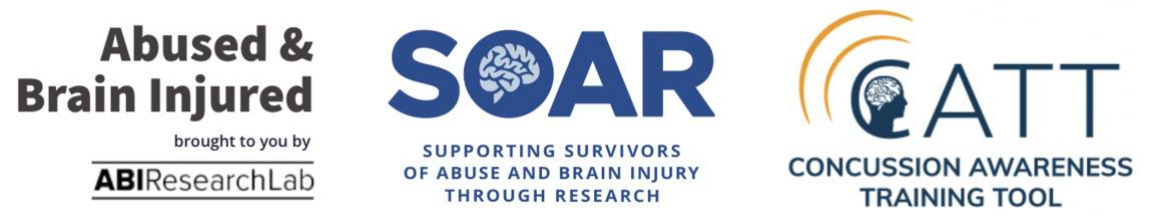

Intimate Partner Violence Traumatic Brain Injury Medical Provider Resource

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Resource Disclaimer & Use

This document was developed by an inter-disciplinary team of clinicians, researchers and advocates to serve as a preliminary resource to assist medical providers (including physicians and nurse practitioners) providing medical assessment, management, and follow-up to patients who sustain acute intimate partner violence-related head trauma. Using existing clinical research and experience, it was developed to address an urgent unmet need for medical provider education and clinical guidance to help them feel more prepared to recognize and respond to this unique patient population. Although this resource offers several recommendations regarding the medical care of patients, physicians and nurse practitioners using this resource should regard these as considerations and are encouraged to use their own clinical judgement when providing patient care within their unique clinical settings and contexts. This resource is not to be used by non-healthcare providers or by survivors for self-diagnosis and management. The contributors shall not be liable for any claims, damages, liabilities, costs, and/or obligations arising from the use or misuse of this resource, including damage or loss that may arise from any claims made a third party.

Our hope is that this resource will act as a starting point to be refined by additional clinical experience and research and help encourage and inform the development of international consensus clinical practice guidelines in the future.

Summary

Intimate partner violence (IPV)-related head trauma can result in a spectrum of brain injuries that include concussion, structural traumatic brain injuries and acquired hypoxic-ischemic injuries resulting from non-fatal strangulation. Individuals with acute intimate partner violence traumatic brain injury (IPV TBI) often have a history of repetitive head trauma and can present with co-existing cranial and extra-cranial injuries as well as features of mental health conditions. While some IPV TBI survivors may receive urgent care in emergency departments, a proportion will seek initial or follow-up medical care from primary care physicians or through specialized concussion or TBI clinics. The intersection of IPV and TBI is particularly complex leading to individualized needs among survivors. Although evidence-based clinical practice guidelines have been developed to guide the initial medical assessment and management of those with acute concussion and other forms of TBI, these resources provide little direction to inform the individualized care of IPV TBI patients. In an effort to address a critical gap in care and utilizing existing clinical research, we present a preliminary medical provider resource that outlines an approach to the in-office initial medical assessment, management, and follow-up of those presenting with acute IPV TBI. The authors highlight unique challenges providers may encounter caring for this patient population and outline a systematic approach that guides the diagnosis of different forms of IPV TBI; identification of co-existing injuries and conditions; and the development of an individualized management plan that meets the medical, safety, and supportive needs of patients and their families.

Intimate Partner Violence Head Trauma and Traumatic Brain Injury

Intimate partner violence (IPV) is an important global public health and human rights issue that includes physical, sexual, or psychological abuse or controlling behaviors inflicted by a current or previous intimate partner (World Health Organization, 2021). It is estimated that approximately 1 in 3 women worldwide experience physical and/or sexual forms of IPV or non-partner sexual violence during their lifetime (World Health Organization, 2021). Risk factors for IPV include female sex, younger age, lower socioeconomic status, and past exposure to child abuse (Abramsky et al., 2011; Capaldi et al., 2012). Marginalized populations such as those who are Indigenous, have physical or cognitive disabilities, identify as 2SLGBTQQIA+, are precariously housed, or work in the sex trade industry can also experience IPV and face unique barriers to accessing care. Individuals exposed to IPV are at an elevated risk of numerous adverse health outcomes including cardiovascular, mental health, chronic pain, urological, gynecological, and substance abuse conditions (Black, 2011; Campbell, 2002; Dillon et al., 2013; Miller & McCaw, 2019). For many survivors, IPV can escalate in frequency and severity and place them at risk of femicide[1]. The societal cost of spousal violence has been previously estimated at $7.4 billion dollars per year in Canada (Zhang et al., 2012) while the cost associated with intimate partner physical assault, rape, and stalking has been found to exceed $5.8 billion each year in the United States (National Centre for Injury Prevention and Control, 2003).

