Are there Characteristics Associated with Higher Performing Breast Units that Could Inform Recommendations to Standardise Arbitration Processes?

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Abstract

Rationale

In recent years the overall benefit of breast screening has been a subject of debate, and one of the criticisms is excessive false-positive recalls. Arbitration by a third reader or group consensus can be integral in reducing these. Before the publication of the Public Health England arbitration guidance (August 2016), the third person arbitrator or lead of consensus meetings had to be medically qualified (radiologists, breast clinicians). How sensitive and specific the third reader should be, has never been specified, but there is considerable variation between individuals undertaking the task.

This research aimed to explore the different reporting and arbitration strategies in breast screening within England to ascertain if specific systems work better in differing units, and thereby inform recommendations to standardise processes. Consideration is also given to advances in technology in this field.

Method

A mixed-methods approach was used to explore the complex factors associated with decision making (reporting and arbitration) in breast screening and the effect on recall rates. The research included two national surveys, analysis of chosen performance metrics (recall rates, small cancer detection rates and Standardised Detection Ratio) for all 80 breast screening units in England (KC62 data) and semi-structured telephone interviews, based on a pre-determined sampling frame. Interviews were undertaken to explore the opinions, experiences, perspectives and insights of reporting staff (varying professional roles). Methodological triangulation was used to evaluate complementary and divergent findings.

Key findings

The survey results demonstrated variability in all aspects of reporting and arbitration practices. The reporters may be influenced by non-blind reading and arbitration, resulting in biased decision-making. The PHE guidance on arbitration has had minimal impact on the respondent units.

Analysis of the KC62 data demonstrated variations in the performance parameters reviewed at the unit level, but in particular, recall rates. However, there was no difference in mean recall rates between units for the cases reviewed; the arbitration strategy; the reading type; professional role undertaking the third reader arbitration/leading consensus or programme size. Also, there were no statistically significant differences for the four-year average prevalent and incident SDR between programme sizes nor between the arbitration strategies for small cancer detection rates (prevalent and incident) or SDR (prevalent and incident).

The interview results generated five main themes relating to reporting and arbitration practices: organisational factors, technology, clinician factors, teamwork factors and PHE guidance factors.

Artificial Intelligence (AI) could potentially tackle some of the current challenges in breast screening, including capacity issues/workforce planning, increased efficiency, improved accuracy and advanced detection of early cancers. Further research is needed on optimising human/AI decision-making.

Conclusion and further research

This thesis has resulted in several organisational and national recommendations regarding blind reading/arbitration to provide improved film reader data profiles and standardisation, and considerations surrounding alternative models of service delivery.

The research has revealed the potential for future work into:

1. the design of the breast screening reporting system

2. selection of arbitrators and alternative methods of group decision making, and

3. determining cultural and organisational characteristics that may improve diagnosis and support effective teamwork