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**Title: Mentally Disordered Offenders With A History Of Previous Head Injury – Are They More Difficult To Discharge?**

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## **Mentally Disordered Offenders With A History Of Previous Head Injury – Are They More Difficult To Discharge?**

### **ABSTRACT**

**Primary objectives:** To identify the incidence of head injury (HI) amongst mentally disordered offenders (MDOs) in UK medium secure units (MSUs), and test the hypothesis that patients with a history of HI are more difficult to discharge than patients without HI.

**Design, methods and procedures:** 113 MDOs being discharged to community settings from five MSUs in England were recruited consecutively between 1/4/99 and 31/12/00. Data on previous HI, offending history, and discharge planning were collected from clinical casenotes, structured questionnaires, and interviews with clinical staff.

**Main outcomes and results:** More HI patients (57.4%) than non-HI patients (47%) had a violent index offence. Risk assessments carried out prior to discharge showed HI patients to be at greater risk of violence to others and of self-harm than non-HI patients ( $p \leq 0.05$ ). All but two HI patients were difficult to discharge (43, 95.6%), compared to 52 (82.5%) non-HI patients.

**Conclusions:** Information on previous HI should be collected on admission to MSUs and considered when planning for discharge.

## INTRODUCTION

It has been suggested that there may be a link between head injury and offending behaviour. In a review article in the *Journal of Forensic Psychiatry* in 1999, Edgar Miller presented the hypothesis that head injury may predispose to offending [1]. He concluded that although the few studies which had been carried out in this area were methodologically flawed, they did provide some evidence to support the hypothesis.

It is well documented that a significant head injury can often result in behavioural and emotional disturbances [2,3,4]. In a recent multi-centre study of 563 patients with traumatic brain injury (TBI) Hawley found that almost half the patients (272, 48.3%) had behavioural problems including anger management, irritability, and aggression [5]. Furthermore, aggressive and impulsive behaviours can increase rather than decrease with time, Hall *et al* found a significant increase in aggressiveness and temper outbursts amongst brain injured patients between 6 month and 2 year follow-ups [6]. In a five year follow-up study Brooks and colleagues found that the percentage of patients described as irritable and bad tempered at one year post injury was unchanged at five years post injury [7]. Furthermore, the number of patients threatening violence increased from 15% to 54% over the same period, and at the five year follow-up, 20% of relatives reported that they had been assaulted by the patient at least once. Also at five years post-injury 31% of patients had been in trouble with the law on at least one occasion.

Kreutzer and colleagues [8] reported a link between alcohol abuse, both pre- and post-brain injury, and criminality, reinforcing findings of an earlier study investigating alcohol and substance abuse and criminal arrests amongst a group of 74 unemployed persons with TBI, in which the overall arrest rate for the sample was significantly higher than for the general population [9]. However, the offences reported for this group tended to be of a relatively minor nature, largely public order offences or offences against property. Offences included driving under the influence of alcohol, drug possession, disorderly conduct, common assault, and theft.

There is also considerable evidence which indicates that head injury is related to serious criminality. As early as 1959, Gibbens and colleagues noted that 40% of the psychopaths in his sample had suffered a head injury at some time [10]. More recently, in a study of 15 prisoners condemned to death in the USA, Lewis *et al* found that 100% of the sample had suffered an earlier head injury [11]. This was a particularly disturbing finding given that the patients had been selected because of the imminence of their execution and not due to any obvious psychopathology. In a second study by the same authors, of 14 juveniles condemned to death in the USA, all had some history of a previous head injury [12]. Furthermore, all but one of these unfortunate individuals had suffered physical abuse as a child and had a history of family violence, and five had been sexually abused.

It is likely that the characteristics of mentally disordered offenders (MDOs) with a history of previous head injury will be different from those of MDOs with no previous head injury, although there is no clear evidence that this is the case. There have been no UK studies which examine the incidence of head injury amongst MDOs in medium security. In the UK, medium secure units were established following the

Butler report in 1975 [13]. They are secure psychiatric hospitals in which MDOs, and other patients with similar needs, are assessed and treated under the Mental Health Act of 1983, at a level of security intermediate between high security, on the one hand, and an ordinary, locked psychiatric ward on the other.

The Mental Health Act (1983) (MHA) is an important legislative process intended to ensure a consistent and comprehensive approach to psychiatric care in England and Wales. As with all pieces of legislation it is divided into different parts, each covering a specific area, these in turn are divided into Sections. This has led to the use of the term being 'sectioned' to refer to compulsory admission to hospital. The Act is divided into 10 parts with a total of 149 separately numbered sections, plus a number of sub-sections, e.g. 25a, 25b etc. The Mental Health Act is primarily about restricting a person's civil liberties because of his/her mental state. For most people, the MHA is primarily concerned with their compulsory admission to hospital and treatment. The MHA also governs the care and treatment of a patient during his/her time in hospital by laying down the rules for treatment, governs the patient's rights to appeal against his detention, and governs the procedures for the patient to be discharged from his/her Section.

