



CLINICAL CASES

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Emergency Medicine Board

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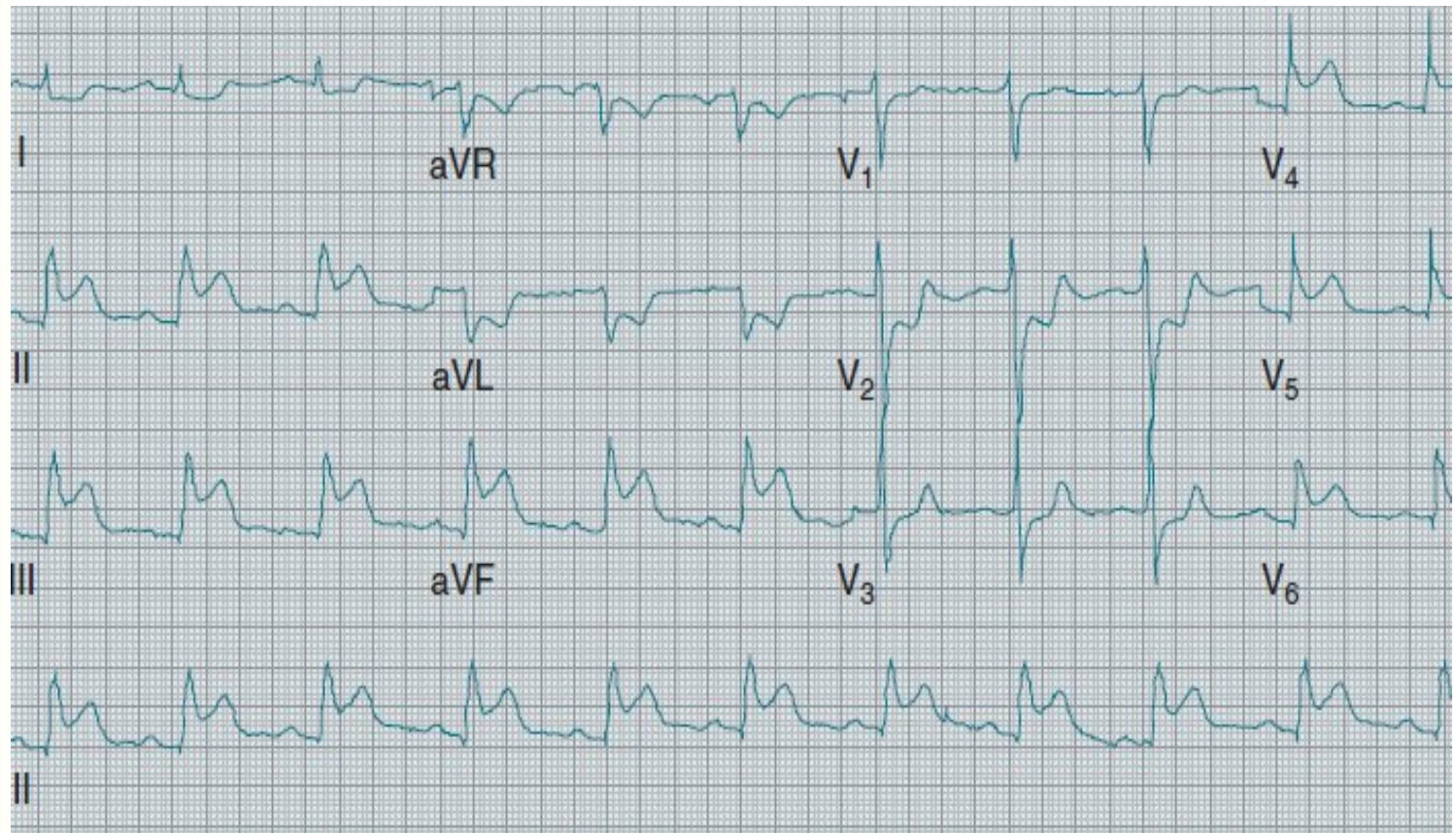


