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Phone Numbers
 ANMC: Consult: *97 or (907) 563-2662
 Transfer: (907) 729-2337
 PICU Cell for urgent consults: (907) 297-8809
 Providence: ED for on-call specialist: (907) 212-3111
 Trauma: (907) 212-2525
 Alaska Regional Hospital Access Center: (844) 880-5522
 VA/JBER: ED: MD consult number (907) 580-5556
 Transfer: (907) 580-6420
 Admissions 24/7 (907) 580-6423
 Operator: (907) 552-1110
 Harborview Seattle (burns): (888) 731-4791

Remember: Unless you transfer care of the patient, YOU are responsible for orders, documentation and notifying the patient and family of the plan of care.

If you're an SRC provider, you do not have the luxury of paging the provider STAT to bedside. For the purposes of this protocol, the SBAR case presentation and the documentation requirements apply.

Page the appropriate provider in Anchorage
 1. ANMC for beneficiaries
 2. Providence Hospital or Alaska Regional Hospital for non-beneficiaries
 3. Alaska Regional for prison inmate
 4. VA or JBER (Joint Base Elmendorf/ Richardson) for veterans

Once speaking with the appropriate provider be able to:
 1. State your name, title and department (i.e. ER physician, outpatient NP, second year resident, etc)
 2. State purpose of call (i.e. quick question, possible admission, management advice.)
 3. Provide name, MRN, age, DOB. If the patient is pregnant, give gravity and parity and gestational age in initial sentence, if the patient is a child, give the age in the initial sentence.
 4. Be able to use the SBAR method to communicate patient details (see box below)
 5. Ask a **specific question** about management.
 6. Let accepting physicians know whether you think that the patient can travel by commercial flight or will require air medevac
 7. If there is a problem getting an accepting physician for a medevac/transfer or with patient management decisions, see NOTE below

Document consultant advice in the medical record, include date, time, first and last name of consultant and a summary of the advice given.

Provider needs consultation about patient at YKHC

Consult provider is located in Bethel?

No

Yes

Patient is critically ill and the consultant is required at bedside?

No

Yes

Page provider STAT to come to bedside and assist in management.

If on-going management is required, a decision must be made **immediately** and **communicated** about who will be the primary managing provider giving orders and documenting in the medical record.

Once patient is stabilized, discussion will occur between the primary provider and the consultant regarding documentation of the patient's medical care in the record and ongoing management.

Page the appropriate provider. Have ready the following information:
 1. State your name, title and department (i.e. ER physician, outpatient NP, second year resident, etc)
 2. State purpose of call (i.e. quick question, possible admission, management advice.)
 3. Name, MRN, age, DOB. If the patient is pregnant, give gravity and parity and gestational age in initial sentence, if the patient is a child, give the age in the initial sentence.
 4. Be able to use the SBAR method to communicate patient details (see box below)
 5. Ask a **specific question** about management.

Provider requesting consult must document consultant's advice in the medical record. Include date, time, first and last name of consultant and a summary of the advice given.

At any time in the process, if the primary provider wants support at the bedside, page the consultant and ask them to come to bedside and provide support

 Clear role delineation must occur establishing who is the primary managing provider.

SBAR:
Situation: a concise statement of the problem, a "one-liner"
 "This is a 3 year old otherwise healthy girl with a fever..."
 "My patient is a 20 year old G3P2 at 26 weeks with vaginal bleeding..."
 "I'm taking care of a 21 year old male with fever and abdominal pain..."
Background: pertinent and brief information related to the situation
 "The labs are normal and CXR shows no infiltrate but her pulse is elevated..."
 "I have performed a sterile speculum exam and there is frank blood in the vault..."
 "The patient's CT show appendicitis and the patient is vomiting all intake..."
Assessment: analysis and consideration of options, what you found/think
 "I think she needs a fluid bolus but I am wondering if she also needs a UA..."
 "I think this patient might have an active abruption..."
 "I think this patient has appendicitis and needs to be transferred to ANMC..."
Recommendation: action requested, what you want
 "I want your opinion on how much fluid and the need for a UA..."
 "I want you to come in and asses this patient in person..."
 "I would like to transfer this patient via medevac to ANMC..."

NOTE:
 If there is a disagreement regarding the management of a patient between the consultant and the primary provider, the primary provider will advise the consultant as to the reason for the disagreement. If a consensus cannot be reached, a third opinion shall be obtained. This can either be from a YK based provider or from a provider from another facility. At any time the Clinical Director on call can also be notified.

This protocol is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
 Approved by MSEC 11/8/17; updated 3/7/19.
If comments about this protocol, please contact Ellen_Hodges@ykhc.org.

**Indications for medevac:**

- Patient is in danger of losing:
 - Life
 - Limb
 - Eyesight
- Preterm labor

NOTE: In the event of multiple medevacs, the ED physician in collaboration with medevac dispatch prioritizes the medevacs.

Occasionally, a charter may be able to fly when a medevac cannot. Consider this option if on weather-hold.

Village to Bethel Collaboration

Village Health Aide collaborates with provider (hospitalist or ED physician) to make decision if medevac is indicated

Consult ED physician for centralized medical control.

If patient is NOT a beneficiary, ask if he/she has a preferred medevac company. If not, suggest they [register for LifeMed insurance online](#).

Activation of Medevac

Activating provider calls medevac dispatch with patient's name, DOB, village, and diagnosis. If applicable, dispatch will ask for escort's name and weight.

LifeMed Dispatch 1-800-478-5433

Complete the Patient Transport Order (PTO) and ensure it is faxed to **5-543-1262 and x6099**.

Managing physician is either ED physician or hospitalist who activated. If hospitalist continues to manage, must keep ED physician updated.

Managing physician calls village Health Aide to get updates and continues to keep records in RAVEN.

Dispatch Process

1. Selected medevac dispatch notifies their medevac team.
If medevac cannot launch (weather, runway lights, etc.) dispatch will notify managing physician. Pilot will continue to check weather.
2. Receiving unit clerk faxes PTO and face sheet to medevac crew.
3. Medevac crew contacts health aide and managing physician as needed.
4. If there is a prolonged delay, medevac crew will contact the managing physician and health aide.
5. In extenuating circumstances, patient may need direct transport to Anchorage from village. After obtaining an accepting physician in Anchorage, managing physician will work with medevac dispatch for transport logistics.

In the event that a medevac is cancelled (patient deemed stable to come in on scheduled flight) medevac dispatch and receiving department must be notified by the managing physician immediately.

Medevac launches

1. Once in village, medevac crew calls managing physician to give report, establish treatment plan, and give ETA in Bethel.
2. Managing physician keeps receiving charge nurse informed of patient status/ETA of medevac.

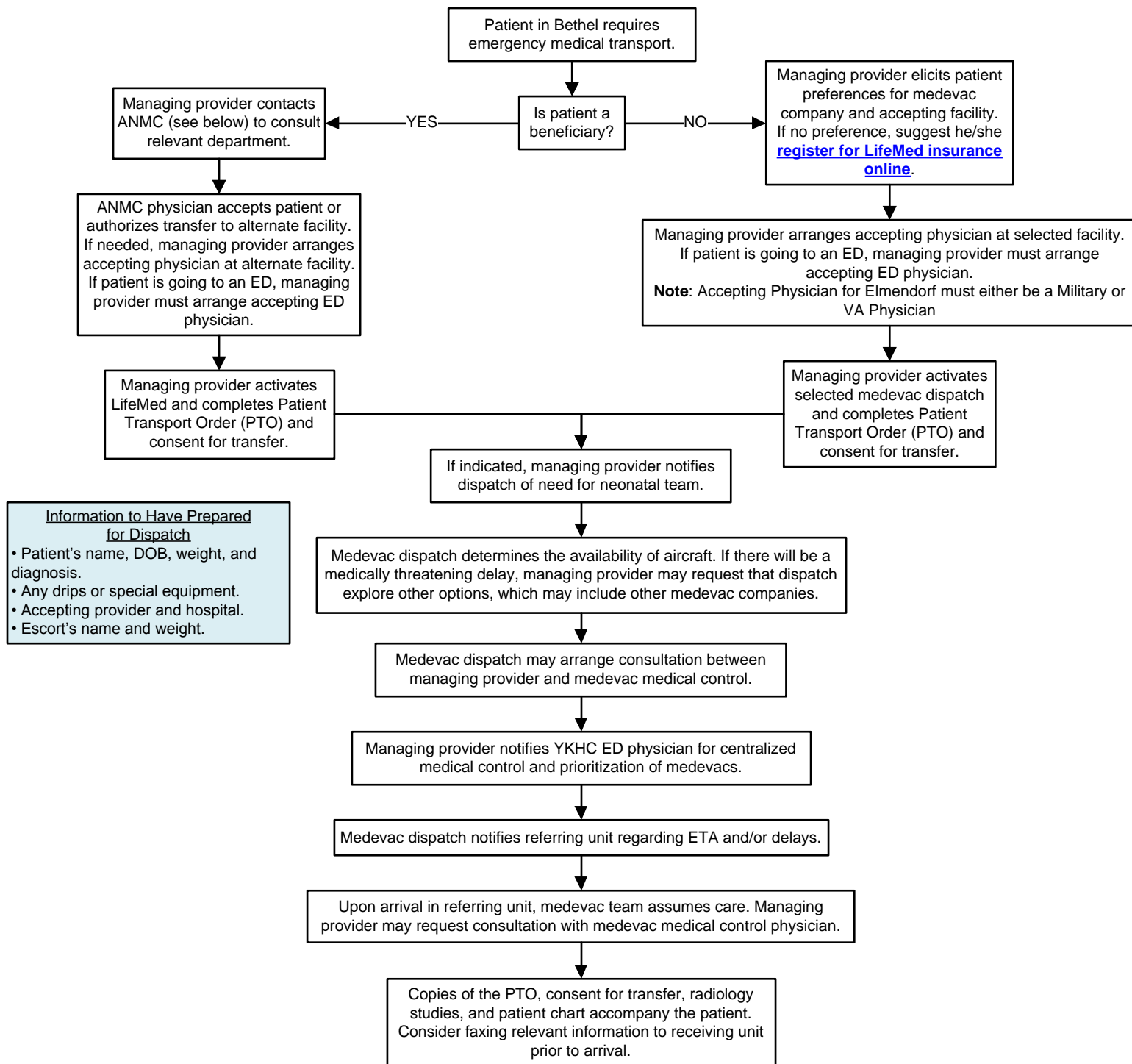
Arrival in Bethel

Patient care is transferred to receiving unit and medevac crew gives report to staff.

Consider Transfer Direct to Anchorage ("ramp-to-ramp") when:

1. Obvious need for acute surgical intervention
 2. Hemodynamically stable intubated patients
 3. Hemodynamically stable acute MI patients
 4. Level III Trauma Center indicated.
 5. Other extenuating circumstances
- Discuss with medevac team if considering ramp transfer.**
Remember to call ED at receiving facility to discuss transfer.

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Approved by MSEC 2/5/20.
If comments about this guideline, please contact Chloe_Wurr@ykhc.org.



Phone Numbers

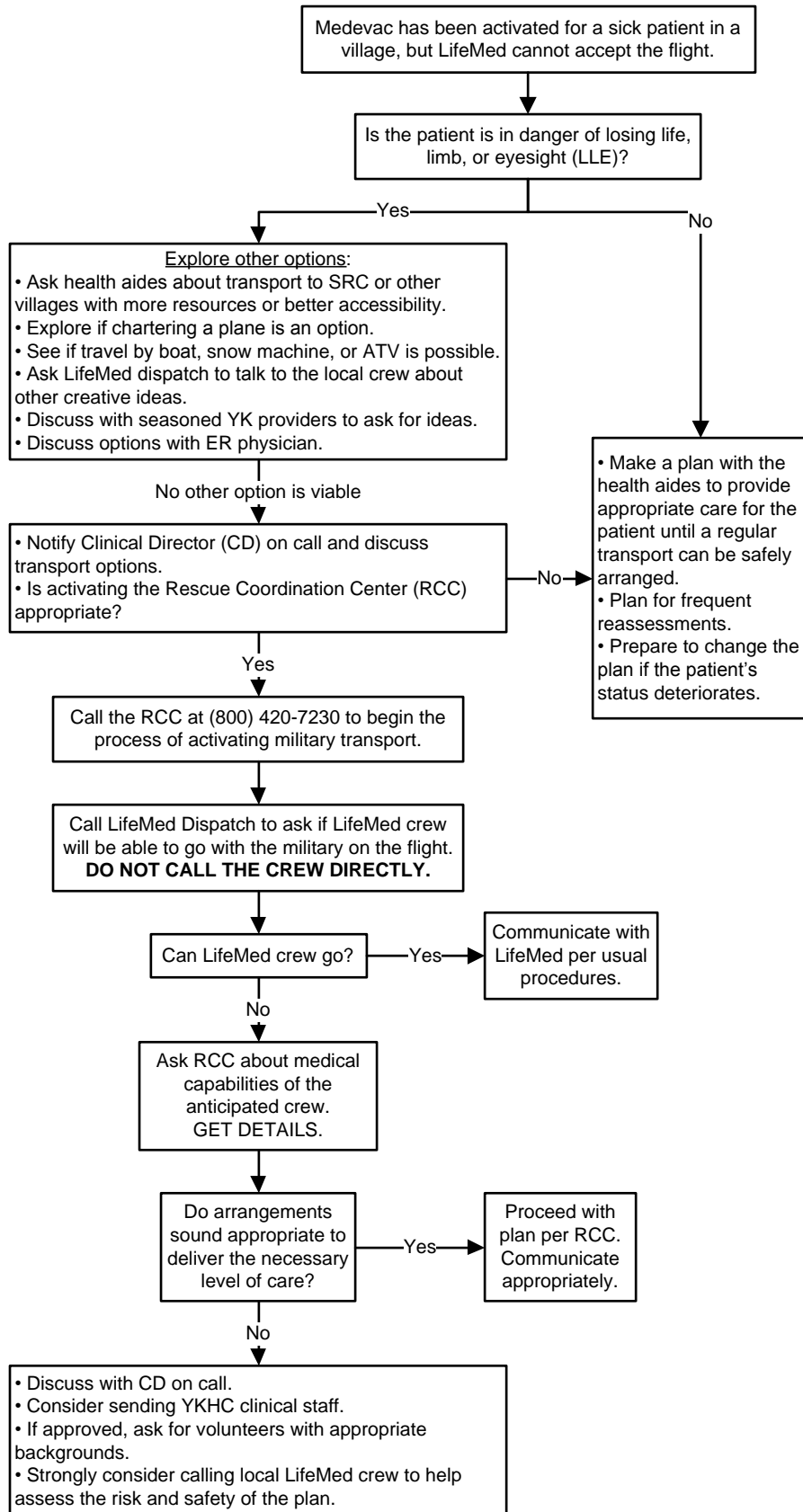
- **LifeMed Dispatch:** 1-800-478-5433 or dial *96.
- **Alaska Native Medical Center:**
Transfer Center (open 10 am – 10 pm): (907) 729-2337. May send Tiger Text to ANMC Transfer Center Coordinator.
After hours, call main operator at *97 or (907) 563-2662
ED: (907) 729-1729
- **Providence Alaska Medical Center:**
Trauma Transfer: (907) 212-2525
ED: (907) 212-3111
Main line: (907) 562-2211
- **Alaska Regional Hospital Transfer Center:** (884) 880-5522
- **Joint Base Elmendorf Richardson Hospital ED:** (907) 580-5556 or (907) 580-5554
- **Department of Corrections On Call:** (844) 751-4588

If patient is an inmate:

Physician must contact the Department of Corrections On Call line so that arrangements can be made for public safety.

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Approved by MSEC 2/5/20.

If comments about this guideline, please contact Chloe_Wurr@ykhc.org.



Things to Consider

The local LifeMed team can sometimes go on a military flight. This decision is up to the local team and their administration and depends on many factors.

If the transport team is all military:

- Will military transport inappropriately lower the level of care the patient is receiving?
- What are the capabilities of the military team? Are they pararescue jumpers (PJs), paramedics, EMTs, etc.?
- What kind of equipment will the military team have?
- Does the military team have pediatric experience and equipment, if applicable?

If you are sending a team from YK:

- Will sending a team of YK employees impact the normal operations of the hospital? (You should avoid sending anyone scheduled to work the current or next shift.)
- An ideal YK team includes an ER RN and/or paramedic. Transport/EMS experience is a must.
- **A YK team must be entirely voluntary.**
- Ensure the team will have all appropriate drugs, weight-based equipment, monitors, pumps, stretchers/backboards, etc.
- Make a plan to keep the patient warm – the military will usually not supply blankets, Doctor Downs, etc.
- **If military transport is used, no YK trainees (residents, students, visitors, etc.) or other “ride-alongs” are allowed to go.** Ride-alongs may only go on LifeMed transports with the local team on their fixed wing aircraft.

Things to Know

- The RCC coordinates military missions. They will connect you with the appropriate people from the branch responding, which may be the National Guard, the Coast Guard, or the Air Force.
- You may have to retell the story to several people, including people with minimal medical knowledge. It helps to involve another provider to help coordinate the many phone calls without negatively impacting patient care.
- The process often takes 6-8 hours or more. If the Blackhawk and a full crew are not physically in Bethel, the military may have to send aircrafts from elsewhere in Alaska, which can lengthen the process to 10-12 hours.

Definitions

LLE: life, limb, or eyesight in danger
 CD: clinical director
 RCC: Rescue Coordination Center
 PJ: pararescue jumpers. These are military medics with ACLS and ATLS training who are not trained to provide further critical care. (For example, ventilator management and infusion of medications are not typically part of their scope of practice.)

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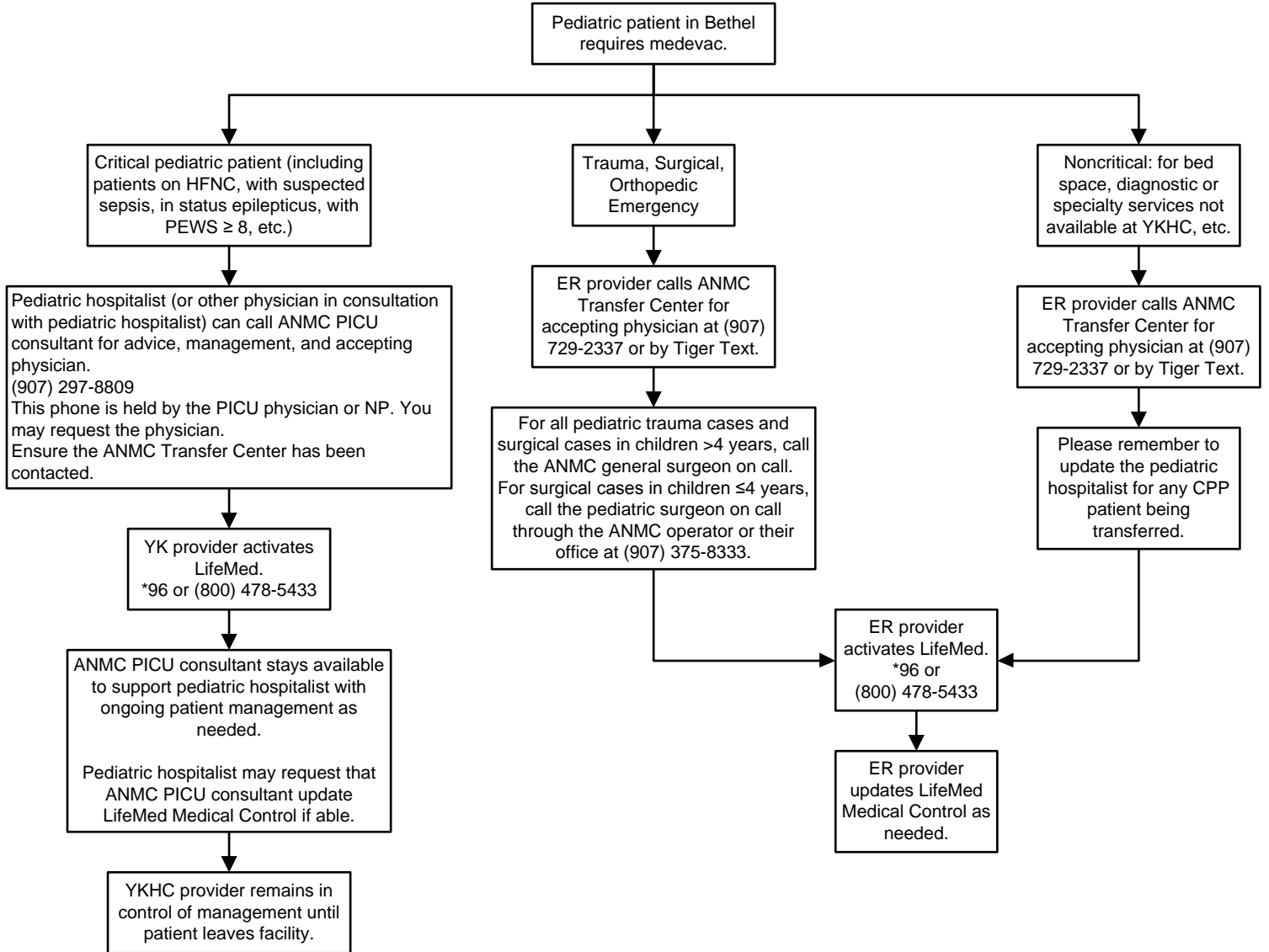
Approved by MSEC 12/11/19.

If comments about this guideline, please contact Ellen_Hodges@ykhc.org.



Call pediatric hospitalist for all potentially critical pediatric patients.

Remember: non-beneficiary patients are transferred to Providence Alaska Medical Center. Call their PICU at (907) 212-3133 to obtain accepting physician (PICU or hospitalist). Ask about medevac insurance coverage.



Use the Pediatric Critical Care Guide and ED Peds Critical Care PowerPlan.

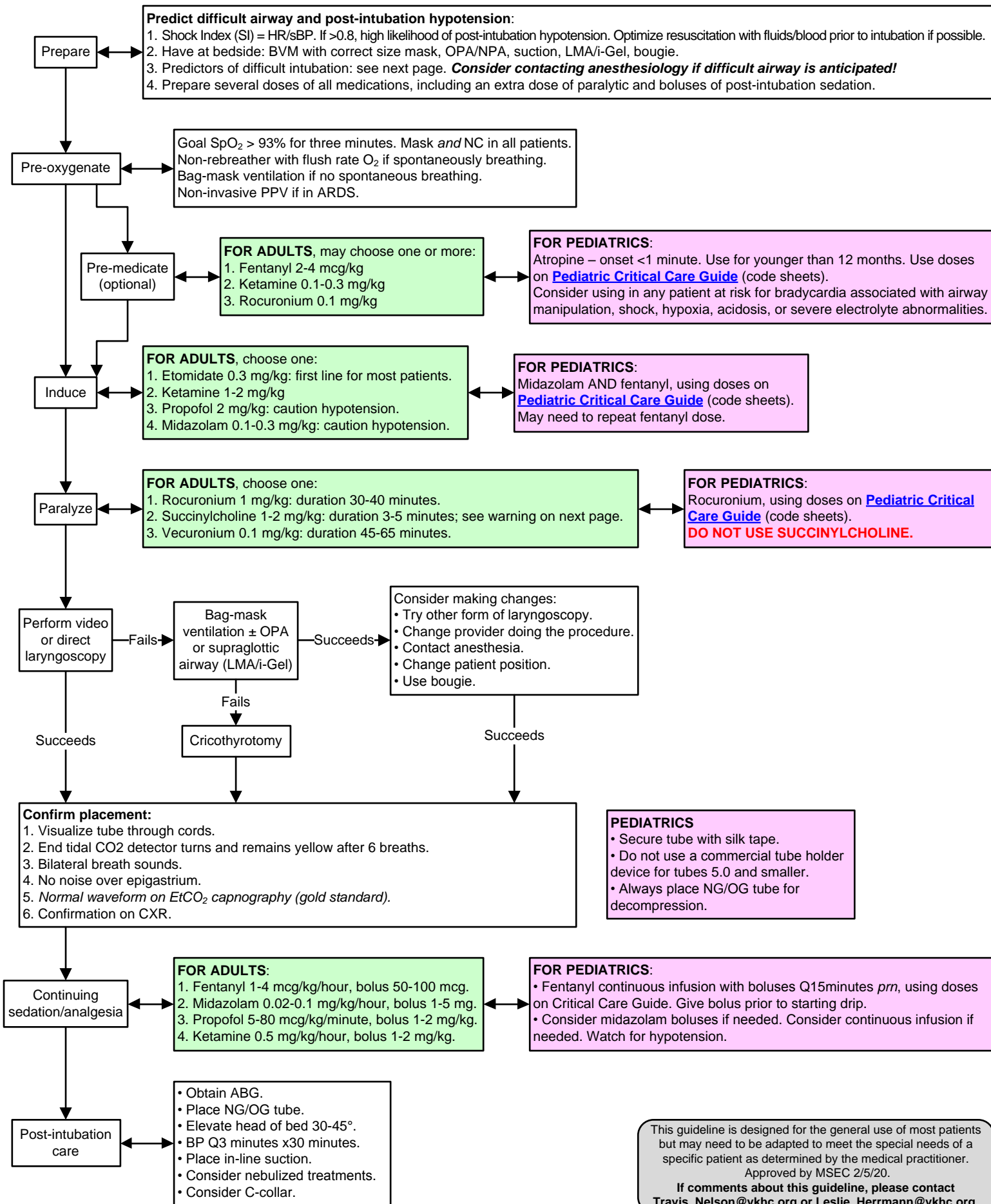


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For Pediatric Critical Care Weight-Based Guide, see

https://yk-health.org/wiki/File:Pediatric_critical_care_guide.pdf





Supplement I: Predictors of Difficult Intubation

Predictors of Difficult Intubation

- Mallampati grade 3 or 4
- Cormack & Lehane grade 3 or 4
- Wilson score of > 2
- LEMON system; objective/subjective scoring

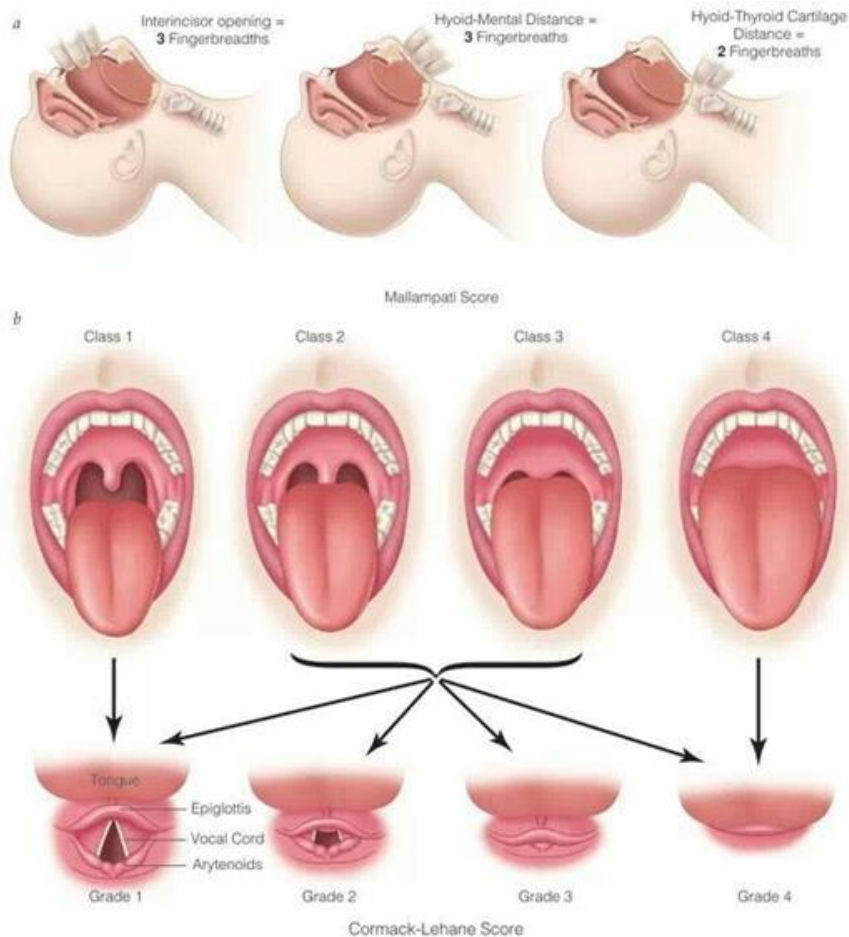
Wilson Score

	0	1	2
Weight (kg)	< 90	90-110	> 110
Head and neck movement	> 90°	~ 90°	< 90°
• Inter-incisor gap (cm) • SL (maximum forward protrusion of lower incisors beyond uppers)	> 5 > 0	= 5 = 0	< 5 < 0
Receding mandible	None	Moderate	Severe
Buck teeth	None	Moderate	Severe

LEMON System

L	Look: trauma, large tongue
E	Evaluate 3:3:2 rule.
M	Mallampati score ≥ 3
O	Obstruction
N	Neck mobility (limited)

Helpful Resource: [the Difficult Airway App](#)



Supplement II: Use of Succinylcholine

Absolute contraindications:

Family / personal history of malignant hyperthermia
Hyperkalemia; if unknown K, obtain EKG for peaked T's
Upper motor neuron injury, denervating neuromuscular disease
Use after acute phase of burns, major trauma, crush injury

Relative contraindications:

Elevated ICP
Pseudocholinesterase deficiency

Treatment of malignant hyperthermia:

Dantrolene 2.5 mg/kg IV, redosing based on expert guidance


ARDS/Protective Ventilation Protocol (appropriate for most patients without indication for alternate ventilation):
Initial Ventilator Settings:

- (1) Set Tidal volume (Vt) = 6-8 mL/kg using Ideal Body Weight. See [MDCalc Tidal Volume Calculator](#).
- (2) Reduce Vt by 1 mL/kg every 1-2 hours until Vt 6 mL/kg.
- (3) Set initial rate to 18-35 bpm based on pre-intubation rate.
Obstructive lung disease: Consider lower RR to maximize expiratory phase.
- (4) Set initial PEEP at 5 cm H₂O.
 - If BMI > 30, set PEEP to 8 cm H₂O.
 - If BMI > 40, set PEEP to 10 cm H₂O.
- (5) Set initial FiO₂ at 30-40%; adjust to SpO₂ 88-95%.
- (6) Set inspiratory flow rate 60-80 lpm.
Obstructive lung disease: Consider inspiratory flow rate 80-100 lpm

Adjust settings based on patient status, blood gases, CXR, and expert consultation.

Oxygenation goal: PaO₂ 55-80 mmHg or SpO₂ 88-95%.

Use a minimum PEEP of 5 cm H₂O. Consider use of incremental FiO₂/PEEP combinations such as shown below (not required) to achieve goal.

For all modes of ventilation:

- Initial vent setting are based on patient presentation.
- Vent settings are adjusted based on patient tolerance of mechanical ventilation and ABG results.
- Obtain ABG prior to intubation, 30 minutes following intubation, and 30 minutes after vent changes.
- Goal plateau pressure < 30 cm H₂O; decrease Tv to lower PP.
Obese patients may require higher plateau pressure
- Target pH > 7.30; increase RR to control hypercapnia.
- Avoid intubation if possible in patients with obstructive lung disease; maximize use of NIPPV.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.

Approved by MSEC 2/5/20.

**If comments about this guideline, please contact
Travis_Nelson@ykhc.org.**

**REMEMBER:**

- Any pediatric patient on HFNC must be transferred to the ER except for newborns, who may stay in the nursery.
- Maintain patient on HFNC until medevac crew arrives.
- No pediatric patient may be kept at YKDRH on HFNC unless medevac is on weather-hold.

Patient with moderate to severe sustained retractions or sustained hypoxia <88% not improved with **SUPPORTIVE MEASURES** (see box) and 2 LPM conventional nasal cannula or infant with apnea responsive to stimulation

Page respiratory therapist.

Page pediatrician on-call.

- Transfer to ER.
- Activate medevac.
- **PREPARE PATIENT** (see box).

RT to start high-flow nasal cannula with pediatrician consultation.

Initial Settings

See Flow Rates box to left.
FiO₂ 50%, 37°C.
For newborns, consult neonatologist.

Titrate flow by 1 LPM increments over first 3 minutes until improvement in WOB. If patient is worsening on high flow rates, consider a lower flow rate.

Titrate FiO₂ to maintain sats >92%.

Frequent gentle nasal suction as needed.

Reassess at least Q20-30 minutes.

Signs of Clinical Improvement

- ↓RR
- ↓retractions
- ↓irritability
- improved air movement

Maintain current settings until medevac arrives.

If no improvement, consider obtaining ANMC PICU consult, checking blood gas, increasing supportive measures, intubation, etc.

SUPPORTIVE MEASURES

- Control fever, as it can be an independent cause of respiratory distress.
- Nasal suction.
- IV hydration.
- Back-to-back nebs with albuterol or normal saline.
- Consider phenylephrine ophthalmic form 1-2 drops to each nostril once.
- Consider hypertonic saline nebs q6h.

PREPARE PATIENT

- Make patient NPO.
- Ensure reliable IV access.
- Suction nares well.
- Choose a nasal cannula with prongs that do not occlude more than 50% of the nares.
- Position patient: optimal patient position is semi-recumbent, not supine or upright. Consider using special blue seat (found in ER storage between trauma and ambulance bays) with adjustable angle. Use blanket rolls to support position and ensure patient is not slumping over. Caregivers may hold the child if it helps keep him/her calm as long as the child is at a ~45 degree angle.
- To prevent condensation causing problems, place patient at a higher level than unit and clip tubing to patient's clothing.

NOTE:

- Low-flow cartridge to be used with neonatal/ infant cannula and produces flow rates of 1-8 LPM. This should only be used in the nursery.
- High-flow cartridge to be used with larger cannula and produces flow rates of 5-40 LPM. In the ER, always start with the high-flow cartridge.

Flow Rates

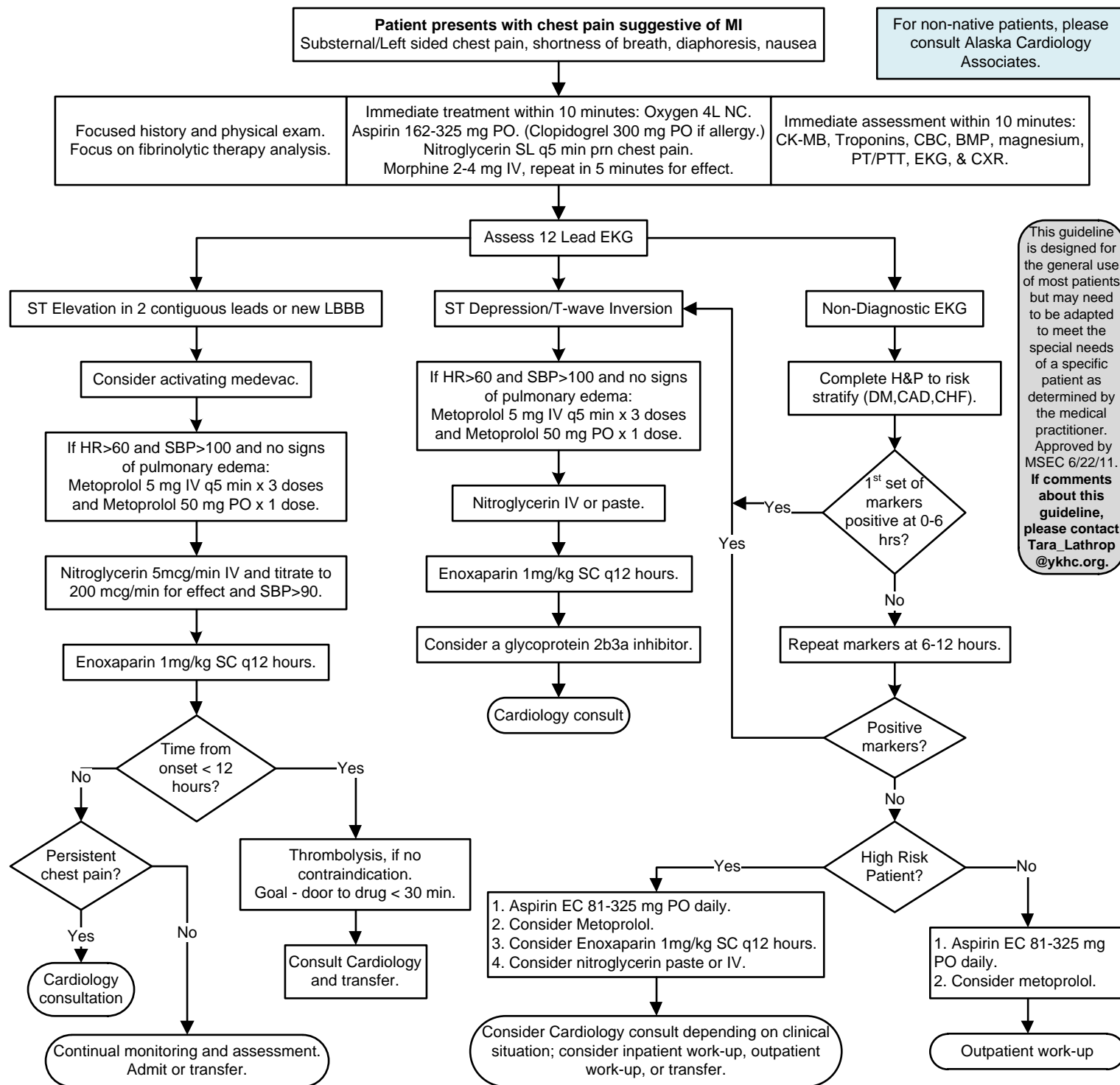
Titrate flow to 0.5-2 LPM/kg.
Younger patients often require higher flow rates per kilogram.
Consult the PICU for any patient requiring >1 LPM/kg.
Listen to lungs with each adjustment. If child is unable to easily exhale or complete an expiration, decrease flow rate until expiration is adequate.

Troubleshooting

- Consider NG/OG-tube for decompression.
- Use a pacifier to keep the patient's mouth closed and prevent loss of pressure.
- Consider mild sedation in consultation with medical control.
- Consider higher levels of flow to improve washout.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 8/1/18.

If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.



Fibrinolytic Therapy Recommendations

Indications:

Chest pain suggesting MI, ST - segment elevation >0.1 mV (1mm) in 2 or more contiguous ECG leads or new LBBB, time to therapy < 12 hours, age < 75 years (age > 75 years Class Iia), evidence of ongoing ischemia.

Absolute contraindications:

H/O CVA; intracranial or intraspinal surgery/trauma w/in 3 wks; intracranial neoplasm, AVM, or aneurysm; active internal bleeding (menses excluded) w/in 2-4 wks; known bleeding diathesis; severe uncontrolled HTN (>180/110); terminal illness.

Cautions:

Recent major surgery: cerebrovascular dz; recent GI bleeding, recent trauma; high likelihood of left heart thrombus; acute pericarditis; subacute bacterial endocarditis, renal or hepatic dysfunction; pregnancy; diabetic hemorrhagic retinopathy; septic thrombophlebitis; occluded AV cannula; advanced age > 75; currently on oral anticoagulants (Coumadin); recent gp 2b/3a inhibitor; platelet <100,000, conditions where bleeding would be difficult to manage.

High Risk Criteria

- Hypotension
- Persistent CP suggestive of MI
- 2 or more episodes of rest angina in previous 24 hours.
- History of 3 or more cardiac risk factors
- History of Diabetes Mellitus
- Known CAD
- Age 65 years or greater
- Congestive heart failure
- New ST deviation > 0.5mm
- New pathological Q waves
- Sustained ventricular tachycardia
- Elevated cardiac markers



Consult ANMC Cardiology to confirm indication, consider alternative, and discuss need for antiarrhythmic drugs prior to procedure.

Ensure that patient had no solid food x 6 hours and no clear liquids x 3 hours.

1. Obtain BMP, magnesium, CBC, PT/PTT: patient should have no significantly abnormal electrolytes, decompensated COPD, or active infections.
2. Obtain digoxin level if applicable.
Procedure may be done on patient with therapeutic digoxin level and no evidence of toxicity.

Obtain consent for procedure.

Anesthesia present with full ACLS setup, including meds and temporary pacer. Anesthesia obtains consent for sedation/anesthesia.

Shave off significant hair.

Position conductive pads or paddles with adequate gel (pads preferred).

Note: Position posteriorly below left scapula and anteriorly just to right of sternum and over right upper parasternal to left cardiac apex.

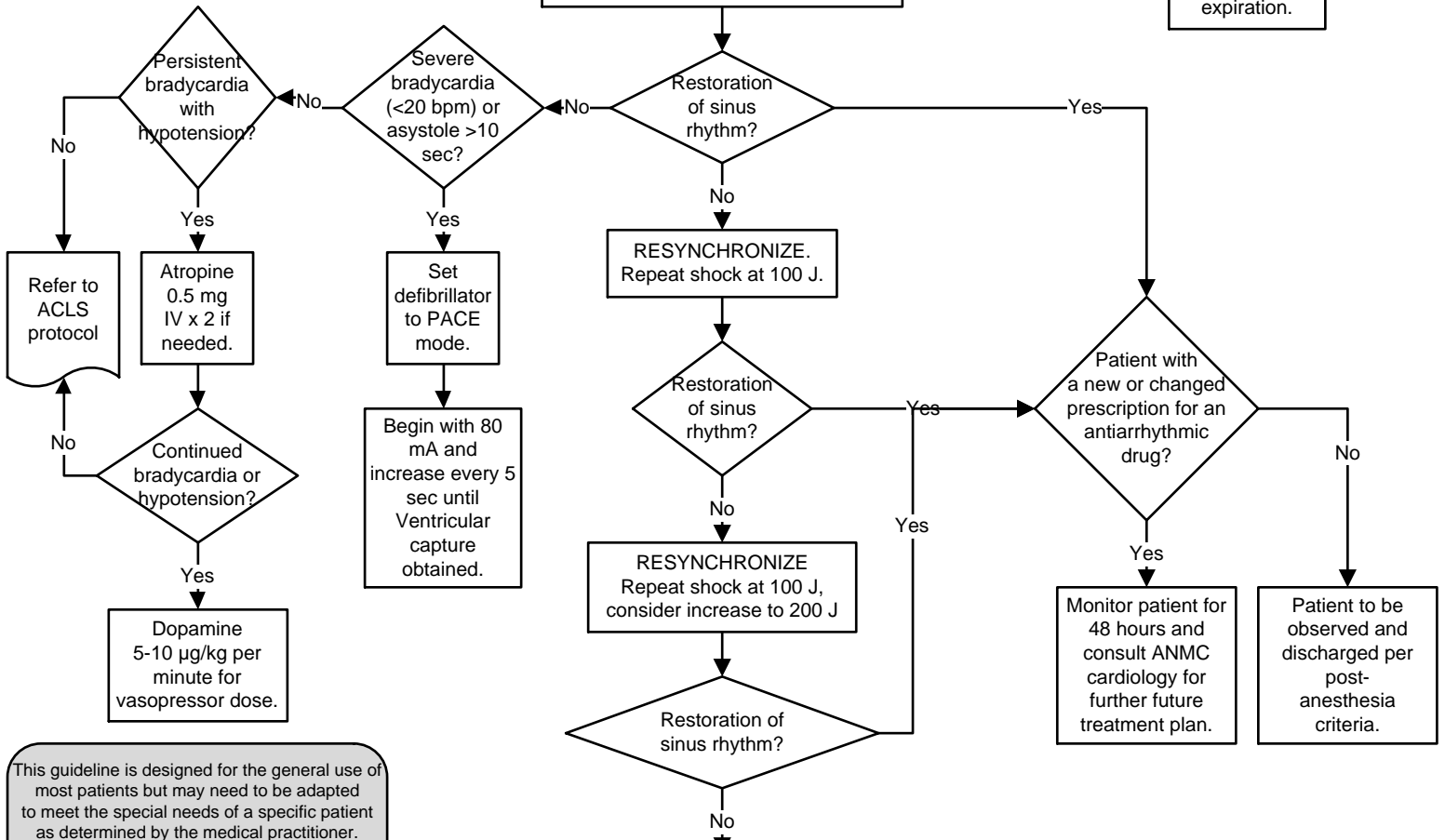
Set defibrillator to SYNCHRONIZED shock. Verify that device is correctly synchronizing on the QRS complex.

Rare complication: V-tach or V-Fib usually occurs when shock delivered in UNSYNCHRONIZED MODE. Brief ventricular ectopy occurring post shock is of no clinical significance. If sustained V-tach or V-fib, deliver an UNSYNCHRONIZED SHOCK AT 360 J.

Administer anesthesia/sedation

Deliver synchronized shock at 50 J

Note: Try to deliver all shocks during expiration.



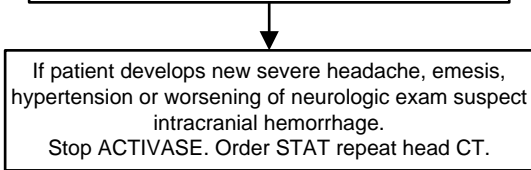
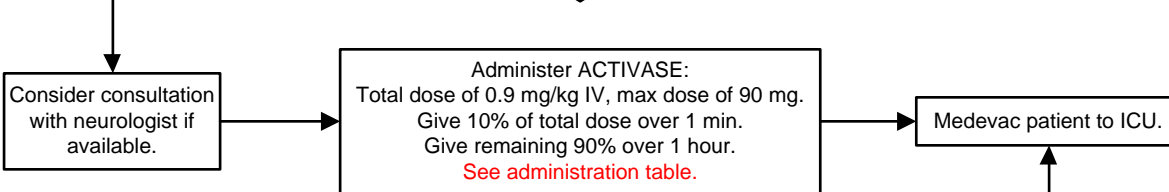
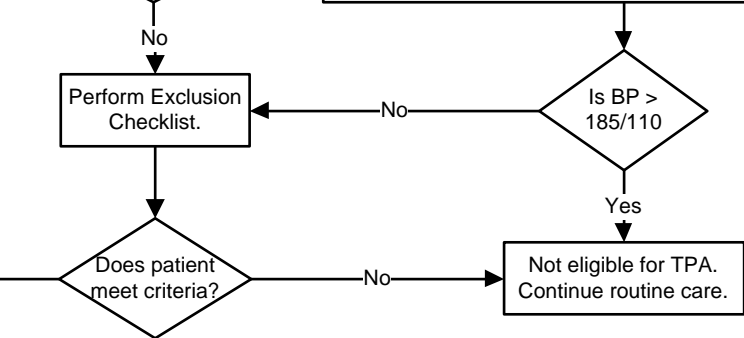
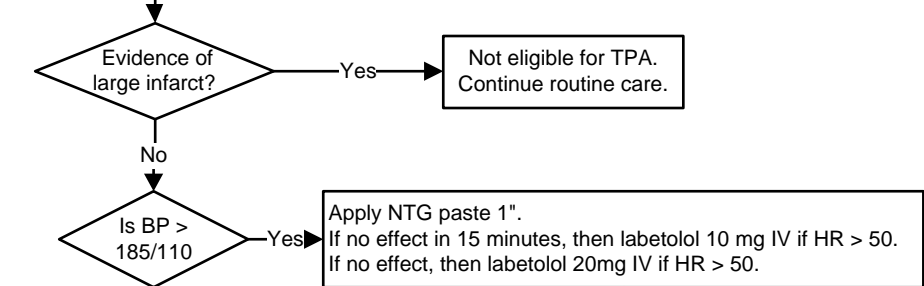
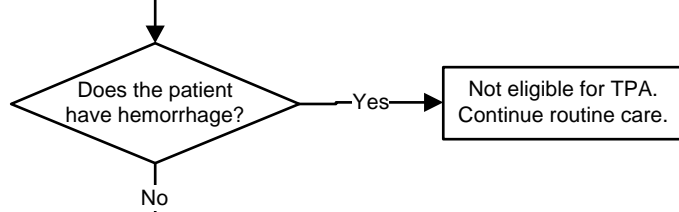
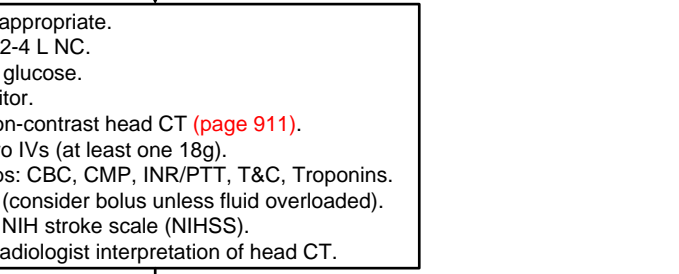
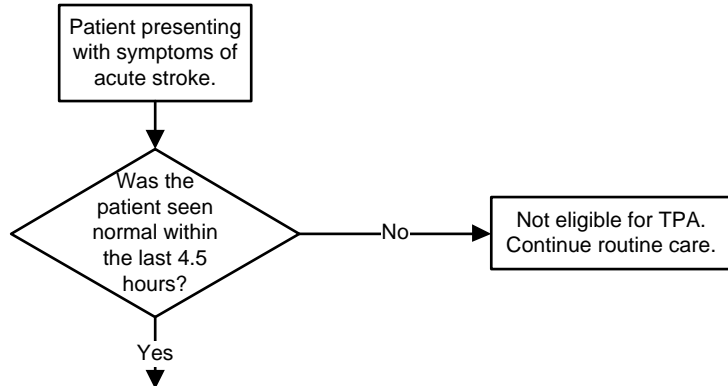
This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 6/22/11. If comments about this guideline, please contact Tara_Lathrop@ykhc.org.

Move anterior pad to left parasternal, RESYNCHRONIZE and repeat shock at 360 J. *A total of 4 shocks will be given before the procedure is declared unsuccessful.



Exclusion criteria
 Any hemorrhage on CT
 BP > 185/110
 NIHSS* < 4 or rapidly improving exam
 Hx suggestive of SAH even with normal CT
 INR > 1.7 or on heparin with elevated PTT
 Platelets < 100,000
 Seizure at onset of symptoms
 History of any of the following:
 intracranial hemorrhage
 intracranial Neoplasm or AVM
 major surgery <14 days
 head trauma in last 3 months
 arterial puncture at non-compressible site < 7 days
 GI or GU hemorrhage <21 days
 LP in last 24 hrs
 Glucose <50 or >400 (may continue if symptoms persist after glucose corrected)
 Presumed septic emboli
Additional 3-4.5 hr Exclusion Criteria
 - age >80 yrs old
 - NIHSS* >25
 - Prior stroke + DM
 - anticoagulation regardless of IHR

Ref: 1). FCASS 3 trial. Lancet Neurol 2009; 8: 1095. 2). Uptodate .www.uptodate.com/contents/reperfusion-therapy-for-acute-stroke>
 *NIH Stroke Scale (NIHSS) calculator: <www.mdcalc.com/nih-stroke-scale-score-nihss>



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qSOFA – 2 or more of the following:
 RR > 22
 altered mental status (GCS<15)
 SBP < 100

SEPSIS 3 & ACEP NOTES

4-6 L of total IVF is often needed during the first 6 hours. After 2 L of NS consider switch to LR. Remember that if the patient fails to respond after the first 2-3 L, pressors should be considered.

In patients with concern for fluid overload (Hx CHF or renal or liver failure) or complications from fluid resuscitation, use less total fluid or smaller boluses with more frequent reassessment of volume status, but **DO NOT DELAY FLUID AND VASOPRESSOR TREATMENT.**

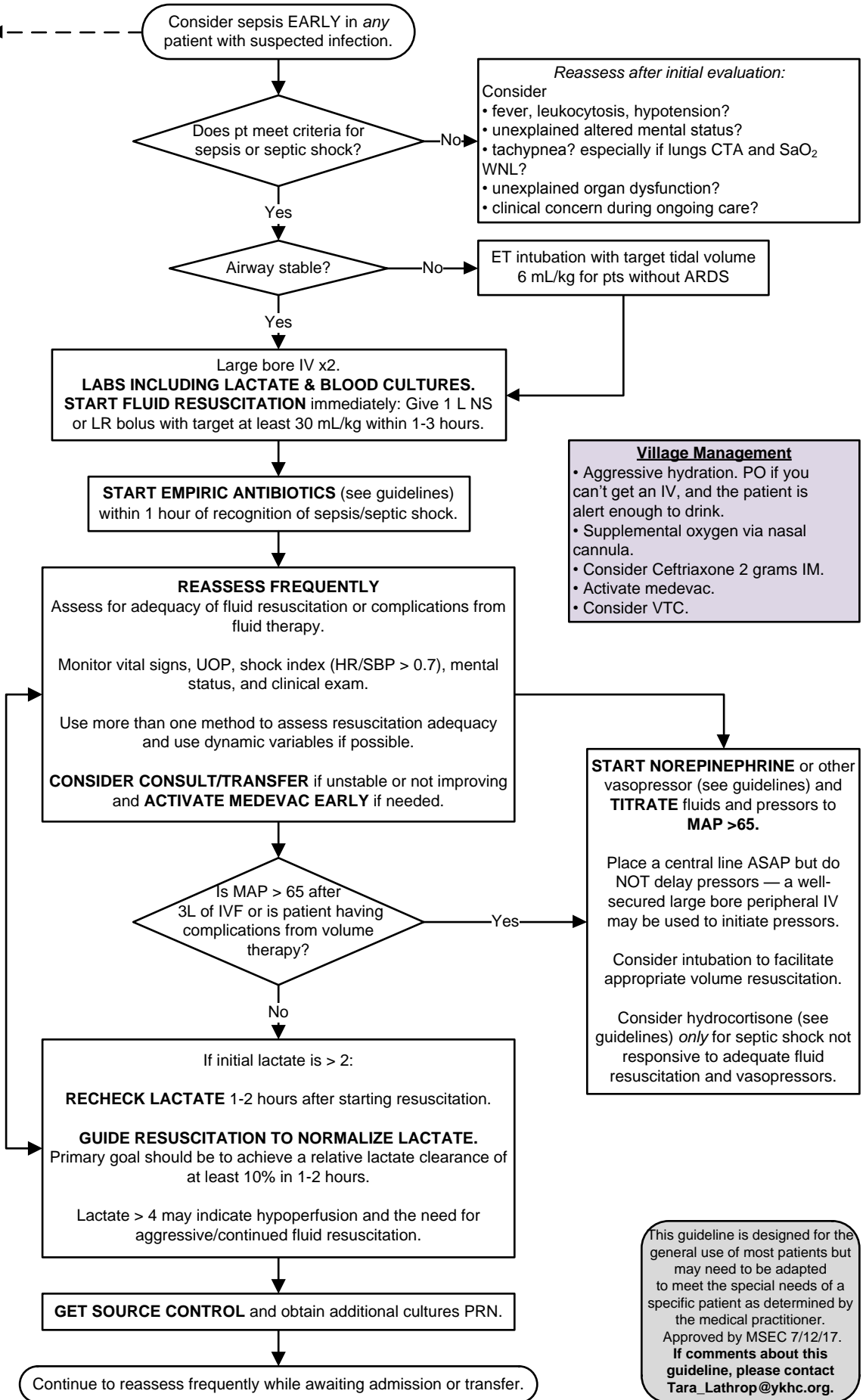
Persistence of elevated lactate, even in the absence of hypotension, is associated with poor outcomes.

CRP and procalcitonin may be elevated but cannot effectively guide ED sepsis care — CHECK (and RECHECK) LACTATE.

In the absence of extenuating circumstances (MI, severe hypoxia, acute blood loss, etc.) transfusion is no longer recommended unless Hgb < 7.

Consider insulin if 2 consecutive blood glucose levels are > 180.

Sodium bicarbonate is not recommended to improve hemodynamics or decrease vasopressor requirements in patients with hypoperfusion-induced lactic acidemia with pH≥7.15.



Village Management

- Aggressive hydration. PO if you can't get an IV, and the patient is alert enough to drink.
- Supplemental oxygen via nasal cannula.
- Consider Ceftriaxone 2 grams IM.
- Activate medevac.
- Consider VTC.

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Empiric Antibiotic Recommendations by Source of Infection

If possible, first dose of antibiotics should be administered as a 30 minute infusion to reduce time to therapeutic concentration.

Unknown Source

Vancomycin¹ 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h.
Max dose 2 grams.
OR
Linezolid 600 mg IV Q12h.

AND

Piperacillin-tazobactam³ 4.5 grams IV Q8h.
OR
If in shock: **Cefepime** 2 grams IV Q8h.

AND

Gentamicin² 7 mg/kg IV Q24h.
Consult pharmacy for max dosing.
OR
Levofloxacin 750 mg IV Q24h.

Community-Acquired Pneumonia

Ceftriaxone 1 gram IV Q24h.
(2 grams if >80 kg.)
OR
Ampicillin-sulbactam 3 grams IV Q6h.

AND

Levofloxacin 750 mg IV Q24h.
OR
Azithromycin 500 mg PO/IV Q24h.

If at risk for aspiration, consider adding:

Metronidazole 500 mg IV Q8h.

Hospital-Acquired Pneumonia or High Risk for Multi-Drug Resistant (MDR) Organisms

Vancomycin¹ 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h.
Max dose 2 grams.
OR
Linezolid 600 mg IV Q12h.

AND

Piperacillin-tazobactam³ 4.5 grams IV Q6h.
OR
If in shock: **Cefepime** 2 grams IV Q8h.

AND

Levofloxacin 750 mg IV Q24h.
OR
Gentamicin² 7 mg/kg IV Q24h.
Consult pharmacy for max dosing.

Meningitis

Dexamethasone 10 mg IV prior to antibiotics.

AND

Vancomycin¹ 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h.
Max dose 2 grams.

AND

Ceftriaxone 2 grams IV Q12h.

If >50 years, ADD

Ampicillin 2 grams IV Q6h.

Urinary Tract Infection

Ceftriaxone 1 gram IV Q24h.
(2 grams if >80 kg.)

AND consider adding:

Gentamicin² 7 mg/kg IV Q24h.
Consult pharmacy for max dosing.
OR
Levofloxacin 750 mg IV Q24h.

If urological interventions or MDR risk factors, consider adding:
Piperacillin-tazobactam³ 3.375 grams IV Q6h.
OR
Cefepime 1 gram IV Q6h.

If at risk of ESBL, ADD:
Meropenem 500 g IV Q8h.

Intra-abdominal or Pelvic Infection

Piperacillin-tazobactam³ 3.375 grams IV Q6h.

OR

Cefepime 1 gram IV Q6h.
AND
Metronidazole 500 mg IV Q6h.

OR

Ciprofloxacin 400 mg IV Q12h.
AND
Metronidazole 500 mg IV Q8h.

Skin and Soft Tissue or Necrotizing Infections

IF PURULENT:
Vancomycin¹ 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h.
Max dose 2 grams.

IF NON-PURULENT:
Cefazolin 2 grams IV Q8h.
OR
Ceftriaxone 1-2 grams IV Q24h.
OR
Ampicillin-sulbactam 3 grams IV Q6h.

If necrotizing, ADD:

Piperacillin-tazobactam³ 3.375 grams IV Q6h.
AND
Clindamycin 900 mg IV Q8h.

OR

Ceftriaxone 2 grams IV Q12h.
AND
Metronidazole 500 mg IV Q6h.

Neutropenic Cancer Patients (ANC <500)

Piperacillin-tazobactam³ 4.5 grams IV Q6-8h.
OR
Cefepime 1 gram IV Q6h.

AND

Vancomycin¹ 25-30 mg/kg loading dose followed by 20 mg/kg Q8-12h.
Max dose 2 grams.

If concerned for HSV or VZV, consider adding:

Acyclovir 10 mg/kg Q8h.
Consult pharmacy for max dosing.

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¹ Linezolid may be substituted for vancomycin in patients with relative contraindication to vancomycin for high risk for acute kidney injury.
² Gentamicin dosing based on ideal body weight.
³ May substitute ampicillin-sulbactam 3 gram IV Q6h for piperacillin-tazobactam if not concerned for pseudomonas.



Vasopressors

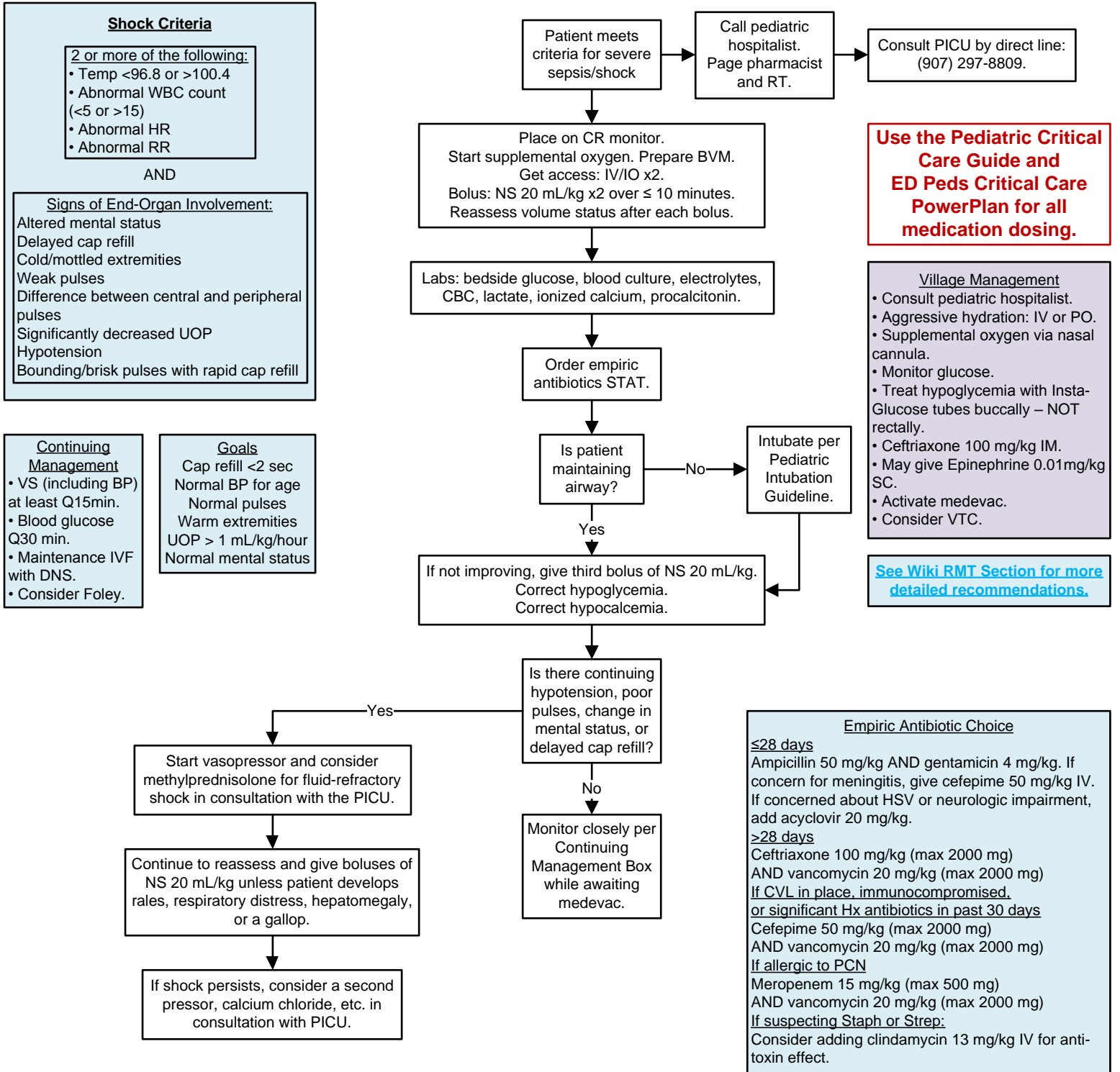
All vasoactive medications should be infused via central line with the exception of dopamine, which can be infused via a peripheral IV at rates less than 10 mcg/kg/minute.

