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flexibility of response; greater input by experienced clinicians; and potentially improved continuity of care.

The triage system, as described, was not universally popular among senior medical staff. First, higher trainees took all calls for the 24-hour period which impacted adversely on their core training placements, and dedicated time for research and special interests. Second, the emergency out-patient appointments required two senior doctors to allocate a minimum of one hour of their time each per day. Any additional referral was seen by senior trainees if the emergency slots were already allocated.

This study does not investigate whether another clinician operating the triage system would be just as effective. Recent literature (Gallagher *et al*, 1998) suggests that experienced nursing staff can operate a telephone triage system to the benefit of patient care. The next phase of evaluation will incorporate how this role is being carried out in recently established local community mental health teams by duty-workers.

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In-patient neuropsychiatric brain injury rehabilitation

AIMS AND METHOD

To discuss the service offered by an in-patient neuropsychiatric brain injury rehabilitation unit. To examine the demographic details of patients admitted to the unit. To find the commonest reasons for referral.

RESULTS

The notes of 78 patients admitted to the unit, over a two-year period,

were examined. Seventy-three per cent were male and the mean age was 45 years. Seventy-five per cent of admissions had a severe brain injury. Two-thirds of the patients were admitted within six months of their injury. The most common reasons for referral were memory difficulties ($n=61$), verbal aggression ($n=31$) and temper control ($n=25$).

CLINICAL IMPLICATIONS

In-patient neuropsychiatric brain injury rehabilitation units offer management of patients referred with a wide range of cognitive, behavioural, functional and physical problems.

Brain injuries are common, with an annual incidence in the UK of 300 per 100 000 (Barnes *et al*, 1998). Although the majority of brain injuries are minor, they are expensive to manage, create considerable stress and are an emotional drain to relatives and others (Leathem *et al*, 1996). Neuropsychiatric symptoms following a brain injury are responsible for at least as much disability as physical symptoms (Lishman, 1998).

Three phases of recovery have been described (Mazaux & Richer, 1998). Different rehabilitation units tend to focus on problems occurring at each stage. In the

first stage, the main focus is to prevent physical complications, and to facilitate the return of clear consciousness. Acute rehabilitation usually takes place on medical or surgical wards, although in some regions, rapid transfer to an acute rehabilitation unit is available. At the second stage, sub-acute rehabilitation addresses mobility and cognitive problems and other activities of daily living. The majority of in-patient rehabilitation units focus on this stage of recovery and on physical abilities such as walking and continence. For the final stage, the goals are to achieve physical, domestic and social independence,



and allow participation in activities in the community. Over the last decade, there has been increasing interest in this aspect of rehabilitation.

The Royal College of Psychiatrists have recommended that each region in the UK has a neurobehavioural unit (Barrett *et al*, 1991). However, only a handful of in-patient units, particularly within the NHS, focus on neuropsychiatric symptoms.

Neuropsychiatric Brain Injury Rehabilitation Unit, Edgware

The Brain Injury Rehabilitation Unit, Edgware, London (BIRU) offers intensive rehabilitation for cognitive, behavioural and other neuropsychiatric problems following brain injury. A recent study at BIRU found that in-patient admission was associated with improved functioning (Bajo *et al*, 1999). The unit has 16 beds (with discretionary locking) and admits patients over 16 years of age. It is staffed (in full-time equivalents) by 2.0 psychiatrists, 2.5 psychologists, 2.0 occupational therapists, 1.2 physiotherapists, 1.0 social worker, 0.8 speech and language therapists, 8.0 nurses (Registered Mental Nurses, Registered General Nurses or Registered Nurses for the Mentally Handicapped) and 8.0 rehabilitation assistants. The team uses a multi-disciplinary approach to assessing, planning and implementing a programme of care and rehabilitation. This has been shown to be more effective than a single discipline approach (Semlyen *et al*, 1998). The programmes are oriented and tailored to the patients. After an initial assessment, a number of goals are set with the patient, for the following periods of rehabilitation, which are offered in three-month blocks. The goals are reviewed in regularly held meetings. They are modified in accordance to the degree of rehabilitation achieved. Community Programme Approach meetings are held regularly, and family members are invited to attend. Families play an important part in the rehabilitation

programme and the family situation is taken into account for setting up future care. Koskinen (1998) found that many families were still under strain, 10 years following a brain injury.

