

CLAHRC BITE **Brokering Innovation Through Evidence**

24 A bite-sized summary of a piece of research supported by NIHR CLAHRC West Midlands

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Changing Case Order to Optimise Patterns of Performance in Screening (CO-OPS)

Background

- Breast cancer screening detects 8.6 cancers per thousand women screened in the UK. However, 2.9 cancers per thousand women are detected between screening rounds in screened women, either due to cancers growing between screenings, or cancers missed at screening.
- An additional 3.3% of women in the UK experience false-positive (“false alarm”) recalls at each screening round.
- Interpreting screening mammograms is a difficult, repetitive task. In similar visual search tasks, such as airport baggage screening, a ‘vigilance decrement’ (decreasing detection rates with time on a task) has been observed.
- In the UK, two film readers independently examine each woman’s mammograms for signs of cancer.
- This study measured whether a vigilance decrement in breast cancer screening exists, and whether changing the order in which cases are reviewed can increase cancer detection.

What effect does changing the order for the second film reader of batches of screening mammograms have on rates of breast cancer detection?

Findings:

- This one-year trial involved 46 breast screening centres using digital mammography, and randomized 1.2 million women in batches of approx. 35 to either intervention or control groups.
- The intervention group involved two readers reviewing the batch in the opposite order to each other - one forward, one in reverse. In the control group, readers reviewed the batch in the same order as one another.
- The results revealed that the intervention did not affect the overall cancer detection rate, recall rate or disagreement rate (where the two readers disagree on whether recall is required).
- However, further analysis showed that cancer detection rate did not change with time on task, but recall rate decreased.
- These results were unexpected and contradict previous research on the vigilance decrement in other fields.
- Possible explanations could be that the experienced specialists in this study are less prone to a vigilance decrement, or the vigilance decrement phenomenon may be associated with an increase in recall threshold rather than a reduction in performance.

Reference

Taylor-Phillips S, Wallis MG, **Jenkinson D**, **Adekanmbi V**, Parsons H, Dunn J, Stallard N, Szczepura A, Gates S, Kearins O, Duncan A, Hudson S, **Clarke A**. Effect of Using the Same vs Different Order for Second Readings of Screening Mammograms on Rates of Breast Cancer Detection: A Randomized Clinical Trial. JAMA. 2016;315(18):1956-1965. [<http://goo.gl/qj4hcO>]



Recommendations for Practice

For individual readers, recall rate decreased with time spent on task for up to 60 cases, with no concurrent change in cancer detection rate. Therefore, the authors have suggested that examining cases in batches of up to 60 is likely to be beneficial.

What is NIHR CLAHRC West Midlands?

The Collaboration for Leadership in Applied Health Research and Care (CLAHRC) is a partnership between universities (Birmingham, Warwick, Keele and Aston) and a number of health and social care organisations in the West Midlands. We are funded by the National Institute for Health Research with a mission to undertake high-quality applied health research focused on the needs of patients to improve health services locally and beyond. For further information, visit:

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