One of the most common and yet under-reported and unrecognized consequences of IPV is traumatic brain injury (TBI). Traumatic brain injuries exist along a clinical and pathological continuum ranging from milder injuries such as concussion to more devastating structural brain injuries. Traumatic brain injury has been defined as “an alteration in brain function, or other evidence of brain pathology, caused by an external force” (Menon et al., 2010). Those who sustain TBI are often classified based on clinical and neuroimaging features (Saatman et al., 2008). Previous research has suggested a prevalence of TBI of up to 75% across different IPV survivor study samples (Haag, Jones et al., 2019; Kwako et al., 2011) and that up to 92% of survivors of IPV report sustaining blows to the head or face (Jackson et al., 2002). A significant proportion of those who have sustained IPV TBI report a history of multiple TBIs (Valera & Berenbaum, 2003; Valera & Kucyi, 2017) with some reporting having sustained injuries that were too many to quantify (Zieman et al., 2017). At the same

[1]The authors recognize that intimate partner homicide can occur among men and gender diverse individuals. However, the authors acknowledge that the vast majority of individuals murdered by their intimate partners worldwide are women and girls and that femicide, the intentional murder of women because they are women, is an important global public health and human rights issue that we intend to highlight in this document

time, these injuries tend to be under-reported as many individuals do not seek care at time of initial injury. In addition, individuals exposed to IPV can sustain hypoxic-ischemic brain injuries resulting from non-fatal strangulation (Monahan et al., 2022) which, for the purposes of this resource, we consider as a form of IPV TBI. Attempted strangulation has been reported in up to 68% of women in abusive relationships (Wilbur et al., 2001) and non-fatal strangulation is a significant risk factor for homicide among women (Glass et al., 2008).

Individuals who sustain IPV TBI can experience a wide spectrum of physical, cognitive, neuro-behavioral, and emotional symptoms (Banks, 2007; Kwako et al., 2011; Maldonado-Rodriguez et al., 2021; Smirl et al., 2019; Valera & Kucyi, 2017; Zieman et al., 2017) that can occur as a consequence of TBI and other co-existing conditions. More severe forms of TBI can result in seizures or sensorimotor, visual, or language functioning deficits that can be transient or permanent. Failure to receive appropriate medical care following acute IPV TBI can lead to delayed diagnosis and treatment of injuries, the development of persistent TBI-related symptoms and co-existing conditions, as well as a return to environments where the survivor is at risk of recurrent and preventable injury and femicide. Despite the magnitude of IPV as an important global public health issue, recent research has revealed a lack of awareness regarding the intersection of IPV and TBI among frontline service providers and a lack of access to TBI-related services especially in smaller and rural communities (Haag, Sokoloff et al., 2019). Although clinical guidelines have been developed to guide the care of those with concussion and other forms of TBI (Marshall et al., 2018; McCrory et al., 2017; Parachute, 2017) as well as those who have experienced IPV (World Health Organization, 2014), presently there are no clinical practice guidelines that outline a comprehensive approach to the in-office medical assessment and management of those presenting with acute IPV-related head trauma, despite the unique and complex challenges of this intersectional condition.

Associated Injuries and Conditions

At the time of initial assessment, those with IPV-related head trauma can present with a wide spectrum of co-existing acute injuries as well as features of mental health conditions. Research suggests that the head, neck, and face are the most common sites of injury among those exposed to IPV (Sheridan & Nash, 2007; Wu et al., 2010). Facial trauma can lead to soft tissue injuries such as abrasions, lacerations, and contusions as well as isolated or multiple facial fractures. Facial injuries in the setting of IPV tend to be left-sided, most commonly involve the middle third of the face, and can include fractures of the nasal bones, zygomatic complex, and mandible (Alessandrino et al., 2020; Arosena et al., 2009; Le et al., 2001). Injury to the cranial and cutaneous nerves of the face can result in cosmetic disfigurement, sensorimotor deficits, and chronic pain. Trauma to the orbits and their contents can lead to a spectrum of injuries that can result in localized pain, monocular or binocular blurred vision, diplopia, visual field defects, or complete vision loss. Injuries can include sub-conjunctival hemorrhages, periorbital bruising, corneal abrasions, orbital fractures, cranial neuropathies, extra-ocular muscle entrapment, retinal detachment, scleral laceration, and globe rupture (Clark et al., 2014; Cohen et al., 2017; Ventura, Balcer & Galetta, 2014). Facial trauma can also result in oral or dental injuries (Ferreira et al. 2014; Garbin et al., 2012).

Injury to the neck can occur as result of blunt force trauma, manual or ligature forms of non-fatal strangulation, suffocation or violent shaking of the head and neck. Soft tissue neck injuries can include localized abrasions, lacerations, contusions, or petechial hemorrhages resulting in localized pain, swelling, or discoloration as well as injury to the larynx or esophagus that can manifest as difficulty breathing, voice changes, stridor, or difficulty swallowing. Cervical spine injuries can include whiplash-type injuries, structural cervical spine fractures and acute spinal cord injuries. Depending on the injury severity, patients may present with neck pain, focal weakness, numbness or pain of the extremities, or in rare cases, features of complete spinal cord injury. Blunt force and penetrating trauma as well as non-fatal strangulation can lead to injury to vascular structures in the neck resulting in dissection and stroke (Thanvi et al., 2005).