TABLE 217-2 Burn Depth Features Classified by Degree of Burn			
Burn Depth	Histology/Anatomy	Example	Healing
Superficial (first degree)	Epidermis	Sunburn	7 d
	No blisters, painful		
Superficial partial-thickness (superficial second degree)	Epidermis and superficial dermis	Hot water scald	14–21 d, no scar
	Blisters, very painful		
Deep partial-thickness (deep second degree)	Epidermis and deep dermis, sweat glands, and hair follicles	Hot liquid, steam, grease, flame	3–8 wk, permanent scar
	Blisters, very painful		
Full-thickness (third degree)	Entire epidermis and dermis charred, pale, leathery; no pain	Flame	Months, severe scarring, skin grafts necessary
Fourth degree	Entire epidermis and dermis, as well as bone, fat, and/or muscle	Flame	Months, multiple surgeries usually required

Case

A 58-year-old man arrives at the emergency department complaining of chest pain. The pain began 1 hour ago, during breakfast, and is described as severe, dull, and pressure-like. It is substernal in location, radiates to both shoulders, and is associated with shortness of breath. The patient vomited once. His wife adds that he was very sweaty when the pain began. The patient has diabetes and hypertension and takes hydrochlorothiazide and glyburide. His blood pressure is 150/100 mm Hg, pulse rate is 95 beats per minute, respiration is 20 breaths per minute, temperature 37.3°C, and oxygen saturation by pulse oximetry is 98%. The patient is diaphoretic and appears anxious. On auscultation, faint crackles are heard at both lung bases. The cardiac examination reveals an S4 gallop and is otherwise normal. The examination of the abdomen reveals no masses or tenderness.

