	71%	59%
Non-invasive	1218	305	94	924	214	97	1182	251	81
Early invasive	6006	2261	1428	4520	1698	1016	5113	1835	1118
Advanced M0	181	107	124	152	91	99	122	69	88
Advanced M1	168	109	101	148	76	88	217	133	78
Ethnicity									
% with ethnicity reported	89%	91%	90%	85%	88%	88%	81%	83%	85%
White	91%	96%	97%	90%	95%	96%	91%	94%	97%
Mixed	1%	0%	0%	1%	0%	0%	1%	1%	0%
Asian	4%	2%	2%	4%	3%	2%	4%	3%	1%
Black	2%	1%	1%	3%	1%	1%	2%	1%	1%
Other	2%	1%	1%	2%	1%	1%	2%	1%	1%
Index of multiple deprivation									
1 Most deprived	15%	13%	14%	15%	14%	14%	15%	13%	15%
2	18%	18%	18%	18%	17%	17%	18%	18%	18%
3	21%	20%	22%	22%	21%	23%	20%	21%	20%
4	23%	24%	22%	23%	25%	23%	24%	24%	25%
5 Least deprived	23%	25%	23%	23%	24%	23%	24%	24%	22%
WHO performance status									
% with WHO PS reported	69%	68%	61%	74%	73%	69%	64%	63%	62%
0	89%	71%	38%	90%	69%	35%	91%	72%	40%
1	9%	19%	30%	8%	21%	30%	6%	19%	25%
2-4	2%	9%	32%	2%	10%	34%	2%	10%	35%

Table A4.2. *…continued from previous page*

Month/Year of diagnosis	Jan–May 2019			Jan–May 2020			Jan–May 2021		
Age at diagnosis	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**
Charlson Comorbidity Index (CCI)									
% with CCI calculated	98%	98%	92%	96%	95%	86%	47%	53%	56%
0	89%	78%	59%	89%	76%	57%	82%	67%	43%
1	8%	14%	20%	8%	14%	19%	13%	18%	24%
2+	3%	8%	21%	3%	10%	23%	5%	14%	33%
SCARF Index									
% with SCARF calculated	98%	98%	92%	96%	95%	86%	47%	53%	56%
Fit	84%	68%	44%	83%	66%	42%	72%	52%	24%
Mild-moderate	15%	26%	33%	15%	27%	32%	25%	37%	44%
Severe	1%	7%	23%	2%	7%	27%	3%	11%	32%

Table A4.3 Patient and tumour characteristics for women aged 50 years and over diagnosed with breast cancer in Wales in 2019 and 2020, by year and age at diagnosis

Year of diagnosis	Jan-Dec 2019			Jan-Dec 2020		
Age at diagnosis	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**
Number of women	**1351 (58%)**	**558 (24%)**	**405 (18%)**	**985 (55%)**	**469 (26%)**	**328 (18%)**
Date of diagnosis (quarters)						
Q1 (Jan–Mar)	315	138	87	346	130	93
Q2 (Apr–Jun)	319	140	106	146	90	59
Q3 (Jul–Sep)	371	131	110	180	113	87
Q4 (Oct–Dec)	346	149	102	313	136	89
Route to diagnosis						
% with route reported	100%	100%	100%	100%	100%	100%
Screening	853	184	30	431	65	11
Emergency presentation	7	12	9	6	10	9
GP referral	431	305	320	488	352	258
Other speciality	33	41	36	45	34	43
Other	27	16	2	15	8	7
Type of breast cancer						
% with stage reported or IDC10=D05	93%	91%	76%	94%	92%	78%
DCIS	193	31	10	87	18	12
Early invasive	1029	432	255	781	383	210
Advanced M0	28	25	35	40	18	21
Advanced M1	12	17	7	20	11	12
Invasive grade of disease*						
% with grade reported	99%	98%	98%	99%	99%	99%
1	20%	14%	14%	16%	14%	14%
2	50%	53%	61%	48%	50%	54%
3	30%	32%	23%	35%	34%	28%
Not assessable	0%	1%	2%	1%	2%	4%
ER status						
% with ER status reported	84%	90%	88%	87%	90%	90%
Positive	84%	82%	88%	83%	82%	88%
Negative	16%	18%	12%	17%	18%	12%