Beyond injury to the head and neck, those exposed to IPV can also present with acute musculoskeletal injuries involving the hands, extremities, spine, and thorax (Bhandari et al., 2006; Loder et al., 2020; Wu et al., 2010). Trauma to the thorax, abdomen, and pelvis can result in superficial injuries as well as injuries to solid organs (Alessandrino et al., 2020). Lastly, those exposed to IPV can present with acute gynecological injuries as a consequence of localized trauma or co-existing sexual assault.

In addition to physical injuries, those with acute IPV TBI can present with features of multiple and often overlapping mental health conditions. Research

suggests that IPV is associated with features of a number of psychiatric conditions including depression, anxiety, and post-traumatic stress disorder (Beydoun et al., 2017; Dillon et al., 2013), with the severity of symptoms often exhibiting a dose-dependent relationship based on the severity and frequency of abuse (Dillon et al., 2013). Those who have experienced IPV may also present with features of substance dependence or withdrawal or suicidal ideation. Although less frequent, they may also present with homicidal ideation.

Initial Medical Assessment

Understanding the patient population

In order to better support patients with IPV-related head trauma, it is important to understand the challenges many face, both systemically and personally. Applying an intersectional (Crenshaw, 1989) lens to patient care requires an understanding of the interconnection between social identities, such as race, gender, ability, sex, sexuality, religion, nationality, citizenship, class, and body type, and how these can impact health outcomes. Ethnic minorities, especially Black and Indigenous women, girls and gender-diverse people have been shown to experience disproportionately worse treatment outcomes than their white counterparts (Stockman et al., 2015). To better understand the racial disparities (Omar et al., 2021; Williams & Rucker, 2015) and respond to the healthcare needs of these groups of women, it is necessary to factor in the social, cultural, structural, and political barriers, including the historical and ongoing systemic anti-Black and anti-Indigenous racism that has led to a distrust of the medical profession, which can influence health outcomes (Hall et al., 2015). It is also important for physicians and nurse practitioners to be aware of their positionalities and understand that they may hold implicit/explicit biases towards this population that need to be checked, in order to provide comprehensive, kind, compassionate and empathetic treatment and support.

Apart from the physical and physiological trauma that arises from an assault, IPV is itself an experience of trauma and that trauma has a neurobiological impact that can affect the brain and nervous systems (Ponic et al., 2016).

In addition to experiencing the physical impacts of IPV-related head trauma, many patients may also be dealing with a myriad of legal and social issues (Mason et al., 2012) that can compound the trauma and exacerbate the symptoms of TBI. Some patients may be interacting with law enforcement and navigating the criminal legal system. In cases where children witnessed the assault or were harmed, child protective agencies may be involved and children may have been placed into care. Patients may be living in a shelter for abused women, or experiencing homelessness, with poverty an underlying reality for many. Other systems that may need to be involved include immigration, especially if she was sponsored by the abuser, or is a refugee and has precarious status. Having missed work due to recent injuries or

previous abuse, the patient's employment may be in jeopardy.

In addition, there are often other legal and ethical factors to consider with this population that are not present with other patient populations. For example, the decision whether to screen or not is often predicated on having access to resources and referrals, should the patient disclose that they are a survivor of IPV. Furthermore, there may be concerns that the patient's abuser and their lawyers may gain access to their medical records through a court order and use it as evidence of their inability to effectively parent, thereby jeopardizing their custody over the children.

While this is not an exhaustive list of systems and issues the patient may be navigating, it should provide physicians and nurse practitioners with an insight into the complex daily lived realities for many patients with IPV-related head trauma.

General considerations

Although IPV is a common cause of injuries and conditions that require medical attention, many instances of IPV go unrecognized and unaddressed due to non-disclosure by patients or failure of appropriate screening by healthcare providers. Since those who have sustained acute IPV-related head trauma may seek care in a variety of clinical settings, including emergency departments, and primary care or medical sub-specialist offices, it is incumbent on all physicians and nurse practitioners to become educated on clinical indicators of IPV, develop a systematic approach to the medical assessment of patients with suspected IPV, and be prepared to offer ongoing care, services and referrals as needed. While this is easy for the authors to suggest, the reality is that many medical providers are likely to feel underprepared and underqualified to care for this unique TBI population. Many providers will not have received education on trauma-informed approaches to caring for IPV TBI patients during their medical training. Some providers will feel unsure about how to inquire about a history of abuse or how to frame questions out of fear of offending or re-traumatizing the patient or being unprepared to respond to the patient's needs and direct them toward appropriate supportive services. While acknowledging these concerns, providers must appreciate that those exposed to IPV face enormous barriers to obtaining care for their injuries and failure to identify these patients can place them at an elevated risk of re-injury or femicide. As such, the benefit of identifying these patients and connecting them to the services they need far outweighs any discomfort or apprehension experienced by the provider. As with any aspect of clinical practice, education, experience, and a systematic approach can help empower providers to develop greater individual comfort and confidence translating into improved patient care and outcomes.

