The overlap between neurology and psychiatry should be obvious, given the two disciplines’ shared concerns with disorders of the human nervous system and the effect of these disorders on such fundamental aspects of our species as thoughts, beliefs, perceptions, and feelings. Nevertheless there is quite a division in terms of training, specialists (medical or otherwise), and service structures for patients who have disorders of the brain or mind. These structural and professional divisions can arguably lead to difficulties for patients accessing appropriate assessments and treatments. In the UK at least it is not currently a requirement of either neurological or psychiatric training to have experience of the other speciality, although progress is being made slowly in this respect with the introduction of more formal neuropsychiatry training modules into both neurology and psychiatry higher training schemes.

This issue of *Neurology in Practice* may go some way towards addressing this gap. Perusal of the literature will reveal that there have long been those arguing for bridges, rapprochements, and integration between the two disciplines, but real change is harder to see. There continues to be controversy within psychiatry whether the discipline is “mindless” or “brainless” and in which direction it and its practitioners should move.

The persistence of mind brain dualism is sadly all too common in our medical practice. It is not uncommon for patients with primary psychiatric illness to have minimal examination of physical state and the mental state examination is rarely done in a systematic way in general medical or even neurological settings. Of course, sometimes that is entirely appropriate, but just as psychiatrists should hopefully be able to detect and describe physical signs, so too should the neurologist be able to describe adequately and systematically abnormalities of mental state.

Studies have repeatedly shown that psychiatric illness in medical patients very often remains unrecognised. While this may have important implications for the treatment of patients, there is evidence that detection may be increased both by increasing the length of time available for assessments and by improving the assessment skills themselves. Communication styles which facilitate the detection of psychiatric morbidity or co-morbidity include listening, open ended questioning, developing an empathic rapport, interviewing patients in private, and using verbal and non-verbal behaviours to encourage disclosure (not, for example, asking questions while writing notes or interviewing people in bed surrounded by trainees or students).

### The Mental State

It is usual when describing mental states to divide the examination into the following headings: appearance and behaviour, orientation, attention and concentration, memory, mood, speech and language, perceptions and thoughts and insight (box 1).

This article aims to review the basic components of the mental state examination and give a structure for recording it. Problems of terminology or diagnosis that are likely to confront neurologists are discussed.

**Appearance and behaviour**

Initial examination of the patient will allow the examiner to comment on various aspects of appearance and behaviour. This includes the general level of motor activity, apparent distractibility, self care, appropriateness of dress (any evidence of disinhibition?), cooperativeness, and hostility. The manner of initial contact may be observed: eye contact, hand shaking, and posture. Of course, like many signs on examination, these have limited diagnostic significance in isolation but need to be part of an integrated mental state examination. Understandably, in busy wards with junior staff changing shifts, detailed behavioural observations may be difficult. When this is the case it may be helpful to use observational charts—for example, sleep charts, activity records, dietary records. These are simple diary style records usually divided into manageable slots, hourly or less frequently to record patient behaviours.

A particularly common clinical scenario deserves special mention. Delirium—synonyms for which include acute confusional state, acute organic brain syndrome, acute organic reaction, and
It may be prudent to try and establish this topic or is unable to recount something that has been explained to him. It may be difficult or impossible to establish in severe aphasia. In the apparent alert patient may know he is in hospital, but treatment is to remove the cause.

In addition to the patient’s behaviour, it may be useful to observe his interaction with his immediate environment. Is there evidence of regression (soft toys), obsessiveness (overly neat bedside tables), dependency (attentive relatives), or abnormal preoccupation with illness (textbooks)?

Orientation
It is surprising how disorientation in patients may be missed. The apparently alert patient may know he is in hospital, know the time (a quick glance at a clock), but reveal confidently the year as being a decade or so past. The acronym “OTPP” usually suffices as an examination of the ability of the human to describe his unique individual nature and to locate himself in space and time. In reality disorientation in person—that is, not knowing who you are—is rare except in advanced organic brain disease. It may be difficult or impossible to establish in severe aphasia. In the absence of these or obvious delirium disorientation in a person is highly suggestive of a dissociative state, especially psychogenic fugue or dissociative amnesias. It may be relieved to some extent by benzodiazepines but treatment is to remove the cause.

Attention
Disorientation most commonly suggests problems with attention and indicates a possible delirium. Traditionally attention is examined using serial 7s or backwards spelling. Digit span may be more useful as it relies less on numerical or spelling ability. Poor attention may become obvious during the general interview as the patient drifts off topic or is unable to recount something that has been explained to him. It may be prudent to try and establish this relatively early on as it may make much of the history taking futile.

