Core Curriculum in Neuropsychiatry of the International Neuropsychiatric Association*

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Abstract Neuropsychiatry (NP) and behavioral neurology (BN) are rapidly emerging as superspecializations in the fields of psychiatry and neurology, respectively. The International Neuropsychiatric Association (INA) set up a committee to develop a curriculum for reference and guidance in the development of training programs in different countries. The purpose of any training program in NP would be to produce specialists who are competent in the diagnosis and management of common neuropsychiatric disorders, who are able to utilize specialized neuropsychiatric investigations in the evaluation of these disorders, who are able to provide secondary and tertiary level consultations to general physicians, psychiatrists, and neurologists, and who will be involved in teaching and research in relationship to these disorders. It is recognized that this curriculum will need to be adapted to the local needs and available resources in that setting. It is hoped that the curriculum, through the aegis of the INA, will promote NP internationally and help provide the best treatment for patients with neuropsychiatric disorders.

Keywords Behavioral neurology • Curriculum • Neuropsychiatry • Specialization • Training

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Background

Neuropsychiatry (NP) is an old discipline with its origins in the mid-nineteenth century, or perhaps even earlier to the seventeenth century, much before the birth of modern psychiatry. For many decades, however, neurology and psychiatry developed as separate disciplines, leading to a dearth of dialogue between the disciplines. NP has remerged in the last two decades as a subdiscipline that bridges the two established disciplines of neurology and psychiatry. In its broader role, NP applies the principles of neuroscience to the understanding and treatment of emotional, behavioral, and cognitive disorders. In its narrower and more practical approach, NP is that branch of psychiatry that is concerned with the diagnosis and management of the psychiatric and behavioral consequences of demonstrable brain disturbance. As such, the practice of NP requires skills and knowledge that in part traverse the traditional psychiatry/neurology boundary.

The discipline of NP must be considered in relation to behavioral neurology (BN). In many respects, NP and BN are two slightly different approaches to the same set of disorders and conditions, with the former being biased toward traditional psychiatry and the latter having its route through neurology. The core competencies are similar, with perhaps differences in vemphasis. As this curriculum is being developed under the aegis of the International Neuropsychiatric Association (INA), the term NP is used. An effort is made to identify specific areas that are particularly important to BN so that the curriculum can be readily adapted to it.

Currently there are few training programs worldwide that are exclusive to NP and lead to a specific NP specialist accreditation. In most countries, trainees who gain experience in NP do so within general adult psychiatry, old age psychiatry, child psychiatry, or forensic psychiatry; this is true even for countries in which a number of NP specialist positions exist. Some countries have a dual training in neurology and psychiatry, with a certification in both disciplines. Although this approach meets some of the requirements of training in NP, it is the position of the INA that training in NP specifically, following basic training in psychiatry and neurology, is necessary to meet the requirements of specialist NP training.

Goals of the Training Program

The purpose of a training program in NP is to produce specialists who will be competent in the diagnosis and management of common neuropsychiatric disorders, able to utilize specialized neuropsychiatric investigations in the evaluation of these disorders, able to provide secondary and tertiary level consultations to general physicians, psychiatrists and neurologists, and be involved in teaching and research in relationship to these disorders. Although the range of disorders included in NP is difficult to delineate, an attempt is made in the core competencies section of this chapter to define this territory, with the acknowledgment that this is an evolving process depending upon the knowledge base of the day.

The following are the goals of the training program:

1. To develop a sound knowledge base of the neuroscientific principles underlying neuropsychiatric practice, in relationship to neuroanatomy, neurophysiology, neurochemistry, and neuropharmacology.
2. To gain first-hand experience of common neuropsychiatric disorders and become competent in their diagnosis and management.
3. To develop an expertise in the use and interpretation of specialized neuropsychiatric investigations, in particular, neurophysiology (e.g. electroencephalography), neuroimaging, and neuropsychology.
4. To be competent in the recognition and management of common psychiatric and neurological disorders.
5. To develop specialized skills in the physical treatments in NP, but without ignoring the principles of psychotherapeutic and rehabilitative approaches.
6. To develop skills in the critical evaluation of research evidence in the pathophysiology, phenomenology, and treatment of neuropsychiatric disorders.
7. To conduct research to improve the empirical basis of neuropsychiatric knowledge and practice.
8. To act as advocates for sufferers of neuropsychiatric illnesses, and to contribute to the development of the profession.

Structure of the NP Training Program

There is no one model that will suit all training programs in NP. An attempt is made here to outline the basic tenets of such a program.

1. An NP training program shall endeavor to create specialists in NP who function as secondary and tertiary level specialists. They shall provide consultations to general psychiatrists, neurologists, and general physicians on a range of neuropsychiatric disorders.
2. An NP training program will generally comprise a 2-year fellowship program that focuses on the core competencies detailed below. In some situations, only a 1-year fellowship in NP may be practicable. Full competency should not be assumed after 1 year of training. However, if the trainee works for a further 2 years in a largely or exclusively neuropsychiatric service (but not specifically as a trainee), it would be considered likely that the training requirements would have been met in this period.
3. The NP Fellow will have previously received training in psychiatry and/or neurology. In general, this would have been a 3-year training program in a center that offers training in both specialties. It is expected that the psychiatry trainee would have received at least 6 months training in neurology, but the neurology trainee would have at least 1 year of training in psychiatry. If this is not the case, the Fellowship period would be used to remedy this with a clinical rotation in the appropriate discipline.

4. The NP training will be in a neuropsychiatric center with two or more neuropsychiatrists, one or more clinical neuropsychologists, a neurologist (part-time or full-time), and a working relationship with psychiatric, clinical neurology, and neurosurgical services. The center would be part of a general teaching hospital and have easy access to a neurophysiology service and up-to-date neuroimaging, which would include structural magnetic resonance imaging (MRI) and functional imaging. It would also have a research program.
5. The training program will include a research project, which would preferably be based on empirical research.
6. The training program will have an evaluation component, based on a formal assessment and/or a series of informal assessments by the supervisors.
7. The program will prepare the trainee for a lifelong period of education and professional enhancement.
8. The program will instil by example the highest ethical standards of conduct in clinical practice and scholarly work.