There are three main ways in which a person can be admitted to a psychiatric hospital in the UK. These are: firstly, 'Informally', that is voluntarily without any compulsion, and the MHA does not apply to these patients. Secondly, as a civil admission (under section 2 for up to 28 days, under section 3 for up to 6 months initially, or under section 4 for up to 72 hours in an emergency). Thirdly, a person can be sent to hospital from the law courts under a 'Restriction Order'. The effect of a Restriction Order is that for so long as the restrictions apply, it will be necessary for the individual, or the hospital doctor, to obtain the agreement of the Home Secretary or a Mental Health Review Tribunal before he or she can be discharged from the hospital. When the individual is discharged, the restrictions may still apply, and then the discharge can be made subject to conditions ('Conditional Discharge'). This means, for example, that the individual may have to continue to see a doctor and take the medication he prescribes.

After a patient has been in hospital for six months, and the hospital doctors wish him or her to remain in hospital against his will, he or she can appeal against being held in hospital by applying to the Mental Health Review Tribunal (MHRT), asking them to decide if he or she can leave hospital. There are usually three people on the Tribunal - a very senior lawyer, a psychiatrist, and an independent third person. All of these people will come from outside the hospital. If the appeal fails, the patient is entitled to re-apply to the MHRT once each year whilst being held under the MHA.

The study described here examines the prevalence of head injury amongst a group of patients held in medium secure units who were identified for community discharge, compares the characteristics of patients with and without a history of head injury, and identifies factors which can cause discharge to be delayed. We hypothesised that patients with a history of head injury would be more difficult to discharge than non-head injured patients.

## METHOD

This study examined the cases of 113 patients being discharged to community settings between 1/4/99 and 31/12/00. The research was carried out in five medium secure units (MSUs) in England; one independent unit, and four National Health Service (NHS) units. These units represented three types of catchment area: metropolitan, urban, and rural, each with a different ethnic mix of patients.

The community was defined as the patient's own home, the home of the patient's relatives, any hostel in the community (ranging from 24 hr staffed hostels, to minimally staffed hostels), a residential home in the community, a group home, or hotel or bed and breakfast accommodation in the community.

The 113 patients were recruited both prospectively and retrospectively. Only patients admitted for 7 days or longer were included in the study. For the prospective group (N = 48) we recruited all patients for whom discharge to the community was planned, and was likely to take place prior to 31<sup>st</sup> December 2000. For the retrospective group (N = 65) we recruited all patients who had been discharged to the community between 1<sup>st</sup> April 1999 and 31<sup>st</sup> December 2000.

For the prospective group researchers attended clinical team meetings, discharge planning meetings, and case conferences in connection with each patient, from the time discharge was planned through to eventual discharge. In addition, data were collected from clinical case notes, including risk assessments.

Patients in the retrospective group had been discharged without MSU staff alerting the research team earlier in the discharge planning process. Therefore for these patients all data were collected from clinical case notes, including risk assessments, the minutes of discharge planning meetings, case conferences, and clinical team meetings.

The data collection instruments were identical for both prospective and retrospectively recruited patients, and were completed using a combination of verbal information from clinicians and clinical case notes. Interviews were also carried out with consultant psychiatrists, specialist registrars, community psychiatric nurses, social workers, probation officers, and psychologists.

Qualitative data collection instruments were designed and used to collect information on patient characteristics including previous family history, educational history, employment history, previous medical history, history of previous brain injury, alcohol and substance abuse, incidents of self-harm, history of physical or sexual abuse, number of previous psychiatric admissions, psychiatric history, forensic history including the index offence, current psychiatric diagnosis, and details of risk assessments. In addition, progress through the unit towards eventual community discharge was also recorded.

A questionnaire was used to collect quantitative data on demographics, reasons for admission, legal status on admission, clinical diagnosis, psychiatric history, forensic history, personal history, treatment, and discharge. This questionnaire was

developed for a study of all patients discharged from UK MSUs led by Professor Maden [14].

When reviewing the clinical case notes researchers were searching specifically for any mention of a previous head injury, even though this information was neither routinely recorded, nor, in many cases, immediately obvious. This information was most usually found under previous medical history, but it was sometimes only found in the description of the patient's family and childhood history. This methodology was dictated by issues of patient confidentiality, which meant that it was not possible for the researchers to access the patients' previous hospital medical notes. The absence of routine recording of this information did, however, indicate that a previous head injury was not widely regarded as relevant to the patient's current psychiatric care, particularly if the injury was sustained several years earlier.

