NOSM University
Pan Northern Clinical Rounds

CONCUSSION
In Primary Care 2.0
DIAGNOSIS & TREATMENT

CEPD continuing education and professional development

Northern Ontario School of Medicine
École de médecine du Nord de l'Ontario
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Conflict of Interest Declaration

The content of this presentation has been developed by Tara Baldisera, Shannon Kenrick-Rochon and Jairus Quesnele based on their work with CEP and ONF and NOSM CEPD Concussion Workshop Development.

Affiliations – Local Concussion Program

Grants - NOAMA ,ONF(grant), CONNECT (grant and research)

Working with Non-profits: CEP, Heath ON, Ontario Brain Injury, ONF

Learning Objectives

1. Diagnose a concussion in pediatric and adult patients.
2. Recommend a treatment plan for patients diagnosed with a concussion.

Cases

Jonathon 16 year old rep hockey player

Day 0 – concussion diagnosis in ED – Follow up PCP 4 d

Day 4 –Graduated RTL - Follow up 6 d

Day 10 – Graduated RTP STOP at Stage 4 (No-Contact)
then Follow up

Day 18 – Full School without accommodations, Medical Clearance

Cases

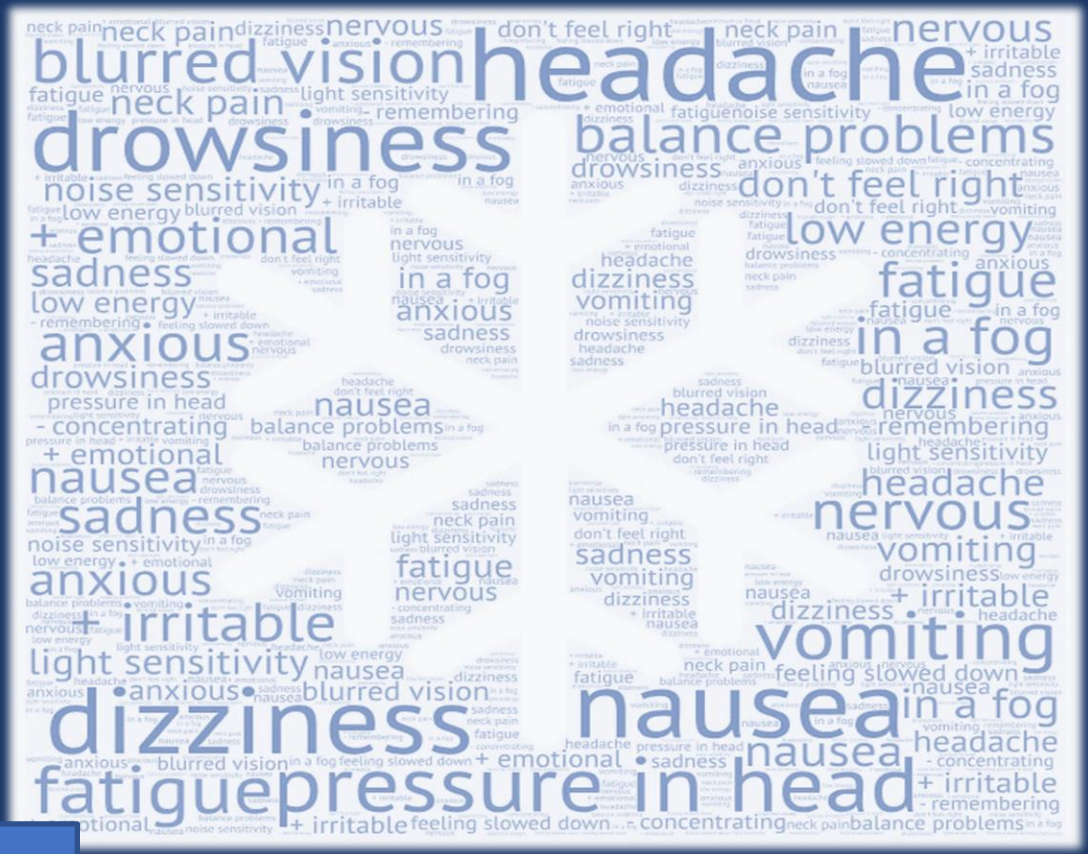
Maureen 42 year divorced mother of 2 (9,11 yo) teacher with hx of depression and migraine headaches

