Concussion and Return to Work

Prepared for: Schedule 2 Employer’s Group Conference
Presented by:

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Acknowledgements

• Dr. Charles Tator, Phd., MD
  – Senior Scientist, Krembil Research Institute
  – Project Director of the Canadian Sports Concussion Project at the Krembil Neuroscience Centre, Toronto Western Hospital
  – Professor, Department of Surgery, University of Toronto
• Dr. Neilank Jha, MD, FRCSC
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  – Chairman, KONKUSSION
  – Chairman, The Konkussion Retreat
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• Dr. Eric Massicotte MD, MSc, FRCS(C)
  – Neurosurgeon, Krembil Neuroscience Centre
  – Medical Director, Altum Health WSIB mTBI Early Assessment Program
• Christina Ting, Research Analyst, UHN Altum Health
Agenda

• Concussion & Concussion Management (20 min)
• Audience Participation (10 min)
• Case Study #1 (30 min)
• Break
• Case Study #2 (30 min)
Objectives

- Demystify Concussion
- Provide Overview of Current Management Approaches
- Offer RTW Strategies & Considerations
Demystifying Concussion
What is a Concussion?

“A concussion is a common form of head and brain injury, and can be caused by a direct or indirect hit to the head or body (for example, a car crash, fall or sport injury).”

This causes a change in brain function, which results in a variety of symptoms.

OLD Terms: “Bell Ringer”, “Ding”, “Seeing stars”

(Ref. Jha 2015; Tator 2015; Think First Canada Website)
Where does Concussion Fit in the Overall Picture of Brain Injuries?

According to Dr. Charles Tator (2015)

“There is a concussion spectrum of disorders”
How Common are Concussions?
Concussion Statistics

- Concussion is the **most common** form of traumatic brain injury.
- A new study initiated by Ontario Neuro-trauma Foundation (not yet published), found that there were **148,710 concussions** diagnosed in Ontario in 2013.
- Majority (80%) of WSIB claims for Brain Injury were concussion
CONCUSSIONS BY AGE GROUP PER 1000

- Under 4 years of age: 97
- 5-12 years of age: 72
- 13-17 years of age: 60
- 18-30 years of age: 20
- 31-65 years of age: 18
- 66 and older: 51

Highest rates of concussion in Ontario are found among children and youth under 18 amongst those visiting emergency departments and family physicians.
Diagnosis of Concussion
Diagnosing A Concussion

A Clinical Diagnosis by a seasoned professional

– History of injury including mechanism and previous injury history (characteristics of injury)
– Symptom checklist
– Focused exam (neurological, cervical, balance testing, vestibular, visual, exertion)
– Neurocognitive testing (concentration, working memory, reaction time, processing speed)

(Ref. Jha et al 2015; Schatz, P, 2015; Think First Canada)
Does there have to be loss of consciousness or amnesia?

NO

• No loss of consciousness in up to 90% of cases
• May or may not have amnesia

(Ref. Jha et al 2015; Tator 2015)
Is CT or MRI useful to Diagnose a Concussion?

NO

Diagnostic Imaging is typically Normal
Brain CT & MRI are used to rule out intracranial bleeding for traumatic cases

Not helpful for the management of concussion

Ref. Jha et al 2015
Signs & Symptoms of a Concussion

**Physical**
- Headache
- Nausea
- Double or Blurred Vision
- Dizziness
- Noise & Light Sensitivity
- Tinnitus
- Balance issues

**Behavioural**
- Drowsiness
- Fatigue; Sluggish
- Irritability
- Emotional/Sad/Depressed Mood
- Anxiety
- **Sleep Disturbed**

**Cognitive**
- Slowed Thought
- Fogginess - Hazy
- **Poor Concentration**
- Memory Loss
- Difficulty paying attention
- Unable to multi-task
Is it Possible to Recover from a Concussion?

- **Up to 90% recover** within 3-4 weeks with early identification, diagnosis & proper management including education and reassurance.
- Approximately **10-15%** require longer time period – referred to as **post concussion syndrome (PCS)**

*(Ref. Jha et al 2015; Tator 2015)*
What Factors Prolong Recovery?
Concussion & Delayed Return to Work

A systematic review was conducted on evidence pertaining to return to work after mild traumatic brain injury. (Cancelliere et al., 2014)

- Most workers RTW within 3-6 months
- mTBI is not a significant risk factor for long-term work disability
- Predictors of delayed RTW include:
  - A lower level of education (<11 years of formal education)
  - Nausea or vomiting on hospital admission
  - Extra-cranial injuries, severe head/bodily pain early after injury
  - Limited job independence and decision-making latitude
Other Factors Associated with Prolonged Recovery

