

CE 3.0 contact hours

ABSTRACT: *Traumatic brain injury (TBI) is one of the leading causes of long-term disability in the United States. Persons with TBI can experience numerous alterations in functional status, self-care ability, and cognitive, emotional, and social functioning. Understanding TBI features, treatment, and rehabilitation is imperative for nurses in every setting. Trauma, intensive and acute care, and rehabilitation nurses are an essential part of the interprofessional team that promotes optimum outcomes through specific interventions to foster hope for TBI patients and families.*

KEY WORDS: *nursing, rehabilitation, spiritual care, TBI, traumatic brain injury*



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Traumatic brain injury (TBI) is a highly prevalent injury in trauma-related care and is one of the leading causes of long-term disability in the United States. More than 2.8 million TBI-related emergency department visits, hospitalizations, and deaths occurred in the United States in 2014 (Centers for Disease Control and Prevention [CDC], 2019). This is a conservative number, as these injuries may go undiagnosed or underreported; this

can be remarkable.

Healthcare professionals of all disciplines need to understand TBI, the deficits that can occur with a TBI, how to provide evidence-based interventions, and how to educate the survivor and his/her family regarding the injury and long-term recovery. Nurses are vitally important in TBI rehabilitation; often nurses are the first professionals to receive the patient in the trauma or emergency room. Nurses may triage a concussion in the

This insult to the head may result in a loss of consciousness and can lead to neuropsychological, behavioral, cognitive, and functional changes. Falls are the most common cause of TBIs (Kolakowsky-Hayner et al., 2016). Other causes include motor vehicle collisions, assault, gunshot wounds to the head, and sports injuries. TBI is considered the “signature injury” experienced by service members of the Iraq and Afghan wars (U.S. Department of Veterans Affairs, 2019).

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*By Tiffany Armstrong
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Hope

After TBI

Begins with Rehabilitation

often is the case with concussions, also known as *mild traumatic brain injury* (mTBI). Many times, brain injury is referred to as “an invisible injury,” as survivors can look well physically, but residual deficits can be undetected by the casual observer. The lifetime cost of healthcare and lost productivity due to TBI is approximately \$76.5 billion (in 2010 dollars) (Kolakowsky-Hayner et al., 2016).

Traumatic brain injuries require complex treatment and frequently are misunderstood by the survivor, their family and friends, and even healthcare providers who are not educated on brain injury. A brain injury is not similar to a broken bone or even diabetes where a cast or pharmacotherapy can fix or mitigate the problem. A brain injury can have a lifelong impact. Once the brain is injured, it is rarely the same, especially in moderate and severe cases. However, when a survivor with a brain injury receives quality and competent rehabilitative care, recovery

can be remarkable. Healthcare professionals of all disciplines need to understand TBI, the deficits that can occur with a TBI, how to provide evidence-based interventions, and how to educate the survivor and his/her family regarding the injury and long-term recovery. Nurses are vitally important in TBI rehabilitation; often nurses are the first professionals to receive the patient in the trauma or emergency room. Nurses may triage a concussion in the