- | | |
|---|--|
| • Norepinephrine 8-12 mcg/min IV initial infusion rate. | First-line vasopressor of choice in sepsis. |
| • Epinephrine 1-10 mcg/min initially, titrated to effect. | May be added or used in place of norepinephrine to maintain adequate BP. |
| • Dopamine 2-20 mcg/kg/min. | Second-line option in highly select patients as it causes more tachycardia. |
| • Phenylephrine 100-180 mcg/min IV initial infusion until stabilized.
Titrate to goal of 60-200 mcg/min.
(Max dose range 80-360 mcg/min.) | Can be used as salvage therapy for refractive hypotension associated with tachycardia. |
| • Vasopressin 0.03-0.04 units/min. | May be added to norepinephrine to increase MAP or decrease norepinephrine dose.
DO NOT use as a single agent. |
| • Dobutamine 2-20 mcg/kg/min IV infusion. | May be used for inotropic support in the presence of severe myocardial dysfunction or hypoperfusion with depressed cardiac output. |

Corticosteroids

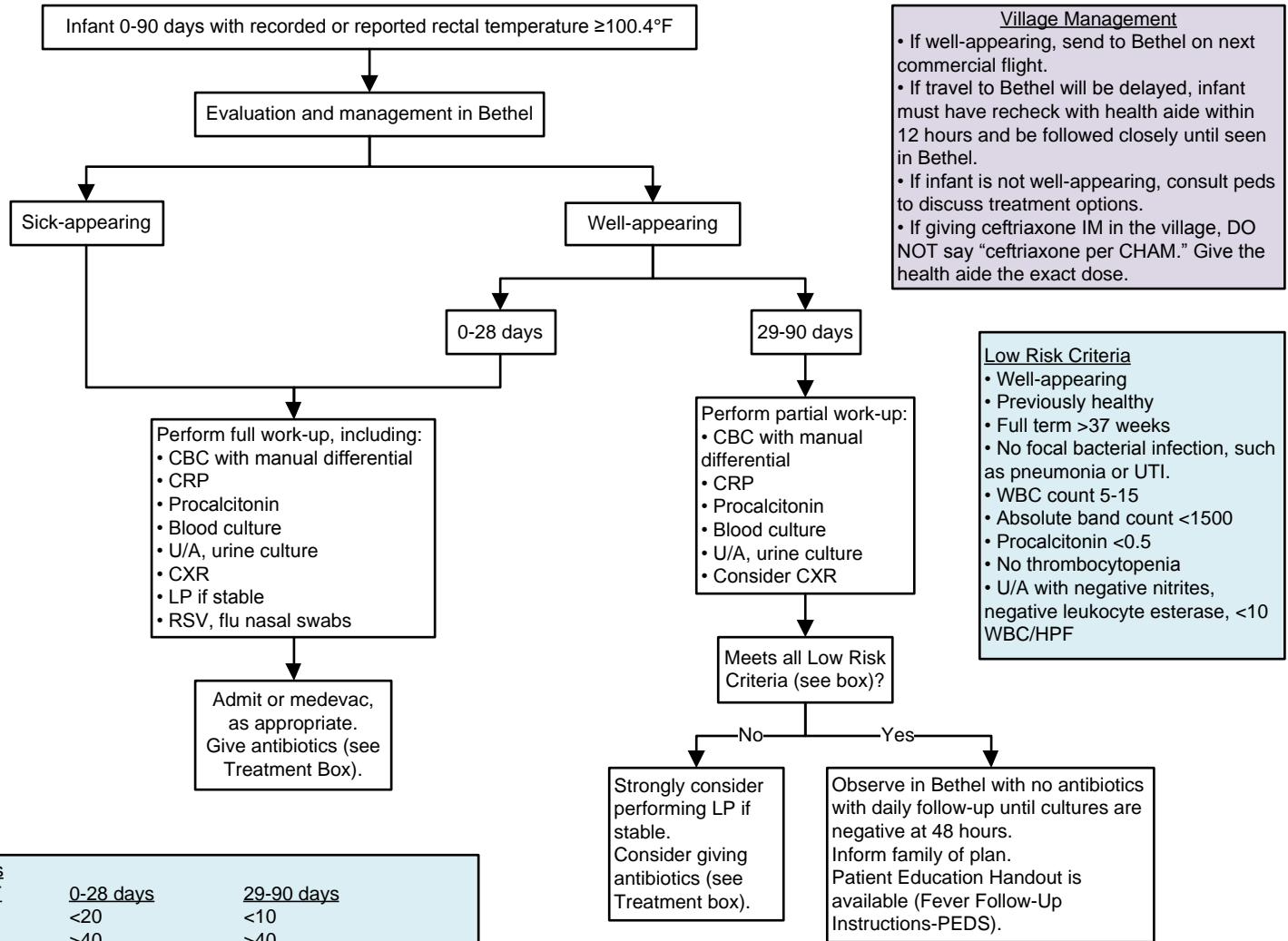
Corticosteroids should NOT be administered for the treatment of sepsis in the absence of shock. Steroids are beneficial in those experiencing adrenal insufficiency in the presence of septic shock; however ACTH testing is not routinely recommended in adult patients. If hemodynamic stability is not achieved after adequate fluid resuscitation and vasopressor therapy, the use of IV hydrocortisone alone at a dose of 200 mg/day can be considered regardless of adrenal insufficiency status. Hydrocortisone should be tapered when vasopressors are no longer required.

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Approved by MSEC 7/12/17.
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Age	HR (beats/minute)		RR (breaths/minute)		Hypotension (sBP in mmHg)
	Bradycardia	Tachycardia	Low	High	
0 days – 1 week	<100	>200	<30	>70	<60
1 week – 1 month	<100	>200	<30	>70	<60
1 – 3 months	<100	>180	<20	>60	<70
3 – 12 months	<100	>180	<20	>60	<70
1 – 2 years	<90	>160	<20	>40	<70
2 – 6 years	<60	>160		>40	<80
6 – 13 years	<60	>120		>23	<90
13 – 18 years	<60	>110		>23	<90

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Approved by MSEC 10/9/19.
If comments about this guideline, please contact Amy_Carson-Strnad@ykhc.org.



CSF Results

Normal CSF	0-28 days	29-90 days
WBC	<20	<10
Glucose	>40	>40
Protein	<100	<75

Absence of neutrophils (polys) makes bacterial meningitis unlikely. CSF neutrophils (polys) >75% increases likelihood of bacterial meningitis.
Do not use correction formulas for traumatic LPs.

Special Circumstances

- Immunizations within 24 hours of fever <101 and well-appearing: no work-up necessary but must follow-up in village or Bethel within 12-24 hours. If fevers persist or infant is not well-appearing, perform work-up as above.
- Pre-treatment with antibiotics with no focal bacterial infection: infant must be observed a full 48 hours off antibiotics. This may require staying in Bethel for 48 hours of antibiotics followed by another 48 hours of observation off antibiotics with daily follow-up. Consider ordering CSF Multiplex PCR, a send-out test.
- Unsuccessful LP: treat if appropriate and consider a repeat LP in 12-24 hours and determine treatment course based on cell counts. If repeat LP not performed or unsuccessful, either treat for 10-14 days with meningitic dosing of IV antibiotics or stop antibiotics at 48 hours and observe infant for an additional 48 hours off antibiotics. Consider admission.

HSV Work-up

- CSF HSV PCR
- Blood HSV PCR
- CMP
- Nasopharyngeal, conjunctival, and anal swabs and vesicle fluid for HSV PCR.

Risk-Stratification Resource:
[Kaiser Neonatal Sepsis Calculator](#)

Treatment

No febrile infant <90 days should receive antibiotics without an LP.

- 0-7 days: please consult a pediatrician, pharmacist, or Neofax.
- 8-28 days:
 - If well-appearing and low suspicion for meningitis: ampicillin 50 mg/kg IV Q8h AND gentamicin 4 mg/kg IV Q24h
 - If well-appearing and any suspicion for meningitis: ampicillin 75 mg/kg IV Q6h AND cefepime 50 mg/kg IV Q12h
 - If ill-appearing and/or positive CSF Gram stain: please consult a pediatrician and/or a pharmacist.
- 29-90 days: ceftriaxone 75 mg/kg IV/IM Q24h OR if worried about meningitis 100 mg/kg IV once then 50 mg/kg IV Q12h
- Continue IV/IM antibiotics until cultures are negative and patient is clinically stable x48-72 hours or until specific organism and sensitivities are available to direct therapy.
- If known HSV exposure, seizures, or severe illness: acyclovir 20 mg/kg IV Q8h with IVF, perform HSV work-up (see box), and consult pediatrics.
- If suspicion for bacterial meningitis, strongly consider medevac.
- If transferring patient, send any extra CSF on ice with patient.

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Approved by MSEC 5/8/19.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.



Patient presents with symptoms suggesting Community Acquired Pneumonia:
Cough, sputum, dyspnea, pleuritic chest pain, fever

Obtain CXR especially if patient has ≥ 2 of these signs:
Temp. > 100.4 , HR > 100 /min, abnormal chest exam, RR > 20 /min, O₂ Sat $< 90\%$, history of chronic lung disease

If multiple TB risk factors, see Adult TB guideline.

CXR shows infiltrate?

Chronic lung disease?

- A. Patient Education.
- B. Rational for no antibiotics.
- C. Follow-up if patient worsens.
- D. Treat bronchospasm if present.
- E. Verify TB and HIV status.

Pneumonia Severity Index (PSI)
<http://pda.ahrq.gov/clinic/psi/psicalc.asp>
Score = Total points accumulated below

Demographic Factors

Age of Males in years	age (years)	
Age of Female in years	age (years) - 10	
Nursing home resident		+10

Comorbid Illnesses

Neoplastic disease ¹	+30
Liver disease ²	+20
Congestive heart failure ³	+10
Cerebrovascular disease ⁴	+10
Renal disease ⁵	+10

Physical Examination Findings

Altered mental status	+20
Respiratory rate > 30 /minute	+20
Systolic BP < 90 mmHg	+15
Temperature $< 95^\circ\text{F}$ (35°C) or $> 104^\circ\text{F}$ (40°C)	+15
Pulse > 125 /minute	+10

Laboratory Findings

pH < 7.35	+30
BUN > 20 mg/dl (11 mmol/L)	+20
Sodium < 130 mEq/L	+20
Glucose > 250 mg/dL (14 mmol/L)	+10
Hgb < 9 gm (Hematocrit $< 30\%$)	+10
PO ₂ < 60 , Sp O ₂ sat $< 90\%$ (room air)	+10
Pleural effusion	+10

Patient with O₂ sat $< 90\%$, homelessness, multilobar pneumonia, or risk for aspiration may warrant hospitalization despite their risk classification.

1. Neoplastic disease – any cancer, except basal or squamous cell carcinoma of the skin active at the time presentation.
2. Liver disease – clinical or histologic cirrhosis or chronic active hepatitis.
3. CHF – documented with history, physical exam, or CXR findings; echo, MUGA; or left ventriculogram.
4. CVD – clinical diagnosis of stroke or TIA or documented stroke on CT or MR.
5. Renal disease – chronic renal disease or abnormal BUN or creatinine.

One or more of the following: Comorbid condition or abnormal physical exam findings from PSI or Age ≥ 60 ?

- Labs**
1. CBC with diff
 2. Comprehensive Metabolic Panel
 3. +/- Blood culture x 2 (prior to ABX)
 4. +/- Sputum
 5. +/- ABG
 6. +/- HIV
 7. Procalcitonin

Consider procalcitonin to differentiate bacterial causes of symptoms.

- Outpatient Antibiotics**
1. Amoxicillin 1000 mg PO TID for 5-7 days
 - AND**
 2. Azithromycin 500 mg PO daily for 3 days
- If anaphylaxis to PCN:
3. Doxycycline 100 mg PO BID for 5-7 days is reasonable for patient without comorbid conditions.
4. Levofloxacin 750 mg PO daily for 5 days

- Patient Education**
1. Smoking Cessation
 2. Immunizations
 - Influenza
 - Pneumovax
 3. PPD
 4. Follow-up

If patient is in a village and CXR isn't available, OR the patient refuses to travel for CXR, consider using doxycycline as the YK Delta still has good pneumococcal coverage with doxycycline.

PSI ≤ 70

PSI 71-90

PSI ≥ 91

Probable outpatient treatment. Management to be based on clinical judgement as above.

- Inpatient Antibiotics**
1. Ceftriaxone 1gram IV daily
 - AND**
 2. Azithromycin 500 mg IV/PO daily x 3 days
- If anaphylaxis to PCN:
3. Levofloxacin 750 mg IV/PO daily for 5 days

- Consult pharmacists for any questions/concerns.
- Consider consultation with respiratory therapy for admitted patients.

Suspect Aspiration: ampicillin-sulbactam 3 grams IV Q6hrs **OR** Ceftriaxone 1 gram IV Q24hrs **AND** metronidazole 500 mg IV every 8 hours
Suspect Pseudomonas: Cefepime 1 gram IV Q 8hours, extended infusion.
Suspect early onset HAP: within first 4 days of hospitalization, treat as CAP
Suspect late onset HAP or VAP: Vancomycin IV dosed per protocol **AND** Cefepime 1 gram IV Q 8 hours, extended infusion

CAP = Community Acquired Pneumonia
HAP = Healthcare Associated Pneumonia
VAP = Ventilator Associated Pneumonia

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Approved by MSEC 9/21/18.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Remember to order a follow up chest x-ray in 6-8 weeks to ensure resolution of infiltrate



Procalcitonin in Adults with Lower Respiratory Tract Infections

Initial Value (Baseline)

Procalcitonin Value	<0.1 ng/mL	0.1-0.24 ng/mL	0.25-0.5 ng/mL	>0.5 ng/mL
Antibiotic START recommendation	Initiation strongly discouraged	Initiation discouraged	Initiation encouraged	Initiation strongly encouraged
Comments	<ul style="list-style-type: none"> Hold on giving antibiotics. Consider alternate diagnosis. Repeat procalcitonin in 6-12 hours if antibiotics not initiated and no clinical improvement. If clinically unstable, immunosuppressed, or high-risk, consider overruling. (PSI Class IV-V, CURB-65 >3). 		<ul style="list-style-type: none"> Start antibiotics. Repeat every 2-3 days to consider early antibiotic cessation. See follow-up table below. If initial value is >5-10 ng/mL, assess for reduction of 90% from peak values. 	

Follow-Up (Repeat procalcitonin level Q48-72 hours)

Procalcitonin Value	<0.1 ng/mL or ↓ by >90%	0.1-0.24 ng/mL or ↓ by >80%	0.25-0.5 ng/mL	>0.5 ng/mL
Antibiotic STOP recommendation	Cessation strongly encouraged	Cessation encouraged	Cessation discouraged	Cessation strongly discouraged
Comments	<ul style="list-style-type: none"> Stop antibiotics. Consider continuing if clinically unstable. 		<ul style="list-style-type: none"> Continue antibiotics. If procalcitonin is rising or not adequately decreasing, consider possible treatment failure and evaluate for need for expanding antibiotic coverage or further diagnostic evaluation. 	

Procalcitonin in Adults with Sepsis without a Source

Follow-Up (Repeat procalcitonin level Q24h or with morning labs daily x3 days)

Procalcitonin Value	<0.25 ng/mL	0.25-0.49 ng/mL or ↓ by >80%	≥ 0.5 ng/mL AND ↓ by >80%	≥ 0.5 ng/mL AND rising or stable
Antibiotic STOP recommendation	Cessation strongly encouraged	Cessation encouraged	Cessation discouraged	Cessation strongly discouraged
Comments	<ul style="list-style-type: none"> Stop antibiotics. Consider continuing if clinically unstable. 		<ul style="list-style-type: none"> Continue antibiotics. A procalcitonin value which is rising or not declining at least 10% per day is a poor prognostic indicator and suggests infection is not controlled. Consider expanding antibiotic coverage or further diagnostic evaluation. 	

Exclusion Criteria: <18 years old; pregnant/breastfeeding; CrCl <30 mL/min or hemodialysis (renally excreted biomarker); severe immunosuppression (eg ANC <500, HIV with CD4 <200, transplant patients, or on immune modulators); severe trauma, burn, or major surgery within 24 hours (particularly abdominal surgery); chronic infections necessitating antibiotics (eg endocarditis, osteomyelitis, tuberculosis); cystic fibrosis; small cell lung cancer or medullary thyroid cancer; receipt of OKT-3 and/or anti-thymocyte globulin; end-stage cancer; concurrent infections.

Source: ANMC Clinical Guidelines.
Click for hyperlink to full guideline,
including accompanying resources.

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Approved by MSEC unknown date.

If comments about this guideline, please contact Ellen_Hodges@ykhc.org.



REMEMBER:

- If patient is <90 days and febrile, please see fever guidelines.
- Pneumonia is a clinical diagnosis and does not require X-ray findings.

Hypoxia
 <90% while awake
 <88% while asleep
 Sustained for >10 minutes

Pulse-Oximetry Monitoring:

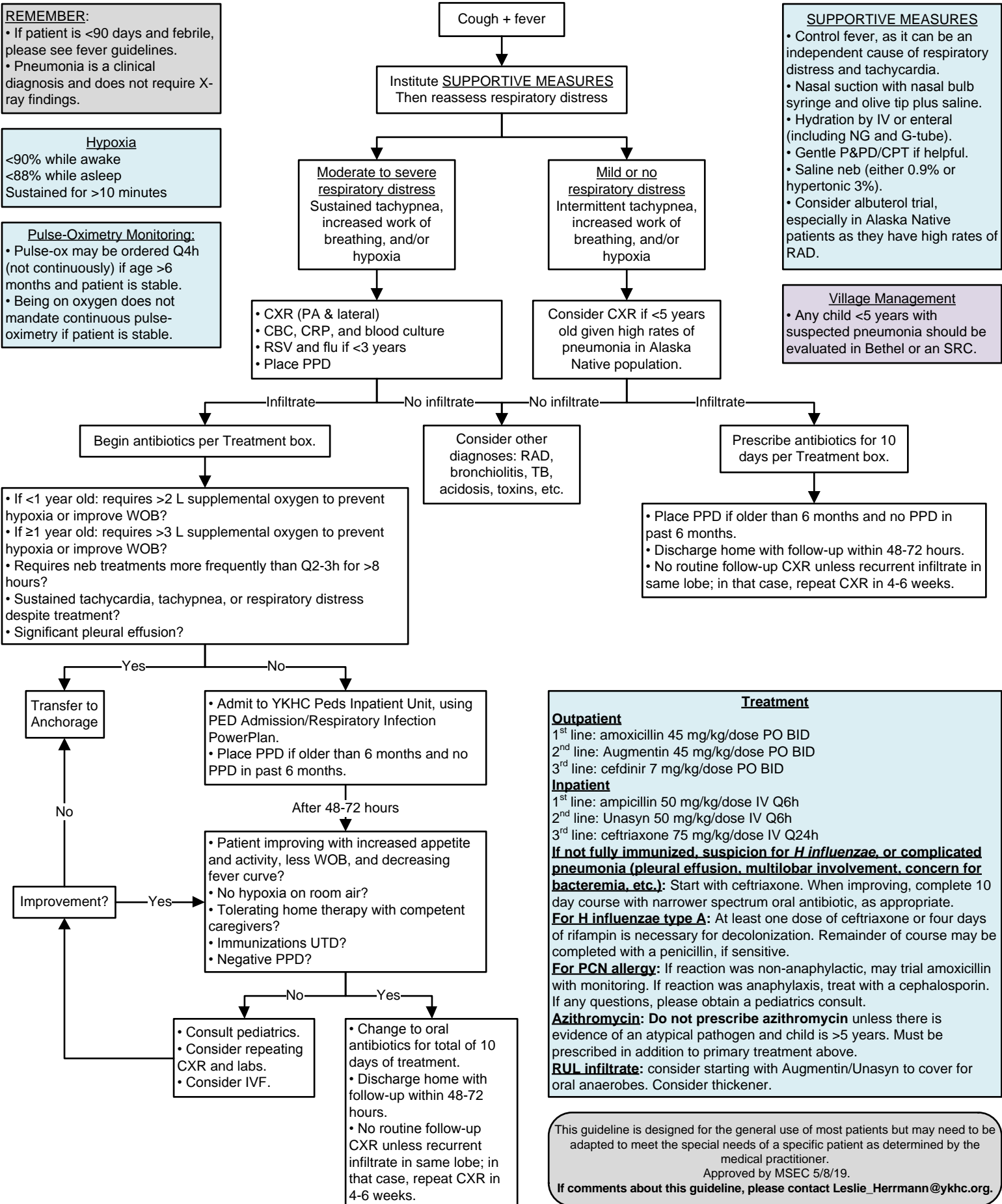
- Pulse-ox may be ordered Q4h (not continuously) if age >6 months and patient is stable.
- Being on oxygen does not mandate continuous pulse-oximetry if patient is stable.

SUPPORTIVE MEASURES

- Control fever, as it can be an independent cause of respiratory distress and tachycardia.
- Nasal suction with nasal bulb syringe and olive tip plus saline.
- Hydration by IV or enteral (including NG and G-tube).
- Gentle P&PD/CPT if helpful.
- Saline neb (either 0.9% or hypertonic 3%).
- Consider albuterol trial, especially in Alaska Native patients as they have high rates of RAD.

Village Management

- Any child <5 years with suspected pneumonia should be evaluated in Bethel or an SRC.



Treatment

Outpatient

1st line: amoxicillin 45 mg/kg/dose PO BID
 2nd line: Augmentin 45 mg/kg/dose PO BID
 3rd line: cefdinir 7 mg/kg/dose PO BID

Inpatient

1st line: ampicillin 50 mg/kg/dose IV Q6h
 2nd line: Unasyn 50 mg/kg/dose IV Q6h
 3rd line: ceftriaxone 75 mg/kg/dose IV Q24h

If not fully immunized, suspicion for H influenzae, or complicated pneumonia (pleural effusion, multilobar involvement, concern for bacteremia, etc.): Start with ceftriaxone. When improving, complete 10 day course with narrower spectrum oral antibiotic, as appropriate.

For H influenzae type A: At least one dose of ceftriaxone or four days of rifampin is necessary for decolonization. Remainder of course may be completed with a penicillin, if sensitive.

For PCN allergy: If reaction was non-anaphylactic, may trial amoxicillin with monitoring. If reaction was anaphylaxis, treat with a cephalosporin. If any questions, please obtain a pediatrics consult.

Azithromycin: Do not prescribe azithromycin unless there is evidence of an atypical pathogen and child is >5 years. Must be prescribed in addition to primary treatment above.

RUL infiltrate: consider starting with Augmentin/Unasyn to cover for oral anaerobes. Consider thickener.

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Signs of Impending Airway Compromise

- drooling
- lethargy
- tripod position
- marked retractions
- tachycardia
- cyanosis or pallor
- rapid progression of symptoms

Important Supportive Measures

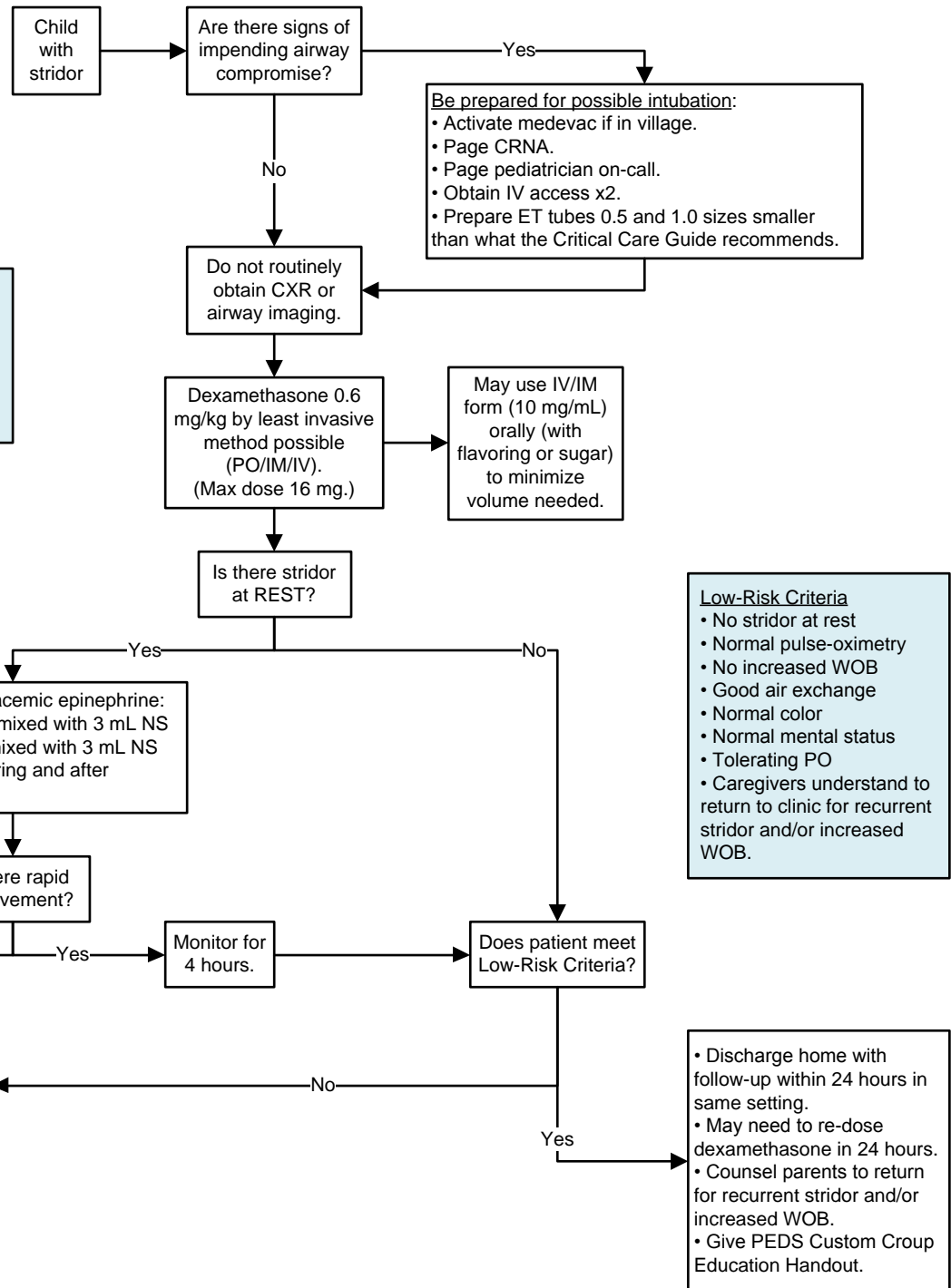
1. Keep child upright or in position of comfort.
2. Turn lights down and minimize unpleasant interventions.
3. May take child outside for cool air.
4. Minimize invasive measures – keep child CALM!
5. **DO NOT** give albuterol; this can worsen croup.

DDx Stridor

- croup (most common in ages 6 months to 3 years)
- foreign body
- tracheomalacia
- angioedema
- tracheitis
- epiglottitis
- abscess

In Village

If no racemic epinephrine available, mix 1 mL of 1:1000 epi with 1 bullet of NS and give via nebulizer.



Low-Risk Criteria

- No stridor at rest
- Normal pulse-oximetry
- No increased WOB
- Good air exchange
- Normal color
- Normal mental status
- Tolerating PO
- Caregivers understand to return to clinic for recurrent stridor and/or increased WOB.



NOTE:

- If <3 months or history of prematurity, keep patient in Bethel and have low threshold for admission.
- RSV increases risk of apnea in these patients.
- If patient is <90 days and febrile, please see fever guidelines.

SUPPORTIVE MEASURES

- Control fever, as it can be an independent cause of respiratory distress and tachycardia.
- Nasal suction with nasal bulb syringe and olive tip plus saline.
- Hydration by IV or enteral (including NG and G-tube).
- Gentle P&PD/CPT if helpful.
- Saline neb (either 0.9% or hypertonic 3%).
- Consider albuterol trial even if no wheezing heard, especially in Alaska Native patients as they have high rates of RAD.

Village Management

- Institute **SUPPORTIVE MEASURES**, especially fever control, nasal suction, IV or PO hydration, and several albuterol nebs.
- Have low threshold to refer to Bethel for further evaluation if no improvement with supportive measures or any concerns.
- If no improvement after 2-3 days of village management, refer to Bethel for further care.
- If unable to bring to Bethel and worsening, consult a pediatrician and consider systemic steroids.

NOTE ABOUT STEROIDS:

National guidelines recommend against systemic steroids as the potential harm is generally greater than the potential benefit.

If considering starting steroids, please consult a pediatrician.

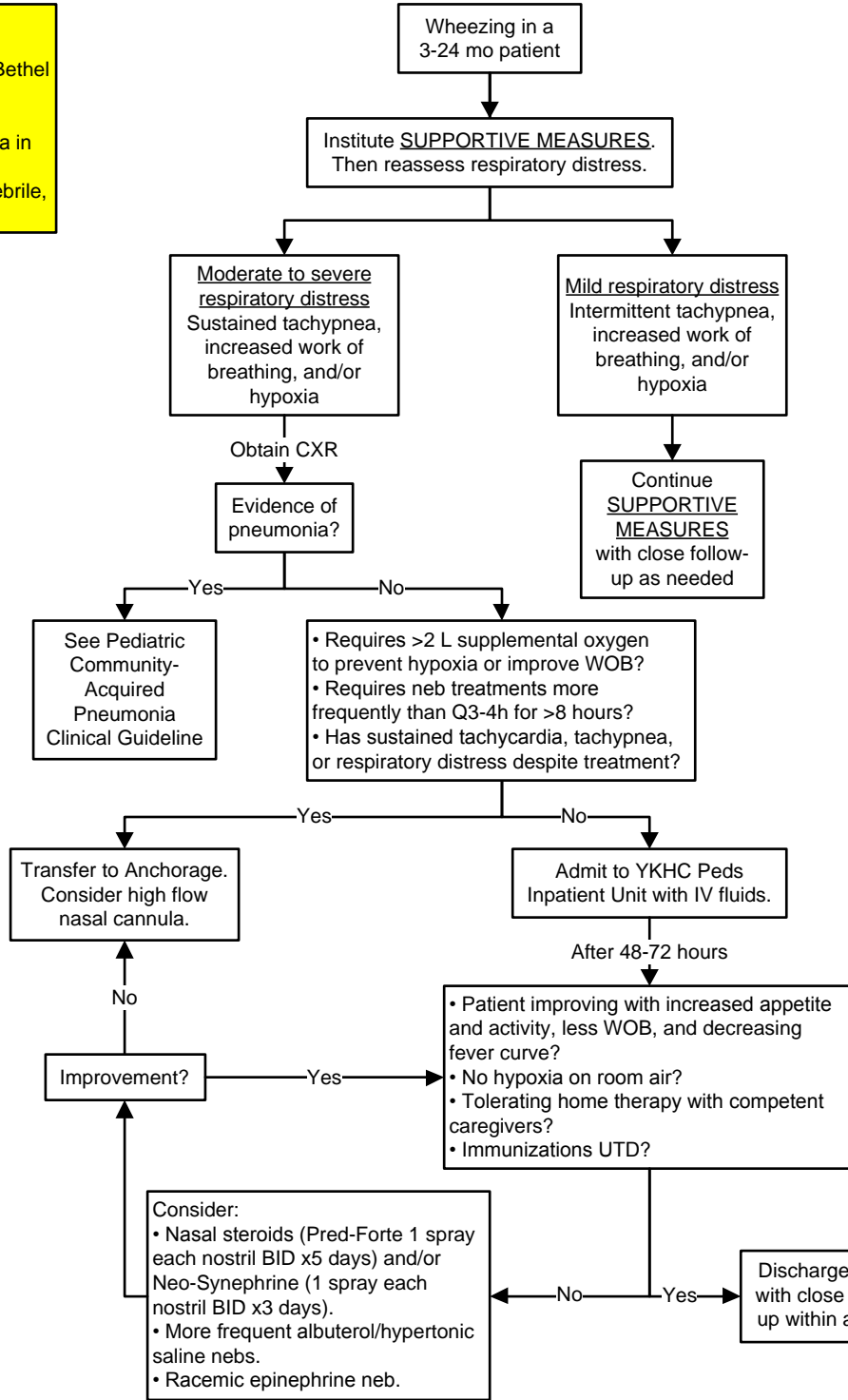
Hypoxia
 <90% while awake
 <88% while asleep
 Sustained for >10 minutes

Pulse-Oximetry Monitoring:

- Pulse-ox may be ordered Q4h (not continuously) if age >6 months and patient is stable.
- Being on oxygen does not mandate continuous pulse-oximetry if patient is stable.

When Admitting, Use Power Plan to Order:

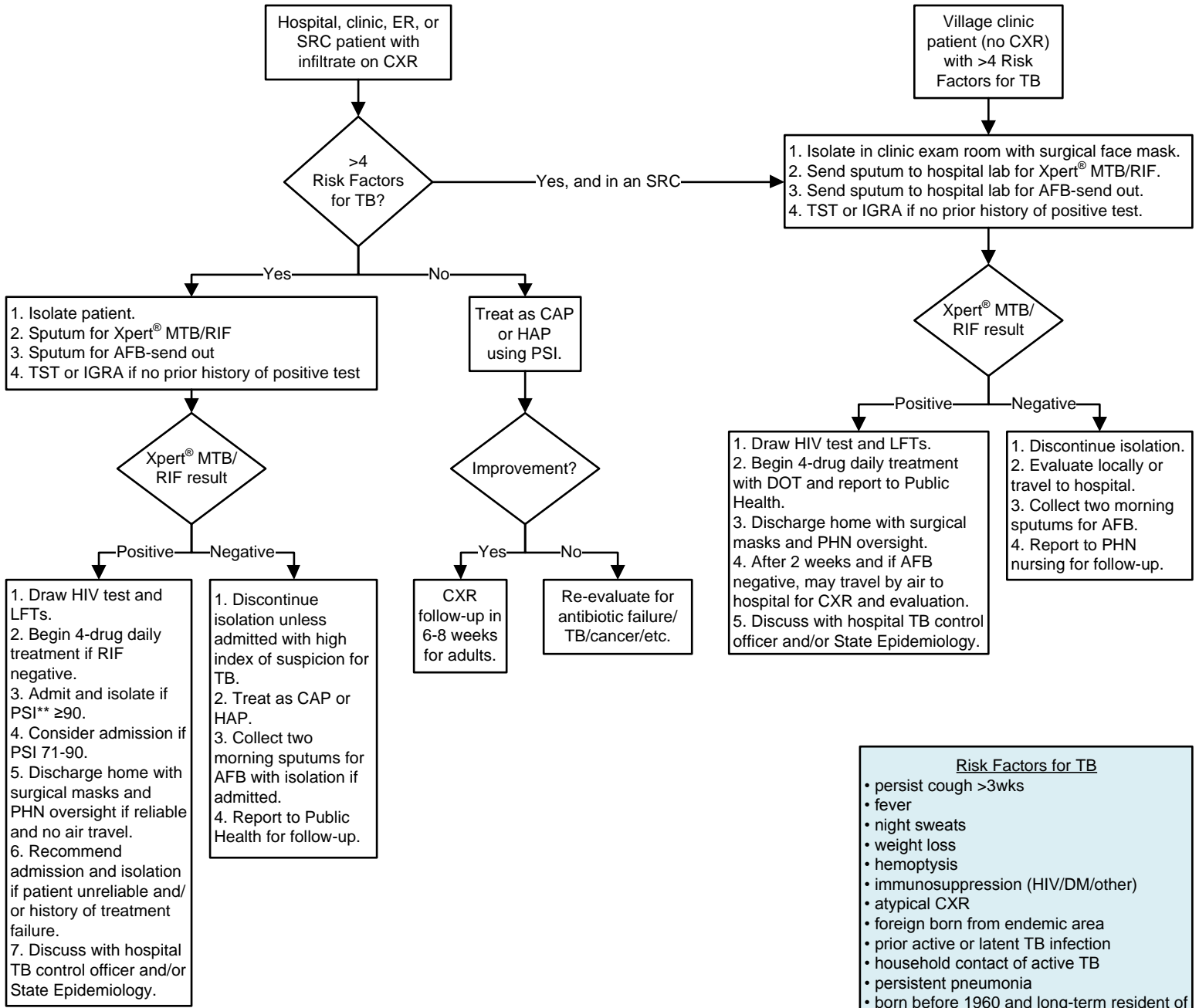
- IVF
- Nasal suction
- Nebs prn
- Consider scheduled nebs
- No deep (nasopharyngeal) suctioning
- Respiratory assessments
- Consider hypertonic (3%) saline – may need to use with albuterol



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Approved by MSEC 5/8/19.

If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

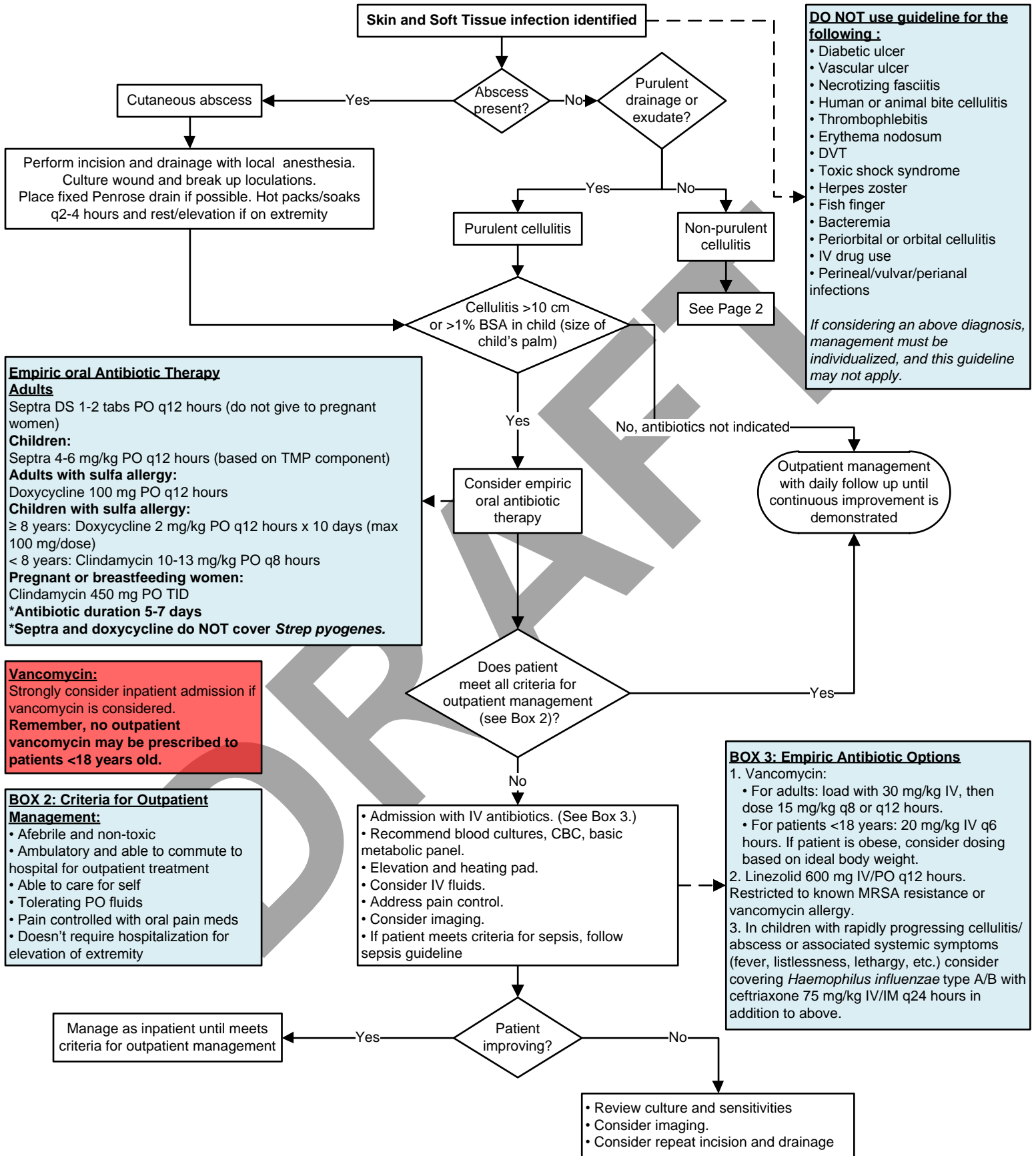


- Risk Factors for TB**
- persist cough >3wks
 - fever
 - night sweats
 - weight loss
 - hemoptysis
 - immunosuppression (HIV/DM/other)
 - atypical CXR
 - foreign born from endemic area
 - prior active or latent TB infection
 - household contact of active TB
 - persistent pneumonia
 - born before 1960 and long-term resident of western Alaska or other endemic area

- PSI**
See www.mdcalc.com/psi-port-score-pneumonia-severity-index-adult-cap/
- PSI ≤70 stable for outpatient therapy
 - PSI 71-90 likely outpatient therapy but may consider inpatient
 - PSI ≥91 advise inpatient therapy

Abbreviations: AFB-acid fast bacilli; CA-cancer; CAP-community acquired pneumonia; CXR-chest x-ray; DM-diabetes mellitus; DOT-direct observational therapy; ER-emergency room; LFTs-liver function tests; HAP-healthcare associated pneumonia; HIV-human immunodeficiency virus; IGRA-interferon gamma release assay; PHN-public health nurse; PSI-pneumonia severity index; SRC-subregional clinic; RIF-rifampin resistance; TB-tuberculosis; TST-tuberculin skin test

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 4/13/16.
If comments about this guideline, please contact Elizabeth_Roll@ykhc.org.



DO NOT use guideline for the following :

- Diabetic ulcer
- Vascular ulcer
- Necrotizing fasciitis
- Human or animal bite cellulitis
- Thrombophlebitis
- Erythema nodosum
- DVT
- Toxic shock syndrome
- Herpes zoster
- Fish finger
- Bacteremia
- Periorbital or orbital cellulitis
- IV drug use
- Perineal/vulvar/perianal infections

If considering an above diagnosis, management must be individualized, and this guideline may not apply.

Empiric oral Antibiotic Therapy

Adults
 Septra DS 1-2 tabs PO q12 hours (do not give to pregnant women)

Children:
 Septra 4-6 mg/kg PO q12 hours (based on TMP component)

Adults with sulfa allergy:
 Doxycycline 100 mg PO q12 hours

Children with sulfa allergy:
 ≥ 8 years: Doxycycline 2 mg/kg PO q12 hours x 10 days (max 100 mg/dose)
 < 8 years: Clindamycin 10-13 mg/kg PO q8 hours

Pregnant or breastfeeding women:
 Clindamycin 450 mg PO TID

***Antibiotic duration 5-7 days**
***Septra and doxycycline do NOT cover *Strep pyogenes*.**

Vancomycin:
 Strongly consider inpatient admission if vancomycin is considered.
Remember, no outpatient vancomycin may be prescribed to patients <18 years old.

BOX 2: Criteria for Outpatient Management:

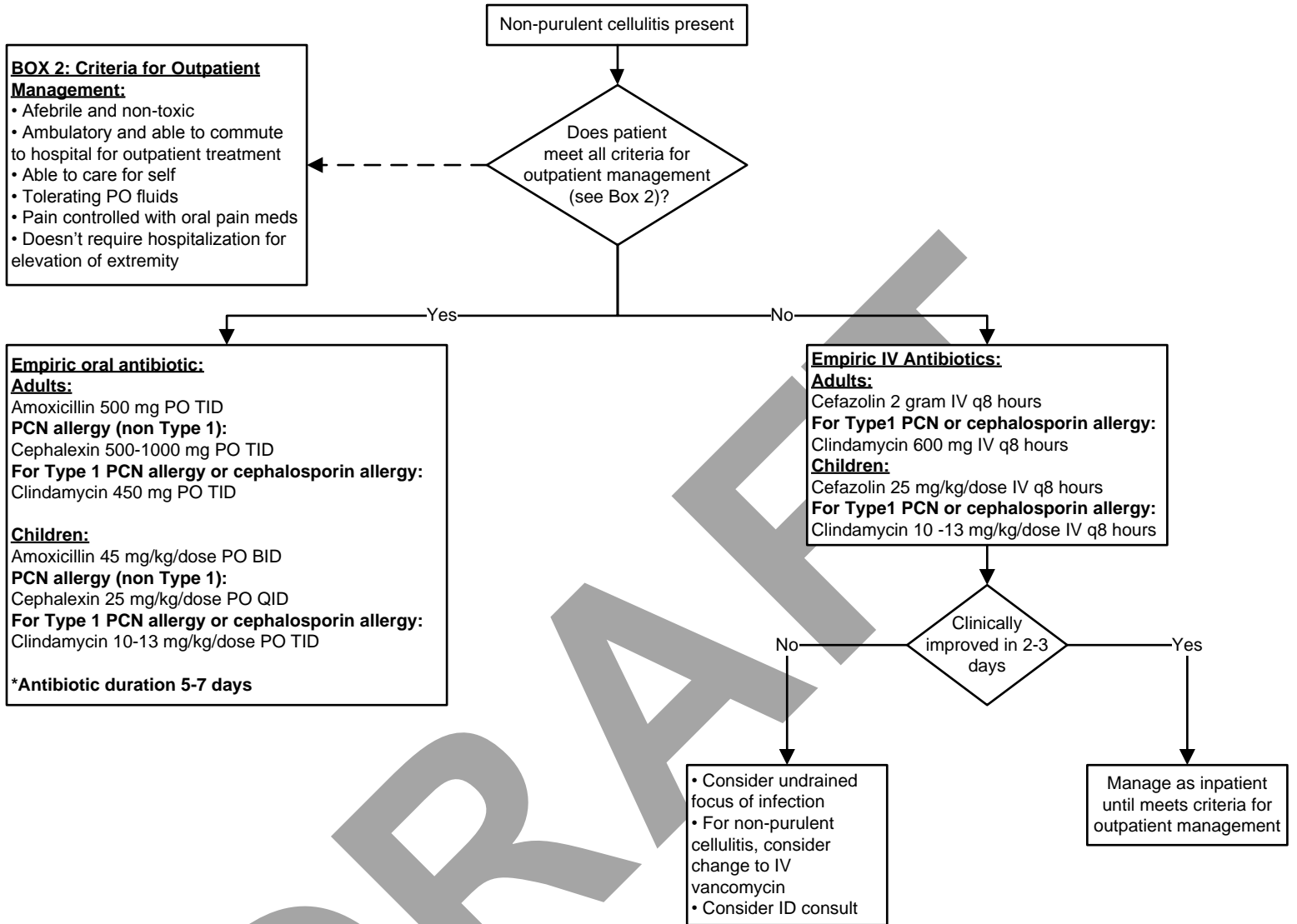
- Afebrile and non-toxic
- Ambulatory and able to commute to hospital for outpatient treatment
- Able to care for self
- Tolerating PO fluids
- Pain controlled with oral pain meds
- Doesn't require hospitalization for elevation of extremity

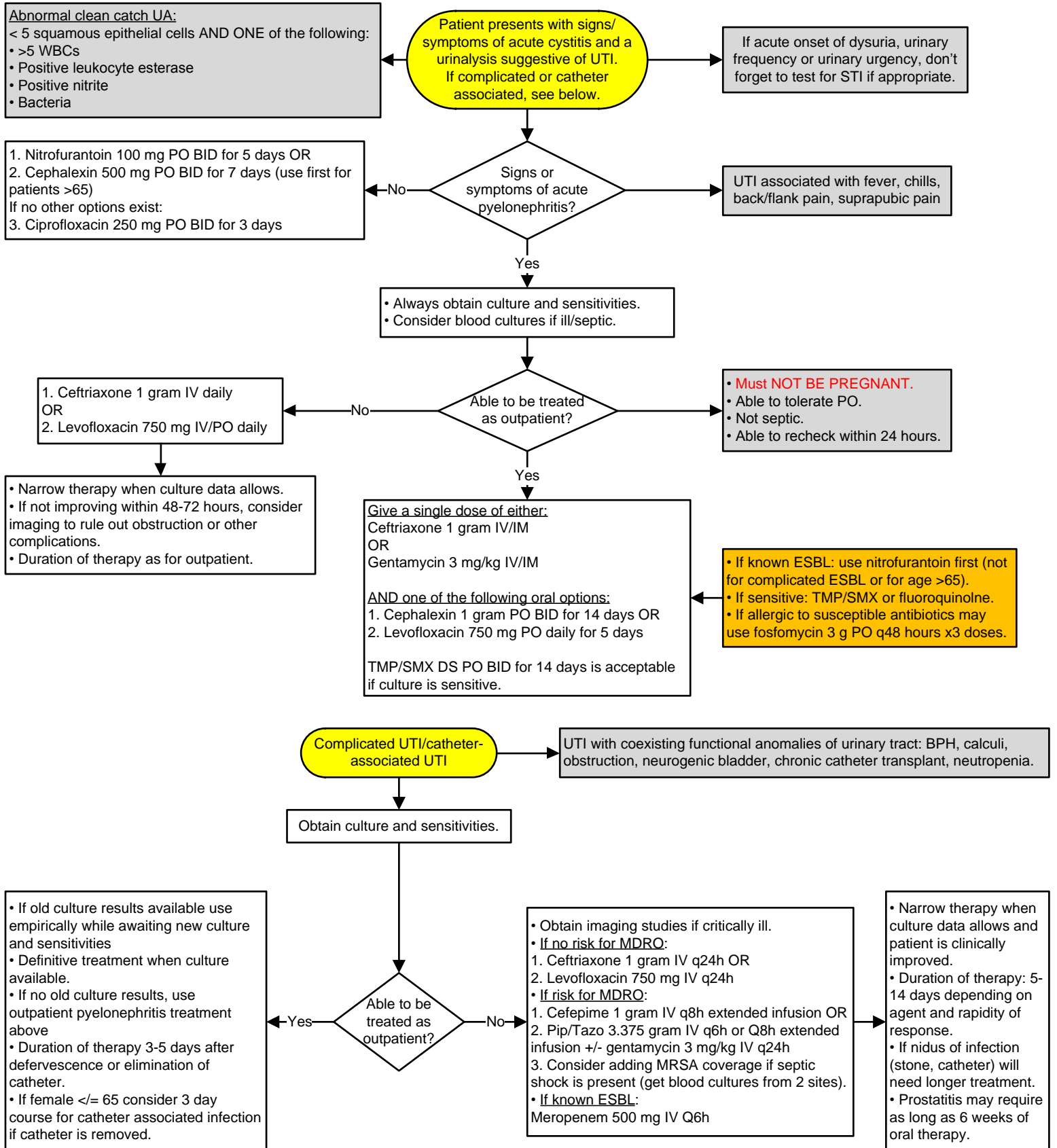
Admission with IV antibiotics. (See Box 3.)

- Recommend blood cultures, CBC, basic metabolic panel.
- Elevation and heating pad.
- Consider IV fluids.
- Address pain control.
- Consider imaging.
- If patient meets criteria for sepsis, follow sepsis guideline

BOX 3: Empiric Antibiotic Options

1. Vancomycin:
 - For adults: load with 30 mg/kg IV, then dose 15 mg/kg q8 or q12 hours.
 - For patients <18 years: 20 mg/kg IV q6 hours. If patient is obese, consider dosing based on ideal body weight.
2. Linezolid 600 mg IV/PO q12 hours. Restricted to known MRSA resistance or vancomycin allergy.
3. In children with rapidly progressing cellulitis/abscess or associated systemic symptoms (fever, listlessness, lethargy, etc.) consider covering *Haemophilus influenzae* type A/B with ceftriaxone 75 mg/kg IV/IM q24 hours in addition to above.





MDRO: Multi-Drug Resistant Organism
MRSA: Methicillin-Resistant Staph Aureus
ESBL: Extended Spectrum Beta Lactam

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 10/15/18.

If comments about this guideline, please contact Ellen_Hodges@ykhc.org.



Signs and Symptoms of UTI

- fever
- dysuria
- vomiting
- abdominal pain
- new daytime or nighttime wetting
- increased frequency of voiding
- malodorous urine

Differential Dx for Dysuria

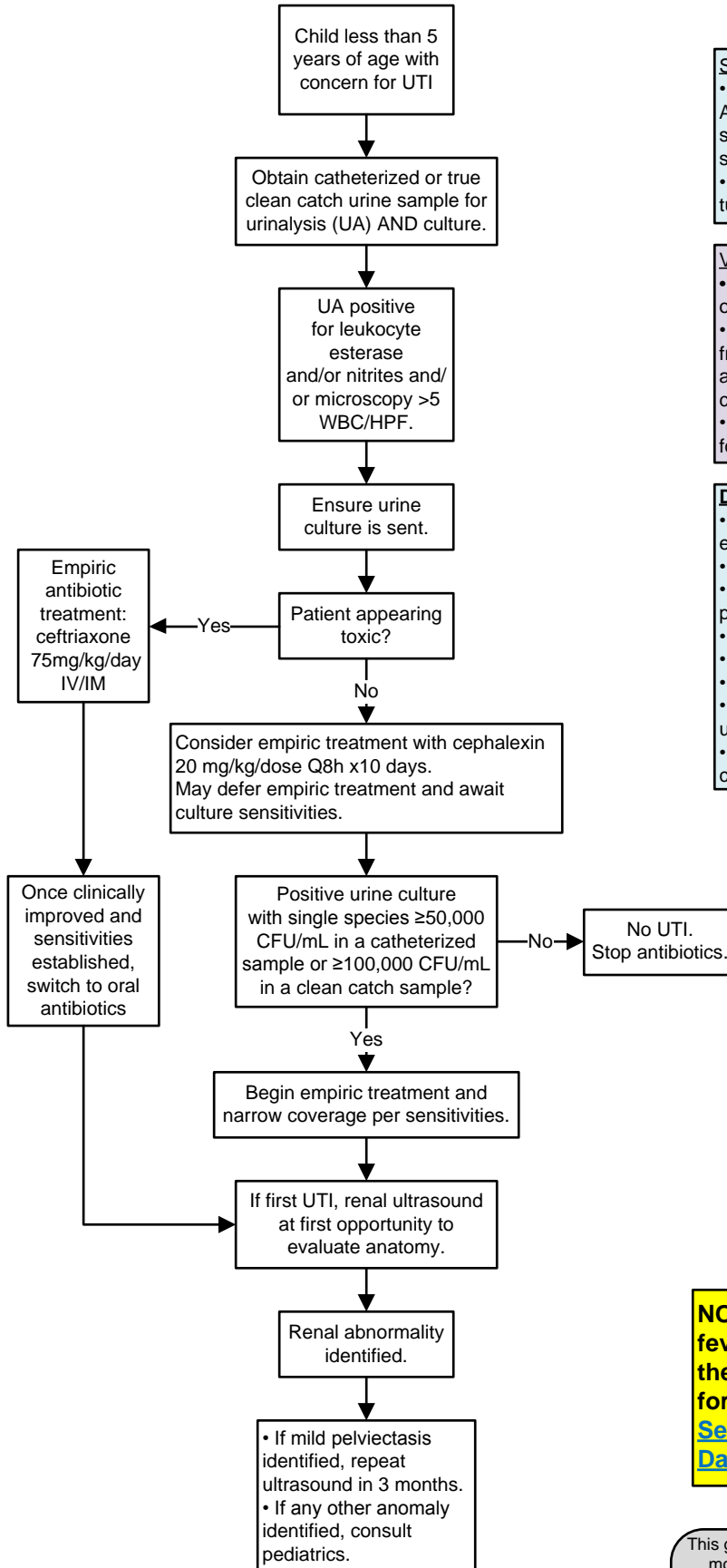
- UTI
- vulvovaginitis
- Candida infection
- poor hygiene
- sexual abuse
- age-appropriate self-exploration

Resistance

- Empiric drug choice is based on local resistance patterns and consultation with ID specialist.
- If urine culture grows an Extended-Spectrum Beta-Lactamase (ESBL) producing organism, please obtain a pediatrics consult and add ESBL to Problem List.

Indications for VCUG:

- Recurrent UTI in child <6 years. Note: study available in Bethel 1-2 times per year when radiologist in-house.
- Major anomaly on ultrasound. Consult pediatric urologist and consider obtaining VCUG in Anchorage.



Symptomatic Care

- If dysuria, irritation, etc. recommend A+D ointment and instruct family to do soaks/baths with warm water and no soap.
- May consider baking soda ¼ cup per tub.

Village Management

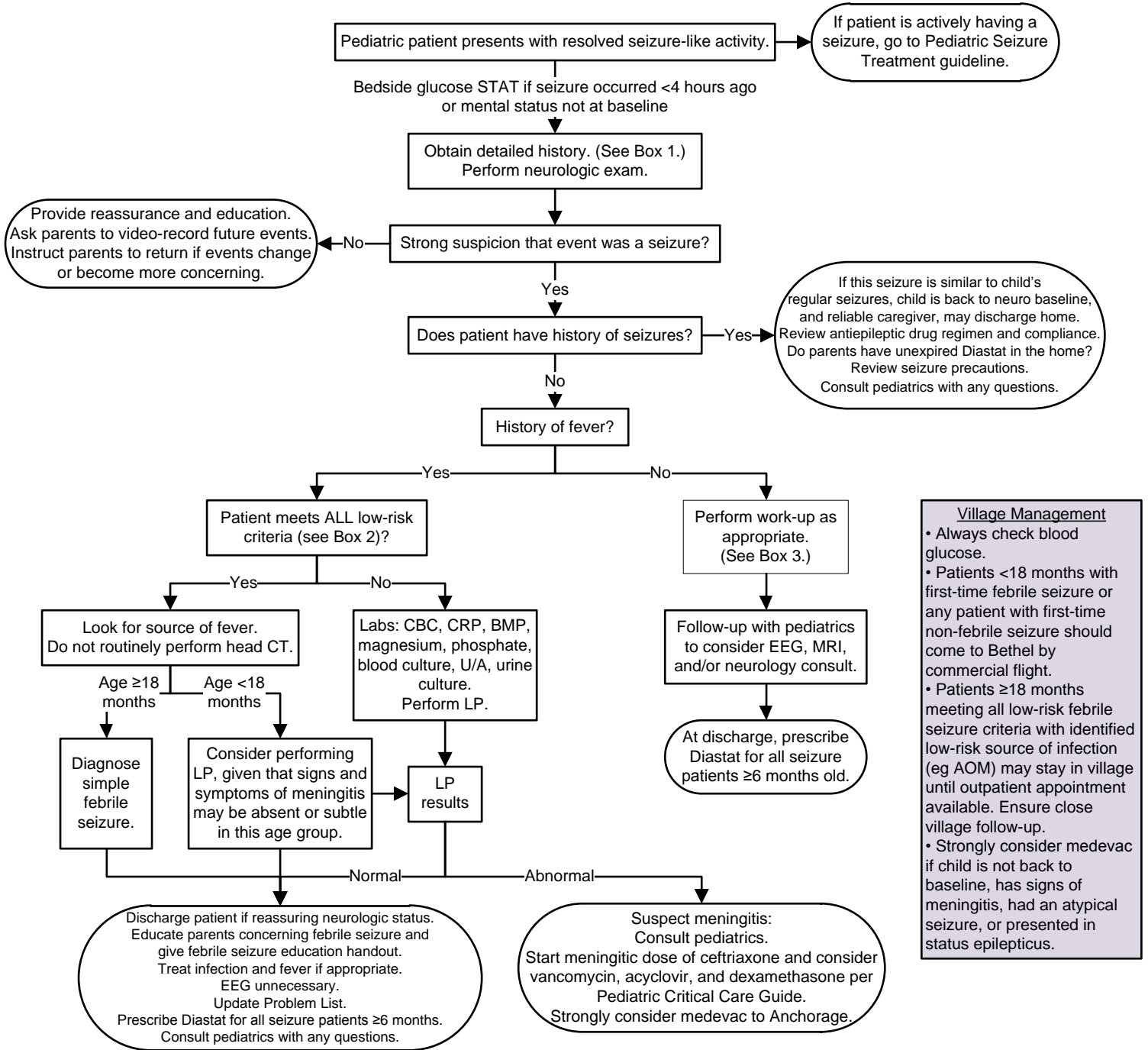
- Do not treat any child under 5 years of age empirically in the village.
- If patient has dysuria, increased frequency, new-onset enuresis, and/or abnormal clean catch urinalysis, consider further evaluation in Bethel.
- Consider symptomatic care (see box) for possible vulvovaginitis.