- Age (>40 y/o)
- Inadequate social support
- Low Perceived Psychological Resilience
- History of Prior Concussion
- Lower Cognitive Reserves
  - IQ, Education level & Occupational Attainment
- Financial incentive
- Co and Pre- Morbidities
  - Migraine, depression or other mental health disorders, attention deficit hyperactivity disorder (ADHD), learning disabilities (LD), sleep disorders, chronic pain

The Employee Experience

• Invisibility of their injury
• Continuing symptoms making it difficult to do their jobs
• Fear of losing job or ridicule/pressure from others
• Lack of information and guidance re: RTW

(Ref. ONF Guidelines)
Current Management of Concussion
How to Manage?

- **Early** identification & diagnosis
  - Prevent Secondary Injury & Prolonged recovery
  - Offer **Reassurance** and **Education/ Coping Strategies**
- **Understand barriers & strengths to recovery**
  - **Build Resilience** – manage stressors through meditation & support
- Individualized & controlled exercise, **activity modification and gradual progression** - Not complete rest/ “Better at Work”
- **Prolonged symptoms**:  
  - Occupational Therapy/ Return to Work Coordination  
  - Multi-disciplinary Team approach to manage ++ barriers  
  - Psychology & Neuropsychology Assessment  
  - More research needed!

Activity Progression: MSD Injuries versus Concussion
Our Reference Guidelines

Progressive Return to Activity
Following Acute Concussion/Mild Traumatic Brain Injury: Guidance for the Rehabilitation Provider in Deployed and Non-deployed Settings

Clinical Support Tool — January 2014
Stages of Recovery Model

• Symptom Checklist
• Activity Diary
• Rate of Perceived Effort, Theoretical Max Heart Rate, Blood Pressure
  – Provides some structure for return to activity and work
  – Progress activity levels for both physical and cognitive exertion according to symptom checklist scores and Rate of perceived effort/HR
  – Progress only if mild or less and no change in symptoms!!
• Increase demands systematically and progressively, observing for any changes that provoke symptoms; modify intensity/duration of demands on symptom exacerbation
• Limitations of the Model – military based
## MSD versus Concussion Approach

<table>
<thead>
<tr>
<th>Stage</th>
<th>MSD Repetitive Injury</th>
<th>Concussion</th>
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</thead>
<tbody>
<tr>
<td>Acute</td>
<td>Pain, edema, limited range of motion/endurance</td>
<td>• Rest with some limited activity to promote recovery</td>
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<tr>
<td></td>
<td>Manage symptoms &amp; gradually increase range of motion;</td>
<td>• No same day return to work</td>
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<tr>
<td></td>
<td>Limited physical activity to within pain free zone</td>
<td>• Basic activities of daily living and extremely light leisure reading</td>
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<tr>
<td></td>
<td>Return to work if able - Modified work accommodations</td>
<td>• Television with rest breaks each hour</td>
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<td>0-3 weeks</td>
<td>• Limit positions where the head is below the heart; no bending; no lifting</td>
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<td>• No driving</td>
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<td></td>
<td></td>
<td>• Wear sunglasses, earplugs,</td>
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<tr>
<td></td>
<td></td>
<td>• Limited exposure to environmental stimuli</td>
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<td></td>
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<td>Recovery Timelines Vary</td>
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<tr>
<td>Sub-Acute</td>
<td>Gradual progression to light strengthening &amp; increased functional demands</td>
<td>• Light routine activity limited to 30 minutes, followed by four hours of rest</td>
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<tr>
<td></td>
<td>Weeks 2-4</td>
<td>• <strong>Cognitive activities</strong> including computer use, 30 min max followed by 60 min rest; uncomplicated and familiar tasks</td>
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<td></td>
<td></td>
<td>• No activities such as climbing stairs, bending head, climbing ladders if balance issues</td>
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<td></td>
<td></td>
<td>• No driving</td>
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<tr>
<td></td>
<td></td>
<td>• Wear sunglasses, earplugs for sensitivity</td>
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<tr>
<td></td>
<td></td>
<td>• Work only if no symptoms above mild and HR/RPE within guidelines</td>
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<td></td>
<td></td>
<td>• Timelines Vary dependent on the essential demands of the job</td>
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<tr>
<td>Light Occupational Related Activity</td>
<td>Strengthening</td>
<td>• Introduce more complex physical and cognitive tasks</td>
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<tr>
<td></td>
<td>Continue to progress function and demands</td>
<td>• Cognitive - 30 minutes maximum followed by 60 minutes of rest between activities</td>
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<tr>
<td></td>
<td>May attempt RTW and gradually increase demands</td>
<td>• Physical – avoid repetitive lifting/brisk walk; occ lift/carry to 10-20 lbs</td>
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<tr>
<td></td>
<td>Weeks 3-6</td>
<td>• Vestibular and balance activities</td>
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<tr>
<td></td>
<td></td>
<td>• Video games</td>
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<td></td>
<td></td>
<td>• Begin driving if symptoms allow (short distance familiar route with another person)</td>
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<tr>
<td></td>
<td></td>
<td>• Encourage healthy sleep habits</td>
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<tr>
<td></td>
<td></td>
<td>• Progression to full activities of daily living and work continues into next stage dependent on job demands/symptoms</td>
</tr>
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<tr>
<td>Return to Work &amp; Moderate Occupational Activities</td>
<td>Functional Tolerances continue to improve</td>
<td>• Exercise &amp; Physical Activity — Occasional lifting and carrying; avoid max weights; Ratio of 1:4 — eg. 60 minute periods followed by 4 hours of rest</td>
</tr>
<tr>
<td></td>
<td>Full Return to Work</td>
<td>• Cognitive activities — 20 minutes to max of 40 minutes sustained followed by 40-80 minutes of rest between activities</td>
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<td>6-8 weeks since injury</td>
<td>• Vestibular and balance activities: carrying objects on uneven terrain; head movements, total body movements</td>
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<td>Depending on severity may require more time</td>
<td>• Limited driving — can progress as symptoms continue to subside</td>
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<td>• Progression to heavier demands as symptoms subside and as required - varies</td>
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Considerations for RTW

