Psychiatric Issues in the Treatment of Severe Trauma

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Carol S. North and Fatih Canan

Learning Objectives

After completing this chapter, readers will be able to:

- State estimated prevalence rates of psychiatric illness and specify the most common disorders among both adult and child patient populations treated for major traumatic injuries.
- Differentiate and recognize the role of pre-existing psychiatric illness in the development of incident (new) psychiatric illness following major traumatic injury.
- Describe established methods for identification of psychiatric illness in patients with major traumatic injuries.
- Discuss the main types of treatments available for the treatment of psychiatric illness following major traumatic injury.

45.1 Introduction

Although it is undisputed that the treatment of patients with severe traumatic injuries requires expertise in orthopedics and trauma care, it is not as well appreciated that it also requires broader expertise in other medical disciplines including psychiatry. It is well recognized that traumatic injuries may be followed by an array of health problems, impaired physical functioning, reduced ability to work, employment difficulties, and permanent disability [1]. Additionally, in many patients, recovery from traumatic injuries may be complicated by psychiatric illness, which is further associated with impaired physical healing, general health, functioning, employment, and quality of life [1–3].

Despite this knowledge, systematic identification of psychiatric illness in patients with traumatic injuries is generally lacking in usual care and thus most psychiatric illness in these patients is not recognized or addressed [1, 4]. This chapter will review available literature on psychopathology in trauma patient populations, summarizing the types and prevalence of psychiatric illnesses, describing methods to help identify these vulnerable patients in clinical care, and providing an overview of interventions for psychiatric difficulties in patients receiving treatment for major traumatic injuries.

C. S. North (✉) · F. Canan
The Altshuler Center for Education & Research at Metrocare Services, Dallas, TX, USA

Department of Psychiatry, The University of Texas Southwestern Medical Center, Dallas, TX, USA
e-mail: carol.north@utsouthwestern.edu; FATIH.CANAN@phhs.org

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45.2 Research Approaches to Psychiatric Disorders in Patients Receiving Treatment for Traumatic Injuries

Although psychiatric illness well documented to represent an important complication of major trauma, the proportions of patients reported to develop psychiatric complications have varied widely across research studies [1, 4]. The main psychiatric disorders of relevance to patient populations treated for major trauma are posttraumatic stress disorder (PTSD), major depressive disorder (MDD), and substance use disorders (SUD) including alcohol and drug use disorders; anxiety disorders including generalized anxiety disorder and panic disorder in adults and behavioral disorders in children may also complicate trauma recovery for some. A review of the scientific literature has yielded a representative collection of articles reporting rates of psychiatric illness among samples of patients in trauma care settings, summarized in separate tables for adults and children in this chapter, and the clinical implications are discussed. The findings of this research should inform clinicians on the prevalence of psychiatric illness they may anticipate in the patients in their practices.

This literature is not easy to assimilate. Methodological issues in the research are pivotal to the interpretation of the reported statistics. Perhaps most importantly, different types of mental health assessment tools may yield vastly different findings. Symptom screening self-assessment tools are often used in studies that apply a threshold cutoff to the resulting symptom score to identify positive cases. The conditions identified by these scales do not represent validated psychiatric disorders but rather are arbitrary constructs that may greatly overestimate psychopathology in populations studied [5–7]. Structured diagnostic interviews uniquely assess psychiatric disorders that determine need for psychiatric treatment and choice of treatment, but they are far more burdensome in terms of both patient and assessor time and effort than brief self-report symptom scales. Self-report screening tools and clinical interviews or observation may identify psychological distress, however, which may also benefit from mental health interventions.

Other methodological issues in this literature are also relevant to interpretation of the reported findings. Many studies assess and report rates of illness only as post-injury *prevalence* of psychiatric disorders. Some studies, however, also provide pre-injury lifetime and/or recency such as in the year or month before the injury or current prevalence at the time of the injury. Current or recent prevalence rates are generally less than lifetime prevalence rates, because of the much longer time inherent in a lifetime for accumulation of psychiatric illness than in any given shorter time period. Few studies provide post-injury *incidence* (new disorders first occurring after the injury in people who did not previously have the disorder). Post-injury *incidence* of psychiatric illness is the statistic that is most likely to capture psychopathology limited to disorders specifically arising from the trauma exposure and/or injury [8]. In contrast, post-injury prevalence may include many cases that are simply the continuation of chronic pre-existing psychiatric illness. Thus, assessment of pre-injury psychiatric disorders is needed for the differentiation of post-injury incidence from prevalence. Pre-existing disorders are likely to represent an association with risk for trauma exposure and for psychiatric illness following traumatic injury.

Sampling issues in both the adult and pediatric trauma injury literature may also affect the findings. Patients with different types of injuries (e.g., orthopedic trauma, burns, minor injuries) may differ in their psychiatric morbidities. Further, many study samples have low participation of eligible patients, including volunteer or convenience samples. Such samples may not be representative of the patient populations from which they are selected, potentially introducing sampling bias and underestimating psychopathology, given that the prevalence of psychiatric illness in research nonparticipants is known to be elevated [8].

45.3 Psychiatric Illness in Patients with Traumatic Injuries

The published literature contains number of published research studies examining psychopathology in patients receiving medical care for major traumatic injuries. More studies have been conducted on adult than pediatric populations. Identification of the prevalence of psychiatric illness in patients treated for major traumatic injuries can help establish the importance of psychiatry in trauma care and inform trauma care teams of anticipated needs for psychiatric expertise in their patients.

45.3.1 Psychiatric Illness in Adult Patients with Traumatic Injuries

Table 45.1 presents findings from 17 published research studies (described in 19 articles, because 1 study yielded 3 articles) [9–11] providing full diagnostic assessment of psychiatric disorders in samples of adult patients with traumatic injuries. There exists an even larger number of studies using non-diagnostic instruments such as self-report symptom questionnaires and screeners, but these studies do not further improve estimates of psychopathology provided by diagnostic studies and will thus not be summarized in this chapter. The types of injuries represented in these studies included general trauma as well as specific types of injuries such as motor vehicle accidents (MVAs), burns, closed head injuries, and spinal injuries. The patient samples were recruited from hospital trauma centers (8 studies), burn units (7 studies), trauma rehabilitation programs (1 study), and primary care practice (1 study).