DO NOT ...

- treat any child under 5 years of age empirically in the village.
- routinely collect urine via bag.
- treat a UTI without a culture in progress.
- routinely perform a test of cure.
- routinely start UTI prophylaxis.
- perform suprapubic taps.
- routinely obtain bloodwork for uncomplicated UTI.
- add UTI to Problem List until confirmed by culture.

NOTE: Any infant with a fever <90 days must go to the Emergency Department for evaluation.
[See the Fever in Infants 0-90 Days Guideline.](#)

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 Approved by MSEC 5/8/19.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.



Village Management

- Always check blood glucose.
- Patients <18 months with first-time febrile seizure or any patient with first-time non-febrile seizure should come to Bethel by commercial flight.
- Patients ≥18 months meeting all low-risk febrile seizure criteria with identified low-risk source of infection (eg AOM) may stay in village until outpatient appointment available. Ensure close village follow-up.
- Strongly consider medevac if child is not back to baseline, has signs of meningitis, had an atypical seizure, or presented in status epilepticus.

Box 1: Detailed History

- When/where did it occur? Awake or asleep?
- What preceded the event (eg head trauma, crying, etc.)?
- How long did it last?
- Ask caregiver to recount, step-by-step, what happened.
- Type of movement and what part of body? Symmetric?
- Interventions?
- Incontinence?
- Behavior after event? How long till back to baseline?

HPI

- Intercurrent illness/fevers
- Medications
- Recent intake, including free water and diluted formula
- Ingestions
- Trauma

PMH

- Prior history of seizures
- History of breathholding

Family Hx: Seizures, febrile seizures, breathholding, etc.

Box 2: Low risk febrile seizure criteria

1. 6 months to 4 years of age.
2. Fever present.
3. Seizure generalized (nonfocal).
4. Seizure duration <5 minutes.
5. Child has normal neurologic examination.
6. Child has no history of previous neurologic or CNS abnormality.
7. Only one seizure in a 24 hour period.
8. Child has returned to baseline.
9. No meningial signs:
 - Irritability or inconsolability
 - Nuchal rigidity
 - Bulging fontanelle
 - Lethargy or somnolence
 - Focal neurologic findings
10. Child has NOT received antibiotics in the past 72 hours.

Box 3: Work-up

- Bedside glucose
- EKG for first event
- BMP, magnesium, phosphate
- Urine drug screen
- Perform LP if persistent altered mental status, meningitis suspected, or <18 months of age and delayed return to baseline.

Radiological studies:

- Obtain head CT prior to LP if concerning neurologic status, persistently altered mental status, history of trauma, or focal neurological findings.

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Approved by MSEC 5/8/19.

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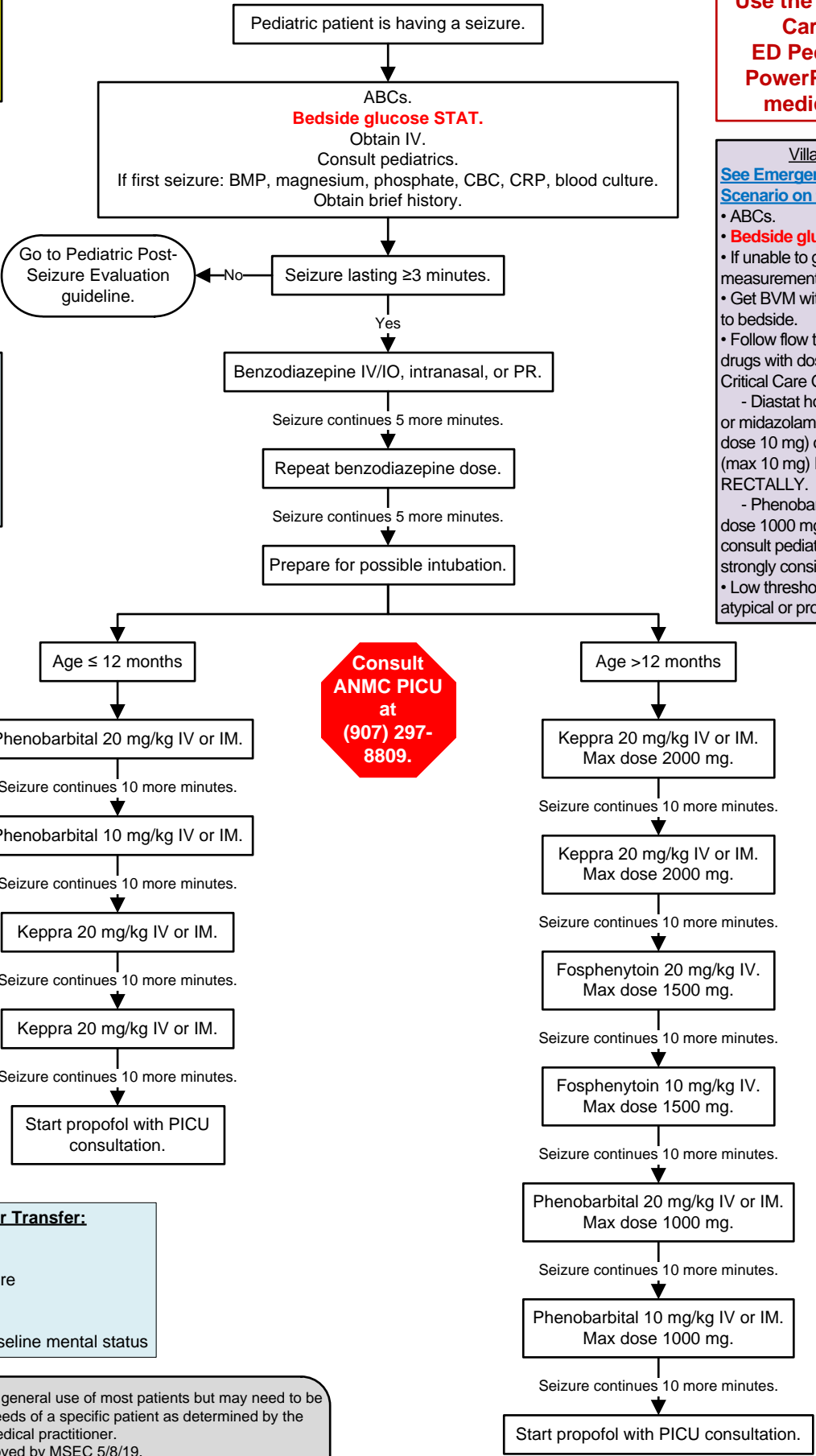
If in the ER or NW, ask a nurse to get the Peds Seizure Kit. Tell him/her to type "seizure" in the Pyxis.

Use the Pediatric Critical Care Guide and ED Peds Critical Care PowerPlan to check all medication dosing.

ER Management
Note: Peds Seizure Kit includes dosing.
Lorazepam 0.1 mg/kg IV/IO (max dose 4 mg) or midazolam 0.2 mg/kg intranasal (max dose 10 mg) if no IV access.

Village Management
[See Emergency RMT Seizure Scenario on the wiki.](#)

- ABCs.
- **Bedside glucose STAT.**
- If unable to get a glucose measurement, give glucose buccally.
- Get BVM with appropriate sized mask to bedside.
- Follow flow to the left, using these drugs with dosing found on Pediatric Critical Care Guide:
 - Diastat home dose PR if available or midazolam 0.2 mg/kg intranasal (max dose 10 mg) or diazepam 0.5 mg/kg (max 10 mg) IV solution given RECTALLY.
 - Phenobarbital 20 mg/kg IM (max dose 1000 mg). If giving phenobarbital, consult pediatrics, notify ER, and strongly consider activating a medevac.
- Low threshold to activate medevac for atypical or prolonged seizure.

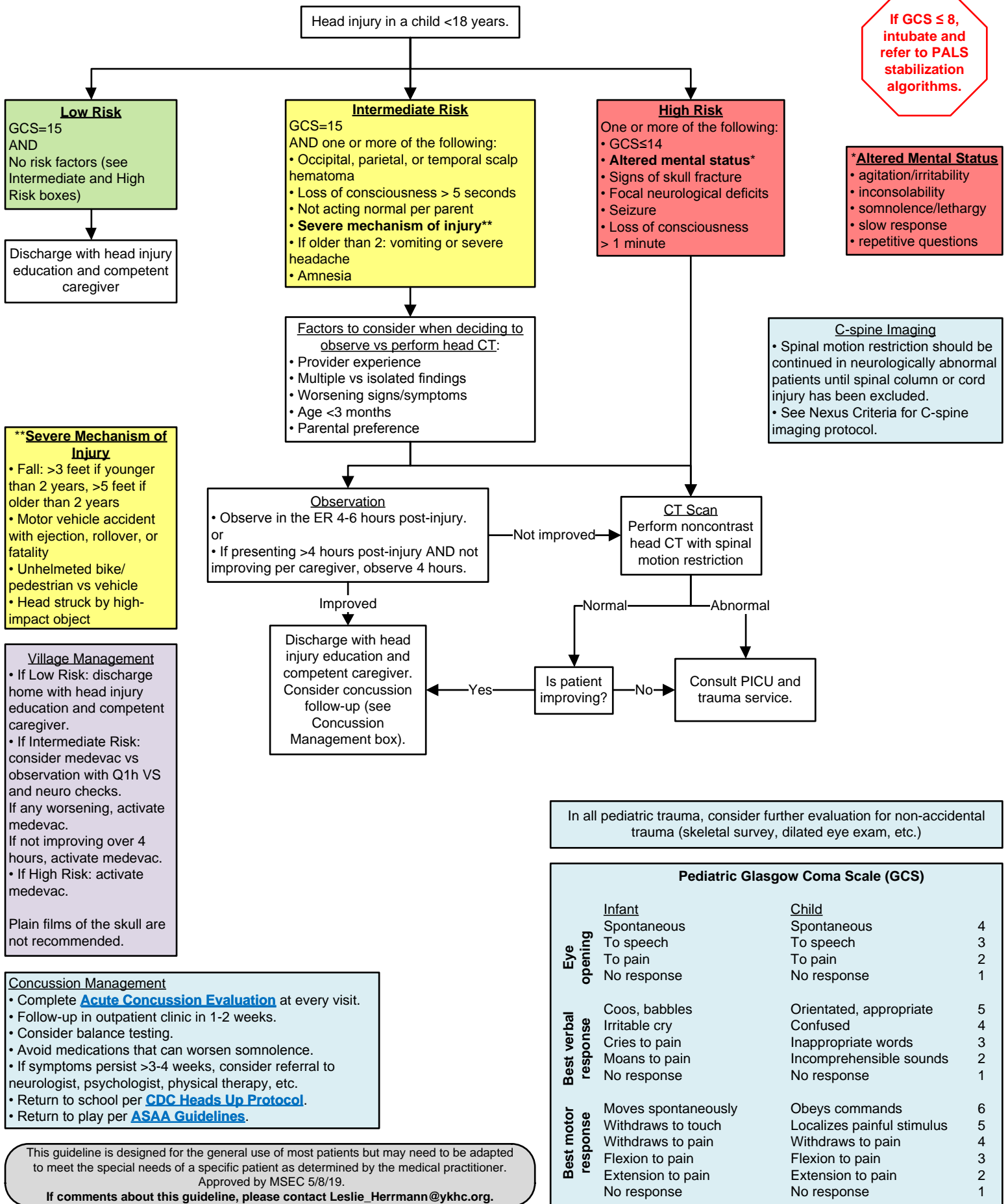


Note: If febrile seizure with status epilepticus, consider giving phenobarbital after benzodiazepines prior to Keppra in any age group.

Indications for Admission or Transfer:

- Status epilepticus
- Cluster of seizures
- Increased intracranial pressure
- CNS infection
- Structural lesion
- Patient does not return to baseline mental status

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Approved by MSEC 5/8/19.
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****Severe Mechanism of Injury**

- Fall: >3 feet if younger than 2 years, >5 feet if older than 2 years
- Motor vehicle accident with ejection, rollover, or fatality
- Unhelmeted bike/ pedestrian vs vehicle
- Head struck by high-impact object

Village Management

- If Low Risk: discharge home with head injury education and competent caregiver.
- If Intermediate Risk: consider medevac vs observation with Q1h VS and neuro checks. If any worsening, activate medevac.
- If not improving over 4 hours, activate medevac.
- If High Risk: activate medevac.

Plain films of the skull are not recommended.

Concussion Management

- Complete [Acute Concussion Evaluation](#) at every visit.
- Follow-up in outpatient clinic in 1-2 weeks.
- Consider balance testing.
- Avoid medications that can worsen somnolence.
- If symptoms persist >3-4 weeks, consider referral to neurologist, psychologist, physical therapy, etc.
- Return to school per [CDC Heads Up Protocol](#).
- Return to play per [ASAA Guidelines](#).

In all pediatric trauma, consider further evaluation for non-accidental trauma (skeletal survey, dilated eye exam, etc.)

Pediatric Glasgow Coma Scale (GCS)			
	Infant	Child	
Eye opening	Spontaneous	Spontaneous	4
	To speech	To speech	3
	To pain	To pain	2
	No response	No response	1
Best verbal response	Coos, babbles	Orientated, appropriate	5
	Irritable cry	Confused	4
	Cries to pain	Inappropriate words	3
	Moans to pain	Incomprehensible sounds	2
	No response	No response	1
Best motor response	Moves spontaneously	Obeys commands	6
	Withdraws to touch	Localizes painful stimulus	5
	Withdraws to pain	Withdraws to pain	4
	Flexion to pain	Flexion to pain	3
	Extension to pain	Extension to pain	2
	No response	No response	1

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1

Nomenclature

- **Viable** – A pregnancy is viable if it can potentially result in a liveborn baby.
- **Nonviable** – A pregnancy is nonviable if it cannot possibly result in a liveborn baby. Ectopic pregnancies and failed intrauterine pregnancies are nonviable.
- **Intrauterine pregnancy of uncertain viability** – A woman is considered to have this if a transvaginal ultrasound shows an intrauterine gestational sac with no embryonic heartbeat and no findings of definite pregnancy failure.
- **Pregnancy of unknown location** – A woman is considered to have this if she has a positive urine or serum pregnancy test and no intrauterine or ectopic pregnancy on transvaginal ultrasound.

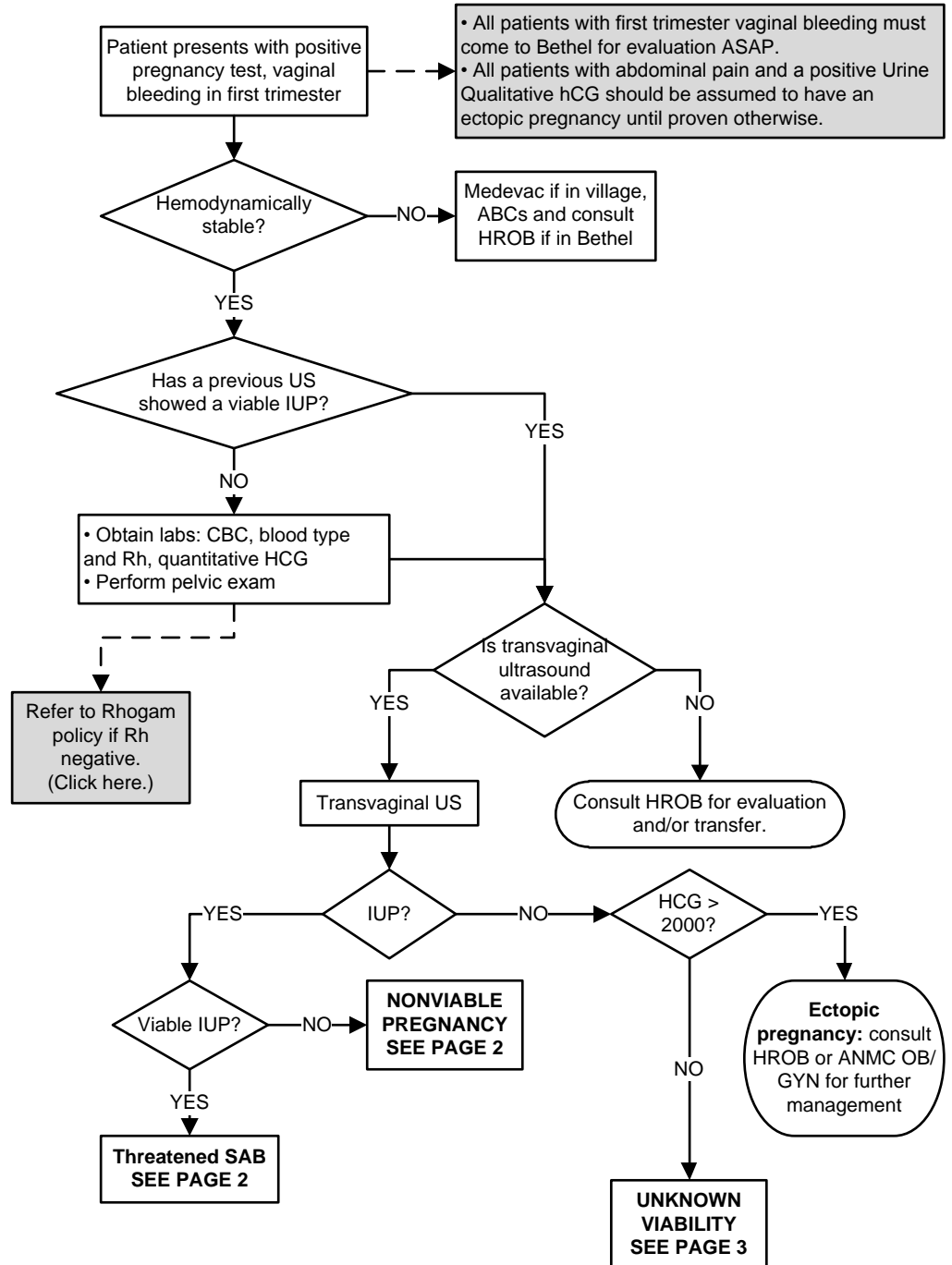
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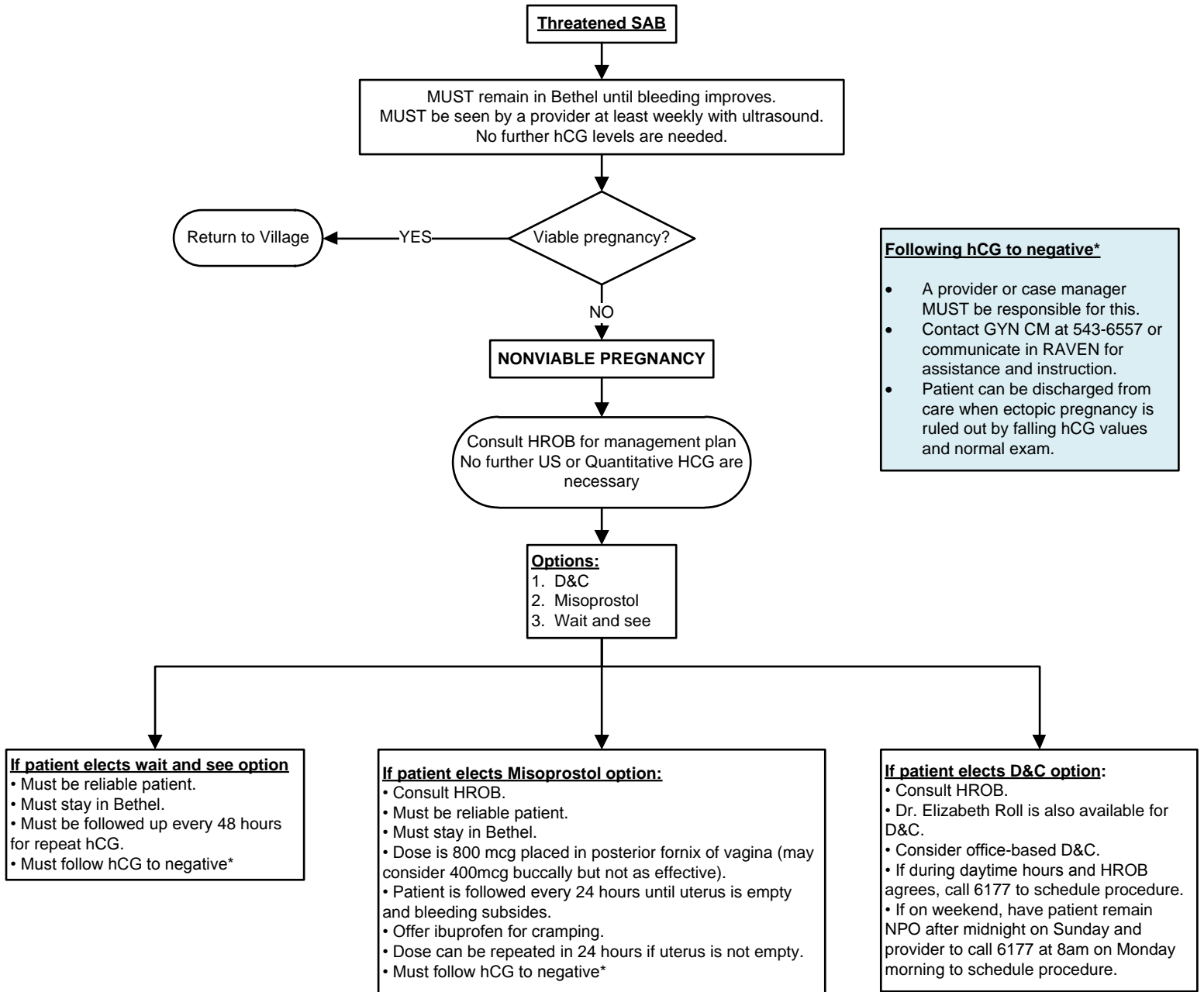
Findings diagnostic of Pregnancy Failure

- Crown-rump length of ≥ 7 mm and no heartbeat
- Mean sac diameter of ≥ 25 mm and no embryo
- Absence of embryo with heartbeat ≥ 14 days after an US that showed a gestational sac without a yolk sac
- Absence of embryo with a heartbeat ≥ 11 days after an US that showed a gestational sac with a yolk sac

Comments

- In a woman with a positive urine or serum pregnancy test, an intrauterine fluid collection with rounded edges containing no yolk sac is most likely a gestational sac; it is certain to be a gestational sac if it contains a yolk sac or embryo.
- Transabdominal imaging without transvaginal scanning may be sufficient for diagnosing early pregnancy failure when an embryo whose crown-rump length is 15mm or more has no visible cardiac activity.







1

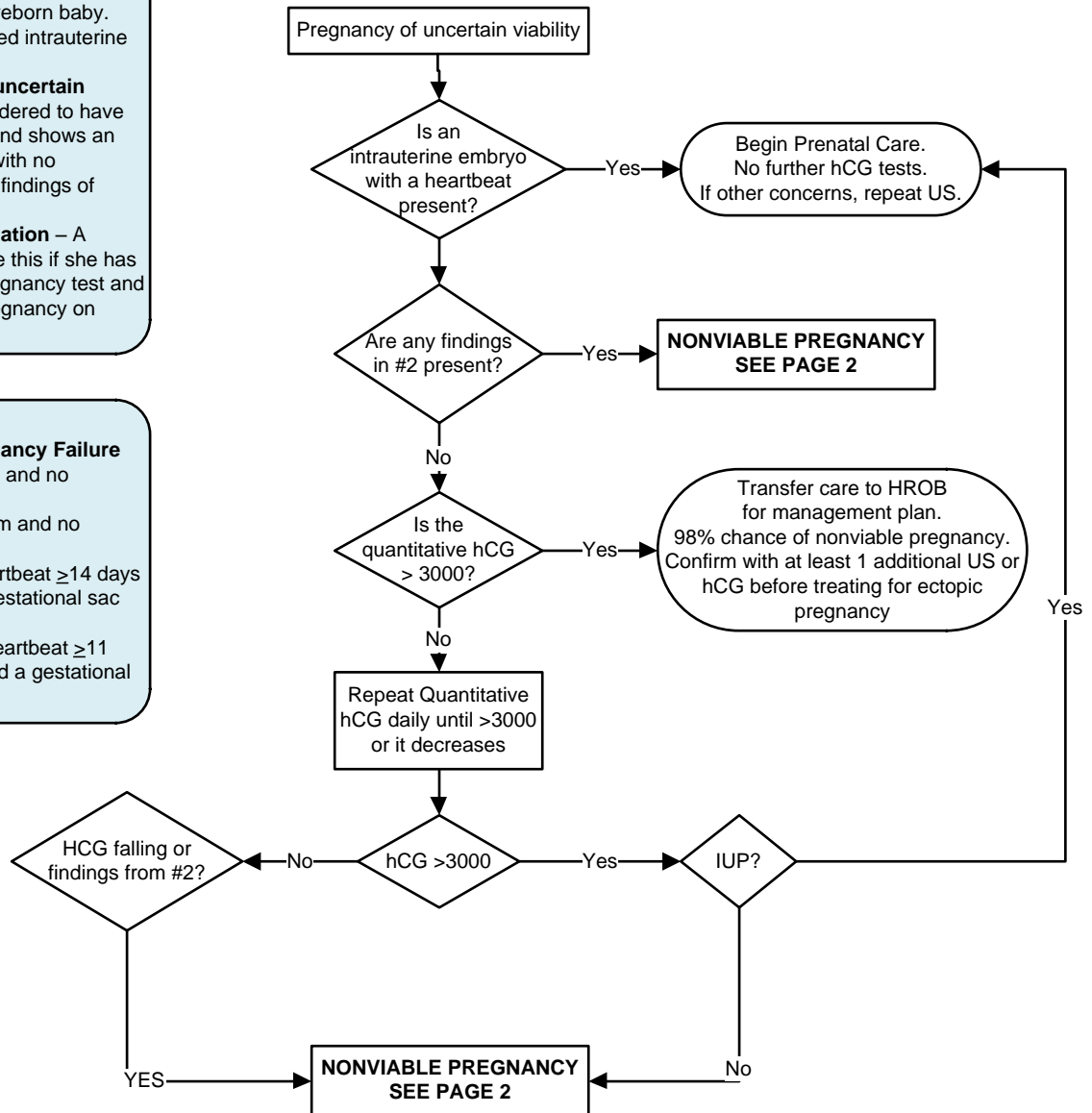
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2

Findings diagnostic of Pregnancy Failure

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- Mean sac diameter of ≥ 25 mm and no embryo
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- Absence of embryo with a heartbeat ≥ 11 days after an US that showed a gestational sac with a yolk sac



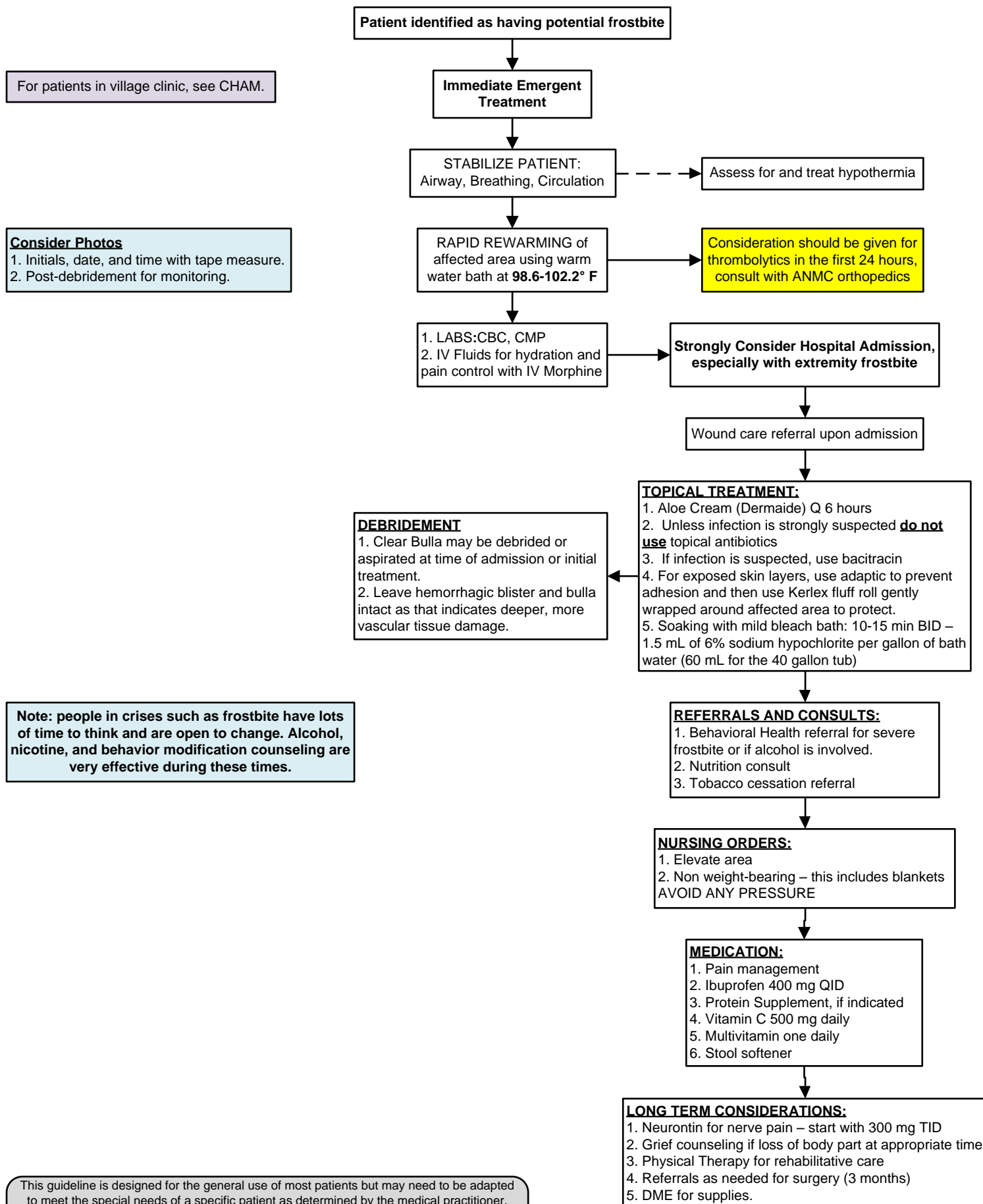
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Approved by MSEC 7/12/17.

If comments about this guideline, please contact Ellen_Hodges@ykhc.org.





Severe Criteria

- Circumferential burns
- Burns of face, neck, GU area
- Burns across joints
- Electrical/chemical burns
- Inhalation injuries
- Trauma (refer to trauma protocol)
- Any full-thickness (3rd degree) burns

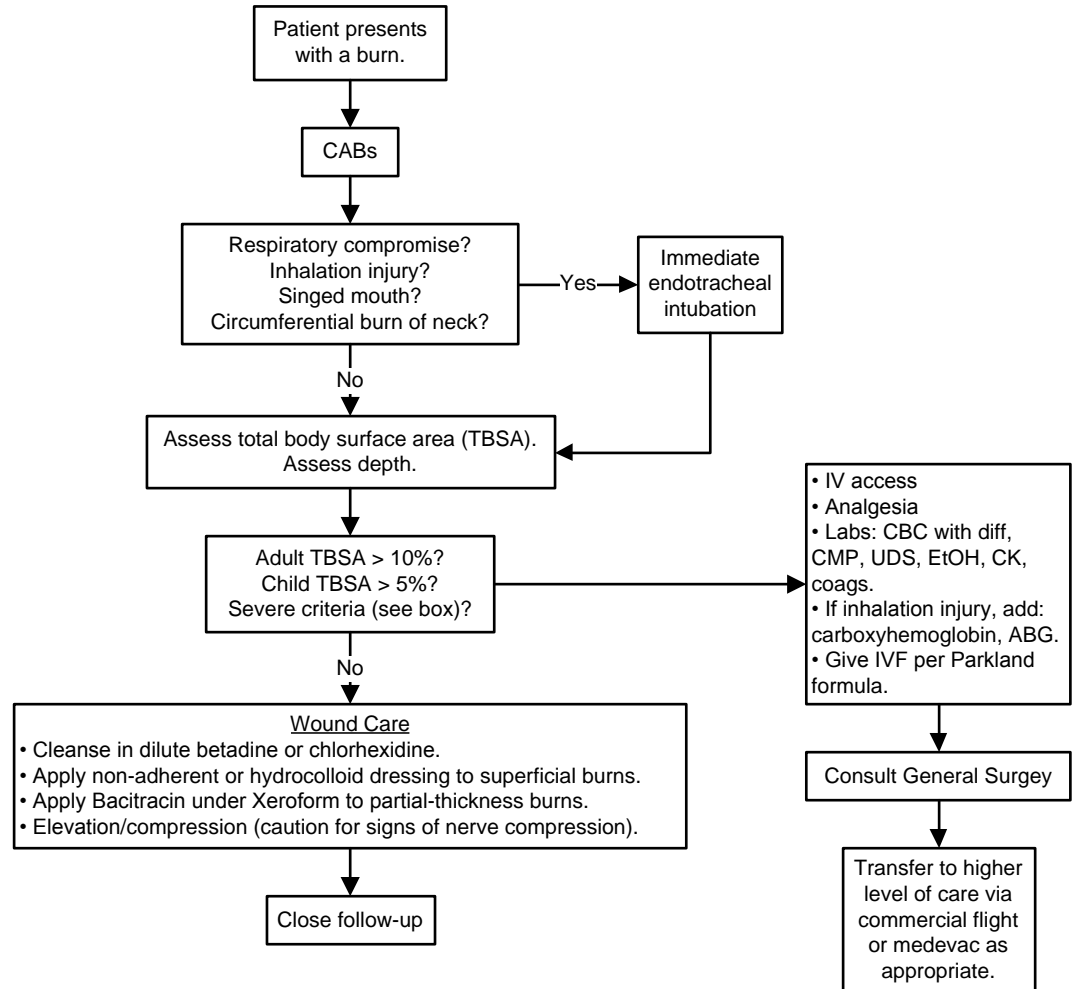
Parkland Formula

Fluid resuscitation, used if:
Adult TBSA > 15%
Child TBSA > 10%

(weight in kg) x 4 mL x %TBSA = total
fluid to be given over 24 hours

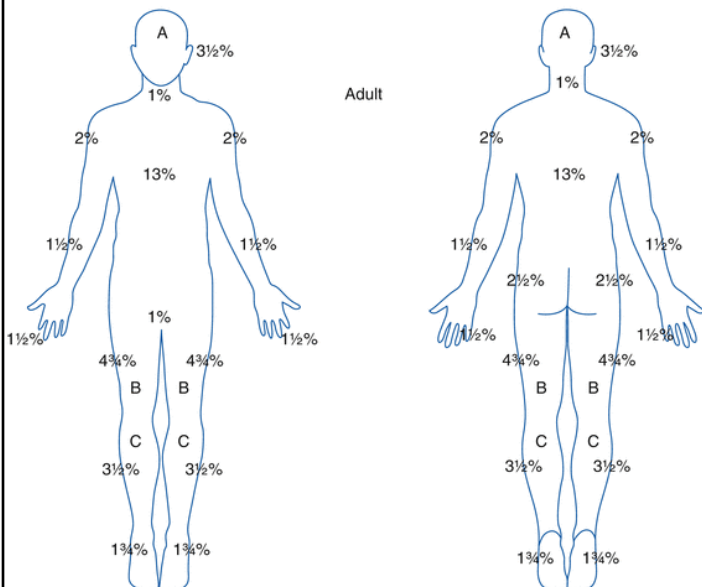
Give half in first eight hours from time
of burn. Give other half over the next
sixteen hours.

LR preferred.



Rule of Nines to Estimate TBSA

Age	0-1	1-4	5-9	10-14	15
A - ½ of head	9½%	8½%	6½%	5½%	4½%
B - ½ of one thigh	9½%	8½%	6½%	5½%	4½%
C - ½ of one leg	9½%	8½%	6½%	5½%	4½%



Classification of Burns by Depth

- Superficial (1st degree): epidermis only, dry, red, blanches with pressure, no blisters, painful
- Superficial partial-thickness (2nd degree): epidermis and part of dermis, blisters, moist, red, weeping, blanches with pressure, painful
- Deep partial-thickness (2nd degree): epidermis and deep dermis, blisters, wet or waxy dry, patchy white to red, does not blanch, pressure sensation only
- Full-thickness (3rd degree): epidermis and entire dermis, waxy white to leathery gray to charred/black, dry and inelastic, does not blanch, sensation to deep pressure only, may be defined as 4th degree with extension into underlying fascia, muscle, or bone

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Approved by MSEC 7/12/17.

If comments about this guideline, please contact Tara_Lathrop@ykhc.org.



BOX 1

Indications for rabies prophylaxis:

1. The bite was from a fox, bat, coyote, skunk, woodchuck, or wolf, and this animal is not available to test.
2. The bite was from a dog who was behaving abnormally.
3. The bite was from a dog not available for quarantine.
4. If the dog is available for quarantine, do not start post-exposure prophylaxis regardless of vaccination status. OEH (Office of Environmental Health) will initiate a 10-day quarantine. Please check under "all documents" for Alert Note or for the rabies investigation report from OEH.
5. If consultation is needed, call OEH at 543-6420 or State Section of Epidemiology 907-269-8000 or 800-478-0084 after hours.

Other Resources

- WikiàRabiesàFAQ.
- <http://dhss.alaska.gov/dph/Epi/id/Pages/rabies>
- Google "rabies state of Alaska"
- Use the Power Plans "AMB/ED Rabies Prophylaxis" to find all necessary orders.

If patient needs wound care, recommend immediate travel to ED for treatment.

Patient reports animal bite (or exposure to brain tissue) from animal who is a possible reservoir for rabies (dog, fox, bat, wolf)

Does the patient require rabies post-exposure prophylaxis? (See BOX 1.)

Provide usual wound treatment

Yes or maybe

Patient in village?

1. Patient presents to ED or outpatient clinic.
2. Ad hoc form in RAVEN entitled "Rabies Investigation Report" is started.
3. Provider forwards the final note to the OEH department pool.

Patient is given Day 0 vaccine, and the wound is infiltrated with immunoglobulin.

Appointment is made for the outpatient clinic for Days 3, 7, and 14.
If any of these fall on a weekend, patient is seen in the ED.

1. Health Aide completes visit in RAVEN.
2. Ad hoc form in RAVEN entitled "Rabies Investigation Report" is started.
3. Patient is reported to RMT provider.
4. Provider forwards the final note to the OEH department pool.

1. RMT provider orders the vaccine for HAND CARRY to village clinic – 3 doses.
2. Contact the on-call pharmacist to arrange the HAND CARRY to the village.

Patient is given Day 0 vaccine in village clinic.

Day 3 vaccine and immunoglobulin given in Bethel outpatient clinic unless it is the weekend (then patient goes to ED). At that visit:
-Wound is assessed.
-Immunoglobulin is infiltrated directly into wound site.

Day 7 & 14 vaccine given in village.

Day zero is the first day the vaccine is given, not the day of the exposure.

If patient is immunocompromised, he/she requires an additional dose on day 28.

Rabies Investigation Report:
This is an ad hoc form that is started by the CHA/P in village clinic or by the ED/outpatient clinic provider when the patient first presents for care. This is sent electronically to the OEH (Office of Environmental Health) who will follow up on the status of the dog. Please check under "all documents" for Alert Note or for the rabies investigation report from OEH.

Animals in Alaska that have tested positive for rabies:

1. Arctic fox
2. Caribou
3. Cat
4. Coyote
5. Dog
6. Keen's myotis bat
7. Little brown bat
8. Red fox
9. Reindeer
10. River otter
11. Wolf
12. Wolverine

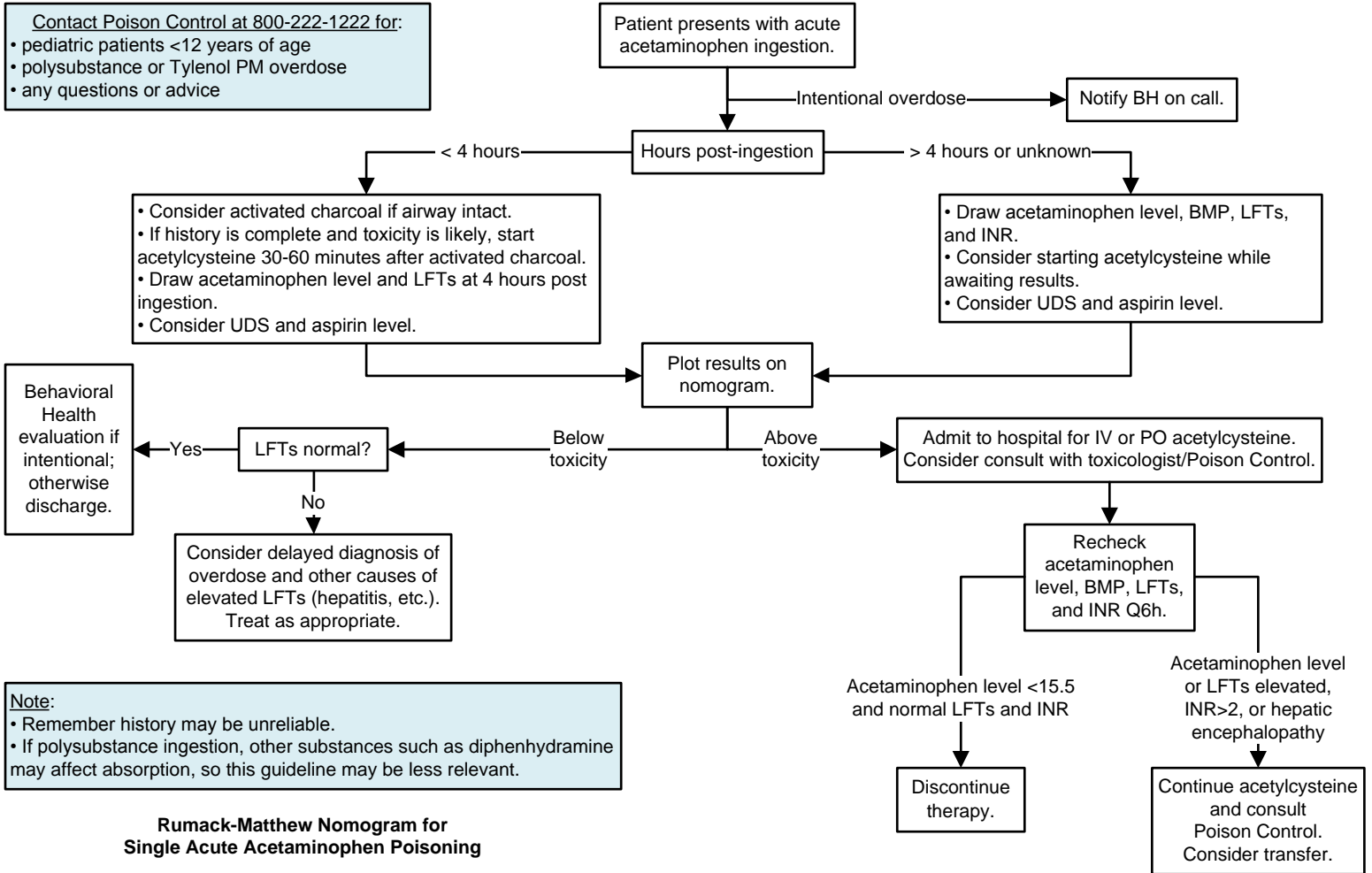
For village patient:
Day 0 dose: Given in village from HAND CARRY.
Day 3 dose: Given in Bethel.
Day 7 dose: Given in village from HAND CARRY.
Day 14 dose: Given in village from HAND CARRY.

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Approved by MSEC 8/7/19.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.



Contact Poison Control at 800-222-1222 for:

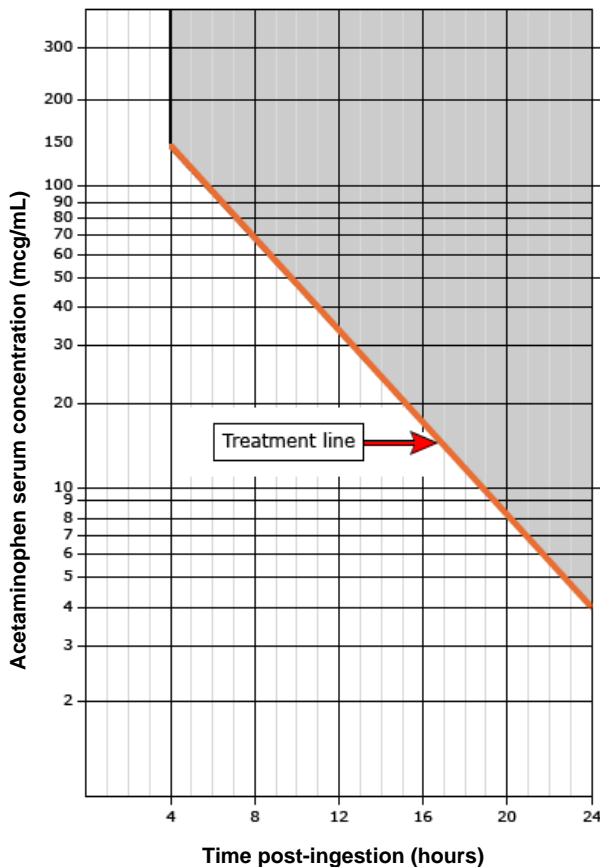
- pediatric patients <12 years of age
- polysubstance or Tylenol PM overdose
- any questions or advice



Note:

- Remember history may be unreliable.
- If polysubstance ingestion, other substances such as diphenhydramine may affect absorption, so this guideline may be less relevant.

Rumack-Matthew Nomogram for Single Acute Acetaminophen Poisoning



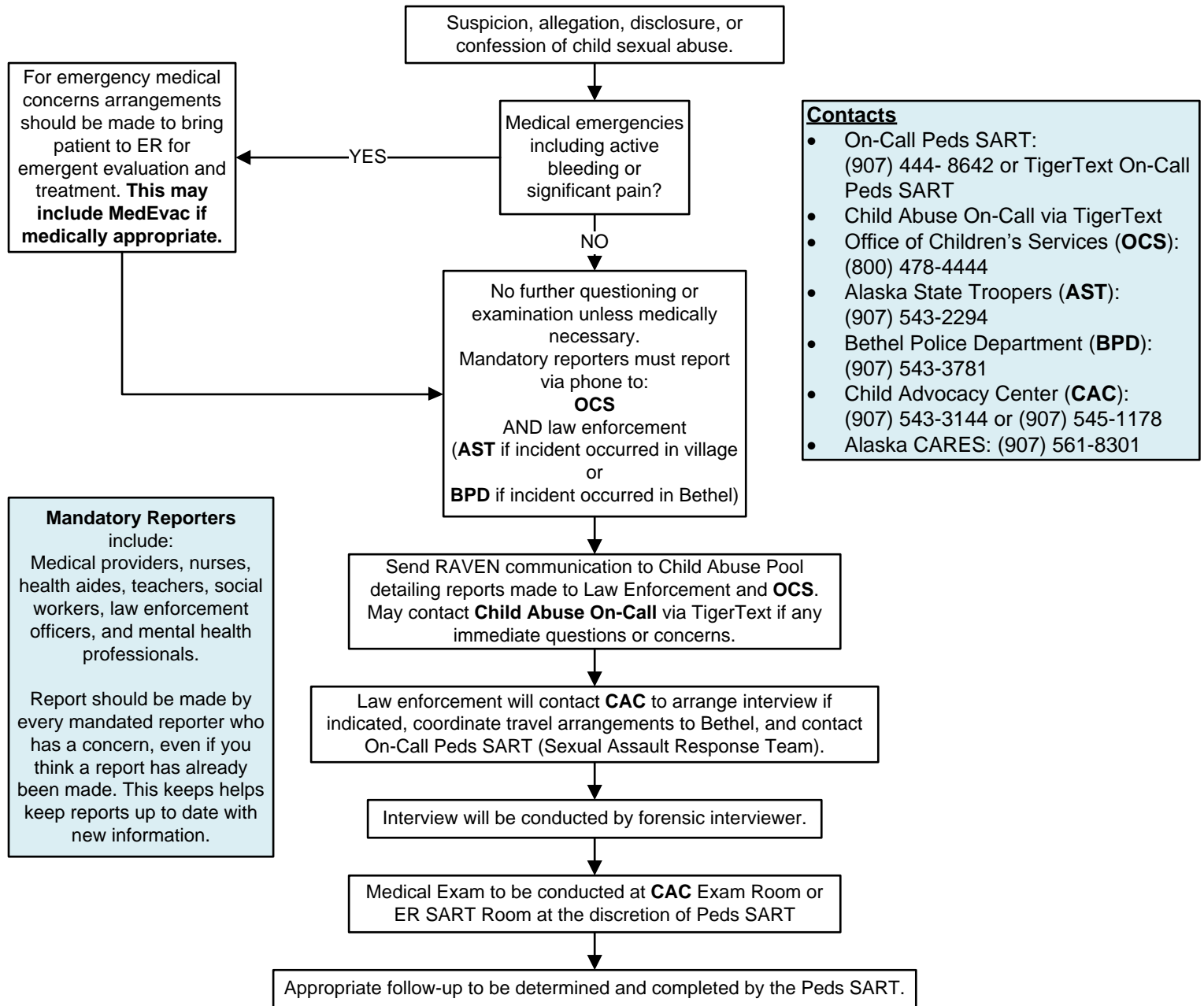
Village Management

- If patient in village and toxicity is at all possible, start treatment with oral acetylcysteine and draw blood at 4 hours post ingestion. Instruct health aide to draw 2 mL (minimum 200 microliters) in a gold/SST or green top tube.
- Consider activated charcoal.
- Transport patient and blood work to Bethel on next available commercial flight, if stable.

Acetylcysteine Administration Protocols

- IV 21 Hour Protocol:** Dose is 150 mg/kg (max 15 grams) over 60 minutes immediately followed by 50 mg/kg (max 5 grams) over 4 hours immediately followed by 100 mg/kg (max 10 grams) over 16 hours. Dilute with D5W or 1/2 NS. See website <http://acetadote.com/dosecalc.php> for details on dose and dilution, especially in children under 40 kg.
- PO 72 Hour Protocol:** Dilute with strongly-flavored juice or soda. Mix one part medication with three parts juice/soda. Loading dose is 140 mg/kg. Maintenance dose of 70 mg/kg Q4h for up to 72 hours. The villages carry vials of inhalation/oral solution that is 200 mg/mL in 30 mL vials.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 2/5/20.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.



- Contacts**
- On-Call Peds SART: (907) 444- 8642 or TigerText On-Call Peds SART
 - Child Abuse On-Call via TigerText
 - Office of Children’s Services (**OCS**): (800) 478-4444
 - Alaska State Troopers (**AST**): (907) 543-2294
 - Bethel Police Department (**BPD**): (907) 543-3781
 - Child Advocacy Center (**CAC**): (907) 543-3144 or (907) 545-1178
 - Alaska CARES: (907) 561-8301

Mandatory Reporters include:
 Medical providers, nurses, health aides, teachers, social workers, law enforcement officers, and mental health professionals.

Report should be made by every mandated reporter who has a concern, even if you think a report has already been made. This keeps helps keep reports up to date with new information.



Indicators of Abuse: History

- No/vague explanation of significant injury
- Important details of explanation change dramatically
- Explanation of injury is inconsistent with the child's physical and/or developmental capabilities
- Injury occurred as a result of inadequate supervision
- Delay in seeking medical care without reasonable explanation
- Children with injuries resulting from family/domestic violence incident
- Previous history of inflicted injury
- Inappropriate caretaker behavior that places child at risk

Indicators of Abuse: Physical Exam

Bruising

- Bruising in infants < 6months of age or non-ambulatory infants
- Bruising in unusual locations in any age child: ear pinna, neck, under chin, torso, buttock
- Pattern Bruises: loop marks, hand print, subgaleal hematoma due to hair pulling

Bite Marks

- Semi-circular/oval pattern
- May have associated bruising

Burns

- Pattern contact burns
- Cigarette burns
- Stocking/glove pattern
- Mirror image burns on extremities
- Symmetrical burns on buttock
- Immersion burns

Facial Injury

- Unexplained torn frenulum in non-ambulatory child
- Unexplained oral injury
- Ear injury

Injuries Suggestive of Abuse

Skeletal

- Rib fractures
- Multiple fractures
- Long bone fractures in < 6 months
- Any fracture (including femur) in non-ambulatory child
- Scapular fracture
- Sternum fracture
- Fractures of hands and feet

Head

- Subdural hematoma with or without skull fracture
- Unexplained intracranial injury (Note: Infants with intracranial injuries frequently have no or non-specific symptoms)

Poisoning

- Any illegal drug exposure, prescribed controlled substance, ethanol or marijuana

Suspicion, allegation, disclosure, or confession of child physical abuse.
Please see Indicators of Abuse AND Injuries Suggestive of Abuse

Treat any acute issues as medically appropriate. If patient is in village and stable please arrange to have patient sent to ER via next commercial flight.
If unstable then activate MedEvac.

Mandatory reporters must report via phone:
OCS AND law enforcement (AST if incident occurred in village or BPD if incident occurred in Bethel)

Complete Non-Accidental Trauma (NAT) Work-up

- Skeletal Survey (See Box)
- CT Head if <6 months, symptomatic, or evidence of Closed Head Injury
- Laboratory Testing for Occult Injuries (See Box)
- Take photos of any injury visible on exam, especially bruising. Take a photograph of the injury at a distance, followed up by a close-up photo to establish relative size and landmarks.

Send RAVEN communication to Child Abuse Pool detailing reports made to Law Enforcement and **OCS**.
May contact **Child Abuse On-Call** via TigerText if any questions or concerns.

If unable to reach a discharge plan with OCS that YOU think is safe, then consider admission for safety and TigerText **Child Abuse On-Call** to help reach a safe discharge plan.

Contacts

- Child Abuse On-Call via TigerText
- Office of Children's Services (**OCS**): (800) 478-4444
- Alaska State Troopers (**AST**): (907) 543-2294
- Bethel Police Department (**BPD**): (907) 543-3781
- Alaska CARES: (907) 561-8301

Mandatory Reporters include:

Medical providers, nurses, health aides, teachers, social workers, law enforcement officers, and mental health professionals.

Report should be made by every mandated reporter who has a concern - even if you think a report has already been made. This helps keep reports up to date with new information.

Laboratory Testing for Occult Injuries

All Patients ≤ 7 years or >7 if clinically indicated

- CBC
- CMP
- Amylase/Lipase
- UA

Fractures

- Above labs and Magnesium & Phosphorus

Bruising or Intracranial Hemorrhage

- Above labs plus PT/PTT
- If patient needs blood, obtain vWF (von Willebrand) antigen and activity, Factor VII and IX

Altered Mental Status/Drug Ingestion

- Urine Drug Screen
- Ethanol level
- Tylenol level
- Aspirin level

Obtain Skeletal Survey For:

Children 0-24 months if concerns for child abuse or any of the following are present:

- History of confessed abuse
- Injury occurred during domestic violence
- Report of impact from toy/object causing fracture
- Delay in seeking care >24 hours in child with signs of distress
- Additional injuries unrelated to chief complaint (i.e. bruising, burns)
- No history of trauma to explain fracture, However, it is not necessary to get **skeletal survey** in ambulatory patients >12 months with distal buckle fracture of radius/ulna or distal spiral or buckle fracture of the tibia/fibula

ALL children 0-11 months with any type of fracture except the following:

- Distal radial/ulna fracture or spiral fracture of the tibia/fibula (Toddler fracture) in a cruising child > 9 months with history of fall
- Linear, unilateral skull fracture in child >6 months with history of significant fall (fall from height > 3 feet or fall with caregiver landing on child)
- Clavicle fracture likely attributed to birth (acute fracture in infants <22 days old or healing fracture in infant <30 days old)

Children 0-24 months with any of the following fractures:

- Rib fracture
- Complex or ping pong skull fracture
- Humeral fracture with epiphyseal separation attributed to short fall (< 3 feet)
- Femur diaphyseal fracture attributed to fall from any height

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.

Approved by MSEC 6/1/19.

If comments about this guideline, please contact
Jennifer_Prince3@ykhc.org.

**Table 1: Alcohol Hangover (F10.120)**

- Poorly defined but universally understood; occurs the morning after a night of heavy drinking.
- In general, starts <12 hours after a binge of <24 hours.
- Sx: fatigue, thirst, headache, nausea, concentration problems, apathy, loss of appetite, dizziness, vomiting, heart pounding/racing.
- Requirements: HR<130, CP<160/100, RR<24, T<100.4, ambulatory, GCS=15, appropriate history, no tremor, no anxiety, no significant comorbidities.

Table 2: Inpatient Criteria

- CIWA>12, despite treatment with PB/BZD.
- Requiring high-dose sedatives or IV infusion to maintain CIWA<12.
- GCS<8 or hemodynamic instability.
- Persistent hyperthermia (T>100.4 F).
- Respiratory insufficiency (hypoxia, hypercapnia, etc.).
- Marked acid-base disturbance.
- Cardiac disease (heart failure, arrhythmia, evidence of ischemia, etc.).
- Severe electrolyte abnormality.
- Severe renal insufficiency or requiring high volume fluids.
- Evidence of rhabdomyolysis.
- Potentially serious infection (PNA, wounds, etc.).
- Severe GI pathology (GI bleed, pancreatitis, etc.).
- Severe psychomotor agitation (high risk to self or others, gravely disabled, etc.).
- Evidence concerning for Wernicke-Korsakoff Syndrome (oculomotor dysfunction, ataxia, severe malnutrition).
- Withdrawal despite very elevated serum ethanol.

Table 3: Phenobarbital Contraindications

- Absolute: Hx allergy, adverse reactions, or porphyria
Relative: current significant sedative level (including EtOH, BZD, or anti-psychotics)

Table 4: Phenobarbital (PB) Protocol

- Phenobarbital 260 mg IV then phenobarbital 130 mg IV every 30-40 minutes until CIWA score ≤ 12. No discharge meds.
OR (for very large/small patients)
- Phenobarbital 4 mg/kg IV (rounded to nearest 130 mg) then phenobarbital 2 mg/kg IV every 30 minutes until CIWA score ≤ 12. No discharge meds.
OR
- Either of the above via IM injection, with subsequent doses very 60-90 minutes.

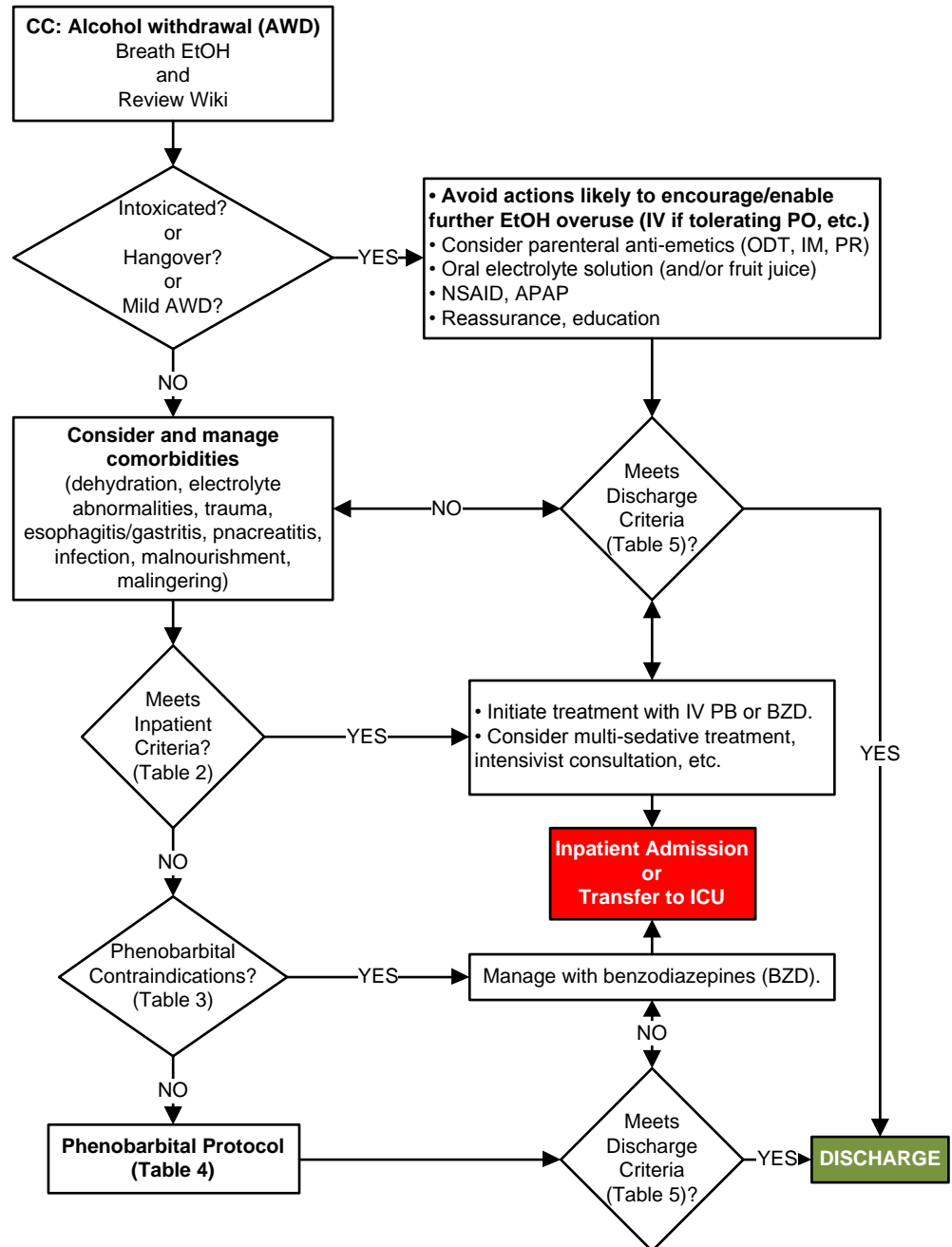
Adverse Effects:

- Transient asymptomatic hypotension
- Transient ataxia
- Transient lethargy

Table 5: Discharge Criteria

- No inpatient criteria present (Table 2).
- CIWA score <12.
- Awakens to voice or light touch.
- Oriented with no delirium.
- Ambulatory without assistance.
- Taking liquids without vomiting.
- No co-administered sedatives/anti-psychotics.
- No seizures after treatment.
- Likely compliant with important outpatient medications (including antibiotics, etc.).