While the value of universal or routine IPV screening during healthcare visits continues to be studied and debated (McLennan & MacMillan, 2016; O' Doherty et al.,

2014; US Preventative Services Task Force, 2018), physicians and nurse practitioners are well positioned to identify those exposed to IPV and initiate measures that can help improve patient safety and support. Medical providers should respect that there are myriad reasons why patients may choose not to disclose IPV including shame, embarrassment, or fear of negative consequences from the abuser or the legal system that could impact themselves or their family (Heron & Eisma, 2021). At the same time, there is evidence to suggest that a majority of women support IPV screening by healthcare providers (Zeitler et al., 2006) and that stakeholders, including women with lived experience of IPV and TBI, support screening, education and awareness of TBI in this context (Haag, Sokoloff et al., 2019). Qualitative research has revealed important insight into how providers can create a safe environment that may help facilitate IPV disclosure. This work has highlighted the need for providers to address confidentiality issues; initiate discussion on IPV if clinical indicators are present; listen to patients; demonstrate empathy, concern and kindness; remain non-judgmental; provide validation and empowerment; ensure patients have multiple opportunities to disclose IPV; and provide culturally-specific care (Feder et al., 2006). Following IPV disclosure, additional work has suggested that providers should aim to establish an emotional connection that makes patients feel physically and emotionally cared for, promote patient choice and control, advocate for the patient, and provide the patient with practical support that addresses their injuries and co-existing health issues, and connects them to other services and community-based supports (Tarzia et al., 2020). The acronym LIVES can help providers remember these important concepts: Listen, Inquire about needs and concerns; Validate; Enhance safety; Support (World Health Organization, 2014). To help facilitate these discussions, providers may consider using a standardized IPV screening tool (Arkins, Begley & Higgins, 2016). Providers should also strongly consider seeking training on trauma-informed approaches to caring for patients exposed to IPV. It is important that providers recognize that some patients may not wish to leave an abusive partner for many reasons which may include financial reasons, cultural factors, children they may share, geographical location, availability of affordable and accessible housing, religious beliefs and supports, or other personal factors. Lastly, physicians and nurse practitioners must be aware of regional mandatory reporting requirements for instances where domestic violence or certain forms of assault (e.g., strangulation, gunshot wounds) are disclosed or risks to child safety are identified.

Specifically for those presenting with acute IPV-related head trauma in the office setting, the medical assessment must achieve the following key objectives: 1) identify, classify, and diagnose existing traumatic brain injuries; 2) identify and diagnose co-existing traumatic injuries and/or medical conditions; 3) use this information to inform the development of an individually-tailored management plan that takes into consideration the medical, safety, and supportive needs of the patient (Figure 1; Table 1). The medical assessment should include a comprehensive clinical history, complete physical examination, and the appropriate use of supplementary

tests as needed. Although standardized tools have been developed to assist in the retrospective assessment of IPV and IPV TBI (Esopenko et al., 2021), it is important to appreciate that providing a history of recent and previous IPV and abuse can be re-traumatizing for patients. Therefore, medical providers should be aware of time demands placed on patients and should tailor their clinical history and physical examination to include only those components that are necessary to optimize patient care.

In general, the medical assessment of patients with suspected IPV-related injuries should be conducted in a safe and private setting with the patient properly clothed and the patient's partner absent. If needed, hospital-based translation services should be utilized instead of having family members or friends acting as interpreters. If the treating medical provider is a male, it is ideal to have a female staff member present during the assessment where available. Prior to collecting the clinical history, clinicians should outline the role of the medical assessment and the limits of confidentiality so patients can make informed decisions regarding IPV disclosure. During the assessment, it is imperative that providers employ trauma-informed care principles and promote patient choice and control in future clinical and supportive decision-making. For additional information on caring for patients exposed to IPV, readers are referred to the WHO Clinical Handbook (World Health Organization, 2014).

Clinical history

The clinical history of those with acute IPV-related head trauma should begin with the collection of demographic data such as the patient's age, biological sex, gender identity, racial or cultural background, hand dominance, and insurance status (where relevant). Injury details that are important to collect include the date and time of the assault, the relationship between the patient and the perpetrator, the physical setting in which the assault occurred, as well as the bodily locations and mechanisms of trauma sustained. Patients should be specifically asked about whether they recall experiencing any episodes of non-fatal strangulation including the direction of approach, mode (e.g., manual, ligature), and associated shaking or impacts with other surfaces. Patients should also be asked about episodes where they were assaulted with any weapons or submerged under water. It is important to note whether the patient experienced any altered level of consciousness, post-traumatic amnesia, neck pain, focal neurological deficits (such as weakness or numbness in the face or extremities, hearing loss, visual changes), evidence of seizure-like activity or bowel or bladder incontinence as well as the immediate symptoms experienced at the time of injury. Whenever possible, lay terminology should be used (e.g., asking about feeling dazed or confused, whether they recall blacking out instead of experiencing an altered level of consciousness; when using the lay language 'choked', start with the proper terminology of 'strangled' before adding 'sometimes referred to as choked').

