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Wolters Kluwer

Acute stress disorder in adults: Epidemiology, clinical features, assessment, and diagnosis

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INTRODUCTION

Acute stress disorder (ASD) is characterized by acute stress reactions that may occur in the initial month after a person is exposed to a traumatic event (threatened death, serious injury, or sexual violation). The disorder includes symptoms of intrusion, dissociation, negative mood, avoidance, and arousal.

The intent of the ASD diagnosis is to facilitate identification and treatment of severe acute stress responses. Treatment of ASD can have the additional benefit of limiting subsequent posttraumatic stress disorder (PTSD), which is diagnosed only after four weeks of symptoms following exposure to trauma.

The epidemiology, pathogenesis, clinical manifestations, course, and diagnosis of ASD are described here. The treatment of ASD is discussed separately as are topics related to clinical presentation, diagnosis, comorbidities, and treatment of PTSD.

- (See "[Acute stress disorder in adults: Treatment overview](#)".)
- (See "[Posttraumatic stress disorder in adults: Epidemiology, pathophysiology, clinical features, assessment, and diagnosis](#)".)
- (See "[Posttraumatic stress disorder in adults: Treatment overview](#)".)
- (See "[Posttraumatic stress disorder in adults: Psychotherapy and psychosocial interventions](#)".)

- (See ["Dissociative aspects of posttraumatic stress disorder: Epidemiology, clinical manifestations, assessment, and diagnosis"](#).)
- (See ["Co-occurring substance use disorder and anxiety-related disorders in adults: Epidemiology, pathogenesis, clinical manifestations, course, assessment, and diagnosis"](#), section on 'Posttraumatic stress disorder'.)

EPIDEMIOLOGY

Prevalence — The point prevalence of acute stress disorder (ASD) following trauma exposure has been estimated at between 5 and 20 percent, depending on the nature and severity of trauma and the instrument used to identify the disorder. Rates of ASD, following specific types of trauma include:

- Motor vehicle accident – 13 percent [1], 21 percent [2]
- Mild traumatic brain injury – 14 percent [2]
- Assault – 16 percent [3], 19 percent [4]
- Burn – 10 percent [3]
- Industrial accident – 6 percent [5], 12 percent [3]
- Witnessing a mass shooting – 33 percent [6]

Risk factors — It is probable that most risk factors for posttraumatic stress disorder also apply to ASD [7]. Consistent with this presumption is evidence that ASD is associated with the following characteristics [8-10]:

- History of a pretrauma psychiatric disorder
- History of traumatic exposures prior to recent exposure
- Female gender
- Trauma severity
- Neuroticism
- Avoidant coping

A problem with most studies of risk factors for ASD is that they assess trauma survivors following trauma exposure. A more accurate assessment of risk would be achieved by testing people prior to trauma exposure. Studies adopting this approach have suggested that individual differences in reactivity to stressors, difficulties in extinction learning, and tendency to engage in catastrophic thinking prior to exposure are linked to worse outcomes following a trauma. As an example, a study of firefighter recruits found that an elevated acoustic startle

response prior to commencing firefighting duties predicted acute stress reactions after exposure to traumatic events [11].

PATHOGENESIS

It is not known why some people develop acute stress disorder (ASD) following a traumatic event. Nor is it fully understood why some people with ASD develop subsequent posttraumatic stress disorder (PTSD) and others do not. However, conceptual models and research studies suggest some underlying factors.

- **Dissociative symptoms** – When ASD was initially introduced, it was largely influenced by the proposal that dissociative symptoms (ie, impaired consciousness, memory, identity, or awareness of body, self, or environment) in response to trauma are a pivotal factor in maladaptive responses to trauma [12]. In terms of dissociation that occurs at the time of trauma (termed peritraumatic dissociation), it is proposed that dissociating trauma memories and their associated affect from normal awareness impedes processing of these reactions and thereby leads to subsequent PTSD [12].

Contrary to earlier beliefs that the presence of dissociation in the acute stress reaction was pivotal in predicting future PTSD, it has become clear that the influence of dissociation appears to be moderated by other variables [13,14]. One model posits that peritraumatic dissociation is a function of the elevated arousal that occurs in the wake of trauma, and so it is elevated arousal in the acute phase that may drive the dissociation, and it is arousal that fuels later PTSD [15]. This interpretation accords with the following findings:

- Dissociative phenomena (eg, flashbacks) occur in PTSD in response to yohimbine-induced arousal [16].
 - Dissociative reactions are commonly reported during panic attacks [17].
 - Panic attacks are very common during trauma [18].
 - Dissociative responses can be induced with a hyperventilation task in individuals with ASD [19].
 - The relationship between peritraumatic dissociation and acute stress depends on the level of peritraumatic panic [20].
- **Panic/elevated arousal** – The finding that panic plays a role in the etiology of ASD is consistent with the prevailing model of ASD and PTSD. Fear conditioning models posit that

the fear elicited during a traumatic event results in conditioning in which subsequent reminders of the trauma elicit anxiety in response to trauma reminders [21]. This model proposes that extreme sympathetic arousal at the time of a traumatic event may result in the release of stress neurochemicals (including norepinephrine and epinephrine) that results in overconsolidation of trauma memories [22]. According to this model, most trauma survivors successfully engage in extinction learning in the days and weeks after trauma as they learn that the reminders are not signaling further threat. In terms of responses in the acute phase, there is much evidence that people who eventually develop PTSD display elevated heart rate in the days after the trauma [23-28]. Further, there is evidence that people with elevated respiration rate after trauma are more likely to develop PTSD [23]. These findings underscore the proposal that elevated arousal in the acute phase is important in the etiology of ASD and PTSD.

- **Cognitive processing** – Another conceptual model for ASD involves cognitive processes, which posit that extremely negative and unrealistic appraisals about the traumatic event, greater levels of symptomatic response, and stronger beliefs about the likelihood of future harm will increase the extent to which PTSD develops [29]. Supporting this model is evidence that people with ASD exaggerate the probability of future negative events [30,31]. Catastrophic appraisals in the initial period after trauma exposure predict subsequent PTSD in adults [32,33] and children [34,35]. Rumination in the acute phase after trauma predicts later PTSD [36].

CLINICAL MANIFESTATIONS

Acute stress disorder (ASD) typically presents with severe levels of re-experiencing and anxiety in response to reminders of the recent trauma. These reactions tend to be readily activated by many occurrences and situations, and often lead to generalized fear and vigilance for further threats.

As an example, a patient presented in treatment two weeks after being assaulted and robbed at his store. He reported that he was experiencing frequent nightmares of the assault, as well as terrifying dreams of being attacked in other situations. He reported daily intrusive memories of the experience (eg, vivid recollections of the assailant sliding a knife against his throat; strong perceptual memories that included smelling the assailant's breath and feeling the scraping sensation of the knife against his skin. The patient reported intense distress to many reminders, including meeting strangers, people of the same ethnic appearance as the assailant, and even entering his own store. He suffered distressing memories every time he shaved because the sensation of the razor on his skin

triggered clear memories of the assailant's knife at his throat. This caused him to tremble with fear, causing him to cut himself while shaving further exacerbating his memories and fears. He became intensely fearful of all potential threats, and constantly scanned his surroundings for anything that may harm him. He always ensured he had his back to the wall so nobody could approach him from behind, and never entered situations which did not allow for ready escape.

Active avoidance of any perceived threat, or even reminders of threat is common as the patient attempts to minimize distress by reducing exposure to any situations, thoughts, or conversations that will reactivate their fear. This can even generalize to being reluctant to discuss their experience with his supports (friends, family) or during clinical assessment.

Patients who meet the full dissociative criteria for ASD (ie, three or more dissociative symptoms) may present with a flat or blunted affect, described as emotional numbing. These patients can appear to be in shock. Even though patients may display dissociative responses on presentation, when directed to recount their trauma they typically will become highly distressed. Patients may report amnesia of core aspects of the event; amnesia of the entire experience is extremely rare.

COURSE OF ILLNESS

Trauma survivors often display symptoms of marked distress in the initial days and weeks after a traumatic event, but then the majority of people tend to adapt, and these symptoms remit. This pattern has been observed in survivors of motor vehicle accidents [37], rape [38], non-sexual assault [39], and terrorist attacks [40]. Latent growth mixture modeling has shown over numerous studies that trauma survivors follow four or five major types of trajectories of posttraumatic stress, including resilient, chronically distressed, gradually recovering, and worsening [41-44].

The acute stress disorder (ASD) diagnosis has been proposed as a means to identify among patients experiencing an acute stress reaction to trauma those at higher risk for subsequent posttraumatic stress disorder (PTSD) who thus may benefit from early intervention. A systematic review of 22 longitudinal studies of 3335 adults and children who were assessed within a month, and subsequently at least three months later, found that a diagnosis of ASD had a moderately strong positive predictive power to identify patients who would go on to develop PTSD [1,4,45-65]. Although there is considerable variability across studies, between 40 and 80 percent of those with ASD develop subsequent PTSD; that is, half or more of people with ASD do not experience chronic PTSD. Only 30 to 60 percent of those who eventually develop

PTSD meet criteria for ASD in the acute phase, indicating that most people who develop PTSD are not detected by the diagnosis. Further studies of children reinforce the conclusion that the ASD diagnosis is a poor predictor of subsequent PTSD [66,67].

