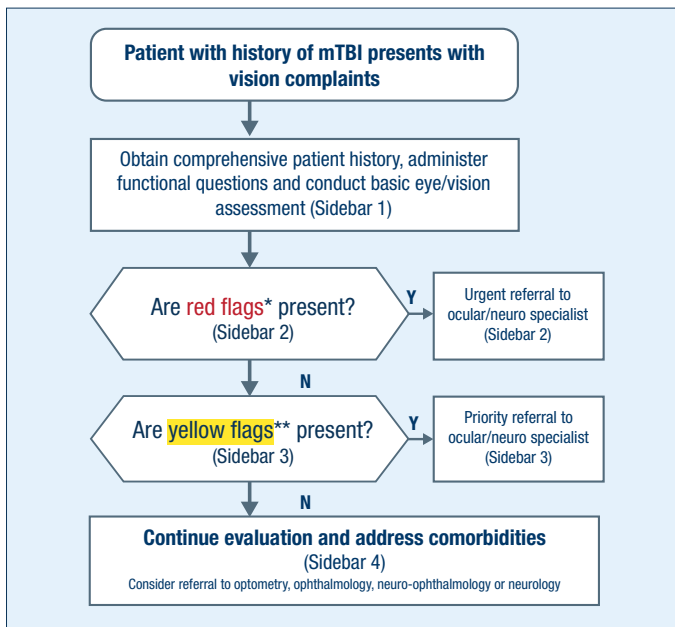


Assessment and Management of Visual Dysfunction Associated with Mild Traumatic Brain Injury



This algorithm is intended to assist primary care providers (PCP) with evaluating and providing appropriate referrals for patients presenting with suspected eye or vision problems following mild traumatic brain injury (mTBI). Included is a listing of red and yellow flags and specific comorbidities which should be explored based on the patient's symptomatology. The processes outlined in the algorithm should not replace sound clinical judgment or standard clinical practice when caring for a patient.



***Red Flags:** Signs and symptoms of potential ocular, cranial nerve or structural brain injury which may cause sight and/or life threatening outcomes, thus requiring urgent referral or consultation (see Sidebar 2)

****Yellow Flags:** Issues that require follow up. Common visual symptoms that may occur following concussion or blast exposure which may be related to trauma or premorbid/comorbid conditions (see Sidebar 3)

Sidebar 1A

Comprehensive Patient History

| Concussion/mTBI history* | |
|---|--|
| Specific visual symptoms and their clinical course | |
| Mechanism(s) and details of injury/potential exposure | <ul style="list-style-type: none">▪ Blast▪ Blunt▪ Penetrating▪ Sports injury▪ Damage to eye glasses/protective equipment |
| Associated injuries | <ul style="list-style-type: none">▪ Tympanic membrane rupture▪ Facial laceration or fractures |
| Comorbidities | see Sidebar 4 |

*See VA/DoD Clinical Practice Guidelines for Management of Concussion/mild TBI

Sidebar 1B

Functional Vision Questions to Consider

| |
|--|
| ▪ “Have you experienced any change in vision?” |
| ▪ “Do you ever experience blurred vision (far or near?)” |
| ▪ “Do you ever experience double vision?” |
| ▪ “Have you experienced any vision loss?” |
| ▪ “Do you ever experience sensitivity to light or glare?” |
| ▪ “Do you see equally with each eye?” |
| ▪ “Do you experience problems with balance or dizziness?”** |
| ▪ “Do you have difficulty maintaining clear vision for extended time periods?” |
| ▪ “Do you have problems reading across a page or computer screen?” |
| ▪ “Do you get a headache when reading or using a computer?” |
| ▪ “Have you experienced any changes to visual habits such as cell phone/texting use, driving, video games, etc?” |
| ▪ “Do you see better if you tilt or turn your head?” |
| ▪ “When do you notice visual problems?” |
| ▪ “What were you doing when you noticed the visual problem?” |

**See DCoE Clinical Recommendation for the Assessment and Management of Dizziness Associated with Mild TBI

Sidebar 1C

Basic Eye/Vision Assessment

| Basic Eye/Vision Assessment* | |
|--------------------------------|---|
| Visual acuity | <ul style="list-style-type: none">Distance (right, left, together)Near card (right, left, together) |
| Monocular confrontation fields | <ul style="list-style-type: none">Four quadrant finger counting (each eye) |
| Pupils | <ul style="list-style-type: none">Size/equalityDirect response to lightSwinging flashlight test |
| Eye movements | <ul style="list-style-type: none">Eye tracking (horizontal and vertical) |
| Nystagmus | <ul style="list-style-type: none">Primary positionGaze evoked |
| External exam | <ul style="list-style-type: none">InspectionConsider lid eversion for foreign body sensationDirect illumination of anterior segment |
| Slit lamp exam | If available |

*Optional PCP Oculomotor Dysfunction Assessment

| Test | Result | Referral |
|-------------------------------------|---|-----------------------------|
| Letter test at distance monocularly | Difficulty reading letters at 20/40 level | Optometry/ Ophthalmology |
| Cover/uncover test | Eye movement observed or patient reports target movement (vertical or diagonal only) | |
| Near letter test** monocularly | Difficulty reading letters at 20/40 level | |
| Near letter test** binocularly | Difficulty reading letters at 20/40 level or monocular performance better than binocular | |