Due to these difficulties, it is likely that the number of patients identified as having a previous head injury is an under-estimate.

For the purpose of the analyses the 113 patients were divided into two groups, those who had suffered a head injury of any severity prior to their MSU admission, and those who had no record of having suffered a previous head injury.

Quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) Version 9.0. Cross-tabulations were carried out on frequency data and Pearson Chi-squared statistics calculated. Where multiple statistical comparisons were made, a significance level of  $p \leq 0.01$  was chosen to control for the possibility of Type I errors.

## RESULTS

### **The study sample**

Of the 113 patients in the study group 93 (82.3%) were male. The average age on admission was 35.6 years with a range from 14 to 71 years (standard deviation = 13.1). Three-quarters of the group (85, 75.2%) were aged between 18 and 38 years. Three-quarters of the patients were single (84, 74.3%), 6 (5.3%) were married, 19 (16.8%) were separated or divorced, and 2 (1.8%) were widowed. The majority of patients were born in the United Kingdom or Eire (88, 77.9%), 13 (11.5%) were born in the Caribbean and 2 (1.8%) were born in Africa. Overall, 77 (68.1%) were white, 23 (20.4%) were Black Caribbean, 5 (4.4%) were Black African, 4 (3.6%) were Asian, and 4 (3.6%) were from other races. These patient characteristics were broadly similar to those of the UK MSU population as a whole, as surveyed in 2001 by Maden et al [14].

### **Previous head injury**

In the clinical notes, information on previous medical history was usually brief, and often presented as a short section in a patient's admission summary. For six patients there was no information on previous medical history. For 12 patients the notes specifically stated that there was no history of head injury, and for 48 patients

there was no evidence of a head injury in the notes. We did find evidence of a previous head injury (HI) in the notes of 47 patients (41.6% of the study group). Of these, 27 (57.4%) were known to have lost consciousness (often of unspecified duration), and 13 (27.7%) had suffered a brain injury serious enough to require hospital admission. The head injury took place during childhood (under the age of 16 years) for over one third of patients (17, 36.2%). The age at which the head injury occurred was unknown for 19 patients (40.4%), and 11 patients (23.4%) were injured at age 16 years or above.

For the purpose of subsequent analyses patients were divided into two groups, history of HI (n = 47) and no history of HI (n = 66). Of the 47 patients with a history of HI, 40 (85.1%) were male. Similarly, the majority (53, 80.3%) of the 66 patients without history of HI were male.

Further analyses were carried out on the 27 patients with a known loss of consciousness (LOC), of any duration, in comparison with the 66 patients without a history of previous HI. The results were essentially the same as the comparisons between patients with a HI and patients without a HI, and significant differences were found for the same factors. Consequently to avoid unnecessary duplication the results below compare the 47 patients with HI with the 66 patients with no HI.

### **Source of admission**

Table 1 shows the source of admission for 47 patients in the HI group and 66 patients in the non-HI group. For both groups of patients approximately half were transferred to medium security from prison, either on remand or sentenced. For both groups 10.6% of patients were transferred to medium security from high security hospitals. High security hospitals, formerly the 'special hospitals', are secure psychiatric hospitals in which MDOs are assessed and treated under the Mental Health Act, at the highest level of security available in the UK. Slightly more HI patients (19.1%) than non-HI patients (15.1%) came straight from home or from a community setting, i.e. hostel or residential home. There were no significant differences between the groups regarding source of admission.

Table 1 about here

### **Reason for admission to MSU**

Table 2 shows the reasons for admission to an MSU for both the HI and non-HI groups. For over half the patients in each group the most usual reason for referral was a deterioration in the patient's mental state. For both groups of patients self-harm or attempted suicide was the next most common cause of admission affecting over one third of each group. There were statistically significant differences between the two groups for only two reasons. More non-HI patients (43.8%) than HI patients (17%) were admitted because of violent or aggressive behaviours to others in the community ( $p = 0.007$ ,  $\chi^2 = 9.96$ ), and more non-HI patients (34.4%) than HI patients (10.6%) were admitted because of non-compliance with treatment ( $p = 0.006$ ,  $\chi^2 = 10.39$ ).



Table 2 about here

### **MHA legal status and legal category on admission**

Table 3 shows the Mental Health Act (MHA) Legal Status for both groups of patients upon admission. In both groups, half of the patients were admitted or transferred to the MSU under a restriction order (Sections 37/41, 47/49, or 48/49). A restriction order means that before a patient can be discharged or transferred, the responsible medical officer, usually a consultant psychiatrist, must first get the agreement of the Home Secretary, or the recommendation from a Mental Health Review Tribunal. Twenty-four (51.1%) of the HI group, and 31 (47%) of the non-HI group were restricted patients. In the non-HI group 24 patients (36.4%) were admitted under a restricted hospital order (Section 37/41), significantly more than in the HI group (9, 19.1%) ( $p = 0.037$ ,  $X^2 = 4.37$ ). Conversely, significantly more HI patients (9, 19.1%) than non-HI patients (4, 6.3%) were admitted/transferred under a Section 47/49 (Transfer Direction with a Restriction Direction) ( $p = 0.037$ ,  $X^2 = 4.36$ ). For the two groups similar proportions of patients were admitted under a civil section, that is without having committed any criminal offence (Sections 2, 3, and 4), or as informal patients not detained under the Mental Health Act.