Diagnostic interviews used in these studies included most commonly the Structured Clinical Interview for DSM (SCID), and also the Composite International Diagnostic Interview (CIDI), the Diagnostic Interview Schedule (DIS), and, for PTSD, the CAPS (Clinician-Administered PTSD Scale). All of these interviews provide valid and reliable diagnostic assessments. One study [12] administered a diagnostic instrument by self-report survey rather than an interviewer-administered assessment, but it followed the complete diagnostic criteria closely. Two diagnostic interview studies [12, 13] reported prevalence data only for PTSD.

Post-injury psychiatric disorders were assessed by 13 studies, pre-injury disorders by 11, and both by 7. The studies had important methodological differences based on variable timeframes of pre- and post-injury disorders examined and reported, including current prevalence at the time of the study, cumulative post-injury prevalence, and variable pre-injury prevalence in lifetime, recency, or current point prevalence. The representation of studies became narrow within these various temporal categories of timeframes, limiting comparisons of findings across studies. In one study [14] reporting both current and post-injury prevalence of psychiatric disorders 1 year after injury, more than two-thirds of those with a post-injury disorder had a current disorder. In one study [15] reporting both post-injury prevalence and incidence, in nearly three-fourths of all the post-injury disorders the new disorders represented new disorders arising for the first time after the injury.

About half the patients in these samples were found to have post-injury psychiatric disorders [11, 15, 16]. There was an apparent dose–response relationship of trauma with psychopathology: in patients with minor injuries, only about one-fourth had post-injury psychiatric disorders [14]. Post-injury psychiatric comorbidity was typical [5], especially between mood and anxiety disorders and PTSD [15, 17].

PTSD was one of the most prevalent post-injury psychiatric disorders in several studies, occurring in as many as one-third [11–13, 18], or even more than one-half [19] of patients. PTSD was diagnosed in about 1 out of 10 (as current prevalence) patients in 2 studies of burn injuries [8, 20] and in 2% (as post-injury prevalence) of patients with minor injuries [14] and 1% (as current prevalence) of patients in a rehabilitation program for spinal injuries [16].

Nearly one-half of the adult studies assessed the post-injury prevalence of depressive disor-

Table 45.1 Adult trauma patient studies using psychiatric diagnostic instruments

Study (first author/yr)	Sample	Assessment time	Assessment tool(s)	Pre-injury disorders	Post-injury disorders
Ahmadi 2006 [23]	324 acute physical trauma pts randomly sampled from hospitals	Baseline in hospital	Structured DSM-IV interview for diagnosis and substance use	Lifetime SUD 40% (alcohol 30%, tobacco 15%). Lifetime substance use 69% (alcohol 47%, tobacco 66%).	Current substance use 35% (alcohol 3%, tobacco 14%).
Blanchard 1996 [13]	158 MVA pts referred from primary care (convenience sample)	1–4 mos post- injury	SCID I, II (DSM-III-R), CAPS		Current PTSD 39%.
Bryant 1996 [12]	35 burn unit pts (convenience sample, 61% participation)	12 mos post-injury	PTSD-I (DSM-III-R) via self-report survey		Post-injury PTSD 31%.
Dersh 2007 [16]	1323 consecutive pts with chronic disabling occupational spinal injury in rehab program	≥4 mos post-injury	SCID I (DSM-IV)	Any lifetime dx 39%: any SUD 27% (alcohol 14%, drug 8%), MDD 10%.	Any current dx 58% (excl. pain dx, present in 96%): MDD 50%, SUD 17% (alcohol 17%, drug 16%, opioid 15%), PTSD 1%.
Dyster-Aas 2008 [8]	73 severe burn injury pts in burn unit (85% participation)	Baseline (during acute care), 12 mos post-injury	SCID I (DSM-IV)	Any lifetime dx 66% (MDE 41%, AUD 32%, PTSD 10%). Any 12-mo pre-injury dx 52% (MDE 30%, AUD 18%, PTSD 7%).	Baseline: any current dx 45%: MDE 16%, AUD 16%, PTSD 10% (4% burn-related). At 12 mos: current MDE 16%, PTSD 9% (8% burn-related); incident MDD 6%.
Epstein 1993 [18]	15 (of 118) pts at trauma center with severe accidental injury (convenience sample)	9 mos post-injury	Structured interviews for DSM-III-R dx		Post-injury PTSD 40%.
Fauerbach 1996, 1997, 2000 [9–11]	98 burn center pts (25% participation)	d/c, 4 mos and 8–12 mos post d/c	SCID (DSM-III-R)	Any lifetime dx 64% (mood dx 31%, AUD 41%, DUD 14%, anxiety dx 10%).	At d/c: current PTSD 8%, MDD 4%, AUD 11%. At 4 mos: current PTSD 28%, MDD 10%, AUD 12%. At 12 mos: any current dx 51%: MDD 11%, AUD 11%.
Jorge 2004 [17]	118 pts with closed head injuries from hospital trauma centers (convenience sample)	Baseline; 3, 6, 12 mos post-injury	SCID (DSM-IV)	Lifetime SUD 24%, depressive dx 19%, anxiety dx 9%.	At 1 yr: any post-injury mood dx 45%, MDD 27%.

Table 45.1 (continued)

Study (first author/yr)	Sample	Assessment time	Assessment tool(s)	Pre-injury disorders	Post-injury disorders
Öster 2014 [20]	107 consecutive burn center pts	Admission, 12 mos, 2–7 yrs	SCID I, II (DSM-IV)	Any lifetime Axis I dx 57% (MDE 36%, SUD 29%, any anxiety dx 27%). Personality dx: 21%.	At 12 mos: current MDE 13%, PTSD 11%. At 2–7 years: any current dx 31%: MDE 3%, PTSD 0%, simple phobia 19%.
Palmu 2010 [5]	107 consecutive pts from 2 burn centers (69% participation)	≥2 wks post-injury	SCID I, II (DSM-IV-TR) (lifetime, 1 mo pre-injury, current)	Any lifetime Axis I dx 61%: MDD 15%, PTSD 8%, SUD 47% (alcohol 36%, drug 8%). Any 1-mo pre-burn dx 41%: MDD 5%, PTSD 3%, SUD 33% (alcohol 28%, drug 5%). Personality dx 23% (incl. cluster B 19%).	Any current Axis I dx 48%: MDD 4%, PTSD 3%, SUD 33% (alcohol 28%, drug 5%).
Poole 1997 [21]	Consecutively hospitalized trauma pts: 46 intentional (not suicide) and 74 nonintentional trauma (80% participation)	Before hospital d/c	PDI for DSM-III-R	Any lifetime dx 55% (intentional trauma pts 63%, incl. ASP 28%, MR 24% and nonintentional trauma pts 53%, incl. ASP 10%, MR 11%).	
Ramchand 2009 [24]	677 physical injury pts from 4 trauma centers (80% participation)	Baseline, 6 mos, 12 mos	CIDI (DSM-IV alcohol abuse); individual binge drinking and drug use questions	12-mo pre-injury alcohol abuse 24%. 12-mo pre-injury drug use 42% (marijuana 37%, cocaine 12%). 1-mo pre-injury binge drinking 37%. 2-h pre-injury alcohol/drug use 30%.	
Richmond 2009 [14]	275 minor injury pts (randomly selected from 2 trauma centers; 27 lost to F/U)	3, 6, 12 mos post-injury	SCID (DSM-IV)	Any lifetime dx 29%, any current dx 16%.	At 1 yr: any post-injury dx 23%: MDD 5%, PTSD 2%, SUD 4%; any current dx 16% (excluding pts with pre-injury dx).
Shalev 1996 [77]	51 consecutive trauma pt hospital admissions (85% participation)	1 wk, 6 mos post-injury (prospective)	PTSD section of SCID (DSM-III-R)		At 6 mos: PTSD 26% (unclear if post-injury or current prevalence).

