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ANALYSIS

Time to end the distinction between mental and neurological illnesses

Mental and neurological conditions are classified in different chapters of diagnostic manuals. **P D White**, **H Rickards**, and **A Z J Zeman** argue that this distinction is inconsistent with current scientific understanding and that the conditions should be grouped together as disorders of the nervous system

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We are witnessing a revolution in the clinical science of the mind, as the techniques of basic neuroscience are successfully applied in mental health. It has become clear that disorders of the mind are rooted in dysfunction of the brain, while neurological disorders interact strongly with psychological and social factors and often cause psychological symptoms. Yet the dominant classifications of mental disorder—the International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual (DSM)[1 2]—continue to draw a sharp distinction between disorders of the mind, the province of psychiatry, and disorders of the brain, the province of neurology. As these classifications are currently under revision, it is timely to consider a radical rethinking.[3 4] The current line of demarcation between disorders of mind and of brain is counterproductive for clinicians and patients on both sides of the line. We propose, therefore, that psychiatric disorders should be reclassified as disorders of the (central) nervous system. This will update our classificatory system in the light of contemporary neuroscience and foster the integration of psychiatry into the mainstream of medicine, where it belongs.

Biological research into mental disorders has been transformed by advances in structural and functional brain imaging, neuropharmacology, and genetics.[5] Meta-analyses have shown that structural brain abnormalities are present in schizophrenia,[6 7] bipolar affective disorder,[7 8] recurrent depressive disorder,[9] post-traumatic stress disorder,[10] and obsessive compulsive disorder.[11] Functional brain imaging has shown that both normal and abnormal emotions have neural representations.[12] Meta-analyses show altered activation in the limbic and related brain systems in depression[13] and bipolar disorder.[w1] We can now visualise the altered brain activity associated with hallucinations.[14] Even conversion disorders are associated with brain activation that differs from that induced by simulation[w2] and may be related to dominant emotional circuits.[w3]

Recent research has begun to delineate the genetic architecture of these disorders, implicating allelic variants,[15] copy number variants,[w4] gene-gene and gene-environmental interactions,[w5] and epigenetic features.[w6] Imaging genetics has linked specific brain activations with genetic variations.[w7] Some of these findings imply that our current taxonomy of psychiatric disorders will require revision.[15 w4]

Psychotropic drugs alter brain function and structure.[16] The efficacy of antidepressants is correlated with brain activation in those parts of the brain that mediate mood.[w8] Their important effects on neurogenesis have recently been identified;[w9] antidepressants particularly enhance hippocampal neurogenesis and synaptogenesis.[w10] Non-pharmacological treatments, such as cognitive behaviour therapy, modulate brain activity.[w11]

This knowledge is consistent with the view that the mind is indivisible from the brain.[17] Yet, the involvement of the brain in psychiatric disease is also fully compatible with the vital roles played by psychological and social factors. Phobias, for example, develop by classically conditioned responses; post-traumatic stress disorder requires a trauma; unemployment is a major risk factor for depressive illness.

Despite the intellectual and institutional barriers between neurology and psychiatry, most disorders of the central nervous system produce both "neurological"—motor and sensory—and "psychological"—cognitive, affective, and behavioural—effects.[18] Mental symptoms constitute major elements of central nervous system disorders including multiple sclerosis, Parkinson's disease, Huntington's disease, and Tourette's syndrome. Although some of these symptoms are

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reactive, such as the depression that can occur in any chronic disabling illness, others directly express the underlying pathophysiology—for example, the subcortical dementia of multiple sclerosis, the cognitive and motivational dimensions of Parkinson's disease, or the post-ictal psychosis of temporal lobe epilepsy. Clinical neuroscience has shown that brain regions once considered predominantly neurological, such as the cerebellum and the basal ganglia, also regulate thought and emotion. Cerebellar disease, for example, can cause impaired memory and planning as well as labile emotion.[w12] Cognitive and emotional symptoms occur as a result of brain stimulation in disorders of the basal ganglia.[w13]

The interests of patients referred to neurologists are best served by clinicians who can recognise and manage the psychological manifestations and origins of neurological disorders and symptoms. The place of psychological and behavioural interventions in patients with neurological disorders is being recognised increasingly.[w14] A system of classification that draws a sharp distinction between neurological and psychiatric disorders is therefore unhelpful.

The evidence described above indicates that both neurological and psychiatric disorders should be regarded as disorders of the nervous system. However, our current systems of classification artificially separate them, giving rise to bizarre double accounting. For instance, in ICD-10 "dementia in Alzheimer's disease" is classified as a mental disorder (F00), while Alzheimer's disease is classified under neurology (G30).[1] Neurodevelopmental disorders also enjoy a hybrid existence. Edward's syndrome (trisomy 18), is classified under neurology, whereas learning disabilities of unknown aetiology are classified under "mental retardation" (F10-79) in psychiatry.[1] Such double accounting is ubiquitous. Another example is insomnia: G47.0 provides a neurological classification for "disorders of initiating and maintaining sleep [insomnias]" whereas F51.0 describes "nonorganic insomnia."[1] There are no clear grounds for deciding whether insomnia is psychiatric or neurological apart from the imponderable question of whether the cause is "organic" or "functional." But this distinction is fundamentally irrational. We are all organisms with functions: illness affects both organs and functions.