Objectives

Attitude Objectives

NP trainees should develop a positive attitude toward neuropsychiatric patients and their carers. NP trainees will demonstrate this attitude by:

1. Being prepared to advocate for the needs of neuropsychiatric patients and their carers.
2. Recognizing and dealing constructively with biased attitudes toward sufferers of neuropsychiatric illness.
3. Developing an awareness of the impact of illness on carers and the wider community, and striving to balance the needs of neuropsychiatric patients with those of carers and the wider community.

Knowledge Objectives

By the completion of training, NP trainees should be knowledgeable about the following:

1. Normal biological, psychological, and social development of the brain and mind:
   (a) Brain structure at the macroscopic and microscopic levels, in particular the knowledge of neuronal networks, the limbic system, the neuroanatomical substrates of memory, and the frontal executive system;
   (b) Central nervous system (CNS) structure–function correlations;
   (c) Neurochemistry, especially neurotransmitter and receptor function;

(d) A basic grasp of issues related to the mind–brain debate, the biology of consciousness, and other neurophilosophical issues.

2. Basic neuroscience:

(a) The molecular biology of psychiatric disorders;
(b) The biochemical basis of neuropsychopharmacology;
(c) The basic principles of neurophysiology, and their application to diagnosis and treatment of neuropsychiatric disorders;
(d) The basic principles of genetics and immunology as they apply to the CNS;
(e) The basic principles of neuroimaging and their application to diagnosis and assessment of neuropsychiatric disorders.

3. Neuropsychiatric disorders

By the completion of training, NP trainees should be knowledgeable about the epidemiology, etiology, psychopathology, clinical features (including complications), and natural history of neuropsychiatric disorders, including concepts of impairment, disability, and handicap. A sound knowledge of the assessment and care of these conditions is also expected.

(a) The incidence and prevalence of neuropsychiatric illnesses in various populations;
(b) The phenomenology of organic brain syndromes, including nonspecific and atypical presentations of illness such as "pseudodementia," "masked" depression, "conversion" disorders, and behavioral disorders;
(c) The criteria on which neuropsychiatric diagnoses are based, within the framework of one of the widely accepted classification systems;
(d) Possible causative or exacerbating factors in neuropsychiatric disorders;
(e) The natural history of the disease process in neuropsychiatric disorders, which enables identification of (1) the severity of the disease; (2) the urgency of the need for treatment; (3) the stage of the illness; and (4) the prognosis;
(f) The assessment of common neuropsychiatric disorders, including the following:

(i) Cognitive disorders
(ii) Dementias and predementia syndromes
(iii) Nondementing cognitive disorders
(iv) Seizure disorders
(v) Movement disorders
(vi) Traumatic brain injury
(vii) Secondary psychiatric disorders, that is, psychosis, depression, mania, and anxiety disorders secondary to "organic" brain disease
(viii) Substance-induced psychiatric disorders: alcohol, drugs of abuse, etc.
(ix) Attentional disorders [adult attention deficit hyperactivity disorder (ADHD) and related syndromes]
(x) General hospital liaison neuropsychiatry

(xi) Developmental disorders
(xii) Sleep disorders

(g) Appropriate management plans for neuropsychiatric disorders including:

(i) Interpretation of medical, psychological, and neurodiagnostic investigations and assessments
(ii) The use of psychopharmacology, electroconvulsive therapy (ECT), and other physical treatments including the frequency and management of side effects
(iii) Application of psychotherapies, including supportive, cognitive-behavioral, group, and family therapies
(iv) The use of behavior modification, environmental adaptation, and preventive measures
(v) Situations in which referral to, or consultation with, colleagues in psychiatry and other disciplines is appropriate
(vi) Programs involving changes in lifestyle
(vii) Rehabilitation programs
(viii) Management in forensic settings
(ix) Strategies that meet the needs of carers including the role of self-help groups, including Alzheimer's Association, Tourette Syndrome Association, etc.

(h) The influence of specific factors on assessment and care of neuropsychiatric disorders, including:

(i) Age
(ii) Intellectual capacity including intellectual disability
(iii) Medical illness and disability
(iv) Sex
(v) Culture
(vi) Spiritual beliefs
(vii) Socioeconomic status
(viii) Psychiatric comorbidity
(ix) Polypharmacy
(x) Support factors

(i) The influence of factors that affect treatment outcome including other medical illnesses;
(j) The principles underlying the choice and integration of interventions in neuropsychiatry, including the evidence base and relative cost-effectiveness;
(k) The principles of medicolegal aspects to the practice of NP, with particular emphasis on mental health and guardianship legislation, including its local application, testamentary capacity, enduring power of attorney, informed consent, assessment of older offenders, and fitness to plead;
(l) The community care system including the relevant welfare legislation that affects the management of people with neuropsychiatric disorders, especially dementia;

(m) Issues of aging and mental health in older people with intellectual and other disabilities;
(n) Prevention and health promotion in NP;
(o) Issues specific to mental health promotion in relationship to neuropsychiatry;
(p) Risk factors for neuropsychiatric disorders that become apparent earlier in life.

4. Medicine in relationship to NP

   By the completion of training, NP trainees should be knowledgeable about medical and surgical conditions in general. Higher levels of knowledge are expected in those areas of medicine that particularly relate to psychiatric practice, such as neurology, rehabilitation medicine, etc.

5. Research method

   By the completion of training, NP trainees should be knowledgeable about the principles of scientific method in their practice and the use of this knowledge to evaluate developments in neuropsychiatric research.

6. Service issues

   By the completion of training, NP trainees should be knowledgeable about the organization and delivery of mental health care to neuropsychiatric patients, including the ethical, economic, geographic, and political constraints within which it operates.

7. Professional responsibility

   By the completion of training, NP trainees should be knowledgeable about the principles of medical ethics, the development of professional attitudes, and mechanisms for the development and maintenance of clinical competence, acknowledging the need for professional and public accountability.

