

The Weill Cornell Headache Appropriate Use Criteria (AUC) addresses fifteen clinical conditions common to patients presenting With Headache and makes recommendations to optimize diagnostic effectiveness.

Common Clinical Conditions – Headache	
0	Not headache, Syncope, Stroke, Sinusitis or Trauma
1	Head Trauma, Evidence of Bleeding or Injury on Imaging
2	Head Trauma, Loss of Consciousness - Amnesia, Head Trauma Feature #1
3	Head Trauma, more than 24 hours ago
4	Head Trauma, no Loss of Consciousness - Amnesia, plus one Serious Head Trauma Feature #2
5	Head Trauma, Penetrating Injury or Glasgow Coma Scale less than 15
6	Headache, Infection or Abscess Known or Suspected
7	Headache, Aneurysm Known or Suspected
8	Headache, Neoplasm Known or Suspected
9	Headache, Cerebral Venous Thrombus Known or Suspected
10	Headache, Arteriovenous Malformation (AVM) Known or Suspected
11	Headache, Meningitis Known or Suspected
12	Headache, Plus Serious Features (Nexus Criteria)
13	Sinusitis Known or Suspected
14	Stroke, Known, Suspected or New Onset
15	Syncope

The Headache AUC is activated When a user orders one of the following sixteen Advanced Imaging Procedures.

Advanced Imaging Procedures	
1	CT Head Without Contrast
2	CT Head With Contrast
3	CT Head With and Without Contrast
4	MR Brain Without Contrast
5	MR Brain With Contrast
6	MR Brain With and Without Contrast
7	MRA Brain With Contrast
8	MRA Brain Without Contrast
9	MRA Neck With Contrast
10	MRA Neck Without Contrast
11	MRV Brain With Contrast
12	MRV Brain Without Contrast
13	MRV Brain With and Without Contrast
14	CTA Neck
15	CTA Head
16	CTV Head

The Headache AUC recommends one of the following sixteen Imaging Procedures based on the clinical condition.

Recommended Imaging Procedures	
1	CT Head Without Contrast
2	CT Head With Contrast
3	CT Head With and Without Contrast
4	MR Brain Without Contrast
5	MR Brain With Contrast
6	MR Brain With and Without Contrast
7	MRA Brain With Contrast
8	MRA Brain Without Contrast
9	MRA Neck With Contrast
10	MRA Neck Without Contrast
11	MRV Brain With Contrast
12	MRV Brain Without Contrast
13	MRV Brain With and Without Contrast
14	CTA Neck
15	CTA Head
16	CTV Head

Additional Clinical Information – Head Trauma and Serious Headache Features

The Headache AUC logic utilizes twenty-nine additional clinical indications categorized as;
 Serious Head Trauma Features #1, Serious Head Trauma Features #2 and, Serious Headache Features.

Serious Head Trauma Features #1 With Loss of Consciousness or Amnesia

Serious Head Trauma Features #1	
1	Headache
2	Vomiting
3	Age >60
4	Intoxication
5	Short-Term Memory Loss
6	Evidence of Trauma above Clavicle
7	Seizure
8	GCS<15
9	Focal Neurological Deficit
10	Coagulopathy

Serious Head Trauma Features #2 Without Loss of Consciousness or Amnesia

Serious Head Trauma Features #2	
1	Focal Neurological Deficit
2	Severe Headache
3	Vomiting
4	Age 65+
5	Hemotympanum
6	Raccoon Eyes
7	Battle's Sign
8	Glasgow Coma Scale (GCS) greater than 15
9	Coagulopathy
10	Dangerous mechanism (Fall > 3 feet, fall > 5 stairs, ejection from motor vehicle, pedestrian struck)

Serious Headache Features

Other Serious Headache Features	
1	Focal Neurologic Deficit
2	Altered Mental Status or Altered Cognitive Function
3	Sudden Onset Severe Headache (Thunderclap)
4	Chronic Headache with New Features
5	Occipital-Nuchal Pain
6	Headache Progressing in Severity
7	Signs of Increased Intracranial Pressure (i.e., Papilledema)
8	Headache Worse with Valsalva Maneuver
9	Headache Awakening Patient from Sleep

Logic Tables

The following Clinical Condition Logic Tables provide the Headache AUC logic for each clinical condition.
 The logic incorporates prior imaging studies and contraindications Where applicable.

