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## Head and Neck Injuries for the PCP

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# Head and Neck Injuries for the PCP



Greta Bires, MD  
PGY2

# Disclosures

None

# Objectives

Define and recognize common symptoms and treatments of head and neck injuries

Become more familiar and comfortable with the history and physical exam techniques of common head and neck injuries

Know when to seek a higher level of care for certain common head and neck injuries

# Head and Neck Injuries

Often occur simultaneously

70% mortality

20% permanent disability

# Case 1

You're an intern on service when you get a call from a nurse. Mr. B was in the chair when he decided to get up on his own to go to the bathroom. He slipped and fell, hitting his head on the side of the bed. He is currently lying on the ground. The nurse is asking you to come evaluate. What are your next steps of action?

# Evaluation of the Head and Neck

Time of Injury

Assess LOC, ABCs

Peripheral Strength and Sensation w/o moving head or neck

Palpate neck for spasm or tenderness

Isometric strength without moving neck or spine

Active ROM of neck

Spurling

Neuro exam

Recent memory and postural instability

Ask about symptoms

# GCS in Adults

Best score 15

3 categories

- Eye opening
- Motor response
- Verbal response

Worst score 3

Mild TBI/Concussion scores 13-15



# GCS

## Eye opening

- Spontaneous (4)
- Verbal commands (3)
- To pain (2)
- None (1)

## Best motor response

- Follows verbal commands (6)
- Localizes pain (5)
- Normal Flexion to painful stim (4)
- Abnormal flexion to painful stim (3)
- Decerebrate posturing to pain (2)
- None (1)

## Best verbal response

- Oriented to conversation (5)
- Disoriented conversation (4)
- Inappropriate words (3)
- Incomprehensible words (3)
- Incomprehensible sounds (2)
- None (1)

# Red Flag Symptoms

- Altered consciousness
- Behaves unusually or seems confused and irritable
- Cannot recognize familiar people or disoriented to place
- Double vision
- Progressively declining neuro eval
- Pupillary asymmetry
- Repeated vomiting
- Seizures
- Slurred speech
- Unsteady on feet
- Weakness or numbness in arms or legs
- Worsening headache

# Imaging requirements

# Nexus C-Spine Criteria

Focal neuro deficit present

Midline spinal tenderness

Altered level of consciousness

Intoxication

Distracting injury

# Canadian C-Spine Rule

Age  $\geq 65$  years old

Extremity paresthesias

Dangerous mechanism

- Fall from  $>3$  feet/5 stairs
- Axial load injury
- High speed MVC/rollover/ejection
- Bicycle collision
- Motorized recreational vehicle

# Canadian CT Head Injury/Trauma Rule

Exclusion Criteria: age <16 yo, on blood thinners, seizure after injury

High Risk Criteria: Rules out need for neurosurgical intervention

GCS <15 at 2 hours post-injury

No 0

Yes +1

Suspected open or depressed skull fracture

No 0

Yes +1

Any sign of basilar skull fracture?

Hemotympanum, raccoon eyes, Battle's Sign, CSF  
oto-/rhinorrhea

No 0

Yes +1

≥2 episodes of vomiting

No 0

Yes +1

Age ≥65 years

No 0

Yes +1

Medium Risk Criteria: In addition to above, rules out "clinically important" brain injury  
(positive CT's that normally require admission)

Retrograde amnesia to the event ≥ 30  
minutes

No 0

Yes +1

"Dangerous" mechanism?

Pedestrian struck by motor vehicle, occupant  
ejected from motor vehicle, or fall from >3 feet  
or >5 stairs.