ASSESSMENT

Structured instruments — There are three structured measures specifically designed to assess for acute stress disorder (ASD).

- The Stanford Acute Stress Reaction Questionnaire, a 30-item self-report inventory, encompasses each of the ASD symptoms that has been validated against the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnosis. [68]
- The Acute Stress Disorder Interview, a 19-item structured clinical interview, possesses good internal consistency ($r = 0.90$), test-retest reliability ($r = 0.88$), sensitivity (91 percent) and specificity (93 percent) relative to independent clinician diagnosis of ASD [69].
- The Acute Stress Disorder Scale is a self-report inventory that is based on the same items described in the Acute Stress Disorder Interview [70]. The scale is widely used as a clinical screen for people who may have ASD; however, it is optimally used as a tool to measure severity of acute stress symptoms rather than to diagnose acute stress disorder. Some studies have employed an overall cutoff score on the Acute Stress Disorder Scale to identify people who are high risk for posttraumatic stress disorder; a score of 50 or more may identify severe acute stress reactions.

DIAGNOSIS

Diagnostic criteria — The diagnostic criteria for acute stress disorder (ASD) from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) are described below [71]:

- "A. Exposure to actual or threatened death, serious injury, or sexual violation in one (or more) of the following ways:
 - 1. Directly experiencing the traumatic event(s)
 - 2. Witnessing, in person, the event(s) as it occurred to others

- 3. Learning that the event(s) occurred to a close family member or close friend

Note: In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.

- 4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (eg, first responders collecting human remains, police officers repeatedly exposed to details of child abuse)

Note: This does not apply to exposure through electronic media, television, movies, or pictures, unless this exposure is work-related.

- B. Presence of nine (or more) of the following symptoms from any of the five categories of intrusion, negative mood, dissociation, avoidance, and arousal, beginning or worsening after the traumatic event(s) occurred:

- Intrusion symptoms

- 1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).

Note: In children, repetitive play may occur in which themes or aspects of the traumatic event(s) are expressed.

- 2. Recurrent distressing dreams in which the content and/or affect of the dream are related to the event(s).

Note: In children, there may be frightening dreams without recognizable content.

- 3. Dissociative reactions (eg, flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings.)

Note: In children, trauma-specific reenactment may occur in play.

- 4. Intense or prolonged psychological distress or marked physiological reactions in response to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

- Negative mood

- 5. Persistent inability to experience positive emotions (eg, inability to experience happiness, satisfaction, or loving feelings).
- Dissociative symptoms
 - 6. An altered sense of the reality of one's surroundings or oneself (eg, seeing oneself from another's perspective, being in a daze, time slowing).
 - 7. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs).
- Avoidance symptoms
 - 8. Efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
 - 9. Efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
- Arousal symptoms
 - 10. Sleep disturbance (eg, difficulty falling or staying asleep, restless sleep)
 - 11. Irritable behavior and angry outbursts (with little or no provocation), typically expressed as verbal or physical aggression toward people or objects
 - 12. Hypervigilance
 - 13. Problems with concentration
 - 14. Exaggerated startle response
- C. Duration of the disturbance (symptoms in Criterion B) is three days to one month after trauma exposure.

Note: Symptoms typically begin immediately after the trauma, but persistence for at least three days and up to a month is needed to meet disorder criteria.

- D. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

- E. The disturbance is not attributable to the physiological effects of a substance (eg, medication or alcohol) or another medical condition (eg, mild traumatic brain injury) and is not better explained by brief psychotic disorder.”

We suggest delaying the diagnosis until a week after the event. Although the DSM-5-TR stipulates that ASD can be diagnosed three days after the traumatic event, delaying the diagnosis until a week after the event may better identify patients who can be effectively treated and are at higher risk of developing posttraumatic stress disorder (PTSD). Diagnosis within three days will identify many people who are experiencing a transient stress reaction that will potentially abate in the following week.

Symptoms of ASD should be present at a severe level to warrant diagnosis. As an example, many people will display some form of avoidance in the month after trauma; however, to meet the avoidance criterion for ASD, the patient needs to be engaging in effortful avoidance that reflects a pattern of actively not engaging with reminders of the event.

Differential diagnosis — ASD should be distinguished from mental disorders such as panic disorder and adjustment disorder. Panic attacks characteristic of panic disorder have a sudden onset that is uncued rather than preceded by trauma, and lead to persistent concern or anxiety about possible recurrence rather than re-experiencing of a preceding event. (See ["Panic disorder in adults: Epidemiology, clinical manifestations, and diagnosis"](#).)