Key

Value	Score
Blank	No Score Assigned
0	AUC Not Applicable – Allows User to Proceed with Original Order
1	Inappropriate
2	Contact Radiology
3	Appropriate
4	Appropriate Preferred

Advice Text

The Advice Text provided in each condition is for Ordering Provider information and education purposes.

Condition 0 – Not Headache, Syncope, Stroke, Sinusitis or Trauma, AUC Not Applicable

Condition	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head
Not headache, syncope, stroke, sinusitis, or trauma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Condition 0 – Advice Text

Not Covered by AUC

Condition 1 - Head Trauma, Evidence of Bleeding, or Injury on Imaging

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Head Trauma, Evidence of Bleeding, or Injury on Imaging		1	4	1	1	3	1	1	1	1	1	1	1	1	1	1	1	LBP	a
Head Trauma, Evidence of Bleeding, or Injury on Imaging	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	LBP	b

Condition 1 – Advice Text

a	CT Head without contrast preferred for follow-up of head trauma and evidence of bleeding or injury on prior imaging.
b	CT Head without contrast preferred for follow-up of head trauma and evidence of bleeding or injury on prior imaging.

Condition 2 - Trauma, Loss of Consciousness/Amnesia plus Serious Head Trauma Feature #1

Condition	Priors	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Trauma - LOC + SF #1			1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1, 2, 3, 9, 10, 11	a
Trauma - LOC + SF #1	CT		1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1		b
Trauma - LOC + SF #1	CT	MR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		c
Trauma - LOC No SF #1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		d

Condition 2 – Advice Text

a	CT Head without contrast preferred for head trauma with serious features.
b	MR Brain without contrast preferred for follow-up of head trauma post negative CT when injury is still a concern.
c	Radiology consultation recommended. Evaluation of head trauma post negative CT should be reviewed with radiology when injury is still a concern and MR contraindicated.
d	Imaging may not be indicated for the evaluation of patients with head trauma in the absence of neurologic deficits or serious features.

Condition 3 – Head Trauma, more than 24 hours ago

Condition	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head
Head Trauma, >24 hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Condition 3 – Advice Text

Not Covered by AUC

Condition 4 – Head Trauma, no Loss of Consciousness/Amnesia, plus Serious Head Trauma Feature #2

Condition	Priors	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Trauma + SHTF #2			1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1,2,3,4,9,10,11. LBP	a
Trauma + SHTF #2	CT		1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1		b
Trauma + SHTF #2	CT	MR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		c
Trauma No SHTF #2			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		d

Condition 4 – Advice Text

a	CT Head without contrast preferred for head trauma with serious features.
b	MR Brain without contrast preferred for follow-up of head trauma post negative CT when injury is still a concern.
c	Radiology consultation recommended. Evaluation of head trauma post negative CT should be reviewed with radiology when injury is still a concern and MR contraindicated.
d	Imaging may not be indicated for the evaluation of patients with head trauma in the absence of neurologic deficits or serious features.

Condition 5 – Head Trauma, Penetrating Injury or Glasgow Coma Scale less than 15

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Head Trauma, Penetrating or GCS<15		1	4	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1, 2, 3, 9	a
Head Trauma, Penetrating or GCS<15	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1, 2, 3, 9	b

Condition 5 – Advice Text

a	CT Head without contrast preferred for penetrating head trauma or Glasgow Coma Scale less than 15.
b	CT Head without contrast preferred for penetrating head trauma or Glasgow Coma Scale less than 15.

Condition 6 – Headache, Infection or Abscess, Known or Suspected

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Infection		1	4	3	1	3	4	1	1	1	1	1	1	1	1	1	1	LBP	a
Infection	GAD	1	4	3	1	4	1	1	1	1	1	1	1	1	1	1	1		b
Infection	MR	1	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1		c
Infection	IOD	1	4	1	1	3	4	1	1	1	1	1	1	1	1	1	1		d
Infection	GAD IOD	1	4	1	1	3	1	1	1	1	1	1	1	1	1	1	1		e
Infection	MR IOD	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		f

Condition 6 – Advice Text

a	CT Head without contrast and/or MR Brain with and without contrast preferred for headache and suspected infection.
b	CT Head without contrast and/or MR Brain without contrast preferred for headache and suspected infection when gadolinium contraindicated.
c	CT Head without contrast and/or CT Head with ans without contrast preferred for headache and suspected infection when MR contraindicated.
d	CT Head without contrast and/or MR Brain with and without contrast preferred for headache and suspected infection when iodinated contrast contraindicated.
e	CT Head without contrast preferred for headache and suspected infection when gadolinium and iodinated contrast contraindicated.
f	CT Head without contrast preferred for headache and suspected infection when iodinated contrast and MR contraindicated.