Table 3 about here.

The MHA defines mental illness as 'any illness or disorder of the mind'. Over half of the HI patients (28, 59.6%), and 47% (31) of the non-HI patients, were in the MHA legal category of 'Mental Illness'. Twice as many non-HI patients (9, 13.6%) were in the category of 'Psychopathic Disorder', compared to 3 (6.4%) HI patients. For the category of 'Mental Illness and Psychopathic Disorder' statistically significant differences were observed between the two groups with 15 non-HI patients (22.7%) and only 3 HI patients (6.4%) in this legal category ( $p = 0.021$ ,  $X^2 = 5.3$ ). Some element of psychopathic disorder was recorded for 24 non-HI patients (36.4%) and only 6 HI patients (12.8%).

### **Psychiatric diagnosis**

Table 4 shows the primary clinical diagnosis for HI and non-HI patients. Psychosis, or schizophrenia, was the primary diagnosis for two thirds of the patients in each group. Personality disorder was diagnosed for 15% of the non-HI group and 17% of the HI group. There were no significant differences between the groups. Although 'organic disorder' (which included organic brain damage) was one of the coding categories used, this was the *primary* diagnosis for only three patients in the study group.

Table 4 about here.

### **Index offence**

The index offence is the crime which led to the patient's detention under the Mental Health Act, and their admission to a secure unit. Only 3 patients had no index offence. Of all patients, Twenty-five (22.1%) had been convicted for murder,

attempted murder, manslaughter, threat or conspiracy to murder, or threats to kill. Half of all patients had committed a violent crime, 52 (46%). Table 5 gives details of the index offences for the HI and non-HI groups. Around half the patients in each group had a violent index offence. Fewer patients in the HI group were convicted of property or sexual offences. None of the differences between the groups were statistically significant.

Table 5 about here

### **Psychiatric history**

The majority of patients had previous contact with psychiatric services before their current admission (HI = 44, 93.6%, non-HI = 56, 84.8%). The mean age for first contact with services was 23.8 years (SD = 12.72) for the HI group and 19.5 years for the non-HI group (SD = 8.25). Most patients had a previous psychiatric admission. Only 12.8% (6) of the HI group and 12.7% (8) of the non-HI group had no previous admissions.

### **Offending history**

Prior to their current admission, 35 (74.5%) of the HI group and 54 (81.8%) of the non-HI group had at least one previous conviction. Thirty (63.8%) of the HI group and forty (60.1%) of the non-HI group had 2 or more previous convictions. The mean number of previous convictions was 7.5 (SD = 21.29) for the HI group, and 4.95 (SD = 15.35) for the non-HI group.

Twenty-one (44.7%) of the HI group and 26 (39.4%) of the non-HI group were under the age of 18 at the time of their first offence. The mean age at which the first offence was committed was 17.3 years, (SD = 9.26) for the HI group, and 17.6 years, (SD = 6.63) for the non-HI group.

### **Education and employment history**

Over half the patients in both HI and non-HI groups had no formal qualifications: (HI = 28, 59.6%); non-HI = 39 (59.1%). Nine patients in the HI group (19.1%), and 13 patients in the non-HI group (19.7%), had studied to the level of a general certificate of secondary education (GCSE) or equivalent. Three patients in the HI group (6.4%) and 5 in the non-HI group (7.6%) had studied to Advanced ('A') level or higher. The educational background of HI and non-HI patients was virtually identical.

Over half the patients in each group had never worked (HI = 27, 57.4%, non-HI = 39, 59.1%). However, nearly one quarter had been employed when well (HI = 12, 25.5%, non-HI = 14, 21.2%). One patient in the HI group, and no patients in the non-HI group, had been in regular employment up until admission.

### **Personal history**

The personal problems previously experienced by patients with and without a previous head injury were compared and are shown in Table 6. In both groups the majority of patients had a history of self-harm (60-61%), alcohol problems (57-61%), problems with dependence on illicit substances (73%), and the loss of at least one parent during childhood (64-68%). Approximately one third of patients in each group had a family history of mental illness. Slightly fewer patients in the HI group had been physically or sexually abused than patients in the non-HI group, but the differences were not statistically significant.

Table 6 about here.