Table A4.3. *…continued from previous page*

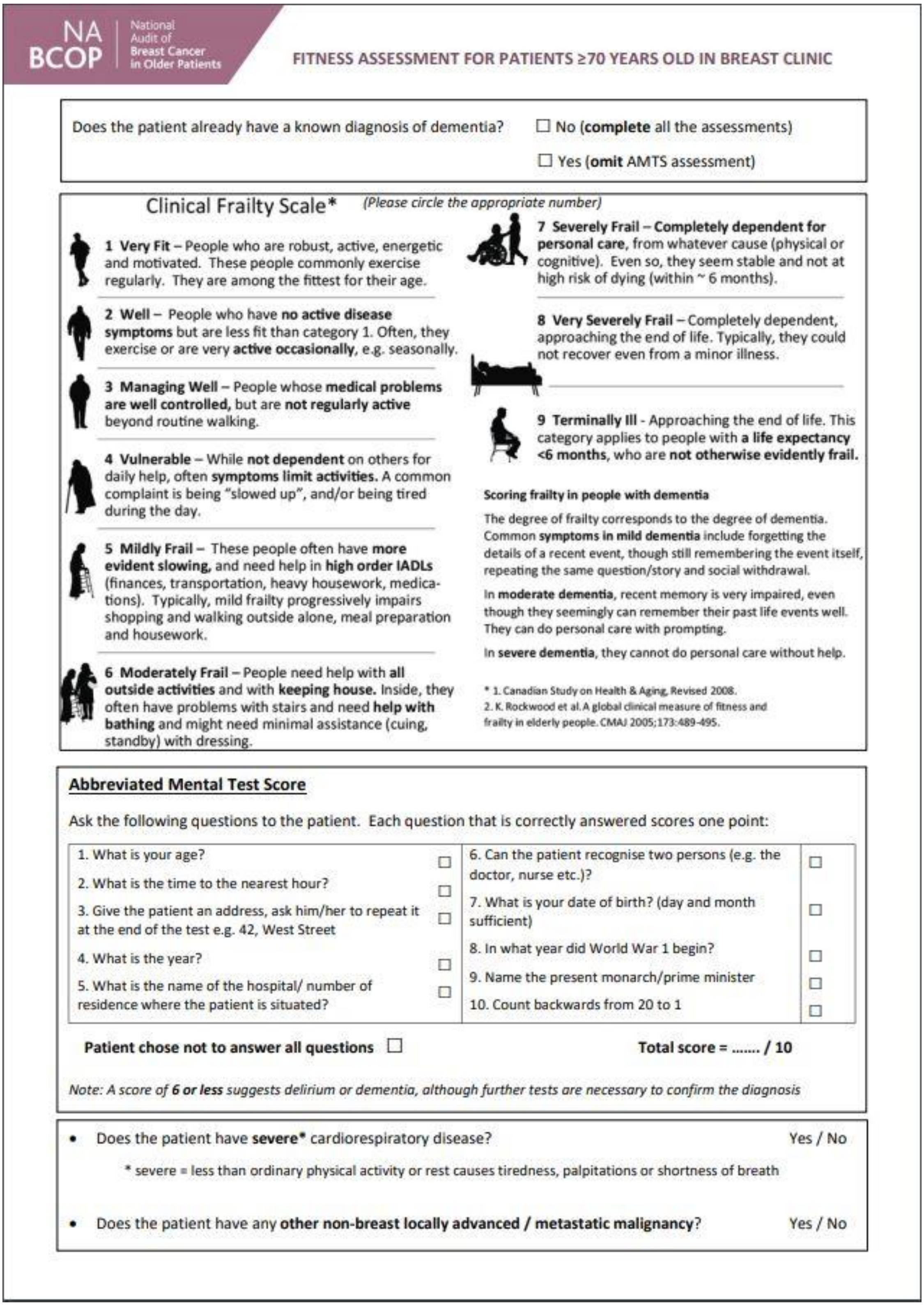
Year of diagnosis	**Jan-Dec 2019**			**Jan-Dec 2020**		
Age at diagnosis	**50–69 years**	**70–79 years**	**80+ years**	**50–69 years**	**70–79 years**	**80+ years**
HER2 status						
% with HER2 status reported	78%	80%	76%	81%	84%	78%
Positive	13%	11%	12%	17%	14%	9%
Negative	88%	89%	88%	83%	86%	91%
Index of multiple deprivation						
1 Most deprived	17%	12%	13%	18%	16%	19%
2	15%	17%	15%	19%	18%	23%
3	24%	23%	22%	18%	20%	21%
4	24%	20%	24%	22%	24%	19%
5 Least deprived	20%	28%	26%	23%	22%	19%
WHO performance status						
% with WHO PS reported	9%	15%	24%	21%	31%	27%
0	92%	73%	24%	88%	68%	26%
1	6%	19%	38%	7%	20%	36%
2-4	2%	7%	39%	5%	12%	38%
Charlson Comorbidity Index (CCI)						
% with CCI calculated	99%	97%	85%	98%	94%	82%
0	92%	82%	65%	91%	79%	61%
1	6%	13%	17%	7%	14%	20%
2+	2%	5%	17%	3%	7%	19%
SCARF Index						
% with SCARF calculated	99%	97%	85%	98%	94%	82%
Fit	86%	74%	50%	87%	70%	45%
Mild-moderate	13%	22%	33%	11%	26%	37%
Severe	1%	4%	18%	2%	4%	18%