Condition 7 – Headache, Aneurysm, Known or Suspected

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice etxt
Aneurysm		1	4	1	1	4	1	1	4	1	1	1	1	1	1	4	1	LBP	a
Aneurysm	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	4	1		b
Aneurysm	IOD	1	4	1	1	4	1	1	4	1	1	1	1	1	1	1	1		c
Aneurysm	MR IOD	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		d

Condition 7 – Advice Text

a	CT Head without contrast, MR Brain without contrast, MRA Brain without contrast or CTA head preferred for headache and suspected aneurysm.
b	CT Head without contrast and/or CTA Head preferred for headache and suspected aneurysm when MR contraindicated.
c	CT Head without contrast, MR Brain without contrast or MRA Brain without contrast preferred for headache and suspected aneurysm when iodinated contrast contraindicated.
d	CT Head without contrast preferred for headache and suspected aneurysm when MR and iodinated contrast contraindicated.

Condition 8 – Headache, Neoplasm Known or Suspected

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Neoplasm		1	4	4	1	3	4	1	1	1	1	1	1	1	1	1	1	LBP	a
Neoplasm	GAD	1	4	4	1	3	1	1	1	1	1	1	1	1	1	1	1		b
Neoplasm	MR	1	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1		c
Neoplasm	IOD	1	4	1	1	3	4	1	1	1	1	1	1	1	1	1	1		d
Neoplasm	GAD IOD	1	4	1	1	3	1	1	1	1	1	1	1	1	1	1	1		e
Neoplasm	MR IOD	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		f

Condition 8 – Advice Text

a	CT Head without contrast, CT Head with and without contrast or MR Brain with and without contrast preferred for headache and suspected cancer.
b	CT Head without contrast or CT Head with and without contrast are preferred for the evaluation of patients with headache and suspected cancer and a contraindication to gadolinium.
c	CT Head without contrast or CT Head with and without contrast are preferred for the evaluation of patients with headache and suspected cancer and a contraindication to MR.
d	CT Head without contrast or MR Brain with and without contrast preferred for headache and suspected cancer when iodinated contrast contraindicated.
e	CT Head without contrast or MR Brain without contrast preferred for headache and suspected cancer when gadolinium and iodinated contrast contraindicated.
f	CT Head without contrast preferred for headache and suspected cancer when iodinated contrast and MR contraindicated.

Condition 9 – Headache, Cerebral Venous Thrombus (CVT), Known or Suspected

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
CVT		1	4	1	1	4	1	1	1	1	1	4	4	1	1	1	4	LBP	a
CVT	GAD	1	4	1	1	4	1	1	1	1	1	1	4	1	1	1	4		b
CVT	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	4		c
CVT	IOD	1	4	1	1	4	1	1	1	1	1	4	4	1	1	1	1		d
CVT	GAD IOD	1	4	1	1	4	1	1	1	1	1	1	4	1	1	1	1		e
CVT	MR IOD	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		f

Condition 9 – Advice Text

a	CT Head without contrast, MR Brain without contrast, MRV Brain with contrast, MRV Brain without contrast, or CTV Head preferred for headache and suspected cerebral venous thrombosis.
b	CT Head without contrast, MR Brain without contrast, MRV Brain without contrast, or CTV Head preferred for headache and suspected cerebral venous thrombosis when gadolinium contraindicated.
c	CT Head without contrast or CTV Head preferred for headache and suspected cerebral thrombosis when MR contraindicated.
d	CT Head without contrast, MR Brain without contrast, MRV Brain with contrast or MRV Brain without contrast preferred for headache and suspected cerebral venous thrombosis when iodinated contrast contraindicated.
e	CT Head without contrast, MR Brain without contrast or MRV Head without contrast preferred for headache and suspected cerebral venous thrombosis when gadolinium and iodinated contrast contraindicated.
f	CT Head without contrast preferred for headache and suspected cerebral venous thrombosis when MR and iodinated contrast contraindicated.