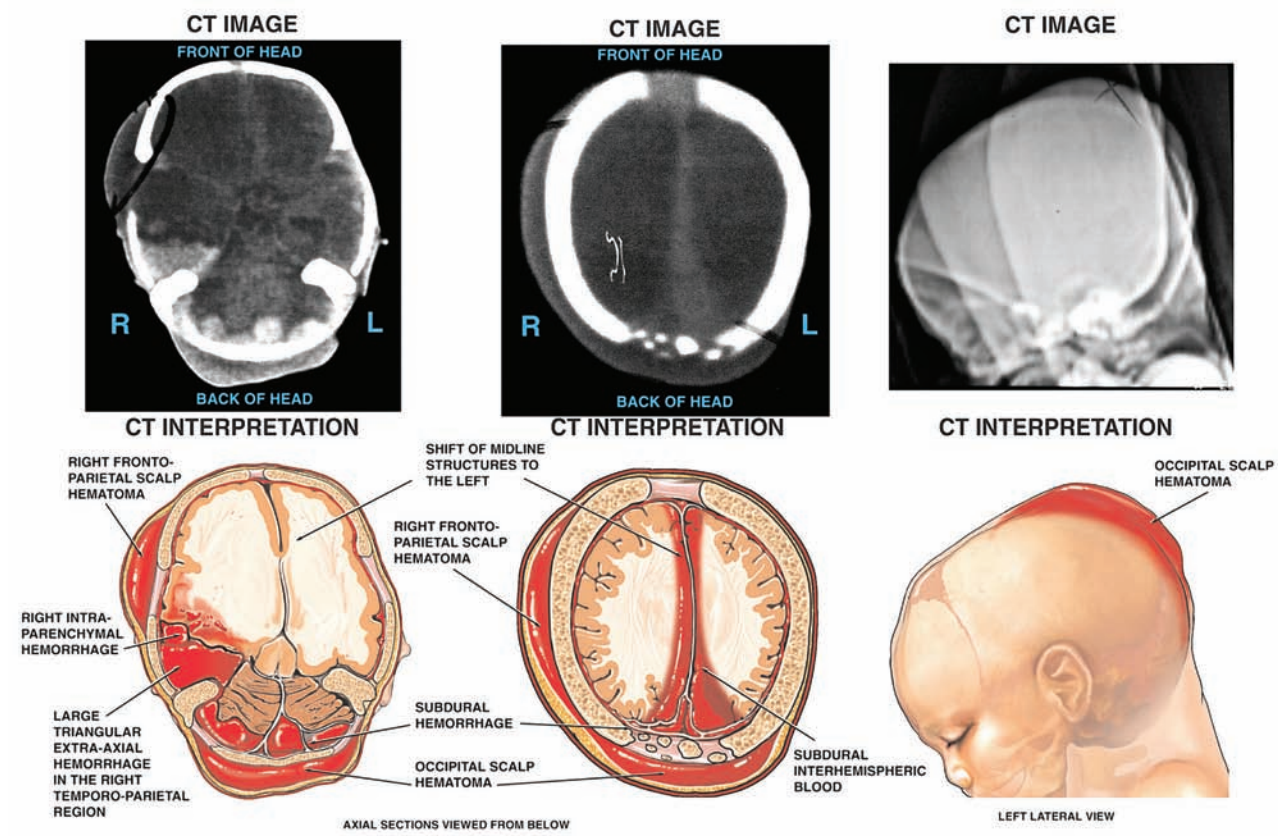
UNDERSTANDING TBI

A TBI occurs when an insult to the brain is caused by an external force. An individual does not have to hit his or her head in order to sustain a TBI, and not every blow to the head results in a brain injury. A brain injury occurs when the velocity and inertial forces are enough to create cellular or structural damage to the brain.

Types

There are various types of TBIs. One type is a focal injury that impacts a specific area of the brain such as a gunshot wound to the head. Inertial and velocity-dependent injuries can create a *coup* (site of the injury) *contrecoup* (additional injury opposite site of injury) *effect* when multiple areas of the brain are injured, such as in a motor vehicle accident when a person’s head hits the dashboard and then bounces backwards, creating a double impact. Brain injuries can

result in bleeding in the brain including subdural hematomas, epidural hematomas, subarachnoid hemorrhages, or bleeding deeper into the parenchyma of the brain. Many severe TBIs result from diffuse axonal injury, a global injury to the brain where significant velocity and impact cause a shearing and tearing of the axonal connections throughout the brain. This type of injury frequently accompanies high-speed collisions and high-velocity falls. Neurosurgical consultation in the trauma setting will decide what, if any, neurosurgical intervention is required to evacuate bleeding and relieve pressure to the brain caused by edema from the injury.



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Severity

Brain injury severity can be quantified by the Glasgow Coma Scale (GCS). This scale assesses a patient’s behavioral response in three key areas: eye opening, verbal response, and motor response (Royal College of Physicians and Surgeons of Glasgow, n.d.). The GCS provides a score of 3–15. A score of 3–8 is a severe brain injury, 9–12 moderate injury, and 13–15 mild brain injury (Table 1).