Information and symptoms related to additional traumatic injuries to cranial and extra-cranial structures should be collected including co-existing instances of sexual assault. Given potential mandatory reporting requirements, providers should also inquire about whether any children, family members, or others were present or harmed at the time of the assault.

It is important to review what emergency services the patient accessed immediately following the assault, if any (e.g. emergency medical services, police, shelters) as well as the results of any previous medical assessments that were conducted including clinical findings, results of diagnostic tests, referrals to allied healthcare professionals (e.g. forensic nurse examiner, social worker), support services (e.g. child protective or family services), or medical sub-specialists (including surgical procedures).

Following collection of initial injury information, a comprehensive past medical history should be completed. This should include collecting information on general medical conditions, current medications, and allergies. A history of previous IPV-related head trauma should be collected including estimated number of previous injuries, mechanisms of injury, injury features (e.g., loss of consciousness), the nature and duration of symptoms, and results of previous medical assessments or diagnostic tests if available. History of other previous IPV-related injuries, episodes of strangulation, and non-IPV-related concussion or TBI should also be collected. Importantly, providers should inquire about any history of mental health conditions such as depression, anxiety, or PTSD as well previous suicide attempts. Substance use including smoking/vaping, alcohol, or prescription or recreational drugs as well as a history of addictions and previous substance dependence rehabilitation should be collected. The provider should also complete a detailed social history that includes relationship status, number and ages of children who are presently under the patient's care or living with the patient, employment status and whether the patient is enrolled in school. Current housing status and geographical place of residence should be documented, and providers should inquire about whether the patient feels safe to return to their current place of residence or requires access to temporary shelter services. For patients who may be returning to an environment that could place them at an elevated risk of recurrent IPV or intimate partner homicide, medical providers should consider performing a risk assessment based on details obtained through the clinical history or by using standardized tools such as the Danger Assessment 5 (Messing et al., 2017).

Following collection of this important background information, the provider should conduct an assessment of the patient's current symptoms, which should be undertaken through a clinical interview and assisted by the use of a validated symptom inventory such as the Rivermead Post-Concussion Symptom Questionnaire (King et al., 1995). Patients should be asked about the presence of subjective red flags such as blurred vision, diplopia, hearing deficits, neck pain, cerebrospinal fluid

leakage, or weakness and/or numbness involving the face or extremities. Those who have experienced episodes of non-fatal strangulation should be asked about symptoms such as difficulties with breathing, speech, or swallowing, voice changes, or localized pain. To screen for the presence of co-existing mental health conditions medical providers should inquire about sleep disturbance, changes in energy levels or routine, whether the patient feels more sad or anxious than normal, or whether they have been experiencing any panic attacks, thoughts, or actions of self-harm, or any passive or active suicidal or homicidal ideation. To screen for features of PTSD, providers with experience may use a validated screening tool such at the Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5) (Blevins et al., 2015) or ask the patient about whether they have been experiencing any unwanted or intrusive thoughts, flashbacks, nightmares, or any bodily reactions or feelings of distress related to recent or past trauma. The presence of other injuries to the face, extremities, thorax, abdomen, or pelvis should prompt the healthcare provider to seek additional clinical history or review of systems to help properly characterize these injuries. Current pregnancy status or last normal menstrual period date should be documented.

Physical examination

Following a clinical history, all patients with IPV-related head trauma should undergo a comprehensive physical examination that includes several core components as well as additional tests depending on the presence of other co-existing injuries. Collection of vital signs such as resting blood pressure and heart rate should be considered. The neurological examination should include assessment of speech and mental status as well as cranial nerve, motor, sensory, reflex, balance, gait and cerebellar functioning. Objective assessment of vision and oculomotor functioning should ideally include fundoscopic examination and testing of pupillary function, extraocular movements, visual fields and visual acuity, smooth pursuits, and saccades (Ventura, Balcer & Galetta, 2014). Otoscopic examination should be performed in patients reporting hearing deficits and those with temporal bone fractures. Patients who have sustained direct head, orbital, or facial trauma should undergo a comprehensive exam that assesses for evidence of soft tissue or bony injuries, signs of basilar skull fracture and associated sensorimotor deficits that includes assessment of the jaw and oral cavity to identify any dental injuries. All patients should undergo examination of the neck and cervical spine that includes visual inspection for external signs of trauma, assessment of range of motion and palpation for localized soft tissue injuries and central or paraspinal tenderness. Following clinical exclusion of a structural cervical spine injury, patients presenting with dizziness or vertigo may undergo assessment of peripheral vestibular functioning using head thrust and Dix-Hallpike testing (Reneker et al., 2015). Suspected injuries to the extremities, thorax,

abdomen, or pelvis should prompt additional focused physical examination tests to comprehensively evaluate these injuries.

