

# Breast cancer briefsheet

**Breast cancer is the most common cancer in the UK\* and accounts for more than a quarter of all cancers in women. Each year almost 46,000 people in the UK are diagnosed with the disease and it claims around 12,000 lives.\*\***

## About breast cancer

Every hour, around five women in the UK are told they have breast cancer.

More women in the UK die from breast cancer than any other type of cancer, except lung cancer.

The good news is that the number of women dying from breast cancer has fallen below 12,000 for the first time in almost 40 years.

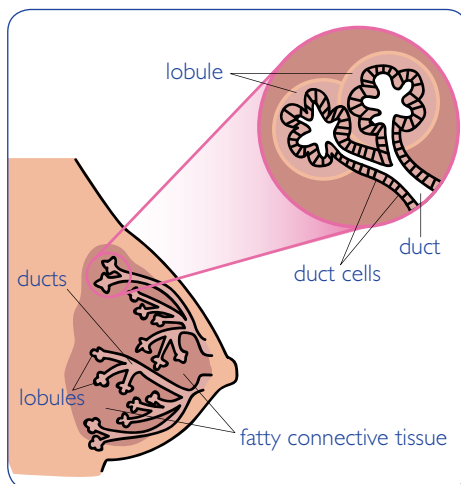
And almost two-thirds of women diagnosed with breast cancer today now survive beyond 20 years.

Men can also develop breast cancer, but this is rare, with around 300 cases in the UK each year.

## What is breast cancer?

The breast is made up of millions of cells. Breast cancer develops when one of these cells begins to multiply out of control and forms a tumour. Some cancer cells may then break away and spread to other parts of the body.

The breast consists of fatty tissue and lobules that are connected to the nipples by ducts. Breast cancer usually starts in a cell lining a duct or lobule.



## How is breast cancer treated?

Treatment depends on many factors including the patient's age and the type, size and spread of the cancer. Most patients will have surgery. This may be followed by radiotherapy and/or chemotherapy. Many women will also have hormone therapy using drugs such as tamoxifen or anastrozole.

For more information please visit [www.cancerhelp.org.uk](http://www.cancerhelp.org.uk)

## Breast screening

More than one and a half million women are screened for breast cancer in the UK each year. In England, Wales and Scotland, women aged 50 to 70 are offered screening every three years, while in Northern Ireland, women aged 50 to 64 are invited. Older women can request screening through their GP. In England, the screening programme will be extended so that by 2012 all women aged 47 to 73 are invited.

Screening involves taking x-rays of the breasts (mammography), and can find cancers at an early stage when there is an excellent chance of successful treatment. Estimates suggest that the screening programme saves 1,400 lives each year in England alone.

## What is Cancer Research UK doing about breast cancer?

Cancer Research UK is the largest single funder of breast cancer research in the UK. Last year we spent over £44 million on groundbreaking work into the disease. Our work is wide-ranging, from understanding the molecular causes and investigating new ways to prevent and diagnose breast cancer, to developing better and kinder treatments for people with the disease.

## What could affect your risk?

### Age

The risk of breast cancer increases as we get older. Around four out of five women diagnosed with the disease are aged 50 or over.

### Family history

Breast cancer can run in families. Most women with one or two affected relatives will not develop the disease. But the risk is greater if your mother, sister or daughter developed breast cancer before the age of 40, or if two or more relatives have been affected at any age.

### Menstruation and menopause

Women who start their periods at a younger age or have a late menopause have an increased risk of developing breast cancer.

### Hormone replacement therapy (HRT)

HRT increases the risk of breast cancer. The risk increases the longer a woman takes HRT but falls back to normal within five years of stopping the treatment.

### The Pill

The contraceptive pill may cause a slight increase in breast cancer risk but this gradually returns to normal once a woman stops taking it.

### Obesity

Being overweight after the menopause increases the risk of breast cancer. This is because body fat affects levels of the female hormone oestrogen that can influence the development of breast cancer. Combining a balanced diet with regular exercise helps to maintain a healthy body weight.

### Physical activity

Women who are physically active have a lower risk of breast cancer than less active women. The more active a woman is, the lower her risk.

### Alcohol

Drinking alcohol increases the risk of breast cancer. The more a woman drinks each day, the greater her risk.

### Having children

The more children a woman has, and the younger she is when she has them, the lower her risk of breast cancer.

### Breastfeeding

Breastfeeding reduces the risk of breast cancer. The longer a woman breastfeeds her children, the lower her risk.

Together we will beat cancer

October 2009

\*excluding non-melanoma skin cancer \*\*latest available figures

CANCER RESEARCH UK 

# Our research into breast cancer

## Understanding breast cancer

Cancer Research UK-funded scientists are world-leaders in unravelling the complex causes of breast cancer.