Skills Objectives

1. Health promotion

   - By the completion of training, the NP trainee should be able to apply specific knowledge of the principles and processes of health promotion and illness prevention:
     - Recognize and address risk factors for common neuropsychiatric problems in the community, in hospitals, and in long-term care, such as falls, confusion, and depression;
     - Recognize and address the needs of carers of neuropsychiatric patients.

2. Assessment of neuropsychiatric patients

   - By the completion of training, trainees should possess the skills necessary for performing a comprehensive neuropsychiatric examination:

- Demonstrate interviewing skills adapted to the needs of neuropsychiatric patients;
- With tact and respect, appropriately use and interpret cognitive tests and document these accurately;
- Appropriately refer people for neuropsychological assessment and effectively utilize the results;
- Conduct assessments in a range of hospital and community settings, including assessment of the environment;
- Perform a functional assessment including activities of daily living and apply it to the determination of the most appropriate form of living arrangements for the individual;
- Recognize and assess relevant features of the family context including the family's role as carers, carer stress, and elder abuse;
- Perform medicolegal assessments with particular emphasis on testamentary capacity, guardianship, enduring power of attorney, competency, and informed consent.

A Survey of Required Competencies in Neuropsychiatry

The curriculum below identifies some core competencies in the skill base and specific modules of the specialist knowledge base; these shall be acquired over 2 years. The competencies are described as modules, but they are not necessarily independent of each other. The importance of the core skills module is highlighted. The aims and objectives of this module will normally be covered within the specific clinical modules undertaken but should represent an additional and specific focus of study within the individual clinical modules. The level of expertise in each of the specific modules will vary, depending upon the facilities available, but a basic level of competence in each module is expected in a 2-year training program.

1. Core skills module
   - 1.1. Knowledge base in clinical neuroscience
   - 1.2. Clinical skills in neuropsychiatry
     - 1.2.1. Neuropsychiatric diagnosis including history and examination, neurophysiological investigations, neuroimaging, neuropsychology, and other investigations;
     - 1.2.2. Treatment, including pharmacology and other physical treatments [ECT, transcranial magnetic stimulation (TMS), surgical interventions], without neglecting psychotherapeutic and rehabilitative interventions.
   - 1.3. Critical thinking in neuropsychiatry: research and scholarship
2. Specific modules
   - 2.1. Cognitive disorders

2.1.1. Dementias and predementia syndromes
2.1.2. Nondementing cognitive disorders

2.2. Seizure disorders
2.3. Movement disorders
2.4. Traumatic brain injury
2.5. Secondary psychiatric disorders, that is, psychosis, depression, mania, and anxiety disorders secondary to "organic" brain disease
2.6. Substance-induced psychiatric disorders: alcohol, drugs of abuse, etc.
2.7. Attentional disorders (adult ADHD and related syndromes)
2.8. General hospital liaison neuropsychiatry
2.9. Developmental neuropsychiatry
2.10. Sleep disorders
2.11. Neuropsychiatric rehabilitation
2.12. Forensic neuropsychiatry

Core Skills Module

Specific Competencies

Knowledge Base in Neuroscience

- Knowledge of brain structure at the macroscopic and microscopic levels, in particular the knowledge of neuronal networks, the limbic system, the neuroanatomical substrates of memory, and the frontal executive system.
- A knowledge of CNS structure–function correlations.
- Knowledge of neurochemistry, especially neurotransmitter and receptor function.
- The biochemical basis of neuropsychopharmacology.
- The basic principles of neurophysiology.
- The basic principles of genetics and immunology as they apply to the CNS.
- A basic grasp of issues related to the mind–brain debate, the biology of consciousness, and other neurophilosophical issues.

Clinical Skills in Neuropsychiatry

1. Undertake clinical assessment of patients with apparent or possible neuropsychiatric problems.

   (a) Take a neuropsychiatric history; this includes all the information routinely gathered as part of a psychiatric and medical history, but with special emphasis on gathering information about:

   - Possible illnesses or injury to the central nervous system.
   - Sudden or gradual changes in intellectual functioning, level of consciousness, personality, and judgment, as well as changes in motor and sensory functions, which might indicate neurological disease.

(b) Perform a neuropsychiatric assessment; this will again involve and encompass all the routine skills required to carry out a psychiatric examination, but in addition will include:

- Demonstration of the ability to elicit information relevant to possible neuropsychiatric disorders and neurological conditions, for example, the ability to list the history of stepwise cognitive decline or psychomotor seizure activity.

(c) Perform a cognitive examination (simple and extended):

- A core skill in NP is the ability to carry out simple tests "at the bedside" to determine a patient's level of orientation, attention, concentration, memory, etc., and to do so in the context of a psychiatric examination.
- A neuropsychiatrist, and in particular one from a neurological background, would be competent in assessing deficits in language, praxis, gnosis, visuo-spatial function, and other cognitive syndromes.
- This competency would not require the ability to administer formal neuropsychological tests, but may involve carrying out paper-and-pencil tests and the use of simple materials such as word lists or pictures.
- A neuropsychiatrist should have competency in interpreting results of such an examination to determine whether the patient is suffering from a dementing illness, a confusional state, or a specific cognitive deficit as well as competency in diagnosing the range of adult psychiatric conditions. Part of the skill would involve placing the results of the examination in the context of the patient's educational and social background and premorbid level of functioning.

(d) Perform a neurological examination:

- The trainee should be able to carry out a full and detailed neurological examination, if necessary, with particular emphasis on the central nervous system and higher cortical functioning.
- The trainee should be able to demonstrate the ability to interpret any abnormal signs elicited and place them in the context of the patient's presentation and a differential diagnosis; this may include eliciting signs, which requires further specialist investigation, either within the realm of NP or neurology or electrophysiology.

(e) Construct a neuropsychiatric differential diagnosis:

- The trainee neuropsychiatrist should be able to demonstrate familiarity with multi-axial forms of classification.
- The trainee should be able to arrange multiple diagnoses into a rational hierarchy and be able to summarize the key elements of the history and examination which support that differential diagnosis.
- The trainee should be able to evaluate the extent to which patterns of psychiatric symptomatology and presentation may be the result of underlying organic brain disease.