Adjustment disorder is regarded as a ‘residual’ category in which symptoms do not meet the criteria for another specific disorder. An acute stress reaction in response to a traumatic experience (threatened death, serious injury or sexual violation) meets criteria for ASD. A life-threatening illness or traumatic injury are not considered traumatic experiences of the type characterized by ASD diagnostic criteria.

ASD should be distinguished from other causes of altered awareness in an injured patient following trauma, including:

- Effects of analgesic medications
- Medical conditions involving coma or impaired awareness
- Effects of substance use disorder

In each of these conditions, the patient may experience alterations in awareness that can appear similar to dissociative experiences. As an example, [morphine](#) prescribed to manage acute pain can result in reduced awareness, derealization, depersonalization, or amnesia. These states can be easily confused with dissociative symptoms of ASD.

An impaired consciousness resulting from mild traumatic brain injury (TBI) can closely mimic a range of ASD symptoms, including depersonalization, derealization, reduced awareness, and dissociative amnesia. There are no reliable means to differentiate between dissociative amnesia and amnesia secondary to mild TBI [72], and for this reason it is wise to not interpret amnesia in the aftermath of mild TBI as a symptom of ASD. Mild TBI can co-occur with ASD (and later PTSD). Longitudinal studies of mild TBI patients have found that meeting ASD criteria is predictive of subsequent PTSD [50]. It appears that satisfying the re-experiencing, avoidance, and arousal symptoms of ASD, even when the person has only partial memory of the traumatic event because of mild TBI, can nonetheless reflect the early signs of subsequent PTSD. (See ["Acute mild traumatic brain injury \(concussion\) in adults"](#).)

In contrast to mild TBI, diagnosing ASD in patients with moderate or severe TBI is not recommended because these patients, by definition, have more pervasive disturbances in consciousness that will overlap markedly with stress reactions, and typically have difficulty monitoring and reporting their psychological states.

Subsyndromal ASD — The development of criteria for acute stress disorder (ASD) was aimed at identifying persons at risk for the development of PTSD but had insufficient symptoms to be diagnosed with ASD. Subsyndromal ASD was often defined as meeting three of the four symptom clusters with most studies of subsyndromal ASD not requiring that dissociative symptoms be present [45-48]. Subsequent studies found that subsyndromal ASD criteria that did not require dissociation to be present had greater sensitivity for predicting the subsequent development of PTSD [1,4,45,63].

It appears that there are multiple pathways to developing PTSD, and whereas some people may display initial dissociation, others do not. Persons with ASD appear to have stronger dissociative tendencies, as measured by hypnotizability, relative to those with subsyndromal ASD [73]. This suggests that people with dissociative tendencies may respond this way to a trauma, however many others who do not have this dissociative tendency will be equally likely to develop PTSD.

This conclusion was a major factor in altering the ASD criteria in to no longer require specific clusters of symptoms to be present [74].

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See ["Society guideline links: Trauma-related psychiatric disorders in adults"](#).)

SUMMARY AND RECOMMENDATIONS

- **Acute stress disorder (ASD)** – ASD is characterized by acute stress reactions that may occur in the initial month after a person is exposed to a traumatic event. The disorder includes symptoms of intrusion, negative mood, dissociation, avoidance, and arousal. (See ['Introduction'](#) above.)
- **Prevalence** – The prevalence of ASD after a traumatic event has been estimated at between 5 and 20 percent, depending on the nature and severity of trauma, and the instrument used to identify the disorder. (See ['Prevalence'](#) above.)
- **Clinical manifestations** – ASD typically presents with severe levels of re-experiencing and anxiety in response to reminders of the recent trauma. These reactions tend to be readily activated by many occurrences and situations. This will often lead to generalized fear, vigilance for further threats, and active avoidance of situations that stimulate recollections of the trauma. (See ['Clinical manifestations'](#) above.)
- **Diagnosis** – ASD is diagnosed in persons experiencing or witnessing a traumatic event and experiencing associated symptoms of intrusion, negative mood, dissociation, avoidance, and arousal, and significant distress or impairment. Symptoms should be present at a severe level to warrant diagnosis. (See ['Diagnosis'](#) above.)

While the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) stipulates that ASD can be diagnosed three days after the traumatic event, we typically delay the diagnosis for a full week after the event. Although the delaying the diagnosis until a week after the event may better identify patients who can be effectively treated and are at higher risk of developing posttraumatic stress disorder. Diagnosis within three days will identify many people who are experiencing a transient stress reaction that will potentially abate in the following week. (See ['Diagnosis'](#) above.)

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