The disease is caused by damage to important genes including those involved in the growth, repair and survival of cells. These faults can accumulate over time but some people inherit faulty genes that increase their risk of breast cancer.

### Inherited susceptibility

In the early 1990s, we led the world in locating a high-risk breast cancer gene called BRCA1 and identifying a second called BRCA2. Thousands of women with a strong family history of breast cancer now benefit from these discoveries.

Professor Paul Harkin in Belfast is investigating how a faulty BRCA1 gene can affect a person's response to chemotherapy. This will lead to more personalised treatment for breast cancer in the future.

Our scientists have shown that breast cancer risk is also influenced by natural variations in a number of 'moderate-risk' and 'low-risk' genes. Professor Bruce Ponder, Professor Doug Easton and Dr Paul Pharoah in Cambridge discovered seven common gene variants that affect a woman's risk of the disease. This groundbreaking work could allow doctors in the future to create targeted screening programmes for women who are more likely to develop breast cancer.

### Lifestyle and hormonal factors

Oestrogen levels vary during a woman's lifetime and are strongly linked to breast cancer risk. Professor Valerie Beral in Oxford is leading a unique worldwide study investigating the effects of hormones and reproductive factors on breast cancer. And results from her national Million Women Study showed that current or recent use of hormone replacement therapy increases the risk of this disease. Our scientists are also investigating how other lifestyle factors such as diet affect breast cancer risk.

### Cancer spread

Stopping cancer spread is the key to saving thousands more lives. Dr Joy Burchell and Dr Maddy Parsons in London are looking at how molecules on the surface of breast

cancer cells help them to move around the body. And Professor Paddy Johnston in Belfast is studying how a protein called osteopontin can help breast cancer to spread if too much of it is produced.

## Prevention and early detection

Our work linking hormonal and lifestyle factors to breast cancer risk is paving the way for potential new strategies to prevent more cases of this disease.

Professor Jack Cuzick in London is investigating how anti-oestrogen drugs may be used to prevent as well as treat breast cancer. He is leading a large clinical trial to investigate whether the drug anastrozole could help prevent the disease in women at increased risk. The trial is recruiting thousands of women from 21 countries worldwide.

## Screening

One of Cancer Research UK's goals is to diagnose cancer earlier – at a stage when it can be treated more successfully. Professor Fiona Gilbert in Aberdeen recently showed that a computer can safely replace one of the two medical experts that check each mammogram, freeing up valuable staff. Professor Kenneth Young in Guildford is improving breast cancer detection by optimising new digital X-ray technology. And Professor Isabel dos Santos Silva in London is studying whether the density of breast tissue can be used to predict treatment response and the risk of cancer developing in the other breast.

## Improving treatment

We have been at the heart of dramatic advances in breast cancer treatment over the last few decades, and we are committed to ensuring that survival rates continue to rise. We are funding almost 30 breast cancer clinical trials across the UK that are investigating new ways to prevent and treat the disease – the results of these studies will help to save thousands more lives in the future.

Professor Judith Bliss at the Institute of Cancer Research in Sutton is coordinating a range of national trials for breast cancer. These aim to improve treatment in the areas of radiotherapy, chemotherapy and hormone therapy. And in London, Professor

Charles Coombes is developing novel breast cancer drugs and testing new combinations of treatments in clinical trials.

Dr Lindsay Turnbull in Hull is finding ways to predict which breast cancer patients will benefit from having chemotherapy before surgery. She discovered that MRI scans could hold the key, and is now testing this approach on a larger scale. This pioneering research will take us closer to an era of personalised treatments, reducing side effects and saving many more lives.

Our scientists are also tackling the challenge of drug resistance in breast cancer treatment. Drugs such as tamoxifen have been tremendously successful but women can eventually develop resistance, making these treatments ineffective. Dr Jason Carroll in Cambridge and Professor Simak Ali in London are investigating the mechanisms involved in resistance with the aim of overcoming this problem.

The work of Professor Nicola Curtin in Newcastle and Professor Alan Ashworth in London has been instrumental in the development of a new generation of cancer drugs called PARP inhibitors. These drugs could be a highly effective way to treat breast cancers caused by faults in the BRCA genes. Two new PARP inhibitors are already giving promising results in clinical trials for breast cancer coordinated by Professor Johann de Bono in London and Professor Ruth Plummer in Newcastle.

## Our impact

- More women than ever before are surviving breast cancer thanks to our work.
- Our research played a key role in developing and improving the national screening programmes, helping to detect breast cancer earlier and save thousands of lives.
- Our scientists led the world in finding faulty genes responsible for certain women's inherited risk of breast cancer, helping doctors to offer tailored advice, screening and treatment.
- Our clinical trials proved the benefit of drugs such as tamoxifen and anastrozole, used every day to treat breast cancer.

"I am living proof that the research that was done 20 years ago has enabled me to be here today"

Yvonne, breast cancer survivor