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

Appendix 5: Fitness assessment for women aged 70 and over

Figure A5.1. 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/



NA BCOP | 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

Table A5.2. Breast cancer specific data items on triple diagnostic assessment (TDA) in a single visit and fitness assessment, collected within the updated COSD Version 9.0 for patients in England.

Data item no.	Data item name	Description	National code definition
BR4400	TRIPLE DIAGNOSTIC ASSESSMENT	Was a triple diagnostic assessment completed for the patient in a single visit, following initial referral?	Yes
			No
			Not known
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.

Appendix 6: NABCOP Quality Improvement Goals

1. Increase the rate of surgery for fit older women with early invasive breast cancer (QI goal #1).

- Specifically, reduce the number of NHS organisations with fewer than 80% of fit women, aged 70+ years, diagnosed with early invasive breast cancer, having surgery.

Rationale for improvement goal: Surgery to the breast should be recommended for all patients with early invasive breast cancer, irrespective of age, unless they have severe frailty, significant cognitive impairment or substantial co-morbidities that are highly likely to limit life expectancy to no more than a few years. Initial primary endocrine therapy in elderly patients with ER+ early invasive breast cancer is reasonable to allow fuller assessment, attention to treatable co-morbidities and to optimise fitness but should not, in the absence of the features described above, be considered a substitute for definitive surgical management. Breast services should regularly audit the outcomes of patients who do not receive standard care such as surgical resection for early invasive breast cancer.

2. Increase the use of a reliable, consistent description of patient fitness (QI goal #2).

- Specifically, increase the use of the fitness assessment pro-forma piloted by the NABCOP.
  This has three parts that record different aspects of patient health:
  1. the Clinical Frailty Scale (CFS), a common measure of frailty
  2. the Abbreviated Mental Test Score (AMTS), a short series of questions asked of the patient to measure their cognitive ability
  3. three screening clinical questions on whether a patient has any major diseases e.g. dementia, cardio-respiratory disease, other advanced cancer.

  The information collected on this form is now part of routine COSD data returns (Version 9; implemented September 2020).

Rationale for improvement goal: There should be increased education and understanding in the breast cancer clinical community of estimation of life expectancy in the older patient. All breast services should have a formalised referral pathway either within their hospital or to community-based geriatric support services to allow optimisation of concurrent illness(es) and fitness to improve the likelihood that older patients with breast cancer can undergo definitive treatment.