- The trainee should be familiar with the range of organic disorders that may account for particular presentations.
- The trainee should be able to communicate this in a clear and concise way to other health professionals as well as to patients and their carers.

2. Undertake and plan investigation of a patient with apparent or possible neuropsychiatric problems:

   (a) Trainees should be familiar with the relevant hematological, metabolic, bacteriological, virological, immunological, and toxicological investigations of relevance to NP. This requirement includes:

   - Demonstrating knowledge and judgment that the relevant parameter is of central importance to the neuropsychiatric presentation.
   - Knowing which investigations need to be pursued with further tests and knowing which may be incidental or within normal limits.
   - Interpretation of examination of cerebrospinal fluid, nerve, muscle, and brain biopsy will also be required, although detailed knowledge is not necessary.

   (b) In contrast to many other specialities within psychiatry, NP requires familiarity with EEG and other neurophysiological investigations and their interpretation:

   - The trainee should be able to discuss the advantages and limitations of the routine EEG, sleep EEG, and longer-term EEG telemetry in patients with possible neuropsychiatric problems.
   - Although the trainee is not expected to be competent in reading EEGs independently, she or he should have a working knowledge of the profiles of normal and abnormal EEGs.
   - In addition, the trainee should understand the use and application of sensory evoked potentials and nerve conduction studies and EMG as they occur in neurological disorders with neuropsychiatric complications, and also as a tool to exclude neurological causes of abnormal function that may in fact have a psychological basis.
   - The trainee should be familiar with the settings in which these investigations are carried out, should be able to query the interpretation with a consultant or experienced technician in the area, and to convey this information to members of the multidiscipline team, carers, and patients alike.

   (c) NP requires sound understanding of the indications for, and interpretations of, the various forms of brain imaging, both structural and functional, including magnetic resonance imaging (MRI), computed tomography (CT), single-photon emission computed tomography (SPECT), and positron emission tomography (PET):

   - The trainee should have sufficient familiarity with these techniques to be able to describe them to a patient and their family/carer and to be able to interpret the results.
   - The trainee should know when such investigations are likely to alter management or treatment decisions and should have some understanding of their theoretical importance.

- The trainee should have sufficient first-hand knowledge of CT and MRI brain scans to be able to detect salient abnormalities and critically assess an expert report.

3. Prescribe and oversee treatment of patients with neuropsychiatric disorders such as those with psychiatric and behavioral symptoms and coexisting neurological disorder. Be familiar with social, psychological, and biological interventions for neuropsychiatric disorders:

   (a) The trainee should have sufficient skill to explain the mode of action, benefits, and side effects of these treatments to fellow health professionals, patients, and their families;
   - Be familiar with the principles of treatment of major neurological disorders and be familiar with neuropsychiatric complications of such treatment.
   - The neuropsychiatrist should also be aware of the neurological manifestations and complications of psychiatric treatment and advise patients and professionals on evaluating the importance of these and in minimizing their occurrence and severity.

   (b) Be familiar with potential drug interactions between psychiatric and neurological medications and other treatments;

   - This requirement will include the awareness of the risks associated with prescribing psychotropic drugs to patients with neurological and neurosurgical diseases.

   (c) Be familiar with nonpharmacological treatments in neurological and neuropsychiatric disorders;

   - The trainee will have competence in the assessment for and the administration of ECT in its current form.
   - The trainee should have some understanding of the newer physical treatments such as transcranial magnetic stimulation (TMS), vagus nerve stimulation (VNS), deep brain stimulation (DBS), and other physical treatments.
   - The trainee should also acquire knowledge of the principles of neurorehabilitation and familiarity with the concepts of disability and handicap.

4. To diagnose and treat patients with medically unexplained symptoms that present as neurological and neuropsychiatric problems; this includes working with colleagues in other disciplines to determine which further tests and investigations are necessary or not as the case may be;

   (a) NP should involve competence in understanding the possible social, cultural, and family influences on unexplained neurological symptoms.
   (b) The trainee should be able to develop a grasp of the principles behind cognitive-behavioral treatments for such patients and be able to plan and oversee such treatments carried out by another professional such as a trained nurse or clinical psychologist.

(c) The trainee should be aware of the relationship between NP and allied psychiatric subspecialties such as old age, child and learning disability psychiatry, and which service patients might most appropriately be served by.

Critical Thinking in Neuropsychiatry: Research and Scholarship

A specialist training in NP will equip the trainee to think critically in the field. The trainee should be able to critically assess the empirical evidence in support of any clinical practice, including the ability to criticize published material. This skill can be developed by means of journal clubs, attendance at research meetings, research presentations, short-term courses, etc.

It is expected that in the second year of training, the trainee will undertake a research project. This work should ideally involve all the steps in an empirical project (background review, design of study, applying for ethics clearance, data gathering, analysis, and report preparation). However, it may take the form of a critical review of a current topic, or a case series. The trainee will produce a report of a publishable standard, as judged by the supervisors, and will be encouraged to publish in a peer-reviewed journal. The research report will be a mandatory component of the second year of training.

Specific Modules

Module 2.1: Cognitive Disorders

Specific Competencies

I. Dementias and predementia syndromes
Be familiar with the diagnosis and investigation of dementias resulting from:

1. Alzheimer's disease (AD)
2. Vascular cognitive impairment (VCI)
3. Dementia with Lewy bodies (DLB)
4. Frontotemporal dementia (FTD), including semantic dementia, progressive aphasia, etc.
5. Dementias related to Parkinsonism + syndromes (progressive supranuclear palsy, corticobasal degeneration, multiple system atrophy)
6. Prion diseases, especially Creutzfeldt–Jakob disease and variant CJD
7. Huntington's disease
8. Dementia resulting from head injury, alcohol use, and medical conditions including human immunodeficiency virus (HIV), brain tumors, encephalitis, etc.

