

East Midlands Breast Pain Pathway - An evaluation of Community Breast Pain Clinics across the East Midlands Cancer Alliance

September 2023

Final Report

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1. Executive Summary

There is strong evidence that breast pain, or mastalgia, as a standalone symptom has no association with breast cancer. However, this presentation within primary care often results in an urgent referral onto a 2-week-wait (2WW) breast cancer pathway. This leads to unnecessary patient anxiety, diagnostic tests and ultimately adds pressure to 2WW clinics that are already running under significant pressure.

The community Breast Pain Clinic (cBPC) is a novel service, and first in the UK, tackling the rising number of breast symptomatic clinic 2-week wait (2WW) referrals. These clinics aim to improve patient care and experience while simultaneously providing a system wide improvement. To determine whether the clinics can be adopted and rolled out at further sites, this evaluation utilises quantitative analysis of cBPC data and patient Reported Outcome Measures (PROMs) to assess the impact on patients and care pathways within five pilots in the East Midlands as compared to standard of care.

Our analysis has demonstrated that this innovative service delivery transformation has been incredibly well-received by patients with breast pain only, with approximately 98.5% of patients suggesting they would recommend the service to friends and family.

Alongside the extremely positive feedback from patients, there is also evidence to suggest that this pilot has been cost effective. Overall, across all pilots in the first year the cost benefits analysis suggests that for every pound (£) spent, the health system received £1.23 back in benefits.

There is some variation between sites (cost benefit ratio ranging from 0.86 to 2.10). In year 2, only Leicestershire is not cost effective. There are a number of factors contributing to the cost benefit analysis in Leicestershire, including staffing models. When using a unit-based (tariff) approach to costing Leicestershire's services, which was later negotiated by the commissioner, Leicester's pilot also becomes cost-effective.

Although found to be both well accepted by patients and cost effective in majority of clinics, for this to be accepted as a new service delivery model it must provide evidence supporting the safety of the EM Breast Pain Pathway. Accepting that no diagnostic pathway in cancer is 100% accurate our analysis estimates breast cancer incidence among women fulfilling the inclusion criteria and attending cBPCs with 'breast pain only' was 3.2 (CI: 1.4-6.9 per 1,000), well within normal population estimates in the literature and well below the level recommended for population-based screening in the NHS. This is reassuring and future audits of the East Midlands CBPCs, involving larger number of patients, will provide increased robustness to the incidence and CI figures reported in this East Midlands audit.

Out of 1901 patients, nine have been diagnosed with breast cancer within 1 year of attendance at a cBPC. Data on all nine patients indicates no evidence of delays to care or any cases of breast cancer missed through this new referral route. Three of the nine patients did not meet the criteria for the cBPC through having a prior personal history of breast cancer that was not indicated in the referral letter and incorrectly being seen in the clinic. There is now an SOP in place to address and prevent this in future.

Therefore, overall, the clinics offer significant benefits in terms of patient experience and cost effectiveness. Recommendations on Standard Operating Procedures to prevent inappropriate referrals are already in place. Further assessment on optimal staff mix and clinic cost mechanisms, should be considered to maximise cost effectiveness and patient safety.

2. Overview of Breast Pain Services

Up to 70% of women over the age of 16 experience breast pain at some stage of their lives, and in 10 to 20 % of cases, it is severe (Kataria et al., 2014).

The challenge with a presentation of breast pain within primary care is it often leads to an urgent referral onto a 2-week-wait (2WW) breast cancer pathway. This leads to patient anxiety, often exacerbated by further testing once seen in secondary care. It also adds additional pressure on these constrained urgent cancer pathways.

However, research indicates that breast pain as the only symptom has no association with breast cancer. Several studies have reported that the chances of having breast cancer is very low when patients have presented with breast pain only. NHSE has also provided guidance that “breast pain alone is not a symptom of cancer and should not be automatically referred on an urgent cancer pathway” (NHS England, 2021).

Therefore, patients are often referred down pathways that lead to unnecessary anxiety, tests and ultimately add pressure to 2WW clinics that are already running under significant pressure. So far, many of the solutions to manage some of the patients more appropriately within the community using existing structures have had minimal impact.

2.1. Key challenges of current referral patterns for breast pain

Given that research indicates breast pain as the only symptom has no association with breast cancer, it is important that referral patterns for patients with breast pain only are optimised. Currently, non-optimised pathways are causing significant challenges to the system, including overutilisation of health care services (Kushwaha et al, 2018).

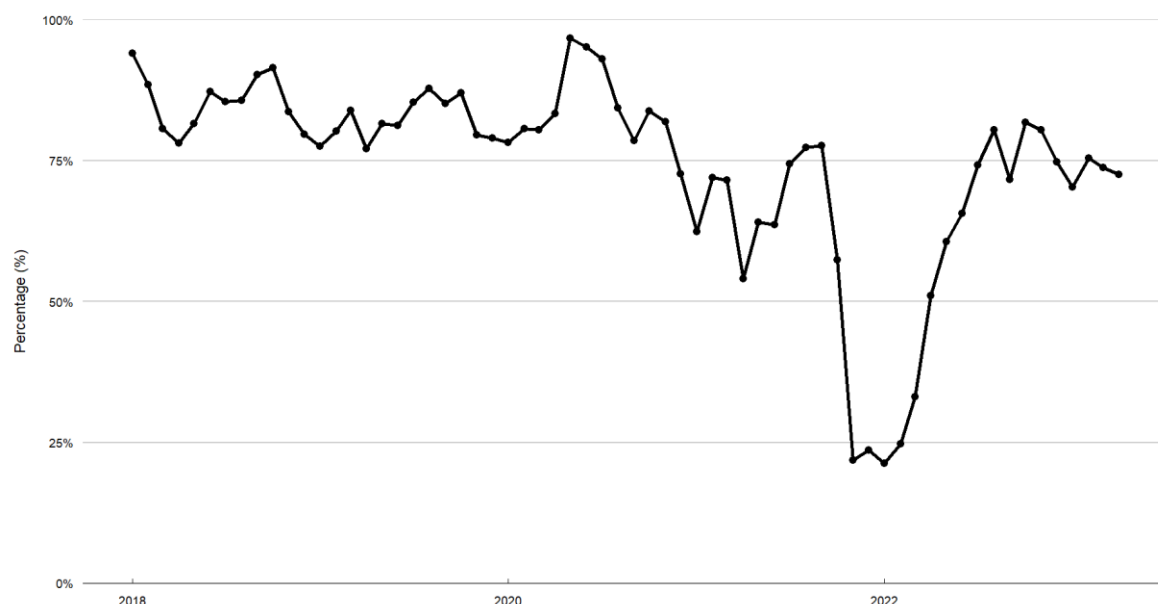
2.1.1. Overutilisation of healthcare services for breast pain only

2.1.1.1. Increased demand for urgent 2WW breast cancer services

Nationally and within the East Midlands, there is an increasing pressure on 2WW breast clinics. Many Trusts are setting up additional 2WW clinics and out-of-hours clinics to manage the additional demand.

Figure 1 shows that despite increasing capacity, there has been a decrease in the attainment of the 2WW standard across the East Midlands. It is now at 75% – dropping 15% since pre-pandemic. This is largely due to rising 2WW referrals.

Figure 1. Proportion of all 2 week wait breast symptomatic referrals seen within 2 weeks, across the East Midlands¹



2.1.1.2. Increased tests, including ultrasounds and mammograms

With each 2WW appointment there is a chance that tests are completed to gain further information on the patient's symptoms and rule out cancer. Equally referral to a secondary care cancer diagnostic clinic raises expectation among patients that such tests are necessary for their complaint. Furthermore, this expectation may be further increased if the GP says to the patient that they are referring them for tests or specifically a mammogram or ultrasound. This growing demand for diagnostic tests within the urgent 2WW pathway, is of significant concern particularly for patient with breast pain only where the British Society of Breast Radiology has recently issued a statement "'Breast pain is not an indication for breast imaging' and therefore patients presenting with breast pain (general or focal) ONLY should not be offered imaging."

Significantly, there are major staff shortages within the breast imaging profession, with 12% of mammographic workforce posts vacant and staffing has not increased in line with demand (National Breast Imaging Academy, 2023). As a result, many breast services are struggling to continue to support rising demand for tests.

Alongside staff shortages, diagnostic capacity in the NHS in England has been reported to be much lower than that in many other developed countries prior to the COVID-19 pandemic. The relative lack of diagnostic equipment and workforce is now hampering recovery from the pandemic, though there is a push to establish community diagnostics hubs nationally (Richards et al., 2022).

¹ <https://www.england.nhs.uk/statistics/statistical-work-areas/cancer-waiting-times/>. This includes data from University Hospitals Of Derby and Burton NHS Foundation Trust, Chesterfield Royal Hospital NHS Foundation Trust, United Lincolnshire Hospitals NHS Trust, Kettering General Hospital NHS Foundation Trust, Nottingham University Hospitals NHS Trust and University Hospitals of Leicester NHS Trust.

3. Existing Research and Evidence on the Benefits of Community Breast Pain Clinics

There is strong evidence that indicates there is no association between breast pain as the only symptom and breast cancer, yet patients presenting with breast pain only are often referred by their GP to Secondary Care, often on an urgent (2-week wait) referral.

This leads to unnecessary anxiety for the patient, further heightened by mammograms and/or ultrasound scans. It also leads to added pressure to urgent 2-week wait (2WW) referral pathways, leading to delays and pressure on staff and in the most severe cases, delays to breast cancer diagnosis and care in other patients.

This is where community Breast Pain Clinics (cBPCs) could deliver significant benefits to patients, staff and the health system.

Through implementation of cBPCs there is the hope that some of the pressures on the 2WW referral pathway could be alleviated and patients with breast pain only could have better experiences with their care. Existing research has identified the following benefits of community-based breast pain care:

- Improved care of patients with breast pain only
- Increased awareness of familial risk of breast cancer with objective risk assessment;
- Reduction in demand for urgent 2WW referrals; and
- Reduction in unnecessary diagnostic tests, including mammograms and ultrasounds.

The rest of this section reviews the available literature in more detail.

3.1. Absence of a causal relationship between breast pain and breast cancer

The literature detailing the absence of a causal relationship between breast pain and breast cancer is outlined in Table 1.

Table 1. Reports of patients presenting with breast pain only (Jahan et al., 2022)

Authors	Year	n	Age	Bilat/Unilat (%)	Cancers (n)	Cancers/1000 pts	Known concordant	FU (months)	Bxs	FH (%)
Duijm et al (NED)	1998	987	10-86	24/76	8 (0.8%)	8	4 vs 4	48	-	N/A
Barton et al (US-MA)	1999	169	40-69	N/A	2 (1.2%)	12	N/A	-	-	18
Leung et al (US-MA)	2005	99	23-77	Focal	0	0	N/A	29	2	32
Masroor et al (PAK)	2009	55	34-63	Focal	0	0	0	18	4	N/A
Howard et al (US-MA)	2012	916	-	60/40	6 (0.6%)	6	3 vs 3	12	65	21
Leddy et al (US-SC)	2013	257	12-85	Focal	3 (1.2%)	12	3 vs 0	12	21	15
Noroozian et al (US-MI)	2015	617	23-88	19/81	2 (0.3%)	3	1 vs 1	24	28	15
Arslan et al (TKY)	2016	789	16-74	60/40	1 (0.2%)	2	N/A	-	-	N/A
Cho et al (US-NC)	2017	413	23-86	Focal	0	0	0	24	51	-
Chetien et al (US-PA)	2017	236	18-83	N/A	1 (0.4%)	4	N/A	-	2	-
Kushwaha et al (US-TX)	2018	799	13-92	26/71	1 (0.12%)	1	0 vs 1	24	17	38
Fonseca et al.	2019	795	16-92	N/A	5 (0.6%)	6	N/A	N/A	31	17
UHDB (UK)	2020	125	17-83	N/A	0	0	0	N/A	N/A	26
Total	-	6256	-	-	29 (0.46%)	4.6	11/20	-	-	-
Post 2000	-	5100	-	-	19 (0.37%)	3.7	7/12	-	-	-

Bilat, bilateral; Bxs, biopsies; FH, % patients with family history; FU, follow-up; UHDB, University Hospitals Derby and Burton; Unilat, unilateral.

These studies indicate that across all studies the incidence rate of cancers in this cohort of patients is 4.6 per 1,000 patients. This lowers to 3.7 per 1,000 patients when looking at all studies post 2000 (Jahan et al., 2022). When two additional studies are included (Owen et al 2019, Dave et al 2022) the figures for incidence rate of cancers is 4.9 per thousand and 4.4 per thousand for all studies included and when looking at all studies post 2000 respectively (Robertson, personal communication)

Therefore, the available literature shows the chance of a patient having breast cancer is very low when presenting with breast pain alone. These rates are well below the level recommended for population-based screening in the NHS. Further, the literature finds that even for the cancers detected, 50% were not related to the patient's symptoms in that the cancer diagnosed was in the contralateral breast that the patient complained of pain in (Jahan et al., 2022). In the publications by Owen et al and Dave et al noted above pain and cancer were also ipsilateral concordant in only 50% of cases.

Therefore, the literature supports the conclusion that breast cancer in a patient with breast pain only is coincidental, with breast cancer in the concordant breast found to be ~1.9:1000 (Jahan et al., 2022).

3.2. Increased awareness of family history risk factors

Interestingly, some of the literature outlined in Table 2 also looked at family history in the cohort of patients. In these reports, more patients with breast pain had a significant family history of breast cancer than what you would expect to find within the population. These results ranged from 15%–30%⁹.

This is an important finding as knowledge of family history risk is important to raise awareness about risk factors and to promote appropriate screening behaviours. It is also important given discussions about family history risk factors with primary care physicians have been found to be low, with patients reporting having been asked about family history of cancer and informed about cancer prevention issues found to be 35.1 and 26.4%, respectively (Kartal et al., 2018). This may be due to a lack of confidence among GPs at calculating or counselling risk of breast cancer. In one study 90% and 83% of GPs reported themselves to be “not confident or little confident” about calculating or counselling about risk of breast cancer respectively (Campbell et al 2003).

Through the development of a novel and innovative cBPC there is the chance to tailor the pathway to ensure these discussions take place, for example, through dedicated family history screening during a cBPC attendance. This may help improve attendance at life-saving screenings in this population of patients at elevated risk of having a significant family history of breast cancer.

3.3. Reduce overutilisation of healthcare resources

3.3.1. Increased demand for urgent 2WW breast cancer services

As demonstrated in our analysis in Section 2.1, following the pandemic Trusts across the country are struggling to cope with demand for 2WW pathway appointments for breast cancer.

With risks of delays to the patient pathway and treatment target breaches, it is important steps are taken to reduce pressures on the system. As there is growing evidence breast pain as the only symptom has no association with breast cancer, referrals onto the 2WW for breast pain only are unnecessarily increasing demand for appointments and contributing to the capacity breaches. Therefore, options to safely divert these patients to community-based clinics could significantly improve the current picture.

3.3.2. Increased tests, including ultrasounds and mammograms

Data indicates that for patients with breast pain only, each patient referral results in 0.64 and 0.27 mammograms and ultrasounds respectively (Jahan et al., 2022).

For example, one study of 799 patients with a mixture of diffuse (30%), focal (30%) and non-localised (40%) breast pain reported on the number of imaging examinations performed (Kushwaha et al., 2018). This shows that 624 mammograms, 550 breast ultrasounds and 8 MRIs were performed. There were also 17 image guided examinations that were performed

to enable a biopsy to be taken. For all these imaging examinations (n=1199), one breast cancer in the contralateral breast was diagnosed.

With mammograms and ultrasounds costing £59.99 and £59.35 each respectively², each unnecessary scan poses a significant cost to the health system. It also exacerbates the anxiety felt by patients when placed on a 2WW urgent cancer referral.

4. Aims and Objectives of Evaluation

This independent evaluation of community breast pain clinic implementation across the East Midlands aims to both quantitatively and qualitatively assess the impact of the implementation on patients, staff and care pathways as compared to standard care. If it is found to deliver benefits and be cost effective, it will also be possible to use this evaluation to determine whether the benefits warrant recommendation for extension beyond the organisation once the costs and potential implications are taken into account.

5. Evaluation Methodology

The evaluation uses a mixed method methodology, combining patient feedback through PROMS with data obtained from the East Midlands Core Dataset with secondary care and Family History (FaHRAS) data.

Quantitative and qualitative analysis was completed using RStudio³. Pseudonymised data on patients care from the community breast pain clinics, secondary care (where applicable) and FaHRAS obtained from each breast pain clinic, covering each pilot period. At the time of this evaluation, each clinic has been open for differing periods (as outlined in Section 3.2.1.). All data collected from the pilot start date and the start of this evaluation has been included. The data from Leicestershire only covers the final 6 months of the pilot.

6. Community Breast Pain Clinic Pilot Overview

6.1. Background to the Pilot

The community Breast Pain Clinic (cBPC) is a novel service, and first in the UK, tackling the rising tide of breast symptomatic clinic 2-week wait (2WW) referrals. Prior to establishing the East Midlands (EM) Breast Pain Pathway, approximately 20% of 2WW referrals to the Secondary Care Breast Clinic had breast pain only as their symptom (Jahan et al., 2022). Breast pain only is not a symptom of breast cancer with as already noted recent NHS England guidance that “breast pain alone is not a symptom of cancer and should not be automatically referred on an urgent cancer pathway”.

To manage the increasing pressures and demands on existing 2WW diagnostic cancer services, a transformation of the 2WW breast cancer pathway is necessary. This has been achieved by the establishment of dedicated primary care/community specialist breast pain clinics within EM Breast Pain Pathway. These clinics aim to improve patient care and

² 2020/21 reference costs (unit costs) for diagnostics

³ RStudio Team (2021). RStudio: Integrated Development Environment for R. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/>.

experience while simultaneously providing a system wide improvement (Primary, Secondary & Tertiary Care).

