

NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE**Health Technology Appraisal****Structural neuroimaging in first episode psychosis****Scope****Remit/appraisal objective**

To appraise the clinical and cost effectiveness of structural neuroimaging (MRI and CT) to identify structural causes of first episode psychosis, and to provide guidance to the NHS in England and Wales.

Background

The term psychotic disorder is used to describe a broad range of mental disorders with symptoms including: hallucinations (seeing, hearing, smelling, tasting or feeling things that are not there); delusions (false and unshakable beliefs); and disturbed thinking. Symptoms may be constant or intermittent depending on the underlying cause of psychosis.

Psychotic symptoms are predominantly associated with disorders such as schizophrenia and manic depressive psychosis. However, psychotic symptoms can be associated with many other conditions such as epilepsy, the use of, or withdrawal from alcohol or drugs (substance-induced psychotic disorder) or systemic illness (such as infection) or there may be underlying structural abnormalities (such as brain injury, or tumour). The psychotic symptoms may or may not be caused by the associated disorders.

In the context of this scope, the term first episode psychosis refers to the first presentation of psychosis in clinical practice. Current standard methods for assessing individuals presenting with first episode psychosis include; a thorough history taking from the individual and relatives, a physical examination, a mental state examination to group characteristics, and biochemical tests as appropriate. Sometimes not all of these are feasible nor indicated, as the clinical presentation and the severity of the condition at first presentation is widely variable.

The estimated overall prevalence of psychotic disorder in the United Kingdom is 5 per 1000 in adults aged 16 to 74. There are no epidemiological statistics on the incidence of first episode psychosis in the UK.

The technologies

Neuroimaging describes a variety of imaging techniques that are used to investigate the cause or mechanism of mental disorders. The techniques include Magnetic Resonance Imaging (MRI), Computerised Tomography (CT), Positron Emission Tomography (PET) and functional Magnetic Resonance Imaging (fMRI). Research studies have used these scans to

examine the structure and function of the brain in patients with different types of psychosis, compared with unaffected individuals.

MRI and CT are imaging techniques used to identify structural abnormalities (such as tumour, stroke, and infectious disease) that may be causing the psychosis. The Institute was advised that structural neuroimaging is not routinely used in the investigation of psychotic symptoms in clinical practice in the UK.

PET and fMRI are functional imaging techniques that are used to assess small changes in the brain that occur with psychiatric disorders such as schizophrenia. Expert advice to NICE has confirmed that functional imaging using PET and fMRI are currently research tools and they will not be considered in this appraisal.

Intervention(s)	Structural neuroimaging techniques (Computerised Tomography and Magnetic Resonance Imaging) <ul style="list-style-type: none"> • as a routine screening tool in all individuals presenting with first episode psychosis • as an assessment tool when standard examination methods fail to identify causes of the first episode psychosis • as an assessment tool in individuals who have not responded to treatment.
Population(s)	Individuals presenting with first episode psychosis
Current standard comparators	Current standard NHS practice in the assessment of individuals presented with first episode psychosis without structural neuroimaging.

<p>Outcomes</p>	<p>The outcome measures to be considered include:</p> <ul style="list-style-type: none"> • Diagnostic utility measures such as <ul style="list-style-type: none"> ○ Proportion of scans that pick up structural abnormalities thought to be aetiologically related to or unrelated to the psychosis ○ Proportion of scans that lead to the identification of otherwise unknown or previously unsuspected structural causes of first episode psychosis ○ Proportion of scans that reveal information of clinical value in terms of supporting clinical care and management of the individual • Morbidity and mortality due to undetected treatable structural disease • Severity and progression of the illness • Subsequent service utilisation (including frequency and duration of hospital admissions) • Health-related quality of life • Adverse effects due to inappropriate treatment
<p>Economic analysis</p>	<p>The reference case stipulates that the cost effectiveness of the technologies be expressed in terms of incremental cost per quality-adjusted life year.</p> <p>The time horizon of the economic analysis should be an appropriate time period over which the costs and benefits of the technologies can be expected.</p> <p>Costs will be considered from an NHS and Personal Social Services perspective.</p>
<p>Other considerations</p>	<p>If evidence permits, the appraisal will seek to assess the relative clinical and cost effectiveness of the different strategies of use of the technologies in existing clinical practice.</p> <p>If evidence permits, the appraisal will seek to identify subgroups of individuals for whom the strategies may be particularly clinically and cost effective.</p> <p>If evidence permits, the appraisal will also seek to appraise the relative clinical and cost effectiveness of MRI and CT.</p>

Related NICE recommendations	Related Technology Appraisals: None. Related Guidelines: Schizophrenia: core interventions in the treatment and management of schizophrenia in primary and secondary care (CG1). The management of bipolar disorder in adults, children and adolescents, in primary and secondary care (CG38).
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