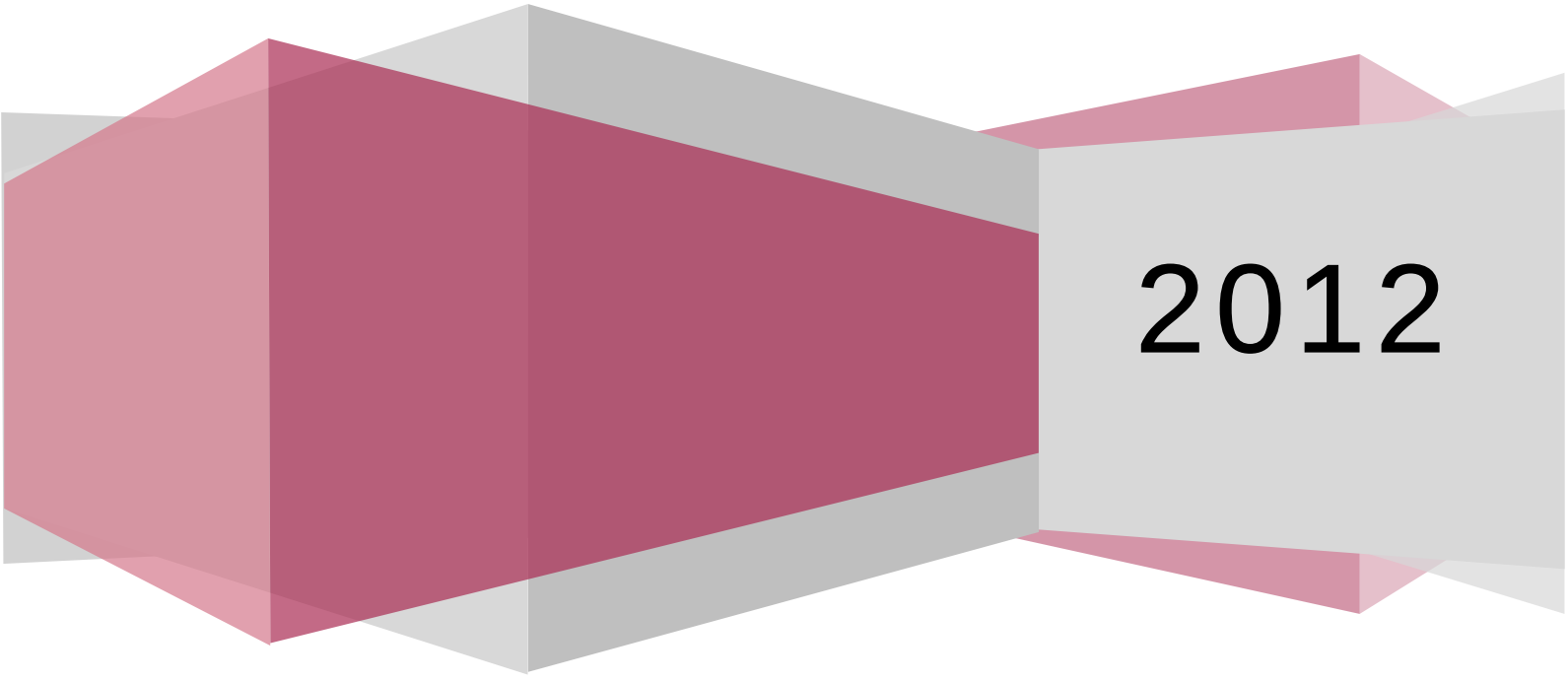
CENTRE FOR HEALTH & WELLBEING RESEARCH

RESEARCH PROTOCOL:

An observational study to investigate whether the Promoting Early Presentation (PEP) intervention can be successfully applied in a general practice setting



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2 Introduction

The National Awareness and Early Diagnosis Initiative (NAEDI[1]), a collaboration of Cancer Research UK, DH and National Cancer Action Team, has funded the implementation and associated research project of a health promotion intervention to promote early presentation in older women with breast cancer. The intervention (the Promoting Early Presentation (PEP) Intervention) was originally developed by Kings College, London and was the subject of a successful randomised control trial of older women aged 67+ attending for mammography screening, where the intervention was delivered by radiographers[2]. The ultimate aim of the PEP Intervention is to equip women with the knowledge, skills, confidence and motivation to present promptly to their GPs on discovering breast symptoms, and thereby improve survival. The study found that the PEP intervention increased breast cancer awareness more than four-fold after two years compared with usual care[2,2a].