Initial analysis from a pan-Derbyshire pilot (Royal Derby and Chesterfield Royal Hospitals), has shown that primary care can reduce urgent 2WW referrals, improve patient care and experience through the establishment of a primary care-based breast pain clinic. This transformative change also increases urgently required capacity within secondary care breast services, particularly as part of the national recovery and restoration plan.

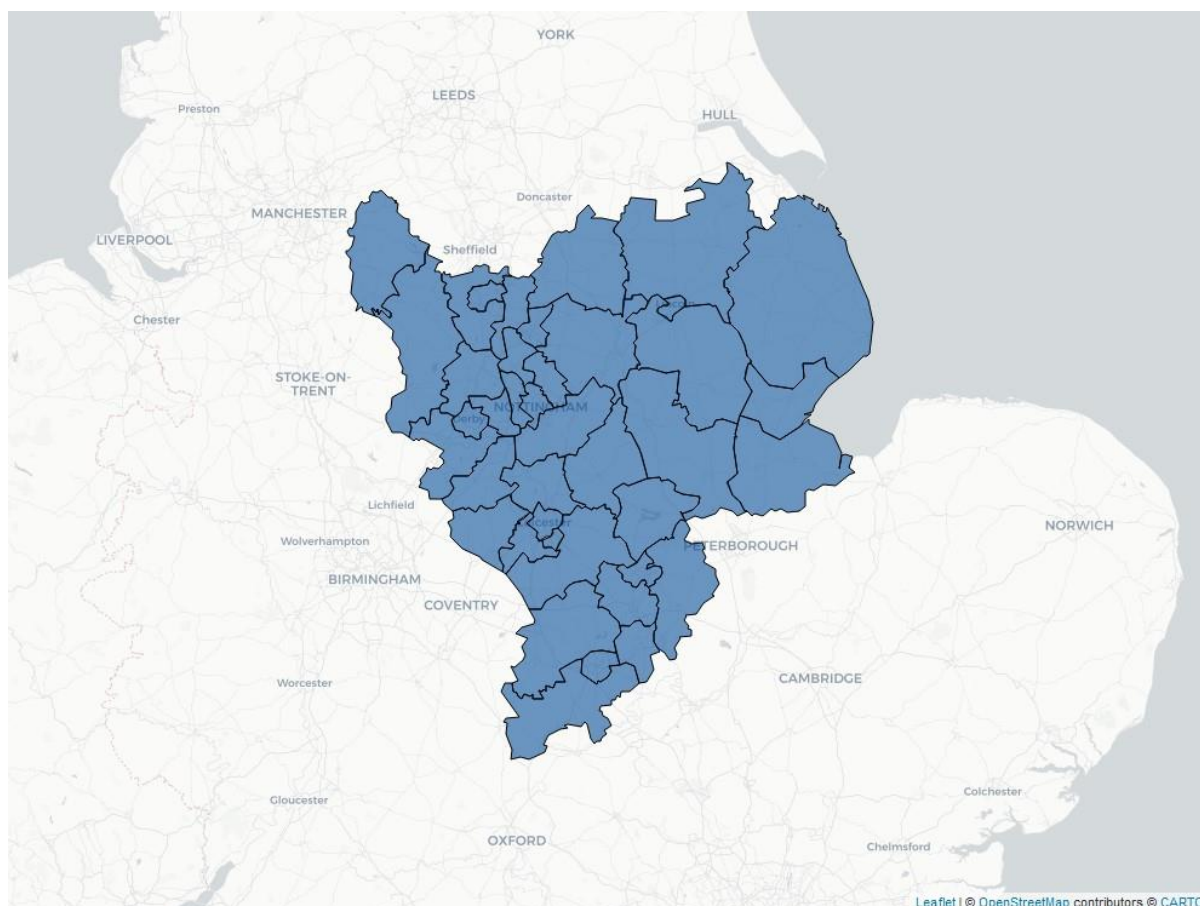
The implemented programme has the potential to increase capacity of the 2WW pathway by up to 20% and in doing so will reduce delays in diagnosis currently experienced in many parts of the country. Tertiary care is also benefitted through the increased identification of familial breast cancer risk and referrals following an objective, reproducible NICE compliant risk assessment which improves referrals from primary care of patients at increased risk of breast cancer while also reassuring patients assessed to be at population or 'near population' risk who do not require referral to familial cancer services.

6.2. The Pilot across the East Midlands

6.2.1. The area

The initial population-based pilot within Derbyshire (population ~1 million) which is served by two Secondary Care Breast Units (Royal Derby Hospital and Chesterfield Royal Hospital), involved setting up three cBPCs per week at two community locations. Since then, the cBPCs have expanded across the East Midlands (population ~5.5 million). The area covered is depicted in Figure 2.

Figure 2. Map of area supported by cBPCs



6.2.2. Key dates

Since the implementation of cBPCs in Derbyshire, other clinics implementing the EM Breast Pain Pathway have opened across the East Midlands at different times. Clinics in Leicestershire opened in January 2022, followed by Lincoln in April 2022, then Nottinghamshire and Northampton in September and November 2022 respectively (Table 2).

Table 2. Implementation Timeline

Phase	Date	Description	No. of clinics per week
1	June 2021	Implementation across Joined Up Care Derbyshire (University Hospital Derby and Burton and Chesterfield Royal Hospital)	3
2	January 2022	Implementation in Leicestershire	3
3	April 2022	Implementation in Lincolnshire	2
4	Sept 2022	Implementation in Nottinghamshire	1
5	Nov 2022	Implementation in Northamptonshire (Kettering General Hospital)	2

6.2.3. The design

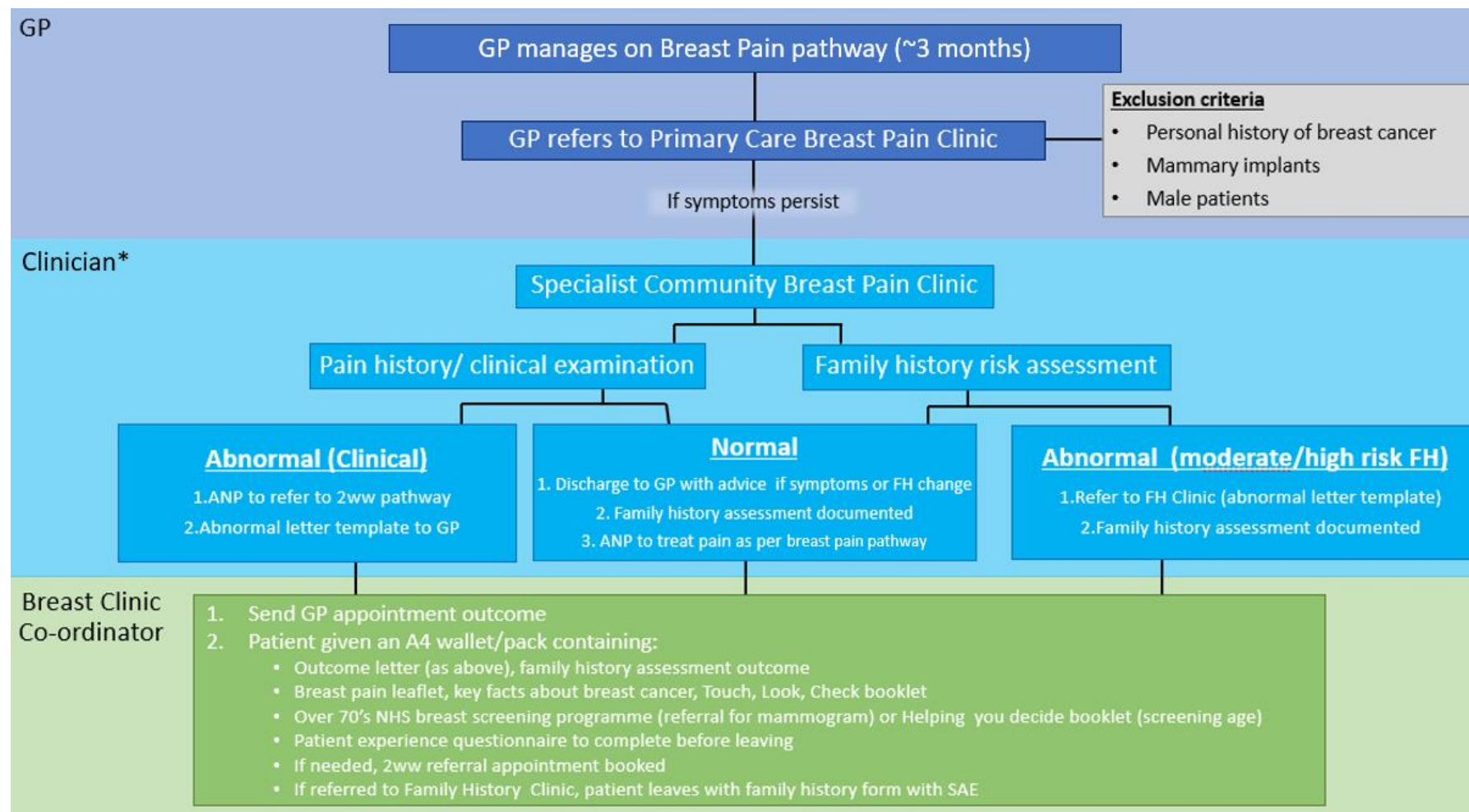
Figure 3 details the structure of the cBPCs. The clinics were designed with several key components:

- 1) A clinic for patients with breast pain only (exclusion criteria apply);
- 2) Clinics based in a community/Primary Care setting;
- 3) Experienced breast clinician (GPSI, Specialty Doctor or NP) confirms no clinical abnormality and that the patient has no other symptoms; and
- 4) Family History Risk Assessment – triage according to NICE CG164 referral guidelines for primary care

The exclusion criteria for the clinics are:

- Personal history of breast cancer;
- Mammary implants; and/or
- Male patients.

Figure 3. Community Breast Pain Clinic – Breast Pain Pathway



* Clinician could be ANP, GPSI or Hospital Doctor

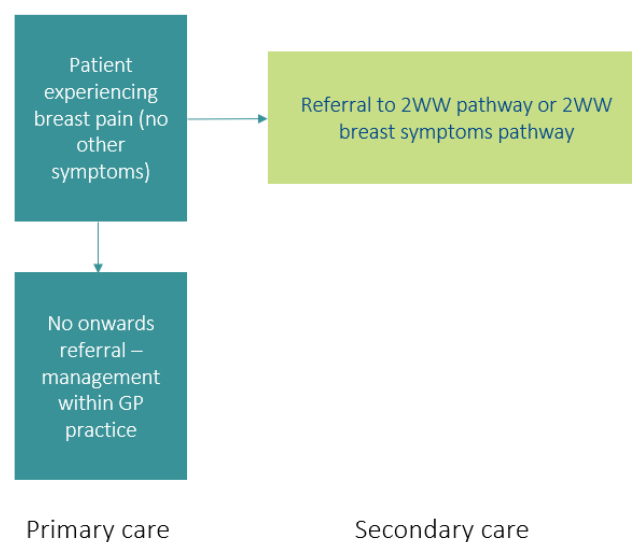
7. Pre- and post-implementation patient pathways

7.1. Pre-intervention patient pathway

Historically, patients experiencing breast pain as their only symptom would be either managed within primary care with no onward referral or referred to the 2WW pathway (Figure 4).

If a patient had breast pain only and the GP noted there was a family history, they would either be referred to a 2WW clinic with a note in the referral letter regarding the family history or the GP would make two separate referrals to the 2WW and to Familial Cancer Services.

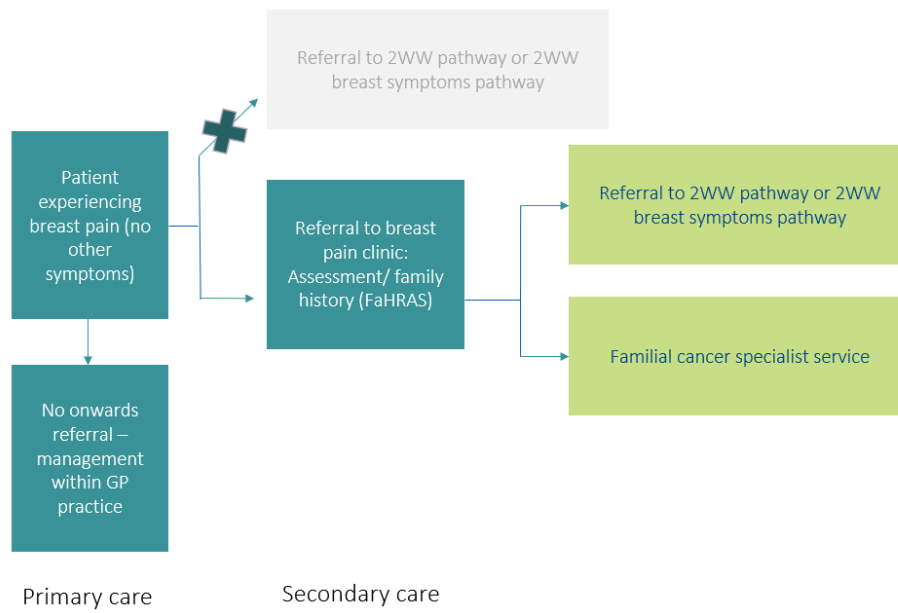
Figure 4. Pre-intervention patient pathway



7.2. Post-intervention patient pathway

Since the introduction of cBPCs, patients presenting with breast pain as their only symptom have a specialised referral route (Figure 5). Patients are directed to a cBPC where they receive an assessment of their pain symptom, a breast examination by an experienced breast clinician and an objective, reproducible breast cancer family history based risk assessment as per NICE CG164. All sites use the FaHRAS software tool to carry out the risk assessment and aid management decisions. Dependant on the results of these interventions, the patient can be i) discharged back to their primary care clinician, ii) referred to the 2WW breast cancer pathway for further investigation of any clinical concern &/or iii) referred to a familial cancer specialist service if they are deemed to be at increased risk of developing a breast cancer in the future.

Figure 5. Post-intervention patient pathway



8. Current Use of cBPCs

At the point this evaluation was undertaken, the clinics have been open for a varying amount of time, ranging from 7 months to almost 2 years. Data on utilisation of these clinics across the East Midlands is outlined below.

8.1. Descriptive statistics of population utilising cBPCs

The data indicates that of the 1,935 attendances⁴ to cBPCs across the 5 pilot sites, the average age of patients attending the cBPCs during the pilot phase was 48 years (range 16-92) (Table 3).

These patients on average had an Index of Multiple Deprivation (IMD) score of 6 (range 1-10). The highest IMD score, representing the least deprived areas, is 10, with 1 representing to most deprived areas. The distribution per 100,000 population, can be found in Appendix 1.

Analysis of the distribution of IMD scores shows that there are slightly higher attendances at the BPC for patients from less deprived areas. This may be explained by findings from Cancer Research UK which report age-adjusted breast cancer incidence is lower in the most deprived women with mortality being slightly higher in this group (Cancer Research UK, 2016; Cancer Research UK, 2020). This previously has been explained by a lower utilisation of breast screening programmes (BSPs) by women in more deprived areas (Smith et al., 2019). These trends may now be being seen in the cBPCs.

Table 3. Descriptive statistics of patient age and Index Multiple Deprivation (IMD) score

Variable ¹	N	Statistic ²
Age at attendance	1,935	48 (16, 92)
IMD Score	1,918	6 (1, 10)

¹ **Note:** IMD: The Index of Multiple Deprivation, a measure of relative deprivation for small areas.

² Median (Range)

Additionally, the patients' ethnicities have also been tracked (Table 4). This shows that 58% of the contacts at across the cBPCs reported being white, 5.4% asian, 1.4% black and 1.1% mixed. Due to variable collection of ethnicity data, 34% of the contacts did not have their ethnicity recorded.

⁴ National opt-out has been applied.

Table 4. Descriptive statistics of patient ethnicity

Variable	N	Statistic ¹
Ethnicity	1,691	
White		989 (58%)
Unknown		569 (34%)
Asian		91 (5.4%)
Black		24 (1.4%)
Mixed		18 (1.1%)
¹ n (%)		

8.2. Patient follow-up recommendation

The patients are tracked through their pathways to determine the outcome of their cBPC visit. This showed that of the 1,935 contacts through the cBPC during the pilot, 81% were discharged, 9.6% referred to family history services and 8.7% were referred on to the urgent 2WW cancer pathway (Table 5).

There is some variability between the percentages of each outcome in each area. The percentage discharged from the cBPC ranges from 82% at Nottinghamshire to 72% at Leicestershire.

Table 5. Descriptive statistics of patient outcomes

Variable ¹	Overall N = 1935 ²	Derbyshire N = 1027 ²	Leicestershire N = 212 ²	Lincolnshire N = 337 ²	Northamptonshire N = 244 ²	Nottinghamshire N = 115 ²
Clinic outcome						
Discharged	1,558 (81%)	847 (82%)	152 (72%)	259 (77%)	199 (82%)	101 (88%)
Referral to Family History service	185 (9.6%)	137 (13%)	8 (3.8%)	16 (4.7%)	16 (6.6%)	8 (7.0%)
Referral to 2WW clinic	168 (8.7%)	39 (3.8%)	52 (25%)	60 (18%)	12 (4.9%)	5 (4.3%)
Other	15 (0.8%)	0 (0%)	0 (0%)	0 (0%)	14 (5.8%)	1 (0.9%)
Referral to 2WW clinic and Family History service	8 (0.4%)	4 (0.4%)	0 (0%)	2 (0.6%)	2 (0.8%)	0 (0%)
Diagnosed with cancer	8 (0.4%)	6 (0.6%)	0 (0%)	1 (0.3%)	1 (0.4%)	0 (0%)
¹ Note: The option of 'Other' contains 'Advice from Family History service', 'Referral to clinical genetics' and 'DNA'. Northampton has one record with no clinic outcome, which is counted in the total						
² n (%)						

The data collected also allows the analysis of referrals to secondary care, either as an outcome of onward referral from the cBPC or through other routes, (e.g. indirectly via screening) (Table 6). Other reasons for referrals to secondary care include patients with a new breast

symptomatic 2WW referral within 3 months of attendance at a cBPC or patients who receive a breast cancer diagnosis within 1 year of attendance at a cBPC.