Condition 10 – Headache, Arteriovenous Malformation (AVM), Known or Suspected

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
AVM		1	4	1	1	4	3	1	4	1	1	1	1	1	1	4	1	LBP	a
AVM	GAD	1	4	1	1	4	1	1	4	1	1	1	1	1	1	4	1		b
AVM	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	4	1		c
AVM	IOD	1	4	1	1	4	3	1	4	1	1	1	1	1	1	1	1		d
AVM	GAD IOD	1	4	1	1	4	1	1	4	1	1	1	1	1	1	1	1		e
AVM	MR IOD	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		f

Condition 10 – Advice Text

a	CT Head without contrast, MR Brain without contrast, MRA Brain without contrast or CTA Head preferred for headache and known/suspected arteriovenous malformation.
b	CT Head without contrast, MR Brain without contrast, MRA Brain without contrast or CTA Head preferred for headache and known/suspected arteriovenous malformation when gadolinium contraindicated.
c	CT Head without contrast and/or CTA Head preferred for headache and known/suspected arteriovenous malformation when MR contraindicated.
d	CT Head without contrast, MR Brain without contrast or MRA Brain without contrast preferred for headache and known/suspected arteriovenous malformation when iodinated contrast contraindicated.
e	CT Head without contrast, MR Brain without contrast or MRA Brain without contrast preferred for headache and known/suspected arteriovenous malformation when gadolinium and iodinated contrast contraindicated.
f	CT Head without contrast preferred for headache and known/suspected arteriovenous malformation when MR and iodinated contrast contraindicated.

Condition 11 – Meningitis, Known or Suspected

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Meningitis		1	4	3	1	3	4	1	1	1	1	1	1	1	1	1	1	LBP	a
Meningitis	GAD	1	4	3	1	4	1	1	1	1	1	1	1	1	1	1	1		b
Meningitis	MR	1	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1		c
Meningitis	IOD	1	4	1	1	3	4	1	1	1	1	1	1	1	1	1	1		d
Meningitis	GAD IOD	1	4	1	1	3	1	1	1	1	1	1	1	1	1	1	1		e
Meningitis	MR IOD	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		f

Condition 11 – Advice Text

a	CT Head without contrast and/or MR Brain with and without contrast are recommended for the evaluation of patients with headache and suspected infection.
b	CT Head without contrast and/or MR Brain without contrast preferred for headache and suspected infection when gadolinium contraindicated.
c	CT Head without contrast or CT Head with and without contrast are recommended for the evaluation of patients with headache and suspected infection and a contraindication to MR (e.g. pacemaker).
d	CT Head without contrast and/or MR Brain with and without contrast preferred for headache and suspected infection when iodinated contrast contraindicated.
e	CT Head without contrast preferred for headache and suspected infection when gadolinium and iodinated contrast contraindicated.
f	CT Head without contrast preferred for headache and suspected infection when iodinated contrast and MR contraindicated.

Condition 12 – Headache, Serious Headache Features (SHF)

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice text
HA +SHF		1	4	1	1	4	3	1	1	1	1	1	1	1	1	1	1	5, 12, 13, LBP	a
HA +SHF	GAD	1	4	1	1	4	1	1	1	1	1	1	1	1	1	1	1		b
HA +SHF	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		c
HA No SHF		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		d

Condition 12 – Advice Text

a	CT Head without contrast or MR Brain without contrast preferred for headache with serious features.
b	CT Head without contrast and/or MR Brain without contrast preferred for headache with serious features when gadolinium contraindicated.
c	CT Head without contrast preferred for headache with serious features when MR contraindicated.
d	Imaging may not be indicated for the evaluation of patients with head trauma in the absence of neurologic deficits or serious features.

Condition 13 – Sinusitis, Known or Suspected

Condition	CT Head W	CT Head WO	CT Head	MR Brain W	MR Brain WO	MR Brain	MRA Brain W	MRA Brain	MRA Neck W	MRA Neck	MRV Brain W	MRV Brain	MRV Brain	CTA Neck	CTA Head	CTV Head
Sinusitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Condition 13 – Advice Text

Not Covered by AUC

Condition 14 – Stroke, Known, Suspected or New Onset

Condition	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head
Stroke	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Condition 14 – Advice Text

Not Covered by AUC

Condition 15 - Syncope

Condition	Contraindications	CT Head W	CT Head WO	CT Head WWO	MR Brain W	MR Brain WO	MR Brain WWO	MRA Brain W	MRA Brain WO	MRA Neck W	MRA Neck WO	MRV Brain W	MRV Brain WO	MRV Brain WWO	CTA Neck	CTA Head	CTV Head	Reference	Advice Text
Syncope, age 60+		1	4	1	1	4	1	1	1	1	1	1	1	1	1	1	1	2, 4, 7, 8	a
Syncope, age < 60, neuro exam abnormal		1	4	1	1	4	1	1	1	1	1	1	1	1	1	1	1		b
Syncope, age < 60, neuro exam abnormal	MR	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		c
Syncope, age < 60, neuro exam normal		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		d