This protocol details a follow-on research project which aims to determine the efficacy of the intervention when it is delivered in a general practice setting. The main health outcome of interest is breast cancer awareness, measured during recruitment to the project, one month after receiving the intervention and twelve months after receiving the intervention. The project has the support of the Primary Care Research Network (East Midlands and South Yorkshire) and is eligible for adoption onto the NIHR portfolio.

3 The Promoting Early Presentation (PEP) Intervention: rationale

Older women have a higher incidence[3] and worse survival rate from breast cancer than younger women.[4] In the UK, five-year survival from breast cancer is lower than in comparable Western European countries.[5] The excess mortality seen in England compared with Norway and Sweden is especially pronounced in the first year after diagnosis, suggesting that late diagnosis is responsible for worse survival. Excess mortality is most marked in the older age groups.[6] The latest figures from Trent Cancer Registry (2008) for breast cancer incidence show that over 25% of cases in the East Midlands are diagnosed in women over 70 years of age and over 40% of breast cancer deaths are in women over the age of 70 (2009). This project is to be located in Northamptonshire, Leicestershire and Rutland where the experience is close to the East Midlands median.

Between 17% and 35% of women with breast cancer delay presenting for more than three months after discovering symptoms,[7] and delay in presentation is associated with worse survival.[8] Older women are at even higher risk of delay in presentation than younger women.[9] [10] Other risk factors for delay include less education, non-lump symptoms, and not recognising the symptoms as serious.[9] Older women have particularly poor knowledge of non-lump symptoms and the increase in breast cancer risk with age.[11,12] About 20% of older women report that they never look at or feel their breasts.[11]

This evidence suggests that low levels of knowledge about risk of developing breast cancer and symptoms, and lower confidence, skills and motivation to detect symptoms and seek help appropriately may contribute to the worse breast cancer survival experienced by older women. Among older women there is a very high chance that a breast symptom is one of breast cancer: one study found about 26% of women aged 70-79 referred to secondary care for investigation of breast symptoms were subsequently diagnosed with breast cancer compared with 7.6% of women aged 50-59.[13]

A systematic review has shown there to be very limited evidence of the efficacy of existing interventions in promoting early presentation in breast cancer[14].

4 The Promoting Early Presentation (PEP) Intervention: description

The PEP Intervention on which this research is based is a scripted one-to-one interaction between a healthcare practitioner and an older woman supported by a booklet. This was designed to be delivered during a routine appointment on the NHS Breast Screening Programme[15] but is applicable to other settings. It takes around 6 minutes to deliver. The style of delivery of the intervention is collaborative and motivational, with key messages being delivered positively. The booklet is given to the woman to take home.

To deliver the intervention, the healthcare practitioner must undertake a training package consisting of two formal group training sessions of 2 hours each, separated by two to three weeks. This training has been developed for radiographers[16] and will be adapted to suit the needs of practice nurses. Kings College London will develop and run a one day 'train the trainers' course which will be delivered to two members of the project team: an experienced healthcare educator from the University of Northampton and an experienced member of the communications staff at NHS Northamptonshire (the training team). The training team will then jointly run two group courses for practice nurses from the participating practices, with up to 12 nurses in each group.

The PEP Intervention aims to address deficits in knowledge, motivation, confidence and skills associated with delayed presentation of breast cancer (see Box 1). These elements of the intervention were identified from a systematic review of the evidence on the risk factors for delay in diagnosis in breast cancer,[9] interview studies in women with breast cancer,[10, 17, 18] and surveys of knowledge and beliefs about breast cancer in the general female population.[11 12]

Box 1: Key elements of the PEP Intervention

Informing

Risk of developing breast cancer: Lifetime risk of developing breast cancer and increase in risk with age.

Breast cancer symptoms: The range of breast cancer symptoms, with emphasis on non-lump symptoms, supported by photographs of signs of early breast cancer.

Motivating

Persuasive goal-setting message strongly recommending immediate help-seeking in the event of symptom discovery.

Persuasive messages targeting attitudes and social norms in the booklet. These outline the benefits of prompt help-seeking and suggestions for overcoming barriers to seeking medical help, such as embarrassment and fear about cancer treatments. They are supported by cartoon illustrations and affirming quotes.