Across all sites, of those patients seen within the cBPC, 162 were subsequently seen in secondary care within the defined time periods noted above; 139 (86%) of these 162 patients were referred directly from the clinic. There were then also 20 (12%) of patients as new referrals through their GP and 3 (1.9%) patients referred via screening.

Table 6. Descriptive statistics on referral source

Variable	N	Statistic ¹
Source of referral to secondary care	162	
BPC		139 (86%)
GP		20 (12%)
Screening		3 (1.9%)
¹ n (%)		

8.3. BPC and secondary care results – Family History Screening

One of the features of the cBPC pathway is the use of FaHRAS i) to help provide an objective assessment of patients' future risk of breast cancer and ii) to assist clinic staff manage that risk assessment by providing local guideline recommendations for subsequent discharge or referral to the local familial cancer services.

Recommendations from FaHRAS can be defined as:

- **Population risk** - patient has no relatives with breast cancer and does not need further follow up
- **'Near Population' - Manage in primary care** - patient has relatives with breast cancer but does not need further follow up
- **Discuss with secondary care** - patient has relatives with breast cancer and/or other relevant factors and requires discussion with secondary care
- **Refer to secondary care** - patient has relatives with breast cancer and/or other relevant factors and requires further follow up by secondary care
- **Refer to tertiary care** - patient has relatives with a genetic mutation and requires further follow up by tertiary care

The data shows that of the 1,838 FaHRAS recommendations provided during the pilot, 70% were found to be at population risk levels, 20% 'Near population' who could be managed in primary care, 6% should be referred to secondary care, 4.4% should be discussed with secondary care and 0.2% should be referred to tertiary care (Table 7).

Table 7 also details the variability in these percentages by site.

Table 7. Summary of follow-up recommendations for patients

Variable	Overall N = 1838[†]	Derbyshire N = 1024[†]	Leicestershire N = 203[†]	Lincolnshire N = 317[†]	Northamptonshire N = 190[†]	Nottinghamshire N = 104[†]
Follow-up recommendation						
Population Risk	1,285 (70%)	701 (68%)	157 (77%)	218 (69%)	135 (71%)	74 (71%)
Manage in Primary Care	359 (20%)	204 (20%)	37 (18%)	70 (22%)	32 (17%)	16 (15%)
Refer to Secondary Care	110 (6.0%)	69 (6.7%)	4 (2.0%)	16 (5.0%)	14 (7.4%)	7 (6.7%)
Discuss with Secondary Care	80 (4.4%)	48 (4.7%)	4 (2.0%)	13 (4.1%)	9 (4.7%)	6 (5.8%)
Refer to Tertiary Care	4 (0.2%)	2 (0.2%)	1 (0.5%)	0 (0%)	0 (0%)	1 (1.0%)
[†] n (%)						

9. Patient Experiences

Throughout the pilot, patient experience has also been collected as part of a Patient Reported Outcome Measures (PROMS) fully anonymised questionnaire. The anonymised questionnaire was completed by patients after their attendance at the cBPC, while the results from the PROMs survey cover the experience of patients pre-, during and post-cBPC attendance.

9.1. Experience prior to cBPC attendance

Results from this survey of 2,066 patients revealed that 76% of patients had been told by their GP that breast pain is not a symptom of breast cancer, while almost a quarter (24%) had not been reassured of this. (Table 8).

The results also indicate that 63% of patients surveyed were referred to the cBPC on their first attendance to their GP with this episode of breast pain. There were a further 25% of patients who were referred on their second attendance, with 12.8% being referred after 3 or more attendances.

Finally, the results indicate that 42% of all the patients surveyed had previously had any breast pain that had led them to see a GP.

Table 8. Summary of PROMs responses – patient experience in primary care

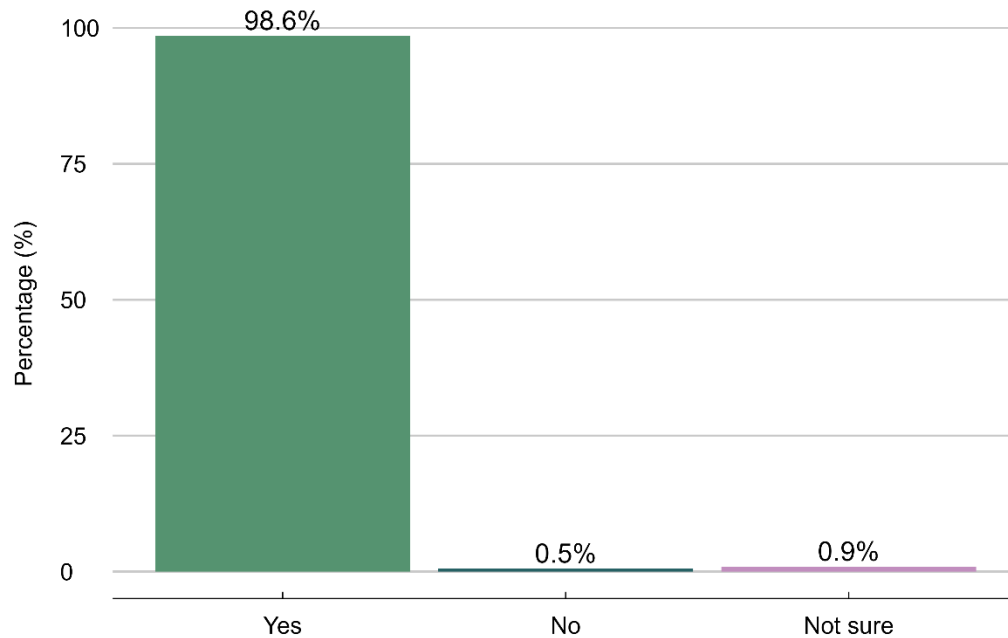
Question	N	Statistic ¹
Did your GP advise you that breast pain is not a symptom of breast cancer?	2,066	1,568 (76%)
How many times have you seen your GP for this episode of breast pain prior to being referred to this clinic?	2,072	
1		1,297 (63%)
2		509 (25%)
3		160 (7.7%)
4		46 (2.2%)
5 or more		60 (2.9%)
Have you had any previous episodes of breast pain that required you to see your GP?	2,073	866 (42%)
¹ n (%)		

9.2. Patient activation

The survey also looked at the degree to which attendance at the cBPC led to increased patient activation (patient activation being patients' involvement in their care decisions) (Figure 6).

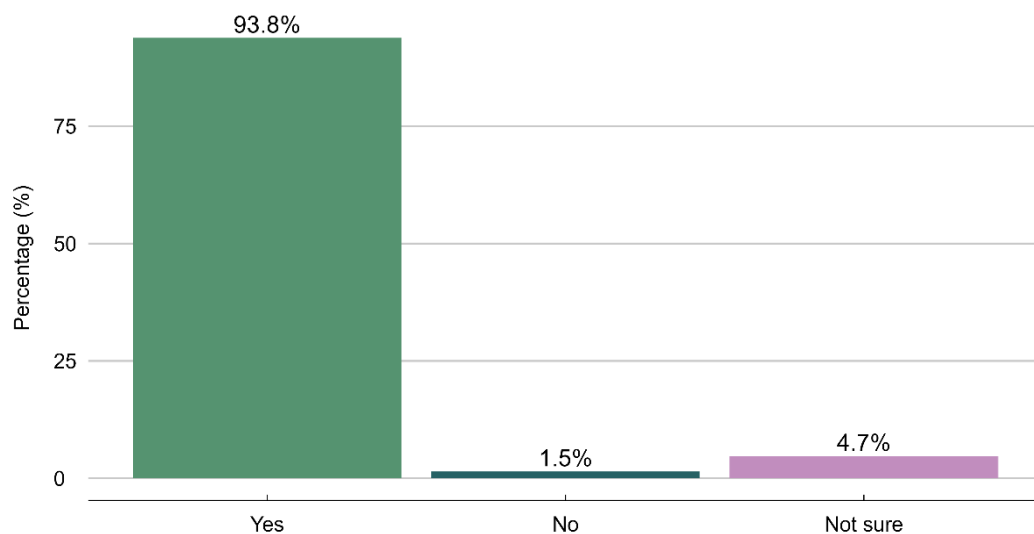
The first key question around activation asked about whether the patients received helpful breast pain advice at the cBPC. The responses indicate that 98.6% of patients did receive helpful advice.

Figure 6. Did you find the breast pain advice you received helpful?



Further, when asked about whether they found the information regarding personal risk of developing breast cancer helpful, 93.8% of patients responded they did find it helpful (Figure 7).

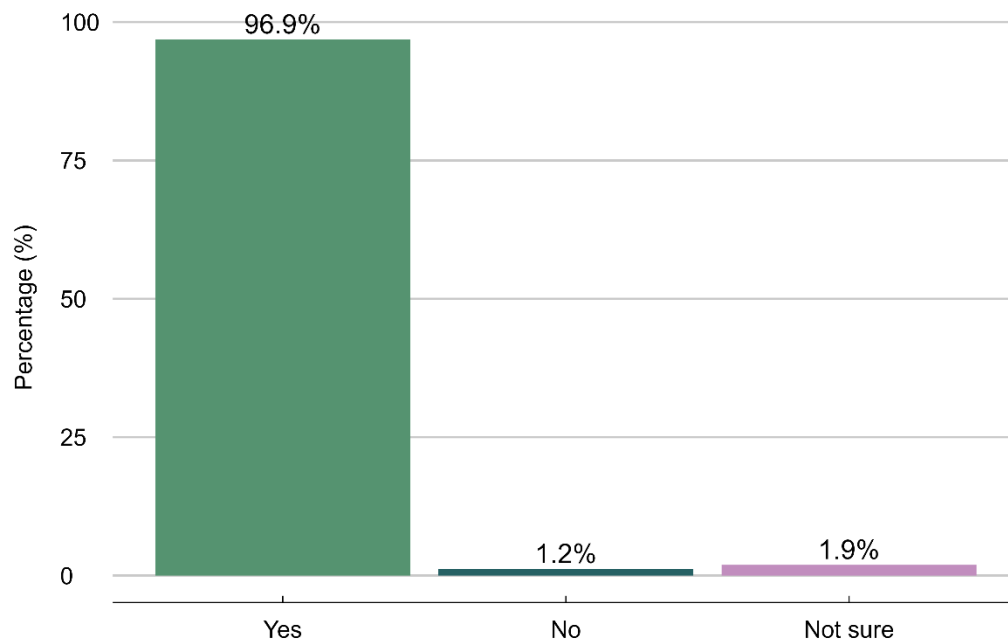
Figure 7. Did you find the information regarding your personal risk of developing breast cancer helpful?



9.3. Patient reassurance

The patients were then asked about whether the advice they received at the cBPC reassured them (Figure 8). This again showed extremely positive responses, with 96.9% of patients indicating the advice they received was reassuring.

Figure 8. Did you feel reassured by the breast pain advice you received?

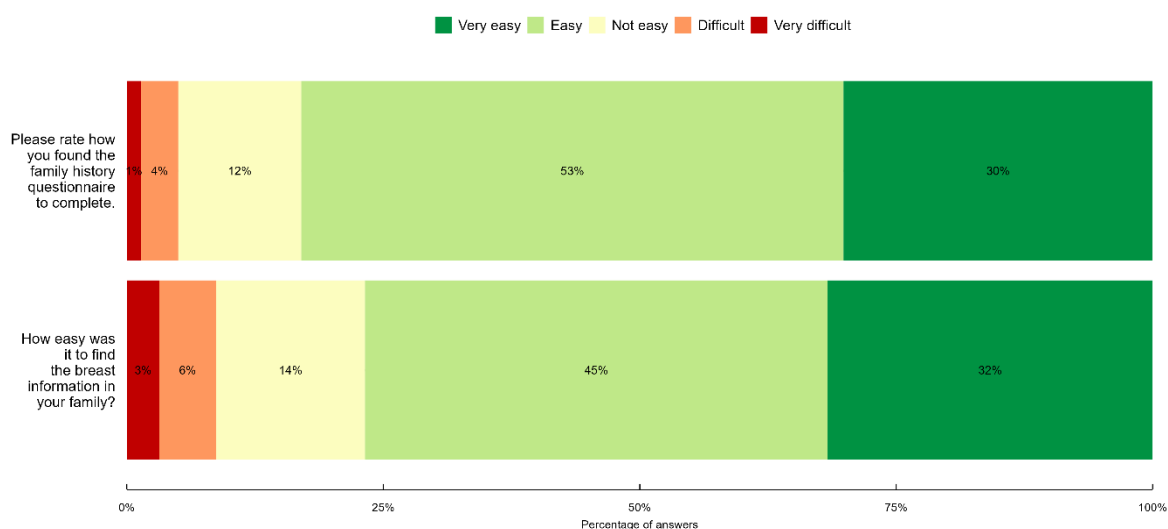


9.4. Ease of use

The survey also asked patients about the ease of use of the family history screening (Figure 9). The results show that majority of patients (83%) found the family history screening easy or very easy to complete. There were also a proportion of patients who found the screening not easy (12%), difficult (4%) or very difficult (1%).

Similar responses were also found when patients were asked how easy it was to find the breast information in their family. Again, the majority of patients (77%) found this information easy or very easy to find. There was a slightly higher proportion of patients who found this information not easy (14%), difficult (6%) or very difficult (3%) to find compared to other measures.

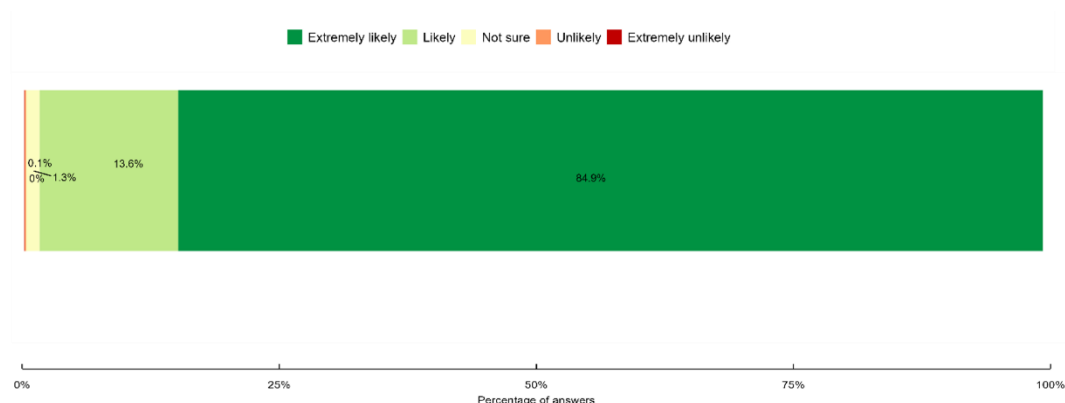
Figure 9. Summary of PROMs responses – ease of use



9.5. Patient satisfaction

Patients were then asked how likely the patient would be to recommend this service to friends and family if they had troublesome breast pain (Figure 10). This showed that 98.5% of patients were extremely likely or likely to recommend this service to friends and family. Only a tiny (1.5%) minority of patients answers not sure, unlikely or extremely unlikely to these questions.

Figure 10. How likely are you to recommend this service to friends and family if they had troublesome breast pain?



9.6. Comparison between feelings pre- and post-attendance

The final questions gave patients the option to respond about their feelings pre- and post-attendance at the cBPC in free-text. Analysis of this free-text shows a high frequency of more negative emotions such as “apprehensive”, “concerned” and “scared” (Figure 11a). Analysis

Figure 11a. How did you feel before attending the cBPC?



10. Staff Experience

Alongside patient feedback, we have also collected a small amount of feedback from clinic staff. Qualitative feedback from clinic staff in Leicestershire, indicates a positive viewpoint of the pilot by staff. Comments on clinic experience have included:

“Pleasant surroundings, feels de-clinicalised”,

“Unhurried, feels as though we have more time to spend with the patient addressing their concerns to ensure they are reassured, and hopefully prevent future appointments.”,

“Independent working” and

“Less time constraints”.

Additional comments on the risk assessment tool include:

“[It] is a very user-friendly system - on average less than a minute per patient to input. Little longer if patient has extensive family history.”, and

“Letters that are issued are clear and easy to read for both GP and patient. If any onward referrals to family history, a support information sheet is also printed out for the patient on what to expect next.”.

11. Patient Safety

For cBPCs to continue in the East Midlands and to expand further, it is important that this pathway is assessed as being safe. This means:

- The breast cancer incidence in this group should be equal to or less than the literature and expected population levels.
- For patients referred to a cBPC, any clinical abnormality should be investigated within the 2WW pathway through a direct onward referral, minimising the time to diagnosis of a breast cancer in someone found to have a clinical abnormality at the cBPC.
- For patients confirmed to have ‘breast pain only’ with no clinical abnormality, breast screening should be recommended for those eligible under the NHSBSP, and strongly recommended if their risk assessment indicated an increased risk.
- Even in this population with a low incidence the above two points should result in the majority of breast cancers being detected as a result of attendance at the cBPC
- Those under 50 years of age who are at increased risk of future breast cancer based on their objective risk assessment should be referred to the local Familial Cancer Services for advice and guidance and if appropriate enrolled in a family history screening programme.