(continued)

Table 45.1 (continued)

Study (first author/yr)	Sample	Assessment time	Assessment tool(s)	Pre-injury disorders	Post-injury disorders
ter Smitten 2011 [15]	90 consecutive burn center admissions (45% participation)	1–4 yrs post-injury	CIDI (DSM-IV)		Any 12-mo dx 39%. Incident dx 28%: MDD 10%, GAD 10%, injury-related PTSD 7%; SUD 10% (alcohol 8%, drug 2%).
Whitman 2013 [19]	42 consecutive trauma pt hospital admissions (100% participation; 11% lost to F/U)	Daily ×7 d Weekly ×3 (final interview at 1 mo)	DIS (DSM-IV)		Injury-related PSTD 59%.
Wisely 2010 [22]	58 consecutive burn center admissions (58% participation)		Semi-structured diagnostic interviews	Any lifetime dx 50% (depression 17%).	

pt patient; *F/U* follow up; *d* day; *wk* week; *mo* month; *yr* year; *d/c* discharge; *rehab* rehabilitation; *MVA* motor vehicle accident; *incl*. including; *excl*. excluding; *DSM-III-R* Diagnostic and Statistical Manual of Mental Disorders, 3rd Ed. Revised; *DSM-IV* Diagnostic and Statistical Manual of Mental Disorders, 4th Ed.; *DSM-IV-TR* Diagnostic and Statistical Manual of Mental Disorders, 4th Ed.-Text Revision; *SCID* Structured Clinical Interview for DSM Disorders; *PTSD-I* PTSD Interview; *CAPS* Clinician-Administered PTSD Scale; *PDI* Psychiatric Diagnostic Interview; *CIDI* Composite International Diagnostic Interview; *DIS* Diagnostic Interview Schedule; *dx* diagnosis; *SUD* substance use disorder; *AUD* alcohol use disorder; *DUD* drug use disorder; *MDD* major depressive disorder; *MDE* major depressive episode; *PTSD* posttraumatic stress disorder; *ASP* antisocial personality disorder; *MR* mental retardation; *GAD* generalized anxiety disorder

ders. The reported rates varied widely, ranging from <5% [5, 11, 14] to 50% [16]. In some studies, MDD was more prevalent than PTSD after the injury, but in other studies, PTSD was more prevalent. Considerably higher rates of post-injury MDD were found in studies sampling from rehabilitation units, reported in one-fourth to one-half of patients [16, 17]. In these studies, the post-injury MMD prevalence was considerably higher than its lifetime prevalence before these patients' traumatic incidents, suggesting that MDD may tend to complicate the post-injury course particularly among patients undergoing rehabilitation rather than predisposing to their risk of exposure to trauma.

The post-injury prevalence of SUDs in studies examining these disorders generally ranged between about one-tenth and one-third of patients [5, 11, 15, 16] although the post-injury prevalence of these disorders was found to be very low in a study of patients with only minor injuries [14]. In a study of burn patients, the post-injury SUD prevalence specific to alcohol was more prevalent than SUD related to other drugs [5], but in a study of spinal injury patients in a rehabilitation program, the post-injury prevalence of SUDs related to drugs was as prevalent as for alcohol [16]. It is unclear to what extent these differences in post-injury alcohol and other drug problems represent differential contributions to risk for trauma exposure in disorders that may have already been present before the injury, or to what extent these disorders may differentially arise as complications of the injuries in distinct patterns for burn injury versus spinal injury patient populations.

The pre-injury prevalence of psychiatric disorders in general was at least as high as the post-injury prevalence in the studies reviewed. Pre-existing psychiatric disorders were identified in about one-half to two-thirds of traumatic injury patients [5, 8, 9, 16, 20–22]. SUDs and personality disorders were identified as types of disorders with relatively high pre-injury prevalence in trauma injury patient populations.

Pre-injury SUDs were identified in about one-fourth to one-half of the trauma injury patients in

studies examining SUDs [5, 8, 9, 16, 17, 20, 23]. Importantly, in recent timeframes right before the traumatic injury, about one-fourth of patients were identified to have a SUD involving alcohol [5, 8, 24], and in one study, nearly one-half of patients in the sample were determined to be using illicit drugs [24]. In one study, one-third of the patients had used alcohol or drugs within 2 h of their injuries [5]. Collectively, these studies suggest not only that SUDs likely represent important risk factors for trauma exposure and injury, but also that these disorders, representing chronic illnesses, can be expected to continue in the post-injury period and present complications for medical and psychiatric recovery, in up to one-third of patients. The study of patients with chronically disabling spinal injury by Dersh and colleagues [16] noted that the patients with post-injury opioid dependence had twice the pre-injury prevalence of SUDs of the patients without opioid dependence. This finding prompted a recommendation for physicians to be careful to obtain a history of pre-existing SUD before prescribing opiates for chronic post-injury pain.

A few studies have examined personality disorders, which are generally lifelong conditions, reporting them to be present in one-fifth to one-fourth of trauma injury patients before the injury [5, 20]. Most of the personality disorders were Cluster B personality disorders including antisocial and borderline personality [5, 20, 21]. One study [10] found that burn survivors scored especially high on neuroticism and low on extraversion. The patients in that study who developed PTSD had higher neuroticism and lower extraversion scores than those who did not. These findings suggest distinct roles for these two personality features in both risk for traumatic injury and risk for development of PTSD among injured patients. The evidence suggests that personality disorders and personality features such as novelty seeking and risk taking [25–28] likely represent risk factors for exposure to trauma as well as persisting afterward to complicate post-injury recovery.

