MedPOINT MANAGEMENT	**Clinical Protocol:** MRI, Brain	
	ORIGINAL EFFECTIVE DATE: 12/28/2011	**REVIEWED/REVISED DATE(S):** 05/28/2019 08/13/2021 08/05/2022 11/15/2023 07/24/2025
PREPARED BY: Ashley Gonzalez, UM Project Coordinator; Konstantin Yengoyan, Supervisor, Clinical Operations	**APPROVED BY:** Richard L. Powell, Chief Medical Officer	

PROTOCOL OVERVIEW

The Clinical Protocol advises on indications and guidelines for Brian MRI.

INDICATIONS

Brain MRI may be indicated for **1 or more** of the following:

a. Acoustic neuroma, as indicated by **1 or more** of the following:
   i. Monitoring of acoustic neuroma without surgery; intervals include **1 or more** of the following:
      1. Six and 12 months after initial diagnosis
      2. Annually for next 5 years
      3. Every 1 to 2 years thereafter
   ii. Monitoring after radiosurgical removal of acoustic neuroma: every 3 years
b. Anatomy or structural defect evaluation needed, as indicated by **1 or more** of the following:
   i. Chiari malformation
   ii. Congenital anomaly, suspected (eg, Dandy-Walker malformation, septo-optic dysplasia, agenesis of corpus callosum)
   iii. Horner syndrome, and central nervous system cause suspected
   iv. Hydrocephalus, as indicated by **1 or more** of the following:
      1. Adult, child, or infant with known hydrocephalus, and need for follow-up
      2. Adult with suspected normal pressure hydrocephalus, as indicated by **1 or more** of the following:
         a. Gait disturbance
         b. Recent onset of dementia or worsening of established dementia
         c. Urinary incontinence
      3. Child or infant with suspected hydrocephalus, as indicated by **1 or more** of the following:
         a. Abnormal findings on neurologic examination (eg, papilledema, gait disturbance, increased deep tendon reflexes, spasticity, clonus, Babinski sign)
         b. Downward gaze (ie, sunset gaze)
         c. Increasing head size beyond normal rate
         d. Persistence of posterior fontanelle beyond 6 to 8 weeks of age

e. Signs or symptoms suggestive of hydrocephalus (eg, irritability, lethargy, decreased mentation, vomiting, headache)
f. Widening or bulging anterior fontanelle, or persistence of anterior fontanelle beyond 18 months of age

4. Ventriculoperitoneal shunt in place and need for further evaluation, as indicated by **1 or more** of the following:
   a. Accelerated head growth
   b. Acute neurologic deficit
   c. Decreased mentation
   d. Headache
   e. Irritability
   f. Lethargy
   g. Loss of developmental milestones
   h. New or more frequent seizures
   i. Shunt reservoir malfunctioning
   j. Unexplained fever
   k. Vomiting
5. Ventriculoperitoneal shunt in place and need for follow-up

v. Neurocutaneous disorders (eg, neurofibromatosis, Sturge-Weber syndrome, tuberous sclerosis complex, von Hippel-Lindau disease)

c. Anosmia, and suspicion for central nervous system etiology, as indicated by **1 or more** of the following:
   i. Anosmia present since birth
   ii. Cognitive impairment
   iii. History of head or facial trauma
   iv. Hypogonadism
   v. Olfactory hallucinations
   vi. Parkinson disease or other neurodegenerative disorder, known or suspected

d. Cancer or neoplasm evaluation or staging needed
e. Cerebral edema, suspected
f. Delirium or change in level of consciousness
g. Dementia or mild cognitive impairment, known or suspected, and 1 or more of the following
   i. Initial diagnostic evaluation
   ii. Amyloid-related imaging abnormalities (ARIA), known, and need for evaluation for continued treatment with monoclonal antibody therapy for Alzheimer disease
   iii. Evaluation for ARIA prior to initiation or monitoring during treatment with monoclonal antibody therapy for Alzheimer disease

h. Demyelinating disease, known or suspected (eg, multiple sclerosis), as indicated by **1 or more** of the following:
   i. Clinically isolated syndrome or multiple sclerosis signs or symptoms that cannot be otherwise explained (eg, temporary loss of vision, diplopia, ascending numbness or tingling, episodic clumsiness)
   ii. Multiple sclerosis, and need for further evaluation, as indicated by **1 or more** of the following:
      1. Increasing cognitive impairment
      2. Symptoms suggesting treatment failure
      3. Transition from one subtype of multiple sclerosis to another is suspected (eg, from relapsing-remitting to secondary-progressive).