The GCS can be administered at any time postinjury but is most commonly utilized in the field, soon after the injury, by emergency medical technicians, in emergency rooms (ER) or trauma bays, or in the intensive care unit (ICU). It is important to note that the GCS has poor reliability related to long-term prognosis, especially when the initial score is low (Zasler et al., 2012). Multiple factors can impact long-term outcomes after

severe TBI, such as age, health prior to injury, and cause of injury (Shobhit & Iverson, 2020).

Deficits

A plethora of deficits can occur after a TBI. These impairments can be short term or permanent. Deficits depend on the type and severity of injury and can be classified into three main domains: physical, cognitive, and emotional/behavioral. Table 2 provides an outline of deficits in each domain. Cognitive deficits and recovery are also objectified by the Rancho Los Amigos Levels of Cognitive Functioning Scale-Revised (RLA; Table 3). Originally developed at Rancho Los Amigos Rehabilitation Hospital in 1972 and revised in 1997, the RLA is a measure of cognitive recovery post-TBI and helps explain what are considered normal stages of recovery following injury. This tool can help nurses and therapists know what to expect related to function and behavior during recovery and assist in predicting the trajectory of recovery depending where the patient begins and how quickly he or she moves through the RLA stages.

Table 1. *Glasgow Coma Scale*

Behavior	Response	Score
Eye opening	Spontaneously	4
	To speech	3
	To pain	2
	No response	1
Verbal response	Oriented to time, place, and person	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
Motor response	Obeys commands	6
	Moves to localized pain	5
	Flexion withdrawal from pain	4
	Abnormal flexion (decorticate)	3
	Abnormal extension (decerebrate)	2
	No response	1

Note: Teasdale & Jennett (1976)

Table 2. *Deficits Experienced After TBI*

Physical	Cognitive	Emotional/Behavioral
<ul style="list-style-type: none"> • Changes in bowel and bladder functioning • Dizziness • Headaches • Fatigue • Hemiparesis • Seizures • Nausea/vomiting • Pain • Impaired balance and coordination • Blurred or double vision • Decreased or loss of hearing; tinnitus • Loss of taste • Loss of smell (anosmia) • Difficulty swallowing • Motor planning difficulties (dyspraxia) 	<ul style="list-style-type: none"> • Impaired memory • Decreased attention • Reduced processing speed • Difficulty with problem solving • Lack of insight of deficits • Disoriented/confusion • Poor safety awareness • Impaired communication—receptive and/or expressive aphasia, slurred speech 	<ul style="list-style-type: none"> • Restlessness • Agitation • Irritability • Aggression • Mood swings • Lack of initiation • Depression • Anxiety • Flat affect • Insomnia or hypersomnia • Over- or underemotional response

NURSING CARE IN THE ACUTE PHASE

Concussion or mTBI may not require any medical or nursing intervention after initial evaluation. However, best practice is a 2- to 3-week follow-up to assess resolution of symptoms. Evidence demonstrates that 85% to 90% of those who have sustained a concussion require 2 to 4 weeks for symptoms to resolve (Biagianni et al., 2020). About 10% to 15% of mTBI cases may require more active intervention in the forms of psychiatry and rehabilitation services to facilitate recovery. Persistent mTBI symptoms such as headache, memory difficulties, balance impairment, vision deficits, and mood complaints can last for weeks, months, or years if not treated early. In cases of prolonged persistent concussion symptoms, referral to a multidisciplinary assessment team is considered best practice (Marshall et al., 2015).

Individuals with moderate to severe TBI often require medically intensive triage, trauma care, neurosurgical consultation, acute care admission, and often a postacute rehabilitation program for weeks and months postinjury to address the severity of their deficits. Acute medical management of the TBI survivor includes achieving physiological stability, vitals monitoring, medication management, indwelling device management including intracranial pressure monitors, drains, and craniotomy or craniectomy care. Crucial care in reducing secondary complications includes serial neurological assessments, ensuring skin integrity by reducing

the risk of pressure injuries, avoiding contractures, balancing nutritional and fluid needs, bowel and bladder maintenance, and pulmonary care including ventilator management (Das-Gupta & Turner-Stokes, 2002). Secondary complications can hinder an individual's ability to return to his or her life in a meaningful manner.

A family's religious and spiritual beliefs may play a significant role in guiding their decision in sustaining or withdrawing care.