Comparing the prevalence of psychiatric disorders prior to and subsequent to the injury reported in research studies may help inform contemplation of the roles of psychiatric disorders in risk for trauma and as a consequence of trauma although caution is warranted because the timeframes compared are usually not equal. The post-injury prevalence of MDD was considerably higher than its pre-injury prevalence in two studies [16, 17], suggesting that this disorder may be more of an outcome of traumatic injury than a risk factor for trauma exposure. In four studies, substance use or SUDs were found to have a higher prevalence before than after traumatic injury [5, 11, 16, 23], suggesting a role of substance abuse and problems related to it in creating risk for traumatic injury more than being a result of the injury. One of these studies [16], however, found the post-injury prevalence (16%) of drug use disorders to be higher than the lifetime pre-injury prevalence (8%) in a sample of spinal injury patients in a rehabilitation program. Additionally, the post-injury prevalence of opioid use disorder (15%) in this sample accounted for almost all of the post-injury drug use disorders, suggesting that seeking pain relief may have played a role in the development of the addictions in these patients.

It has been suggested that different types of traumatic injuries may be associated with different patterns of pre-existing psychiatric disorder prevalence. One study found pre-existing SUDs, psychotic disorders, and personality disorders to be especially common in burn patients, possibly implying that these disorders in particular may predispose to burn injuries [5]. Four studies of burn patients [5, 8, 9, 11, 20] found that the lifetime prevalence rates of pre-existing SUDs and mood disorders were quite high, also possibly implying that these disorders may represent risk factors for burn injuries. Potential mechanisms conferring risk might be diminished cognitive processing, inadequate awareness, and impaired impulse control that may occur as part of these psychiatric illnesses [9–11, 17, 20]. SUDs and mood disorders have further been found to be specifically predictive of post-injury psychiatric illness in burn patients [11]. In a study of chronically disabling spinal injuries, PTSD developed for the first time seven times more often before

than after the injury, illustrating the recurring nature of trauma that can serve as a risk factor for subsequent spinal injury [16].

Only one adult study reviewed here [15] reported post-injury incidence of psychiatric disorders, which was identified in more than one-fourth, and no single incident disorder was identified in more than one-tenth of the sample. Of note, PTSD related to the specified traumatic injury represents an incident disorder because by definition it could not have occurred prior to the injury.

Yet other pre-existing characteristics of patients treated for traumatic injuries differentiate them from other patient populations [21]. The traumatic injury itself inserts a certain amount of selection bias into injured populations, because of the associated risk factors for trauma exposure. Social disadvantages including poverty, lack of education, and unemployment may place individuals at risk for trauma [27–29]. Specific contributors to this risk in disadvantaged populations include exposure to crime, danger, and victimization by firearms and other weapons in low-income neighborhoods, as well as employment in lower-income jobs that may involve greater physical hazards. Behavioral factors may also predispose individuals to trauma, including recreational substance use, non-use of safety devices such as automobile seat belts and motorcycle helmets, and hazardous behaviors such as climbing to unprotected heights or onto unsafe structures. Because of these pre-existing characteristics, exposure trauma is not a random occurrence in life, contrary to common assumptions [21, 28], and not all people are at equal risk for exposure to trauma [30]. As briefly mentioned earlier, people with a history of trauma are more likely to experience future traumatic events, and thus trauma exposure can be a repetitive phenomenon for some individuals who seem to be injury prone, termed "trauma recidivism" (p. e1) [31] (p. 685) [32] (p. 847) [33]. For example, a study of victims of violent injury found that 44% would have another violent injury within 5 years, and that 20% would die of trauma or substance abuse in that period [34].

45.3.2 Psychiatric Illness in Pediatric Patients with Traumatic Injuries

Table 45.2 presents findings from seven published studies (described in eight articles, because one study yielded two articles) [35, 36] providing full diagnostic assessment of psychiatric disorders in samples of child and adolescent patients with traumatic injuries. Similar to the literature on adult trauma, the child trauma literature also contains myriad studies using non-diagnostic instruments such as self-report symptom questionnaires and screeners that do not further improve estimates of psychopathology provided by diagnostic studies and will thus not be summarized in this chapter. The types of injuries represented in these study samples included general trauma, MVAs, and burns. The samples were recruited from hospitals and burn units. Of these seven studies, only post-injury disorders were assessed by six, and both pre- and post-injury prevalence were assessed by one; incidence was reported by two studies. The Diagnostic Interview for Children and Adolescents (DICA) was used in three of the studies, and five other structured diagnostic interviews were used each by a single study.

About one-third to one-half or more of the pediatric patients in these studies had a post-injury psychiatric disorder [37, 38], and one study found nearly one-third to have an incident disorder [39]. As in adults, psychiatric illness in children tended to be comorbid [38, 39], and acute post-injury onset of PTSD appeared to be a gateway for the development of other psychiatric disorders within the next 6 months [38].

As in studies of adults, pediatric injury-related PTSD was one of the main psychiatric disorders to be found in the context of the traumatic injury. Injury-related PTSD was identified in variable rates across these studies, commonly (18–35%) after MVA [40, 41] and in few (5–13%) after burns and other injuries [35, 37, 38, 42]. Psychiatric disorders other than PTSD were examined by only three studies [37–39]. Post-injury depressive disorders were observed in as few as no patients with burn injuries [38] and in

Table 45.2 Studies of children/adolescents using psychiatric diagnostic instruments

