



Title **Structural Neuroimaging in Psychosis: A Systematic Review and Economic Evaluation**

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Aim

To establish the clinical and cost effectiveness of structural neuroimaging, ie, magnetic resonance imaging (MRI) or computed tomography (CT), for all patients with psychosis (particularly a first episode of psychosis) relative to the current UK practice of selective screening only when clinically indicated by symptoms or signs of a space-occupying brain lesion.

Conclusions and results

Evidence to date suggests that structural neuroimaging screening of all patients presenting with psychotic symptoms would yield little to affect clinical management beyond the information provided by a full clinical history and neurological examination. From an economic perspective, the outcome is unclear. Neuroimaging for all could be either cost-incurring or cost-saving for MRI or CT, depending on the assumptions used. The results would depend on assumptions around the prevalence of structural lesions causing psychosis, but results must be interpreted with caution since evidence is sparse. The systematic review included 24 studies of a diagnostic, before-after type of design evaluating the clinical benefits of CT, structural MRI, or combinations in treatment-naïve, first-episode, or unspecified psychotic patients, including one study in schizophrenia patients resistant to treatment. Also included was a review of published case reports of misidentification syndromes. Almost all evidence concerned patients aged below 65 years. In most studies, structural neuroimaging identified little to influence patient management that was not suspected based on a medical history and/or physical examination. See Executive Summary link at www.hta.ac.uk/project/1594.asp.

Recommendations

See Executive Summary link at www.hta.ac.uk/project/1594.asp.

Methods

A systematic review included studies (any study design) reporting the additional diagnostic benefit of structural MRI, CT, or combinations of these in patients with psychosis. The comparator was any current standard practice of diagnostic workup without structural neuroimaging. Only studies reporting clinically relevant outcomes were included. MEDLINE, EMBASE, the Cochrane Library, PsycINFO, and CINAHL were searched from inception to November 2006. Inclusion, quality assessment, and data extraction were undertaken in duplicate. There were no language restrictions. Studies were assessed qualitatively only. Economic assessment consisted of a systematic review of economic evaluations and development of a threshold analysis to predict the gain in quality-adjusted life-years (QALYs) required to make neuroimaging cost effective at commonly accepted threshold levels (20 000 pounds sterling [GBP] and GBP 30 000 per QALY). Sensitivity analyses addressed several parameters including prevalence of psychosis. Full economic modeling was not possible due to lack of clinical evidence.

Further research/reviews required

The main research priorities are to monitor current NHS use of structural neuroimaging in psychosis in patients aged below 65 years to identify clinical triggers and subsequent outcomes. In addition, well-executed, diagnostic before-after studies on representative populations are required to determine the clinical utility of structural neuroimaging in this patient group. Research is also needed to determine whether the most appropriate structural imaging modality in psychosis should be CT or MRI.