Supplemental tests

Several supplemental tests may be required to identify and classify IPV-related injuries. In the case of IPV-related head trauma, the most common tests performed include diagnostic imaging of the head, face, and neck. Given potential risks of certain diagnostic imaging modalities (e.g., radiation), the use of diagnostic imaging should always be guided by validated clinical decision-making rules wherever possible. In general, computerized tomography (CT) imaging is the ideal imaging modality to assess for acute structural brain and facial injuries. Plain film radiographs or CT imaging may be considered for patients presenting with clinical features suggestive of structural cervical spine injury (Kanwar et al., 2015). CT- or magnetic resonance-angiography of the cervical spine should be considered in patients where there is concern for acute vascular injuries secondary to blunt or penetrating trauma or non-fatal strangulation (Thanvi et al., 2005; Matusz et al., 2020). Magnetic resonance imaging can also be considered to assess for more subtle forms of traumatic or acquired brain injury (Saatman et al., 2008). Depending on the extent of other extra-cranial injuries, diagnostic imaging of the chest, abdomen, pelvis, and extremities may need to be considered. Additional tests that may be needed on an individualized basis include bloodwork, electrocardiography, electroencephalography, and visual field testing.

Initial Medical Management

Utilizing the results of the clinical history, physical examination and supplemental tests, physicians and nurse practitioners should develop an individually-tailored management plan that addresses the medical, safety and supportive needs of the patient. Patients with suspected life-threatening injuries should be urgently referred to the nearest emergency department, while those with non-life-threatening injuries can often be managed on an out-patient basis. From a medical perspective, it is important for IPV TBI patients to be provided verbal and written education regarding how to care for their brain injuries including what symptoms to expect, what signs or symptoms should prompt immediate medical attention, guidance on pain management, recommended actions to take to promote recovery, and what steps may need to be taken to return to activities such as work, school, or sports as applicable. Patients may require documentation to allow them to return to work- or sport-related activities or receive certain school accommodations. Depending on the severity or type of brain injury diagnosed or the presence of other co-existing injuries, additional multi-disciplinary referrals may need to be arranged

(see Table 2). Importantly, those who have sustained co-existing acute sexual assault should be referred to a forensic nurse examiner program where available to facilitate a complete medical forensic assessment, relevant laboratory tests and consideration of emergency contraception and treatment as needed (Vrees, 2017). Patients with co-existing mental health or substance dependence conditions may require urgent referral to crisis centres and should be provided information on local mental health and addictions services. After assessing the patient's housing status and safety, patients should be provided information and guidance that helps them develop a safety plan, or be referred to a social worker where available. Those without safe housing should be connected to a social worker, where available, to facilitate contact with a shelter or temporary housing facility. Providers should consider providing patients with information on local IPV or TBI support groups, family counseling, resource centres that provide gender- or culturally-specific supports, and victim and legal services. Providers should familiarize themselves with government- and community-based domestic violence organizations that have developed online and hard copy resources that can be provided to patients. They should also consider potential negative consequences of providing patients with hard copy IPV-specific resources, especially in cases where patients may be returning to environments where they are at risk of repeat IPV. If patients wish to report abuse to police or child protective services, providers should help facilitate these connections with the patient's informed consent. It is important that the provider arrange longitudinal follow-up with the patient and be aware of how certain factors such as geographic location, insurance status, access to telephone, childcare, and transportation can impact future access to healthcare and supportive services. Providers should inquire about what modality of healthcare delivery (e.g., in-person, telemedicine, telephone) the patient prefers to receive future care. Moving forward, providers should ensure that additional tests and referrals are well coordinated, and the patient has access to safe and affordable transportation to attend future in-person appointments. Given the complex medical and social needs of IPV TBI patients, medical providers should consider referring patients to specialized multi-disciplinary TBI clinics and programs that have experience with IPV TBI and can apply a collaborative, trauma-informed approach to patient care. These programs could be strengthened by the presence of a patient advocate or navigator who can help coordinate appointments for tests and consultations. Patients initially evaluated in medical sub-specialty offices and multi-disciplinary TBI clinics should be encouraged to seek follow-up with their primary care provider. Those without primary care providers should be referred to those accepting new patients where available. In instances where children have been harmed or have witnessed IPV, providers should obtain consent to refer the patient's children to clinical child protection services so they can access medical assessment and trauma-informed support and counselling. All aspects of the medical assessment should be documented in the patient's medical record.