II. Other cognitive disorders
1. Be familiar with the diagnosis and investigation of *specific memory disorders* (amnesic syndromes), in particular:

- Alcoholic Korsakoff's syndrome
- Other causes of thiamine deficiency
- Brain infection such as herpes encephalitis or other encephalopathies
- Brain dysfunction resulting from cerebral hypoxia, for example, carbon monoxide poisoning
- Vascular disorders, such as thalamic infarction or subarachnoid hemorrhage

2. Be familiar with the diagnosis and investigation of frontal/executive syndromes of disinhibitory and nonspontaneous types
3. Be familiar with the diagnosis and investigation of *other, more "posterior" cognitive disorders*:

- Including language disorders (anomias, and disorders of comprehension or expression), reading disorders (surface and deep dyslexia), mental calculation (whether or not part of Gerstmann's syndrome), disorders of visuo-spatial awareness, perception, construction, and the agnosias.

III. Be familiar with the diagnosis and investigation of psychologically based cognitive impairments

- Hysterical conditions, including psychogenic amnesias
- Pseudo-dementias, as in depression
- Cognitive impairment as part of somatization, factitious or malingering syndromes

IV. Be familiar with the status and controversies regarding *mild cognitive impairment.*

Diagnostic Techniques

1. Understand clinical assessment including neurological and clinical cognitive examination.
2. Be familiar with the role, importance, and principles of neuropsychological testing.
3. Be familiar with the interpretation of occupational therapy and with speech and language therapy assessments and reports.
4. Be familiar with the relevant investigations in a clinical blood screen.
5. Be aware of when an EEG can be helpful or even crucial.
6. Be familiar with the purpose and interpretation of CT and MRI brain scans.
7. Be aware of the putative role of other forms of neuroimaging including SPECT, PET, diffusion tensor imaging (DTI), and functional MRI (fMRI).

Be familiar with the main principles involved in the management and treatment of cognitive disorders and of dementias

1. The work of a multidisciplinary team (MDT).
2. The contribution of cognitive behavior therapy and psychological counseling in specific conditions.

3. The use of cognitive-enhancing drugs including cholinesterase inhibitors and memantine.
4. The use of other medications in NP, including anticonvulsants and antidepressants.
5. The management of behavioral disturbances in dementia.
6. The use of outreach and community support services.

How Taught

1. Observation and modeling
2. Working as a team member
3. Supervised clinical practice
4. Review of suitable texts and papers in scientific publications, including review articles

How Assessed

1. Clinical supervision
2. Direct observation
3. Clinical logbook
4. Clinical audit
5. Case presentations, etc.

Module 2.2: Seizure Disorders

Specific Competencies

1. Undertake a clinical assessment of patients with suspected epilepsy:
   (a) Take a seizure history;
   (b) Take a neuropsychiatric history focusing on eliciting impact of seizure disorder on the patient;
   (c) Take a history from an informant;
   (d) Perform a neurological examination on patients with suspected epilepsy;
   (e) Construct a formulation with differential diagnoses for the seizure type and syndrome, along with discussion of etiology.
2. Assess patients suspected of having nonepileptic seizures (NEAD):
   (a) Be familiar with the main features differentiating epilepsy and NEAD;
   (b) Be familiar with the coexistence of epilepsy and NEAD;
   (c) Be familiar with the management of NEAD.
3. Undertake investigation of patients with suspected epilepsy:
   (a) Be familiar with EEG recording and interpretation (including the limitations) in people with epilepsy;

(b) Be familiar with the indications for and interpretation of structural and functional neuroimaging in people with epilepsy.

4. Prescribe treatment to patients with coexisting neurological disorder:

(a) Be familiar with social and psychological interventions for the treatment of epilepsy including relaxation techniques and other behavioral methods of controlling/inhibiting seizures;
(b) Be familiar with the principles of the medical treatment of the different seizure and syndrome types;
(c) Be familiar with potential drug interactions between psychiatric medications and anticonvulsants;
(d) Be aware of the risks associated with prescribing psychotropic agents to patients with epilepsy;
(e) Be familiar with the surgical treatment of epilepsy including vagal nerve stimulation.

5. Assess and manage special patient groups with epilepsy:

(a) Be familiar with the difficulties in assessing and managing seizure disorders in children and adolescents with epilepsy, including issues around puberty;
(b) Be familiar with the difficulties in assessing and managing seizure disorders in women with epilepsy, including catamenial epilepsy, contraception, pregnancy, teratogenicity, polycystic ovarian syndrome, and menopause;
(c) Be familiar with the difficulties in assessing and managing seizure disorders in older age patients, including cognition and issues regarding concomitant physical illnesses and medication;
(d) Be familiar with the difficulties in assessing and managing seizure disorders in patients with learning disability including etiology, difficulty eliciting a history, and cognitive and treatment issues.

6. Assess and manage psychiatric comorbidity in people with epilepsy: pre-ictal, ctal, post-ictal, inter-ictal, and iatrogenic:

(a) Be familiar with the diagnosis and management of depression in people with epilepsy, including the risk of suicide;
(b) Be familiar with the diagnosis and management of anxiety/panic attacks in people with epilepsy, including the difficulties in differentiating between panic attacks and ictal panic;
(c) Be familiar with the diagnosis and management of psychosis (post-ictal psychosis, chronic inter-ictal psychosis, and forced normalization) in people with epilepsy;
(d) Be familiar with the diagnosis and management of cognitive dysfunction in people with epilepsy, resulting from seizures and anticonvulsant medication, including the role of neuropsychological assessments;
(e) Be familiar with the diagnosis and management of sexual dysfunction in people with epilepsy;

(f) Be familiar with the diagnosis and management of disorders of impulse control (anger/irritability, drug/alcohol problems) in people with epilepsy;
(g) Be familiar with quality of life issues in people with epilepsy, such as stigma, locus of control, and employment/relationship difficulties.

7. Be aware of the issues involved in the medicolegal aspects of epilepsy:

   (a) Be aware of the driving license implications of having epilepsy;
   (b) Be familiar with the concept of automatisms when used as a defense in court.

8. Liaison with Epilepsy Surgery Program:

   In centers affiliated with Epilepsy Surgery programs, the trainee should become familiar with the psychiatric issues involved in the assessment of candidates for epilepsy surgery and be able to provide preoperative consultations and postoperative follow-up to such patients.

