

Introduction to Traumatic Brain Injury

Nigel S. King and Andy Tyerman

Introduction

Traumatic brain injury (TBI) is a major area of health and social care need. In the UK it is estimated that around a million people each year attend accident and emergency departments with an injury to the head. The annual incidence of hospital admission after head injury is estimated to be 229 per 100,000 in England: 356 per 100,000 for children (aged 0–15); 178 per 100,000 for adults (aged 16–75); and 384 per 100,000 for older adults (aged 75 and over) (Tennett, 2005). Whilst 75–85 per cent of such injuries are mild in nature (Miller & Jones, 1985; Kraus & Nourjah, 1988), the incidence of moderate or severe TBI is estimated to be 25 per 100,000 (RCP/BSRM, 2003). Outcome ranges from complete recovery to persistent coma or death. Prevalence of disability from TBI is estimated to affect 100–150 per 100,000 (British Society of Rehabilitation Medicine, 1998), affecting one family in 300 (Lancet, 1983).

TBI often results in complex impairments that interact across a number of domains – physical, sensory, cognitive, behavioural and emotional. However, in the long term it is the psychological rather than the physical difficulties that cause most of the long-term restrictions after TBI. These typically involve difficulties in: (1) maintaining positive relationships with family and friends; (2) maintaining occupational activities; and (3) making long-term adjustment to impairments and disabilities and their wide-ranging personal, family and social effects. The critical importance of the psychological effects of TBI and the need for psychological services to assist their management has long been recognised (e.g. Royal College of Physicians, 1986; Medical Disability Society, 1988; British Psychological Society, 1989; British Society of Rehabilitation Medicine, 1998; RCP/BSRM, 2003). It is imperative that professionals from all rehabilitation disciplines are familiar with them.

The publication of the *National Service Framework for Long-term Conditions* (Department of Health, 2005) provides the strategic framework for developing

services for adults with TBI and other neurological conditions over the next decade. This links with recent clinical guidelines – early assessment and management (NICE, 2003), rehabilitation (RCP/BSRM, 2003) and vocational assessment/rehabilitation (RCP/JCP/BSRM, 2004). As such, it is timely to address the ways in which psychological approaches to rehabilitation after TBI can be implemented. This book attempts to achieve this across five broad areas: (1) service provision; (2) cognitive rehabilitation; (3) behavioural and emotional interventions; (4) vocational rehabilitation; and (5) family interventions. By focusing on practical applications it is hoped that the book will be useful not just for clinical psychologists but to all professionals involved in rehabilitation for people with TBI and their families.

In this chapter we shall outline briefly the nature of TBI, its psychological effects and current service provision for adults in the UK (with a focus on psychological approaches to rehabilitation), and then introduce the other 18 chapters in this book.

The Nature of Traumatic Brain Injury

Traumatic brain injury has been defined as ‘brain injury caused by trauma to the head including the effects of direct complications of trauma notably hypoxaemia, hypotension, intracranial haemorrhage and raised intracranial pressure’ (British Society of Rehabilitation Medicine, 1998). Head injury has been defined previously as ‘trauma that carries some risk of damage to the brain’ (Field, 1976).

There are two main types of head injury – open and closed: open head injury occurs when the skull and protective linings of the brain are damaged and the brain is exposed; closed head injury occurs when the skull and protective linings of the brain are not penetrated. In the UK, TBI is predominantly of a closed, blunt-impact nature arising from sudden changes in velocity (e.g. acceleration/deceleration injuries from road traffic accidents), assaults or falls. Open, penetrating injuries (e.g. arising from gunshot wounds or bomb blasts) are uncommon in the UK but common in war zones.

Severe TBI often involves some skull fracture. This may be simple, compound (open), comminuted (involving a shattering of the bone into a number of pieces) or depressed (when a skull fragment has been pushed through the linings of the brain into the brain substance). The latter injuries are likely to occur when the head makes contact with a sharp rather than flat surface (e.g. kerb) or when the head is hit with an object (e.g. hammer), which concentrates the force on a small area of the skull. The damage to the underlying brain may be primary (i.e. occurring at the time of injury) or secondary (i.e. due to subsequent complications).

