INTRODUCTION. Breast cancer is the most common UK cancer with 1 in 8 women developing the disease in their lifetime (1). The World Health Organisation (WHO) states that early detection of this cancer is vital to improve breast cancer outcome/ survival (2). Mammography is currently accepted as the only proven screening method with a reduction of 25% in breast cancer mortality (3). Women with a family history have an increased risk of developing breast cancer and need for regular surveillance (4). The 2006 National Institute for Health and Clinical Excellence (NICE) recommend that women known to be at high-risk of developing breast cancer should be offered annual MRI surveillance 94). These guidelines also state that mammographic surveillance should not be available for women younger than 30 years (4). However, the existing evidence for the effectiveness of MRI relative to film-screen mammography (FM) in this patient group is limited(6).

RESEARCH QUESTIONS
For this patient group:
➢ How does the sensitivity and specificity of MRI compare to the gold standard screening modality - mammography?
➢ What are the dose implications of screening with mammography?
➢ Is MRI an acceptable and cost-effective screening option?

ACCURACY OF MRI
From the research it is clear that the diagnostic accuracy of MRI for breast cancer screening varies. The consensus is one of significantly higher sensitivity of MRI when compared to FM, however the specificity of MRI was found to be significantly lower than that of FM in some studies, resulting in more recalls and biopsies. However, several researchers have reported that recall rates decreased in subsequent rounds of screening. It seems that, while the increased sensitivity of MRI leads to a higher call-back rate, it also leads to a higher number of cancers detected. As with FM and other screening tests, false negatives after MRI screening can be due to inherent technological limitations of MRI, patient characteristics, and human error.

COST IMPLICATIONS
The consensus of the identified studies is that annual MRI screening of women at high-risk of developing breast cancer does involve considerable additional cost. This additional cost is found to be justified and therefore breast cancer screening using MRI is cost-effective for women at high-risk of developing breast cancer.

CONCLUSION. The reported diagnostic accuracy of MRI for this patient group varies but the sensitivity of MRI is significantly higher than FM. However, the variation in the reported specificity of MRI is larger with some studies finding it to be significantly lower than FM and others finding it to be comparable. At present there is no investigation of the impact of this increased cancer detection on mortality and it is not known whether improvements in sensitivity and specificity give rise to improved patient outcomes. Therefore this review has not definitively proven that MRI screening for high-risk breast cancer should be the gold standard. Findings on patient acceptance and tolerance is limited with a distinct lack of robust qualitative work on the patient experience of breast MRI. However, the research identified agrees that MRI is an acceptable option for patients. It is found that MRI screening is associated with a significant additional cost which is justified for this group.

IMPLICATIONS FOR CLINICAL PRACTICE. A lack of MRI image reader expertise and differences in equipment/ protocols was identified and should be addressed to ensure that women at high-risk of breast cancer receive a high quality service. It is essential to provide counselling and information about the uncertainty surrounding potential findings and the higher risk of false positive findings of MRI screening. The safety implications identified must be addressed in pre-screening questionnaires.

PATIENT ACCEPTABILITY & TOLERANCE
The literature search revealed no qualitative work on the experiences of patients undergoing breast MRI and was limited to two studies using questionnaires. From the limited literature identified it seems that women at high risk of breast cancer do find MRI to be an acceptable option.