3. Improve completeness of key clinical data items, specific to the audit (QI goal #3).

- Specifically, by increasing awareness of data collection processes, flows and central uploading that are necessary to transfer trust level information to NCRAS. This will improve the completeness and quality of information, integral to understanding treatment decisions and to reduce the number of NHS organisations with less than 90% completeness for key data items:
  - tumour size
  - T (tumour) stage
  - N (nodal) stage
  - M (metastasis) stage
  - ER and HER2 status for invasive breast cancer
  - World Health Organization performance status
  - Contact with a clinical nurse specialist.

Rationale for improvement goal: Complete data is a basic requirement of NABCOP and other audits to understand the care pathway and treatment decisions. All women should be staged and have their tumour receptor status tested regardless of age. For NHS organisations in England this information can be monitored regularly using the CancerStats reporting portal[14] (described in section 3.2).

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[14] Repository for all feedback on those national datasets for England, which are managed or supported by the National Cancer Registration and Analysis Service (NCRAS).

Glossary and abbreviations

Abbreviated Mental Test Score (AMTS) – a ten point test used to quickly assess elderly patients for the possibility of dementia (see **Chapter 6**).

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.

Advanced non-metastatic (advanced M0) – Defined as overall stage 3b (the breast cancer has spread to nearby tissues, and up to 9 lymph nodes) or 3c (the breast cancer is any size, and has spread to the lymph nodes in one or more of the following regions: the armpit only [>=10 nodes], in the armpit and near the breast bone, or above / below the collar bone).

Anticoagulant – a medication used to prevent blood clots.

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

Association of Breast Surgery (ABS) – 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.

Atrial fibrillation – a heart condition where the heart rhythm becomes irregular and the heart can beat faster than normal.

Bisphosphonate – a group of drugs which slow bone loss. They are used to prevent or treat loss of bone mineral density among certain postmenopausal women, and some women with early invasive breast cancer to reduce the risk of disease spread to the bone.

Breast-conserving surgery (BCS) – 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.

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

Cancer Outcomes and Services Dataset (COSD) –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.

Cancer Patient Experience Survey (CPES) – The National CPES has been running in England since 2010. CPES is not specific to breast cancer. It is completed during a three-month window in each survey year, by patients with (any) cancer who were discharged from an English NHS trust after an admission for cancer related treatments. Further details on the CPES questions can be found via https://www.ncpes.co.uk/.

Charlson Comorbidity Index (CCI) – 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 (CNS) – 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.

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

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

Deep vein thrombosis – Blood clots which develop within a vein, usually within the leg, which partially or completely block the flow of blood.

Early invasive breast cancer (EIBC) –Defined as overall stage 1 (the breast cancer is small, and some cancer cells may have spread to the lymph nodes near to the breast) to 3a (the cancer in the breast has spread to several [between 4-9] nearby lymph nodes).

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.

Estrogen receptor (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.

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

HER2 – human epidermal growth receptor 2 (HER2) 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 (HES) – A database that contains data on all inpatients treated in NHS trusts in England. This includes details of admissions, diagnoses and treatments.

Healthcare Quality Improvement Partnership (HQIP) – The Healthcare Quality Improvement Partnership (HQIP) aims to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices.

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.

Index of Multiple Deprivation (IMD) – 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.

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

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

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

Neo-adjuvant 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.

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 (ONS) – 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 (PEDW) – 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 Care Prescription Database (PCPD) – A database that contains data on drug therapies prescribed within primary care and dispensed in community pharmacies within England

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).

Royal College of Surgeons of England (RCS) – 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.

Secondary Care Administrative Records Frailty (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.

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.

Triple diagnostic assessment (TDA) – patients referred to specialist services with suspected breast cancer should receive three diagnostic assessments: physical examination, imaging of the breast (mammogram and / or ultrasound) and biopsy of tissue (breast tissue and / or axillary lymph nodes

UK Breast Cancer Group (UKBCG) – a forum for clinical and medical Oncologists, with the aim to improve care of patients with breast cancer.

Wales Cancer Network (WCN) – 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.

World Health Organization (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.