Case

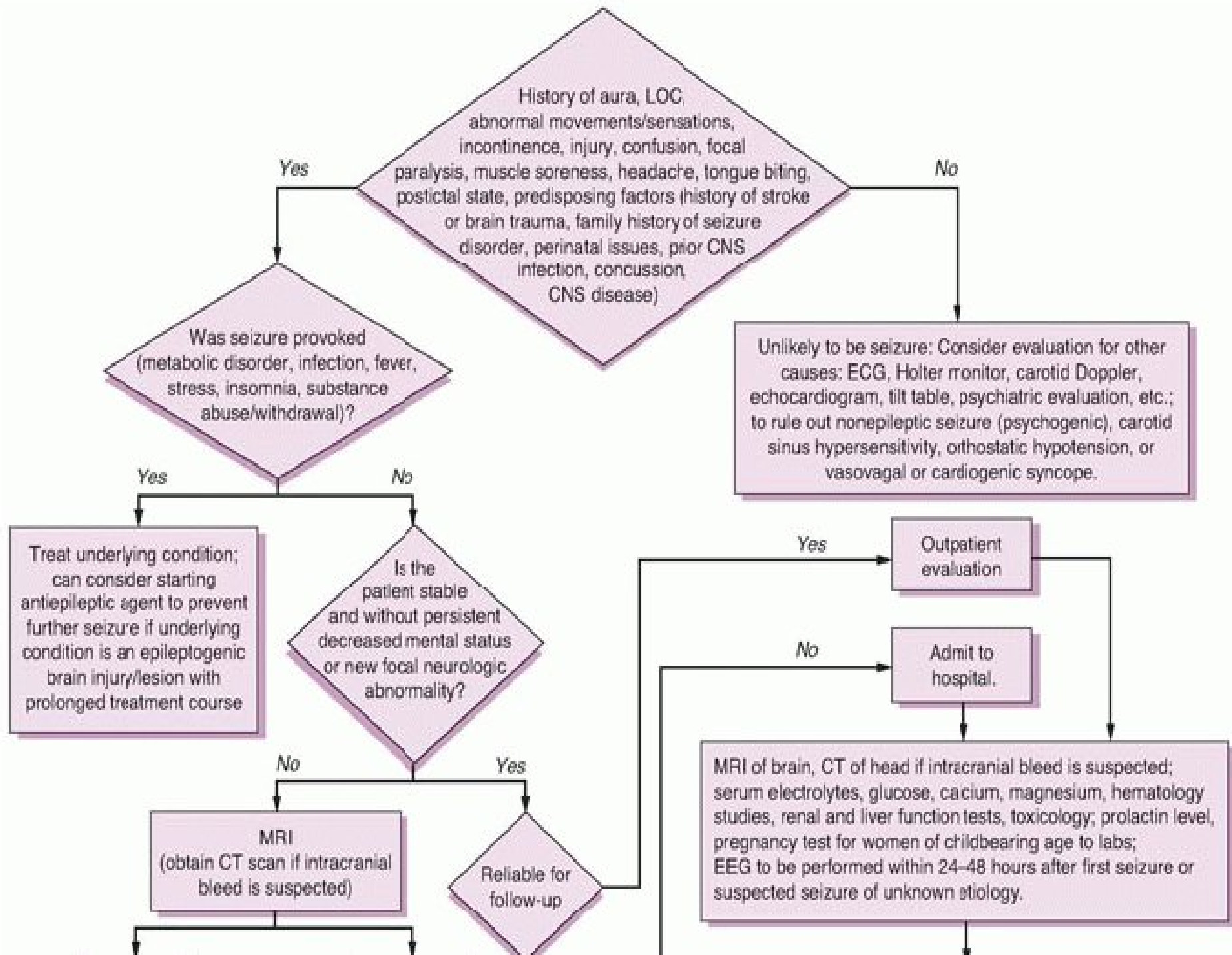


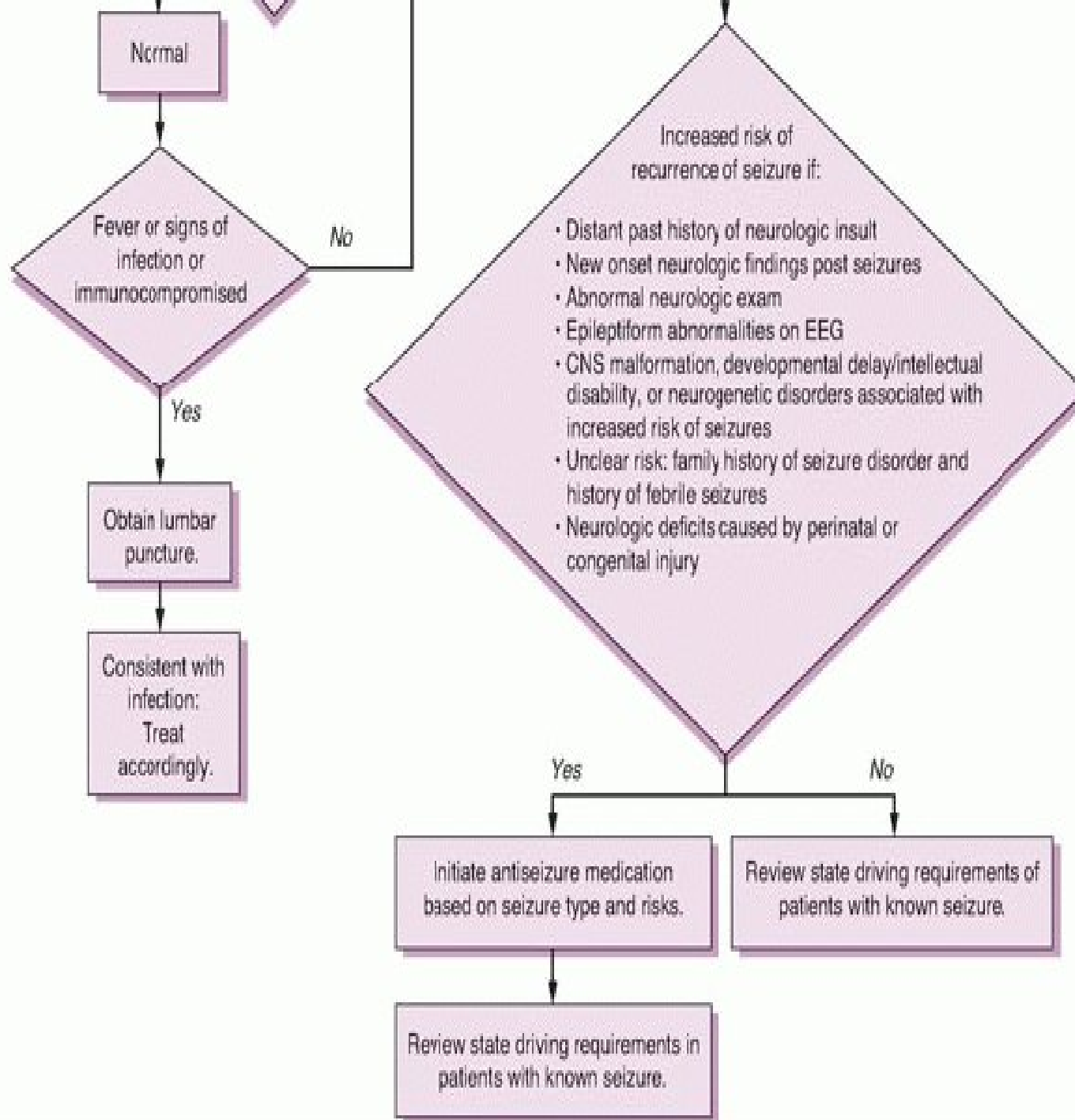
Case

A 59-year-old man with a history of hypertension presents to (ED) with right-sided paralysis and aphasia. The patient's wife states he was in his normal state of health until one hour ago, when she heard a thud in the bathroom and walked in to find him collapsed on the floor. She immediately called emergency medical services, who transported the patient to your ED. En route, his fingerstick blood sugar was 108 mg/dL. On arrival in the ED, the patient is placed on monitors and an IV is established. His temperature is 36.8, blood pressure is 169/93 mm Hg, heart rate is 86 beats per minute, and respiratory rate is 20 breaths per minute. The patient has a noticeable left-gaze preference and is verbally unresponsive, although he will follow simple commands such as raising his left thumb. He has a normal neurologic examination on the left, but on the right has a facial droop, no motor activity, decreased deep tendon reflexes (DTRs), and no sensation to light-touch.

Case 1

A 16-month-old child is brought in by EMS after a witnessed tonic-clonic event at home by his mother. The mother noted that the child has been well appearing, is not taking any medications and there had been no recent travel. He had been active for the past week with no apparent complaints. The mother thinks the seizure lasted about 5 minutes but it ceased by the time EMS arrived at the home. The vital signs on the chart include a temperature of 38.4°C (rectal), a heart rate of 130 beats per minute, a respiratory rate of 24 breaths per minute, and a systolic blood pressure of 100 mm Hg. On initial evaluation, the child is well appearing, well-perfused, and in no respiratory distress. His mental status is back to baseline per the mother, and on further evaluation, the child has no rashes or murmurs but is noted to have a bulging erythematous tympanic membrane. Acetaminophen is ordered and the child is observed and reevaluated several times over the next couple of hours. No laboratory studies are ordered initially.





