Approach to Weakness

NEUROLOGY & MENTAL STATUS

NNT 2.6

KEY DECISION RULE
Thrombectomy for LVO (HERMES)[4]
to cut 90-day disability by ≥1 mRS level in anterior LVO stroke

Weakness: true loss of power, not fatigue or pain-limited effort

→ Tempo, last known well; UMN vs LMN signs, pattern, sensory level, bulbar signs[11]

→ Glucose, K, Ca, Mg, PO4, CK, ECG; serial VC and NIF if LMN, NMJ or bulbar[5,11]

→ **Stroke, cord or breathing threat?**

Yes →

Emergency: code stroke, spine MRI or ICU[2,10,11]

- Sudden face, arm, speech deficit[1]
- Sensory level, saddle loss, retention
- VC <20 mL/kg or weak NIF[5]
- Bulbar signs, dyspnea, weak cough
- Rapid ascending weakness
- Flaccid; peaked T or U waves

→ **Stroke: glucose, CT + CTA; cord: stat MRI spine; failing VC: ICU[2,10]**

If not: where is the lesion?

	Brain (UMN) sudden, focal	**Spinal cord, cauda equina** level, saddle	**Horn, root and nerve** LMN signs	**Junction and muscle** proximal
CAUSES	• **Ischemic stroke** • **Intracerebral hemorrhage** • Tumour, abscess, MS; Todd paresis	• **Compression: tumour, abscess, bleed** • **Cauda equina syndrome** • Myelitis, infarct, B12/copper, spondylosis	• **Guillain-Barré syndrome** • Polyneuropathy: DM, alcohol, B12 • Radiculopathy, CIDP; ALS (UMN + LMN)	• **Myasthenic crisis, botulism** • **Hypo- or hyperkalemia; rhabdomyolysis** • Myositis; statin or steroid myopathy
CLUES	• Face, arm or speech: any one, LR 5.5[1] • Aphasia, neglect, field cut • Hemiparesis; brisk reflexes, Babinski	• Sensory level or saddle loss; retention[11] • Back pain worse lying down; cancer[10] • Fever, injection drug use: abscess	• Ascending, areflexic after infection[7] • Atrophy, fasciculations, low tone • Radiating pain; distal sensory loss	• Fatigable ptosis, diplopia, dysphagia • Proximal, symmetric; sensation normal • Better with effort, dry mouth: LEMS
WORKUP	• Glucose; CT rules out bleed; CTA for LVO[2] • MRI brain if CT unrevealing	• Stat MRI whole spine with contrast[10] • B12, copper, HIV, syphilis; LP if myelitis	• LP: ↑protein; may be normal in wk 1[7] • NCS/EMG; MRI if radicular; A1c, B12, SPEP[11] • mEGRIS: ventilation risk[6,7]	• AChR, then MuSK Ab; CT chest[8,11] • EMG with repetitive stimulation • CK, K, TSH; review drugs
MANAGE	• ≤4.5 h: TNK 0.25 mg/kg (max 25 mg) or tPA[2,3] • LVO: thrombectomy ≤24 h by imaging[2,12] • BP ≤185/110 pre-lysis; ICH: reverse anticoag[2,11]	• Tumour: dexamethasone; RT ± surgery[10] • Abscess: drainage, IV antibiotics • Neurosurgery or spine surgery now	• Can't walk ≤4 wk: IVIG 0.4 g/kg ×5 d or PLEX[7] • No corticosteroids for GBS[7] • Intubate: VC <20 mL/kg or >30% fall[5]	• MG crisis: IVIG or PLEX, ICU; avoid FQs, AGs[8,11] • High K: Ca gluconate if ECG change; shift K[9] • Low K: replace on monitor; rhabdo: fluids

Stethopedia
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Evidence [1] Goldstein 2005, JAMA [2] Heran 2024, Can J Neurol Sci [3] Menon 2022, Lancet [4] Goyal 2016, Lancet [5] Lawn 2001, Arch Neurol [6] Luijten 2023, JNNP [7] van Doorn 2023, Eur J Neurol [8] Sanders 2016, Neurology [9] Lindner 2020, Eur J Emerg Med [10] Lawton 2019, J Clin Oncol [11] Manual 2024–25, pp. 196–198, 200 [12] Heran 2025, Can J Neurol Sci