Therefore, in addition to the incidence of breast cancer in patients with ‘breast pain only’ being similar to the normal population on referral to the cBPC, all of the above measures should maximise the opportunities for early detection of breast cancer through screening

focussed on those at increased personal risk (e.g. due to family history, patient age, etc) and thereby minimise the incidence of patients presenting with a breast cancer within the subsequent 12 months to an incidence which is at or even below an unscreened, age-matched population.

It is important to note here that pilots are still ongoing and therefore, once further data are available, further analysis should be conducted.

11.1. Additional time between BPC and subsequent 2WW attendance

Across the pilot sites during the audit period, 8 cases of cancer were detected after attending a cBPC. There are a number of ways in which these cancers were identified.

11.1.1. Onward referrals to breast symptomatic 2WW

The data shows four patients were referred onto the 2WW straight from their attendance at the cBPC. These occurred across three different Trusts. The average time between the cBPC referral and the referral to the 2WW was 11.5 days. This time period has been used as without the cBPC referral route, these patients may have been directly referred onto the symptomatic breast cancer 2WW.

However, this does not constitute a delay to care. Firstly, patients referred directly from a cBPC to the 2WW are sent directly rather than sent to the back of the line. Therefore, they do not face potential delays they may have faced if they were referred directly from the GP.

There is also more complexity here. Further exploration on these patients, indicate that 1 had a previous personal history of cancer and therefore met an exclusion criteria for the cBPC. An SOP has been developed to try and prevent these patients from being referred to the cBPC in the first place – eg, by making prior personal history of breast cancer a specified exclusion criteria on the referral – and secondly by triaging out any such referrals. It also addresses how to deal with patients with personal prior history of breast cancer who still manage to be seen in the cBPC (eg where a GP doesn't mention the patient's personal history of breast cancer in their referral letter).

11.1.2. Subsequent referrals by the GP

There was 1 patient who was initially discharged from the cBPC and later was referred by their GP onto the symptomatic breast cancer 2WW pathway. This patient attended the cBPC with bilateral breast pain. They later developed new nipple retraction and were subsequently diagnosed with ipsilateral invasive breast cancer. This was mammographically occult even at the time of the 2WW referral. The patient also had a previous history of bilateral breast cancer and therefore did not fulfil the criteria for a cBPC attendance.

Monitoring of eligible patients receiving a breast cancer diagnosis not resulting from onward referral to 2WW or advice on screening from the cBPC, and then subsequently being diagnosed within one year of discharge from the cBPC must continue as each pilot matures. Any patient diagnosed through this route risks being identified as a "missed" diagnosis by the

cBPC. If there were to be an incidence approaching that of an asymptomatic screening population this could flag a safety concern.

11.1.3. Subsequent referrals through asymptomatic screening

The final group of patients are those who were discharged from the cBPC and later had cancer picked up through screening. Examples of these include:

- 1 patient who was identified at their cBPC attendance as having missed their previous screening invite and still eligible for NHS breast screening. They were only population risk of breast cancer but were advised to schedule a screen. This identified impalpable ductal carcinoma in situ in the ipsilateral breast cancer.
- Another patient was identified as above population risk of breast cancer and was therefore advised by the cBPC clinic to schedule a mammogram. This identified an impalpable, invasive contralateral breast cancer.
- Another patient was identified as population risk of breast cancer, and had a normal clinical assessment at the cBPC. They were signposted to NHS Breast Screening Programme for over 70s. This identified impalpable contralateral invasive breast cancer.

11.2. Breast cancer incidence

For the cohort of patients seen so far in cBPCs, the incidence of breast cancer was found to be 4.2 per 1,000 (CI: 2.1-8.3 per 1,000).

However, as described previously, there have been 2 patients who have been referred to the cBPC inappropriately. This is because they met exclusion criteria by having a personal history of cancer. If these patients are excluded from the prevalence estimates the prevalence at the cBPC drops to 3.2 (CI: 1.4-6.9 per 1,000).

The incidence in patients presenting with 'breast pain only' has been reported to be on average 4.7 per 1,000. Therefore, the incidence at cBPC is below population incidence levels reported in the literature, looking just at patients eligible for the clinic.

12.Improved Value for Money

12.1. The cost of the Pilot

Cost estimates are provided in Table 10. For the purposes of this analysis, these estimates have been scaled to represent a full year of the clinic being open. This allows comparison between sites.

Table 10. Costs per year of the pilot, by Trust

Cost Line	Derbyshire	Leicestershire	Lincolnshire	Nottinghamshire	Northamptonshire
Laptop	£780	-	-	£2,487	-
Phones	£140	-	-	-	-
Miscellaneous	£30	-	£4,000	£26	-
Training	-	-	£3,000	-	-
Staff (B3 admin)	-	£25,320 (3 x 0.3 FTE)	£26,375 (1 FTE)	£10,550 (0.4 FTE)	£5,627 (0.2 FTE)
Staff (B7 SN)	-	-	£22,909 (2 x 0.2 FTE)	£11,455 (0.2 FTE)	-
Staff (B8a SN)	-	-	-	-	£22,707 (0.35 FTE)
Staff (ANP)	£60,000*	-	-	-	-
GP w special interest	-	£62,400 (cost per clinic)	-	-	-
Clinic Location	-	-	£5,000	£7,540	-
FaHRAS	£24,336	£24,336	£16,224	£8,112	£24,336
Total	£102,343	£112,056	£77,509	£40,169	£52,670

*Money left from Transformation budget given to a Trusts to backfill so the Trust could release ANP capacity to deliver the service. Costs for Year 2 include a B3 admin and an ANP totalling £140,752.

The above costs were based on Trust submissions.

Where a Trust only indicated the FTE of a clinical staff group (rather than FTEs and costs), national values were used from 20/21 did not indicate the cost per FTE of a staff group, values from the Unit Costs of Health and Social Care publication funded by the NIHR Policy Research Programme⁵. These were inflated using 21/22 healthcare inflation values (22/23 values not yet available). Employer NIC contributions were added onto the cost of salaries.

Where a Trust only indicated the FTE of an administrative staff group (rather than FTEs and costs), salary information was taken from the NHS employer website⁶. Employer NIC contributions were similarly added into the cost of salaries.

The costs if the pilots were extended for a second year across all sites were estimated to be the same as in Table 7, less fixed costs such as training and laptops, etc.

12.2. Quantified benefits

12.2.1. Assumptions

To complete this analysis we have used a number of assumptions, including:

⁵ Unit Costs of Health and Social Care 2021, Published December 2021

⁶ <https://www.nhsemployers.org/articles/pay-scales-202223>

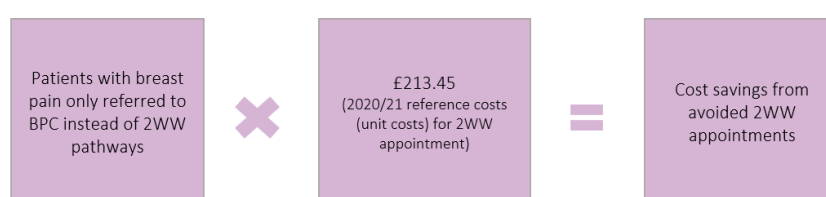
- 2WW: It is assumed that all attendances at a cBPC would have otherwise been referred onto a 2WW pathway. On the foundation of this assumption, we use data from the pilots to estimate how many 2WW referrals were averted. Some patients who attend a cBPC are still later referred along a 2WW pathway, which is accounted for in our estimates.
- 2WW: When extrapolating the benefits for years 1 and 2, it is assumed that cBPC attendances continue at the same rate as they have been for the latest 3 months of available cBPC data. This accounts for potential ramp-up periods while the cBPCs were being set-up.
- Cost savings of the reduction in 2WW appointments: The assumptions and calculations are outlined in detail below in Section 11.2.2, along with cost savings from reductions in diagnoses in Section 11.2.3.
- Costs in Year 2: Costs have also been assumed to be the same as year 1 (except for Derbyshire⁷), less fixed costs. It is anticipated that some costs will rise in the second year of the pilot at some sites due to adaptations and learnings in the first year. This may have an impact on the CBR for year 2.

12.2.2. Reduction in 2WW appointments

Through the redirection of patients to cBPC, patients no longer require an urgent cancer referral on the 2WW pathway nor do they require additional diagnostic tests that normally accompany a referral along this pathway. Therefore, we can calculate this cost savings.

For this calculation, the number of attendances at a cBPC at each site has been scaled to 1 year. This has been done by using the average attendances for last full 3 months of the pilot as an indicator of potential attendances for any remaining months.

Using this calculation, 1987 patients are expected to be seen in the first year of the pilot. Therefore, using 2020/21 reference costs, there is an anticipated saving of £424,125. This rises to £880,268 by the end of year 2.



Note: 20/21 reference costs were inflated using 21/22 healthcare inflation values (22/23 values not yet available).

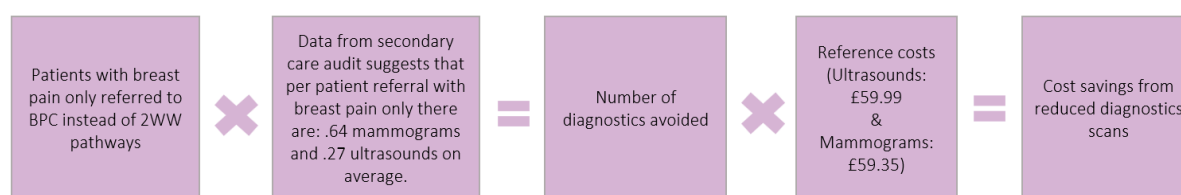
12.2.3. Reduction in Mammograms and Ultrasound Scans

Alongside savings from the 2WW avoidance, there is also a saving associated with the reduction in diagnostic scans, namely mammograms and ultrasounds.

⁷ Derbyshire costs for year 2 are known and therefore used for our analysis. The total is £140,752, including staff costs and the FaHRAS licence.

For mammograms, using the total number of anticipated attendances at a cBPC of 1,987 in the first year of the pilot, there is a saving of £75,474. This uses an assumption from the secondary care audit which states that 0.64 mammograms are completed per 2WW referral. It also uses the reference cost which states a mammogram costs £59.35 per scan (inflated using 21/22 healthcare inflation values - 22/23 values not yet available). This rises to £156,646 by the end of year 2.

For ultrasounds, prior research from a secondary care audit found there are 0.27 scans per 2WW attendance. We use the reference cost per scan is £59.99, inflated using 21/22 healthcare inflation values (22/23 values not yet available). Therefore, over the first year of the pilot there is anticipated to be a saving of £32,184. This would rise to £66,797 by the end of year 2.



Note: 20/21 reference costs were inflated using 21/22 healthcare inflation values (22/23 values not yet available).

12.3. Cost-Benefit Analysis

This analysis then looks at the costs and benefit of a full first year pilot across the 5 trusts, using the figures outlined above. Both the cost benefit ratio (CBR) and net benefit from establishing the pilot cBPCs are outlined in Tables 8 and 9. This combines the calculations of costs of patients going through the 2WW pathway and costs of establishing the BPC.

12.3.1. Cost Benefit Analysis for Year 1

Using the benefits quantified as part of this evaluation, the benefit to cost ratio is 1.23 (Table 11). Therefore, for each pound spent, the health system receives £1.23 in benefits.

Table 11. Cost Benefit Analysis of Year 1 of the pilot

	Estimated total benefits from Year 1	Estimated total costs from Year 1	CBR – every £ saved per £ invested	Net benefit
Derbyshire	£141,843	£102,343	1.39	£39,500
Leicestershire	£96,534	£112,056	0.86	-£15,522
Lincolnshire	£75,927	£77,509	0.98	-£1,581
Nottinghamshire	£84,478	£40,169	2.10	£44,308
Northamptonshire	£75,682	£52,670	1.44	£23,012
Total	£474,464	£384,747	1.23	£89,716

12.3.2. Summary of Year 2 Benefits

Table 12 represents a scaling of the benefits and costs into a second year of the pilot. In year 2 we estimate prevented 2WW pathways using recent BPC throughput data and the historic percentage of patients in cBPCs whose 2WW pathway is prevented.

As expected, for many sites, the CBR improved in year 2 as costs stay the same but more patients are seen in a cBPC and therefore generate more benefits. As Derbyshire administrative costs increase in year 2 without a significant increase in patients seen, the CBR for Derbyshire decreases.

Table 12. Cost Benefit Analysis at the end of Year 2 of the pilot

	Estimated total benefits after Year 2	Estimated total costs after Year 2	CBR – every £ saved per £ invested	Net benefit
Derbyshire	£287,435	£243,095	1.18	£44,340
Leicestershire	£197,977	£224,113	0.88	-£26,136
Lincolnshire	£149,033	£148,017	1.01	£1,016
Nottinghamshire	£177,659	£77,826	2.28	£99,833
Northamptonshire	£174,573	£105,340	1.66	£69,232
Total	£986,677	£798,391	1.24	£188,286

12.4. Scenario analysis

We have also run scenario analysis to estimate the cost-benefit ratio where clinics hit higher utilisation rates. The scenario chosen is where all clinics reach the maximum utilisation reached during their pilot phase.

This scenario uses the maximum monthly patient attendance, Table 13, to calculate a proxy for the maximum utilisation the clinics could have achieved within a year if this is met every month⁸. This maximum utilisation has been calculated for each site. These are still within the max prevalence of breast pain only, where 20% (Jahan et al., 2022) of all 2WW referrals for symptomatic breast cancer are breast pain only⁹.

Table 13. Maximum utilisation, by site

	Max number of patients per clinic in one month	Number of clinics	Maximum appointments (12 months)
Derby	25	3	900
Leicester	19	3	695
Lincoln	20	2	468
Nottingham	38	1	456
Northampton	21	2	492

Under the same assumptions as outlined in Section 12.2.1. and with costs remaining constant, cost benefit analysis under scenario 1 indicates that all sites are cost effective within 1 year (Table 14). The CBR is 1.87, meaning that for every £1 spent, the health system receives £1.87 back in benefits. This is reflective of the higher number of appointments through the clinics, and therefore benefits generated, at the same cost level.

Table 14. Cost Benefit Analysis under Scenario 1

	Estimated total benefits from Year 1	Estimated total costs from Year 1	CBR – every £ saved per £ invested	Net benefit
Derbyshire	£227,883	£102,343	2.23	£125,540
Leicestershire	£142,102	£112,056	1.27	£30,045
Lincolnshire	£110,012	£77,509	1.42	£32,503
Nottinghamshire	£116,733	£40,169	2.91	£76,563
Northamptonshire	£124,118	£52,670	2.36	£71,448
Total	£720,847	£384,747	1.87	£336,100

⁸ Maximum utilisation per month per clinic has been calculated using the total number of appointments per month per site divided by the number of clinics.

⁹ Data received from the East Midlands Cancer Alliance.

This scenario testing shows that it is important for the cost effectiveness of these clinics to ensure that the clinics are well utilised. Low utilisation in the first year, or couple months in many areas, is not uncommon and does not signal low demand. However, it is important that any causes of persistent low utilisation at any site are identified and rectified to ensure cost effectiveness of the clinics to the health system going forward.

12.5. Other benefits

Alongside the benefits quantified as part of this analysis, there are other considerations which cannot be quantified at this time. These include the benefits of reducing pressures on the 2WW for patients requiring urgent cancer referrals. These benefits may include shorter waiting times which could have impacts on time to treatment and therefore longer-term outcomes.

There may also be environmental benefits as patient travel time should decrease as they are only required to attend clinics in the community rather than travelling to large secondary care centres.

13. Findings, Considerations and Recommendations

13.1. Findings

Across all measures of patient experience, patients attending the cBPCs rated their experience very highly. *For example, 98.5% of patients indicated they would recommend the service to friends and family.* This demonstrates the value of these clinics in both alleviating anxiety and increasing patients' activation – their understanding and proactiveness towards their own healthcare.

In terms of value for money, all sites were cost effective by Year 2 except for Leicestershire. In spite of this, across all clinics included within the East Midlands audit, the cBPC pilots were found to have a benefit ratio of 1.23 in Year 1 and 1.24 in Year 2. This means that for every £1 spent by the health system on these clinics, they receive just over £1.20 back in benefits. All clinics become cost beneficial if all clinics reach their maximum utilisation, in which scenario it is estimated that for every £1 spent by the health system on these clinics, they receive just over £1.87 back in benefits (range £1.27 to £2.91).

Additionally, the cancer incidence rate in the patient cohort attending cBPCs was in line with similar population estimates in the literature. Initial estimates of breast cancer incidence among women attending cBPCs were estimated to be 3.2 (CI: 1.4-6.9 per 1,000). It is important to note, many of the clinics have only opened within the past year and therefore it is possible that some patients who have attended a cBPC may still be diagnosed with breast cancer within 1 year of attending the clinics.

13.2. Considerations

13.2.1. Cost mechanisms

It is also important to note that these estimates have been calculated using staffing costs to the provider to reflect the cost of establishing the clinic. Since this time, the commissioner has agreed a tariff of £75 per patient seen. If this figure is used rather than the staffing costs, Leicester, for example, then becomes cost effective, with a cost benefit ratio of 1.14 in year one. This suggests that some of the breast pain clinics may be underutilised compared to their available capacity (used as part of tariff calculations).

13.2.2. Onward referral rates to 2WW

Furthermore, the Leicestershire clinic utilised a different staffing model compared to the other clinics. Whereas Leicestershire clinics were staffed by general practitioners with special interests the other clinics were staffed by senior breast clinic nursing staff. Compared to other pilot sites, Leicester's level of referrals onto secondary care was also relatively high (25%) compared to between <5% at three sites who used senior breast clinic nursing staff (Table 5).

Interestingly, the fifth site, Lincolnshire, also had a relatively high referral rate to the symptomatic breast cancer 2WW pathway. In the pilot to date, around 18% of attendances at the cBPC resulted in a 2WW referral. The staffing mix for these clinics is a Band 7 Specialist Nurse and B3 admin. This matches Nottingham, who do not see this high referral rate.