Module 2.3: Movement Disorders

Specific Competencies

1. Clinical assessment

   (a) Take a history of movement disorder
   (b) Assess psychiatric history
   (c) Assess neurological history
   (d) Perform psychiatric examination
   (e) Perform neurological examination
   (f) Construct differential diagnosis of movement disorder

2. Investigation

   (a) Review previous neurological examinations
   (b) Review previous neurological treatment
   (c) Review previous psychiatric treatment
   (d) Order further relevant investigations

3. Treatment

   (a) Review previous psychiatric treatment
   (b) Review previous neurological treatment
   (c) Recommend alterations to current treatment
   (d) Prescribe new appropriate treatment
   (e) Review effects of treatment

Suggested Learning Methods

1. Attend movement disorders clinic
2. Discuss neurological treatment of movement disorders with neurologist

Suggested Assessment Method: Clinic Logbook

1. Parkinson's disease
2. Tourette's syndrome: tics
3. Tremor
4. Dystonia
5. Catatonia
6. Neuroleptic-induced movement disorders: tardive dyskinesia, tardive dystonia, akathisia, NMS, drug-induced parkinsonism, etc.
7. Hysterical conversion/somatization disorders

Module 2.4: Traumatic Brain Injury

Clinical Settings

1. Emergency services, with patient presenting with psychiatric disturbance following head injury
2. Medical or surgical ward, involving patients with neuropsychiatric disturbance following head injury
3. Outpatient clinics
4. Neurorehabilitation settings
5. Medicolegal settings

Specific Competencies

1. To take a competent trauma history, including the assessment of posttraumatic amnesia (PTA), administration of Glasgow Coma Score (GCS), etc.
2. To assess psychiatric morbidity related to head injury.
3. To assess the relative contributions of brain injury, posttraumatic epilepsy, physical disability, personality, and psychosocial and medicolegal factors contributing to neuropsychiatric presentations.
4. To be able to assess cognitive disturbances following head injury, including the interpretation of neuropsychological assessments.
5. To be able to manage neuropsychiatric disturbances in head-injured patients using drug treatment, cognitive, and behavioral interventions.

Suggested Learning Methods

1. Participate in emergency, medical, and surgical consultations with supervisor.
2. Assess patients in outpatient clinics and follow up these patients.
3. Attend rehabilitation rounds and participate in consultations.

Module 2.5: Secondary Psychiatric Syndromes and Delirium

Clinical Settings

1. Psychiatric wards
2. Neuropsychiatric outpatient clinics
3. Medical and surgical wards

Specific Competencies

1. Familiarity with common presentations of delirium and secondary psychiatric syndromes, including secondary delusional disorder, secondary hallucinosis, secondary depression or mania, secondary anxiety disorder, secondary obsessive-compulsive disorder (OCD), and organic personality disorders.
2. Knowledge of the common causes of these syndromes.
3. Competency in the investigation of the etiology of secondary syndromes, and the interpretation of the results of the investigations.
4. Experience in the treatment of such syndromes, including the use of psychotropic and neurotherapeutic drugs.
5. Knowledge of the pathophysiological mechanisms underlying the development of secondary syndromes.

Suggested Learning Methods

1. Review of published material
2. Neuropsychiatric clinic attendance
3. Consultations on psychiatric, medical, and surgical wards
4. Case discussions

Module 2.6: Substance-Induced Neuropsychiatric Syndromes

Clinical Settings

1. Drug dependence clinic
2. Psychiatric wards
3. Neuropsychiatric outpatient clinics
4. Medical and surgical wards

Specific Competencies

1. Familiarity with common presentations of alcohol- and substance-related neuropsychiatric syndromes.

2. Competency in the investigation of these syndromes, including biological and psychosocial investigations.
3. Experience in the treatment of such syndromes, including the use of psychotropic drugs and psychosocial and rehabilitative interventions.
4. Knowledge of the pathophysiological mechanisms underlying the development of these syndromes.

Suggested Learning Methods

1. Review of published material
2. Clinic attendance
3. Consultations on psychiatric, medical, and surgical wards
4. Case discussions

Module 2.7: Attentional and Dysexecutive Syndromes (Including Adult ADHD)

Clinical Settings

1. Specialized adult ADHD clinic
2. Psychiatric wards
3. Neuropsychiatric outpatient clinics

Specific Competencies

1. Familiarity with common presentations of ADHD in adults.
2. Competency in the investigation of attentional and frontal dysexecutive syndromes, including biological and psychosocial investigations.
3. Experience in the treatment of such syndromes, including the use of psychotropic drugs and psychosocial and rehabilitative interventions.
4. Knowledge of the pathophysiological mechanisms underlying the development of these syndromes.

Suggested Learning Methods

1. Review of published material
2. Clinic attendance
3. Consultations on psychiatric, medical, and surgical wards
4. Case discussions

Module 2.8: General Hospital Liaison Neuropsychiatry

Key Competencies

Undertake assessment of patients with unexplained neurological symptoms:

1. Take an appropriate neuropsychiatric history.
2. Interpret previously performed investigations.
3. Perform examination of mental and physical status.
4. Assess the patients' function in the context of their disability.
5. Understand the concepts of conversion, somatization, and dissociation in a neurological context.
6. Formulate appropriate management plans.
7. Communicate information to the neurological team.

