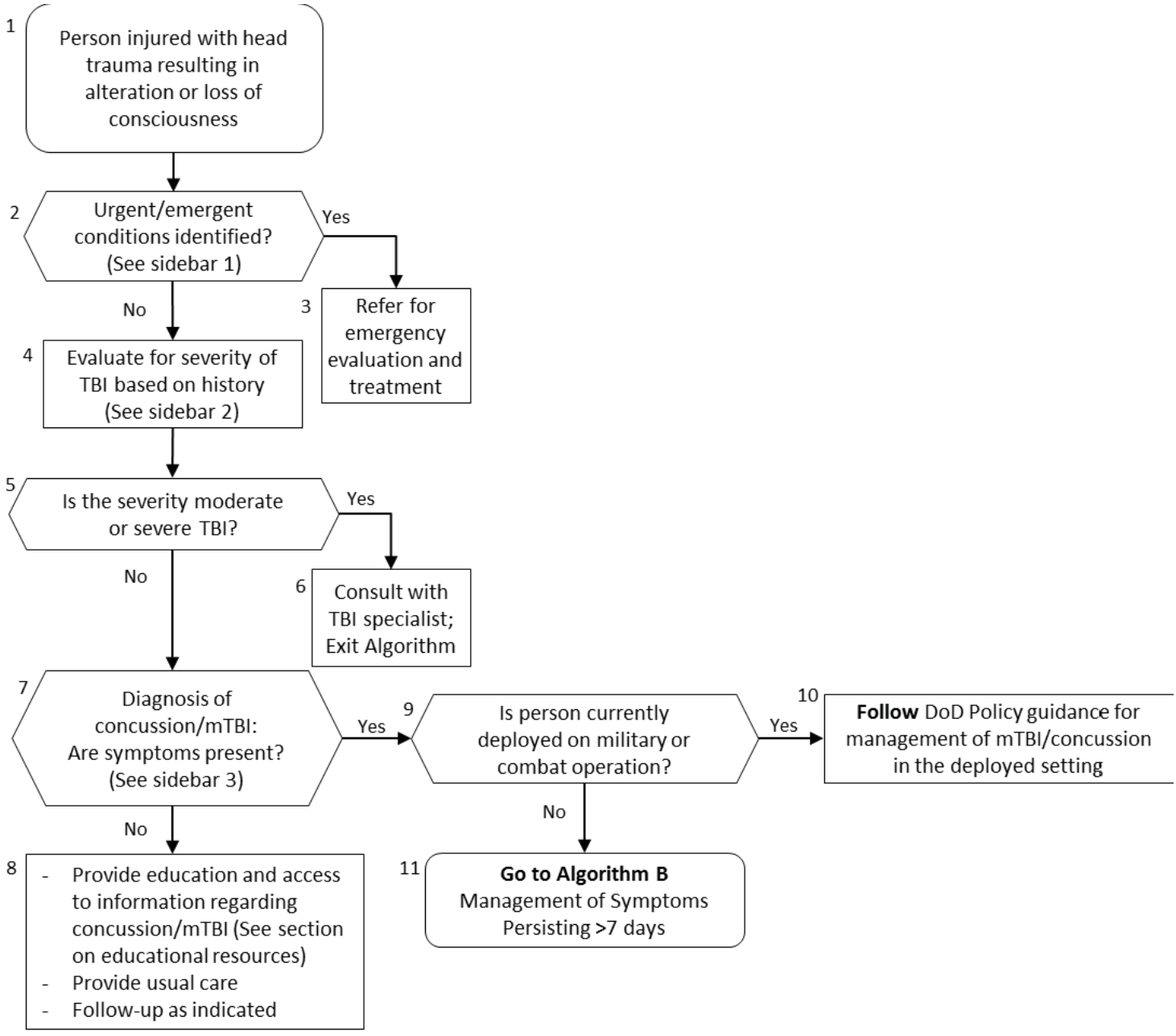
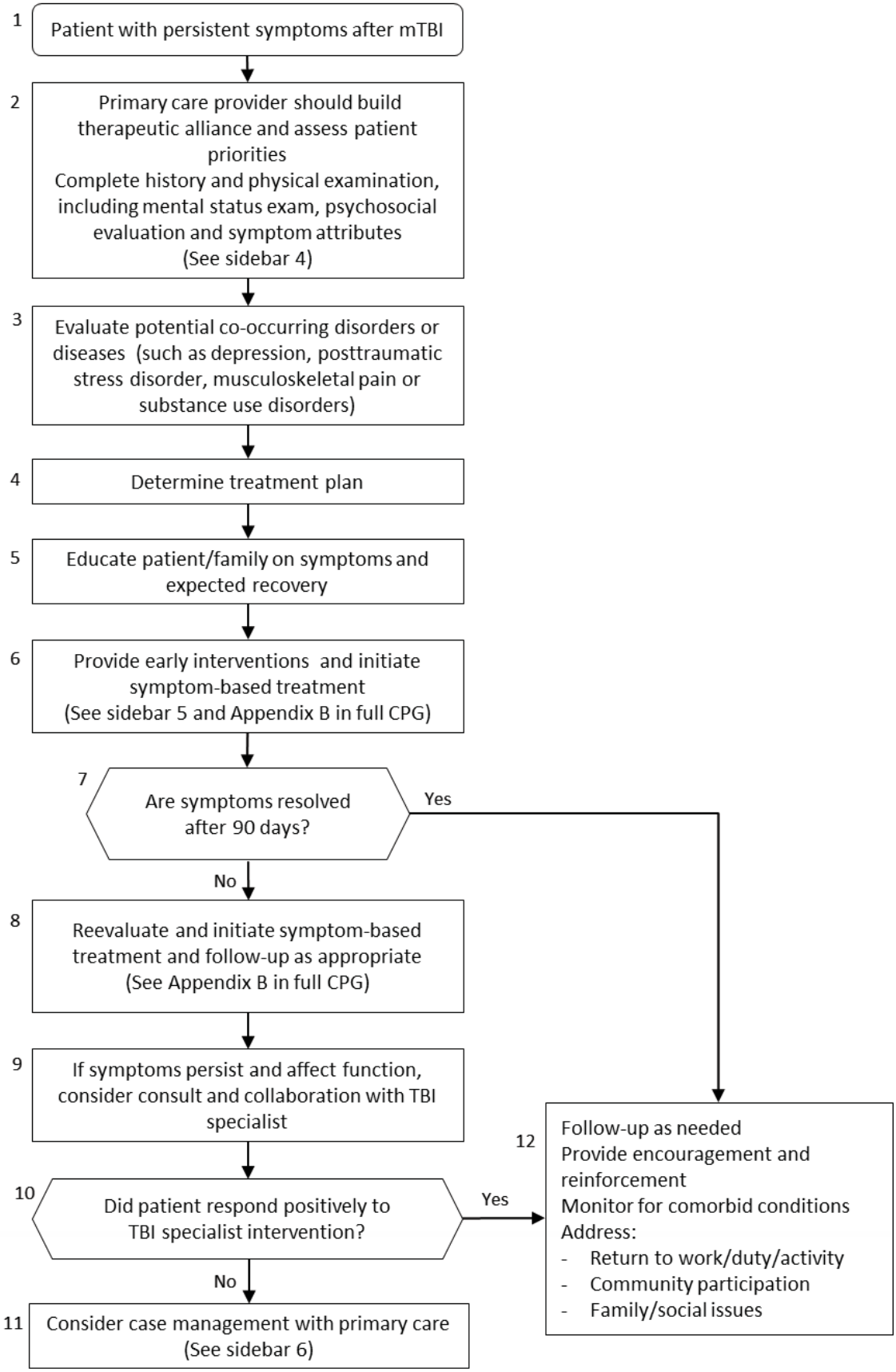
Module A: Initial Presentation (>7 Days Post-injury)