### **Risk assessment**

Clinical staff had carried out a formal risk assessment shortly prior to discharge for 92 patients, 33 in the HI group, and 59 in the non-HI group. Four main categories of risk were identified, these were: violence to others, harm to self, risk of re-offending, and patient vulnerability. Table 7 shows the results. Significantly more patients in the HI group than in the non-HI group were perceived as posing a risk to others ( $p = 0.01$ ) and were at risk of self-harm ( $p = 0.03$ ).

Table 7 about here.

### **Factors hampering community discharge**

A major aim of the study was to investigate the process of planning for discharge from medium security to community settings. Using interviews with MSU professionals, observation of discharge planning meetings and clinical team meetings, and a search of patient case notes we identified eleven factors which were given as the cause of a delayed or problematic discharge. A category of 'other' was also added, and a category of 'none' included for patients who were not difficult to discharge. We then compared the number of patients with and without a history of head injury associated with each factor. Table 8 gives the results. There may have been more than one reason why discharge was difficult and therefore patients may appear in more than one category. For example, the risk of harm to others was linked to non-compliance with medication for 8 patients, and to anger management for 4 patients.

Four times as many non-HI patients (11, 17.5%) had no discharge difficulties compared with HI patients (2 (4.4%), ( $p = 0.040$ ,  $X^2 = 4.2$ ). Twice as many HI patients (14, 31.1%) as non-HI patients (9, 14.3%) were difficult to discharge because they posed a risk to others in the community ( $p = 0.035$ ,  $X^2 = 4.4$ ). Risk to others included the possibility of harm to previous victims, harm to family members, harm to hostel staff, and to other hostel residents. These differences did not reach significance at the 0.01 level.

More non-HI (15, 23.8%) than HI patients (6, 13.3%) were difficult to discharge because of a deterioration in their mental state, but this difference was not statistically significant ( $p = 0.18$ ,  $X^2 = 1.8$ ). More HI patients than non-HI patients

were difficult to discharge because of poor anger control or behavioural problems, lack of insight, risk of re-offending, and non-compliance with medication or treatment. The numbers of patients in these categories were too small for statistical comparisons.

Table 8 about here.

### **Reasons preventing discharge**

During the study period, 99 patients were discharged from medium security. Fourteen patients, for whom discharge had been planned, had not been discharged by the end of the study. In the HI group 5 (10.6%) had not been discharged. This was due to perceived risk to others (2), funding difficulties (1), non-compliance with medication (1) and home office delays (1). In the non-HI group 9 (13.6%) had not been discharged. This was due to placement difficulties (4), deterioration in mental state (2), home office delays (1), funding difficulties (1), and one patient had absconded from the unit, which delayed his planned discharge.

## **DISCUSSION**

In a sample of 113 patients being discharged to community settings across five medium secure units, 47 (41.6%) had sustained a head injury at some point in their lives, 27 (23.9%) were known to have lost consciousness, and thirteen (11.5%) had suffered a significant brain injury. This is likely to be an under-estimate as a detailed previous medical history was not normally available in the patients' case notes and often a previous head injury was referred to only briefly, suggesting an under-estimation of the possible influence of this event on the patients' subsequent behaviour. We found some evidence to support the hypothesis that patients who have a history of previous head injury are more difficult to discharge than patients without a history of head injury. For 95.6% (43) of patients in the HI group clinicians had identified reasons why community discharge was either delayed or problematic.

We compared patients who had suffered a head injury, of any severity, with patients who had no record of a previous head injury on a wide range of factors. On most factors, there were no significant differences between patients with and without a previous head injury. The typical patient profile was similar for both groups: often male, with a troubled family history, a poor education, previously unemployed, a previous psychiatric history, a history of alcohol and drug abuse, more than one previous offence, a history of violent crime, and a clinical diagnosis of schizophrenia. However, some differences did emerge.

Patients in the head injured group had more index offences involving violence than those in the non-head injured group (57% compared to 47%). The most frequently occurring category of index offence for both groups was attempted murder/ threat to murder/ or threat to kill, but it accounted for a higher proportion of HI patients (10, 21.3%) than non-HI patients (9, 13.6%). Violence has been associated with head injury by previous researchers, for example Bach-y-Rita and Veno found that 61% of their sample of habitually violent prisoners had suffered an earlier head injury involving loss of consciousness [15].

## **Head injury and psychosis**

There was no difference in psychiatric diagnosis between the groups, with schizophrenia being the primary diagnosis for two thirds of patients in each group. Head injury has been linked with post-traumatic psychosis by several authors. Ahmed and Fujii claimed that HI patients have a 2 to 5 times greater risk of developing psychosis than the general population [16]. Silver *et al* concluded that individuals with a history of HI resulting in loss of consciousness, have a significantly higher occurrence of psychiatric disorders and suicide attempts compared with individuals without HI [17].