Therefore, more research is needed to determine the reasons for these variations in clinic outcomes across the different sites.

13.3. Recommendations

13.3.1. Clinic SOPs

As mentioned, in the early stages of this pilot, some patients were referred to the cBPCs even when they met defined exclusion criteria. Key exclusion criteria include, personal history of breast cancer, presence of any implants or the patient in male. To date, there have been patients sent to the clinics with a personal history of breast cancer. Two of these patients were subsequently diagnosed with breast cancer. Having learnt from the initial case, the second case was referred directly from the cBPC to the 2WW clinic and promptly diagnosed.

It is therefore, imperative that cBPCs have a clear Standard Operating Procedure in place to minimise the risk that patients are incorrectly referred to a cBPC and to deal with the scenario where a GP omits to mention a patient has a personal history of breast cancer. Alongside this, it is important that this is clearly communicated with GPs with sufficient and continued education provided.

13.3.2. Maximise utilisation in each clinic

Although many of the pilot sites remain in their infancy, scenario analysis indicates the importance of maximising utilisation within current capacity across the different clinics. Where clinics hit their observed maximum utilisation across 12 months, all pilot sites become cost beneficial with the CBR of 1.87.

Ensuring all clinics are maximising utilisation will require future monitoring as each pilot matures. If utilisation drops, it will be important to work with teams on the ground to understand any challenges they are facing and work to resolve, where possible.

13.3.3. Optimised Staffing Models

It is also important the staffing models are optimised at each clinic. Across the different clinics, evaluated in this audit, a number of different staffing models have been utilised. For example, Leicestershire uses a GP with specialist interest and Nottinghamshire has a B7 Specialist Nurse.

This is important both in terms of the costs associated with each clinic as well as the potential savings associated with prevented 2WW referrals. The different staffing models show large differences in the percentage of avoided 2WW referrals from the cBPCs. For example, the percentage of avoided 2WW referrals at Leicestershire clinics so far is 76%, whereas this rises to 96% Nottinghamshire. With each avoided 2WW referral saving £213.45, the additional 20% savings could make a significant difference in terms on the cost effectiveness in clinics.

It is important more research is conducted to understand this difference in referrals and whether it is due to staffing models or other factors are at play.

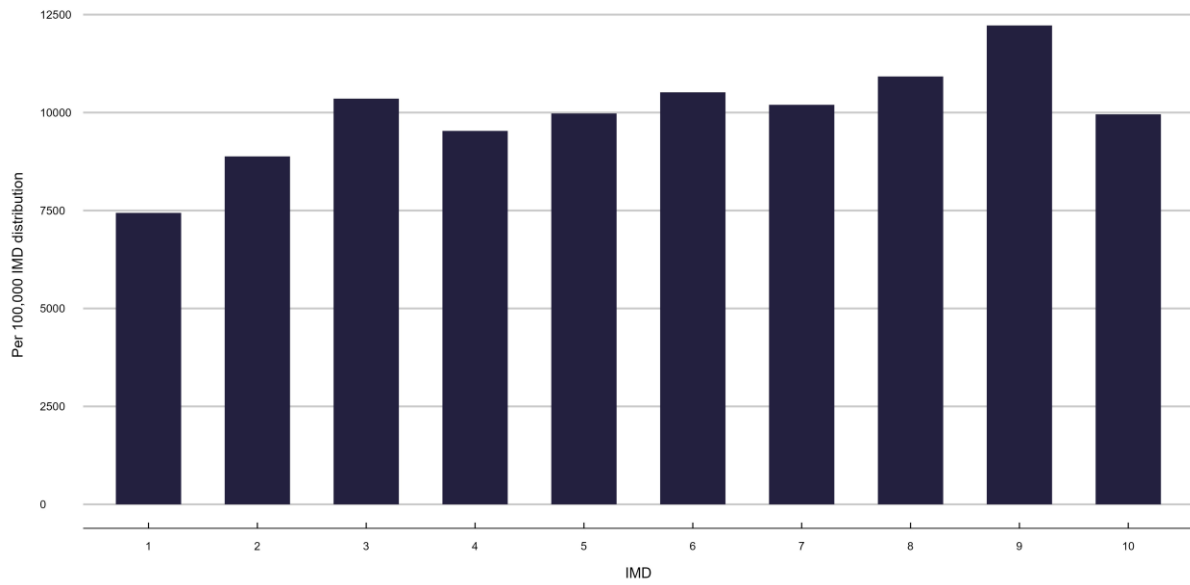
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15.Appendix

Appendix 1. Distribution of IMD score, standardised by 100,000 IMD population, for pilots to date.



Appendix 2. Leicestershire Data

Table 1. Patient ethnicity, Leicestershire

Descriptive statistics of patient characteristics		
Variable	N	Statistic ¹
Ethnicity	212	
White		147 (69%)
Asian		36 (17%)
Unknown		25 (12%)
Black		4 (1.9%)
¹ n (%)		

Figure 1. Distribution of IMD score, Leicestershire

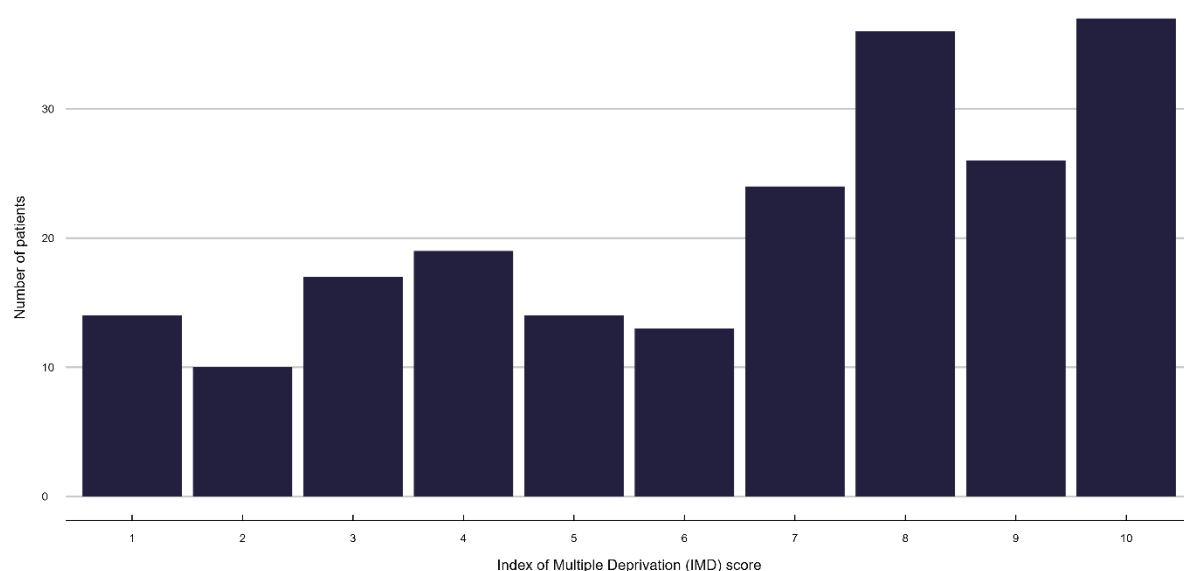


Table 2. Patient demographics, Leicestershire

Descriptive statistics of patient characteristics		
Variable ¹	N	Statistic ²
Age at attendance	212	44 (16, 87)
IMD Score	210	7 (1, 10)

¹ **Note:** IMD: The Index of Multiple Deprivation, a measure of relative deprivation for small areas.

² Median (Range)

Table 3. Source of referral to secondary care, Leicestershire

Descriptive statistics of patient pathway		
Variable	N	Statistic ¹
Source of referral to secondary care	48	
BPC		48 (100%)
¹ n (%)		

Table 4. PROMS demographics, Leicestershire

Response		
Question	N	Statistic ¹
Did your GP advise you that breast pain is not a symptom of breast cancer?	381	298 (78%)
How many times have you seen your GP for this episode of breast pain prior to being referred to this clinic?	387	
1		208 (54%)
2		115 (30%)
3		36 (9.3%)
4		14 (3.6%)
5 or more		14 (3.6%)
Have you had any previous episodes of breast pain that required you to see your GP?	387	183 (47%)
¹ n (%)		

Figure 2. PROMS patient reassurance, Leicestershire

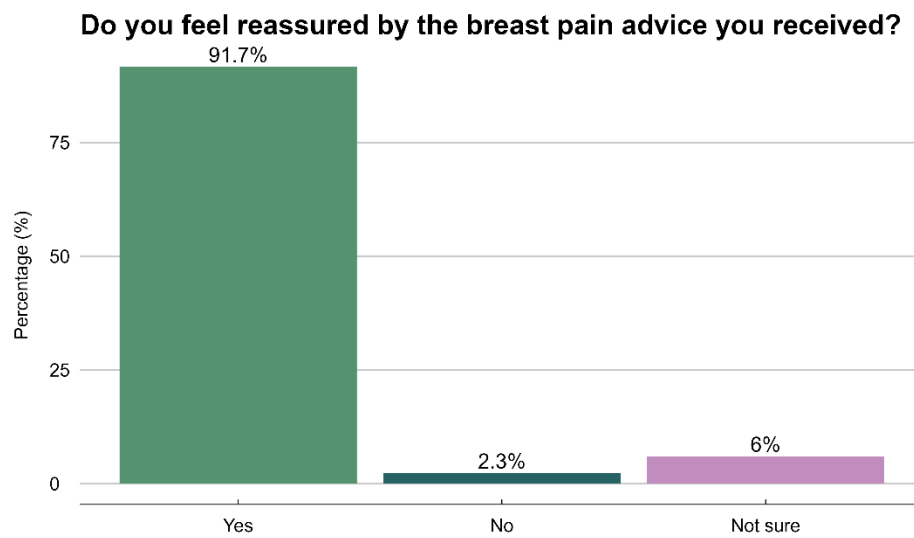


Figure 3. PROMS patient activation, Leicestershire

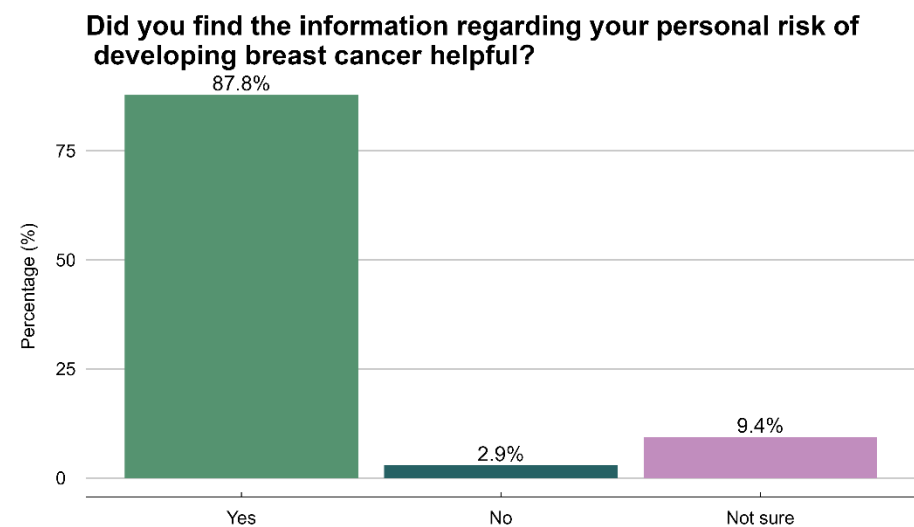
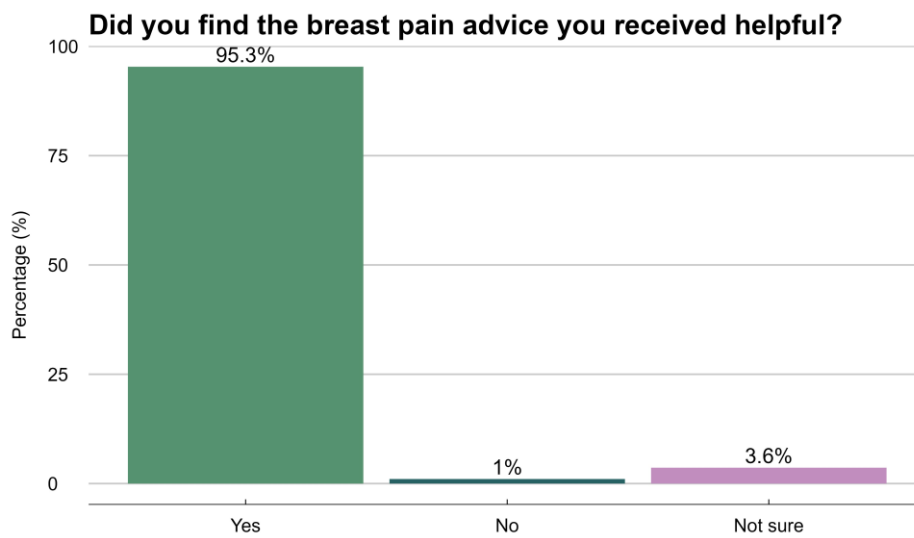


Figure 4. PROMS ease of use, Leicestershire

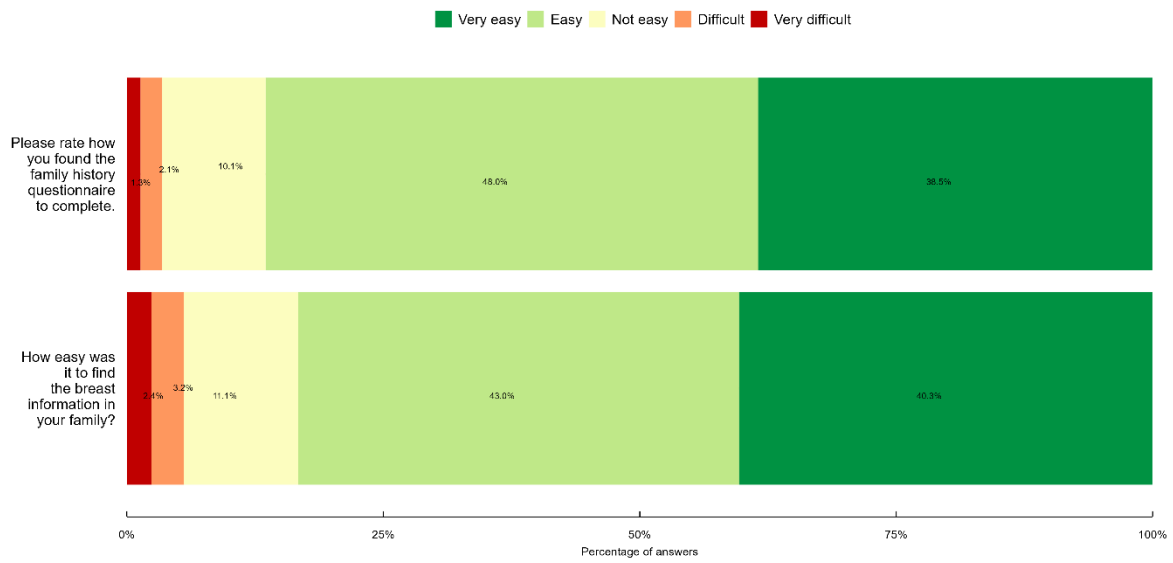
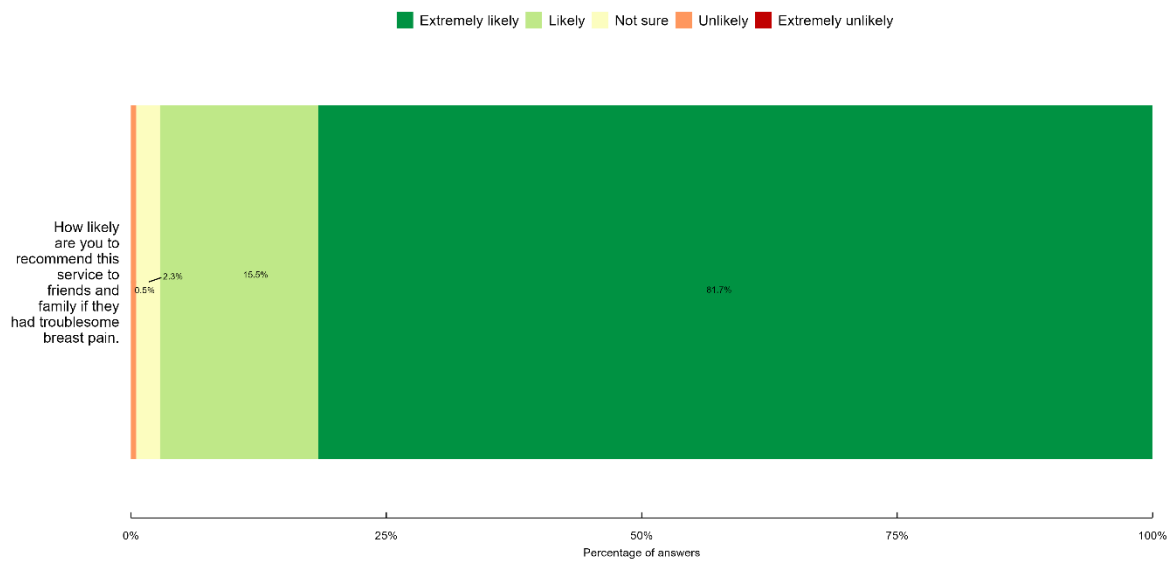


Figure 5. PROMS recommendation of service, Leicestershire



Appendix 3. Nottinghamshire Data

Table 1. Patient ethnicity, Nottinghamshire

Descriptive statistics of patient characteristics		
Variable	N	Statistic ¹
Ethnicity	115	
White	84 (73%)	
Unknown	16 (14%)	
Asian	8 (7.0%)	
Black	5 (4.3%)	
Mixed	2 (1.7%)	
¹ n (%)		