Condition 15 – Advice Text

a	CT Head without contrast or MR Brain without contrast preferred for syncope in patients over age 60.
b	CT Head without contrast or MR Brain without contrast preferred for syncope with abnormal neurologic exam in patients less than age 60.
c	CT Head without contrast preferred for syncope with abnormal neurologic exam in patients less than age 60 when MR contraindicated.
d	Imaging not recommended in syncope with normal neurologic exam.

Sources

The Headache AUC has been developed by Weill Cornell Medicine utilizing the following thirteen published sources and local best practices (LBP).

No.	Source	Score
1	Wahid Bouida, MD et al. Prediction Value of the Canadian CT Head Rule and the New Orleans Criteria for Positive Head CT Scan and Acute Neurosurgical Procedures in Minor Head Trauma: A Multicenter External Validation Study. <i>Ann Emerg Med</i> . 2013 May. https://pubmed.ncbi.nlm.nih.gov/22921164/	2
2	Stiell IG, Wells GA, Vandermheen K, et al. <i>Lancet</i> . 2001. The Canadian CT Head Rule for patients with minor head injury. <i>Lancet</i> 2001 May. https://pubmed.ncbi.nlm.nih.gov/11356436/	2
3	Haydel MJ, Preston CA, Mills TJ, et al. Indications for computed tomography in patients with minor head injury. <i>N Engl J Med</i> . 2000 Jul. https://pubmed.ncbi.nlm.nih.gov/10891517/	2
4	Jagoda et al. Clinical policy: neuroimaging and decision making in adult mild traumatic brain injury in the acute setting. <i>Annals of Emergency Medicine</i> 2008 Dec. https://pubmed.ncbi.nlm.nih.gov/19027497/	5
5	Edlow et al. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with acute headache. <i>Annals of Emergency Medicine</i> 2008 Oct. https://pubmed.ncbi.nlm.nih.gov/18809105/	5
6	Avoid CT of the head in asymptomatic adult patients in the emergency department with syncope, insignificant trauma, and a normal neurologic evaluation. ACEP, Choosing Wisely October 24, 2014. http://www.choosingwisely.org/clinician-lists/american-college-emergency-physicians-ct-scans-of-head-for-emergency-department-patients-with-minor-head-injury/	5
7	Mitsunaga MM, Yoon HC. Head CT Scans in the Emergency department for Syncope and Dizziness. <i>AJR</i> 2015 Jan. https://pubmed.ncbi.nlm.nih.gov/25539233/	4
8	Grossman SA, Fischer C, Bar JL et al. The yield of head CT in syncope: a pilot study. <i>Intern Emerg Med</i> 2007 Mar. https://pubmed.ncbi.nlm.nih.gov/17551685/	3 Small Series
9	Smits M, Dippel DW, de Haan GG, et al. External validation of the Canadian CT Head Rule and the New Orleans Criteria for CT scanning in patients with minor head injury. <i>JAMA</i> 2005 Sept. https://pubmed.ncbi.nlm.nih.gov/16189365/	3

10	Smits M, Hunink MG, Nederkoorn PJ, et al. A history of loss of consciousness or post-traumatic amnesia in minor head injury: “condition sine qua non” or one of the risk factors? J Neurol Neurosurg Psychiatry 2007 Dec. https://pubmed.ncbi.nlm.nih.gov/17470468/	2
11	Miller EC, Holmes JF, Derlet RW. Utilizing clinical factors to reduce head CT scan ordering for minor head trauma patients. J Emerg Med 1997 Jul-Aug. https://pubmed.ncbi.nlm.nih.gov/9279694/	3
12	Akpek S, Arac M, Atilla S, et al. Cost-effectiveness of computed tomography in the evaluation of patients with headache. Headache 1995 Apr. https://pubmed.ncbi.nlm.nih.gov/7775181/	4
13	Demaerel P, Boelaert I, Wilms G, et al. The role of cranial computed tomography in the diagnostic work-up of headache. Headache 1996 Jun. https://pubmed.ncbi.nlm.nih.gov/8707550/	4
LBP	Weill Cornell Medicine Local Best Practice	NA

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