

Breast cancer research highlights gaps

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(Medical Xpress)—Research involving a Newcastle University academic has identified the ten critical gaps that exist in breast cancer research, which if not urgently addressed could see the loss of around 185,000 lives by 2030.

This landmark research, led by charity Breast Cancer Campaign and published in the international open access journal, *Breast Cancer Research*, is a unique collaboration of over 100 internationally recognised scientists, clinicians and healthcare professionals.

The Gap Analysis 2013 is the most comprehensive review of [breast cancer](#) research to have ever taken place and provides us with what we need to know and what we need to do to overcome – prevent, cure and outlive – breast cancer by 2050.

Nicola Curtin, Professor of Experimental Cancer Therapeutics at Newcastle University, said: "This study is a major look at the [treatment](#) of breast cancer and is the sum of the contributions of many individuals working in [breast cancer research](#) and treatment who met in targeted working groups to identify the gaps and propose solutions.

"My interest is in novel therapies that exploit the defects (BRCA1/BRCA2) in the tumour cells that caused them to become cancerous in the first place, that is turning the defect into its Achilles' heel. Such therapies are the PARP inhibitors, which are not toxic to normal cells and are well tolerated whilst targeting the tumour specifically. Newcastle is a major centre for PARP inhibitor research

and the first PARP inhibitor that went into clinical trial, in 2003 in Newcastle, was developed here."

Top ten gaps

The top ten gaps have been identified and prioritised in key areas, such as genetics, prevention, diagnosis, treatment and support, which, if overcome, will have a significant impact on the lives of those affected. Critical gaps include:

1. Understanding how genetic changes lead to the development of breast cancer.
2. Identifying sustainable lifestyle changes, such as diet and exercise, which can reduce a woman's risk of breast cancer, as well as improving risk-reducing drugs (chemoprevention) for women at increased risk of the disease.
3. Targeting breast screening to those who will most benefit, by finding accurate and practical ways to calculate someone's individual risk of developing breast cancer.
4. Understanding the molecules and processes that encourage different types of breast cancer to grow, and those that allow breast tumours to become resistant to treatments and spread throughout the body.
5. Understanding how cancer cells with different characteristics form within a tumour, why cancer cells sometimes go into hibernation, and why some breast cancers are resistant to treatment from the outset whereas others become resistant over time.
6. Developing tests to predict how well patients will respond to chemotherapy or radiotherapy.

7. Understanding how to use combinations of drugs and other therapies to improve and tailor treatment for each individual.
8. Developing better ways of using imaging to diagnose breast cancer, track how the disease responds to treatments and monitor its spread throughout the body.
9. Providing effective and practical support to help people deal with the emotional impact of breast cancer and the side effects of treatment.
10. Collecting tumour tissue and blood samples donated by [breast cancer patients](#) at different stages of their disease, alongside detailed anonymous information about each patient, to help study the disease and develop new treatments.

Solutions

In addition, the paper identifies five key strategic solutions to these gaps to help treat and support those impacted by breast cancer and ultimately help more women to prevent and overcome the disease:

1. Reverse the decline in resources targeted towards breast cancer research. Funding must be increased and strategically directed to enhance our current knowledge, develop the talent pool, and apply evidence-based findings to improve clinical care.
2. Develop a fully cohesive and collaborative infrastructure to support breast cancer research, including access to appropriate, well-annotated clinical material such as longitudinal sample collection with expert bioinformatics support and data sharing.
3. Find better ways to study breast cancer and test treatments in the laboratory, and identify accurate methods to use in clinical practice to

predict how patients respond to treatments.

4. Encourage collaboration between researchers in different scientific fields, including computer technology, physics and engineering, and support clinicians to do research.

5. Improve clinical trial design to better meet the complexity of modern treatment options and involve patients in the design process.

The findings have informed Breast Cancer Campaign's new action plan, *Help us find the cures*, which sets out its hopes and ambitions for the future for the prevention and treatment of breast cancer and how the scientific community, funding organisations, industry, policy makers and Government must now join forces to address the gaps. The charity aims to raise £100 million over the next decade to specifically tackle the critical gaps and help make this happen.

Key ambitions

The plan sets out eight key ambitions for overcoming breast cancer by 2050, which as a result of the Gap Analysis the charity believes is now possible, if increased investment, focus and collaboration can be achieved. These are:

- Risk and prevention: By 2025 individual [breast cancer risk](#) will be more precisely predictable and up to 20% of all breast cancers will be prevented.
- Unlocking Genetics: By 2030 all patients will benefit from individual care and treatment made possible by understanding all of the genetic variables relating to breast cancer
- Early and effective diagnosis: By 2025, over 60% of breast cancers will

be diagnosed before they are symptomatic

- Understanding breast cancer biology: By 2030 what causes different tumours to grow and progress will be identified enabling us to select the best treatment for every patient
- Improving Treatment: By 2025, improved treatments for breast cancer will reduce mortality from breast cancer by half
- Tackling secondary breast cancer: By 2020, 25% fewer people will develop secondary breast cancer and by 2030 more than half of those who develop secondary breast cancer will survive beyond 5 years.
- Living with and beyond breast cancer: By 2025 all those diagnosed with breast cancer, and the people close to them, will receive individually tailored information and support to meet their needs to help them live with and manage the consequences of breast cancer and its treatment.
- Biobanking and enabling research: By 2023 a fully cohesive and collaborative global infrastructure to support breast cancer research will be in place, including the provision of tissue samples and bioinformatics, speeding up the pace of discovery and translation into patient benefit.

More information: [www.breastcancercampaign.org/# ...59029851072250329485](http://www.breastcancercampaign.org/#...59029851072250329485)

Provided by Newcastle University

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