Figure 1. Distribution of IMD score, Nottinghamshire

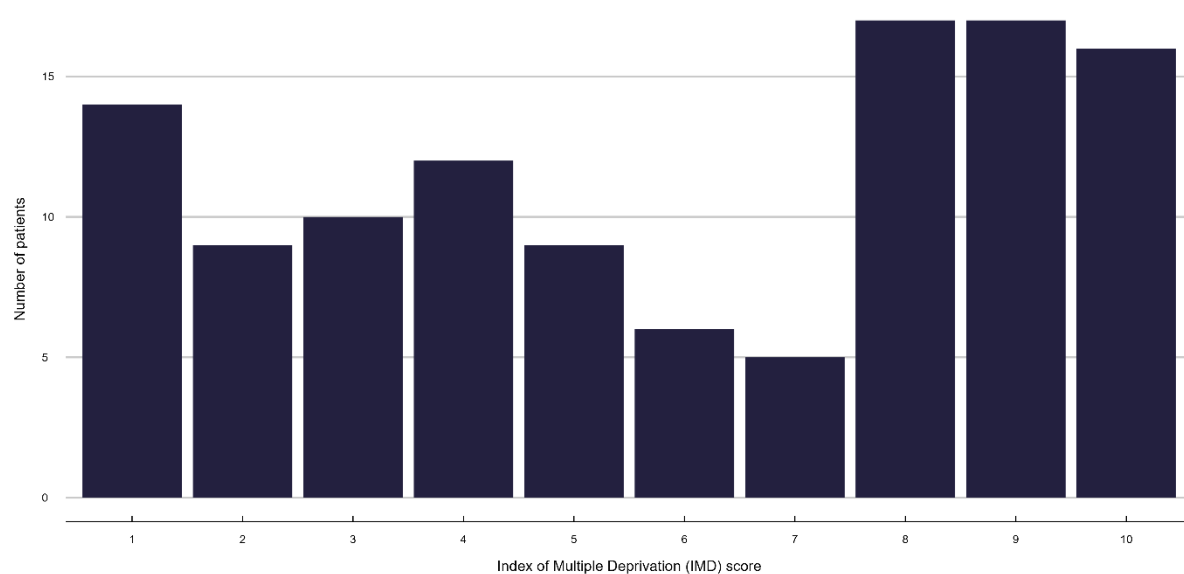


Table 2. Patient demographics, Nottinghamshire

Descriptive statistics of patient characteristics		
Variable ¹	N	Statistic ²
Age at attendance	115	50 (20, 84)
IMD Score	115	6 (1, 10)
¹ Note: IMD: The Index of Multiple Deprivation, a measure of relative deprivation for small areas.		
² Median (Range)		

Table 3. Source of referral to secondary care, Nottinghamshire

Descriptive statistics of patient pathway		
Variable	N	Statistic ¹
Source of referral to secondary care	5	
BPC	5	5 (100%)
¹ n (%)		

Table 4. PROMS demographics, Nottinghamshire

Response		
Question	N	Statistic ¹
Did your GP advise you that breast pain is not a symptom of breast cancer?	69	52 (75%)
How many times have you seen your GP for this episode of breast pain prior to being referred to this clinic?	69	
1	31	(45%)
2	27	(39%)
3	4	(5.8%)
4	4	(5.8%)
5 or more	3	(4.3%)
Have you had any previous episodes of breast pain that required you to see your GP?	71	30 (42%)
¹ n (%)		

Figure 2. PROMS patient reassurance, Nottinghamshire

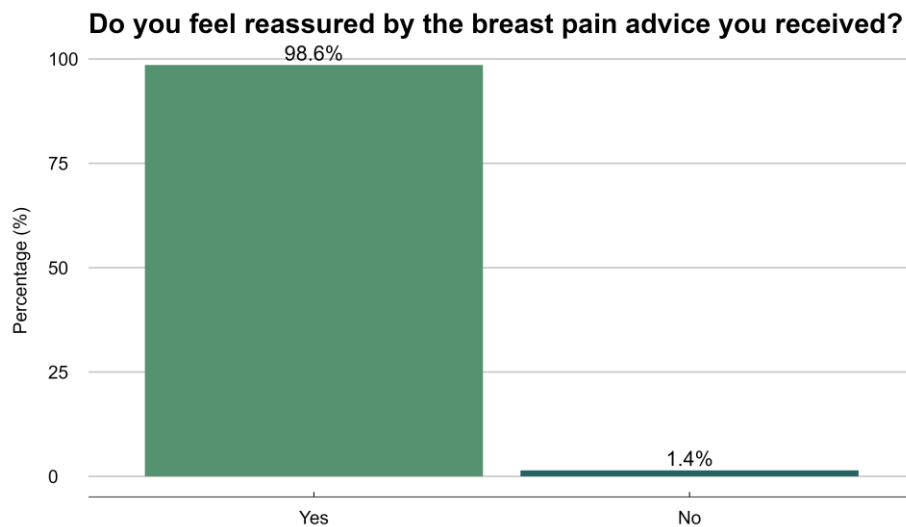


Figure 3. PROMS patient activation, Nottinghamshire

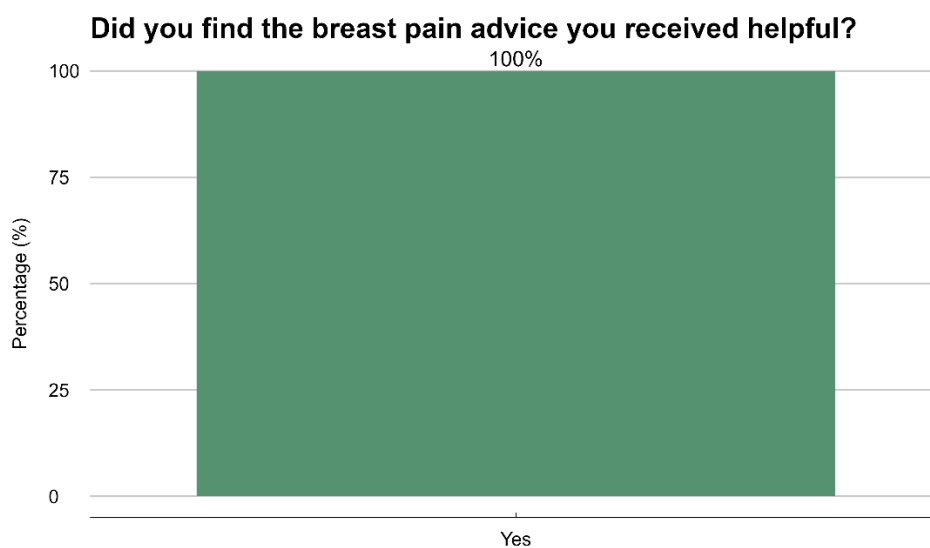
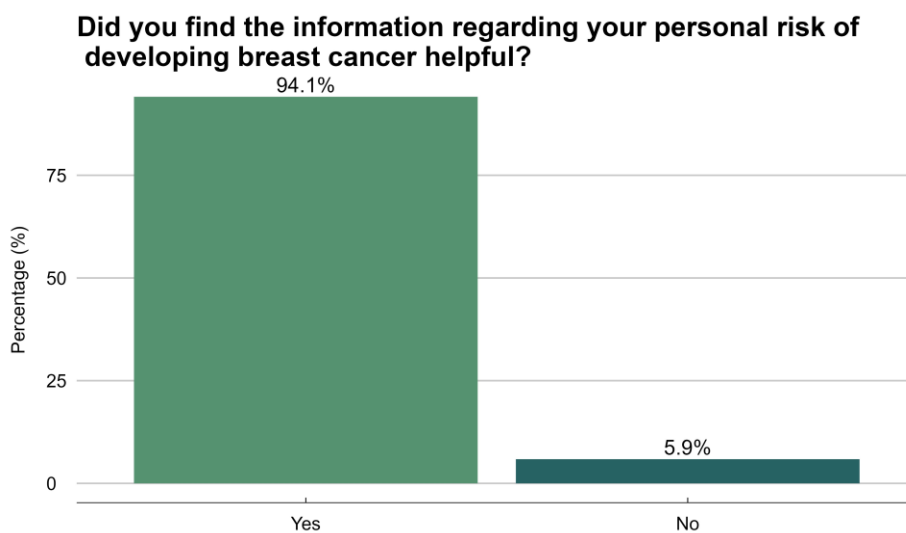


Figure 4. PROMS ease of use, Nottinghamshire

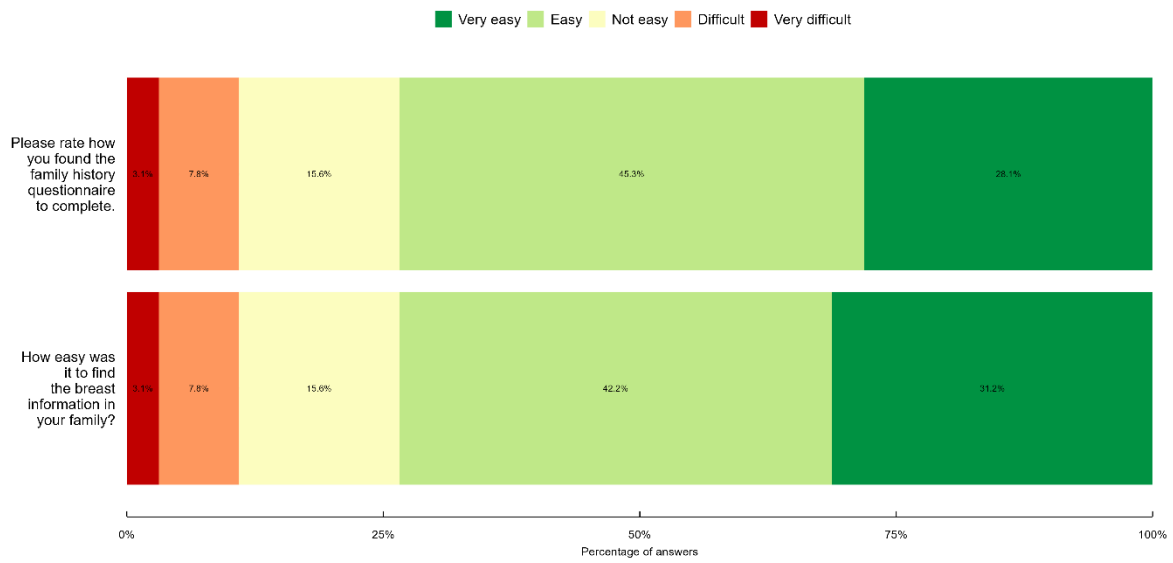
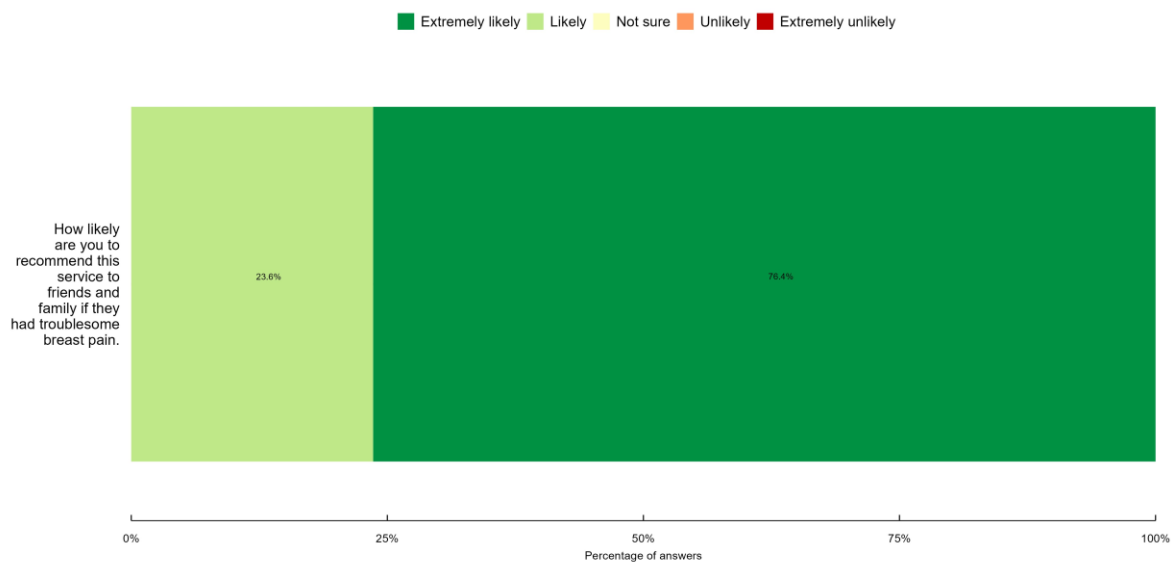


Figure 5. PROMS recommendation of service, Nottinghamshire



Appendix 4. Northamptonshire Data

Table 1. Patient ethnicity, Northamptonshire

Descriptive statistics of patient characteristics		
Variable	N	Statistic ¹
Ethnicity	0	0 (NA%)
¹ n (%)		

Figure 1. Distribution of IMD score, Northamptonshire

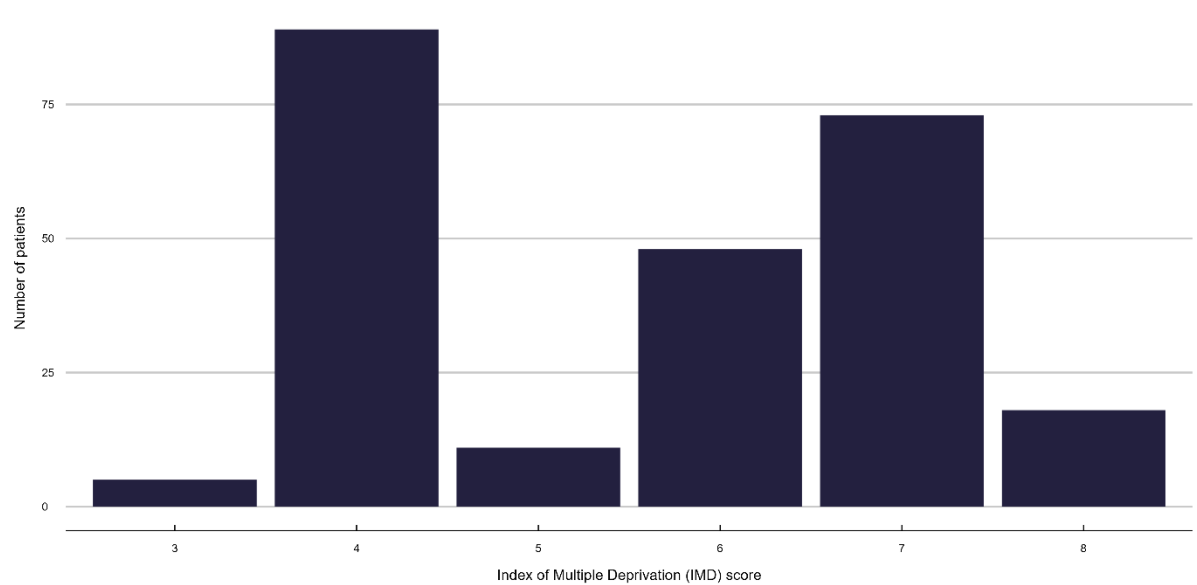


Table 2. Patient Demographics, Northamptonshire

Descriptive statistics of patient characteristics		
Variable ¹	N	Statistic ²
Age at attendance	244	46 (19, 86)
IMD Score	244	6 (3, 8)
¹ Note: IMD: The Index of Multiple Deprivation, a measure of relative deprivation for small areas.		
² Median (Range)		

Table 3. Source of referral to secondary care, Northamptonshire

Descriptive statistics of patient pathway		
Variable	N	Statistic ¹
Source of referral to secondary care	14	
BPC		14 (100%)
¹ n (%)		

Table 4. PROMS demographics, Northamptonshire

Response		
Question	N	Statistic ¹
Did your GP advise you that breast pain is not a symptom of breast cancer?	229	162 (71%)
How many times have you seen your GP for this episode of breast pain prior to being referred to this clinic?	229	
1		178 (78%)
2		35 (15%)
3		9 (3.9%)
4		4 (1.7%)
5 or more		3 (1.3%)
Have you had any previous episodes of breast pain that required you to see your GP?	227	76 (33%)
¹ n (%)		