If abnormal,
treat as
indicated.

Normal

Fever or signs of
infection or
immunocompromised

No

Yes

Obtain lumbar
puncture.

Consistent with
infection:
Treat
accordingly.

Increased risk of
recurrence of seizure if:

- Distant past history of neurologic insult
- New onset neurologic findings post seizures
- Abnormal neurologic exam
- Epileptiform abnormalities on EEG
- CNS malformation, developmental delay/intellectual disability, or neurogenetic disorders associated with increased risk of seizures
- Unclear risk: family history of seizure disorder and history of febrile seizures
- Neurologic deficits caused by perinatal or congenital injury

Yes

No

Initiate antiseizure medication
based on seizure type and risks.

Review state driving requirements of
patients with known seizure.

Review state driving requirements in
patients with known seizure.

Case 2

A 50-year-old woman presents with a severe headache of abrupt onset of 10 hours duration. The pain is diffuse, throbbing, and worsened when she went out into the sunlight. She denies any recent fever, neck pain, numbness, weakness, vomiting, and any change in vision. She was concerned because she has never had a headache as strong as this before. Her past medical and family histories are unremarkable. She does not take any medications, does not smoke, and only drinks alcohol socially.

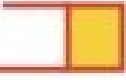
Case 2

On examination, her temperature is 36.9°C, blood pressure 136/72 mm Hg, heart rate 88 beats per minute, and respiratory rate of 16 breaths per minute. She is not in any acute distress but appears to be mildly uncomfortable. Her pupils are equal and reactive bilaterally. There is no evidence of papilledema on fundoscopic examination. Movement of her neck causes her some increased discomfort. Her neurological examination is normal, including cranial nerves, strength, light touch sensation, deep-tendon reflexes, and finger-to-nose.