A TBI can be fatal. More than 56,500 deaths were attributed to TBI in the United States in 2014 (CDC, 2019). However, 70% of these deaths were due to withdrawal of life-sustaining treatment (Giacino et al., 2018). In the most severe cases of TBI, families may be counseled by trauma providers on their options for continued care. Nurses play a vital role in supporting families who are faced with the difficult decision to continue aggressive care and strive for the best recovery possible or to de-escalate and withdraw care.

SPIRITUAL CARE AND TREATMENT DECISIONS

A family's religious and spiritual beliefs may significantly guide their decision to sustaining or withdrawing care. It is important for care providers to un-

derstand and actively listen to families' needs, concerns, and how their spirituality impacts the family and conceptualization of the situation. Some families may ask for spiritual care or to consult their spiritual or religious leader. This is a delicate situation post-TBI and nurses must have the knowledge and empathy to support each individual case. Nurses must be aware of personal or religious biases regarding withdrawal of care or quality of life and prevent imposing their biases on the family.

Families should not be pressured to make decisions to sustain or withdraw care within the first hours or days postinjury (Fins, 2015). In the trauma and ICU settings, nurses serve in roles of counselor, educator, and comforter for families facing these difficult decisions. When supporting families, it is imperative to know recent research on positive long-term outcomes and quality of life potential in severe TBI cases and to limit gravely nihilistic prognoses (Giacino et al., 2018; Hammond, Giacino, et al., 2018).

POSTACUTE CARE: REHABILITATION NURSING

In the last decade, multiple studies have focused on assessing the recovery of individuals from prolonged disorders of consciousness (DOC). The DOC spectrum includes coma, vegetative state or unresponsive wakefulness, and minimally conscious state. Research has demonstrated a more positive view of long-term outcomes for survivors of severe brain injury who have experienced prolonged DOC. Analysis of

Table 3. *Rancho Los Amigos Scale—Revised*

I	No Response	No response to pain or stimulation of senses. No sleep/wake cycle. Classified as coma.
II	Generalized Response	Emerging response to pain, noise, visual, or other stimulus. May open eyes spontaneously, but is not conscious. Classified as vegetative state.
III	Localized Response	Withdraws or vocalizes to painful stimuli. Turns towards or away from auditory stimuli; blinks at bright light and may visually follow moving object. Inconsistent command following. Classified as minimally conscious state.
IV	Confused-Agitated	Extremely limited attention and concentration. Disoriented to environment. Physically restless; sometimes combative or agitated. Can be difficult to redirect from confused and agitated behaviors. Hypersensitive to external and internal stimuli.
V	Confused-Inappropriate-Non-agitated	Disoriented and confused. Participates in some tasks. May become agitated in response to external stimulation or lack of environmental structure. Often demonstrates confused language. Highly distractible. Difficulty learning new information. Can respond to familiar commands.
VI	Confused-Appropriate	Inconsistent orientation. Behaviors are more goal directed. Safety and insight are still significantly impaired. Able to use memory aides with assistance.
VII	Automatic-Appropriate	Appears appropriate and normal on the surface. Able to engage in highly familiar tasks. Poor recollection of day-to-day occurrences. Lacks insight and judgment. Demonstrates initiative and carry-over for new learning.
VIII	Purposeful-Appropriate, Stand-by Assistance	Completes familiar home and community activities independently. Requires help with unfamiliar situations. Oriented and able to recall recent events and plan for the future. Aware of disability but unable to self-monitor and recognize a problem while it is occurring.
IX	Purposeful-Appropriate, Stand-by Assistance on Request	Completes new tasks with extra time and instruction. Demonstrates insight into impairments and abilities. Able to shift back and forth between tasks independently. Increased insight into other's thoughts and feelings.
X	Purposeful-Appropriate, Modified Independent	Formulates own compensatory techniques. Demonstrates socially appropriate behavior without assistance. Handles multiple tasks simultaneously in all environments, but may need periodic breaks. Independently thinks about consequences. Irritable and low frustration tolerance noted when ill, fatigued, and/or under emotional stress.