No 0

Yes +1

# PECARN Pediatric Head Injury/Trauma Algorithm

Age	<input type="radio"/> <2 Years	<input checked="" type="radio"/> ≥2 Years
GCS ≤14 or signs of basilar skull fracture or signs of AMS AMS: Agitation, somnolence, repetitive questioning, or slow response to verbal communication	<input checked="" type="radio"/> No	<input type="radio"/> Yes
History of LOC or history of vomiting or severe headache or severe mechanism of injury Motor vehicle crash with patient ejection, death of another passenger, or rollover; pedestrian or bicyclist without helmet struck by a motorized vehicle; falls of more than 1.5m/5ft; head struck by a high-impact object	<input checked="" type="radio"/> No	<input type="radio"/> Yes

# Jefferson Fall Guidelines

Assessment done on all patients

Nursing to immobilize in hard cervical collar and on long backboard if cervical tenderness

Post Fall Assessment order set

- STAT head CT scan, STAT cervical spine x-ray, STAT cervical spine CT scan, q1H neuro checks x4, then q2 hour neuro checks x2, consult trauma and neurosurgery

## Case 2

30 year old male with no significant PMH presents with a headache. He reports that he was out Saturday night, 2 days prior to presentation, and was going down the stairs when he hit his head on the ceiling. He woke up with a headache the next day, but thought nothing of it. The headache has persisted and today he was having some trouble concentrating at work so he decided to come in for further evaluation.

What more do you want to know?



# Evaluation of the Head and Neck

Time of Injury

Assess LOC, ABCs

Peripheral Strength and Sensation w/o moving head or neck

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Neuro Exam

Recent memory and postural instability

Ask about symptoms

# TBI and Concussion

Approximately 1.7 million TBI annually

75% mild TBI

Men > Women

# Pathophysiology

Sudden release of excitatory neurotransmitters

Sudden release of Potassium into extracellular space

Influx of calcium into cell

Transient hypermetabolic glycolytic state and production of free radicals

# Clinical Features

# Clinical Features

LOC

Retrograde or anterograde amnesia

Headache

Nausea

Tinnitus

Photophobia

Vertigo

Feeling in fog

Difficulty concentrating

Decreased reaction time

Lability

Depressed mood

Anxiety

Fatigue

Dizziness

Gait instability

Somnolence

Drowsiness

insomnia

# SCAT5 and Child SCAT5

<https://bjsm.bmj.com/content/bjsports/early/2017/04/26/bjsports-2017-097506SCAT5.full.pdf>

**What instructions do you give him?**

# Treatment

Initial Rest

Early Education

Manage Specific Symptoms



# Transition back to school/work and return to play

Slow reintegration, avoid standardized testing, monitor 2-3 months for difficulties

Start return after rest and resolution of symptoms

Steps of return to play

- Symptom limited activity (normal activities of daily living)
- Non Impact aerobic exercise
- Sport-specific exercise (non-impact drills)
- Non-contact training drills
- Full contact practice
- Return to normal play

# Follow up

Patient comes back to you one month later. He has persistent headache and still feels like he isn't completely out of a fog. What are your next steps?