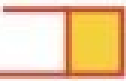
RED FLAGS “SNOOP T”



Systemic symptoms (fever, weight loss) or
secondary risk factors (HIV, systemic cancer)



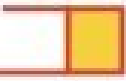
Neurologic symptoms or abnormal signs (confusion, impaired alertness, or consciousness)



Onset: sudden, abrupt, or progressively worsening



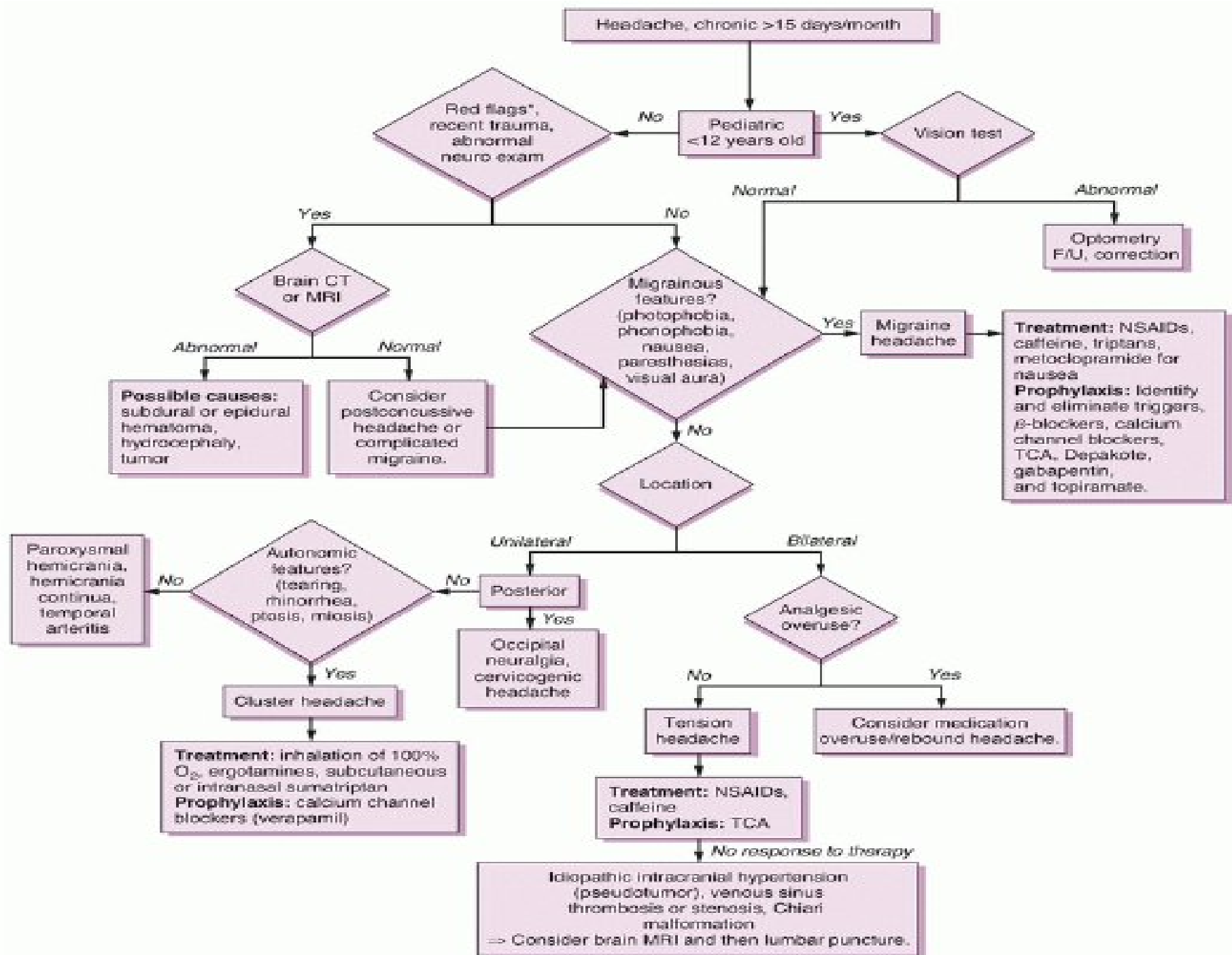
Older: new onset and progressive headache, especially in middle-age >50



Previous headache history: first headache or different (change in attack frequency, severity, or clinical features)



Triggered headache (Valsalva, exertion)



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R



P

Case 3

A 34-year-old man with hypertension, depression, and recent gunshot wounds resulting in T-10 paraplegia presents with dyspnea, pleuritic and right-sided chest pain, tachypnea, tachycardia, left calf swelling, and bibasilar atelectasis on chest radiography.