Memory
The examination of memory can be relatively simple and superficial or the subject of detailed and sophisticated neuropsychology. As in all neuropsychiatry, the informant history may be more much more revealing than the patient interview alone, as the patient may be more or less unaware of his difficulties. General questions about recent personal or public events are useful as are more specific probes about memory of routes, duties, conversations, soap opera plots, etc. Elementary formal examination of memory using the familiar “three objects” or “name and address” may be included as part of a routine or more extended cognitive assessment.

Structured cognitive examination
Whether one decides to use a standard assessment such as the mini mental state examination, frontal assessment battery, or Addenbrooke’s cognitive examination, abnormalities should be explored more fully and tailored to the individual patient. A patient who scores 29/30 on a mini mental state examination, losing one point for copying intersecting pentagons, for example, could be asked to draw a clock face to explore whether there is a real finding or whether this was just a one-off error.

Certain findings on standard bedside cognitive testing may suggest a psychiatric disorder. Problems with concentration are common in depression and anxiety. Poor performance in a range of tests with a pattern of giving up early or despairing with “I don’t know” or “I can’t do that” answers may suggest the pseudodementia of depression, although it must be remembered that the cognitive impairment of depression is a real impairment and not simply secondary to loss of drive, interest, or motivation. Furthermore, depression may itself be a risk factor for the development of dementia and psychiatric symptoms are an indicator of severity in mild cognitive impairment. Approximate answers, originally described as part of the Ganser syndrome, which are patently absurd answers, suggest a dissociative state. Examples would include “What is two plus two? Five” or “What colour is grass? Blue” The examiner should be vigilant for clues to an abnormal mental state which may lie in the content of a sentence” or “Describe what you see in this picture”. Thus a patient who is hypomanic may describe things in glowingly enthusiastic language. The paranoid patient may reveal fears or preoccupations and the depressed patient may spontaneously reveal feelings of guilt, hopelessness, inadequacy, or despair.

Mood and affect
The most important abnormalities of mood are depression, anxiety, and elation. The eliciting of depressed mood or anxious mood is particularly important as these are eminently treatable, common co-morbid disorders in neurological practice. The most basic tool in eliciting mood symptoms is time. Unfortunately this is not always readily available but it is at least arguable that time spent listening to patients might reveal problems earlier on and prevent unnecessary or costly investigation. The symptoms should be asked for in an open ended way, leaving silences if necessary: “How are you feeling? How are your spirits? How
has all this affected you?” may be much more revealing questions than “Have you been depressed?” In addition to subjective unhappiness, patients with low mood describe loss of enjoyment (anhedonia), or deadening of emotions. If there is a sense that the patient has indeed been experiencing low mood, the examiner should go on to ask about specific biological features (also called melancholic features) such as sleep disturbance (especially early morning wakening), diurnal variation (worse in morning), appetite disturbance, weight loss, and loss of libido. Important cognitions which may suggest depression are feelings of guilt and hopelessness. Anxiety and irritability are also features of mood disturbance and should be asked about specifically.

Elated mood is suggested by talkativeness, irritability, pressured speech, and grandiose ideas. Much less common than depression, it has been thought to be more associated with right hemisphere damage involving cortical or subcortical limbic areas. Sustained cheerfulness has traditionally been associated with demyelinating disease and may reflect frontal involvement revealed on neuropsychological examination. Elated mood necessitates a careful review of medication. Steroids, antidepressants, or stimulant drugs are probably most commonly implicated.

Anxiety is arguably the most common mood problem seen and the clinical assessment may centre on whether to consider it as a primary mood disorder (perhaps on a spectrum with depression) or a more specific anxiety disorder (see below).

The term “affect” is used with a number of complementary meanings. Sometimes it is reserved for the description of the prevailing mood state at a particular point in time, while the term “mood” is used for the overall state over a longer period of hours or days. Others use the term affect to describe a more “objective” description of mood, perhaps related to the effect the patient’s mood appears to have on the examiner, in contrast to the more subjective mood state of the patient. The most useful sense of the word is probably when it is used to describe less the emotional tone or flavour (depressed, anxious, irritable, elated) but rather the range, variability, and appropriateness of the emotional reaction within the interview. Thus one may speak of constricted, blunted, flattened, incongruous, or inappropriate affect.