Primary brain damage

There are two main types of primary brain damage: haemorrhagic contusions (areas of bruising) and diffuse axonal injury (widespread damage to axons). Contusions are more common after falls and direct blows; axonal injury after acceleration/deceleration injuries such as road traffic accidents.

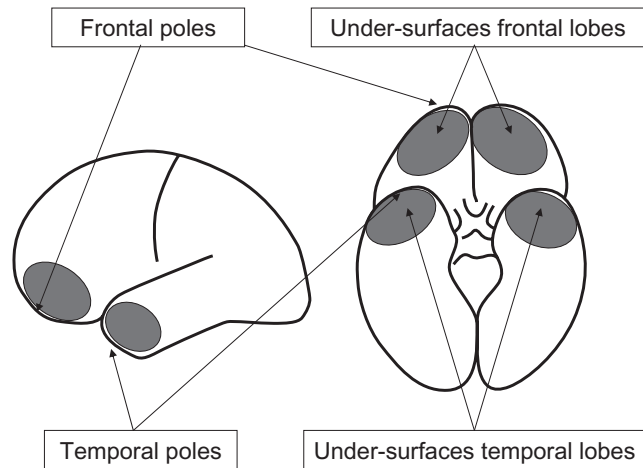


Figure 1.1 Common sites of contusion

Haemorrhagic contusions on the crests of the gyri of the cortex can occur under the point of impact (especially after depressed skull fractures) or directly opposite it ('contrecoup' injury), but are seen most often on the under-surfaces of the frontal lobes and around the pole of the temporal lobes, where the brain impacts on the sharpest and most confined parts of skull (see Figure 1.1). Haemorrhage occurs when the blood vessels supplying oxygen are ruptured.

Diffuse axonal injury refers to widespread tearing or shearing of axons in the white matter due to violent movement of the largely unrestrained brain, causing stretching and compressing of axons (i.e. the part of the neuron which conveys impulses from the cell body to the next neuron in the chain). Diffuse axonal injury is considered to be the more important mechanism of primary brain damage.

Secondary brain damage

There are two main types of secondary brain damage: extracranial (i.e. outside the skull) and intracranial (i.e. inside the skull).

Extracranial causes of secondary brain damage include respiratory failure, hypoxia (insufficient oxygen) or hypotension (loss of blood flow). Even a short period of loss of blood flow to part of the brain will set up a chain reaction leading to death of neural tissue (ischaemia). As such, protecting the airway, maintaining breathing and controlling bleeding are the first priorities in accident and emergency departments.

Intracranial causes of secondary damage include haemorrhage (bleeding); haematomas (collections of blood following haemorrhage); cerebral oedema (brain swelling); infection (after open wounds); and hydrocephalus (build up of cerebrospinal fluid). Haemorrhage in particular can quickly transform a seemingly mild TBI into a life-threatening event. Haemorrhage and resultant haematoma can occur

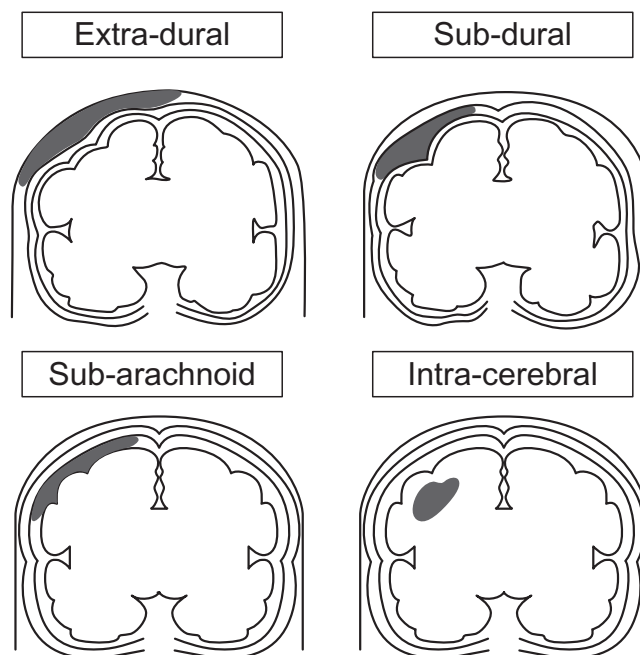


Figure 1.2 Types of haemorrhage

both above and below the two outer coverings of the brain (the dura mater and arachnoid mater), as well as within the brain itself (see Figure 1.2):