Study (first author/yr)	Sample	Assessment time	Assessment tool(s)	Pre-injury disorders	Post-injury disorders
Bloom 2001 [37]	46 hospitalized child/adolescent pts with TBI and no known prior psychiatric illness	≥1 yr post TBI	DICA-R (DSM-IV)	Any dx 35%: ADHD 22%, anxiety dx 13%	Any post-injury dx 59%: ADHD 35%, MDD 26%, PTSD 13%, anxiety dx 7%; any current dx 50%: ADHD 35%, MDD 11%, PTSD 7%, anxiety dx 2%.
De Young 2012 [38]	130 pts aged 1–6 yrs at burn center for accidental burns (40% participation)	1 and 6 mos post hospital d/c or outpatient visit	DIPA (DSM-IV-TR) parent interview		At 1 mo: any post-injury dx 35%: ODD 16%, SAD 16%, PTSD 5%, ADHD 5%, MDD 3%; any incident dx 32%. At 6 mos: any current dx 27%: ODD 14%, SAD 8%, PTSD 1%, ADHD 6%, MDD 0%; any incident dx 14%.
Max 2012 [39]	141 pts aged 5–14 yrs in consecutive hospital admissions for TBI (80% participation)	6 months post-injury	K-SADS-PL		Current depressive dx 13%; incident depressive dx 2%.
Stallard 1998 [41]	119 consecutive pts aged 5–18 yrs with MVA from hospital ED (43% participation)	22–79 d post-injury	CAPS-C		Post-injury PTSD 35%.
Stottard 2017 [42]	42 consecutive pts aged 1–4 yrs hospitalized for burns (51% participation)	1 mo post hospital d/c	DICA-P; PTSDSSI		Post-injury PTSD 10% (DICA-P) vs. 3% (PTSDSSI).
van Meijel 2015, 2019 [35, 36]	147 consecutive pts aged 8–18 yrs hospitalized for accidental injury (39% lost to F/U)	3 mos and 2–4 yrs post-injury	ADIS-IVC/P		At 3 mos: current PTSD 6%. At 2–4 yrs: current PTSD 6%.
Zink 2003 [40]	143 hospitalized pts aged 7–15 yrs with MVA	2 and 6 mos post-injury	PTSD section of DICA-R		At 2 mos: any current PTSD 18%. At 6 mos: post-injury PTSD 22%; current PTSD 10%.

pt patient; *F/U* follow up; *d* day; *mo* month; *yr* year; *d/c* discharge; *MVA* motor vehicle accident; *TBI* traumatic brain injury; *ED* emergency department; *DSM-IV* Diagnostic and Statistical Manual of Mental Disorders, 4th Ed.; *DSM-IV-TR* Diagnostic and Statistical Manual of Mental Disorders, 4th Ed.-Text Revision; *CAPS-C* Clinician-Administered Posttraumatic Stress Disorder Scale for Children; *DICA-R* Diagnostic Interview for Children and Adolescents-Revised; *DICA-P* Diagnostic Interview for Children and Adolescents-Parent version; *K-SADS-PL* Schedule for Affective Disorders and Schizophrenia for School-Age Children, Present and Lifetime Version; *DIPA* Diagnostic Infant Preschool Assessment; *ADIS-IVC/P* Anxiety Disorders Interview Schedule for DSM-IV—Child and Parent Version; *PTSDSSI* PTSD Semi-Structured Interview and Observational Report; *dx* diagnosis; *ADHD* attention deficit hyperactivity disorder; *ODD* oppositional defiant disorder; *CD* conduct disorder; *MDD* major depressive disorder; *PTSD* posttraumatic stress disorder; *SAD* separation anxiety disorder

up to about one-fourth of patients with traumatic brain injury (TBI) [37], and very few incident depressive disorders were found [39]. In a study of children with TBI [37], post-injury externalizing disorders including the hyperactive type of attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder (CD) tended to be persistent post-injury disorders, but internalizing disorders (mood, anxiety, and eating disorders) were likely

to resolve over time. Of note, children are well known to report more internalizing disorder symptoms for themselves than their parents do for them, and parents report more externalizing disorder symptoms for their children than their children report for themselves [37, 43–47], which could have played a role in the apparent more rapid recovery of the internalizing symptoms.

Pre-existing psychiatric disorders were identified in only one pediatric study [37], in which about one-third of children with burn injuries who were selected for having no known pre-existing psychiatric illness were found to actually have a pre-existing psychiatric disorder as determined by structured diagnostic interviews. In that study, ADHD represented most of the identified pre-existing psychopathology, with a lifetime prevalence several times higher than the 5% ADHD prevalence reported for the general child population [48]. This high pre-existing ADHD prevalence suggests that this disorder may be a risk factor for accidental injuries in children, a hypothesis that has been tested and found to be the case by other studies [49].

45.3.3 Clinical Implications of Psychiatric Illness in Patients Receiving Treatment for Traumatic Injuries

The main clinical implication of the studies of adult and pediatric trauma injury patients reviewed here is that post-injury psychiatric illness and distress are highly prevalent in these patients. Not only does the accompanying psychopathology result in mental suffering in its own right for these patients and their loved ones, but it appears to have important negative consequences for their short-term and long-term medical recovery, functional outcomes, and restoration of psychosocial status and quality of life.

Acutely, the occurrence of post-injury psychiatric illness or psychological distress in adult traumatic injury patients was found in these studies to be associated with longer hospitalization and greater treatment costs, higher levels of distress, and more functional impairment [9, 11, 22]. However, by the time 4 and even 12 months have elapsed, patients with and without psychiatric disorders appeared to converge in their functionally capacities, at least in one study described in two articles [9, 11]. Post-injury MDD in particular, however, has been found to be associated with poorer social functioning, more impaired daily functioning abilities, more sick days in bed, and non-return to employment at 12 months post-injury [14, 17]. These findings demonstrate the importance of identifying patients with post-injury mental health problems and providing psychiatric care not only to reduce psychiatric morbidity but also with the aim to improve their ultimate medical, psychosocial, and functional outcomes.

45.4 Identification of Psychiatric Illness in Patients with Traumatic Injuries

To be cared for appropriately, psychiatric illness must first be identified. A starting point for clinician awareness of the possibility of post-injury psychiatric illness is to consider their patients' individual histories and clinical characteristics known to be associated with, or specific risk factors for, psychopathology provided by research studies. Careful research methods are required to untangle the separate yet sometimes overlapping risk factors for psychopathology after trauma from risk for the trauma itself because risk for development of psychopathology after trauma exposure may differ from, yet be confounded with, risk for exposure to trauma [7, 50]. The risk factor most consistently and robustly found to predict post-injury psychiatric illness in both adult and pediatric studies is the presence of pre-existing psychiatric disorders [8, 11, 13, 16]. Additionally, pre-existing psychopathology has been found to predict less satisfactory recoveries even adjusting for post-injury psychiatric illness [9]. The specific pre-existing disorders found to confer greatest risk for post-injury disorders are detailed in the section above, largely consisting of depressive and anxiety disorders, PTSD, and

substance use disorders. For PTSD, in addition to pre-existing psychopathology, female sex, severity of the traumatic incident and of resulting injuries and initiation of litigation were found by one study in this review to be modest predictors of the development of PTSD, and loss of consciousness in the incident was found to be possibly protective [13].