Table 16–3 • WELLS CRITERIA FOR ASSESSMENT OF PRETEST PROBABILITY OF PULMONARY EMBOLISM

Criterion		Points
Suspected DVT		3
An alternate diagnosis is less likely than PE		3
HR >100 beats/min		1.5
Immobilization or surgery in the previous 4 weeks		1.5
Previous DVT/PE		1.5
Hemoptysis		1
Malignancy (being treated currently or in the last 6 months)		1
Score Range (Points)	Mean Probability of PE	Interpretation of Risk
0-2	4%	Low
3-6	21%	Moderate
>6	67%	High

TABLE 56-6 Wells' Score for Deep Vein Thrombosis (DVT)

Clinical Feature	Points*
Active cancer (treatment within 6 mo, or palliation)	1
Paralysis, paresis, or immobilization of lower extremity	1
Bedridden for >3 d because of surgery (within 12 wk)	1
Localized tenderness along distribution of deep veins	1
Entire leg swollen	1
Unilateral calf swelling of >3 cm (10 cm below tibial tuberosity)	1
Unilateral pitting edema	1
Collateral superficial veins	1
Alternative diagnosis as likely as or more likely than DVT	−2
Prior history of DVT or pulmonary embolism†	1

*Risk score interpretation (probability of DVT) in original Wells DVT model: ≥ 3 points = high risk (75%); 1 or 2 points = moderate risk (17%); < 1 point = low risk (3%).

†Only awarded in the modified (dichotomized) Wells DVT model: ≤ 1 point = DVT unlikely; > 1 point = DVT likely.

Assess Pulmonary Embolism Rule Out Criteria (PERC)

If any of the following are true, then the patient is considered PERC-positive:

1. Patient is ≥ 40 years.
2. Patient's pulse >99 beats/min
3. Patient's pulse oximetry reading $<95\%$ on room air
4. Patient with hemoptysis
5. Patient taking exogenous estrogen
6. Patient had a previous VTE diagnosis.
7. Patient had surgery or trauma, which required intubation or hospitalization in the last 4 weeks.
8. Patient has unilateral leg swelling of the calves.

Clinical signs/symptoms of pulmonary embolism (PE)

Clinically stable?

No

Stabilize and consider empiric anticoagulation. TTE to evaluate RV strain or dysfunction

PE confirmed

Thrombolysis, surgery, or catheter embolectomy if hypotensive

PE ruled out

Consider alternative diagnosis.

Yes

Assess PERC positive?

Yes

Clinical pretest probability score?

No

PE unlikely. Consider alternative diagnosis.

≤ 4

PE less likely

Highly sensitive D-dimer?

Negative

Consider alternative diagnosis.

Positive

≥ 5

Spiral CT angiography

Positive

PE confirmed

Treat with anticoagulation and consider thrombolysis if becomes unstable.

Assess the Clinical Pretest Probability of Pulmonary Embolism
Clinical pretest probability (CPTP—modified Wells PE Score)

Clinical signs	3
Alternative Dx unlikely	3
Heart rate >100	1.5
Immobilization previous 4 days	1.5
Previous DVT/PE	1.5
Hemoptysis	1
Malignancy	1

PE less likely ≤ 4
PE likely ≥ 5

Inconclusive results or unable to perform CT (i.e., renal failure or contrast allergy)

V/Q scan

High probability of PE

Consider alternative imaging: serial lower extremity venous ultrasound, pulmonary angiography, or MRA

Inconclusive (low to intermediate probability)

Low probability and low CPTP

Consider alternative diagnosis.

Normal V/Q scan

Anticoagulation:
Immediate treatment: at least 5 days of therapy regardless of INR
- Low-molecular-weight heparin
- Unfractionated heparin
- Fondaparinux
- Overlap with vitamin K antagonist for 2 days once INR is 2.0–3.0
Long-term treatment >3 months (based on risk factors and severity of PE):
- Vitamin K antagonist
- Extended treatment: indefinite (depends on risk factors and severity of PE)
Oral anticoagulation:
- Dabigatran (requires 5–10 days of parenteral anticoagulation before initiation)
- Rivaroxaban
- Apixaban
Low-risk patients consider outpatient treatment (troponin, BNP, and TTE can help with risk stratification).

Case 4

A 18-year-old female is brought to the emergency room by family.