- an extra-dural haematoma is a collection of blood inside the skull but outside the dura mater (the outer covering of the brain);
- a sub-dural haematoma lies underneath the dura mater but outside the arachnoid mater (the middle covering of the brain);
- a sub-arachnoid haemorrhage is bleeding under the arachnoid mater into the sub-arachnoid space where cerebrospinal fluid flows; and
- an intra-cerebral haemorrhage is bleeding within the brain itself.

Raised intracranial pressure, resulting from swelling of the brain within the confines of the skull, may lead to a reduction in cerebral blood flow or brain compression which, if unchecked, may lead to death. Hydrocephalus (resulting from disruption to the flow or absorption of cerebrospinal fluid) can arise acutely in the early days or weeks of recovery or develop gradually in the months or years post-injury. A further neurological complication is that of post-traumatic epilepsy, which is experienced by an estimated 5 per cent of people admitted to hospital after TBI. Identified risk factors for post-traumatic epilepsy include early seizure, cerebral haematoma and depressed skull fracture. For a summary of the nature of TBI see, for example, Ponsford (1995), McGlashan (2002) or Povlishock and Katz (2005). For an overview of early management of TBI, see Smith (1996).

Severity of traumatic brain injury

The severity of TBI is usually measured by: (i) depth of unconsciousness – usually measured immediately after resuscitation on the Glasgow Coma Scale (GCS); (ii) length of unconsciousness (i.e. GCS <9); (iii) presence of neurological signs (e.g. paresis or damage revealed by neuro-imaging techniques); and/or (iv) length of post traumatic amnesia (PTA) (i.e. the period of time between injury and regaining continuous day-to-day memory for events). The classification of GCS and PTA is detailed in Table 1.1.

After a mild or moderate TBI about 50 per cent will experience one or more of a range of ‘post concussional symptoms’. These may include headaches, fatigue, dizziness, irritability, nausea, sensitivity to light and/or noise, blurred/double vision, poor memory, poor concentration, slowed thinking, sleep disturbance, tinnitus, anxiety, depression or frustration. These symptoms may be caused by organic and/or psychological factors. Whilst, for most, full recovery occurs within a few days to three months, 5–10 per cent will have persisting symptoms after a year, which may lead to vocational and other long-term consequences. Post-traumatic stress symptoms may also occur, for example phobic avoidance of situations associated with the injury. A vicious cycle can easily develop where anxiety, depression, irritability or frustration exacerbates the symptoms, leading to increased distress and reduced coping, which in turn causes further exacerbation of symptoms (King & Tyerman, 2003).

The disabilities associated with severe TBI are extremely varied, encompassing both physical (i.e. motor and sensory deficits) and psychological changes (e.g. cognitive impairment, loss of behavioural control and altered emotional response). For some these will be quite subtle and only evident: (i) under stress; (ii) in busy work environments; and/or (iii) when skills or emotional/behavioural control is under pressure (e.g. on formal testing or in demanding situations). Improvement typically takes place gradually over a period of months and years. The most rapid recovery is usually seen within the first 6–12 months with more patchy improvement thereafter. Some degree of permanent impairment is likely after more severe injuries. The majority of recovery occurs within the first two years such that significant difficulties at two years rarely resolve naturally thereafter, although limited improvement can sometimes be experienced up to and beyond five years post-injury. However, positive adjustments leading to improved function can sometimes be facilitated many years post-injury, as people with TBI are helped to develop greater understanding and management of long-term difficulties. This is especially

Table 1.1 Severity of head injury

Severity	Glasgow Coma Scale	Post-traumatic amnesia
Mild	13–15	<1 hour
Moderate	9–12	1–24 hours
Severe	3–8	1–7 days
Very severe	N/A	1–4 weeks
Extremely severe	N/A	>4 weeks

so when people have received only limited early rehabilitation, either in scope or duration.