Figure 2. PROMS patient reassurance, Northamptonshire

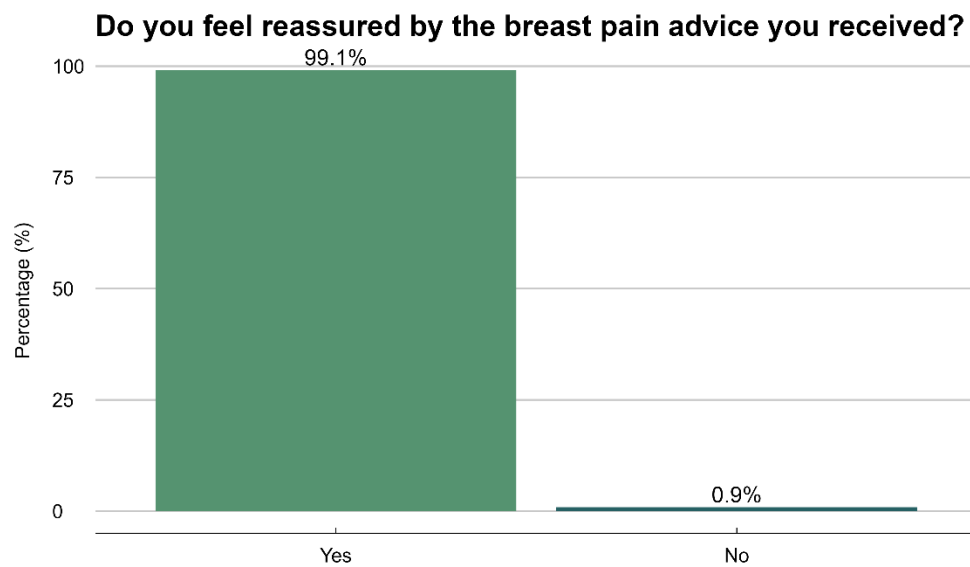


Figure 3. PROMS patient activation, Northamptonshire

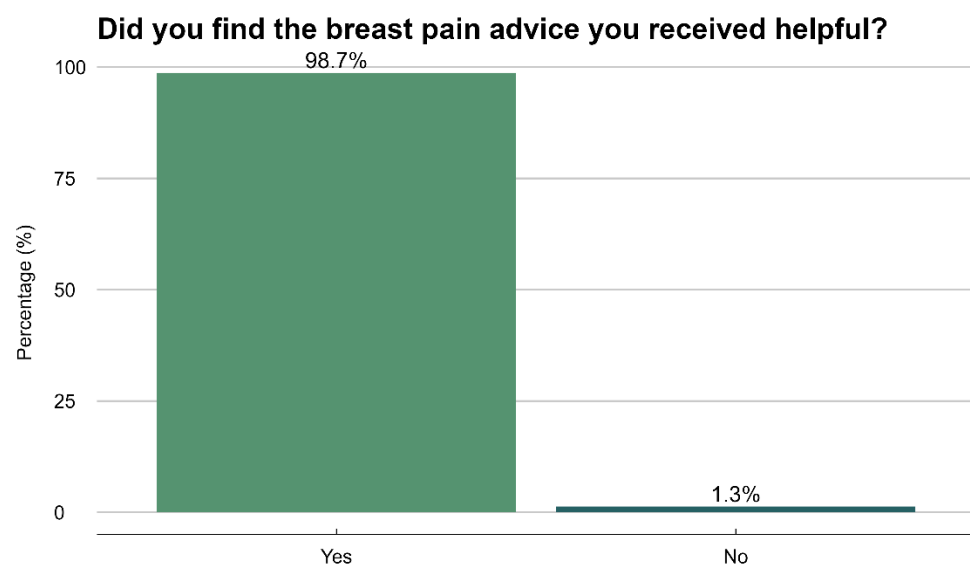
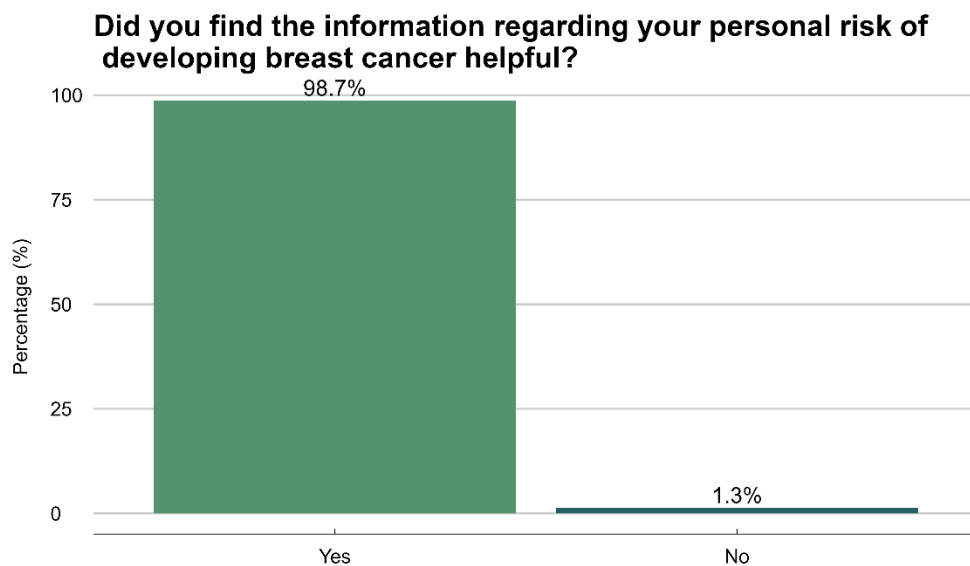


Figure 4. PROMS ease of use, Northamptonshire

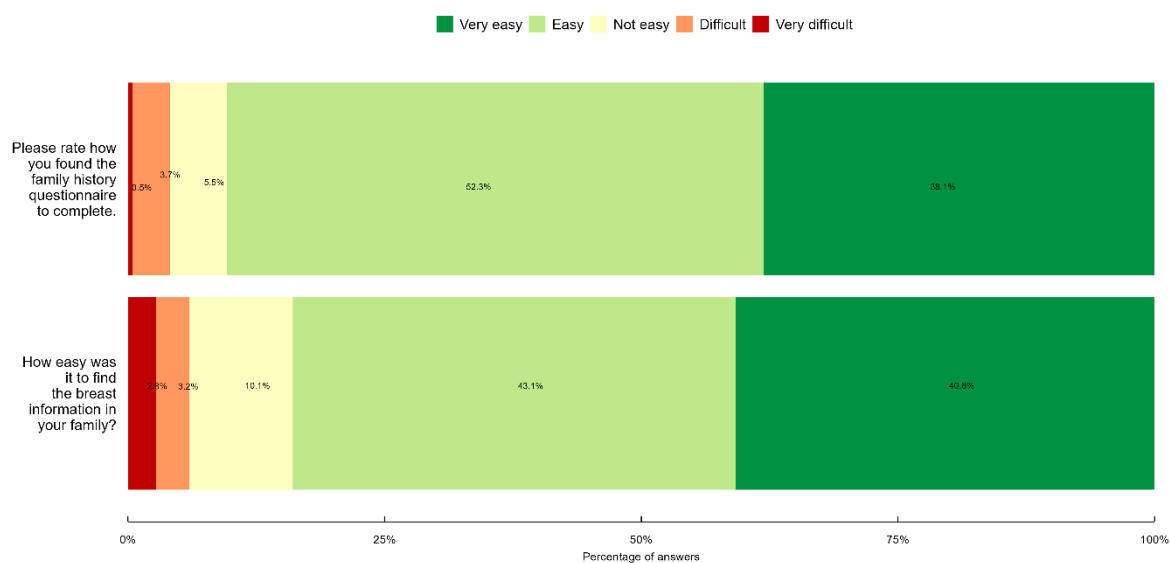
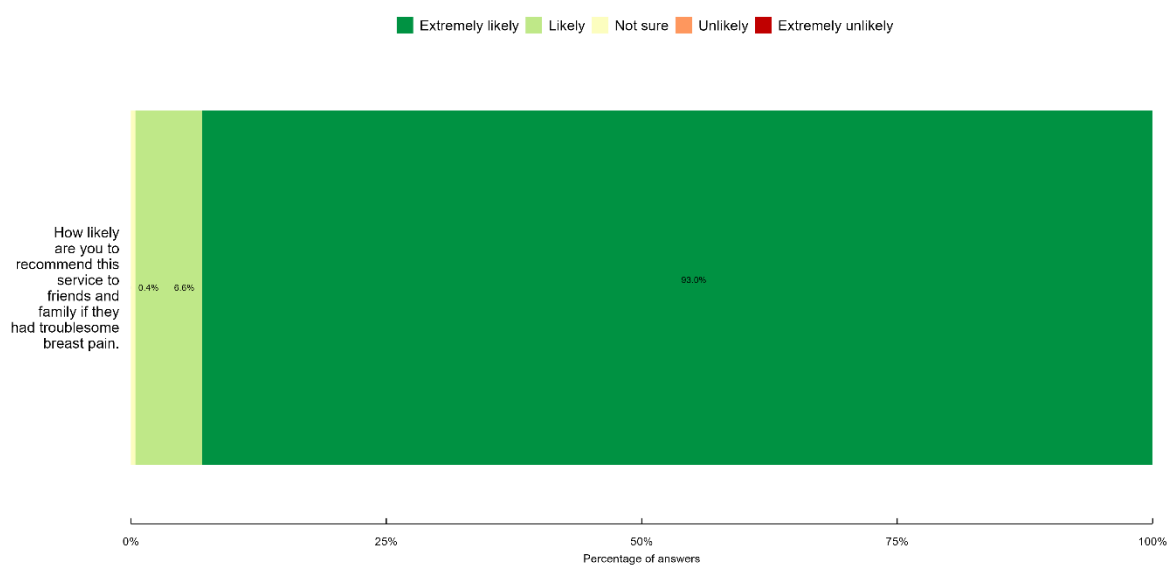


Figure 5. PROMS recommendation of service, Northamptonshire



Appendix 5. Lincolnshire Data

Table 1. Patient ethnicity, Lincolnshire

Descriptive statistics of patient characteristics		
Variable	N	Statistic ¹
Ethnicity	337	
White		262 (78%)
Unknown		65 (19%)
Asian		5 (1.5%)
Mixed		3 (0.9%)
Black		2 (0.6%)
¹ n (%)		

Figure 1. Distribution of IMD score, Lincolnshire

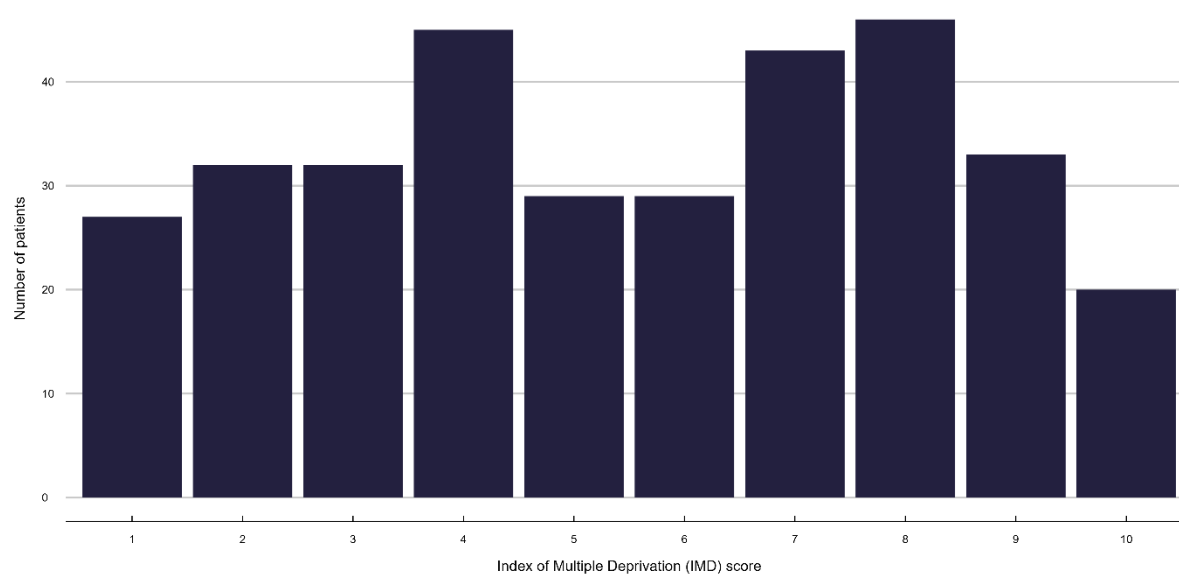


Table 2. Patient Demographics, Lincolnshire

Descriptive statistics of patient characteristics		
Variable ¹	N	Statistic ²
Age at attendance	337	48 (17, 92)
IMD Score	336	6 (1, 10)
¹ Note: IMD: The Index of Multiple Deprivation, a measure of relative deprivation for small areas.		
² Median (Range)		

Table 3. Source of referral to secondary care, Lincolnshire

Descriptive statistics of patient pathway		
Variable	N	Statistic ¹
Source of referral to secondary care	41	
BPC	29 (71%)	
GP	12 (29%)	
¹ n (%)		

Table 4. PROMS demographics, Lincolnshire

Response		
Question	N	Statistic ¹
Did your GP advise you that breast pain is not a symptom of breast cancer?	305	226 (74%)
How many times have you seen your GP for this episode of breast pain prior to being referred to this clinic?	305	
1	203 (67%)	
2	67 (22%)	
3	25 (8.2%)	
4	5 (1.6%)	
5 or more	5 (1.6%)	
Have you had any previous episodes of breast pain that required you to see your GP?	306	111 (36%)
¹ n (%)		