Day 0 – concussion diagnosis by ED after a sliding accident with her kids

Day 7 – prognostic factor assessment with PCP and consideration for return to work - PCSS 65

Day 16– not progressing as expected/headaches are constant

Week 5 – PCSS 68, mood has worsened



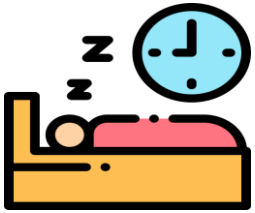
Pathophysiology

New Assessment Tool

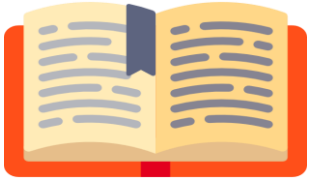
- Centre for Effective Practice (CEP) Concussion Diagnosis and Management Tool
- https://cep.health/clinical-products/concussion/

Road to Recovery

Hutchinson et al. 2016



rest



education

re-integration

Expected Recovery

Manage expectations

Adults:

- 2 – 4 weeks
- 15% experience persistent symptoms over 3 months

Children and Adolescents:

- 2 – 4 weeks
- 30% experience persistent symptoms over 3 months

Sources:

- *Zemek, R., et al., (2016), Nelson et al., (2016); Henry et al., (2016)*
- *Zemek, R., et al., (2016); McCrea M., et al., (2013); Babcock et al., (2013) (McCrory et al. 2017)*
- *ONF Concussion Standards 2017*

Rest and Re-activation

Prolonged rest
is NOT best!

Return-to-learn

Table 2 Graduated return-to-school strategy

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the child symptoms	Typical activities of the child during the day as long as they do not increase symptoms (eg, reading, texting, screen time). Start with 5–15 min at a time and gradually build up	Gradual return to typical activities
2	School activities	Homework, reading or other cognitive activities outside of the classroom	Increase tolerance to cognitive work
3	Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day	Increase academic activities
4	Return to school full time	Gradually progress school activities until a full day can be tolerated	Return to full academic activities and catch up on missed work

- ✓ Long periods out of school is a source of social isolation and anxiety for students
- ✓ Goal is returning to school within 1 week
- ✓ Students will NOT be symptom free

Return-to-play

Table 1 Graduated return-to-sport (RTS) strategy

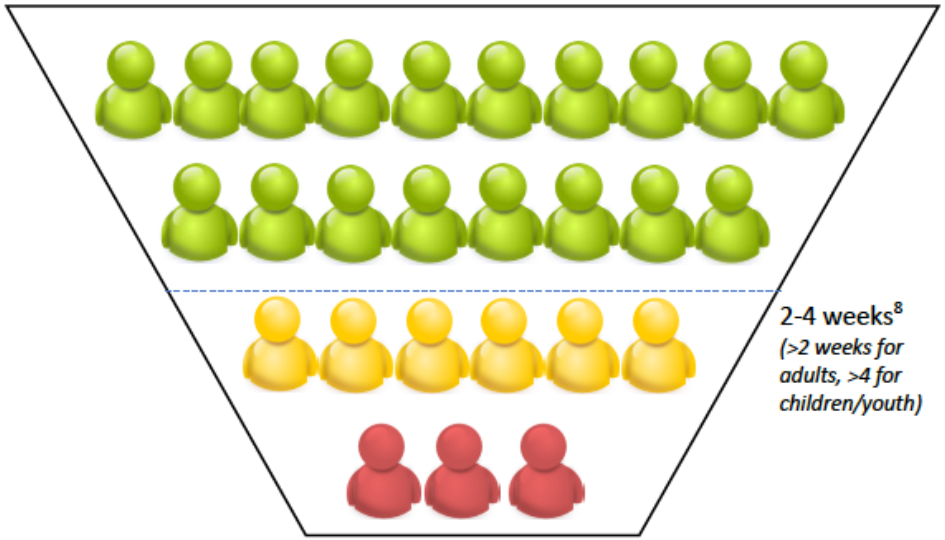
Stage	Aim	Activity	Goal of each step
1	Symptom-limited activity	Daily activities that do not provoke symptoms	Gradual reintroduction of work/school activities
2	Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training	Increase heart rate
3	Sport-specific exercise	Running or skating drills. No head impact activities	Add movement
4	Non-contact training drills	Harder training drills, eg, passing drills. May start progressive resistance training	Exercise, coordination and increased thinking
5	Full contact practice	Following medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal game play	