Note. Adapted from "Traumatic brain injury provider training manual" by Nebraska Brain Injury Advisory Council. Copyright © 2019 Nebraska Brain Injury Advisory Council.

several studies demonstrated that 38% of individuals emerge into consciousness at 3 months postinjury, 67% at 6 months, and 78% at 12 months (Hammond, Russell, et al., 2019). Functional outcomes also are more positive than historically predicted. Whyte et al. (2013) found that 5 years after injury, 58% to 85% of survivors were independent in self-care and mobility, about 21% were independently living without supervision, and about 20% were employable. Hammond, Giacino, et al. (2018) completed a 10-year outcome study and found continued functional gains between years 5 and 10 postinjury. Therefore, early nihilistic prognoses should be avoided and all treatment options should be considered. Nurses can play a key role in educating patients and family members on realistic expectations while still assuring that research shows hope for ongoing improvement.

Difficult decisions about treatment don't end at the trauma/ICU doors. In chronic severe brain injury cases, the plan to de-escalate care may be the wish of family as surrogates of patients who unfortunately do not achieve the

recovery that was originally hoped for and remain in a DOC state. These families may have originally made the decision to move forward with a tracheostomy (trach), feeding tube, and aggressive care. However, months or years later, if the patient is still in a vegetative or minimally conscious state, families may decide to de-escalate care as they feel their loved one "would not want to live this way." Nurses in skilled, long-term care, home health, or hospice may care for survivors and families who move toward these decisions months or years postinjury.

After a patient is medically stabilized following the initial brain injury, it is considered best practice to recommend specialized brain injury postacute care (Giacino et al., 2018). Specialized brain injury postacute care and rehabilitation programs are specifically designed to manage the medical, physical, cognitive, and behavioral changes and challenges that can occur after moderate to severe brain injury (Seel et al., 2013). The majority of skilled nursing or long-term care facilities are not equipped to provide the intensity and specificity of

resources and treatments to facilitate optimal recovery after TBI. Brain injury programming is recommended in the first weeks and months postinjury.

Goals of rehabilitation

In postacute settings, nursing care continues to focus interventions on any of the previously mentioned concerns that are still applicable to the patient, along with nutritional needs, bowel and bladder management, physical needs, cognitive functioning, behavioral support, and patient and family education. Nurses also work closely with other rehabilitation professionals to assist patients with mobility, transfers, self-care, toileting, feeding and swallowing, and utilizing cognitive compensatory strategies for memory and behavioral changes. Nursing is seen as collaborative with therapists in providing a robust rehabilitation program. Inpatient rehabilitation settings include nurses as critical members of the interprofessional rehabilitation team who offer daily input from a nursing perspective on the patient's progress and medical needs.

The ultimate goal of TBI care and rehabilitation is to return survivors to participation within their families and communities. Return to functional independence, work, school, and play are viewed as significant quality-of-life measures. Facilitating return to quality of life after TBI starts at the time of injury and is supported by all team members throughout the continuum of care. Rehabilitation team members need to remember that quality of life looks different for each individual and family member and can change from a preinjury definition to a completely different perspective postinjury.

Specific care needs after TBI

Regardless of the setting, a nurse who cares for an individual with a TBI should be prepared to provide a variety of interventions. The role of the rehabilitation nurse encompasses many areas including basic nursing care. However, rehabilitation nurses also specialize in promoting self-care, assuring proper nutrition, bowel and bladder maintenance, prevention of skin breakdown, behavior management, safety promotion/fall prevention, medication management, fostering smooth transitions of care, and education of the patient/family/caregiver. A few of these unique specialized care needs are discussed here in more detail.