She is known case of epilepsy, on tegretol 200mg.

She taked 20 tablets from her medicine 30min. ago

What should you do ?

Orogastric Lavage

Indications	Rarely indicated Consider for recent (<1 h) ingestion of life-threatening amount of a toxin for which there is no effective treatment once absorbed
Contraindications	Corrosive/hydrocarbon ingestion Supportive care/antidote likely to lead to recovery Unprotected airway Unstable, requiring further resuscitation (hypotension, seizures)
Complications	Aspiration pneumonia/hypoxia Water intoxication Hypothermia Laryngospasm Mechanical injury to GI tract Time consuming, resulting in delay instituting other definitive care

Activated Charcoal	Adults 50 grams orally, children 1 gram/kg orally
Indications	Ingestion within the previous hour of a toxic substance known to be adsorbed by activated charcoal, where the benefits of administration are judged to outweigh the risks
Contraindications	Nontoxic ingestion Toxin not adsorbed by activated charcoal Recovery will occur without administration of activated charcoal Unprotected airway Corrosive ingestion Possibility of upper GI perforation
Complications	Vomiting Aspiration of the activated charcoal Impaired absorption of orally administered antidotes

TABLE 176-9 Indications, Contraindications, and Complications of Enhanced Elimination Procedures	
Multidose Activated Charcoal	Initial dose: 50 grams (1 gram/kg children), repeat dose of 25 grams (0.5 gram/kg children) every 2 hours
Indications	Carbamazepine coma (reduces duration of coma) Phenobarbital coma (reduces duration of coma) Dapsone toxicity with significant methemoglobinemia Quinine overdose Theophylline overdose if hemodialysis/hemoperfusion unavailable
Contraindications	Unprotected airway Bowel obstruction Caution in ingestions resulting in reduced GI motility
Complications	Vomiting Pulmonary aspiration Constipation Charcoal bezoar, bowel obstruction/perforation

TABLE 176-8 Principles to Minimize Complications From Orogastric Lavage

- Ensure a protected airway if consciousness level is reduced.
- Use a 36F- to 40F-gauge orogastric tube (22F to 24F in children).
- Position the patient on the left side with the head down 20 degrees.
- Pass lubricated tube down the esophagus a distance equal to that between chin and xiphoid process.
- Confirm tube position by insufflation of air.
- Gently lavage with 200 mL (10 mL/kg in children) of warm tap water, allowing drainage after each aliquot.
- Continue until returned fluid is clear.
- Consider administration of activated charcoal via orogastric tube before removal.

Personal protective equipment; secure airway, breathing, circulation.

*Consider prolonged resuscitation effort (60 minutes) because intact neurologic survival is possible.



Check blood sugar (treat with 1 amp of D50); administer thiamine (100 mg IV/IM) and naloxone (0.4–2.0 mg q2–3min) if unresponsive.



Seizure control

1st-line benzodiazepines (BZD), 2nd-line barbiturates, avoid phenytoin.

Consider lorazepam 4 mg or diazepam 8 mg IV then phenobarbital 10–20 mg/kg IV or propofol 1 mg/kg IV.

*Pyridoxine up to 5 g IV if suspect isoniazid or mushroom poisoning



Correct hyperthermia (antipyretics ineffective).
Evaporative cooling, ice water immersion, ice packing, gastric lavage, peritoneal lavage

Collateral history from patient, family, or EMS; thorough physical exam

Contact Poison Control Center at 800-222-1222.

Initial workup: electrocardiogram, Tylenol level, ASA level, urinalysis with pH, hepatic function panel, comprehensive metabolic panel, pregnancy test (female), lactate, coagulation blood tests, salicylates, serum osmolality, serum ethanol level, blood gas (arterial or venous), chest x-ray, creatine kinase, carboxyhemoglobin, expanded urine drug screen