iii. Repeat study if diagnosis unclear after initial central nervous system imaging and after at least 90 days from onset of symptoms
iv. Repeat study to monitor response to pharmacotherapy for multiple sclerosis; intervals include **1 or more** of the following:
1. Annually in stable patient
2. After initiation of treatment with new pharmacotherapy: 6 to 12 months
3. Patient at increased risk of complications from pharmacotherapy (ie, progressive multifocal leukoencephalopathy, inflammatory demyelination): 3 to 4 months

i. Developmental delay
j. Dizziness or vertigo, as indicated by **1 or more** of the following:
i. Brainstem findings (eg, dysarthria, Horner syndrome)
ii. Cerebellar findings (eg, incoordination of voluntary movements, intention tremor, disorder of equilibrium or gait, diminished muscle tone)
iii. Focal neurologic findings (eg, weakness, numbness, paresthesias on one side of body)
iv. New-onset headache or neck pain
v. Unresponsive to antibiotic treatment for sinus or ear infection
vi. Unresponsive to symptomatic treatment
k. Epilepsy or seizure disorder, suspected or known, as indicated by **1 or more** of the following:
i. Abnormal neurologic examination (eg, focal deficit, stigmata of neurocutaneous or cerebral malformation, developmental delay or regression in child)
ii. Change in seizure pattern
iii. First focal seizure
iv. First unprovoked generalized seizure
v. More frequent seizures despite anticonvulsant medication
vi. Preoperative evaluation when surgery being considered
vii. Seizure in child younger than 2 years, excluding those with febrile seizures
viii. Status epilepticus
l. Headache with possible underlying structural cause, as indicated by **1 or more** of the following:
i. Personal history suggesting underlying infectious, inflammatory, or structural cause, as indicated by **1 or more** of the following:
1. Onset of headache before age 6 years or after age 50 years
2. Patient with history of cancer
3. Patient with HIV or immunosuppression
ii. Signs or symptoms suggesting underlying infectious, inflammatory, or structural cause, as indicated by **1 or more** of the following:
1. Abnormal findings on neurologic examination, including altered mental status or personality
2. Accompanied by seizure
3. Accompanied by vomiting
4. Change in frequency, severity, or clinical features of headache from what patient has commonly experienced
5. Cluster-type headache
6. Meningeal signs
7. Motor or sensory aura, or aura that has changed character
8. New or progressive headache that persists for days

9. Persistent headache without family history
10. Precipitated by exertion, coughing, sneezing, bending down, or sexual intercourse
11. Repeatedly awakens child from sleep or is present upon awakening
12. Systemic symptoms (ie, fever, myalgias, weight loss, scalp tenderness)
13. Temporal arteritis, suspected
14. Unresponsive to medical treatment
15. Worst headache of patient's life (ie, "thunderclap" headache)

m. Hearing loss, as indicated by **1 or more** of the following:
   i. Associated with neurologic symptoms or focal findings
   ii. Congenital sensorineural hearing loss
   iii. Postoperative assessment of acoustic neuroma (eg, after resection or stereotactic radiosurgery)
   iv. Preoperative imaging for cochlear implant
   v. Unexplained unilateral sensorineural hearing loss documented by audiometry
n. Infection, known or suspected, as indicated by **1 or more** of the following:
   i. Abscess of brain, known, and need for follow-up
   ii. Abscess of brain, suspected (eg, history of sinus infection, headache, fever, neurologic abnormalities)
   iii. Immunosuppressed patient (eg, receiving chemotherapy, HIV-positive) with recent onset of neurologic abnormalities
   iv. Meningitis, suspected, and need to confirm diagnosis or exclude contraindications to lumbar puncture
   v. Neurocysticercosis, suspected
   vi. Viral encephalitis, suspected (eg, herpes infection, confusion, neurologic abnormalities)
o. Intracranial vasculitis, suspected, and need for evaluation of possible sequelae
p. Neonatal hypoxic-ischemic encephalopathy during first 7 days of life
q. Neurologic disease signs or symptoms, as indicated by **1 or more** of the following:
   i. Ataxia or gait disturbance
   ii. Change in speech or language (eg, dysarthria, aphasia)
   iii. Cranial nerve palsy
   iv. Focal sensory deficit (eg, numbness, paresthesias) of face, limb, or whole side of body
   v. Focal weakness of face, limb, or whole side of body
   vi. Horner syndrome (unilateral miosis, ptosis, facial anhydrosis)
   vii. Papilledema
   viii. Visual disturbance (eg, diplopia, visual field defect, nystagmus, visual loss)
r. Parkinson disease or other neurodegenerative disorders, as indicated by **1 or more** of the following:
   i. Established Parkinson disease and **1 or more** of the following:
      1. Atypical features unresponsive to levodopa
      2. Prior to surgery or deep brain stimulation
   ii. New onset of symptoms suggestive of Parkinson disease or other neurodegenerative disorder
s. Precocious puberty (central), as indicated by **ALL** of the following:
   i. Clinical findings suggestive of central precocious puberty
   ii. Patient has been evaluated by pediatric endocrinologist.
t. Preterm infant needing near-term equivalent (ie, 37 to 42 weeks' gestation) evaluation, as indicated by **1 or more** of the following:
   i. Birth at less than 32 weeks of gestational age
   ii. Birth at less than 1500 g birth weight