Psychological Effects of TBI

The effects of TBI have similarities with other neurological conditions but also distinct features in terms of onset, symptom profile and course (Tyerman & King, 2004). Physical disability ranges from general paralysis (affecting all four limbs, speech, swallowing, etc.), through more specific changes (e.g. paralysis down one side of the body) to a subtle reduction in strength, coordination and balance. Sensory disturbances (such as double vision, visual field deficits and reduced sensation, taste and smell) are quite common. Whilst less common, hearing deficits also occur. Many people with TBI are troubled by headaches and fatigue, and some by other specific changes (e.g. sleep disturbance, altered sexual response, etc.). (For a summary of physical effects of TBI, see Mathers *et al.* 2002.) However, it is the psychological changes that predominate, reflecting a combination of primary neuropsychological and secondary psychological effects. These include a complex interaction of cognitive, behavioural and emotional changes.

Cognitive impairment

After TBI the most common cognitive difficulties are in the areas of attention and concentration, new learning/memory, speed of information processing and executive functioning (i.e. reasoning, planning, problem solving, self-awareness and self-monitoring). Subtle difficulties with language skills (e.g. comprehension, verbal fluency, word finding) are also quite common. More marked impairment of language skills (e.g. receptive or expressive dysphasia, acquired dyslexia, etc.) and other specific impairment (e.g. visuo-perceptual, spatial and constructional difficulties) are less common but can occur as a result of focal damage or after severe generalised damage. The realisation of confusing changes in cognitive skills can be a disturbing experience. Difficulties with communication, memory, visuo-perceptual/spatial-motor function and executive/attentional skills are addressed in detail in chapters 6–9.

The characteristic reduction in awareness after TBI, which often reflects a complex and dynamic interaction of neurological and psychological factors, poses a particular challenge and necessitates ‘unique and specialized neuropsychological interventions’ (Trexler *et al.*, 2000). Loss of awareness may prevent the person from recognising impairments, from accepting the observations of family and friends and the results of formal assessments, thereby reducing engagement in rehabilitation and the use of coping strategies. The application of coping strategies will also be affected by the interaction of cognitive impairment, behavioural/emotional volatility and difficulties in psychological adjustment. Even with awareness, people with executive difficulties commonly struggle to adapt strategies to new situations, make appropriate decisions and problem solve about difficult situations. As such, disruption to executive function is of particular importance, not only in its direct effects on independence and control, but also in the limitations imposed on insight, understanding,

use of compensatory strategies and long-term adjustment (Tyerman & King, 2004).

Behavioural/emotional changes

A wide range of behavioural and emotional changes may be experienced after TBI, reflecting an interaction of primary neurological damage and secondary psychological effects. Common primary changes include irritability and intolerance, aggressive outbursts, disinhibition, impulsivity, emotional lability and mood swings. In contrast, others may experience passivity, lack of initiation and/or a flattening of emotional response. Equally, a wide range of emotional reactions may be experienced, such as frustration and anger, fear and anxiety, depression, loss of confidence/self-esteem. Some people, most commonly those with mild or moderate TBI, also experience post-traumatic stress disorder (PTSD). There can also be subtle and confusing changes in the experience and expression of emotion. Behavioural difficulties, common emotional difficulties, PTSD and difficulties with psychological adjustment are reviewed in chapters 10–13.

Some people experience early on the emotional impact of the consequences of TBI – the loss of skills, roles and control over one's life, the slow pace of progress and the uncertain extent of future recovery. However, early in rehabilitation, people with TBI may appear unconcerned about their predicament owing to limited insight into the extent of cognitive and behavioural/emotional difficulties, unrealistic expectations of a full recovery and/or psychological denial. As such, anxiety, depression and loss of confidence may surface only later when the person has developed greater insight and/or attempted and struggled to resume former family, work and social roles.