Module B: Management of Symptoms Persisting >7 days



Sidebar 1: Indicators for Immediate Referral	
1. Progressively declining level of consciousness 2. Progressively declining neurological exam 3. Pupillary asymmetry 4. Seizures 5. Repeated vomiting 6. Neurological deficit: motor or sensory	7. Double vision 8. Worsening headache 9. Cannot recognize people or disoriented to place 10. Slurred speech 11. Unusual behavior

Sidebar 2: Classification of TBI Severity
(If a patient meets criteria in more than one category of severity, the higher severity level is assigned)

Criteria	Mild	Moderate	Severe
Structural imaging	Normal	Normal or abnormal	Normal or abnormal
Loss of Consciousness (LOC)	0-30 min	>30 min and <24 hours	>24 hours
Alteration of consciousness/ mental state (AOC)*	up to 24 hours	>24 hours; severity based on other criteria	
Posttraumatic amnesia (PTA)	0-1 day	>1 and <7 days	>7 days
Glasgow Coma Scale (GCS) (best available score in first 24 hours)**	13-15	9-12	<9

*Alteration of mental status must be immediately related to the trauma to the head. Typical symptoms would be: looking and feeling dazed and uncertain of what is happening, confusion, difficulty thinking clearly or responding appropriately to mental status questions, and being unable to describe events immediately before or after the trauma event.
**In April 2015, the DoD released a memorandum recommending against the use of GCS scores to diagnose TBI. See the memorandum for additional information.[1]

Sidebar 3: Possible Post-mTBI Related Symptoms***		
Physical Symptoms: Headache, dizziness, balance disorders, nausea, fatigue, sleep disturbance, blurred vision, sensitivity to light, hearing difficulties/loss, tinnitus, sensitivity to noise, seizure, transient neurological abnormalities, numbness, tingling	**Cognitive Symptoms:** Problems with attention, concentration, memory, speed of processing, judgment, executive control	**Behavior/Emotional Symptoms:** Depression, anxiety, agitation, irritability, impulsivity, aggression

***Symptoms that may develop within 30 days post injury.

Sidebar 4: Symptom Attributes

- Duration, onset, and location of symptom
- Previous episodes, treatment and response
- Patient perception of symptom
- Impact on functioning
- Factors that exacerbate or alleviate symptoms

[1] Department of Defense Instruction. DoD policy guidance for management of mild traumatic brain injury/concussion in the deployed setting. 6490.11: Department of Defense; September 18, 2012. Updated April 2015.