Head injury has been specifically associated with schizophrenia by several researchers. In a review article, McAllister [18] noted that individuals with schizophrenia have a higher frequency of previous HI than do individuals with other psychiatric disorders. Sachdev *et al* examined the link between schizophrenia-like psychosis (SLP) and HI [19]. They found that HI patients who later developed SLP had more widespread brain damage and more cognitive impairment than HI patients who had not developed SLP. They found the mean latency between TBI and SLP to be 54.7 months, often with a gradual onset. Both this study and another by Malaspina *et al* [20] identified a genetic predisposition to schizophrenia to be a major risk factor for developing HI-related SLP.

Of the patients with a previous head injury, over one third (17) were injured as a child aged under 16 years. For a further 40% (19) of patients, the age at which they suffered a head injury was unknown and may have been during childhood or early teens. Furthermore, nearly one third of the head injury group (31.9%, 15) had a family history of mental illness. It is therefore possible that for some patients their diagnosis of schizophrenia may have been triggered by a combination of head injury and family history.

For the majority of patients in our study group with a history of head injury the severity of that injury was not clear. It may be assumed that for most of these patients the head injury was relatively minor. However, even mild head injury can lead to disturbed functioning and persistent deficits [21,22], and a minor head injury may be a significant stressor in someone who is already vulnerable by reason of the various social and medical factors outlined above. Furthermore, because of the poor medical notes available for some patients and the absence of any consistent recording of a head injury, it is possible that some of the patients in the non-HI group may have had a mild head injury themselves. This may go some way to explain the many similarities between patients in the HI and non-HI groups.

## **Head injury and community placement**

A head injury often leads to persistent behavioural, cognitive and memory problems, impulsivity, and reduced alcohol tolerance, is characterised by a 'short fuse' and poor temper control, and frequently leads to social isolation [5,23,24]. These factors can contribute to offending behaviour and can also make community placement

more difficult as patients with a history of head injury and mental illness often have poor social skills and are ill-equipped to cope with community living and require continued support [25].

For 92 patients, 33 in the HI group and 59 in the non-HI group, a formal risk assessment had been carried out by the multi-disciplinary clinical team in the period leading up to community discharge. As this study was observational, we had no control over when risk assessment were carried out, therefore the timing of the risk assessments varied from a few weeks prior to discharge, to several months prior to discharge. We therefore recorded the risk assessment nearest to the planned discharge date. From these assessments, four main areas of risk were identified: violence to others, self-harm, risk of re-offending, and the vulnerability of the patient to exploitation or harm by others in the community. Fifteen patients in the HI group (45.5%) were perceived as posing a risk to others, and 16 patients (48.5%) were at risk of harming themselves, significantly more than the 20% (12) and 25% (15) of patients in the non-HI group. More patients in the HI group than in the non-HI group were perceived as potentially vulnerable in the community. These findings are consistent with the literature describing symptoms following head injury [2].

All of the above risk factors obviously have an impact on planning for discharge to the community. We attended discharge planning meetings for 48 patients in the study group, and studied the notes of clinical team meetings and discharge planning meetings for an additional 60 patients. From these observations we were able to identify factors, voiced by clinicians themselves, which were delaying or hindering the process of discharge planning. Identification of a suitable community placement with adequate community support for the patient was the most frequent reason for a delayed discharge. This caused discharge delays or difficulties for approximately one quarter of patients in both the HI and non-HI groups. However, a perceived risk to others in the community was a factor hampering discharge for twice as many patients in the HI group than in the non-HI group. HI patients were also more likely to have continued problems with anger management and behaviour, and a lack of insight into their condition which would make them difficult to re-integrate into community settings.

## **Summary and conclusions**

The presence of a previous head injury was very rarely referred to in discharge planning discussions, yet it is an important factor to consider even if the injury was many years ago. We found that the head injured group were significantly more difficult to discharge than the non-HI group, in that four times as many non-HI patients as HI patients had no discharge difficulties. These findings suggest that patients with a history of head injury may pose particular problems for clinicians attempting to discharge them from MSUs to the community.

This study has highlighted several important trends in relation to discharge planning and head injury, and has found some evidence to suggest a link between head injury and violent offending and between head injury and psychosis. However, future research should attempt to clearly establish the incidence of head injury amongst mentally disordered offenders in medium secure units, and the severity of those head injuries. It is recommended that psychiatric case notes should include details

of previous medical history and particularly any previous head injury. This will enable researchers to examine the relationship between head injury and serious offending more accurately and in greater depth.