# Persistent Postconcussion syndrome

> 1 month

Education and reassurance

CBT

Exercise, vestibular, and cognitive rehab programs

Refer

# CTE

Attention, memory and psych symptoms

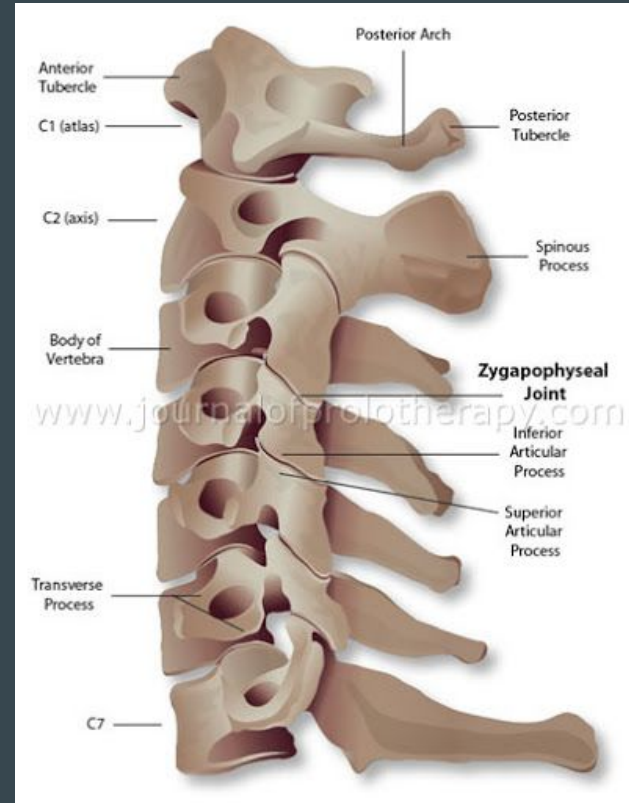
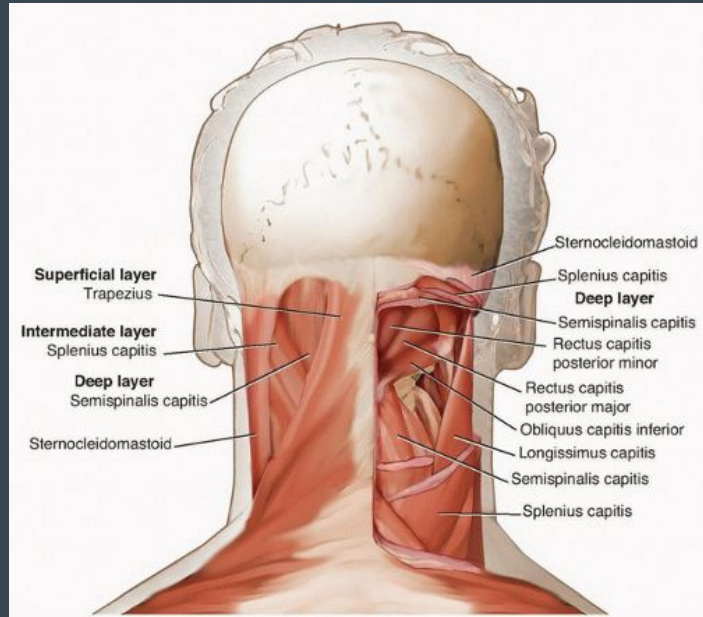
Regional deposition of tau proteins

Assoc with alzheimer disease, parkinson disease, depression, suicide

## Case 3

43 year old female with history of HTN presents after fender bender complaining of neck pain. She reports she got rear-ended by another vehicle. She estimates the other car was going around 20 mph. She did not hit her head, but felt jolted. No real pain at that time, but within 30 minutes she started to feel very sore and couldn't move her neck to the L. She had no numbness, tingling or weakness. She tried tylenol without relief.

# Cervical Spine Anatomy



# Whiplash Injury

Acceleration-deceleration mechanism causing sudden neck extension and flexion

Sx: neck pain and stiffness immediately after injury, shoulder or back pain, dizziness, paresthesias, fatigue

Dx: clinical presentation and clinical findings

Treatment: early mobilization, early return to normal activity

# Cervical strain/sprain

No injury to nerves or bones

Sx: cervical pain without radiation or neuro symptoms

Exam: limited cervical ROM and muscular spasm or tenderness

Initial treat: NSAIDs/tylenol, modalities (heat, etc)



# Postural Syndromes

Sx: periscapular or posterior neck pain exacerbated by prolonged static posture

PE: thoracic kyphosis, rounded shoulders, tight pectoral muscles, restricted shoulder movements, protruding chin

