

# Genesis Research

## Diet and Lifestyle Research

### Our Aim

- To research and develop preventative procedures for the disease.

### Our Objective

- To offer diet and lifestyle interventions to those deemed high-risk.
- To introduce lifestyle change to prevent the disease.

Currently, across the UK there are rising trends of obesity, sedentary lifestyle and alcohol rates. In England alone, 65% of women are overweight and 25% obese (3 stone heavier than the ideal). Being overweight increases the risk of developing breast cancer as well as several other chronic diseases including cardiovascular disease, diabetes, dementia and eleven other types of cancer. Recent expert reports estimate that 40% of breast cancer cases may be preventable through weight control, exercise and reduced alcohol intake.

Our award winning Genesis research dietician, Dr Michelle Harvie, has attracted press from around the world with her ground-breaking intermittent diets and novel interventions for women with breast cancer and women deemed high risk. We asked her a few questions....

### Q. How are diet and lifestyle related to breast cancer?

The links between diet and the development and progression of breast cancer were first suggested as far back as 100 years ago. Current evidence suggests that being overweight, inactive and habitually having a high alcohol intake may all contribute to breast cancer. The precise amount of breast cancer due to these factors is debated but are said to account for between 17-40% of all breast cases in the UK today.

### Q. What have been the key findings of your work so far?

We were one of the first groups to demonstrate that weight loss can reduce the risk of breast cancer. A collaborative study with the Iowa Women's health study cohort (33,000 women) suggested modest weight loss (5% i.e. 10 pounds of weight) reduced risk by 25-40%. Weight loss is notoriously difficult to achieve and maintain. We have been developing and testing novel intermittent diets for weight loss and breast cancer prevention since 2006. The initial

randomised evaluation of intermittent energy restriction (IER) versus the normal approach of daily dieting showed intermittent dieting led to greater reductions in the hormone insulin, which promotes cancer, compared to standard daily dieting (25% greater reduction five days after the intermittent diet with a further 25% reduction during the 2 restricted days). Our recent intermittent energy and carbohydrate restricted diet appears to be easier to follow than daily dieting and offers beneficial effects in lowering insulin and other cancer causing hormones.

We have also been examining exactly how low calorie diets and weight loss may help protect from developing breast cancer. Understanding the underlying mechanism is important as it will help reinforce the message for women who struggle to comprehend the links, and also helps our understanding. If we understand the mechanism it also gives us the opportunity in the future to develop and test drugs which mimic the powerful effects of diet.

Our recent Genesis funded project examined the effects of a month of the 2 day intermittent diet on the genes within the breast cells of healthy women who were at high risk of breast cancer. This trial has shown changes in breast gene expression in 300 genes.

Our 2004 publication highlighted the problem of weight gain after diagnosis of breast cancer whilst our subsequent surveys indicate the lack of weight control services for patients. In 2008 we undertook a Genesis funded pilot trial to assess weight control interventions amongst early breast cancer patients called Breast - Activity & Healthy Eating after Diagnosis study (B-AHEAD). In 2008 we were awarded a £260,000 Research for Patient Benefit grant to compare three ways to deliver weight control advice in the NHS; a supervised diet and exercise class, home based programme or written advice only.

### Q. What projects are you currently working on?

We are working with Professor Gareth Evans and Professor Tony Howell to start introducing lifestyle programmes for the prevention of breast cancer (see below) into the Breast Screening Programme. We are also working with service users to develop what support would be required by the women. This is likely to include peer support as well as healthcare professional input.

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## 'Healthy Lifestyle Promotion at Screening' Programme

The current approach to weight reduction and lifestyle change for disease prevention is not systematic or even particularly effective to cope with this epidemic. The costs are increasing for the NHS as the number of patients with obesity linked conditions escalates. The NHS Breast Screening Programme (NHS BSP) allows early diagnosis and improved breast cancer survival but does not currently incorporate disease prevention.

From three of our previous studies we have also found that many overweight women, of breast-screening age, have previously unidentified high risk profiles for heart disease and diabetes.

Recent cancer expert reports, widely covered in the media, have estimated that 40% of breast cancer cases could be prevented through

- Weight control
- Change in sedentary behaviour
- Reduced alcohol intake

This is supported by Dr Harvie and others who have confirmed that a 5% weight loss reduces postmenopausal breast cancer risk by 25%. Changing people's behaviour can be difficult and costly but we have shown in several studies that telephone support seems useful and potentially very

cost effective. We have also demonstrated in past studies that telephone support is as effective as centre visits and superior to standard written advice for achieving weight loss and lifestyle change.

The NHS BSP service reaches approximately 70% of the female population in the UK, every three years from the age 47 to 73. These women who attend screening have already shown a motivation to be health aware and are more likely to want to change their behaviour.

This one year pilot study assesses if we can introduce lifestyle changes for women at high risk of developing breast cancer in order to reduce their risk and prevent the disease. Additionally, participants will be screened for diabetes and CVD to investigate the feasibility of efficiently screening for these diseases in women in the screening programme.

This randomised pilot study, led by Dr Harvie, will test a tailored lifestyle programme to a group receiving standard NHS care and will involve overweight women from the BSP who have been identified from other Genesis projects as being at an increased risk of breast cancer (three times the population risk).

- An intervention group will receive their personal disease risk for breast cancer, CVD and diabetes, three months of personalised phone, mail and web supported 'Healthy Lifestyle Promotion at Screening' programme and a subsequent three months of web and peer support.
- A comparison group will receive disease risk information and standard written lifestyle advice.

We will evaluate the uptake and retention of women to the study, the feasibility of targeting women in the BSP for lifestyle intervention and the effects of the programme including reduction in obesity, change in diet and exercise behaviours and potential reduction in breast cancer risk using insulin, a breast cancer risk marker.

## Intermittent Diets

Following the success of Dr Harvie's diet book, *The Genesis Breast Cancer Prevention Diet*, a new diet book, *The 2-Day Diet* was published in February 2013 focusing on the results of her more recent research into intermittent dieting. This shows that restricting

*"The research into breast cancer prevention is vital and so much has improved over the last few years.*

*I volunteer for Genesis as it is a cause close to my own heart, because both my mother and I have had breast cancer. Over the years I have been very aware of the improvements in the prevention of breast cancer. More research is needed so one day it really will be prevented".*

**Chris Simmons,**  
Ex-patient and volunteer