### **Limitations of the Study**

Firm evidence of a previous head injury was patchy within the clinical notes. Few sets of notes contained information on whether measures such as computed tomography (CT) or magnetic resonance imaging (MRI) scans, or an electroencephalogram (EEG) had been carried out, and even fewer recorded the results. The full hospital medical notes of patients, which pre-dates their psychiatric admission, were not available within the psychiatric hospitals, and this study did not have the necessary ethical committee approval required to request the full medical notes in order to confirm the severity of the head injury.

MSU clinical notes varied in the quality of information given, and therefore we often had to rely on comments in the notes referring to a previous head injury. This was not ideal, and consequently it was not possible to identify all patients with a previous head injury, or the severity of that injury, with complete accuracy.

Bearing these constraints in mind, the researchers decided to adopt a descriptive methodology. This allowed us to quantify the incidence of head injury amongst mentally disordered offenders identified for community discharge, and in doing so has highlighted a need for routine recording of a previous head injury in clinical case notes, so that the nature of the problem can be accurately measured and addressed.

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Table 1 Source of admission (N = 113)

<i>admission source</i>	<i>HI</i> <i>n = 47</i> <i>n (%)</i>	<i>No HI</i> <i>n = 66</i> <i>n = (5)</i>
Home	4 (8.5)	3 (4.5)
Community home or hostel	5 (10.6)	7 (10.6)
NHS inpatient unit	6 (12.8)	10 (15.2)
Other MSU (Independent)	2 (4.3)	1 (1.5)
High Security	5 (10.6)	7 (10.6)
Prison (on remand)	9 (19.1)	19 (28.8)
Prison (sentenced)	12 (25.5)	14 (21.2)
Other	4 (8.5)	5 (7.6)
Total	47 (100)	66 (100)

Table 2 Reason for admission (n=113)

<i>Reason for admission</i>	<i>HI N (%) n=47</i>	<i>No HI N (%) n=66</i>	<i>Significant difference</i>
Violent/aggressive behaviours to others in hospital	7 (14.9)	16 (24.2)	no p = 0.168
Violent/aggressive behaviours to others in the community*	8 (17.0)	28 (42.4)	yes p = 0.007
Violent/aggressive behaviours to others in prison	6 (12.8)	15 (22.7)	no p = 0.153
Absconding from hospital	4 (8.5)	6 (9.1)	no p = 0.463
Self harm or attempted suicide/suicide risk	16 (34)	26 (39.4)	no p = 0.378
Non-compliance with treatment*	5 (10.6)	22 (33.3)	yes p = 0.006
Sexual offending or harassment	8 (17.0)	14 (21.2)	no p = 0.55
Nature of current criminal charges/convictions	19 (40.4)	14 (21.2)	no p = 0.106
Deterioration in patient's mental state	29 (61.7)	37 (56.1)	no p = 0.463
Current risk to patient's physical health	8 (17.0)	11 (16.7)	no p = 0.471
Maximum secure hospital care no longer needed	4 (8.5)	5 (7.6)	no p = 0.472
Diagnostic assessment	6 (12.8)	7 (10.6)	no p = 0.46
Assessment for sentencing recommendation	3 (6.4)	1 (1.5)	no p = 0.199
Transfer to MSU nearer patient's home area	0 (0)	1 (1.5)	no p = 0.322
Transfer to MSU for other reason	0 (0)	2 (3)	no p = 0.218
Home Office recall	0 (0)	0 (0)	-
Specific therapy programme	0 (0)	3 (4.5)	no p = 0.471
Other	7 (14.9)	4 (6.1)	no p = 0.58

\* denotes statistically significant difference between HI and non-HI groups (p <0.005)

Table 3 MHA legal status on admission (N = 113)

<i>MHA Legal Status (at admission)</i>	<i>HI n (%)</i>	<i>No HI n (%)</i>
Informal	5 (10.6)	9 (13.6)
Section 3	10 (21.3)	10 (15.2)
Section 37 (Hospital Order)	2 (4.3)	3 (4.5)
Section 37/41 (Hospital Order with Restriction Order) *	9 (19.1)	24 (36.4)
Section 47/49 (Transfer Direction with Restriction Direction) *	9 (19.1)	4 (6.1)
Section 48/49 (Transfer Direction with Restriction Direction)	6 (12.8)	3 (4.5)
Other sections	5 (10.6)	9 (13.6)
Condition of bail	1 (2.1)	4 (6.1)
Total	47 (100)	66 (100)

\* denotes statistically significant difference between between HI and non-HI groups (p < 0.05)

Table 4 Primary clinical diagnosis

<i>Primary clinical diagnosis</i>	<i>HI n (%)</i>	<i>No HI n (%)</i>
Psychosis/schizophrenia	29 (61.7)	45 (68.2)
Mood disorder	4 (8.5)	6 (9.1)
Personality disorder	8 (17.0)	10 (15.2)
Learning disability	1 (2.1)	3 (4.5)
Substance misuse	2 (4.3)	1 (1.5)
Organic disorder	2 (4.3)	1 (1.5)
Other	1 (2.1)	0 (0)
Total	47 (100)	66 (100)