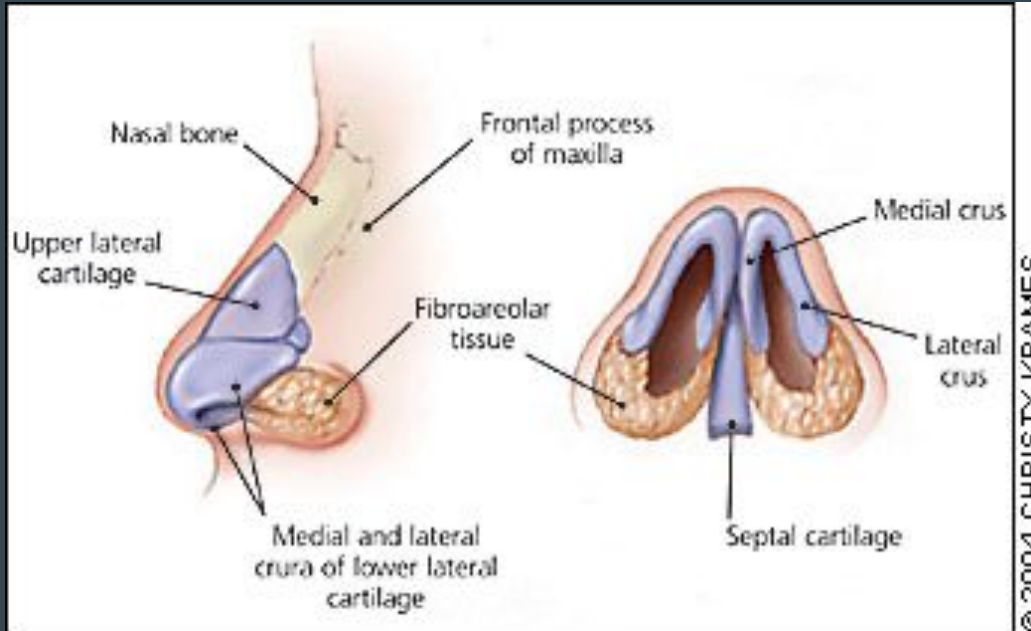
Treat: retraining, workplace modifications, physical therapy

# Case 4

AJ is 8 years old and was playing basketball with his dad. His dad threw him the ball and it came a little faster than he expected and ended up hitting him in the face. He immediately felt pain and his nose started to bleed. His dad reports they applied pressure for about 30 minutes, but his nose was still bleeding a little so they decided to come in for further evaluation. He denies any headache, LOC, nausea, dizziness, or blurry vision. He does not take any medications regularly and has no PMH. No prior injury to the nose.

What's on your differential?

# Nose Anatomy



# Nasal Fractures

MCC: fights, sports injuries, falls, vehicle crashes

Key History: mechanism, direction, strength of force, timing, extent of bleeding

PE: adequate airspace, eval for other head or neck injuries, palpate

Red flags: clear rhinorrhea, subcut emphysema, mental status change, limited EOM

Treatment: pain medications, rest, ice, maintain head elevation, delayed reduction

# Epistaxis

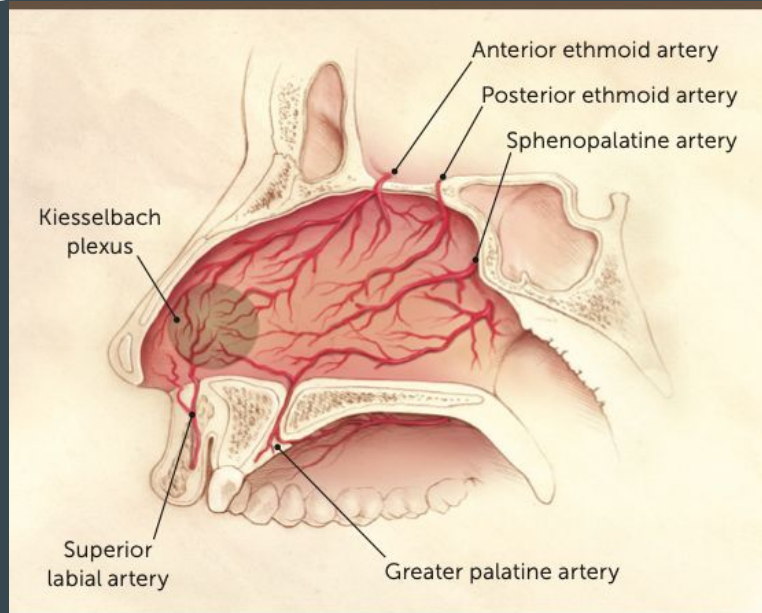
60% general population, 6% (1 in 10) seek medical attention

