

# Breast cancer detection rates of mammogram readers don't decline over time

May 10 2016

---



Mammograms showing a normal breast (left) and a breast with cancer (right).  
Credit: Public Domain

A new study has found there is no decline over time in the accuracy of medical staff who analyse mammogram scans for indications of breast cancer.

Research conducted at the University of Warwick investigated whether detection rates dropped towards the end of each batch of mammogram

readings.

The study Improving [breast cancer screening](#) detection rates through understanding, modelling, and adapting patterns of radiologist performance has been published in *JAMA*, the *Journal of the American Medical Association*. The research was conducted by Dr Sian Taylor-Phillips who was funded by an NIHR Doctoral Research Fellowship.

Dr Taylor-Phillips examined whether a phenomenon called 'the vigilance decrement' would apply in which accuracy of repetitive tasks decreases over time.

Breast x-rays or [mammograms](#) show lots of overlapping tissue and cancers can be quite difficult to spot. To the research team's surprise they found that the cancer detection rates throughout each batch of approximately 35 readings didn't change. They had expected accuracy to decline towards the end of each batch.

Dr Taylor-Phillips said: "We found no reduction in performance or vigilance decrement at all. In fact, we found the opposite of what we were expecting - breast screening readers seemed to get 'into the zone' and their performance improved with time on task. They recalled fewer women for further tests as they got nearer the end of the batch while cancer detection rates stayed constant."

In the UK National Health Service Breast Screening Programme two readers separately examine each woman's mammograms for signs of cancer. Women have mammograms taken of both breasts and these are examined for signs of cancer by trained staff. Both readers scrutinise batches of around 35 women's mammograms. Current practice is that both readers examine the x-rays in the same order as one another, so if they both experience a vigilance decrement, the vigilance will be low for both readers when examining the same women's mammograms.

To test the vigilance decrement theory the researchers changed the case order for the two readers expecting them to experience low vigilance when examining different women's mammograms. A real-world randomised controlled study in UK clinical practice was conducted incorporating 1.2 million women's x-rays in the trial.

As well as finding no effect on [cancer detection](#) rate, in an exploratory post-hoc analysis, they found that their overall performance improved with time on task.

Whilst the readers kept up a constant rate of detecting cancer, the number of women they recalled for further tests to achieve this decreased over time. When readers first sat down and started the task they recalled on average 6.4 women per thousand screened, this decreased to 4.6 per thousand screened after examining 40 women's mammograms in a row.

Dr Taylor-Phillips said: "Psychologists have been investigating a phenomenon of a drop in performance with time on a task called 'the vigilance decrement' since World War 2. In those days radar operators searched for enemy aircraft and submarines which appeared as little dots of light on a radar screen.

"People thought that the ability to spot the dots might go down after too much time spent on the task. Many psychology experiments have found a vigilance decrement, but most of this research has not been in a real world setting, unlike our study."

Dr Taylor-Phillips and her team are going to expand their research in this area. They are currently analysing how performance changes over longer reading sessions, and whether examining mammograms at different times of day affects performance.

**More information:** *JAMA*, doi:10.1001/jama.2016.5257

Provided by University of Warwick

Citation: Breast cancer detection rates of mammogram readers don't decline over time (2016, May 10) retrieved 25 April 2024 from <https://medicalxpress.com/news/2016-05-breast-cancer-mammogram-readers-dont.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.