Sidebar 5: Early Intervention

- Provide information and education on symptoms and recovery
- Educate about prevention of further injuries
- Provide reassurance on expectation of positive recovery
- Empower patient for self-management
- Provide sleep hygiene education
- Teach relaxation techniques
- Recommend limiting use of caffeine/tobacco/alcohol
- Encourage monitored progressive return to normal duty/work/activity/exercise

Sidebar 6: Case Management

Case managers may:

- Follow-up and coordinate (remind) future appointments
- Reinforce early interventions and education
- Address psychosocial issues (financial, family, housing or school/work)
- Connect patient to available resources

Symptom Management			
Symptom	**Non-Pharmacologic Treatment**	**Pharmacologic Treatment**	**Referral After Failed Response to Treatment**

Headache *(treatment approach is dependent upon headache type)*	• Education including topics such as:
	  • stimulus control
	  • sleep hygiene
	  • dietary modification
	  • environment modifications
	• Physical therapy (for tension headaches of cervical origin)
	• Biofeedback
	• Integrative medicine
	• Cognitive behavioral therapy
	• Extracranial pressure
	• Thermal therapies
		Tension-like
		• **Abortive:** NSAIDS, aspirin, acetaminophen, combination medications (aspirin, acetaminophen, caffeine and a sedative drug)
		• **Preventive:** Tricyclic antidepressants, beta-blockers (propranolol), anti-convulsants (topiramate), tizanidine
		Migraine-like
		• **Abortive:** NSAIDS, serotonin 5-HT receptor agonist, aspirin, acetaminophen, antiemetic agents, combination medications
		• **Preventive:** Anti-convulsants (gabapentin, topiramate, divalproex sodium), beta-blockers, alpha-blockers, tricyclic antidepressants, magnesium oxide, vitamin B2
			• Neurology
			• Pain clinic

Dizziness and disequilibrium	• Trial of vestibular, visual, and proprioceptive therapeutic exercise; a prolonged course of therapy in the absence of patient improvement is strongly discouraged	• Medications should only be considered if symptoms are severe enough to significantly limit functional activities; trials should be brief and optimally less than a week • Vestibular suppressants; first-line medication: meclizine, followed by scopolamine and dimenhydrinate	• ENT • Neurology • Physical therapy
Tinnitus	• Trial of tinnitus management (e.g., white noise generator, biofeedback, hypnosis, relaxation therapy); a prolonged course of therapy in the absence of patient improvement is strongly discouraged		• ENT

Symptom Management			
Symptom	**Non-Pharmacologic Treatment**	**Pharmacologic Treatment**	**Referral After Failed Response to Treatment**
Visual symptoms	• Trial of specific visual rehabilitation; a prolonged course of therapy in the absence of patient improvement is strongly discouraged • Pain management • Controlling environmental light		• Optometry • Ophthalmology • Neuro-ophthalmology • Neurology • Vision rehabilitation

Sleep disturbance	• Education including topics such as:
	  • stimulus control
	  • sleep hygiene
	  • dietary modification
	  • sleep environment modification
	• Cognitive behavioral therapy specific for insomnia
	• Physical activity
	• Relaxation
		• Short-term use of trazodone, mirtazapine, and tricyclic antidepressants	• Mental health
			• PM&R
			• Neurology

Behavioral symptoms	*See applicable VA/DoD CPGs* • Cognitive behavioral therapy	*See applicable VA/DoD CPGs*	
Cognitive symptoms	• Trial of cognitive rehabilitation • Psychoeducation • Supportive stress management • Cognitive-behavioral interventions • Motivational interviewing		• Cognitive rehabilitation
Fatigue	• Education • Cognitive behavioral therapy • Physical therapy • Promotion of sleep hygiene • Encouragement of regular exercise		
Hearing difficulties	• Reassurance • Pain management • Controlling environmental noise • White noise generators		• ENT • Audiology
Smell (olfactory deficits)	• Flavor/spice food to enhance taste • Monitor patient weight • Provide specific safety education		• ENT

Abbreviations: CPG: clinical practice guideline; DoD: Department of Defense; ENT: ear, nose and throat specialist; mTBI: mild traumatic brain injury; NSAIDs: nonsteroidal anti-inflammatory drugs; PM&R: physical medicine and rehabilitation; VA: Department of Veterans Affairs