Peak distribution children <10 yo, adults 70-79 yo

History: side of bleeding, previous episodes, treatments, comorbid conditions, med use

Physical: vitals, mental status, airway patency

# Vascular supply



## **Vascular anatomy of the nasal cavity.**

Illustration by Christy Krames

*Reprinted with permission from Kucik CJ, Clenney T. Management of epistaxis. Am Fam Physician. 2005;71(2):305.*

How would you treat?

# Anterior Epistaxis

Compressive therapy

Oxymetazoline nasal spray, topical epi

Direct nasal cautery - silver nitrate

Topical therapy and Nasal Packing



# Posterior Epistaxis

IV access and fluid resuscitation

Chemical cautery not possible

Stabilize with posterior packing

Often requires hospitalization - refer to ENT or ED

# AAFP Photo Quiz Case

A 25-year-old man presented with complaints of midfacial pain, fever, and general malaise of about 48 hours' duration. He denied having a cough, rhinorrhea, or nasal congestion. The patient reported being hit in the nose about 10 days earlier and had received no interval treatment. The patient's temperature was 100.6° F (38.1° C) orally and he had no frontal or maxillary sinus tenderness. Nasal examination revealed bilateral midline nasal swelling. The rest of the physical examination was unremarkable.



Based on the history and physical exam what is the most likely diagnosis?

- a. Sinusitis
- b. Septal hematoma
- c. Nasal polyps
- d. Foreign body
- e. Viral syndrome

# Septal hematoma

Collection between nasal mucosa and cartilaginous septum

Often bilaterally following nasal trauma

Easily infected

PE: slightly white or purple area of fluctuance on one or both sides of nasal septum

Immediate referral

Complications: saddle nose deformity

# Objectives

Define and recognize common symptoms and treatments of head and neck injuries

Become more familiar and comfortable with common history and physical exam techniques of common head and neck injuries

Know when to seek a higher level of care for certain common head and neck injuries

# Evaluation of the Head and Neck

Note exact time injury

Assess LOC, ABCs

Peripheral strength and sensation without moving head or neck

Palpate neck for asymmetric spasm or tenderness

Isometric strength without moving neck or spine

Assess active ROM of neck

Provocative test

Neuro Exam

Assess memory and postural instability

Ask about symptoms

# Thank you. References

Stiell I. Canadian C-Spine Rule. MDCalc. Accessed August 10, 2020.

<https://www.mdcalc.com/canadian-c-spine-rule>

Stiell I. Canadian CT Head Injury/Trauma Rule. MDCalc. Accessed August 10, 2020.

<https://www.mdcalc.com/canadian-ct-head-injury-trauma-rule>

Ferry B, DeCastro A. Concussion. In: *StatPearls*. StatPearls Publishing; 2020. Accessed August 10, 2020.

<http://www.ncbi.nlm.nih.gov/books/NBK537017/>

Yue JK, Upadhyayula PS, Avalos LN, Phelps RRL, Suen CG, Cage TA. Concussion and Mild-Traumatic Brain Injury in Rural Settings: Epidemiology and Specific Health Care Considerations. *J Neurosci Rural Pract*. 2020;11(1):23-33. doi:[10.1055/s-0039-3402581](https://doi.org/10.1055/s-0039-3402581)

DeMatteo C, Randall S, Falla K, et al. Concussion Management for Children Has Changed: New Pediatric Protocols Using the Latest Evidence: *Clinical Pediatrics*. Published online October 18, 2019.

doi:[10.1177/0009922819879457](https://doi.org/10.1177/0009922819879457)

# Thank you. References

Womack J, Stabile M, Kropa J. Epistaxis: Outpatient Management. *American Family Physician*. 2018;94(4):240-245.