Levels of **physical and cognitive activity that exacerbate** concussion symptoms may be associated with prolonged recovery

(Ref. Jha et al, 2015; Tator 2015; McGuire, 2015)
“Personal Threshold”

Where symptoms become noticeable

*Keep under or just within personal threshold*

Return to Work Accommodations

**Hours**
- Quantity, hours per day/shift, shift times, rest breaks (self determined or fixed)

**Pace of work**
- Self paced or regulated; machine paced; productivity demands, bonus system

**Work Tasks**
- Cognitive vs physical demands, routine or highly variable, memory or concentration demands, decision making, multitasking or competing simultaneous demands, vigilance with machinery; level of responsibility/seniority/accountability; support from supervisor

**Work Environment**
- Light, noise, inside, outside (impact of ambient temperature and climate control affects physical and cognitive functioning)

**Transport to and from work**
- Private versus public transport; others in vehicle; time and effort

**Driving**
- Commercial or heavy vehicles; business and legal requirements; vehicle load; duty of care carrying dangerous goods; skills to manage vehicle; long periods spent on the road
Questions
The Concussion Experience

Audience Participation Please!!
Case Studies
Case Study #1

Teacher A

DOI: Oct 22, 2015

MOI: Soccer Ball / Type A Personality / Marital Issues / Symptoms: headaches, concentration, memory, sleep

GP Same Day – 3 wks off work
Nov 2/15 - Physio (vestibular & neck)

Nov 4/15 – RTW Offer - PT disagree with timing/offer declined

Teacher B

DOI Oct 23, 2015

MOI: Soccer Ball / Type A Personality / Good support & active / Same Symptoms

GP Oct 27, 2015 – 2wks off work
Dec 12/15 – Physio (vestibular & neck)

Nov 5/15 – RTW Offer - PT disagreed with timing/offer declined
Case Study #1 Continued

Teacher A

Nov 28/15 - WSIB REC (requested by employer)
4 wks off work then GRTW ½ d/3x wk as of Jan/16 in overlay

Jan 6/16 – RTW plan initiated 2 hrs/3d
LOE approved

RTW attempt failed
Back off work
Employer agreed not fit for work & approved sick leave

Jan 25/16 – WSIB file closed

Physio – out of pocket

Teacher B

Dec 18/15 - WSIB REC
GRTW Jan 18/16 then full duties w/in 4 wks in overlay

Jan 18/16 – RTW plan initiated 2hrs/3d
LOE approved

Working but no progression and no symptom improvement

WSIB Neuro Spec – April 14/16 – tx rec
Recommended by WSIB
LOE ongoing
Case Study #1 Continued

Teacher A

May 16 – Ongoing Sick Leave/Denied for LTD

Aug 22/16 – Employer funded AHC – rec gradual RTW in overlay position 2 hrs/d – 3/wk for Sept/16

Sept 6/16 – RTW in modified work/hrs

Current Work Status - Working 2 hours per day
October 2016 – CWC Employer funded; Struggling with ADL/Symptoms