Social and family effects

Whilst recovery and adjustment to TBI may continue over several years, the complex array of physical, cognitive, behavioural and emotional difficulties are such that people with TBI often face major restrictions in independence, occupation, leisure and social life. This is often mirrored by substantial impact upon the family.

Some people with TBI lose the capacity for independent living, contribute less to family life in terms of practical, social, parental and marital roles and experience a much reduced leisure and social life. Return to education, training or work represents a major challenge. Reduced cognitive and motor speed, limited concentration, unreliable memory, headaches and/or fatigue renders many uncompetitive in their previous work or training, whilst specific effects (e.g. visual field deficits, communication difficulties, executive difficulties, loss of behavioural or emotional control) may preclude a return to specific occupations. Those returning to work may have difficulty in sustaining work over time and/or have difficulty in securing and coping with alternative employment. Those unable to return to paid employment may struggle to find alternative occupation appropriate to their interests and needs. Return to previous occupation is discussed in chapter 14 and return to alternative occupation in chapters 15 and 16.

Primary carers of people with TBI often experience high levels of stress and distress, often amidst marked changes in family relationships, roles and functioning. As

family life changes in response to the difficulties and needs of the person with TBI, the occupational, leisure and social lives of other family members may falter. Family relationships often become strained as a result of the changes in the person with TBI – the need for supervision, reduced communication and social skills, behavioural difficulties, emotional vulnerability and resultant disruption to household routines and family activities. Changes in arousal may disrupt sexual relations and partners may find the behaviour of the person with TBI incompatible with that of a sexual partner. Partners often struggle to cope with the competing needs of the person with TBI, children, home and work, with some feeling trapped in a relationship they no longer find rewarding. Some couples adjust positively, others remain close but with less fun and intimacy. However, for some the extent of change is such that the person and/or partner are unable to adjust and the relationship breaks down. Changes in the person and impact on the family may also have a major impact on siblings and children. The impact of TBI on the family and related services are discussed in chapters 17 and 18 and for child relatives specifically in chapter 19.

Traumatic Brain Injury Services

The most severely injured are likely to be transferred to regional neuroscience services for neurosurgical intervention and care before returning to their local general hospital. However, the majority of people with TBI are treated in the general hospital. Whilst some general hospitals have arrangements for follow-up of clients with TBI, many have no such provision. Some of the more severely injured will receive a period of specialist post-acute neurological in-patient rehabilitation. Once discharged back into the community, specialist rehabilitation services in the UK are very patchy. Some people will be seen for rehabilitation in hospital out-patient departments or through hospital outreach teams, some will be referred to a specialist brain injury team or case manager, others to specialist neurorehabilitation or local generic rehabilitation services.

Rehabilitation is a process of active change through which a person who has become disabled acquires the knowledge and skills needed for optimal physical, psychological and social function. Rehabilitation services use all means to minimise the impact of disabling conditions and to assist disabled people to achieve their desired level of autonomy and participation in society (British Society of Rehabilitation Medicine, 1998). Rehabilitation after TBI requires input from an interdisciplinary team (including medicine, neuropsychology, nursing, occupational therapy, physiotherapy, speech and language therapy), in liaison with acute services, the primary care team, Social Services and a range of community services. Core brain injury rehabilitation typically focuses initially on promoting optimal independence through provision of assistive devices and interventions to address the following areas of difficulty:

- symptom management;
- mobility and motor skills;
- sensory function;
- personal and domestic independence;
- communication and social skills;

- cognitive function;
- behavioural control; and
- emotional well-being.

Some TBI services also provide ongoing rehabilitation to promote optimal community reintegration through interventions and support: to assist a return to work, education, driving, leisure and social life; to help with family and sexual relationships; and to facilitate psychological adjustment. Provision for specialist education, counselling and support for relatives is sometimes provided. However, community rehabilitation is underdeveloped in the UK, with provision focusing on physical disability and few services specialising in interventions addressing cognitive and behavioural difficulties (McMillan & Ledder, 2001). As such, many people with TBI currently do not receive the required community rehabilitation and long-term support. However, the *National Service Framework for Long-term Conditions* (Department of Health, 2005) gives a clear outline of how TBI services in the NHS need to be developed over the next decade. This means that there is now an excellent opportunity for TBI services to be more consistent and coordinated across the UK.

