Title **Cervical Screening Programs: Can Automation Help? Evidence from Systematic Reviews, an Economic Analysis and a Simulation Modeling Exercise Applied to the UK**

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Aim

To assess the effectiveness and cost effectiveness of adding automated image analysis to cervical screening programs.

Conclusions and results

The predominant finding from the systematic reviews was the limited amount of rigorous primary research. None of the included studies refers to the only commercially available automated image analysis device in 2002, ie, the AutoPap Guided Screening (GS) System. The results of the studies were debatably most compatible with automated image analysis being equivalent in test performance to manual screening. Concerning process, there was evidence showing that automation leads to reductions in average slide processing times. The PRISMATIC trial reported a reduction from 10.4 to 3.9 minutes, a statistically significant and practically important difference. Economic evaluation tentatively suggested that the AutoPap GS System might be efficient. The key proviso is that credible data become available to support that the AutoPap GS System has test performance and processing times equivalent to those obtained for PAPNET.

Recommendations

The available evidence is insufficient to recommend implementation of automated image analysis systems.

Methods

Four systematic reviews were conducted according to recognized guidance. The review of *clinical effectiveness* included studies assessing reproducibility and impact on health outcomes and processes in addition to evaluations of test accuracy. A discrete event simulation model was developed, although the economic evaluation ultimately relied on a cost-minimization analysis.

Further research/reviews required

The priority for action remains further research, particularly the clinical effectiveness of the AutoPap GS System. Another priority is to assess the cost effectiveness of introducing automation alongside other approaches.

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