Teacher B

July 18/16 – Full hrs/modified

Aug 19/16 – Cog Work Conditioning WSIB funded

Sept 6/16 – Full hours in overlay – symptoms have improved but continues to have anxiety/fatigue/ sensitivity
CWC progression/ Resumed lifestyle

Anticipated Status November 2016 – Full duties expected /
End Results

1. Teacher A’s recovery process was more stressful & less successful despite employer support (out of pocket expenses; stress; psycho social; sick leave vs. LOE)

2. RTW Status - Teacher B was more successful

3. Employer support & flexibility to the individual employee not injury is important to recovery
Questions

Break
Case Study #2

• 43 year old police constable injured on December 12, 2015
• During the search of a prisoner a struggle ensued & the prisoner took the constable down to the ground
• The constable struck her head on the floor along with hitting her face around the right eye
• Amnesia with no LOC – she noted that 9 months later still cannot recall what happened
Symptoms

• Headaches as well as “seeing stars”
• Loss of appetite
• Balance issues, dizziness, fogginess
• Extreme fatigue and difficulties with sleep
• Issues with memory, concentration, multi-tasking
• Mood swings and frustration having to be inactive
• Anxiety and irritability developed subsequently
• Nausea with too much physical activity
How’s it Feeling?

• Frustration?

• Dizziness?

• Nausea?

• Difficulty with Information Processing?
Case # 2
Post Injury Management

• CT scan
  - Clear, no fractures no bleeds
• Provided with Concussion Protocol
• Released
Pre – Existing Conditions

• 2012 - Concussion from a work related MVA
  – Passenger in squad car
  – Head on crash which impacted her head requiring several months of treatment.

• Treatment - different providers w/ communication challenges

• Graduated RTW plan
  – Clerical work then integration back to regular duties

• Fully recovered and asymptomatic until current injury
Client Profile

• Prior to the injury the client had a good level of physical fitness (required to do her job effectively)

• She would also describe herself as a “type A” personality with high engagement in an number of activities

• Extremely motivated to get back to work
WSIB mTBI Early Ax Program

Referral Information
• Referred approximately 1 month post injury
• Employer offered accommodated work
• Supervisor and clinical team were in touch early-on
• Client was not working at that time but hoping to return to modified hours and duties

Recommendations
• Cognitive Work Conditioning program recommended
• Reassurance and symptom management strategies provided at the Initial Assessment with MD
Cognitive Work Conditioning Treatment

• Initiated CWC at 2 months post injury
• Intake assessed client globally
  – Eg. executive functioning, vestibular functioning, vision, balance, proprioception treatment needs
• Treatment with an interdisciplinary approach
  – PT, OT, Kin focusing on physical, cognitive and emotional/behavioral needs
  – 2-3 x week
Additional Services

Psychology

– Mood issues - client struggling
– Team recommended psychology assessment
– Delayed approval due to WSIB retrieval of 5 years of medical records which had to be reviewed
– Then delayed treatment while ax and report completed prior to treatment approval

Client was frustrated with the delays so she proceeded to obtain psychological support through her extended health care insurer as well as paying out of pocket
Rehab Progress

• Slow Progress over first three months
  – Unfortunately at the 3 month mark a subsequent head related impact (non-work related but significant) increased her symptoms and set back progress

• 3\textsuperscript{rd} Concussion in 4 years
  – with the 2\textsuperscript{nd} and 3\textsuperscript{rd} concussions within a few months of each other

• A trial graduated RTW was planned at 3 months but had to be delayed

• Treatment was extended
Current Status

As of Sept 2016 – 9 months post index injury

- Continues treatment - has clearance to initiate a return to work plan
- Client is excited about returning to work but also worried about being able to complete the test requirements to do her job
- Client was very appreciative of employer and co-worker support/contact throughout her recovery
- Client found the interdisciplinary approach essential to her success to date & wished the psychological aspects could have been dealt with sooner
- Main symptom issues at this time are loss of concentration/train of thought, dealing with numbers, and fatigue
Upcoming RTW Planning

- Recommendation for 4 hours/day alternating days for 4 weeks
  - Client wants to follow her platoon shift rotation of days, afternoons, midnights
  - May challenging and impact her symptoms but the client feels it is more important to work with a team familiar with her accommodation to have consistency during the RTW process

- Clerical work first
Next Steps for RTW

• The employer has taken away her qualifications for the use of force and she will have to re-test for this
  – Use of force has 3 tests including a physical take down assessment as well as interactive videos to look at situational decision making
  – Must re-qualify to use a gun