NOTE: An initial period of 24–48 hours of both relative physical rest and cognitive rest is recommended before beginning the RTS progression.

- ✓ Patient **MUST** be symptom free and at school full-time **before** clearance

Persistent Post Concussion Symptoms (PPCS)

Greater service involvement



Time post-concussion

Follow-up with primary care provider – majority will recover over a few days to weeks, with education about symptom management.

Follow-up required, further assessment may be required if symptoms are not resolving fully or considered as higher risk for a prolonged recovery.

Persistent symptoms, interdisciplinary care required

Who needs a concussion clinic?

- ✓ Majority recover spontaneously
- ✓ 30% may benefit from interdisciplinary specialized care
- ✓ Individualized treatment
- ✓ Predictors of longer recovery times

Ontario Concussion Care Strategy, 2018

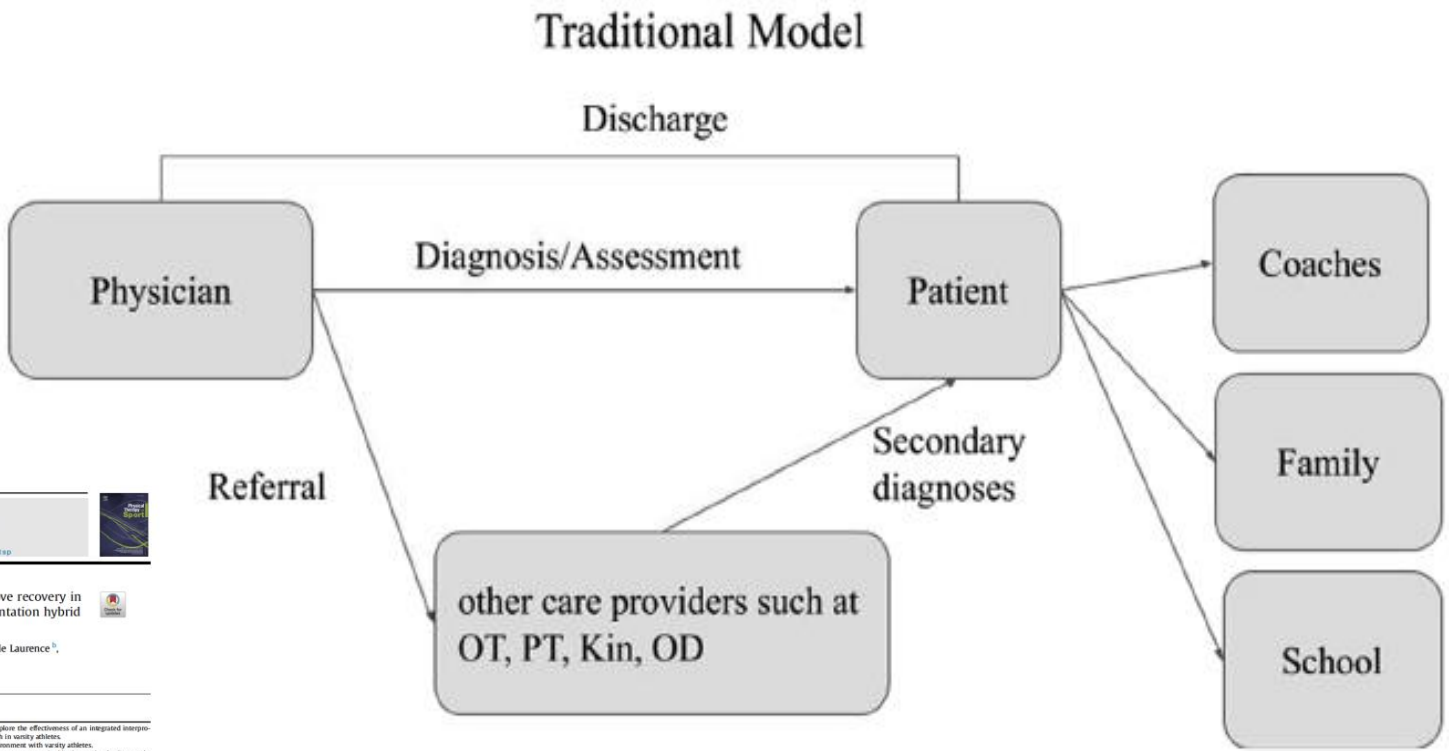
Factors for Delayed Recovery

Case Revisited: Maureen – mood, migraine

Rehabilitation

MD
Vestibular
PT
Ocular
OPTO
Neck (cervicogenic)
DC
Physiological
R.Kin AT
Cognitive
Neuro-psych
Affective
OT
Sleep
NP
Headache

Interprofessional Management



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Original Research

Does interprofessional concussion management improve recovery in varsity athletes? A year to year effectiveness-implementation hybrid study

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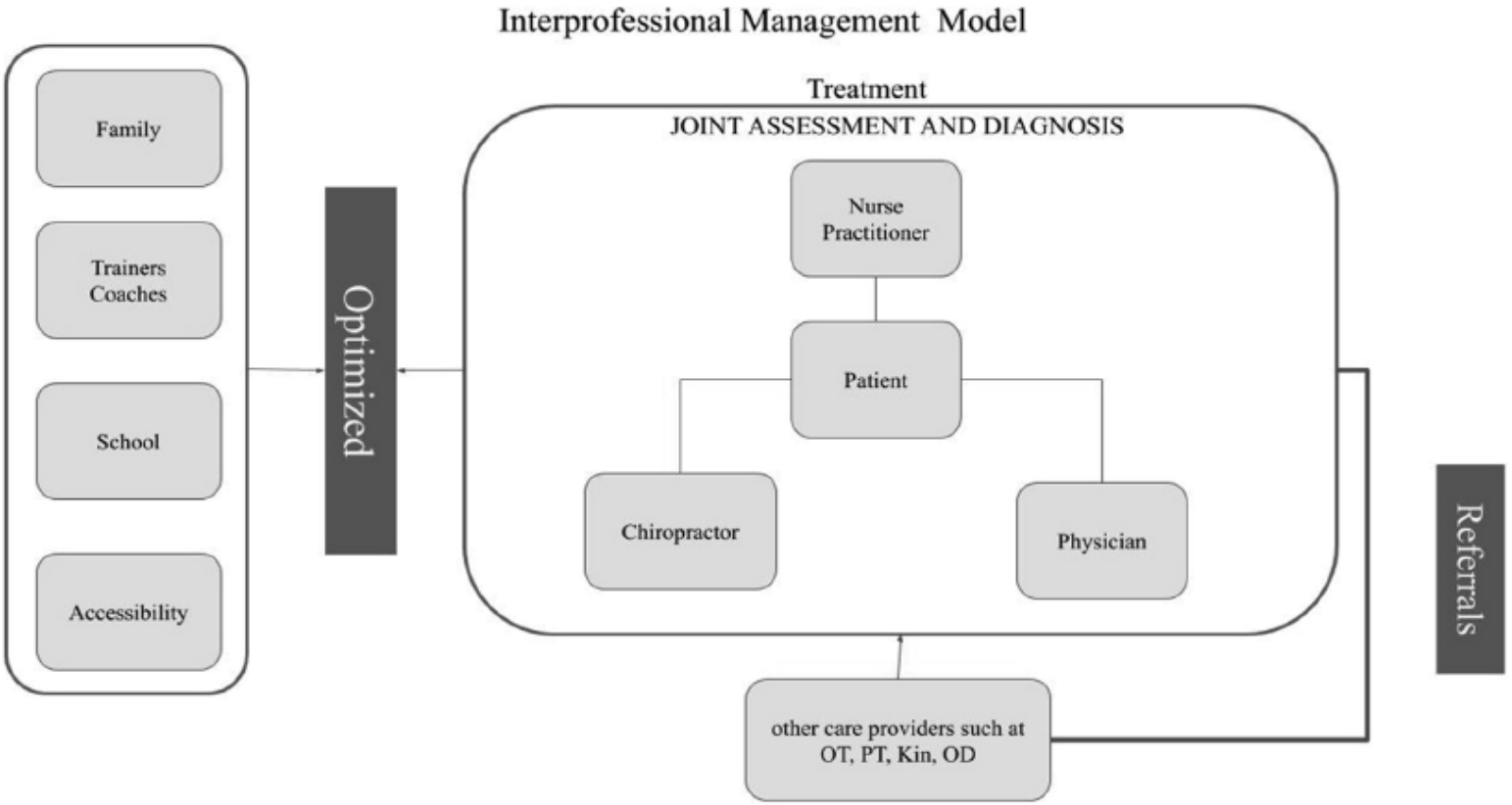
ABSTRACT