Please see the Wiki for more information:
http://yk-health.org/wiki/Alcohol_Withdrawal_in_the_YK_Delta
http://yk-health.org/wiki/Phenobarbital_for_Alcohol_Withdrawal



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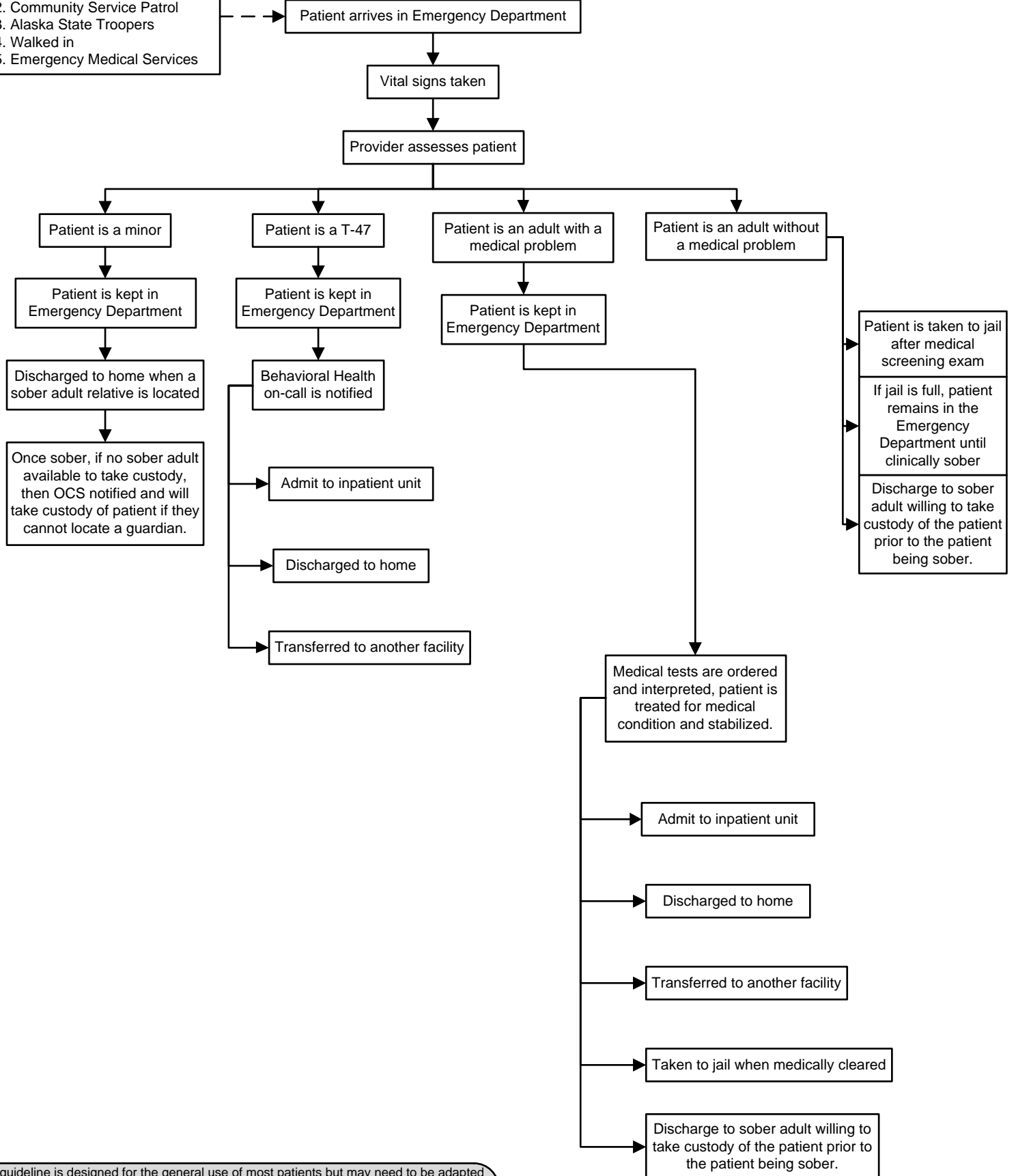
Approved by MSEC 10/9/19.

If comments about this guideline, please contact Megan_Young@ykhc.org.



Mode of Arrival:

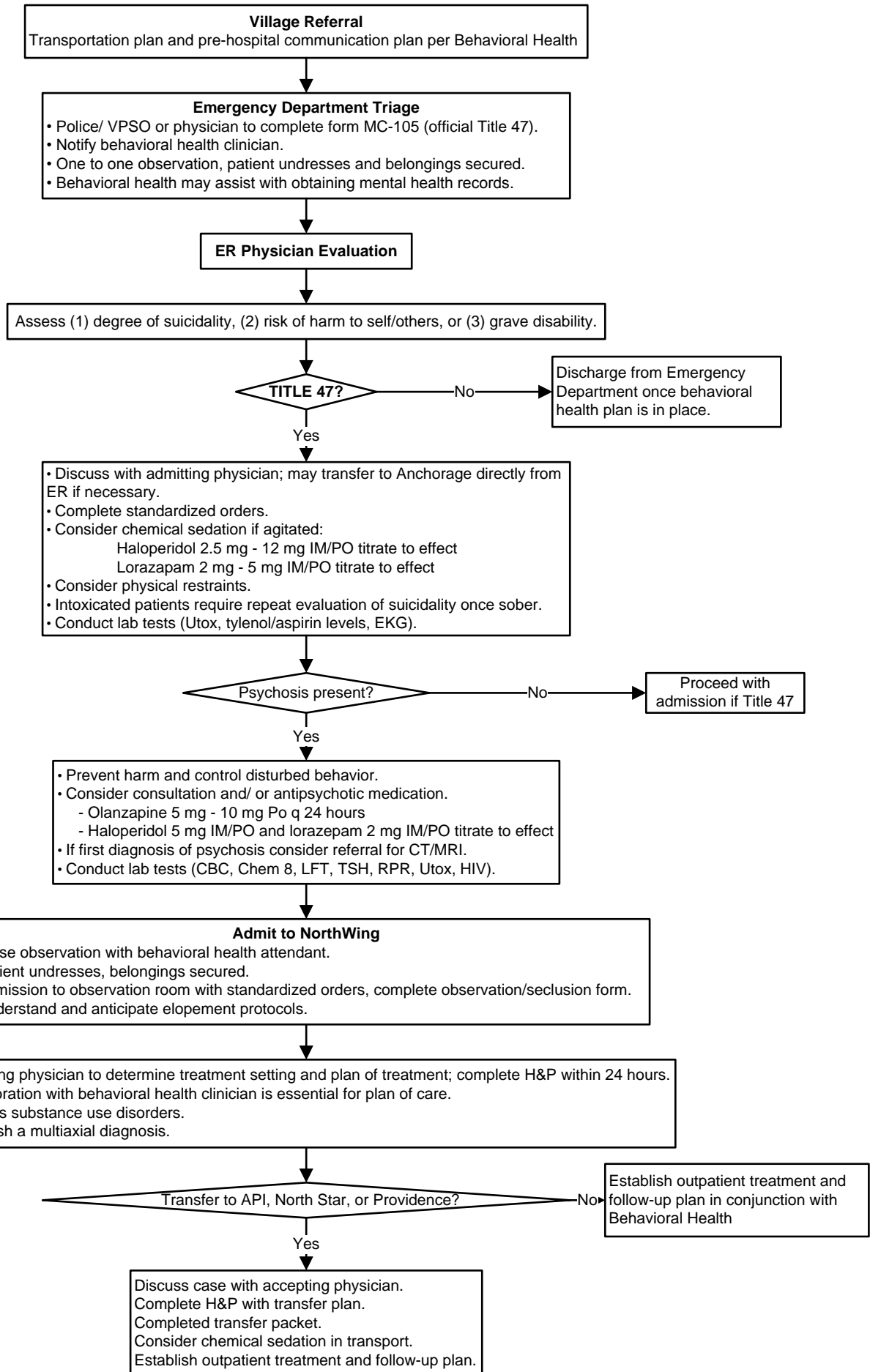
1. Bethel Police Department
2. Community Service Patrol
3. Alaska State Troopers
4. Walked in
5. Emergency Medical Services



This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.

Approved by MSEC ???/??/???

If comments about this guideline, please contact Ellen_Hodges@ykhc.org.



This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 6/22/11. If comments about this guideline, please contact Tara_Lathrop@ykhc.org.



Background

- Only 4-9% of those...labeled [penicillin-allergic] are currently allergic. It is important to identify those who are not allergic, because children mislabeled as penicillin-allergic have more medical visits, receive more antibiotic prescriptions, and have longer hospitalizations with more antibiotic-related complications.¹
- Up to 10% of children develop rashes while receiving antibiotics. Most are diagnosed...as allergic to the implicated antibiotic, and most continue to avoid the suspect antibiotic in favor of alternatives, which may be less effective, more toxic, and more expensive.²
- Do not label a patient as allergic to penicillin/amoxicillin unless he or she has true hives, anaphylaxis, or a life-threatening reaction. Please include photos of rashes in RAVEN.
- Please consult a pediatrician with any questions.

Anaphylaxis

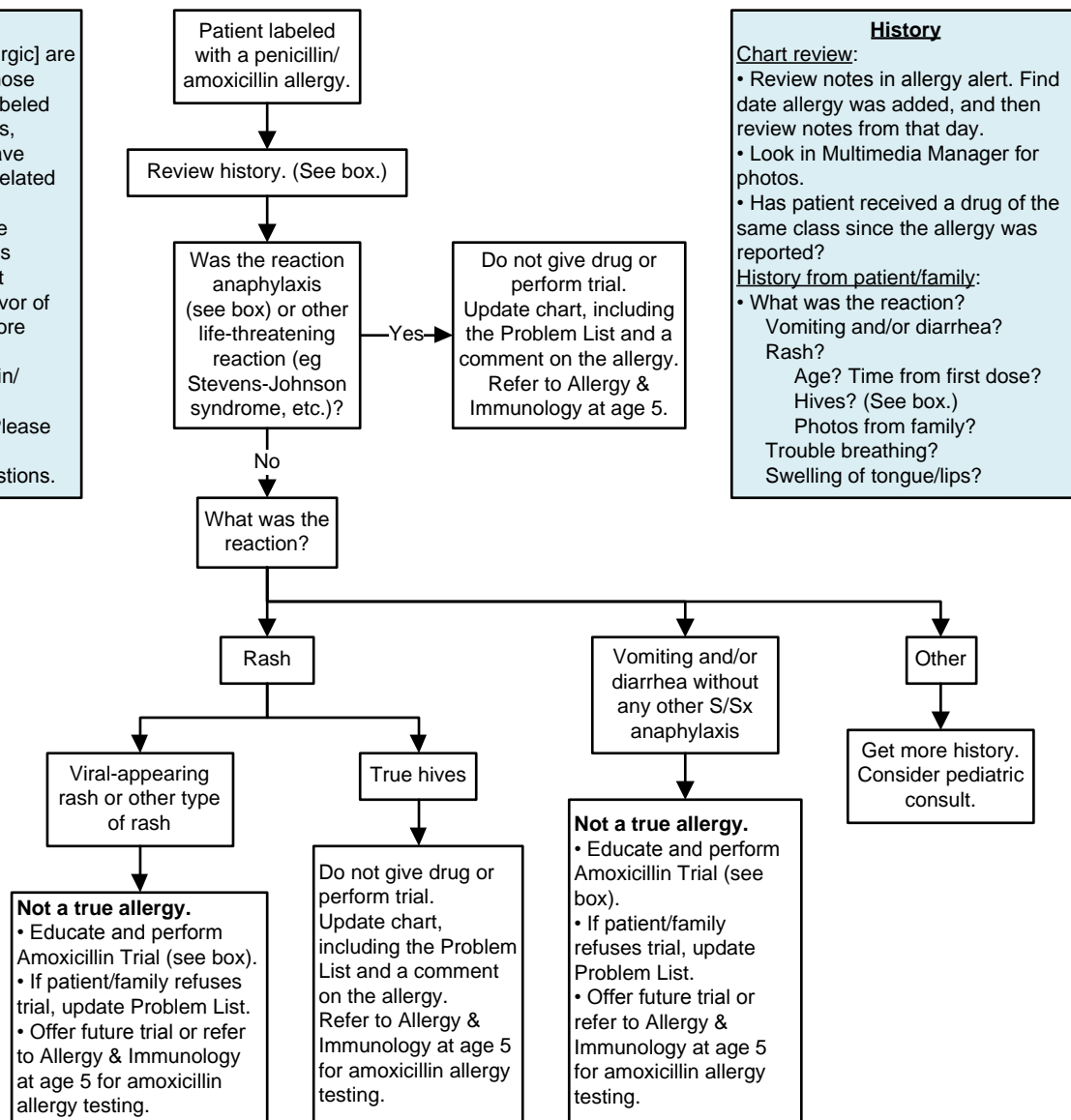
- Acute onset – several minutes to hours from exposure.
- Generalized hives, pruritis or flushing, swelling of lips/tongue/uvula, and at least one of the following:
 - Dyspnea, bronchospasm, stridor
 - Hypotension
 - Evidence of hypoperfusion of end-organs
 - Persistent crampy abdominal pain and/or vomiting

Hives vs Viral Rash

- True hives are raised, itchy, larger than dime-sized, come and go, move around the body, and change shape and size.
- Keep in mind that many parents refer to any rash as "hives." Get a description every time.
- A viral exanthem is typically diffuse, fine, pinpoint red dots and can be dense, coalesced, larger raised lesions. The rash typically covers the face and chest but can cover the whole body. The rash typically worsens and takes days to clear.

References

1. Kelso JM. "Provocation challenges to evaluate amoxicillin allergy in children." JAMA Pediatrics 2016;170(6):e160282.
2. Mill C, et al. "Assessing the diagnostic properties of a graded oral provocation challenge for the diagnosis of immediate and nonimmediate reactions to amoxicillin in children." JAMA Pediatrics. 2016;170(6):e160033.



History

- Chart review:**
- Review notes in allergy alert. Find date allergy was added, and then review notes from that day.
 - Look in Multimedia Manager for photos.
 - Has patient received a drug of the same class since the allergy was reported?
- History from patient/family:**
- What was the reaction? Vomiting and/or diarrhea? Rash? Age? Time from first dose? Hives? See box. Photos from family? Trouble breathing? Swelling of tongue/lips?

Amoxicillin Trial Procedure²

1. Obtain VS. Perform physical exam, including lung exam. Have appropriate dose of EpiPen or epinephrine available.
Epinephrine (1 mg/mL): 0.01 mg/kg (or 0.01 mL/kg) IM q5-15 minutes.
Per AAP recommendations:
 - 7.5-25 kg: use EpiPen Jr (0.15 mg)
 - ≥ 25 kg: use EpiPen (0.3 mg)
2. Calculate weight-based dose of amoxicillin. Give patient 10% of that dose.
3. Place patient in nearby room and instruct caregiver to notify staff of any changes in status.
4. If no reaction by 20 minutes, give patient remaining 90% of weight-based dose of amoxicillin.
5. Observe another 60 minutes. If no reaction, check VS and physical exam. If all stable, discharge home with regular course of drug.
6. Give patient and family amoxicillin trial education sheet.
7. Update allergy alert in RAVEN. Click the allergy in the banner. Right click over the drug name and choose "cancel." On the "reason" drop-down menu, choose "OK on Retrial."

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 5/8/19.

If comments about this guideline, please contact Jane_McClure@ykhc.org.



Neonatal Guidelines

For Neonatal Resuscitation Summary, see

https://yk-health.org/images/e/e4/Neonatal_resuscitation_summary.pdf

Newborn GBS Exposure.....	48
Neonatal Jaundice.....	49
Neonatal Glucose Screening.....	50



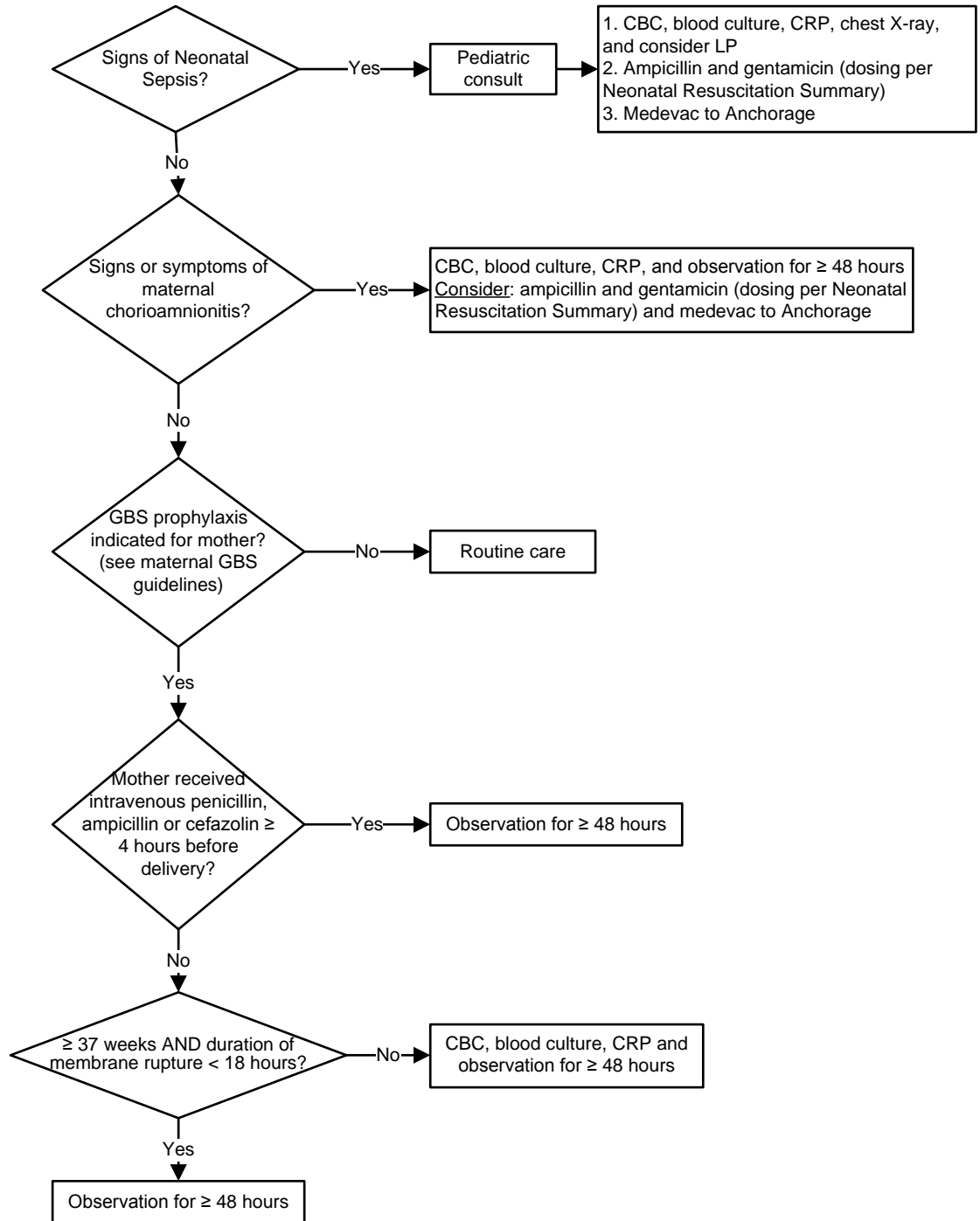
Signs of Neonatal Sepsis

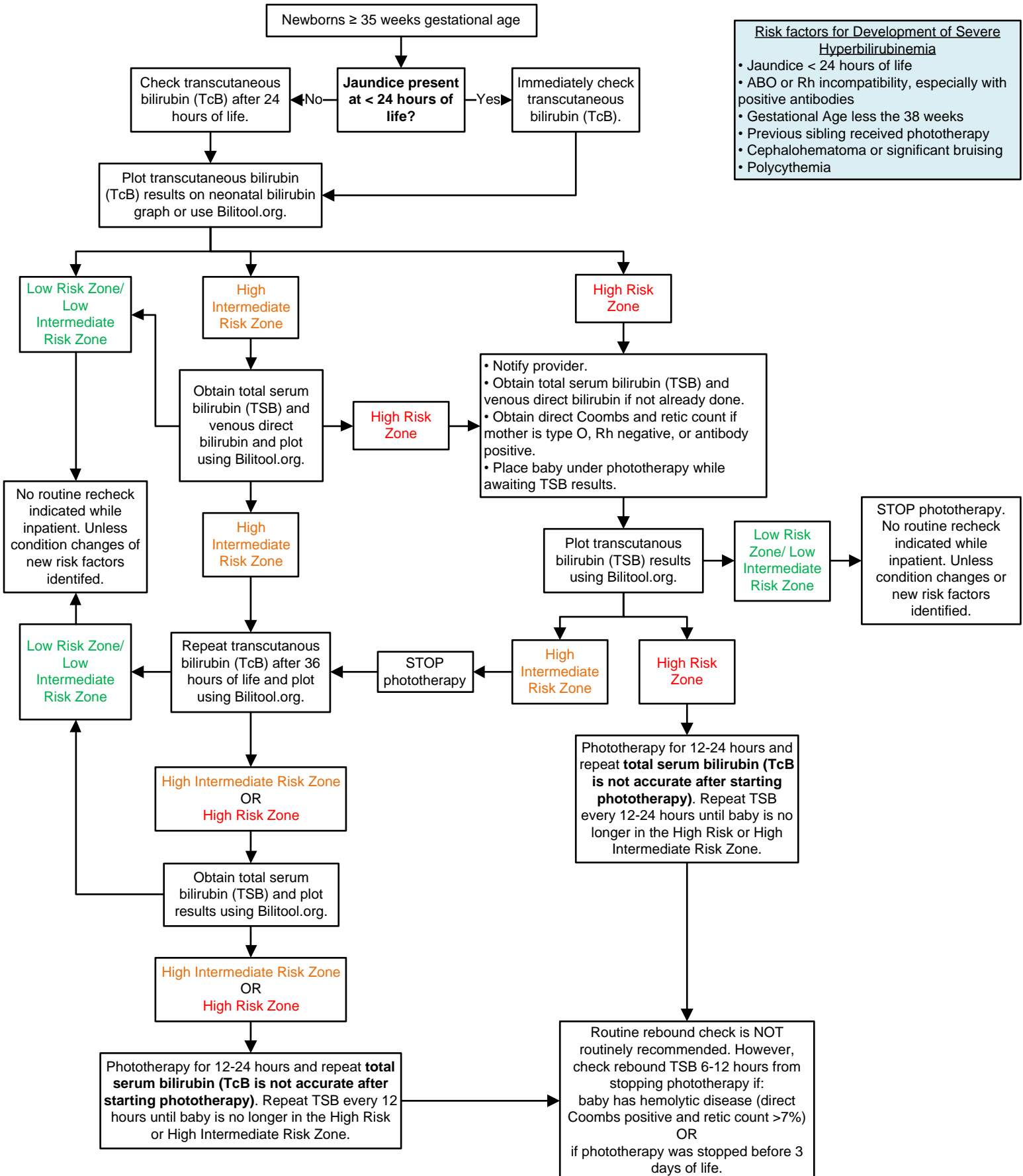
- Temp ≥ 100.4
- Irritability
- Poor Feeding
- Hypoglycemia
- Hypothermia
- Tachypnea
- Tachycardia
- “not acting right”

Intrapartum Maternal GBS Risk Factors

- Chorioamnionitis
- Previous infant with invasive GBS disease
- GBS during current pregnancy
- GBS status unknown
- Labor at < 37 weeks gestation
- Rupture of membranes ≥ 18 hours
- Intrapartum temperature > 100.4
- GBS bacteriuria

Note: If mother receives “inadequate prophylaxis” (eg. clindamycin, vancomycin, or erythromycin) for GBS status, provider may consider a limited work up of the neonate





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Approved by MSEC 6/1/19.

If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.



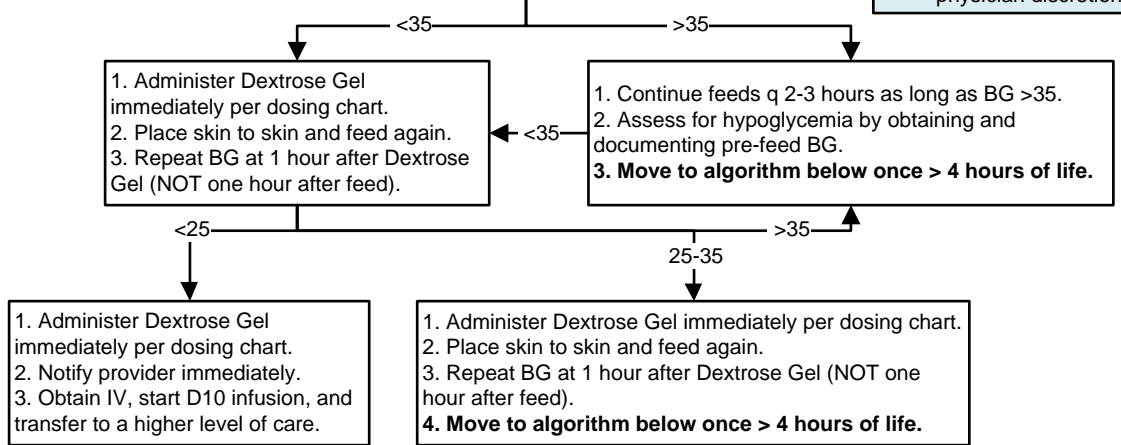
Target Glucose Levels for Age	
Birth to 4 hours of life	>35 mg/dl
>4 – 24 hours of life	>45 mg/dl
>24 – 48 hours of life	>50 mg/dl

- Symptoms of Hypoglycemia in Newborns:**
- Irritability
 - Tremors
 - Jitteriness
 - Exaggerated Moro Reflex
 - High Pitched Cry
 - Seizures
 - Lethargy
 - Floppiness
 - Cyanosis
 - Apnea
 - Poor Feeding

0-4 HOURS OF AGE

At Risk Infants (See Box)
Begin feeding within one hour of birth. First glucose should be obtained 30 minutes after completion of first feed.

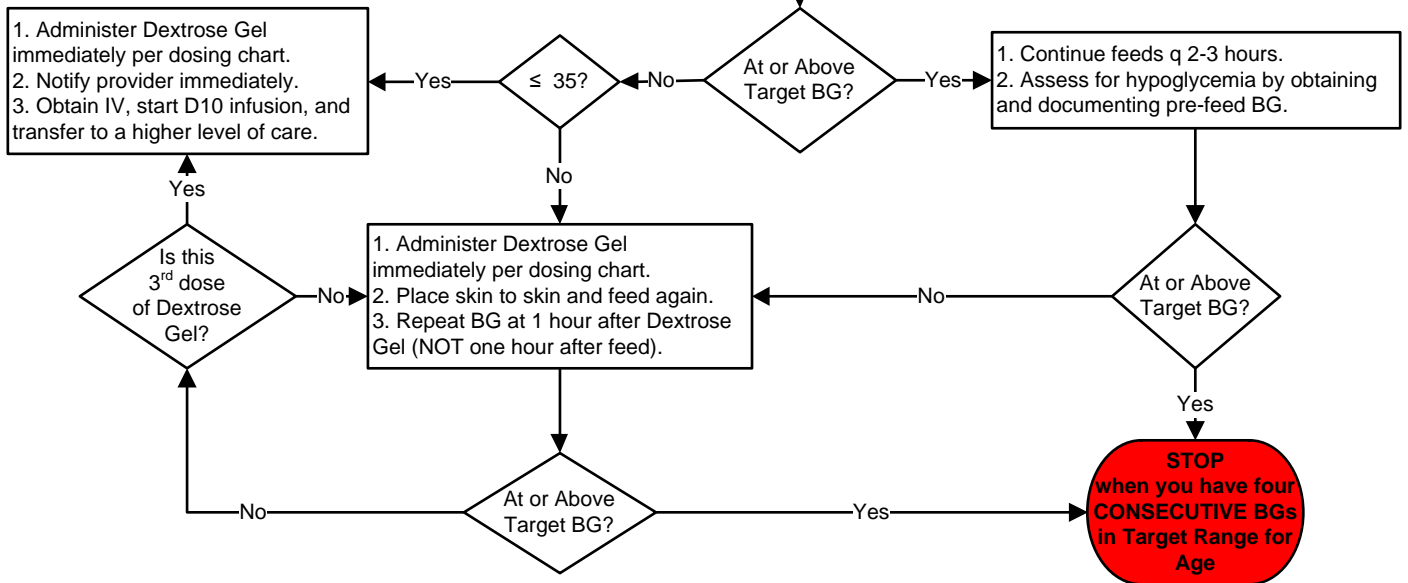
- Risk Factors and Indications for Screening of Asymptomatic Newborns:**
- SGA (<10%ile BW)
 - LGA (>90%ile BW)
 - Infant of Diabetic Mother
 - Late Preterm (34 0/7 – 36 6/7)
 - Other clinical situation per physician discretion



DEXTROSE (40%) GEL DOSING	
Birth Weight	Dose
≤ 2 kg	1 mL
>2-2.5 kg	1.25 mL
>2.5-3 kg	1.5 mL
>3-3.5 kg	1.75 mL
>3.5-4 kg	2 mL
>4-4.5 kg	2.25 mL
>4.5-5 kg	2.5 mL

> 4 - 48 HOURS OF AGE

1. Continue feeds q 2-3 hours.
2. Assess for hypoglycemia by obtaining and documenting pre-feed BG.



If infant has severe symptoms or BG is <25 after first Dextrose Gel dose: THIS SCREENING PROTOCOL NO LONGER APPLIES.

- Give Dextrose Gel dose.
- Start IV.
- Give D10 2 mL/kg bolus at 1 mL/minute.
- Start D10 infusion at 80 mL/kg/day.
- Goal is to keep baby's serum glucose at 60.
- Check glucose 30 minutes after each bolus or rate change and Q1-2h until stable.
- If glucose remains low, give another D10 2 mL/kg bolus and increase hourly rate by 1 mL/hour.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 12/11/19.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.



Pediatric/Neonatal Reference

Induced Sputum Collection.....	52
Infant Hip Exam and Surveillance.....	53
Endocrine Emergencies.....	54
Endocrine Referrals/Labs and Follow-up Recommendations.....	57
Diabetic Ketoacidosis Management.....	60



POLICY: To obtain sputum samples safely and effectively in pediatric patients

PROCEDURE: Induced Sputum Collection in Pediatric Patients

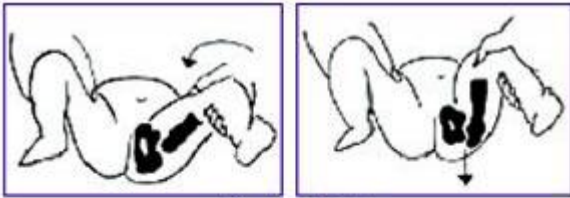
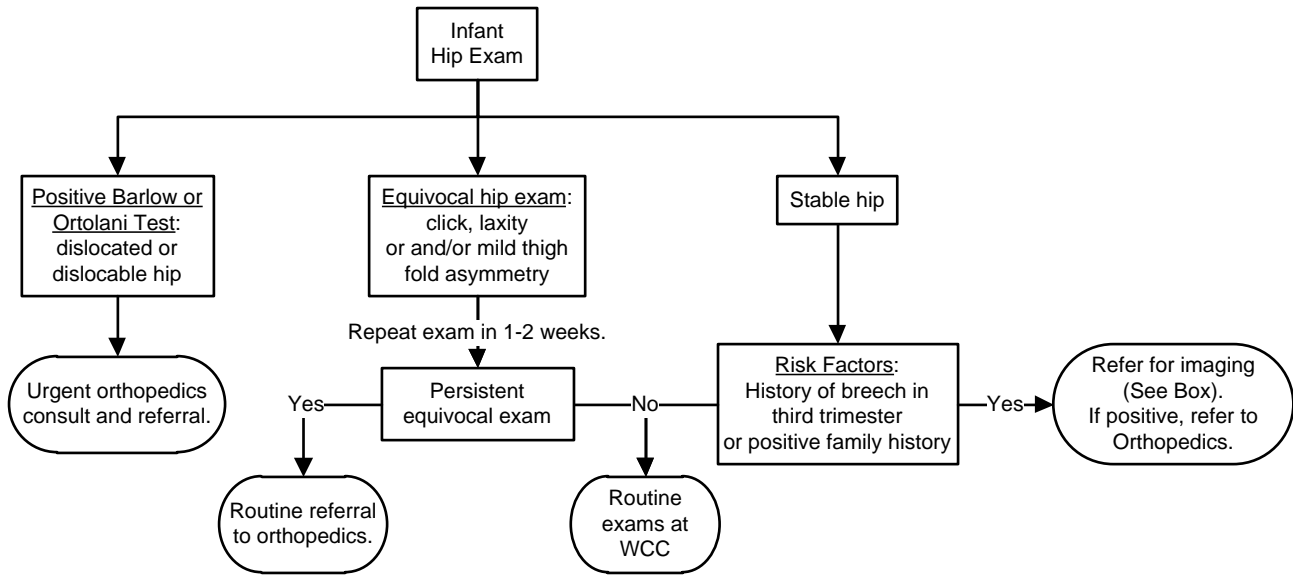
1. Premedicate with albuterol 2.5 mg/3mL (0.083%) solution – 3 mL via nebulizer to induce bronchodilation and better facilitate delivery of hypertonic saline. This can help prevent the development of bronchospasm during delivery of hypertonic saline. An MDI with a mask and spacer is also an acceptable substitution.
2. Give 5 mL of 3% hypertonic saline solution via nebulizer over period of at least 10 minutes as prolonged administration has been shown to yield better samples.
3. If patient has copious nasal secretions, consider nasal suction with olive tip.
4. Obtain mucus specimen trap with suction catheter appropriate for patient size. Measure from tip of nose to the tragus for depth of catheter insertion and obtain sample via suction of the nasopharynx. The goal is to induce a gag and then a cough. Sample is expected to be blood-tinged.
5. Place specimen in appropriate collection container for desired test.
 - a. For r/o pulmonary tuberculosis, collect 3 induced sputum samples at least 8 hours apart – one must be first morning sample. Send for Acid Fast Bacilli Smear and Culture. Sample must be a minimum of 5 ml, may add sterile water to achieve desired volume.
 - b. Standard sputum cultures do not have a minimum volume and can be placed in a sterile specimen cup.

***Contraindications to above procedure:** oxygen saturation of <92% despite supplemental oxygen therapy, inability to protect the airways, severe bronchospasm, or designation as inappropriate by the clinician for another reason (eg, midface trauma). After exclusion or resolution of these conditions, sputum induction can be considered.

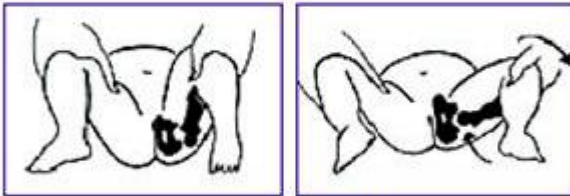
This protocol is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.

Approved by MSEC 4/26/18.

If comments about this protocol, please contact Amy_Carson-Strnad@ykhc.org.



Barlow Test



Ortolani Test

The Barlow test is an attempt to dislocate the hip. If positive, you will feel the hip sublux or dislocate. The Ortolani test is the maneuver to reduce a dislocated hip. If positive, you will feel a clunk.

Imaging

- Hip ultrasound: at 6 weeks to 4 months of age.
 - Performed at Alaska Regional Hospital
 - Place order for "Refer to Pediatric Clinic External (MRI / EEG / VFSS / Hip US)" with brief history.
 - Send a RAVEN Communication to Chronic Peds Case Manager Pool about the referral and level of importance.
- X-ray, AP & Frogleg: over 4 months of age.
 - Performed at YKHC
 - Place a future order for "Bilateral Hip Complete X-ray" and put in comments "AP and frog leg views to rule-out hip dysplasia."
 - Send a RAVEN Communication to Chronic Peds Case Manager Pool stating the order was placed and requesting an appointment for this with a pediatric provider in Bethel.

Orthopedics Consults & Referrals

- Consultation:
 - Native patients: contact ANMC orthopedic surgeon on call at (907) 563-2662 (*97).
 - Non-native patients: contact Ken Thomas at Anchorage Fracture & Orthopedics at (907) 563-3145.
- Referral:
 - Place an order for "Refer to Orthopedics External" with brief history. Note the orthopedist who was consulted. Indicate where the referral should be sent.
 - Send a RAVEN Communication to Chronic Peds Case Manager Pool about the referral and level of importance.



Hypoglycemia

If low BG and cause unknown, **GET CRITICAL SAMPLE PRIOR TO TREATMENT!**

Labs tested during hypoglycemia are critical to identifying cause and preventing recurrence.

- Serum critical sample:
 - BMP, insulin, C-peptide, Cortisol, GH
 - Free fatty acids, β -hydroxybutyrate, acetoacetate
 - Lactate, ammonia, Serum (sulfonylureas), total and free carnitine
- At any time:
 - Acylcarnitine profile, serum amino acids
- Urine – as quickly after hypoglycemia as possible
 - Urine ketones
 - Urine organic acids
- If suspect hyperinsulinism, perform glucagon stim test (administer 0.03 mg/kg, max 1 mg) and measure lab glucose at 0, 15, and 30 minutes.

Acute Treatment: obtain critical sample and correct hypoglycemia within 10-15 minutes.

- Glucose gel per eCHAM guidelines.
- IV or IO dextrose bolus (D10% or D25%) followed by continuous infusion of dextrose IVF and frequent blood sugar checks (Q1-2h or more frequently initially)
 - D25%: 2-4 mL/kg; D10%: 5-10 mL/kg. (For neonates, give D10% 2 mL/kg.)
- If insulin-mediated, treat with glucagon 0.03 mg/kg up to 1 mg OR for patients < 20 kg give 0.5 mg IM and for patients > 20 kg give 1 mg IM.

Adrenal Insufficiency

Critical Sample before treatment: cortisol

- If suspect primary adrenal insufficiency, include ACTH, renin, aldosterone.
- If suspect CAH, include 17OH-progesterone or CAH-6b panel (send-outs).
- Also check BMP, CBC, U/A.

Treat while awaiting results.

- Normal Saline Bolus 20 mL/kg.
- Hydrocortisone 50-100 mg/m² IV bolus (lower end of range if less sick, higher end of range if more sick) followed by 50-65 mg/m²/day, divided q6h
 - If no IV access, SoluCortef IM or Dexamethasone IM
 - SoluCortef 50-65 mg/m² IV/IM – short acting
 - ◆ At this dose, adequate mineralocorticoid activity to replace moderate doses of oral fludrocortisone (80 mg HC = 0.2 mg fludrocortisone)
 - Dexamethasone 1.5-2 mg/m² IV/IM—long acting
 - ◆ No mineralocorticoid activity
 - ◆ Does not cross react with cortisol in lab assay so can use Dex if unable to get cortisol before treatment and then do Cortrosyn stimulation
- test after treatment
 - SoluMedrol 10-15 mg/m² IV/IM—intermediate acting
 - ◆ No mineralocorticoid activity
- For milder presentation, ex. known diagnosis with flu symptoms, but hemodynamically stable, can skip load, use 50-65/m²/day, divided every 6 hours.

Known adrenal insufficiency (ie CAH or hypopituitarism) and adrenal crisis

- Loading dose hydrocortisone IV or IM 50 mg/m² x1 then 50 mg/m²/day divided q6h
- If BSA unknown or for more rapid dosing, can use age:
 - <3 y.o.: 25 mg IM/IV bolus followed by 25-30mg/day divided q6h**
 - 3-12 y.o.: 50 mg IM/IV bolus followed by 50-60mg/day divided q6h**
 - >12 y.o.: 100 mg IM/IV bolus followed by 100mg/day divided q6h**
- If severely ill or unable to take PO due to continued emesis, but no IV, can give SoluCortef 30-50 mg/m² IM (better for CAH because has fludrocortisone activity at high doses, but only lasts about 6 hours), or Dexamethasone 1.5-2 mg/m² IM.
- If less ill (ie, not in crisis but needs stress doses because of fever or vomiting), can give double or triple oral dose (usually double if fever, triple if vomiting or more sick).
- Normal saline bolus 20 mL/kg/ IV then D5NS or D10NS (depending on blood sugar) at 1.5 x maintenance.
- Monitor electrolytes, BP.
- For anesthesia: begin triple dose the night before the procedure, then 30-50 mg/m² IV or IM on call to the OR prior to anesthesia; and continue stress dosing for 24 hours after procedure.



Hypercalcemia

Critical sample: Ca, Phos, iPTH

• Other labs: 25-OH-D, 1,25 (OH)₂D, urine Ca/Cr, CBC

Treatment for severe hypercalcemia (Ca >14): same initial treatment independent of the cause

- Saline diuresis: NS bolus followed by 2.5-3 L/m²/day
 - Saline diuresis generally works rapidly, but only as long as it is continued, and usually does not normalize calcium.
- Consider calcitonin 4 units/kg IV/IM/SQ q12h
 - Tachyphylaxis common (often 2nd-line therapy)
 - Common side effects: nausea, vomiting, flushing
- May need bisphosphonates.
- Discontinue any medications known to cause or worsen hypercalcemia.
- Avoid immobilization.

If mild/moderate (Ca <13-14) and no contraindication to PO: 2-3 L/day water plus PO salt to promote Ca excretion.

Therapy specific for underlying disorder

- Hyperparathyroidism → parathyroidectomy
- Glucocorticoids → effective if associated with hematologic malignancy or diseases with increased 1,25 (OH)₂ vitamin D.

Hypocalcemia

Critical sample: Calcium, Phosphorus, Magnesium, intact PTH before treatment.

- Ca and PTH need to be simultaneous, and PTH *MUST* be obtained while Ca is low.
- Collect urine Ca/Cr while Ca low if possible.
- If there is reason to suspect low albumin, check ionized calcium or calculate corrected calcium using albumin
 - Corr Ca = measured calcium + [0.8 (4-albumin)]
- Other useful labs: CMP (kidney, liver, bone function), 25-OH-D, 1,25 (OH)₂D, urine Ca/Cr.

Treatment if Symptomatic - tetany, seizure, apnea, heart failure, laryngospasm.

- *Slow* (<1 ml/min) IV infusion 10% Ca gluconate 1 mL/kg
 - 100 mg/ml Ca Gluconate = 9 mg/mL elemental Ca
 - Cardiac monitoring (bradycardia, shortened QT_c); close attention to infusion site if not central IV (risk of tissue necrosis if peripheral IV infiltration)
- If Mg low, replace with 0.1-0.2 mL/kg 50% Mg Sulfate

If not acutely symptomatic, can do more comprehensive evaluation first to determine cause and appropriate oral treatment.



Thyroid Storm (Thyrotoxic Crisis)

Score ≥ 45 \rightarrow highly suggestive of thyroid storm; 25–44 \rightarrow thyroid storm; and < 25 \rightarrow thyroid storm unlikely.

Thermoregulatory dysfunction	Score
Temperature (C)	
37-37.7	5
37.7-38.3	10
38.3-38.8	15
38.8-39.3	20
39.4-39.9	25
40	30
Central nervous system effects	
Mild - agitation	10
Moderate - delirium, psychosis, extreme lethargy	20
Severe - seizure, coma	30
Gastrointestinal-hepatic dysfunction	
Moderate - diarrhea, nausea/vomiting, abdominal pain	10
Severe - unexplained jaundice	20
Cardiovascular dysfunction	
Tachycardia (heart rate/min)	
99-109	5
110-119	10
120-129	15
130-139	20
≥ 140	25
Congestive heart failure	
Mild - pedal edema	5
Moderate - bibasilar rales	10
Severe - pulmonary edema	15
Atrial fibrillation	10
Precipitant history	
Negative	0
Positive	10

Critical Sample: **Free T4 and TSH**, run STAT

- Other labs: TBII, TSI, TPO antibodies
- Useful to measure: CMP (glucose, liver function), CBC (acute infection?), urine pregnancy test

Acute Treatment

- Oxygen
- Adrenergic blockade (if not in CHF) - goal HR < 100
 - Propranolol (PO 2 mg/kg/day div q6-8h or IV 0.01 mg/kg/dose (max 5mg) over 10-15 min).
 - If contraindication to propranolol (ie asthma), can use atenolol (cardioselective) with caution.
- IV fluids (cooled if necessary)
- Cooling blankets
- Antipyretics should be avoided when possible.
- Sedation – phenobarbital stimulated thyroid hormone clearance.
- Hemodynamic support/treat CHF if present.

Longer term treatment:

- Block thyroid hormone synthesis and release
 - Thionamides – block thyroid hormone synthesis
 - ◆ PTU (propylthiouracil): black box warning in peds
 - ◆ Methimazole : ~0.8 mg/kg up to 60 mg loading, then ~0.4 mg/kg up to 30 mg every 6 hours (5, 10 mg tabs)
 - High Dose Iodine – blocks release of already formed thyroid hormone
 - ◆ Should be delayed until 1-2 hours after thionamide, to prevent transient increase in thyroid hormone levels
 - ◆ SSKI (Lugol solution) 5 drops every 6-12 hours
 - ◆ Use will necessitate delay in radioactive iodine treatment if that is desired
- Block peripheral conversion of T4 to T3
 - Corticosteroids (stress dose HC or equivalent)
 - Propranolol
 - Iodinated contrast agents

Identify and treat precipitating event causing severe decompensation.

- Infection, pregnancy, emotional stress, DKA, pulmonary embolism, CVA, trauma, hypoglycemia.

Assess for underlying cause

- Grave's disease, functioning thyroid nodule ("hot nodule").



Please remember that this is just a list of lab tests often recommend prior to seeing patients. These are not physician orders. However, they are recommended prior to specialty appointments.

Congenital Adrenal Hyperplasia (CAH): meds are often adjusted based on labs/growth/bone age

- 17-OH-P (17-OH hydroxyprogesterone) often every 3-6 months Infants/toddlers often ordered q 1-3 months. (Goal: ~300-900)
- Androstenedione: Often every 3-6 months. Infants/toddlers often ordered every 1-3 months. (Goal: w/in normal range)
- Renin Activity: Often every 3-6 months. Renin hard to obtain in villages as must be sent frozen. (Goal: w/in normal range)
- Bone age after 2-3 years of age, then annually
- Accurate height and weight measurements each visit
- F/u in endo clinic every 3 to 6 months

Newborn with + FH of CAH but no ambiguous genitalia (ie no physical s/s of CAH):

- Newborn screen after 24hrs of life (in all infants).
- Serum 17OHP around day 3-4 of life (17OHP levels are normally high during the first 2-3 days after birth but by the 3rd day, levels in healthy infants fall and levels in affected infants rise to diagnostic levels).
- Alert state newborn screening program of patient at risk of CAH.
- Measure serum electrolytes prior to hospital discharge and at 5 and 10 days of age (hyponatremia and hyperkalemia are usually not present before 7 days of age and salt-losing crisis will typically occur in the second week of life).
- After newborn is sent home, parents should be cautioned to watch for signs of salt-losing crisis including vomiting, diarrhea, lethargy, dehydration, decreased PO intake.
- If positive newborn screen or elevated 17OHP, patient should be seen immediately and consult endocrinologist on call.

Congenital Hypothyroid/Hashimoto Thyroiditis/Goiter: meds are usually adjusted based on labs

General Information

- When a med dosage change is made, labs are usually repeated in 4-6 weeks and then again before the next clinic visit.
- Under certain circumstances, a thyroid ultrasound is sometimes ordered – not routine.
- Growth records on all children with any thyroid condition should be plotted.
- Often other thyroid labs are done as part of initial workup, but depends on what the presumptive diagnosis is. (TSH, Antithyroid peroxidase AB, etc.)

Specific Labs – Goal: normal Free T4 and TSH (infants should have a free T4 at least once).

Congenital Hypothyroidism

- FT4 & TSH 2weeks after dose started.
- 0-6 Months: FT4 & TSH every month
- 6-12 Months: FT4 & TSH every 2 months
- 1-3 Years: FT4 & TSH every 3 months

Acquired Hypothyroidism

- FT4 & TSH 4-6 weeks after starting med or after dose change
- FT4 & TSH every 6 months routinely

Central Hypothyroidism (ie, hypopituitarism)

- Free T4 every 4-6 months routinely

Hypopituitarism/Septooptic dysplasia/Optic nerve hypoplasia: (any combination of deficiencies of GH, TSH, ACTH, LH/FSH, ADH)

- Labs to follow depend on deficiency
- If panhypopituitarism
 - IGF-1 every 6-12 months if on GH (see below).
 - Free T4 every 4-6 months (see above).
 - May check BMP if concerns about inadequate adrenal hormone replacement.
 - Na levels if DI depend on thirst—if intact thirst, Na level every 3-4 months; if non-intact thirst, may need Na every 2-4 weeks.
 - LH/FSH pediatric, estradiol ultrasensitive or total testosterone at approximately age 12.
 - Accurate height and weight plotted on growth chart.

Work-up of Short Stature

- X-ray: bone age XR left hand/wrist
- bloodwork: TSH, free T4, TTG IgA, IgA, CMP, CBC, IGF-1, IGFBP-3, ESR. Also do chromosome microarray if a girl.
- urine: urinalysis (looking for RTA)



Children on Growth Hormone Injections: (GH deficiency/Turners/Noonan's/Prader-Willi Syn/SGA/Panhypopituitarism/CRF)

- Free T4 and IGF-1
 - Usually obtained q 6-12 months. Other labs including these may be done for initial diagnosis which may include GH stimulation tests.
 - GH dose will be adjusted based on IGF-1, growth pattern and weight.
- Bone age: includes left hand and wrist – please have radiology send via PACS to ANMC.
 - Initially and approximately every year.
- Accurate height and weight
 - Crucial to have correct plotting on growth record. (Lengths are done on infants and toddlers less than 2 years of age or if not able to stand well; plotted on 0-24mo WHO growth chart; heights are done when the child is over age 2 and plotted on the CDC 2-20 growth chart.)

Insulin Resistance/Obesity: goal is to prevent these children from becoming diabetic; not usually managed in endocrine clinic unless there is an endocrine condition (diabetes, prediabetes, PCOS, dyslipidemia); hypertension is managed by PCP or nephrology.

** Refer to publications in *Pediatrics*.

- Screening fasting plasma glucose, HbA1c every 2 yrs. OGTT if needed (Fasting Insulin **not** routine).
 - Fasting plasma glucose <100 is normal; 100-125 = prediabetes, >125 = diabetes.
 - OGTT-fasting plasma glucose, then drink 1.75 g/kg (max 75 g) of Glucola (within 10-15 min) and repeat plasma glucose in 2 hours.
 - ◆ Fasting 101-125 = impaired fasting glucose; over 125 = diabetes
 - ◆ 2 hour 141-199 = impaired glucose tolerance; over 199 = diabetes
 - HbA1c: 5.7% to 6.4% = prediabetes; >6.4%, likely diabetes but not necessarily diagnostic in children
- Fasting lipids initially and then per recommendation, usually every 2 years
 - If abnormal, repeat after 2 weeks but before 3 months (see below).
 - If still abnormal, dietitian referral.
- Liver function tests-AST/ALT every 2 years.
- Growth records with accurate height & weight plotted-also calculate and plot BMI.
 - Only obtain TSH & Free T4 initially if patient is showing growth deceleration.
- All patients should have initial evaluation and then monthly appointments with a dietitian whenever possible.
 - Daily activity, one hour/day with lifestyle change.
 - The more they see their primary provider and dietitian, the more likely they are to comply with changes in dietary and activity levels.

Type 2 Diabetes

- At diagnosis: HgbA1C. Other labs depend on the individual case.
 - Criteria for dx of diabetes (per ADA):
 - ◆ FPG > 125 (no caloric intake for 8 hrs)
 - ◆ OR 2-hr glucose >199 during an OGTT
 - ◆ OR HbA1c >6.4% (**controversial for dx in children)
 - ◆ **the above 3 criteria require repeat testing in the absence of unequivocal hyperglycemia)
 - ◆ OR classic symptoms of hyperglycemia or hyperglycemic crisis and a random plasma glucose >199
- HbA1c every 3 months: Goal A1c <7%
- Fasting lipid panel soon after diagnosis and every 5 years if normal.
 - If abnormal, repeat after 2 weeks but before 3 months (see below).
 - If still abnormal, dietitian referral.
- Random urine microalbumin/creatinine soon after diagnosis and annually.
 - If abnormal, repeat with first morning urine MA/Cr or overnight collection; if still abnormal, referral to nephrology.
- Eye exam soon after diagnosis and annually.
- Dental exam annually.
- Dietician visit q 3-6 months.
- RN-CDE for education.



Type 1 Diabetes Mellitus

New Diagnosis: HbA1c, BMP, c-peptide, insulin level, other labs depending on patient and presentation (for diagnostic criteria, see above; type 1 distinguished from type 2 based on presentation, physical exam, sometimes on labs such as c-peptide and diabetes antibodies)

- Hemoglobin A1C: Every 3 months (lifetime standard of care for DM)
 - This lab helps determine the overall status of blood glucose readings over a 3 month period and gives an average of all readings.
 - A1c goal is generally 7%; infants and toddlers, tolerate A1c goal of ~8%.
- Fasting Lipid Panel
 - Initial check soon after diagnosis, once blood sugars stabilized, if over 2 years old.
 - Repeat fasting lipid panel every 5 years if initial is normal (starting at 9 years old).
 - If abnormal, fasting lipid panel should be repeated at least 2 weeks later but less than 3 months later to confirm.
 - If confirmed abnormal, referral to dietician for lifestyle/diet modification.
- Thyroid and Thyroid Auto Antibodies
 - Obtain Free T4 & TSH at diagnosis and annually.
 - Antibodies not routine, but if done it includes thyroid peroxidase AB.
- Celiac screening
 - TTG IgA and total serum IgA soon after diagnosis.
 - Annually for the first 5 years, more frequent if symptoms.
- Eye exam
 - Initial eye exam soon after diagnosis to detect cataracts or major refractive errors
 - Annual eye exam should start at:
 - ◆ 9 years if 5-year duration diabetes.
 - ◆ 11 years if 2-year duration diabetes.
 - ◆ After 2 years duration if diabetes diagnosed in an adolescent.
- Urine microalbumin/creatinine screen
 - Spot urine microalbumin/creatinine annually after age 10 years.
 - If abnormal, repeat with first morning void or an overnight urine collection.
- Flu Vaccine recommended yearly.
- Dental evaluation recommended yearly.
- RN CDE referral for all aspects of Diabetes education. Work closely with CDE if patient is on Lantus + rapid acting insulin intensive regimen-ideally.
- Dietitian CDE for dietary/CHO counting/activity/insulin (learning to count carbs).
- All children should see Pediatric Endocrinologist every 3 months (may alternate depending on needs of family/primary provider).
 - Families need to know when to do Urine Ketones: if BS over 300 or if ill.

Table 9-1. Acceptable, Borderline-High, and High Plasma Lipid, Lipoprotein and Apolipoprotein Concentrations (mg/dL) For Children and Adolescents*

NOTE: Values given are in mg/dL; to convert to SI units, divide the results for TC, LDL-C, HDL-C and non-HDL-C by 38.6; for TG, divide by 88.6.			
Category	Acceptable	Borderline	High+
TC	< 170	170-199	≥ 200
LDL-C	< 110	110-129	≥ 130
Non-HDL-C	< 120	120-144	≥ 145
ApoB	< 90	90-109	≥ 110
TG			
0-9 years	< 75	75-99	≥ 100
10-19 years	< 90	90-129	≥ 130

Category	Acceptable	Borderline	Low*
HDL-C	> 45	40-45	< 40
ApoA-I	>120	115-120	<115

*Values for plasma lipid and lipoprotein levels are from the National Cholesterol Education Program (NCEP) Expert Panel on Cholesterol Levels in Children. Non-HDL-C values from the Bogalusa Heart Study are equivalent to the NCEP Pediatric Panel cut points for LDL-C. Values for plasma apoB and apoA-I are from the National Health and Nutrition Examination Survey III.

*The cut points for high and borderline-high represent approximately the 95th and 75th percentiles, respectively. Low cut points for HDL-C and apoA-I represent approximately the 10th percentile.



General Guidelines and Definitions

Disclaimer: These are guidelines—not hard and fast rules. Some patients, such as younger children (<5 years) and poorly controlled diabetics (HbA1c >10%), may not adhere to the usual course and guidelines may need to be modified. The below categorizations of mild, moderate, and severe are not the consensus-statement published definitions, but are more “real-world” categorizations.

DKA: A state of *insulin deficiency* and characterized by *severe depletion of water and electrolytes* (see Appendix 1). The primary goals are to **treat the insulin deficiency** (which will correct the acidosis and reverse the ketosis) and to **replace fluids and electrolytes**. Other goals include gradually achieving euglycemia, monitoring for complications of DKA, and identifying and treating any precipitating event.

Clinical signs of DKA: dehydration, tachycardia, tachypnea, Kussmaul respirations, acetone breath odor, nausea, vomiting, abdominal pain, blurry vision, confusion, drowsiness, progressive decrease in level of consciousness, loss of consciousness.

Biochemical criteria for DKA: hyperglycemia (BG > 200mg/dl); venous PH <7.3 or serum bicarb <15, beta-hydroxybutyrate ≥3 or moderate/large ketonuria

Diabetic ketosis without significant acidosis: Urine ketones moderate/large, nausea +/- vomiting, pH >7.3, Bicarb >15

Management:

- Oral or IV hydration, depending on vomiting, ability to tolerate PO.
- Supplemental insulin (Novolog, SQ: 0.1-0.2 units/kg every 4 hours) in addition to patient's usual long-acting insulin (ie Lantus, Tresiba).
- Often managed as outpatient at home or in Emergency Department.
- In established patient with good family support, sometimes managed at home by phone under guidance from on-call physician with no knowledge of laboratory results other than self-monitored blood glucose and urinary ketones.

Mild-moderate DKA: Urine ketones mod/large, persistent vomiting, pH 7.2-7.3, Bicarb 10-15

Management:

- Oral or IV hydration (usually IV).
- Supplemental insulin should be used (Novolog SQ 10% of total daily insulin dose or 0.1-0.2 units/kg every 2 hours[†]) in addition to the patient's usual long-acting insulin (ie Lantus, Tresiba).
- May require admission and management with IV regular insulin infusion (0.05-0.1 units/kg/hr).

Severe DKA: Urine Ketones Large, pH <7.2, Bicarb <10 OR mild/moderate DKA with other organ system impairment (altered mental status, impaired renal function, respiratory distress, compromised circulation) (published definition: pH <7.1, bicarb <5)

Management:

- Admit to hospital for therapy and intensive monitoring.
- PICU status may be appropriate in some cases (altered mental status, hypokalemia, hyponatremia (after sodium corrected for glucose[‡]), young age (<5 years), hypotension, per admitting physician).
- IV hydration (3 L/m²/day)[‡]
- IV insulin (0.1 units/kg/hour).
- Intensive monitoring for improvement and signs of cerebral injury.
- Follow guidelines as given in the remainder of this protocol.

Some useful formulas:

[†]Total daily insulin dose approx. = Lantus dose x 2 (In general, Lantus dose is 50% of patient's total daily insulin)

[‡]Corrected sodium = $[(\text{Glucose} - 100)/100] \times 1.6 + \text{Pt's Na}$ [glucose is mg/dL]

[‡]BSA (m²) = sq root $[(\text{wt(kg)} \times \text{ht(cm)})/3600]$; estimated BSA = $(\text{wt(kg)} \times 4 + 7)/(90 + \text{wt(kg)})$

[‡]Anion Gap = Na – (Cl + HCO₃); normal is 12 +/- 2 mmol/L

[‡]Effective osmolality = 2 x (Na + K) + glucose/18 [glucose is mg/dl]

Fluid Management (2 bag system)

- Total fluids should not exceed about 3500 mL/m²/day.
- Volume expansion (fluid bolus) should be initiated prior to insulin administration, and insulin should be initiated at least 1 hour after the fluid administration has begun.
 - Initial bolus of NS or LR with 20 mL/kg over 1-2 hours.
 - If poor peripheral perfusion, hypotension, or shock persist after the initial 20ml/kg, it may be appropriate to repeat with a second 10-20 mL/kg NS bolus.
- Rehydration: assume 10% dehydration and plan to replace the deficit over 24 hours. (See Appendix 2.)
 - This can often be accomplished by running IV fluids at 1.5 x maintenance or 3000 mL/m²/day.
 - Initial IVF with ½NS + 20 mEq/L K-phosphate + 20 mEq/L K-acetate (or KCl if K-acetate is not available). **Note: there is zero dextrose in this fluid.
 - ◆ Consider NS if measured Na level is low and does not rise with the fall in glucose.
 - ◆ If K is >6, repeat the BMP and add the K to the fluids when the K is <6; If K is low, may need up to 60 mEq/L K total (typically 30 and 30 of the two types of K solution).
 - “Y-in” D10 ½NS + 20 mEq/L K-phosphate + 20 mEq/L K-acetate (or KCl) when the serum glucose is less than 250 mg/dL or if glucose falls faster than 100mg/dL per hour.
 - 2 bag method: Use 2 separate bags of IV rehydration fluid with identical electrolyte composition; one bag has NO dextrose and the other has 10% dextrose. Increase and decrease the rate of each bag reciprocally so that the total rate is constant at the desired rehydration rate (ie, 3 L/m²/day) and the glucose is maintained between 150 and 250.
 - ◆ Typically, when the BG is ≤ 250, run the 2 fluids at 50/50 rates and when the BG is <200, stop running the fluid without the dextrose and run the D10 fluid at 100% of the desired rate.
 - ◆ **DO NOT REDUCE INSULIN INFUSION RATE BECAUSE OF FALLING BLOOD GLUCOSE UNTIL THE REDUCTION IS INDICATED**

BASED ON RESOLUTION OF KETOACIDOSIS: *If the patient is still acidotic, they still need the insulin—*increase the dextrose content instead (can use D12.5% fluids prn).