Providing self-efficacy and skills to perform target behaviours (breast checking and seeking medical help promptly on discovering a breast change)

Breast cancer awareness skills are demonstrated by the health professional using a silicone breast model followed by guided practice with positive feedback to increase women's confidence to detect a breast change.*

Social skills are modelled with cartoon illustrations and dialogue in the booklet showing (a) how to seek medical attention immediately and (b) how to disclose symptoms to someone close in the event of discovering a breast change.

Self-regulatory skills to prioritise the target behaviours in the face of other demands through action planning are prompted using an 'if-then' model (for example, "**if** I discover a breast symptom, **then** I will make an appointment to see a GP").

*This is not a tutorial in Breast Self Examination, as there is currently insufficient evidence of its effectiveness (a Cochrane systematic review found that Breast Self Examination had no effect on breast cancer mortality but increased investigations [19]). The PEP Intervention provides only simple guidance in techniques for breast checking.

To address psychological barriers to early presentation, the PEP Intervention targets key elements of behavioural control specified by the Information-Motivation-Behavioural skills

model.[20 21] It also draws upon insights from self-regulation theory,[22] the theory of planned behaviour[23] and models of specific planning and implementation intention formation.[24] The PEP Intervention seeks to highlight knowledge of symptoms and risks (without arousing fear) and to provide expertise in symptom recognition. It also seeks to bolster the motivation to seek help through setting goals, and to target key elements of motivation, including positive expectations of the outcomes of seeing a GP (e.g. feeling reassured) and approval from family and friends for having sought help. In addition, the PEP Intervention seeks to enhance confidence to take part in the social interactions involved in early presentation and prompts formation of intentions to detect a breast change or present promptly to a GP, which will facilitate behaviour change when necessary.

5 The Promoting Early Presentation (PEP) Intervention: efficacy

Kings College London have carried out a randomised controlled trial to test the effect of the PEP Intervention on breast cancer awareness compared with usual care. This study randomised 867 women attending their final routine breast screening appointment at three breast screening services in the South East between July 2007 and May 2008 to the PEP Intervention, a booklet alone or usual care. At one year, the PEP Intervention increased breast cancer awareness to a much greater degree than other interventions of this kind[2,14].

The proportion of women who were breast cancer aware at one year was significantly greater in the two intervention arms than usual care (PEP Intervention: 24% versus 4%; odds ratio 15.2, 95% confidence interval 4.8 to 47.8; booklet alone: 12% versus 4%; odds ratio 3.5, 95% confidence interval 1.2 to 10.5)[2]. At two years, the proportion of women who were breast cancer aware was still significantly greater than usual care in the PEP Intervention arm, but not in the booklet alone arm[2a] (PEP Intervention: 21% versus 6%; odds ratio 8.1, 95% confidence interval 2.7 to 25.0; booklet alone: 9% versus 6%; odds ratio 1.8, 95% confidence interval 0.6 to 5.3).

The KCL team have also worked with NHS Breast Screening Programme to implement the PEP Intervention in three breast screening services, delivered by NHS mammographers rather than research radiographers. Preliminary findings over a period of several months showed that among 311 women who received the PEP Intervention, the proportion breast cancer aware increased from 3% to 39% over one month, compared with 3% to 4% in a service where it was not offered (report in preparation).

6 Research project

6.1.1 *Research questions*

This project aims to investigate the effectiveness of the Kings College interventional programme when implemented in a general practice setting, delivered by practice nurses. If increased breast awareness is seen in this setting, it will potentially lead to a sustainable model of improving the early presentation of breast cancer symptoms in women aged over 70 years. This is a group that are known to have lower breast cancer awareness, are more likely to delay presentation in breast cancer, and have worse outcomes than younger women.

The primary research question for the study is therefore:

> ***Does the Promoting Early Presentation (PEP) intervention increase breast cancer awareness in older women (over 70 years) when used in a general practice setting?***

Secondary research questions:

- *Which, if any, demographic factors are associated with successful PEP intervention in primary care settings?*
- *What are the barriers to successful outcomes from a service user perspective?*

6.1.2 *Methods*

The efficacy of this intervention in a population of older women attending for mammography screening has already been established in a randomised control trial. This study will investigate whether the intervention is also effective when implemented in a more general primary care setting, and will use observational methods to compare participants' breast awareness before and after the delivery of the PEP intervention (both in the short and long-term).