The study

Patients were included in the study if they were admitted to BIRU between 1 April 1997 and 1 April 1999 and their notes were available. Basic demographic information and reasons for referral were recorded retrospectively from each set of case notes. A severe brain injury was defined as having had a Glasgow Coma Scale rating of below nine (Teasdale & Jennett, 1974); loss of consciousness of more than a day; or post-traumatic amnesia of more than one week (Kraus & McArthur, 1996). All reasons for referral were recorded.

Findings

Over the two-year period, there were 80 admissions. Of these, notes were available for 78 patients (97.5%), and these patients were included in the study. Fifty-seven (73%) were male. The mean age was 45 years, and 27 (35%) were under 40 years old. The type of injury was: traumatic $n=36$ (46%); anoxic $n=19$ (24%); stroke $n=17$ (22%); surgery $n=5$ (6%) and infection $n=1$ (1%). Forty-five of the patients (75%) had had a severe brain injury. The mean time between head injury and admission was 49 months, and 41 patients (63%) were admitted within six months of the brain injury. Table 1 shows the reasons for referrals. The most common reasons were memory difficulties ($n=61$), verbal aggression ($n=31$) and temper control ($n=25$).

Discussion

The study looked at the demographic details of patients admitted to a neuropsychiatric brain injury rehabilitation unit, and the reasons for referral. Other studies have examined the extent of neuropsychiatric disability following brain injury (Barrett, 1999; Deb *et al*, 1998) or the effectiveness of in-patient rehabilitation on functional improvement (Bajo *et al*, 1999; Semlyen, 1998). Most of the admissions were male, which is likely to reflect the fact that traumatic brain injury is more common in men (Barnes *et al*, 1998). Most had a severe brain injury and were admitted within six months of the injury. Major gains in the recovery of intellectual impairment are usually made in the first year post-injury, the most substantial improvement in the first six months (Lishman, 1998). During subsequent years gains are normally made from better coping strategies.

Cognitive problems (memory difficulties, concentration and attention difficulties, language difficulties, disorientation, and difficulties with planning and monitoring) were the most common reasons for referral. Cognitive problems are common after a severe brain

Table 1 The commonest reasons for referral (more than one reason may be given for each patient)

	Number of times given as a reason for referral
Memory difficulties	61
Verbal aggression	31
Poor temper control	25
Concentration and attention difficulties	22
Speech difficulties	21
Poor motivation	18
Restlessness or agitation	16
Requiring help with activities of daily living	16
Disorientation	15
Weakness or spasticity	15
Urinary incontinence	14
Physical aggression	13
Difficulties with planning and monitoring	12



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injury and are generally widespread (Lishman, 1998). In-patient rehabilitation offers intensive training in the use of compensation aids such as diaries, mnemonics, self-cueing and rehearsal. For those patients with an extensive retrograde amnesia, autobiographical memory may be helped by using life books. Behavioural problems (verbal aggression, poor temper control, poor motivation, restlessness or agitation and physical aggression) were the next most common reasons for referral. Temper disorders have been associated with frontal and temporal damage (Barrett, 1999). Management starts with reviewing the physical state of the patient and making sure that it is not accountable for the challenging behaviour. This group of patients is sensitive to psychotropic medication and its side-effects. Drug therapy should be tailored to each patient and kept as a minimum dosage. Psychological interventions include the use of ABC charts (functional analysis) and modelling. Cognitive-behavioural therapy may be useful. Providing relatives with advice about managing behavioural and emotional problems is associated with improved satisfaction (Junque *et al*, 1997). The final groups of reasons for referral were for help with functional capacity (activities of daily living and continence) and physical health (weakness or spasticity). These problems are managed concurrently with cognitive and behavioural problems, with a multi-disciplinary approach.

Most brain injury rehabilitation units focus on sub-acute problems such as activities of daily living and physical disabilities. However, neuropsychiatric deficits are responsible for as much disability as physical symptoms. In-patient neuropsychiatric brain injury rehabilitation units see patients referred with a wide range of problems of which the most common are cognitive and behavioural difficulties. These units offer intensive multi-disciplinary input with the goals of improving deficits and helping people and their families adjust to change.

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