• **Do not administer sodium bicarbonate to correct the acidosis** (*cautious* administration may be *considered* if pH <6.9 and the acidosis is so profound as to adversely affect the action of epinephrine during resuscitation, decreased cardiac contractility, impaired tissue perfusion from vasodilation, or life-threatening hyperkalemia; dose should be 1-2 mmol/kg over 60 minutes).

This protocol is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
If comments about this protocol, please contact Jane_McClure@ykhc.org.



Insulin Therapy

- "Low-dose continuous IV insulin infusion" = 0.1 units/kg/ hour regular insulin, IV (conc. 1 unit/mL).
 - Start insulin 1 hour after initial fluids have been started but do not further delay in starting insulin.
- Do not give intravenous insulin bolus or subcutaneous insulin bolus when starting the continuous infusion. (*If a delay in starting the insulin infusion is expected to be longer than 1 hour (i.e. more than 2 hours after IVF have been started, then a SQ insulin dose may be warranted.)
- **CONTINUE IV INSULIN INFUSION AT 0.1 UNITS/KG/HOUR UNTIL THE KETOACIDOSIS IS RESOLVED**, bicarb >18, the anion gap is closed (AG <12)[‡], and the patient is awake and can tolerate PO fluids.
 - A lower continuous rate (0.05 – 0.08 units/kg/hr may be needed in patients with marked insulin sensitivity.
- Usually, long-acting basal insulin (ie Lantus, Tresiba) should be given at the usual time, even if the patient is on an insulin infusion (this is most frequently given at bedtime; its onset of action is approx. 1-2 hours).
 - Administering basal insulin while on the insulin infusion allows us to d/c the insulin infusion when it is appropriate (see above) without waiting for subcutaneous insulin to be given; it also provides background insulin so that DKA does not recur after the insulin infusion is discontinued (remember: without SQ insulin, once the IV insulin infusion is stopped, the patient has no other insulin on board!)
 - In new-onset diabetes, the usual starting total daily dose of insulin is 0.5-1 units/kg/day, 50% of which should be given as basal insulin; in known diabetes, the patient's home dose of basal can be used.
 - For those patients on insulin pumps, they will not be on a long-acting basal insulin, so do not need to receive this unless there is a plan to not restart the patient's pump while they are hospitalized. Otherwise, they can simply be restarted on their pump when the IV insulin infusion is completed.

Cerebral Injury in DKA

The most common cause of death during DKA in children is clinically apparent cerebral injury, which occurs in about 0.5-0.9% of cases and manifests as sudden neurologic decline. It often occurs early in the course of DKA (sometimes even before treatment has been started) and when it is clinically apparent, the prognosis is usually poor; mortality rate is up to 21-24%. The pathogenesis is incompletely understood, but may result from cerebral hypoperfusion and the effects of reperfusion, along with neuroinflammation. Cerebral edema is likely a consequence (rather than the cause) of cerebral injury, and often develops hours or days after the diagnosis of brain injury.

- Risk factors include:
 - Younger age; New-onset diabetes; Longer duration of symptoms
 - **Sodium bicarbonate treatment for correction of acidosis**
 - Administration of insulin in the first hour of fluid treatment
 - Increased BUN at presentation
 - Greater hypocapnia at presentation after adjusting for degree of acidosis
 - More severe acidosis at presentation
 - An attenuated rise in measured serum sodium concentrations during therapy
- Children with DKA are frequently sleepy, but **warning signs and symptoms of cerebral injury include:**
 - Worsening of Glasgow Coma Scale (GCS) Score
 - Slowing of heart rate, rising blood pressure, decreased O₂ saturation (Cushing's Triad)
 - Change in neurological status (restlessness, irritability, increased drowsiness, incontinence)
 - Headache, vomiting, focal neurological signs, dilated/unresponsive/sluggish/unequal pupils, papilledema
 - Decreasing urine output without clinical improvement or tapering of fluids
- **CEREBRAL INJURY IS A LIFE THREATENING MEDICAL EMERGENCY REQUIRING IMMEDIATE AGGRESSIVE INTERVENTION AND IMMEDIATE TRANSFER TO AN INTENSIVE CARE UNIT SETTING.**
- Treatment includes:
 - Give Mannitol 0.5-1 gm/kg over 10-15 min and repeat if no initial response in 30 minutes to 2 hours.
 - ◆ Hypertonic saline (3% saline) 2.5-5ml/kg over 30 min may be an alternative or 2nd line.
 - Elevate the head of the bed to 30 degrees and keep the head in a midline position.
 - Adjust fluid administration as indicated to maintain normal BP and optimize cerebral perfusion; avoid hypotension that might compromise cerebral perfusion pressure.
 - Administer oxygen as needed to maintain normal oxygen saturation.
 - Intubation may be necessary if impending respiratory failure, but aggressive hyperventilation to hypocarbia (pCO₂ <22 mmHg) has been associated with poor outcome and is not recommended.
 - Head CT scan should be obtained to rule out other possible intracerebral causes of neurologic deterioration AFTER treatment for cerebral injury has been started (**DO NOT DELAY TREATMENT TO GET THE HEAD CT!**); changes that will be detectable on head CT often occur late in the development of cerebral injury.

Monitoring and Other Recommendations

- Height and weight are both needed in order to calculate body surface area.
- Vital Signs Q1 hour for at least first 12 hours, then Q2 hours; HR monitor and pulse oximetry.
- Neuro checks/GCS score Q1 hour.
- Strict monitoring of Intake and Output is essential (Strict I/O).
- Check blood sugar (bedside glucose) every hour while on insulin infusion.
- NPO until acidosis is resolved in order to strictly monitor total intake, avoid excessive fluid administration, and decrease the risk of aspiration should consciousness be altered.
- BMP, Magnesium, Phosphorus, beta-hydroxybutyrate initially and q4-6 hours.
- I-Stat-7 Q2 hours until pH >7.25, then q4-6 hours.
- After first 12-18 hrs of DKA treatment, check urine ketones every void until negative twice in a row.
- Mannitol 1 gm/kg or 3% Saline at bedside (and ready to be given for acute change in mental status).
- Two peripheral IV catheters should be placed for fluid and insulin administration and for blood sampling.
- A flow sheet with lab results and clinical response can be a useful guide to therapy.
- Initial labs should include: Hemoglobin A1c, BMP, Mg, Phos, Beta-hydroxybutyrate, diabetes autoantibodies (islet cell antibody, insulin antibody, glutamic acid decarboxylase (GAD-65) antibody, ZnT8 antibody), celiac panel (total IgA and TTG), TSH and free T4 (if patient is very ill, the TSH and free T4 should wait until child is more stable to avoid abnormalities of "sick euthyroid syndrome"), insulin and c-peptide (do not measure insulin if patient has already been started on insulin), CBC, cultures if indicated (fever, etc); **leukocytosis is a common finding in DKA and does not alone indicate infection).
- Call 907-563-2662, ask to speak with pediatric endocrinologist on call any time of the day or night.



Prevention of DKA is key

- In patients with newly diagnosed diabetes, education of the public and health care providers to recognize early signs of diabetes can lead to diagnosis of type 1 diabetes before DKA develops.
- In patients with known diabetes, sick day reeducation with diabetes educator is important to discuss factors that led to DKA in this situation and how to avoid it in the future (ie urine ketone monitoring with illness or high blood glucose, avoiding insulin omission, appropriate use of insulin pump and trouble-shooting with pump problems).
- Appropriately manage sick days and ketones at home or in the hospital to prevent progression to DKA (see below).

Sick day management guide when a patient has ketones based on amount of ketones and the blood sugar			
Urine Ketones	Blood Glucose		
	<100	100-200	Over 200
Neg/Trace/Small	Push sugar-containing fluids	Push fluids (sugar and sugar-free)	Push sugar free fluids; continue to check ketones while ill; give correction dose if BG>250-300
Moderate	Push ~30-60g carBG to get BG over 200, consider mini-dose glucagon (see below)	Push ~30g carbs to get BG over 200 (recheck BG q 30-60min)	Give extra NovoLog (10% of total daily dose or 0.1 units/kg or double the BG correction dose); check BG and ketones in 2 hrs; repeat Novolog dose in 2 hrs if ketones do not decrease
Large, but well patient (not continuously vomiting, no difficulty breathing, awake)	Push fluids (30-60g carBG), consider mini-dose glucagon	Push ~30 g carbs to get BG over 180-200 (recheck BG q30-60 min)	Give extra Novolog (20% of total daily insulin dose or double the BG correction); check BG and ket in 2 hrs; repeat Novo-Log dose in 2 hours if ketones do not decrease
Large, and sick pt (cont vomiting, difficulty breathing, lethargy)	Bring to ER, consider mini-dose glucagon on the way	Bring to ER Cont to push fluids if possible on the way	Bring to ER (can give an extra insulin dose while on their way to the ER if they live far away)

Total daily insulin dose approx. = 2 x Lantus/Tresiba dose

Double the correction: calculate what insulin dose would be based on their BG correction factor and give 2 x that dose

References:

Kuppermann et al, N Engl J Med. 2018; 378(24):2275-87
 Wolfsdorf et al, Ped Diab. 2018;19 (Suppl 27):155-77 Wolfsdorf et al, Diab Care. 2006;29(5):1150-59
 White NH, Washington Univ in St Louis; 1989 (rev 2003)

Appendix 2: Fluid maintenance and replacement volumes based on body weight and an assumption of 10% dehydration

Body weight (kg)	Maintenance (mL/24 h)	DKA: give maintenance +5% of body weight/24 h	
		mL/24 h	mL/h
4	325	530	22
5	405	650	27
6	485	790	33
7	570	920	38
8	640	1040	43
9	710	1160	48
10	780	1280	53
11	840	1390	58
12	890	1490	62
13	940	1590	66
14	990	1690	70
15	1030	1780	74
16	1070	1870	78
17	1120	1970	82
18	1150	2050	85
19	1190	2140	89
20	1230	2230	93
22	1300	2400	100
24	1360	2560	107
26	1430	2730	114
28	1490	2890	120
30	1560	3060	128
32	1620	3220	134
34	1680	3360	140
36	1730	3460	144
38	1790	3580	149
40	1850	3700	154
45	1980	3960	165
50	2100	4200	175
55	2210	4420	184
60	2320	4640	193
65	2410	4820	201
70	2500	5000	208
75	2590	5180	216
80	2690	5380	224

Appendix 1

Pathophysiology of Diabetic Ketoacidosis

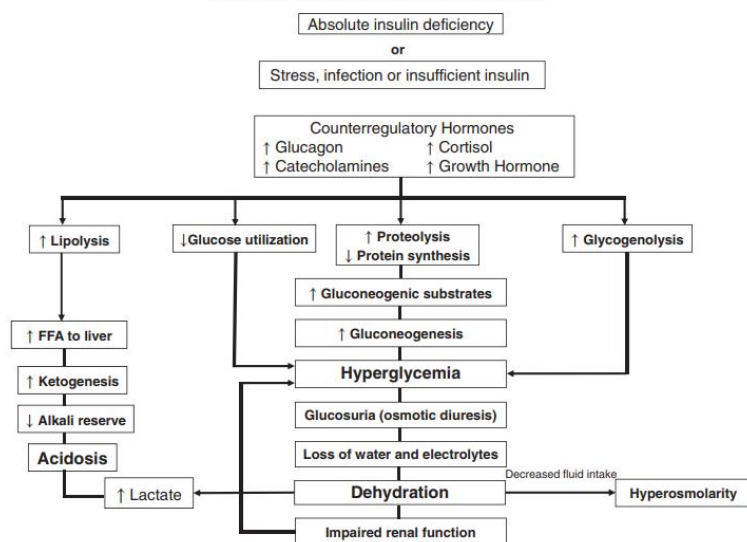


FIGURE 1 Pathophysiology of diabetic ketoacidosis. Copyright© 2006 American Diabetes Association. From diabetes care, Vol. 29, 2006:1150-1159. Reprinted with permission of The American Diabetes Association



Obstetrics Guidelines

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Nomenclature

- **Viable** – A pregnancy is viable if it can potentially result in a liveborn baby.
- **Nonviable** – A pregnancy is nonviable if it cannot possibly result in a liveborn baby. Ectopic pregnancies and failed intrauterine pregnancies are nonviable.
- **Intrauterine pregnancy of uncertain viability** – A woman is considered to have this if a transvaginal ultrasound shows an intrauterine gestational sac with no embryonic heartbeat and no findings of definite pregnancy failure.
- **Pregnancy of unknown location** – A woman is considered to have this if she has a positive urine or serum pregnancy test and no intrauterine or ectopic pregnancy on transvaginal ultrasound.

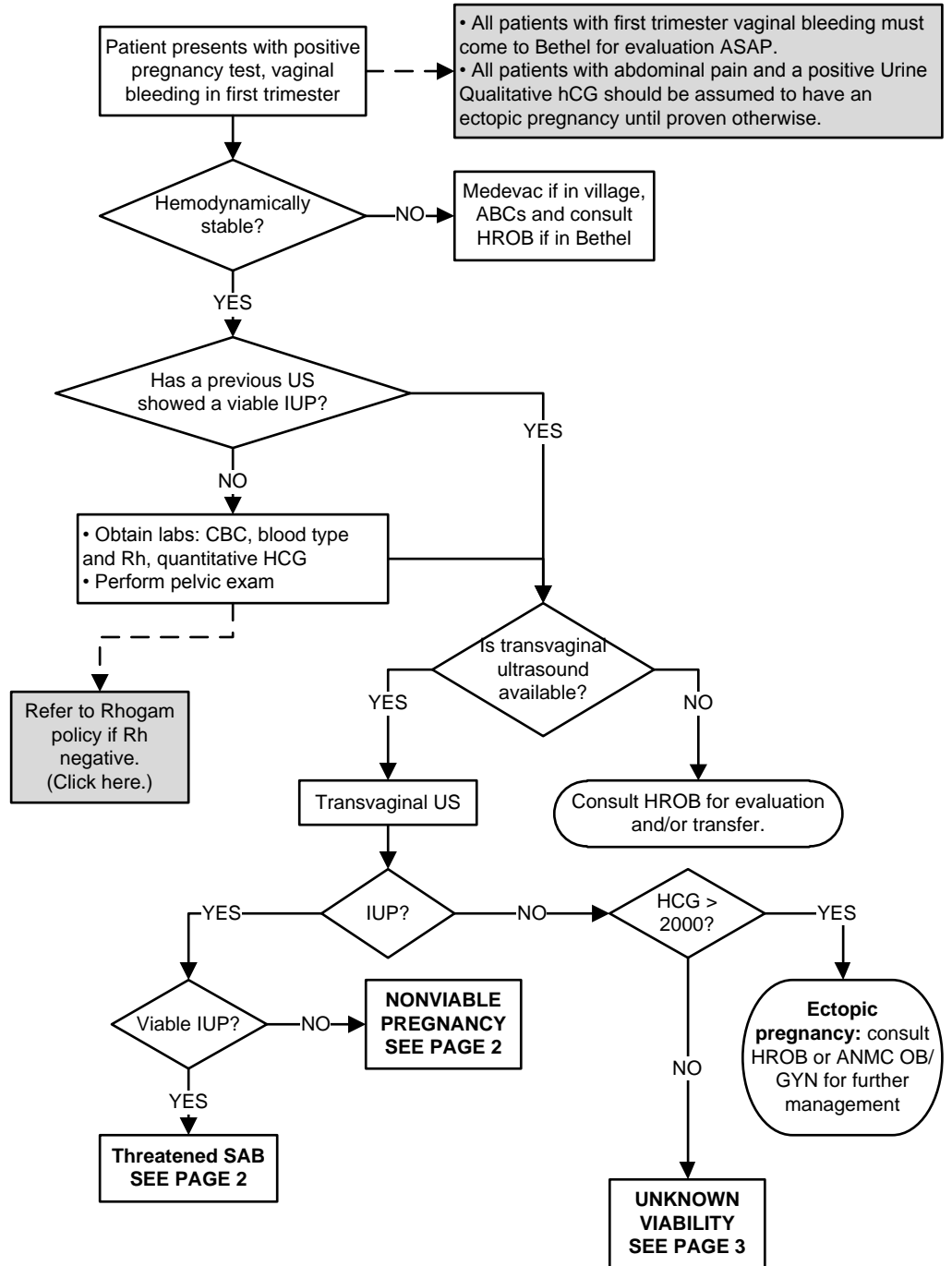
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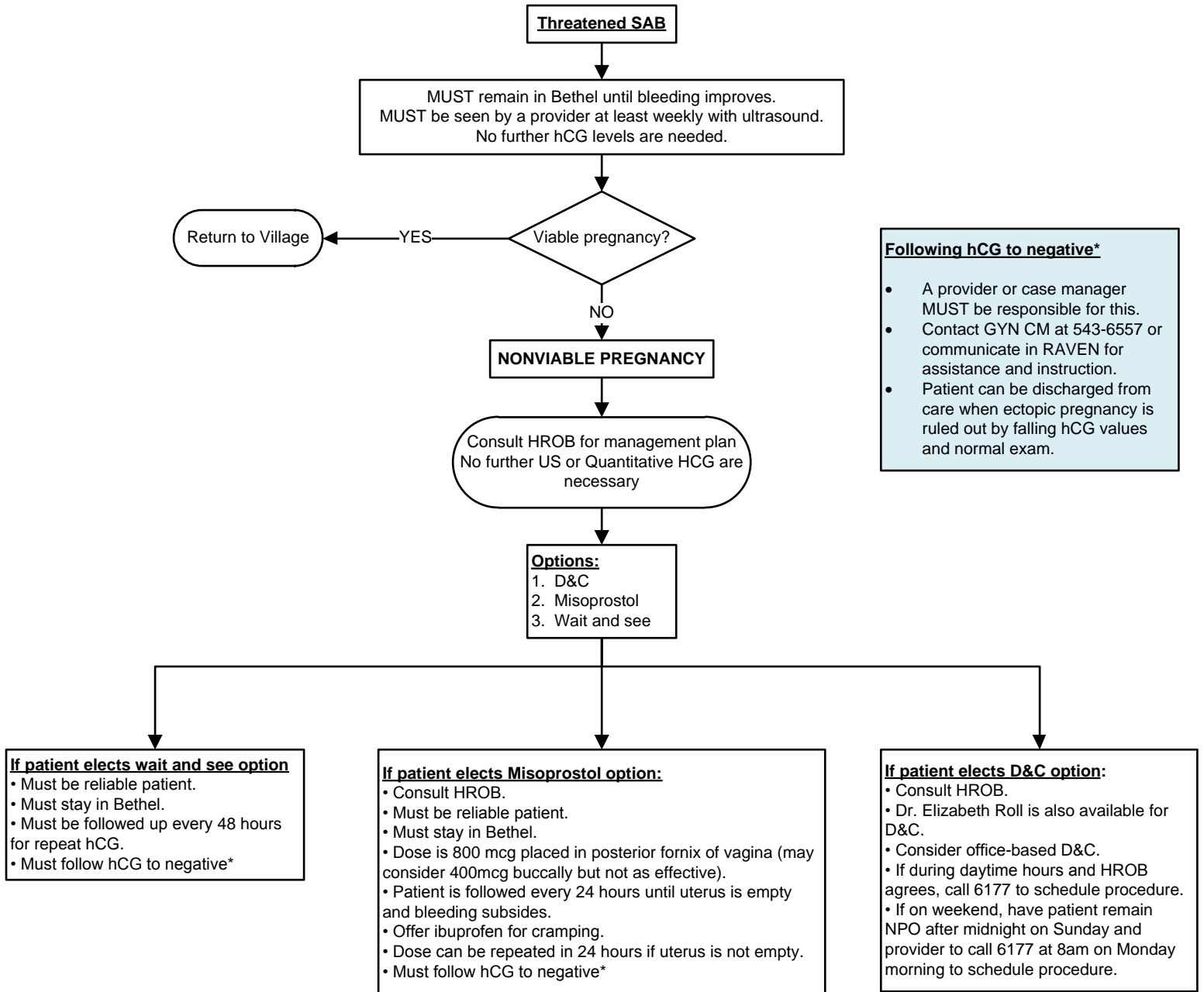
Findings diagnostic of Pregnancy Failure

- Crown-rump length of ≥ 7 mm and no heartbeat
- Mean sac diameter of ≥ 25 mm and no embryo
- Absence of embryo with heartbeat ≥ 14 days after an US that showed a gestational sac without a yolk sac
- Absence of embryo with a heartbeat ≥ 11 days after an US that showed a gestational sac with a yolk sac

Comments

- In a woman with a positive urine or serum pregnancy test, an intrauterine fluid collection with rounded edges containing no yolk sac is most likely a gestational sac; it is certain to be a gestational sac if it contains a yolk sac or embryo.
- Transabdominal imaging without transvaginal scanning may be sufficient for diagnosing early pregnancy failure when an embryo whose crown-rump length is 15mm or more has no visible cardiac activity.







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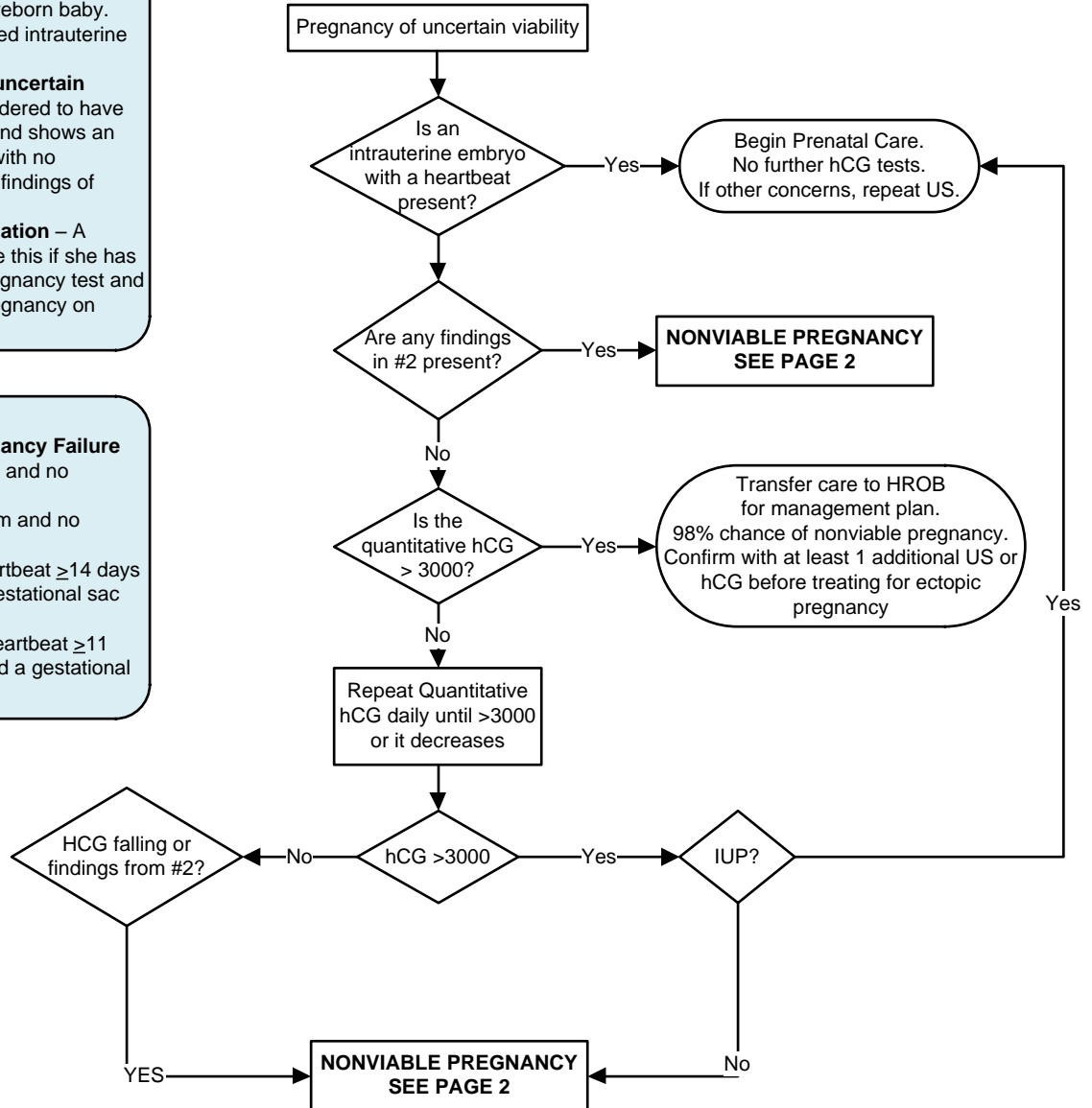
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Approved by MSEC 7/12/17.

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D&C Prior to Methotrexate?

This is NOT necessary prior to treatment with Methotrexate (MTX) for a plateau or abnormally rising HCG level. MTX will treat an abnormal pregnancy in the uterus or any other location.

Typical side effects of MTX.

Less than 30% of patients will experience minor, self-limited side effects from the medication, including nausea, mouth ulcers, and GI cramps. Most patients have some lower abdominal pain on the 3-6th day after treatment. This is not a problem if ibuprofen or acetaminophen relieves the pain.

Contraindication to MTX.

Absolute contraindications

Breast Feeding
Overt or Laboratory evidence of immunodeficiency
Alcoholism, alcoholic liver disease, or other chronic liver disease
Preexisting blood dyscrasias, such as bone marrow hypoplasia, leukopenia, thrombocytopenia or significant anemia

Known sensitivity to MTX
Active pulmonary disease
Peptic ulcer disease
Hepatic, renal or hematologic dysfunction

Relative contraindications

Gestational sac larger than 3.5cm
Embryonic cardiac motion

Single-dose regimen

- Single dose MTX 50mg/m² IM day 1
- Measure hCG level on post treatment days 4 and 7
- Check for 15% hCG decrease between days 4 and 7
- Then measure hCG level weekly until reaching the nonpregnant level
- If results are less than the expected 15% decrease, readminister MTX 50mg/m² and repeat hCG measurement on days 4 and 7 after second dose.

Two-dose regimen

- Administer 50 mg/m² on day 0.
- Repeat 50mg/m² on day 4.
- Measure hCG levels on days 4 and 7, and expect a 15% decrease between days 4 and 7.
- If the decrease is greater than 15%, measure hCG levels weekly until reaching non pregnant level.
- If less than a 15% decrease in hCG levels, readminister MTX 50mg/m² on days 7 and 11, measuring hCG levels.
- If hCG levels decrease 15% between days 7 and 11, continue to monitor weekly until non pregnant hCG levels are reached.

Ectopic Pregnancy diagnosed after consultation with HROB or OB/GYN

Obtain:

- Quantitative HCG
- Type and Screen
- CBC
- Comprehensive Metabolic Panel
- Transvaginal Pelvic Ultrasound (US)

Hemodynamically stable?

No

Consult HROB for immediate surgery or transfer

Yes

Adnexal Mass \geq 3cm
Cardiac activity
Pregnancy in location other than a tube

Yes

No

Platelets, kidney and liver function normal?

No

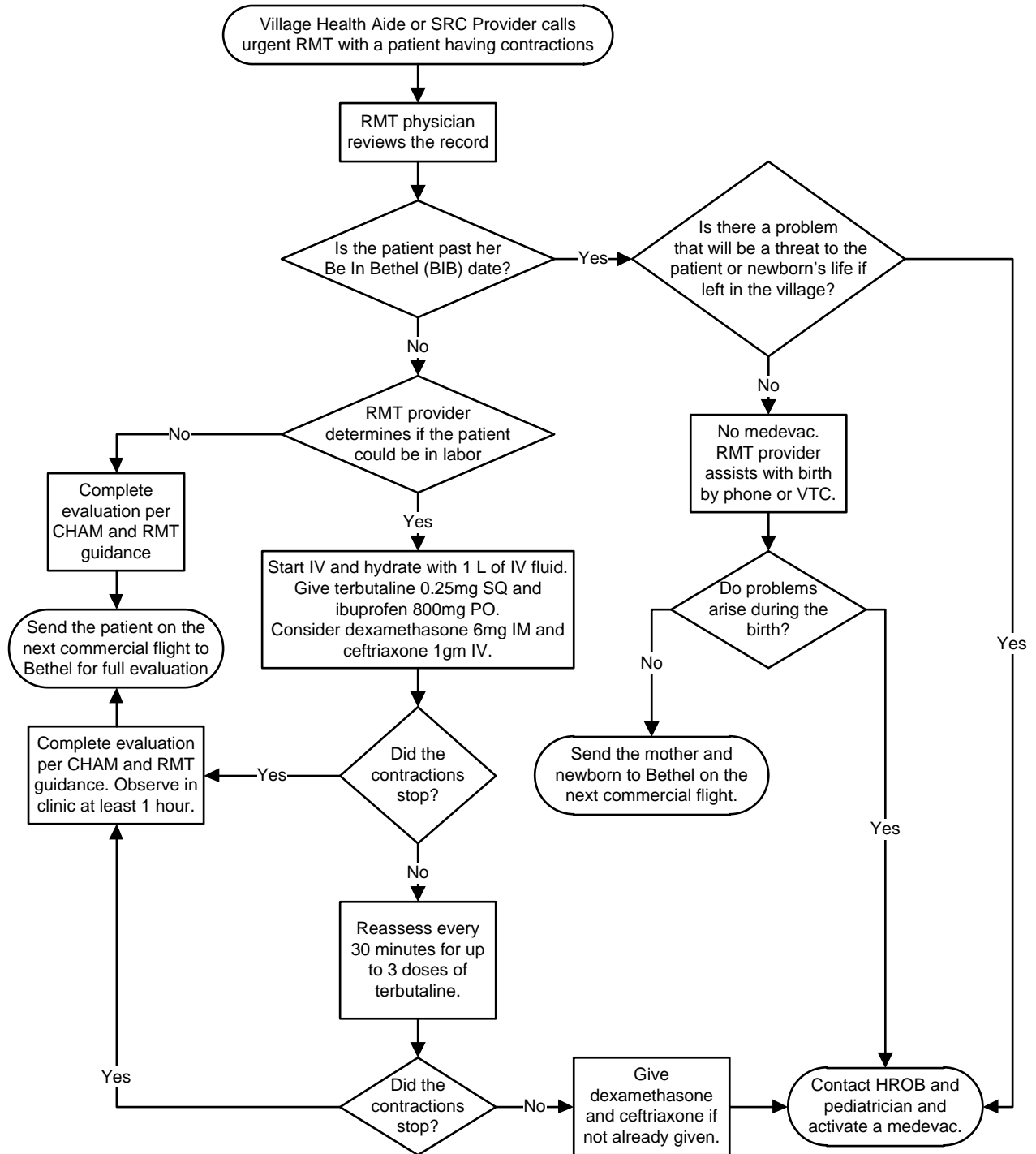
Yes

Is the hCG >5000?

No

Yes

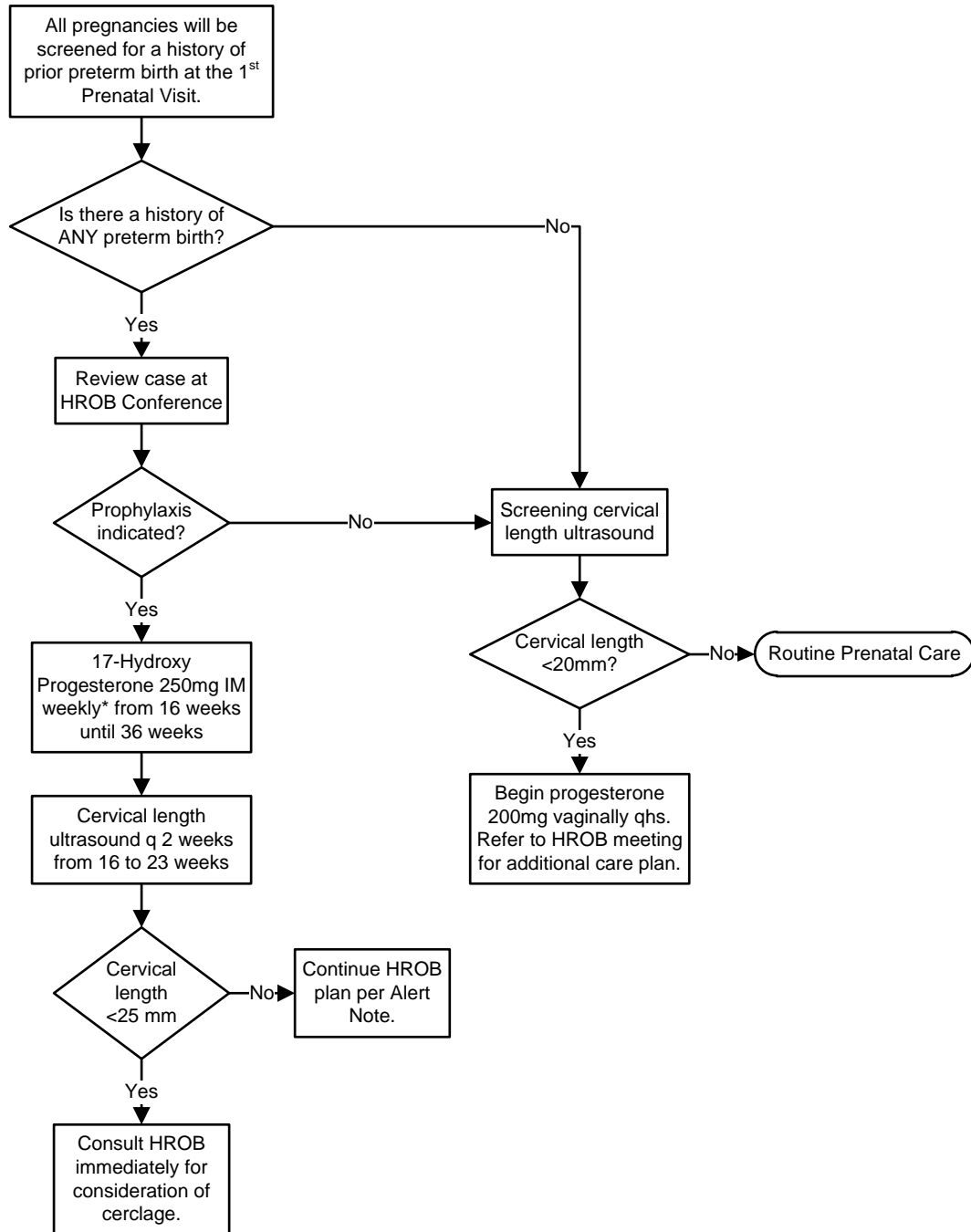
If at any time the hCG level rises during the monitoring of weekly hCG levels, consult a GYN Oncologist for further treatment.



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* The Obstetrics Case Managers will maintain a patient list in RAVEN to communicate the patients prescribed this intervention.



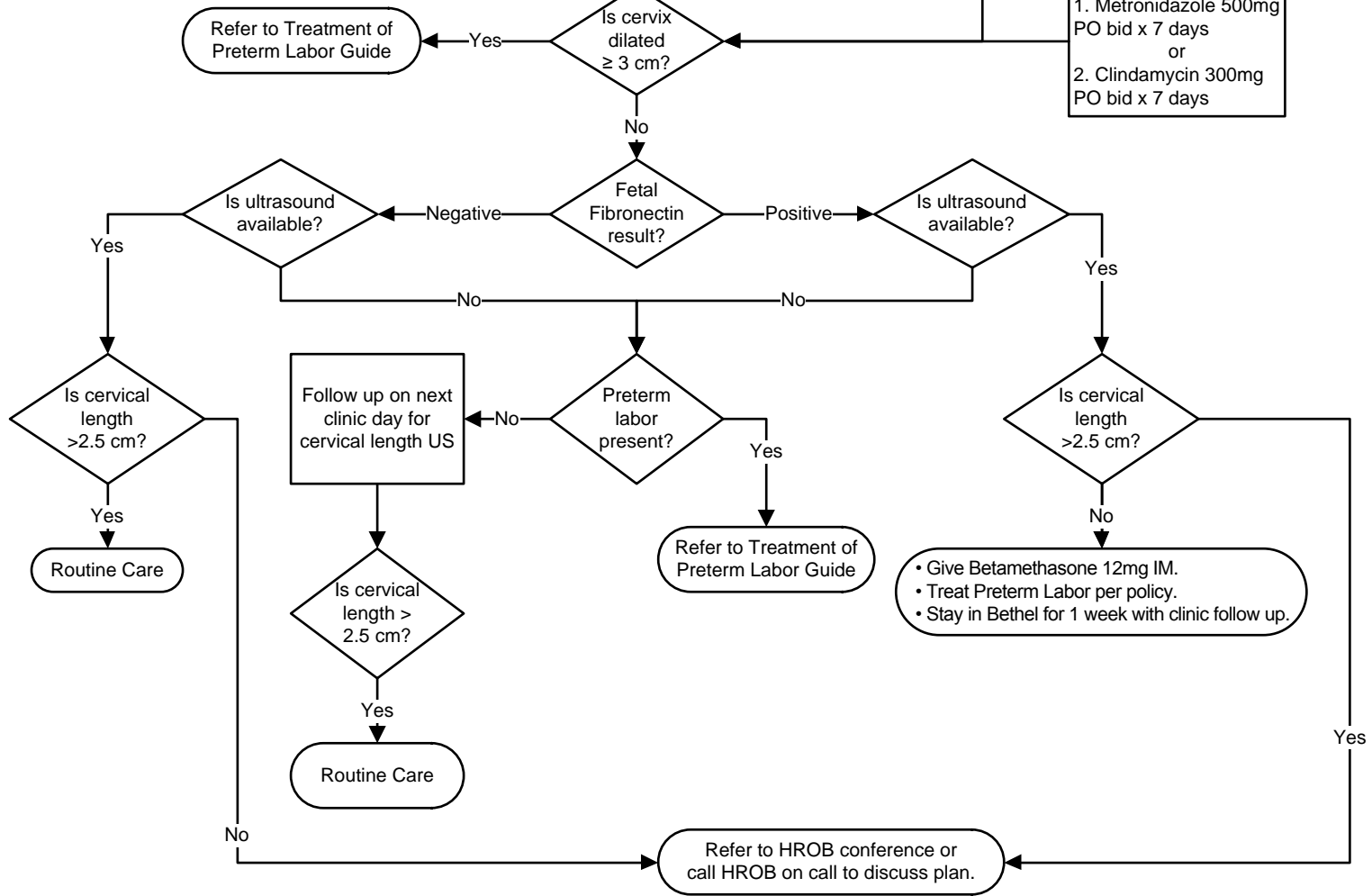
- Preterm Labor Symptoms**
- Increased vaginal discharge
 - Blood tinged mucus
 - Low backache
 - Pelvic pressure
 - Menstrual-like cramps
 - Intestinal cramping with or without diarrhea
 - "Not feeling right"
 - Loss of cervical mucous/"plug"

Patient presents with signs and symptoms of preterm labor at 24 – 34 weeks gestation

Definition of Preterm Labor- regular uterine contractions after 20 weeks gestation and before 37 weeks gestation which lead to a progressive cervical change.

Sterile speculum vaginal exam to assess for cervical dilation and obtain:
 • wet mount for bacterial vaginosis
 • Fetal Fibronectin, GC/CT, GBS culture, and cervical exam.

Antibiotic Treatment
 1. Metronidazole 500mg PO bid x 7 days
 or
 2. Clindamycin 300mg PO bid x 7 days



There is no need to treat contractions with tocolytics in the absence of cervical change.

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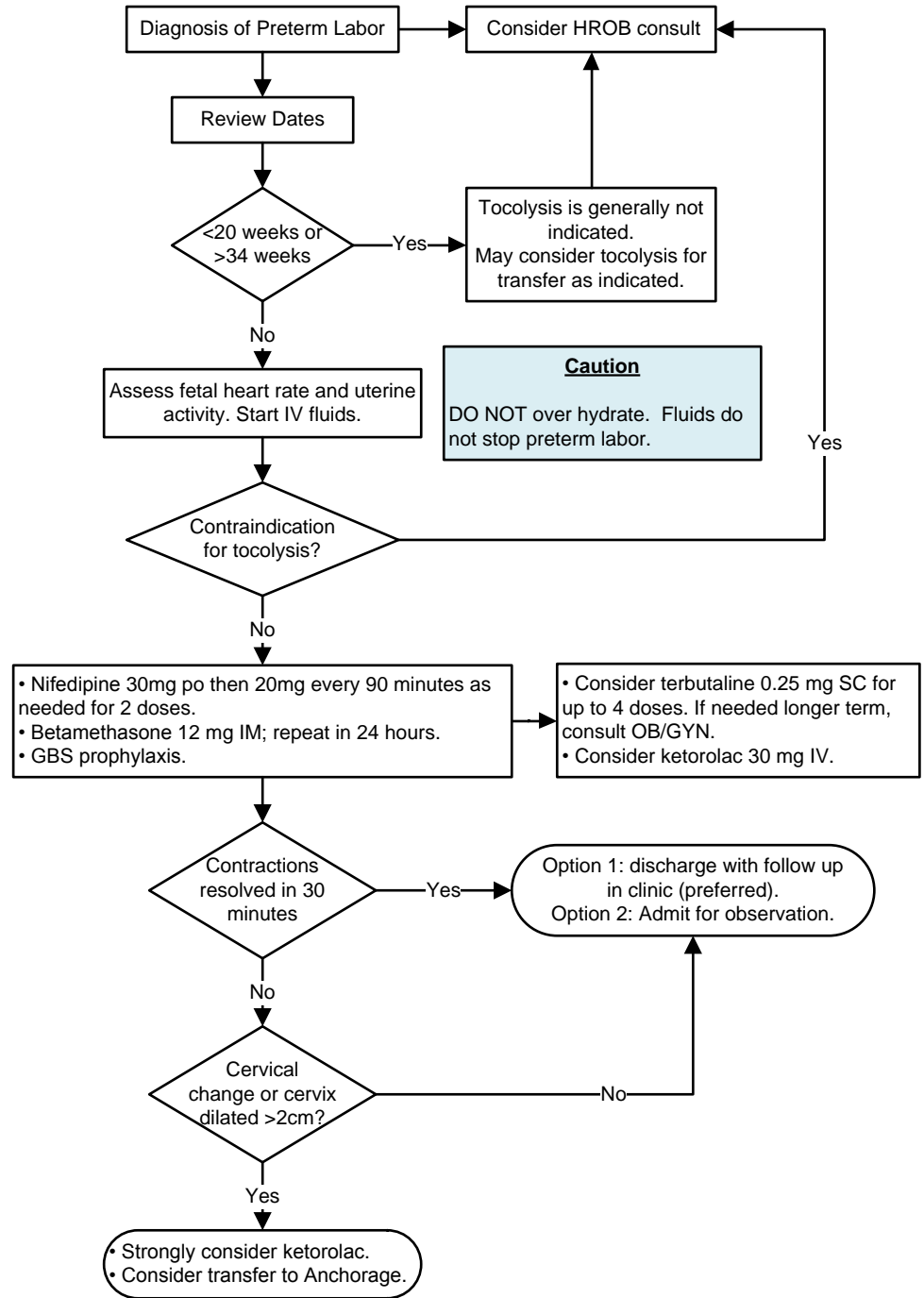
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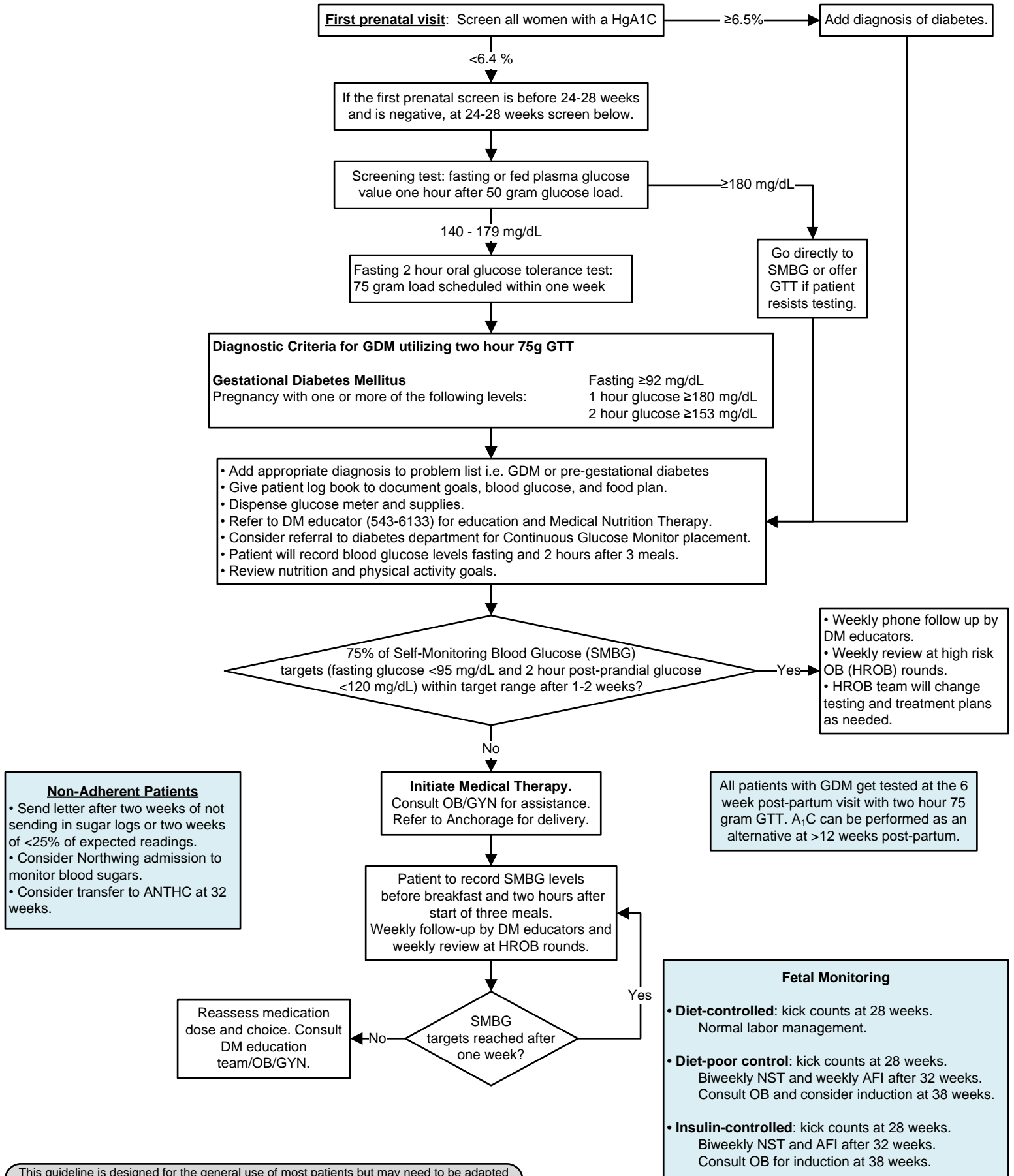
Contraindications to tocolysis:

- IUFD
- Lethal fetal anomaly
- Non-reassuring fetal assessment
- Severe IUGR
- Chorioamnionitis, relative
- Maternal hemorrhage with hemodynamic instability
- Severe preeclampsia or eclampsia
- PPROM

Contraindications to terbutaline

- Diabetes
- HTN
- Suspected placental abruption (relative)





Non-Adherent Patients

- Send letter after two weeks of not sending in sugar logs or two weeks of <25% of expected readings.
- Consider Northwing admission to monitor blood sugars.
- Consider transfer to ANTHC at 32 weeks.

All patients with GDM get tested at the 6 week post-partum visit with two hour 75 gram GTT. A₁C can be performed as an alternative at >12 weeks post-partum.

Fetal Monitoring

- **Diet-controlled:** kick counts at 28 weeks. Normal labor management.
- **Diet-poor control:** kick counts at 28 weeks. Biweekly NST and weekly AFI after 32 weeks. Consult OB and consider induction at 38 weeks.
- **Insulin-controlled:** kick counts at 28 weeks. Biweekly NST and AFI after 32 weeks. Consult OB for induction at 38 weeks.

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GBS Prophylaxis of the Mother at Term

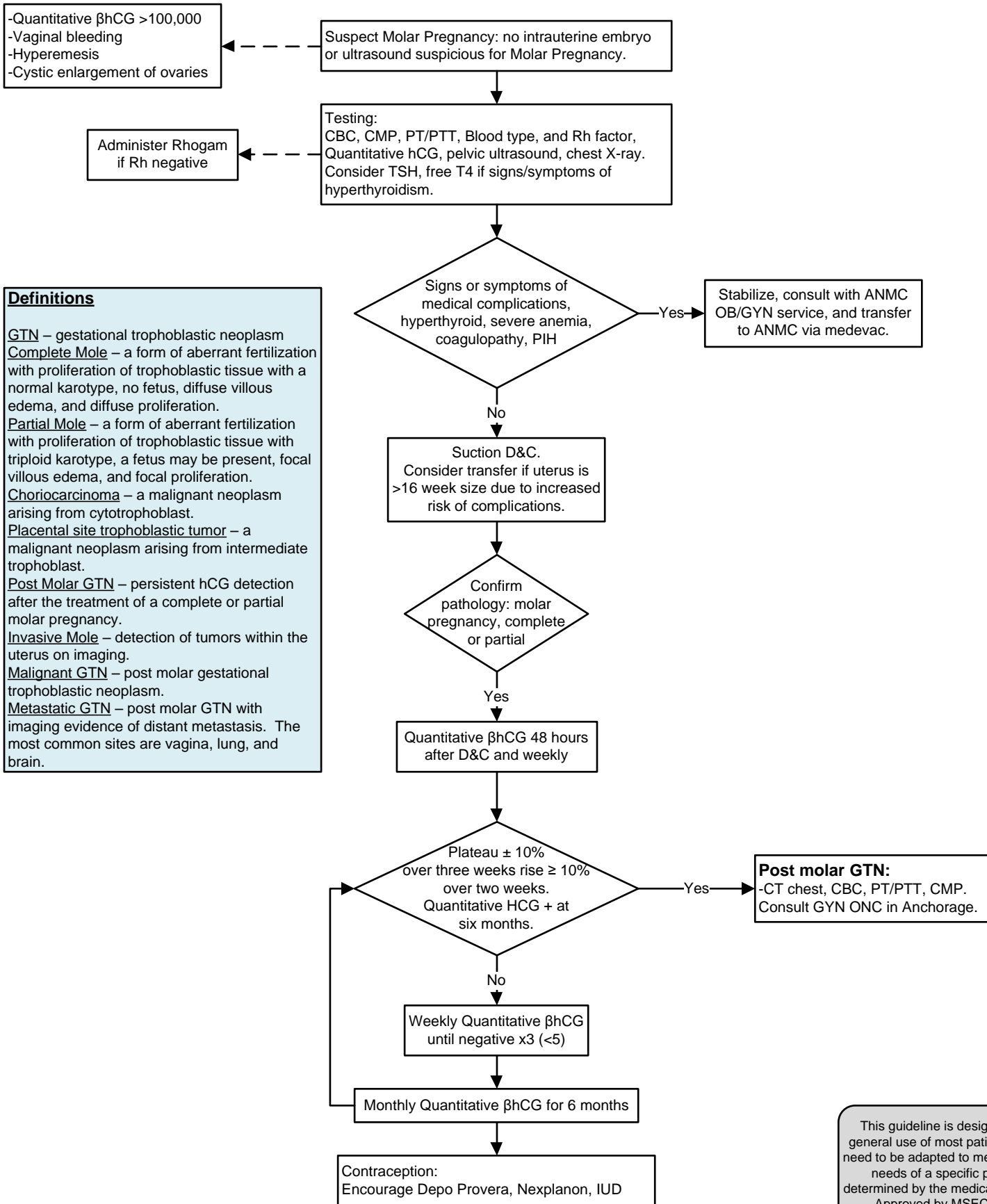
Use the
GBS App

to determine need for prophylaxis and antibiotic of choice for GBS prevention

Web version: <https://www2a.cdc.gov/vaccines/m/gbs3/gbs.html>

or

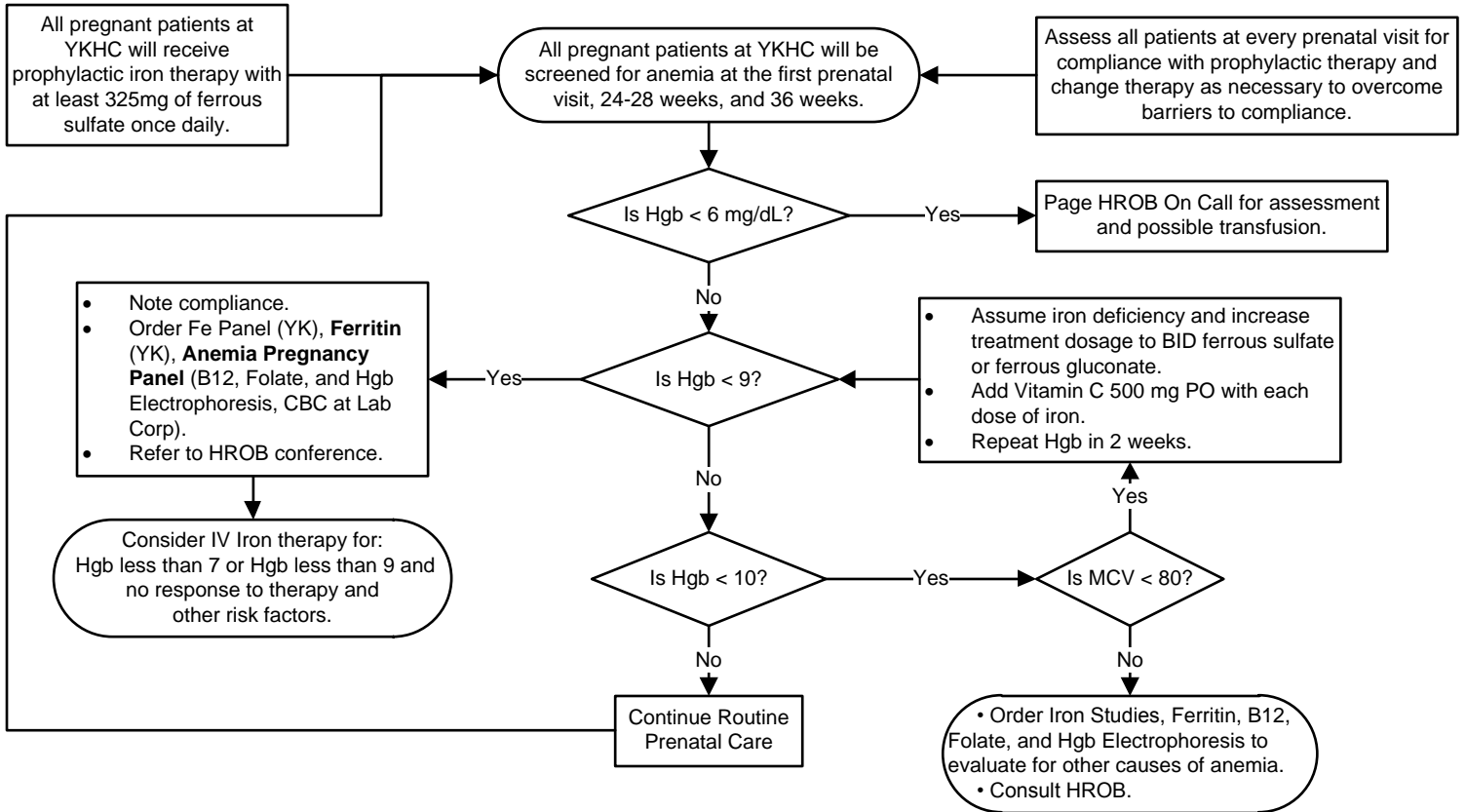
Download for your smartphone.



Definitions

GTN – gestational trophoblastic neoplasm
Complete Mole – a form of aberrant fertilization with proliferation of trophoblastic tissue with a normal karyotype, no fetus, diffuse villous edema, and diffuse proliferation.
Partial Mole – a form of aberrant fertilization with proliferation of trophoblastic tissue with triploid karyotype, a fetus may be present, focal villous edema, and focal proliferation.
Choriocarcinoma – a malignant neoplasm arising from cytotrophoblast.
Placental site trophoblastic tumor – a malignant neoplasm arising from intermediate trophoblast.
Post Molar GTN – persistent hCG detection after the treatment of a complete or partial molar pregnancy.
Invasive Mole – detection of tumors within the uterus on imaging.
Malignant GTN – post molar gestational trophoblastic neoplasm.
Metastatic GTN – post molar GTN with imaging evidence of distant metastasis. The most common sites are vagina, lung, and brain.

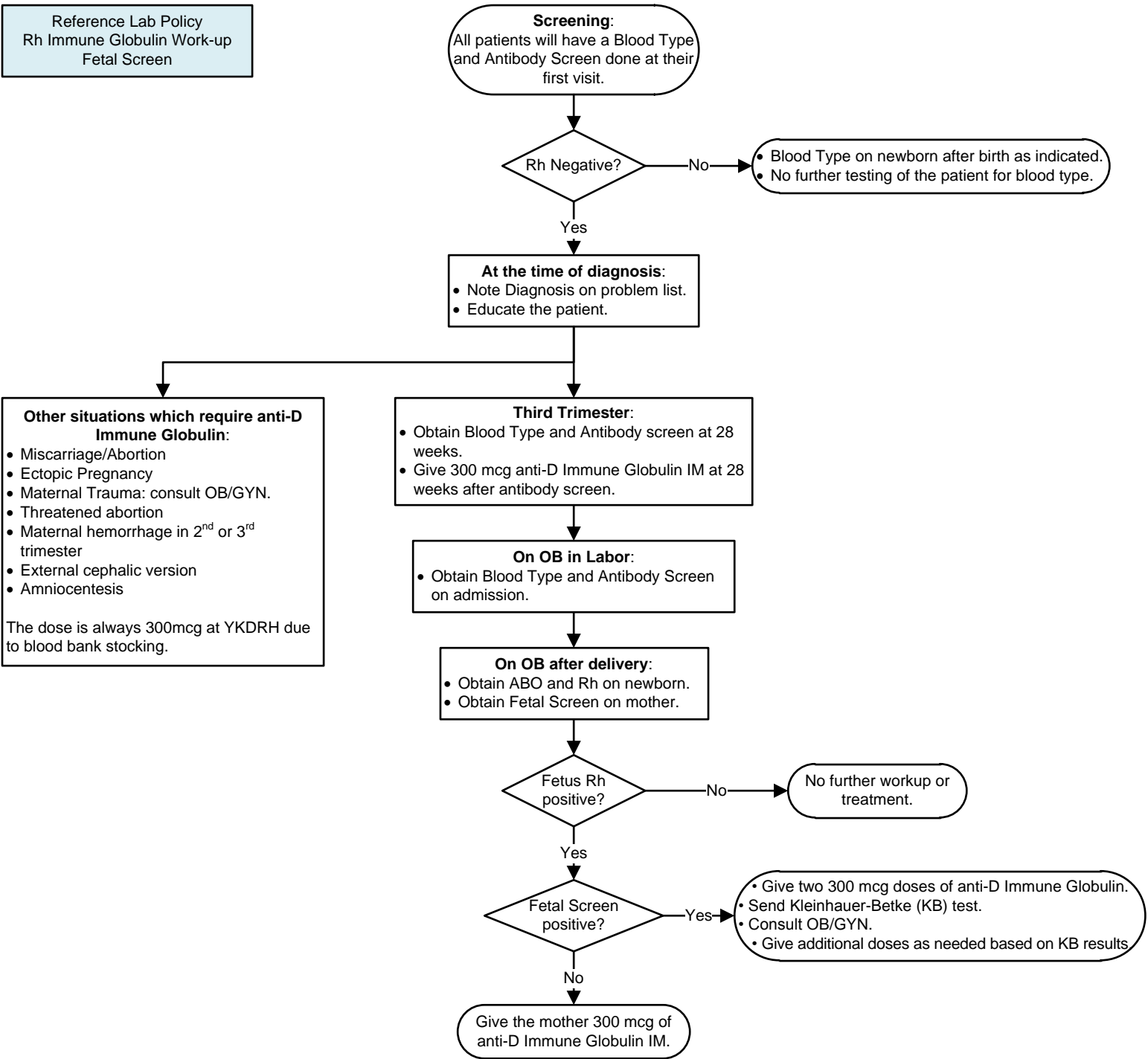
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Reference Lab Policy
Rh Immune Globulin Work-up
Fetal Screen



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Risk Factors for Intrauterine Growth Restriction

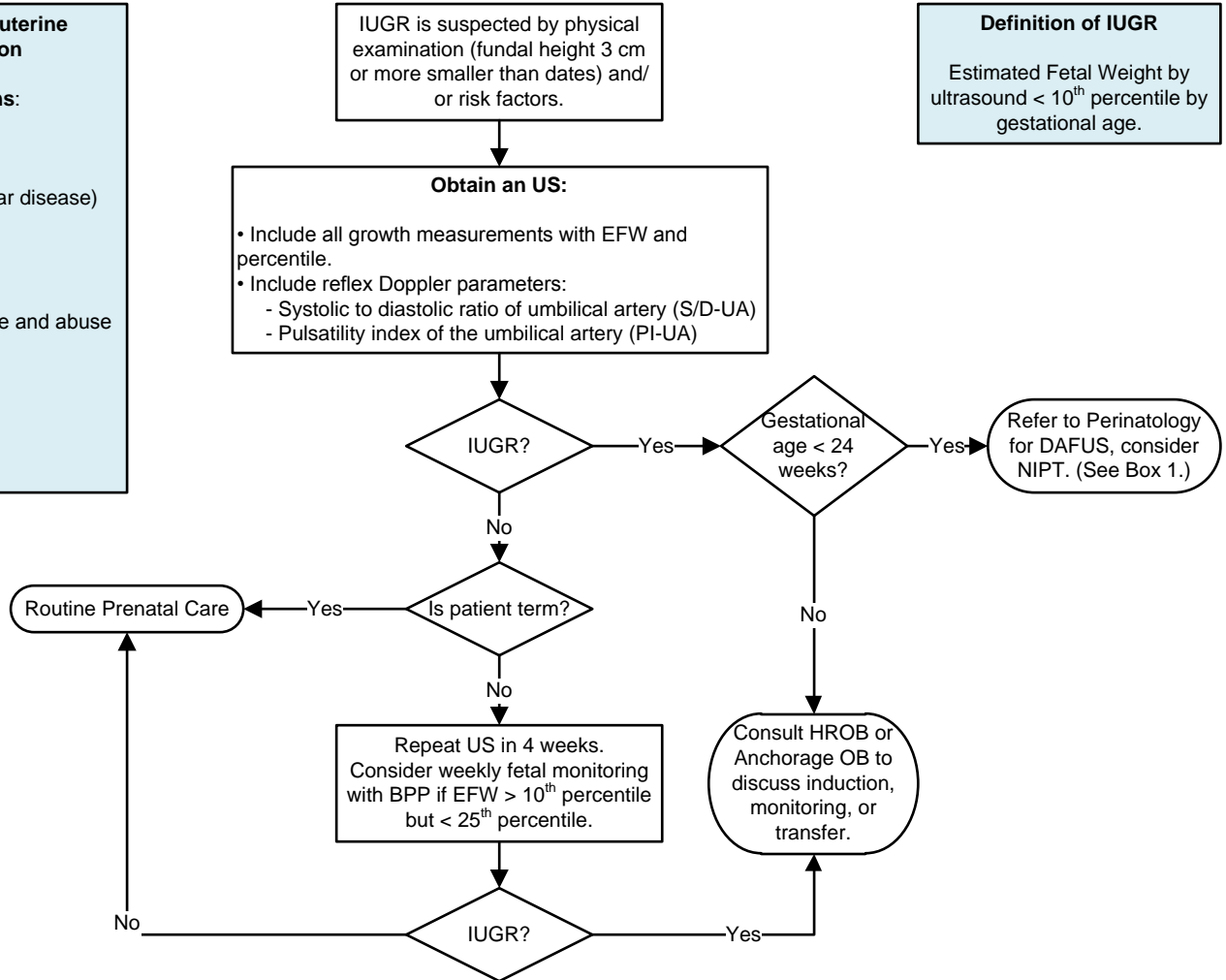
Maternal medical conditions:

- Hypertension
- Renal disease
- Restrictive lung disease
- Diabetes (with microvascular disease)
- Cyanotic heart disease
- Antiphospholipid syndrome
- Auto-immune disease

- Smoking and substance use and abuse
- Severe malnutrition
- Primary placental disease
- Multiple gestation
- Infections (viral, protozoal)
- Genetic disorders
- Exposure to teratogens

Definition of IUGR

Estimated Fetal Weight by ultrasound < 10th percentile by gestational age.