Neuropsychological assessment and interventions are vital components of brain injury rehabilitation. Drawing on a combination of specialist neuropsychological knowledge and core training, clinical neuropsychology provides the following key functions (British Psychological Society, 1989):

- a. to carry out detailed assessments of cognition, emotion, behaviour and social competence;
- b. to devise and implement training programmes to address these difficulties;
- c. to liaise with educational agencies and employers; and
- d. to provide and advise about long-term care and facilitate long-term personal, family and social adjustment.

An updated report (British Psychological Society, 2005), outlines a proposed acquired brain injury service network (see Figure 1.3). Key recommendations include the need for: a brain injury service network/care pathways; early assessment and treatment by specialist staff; specialist facilities for people with high physical dependence, severe challenging behaviour and for those who are minimally responsive; post-acute community rehabilitation service; and integration of brain injury and vocational.

In the UK clinical neuropsychologists work with people with TBI in a range of settings across the care pathway – in regional neuroscience centres, in-patient neurological rehabilitation centres, community neurorehabilitation or specialist community brain injury teams and in specialist services focusing specifically on cognitive, behavioural and/or vocational needs after acquired brain injury (Carpenter & Tyerman, 2006). (for an outline of the role of the clinical neuropsychologist, see British Psychological Society, 2004.) in developing rehabilitation interventions, clinical neuropsychologists have drawn on a wide range of theoretical approaches (e.g. neuropsychological, cognitive-behavioural, behaviour modification and humanistic psychotherapy). for a review of the principles and theoretical approaches to neuropsychological rehabilitation, see Prigatano (1999) and Wilson (2002, 2004).

Understanding and managing the psychological effects of TBI is important not just for those directly involved in psychological interventions but for other members