Sudden changes in mood, often short lived and from which the patient can be easily distracted, are suggestive of liability of affect, often seen in association with cortical or subcortical disease, and should not be confused with the persistently lowered mood of depression. Pathological laughter is rare. It may be associated with a subjective sensation of mirth or be part of hypochondriasis or even specific phobias. It may also be specific and reveal fear of illness as part of the normal reaction to the distress and uncertainty linked to facing a possible neurological diagnosis. Clues that it may be the former are its persistence and the presence of melancholic symptoms or feelings of guilt and hopelessness as described. Often, the most appropriate course of action is to allow the patient to articulate his fears or feelings and then adopt a “wait and see” approach. If doubt persists, an empirical trial of antidepressant treatment may be needed.

Patient groups in whom affective disturbance may be particularly difficult to diagnose include those with learning difficulties and autistic spectrum disorders. The latter may have a very different subjective experience of mood disorder and may not have the usual language to describe their experiences. Affective disorders may have to be inferred from altered behaviours—for example, loss of interest in usual routines, sleep or appetite disturbance, or aggression. Again, an empirical trial of antidepressant treatment may be necessary.

**Anxiety**

Anxiety is characterised by a subjective sense of discomfort and fear. This may be entirely appropriate and related to the possible diagnosis, treatment, or prognosis of a neurological condition. It may also be specific and reveal fear of illness as part of hypochondriasis or even specific phobias. It may also be part of a generalised anxiety or depressive illness (table 1).

**Speech**

In non-neurological settings it is usual to examine speech by commenting particularly on the rate and rhythm of speech. The overtalkative patient may be anxious or hypomanic, while slowness or monotony of speech suggests depression. The speech patterns of patients with schizophrenia may be...
highly unusual, with mannerisms and stereotypies, or relatively normal but with unusual content. In the neurological setting speech abnormalities may reflect an organic neurological disorder. The speech of the patient with Parkinson's disease may mimic the slowing and loss of intonation seen in depression; the patient with frontal impairments (whether cortical or secondary to subcortical disease) may show slowing and loss of richness or disinhibition with volubility. Circumstantiality and overinclusiveness are seen in obsessive patients, but apart from being frustrating for the clinician pressed for time, they are of doubtful clinical usefulness. Regressed, child-like speech may be a feature of dissociative disorders. Slurred, dysarthric speech should always raise the possibility of organic illness, especially drug toxicity.

In psychiatric practice the most frequently seen speech abnormality is probably that reflecting the thought disorder of schizophrenia. This may mimic the disorganised and illogical speech patterns of the aphasic patient, but the differentiation will usually be obvious from the history. Global aphasic patients may indeed develop what is in effect a disorder of thought, because of the profound effect of disordered language on thinking itself. Apart from the history, it may be possible to distinguish the aphasic from the schizophrenic speech disorder by the former's shorter history, it may be possible to distinguish the aphasic from the schizophrenic speech disorder by the former's shorter responses and attempts to enlist the examiner's aid, and the latter's more bizarre themes.

**Perceptions**

It is probably fair to say that abnormal perceptions, particularly hallucinations, are one of the hallmarks of psychiatric illness. Hearing voices is such a characteristic and distressing symptom of schizophrenia that there are self-help and therapeutic groups primarily to help people cope with these symptoms. Hallucinatory behaviour, which may appear as muttering or mumbling to oneself, may be one of the most stigmatising symptoms around, leading to a person being seen as "crazy" with the attendant stigma of dangerousness, unpredictability, or unreliability.

Patients are themselves acutely aware of this and so may be reluctant to answer direct questions about hallucinations. Perhaps as common, however, is that clinicians are reluctant to ask about such symptoms, for fear of annoying the patient. It is usual therefore to introduce questions about hallucinations once a degree of rapport has been established and any suspiciousness or hostility on the part of the patient has been hopefully reduced. As with any line of questioning it is advisable to begin with relatively open questions ("Any unusual experiences?", "Anything distracting you?") before moving to more closed questions. The experience may need to be normalised to some degree: "People sometimes tell me they hear others talking to them or about them. Has that ever happened to you?" Auditory hallucinations should be clarified as to whether (some commentaries can be banal or reassuring) and in particular whether there are "command" hallucinations. The latter are associated with acting on the content of the hallucination and may therefore be associated with a higher degree of risk of violence to the self or others. Visual hallucinations are more suggestive of organic disease. Transitory hallucinations—hallucinations which are poorly formed, variable in content, and not associated with complex fixed delusions—are characteristic of organic brain syndromes such as delirium. Visual hallucinations in particular are seen complicating Parkinson's disease and its treatment and, compared to patients with primary psychiatric disturbance, insight into the abnormal nature of the experiences may be relatively well preserved. Strongly mood congruent hallucinations (rotting smells, accusatory voices, visions of hell, in depression) should raise the suggestion of affective disturbance.