Objectives: The main purpose of this study was to explore the effectiveness of an integrated interprofessional management (IPM) concussion care approach in varsity athletes.
Setting: The study was completed in a university environment with varsity athletes.
Design: Data analysis was quantitative, as compared between seasons, in this observational cohort study.
Main outcome measures: The metrics for the effectiveness of the IPM team were: time spent in treatment and post-concussion symptom severity scores. These measures were compared for each season year and both sexes for the primary concussive domain they were initially diagnosed with.
Participants: University varsity athletes from various in-season teams.
Results: A Kruskal-Wallis revealed that 2017/18 athletes spent a significantly shorter amount of time in

Interprofessional Management

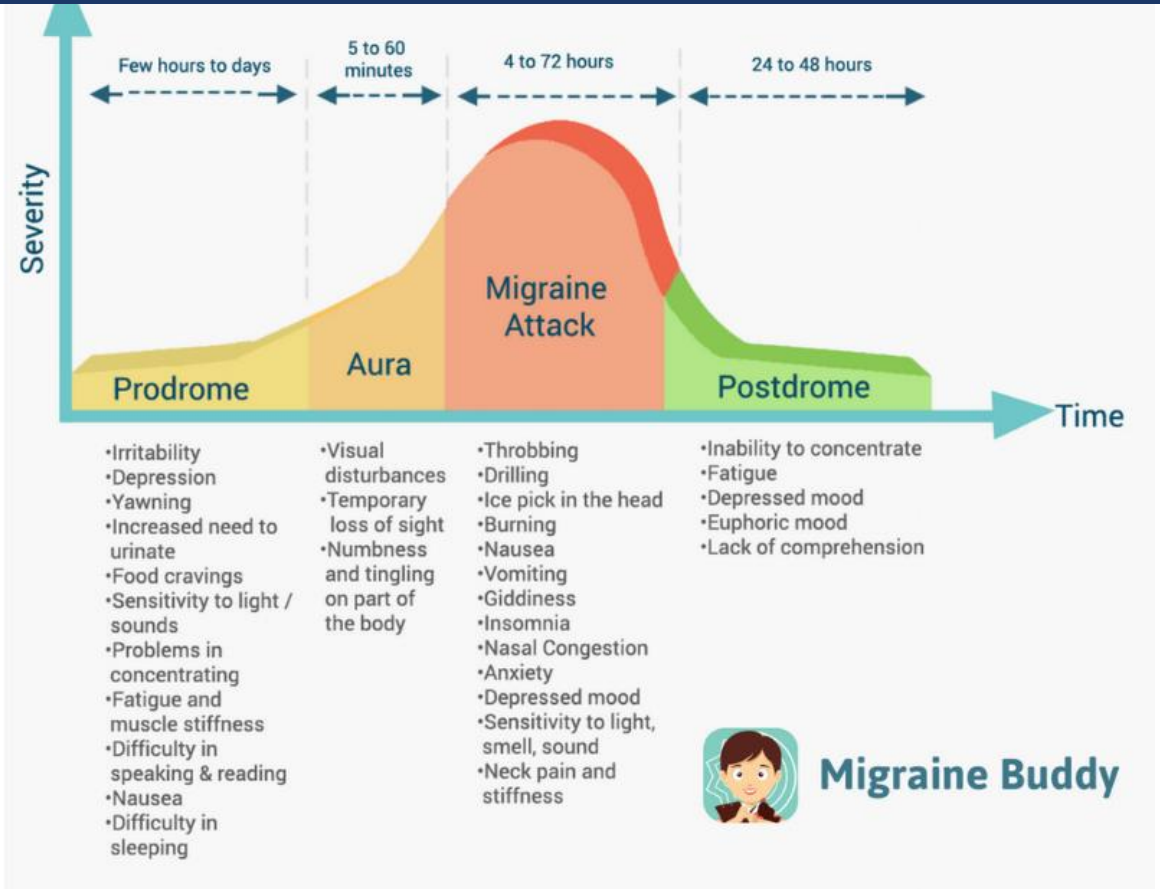


Tips on Treating Persistent Symptoms

- ✓ Concussion erodes existing coping mechanisms, making underlying challenges more difficult to manage

- ✓ Headaches - Avoid rebound/medication overuse
- ✓ Migraines – if presenting with complaint of headaches in primary care- only 24% will not be migraine (Dowson et al- 2002)

Migraine


Few hours to days
5 to 60 minutes
4 to 72 hours
24 to 48 hours
Severity
Prodrome
Aura
Migraine Attack
Postdrome
Time
•Irritability
•Depression
•Yawning
•Increased need to urinate