GI and respiratory functions

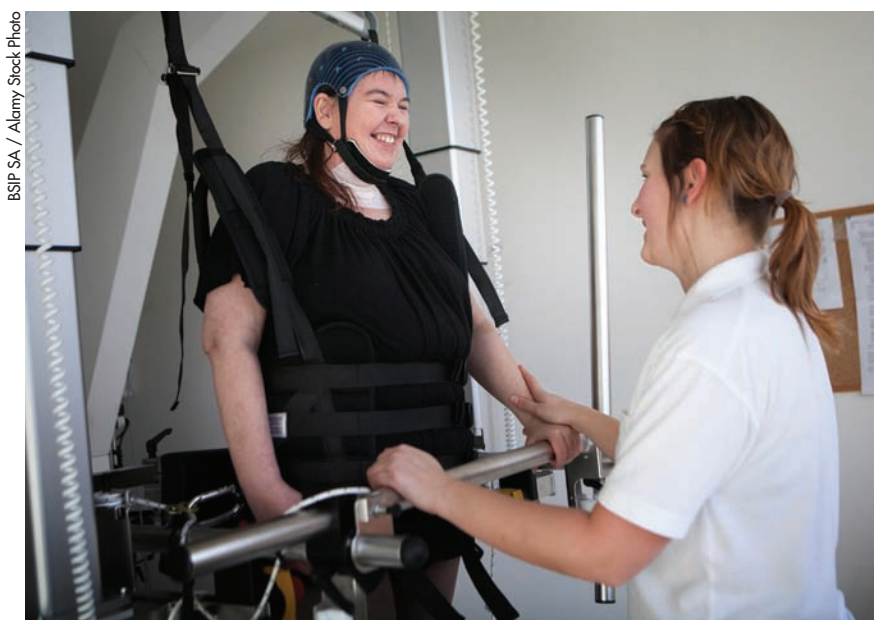
Often patients with TBI have a gastrostomy tube (g-tube) for medication and enteral feedings. Nurses may be charged with exchanging the g-tube on a routine or as-needed basis, or discontinuing the g-tube when no longer needed. These patients may also have tracheostomies. A nurse should know how to perform trach care, change trach ties, give respiratory treatments via a trach, reinsert a dislodged trach, change an inner cannula, exchange a trach on a routine or as-needed basis, suction, and use a bag-valve mask via a trach. If the patient requires mechanical ventilation, the nurse will need to be familiar with ventilation management even if a respiratory therapist typically manages the ventilator. There may be times when the respiratory therapist is not immediately available, which would require the nurse to know the basic functions of the ventilator and how to disconnect the ventilator to attach a bag-valve mask.

Bowel and bladder care

Management of bowel and bladder is another necessary nursing task. Management may look different depending on the setting and medical stability of the patient. In acute care, the focus is more on medical stability so patients may require indwelling catheters or rectal tubes to help manage skin integrity

and assess accurate intake and output. However, in postacute care, management is on promoting continence and independence. Foxx-Orenstein et al. (2003) found that 68% of patients with a TBI experienced bowel incontinence at the time of admission to inpatient rehabilitation. Bowel and bladder are important functions that individuals want to regain control over to return to previous life functioning; incontinence could hinder this return and increase emotional concerns. Incontinence can be caused by medications, diet, or simply the inability of the brain to send and receive messages to and from the bladder and bowel to continue normal functioning, unless there were additional physical injuries to the bladder or bowel (Foxx-Orenstein et al., 2003). Thus, the goal is to reestablish a normal continence routine.

A nurse should assess for the presence of urinary retention and if present, establish an intermittent catheterization schedule to reestablish communication between the bladder and brain. Intermittent catheterization can decrease the risk of infection from an indwelling catheter and helps maintain skin integrity by preventing consistent wetness in an incontinence brief. If urinary retention is ruled out, a nurse can create a simple toileting schedule (Das-Gupta & Turner-Stokes, 2002). It is helpful to track an individual's voiding habits over a few days to determine when the patient voids spontaneously and time toileting attempts according to that pattern. The toileting schedule will need to be adjusted to be more frequent if a patient has continued incontinence or the time can be increased if a patient remains continent to help increase the time a patient maintains continence.



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Nurses can play a key role in educating patients and family members on realistic expectations after TBI while still assuring that research shows hope for ongoing improvement.

For bowel incontinence, the nurse can schedule specific times for toileting that would incorporate both bowel and bladder to promote continence. However, if a patient is having trouble with continued incontinence, the nurse could discuss with the physician if a bowel regimen could be ordered. This regimen could include bowel care medications and/or digital stimulation and could occur twice daily, daily, or every-other-day to fit the patient's needs. Nurses should assist in reviewing the patient's diet, activity level, and side effects of medications that affect bowel incontinence (Foxy-Orenstein et al., 2003).

