

Title:	Genotypic resistance testing of antiretrovirals in HIV, November 2004
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Aim

To assess the safety and effectiveness of genotypic resistance testing of antiretrovirals in HIV and under what circumstances public funding should be supported.

Conclusions and results

<i>Safety</i>	An extensive literature search revealed a lack of safety data for genotypic resistance testing of antiretrovirals in HIV. However, as the test generally only requires a blood sample, the risks to subjects are expected to be minimal.
<i>Effectiveness</i>	The accuracy of genotypic resistance testing of antiretrovirals in predicting treatment outcome was assessed from studies reporting on resistance or sensitivity to various therapies as a predictor of treatment outcome. The diagnostic characteristics of genotypic resistance testing varied across studies due to different drug combinations, study design and the accumulation of further mutations in HIV during the study. The effectiveness of genotypic resistance testing was assessed from seven randomised controlled trials, one single-arm extension of a randomised controlled trial and a meta-analysis. A meta-analysis performed during the review including data from randomised controlled trials comparing genotypic resistance testing and standard of care showed that patients treated by genotypic resistance testing were more likely to achieve an undetectable viral load and have a statistically significant reduction in viral load at 3 and 6 months compared with patients treated by standard of care. Patients treated on the basis of resistance results were also more likely to receive more antiretrovirals, making the incremental benefit of genotypic resistance testing and the drugs themselves difficult to determine. No significant differences were observed between patients whose treatment was based on genotypic resistance testing, virtual or drug-susceptibility phenotyping.
<i>Cost-effectiveness</i>	A decision analytic model of genotypic resistance testing in a cohort of patients failing their first and subsequent HAART regimens resulted in an incremental cost per QALY of \$5,623.

Recommendations

MSAC recommended that on the strength of evidence pertaining to safety, effectiveness and cost-effectiveness of genotypic resistance testing of antiretrovirals in HIV that public funding should not be supported.

Method

MSAC conducted a systematic review of medical literature published from 1966 to 2004 via Medline, Embase, Australasian Medical Index, Biological Abstracts, CINAHL and the Cochrane Library. Internet sources and health technology assessment sites were also searched. Diagnostic accuracy was assessed using studies reporting on resistance or sensitivity to various therapies as a predictor of treatment outcome. Effectiveness was assessed using randomised controlled trials that compared genotypic resistance testing in HAART experienced patients that were failing current therapy compared with standard of care and drug-susceptibility phenotyping. MSAC modelled a trial-based cost-effectiveness of genotypic resistance testing versus standard of care.