Participants (for sampling and recruitment methods see 6.1.3 and 6.1.4) will be asked to complete a **validated measure of breast cancer awareness** (the Breast Cancer Awareness Measure) on three occasions: during recruitment to the project, again one month after they have had the educational intervention and 12 months after the intervention. Additionally, participants will be asked to complete a **short questionnaire** relating to demographic and socio-economic information. This will enable the research team

to collate information about those factors previously identified as being associated with reduced use of health services[35]:

- Age
- Postcode (for Indices of Multiple Deprivation analysis)
- Ethnicity
- Details of first/second language
- Formal education level
- Disability
- Transport provision
- GP surgery (for calculation of distance between residential location and surgery)

The intervention training will be delivered to each participating practice nurse by staff of the University of Northampton and NHS Northamptonshire who have been trained to do so by the Kings College team (for details, see section 4). The trained practice nurses will then deliver the intervention as part of this project.

The demographic questionnaire completed by participants will also ask for the contact details of those who are willing to be contacted for a short telephone interview at the conclusion of the research project. Following initial analysis of the 12 month follow up measure, participants who have shown little or no raised awareness from their scores (and who have consented to participate) will be invited to complete a **short telephone interview** with a researcher. A stratified sample will be drawn from those who consent to being contacted. Stratification will be undertaken according to the factors identified above which are associated with reduced use of health services. The interviews will explore the reasons why the intervention was unsuccessful with these individuals. It is anticipated that approximately 15 telephone interviews will be undertaken, but the final number will depend on when data saturation occurs.

6.1.3 *Sample size*

The primary research question of the proposed study will test the null hypothesis that there is no relationship between the validated Breast Awareness scale outcome (not aware vs. aware) and the time at which the outcome was measured (before vs. 12 months after). This will tested by the McNemar test for paired proportions. The criterion for significance (alpha) has been set at 0.05 (2-tailed).

The power analysis is based on the following population effect size, derived from previous research: in 90.0% of pairs, both cases will be classified as not aware and in another 4.0%

both cases will be classified as aware. These cases contribute no information to the hypothesis test.

A discrepancy between the two members of a pair is expected in the balance of the population: 1.0% of all pairs will show an outcome of aware for the before case only, while 5.0% of all pairs will show an outcome of aware for the after case only. This effect was selected as the smallest effect that would be important to detect, in the sense that any smaller effect would not be of clinical or substantive significance. This effect size is reasonable, in the light of results from previous research in this field.

A proposed sample size of 250 (at 12 month follow-up) will have power of 80.7% to yield a statistically significant result. The attrition rate between baseline and immediately after the intervention will be low as the participants will bring their completed questionnaire to their booked appointment and complete the post-intervention questionnaire immediately after their appointment (estimated 5% drop-out). However, the drop-out rate to the 12-month follow-up is likely to be substantial and has been conservatively estimated at 50%. Hence 532 participants will need to be recruited for the intervention in order to ensure that 250 are available for analysis after 12 months.

6.1.4 *Recruitment*

The participating GP practices will be recruited through the Primary Care Research Network (EM SY) and the participating practice staff will have undergone training in the conduct of research.

The study participants will be women over the age of 70 years. This is a group that are known to have lower breast cancer awareness, are more likely to delay presentation in breast cancer, and have worse outcomes than younger women. This age group is the focus of work being undertaken by the East Midlands Cancer Network. Currently women over the age of 70 years do not receive a routine invitation for NHS breast screening (this facility will be extended to women aged 71-73 by 2016). An estimated 18 GP practices, identified via the PCRN, will recruit approximately 30 participants each to the study (to a total of 532 participants). The recruitment of the participants for the study will be done via the GP practices, who will identify those eligible for inclusion, send out invitation letters and the pre-intervention questionnaire. The GP practices will arrange the appointments and deliver the intervention. The post-intervention questionnaires will be sent out by the practices. All

completed questionnaires, linked with a unique identifier, will be returned by the participants to their GP practice, who will then forward them to the CHWR for analysis.

6.1.4.1 Inclusion and exclusion criteria

Inclusion: Participants will be women aged over 70 years, registered with a participating GP practice.

Exclusion: Inability to consent or participate due to a significant physical or mental disorder or disability, insufficient competence in English language or other language difficulty. The decision as to who should be excluded under these criteria will rest with the GP practice, who are best placed to make this decision.

6.1.5 *Analysis*

6.1.5.1 Primary research question: Does the Promoting Early Presentation (PEP) intervention increase breast cancer awareness in older women (over 70 years) when used in a general practice setting?

The validated Breast Cancer Awareness Measure will be used to categorise participants as aware or not aware. A McNemar's test for paired proportions will be used to compare the proportions of aware to not aware at one month and twelve months after the delivery of the intervention.