Box 1: NIPT

Non-invasive prenatal testing is a way to detect fetal chromosome abnormalities from a maternal blood draw. Our current test is InformaSeq from LabCorp.

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Differential Diagnosis by Trimester

First

- Aneuploidy
- Fetal Anomaly

Second

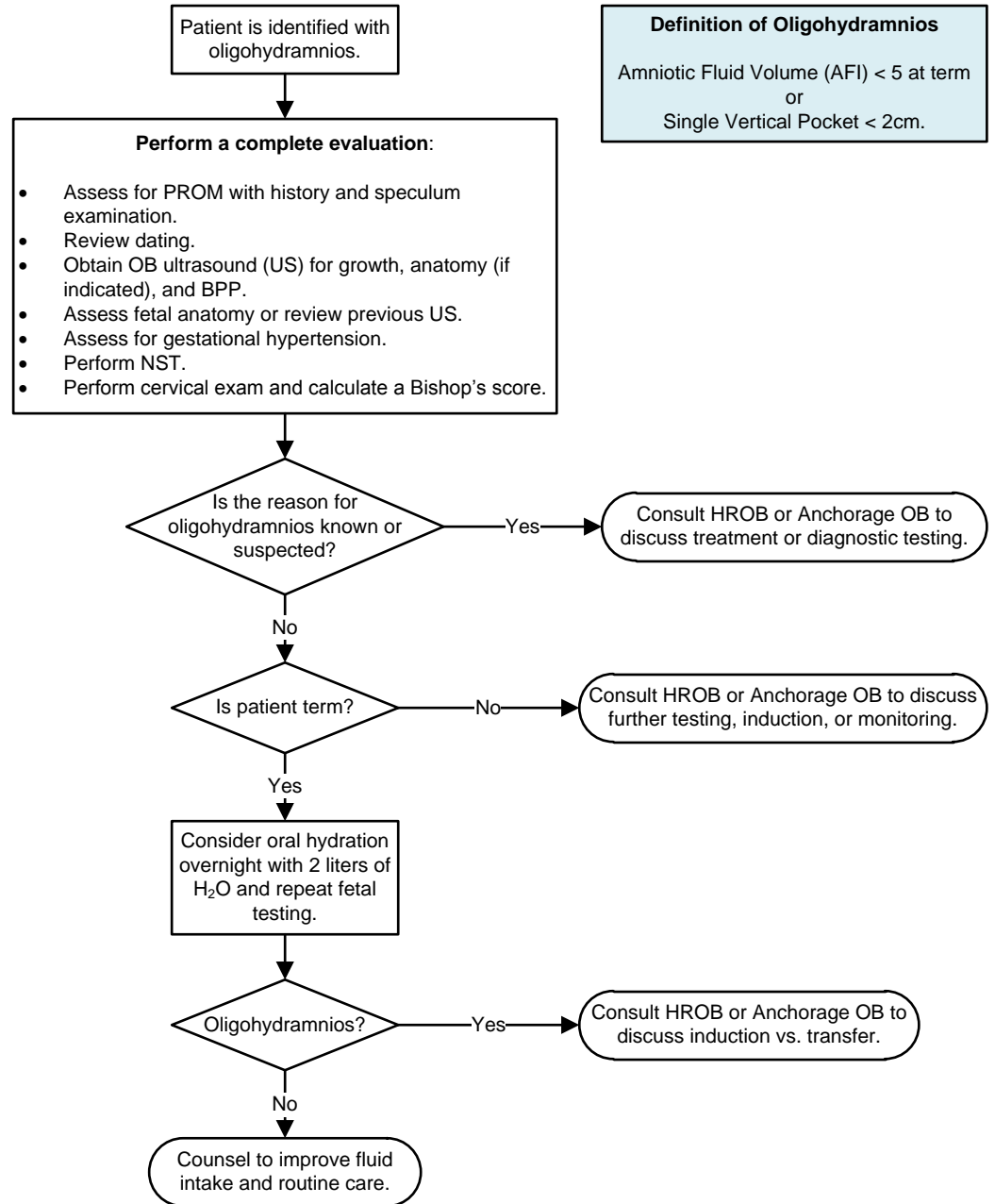
- Aneuploidy
- Fetal Anomaly
- Preterm premature rupture of membranes (PPROM)
- Placental abruption
- Fetal growth restriction
- Amniocentesis
- Elevated maternal serum alpha fetoprotein

Third

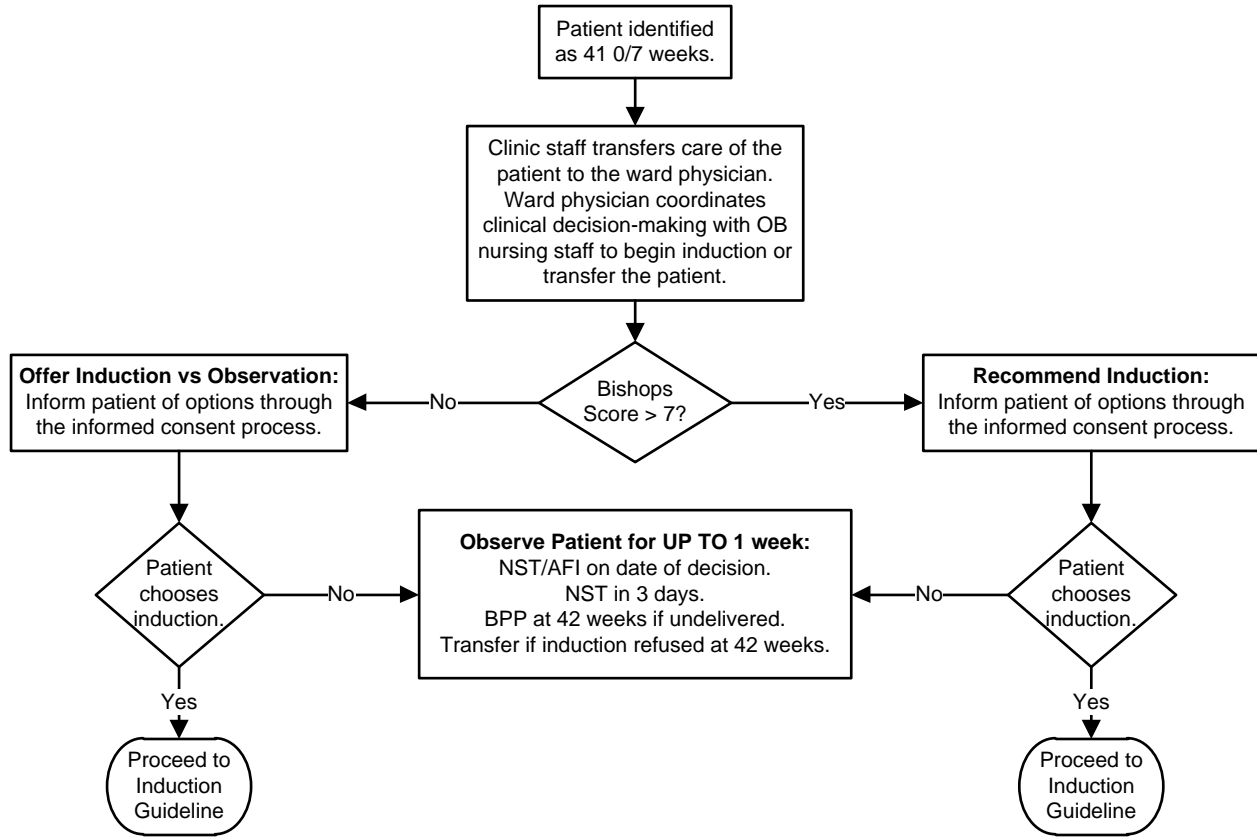
- Preterm premature rupture of membranes
- Placental abruption
- Fetal growth restriction
- Utero-placental insufficiency
- Preeclampsia
- Maternal vascular diseases
- Fetal anomaly
- Post-term
- Suboptimal maternal hydration

Definition of Oligohydramnios

Amniotic Fluid Volume (AFI) < 5 at term
or
Single Vertical Pocket < 2cm.



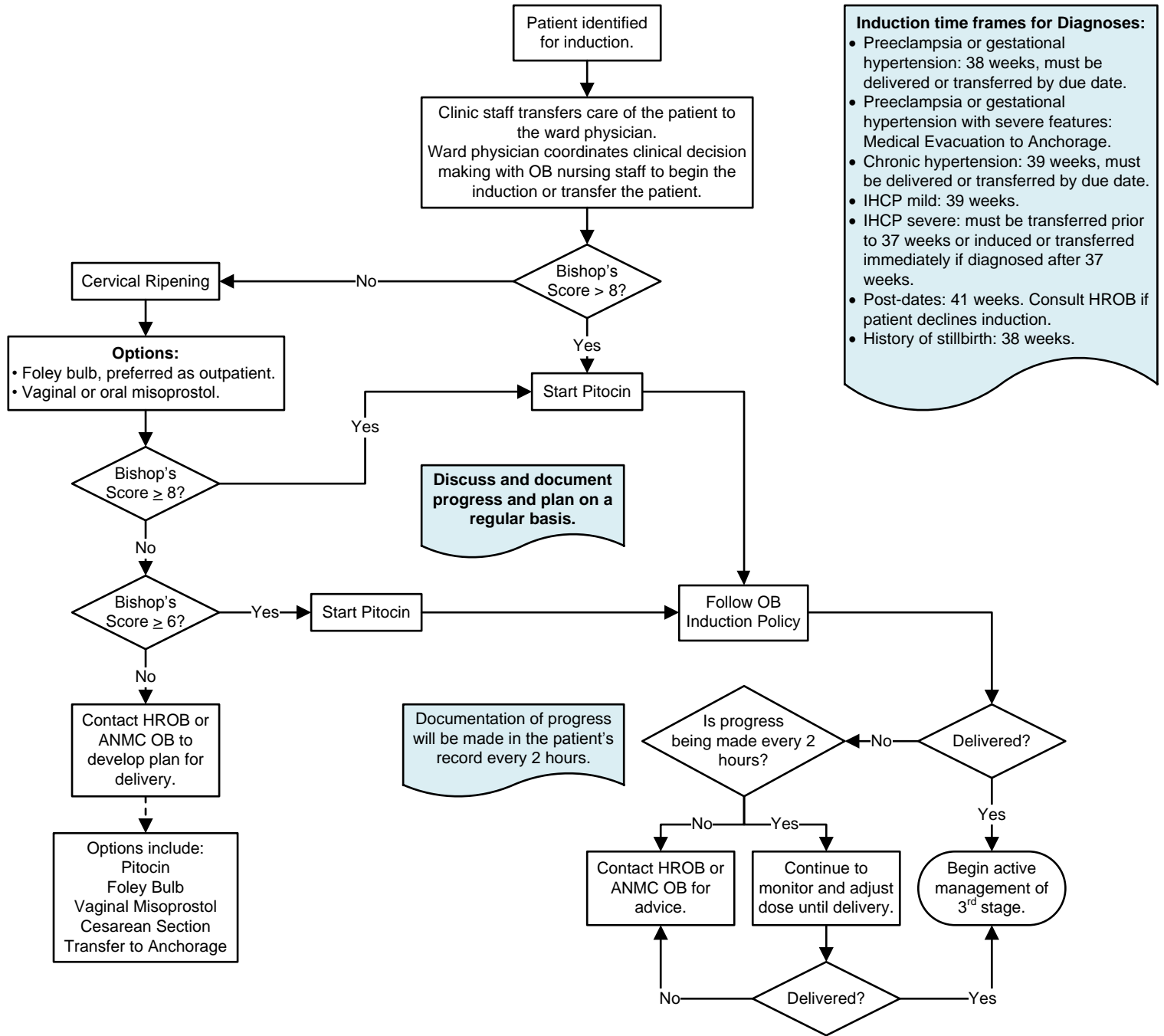
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Bishops Score

Score	Dilatation	Effacement	Station	Position	Consistency
0	closed	0 – 30%	-3	posterior	firm
1	1-2 cm	40 -50%	-2	mid-position	medium
2	3-4 cm	60 -70%	-1,0	anterior	soft
3	5+ cm	80+%	+1,+2		

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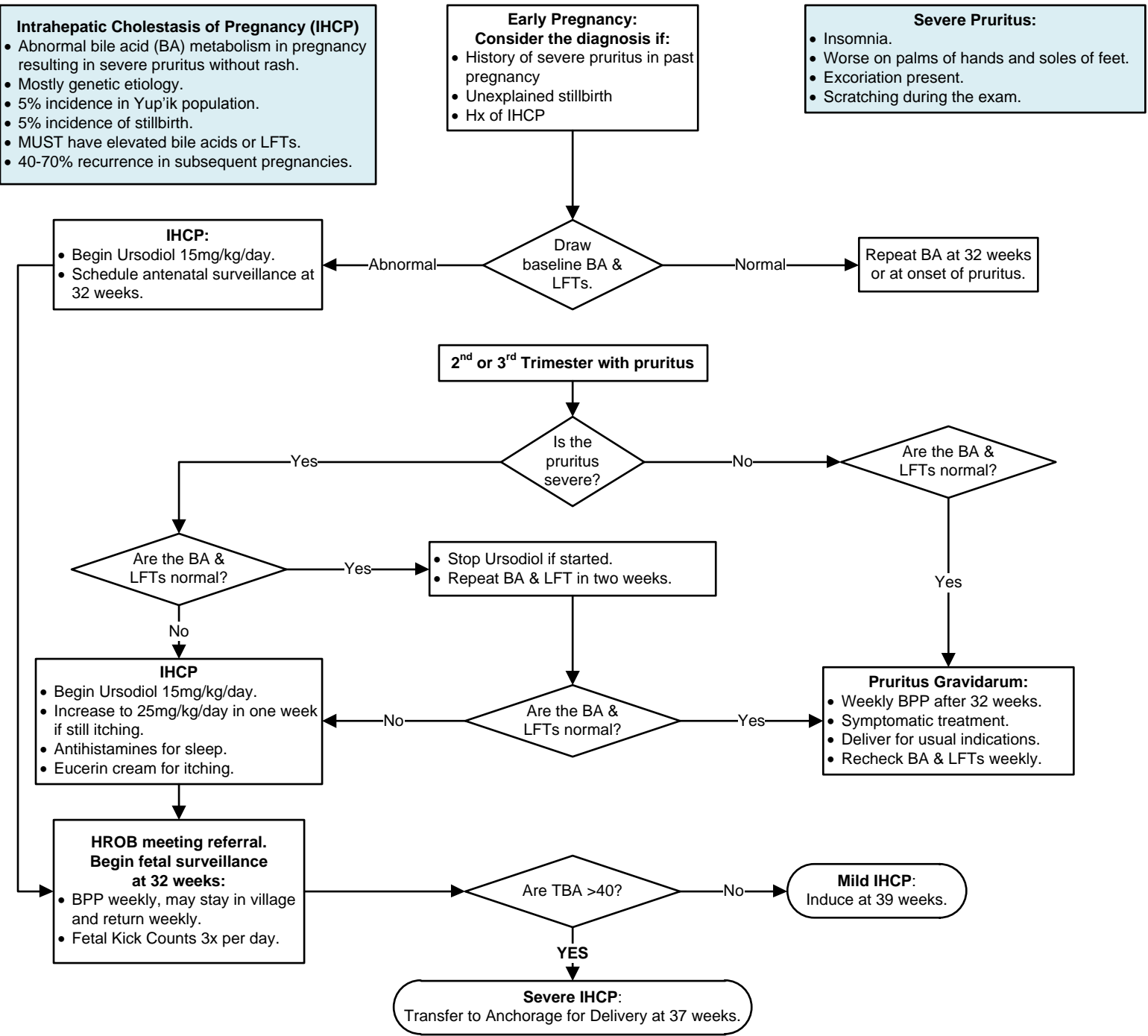


Induction time frames for Diagnoses:

- Preeclampsia or gestational hypertension: 38 weeks, must be delivered or transferred by due date.
- Preeclampsia or gestational hypertension with severe features: Medical Evacuation to Anchorage.
- Chronic hypertension: 39 weeks, must be delivered or transferred by due date.
- IHCP mild: 39 weeks.
- IHCP severe: must be transferred prior to 37 weeks or induced or transferred immediately if diagnosed after 37 weeks.
- Post-dates: 41 weeks. Consult HROB if patient declines induction.
- History of stillbirth: 38 weeks.

Bishop's Score					
Score	Dilatation	Effacement	Station	Position	Consistency
0	closed	0 – 30%	-3	posterior	firm
1	1-2 cm	40 -50%	-2	mid-position	medium
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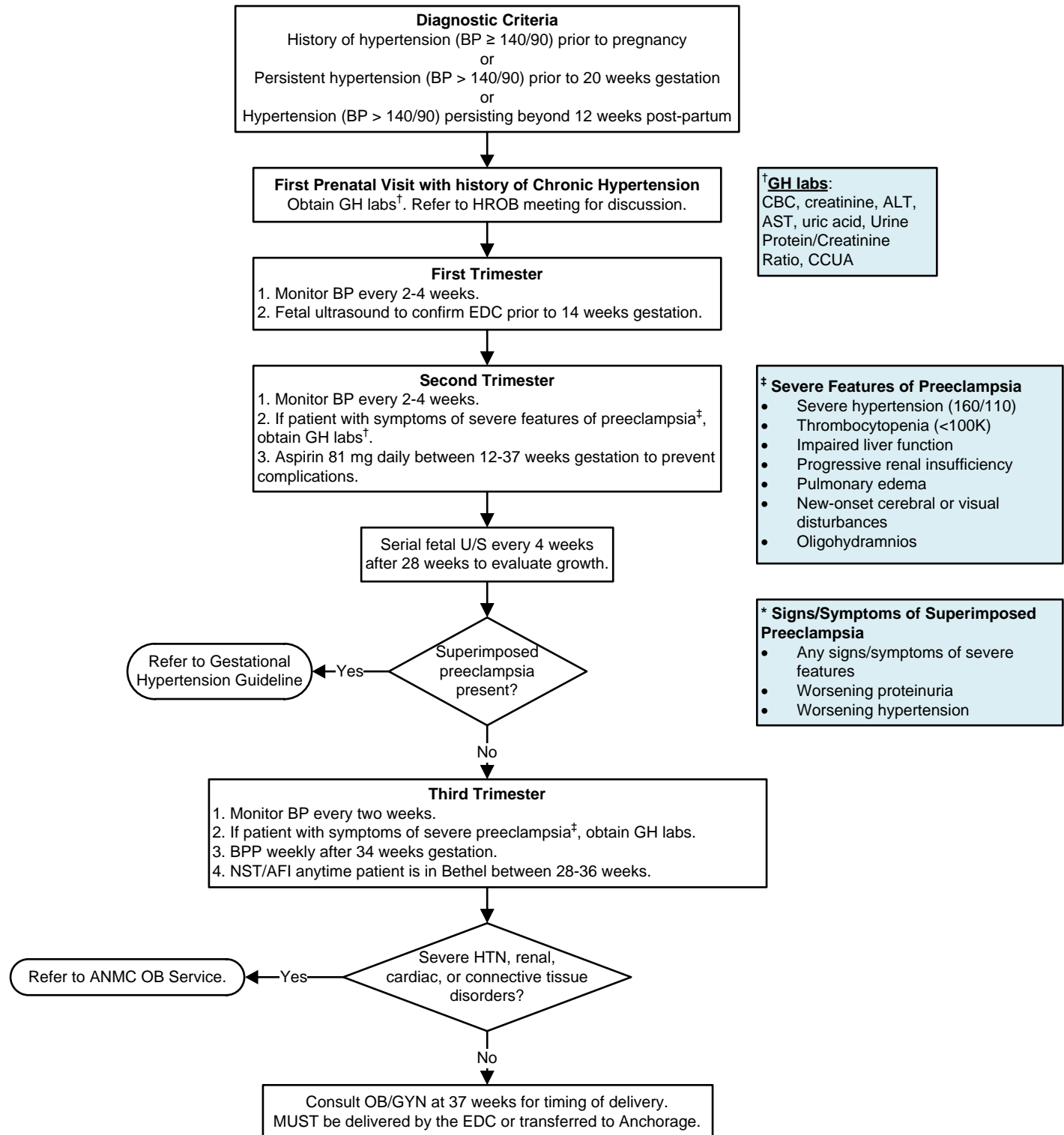
Abnormal Lab levels

Total Bile Acids (TBA)	>10 µmol/L
Cholic Acid	> 3 µmol/L
AST/ALT	>40 units/L
Bilirubin	> 1 mg/dL
Alkaline Phosphatase	>300 units/L

Biophysical Profile (BPP)

- NST
- US including: fetal breathing, tone, gross body motion, and AFI

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Any patient with hypertension in pregnancy should have blood pressure monitored for at least two weeks post-partum.

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†How to take a BP
 Patient should be seated for 15 minutes and calm. She should not chew or smoke. The appropriate sized BP cuff should be used.

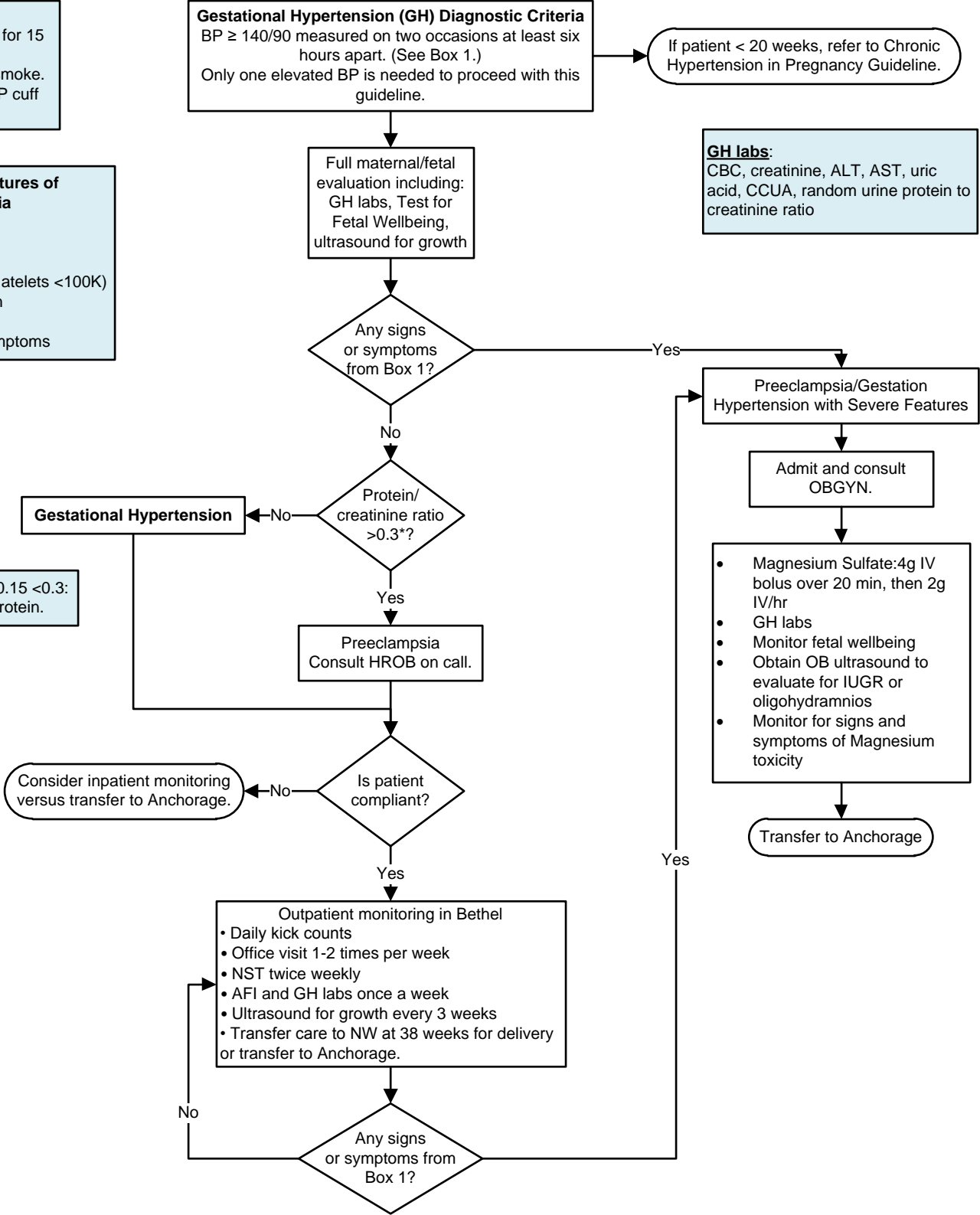
- Box 1: Severe Features of Preeclampsia**
- BP > 160/110
 - Renal insufficiency
 - Pulmonary edema
 - Thrombocytopenia (platelets <100K)
 - Impaired liver function
 - IUGR
 - Cerebral or visual symptoms

Gestational Hypertension (GH) Diagnostic Criteria
 BP ≥ 140/90 measured on two occasions at least six hours apart. (See Box 1.)
 Only one elevated BP is needed to proceed with this guideline.

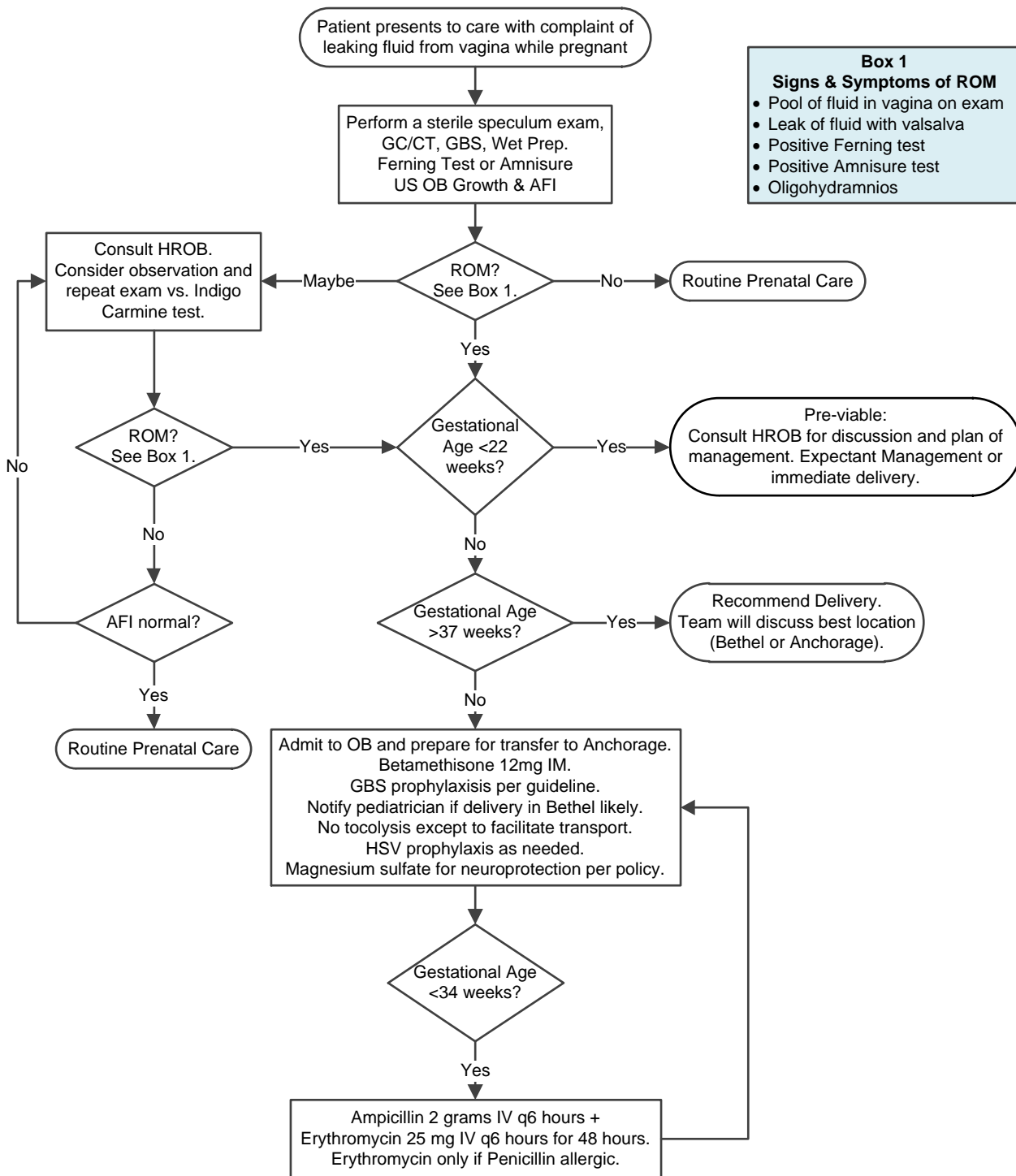
If patient < 20 weeks, refer to Chronic Hypertension in Pregnancy Guideline.

GH labs:
 CBC, creatinine, ALT, AST, uric acid, CUA, random urine protein to creatinine ratio

*Protein/creatinine ratio >0.15 <0.3:
 Obtain 24 hour urine protein.



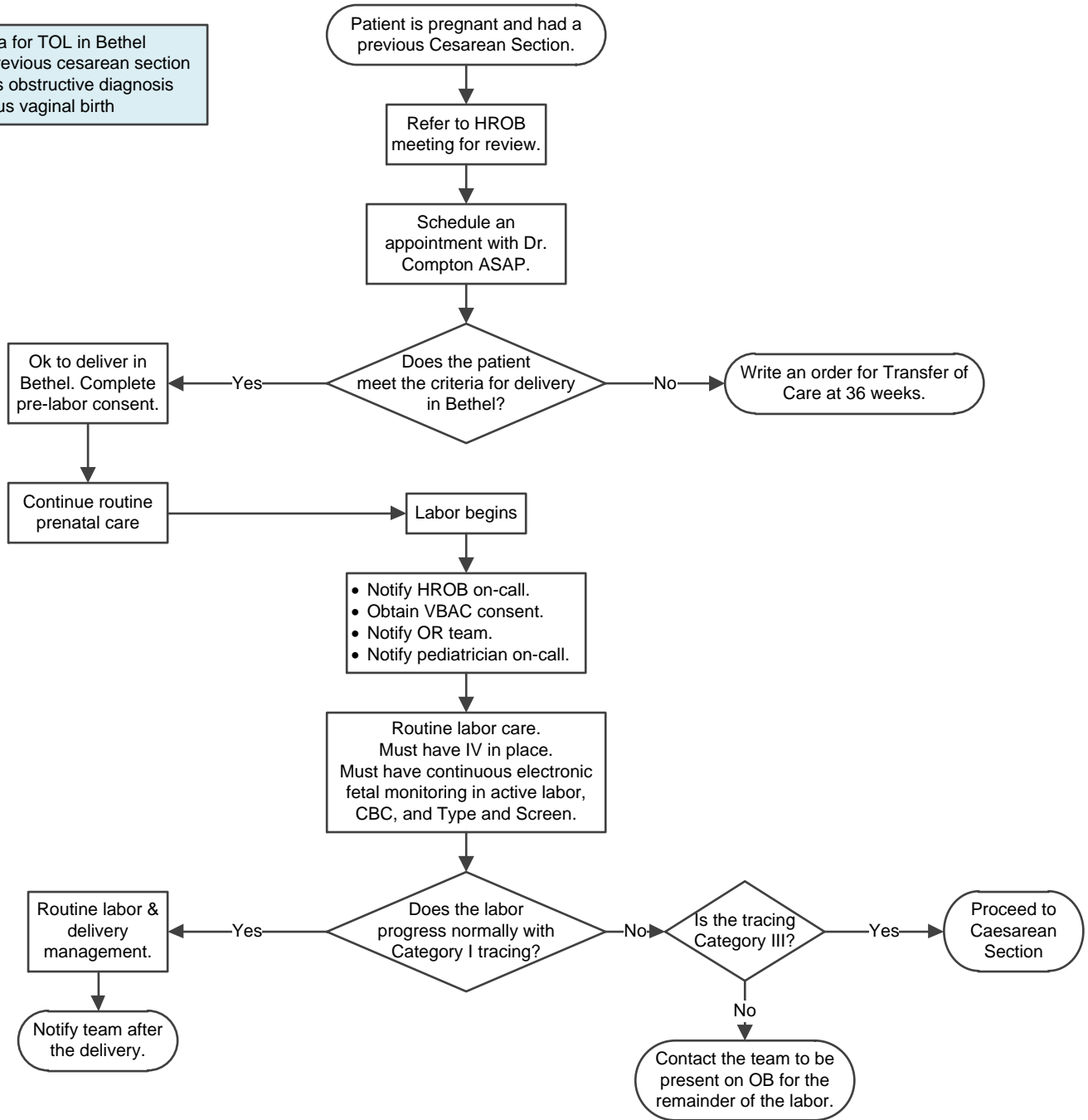
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Approved by MSEC 7/26/17.
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- Criteria for TOL in Bethel
- Only one previous cesarean section
 - No previous obstructive diagnosis
 - One previous vaginal birth

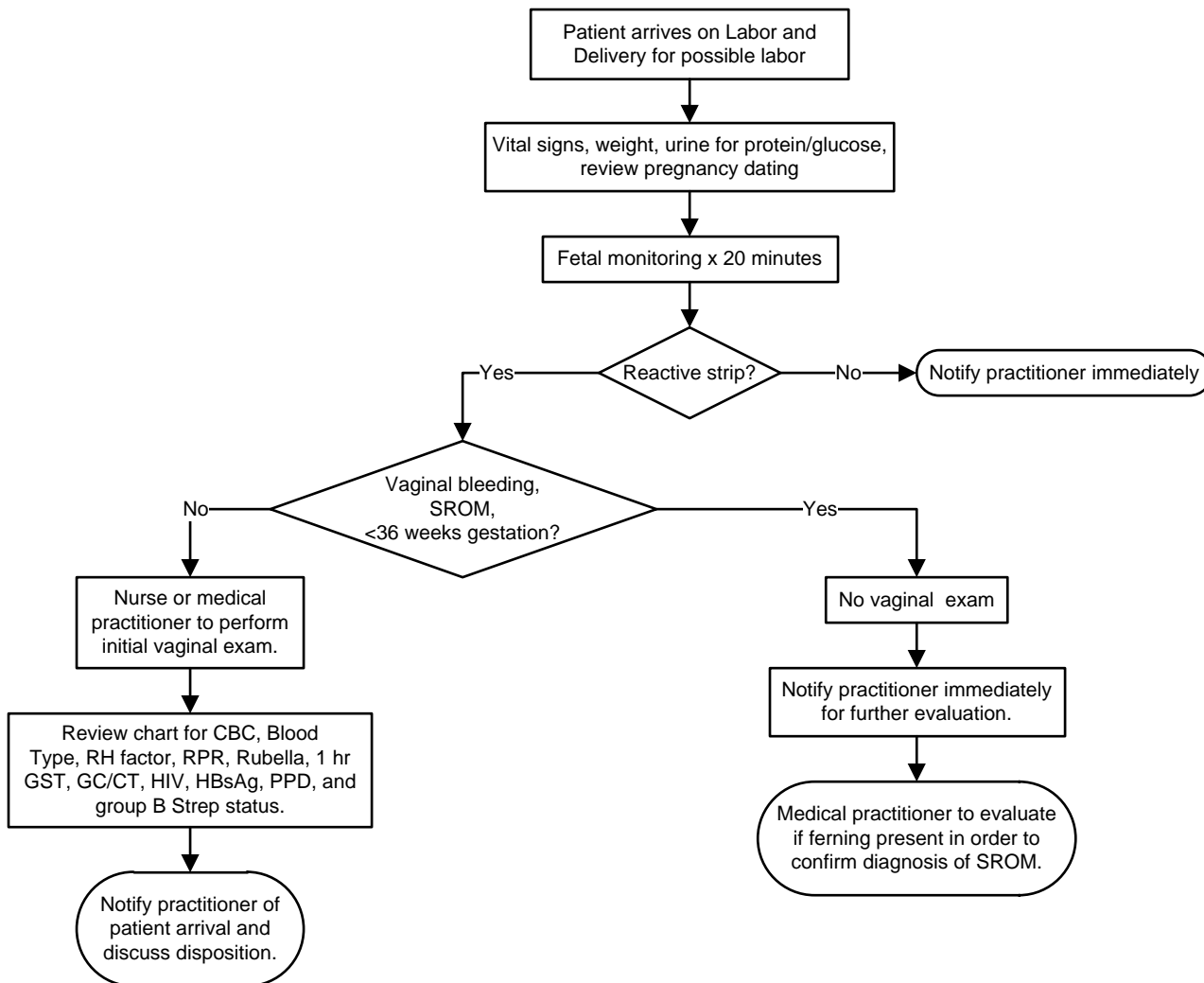


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 Approved by MSEC unknown date.
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Obstetrics Protocols/Reference

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BASICS

- Review the chart EVERY visit for incomplete lab or other required testing.
- Review the Problem List EVERY visit for needed testing or intervention items.
- Patient should see a Bethel provider or CHA/P monthly from first visit to 32 weeks.
- Patient should see a Bethel provider or CHA/P every two weeks after 32 weeks and then weekly at 36 weeks.
- If there is any question of EDC, see guideline or refer to HROB meeting for decision.

First Prenatal

NURSING/CASE MANAGER

- Order First Trimester Transvaginal OB Ultrasound (>6 weeks) for dating.
- Patient to initiate paperwork:
 - Residential Information Sheet.
 - Pregnancy Verification Sheet – use LMP if no EDC from ultrasound.
 - Quad screen consent form.
 - FAS & Drug Assessment Screening questionnaire.
 - 36 Week BIB/Medevac Policy.
- Review TB screening status – patient MUST HAVE a negative Quantiferon or PPD prior to 36 weeks to stay at Prematernal Home. Place PPD if needed.
- Send patient for labs: urinalysis with reflex, blood type and screen, HBsAg, CBC, Rubella titer, RPR, HIV testing, HgA1c, 25-OH vitamin D.
- Set up room for pelvic to do PAP (only do a PAP if it is due), wet prep, GC/CT (with verbal consent).
- Routine patient handouts: WIC handout.

PROVIDER

- Prenatal H&P and Prenatal Education.
- Chart review.
- Offer flu vaccine October through the end of the flu season.
- Discuss and sign BIB/Medevac Policy contract.
- Update the Problem List and include EDC and grvida/para in one problem.
- Refer to HROB meeting if needed.
- Ask about S/Sx of IHCP; if present, add bile acids and LFTs to lab draw.

PATIENT

- Go to the Medicaid office to file for Medicaid.
- Go to the WIC office to file for WIC.

15-21 Weeks

- If desired, quad screen must be drawn between 15 and 21 weeks gestation.
- Review TB status.

20 Weeks

- Ultrasound to screen for anomalies: US OB anatomy and cervical length.
 - Only one is needed no matter where it is done.
 - Aim for 20 weeks.
 - If anatomy is incomplete, order US OB follow-up for the next visit to complete the anatomy exam.

24-28 Weeks

NURSING

- Labs: GST, CBC, 25-OH vitamin D.
- Tdap after 24 weeks.
- GST – 50 g (½ bottle or 5 ounces):
 - If result >140 mg/dL, schedule 3 hour GTT ASAP.
 - If the result >179, no GTT; refer directly to diabetes education.
- Attempt to keep the patient until the results of the GST are back.
- Review TB status. Send to lab for Quantiferon if failed to have PPD read.

PROVIDER

- After 28 weeks, ask about preeclampsia symptoms.
- After 24 weeks, ask about preterm labor symptoms and IHCP symptoms.
 - Back pain.
 - Sudden increase in vaginal discharge.
 - Pelvic pressure.
 - Cramps/contractions.
- Educate patient on fetal movement count.

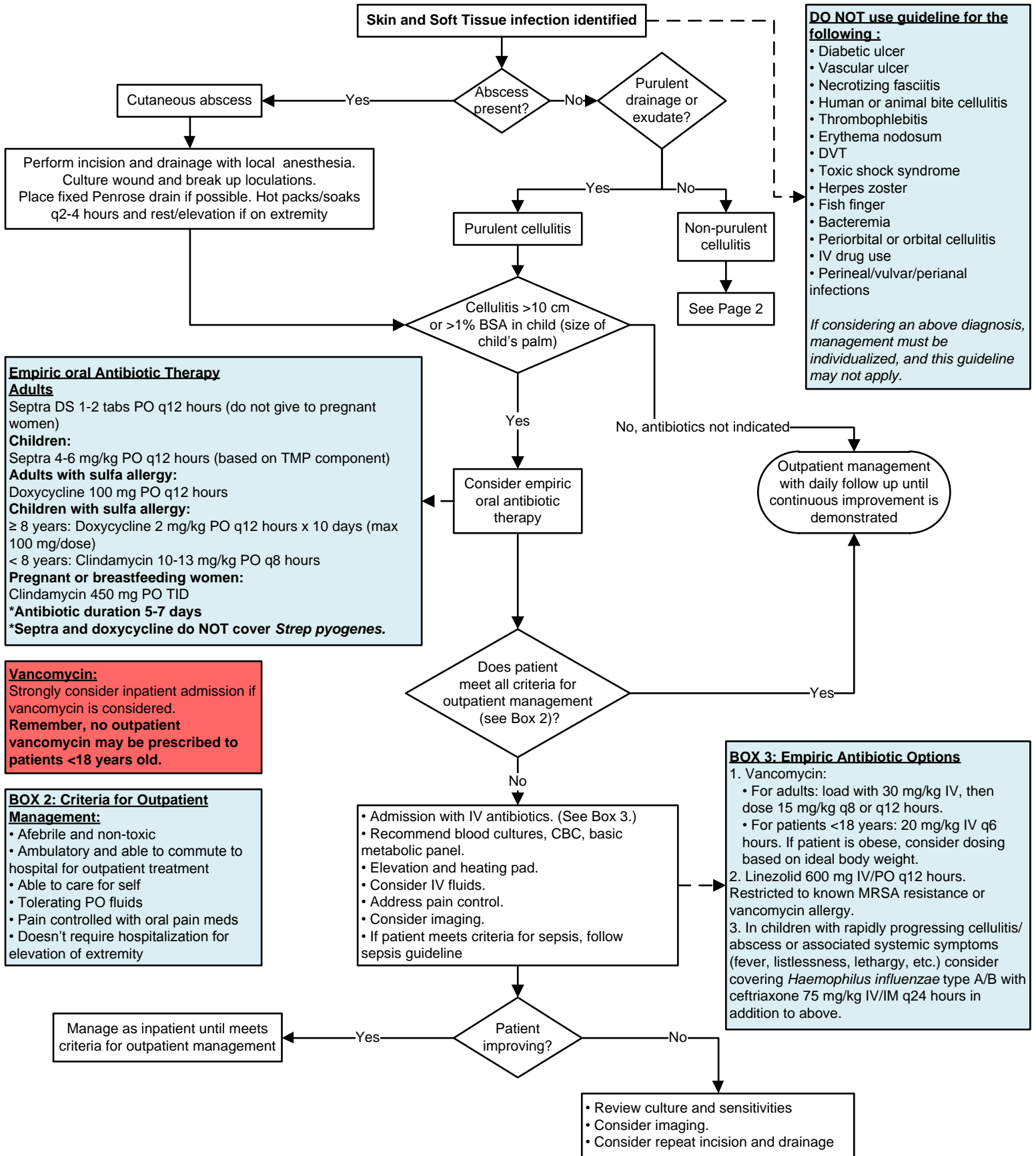
36 Weeks/BIB Date

- Labs: CBC, RPR, pelvic exam with GBS culture, GC/CT, wet mount if concerns.
- Review TB status. Send to lab for Quantiferon if status unknown.
- Schedule appointments to be seen each week by Bethel provider through 41 weeks.
- Complete Prematernal Home/Medical Clearance paperwork.
- Ask about any symptoms of:
 - Rupture of membranes.
 - Preeclampsia.
 - Labor.
 - Itching.

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DO NOT use guideline for the following:

- Diabetic ulcer
- Vascular ulcer
- Necrotizing fasciitis
- Human or animal bite cellulitis
- Thrombophlebitis
- Erythema nodosum
- DVT
- Toxic shock syndrome
- Herpes zoster
- Fish finger
- Bacteremia
- Periorbital or orbital cellulitis
- IV drug use
- Perineal/vulvar/perianal infections

If considering an above diagnosis, management must be individualized, and this guideline may not apply.

Empiric oral Antibiotic Therapy

Adults
Septra DS 1-2 tabs PO q12 hours (do not give to pregnant women)

Children:
Septra 4-6 mg/kg PO q12 hours (based on TMP component)

Adults with sulfa allergy:
Doxycycline 100 mg PO q12 hours

Children with sulfa allergy:
≥ 8 years: Doxycycline 2 mg/kg PO q12 hours x 10 days (max 100 mg/dose)
< 8 years: Clindamycin 10-13 mg/kg PO q8 hours

Pregnant or breastfeeding women:
Clindamycin 450 mg PO TID

***Antibiotic duration 5-7 days**
***Septra and doxycycline do NOT cover *Strep pyogenes*.**

Vancomycin:
Strongly consider inpatient admission if vancomycin is considered.
Remember, no outpatient vancomycin may be prescribed to patients <18 years old.

BOX 2: Criteria for Outpatient Management:

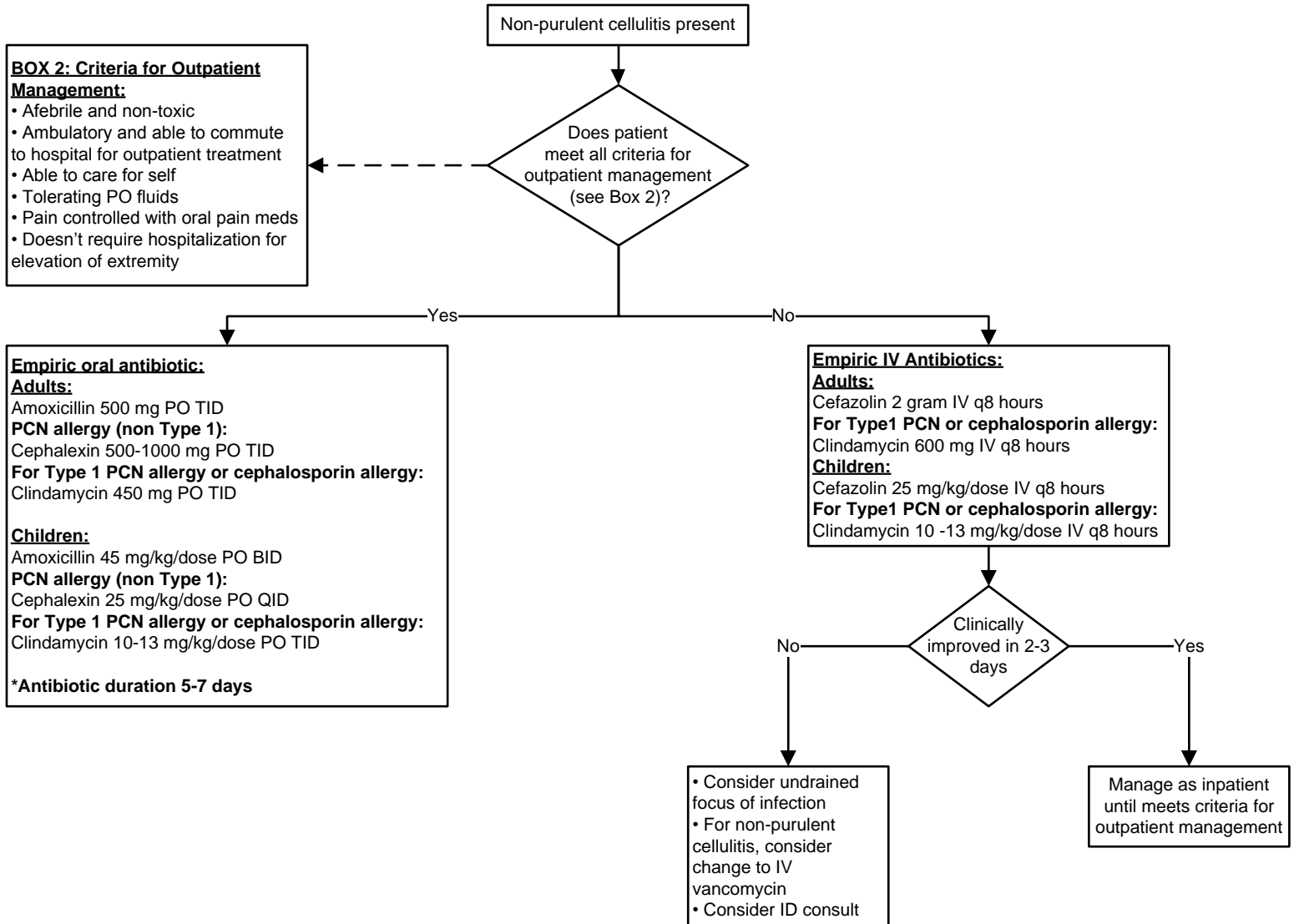
- Afebrile and non-toxic
- Ambulatory and able to commute to hospital for outpatient treatment
- Able to care for self
- Tolerating PO fluids
- Pain controlled with oral pain meds
- Doesn't require hospitalization for elevation of extremity

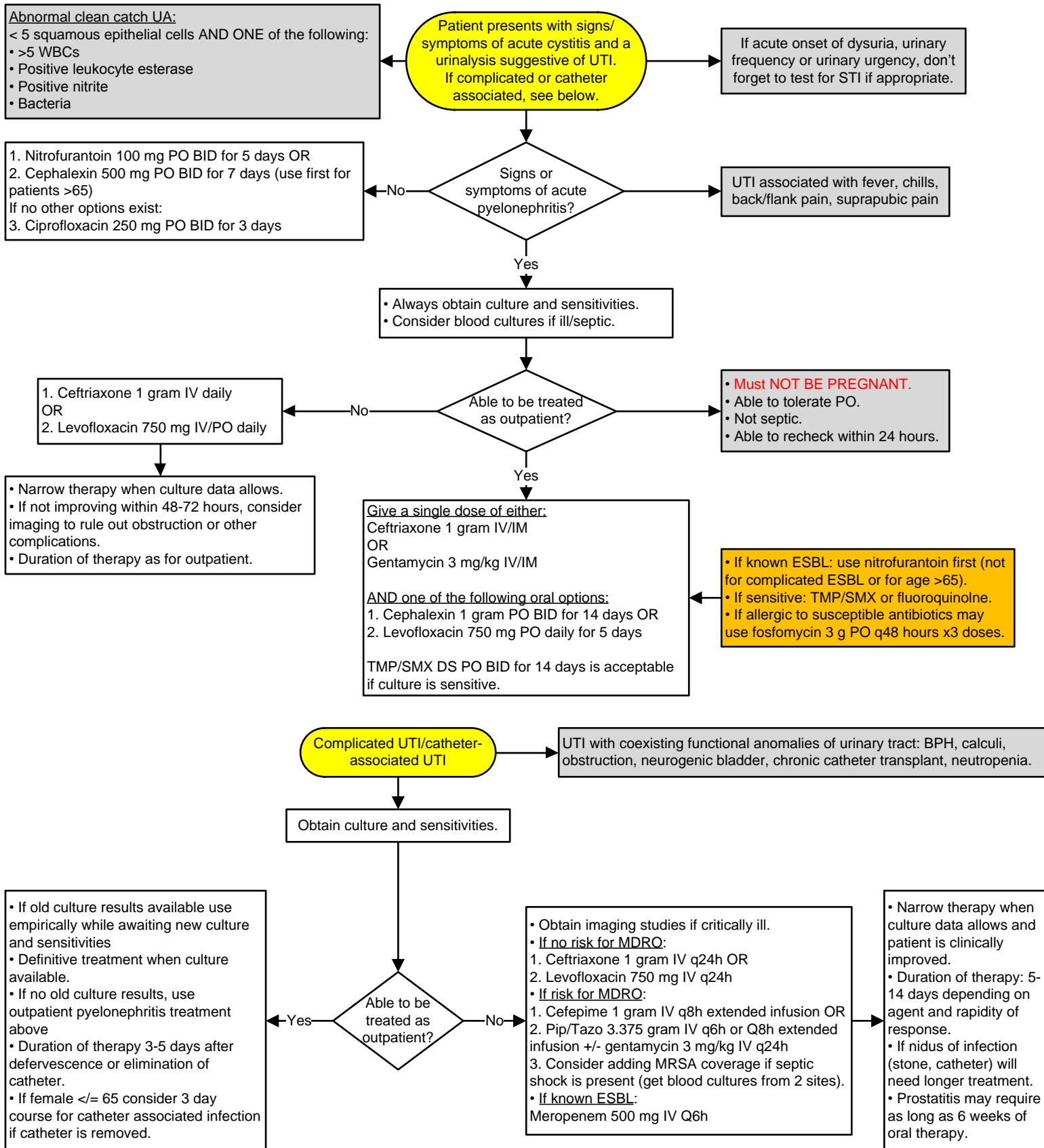
• Admission with IV antibiotics. (See Box 3.)

- Recommend blood cultures, CBC, basic metabolic panel.
- Elevation and heating pad.
- Consider IV fluids.
- Address pain control.
- Consider imaging.
- If patient meets criteria for sepsis, follow sepsis guideline

BOX 3: Empiric Antibiotic Options

1. Vancomycin:
 - For adults: load with 30 mg/kg IV, then dose 15 mg/kg q8 or q12 hours.
 - For patients <18 years: 20 mg/kg IV q6 hours. If patient is obese, consider dosing based on ideal body weight.
2. Linezolid 600 mg IV/PO q12 hours. Restricted to known MRSA resistance or vancomycin allergy.
3. In children with rapidly progressing cellulitis/abscess or associated systemic symptoms (fever, listlessness, lethargy, etc.) consider covering *Haemophilus influenzae* type A/B with ceftriaxone 75 mg/kg IV/IM q24 hours in addition to above.





MDRO: Multi-Drug Resistant Organism
MRSA: Methicillin-Resistant Staph Aureus
ESBL: Extended Spectrum Beta Lactam

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Approved by MSEC 10/15/18.

If comments about this guideline, please contact Ellen_Hodges@ykhc.org.



Signs and Symptoms of UTI

- fever
- dysuria
- vomiting
- abdominal pain
- new daytime or nighttime wetting
- increased frequency of voiding
- malodorous urine

Differential Dx for Dysuria

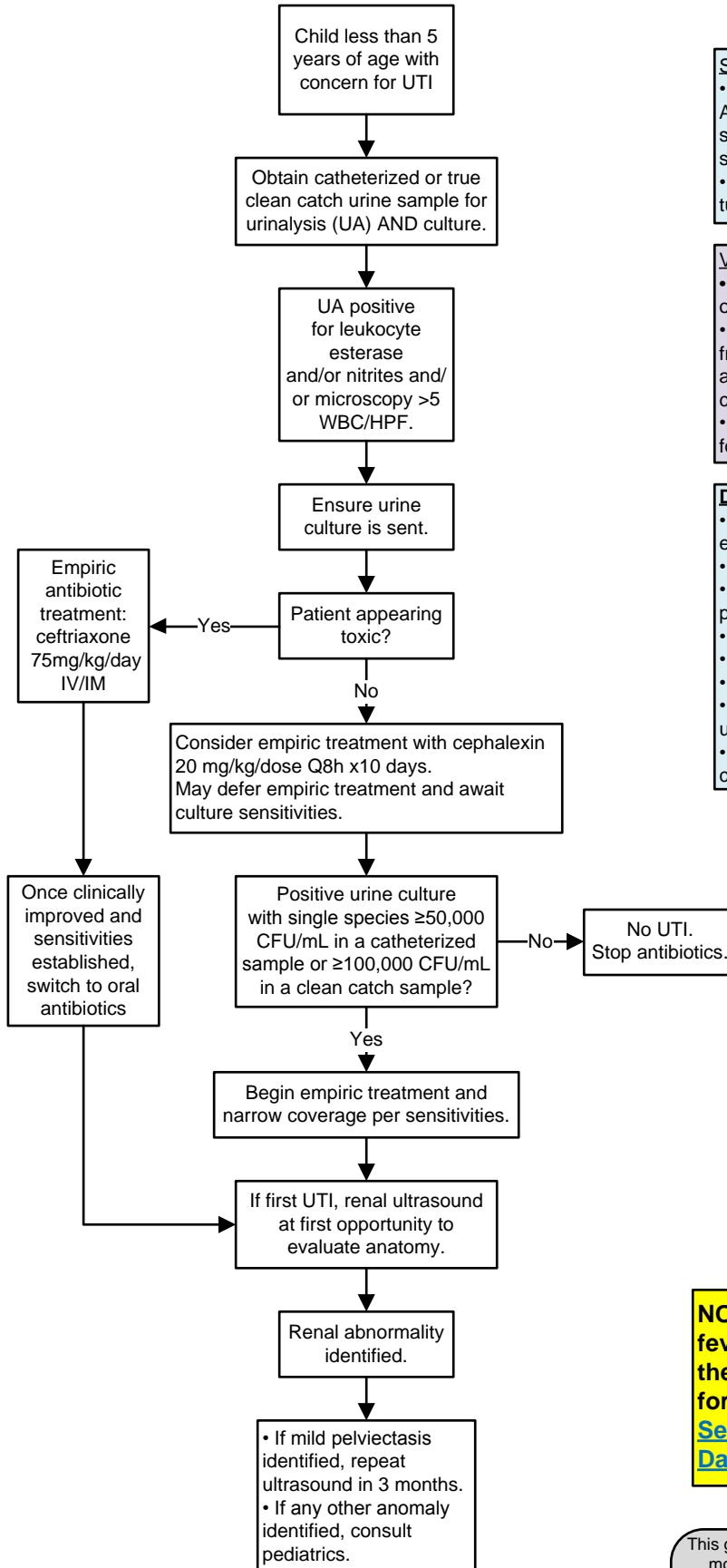
- UTI
- vulvovaginitis
- Candida infection
- poor hygiene
- sexual abuse
- age-appropriate self-exploration

Resistance

- Empiric drug choice is based on local resistance patterns and consultation with ID specialist.
- If urine culture grows an Extended-Spectrum Beta-Lactamase (ESBL) producing organism, please obtain a pediatrics consult and add ESBL to Problem List.

Indications for VCUG:

- Recurrent UTI in child <6 years. Note: study available in Bethel 1-2 times per year when radiologist in-house.
- Major anomaly on ultrasound. Consult pediatric urologist and consider obtaining VCUG in Anchorage.



Symptomatic Care

- If dysuria, irritation, etc. recommend A+D ointment and instruct family to do soaks/baths with warm water and no soap.
- May consider baking soda ¼ cup per tub.