The requirement that conditions should be classified under either mental or physical chapters causes particular difficulty in the context of the functional somatic syndromes or somatoform disorders, in which physical symptoms are often assumed to have a psychological explanation. Both patients and their doctors are often dissatisfied with the resulting clinical encounters; this dissatisfaction stems in part from a dualistic diagnostic system that fails adequately to categorise conditions that fall into the gap between physical and psychological medicine.[19]

For example, chronic fatigue syndrome may be classified as myalgic encephalomyelitis (ME) within the neurology chapter (G93.3) of ICD-10, or as neurasthenia, a psychiatric disorder (F 48.0).[1] Similarly, tension-type headache is a neurological disease (G44.2), whereas persistent somatoform pain disorder (F45.4) is psychiatric. Somatoform disorders (F45) are regarded as mental disorders in both ICD-10 and DSM-4.[1 2] This diagnosis requires that the doctor is satisfied that no medical diagnosis can explain the symptoms, which are the result of, or primarily related to, stress or psychological processes. But there are strong grounds for believing that these disorders have both physical and psychological causes.[20 21] Evidence is increasing, for example, that chronic pain syndromes may be caused by sensitisation of the central nervous system, the mechanisms for which are both related to and independent of mood.[21] As in all medical conditions, beliefs, feelings, and consequent behaviour are important in maintaining ill health and disability once an illness is established.[w15] Thus the current classification is ill suited to functional somatic syndromes, which are neither solely physical nor solely mental but both.

The evidence that psychiatric disorders are based in the brain, while neurological (and other medical) disorders have prominent psychological aspects, implies that physical and psychological medicine should be realigned. This movement is already under way.[5 22 23] While clinical scientists and practitioners are trying to reintegrate medicine and psychiatry, it is unhelpful to have a false dichotomy at the heart of our classification of disease. We propose, therefore, that the classifications of psychiatric and neurological disorders should be merged as disorders of the nervous system. Changing the classification will not, in itself, transform the relationship between psychiatry and the rest of medicine, but it will epitomise an intellectual shift with far reaching beneficial consequences.[23]

For psychiatry, reclassification will contribute towardsreducing discrimination against people with psychiatric disease, to the benefit of patients who will no longer be regarded as belonging to the other half of medicine, held responsible for their plight, or cared for in environments that would be considered unacceptable for people with "physical" disorders. A more medicalised psychiatry might improve the currently low recruitment into the profession.[22] Regular exchange of staff in training between psychiatry and medicine will enhance the general medical and neurological skills of future psychiatrists and mental health nurses, helping them to comprehend and manage the biological dimension of their patients' disorders.[22] This may contribute to narrowing the mortality gap whereby patients with serious mental illnesses die from natural causes many years earlier than the rest of the population.[24]

In neurology—and more generally in medicine—the reclassification will encourage doctors to recognise the third of patients who present to clinics with conditions that have a predominantly psychological explanation, and the even more common psychological ramifications of neurological and medical disease. Regular rotation of junior staff through mental health training posts will better equip them to deal with psychological aspects of medical disorders, which are currently under-recognised and undertreated.[25] Patients will benefit from less fragmented communication and more integrated care.

Our proposal will meet with several obstacles. In terms of nosology, the greatest of these is that there is no equivalent American classification of neurological disorder with which DSM could be merged.[2 4] Therefore the first priority should be to merge the mental and behavioural and neurology chapters of ICD-11.

There may also be some reluctance among clinicians. We do not envisage that the disciplines of psychiatry and neurology will fuse in the short or medium term. Their distinctive histories, cultures, skill sets, and institutions militate against this. In addition to the broad differences of outlook between the two specialties there are also substantial differences of outlook within them. Nevertheless, the two disciplines have much to gain from closer collaboration. The change in the classification of disorders will help psychiatrists and neurologists to promote a biopsychosocial model of illness so that in future doctors will find it unnecessary to classify patients into physical or mental categories, which hinder assessment and management more than they help.[22 23]

Most fundamentally, reclassifying mental illnesses as disorders of the nervous system may fall foul of the widespread tendency towards a dualism of mind and body.[26] Our proposal does not,

in fact, seek to deny the importance of the mind. On the one hand we argue that mental disorders are disorders of the brain; on the other hand, we argue that the mind requires attention throughout the territory of medicine. Our proposal that psychiatric disorders should be classified as disorders of the nervous system is consistent with the vital importance of psychosocial factors in all areas of medicine. Both clinical practice and clinical science have much to gain from developing a single classification for disorders of the nervous system.

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