Behavior management

In addition to other routine nursing care including activities of daily living and medication administration, nurses should familiarize themselves with behavior management techniques. Neurobehavioral and neuropsychiatric changes are common after TBI. Many individuals experience anxiety, agitation, or aggression as part of the normal recovery process. These maladaptive behaviors can be displayed in any setting. Because nursing care is provided 24/7, nurses will likely encounter a range of behaviors with these individuals.

A key concept to behavior management is recognition of the escalation of a patient's agitation so early intervention is possible (Crisis Prevention Institute, 2017). By addressing these behaviors early, nurses may prevent more aggressive or harmful behaviors. Strategies include low-stimulating environments (turning off the television, limiting visitors), rest breaks, consistent routines, distraction by changing the subject or asking a patient a question related to a hobby or his/her family, allowing a patient to ambulate to help decrease motor restlessness, and eliminating or minimizing precipitating factors. It is not always easy to determine what triggers a patient's behavior, but if a nurse recognizes that he or she may be increasing the patient's behavior, the nurse should step out so another nurse or staff member can interact with the patient. Nurses must advocate for patients who

have frequent maladaptive behaviors. Nurses should communicate with the transdisciplinary team including neuropsychology, if available, to determine a consistent team approach. Nurses can also request a referral to psychiatry or psychology and educate family and other visitors how to minimize overstimulation. Overstimulation or agitation can decrease the individual's ability to participate in therapy or daily routines, which can impact overall recovery (Das-Gupta & Turner-Stokes, 2002).

Safety

Another important nursing assessment is safety. Survivors of brain injury are at a high risk for falls (McKechnie et al., 2016). Although assessing safety risk is not unique to TBIs, the risk interventions applied can differ due to the complexity of causes for increased risk (McKechnie et al., 2015). Different settings use a wide range of interventions; nurses should know the policies and regulations applicable in their settings. Some settings allow restraints including wrist restraints or net beds, whereas other settings encourage less restrictive interventions such as bed or chair alarms, low beds with mats, 1:1 supervision, secured units, remote video monitoring, and use of diversional activities such as music therapy, recreational therapy, group or individual activities, or fidget/sensory kits. Nurses should promote the least restrictive interventions for safety regardless of the situation to limit the risk of injury and promote dignity of the patient (Centers for Medicare and Medicaid Services, 2008).

Patient/family education

A brain injury can change relationship roles between spouses, parent and child, friends, and siblings. These unexpected changes may create stress and dysfunction within family relationships. The topics of sexuality, intimacy, and relationships should be addressed with an individual and his or her family. Nurses should be prepared to provide education in a respectful and nonjudgmental manner. Literature recommends utilization of the PLISSIT model to

initiate discussion of intimacy and sexuality after disability (Annon, 1976). Arango-Lasprilla et al. (2017) identified that survivors of TBI and their families desire increased openness from their providers in discussing sexuality. Sexuality and intimacy can be impacted by both physical and psychological changes after brain injury.

Divorce and separation rates have been reported as high as 78% after a brain injury (Dyer & das Nair, 2014). Both patients and nurses can have opinions and beliefs regarding this topic based on their cultural, spiritual, and religious backgrounds. Nurses should know the policy in their practice setting regarding education of sexuality and intimacy. Nurses should be prepared to direct patients to additional resources that could provide factual answers to their questions, including a physician, pastor, spiritual care advisor, or additional local or national brain injury resources. The TBI Model Systems Knowledge Translation Center (2011) provides basic information about how a TBI affects sexual functioning, what causes changes in sexual functioning after a TBI, and how to improve sexual functioning after a TBI.

SPIRITUAL CARE AND SUPPORT OF PATIENTS AND FAMILIES

Traumatic brain injury impacts every family member and changes the family dynamic, including roles and responsibilities, and places financial burdens on the family. Not surprisingly, one's personal religious and spiritual beliefs are significant in the outcomes of rehabilitation from a brain injury. Waldron-Perrine et al. (2011) discovered that a sense of being connected to a higher power correlates to a TBI survivor's maximizing of his or her rehabilitation potential and gaining the greatest positive outcomes. Nurses working with persons following a TBI should fully assess the patient's and the family's spiritual beliefs and facilitate the use of those beliefs throughout the rehabilitation process. Engage the patient and family to understand their spiritual and religious preferences and to understand how their beliefs can foster their coping and resilience after TBI.