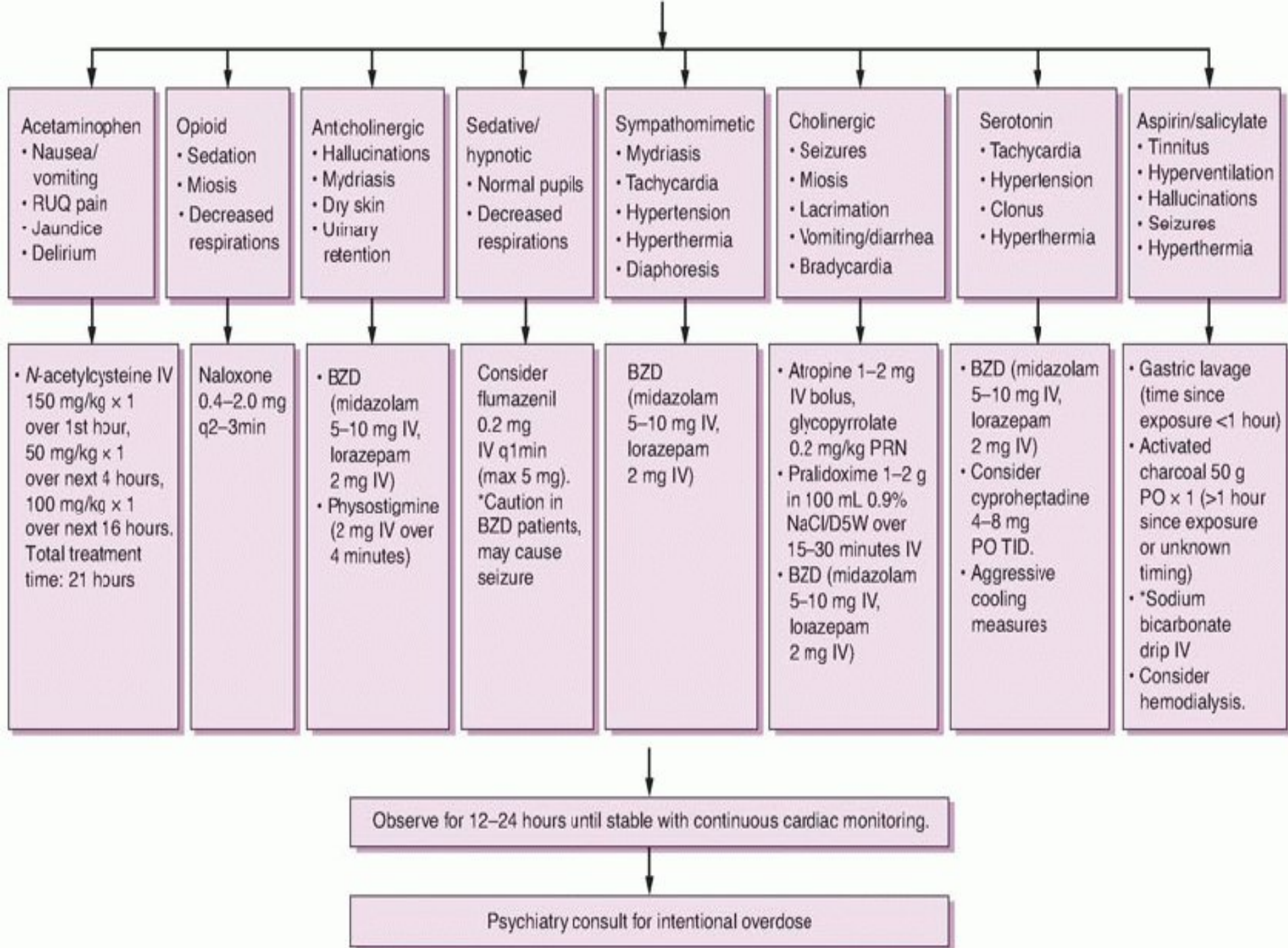
Consider drug immunoassay and drug levels for the following if indicated: digoxin, valproic acid, methotrexate, theophylline, carbamazepine, iron, lithium, phenobarbital, phenytoin, carbon monoxide, methemoglobin.

Bicarbonate for severe metabolic acidosis or widened QRS interval
*Instructions for drip below—titrate infusion to a target serum pH of 7.45–7.50.

GI decontamination only if supportive care not satisfactory and airway is secure. Consider activated charcoal 1 g/kg PO x 1 within an hour of ingestion or whole-bowel irrigation with polyethylene glycol at 1–2 L/hr via NGT.

Enhanced clearance with dialysis (aspirin, methanol, ethylene glycol, lithium, theophylline, isoniazid) or with urine alkalization (urine pH >7.5)
*Instructions for drip below—titrate infusion to a target urine pH of >7.50.

Go to "Poison Treatment" algorithm.



Thank you