The studies using full diagnostic assessment of patients with traumatic injuries described in this chapter described few consistent predictors of post-injury psychiatric illness beyond pre-existing psychopathology. Therefore, other findings from the broader trauma literature may be applicable in the absence of information gleaned specifically from traumatic injury populations. In general, research on samples of survivors of a variety of types of trauma broadly including non-patient epidemiological samples and disaster survivors has identified female sex and pre-existing psychopathology as the two most robust predictors of PTSD [51]. Other risk factors have been inconsistently or weakly reported in association with PTSD, including age, education, race/ethnicity, marital status, litigation, and financial compensation for injury [51–53]. The prevalence of depressive and anxiety disorders is well described as higher in women than men by a factor of about 2, and to be associated with early life adversity in general populations [54, 55]. Substance use disorders are well known to be at least twice as prevalent as men than women in the general population, associated with nonminority race for alcohol and minority race for drugs, younger individuals, and economically disadvantaged groups, especially the homeless population [56, 57]. In sum, clinicians may want to be most vigilant for post-injury psychiatric illness in their patients with traumatic injuries with past histories of psychiatric illness, paying attention especially to depressive, anxious, and posttraumatic stress disorders in female patients and substance use disorders in male patients.

One additional post-injury clinical characteristic may be a possible clinical flag representing potential for development of PTSD. A prospective study of 42 hospitalized trauma patients queried PTSD symptoms daily for the first post-injury week and then weekly through the first month, and 59% were diagnosed with PTSD [19]. By 1 week, 100% of patients meeting avoidance/numbing symptom group criteria (≥3 of 7 possible symptoms) met PTSD criteria at the end of the month, and 94% of patients not meeting criteria for this symptom group by 2 weeks post-injury did not develop PTSD. Thus, by 1 week, prominent avoidance and numbing identified all of those who would develop PTSD, and absence of avoidance and numbing identified almost all of those who not develop PTSD. Consistent with the apparent early importance of avoidance and numbing symptoms found in this study, a diagnostic study of patients with burn injuries reported that avoidant coping predicted development of PTSD during the first post-injury year [12]. It may be that patients with prominent avoidance and numbing responses early in their post-injury course are so emotionally overwhelmed by their traumatic experience that they cannot bear to think or talk about it or to feel emotions related to it, and patients who show these behavior patterns may be ones who warrant the most careful observation for the development of PTSD.

In the studies of children with traumatic injuries reviewed in this chapter, some individual characteristics were found to be associated with post-injury psychopathology, although there were few consistent predictors of post-injury psychopathology in children. A few lone studies found that girls had significantly more post-injury PTSD than boys [41], that older children were more likely to experience post-injury depression [39], and that prior trauma history was associated with development of PTSD [41] and with permanent physical impairment [36]. Numerous other studies, however, did not find these associations [36, 38–41, 58] or any association of post-injury psychopathology with race or socioeconomic status [39, 40] or type of trauma or injury [40, 41] in children.

Compared to patients briefly treated in the emergency department or outpatient care, patients hospitalized for injuries generally have more extensive contact with hospital personnel provid-

ing more opportunities for observation of emotional distress or psychiatric impairment [14, 15, 59]. However, members of trauma treatment teams may not only lack specific expertise in identification and management of psychiatric illness but also work under well-recognized time pressures of current medical environments, all conspiring against recognition and adequate management of these important problems. Additionally, systematic screening of all traumatic injury patients for psychological issues is not routine in most practices, but this practice could greatly improve recognition of need for mental health care [41] and has thus been recommended by various authors [36, 38].

Self-report symptom screening tools can be implemented systematically in clinical practice to help identify patients at risk for post-injury psychopathology. There are a number of simple, brief screening instruments that are easy for patients to complete and clinicians to score that have been determined to be valid for this purpose. Published articles provide detailed reviews of adult [6, 60] and child [61] screening of post-traumatic, depressive, and anxiety symptoms and alcohol and other drug abuse in the context of traumatic injury or general medical care. It should be emphasized that symptom screening tools are not diagnostic instruments, as they designed for maximal sensitivity and low specificity, making them overly inclusive in case-finding [61]. Thus, brief screening tools should be used only to identify patients needing further evaluation and not to infer psychiatric diagnosis or direct treatment decisions [50, 62]. Psychiatric diagnosis is time-consuming and requires specialized skills, and neither sufficient time to fully assess psychiatric disorders nor specialized training in psychiatric diagnosis are likely to be part of the repertoire of physicians specializing in traumatic injury medicine. Similar issues also apply to provision of psychiatric treatment, and thus both diagnosis and treatment of major psychiatric illness in patients with traumatic injuries will likely require the skills of a dedicated mental health professional.

Some examples of brief self-report screening instruments that have acceptable psychometric properties are freely available, and can be readily applied in clinical practice for detection of psychopathology in adult patients with traumatic injuries are the PTSD Checklist (PCL), a 17-item PTSD symptom scale [63, 64]; the Quick Inventory of Depressive Symptomatology–Self-Report (QIDS-SR), a 16-item scale for MDD symptoms [64]; the 3-item Alcohol Use Disorders Identification Test Consumption (AUDIT-C) [60, 65]; and the Two-Item Conjoint Screen (TICS) questions [60, 66]. Most simply, a single-item question can be asked of the patient about binge use of alcohol (defined as having ≥5 alcoholic drinks for men and ≥4 for women on a single occasion) or about use of illicit drugs in the last year. In a diagnostic study of adult patients with traumatic injuries, these questions identified the presence or absence of substance use disorders in these patients with a respective accuracy of about three-fourths for alcohol use disorder and of about one-half to three-fourths for drug use disorder, respectively [24]. In inpatient and emergency care settings, blood alcohol levels and urine drug screening may be useful for detecting very recent substance use.

Examples of freely available, readily applied screening tools for psychopathology with acceptable psychometric properties for children and adolescents in the context of trauma [47, 67] include the UCLA PTSD reaction index for DSM-5 (PTSD-RI-5), a 27-item scale for PTSD symptoms for children ages 6–17 years [68], and the Depression Self-Rating Scale (DSRS), an 18-item inventory of depressive symptoms for children ages 6–13 years [69].

45.5 Mental Health Care for Patients with Traumatic Injuries

Despite the frequency of psychiatric illness and its known complication of recovery from traumatic injuries [9, 11, 20], some studies in this chapter's review reported that only about half or fewer of injured patients with PTSD or other post-injury psychiatric illness received psychiat-

ric treatment for it [5, 8, 12]. In one pediatric study, no patients received treatment [41].