Individuals recovering from TBI may have different perceptions of God/higher power postinjury. Their knowledge of how to express spirituality and practice their religion or gain confidence from their faith can be lost or altered as a result of the injury. This can be disconcerting and another potential source of grieving and distress for family members if they have shared the patient's religious or spiritual beliefs.

Nurses can affirm the grieving and questioning that TBI patients experience. Be present and listen actively. Avoid judgmental responses if anger and rejection of one's faith or higher power is voiced. Seek out the resources that the patient needs to regain religious or spiritual equilibrium. As a patient grapples with a change in or loss of meaning and purpose in life, offer the services of a chaplain or other appropriate spiritual advisor.

In considering the patient's return to his or her community, communicate to the family that actively participating in the community can lower the person's emotional and psychological impairment (Hughes & Handzo, n.d.). Cornah (2006) found that depression is less likely the more a person uses religious activities, spiritual practices, and involvement with a spiritual community. If available, involve a faith community nurse in the discharge and reentry to community process.

A multitude of resources are available for survivors of TBI and their families or care providers. The Brain Injury Association of America (BIAA) and the Brain Injury Alliance are excellent places to start (see Web Resources). These organizations support state and local programs and house a plethora of information regarding brain injury for survivors and caregivers. The BIAA offers opportunities for healthcare professionals to specialize in brain injury care, including a national specialty certification. Many communities also provide brain injury resource facilitation and brain injury support groups.

PREVENTING TBI

Given that a TBI cannot be cured, a focus on prevention is essential. Prevention strategies include education

for the general public, improvement of public health services, and implementation of legislation. Prevention education can be provided in schools, health fairs, public service announcements, and healthcare settings. Brain injury prevention education should include fall prevention that teaches individuals about adequate lighting and clutter-free walkways. Prevention education also includes using a helmet when riding bicycles, skateboards, roller skating, snowboarding, horseback riding, contact sports, or when riding in open and unrestrained vehicles. Remind individuals to wear a seatbelt when riding in a motor vehicle. As healthcare providers, we should also provide education to new parents on abusive head trauma. The Period of Purple Crying Program is an excellent resource in providing abusive head trauma education (see Web Resources).


Prevention of secondary TBI is also necessary after an initial injury. As previously stated, TBI survivors have an increased fall risk and higher risk of being in motor vehicle collisions when driving after their TBI (Bivona et al., 2012). The media also has addressed prevention as it relates to the National Football League and college safety and rule changes. All 50 states have legislation surrounding sports concussion prevention and management (CDC, 2015). Several states have motorcycle helmet laws. The best way to treat a TBI is to prevent one.

CONCLUSION

Persons with TBI fall into a specialized population with specific needs requiring support from care providers knowledgeable about their diagnosis and long-term needs. The brain continues to baffle experts and researchers as to how it heals after injury. Much remains unknown. Nurses can be beacons of hope when the prognosis is unknown and the ultimate outcome unclear. It is a blessing to witness and take part in the miracle of recovery so often experienced by brain injury survivors. It is a gift to be able to serve this population and their families.

Web Resources

- **Brain Injury Alliance:** <https://www.usbia.org>
- **Brain Injury Association of America:** <https://www.biausa.org>
- **Brain Injury Resource Center:** <https://www.headinjury.org>
- **BrainLine:** <https://www.brainline.org>
- **Centers for Disease Control and Prevention:** <https://www.cdc.gov/traumaticbraininjury/>
- **Model Systems Knowledge Translation Center:** <https://www.msktc.org/tbi>
- **National Association of State Head Injury Administrators:** <https://nashia.org>
- **National Resource Center for TBI:** <https://www.tbinc.com>
- **Period of Purple Crying Program:** purplecrying.info/what-is-the-period-of-purple-crying.php

Patient-centered, competent, and compassionate care will leave a lasting impact on the patient and family. 

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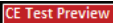
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