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Title **Effectiveness and cost-effectiveness of automated and semi-automated cervical screening devices: A systematic review**

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http://nzhta.chmeds.ac.nz/nzhtainfo/csv3nl.pdf

Aim

To systematically review the evidence for effectiveness and cost-effectiveness of introducing "new" devices in place of conventional Pap testing in New Zealand's population-based screening program. Devices considered included automated liquid-based slide preparation systems (Thinprep and AutoCyte Prep) and a semi-automated, computerized image processor for ranking slides according to their likelihood of being abnormal (AutoPap System).

Conclusions and results

- Estimates of test sensitivity and specificity could not be reliably determined. There was no reliable evidence for improved detection of high-grade abnormalities by the devices.
- To date, there is minimal evidence relating to new devices' test specificity. Therefore, the possibility that new devices may increase false positive diagnoses has not been comprehensively evaluated in the literature.
- In cost-effectiveness models, additional abnormalities assumed to be detected by new devices were found to have little impact on cancer mortality.

Recommendations

- The vast majority of missed abnormalities will be detected at subsequent screens for women who are routinely screened appropriately, assuming acceptable levels of smear taking and laboratory performance. The Pap test should therefore remain the standard of care in New Zealand's three-yearly, population-based cervical screening program (this recommendation has been accepted by the New Zealand government's health purchasing body).
- Industry-produced promotional material should be balanced by independent, evidence-based material (this recommendation is being acted upon by the New Zealand government).
- Resources required to introduce new devices into the National Cervical Screening Programme may lead to better outcomes if dedicated to other strategies.

Methods

The comprehensive search strategy conducted by Susan Bidwell included various electronic and bibliographic sources, Internet websites, New Zealand government publications, and citations of retrieved papers. Searches were limited to English language material published from January 1997 through May 2000 to update the search dates of a 1998 review produced by the Australian Health Technology Advisory Committee (AHTAC). The search strategy identified 26 papers eligible for full appraisal from over 700 identified. The report includes a comprehensive chapter discussing methodological issues in cytological research. Six expert consultants provided advice and peer review.

Further research/reviews required

Higher quality research is required to generate valid estimates of test sensitivity and specificity for new cervical screening devices. Methodological limitations to address include the application of appropriate reference standards for verification of cytological diagnoses, including test negatives. Economic modeling studies would be more meaningful with more valid estimates of test characteristics, and a comprehensive measurement of screening costs from a societal perspective, including careful investigation of the impact of screening and clinical management on quality of life. It is recommended that the conclusions of this report be revisited in October 2001.

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