6.1.5.2 Secondary research question: Which, if any, demographic factors are associated with successful PEP intervention in primary care settings?

A logistic regression model will be built using the binary Breast Cancer Awareness Measure outcomes as the outcome variable (dependant variable) and the demographic factors collected as the predictors (independent variables). If the predictors are found to be highly correlated, a principal component analysis may be undertaken to identify mutually orthogonal components which typify the underlying dimensions of the demographic variables.

6.1.5.3 Secondary research question: What are the barriers to successful outcomes from a service user perspective?

All telephone interviews will be fully transcribed and analysed thematically. The research team are keen that the voices of participants should be prioritised in any outputs from the study. To enable this, anonymised direct quotes will be used wherever possible, with consent, in project outputs.

6.1.6 *Ethical issues*

The research project will be subject to scrutiny by an NHS REC committee. The underlying principle of the data collection is that of protection; acknowledging that those working to collect data as part of the study are responsible for the well-being of participants. Ethical considerations will be constantly re-assessed by researchers trained to follow strict ethical codes of practice. Should further issues to those identified below arise, these will be discussed with the stakeholders of the study and amongst the research team at the lead institution (University of Northampton). Appropriate strategies will then be developed and any changes in protocol or practice will be referred for approval as per NHS REC guidelines.

The following issues specific to this study have been identified and procedures planned for to mitigate them. Where reference is made to 'participants' this relates to patients to whom the PEP intervention has been delivered.

- Consent: All participants of the research will be fully informed of the aim and emphasis of the study and given time (a minimum of 24 hours) to reflect on this before being given the opportunity to opt in (via completion of a research questionnaire applying implied consent) or out of the research project. Patients will be invited to receive the intervention via their GP practice (all practices participating will be part of the Primary Care Research Network). Potential participants will be informed of their right not to participate via information distributed with the questionnaire. This information also states that, should they choose not to participate, this will not impact on the treatment or advice that they receive from their GP surgery.

- Anonymity and confidentiality: All participants of the research will be informed as to how the data will be stored and used and assured of their anonymity in subsequent publications of the findings.

- Data storage and transfer: No personal contact information will be stored with data collected as part of the completion of the project and research questionnaires will not be linked to patient medical records. Each participant will have a unique identifying number in order to link the data collected from them in the three Breast Cancer Awareness Measures and the demographic questionnaire. However, only the practices, who will be responsible for contacting the participants, will have the key to link these indentifiers with names and addresses. This key will be stored securely, and separately from the medical records. The University research team will therefore not have access to the personal identifiable information of participants, except for those patients who opt to form part of the telephone interview sample. For this sample, the University team will keep the contact details of those who volunteer this information, together with their unique identifier, separate from their data which will be stored with only the unique identifier. Research questionnaires will be securely transferred to the University team and the hardcopies of these will be stored in a locked cabinet. All data collected as part of the project shall be stored securely according to the guidelines set by the Data Protection Act (1998) and the Freedom of Information Act (2000). All electronic information will be filtered with anti-virus software. All data collected as part of the research will be destroyed 5 years after the conclusion of the project.