Visual hallucinations are seen in patients with visual loss following peripheral damage (Charles Bonnet syndrome), occipital epilepsies, and occipital stroke.

**Content of thought**

Under this heading it is usual to consider firstly a description of the patient's main preoccupations. Secondly, it is usual to look for specific pathological thought content such as delusions, overvalued ideas, or obsessions. Finally, it may be useful to explore the patient's belief systems especially regarding disease causation, investigation, and prognosis. Specific disorders of thought such as disordered experience of the possession of thoughts are characteristic of schizophrenia.

**Delusions**

Rather like hallucinations, delusions may be fragmentary (they are out to kill me/we are sinking) or systematised (an elaborate narrative with characters, arguments, plot, and predictions). The former suggest an acute organic brain syndrome whereas the latter are characteristic of more chronic psychotic disorders such as schizophrenia and dementia. The characteristic feature of the delusion is the fixity with which the belief is held. Evidence is recruited to support the belief, never to challenge it. Patients with long standing delusional beliefs in schizophrenia may have accommodated to their beliefs and may function relatively well in our community despite them. For example, a patient who believes his brain is being stored in the USA for experiments by a well known rock musician continues to look after himself and collect his benefits while "knowing" he is the subject of government and media surveillance. Sometimes very depressed patients may paradoxically report that their mood is fine but that they "know" they will shortly be killed, or that the doctors are planning their disposal.

**Obsessions and repetitive behaviours**

It is relatively common to find stereotyped and repetitive behaviours in patients with neuropsychiatric disease. There can be confusion as to the meaning of these, and in particular how they relate to obsessive-compulsive disorder (OCD). Patients with a range of disorders affecting global cognitive

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**Table 1 Simple classification of anxiety states**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Worries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phobic</td>
<td>Afraid of specific situations, stimuli leading to avoidance of these</td>
</tr>
<tr>
<td>Panic</td>
<td>Recurrent attacks of severe anxiety in an unpredictable way</td>
</tr>
<tr>
<td>Generalised</td>
<td>Relatively free-floating anxiety not confined to specific situations</td>
</tr>
<tr>
<td>Adjustment or PTSD</td>
<td>Shorter or longer term reactions to a specific stressor, PTSD characterised by characteristic reliving experiences with avoidance and mood and concentration problems</td>
</tr>
<tr>
<td>Somatoform</td>
<td>Includes persistent physical symptoms (somatisation) and persistent worry about illness (hypochondriasis)</td>
</tr>
</tbody>
</table>

PTSD, post-traumatic stress disorder.
function, such as dementia or learning disability, may show a restricted pattern of behaviours and an intolerance to the interruption of these behaviours. This is particularly a feature of dementia syndromes affecting the frontal lobes, and indicates orbitobasal involvement. Repetitive stereotyped behaviours are a predominant and defining characteristic of autism spectrum disorders (a term used to encompass autism and the more nosologically controversial syndromes of high functioning autism and Asperger’s syndrome). Repetitive behaviours are also a feature of disorders of the basal ganglia and are seen in Wilson’s disease, Huntington’s disease, and neuroacanthocytosis. They are also a core feature of Gilles de la Tourette’s syndrome (GTS). These behaviours seem to lie on a continuum with OCD. Thus, while the diagnoses listed (with the exception of the developmental disorders) may primarily come to the attention of neurologists, patients with OCD will usually be referred to psychiatrists or psychologists. The principal difference is that patients with primary OCD will have a strong subjective sense of the strangeness or illogicality of their thoughts or fears and will often actively resist them. There is pronounced associated anxiety and compulsions develop to reduce this anxiety. Interrupting this cycle of avoidance and compulsive behaviours by encouraging a graded sensitisation to the associated anxiety is the principle on which the behavioural therapy of OCD is based. Patients with organic syndromes are less likely to be aware of the behavioural problems. Though they may develop anxiety in reaction to any attempt to interrupt them, they are less likely to be motivated themselves to bring about change through exposure to anxiety and treatment strategies are more likely to be based on reinforcement of positive behaviours. Patients with GTS seem to lie between these two poles and this may relate to whether there is any associated global cognitive difficulty.