Medical Follow-up

Although patients with more severe structural brain injuries following IPV may require a period of in-patient multi-disciplinary rehabilitation, a significant proportion of IPV TBI patients can be cared for on an out-patient basis (Figure 1). Medical follow-up should be arranged every 1-2 weeks during the acute phase of injury and then modified based on the patient's needs and persistent symptoms. At each follow-up visit, medical providers should re-assess the patient's safety and housing status and inquire about whether the patient has sustained any new injuries. Those who have sustained repeat abuse or new injuries will require a repeat medical assessment as described above. The patient's current symptoms should be re-assessed by clinical interview and use of a standardized symptom inventory. At each visit, patients should be screened for the presence of mental health conditions including features of anxiety, depression, substance dependence, or PTSD. Persistent symptoms should prompt a tailored focused physical examination to determine potential causes of these symptoms and guide additional tests and referrals. Return to activity status (e.g., school, work) should be assessed and return to school and work programs modified as needed. Athletes who have sustained IPV TBI should be managed according to their sport-specific Return-to-Sport strategy and receive medical clearance before they return to full contact practices and game play (McCrory et al., 2017; Parachute, 2017). At each medical follow-up appointment, providers should offer patients information on mental health crisis and IPV support resources, family counseling, victim and legal services, and organizations that can provide culturally-safe and specific support and healing as needed. To date, there is little published data regarding the natural history or expected outcomes following acute IPV TBI. Some patients may return to their baseline clinical status whereas some may experience non-linear improvement or stability of symptoms over time. The decision to discharge patients from medical follow-up should be made on an individualized basis depending on their clinical outcome and needs. Even after experiencing stability or complete resolution of their TBI-related symptoms, some patients may require ongoing monitoring and care for the long-term medical and psychological consequences of recent and historical trauma.

Conclusion

Intimate partner violence can result in a wide spectrum of TBIs as well as other co-existing injuries and mental health conditions that lead survivors to seek medical attention. This medical provider resource outlines a preliminary approach to the in-office medical assessment, management, and follow-up of acute IPV TBI that can help providers identify and address the important medical, safety, and supportive needs of their patients. Future work and a greater investment in research are critically needed to develop expert consensus and evidence-based clinical practice guidelines for IPV TBI. Beyond providing clinical care for patients with IPV TBI, physicians and nurse

practitioners can play an important role in advocacy. At the systems level, providers can advocate for necessary intersectional, trauma informed, anti-racist and equitable health and social care systems as well as cross pollination of knowledge across disciplines. There is a reported need for systems level support for integrated and coordinated care that requires advocacy and leadership (Toccalino et al., 2022).

For additional information on IPV TBI please visit the following websites:

The Abused & Brain Injured Toolkit: www.abitoolkit.ca

Supporting Survivors of Abuse and Brain Injury Through Research (SOAR): www.soar.ca

Concussion Awareness Training Tool: www.cattonline.ca

Table 1. Summary of Medical Assessment

Key clinical history and physical examination considerations and details for the initial medical assessment of patients with acute IPV TBI

It is important for physicians and nurse practitioners to appreciate key aspects of the initial medical assessment in patients presenting with acute IPV TBI and how the approach may differ as compared to the assessment of other more commonly seen patient populations (e.g., those presenting with sport-related head trauma). A trauma-informed approach and an understanding of the inherent complexity are critically important.

1a. General considerations

- Formulate systematic approach to medical assessment.
- Address confidentiality issues (see informed consent).
- Apply trauma-informed approach.
- Ensure patient is appropriately clothed and partner is absent.
- Initiate IPV screening if clinical indicators are present.
- Apply an intersectional lens to patient care.
- Listen to patient.
- Demonstrate non-judgmental validation and empowerment.
- Demonstrate empathy, concern, and kindness.
- Provide multiple opportunities to disclose IPV.
- Promote patient choice in decision-making.
- Help patients feel emotionally and physically cared for.
- Follow mandatory reporting requirements (e.g., children at risk of harm, weapons).

1b. Informed consent

- In patients with suspected IPV TBI, outline purpose of medical assessment and outline limits of confidentiality and duty to report (e.g., children at risk of harm) prior to conducting medical assessment.

1c. Clinical history (the following details should be collected):

- Demographic data such as the patient's age, biological sex, gender identity, racial or cultural background, hand dominance and insurance status
- Injury details including relationship of perpetrator to patient, setting of the assault and injury mechanisms (e.g., punched, kicked, weapons) and bodily locations
- Episodes of non-fatal strangulation
- Immediate injury features (e.g., loss of consciousness, post-traumatic amnesia, focal neurological deficits, seizures, bowel or bladder incontinence, immediate symptoms)
- Co-existing sexual assault
- Children present or harmed at the time of the assault
- Services accessed (e.g., emergency medical services, police, child and family services)
- Results of previous medical assessments (diagnostic imaging, consultations, surgical procedures)
- **Past medical history**
  - Previous IPV-related head trauma or TBI
  - Previous episodes of IPV-related non-fatal strangulation
  - Previous non-IPV related concussion or TBI
  - Mental health conditions (e.g., anxiety, depression, post-traumatic stress disorder, suicide attempts)
  - General medical conditions
- **Past medical history (cont.)**
  - Substance use (e.g., tobacco, vaping, alcohol, recreational drugs, substance dependence treatment/rehabilitation)
  - Current medications and allergies
- **Social history**
  - Geographic location and housing status (including safety to return to current place of residence, need for temporary housing)
  - Relationship status
  - Number of children under the patient's care or living with patient
- Employment/school status
- Danger assessment (as needed)
- Current clinical symptoms (clinical interview/validated symptom inventory)
- Presence of other injuries (face, eyes, neck, thorax, abdomen, or pelvis)
- Pregnancy status/last normal menstrual period
- **Screen for:**
  - Subjective red flags associated with IPV-related head trauma (e.g., blurred vision, diplopia, hearing deficits, neck pain, cerebrospinal fluid leakage or weakness and/or numbness involving the face or extremities).
  - Symptoms associated with non-fatal strangulation (difficulties with breathing, speech or swallowing, voice changes or localized pain).
  - Features of mental health conditions.
  - Features of post-traumatic stress disorder.