Village Management

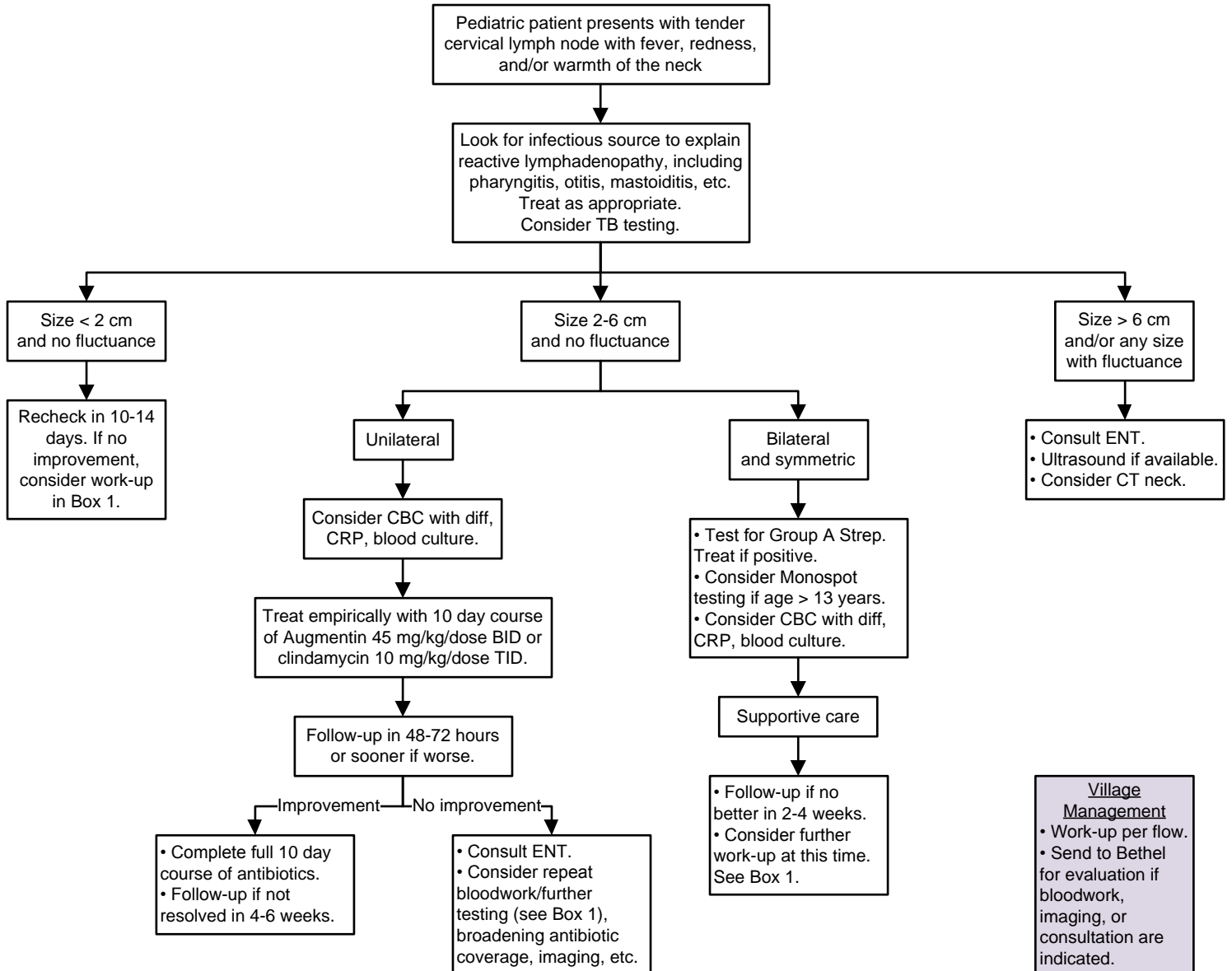
- Do not treat any child under 5 years of age empirically in the village.
- If patient has dysuria, increased frequency, new-onset enuresis, and/or abnormal clean catch urinalysis, consider further evaluation in Bethel.
- Consider symptomatic care (see box) for possible vulvovaginitis.

DO NOT ...

- treat any child under 5 years of age empirically in the village.
- routinely collect urine via bag.
- treat a UTI without a culture in progress.
- routinely perform a test of cure.
- routinely start UTI prophylaxis.
- perform suprapubic taps.
- routinely obtain bloodwork for uncomplicated UTI.
- add UTI to Problem List until confirmed by culture.

NOTE: Any infant with a fever <90 days must go to the Emergency Department for evaluation.
[See the Fever in Infants 0-90 Days Guideline.](#)

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 Approved by MSEC 5/8/19.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.



Box 1: Further Work-up

Perform careful exam for lymphadenopathy of other locations. For any child with nontender lymphadenopathy or lack of improvement after specified period, consider, as appropriate:

- PPD/TB work-up
- CBC
- CRP
- LFTs
- Blood culture
- HIV testing
- RPR
- Toxoplasmosis testing
- Bartonella testing
- EBV, CMV titers
- LDH, uric acid
- CXR
- Hematology/oncology consult
- Infectious disease consult

Most Common Causes

- **Reactive lymphadenopathy** due to local infection (may take 4-6 weeks to resolve).
- **Unilateral:** *Staph aureus*, Group A Strep, Group B Strep, anaerobes, TB/MAC
- **Bilateral:** respiratory viruses (enterovirus, adenovirus, influenza, etc.), Group A Strep, HSV (primary), EBV, CMV, *Mycoplasma*, *Arcanobacterium*, TB

Less Common Causes to Consider

- Kawasaki disease; periodic fever with aphthous stomatitis, pharyngitis, and adenitis (PFAPA); leukemia; lymphoma

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If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.



Box 1: AOM Decision-Making Principles

- If observation is warranted, do not prescribe antibiotics.
- Always treat pain with acetaminophen and ibuprofen, as appropriate.
- If patient has not received amoxicillin within 30 days, start with amoxicillin to treat new infection.
- For AOM with otorrhea, use otic drops if >6 months. Do not use oral antibiotics unless the other ear is infected without perforation.
- Do not treat fluid that develops after AOM if child is asymptomatic – observe up to 3 months.
- Do not use azithromycin, erythromycin, cephalexin (Keflex), or Septra for AOM.
- Do not use antibiotic prophylaxis.
- Do not send ear drainage for culture.

Box 2: Eligibility for Observation for 48-72 hours

- 6-24 month old with mild, uncertain, or unilateral AOM
- >24 month old with mild/moderate (non-bulging) AOM
- Caregiver comfortable withholding antibiotics
- Follow-up assured
- Antibiotics can be started promptly if symptoms persist or worsen
- No fever >102°F and only mild otalgia

Box 3: AOM Treatment

Antibiotic duration, by age:

- < 2 years: 10 day course of oral antibiotic
- 2-5 years: 7 day course of oral antibiotic
- ≥ 6 years: 5 day course of oral antibiotic
- Note: in patients with history of recurrent, complicated, or chronic infections, may consider up to 10 days of treatment.

Antibiotic choice:

- 1st line: amoxicillin 45 mg/kg/dose PO BID
- 2nd line: Augmentin 45 mg/kg/dose PO BID
- 3rd line: ceftriaxone 50 mg/kg IV/IM QD for 3 days

Otitis-conjunctivitis syndrome

Augmentin 45 mg/kg/dose PO BID

Try to avoid using cephalosporins. They are less effective at treating the most common organisms that cause OM.

For PCN allergy: Please refer the patient for an allergy trial if not already done.

cefdinir 14 mg/kg/dose PO QD

OR

ceftriaxone 50 mg/kg IV/IM QD for 1-3 days

For ruptured TM/tube drainage:

Wick ears prior to giving drops.

- Ofloxacin 5 drops BID
- Ciprodex 4 drops BID

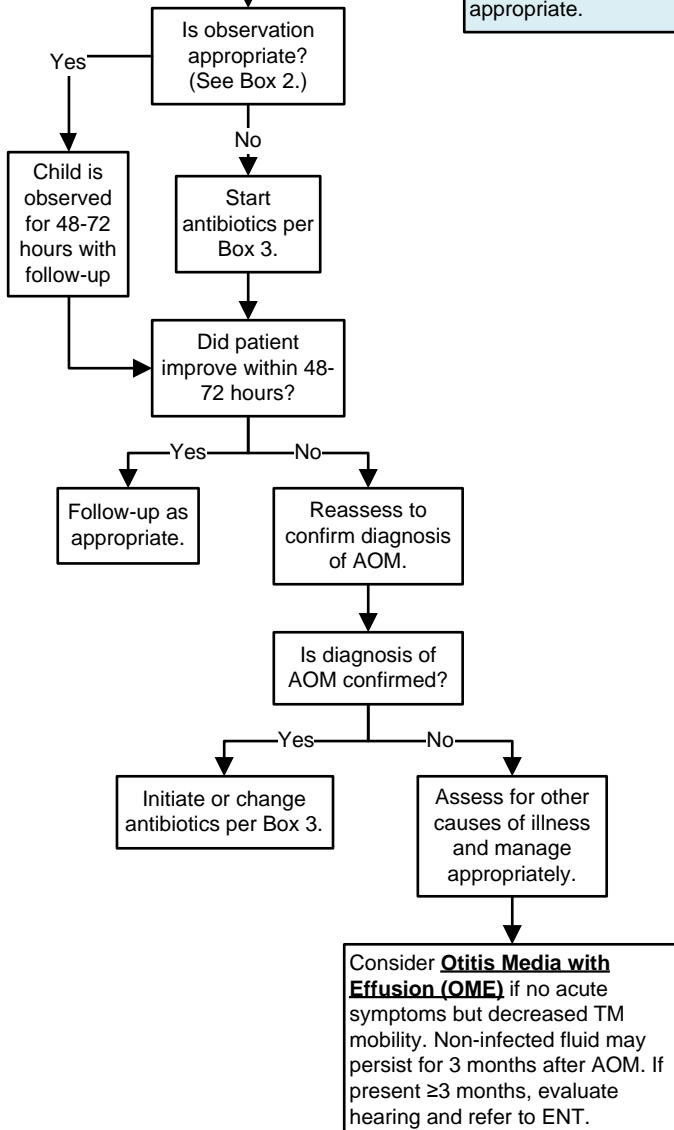
AOM ≥3 months

Acute onset of:

- Fever and ear pain
 - Bulging TM and decreased mobility
- See Box 1.

Always address pain:

- If >3 months old, use acetaminophen.
- If >6 months old, use acetaminophen and/or ibuprofen.



AOM <3 Months Old

If otorrhea, bulging TM, or other suspicion of AOM <3 months old, patient must be seen by provider within 24 hours.

- ≤28 days old: patient must be seen in the ER for full lab work-up including LP and treatment with IV antibiotics.
- 29-60 days old with or without fever, patient must be seen in the ER for full lab work-up including LP.
 - If febrile, follow [fever < 90 days clinical guideline](#).
 - If afebrile and reassuring work-up, may treat with oral antibiotics as appropriate.
- 61-90 days old:
 - If febrile, follow [fever < 90 days clinical guideline](#).
 - If afebrile and sick-appearing, perform work-up as clinically appropriate. May consult peds as needed.
 - If afebrile and well-appearing, lab work-up not necessary. May treat with oral or otic antibiotics as appropriate.

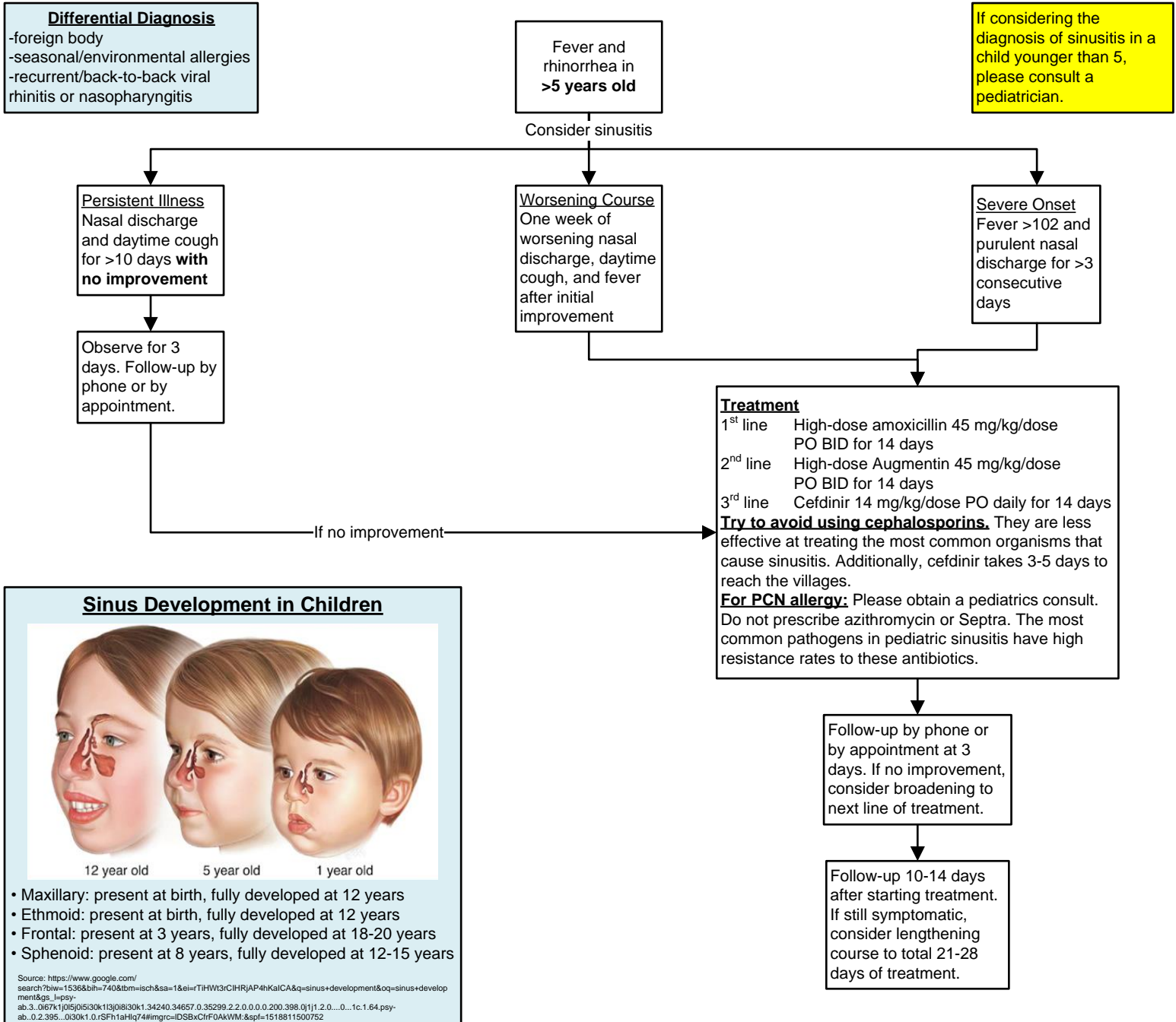
This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.

Approved by MSEC 2/5/20.

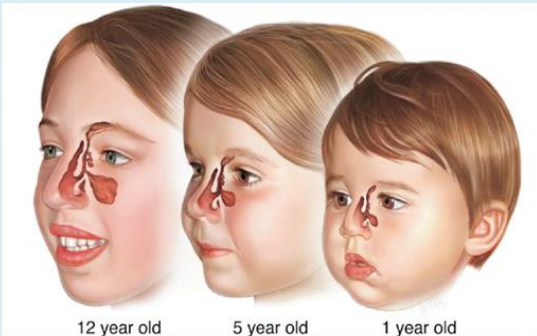
If comments about this guideline, please contact
Leslie_Herrmann@ykhc.org.

When to Refer to ENT

- 3 episodes of AOM in 6 months
- 4 episodes of AOM in 12 months
- OME or otorrhea for ≥3 months
- Hearing loss >20 dB



Sinus Development in Children



- Maxillary: present at birth, fully developed at 12 years
- Ethmoid: present at birth, fully developed at 12 years
- Frontal: present at 3 years, fully developed at 18-20 years
- Sphenoid: present at 8 years, fully developed at 12-15 years

Source: https://www.google.com/search?biw=1536&bih=740&btm=isch&sa=1&ei=TiHWt3rCIHRJAP4hKaCA&q=sinus+development&oq=sinus+development&gs_l=psy-ab:3..0i67k1j0i5j0i530k11j3i0i8i30k1.34240.34657.0.35299.2.2.0.0.0.200.398.0j1j1.2.0...0...1c.1.64.psy-ab..0.2.395...0i30k1.0.rSFh1aHlq74#imgrc=IDSBxCtrFOAKWM.&sp=1518811500752

Imaging

Do not routinely obtain imaging studies in suspected sinusitis unless there is concern for a complication like orbital or CNS involvement.

Do not treat sinusitis, in the absence of symptoms, if it is an incidental finding on an imaging study.

Adjuvant Therapies

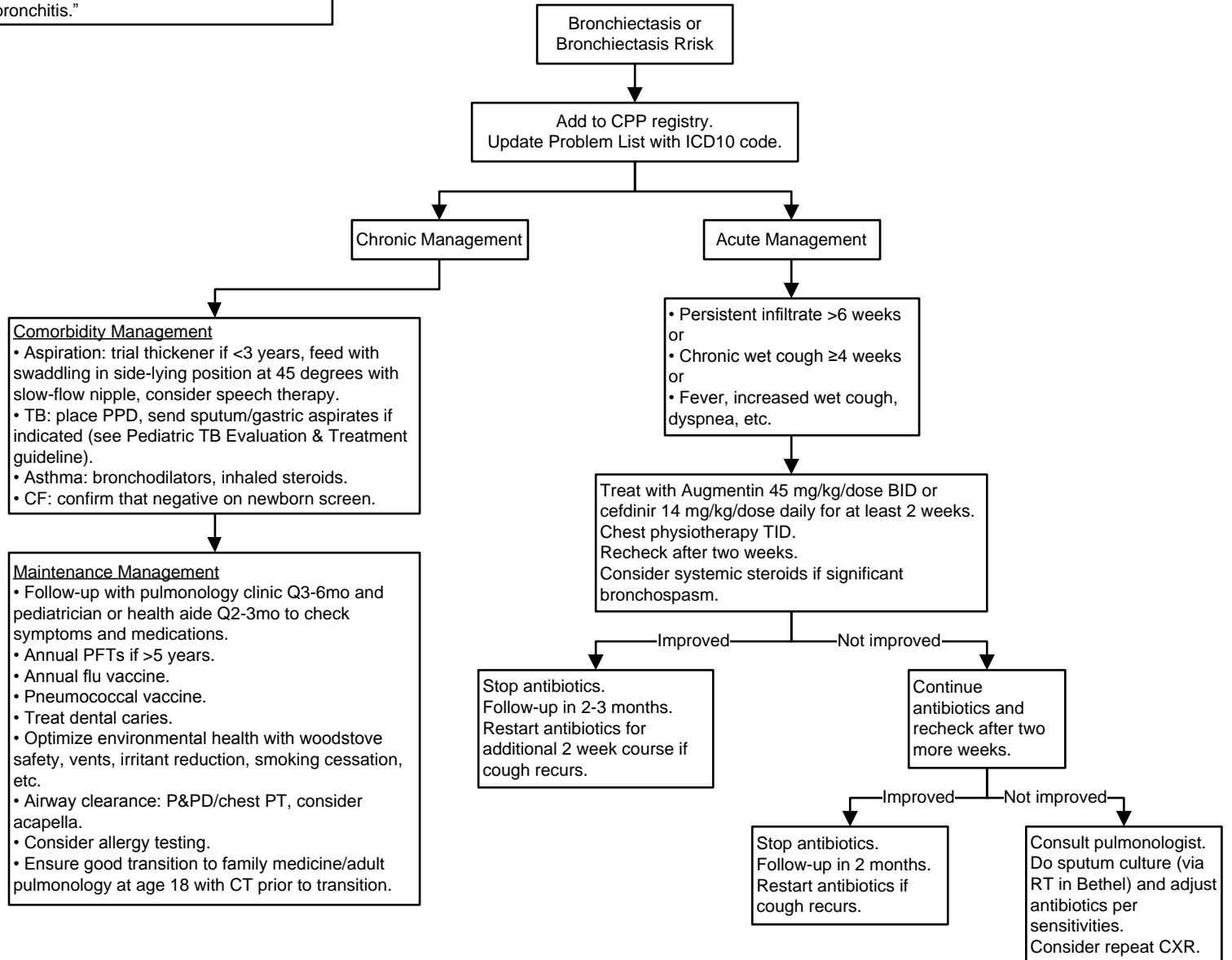
- Saline nasal spray
- Steam
- Oral hydration
- Tylenol and ibuprofen
- Do not routinely give decongestants and antihistamines (especially Benadryl). They have been proven ineffective in children and are unsafe under 6 years old.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 4/26/18; reviewed and reapproved 10/2019. **If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.**



Definitions

- Bronchiectasis is a lung condition with chronic wet cough and lung infections and is diagnosed by CT scan. Use ICD10 code J47 – “Bronchiectasis.”
- Bronchiectasis risk is defined as ≥ 3 episodes of wet cough >4 weeks in the past 2 years, often in a setting of persistent infiltrates and recurrent pneumonia. Use ICD10 code J41.1 – “Chronic purulent bronchitis.”





High Risk for TB

1. Exposure to an active TB patient.
2. HIV positive.
3. Immunosuppressed.
4. Prednisone-dependent on ≥ 15 mg/day.
5. Suspicious CXR.
6. <6 mo of age.

+PPD

At least 10 mm induration (not redness) OR >5 mm induration (not redness) for patients who are high risk (see box).

Needs to be read 48-72 hours after placement for a true negative. If positive, the induration will remain up to seven days and can be read until then.

Public Health Nursing (PHN)

Phone: 543-2110
Fax: 543-0435

All Directly Observed Therapy (DOT) will be arranged by PHNs.

Schedule 40 minute clinic appointment.
Notify Public Health.
Patient may do three sputums for AFB smear/culture in village or Bethel while awaiting appointment.

Examine patient and perform symptom review: cough >3 weeks, sputum, weight loss, sweats, fever, cough not resolving on antibiotics, fatigue.

Get CXR, LFTs, HIV testing.
Consider STI screening with RPR, GC/CT.
Order three sputums for AFB smear/culture: first in the clinic, two more at home. Need first morning samples if not already done.

If concerned about false-positive PPD $<$ consider Quantiferon-Gold.

CXR normal?
Symptom review normal?

Consider active TB.
See tuberculosis guideline.

1. Hold on LTBI meds while obtaining sputum samples.
2. Ensure follow-up if medication deferred.
3. Discuss with PHNs.
4. Send note and med order to PHN.

Adult or child?

Older child or adult

Infant or child unable to do sputum (<6 years)

Older child or adult

Infant or child unable to do sputum (<6 years)

1. If negative smears, start LTBI regimen (see box). If Hx INH resistance in patient's village, consider rifampin.
2. PH completes monthly symptom and medication side effects screens.
3. Consider following LFTs if alcohol use.
4. Await AFB cultures.

Treat as LTBI

1. See regimens and select with PHN discussion.
2. Use pills and a crusher; mix medications in pudding or applesauce.
3. Follow-up Q3mo.
4. Send note and med order to PHN.

Obtain sputums for AFB smear/culture x3 if not already done.

Start four drug therapy for active TB. See tuberculosis guideline.

Admit child for collection of gastric aspirates or induced sputums. When collected, start four drug therapy.

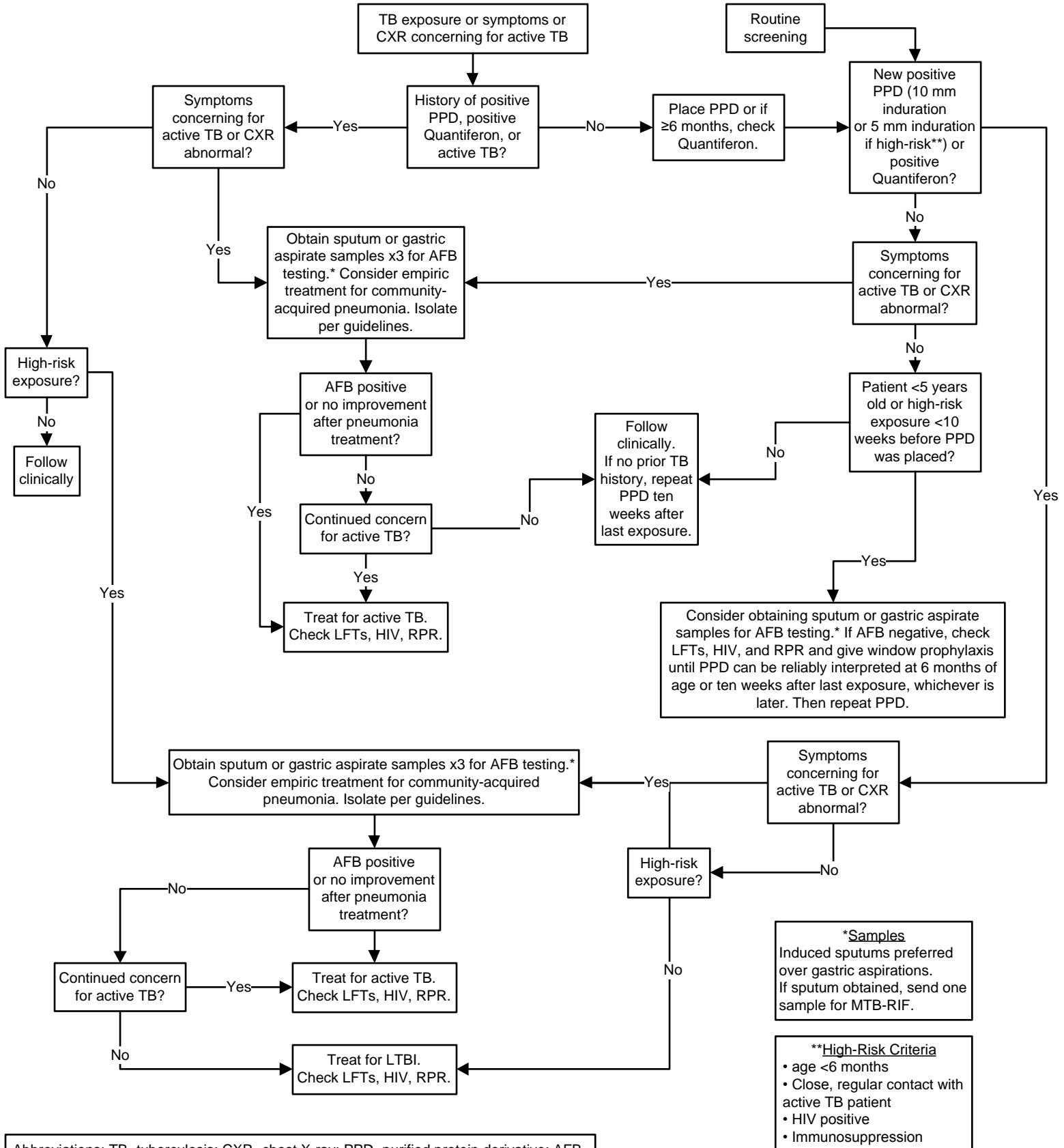
If culture is positive, stop LTBI therapy, consult a TB officer, and start four drug active TB therapy. See tuberculosis guideline.

LTBI Treatment Medications

1. Isoniazid 300 mg PO daily x9 months. For pediatrics: 20 mg/kg (max dose 300 mg).
2. Isoniazid 900 mg PO twice a week x9 months. For pediatrics: 30 mg/kg (max dose 900 mg). May only be given with DOT.
3. For 12 years and up: isoniazid weight-based/rifampentine weight-based Qweek x12 weeks. Not for patients who are pregnant, nursing, HIV+ on retrovirals, or have presumed INH or rifampin resistance. May only be given with DOT.
4. If INH-resistant: rifampin 20 mg/kg PO daily x4 months for adults. For pediatrics: 10-20 mg/kg PO daily x6 months.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 4/19/12.

If comments about this guideline, please contact Elizabeth_Roll@ykhc.org.



Abbreviations: TB- tuberculosis; CXR- chest X-ray; PPD- purified protein derivative; AFB- acid-fast bacilli; HIV- human immunodeficiency virus; LFTs- liver function tests

***Samples**
Induced sputums preferred over gastric aspirations. If sputum obtained, send one sample for MTB-RIF.

****High-Risk Criteria**

- age <6 months
- Close, regular contact with active TB patient
- HIV positive
- Immunosuppression

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 Approved by MSEC 4/26/18; minor revisions approved 7/26/18.
 If comments about this guideline, please contact Mien_Chyi@ykhc.org.



True Varicella infection is RARE in our region:

1. **DO NOT diagnose Varicella** without confirmatory lab testing.
2. Per the CDC:
 - Two doses of VZV vaccine are 88-98% effective at preventing all VZV infections.
 - One dose of VZV vaccine is 85% effective at preventing all VZV infections.
3. All confirmed Varicella must be confirmed to State Epidemiology with this form: <http://dhss.alaska.gov/dph/Epi/Documents/pubs/conditions/frmlInfect.pdf>

Differential Diagnosis

- Hand-foot-mouth disease
- Scabies
- Stomatitis
- Eczema herpeticum
- Diffuse impetigo

Provider Documentation for Suspected Varicella Infection

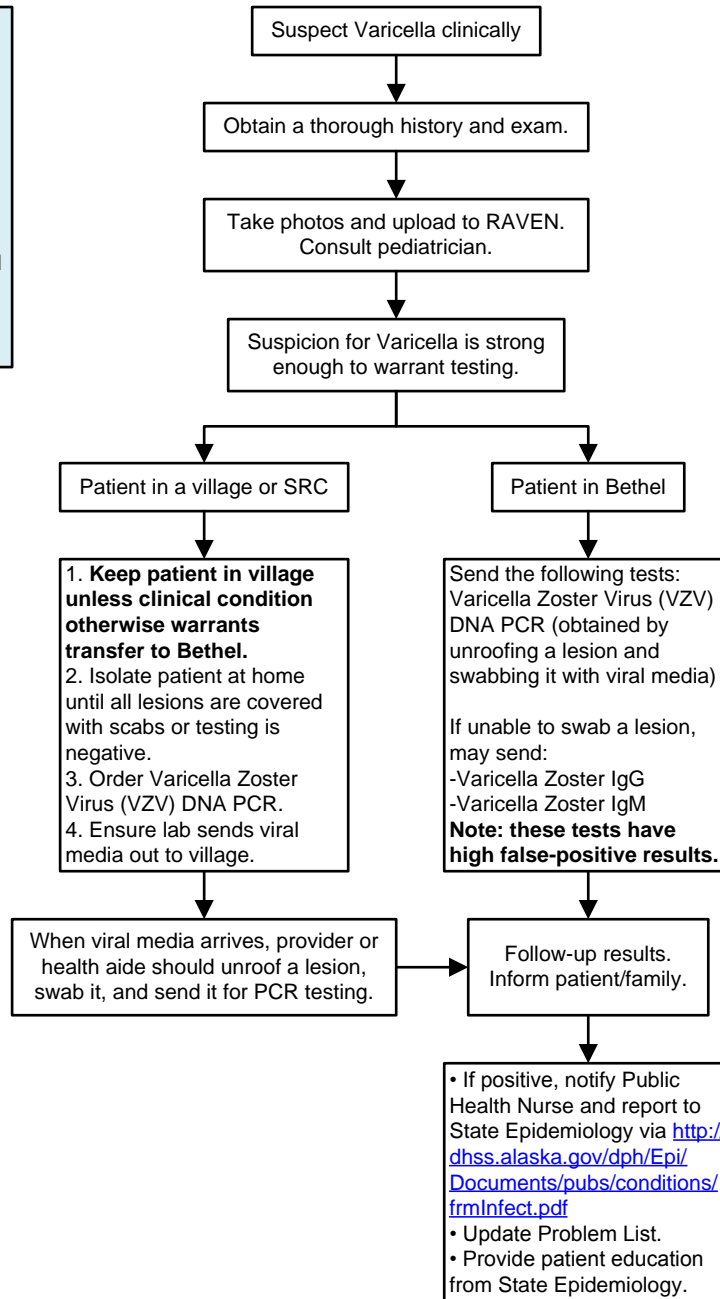
- Date of symptom onset
- Date of suspected diagnosis
- Date of rash onset
- Location of rash, including where first noted
- Number of lesions
- Photos of lesions
- Evolution of rash (including appearance of new groups of lesions)
- Appearance of lesions (are there lesions in all stages of development at once?)

High Risk Exposures

- Inquire if any pregnant women or immunocompromised people have been exposed.
- For pregnant women: find out if she has a history of varicella or has received the vaccine. If not, then consult HROB to consider further treatment.
- For immunocompromised patients: refer to a provider for evaluation.

Typical Presentation for Chickenpox/Varicella

- Exposure occurs.
- 10-21 days after exposure, fever appears, followed by rash.
- Rash appears in successive crops over several days.
- Rash begins as macular and then progresses to vesicular, then pustular, then crusted.
- There are lesions in different stages of development on different parts of the body.
- New vesicles stop forming within four days.



**Background Information:**

- 75% of the AN/AI population is colonized with H. Pylori (range 61-84%).
- Screening or testing for H. Pylori for routine evaluation of dyspepsia or other GI symptoms is not clinically useful or supported by evidence for high prevalence populations.
- For routine clinical practice, there is **insufficient evidence-based data** to support community-wide eradication as a mechanism for gastric cancer prevention.
- Current literature **DO NOT** support a test and treat method with noninvasive tests.

Pediatrics:

- Goal is to determine underlying cause of symptoms, not solely the presence of *H pylori* infection.
- Principles of testing and treatment are the same as for adults.
- Diagnostic testing is NOT recommended with functional abdominal pain or iron-deficiency anemia.
- Consult pediatrics if considering this diagnosis.

Pregnancy and Lactation:

- Delay treatment until after pregnancy
- DO NOT use in Pregnancy: bismuth and tetracycline
- DO NOT use in lactation: bismuth, metronidazole, levofloxacin

H. Pylori identified by histology and/or CLO test from EGD

AND

Endoscopy reveals the following:

- Duodenal ulcers
- Gastric ulcer
- MALT lymphoma
- Intestinal metaplasia

Treat for H. Pylori with antibiotics

****All treatment is for 14 days****

Adult Dosing**Preferred Treatment:**

Metronidazole 500 mg PO QID
Amoxicillin 1000 mg PO BID
Omeprazole 20 mg PO BID
Bismuth subsalicylate 524 mg PO QID

PCN allergic (anaphylactic):

Metronidazole 500 mg PO QID
Doxycycline 100 mg PO BID
Omeprazole 20 mg PO BID
Bismuth subsalicylate 524 mg PO QID

Recurrence/Failure:

Metronidazole 500 mg PO QID
Doxycycline 100 mg PO BID
Omeprazole 20 mg PO BID
Bismuth subsalicylate 524 mg PO QID
OR
Amoxicillin 1000 mg PO BID
Levofloxacin 500 mg PO daily (FDA Black Box)
Omeprazole 20 mg PO BID

Pediatric Dosing

Metronidazole 10 mg/kg PO BID
Amoxicillin 45 mg/kg PO BID
Omeprazole 1 mg/kg PO BID
Bismuth subsalicylate
<10 years: 262 mg PO QID
>10 years: 524 mg PO QID

Other causes of dyspepsia that antibiotics will NOT help, **EVEN IF** H. Pylori is detected:

- GERD
- Irritable Bowel Syndrome
- Mild/moderate gastritis
- Excessive/chronic NSAID use
- Heavy alcohol use
- Poor gastric mobility

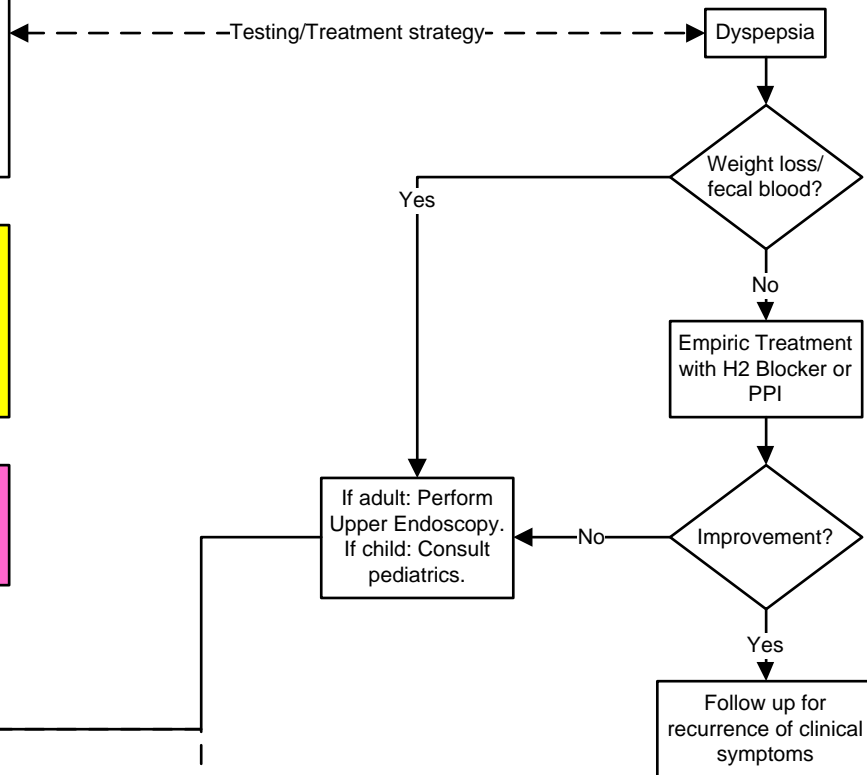
Symptomatic Relief Medications:

Adults:
Ranitidine 150 mg PO BID
Omeprazole 20 mg PO BID

Children:
Ranitidine 5-10 mg/kg PO divided BID

Eradication Testing:

- Urea Breath Test for *Test of Cure* is necessary to determine need for retreatment. It can be performed on children as young as 3. The stool antigen test available at YKHC is not recommended for test of cure.
- 10-35% of individuals will fail treatment.
- Serologic testing is not recommended due to prolonged antibody persistence beyond date of cure and false positive results.
- Must be off PPI for ≥ 2 weeks prior to Urea Breath Test.





Diagnostic Criteria

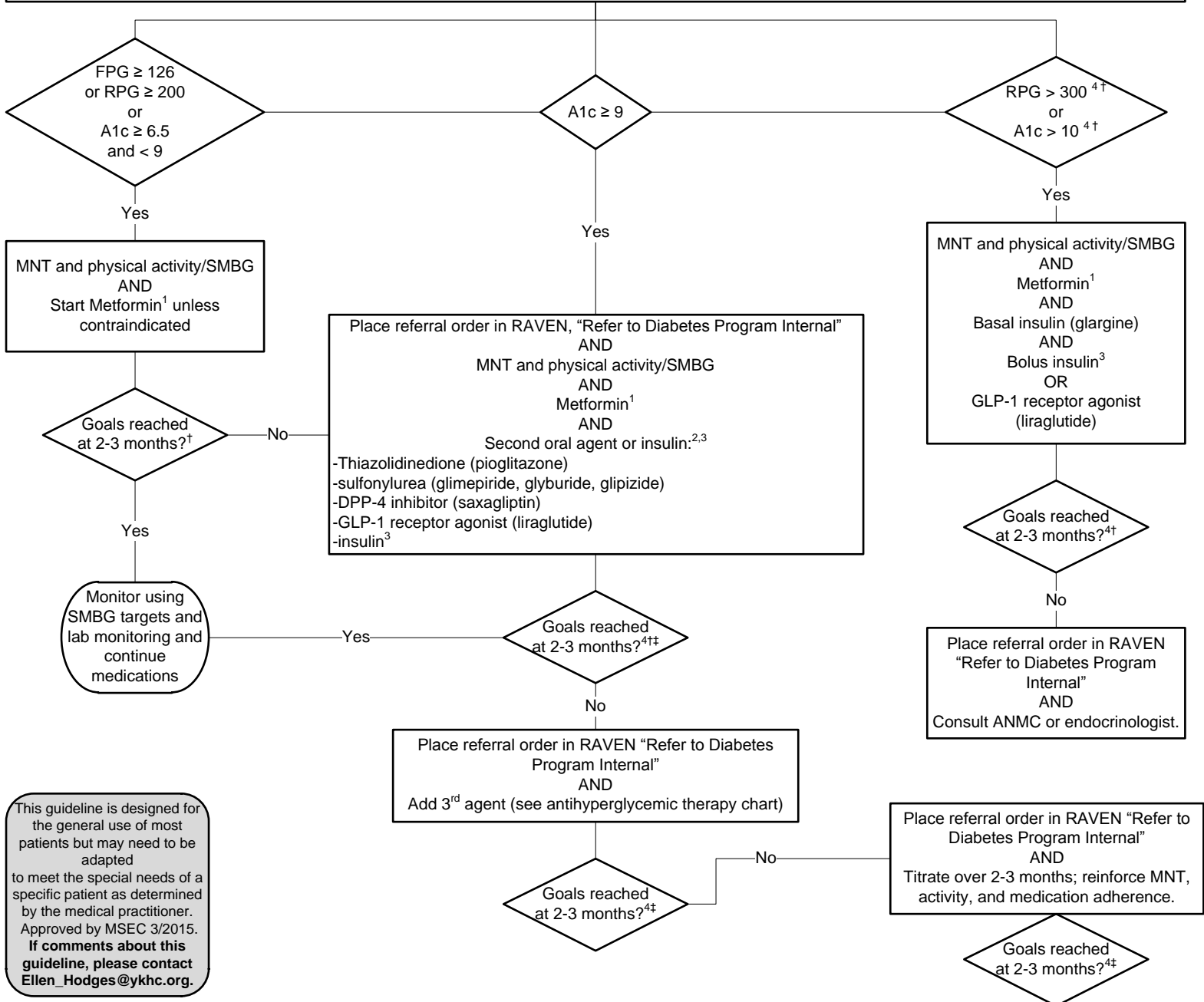
Hemoglobin A1c $\geq 6.5^*$
or
Fasting plasma glucose (FPG) ≥ 126 mg/dL*
or
One random plasma glucose (RPG) ≥ 200 mg/dL with classic symptoms of hyperglycemia or hyperglycemic crisis
or
2 hour 75 g oral glucose tolerance test ≥ 200 mg/dL*

**In the absence of unequivocal signs of hyperglycemia, results should be confirmed by repeat testing.*

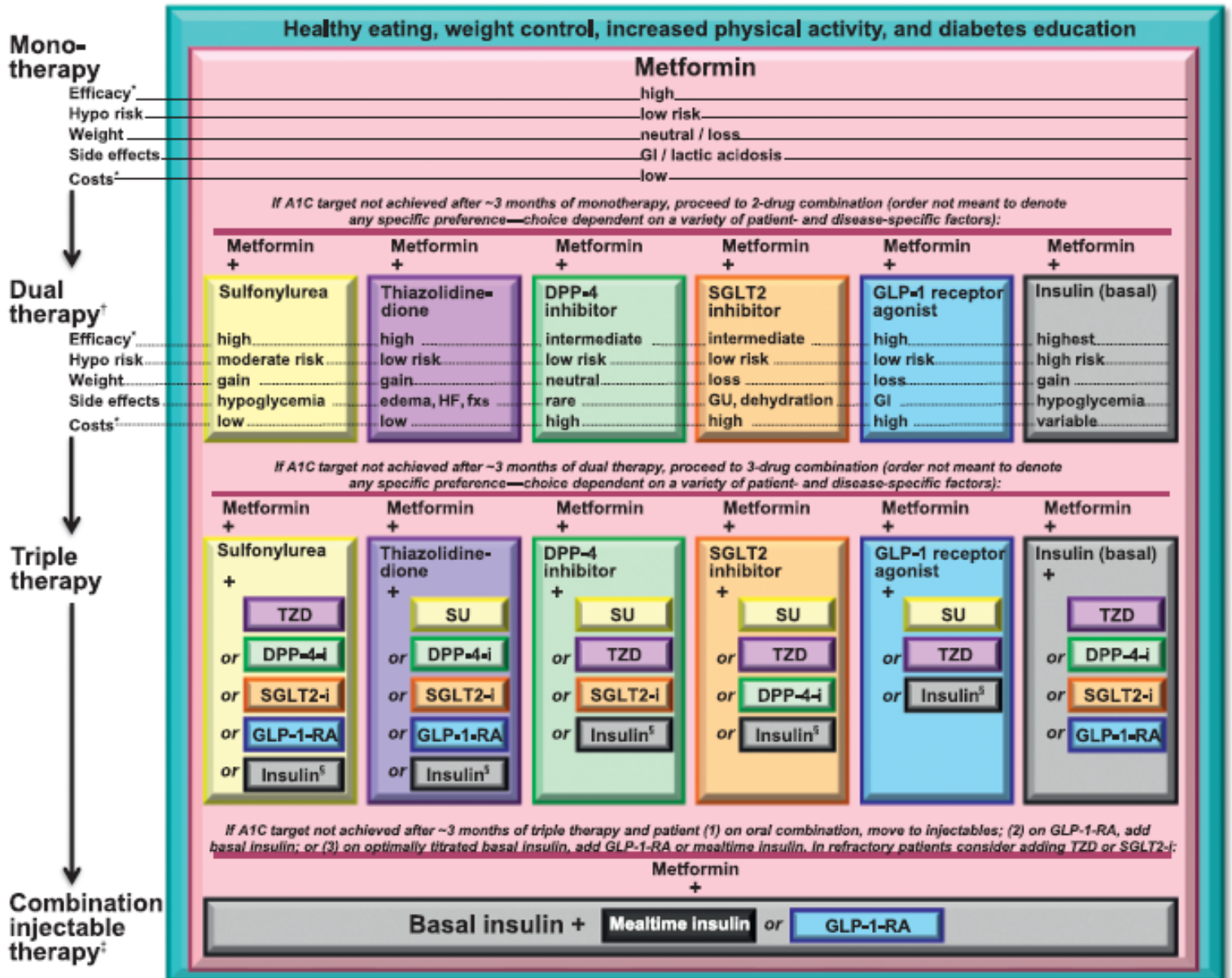
Abbreviations

MNT: Medical Nutrition Therapy
SMBG: Self-Monitored Blood Glucose
PPG: Post-Prandial Glucose

1. Consider completing Pownote Note Pathway "Diabetes, Type 2" and include: weight, height, BP, tobacco & EtOH Hx; perform foot exam; discuss mental health and sexuality; add to Problem List in RAVEN.
2. Consider completing Diabetes Power Plan and order A1c, lipids (fasting or non-fasting), CMP, CUA and urine microalbumin, EKG (if not obtained in the last five years); update immunizations; place PPD; and refer to Optometry and Dental Internal.
3. Establish treatment goals with patient.^{†‡}
4. Consider statin, ASA, ACE, or ARB.
5. Consider ordering glucometer and strips.
6. Refer to Diabetes Program by calling 543-6133 or cell 545-2649 for same day counseling appointments AND placing referral order in RAVEN: "Refer to Diabetes Program Internal."
7. Place future lab orders (A1c in three months).
8. Place "Bethel Follow-Up" or "<village name> Follow-Up" order in RAVEN.



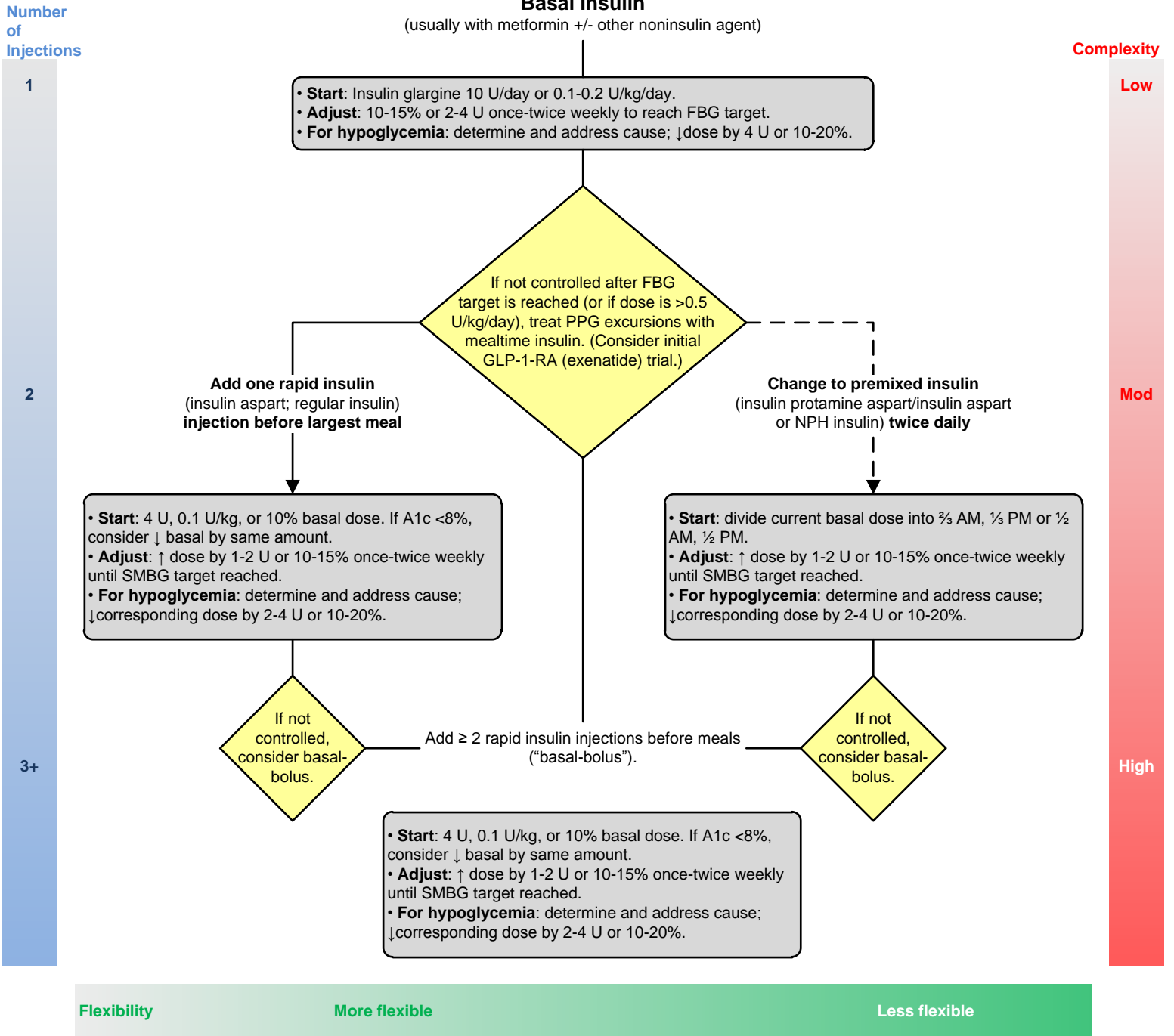
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References

1. ADA 2014 Guidelines; Metformin: Preferred initial therapy (if tolerated and not contraindicated)
 2. ADA 2014 Guidelines: Add second oral agent, GLP-1 receptor agonist, or insulin if non-insulin monotherapy at maximum tolerated dose does not achieve or maintain A1c target over three months.
 3. ADA 2014 Guidelines: Consider insulin therapy with or without other agents at outset in newly diagnosed patients with markedly symptomatic and/or elevated BG levels of A1c.
 4. ADA 2015 Standards of Care: Summary of glycemic recommendations for non-pregnant adults with diabetes.
- † More or less stringent glycemic controls may be appropriate for individual patients. Goals should be individualized based on duration of diabetes, age/life expectancy, co-morbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient considerations. (See Glycemic Targets Chart on the Document Library.)
- ‡ Post-prandial glucose may be targeted if A1c goals are not met despite reaching pre-prandial glucose goals.

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- Major Risk Factors:**
- Hypertension
 - Prior MI
 - Diabetes
 - Valvular heart disease
 - Obesity
- Minor Risk Factors:**
- Alcohol abuse
 - Cigarette smoking
 - Dyslipidemia
 - Renal insufficiency
 - Sleep-disordered breathing
 - Low physical activity
 - Lower socioeconomic status
 - Depression
 - Increased dietary salt intake

Concern for congestive heart failure

Are risk factors present?

- Box 1: Initiate education for Health Seeking Behaviors:**
- No smoking, limit alcohol, avoid illicit drug use.
 - Eat a diet low in saturated fat and rich in fruits and vegetables.
 - Educate regarding risk factors.
 - Keep BMI < 25.
 - Encourage physical activity 120-180 min/week.
 - Limit sugar-sweetened beverages.

- Monitor for signs/symptoms:**
- Shortness of breath
 - Activity intolerance
 - Orthopnea
 - Frothy sputum
 - Peripheral edema
 - Sudden weight gain >2-3 lbs
 - Nocturia
 - **Altered mental status**
 - **Hypoxemia**
 - **Chest pain**

Consider urgent/emergent evaluation in the ED if last three symptoms are present.

Are positive findings present?

- Box 2: Plan of care for CHF patients**
- Encourage patient to collaborate with provider to treat known risk factors.
 - Evaluate patient at regular intervals for signs/symptoms of heart failure.
 - Teach patient to report weight gain >2-3 lbs and changes in heart rhythm.
 - Instruct patient to comply with LV function testing.
 - Encourage medication compliance, especially with ACE-I/ARB.
 - Patient education from Box 1.

Follow plan of care for diagnosis/management of CHF.

- Seek to exclude CHF as diagnosis/cause of symptoms:
- **ECG (acute ischemic findings, new LBBB)**
 - BNP

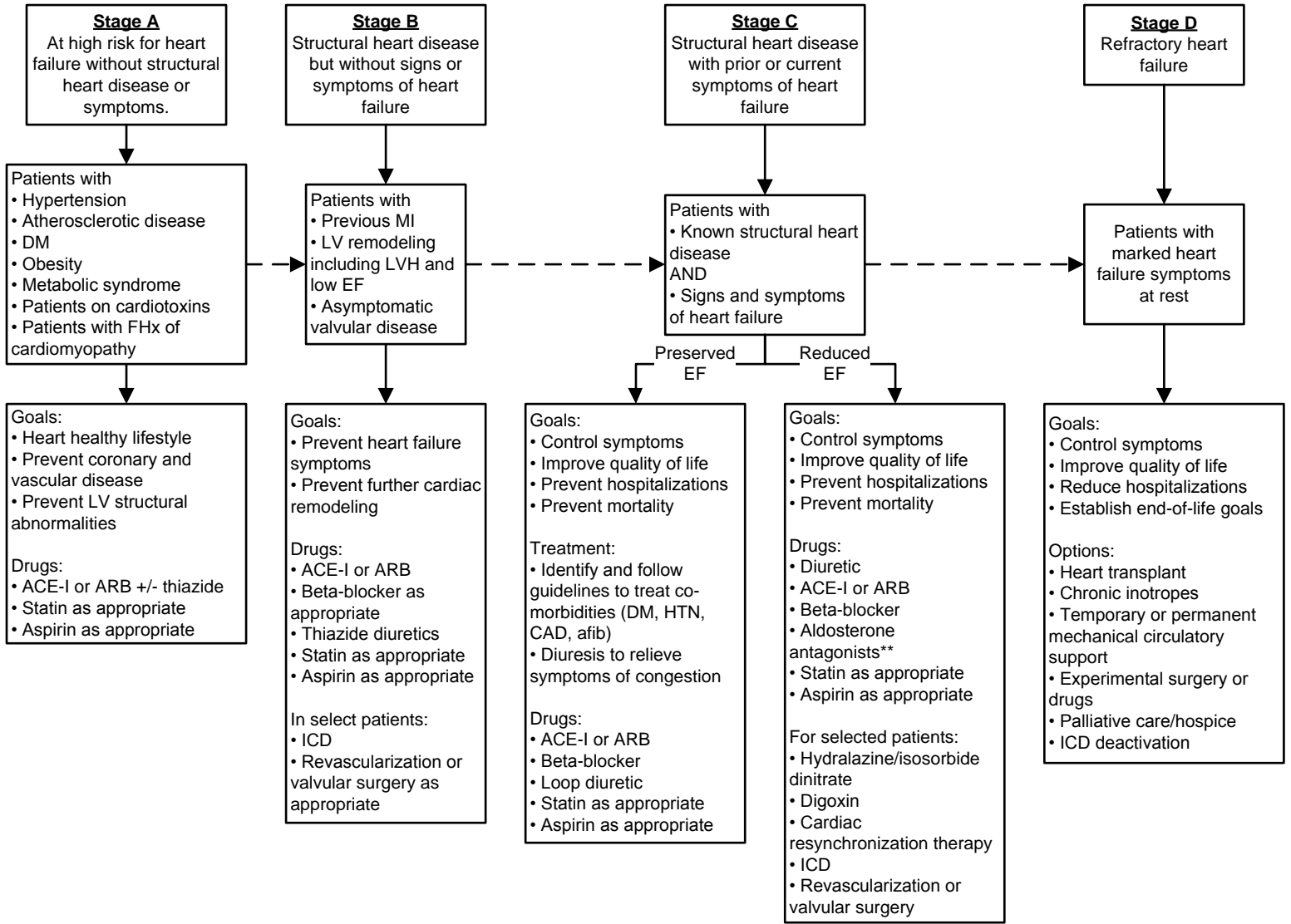
Transfer to ED if signs/symptoms of acute coronary syndrome are present.

Both normal?

- CXR, CBC, CMP, thyroid function testing, Hgb A1c, lipids, spirometry, microalbumin.
- Refer for echocardiogram.
- Lifestyle management with Box 1 and Box 2.

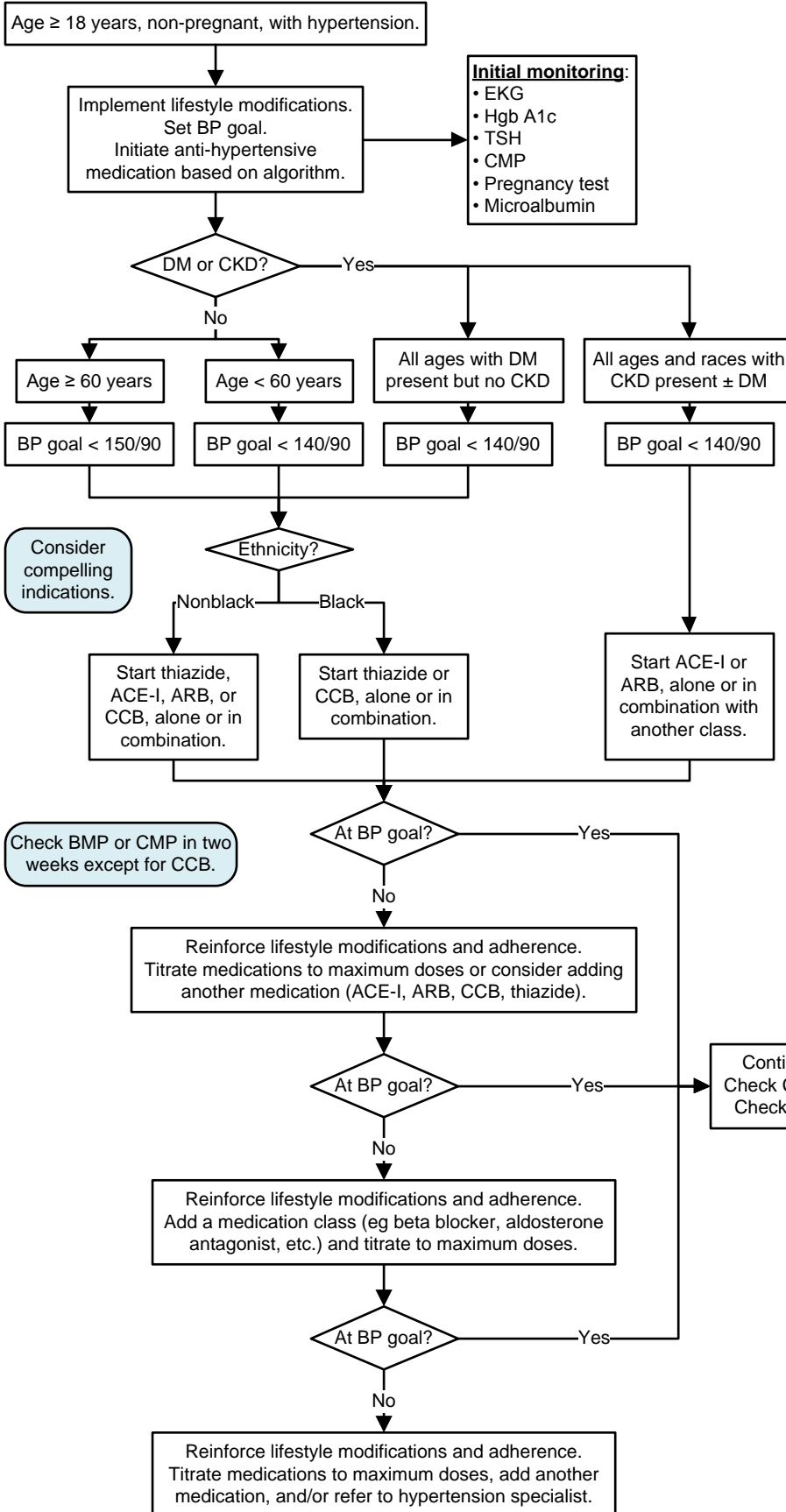
See page 2 for Heart Failure Management

CHF unlikely cause of symptoms. Consider CXR, CT chest, venous doppler, etc.



Calcium channel blocker contraindicated in Stage C.