In many patients with traumatic injury and psychiatric illness, the psychiatric illness may have been present prior to the trauma and may have contributed to the patient's likelihood of encountering trauma; others may develop new or incident disorders only after the injury, and these disorders may well have been precipitated by the trauma. Regardless of whether the disorder is pre-existing or new after the injury, it is important to recognize and provide treatment for it, for the sake of not just the patient's psychological welfare but also to maximize chances of the most satisfactory medical outcomes as well. Available treatments for psychiatric disorders are effective and can dramatically improve or even resolve the symptoms altogether, and thus appropriate linkage to mental health care is an important intervention for patients with these disorders [59]. Psychological distress not meeting criteria for a diagnosis occurs even more often than diagnosable psychiatric disorders, representing a normative and nonpathological response, which may warrant intervention as well. Although the above review of traumatic injury patient populations identified many psychiatric disorders that deserve recognition and treatment, three of the major and commonly encountered psychiatric syndromes will be summarized below: PTSD, MDD, and substance (alcohol and drug) use disorders. There is little information on the treatment of these psychiatric disorders specific to patients hospitalized for traumatic injuries, but a great deal of information is applicable from the many studies of treatment for these disorders among psychiatric patient populations [59].

PTSD is considered the "signature" psychiatric disorder of traumatic injury [7, 50]. Among established psychiatric diagnoses, PTSD is unusual in that it is conditional on exposure to trauma. Trauma is defined by current American diagnostic criteria for PTSD [70] as a sudden threat or injury to life or limb through incidents such as accidents, disasters and war, and intentional human acts of violence [52]. The diagnosis of PTSD requires sufficient symptoms classified as intrusion (e.g., nightmares, flashbacks), avoidance (e.g., can't go back to the site of the trauma), negative cognitions and emotions (e.g., loss of interest, emotional numbing), and hyperarousal (e.g., hypervigilance, sleep disturbance), beginning after the trauma and lasting for >1 month, causing distress or impaired functioning, and not arising from another medical condition. PTSD symptoms usually begin quickly after a traumatic event, but full development of the disorder may unfold slowly over time. Although many patients will recover spontaneously from PTSD, the symptoms can persist for years or even decades. PTSD can be a serious disorder in terms of the emotional suffering and severe disability that can result from it.

Two psychotropic medications, paroxetine and sertraline—both antidepressant agents of the selective serotonin reuptake inhibitor (SSRI) mechanism—have been demonstrated to significantly reduce PTSD symptoms [51, 52, 71]. Unfortunately, for many patients, paroxetine may not be a suitable candidate because of its interaction with anticoagulant medications often administered after traumatic injuries. There have been many studies of other types of antidepressant agents and other psychotropic medications for the treatment of PTSD with favorable results, but only these two medications have received FDA approval for pharmacotherapy of PTSD. Benzodiazepines and antipsychotic medications have immediate sedative effects in contrast to SSRIs that typically require many weeks for effectiveness, but benzodiazepine and antipsychotic medications are not considered to be effective primary or adjunctive pharmacotherapy for PTSD.

Psychotherapy has also been shown to be effective for treatment of PTSD, especially exposure therapies that involve processing memories of the traumatic event and also PTSD-oriented cognitive-behavioral therapy that helps patients develop more adaptive cognitive and emotional responses to their traumatic experience. Although both pharmacotherapy and psychotherapy are effective treatments for PTSD, the decision of which or both types of treatments to use will be based on patient preference and ability to devote time, effort, and resources to therapy as well as

availability of therapists skilled in these methods.

MDD is the "bread and butter" of psychiatric care, being one of the most common disorders presenting to psychiatric treatment settings as well as one of the most prevalent disorders in general populations. Therefore, it is not unexpected that MDD is also one of the main psychiatric disorders presenting in patients being treated for traumatic injuries. MDD may occur as a single episode in a person's life, but episodes of the illness tend to recur, and sometimes MDD may become a chronic or even lifelong condition. To be diagnosed by current American diagnostic criteria, a major depressive episode (MDE) must last ≥2 weeks with depressive symptoms occurring most of the day for most days and representing a change from the person's usual self [70]. The main symptoms defining a MDE are depressed or irritable mood and loss of interest or pleasure in usual activities. Other symptoms, including appetite and sleep disturbance and fatigue are physical, suggesting or sometimes even being confused with medical illness. Yet other symptoms are cognitive, including feelings of guilt and worthlessness, inability to concentrate, and slowed thinking. The episode must cause distress or impaired functioning and not be explained by another medical condition to qualify as MDE, and for a diagnosis of MDD, the episode cannot be part of a bipolar (manic/depressive) disorder. MDD not only causes substantial psychological suffering, but it can also cause profound functional disability. A severe complication can be death by suicide, which has been documented to occur in as many as 15% of patients with severe MDD [54].

Because MDD is often comorbid with PTSD in patients unfortunate enough to develop both disorders, it is fortuitous that the two FDA-approved medications for PTSD are also effective for the treatment of MDD. There are many different types of antidepressant medications demonstrated effective and FDA-approved for the treatment of MDD, and many effective types of psychotherapy [54]. Because none of these medications has been found to be more effective than the others, and all require weeks of adequate dosing for full beneficial effects, the choice of the particular agent is largely determined by the suitability of the side-effect profile given the patient's preferences and other medical and psychosocial issues [72]. Psychotherapy may also be effective in conjunction with antidepressant medication, or by itself especially for less severe depression. The main types of psychotherapy used for depression are cognitive and behavioral therapy, interpersonal therapy, psychodynamic or psychoanalytic therapy, and supportive therapy [73].

Substance (alcohol and drug) use disorders arise from behaviors related to repetitive consumption of large amounts of these substances over time [56, 57]. These disorders involve cognitive, behavioral, and physiological symptoms related to continued use of these substances in spite of serious physical, psychological, and social complications of their use. As time progresses, continued use of these substances can generate considerable medical and psychiatric morbidity and sometimes even leads to death. Clinical characteristics of SUDs include craving of the substance, tolerance, and withdrawal syndromes. In patients hospitalized for major trauma, serious withdrawal syndromes may emerge and medical detoxification may be needed. Alcohol withdrawal peaks on about the third day of abstinence, and withdrawal from very heavy and prolonged use can lead to delirious states, withdrawal seizures, and even delirium tremens. Heavy substance use can impede the assessment of other psychiatric disorders, for which diagnosis may not be possible until some time has elapsed after cessation of use.