1d. Physical examination

- Vital signs
- Complete neurological examination (including cranial nerve, motor, sensory, reflex, balance, gait, and cerebellar functioning)
- Comprehensive vision, oculomotor and otological examination
- Cervical spine examination
- Head, eyes, ears, nose, and throat examination including assessment for signs of facial and basilar skull fractures
- Vestibular functioning tests
- Focused physical examination for other injuries (extremities, thorax, abdomen, or pelvis)

Table 2. Multi-disciplinary referral considerations

2a. Medical sub-specialists	
Clinician	*Indication for Referral*
Emergency medicine physician	Cranial or extra-cranial injuries requiring urgent assessment in the emergency department
Radiologist	Need to arrange diagnostic imaging
Neurosurgeon	Structural brain or spine injury
Maxillofacial/plastic surgeon	Facial fractures and injuries
Ophthalmologist	Suspected or diagnosed structural eye injury
Orthopedic surgeon	Traumatic orthopedic injuries
ENT surgeon	Suspected or diagnosed injuries to ears, nose, or throat including hearing deficits and temporal bone pathology
Oral surgeon/dentist	Oral or dental injuries
Psychiatrist	Suspected or diagnosed mental health conditions, addictions, sleep disorders or suicidal ideation
Neuro-ophthalmologist	Suspected or diagnosed cranial neuropathy or visual field defect
Primary care physician	General medical care and follow-up
Neurologist	Persistent post-traumatic headaches, migraines, facial pain, cerebrovascular injury, seizures or stroke
Obstetrician/gynecologist	Pregnancy or gynecological concerns

2b. Allied health professionals	
Clinician	*Indication for Referral*
Social worker	Assistance with social needs, housing, victim and legal services
Patient advocate/navigator	Assistance with accessing and coordinating patient care and support
Forensic nurse examiner	Acute sexual and domestic assault
Clinical psychologist	Suspected or diagnosed mental health conditions, addictions, sleep disorders or suicidal ideation
Neuropsychologist	Persistent mood or cognitive symptoms
Vestibular physiotherapist	Suspected or diagnosed vestibular disorders
Neuro-physiotherapist	Neurological deficits requiring rehabilitation
Musculoskeletal physiotherapist	Diagnosed whiplash and other musculoskeletal injuries requiring rehabilitation
Occupational therapist	Neurological and cognitive challenges or mental health needs requiring rehabilitation, or environmental modifications and support
Speech language pathologist	Deficits in speech, language or swallowing
Chiropractor	Diagnosed whiplash-type injury
Traditional healer	Patients who wish to receive culturally-based traditional healing and support
Clinical child protection service	Children impacted by family violence

Figure 1. Clinical algorithm for medical assessment and management

Initial Medical Assessment
(physician/nurse practitioner)

Objectives:

1.) identify, classify, and diagnose existing traumatic brain injuries
2.) identify and diagnose co-existing traumatic injuries and/or medical conditions
3.) develop an individually-tailored management plan

Components: Informed consent, clinical history, physical examination, supplemental tests as needed

Management Plan:

- Provide verbal and written information on IPV TBI.
- Provide return to school, work or sport documentation as needed.
- Provide information and guidance about how to develop a safety plan.
- Provide information on mental health crisis and IPV support resources, family counseling, victim and legal services and organizations that can provide culture- and gender-specific support and healing.
- Consider additional tests or referrals as needed.
- Consider referral to a multi-disciplinary TBI clinic or program.
- Arrange medical follow-up with patient in 1-2 weeks.
- Assess need for mandatory reporting to police or child protective services.

Medical Follow-Up
(physician/nurse practitioner)

- Reassess housing status, safety and new injuries.
- Reassess clinical symptoms and return to activity status (work, school, sport).
- Screen for features of mental health conditions.
- Perform focused physical examination as needed.
- Provide return to school, work or sport documentation as needed.
- Provide information on mental health crisis and IPV support resources, family counseling, victim and legal services and organizations that can provide culture- and gender-specific support and healing.
- Consider additional tests or referrals as needed.
- Arrange medical follow-up as needed or consider discharge based on individual patient needs.

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