**Aldosterone antagonists:
 • Use for estimated creatinine clearance > 30 and potassium < 5.
 • Check BMP at baseline, day 2, day 7, monthly x3, Q3 mo x1 year, then Q6 mo



Initial Drugs of Choice for Hypertension

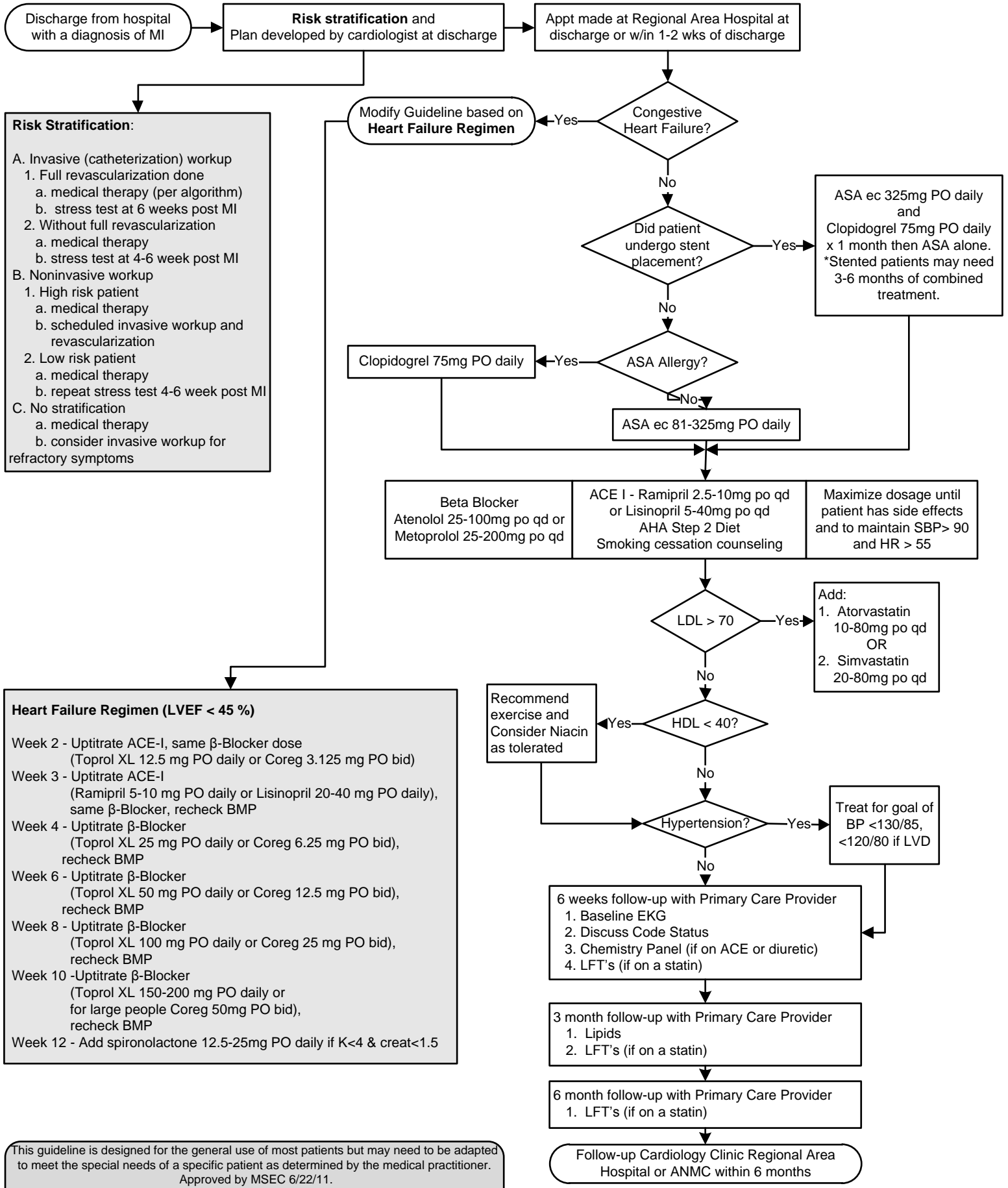
- ACE-inhibitor (ACE-I)
- Angiotensin receptor blocker (ARB)
- Thiazide diuretic
- Calcium channel blocker (CCB)
- Beta blocker (not first-line except in pregnancy or women who may become pregnant)

Strategy	Description
A	Start one drug. Titrate to maximum dose, and then add a second drug.
B	Start one drug. Add a second drug before reaching max dose of first drug.
C	Begin two drugs at the same time as separate pills or combination pill. Initial combination therapy is recommended if BP is >20/20 mmHg above goal.

Lifestyle Modifications:

- Smoking cessation
- Control blood glucose and lipids
- Diet:
 - DASH diet recommended.
 - Moderate alcohol consumption.
 - Reduce sodium intake to no more than 2400 mg/day.
 - Limit alcohol to two drinks/day for men and one drink/day for women.
- Physical activity
 - Moderate-to-vigorous activity for 120-180 min/week.

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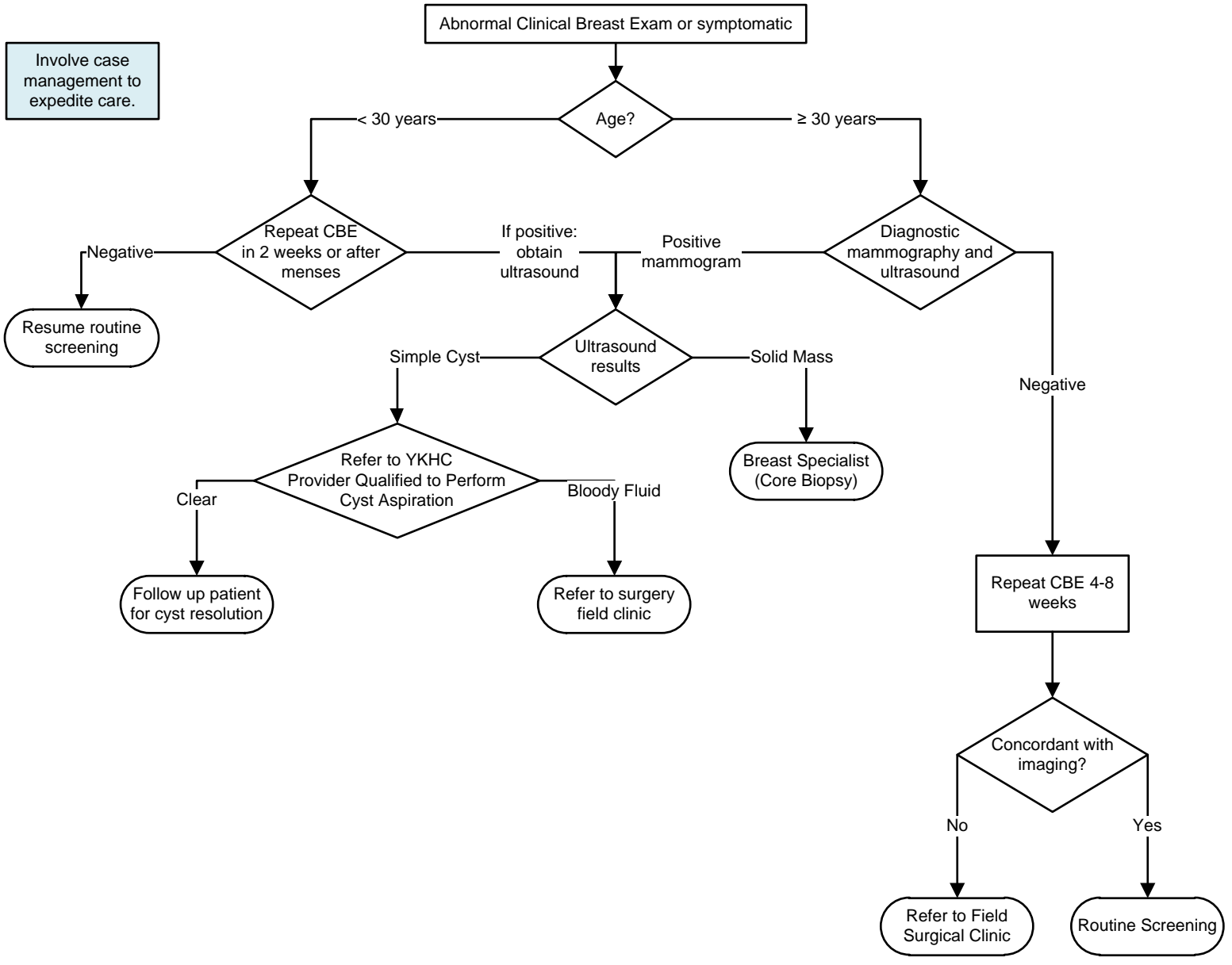


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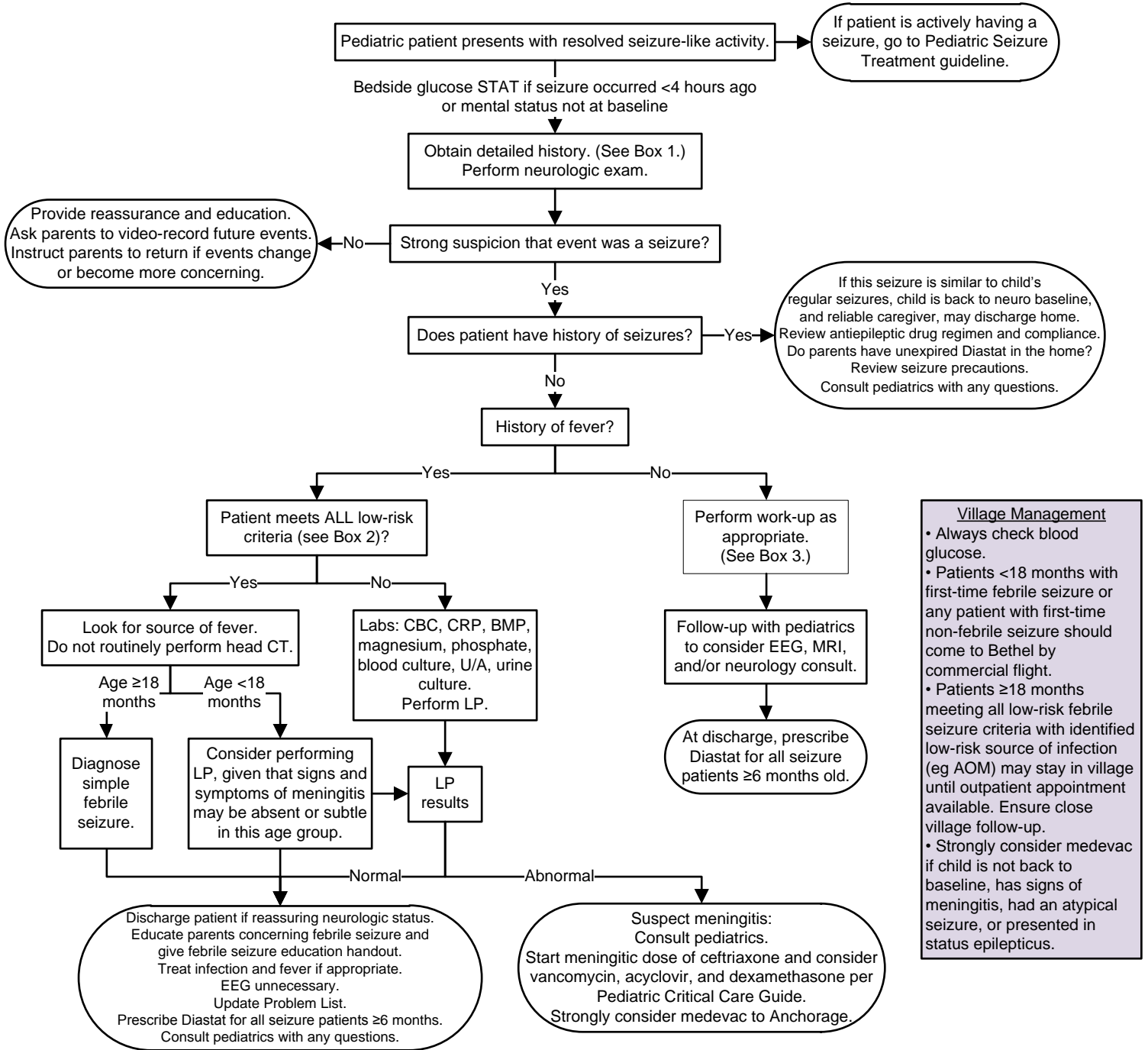
Clinical Breast Exam Screening Recommendations:

1. Breast self-examination: at provider's discretion
2. Clinical breast examination: at provider's discretion
3. Mammography: start age 45
screen every 2 years
end screening at age 70, based on health status



Involve case management to expedite care.

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Village Management

- Always check blood glucose.
- Patients <18 months with first-time febrile seizure or any patient with first-time non-febrile seizure should come to Bethel by commercial flight.
- Patients ≥18 months meeting all low-risk febrile seizure criteria with identified low-risk source of infection (eg AOM) may stay in village until outpatient appointment available. Ensure close village follow-up.
- Strongly consider medevac if child is not back to baseline, has signs of meningitis, had an atypical seizure, or presented in status epilepticus.

Box 1: Detailed History

- When/where did it occur? Awake or asleep?
- What preceded the event (eg head trauma, crying, etc.)?
- How long did it last?
- Ask caregiver to recount, step-by-step, what happened.
- Type of movement and what part of body? Symmetric?
- Interventions?
- Incontinence?
- Behavior after event? How long till back to baseline?

HPI

- Intercurrent illness/fevers
- Medications
- Recent intake, including free water and diluted formula
- Ingestions
- Trauma

PMH

- Prior history of seizures
- History of breathholding

Family Hx: Seizures, febrile seizures, breathholding, etc.

Box 2: Low risk febrile seizure criteria

1. 6 months to 4 years of age.
2. Fever present.
3. Seizure generalized (nonfocal).
4. Seizure duration <5 minutes.
5. Child has normal neurologic examination.
6. Child has no history of previous neurologic or CNS abnormality.
7. Only one seizure in a 24 hour period.
8. Child has returned to baseline.
9. No meningial signs:
 - Irritability or inconsolability
 - Nuchal rigidity
 - Bulging fontanelle
 - Lethargy or somnolence
 - Focal neurologic findings
10. Child has NOT received antibiotics in the past 72 hours.

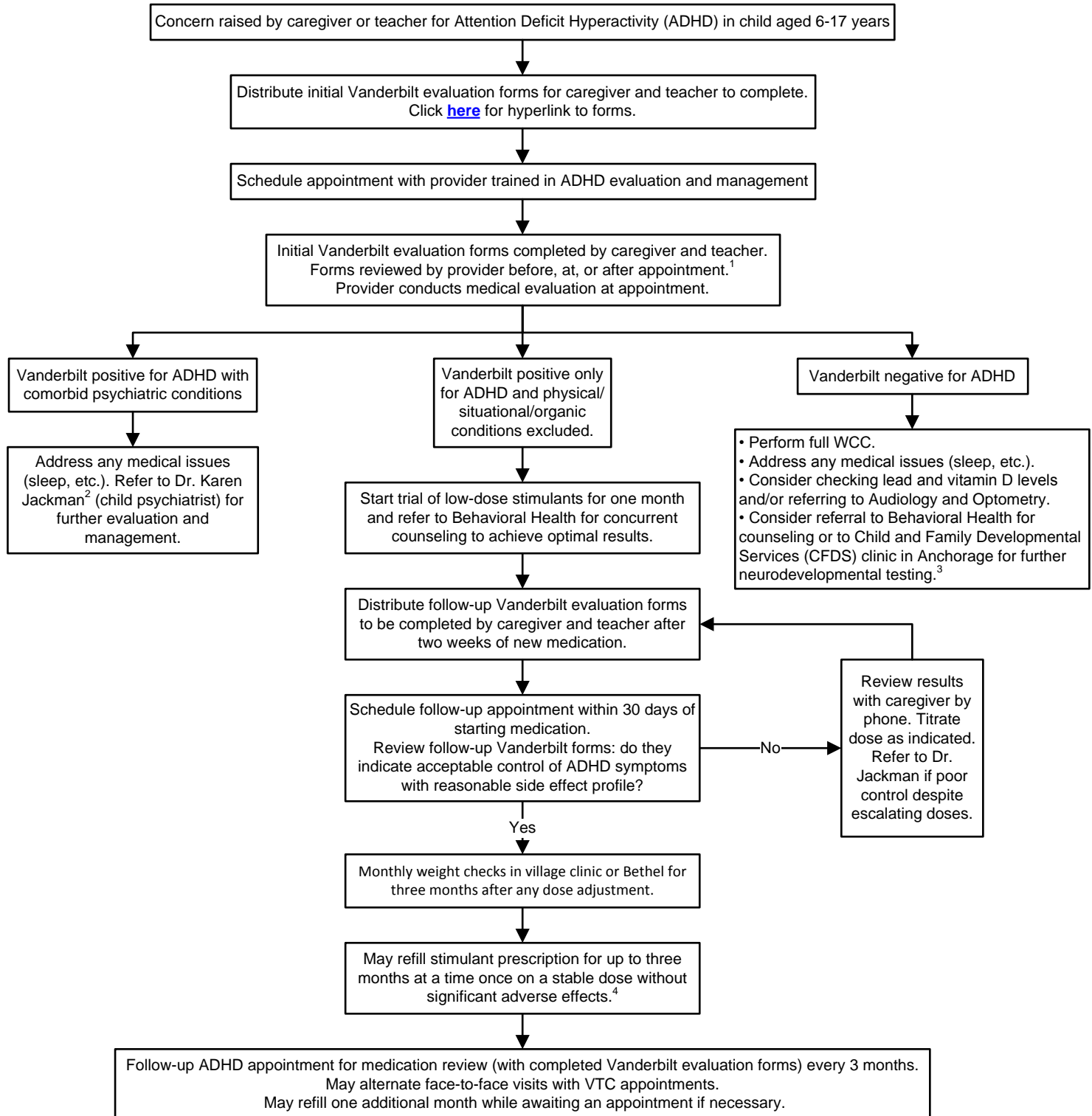
Box 3: Work-up

- Bedside glucose
- EKG for first event
- BMP, magnesium, phosphate
- Urine drug screen
- Perform LP if persistent altered mental status, meningitis suspected, or <18 months of age and delayed return to baseline.

Radiological studies:

- Obtain head CT prior to LP if concerning neurologic status, persistently altered mental status, history of trauma, or focal neurological findings.

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Approved by MSEC 5/8/19.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

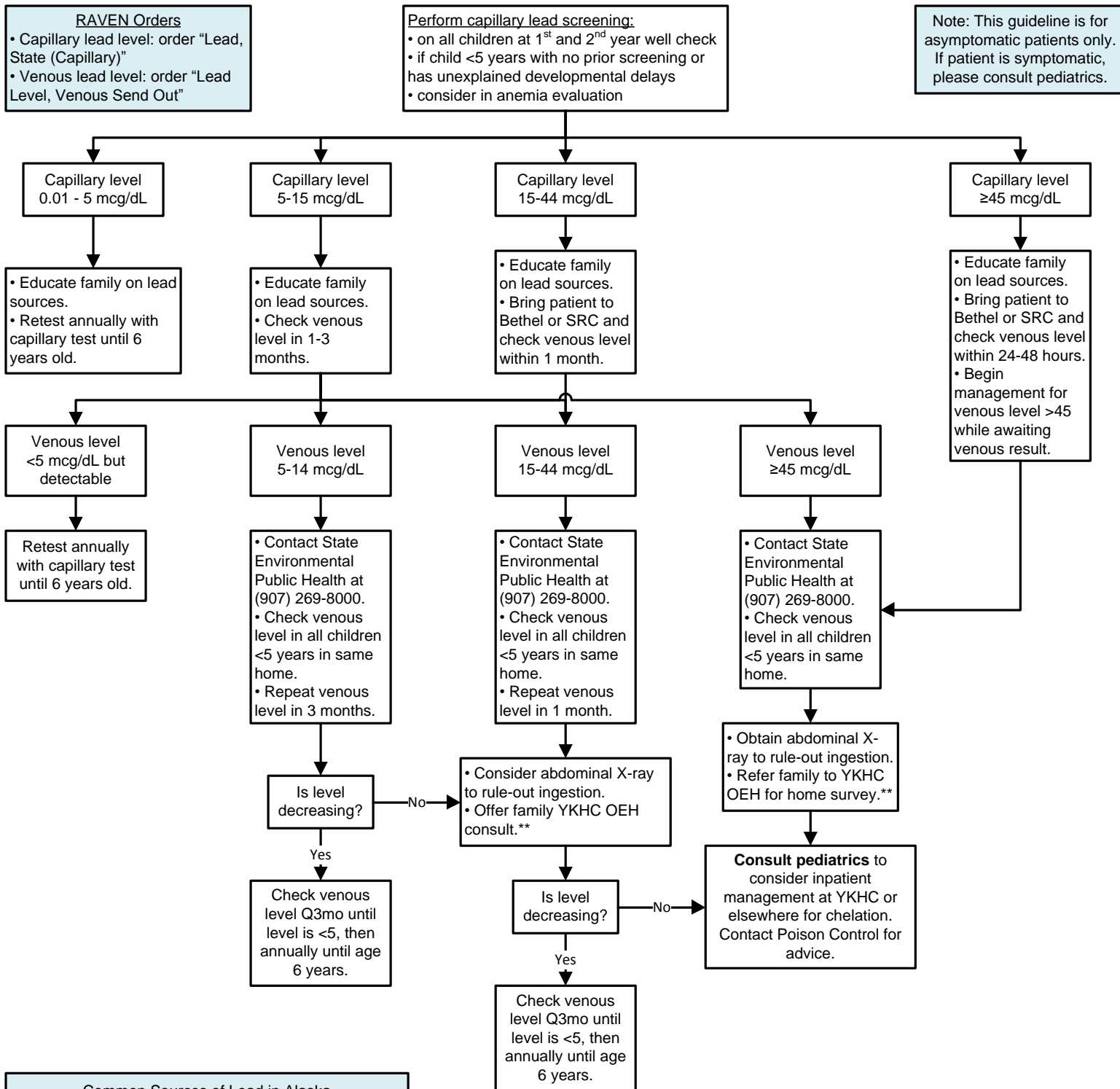


1. Scan completed Vanderbilt forms into MultiMedia Manager under "Continuity of Care."

2. To refer to Dr. Jackman: use "Refer to Peds Psychiatry Internal" order. Dr. Jackman may be contacted at (907) 230-3765 or jackman@alaska.net.

3. To refer to [CFDS](#) or other private psychologist: use "Refer to Other External" order and send a message to the case manager to process the referral.

4. E-prescribe three separate 30 day prescriptions after checking Alaska PDMP. Include the month the medicine is to be filled in the comments or special instructions section.



- Common Sources of Lead in Alaska**
- Mining lead, zinc, silver, or gold ore
 - Lead paint in homes or buildings built before 1978
 - Firearms and ammunition
 - Shooting ranges
 - Game meat shot with lead ammunition
 - Fishing weights
 - Leaded aviation gas
 - Marine paint
 - Soldering, welding, or craft-making
 - Pica or "mouthing" (eating dirt)
 - Imported household objects
 - Lead or brass pipes/faucets
 - Batteries and automobile repair sites

**To consult YK Office of Environmental Health (OEH), email Jennifer_Dobson@ykhc.org with patient's name and DOB, lead levels, and parent's contact information. OEH can review environmental risk factors with family and offer a home visit if appropriate.

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 Approved by MSEC 12/11/19.
 If comments about this guideline, please contact Kimberly_Fisher@ykhc.org.



Background

- Only 4-9% of those...labeled [penicillin-allergic] are currently allergic. It is important to identify those who are not allergic, because children mislabeled as penicillin-allergic have more medical visits, receive more antibiotic prescriptions, and have longer hospitalizations with more antibiotic-related complications.¹
- Up to 10% of children develop rashes while receiving antibiotics. Most are diagnosed...as allergic to the implicated antibiotic, and most continue to avoid the suspect antibiotic in favor of alternatives, which may be less effective, more toxic, and more expensive.²
- Do not label a patient as allergic to penicillin/amoxicillin unless he or she has true hives, anaphylaxis, or a life-threatening reaction. Please include photos of rashes in RAVEN.
- Please consult a pediatrician with any questions.

Anaphylaxis

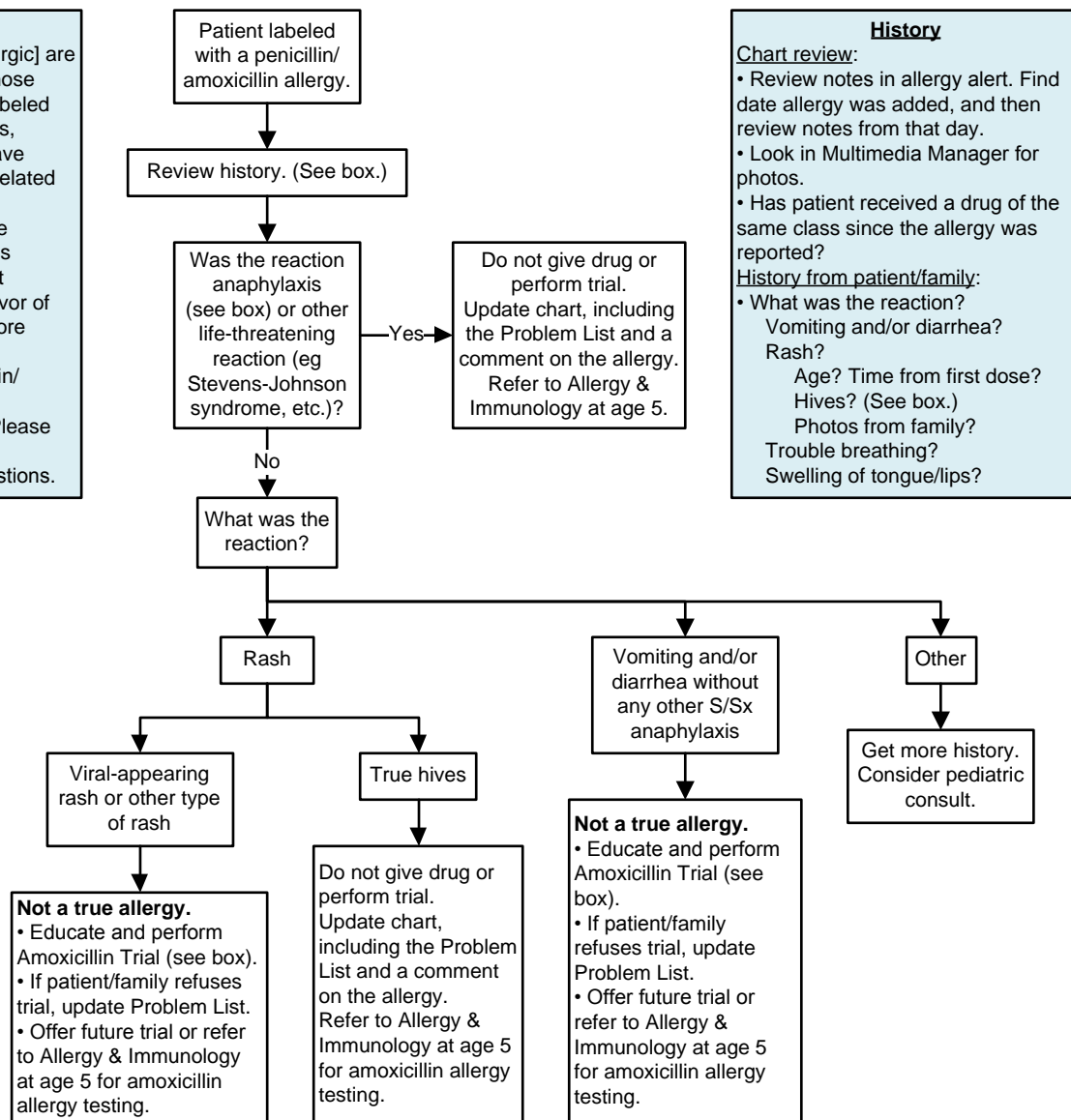
- Acute onset – several minutes to hours from exposure.
- Generalized hives, pruritis or flushing, swelling of lips/tongue/uvula, and at least one of the following:
 - Dyspnea, bronchospasm, stridor
 - Hypotension
 - Evidence of hypoperfusion of end-organs
 - Persistent crampy abdominal pain and/or vomiting

Hives vs Viral Rash

- True hives are raised, itchy, larger than dime-sized, come and go, move around the body, and change shape and size.
- Keep in mind that many parents refer to any rash as "hives." Get a description every time.
- A viral exanthem is typically diffuse, fine, pinpoint red dots and can be dense, coalesced, larger raised lesions. The rash typically covers the face and chest but can cover the whole body. The rash typically worsens and takes days to clear.

References

1. Kelso JM. "Provocation challenges to evaluate amoxicillin allergy in children." JAMA Pediatrics 2016;170(6):e160282.
2. Mill C, et al. "Assessing the diagnostic properties of a graded oral provocation challenge for the diagnosis of immediate and nonimmediate reactions to amoxicillin in children." JAMA Pediatrics. 2016;170(6):e160033.



History

- Chart review:**
- Review notes in allergy alert. Find date allergy was added, and then review notes from that day.
 - Look in Multimedia Manager for photos.
 - Has patient received a drug of the same class since the allergy was reported?
- History from patient/family:**
- What was the reaction? Vomiting and/or diarrhea? Rash? Age? Time from first dose? Hives? See box. Photos from family? Trouble breathing? Swelling of tongue/lips?

Amoxicillin Trial Procedure²

1. Obtain VS. Perform physical exam, including lung exam. Have appropriate dose of EpiPen or epinephrine available.
Epinephrine (1 mg/mL): 0.01 mg/kg (or 0.01 mL/kg) IM q5-15 minutes.
Per AAP recommendations:
 - 7.5-25 kg: use EpiPen Jr (0.15 mg)
 - ≥ 25 kg: use EpiPen (0.3 mg)
2. Calculate weight-based dose of amoxicillin. Give patient 10% of that dose.
3. Place patient in nearby room and instruct caregiver to notify staff of any changes in status.
4. If no reaction by 20 minutes, give patient remaining 90% of weight-based dose of amoxicillin.
5. Observe another 60 minutes. If no reaction, check VS and physical exam. If all stable, discharge home with regular course of drug.
6. Give patient and family amoxicillin trial education sheet.
7. Update allergy alert in RAVEN. Click the allergy in the banner. Right click over the drug name and choose "cancel." On the "reason" drop-down menu, choose "OK on Retrial."

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Approved by MSEC 5/8/19.

If comments about this guideline, please contact Jane_McClure@ykhc.org.

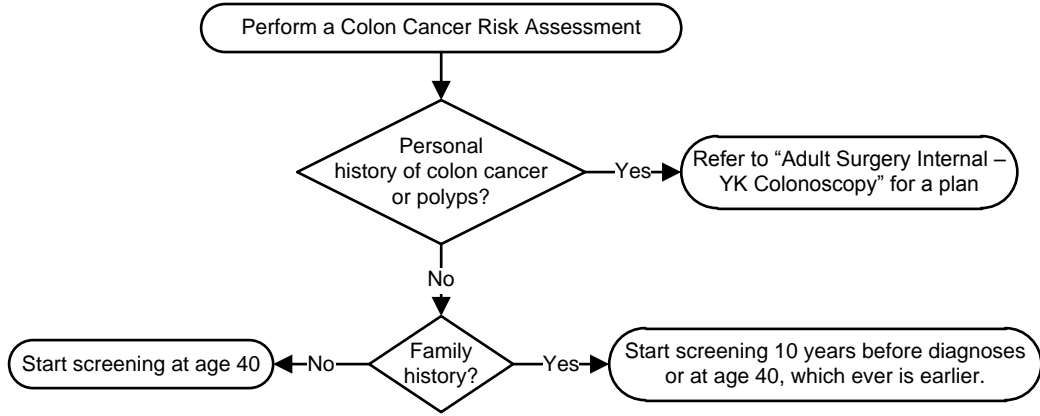


Outpatient Protocols/Reference

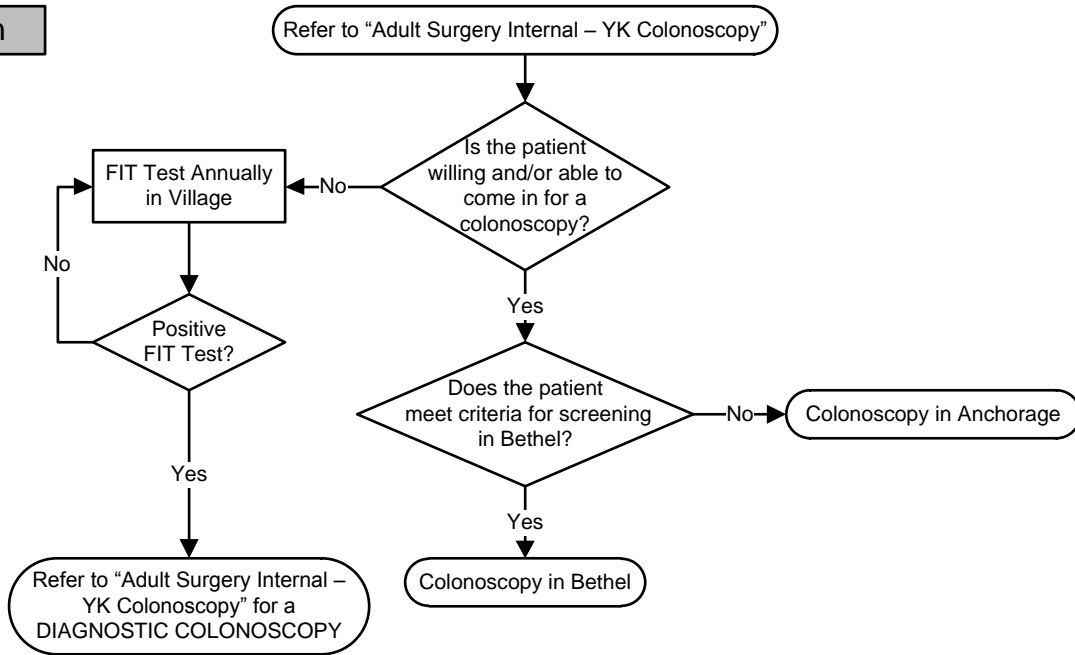
Colon Cancer Screening.....	115
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Chronic Pain: Non-narcotic Treatment.....	118
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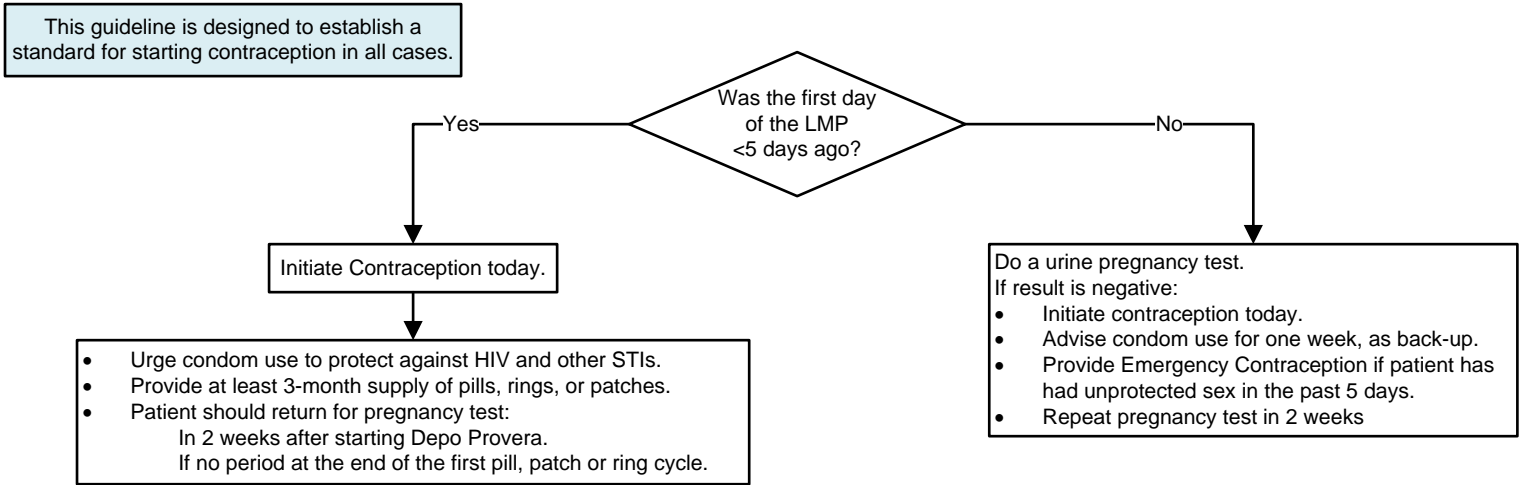
When to Screen



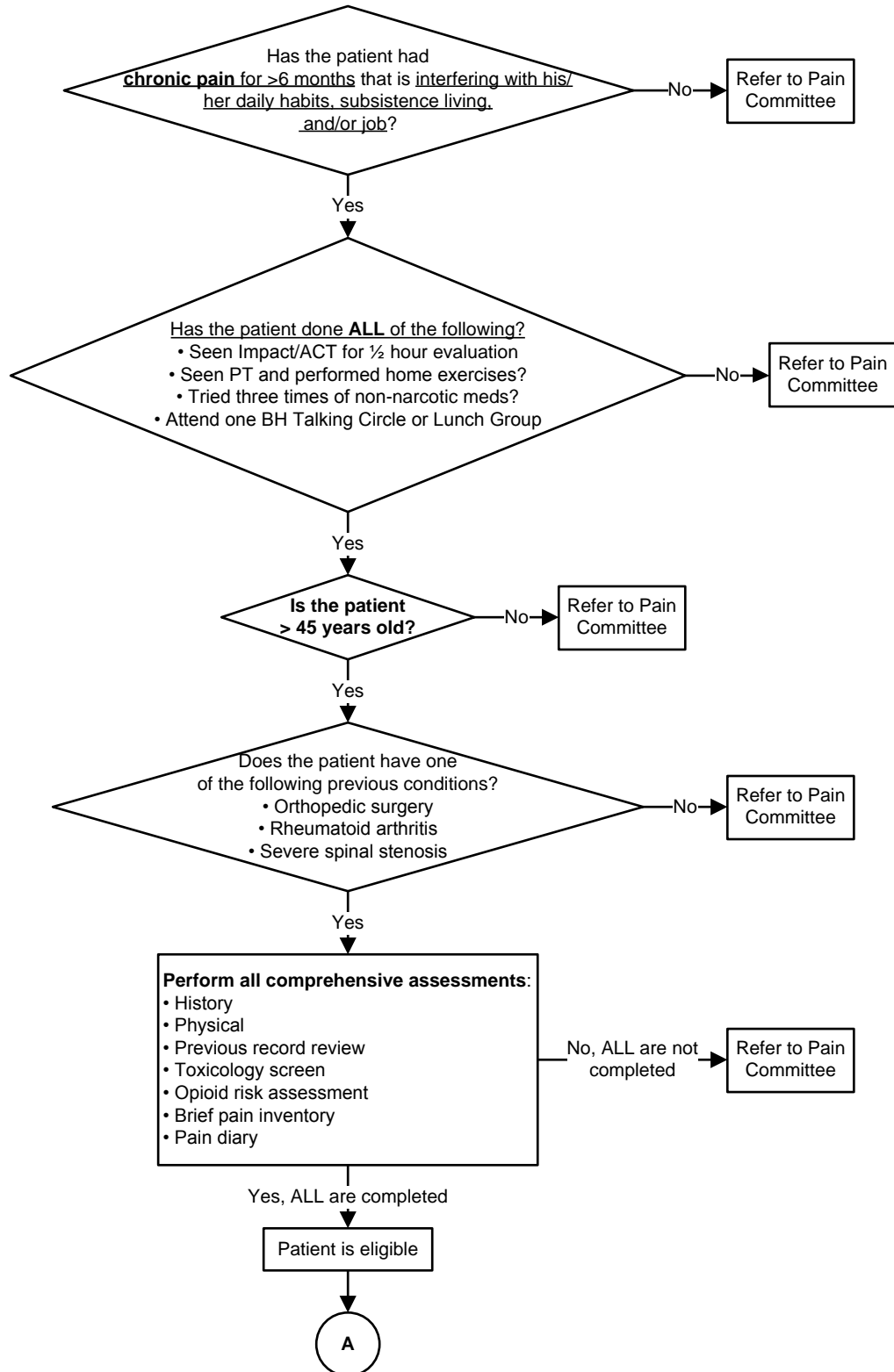
How to Screen



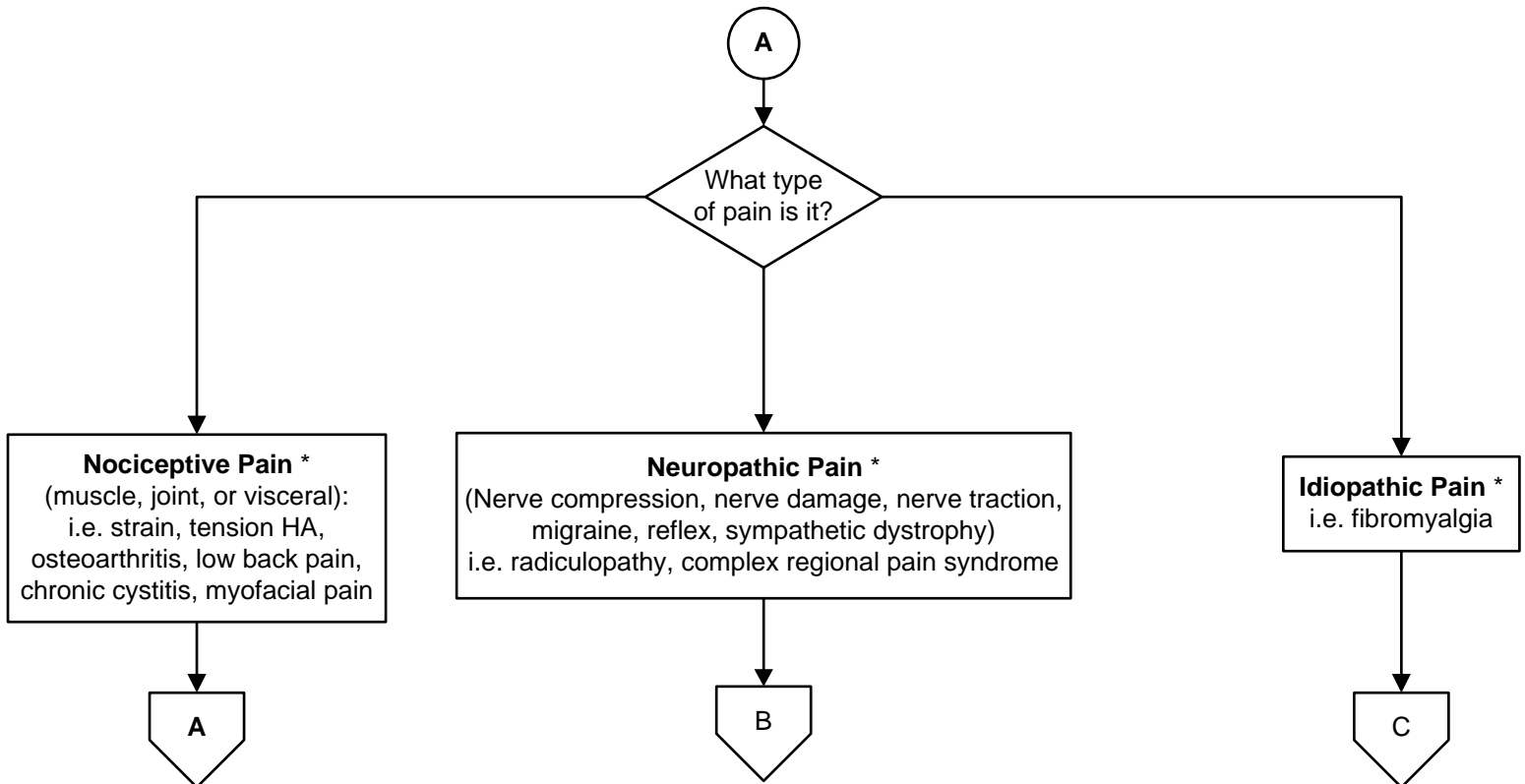
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Approved by MSEC 3/25/13.
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Ellen_Hodges@ykhc.org.**

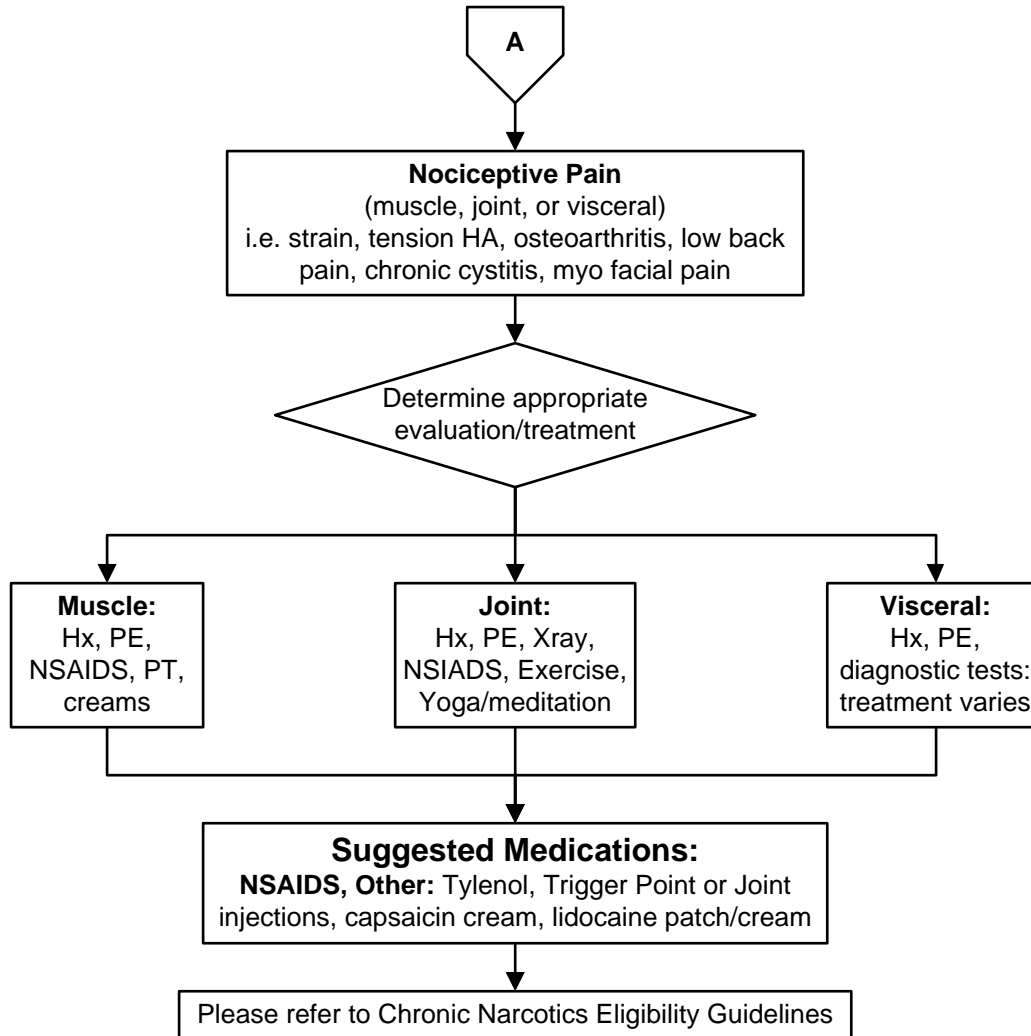


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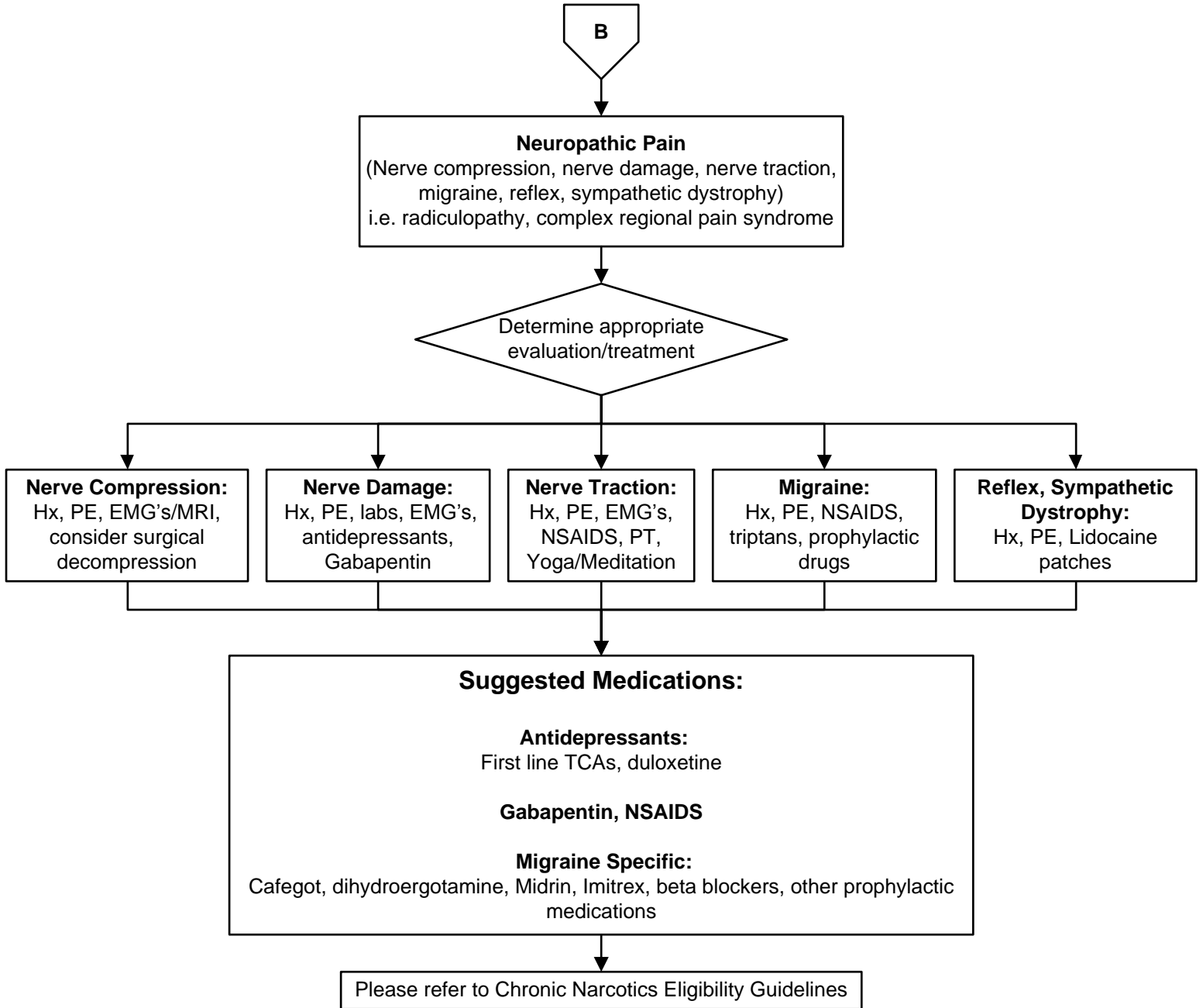


***Treatment Options for all types of pain:**
Sleep Hygiene, Yoga, Meditation

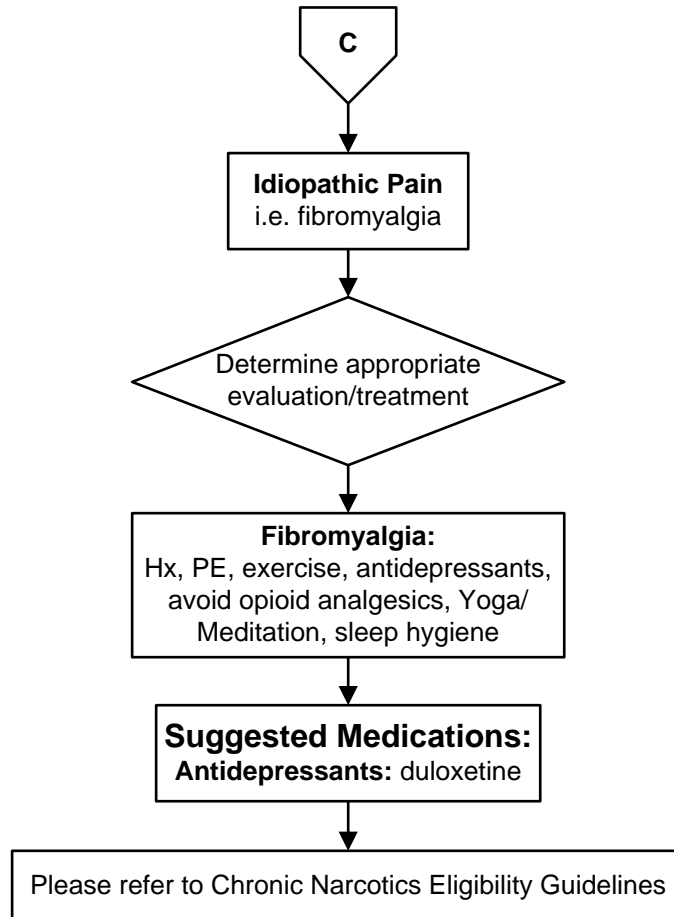
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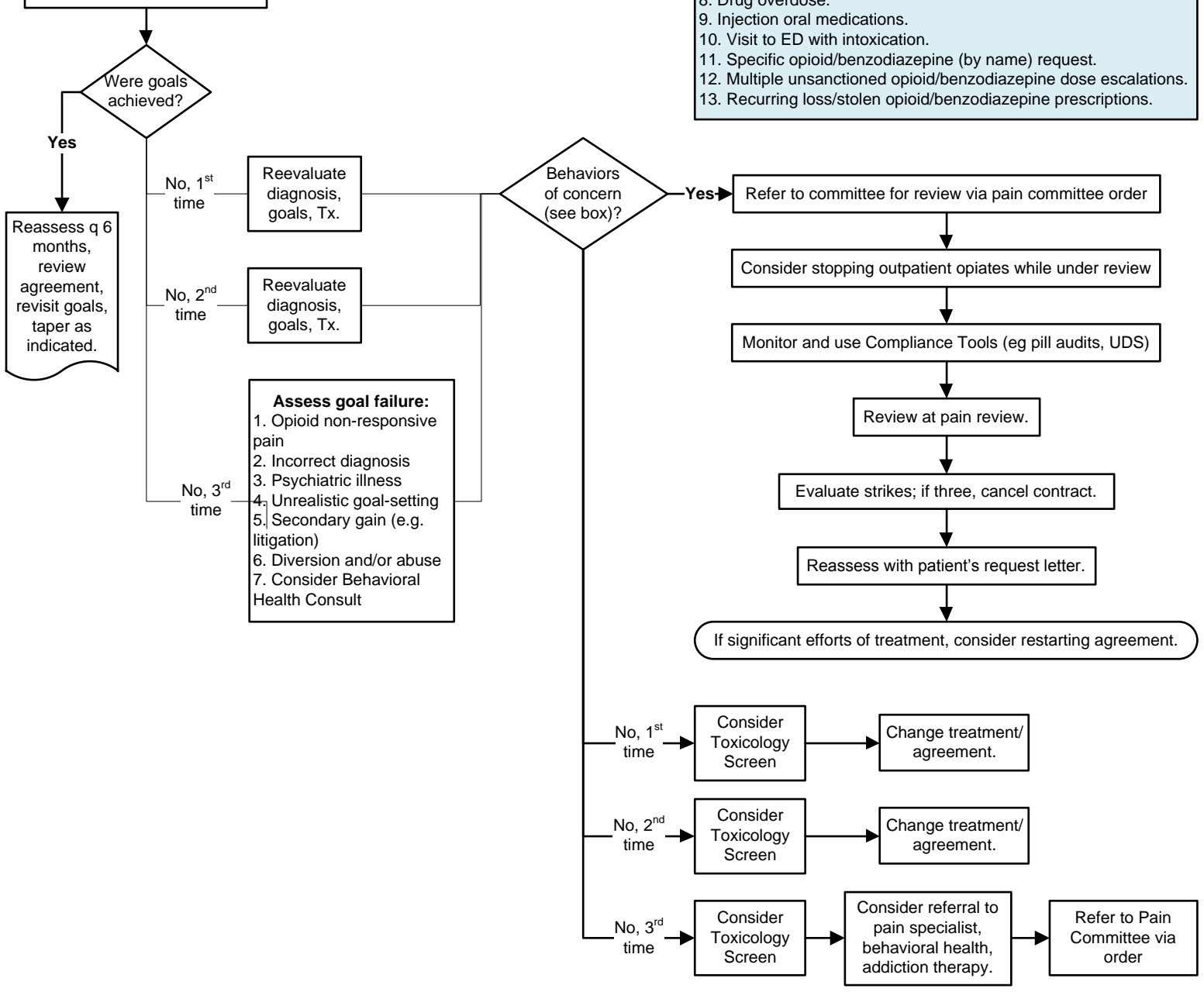
Follow up and reevaluation:

Assess for:

1. functionality
2. adverse effects
3. achievement of goals
4. analgesia
5. behaviors of concern: see flow sheet

Behaviors of Concern

1. ETOH abuse
2. Poly-drug abuse
3. Cocaine abuse (+tox screen)
4. Forgery
5. Stealing. Buying from the street.
6. Negative tox screen for prescribed opioid/benzodiazepine.
7. Hospitalization related to substance abuse.
8. Drug overdose.
9. Injection oral medications.
10. Visit to ED with intoxication.
11. Specific opioid/benzodiazepine (by name) request.
12. Multiple unsanctioned opioid/benzodiazepine dose escalations.
13. Recurring loss/stolen opioid/benzodiazepine prescriptions.



For terminal cancer patients (with life expectancy less than or equal to 6 months) who have previously demonstrated good compliance with Chronic Medication agreement, documentation of titration for pain control as appropriate is acceptable without requiring new agreement. Continue to monitor for achievement of goals/behaviors of concern.

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Age	Hb/Hct	Coags	Lytes	BUN/Cr	Glucose	LFTs	EKG	CXR	T&S
0 – 59 years	No routine testing needed in this age group.								
60 – 74 years							X		
75 – 99 years	X		X	X	X		X		

Disease	Hb/Hct	Coags	Lytes	BUN/Cr	Glucose	LFTs	EKG	CXR	T&S
Hypertension			X				X		
Card – moderate	X		X	X			X		
Card – severe	X		X	X			X	X	
Pulm – mild									
Pulm – severe	X						X	X	
Smoker > 20 years	X								
Malignancy	X								
Lymphoma								X	
Hepatic	X	X	X			X			
Renal	X	X	X	X					
Bleeding	X (CBC)	X							
Diabetes			X	X	X		X		
Expected blood loss	X								X

Medication	Hb/Hct	Coags	Lytes	BUN/Cr	Glucose	LFTs	EKG	CXR	T&S
Diuretic			X	X					
Antihypertensive			X	X			X		
Cardiac medication			X	X			X		
Steroid			X		X				
Anticoagulant	X	X							

Other

Urine hCG: obtain within 48 hours of surgery in women of childbearing age (13-50).

Drug Levels: draw level on all patients on digoxin or phenytoin.

CXR: obtain if recent change in sputum quality or color, pneumonia in past three months, chronic home oxygen use, planned intrathoracic surgery, or if exam reveals rales, rhonchi, or wheezes.

Surgical Risk Screening Protocol Orders

- Patients who are not to be scheduled at YKHC:
 - Patients with BMI > 45 (up to BMI of 45 is acceptable if no significant unstable CV, respiratory, or endocrine pathology is present).
 - Obstructive sleep apnea perioperative risk score of 5 or 6.
- Preventative antibiotic therapy will be administered within one hour prior to skin incision per protocol pre-operatively based on procedure type and patient's allergies unless otherwise ordered by physician.
- DVT/VTE prevention methods will be implemented using SCIP Mechanical Prophylaxis Protocol unless contraindicated or otherwise documented in orders by physician.

Diabetes Management

- Discontinue all oral agents the evening prior to surgery except Metformin, which can be taken the evening prior to surgery but not the day of surgery.
- Discontinue insulin after midnight for AM surgeries.
- Take half usual dose of insulin the morning of surgery if surgery is scheduled to start at noon or later.
- Take full dose of Lantus insulin up to time of surgery.
- Consume apple or cranberry juice up to two hours prior to arrival to surgery if insulin was given.
- For insulin pumps, set to basal rate and continue throughout pre-operative period.
- Upon arrival to Holding Area, obtain glucose level. Anesthesia will treat results.



NPO Guidelines

The preoperative nurse will instruct all patients to be NPO after midnight and to follow the surgeon's instructions if they differ from this. The surgeon who gives different instructions will be responsible for thorough patient instruction of anything other than these guidelines.

1. All patients are equal with regard to NPO guidelines (eg gastric emptying time, obesity).
2. Clear liquids may be consumed up to two hours prior to scheduled arrival time.
3. Clear liquids are water, black coffee, and beverages not cloudy that can be seen through. Sugar and artificial sweeteners are acceptable. All broths are NOT acceptable.
4. Patient may brush his/her teeth but should not swallow toothpaste.
5. Gum and candy of any type are not allowed.
6. All patients will be allowed to eat a full, regular diet (solids) up to eight hours prior to surgery. Patients going to the OR at 0730 who were NPO after midnight are considered to meet this standard.
7. Infants up to 24 months of age will be allowed breast milk up to four hours prior to the arrival to the hospital. Infant formula is considered a solid.

Estimated Energy Requirements for Various Activities, Based on Duke Activity Status Index*

1 MET	Can you...	
		...take care of yourself?
		...eat, dress, or use the toilet?*
		...walk indoors around the house?
		...walk one or two blocks on level ground at 2-3 mph (3.2-4.8 kph)?
< 4 METs	Can you...	
		...do light work around the house, such as dusting or washing dishes?
≥ 4 METs	Can you...	
		...climb a flight of stairs or walk up a hill?
		...walk on level ground at 4 mph (6.4 kph)?
		...run a short distance?
		...do heavy work around the house, such as scrubbing floors or lifting or moving furniture?
		...participate in moderate recreational activities, such as golf, bowling, dancing, doubles tennis, or throwing a baseball or football?
≥ 10 METs	Can you...	
		...participate in strenuous sports, such as swimming, singles tennis, football, basketball, or skiing?

* MET = metabolic equivalent

Adapted from J AM Coll Cardiol, with permission from Elsevier.