



The Role of Audiologists in Concussion Management: Position Statement

Position

It is the position of Speech-Language & Audiology Canada that audiologists are essential to quality, person-centered, interprofessional concussion care across the lifespan. Audiologists have a primary role in assessing and managing hearing and vestibular issues that affect day-to-day functioning and communication following concussion. As such, audiologists must be involved in the development of a pan-Canadian approach to concussion.

Background

Awareness and understanding of the impact of concussion – a form of traumatic brain injury – is increasing in Canada. Physical, cognitive, communicative and emotional symptoms may follow concussion. Although these difficulties usually resolve within four weeks of the injury, approximately 20% of individuals experience persistent problems that interfere with return to regular activity (Ontario Neurotrauma Foundation (ONF), 2018).

A concussion can affect both hearing and balance (Barber 1969; Dwyer & Katz, 2018; Griffiths, 1979; Hoffer, Balough & Gottshall, 2007; Nölle et al., 2004; Ottaviani et al., 1986; Singh & Seidman, 2019). Hearing loss can occur due to physical damage to the peripheral auditory system (Chen et al., 2018; Gallun, Papesch, & Lewis, 2017; Ward, Carey, & Minor, 2017; Whitelaw & Young, 2005). Other auditory effects of concussion may be present, even with normal hearing sensitivity (Drake, Weate & Newell, 1996; Gallun et al., 2012 a/b; Kraus et al., 2016; Levin et al., 1989; Turgeon et al., 2011). Advanced audiological testing can indicate central auditory deficits, as patients may experience auditory processing difficulties, including difficulty understanding speech in a noisy environment (Atcherson & Steele, 2016; Hoover, Souza & Gallun, 2017; Ottaviani et al., 1986; Saunders et al., 2015). Tinnitus is frequently reported, and hyperacusis (increased sensitivity to everyday sounds) and/or misophonia (severe sensitivity to certain sounds) may also be present (Assi et al., 2018; Boucher et al., 2015; Kreuzer, Landgrebe, Schecklmann et al., 2012; Jastreboff & Jastreboff, 2015; Kreuzer, Landgrebe, Vielsmeier et al., 2012; Landon et al., 2012). Vestibular and balance difficulties, which may include dizziness, vertigo, nausea and visual impairments, after a concussion can occur due to damage to the peripheral or central vestibular systems (Akin et al., 2017; Alkathyry et al., 2019; Brantberg, Bergenius & Tribukait, 1999; Ernst et al., 2005; Fausti et al., 2009; Fife & Kalra, 2015; Gans &

Kurtzer, 2017).

Auditory and vestibular complaints may be untreated in a large number of individuals with concussion (Oleksiak et al., 2012) and can persist decades later (Hoofien et al., 2001). Persistent auditory and vestibular symptoms can have a significant impact on a patient's daily activities (Gallun et al., 2017; Mucha, Fedor & DeMarco, 2018; Saunders et al., 2015).

Audiologists are health professionals with specialized training in the assessment and intervention of hearing and vestibular difficulties. When auditory and/or vestibular symptoms are present, timely referral to an audiologist is necessary within an integrated collaborative team (Alkathiry et al., 2019; Bergemalm, 2003; Flood, Dumas, & Haley, 2005; Noseworthy et al., 1981). Audiologists also collaborate with and recommend referrals to speech-language pathologists and other health-care professionals to address co-occurring conditions typical after concussion (Musiek, Baran and Shinn, 2004; Singh & Seidman, 2019; Turner Stokes et al., 2015).

Audiologists provide evidence-based practice in the education, rehabilitation, management and counselling of concussion clients and apply client-centred care in managing symptoms to facilitate optimal hearing and communication, comfort and balance in daily activities (Chermak & Musiek, 2002; Formby et al., 2017; Gottshall & Whitney, 2019; Krebs et al., 2003; Moncrieff & Wertz, 2008; Russo et al., 2005; Vitte, Sémont & Berthoz, 1994; Zanier et al., 2018). Audiologists provide assistive listening devices, hearing aids, and sound generators, along with auditory and vestibular (re)habilitation therapies which can be effective in alleviating debilitating symptoms of concussion (Bamiou & Luxon, 2003; Chisolm et al., 2007; Ferguson & Henshaw, 2015; Gans, 2015; Gans & Kurtzer, 2017; KuK, 2011; Musiek, Chermak & Weihing, 2014; Park et al., 2018; Song et al., 2012).

Concussions are currently diagnosed by physicians, nurse practitioners or neuropsychologists. It is recognized that establishing a diagnosis may be challenging in some instances (Harmon et al., 2019). Notably, emerging evidence suggests the use of auditory evoked potentials as an objective measure in concussion diagnosis and management, which would further increase the audiologist's role in concussion care (Barber, 1969; Drake et al., 1996; Gosselin et al., 2006; Kraus et al., 2016; Munjal et al., 2010; Musiek, Baran and Shinn, 2004; Noseworthy et al., 1981; Theriault et al., 2009; Vander Werff & Rieger, 2017).

SAC recommends consultation with audiologists in the development of a pan-Canadian approach to concussion. Audiology services should be available as part of provincial and territorial concussion management programs across the lifespan, including involvement in return to learning, work, play and everyday life. SAC advocates for greater awareness of the impact of concussion on hearing and balance and recommends evaluation of these functions within concussion protocols and screening procedures. Audiology university program curricula should address concussion management. Professional development opportunities should also be available for practicing clinicians. The development of audiological clinical practice guidelines specific to concussion and investment in collaborative research will help advance audiology concussion management practices.

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