u. Sickle cell disease, and results will impact treatment decision for stroke prophylaxis
v. Stroke (ischemic) or transient ischemic attack, as indicated by **1 or more** of the following:
    i. Aphasia
    ii. Ataxia
    iii. Decreased level of consciousness
    iv. Dysarthria
    v. Follow-up of CT scan findings atypical for stroke
    vi. Monocular blindness (ie, amaurosis fugax)
    vii. Neonatal stroke, suspected (eg, altered mental status, encephalopathy, neurologic deficit, seizures)
    viii. Paresthesias
    ix. Transient global amnesia
    x. Visual loss
    xi. Weakness or sensory loss on one side of body
w. Syncope, and associated symptoms or findings include **1 or more** of the following:
    i. Abnormality on neurologic examination
    ii. Bowel or bladder incontinence
    iii. Witnessed tonic-clonic seizure
x. Trauma, as indicated by **1 or more** of the following:
    i. Carotid or vertebral artery dissection, suspected
    ii. Minor or subacute closed head injury (Glasgow coma scale score of 13 to 15) with cognitive or neurologic deficit, and CT scan contraindicated or not available, or results indeterminate
    iii. Moderate or severe acute closed head injury (Glasgow coma scale score of less than 13), and CT scan contraindicated or not available, or results indeterminate
    iv. Nonaccidental head trauma, suspected
    v. Subacute or chronic closed head injury with cognitive or neurologic deficit
y. Repeat evaluation of specific area or structure with same imaging modality, as indicated by **1 or more** of the following:
    i. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    ii. Need for interval reassessment that may impact treatment plan
    iii. Need for re-imaging either prior to or after performance of invasive procedure

DISCUSSION

For new-onset unprovoked seizures in adults, a consensus guideline recommends neuroimaging with either brain CT or MRI. Epilepsy is defined as 2 or more unprovoked afebrile seizures. For children with epilepsy, an expert consensus guideline recommends neuroimaging with brain MRI for the following: status epilepticus; failure to control seizures, worsening seizures, or changes in seizure manifestations; seizures in children younger than 2 years of age, excluding those with febrile seizures; abnormal neurologic examination; a history of significant development delay, arrest, or regression; or a new-onset focal seizure.

For evaluation of hydrocephalus or its complications, brain MRI is a standard imaging modality.

For clinical suspicion of a demyelinating disease such as multiple sclerosis in patients presenting with a clinically isolated syndrome, most commonly manifested as unilateral optic neuritis, brainstem

syndrome, or partial myelitis, diagnostic criteria for multiple sclerosis have been developed based on the demonstration of central nervous system lesions disseminated in space and disseminated in time on MRI imaging of the brain and, if appropriate, on spinal cord imaging. Requirements for radiographic dissemination in time criteria for multiple sclerosis include either the simultaneous presence of both gadolinium-enhancing (new) and nonenhancing (older) lesions on the same MRI or new T2 weighted lesions on a repeat MRI performed at least 30 days from the initial onset of symptoms.

For Parkinson disease and other neurodegenerative conditions, MRI is helpful in differentiating Parkinson disease from atypical Parkinson disease, and can provide additional evidence for the presence of other conditions such as progressive supranuclear palsy.

For suspected or known neuroendocrine disease of the pituitary or hypothalamus, an expert consensus guideline recommends MRI as first-line imaging.

For precocious puberty, brain MRI is indicated to rule out hypothalamic lesions such as hamartoma.

For clinical suspicion of a transient ischemic attack, an expert consensus guideline recommends urgent brain MRI with diffusion-weighting imaging, preferably with 24 hours of symptom onset. For acute ischemic stroke, an expert consensus guideline recommends urgent brain imaging, such as MRI if emergently available and not contraindicated, or CT, prior to initiating any specific therapy, including thrombolytic medication. An evidence-based national specialty society guideline recommends brain MRI with diffusion-weighted imaging for the diagnosis of ischemic stroke within 12 hours of symptom onset. A prospective study of 356 consecutive patients presenting with clinically suspected stroke concluded that although both brain MRI and CT had comparable accuracy for detection of intracranial hemorrhage, brain MRI had greater sensitivity than CT for the detection of acute ischemic stroke.

RECOMMENDED RECORDS

Please submit history and physical or progress notes that show the symptoms, exam findings, and any pertinent diagnostic tests that may have been done. (i.e. X-ray, ultrasound).

CITATION

MCG Care Guidelines 29th Edition, 03/04/2023 MCG Releases 29th Edition of Guidelines with New Support for the 2025 Medicare Advantage Final Rule - MCG Health

CLINICAL PROTOCOL REVISION HISTORY

Revised By:	Ashley Gonzalez, UM Project Coordinator; Konstantin Yengoyan, Supervisor, Clinical Operations	**Date:** 07/24/25	
Approved By:	Richard L. Powell, Chief Medical Officer	**Date:** 2/4/2026	**Signature** DocuSigned by: Richard Powell FE8F6E6807B34D9...
Revised By:		**Date:**	

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