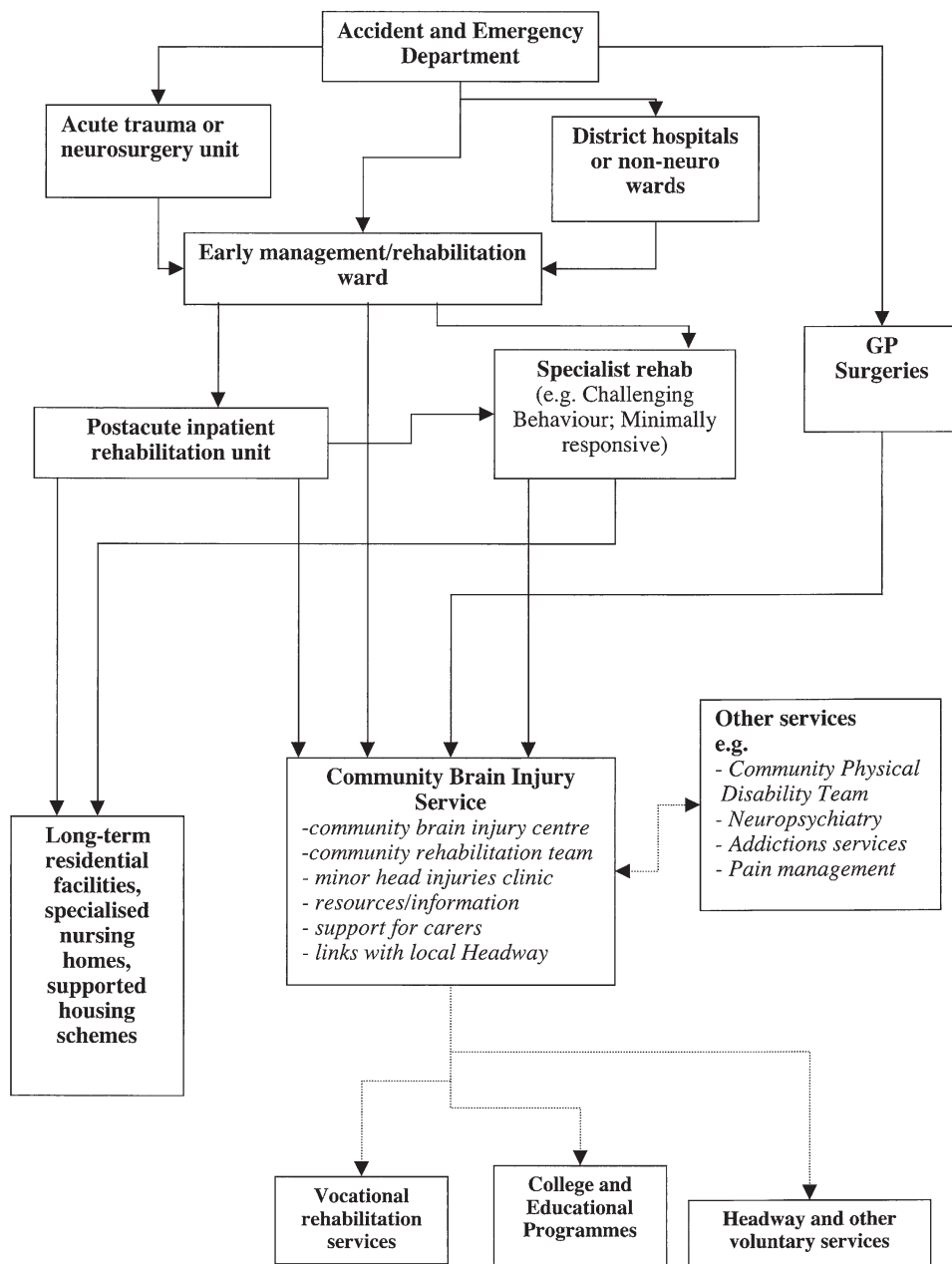


Figure 1.3 The ABI Service Network (reproduced with permission from the British Psychological Society, 2005)

of the rehabilitation team and other agencies. This is reflected in an expanding literature addressing the integration of psychological approaches with other therapies within the rehabilitation team. An excellent example is provided by Campbell (2000) who describes the impact of cognitive and behavioural difficulties on the provision of physical therapy, with illustrative examples and management suggestions. The nature and management of cognitive, behavioural and emotional difficulties are key elements of staff training in brain injury rehabilitation (see Jackson & Manchester, 2001).

Psychological Approaches to Rehabilitation after TBI

In summary, TBI commonly results in a complex and highly disabling array of impairments that have a dramatic impact on the person and those close to them. Many people with TBI and their families therefore require treatment and support across a range of contexts – acute hospital, in-patient rehabilitation, residential, out-patient and community settings. The aims of rehabilitation services are to promote optimal recovery, independence and participation and to facilitate long-term personal, family and social adjustment. Very significant psychological challenges are faced by the person with TBI and those close to them. This book describes psychological approaches to rehabilitation to assist people with TBI and their relatives in meeting these challenges.

This book covers five broad areas. Part I, 'Service Provision', includes chapters illustrating the role of psychological approaches in acute, in-patient rehabilitation, community rehabilitation and residential settings. Part II, 'Cognitive Rehabilitation', includes chapters on communication disorders, memory, visuo-perceptual and spatial-motor disorders, and executive/attentional difficulties. Part III, 'Behavioural and Emotional Interventions', includes chapters on behavioural difficulties; fear, anxiety and depression; TBI and post-traumatic stress disorder; and facilitating psychological adjustment. Part IV, 'Vocational Rehabilitation', includes chapters on return to previous employment, vocational rehabilitation and supported employment/job coaching. Part V, 'Family Interventions', includes chapters on TBI and the family; working with families – a community service example; and familial brain injury – impact on and interventions with children. The chapters have been written by recognised experts in their respective fields in the UK and reviewed by both a clinical neuropsychologist and a member of a relevant professional group.