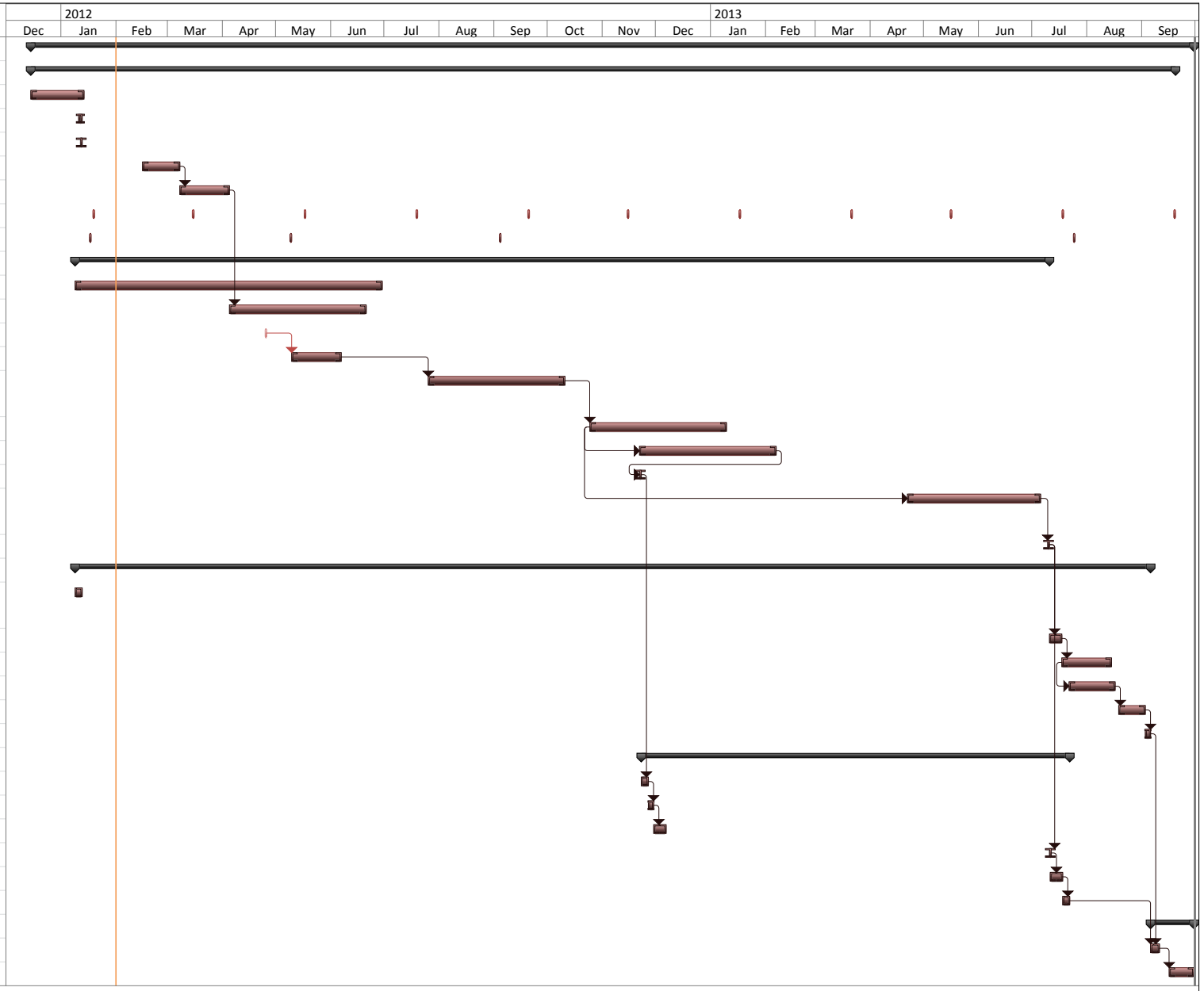
- Feedback: The results of the study will be made available to the general public via the normal public communications employed by NHS Northamptonshire.

- Additional issues: It is possible that participants may become anxious as a result of their breast cancer awareness intervention, although this project has been carefully designed to minimise the likelihood of this and interventions will be delivered by qualified practice nurses. The practice nurses are ideally placed to reassure participants and, should it be necessary, can refer them to their GP for further discussions.

7 Timeframe

Subject to appropriate permissions, the research will begin in April 2012 and be completed by the end of September 2013. The following project plan shows the planned workflow throughout the project.

ID	Task Name
1	**Breast Aware Project**
2	**Project development and management**
3	Write protocol
4	Develop OCR form of questionnaire + data sheet
5	Develop participant information sheet
6	Obtain REC favourable opinion
7	Obtain R&D approval/acceptance on to portfolio
8	**Project team meetings**
20	**Steering Group meetings**
25	**Implementation and questionnaire data collection**
26	Liaise with PCRN/GP practices re recruitment
27	Recruit practices
28	Train trainers
29	Deliver training to practices
30	Send out invitations for intervention + baseline questionnaire
31	Deliver intervention
32	Send out 1 month follow-up Breast Awareness Measure
33	Scan questionnaires (pre/post)
34	Send out 12 month follow-up Breast Awareness Measure
35	Scan questionnaires (follow-up)
36	**Interviews**
37	Develop interview schedule, participant information and consent forms
38	Select stratified sample
39	Arranging and undertaking c 15 interviews
40	Transcribing recordings
41	Analysing transcriptions
42	Write up results
43	**Questionnaire Analysis**
44	Data cleaning (interim)
45	Analyse data (interim - pre/post)
46	Write interim report on questionnaire findings
47	Data cleaning (final)
48	Analyse data (inc 12m follow-up)
49	Write report on questionnaire findings (final)
50	**Dissemination**
51	Write final report
52	Write paper for publication



Project: Promoting early presenta
Date: Wed 01/02/12

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

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