** Perform near letter test at the standard distance of 40 cm (16 in) and consider moving the target up to 20 cm (8 in) to evaluate accommodative amplitude on patients under age 40

Sidebar 2

Red Flags and Referral to Specialist

| Red Flag | Specific Red Flags | Referral (Facility-specific) |
|--------------------------|--|--|
| Vision loss or decline | <ul style="list-style-type: none">Monocular/binocularField loss/scotomasTransient | Ophthalmology/ Optometry |
| Diplopia | <ul style="list-style-type: none">Double vision | Ophthalmology/ Neurology/Optometry/ Neuro-ophthalmology |
| Abnormal pupils | <ul style="list-style-type: none">Anisocoria (non-physiologic)Afferent pupillary defectImpaired reactivityIrregular shape | Ophthalmology/ Neurology/Optometry/ Neuro-ophthalmology |
| Abnormal external exam | <ul style="list-style-type: none">PtosisProptosisSubconjunctival hemorrhageHyphemaForeign body | Ophthalmology/ Optometry |
| Trauma | <ul style="list-style-type: none">Ocular (including eyelid)FacialPolytrauma/moderate-to-severe TBI | Neurosurgery/ Ophthalmology/Oral Surgery/Maxillofacial (Plastic) Surgery/ Otolaryngology/ Optometry |
| Abnormal eye movements | <ul style="list-style-type: none">Restricted gazeUncoupled eye movementsNystagmus | Ophthalmology/ Neurology/Optometry/ Neuro-ophthalmology |
| Abnormal visual behavior | <ul style="list-style-type: none">Bumping into thingsLack of visual recognition | Ophthalmology/ Neurology/Optometry |
| Acute ocular symptoms | <ul style="list-style-type: none">Severe eye painFlashes and/or floatersSevere photophobia | Ophthalmology/ Optometry |

Sidebar 3

Yellow Flags and Referral to Specialist

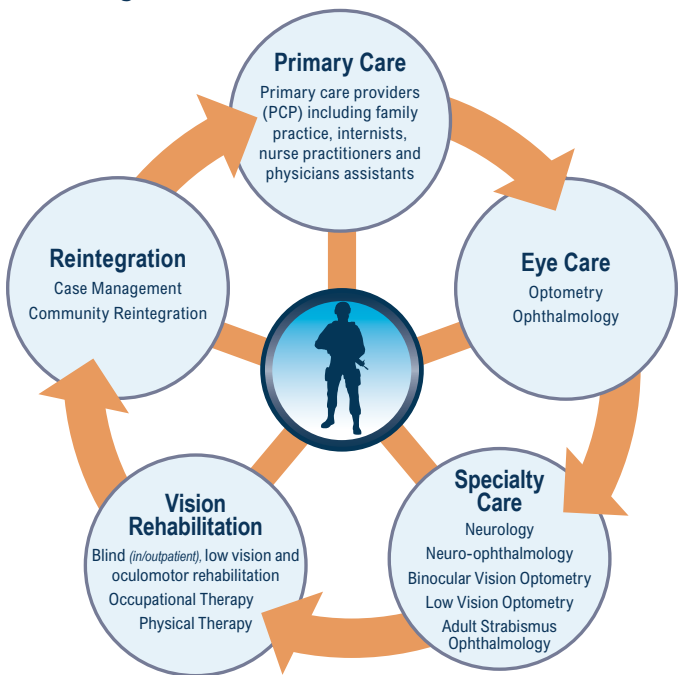
| Yellow Flag | Specific Yellow Flags | Referral (Facility-specific) |
|-----------------------|--|---|
| Visual dysfunction | <ul style="list-style-type: none"> ▪ Eyestrain, blurred vision, difficulty focusing, ocular fatigue, difficulty reading, impaired depth perception ▪ Problem with sustained vision tasks ▪ Photophobia without associated headache ▪ Color deficit | Optometry/ Ophthalmology |
| Neurologic symptoms | <ul style="list-style-type: none"> ▪ Uncontrolled headache with photophobia ▪ Dizziness/vertigo ▪ Visual neglect (right- or left-sided) | Neurology/ Neuro- ophthalmology |
| Physical exam finding | <ul style="list-style-type: none"> ▪ Abnormal head posture/eye alignment or head turn (possibly compensating for visual problems) | Optometry/ Ophthalmology/ Neurology/ Neuro- ophthalmology |

Sidebar 4

Continued Evaluation and Comorbidities

| | |
|---------------|---|
| Comorbidities | <ul style="list-style-type: none"> ▪ Migraine ▪ Sleep disturbance ▪ Chronic pain ▪ Additional injuries/illnesses ▪ Medication side effects/drug interactions ▪ Mood disorders ▪ Posttraumatic stress disorder (PTSD) |
| Medications | Evaluate |

Continuum of Care for Visual Dysfunction Following mTBI



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