The practical emphasis of the book means that it concentrates on providing ideas and references for applying psychological approaches in these domains and on signposting clinicians to pragmatic resources to aid their work. The extensive use of case study material illustrates how these approaches have been used in day-to-day practice. As such, the outcome literature is attended to only when it enhances the practical emphasis of the book. Fuller accounts of the effectiveness of cognitive and psychological rehabilitation methods, both generally and for traumatic brain injury in particular, have been well described elsewhere (e.g. Trexler, 2000; Williams & Evans, 2003; Halligan & Wade, 2005; Carney & Coudray, 2005).

It is hoped that the book will stimulate the development and provision of interventions by neuropsychologists and others which address the psychological effects of

TBI and thereby improve the quality of life of people with TBI and their relatives. In developing and providing such services it is vital that we contribute, whenever possible, to our collective knowledge about the effectiveness of such interventions through systematic feedback, case studies, service evaluation and outcomes studies.

Recommended Reading

Christensen, A-L. & Uzzell, B.P. (2000). *International handbook of neuropsychological rehabilitation*. New York: Kluwer Academic/Plenum Publishers.

Edited book including chapters on acute management/recovery, neuropsychological assessment, neuropsychological rehabilitation – four general chapters and nine chapters outlining specific programmes in the USA, South America and Europe.

Goldstein, L.H. & McNeil, J.E. (2004). *Clinical neuropsychology: A practical guide to assessment and management for clinicians*. Chichester: Wiley.

Edited book outlining current practice in clinical neuropsychology in the UK. Chapters on neuroscience; neuropsychological assessment; areas of cognitive function; working with children, adults and the law; and rehabilitation (four chapters).

Johnstone, B. & Stonington, H.H. (2001). *Rehabilitation of neuropsychological disorders. A practical guide for rehabilitation professionals*. Philadelphia: Psychology Press.

Edited book by US authors on assessment/rehabilitation including practical management strategies for areas of cognitive impairment – includes chapters on attention, memory, executive, visuospatial and language disorders.

Ponsford, J., Sloan, S. & Snow, P. (1995). *Traumatic brain injury: Rehabilitation for everyday adaptive living*. Hove: Lawrence Erlbaum Associates.

Practically account with case examples – chapters on TBI mechanisms and sequelae, impaired consciousness, cognitive difficulties, communication/interpersonal skills, behavioural problems, return to the community, psychological adjustment, working with families and TBI in children.

Wilson, B.A. (Ed.) (2003). *Neuropsychological rehabilitation: theory and practice*. Hove: Psychology Press.

Edited book (UK/international authors). Includes chapters on attention, executive deficits, memory, language, emotional disorders, social rehabilitation, behaviour disorders, dementia, TBI in children, reduced awareness states, and service delivery.

Wood, R.LI. & McMillan, T.M. (2001). *Neurobehavioural disability and social handicap following traumatic brain injury*. Hove: Psychology Press.

Edited book (predominantly British authors) outlining the nature, assessment and management of neurobehavioural disability and social handicap after TBI. Includes specific chapters on challenging behaviour and dysexecutive syndrome.

Useful Resources

www.dh.gov.uk/longtermnsf

The section of the Department of Health website on the National Service Framework (NSF) for Long-term (Neurological) Conditions includes access to the NSF (and its 11 quality

requirements), a list of regional and local PCT Leads for the NSF and a good practice guide including examples of good practice for each quality requirement.

www.hdipub.com

The HDI publishers' website provides access to a selection of TBI publications including the HDI Professional series (25 booklets on specific aspects of TBI and their management) and the HDI Coping Series (5 booklets for TBI clients/families).

www.headway.org.uk

Headway, the brain injury association (UK), website provides information on the nature of TBI, local Headway groups and branches, the range of Headway publications and a list of personal injury solicitors in the UK.

www.ukabif.org.uk

UK Acquired Brain Injury Forum website provides a directory of rehabilitation services in the UK plus information on membership, the ABI All Party Parliamentary Group, forthcoming conferences/events and links to other organisations.

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