Learning and Assessment Methods

1. Take an appropriate neuropsychiatric history

   (a) Interpret previously performed investigations

Suggested learning methods	Suggested assessment methods
Observation/modeling	Validated self-assessment
Supervised clinical practice	Clinical supervision
Specific teaching from relevant health professionals (e.g., radiologist)	Case presentation

Perform examination of physical and mental status (see other sections)

   (b) Assess patients' function in the context of their disability

Suggested learning methods	Suggested assessment methods
Observation/modeling	Validated self-assessment
Supervised clinical practice	Clinical supervision
Specific teaching from relevant health professionals (e.g., occupational therapist)	Clinical logbook Case presentation

   (c) Understand the concepts of conversion, somatization, and dissociation

Suggested learning methods	Suggested assessment methods
Supervised clinical practice	Clinical supervision
Reading relevant texts	Clinical logbook
Peer group discussion	Case presentation

   (d) Formulate appropriate management plans (see other sections)

(e) Communicate information to neurology team

Suggested learning methods	Suggested assessment methods
Obervation/modeling	Clinical supervision
Supervised clinical practice	Direct observation

2. Undertake assessment of patients with delirium

(a) Take a relevant clinical history from patient and informants
(b) Gather information from clinical staff

Suggested learning methods	Suggested assessment methods
Observation/modeling	Clinical supervision
Supervised clinical practice	Direct observation
Working as a team member	

Perform examination of physical and mental status

(c) Construct an appropriate differential diagnosis (delirium vs. depression vs. dementia)

Suggested learning methods	Suggested assessment methods
Supervised clinical practice	Clinical supervision
Appropriate reading	Case presentation
	Clinical logbook
	Validated self-assessment

(d) Perform investigation to ascertain etiology

Suggested learning methods	Suggested assessment methods
Supervised clinical practice	Clinical supervision
Appropriate reading	Case presentation
Specific teaching from other health professionals	Clinical logbook
	Validated self-assessment

(e) Initiate and monitor treatment where appropriate

Module 2.9: Developmental Neuropsychiatry

Preamble

Developmental NP is that branch of psychiatry concerned with the diagnosis and management of emotional, behavioral, and learning disorders that are associated with demonstrable or suspected organic brain dysfunction, and which manifest during childhood. Because these disorders are primarily disruptive to normal developmental attainments or adjustment, they are known as *neurodevelopmental* disorders. The practice of developmental NP requires skills and knowledge that encompass not only child psychiatry, in broad terms, but also pediatric neurology and learning disabilities.

Currently, there is no formal training program leading to a specific accreditation in developmental NP. In this respect, the subspecialty is in the same category as

adult NP. Few child psychiatric training programs explicitly include training in developmental NP. However, it is arguable that within the clinical field of child psychiatry, neurodevelopmental disorders are now the predominant reason for specialist referral.

The competencies outlined below describe the minimum range of skills in developmental NP that should be acquired by consultant child psychiatrists in training. We recommend that all trainees have at least 1 year of experience in this specialty, but that those who intend to become specialists in this area may choose to spend additional time gaining particular skills.

Skills in Developmental Neuropsychiatry

Specific Competencies

1. Undertake clinical assessment of patients with apparent neurodevelopmental disorders

   (a) Take a developmental neuropsychiatric history

Suggested learning methods	Suggested assessment methods
Observation/modeling	Validated self-assessment
Working as a team member	In-training assessment
Supervised clinical practice	Clinical supervision
Focused training courses	Direct observation of clinical work
	Peer review
	Clinical logbook
	Clinical audit
	Case presentations
	Review of case notes and other records
	Chart-stimulated recall

   (b) Perform a neurobehavioral assessment;
   (c) Arrange for, and interpret, a neurocognitive examination;
   (d) Perform a neurological examination, and interpret signs;
   (e) Construct a neurodevelopmental differential diagnosis.

2. Undertake investigation of patients with apparent developmental neuropsychiatric disorders:

   (a) Be familiar with relevant hematological and metabolic investigations;
   (b) Be familiar with EEG recording and interpretation;
   (c) Be familiar with indications for and interpretation of structural neuroimaging.

3. Prescribe treatment to patients on basis of clinical assessment:

   (a) Be familiar with the evidence for the effectiveness of specific pharmacological treatments of common neurodevelopmental disorders;
   (b) Be familiar with the constraints on prescribing psychotropic medications to children, the indications, “approval status,” and potential side effects;

(c) Be familiar with the need to undertake appropriate investigations before prescription, and the need for monitoring of treatments prescribed, to minimize side effects and complications;
(d) Be familiar with indications for nonmedical treatments including behavioral management techniques, educational interventions, skills, and training (e.g., motor, social, speech and language).

4. Work collaboratively with neuroscience colleagues:

(a) Obtain relevant information about patients' behavior from neuroscience staff;
(b) Advise neuroscience ward staff about interpretation and management of abnormal mental states and behaviors;
(c) Work collaboratively with neuroscience clinicians to establish correct diagnoses and treatment plans;
(d) Develop academic links within the neuroscience community.

Learning and Assessment Methods

1. Obtain relevant information about patients' behavior from neuroscience staff

Suggested learning methods	Suggested assessment methods
Observation/modeling	Clinical supervision
Supervised clinical practice	Direct observation

2. Advise staff about the interpretation and management of abnormal mental states and behaviors

Suggested learning methods	Suggested assessment methods
Observation/modeling	Clinical supervision
Supervised clinical practice	Direct observation

3. Work collaboratively with neuroscience colleagues to establish correct diagnosis and treatment plans

Suggested learning methods	Suggested assessment methods
Observation/modeling	Clinical supervision
Supervised clinical practice	Direct observation

4. Develop academic links with the neuroscience community

Suggested learning methods	Suggested assessment methods
Observation/modeling	Clinical supervision
Supervised clinical practice	Case presentation

5. Assess critically ill patients in a neuroscience setting

   (a) Assess the mental states of patients who are in the postoperative period or in a "neuro-critical care" setting

Suggested learning methods	Suggested assessment methods
Observation/modeling	Clinical supervision
Working as a team member	Direct observation
Supervised clinical practice	Clinical logbook
	Case presentation

   (b) Produce a differential diagnosis and formulation for patients with mental disorder in this setting

Suggested learning methods	Suggested assessment methods
Supervised clinical practice	Clinical supervision
Appropriate reading	Case presentation
	Clinical logbook

   (c) Make assessments of capacity in critically ill patients

Suggested learning methods	Suggested assessment methods
Supervised clinical practice	Clinical supervision
Observation/modeling	Case presentation

   (d) Advise on the management of disturbed behavior in critically ill patients

Suggested learning methods	Suggested assessment methods
Supervised clinical practice	Direct observation
Observation/modeling	Clinical supervision
Working as a team member	