Table 5 Index offences of patients with previous head injury destined for discharge to the community (N=113)

<i>Index offence - general</i>	<i>HI n (%)</i>	<i>No HI N (%)</i>	<i>Index offence - detail</i>	<i>HI n (%)</i>	<i>No HI n (%)</i>
None	2 (4.3)	1 (1.5)	None	2 (4.3)	1 (1.5)
Violence	27 (57.4)	31 (47.0)	Murder	0 (0)	2 (3.0)
			Manslaughter	1 (2.1)	3 (4.5)
			Attempt/threat to murder/kill	10 (21.3)	9 (13.6)
			Wounding	4 (8.5)	3 (4.5)
			Assault	4 (8.5)	4 (6.1)
			Grievous Bodily Harm (GBH)	4 (8.5)	7 (10.6)
			Armed robbery	2 (4.3)	2 (3.0)
			Other violence	2 (4.3)	1 (1.5)
Property offences	2 (4.3)	7 (10.6)	Aggravated burglary	2 (4.3)	3 (4.5)
			Other theft/burglary	0 (0)	3 (4.5)
			Other criminal damage	0 (0)	1 (1.5)
Sexual offences	6 (12.8)	14 (21.2)	Rape	4 (8.5)	9 (13.6)
			Harassment	0 (0)	4 (6.1)
			Other sexual offences	2 (4.3)	1 (1.5)
Arson	6 (12.8)	9 (13.6)	Arson	6 (12.8)	9 (13.6)
Other indictable / summary offences	4 (8.5)	4 (6.1)	Other	4 (8.5)	4 (6.1)
Total	47 (100)	66 (100)	Total	47 (100)	66 (100)

Table 6 History of previous problems. Head Injury group versus No Head Injury Group

<i>History of previous problems</i>	<i>Head injury n = 47</i>		<i>No Head injury n = 66</i>		<i>Significant difference</i>
	<i>N</i>	<i>%</i>	<i>n</i>	<i>%</i>	
Self harm	27	61.4	35	60.3	no p = 0.917
Been physically abused	11	28.2	20	37.7	no p = 0.339
Been sexually abused	7	17.1	13	22.4	no p = 0.514
Loss of at least one parent*	32	68.1	42	63.6	no p = 0.740
History of alcohol problems	28	60.9	29	56.9	no p = 0.689
History of drug problems	32	72.7	43	72.9	no p = 0.986
Family history of mental illness	15	31.9	26	39.4	no p = 0.454

\* Loss of at least one parent due to death, divorce, separation, or imprisonment, or placed in care as a child.

Table 7 Assessment of risk prior to discharge (n = 92)

<i>Risk assessment</i>	<i>Head injury</i> <i>N = 33</i> <i>n (%)</i>	<i>No head injury</i> <i>N = 59</i> <i>n (%)</i>	<i>X<sup>2</sup> and p value</i> <i>(df = 1)</i>
Risk to others	15 (45.5)	12 (20.3)	6.44 p = 0.011
Risk of self-harm	16 (48.5)	15 (25.4)	5.04 p = 0.025
Risk of re-offending	5 (15.2)	9 (15.3)	0.00 p = 0.990
Vulnerability of patient	6 (18.2)	4 (6.8)	2.84 p = 0.092



Table 8 Main factors delaying or hampering discharge (N = 108)

<i>Main factors delaying or hampering discharge</i>	<i>HI</i> <i>n = 45</i> <i>n (%)</i>	<i>No HI</i> <i>n = 63</i> <i>n (%)</i>
1. Risk to others*	14 (31.1)	9 (14.3)
2. Placement difficulties (including identification of community support)	13 (28.9)	16 (25.4)
3. Mental state (includes anxiety, depression)	6 (13.3)	15 (23.8)
4. Non compliance with medication or treatment	8 (17.8)	7 (11.1)
5. Funding issues	5 (11.1)	8 (12.7)
6. Risk of drug or alcohol problems on discharge	4 (8.9)	5 (7.9)
7. Risk to self	4 (8.9)	4 (6.3)
8. Risk of reoffending	5 (11.1)	9 (14.3)
9. Anger management/behaviour	5 (11.1)	2 (3.2)
10. Lack of insight	4 (8.9)	1 (1.6)
11. Patient has become institutionalised	0 (0)	4 (6.3)
Other	5 (11.1)	5 (7.9)
<b>None</b> – no discharge difficulties*	2 (4.4)	11 (17.5)

\* denotes a difference between between HI and non-HI groups ( $p < 0.05$ ). No differences were statistically significant at the  $p \leq 0.01$  level.