Other areas of assessment
Illness beliefs
In addition to the standard assessment of mental state, which focuses on the detection of abnormalities of mental state and is really the psychiatric equivalent of the physical examination, it is often time well spent if the clinician can elucidate some of the patients beliefs (which may be wrong but not delusional!) regarding neurological illness and its treatment. This is particularly important in the area of somatisation, conversion and dissociation, and somatoform disorders generally. Clearly this group of patients is one which neurologists find particularly difficult to treat and it is almost characteristic that patients will develop a poor relationship with some clinicians who will come to dread the next visit of that particular patient. It is probable that much of this cannot be avoided but there are some general strategies which may help. It is important, in my view at least, not to assume that physical symptoms which cannot be explained organically must have a psychiatric explanation. While undoubtedly some patients may have a masked depression or anxiety state, others will not. This group of patients is more likely to have problems on the somatisation/somatoform disorder spectrum and may not do well by being told that they have a psychiatric disorder. From experience, it seems that such patients need extra effort to ensure they feel their concerns have been taken seriously and understood. They may then need reassurance (not that there is nothing wrong but that this is not an unusual pattern and that a good degree of recovery can be hoped for). They may also need skilled and diplomatic management to avoid unnecessary or harmful investigations or treatment. Specific questions may help elucidate the problems with these patients. For example, asking them what they think may be wrong, or asking about illness beliefs. Do they think headache usually indicates serious illness? How common is tiredness? Finally reassurance should be given carefully as it is all too often heard as “there is nothing wrong”.

Acute change in mental state
A common experience in the accident and emergency department is the patient presenting with an acute change in mental state, and it has even been known for unseemly disputes to arise between psychiatrist and neurologist as to which discipline should take on the assessment of the patient. The psychiatrist will want their neurology colleagues to “exclude an organic cause” and the neurologist may wish the psychiatrist to diagnose “functional illness”. What might be the pointers towards a patient needing thorough organic work up? Very sudden changes in mental state may suggest an underlying organic problem. Intoxication with street or prescribed drugs should always be considered and toxicology should be a routine part of the assessment of patients with unusual or suddenly changed mental states. Focal neurological signs are not a feature of common psychiatric disorders like depression or schizophrenia. Age may also be a pointer: significant mental state changes in the elderly or in children should probably be assumed to have a possible organic aetiology. Acute psychosis suggesting schizophrenia may present at any age, but typically first presents between the ages of 15 and 35 years. Affective disorders present more commonly in middle age and later life.

Alcohol
It is estimated that between 10–20% of patients on general medical wards may have significant alcohol problems. Alcohol problems may be suggested by the diagnosis; in the neurological setting organic brain syndromes including amnestic syndromes and dementias may be most common. Establishing a history of harmful alcohol use or dependence may be difficult since denial is one of the features of dependence and because patients will anticipate rejection or withholding of treatment because of what might be seen as judgmental attitudes on the part of staff. The detection of alcohol problems is important for a number of reasons. Substance using patients are at relatively high risk of psychiatric illness and of completed suicide. Heavily dependent patients may develop life threatening delirium tremens in the context of an acute hospital admission if the alcohol history is missed. Finally, there is some evidence that advice given about harmful alcohol use can be beneficial if given in medical settings. There are various screening instruments available—for example, the FAST, AUDIT, or CAGE questionnaires.

Consciousness
It is perhaps worthwhile straying off into this most vexed of terms as it can lead to confusion between neurologists and psychiatrists. It is traditional in psychiatry to use the term “consciousness” to refer to the integration of our awareness of, monitoring of, and response to the environment. The term is problematic, however, because of its multiple meanings. One author defines a disturbed state of consciousness as follows: “...a state in a person in which he has no
experiences at all, or in which all of his experiences are deviant, concerning other or more qualities than tempo and mood colouring, from those he would have under similar stimulus conditions in his habitual waking state. The state is a disturbed state of consciousness only if the individual cannot return to, and remain in, his habitual state by deciding to do so himself, and if others bring about a lasting return to his habitual state by the application of a simple social procedure”.

Zeman simplifies things and identifies three principal meanings. The first is consciousness as “the waking state”. This is the most common meaning in neurological practice. It is distinguished from unconsciousness. The unconscious patient is perhaps asleep or in a coma. The difference is quantitative. The degree of consciousness can be measured using instruments like the Glasgow coma scale. Consciousness has another meaning which is dealt with by philosophy and relates to the subjective elements of experience and relates to terms like “self awareness”. This is generally held to be a particular feature of human beings (unlike the first meaning) and debate continues as to whether it could be a feature of artificial intelligences or non-human animals. Psychiatry uses the terms “conscious” and “unconscious” with a further, though of course related meaning, which is particularly important in how we conceptualise the problems of patients with symptoms that do not have a neurological explanation. Thus we speak of “the unconscious” or at least unconscious motivations. Whether these concepts make sense philosophically is one thing (and thankfully this is, to use the cliché, “beyond the scope of the present article”), but it is certainly a common part of our current concepts of these syndromes that the internal or external reinforcers of behaviours and symptoms are not usually known to the patient and therefore not under voluntary control.

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