• May require a driving re-assessment
Challenges

• Physically and cognitively demanding job

• Use of a firearm safely and appropriately

• Emotional impact

• Delay to initiate a graduated RTW trial due to the subsequent concussion injury
Next Steps Continued

Future RTW Considerations:

• Complex case that may require job coaching, equipment (eg. theraspecs), assessments throughout for re-certifications

• Focus of work initially will need to be administrative duties rather than direct contact with the public

• Next steps job shadowing when transitioning into more regular duties and direct contact with the public/safety risks
Overall Key Points

• Concussions are complicated and can take longer than MSD related type injuries
• Concussion symptoms can have a mix of physical, cognitive and emotional factors and can vary over the course of a client’s recovery
• Important factor is a supportive employer
• Multi-disciplinary care that is tailored to specific needs
• For an employer it can be very challenging to wait for initiating RTW along with finding suitable work to fit the client needs and is dependent upon the nature of the work
Suggestions for Employers

• Be supportive – reassurance that they will get better

• Use an individual approach / Be creative however maintain work as normal or similar to preinjury as possible
  – Less new things to learn = less stress

• Communicate
  – Work with clinical team/other parties regarding RTW offers & plans – enables informed treatment & work conditioning programming & keeps all parties aligned re: alternative work and that RTW is the goal

• Ask for advice/support (GP, WSIB mTBI Early Ax Program; OT, RTWC, CWC team)
  – Timing a RTW start date with a concussion is hard to precisely pinpoint (too soon?, too late?, just right?)
Questions/Discussion
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Sylvia Boddener is the Senior Director for Programs and Quality at UHN Altum Health. She is first and foremost a clinician - an Occupational Therapist and secondly a results oriented Health Care leader, passionate to innovate and implement new models of care, including concussion management, that impact the lives of many. She focuses on engaging teams to find collaborative solutions for clients and customers, to provide value and improve clinical care delivery. In her 17 years at UHN Altum Health, Sylvia has gained breadth and depth of experience in the health care sector leading, advising and consulting (international), developing business opportunities and new service lines, implementing value driven health care programs and services, and managing operations, continuous quality improvement processes and developing clinician competencies. Sylvia is also a long term contributor at the College of Occupational Therapists of Ontario. At the College, as an elected member of council, she has played key roles including President and Vice President. She continues to contribute to the College as a non-council Practice Issues Subcommittee Member. Sylvia obtained a Honors Bachelor of Science degree in biology and psychology in 1989, and a Bachelor of Health Science in Occupational Therapy from McMaster University in 1994. In addition, she obtained her Graduate Diploma in Management and a Master's of Business Administration in 2011 from Athabasca University.
Speaker Biography

- Pauline Camara earned a Specialized Bachelor of Arts Degree in Kineisiology from York University, Toronto, and became a Certified Kinesiologist with the Ontario Kinesiology Association, in 2001. She has worked as a Kinesiologist for Premier Physiotherapy; North Peel Rehabilitation; Workable Centres inc., providing services such as; designing exercise/Work Hardening/Conditioning Programs; applying modalities; performing Functional Abilities Evaluation (FAE); and performing Post Offer Employment Testing (PPET). In 2006, Pauline secured a Return to Work Coordinator (RTWC) position with Altum Health, of the University Health Network (UHN). As a RTWC, Pauline worked as part of a multidisciplinary team in the Function and Pain Specialty Clinic, as the client liason between the clinical team and the employer. Since 2007, Pauline has provided RTWC consultation services for the Upper Grand District School Board (UGDSB) and in 2012 for the Peel District School Board in addition to the Hamilton-Wentowrth District School Board in 2013. Her work includes providing recommendations on return to work planning; accommodations; treatment; investigations; in addition to education/presentations on health, wellness and ergonomics. In 2011, Pauline completed the Occupational Health & Safety Certificate Program at Reyerson University and she became a Certified RTWC with the National Institute of Disability Management and Research NIDMAR. In 2013 Pauline became a Registered Kinesiologist with the College of Kinesiologists of Ontario.
Speaker Biography

• Leah Smeaton is a graduate of the University of Waterloo Kinesiology program and is a Registered Kinesiologist, with over 25 years of experience in the Rehabilitation, Ergonomics and Disability Management field. Ms. Smeaton provides, case management, ergonomic assessments, needs assessments and return to work services for a variety of clients including school boards, WSIB, Private / Public Sector employers and Insurance companies (Motor Vehicle, short term and long term disability providers). She has been providing a key role at UHN Altum Health in the implementation of the RTW guidelines of the mtbi Assessment program for WSIB. Leah also provides education and training seminars including Ergonomics and Wellness in the workplace to many Schedule 2 Employers.
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