•Food cravings
•Sensitivity to light / sounds
•Problems in concentrating
•Fatigue and muscle stiffness
•Difficulty in speaking & reading
•Nausea
•Difficulty in sleeping
•Visual disturbances
•Temporary loss of sight
•Numbness and tingling on part of the body
•Throbbing
•Drilling
•Ice pick in the head
•Burning
•Nausea
•Vomiting
•Giddiness
•Insomnia
•Nasal Congestion
•Anxiety
•Depressed mood
•Sensitivity to light, smell, sound
•Neck pain and stiffness
•Inability to concentrate
•Fatigue
•Depressed mood
•Euphoric mood
•Lack of comprehension
Migraine Buddy

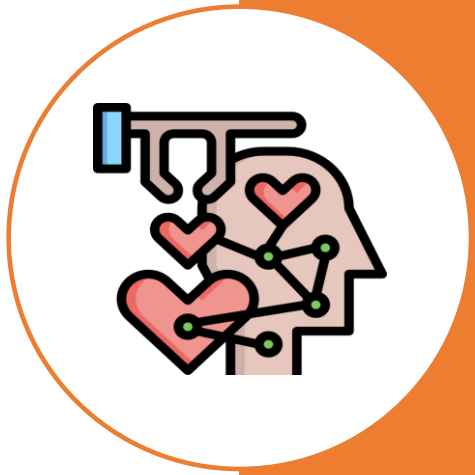
Tips on Treating Persistent Symptoms

- ✓ Activity/Exercise – graduated symptom tolerance approach EMPWR
- ✓ Sleep – Back to the Basics, Teens*
- ✓ Manage Affective Symptoms – mood disorder
- ✓ Manage de-compensated co-morbidities

Future Risk

- Concussions happening closer together
- Less force resulting in symptoms
- Increase in severity and duration

" Teammates don't let teammates play with concussion."



– Sudbury Sport and Exercise Medicine

Work to date

ONF – Concussion Advisory Committee, Health Ontario

Concussions Ontario/OBI – CONNECT

NOAMA grant supported - ? 5 publications

ONF Catalyst grant – blended models of care

Future NOAMA grant – building capacity in NO

Advocacy – partnering with Science North

Thank you!

Questions?

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