Module 2.10: Sleep Disorders

Core competencies in assessment and management of patients with sleep disorders

Specific Competencies

Have knowledge of etiology, prevalence, diagnosis, categorization, and treatment of sleep disorders:

1. Primary insomnia
2. Secondary insomnia
3. Hypersomnias
4. Parasomnias
5. Neuropsychiatric consequences of sleep apnoea syndrome

Diagnostic Techniques

1. Take an appropriate history relevant to sleep problems.
2. Perform appropriate examination of mental, neurological, and physical status.
3. Be able to relate history and clinical findings to relevant medical, neurological, psychological, and social issues associated with etiology and treatment.
4. Have knowledge of use, reliability, and validity of generally accepted techniques and investigations for diagnostic assessment and the interpretation of results.
5. Have a basic understanding of the EEG, polysomnogram, oximetry, and actigraphy.
6. Understand the major theories of sleep mechanisms.
7. Have competence to form a differential diagnosis and to diagnose medical, neurological, and psychiatric sleep disorders and those sleep problems associated with medical, psychiatric, and neurological conditions.
8. Understand the biological, psychological, social, and economic factors that influence evaluation and management of sleep disorders.

Management

1. Formulate appropriate management plans.
2. Be familiar with therapies used [behavior therapy, psychotherapy, drug treatment, and physical treatments such as continuous positive airway pressure (CPAP)].
3. Have competence in being aware of when refer to a sleep disorders clinic.
4. Have basic knowledge relating to ethical and legal aspects of sleep medicine.

Suggested Learning Methods

1. Observation/modeling
2. Supervised clinical practice
3. Reading relevant texts
4. Peer group discussion
5. Multidisciplinary case conferences, journal clubs
6. Specific teaching from relevant health professionals (e.g., EEG, respiratory, neurology)
7. Primary responsibility for diagnosis and treatment of a reasonable number and adequate variety of patients with acute and chronic sleep disorders (e.g., at least five hypersomnia, five parasomnia, ten insomnia, of a range of ages)
8. Attendance at a respiratory sleep disorder clinic for the diagnosis of sleep apnea
9. Attendance at multidisciplinary national conferences

Suggested Assessment Methods

1. Validated self-assessment
2. Clinical supervision and feedback
3. Case presentation
4. Clinical logbook

Module 2.11: Rehabilitation Neuropsychiatry

Clinical Settings

1. Rehabilitation units providing neurophysical rehabilitation; District and/or Regional Rehabilitation Units.
2. Neuropsychiatric/Cognitive-Behavioral Rehabilitation Units for people with brain injury.
3. Neuropsychiatry/liaison psychiatry services to Clinical Neurosciences Centres, General District Hospitals, and nursing homes and other residential units.
4. Neuropsychiatry/liaison psychiatry outpatient clinics.

Knowledge

1. Of the pathophysiology of common causes of acquired brain injury.
2. Of brain–behavior relationships, in particular, following acquired focal lesions to the brain and diffuse brain injury.
3. Of the neuropsychiatric sequelae of acquired brain injury, including etiology and management of symptoms.
4. Of the principles of cognitive behavior therapy and behavior therapy for behavioral problems and other symptoms following brain injury.
5. Of the ICIDH (International Classification of Impairments, Disabilities, and Handicaps) model of impairment, disability, and handicap (impairment, activities, and participation).
6. Of outcome measures suitable for patients with acquired brain injury.
7. Of rehabilitation service provision, organization, and funding, including voluntary sector provision.

Skills

1. To undertake an assessment to understand the role of brain injury in neuropsychiatric symptom formation.
2. To assess the role of psychological processes and mental illness in symptom formation after acquired brain injury.
3. To use pharmacotherapy to manage neuropsychiatric symptoms after acquired brain injury.

4. To work with the MDT, including psychologists and other therapists, to produce an overall treatment strategy for symptoms.
5. To interpret neuropsychometric test results sufficiently to produce a neuropsychiatric formulation.
6. To set up, in collaboration with the MDT, a program of therapy based on goal planning.
7. To work alongside psychologists, behavioral nurse therapists, and others to implement cognitive-behavioral treatments and behavioral treatments.
8. To set up effective aftercare following inpatient rehabilitation, based on good communication across health services, social services, statutory services, and voluntary sector.
9. To undertake a risk assessment for all commonly occurring risks following acquired brain injury, and ensure that there are procedures in place to offer a reasonable risk management strategy.
10. To understand the symptoms and signs of the post-concussion syndrome and provide advice to patients following a brain injury to minimize the risk of problems on returning to work, and/or return to living in the community with family and/or carers.
11. To appreciate the psychodynamic processes that follow brain injury and other forms of disability and provide appropriate psychotherapeutic support.
12. To manage the common sequelae of brain injury, including disturbances of mood, psychotic disorders, personality change (especially associated with antisocial behavior), and reduced initiation and motivation.

Learning and Assessment Methods

1. Attending neuropsychiatric clinics, liaison assessments in rehabilitation units, general hospitals, etc.
2. Attachment to rehabilitation unit attending management rounds/ward rounds.
3. Attending postgraduate teaching programs/conferences on NP/brain injury.
4. Specific attachments to rehabilitation neuropsychologists and therapists.
5. Assessment methods: self-assessment, clinical supervision, and case presentation and clinical logbook.

Module 2.12: Forensic Neuropsychiatry

Key Competencies

1. Knowledge of organic basis of violence and of antisocial and criminal behavior.
2. Competence in the clinical assessment of individuals with violent or criminal behavior, from both biological and psychosocial perspectives.
3. Ability to intervene in the management of such behavior from a neuropsychiatric perspective, including drug management and psychosocial interventions.

4. Awareness of the ethical and medicolegal aspects of such disorders.
5. Ability to write an expert report for the court or other forensic settings.

Learning and Assessment Methods

1. Attending neuropsychiatric clinics in a forensic setting
2. Assessing patients referred for forensic reports
3. Preparation of reports under supervision
4. Attending court proceedings when medicolegal evidence presented

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Recommended Reading

Neuropsychiatry Textbooks

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