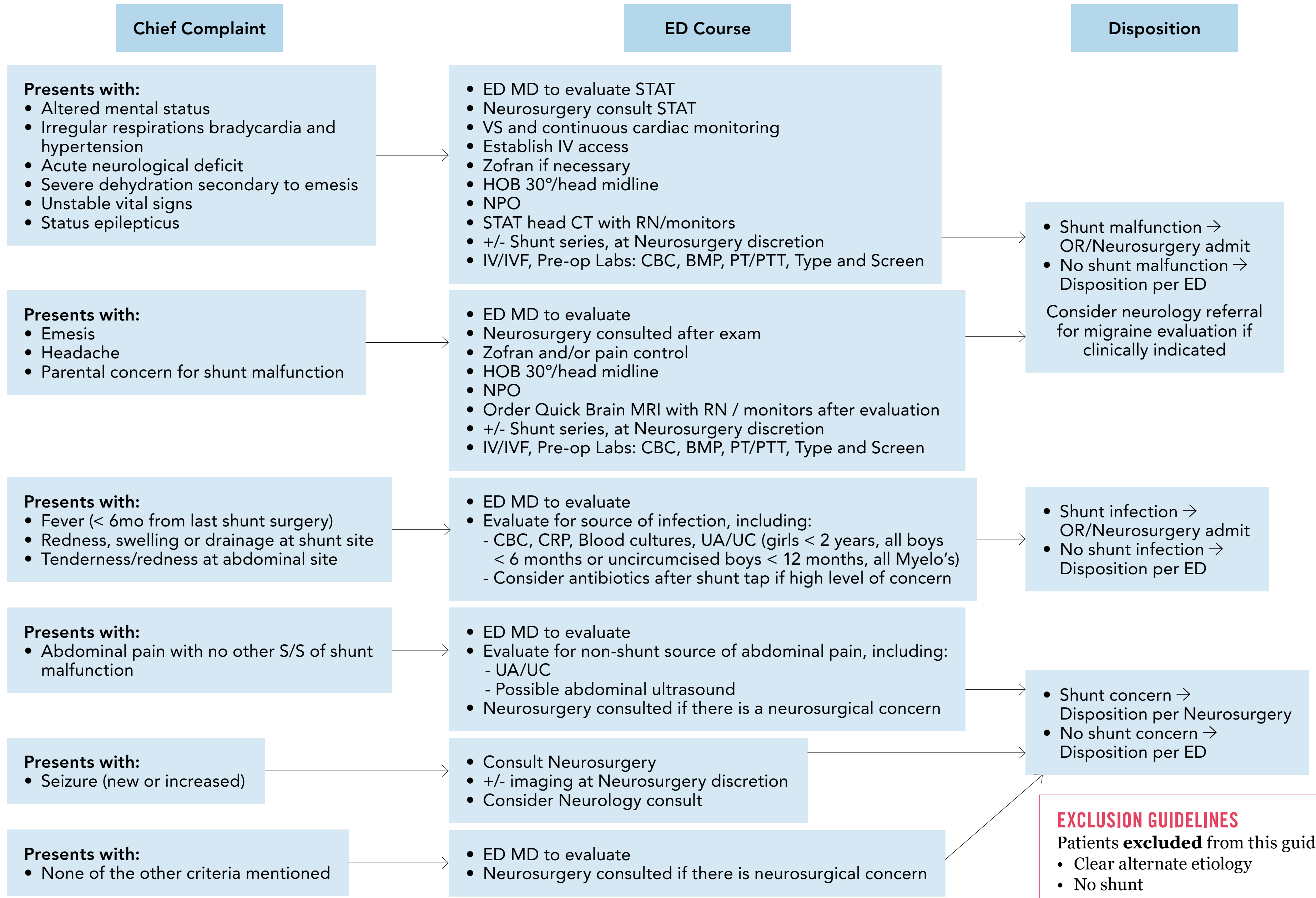
ED GUIDELINE

SUSPECTED SHUNT MALFUNCTION OR INFECTION

Children's MINNESOTA

Aim: To standardize the workup and management of patients with ventricular shunts who present to the ED.



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CLINIC PROTOCOL

Imaging (goal is within 60 minutes of presentation):

- May go to imaging off monitor if stable (no bradycardia, respiratory abnormalities, seizure or altered mental status)
- Patients with fever or abdominal pain but no other symptoms of shunt complication may not require imaging
- Definitive imaging for all patients except isolated fever:
  - "Quick brain" MRI without sedation is first choice for stable patients
    - Order MRI head without contrast, with shunt assessment as indication
  - Head CT without contrast if MRI not available within 60 minutes or if the patient is unstable
- Consider US of abdomen if abdominal pain

Medication considerations:

- Ondansetron (Zofran) prn nausea or vomiting
  - 8–15 kg – 2 mg IV/ODT
  - 15+ kg – 4 mg IV/ODT
- Acetaminophen (Tylenol) prn pain or fever
  - 15 mg/kg PO/PR
- Morphine prn severe pain
  - 0.1 mg/kg IV; use caution in altered mental status
- Lorazepam (Ativan) prn seizure
  - 0.1 mg/kg IV, max 2 mg per dose
- Fosphenytoin prn ongoing/refractory seizures
  - 15–20 mg PE/kg IV loading dose

Consultations:

- Consult neurosurgery
  - Immediately for all unstable patients (altered mental status, Cushing triad, acute focal neurological deficit, ongoing seizure activity)
  - After physician evaluation for other cases if indicated after ED assessment
- Tap of shunt to assess CSF and pressures to be completed at discretion of neurosurgery
- Shunt Series radiographs to be obtained at discretion of neurosurgery
- Neurology for new seizure or headache without shunt findings

Reassessments:

- VS with BP q1h while in ED, or as otherwise indicated by clinical status

Differential diagnosis:

- Shunt failure
- Shunt infection (usually in the first 1–3 months after placement)
- Viral illness
- Medication toxicity
- Missed medication doses (e.g., anti-epileptics)
- Migraine headache

Discharge or Admission criteria:

- General guidelines:
  - Shunt malfunction or suspected shunt malfunction: Neurosurgery to admit to OR, PICU or floor
  - Unlikely shunt malfunction: Disposition to be determined by ED

Quality measures:

- MRI or CT within 60 minutes of triage
- Return to ED for same problem within 48 hours for discharged patients

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