Figure 2. PROMS patient reassurance, Lincolnshire

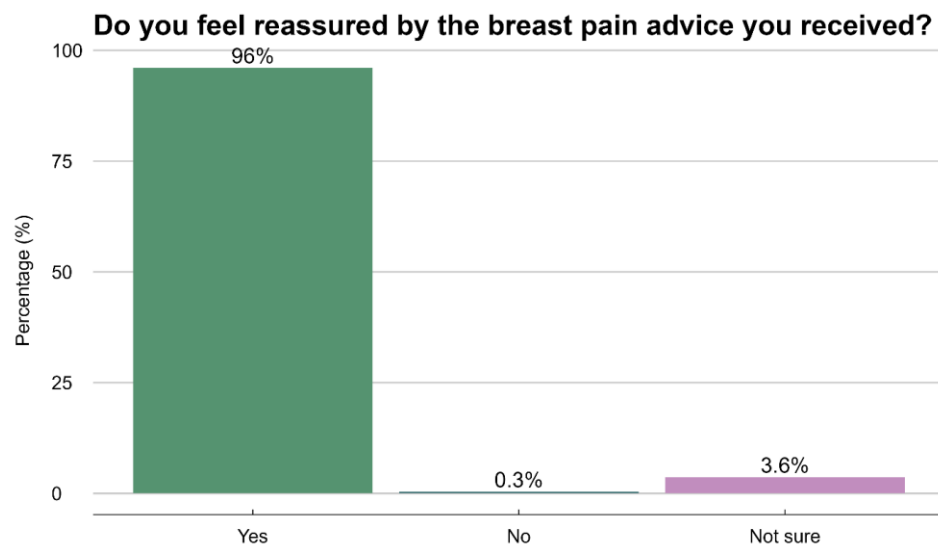


Figure 3. PROMS patient activation, Lincolnshire

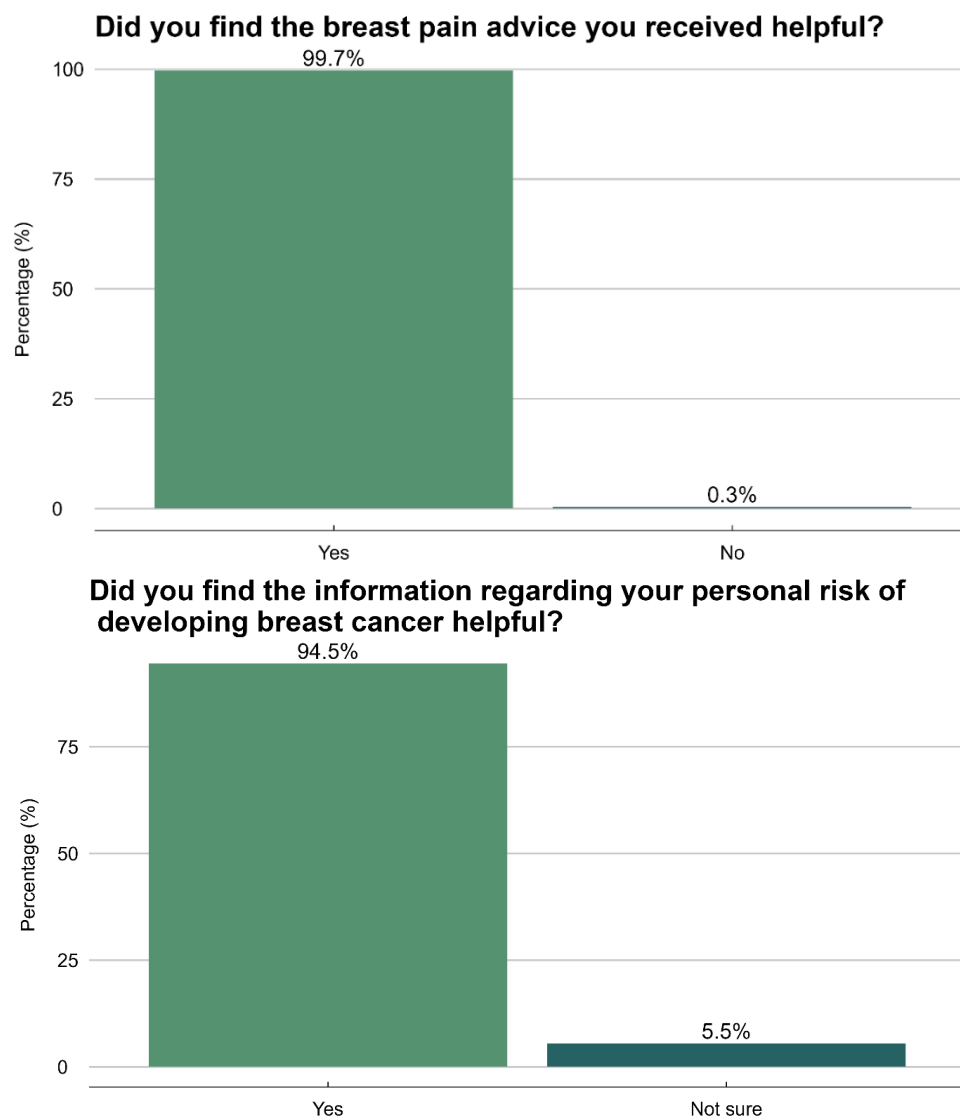


Figure 4. PROMS ease of use, Lincolnshire

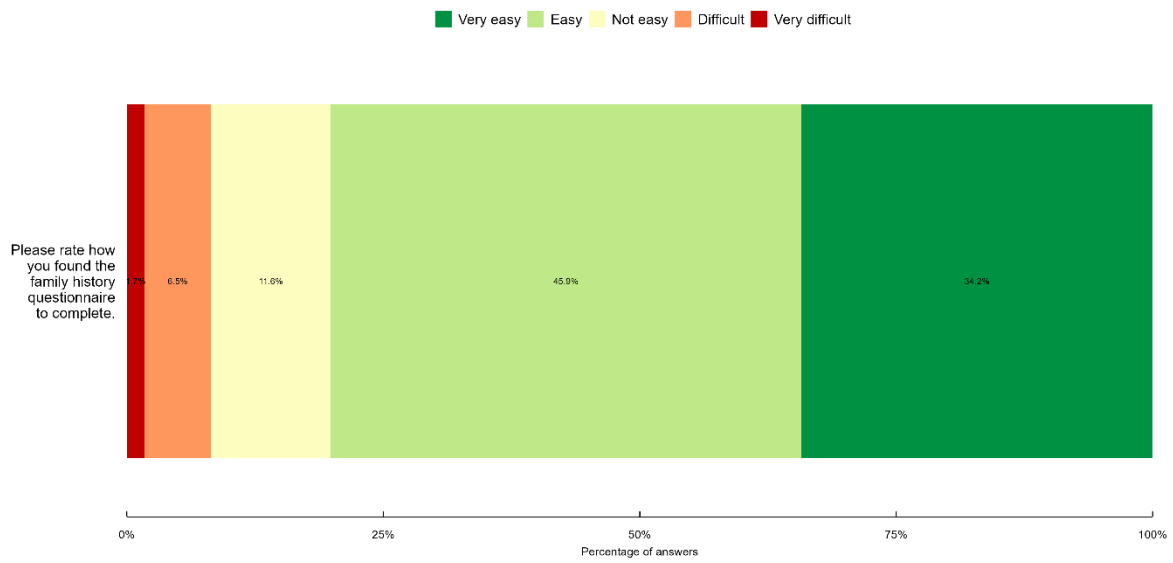
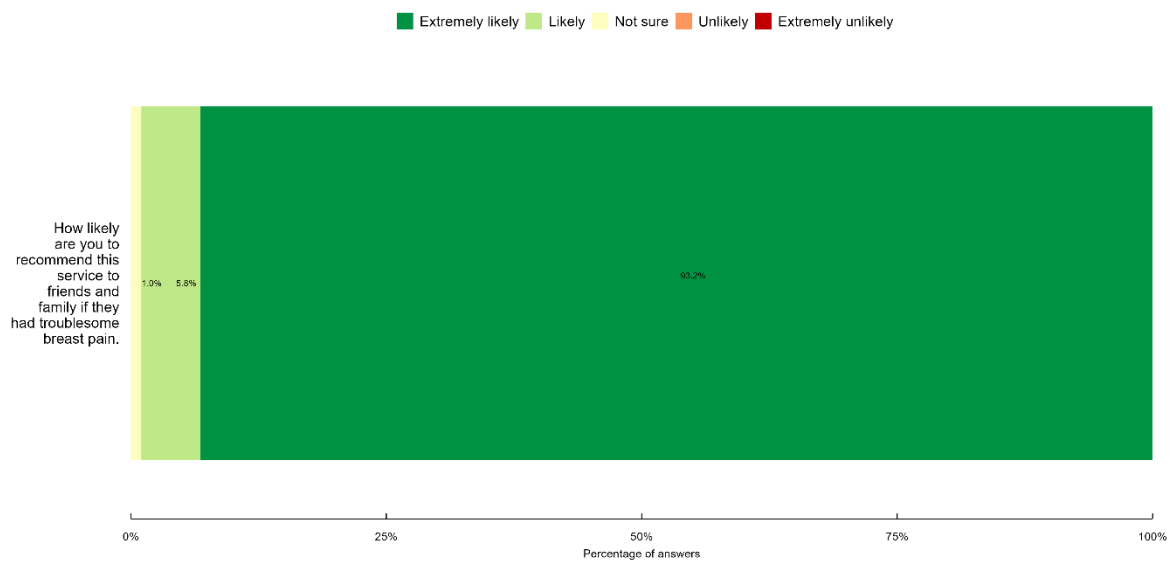


Figure 5. PROMS recommendation of service, Lincolnshire



Appendix 6. Derbyshire Data

Table 1. Patient ethnicity, Derbyshire

Descriptive statistics of patient characteristics		
Variable	N	Statistic ¹
Ethnicity	1,027	
White		496 (48%)
Unknown		463 (45%)
Asian		42 (4.1%)
Black		13 (1.3%)
Mixed		13 (1.3%)
¹ n (%)		

Figure 1. Distribution of IMD score, Derbyshire

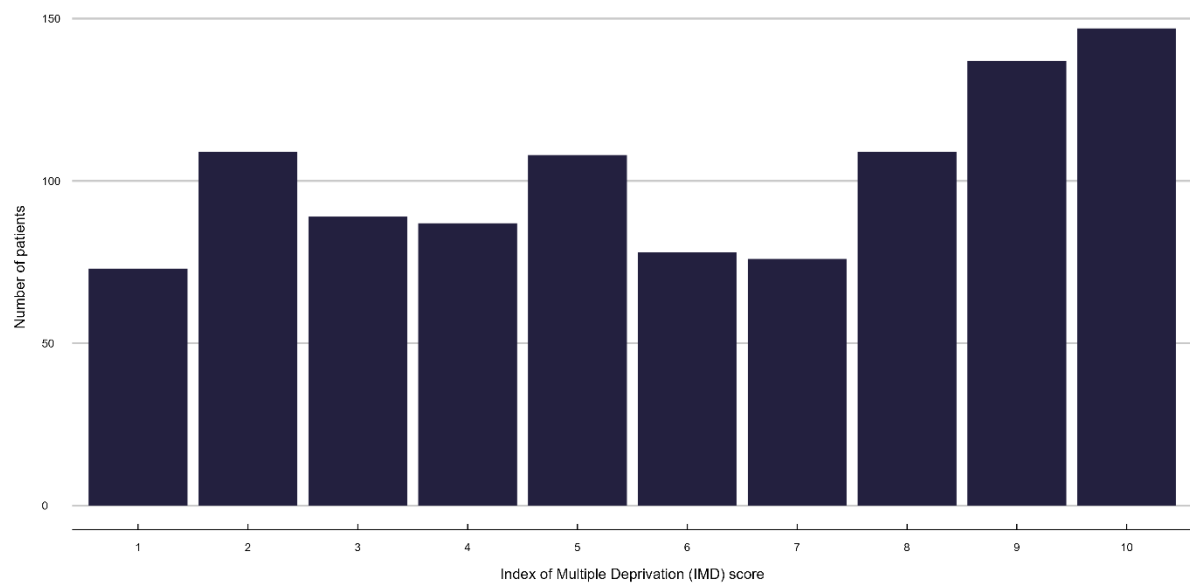


Table 2. Patient Demographics, Derbyshire

Descriptive statistics of patient characteristics		
Variable ¹	N	Statistic ²
Age at attendance	1,027	50 (16, 88)
IMD Score	1,013	6 (1, 10)
¹ Note: IMD: The Index of Multiple Deprivation, a measure of relative deprivation for small areas.		
² Median (Range)		

Table 3. Source of referral to secondary care, Derbyshire

Descriptive statistics of patient pathway		
Variable	N	Statistic ¹
Source of referral to secondary care	54	
BPC	43 (80%)	
GP	8 (15%)	
Screening	3 (5.6%)	
¹ n (%)		

Table 4. PROMS demographics, Derbyshire

Response		
Question	N	Statistic ¹
Did your GP advise you that breast pain is not a symptom of breast cancer?	1,082	830 (77%)
How many times have you seen your GP for this episode of breast pain prior to being referred to this clinic?	1,082	
1	677 (63%)	
2	265 (24%)	
3	86 (7.9%)	
4	19 (1.8%)	
5 or more	35 (3.2%)	
Have you had any previous episodes of breast pain that required you to see your GP?	1,082	466 (43%)
¹ n (%)		

Figure 2. PROMS patient reassurance, Derbyshire

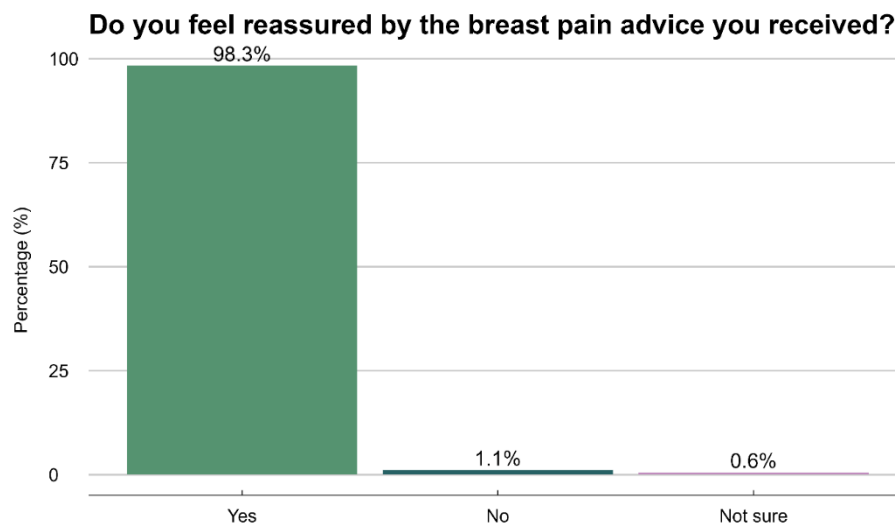


Figure 3. PROMS patient activation, Derbyshire

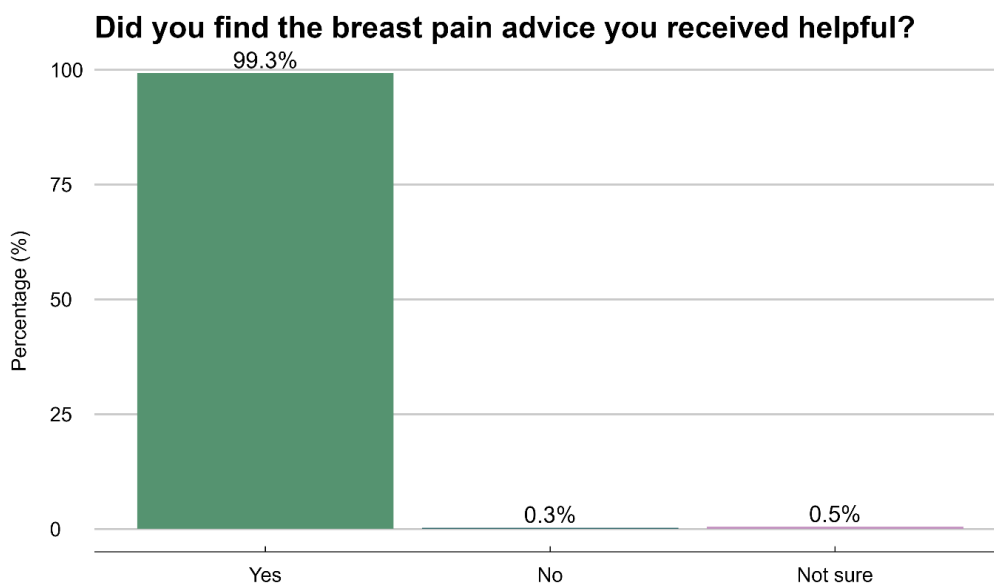
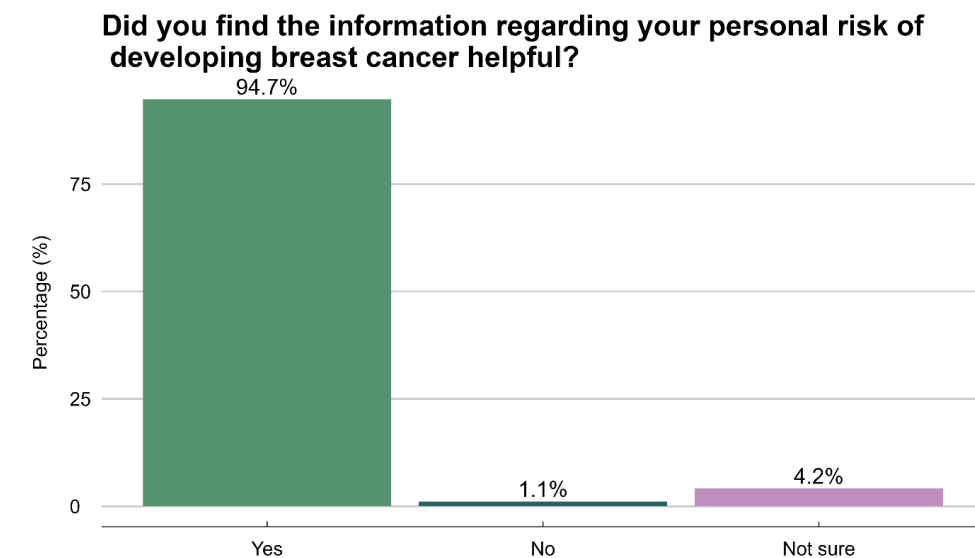


Figure 4. PROMS ease of use, Derbyshire

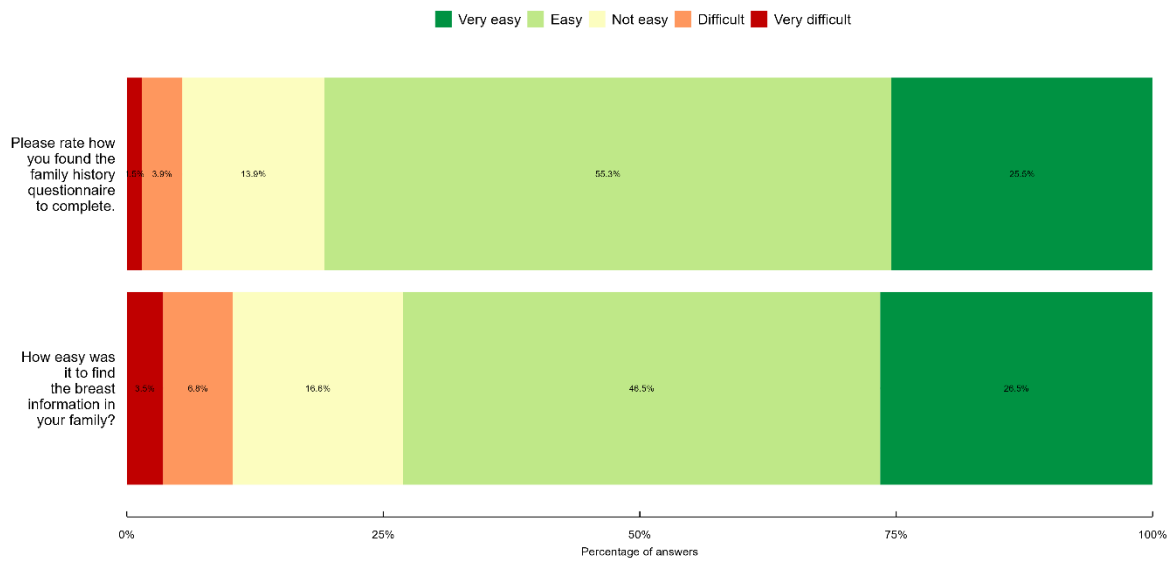
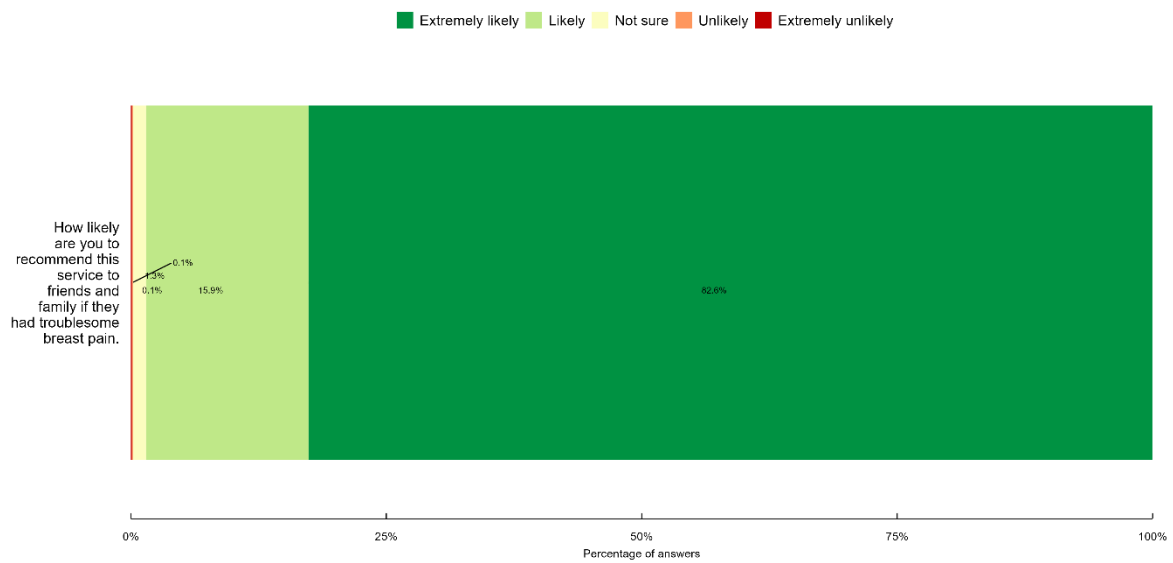


Figure 5. PROMS recommendation of service, Derbyshire



Appendix 7. Team members and declarations

Team members	Declarations
Jennifer Connolly	<i>No interests to declare.</i>
Lucy Pirkle	<i>No interests to declare.</i>
Chen Li	No interests to declare.
Professor. John Robertson	As per East Midlands Cancer Alliance DOI
Dr. Mark Sibbering	As per East Midlands Cancer Alliance DOI
Dr. Thilan Bartholomeuz	As per East Midlands Cancer Alliance DOI
Kevin Clifton	No interests to declare.
Michael Ellis	<i>No interests to declare.</i>