A common feature of substance use disorders is rationalization of the use of alcohol and/or drugs as "self-medication" of unpleasant physical or emotional states. Many patients attribute their substance use to external sources of psychosocial difficulties such as interpersonal conflicts or financial difficulties. Rationalization of substance use is a well-recognized and very common part of the illness. For individuals facing significant medical challenges such as patients recovering from major traumatic injuries, their challenging situation may be a ready target for

attribution or rationalization of substance use. Physical pain from injuries may further motivate these patients to "self-medicate" with alcohol and/or drugs. Regardless of the source of these behaviors, treatment is appropriate. Patients may be more able to surmount stigma surrounding their substance abuse if they can frame it within the challenges of their situation and may be more willing to consider and accept treatment. Effective treatment, however, helps patients move from self-blame and from blaming external sources for their difficulties to acceptance of the substance use problem as a medical illness and assuming responsibility for establishing a course toward recovery.

As for PTSD and MDD, the mainstay of treatment for SUDs also includes both pharmacological and therapeutic approaches. SUDs are generally chronic, frequently relapsing disorders, although most relapses occur in the first year after initiation of treatment. Available treatments effective and a substantial proportion of patients have good long-term courses. Two FDA-approved pharmacologic agents with demonstrated treatment effectiveness for alcohol use disorder (AUD) are naltrexone and acamprosate. Psychosocial treatments include cognitive-behavioral therapies, 12-step group peer programs such as Alcoholic Anonymous that emphasize achievement of sobriety, family and social therapies, and a brief counseling technique known as motivational interviewing that addresses patient ambivalence toward change using principles of harm reduction rather than emphasizing total abstinence [74].

Some special aspects of psychiatric treatment in children deserve mention. An important principle of pediatric psychiatry is that how parents conduct themselves in challenging situations may substantially influence the child's emotional response to the situation, and conversely that the child's distress may also affect the parents' ability to function and effectively parent their child through difficult circumstances [61, 75]. Thus, family members such as parents or other caregivers are routinely included in psychiatric treatment of children. Most children are resilient even in the face of major difficulties such as traumatic injuries. Provision of emotional support is appropriate for all children, however, as almost all children can be expected to experience psychological distress after trauma. A useful intervention is the "normalization" of discussion and feelings about the traumatic incident [40, 61]. Children with intense emotional distress and/or psychiatric disorders may need formal treatment, including individual and family therapy and even pharmacotherapy for severe or disruptive symptoms. Pre-existing psychopathology such as ADHD may obscure diagnosis of other disorders and complicate post-injury psychiatric treatment. Importantly, not all psychopathology in children with traumatic injuries should be assumed to be caused by the trauma [62].

A few additional special psychiatric considerations that may emerge in the acute treatment of traumatic injuries. Psychotic disorders, substance use disorders, and personality disorders that may predispose to traumatic injury, especially burns, may complicate the treatment of the injuries, requiring specialized psychiatric care in coordination with the trauma treatment team [5]. Chronic pain is well known to be associated with psychiatric disorders, but certain disorders (SUDs, anxiety disorders, and MDD) frequently precede the development of the pain disorder; additionally, MDD also has a propensity to develop anew after the onset of pain [5, 76]. Regardless of the causal directions in these associations, pain management may be complicated by these psychiatric disorders. Brain matter lesions in patients with TBI may impair executive functioning and directly induce depressive and anxiety disorders and personality changes that may hinder functional recovery from injuries in both adults and children [16, 39]. Delirium may arise as a function of severe medical compromise following injury, creating difficult and hazardous behavioral aberrations requiring acute medical intervention.

Although research has demonstrated that psychiatric treatments are effective and that psychiatric illness is associated with less favorable medical and functional outcomes of traumatic injuries, studies with designs such as randomized controlled trials are needed to experimentally test

the effects of treatment of psychiatric disorders on these outcomes. At present, it can only be inferred that psychiatric treatment can potentially improve medical and functional outcomes based on non-experimental studies that are available, but there is every reason to believe that future research will demonstrate this benefit.

45.6 Conclusions

Mental health issues constitute a substantial source of interventions needed for patients receiving care for acute traumatic injuries, as most patients experience emotional distress, and substantial proportions have diagnosable psychiatric disorders. Patients with traumatic injuries have elevated risk for psychiatric illness, including disorders that newly develop during their post-injury course and pre-existing disorders that persist in the post-injury period and contribute risk for the injury that led the patient to treatment for it. Untreated psychiatric illness in these patients is associated with less satisfactory medical and functional outcomes, yet most patients with psychiatric illness go unrecognized and/or their illness is untreated. To address these problems that are inherent in the current fragmented systems of care, integrated multidisciplinary teams with dedicated psychiatric expertise are needed to ensure that psychiatric issues in these patients are properly recognized and addressed [40]. Well-designed studies are needed to demonstrate that appropriate psychiatric treatment can improve not only psychiatric outcomes, but also medical and functional outcomes with reduced length of recovery and cost of treatment—which may in turn encourage new initiatives to include specialty care within trauma treatment environments.

Key Concepts

- Psychiatric illness in patients receiving treatment for major traumatic injuries is greatly under-recognized and largely untreated.
- Psychiatric illness complicating treatment of major traumatic injuries must first be identified, and then linkage to appropriate psychiatric care is an important aspect of care for major traumatic injuries.
- Pre-existing, post-injury, and incident (new) psychiatric illness after major trauma are all important to the treatment of traumatic injuries, and each has a distinct role for contribution to exposure to trauma and recovery from traumatic injuries.
- Integrated multidisciplinary teams with dedicated psychiatric expertise are needed to ensure that psychiatric issues in patients with major traumatic injuries are properly recognized and addressed.

Take Home Messages

- Recovery from traumatic injuries may be complicated by psychiatric illness, which is further associated with impaired physical healing, general health, functioning, employment, and quality of life.
- About half of patients receiving care for major traumatic injuries will experience psychiatric illness during their recovery.
- Few patients with psychiatric illness present during treatment for major traumatic injuries are identified, and most do not receive psychiatric treatment.
- Brief self-report psychiatric symptom tools are available for identification of patients with increased risk for psychiatric illness complicating treatment of major traumatic injuries, and systematic application of these tools will identify patients needing diagnostic evaluation and possibly treatment for psychiatric illness.
- Psychiatric treatment is effective and may not only reduce psychiatric suffering but also improve medical and functional outcomes of treatment for major traumatic injuries.

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