Isaac Z, Kelly H. Evaluation of the adult patient with neck pain - UpToDate. Accessed August 10, 2020. [https://www.uptodate.com/contents/evaluation-of-the-adult-patient-with-neck-pain?search=common%20neck%20injuries&source=search\\_result&selectedTitle=9~150&usage\\_type=default&display\\_rank=9#H474720179](https://www.uptodate.com/contents/evaluation-of-the-adult-patient-with-neck-pain?search=common%20neck%20injuries&source=search_result&selectedTitle=9~150&usage_type=default&display_rank=9#H474720179)

Kucik CJ, Clenney TL, Phelan J. Management of Acute Nasal Fractures. *AFP*. 2004;70(7):1315-1320.

Silverberg ND, Iaccarino MA, Panenka WJ, et al. Management of Concussion and Mild Traumatic Brain Injury: A Synthesis of Practice Guidelines. *Archives of Physical Medicine and Rehabilitation*. 2020;101(2):382-393. doi:[10.1016/j.apmr.2019.10.179](https://doi.org/10.1016/j.apmr.2019.10.179)

Binder A. Neck Pain. *AFP*. 2005;71(1):117.

Childress M, Stueck S. Neck Pain: Initial Evaluation and Management - American Family Physician. AAFP. Accessed August 10, 2020. <https://www.aafp.org/afp/2020/0801/p150.html>



# Thank you. References

Hoffman J. NEXUS Criteria for C-Spine Imaging. MDCalc. Accessed August 10, 2020.

<https://www.mdcalc.com/nexus-criteria-c-spine-imaging>

Nosebleed (Epistaxis). Accessed August 10, 2020.

<https://www.aafp.org/patient-care/clinical-recommendations/all/nosebleed.html>

Ghiselli G, Schaadt G, McAllister DR. On-the-field evaluation of an athlete with a head or neck injury. *Clinics in Sports Medicine*. 2003;22(3):445-465. doi:[10.1016/S0278-5919\(02\)00109-6](https://doi.org/10.1016/S0278-5919(02)00109-6)

Patient education: Whiplash (The Basics) - UpToDate. Accessed August 10, 2020.

[https://www.uptodate.com/contents/whiplash-the-basics?search=whiplash&source=search\\_result&selectedTitle=2~29&usage\\_type=default&display\\_rank=2#H11943796](https://www.uptodate.com/contents/whiplash-the-basics?search=whiplash&source=search_result&selectedTitle=2~29&usage_type=default&display_rank=2#H11943796)

Kuppermann N. PECARN Pediatric Head Injury/Trauma Algorithm. MDCalc. Accessed August 10, 2020.

<https://www.mdcalc.com/pecarn-pediatric-head-injury-trauma-algorithm>

# Thank you. References

Misch MR, Raukar NP. Sports Medicine Update: Concussion. *Emergency Medicine Clinics of North America*. 2020;38(1):207-222. doi:[10.1016/j.emc.2019.09.010](https://doi.org/10.1016/j.emc.2019.09.010)

Junnila J. Swollen Masses in the Nose. *AFP*. 2006;73(9):1617.

Graham R, Rivara FP, Ford MA, et al. *Treatment and Management of Prolonged Symptoms and Post-Concussion Syndrome*. National Academies Press (US); 2014. Accessed August 10, 2020.

<https://www.ncbi.nlm.nih.gov/books/NBK185342/>

Eck JC, Hodges SD, Humphreys SC. Whiplash: a review of a commonly misunderstood injury. *The American Journal of Medicine*. 2001;110(8):651-656. doi:[10.1016/S0002-9343\(01\)00680-5](https://doi.org/10.1016/S0002-9343(01)00680-5)