Yukon-Kuskokwim HEALTH CORPORATION

CLINICAL RESOURCE BOOK

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Outpatient Protocols/Reference

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Use of Consultants at YKHC

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.

Provider needs consultation about patient at YKHC

Consult provider is located in Bethel?

No

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.

Yes

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

No

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.

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.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Medevac Activation: Village to Bethel

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

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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**.

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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.**

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

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

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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.

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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.

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

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.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Medevac Activation: Bethel to Anchorage

Patient in Bethel requires emergency medical transport.

Is patient a beneficiary?

YES → Managing provider contacts ANMC (see below) to consult relevant department.

ANMC physician accepts patient or authorizes transfer to alternate facility. If needed, managing provider arranges accepting physician at alternate facility. If patient is going to an ED, managing provider must arrange accepting ED physician.

Managing provider activates LifeMed and completes Patient Transport Order (PTO) and consent for transfer.

NO → Managing provider elicits patient preferences for medevac company and accepting facility. If no preference, suggest he/she **register for LifeMed insurance online**.

Managing provider arranges accepting physician at selected facility. If patient is going to an ED, managing provider must arrange accepting ED physician.
Note: Accepting Physician for Elmendorf must either be a Military or VA Physician

Managing provider activates selected medevac dispatch and completes Patient Transport Order (PTO) and consent for transfer.

If indicated, managing provider notifies dispatch of need for neonatal team.

Medevac dispatch determines the availability of aircraft. If there will be a medically threatening delay, managing provider may request that dispatch explore other options, which may include other medevac companies.

Medevac dispatch may arrange consultation between managing provider and medevac medical control.

Managing provider notifies YKHC ED physician for centralized medical control and prioritization of medevacs.

Medevac dispatch notifies referring unit regarding ETA and/or delays.

Upon arrival in referring unit, medevac team assumes care. Managing provider may request consultation with medevac medical control physician.

Copies of the PTO, consent for transfer, radiology studies, and patient chart accompany the patient. Consider faxing relevant information to receiving unit prior to arrival.

Information to Have Prepared for Dispatch
- Patient's name, DOB, weight, and diagnosis.
- Any drips or special equipment.
- Accepting provider and hospital.
- Escort's name and weight.

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.
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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Activating Emergency Military Transport

Medevac has been activated for a sick patient in a village, but LifeMed cannot accept the flight.

Is the patient is in danger of losing life, limb, or eyesight (LLE)?

Yes

Explore other options:
- Ask health aides about transport to SRC or other villages with more resources or better accessibility.
- Explore if chartering a plane is an option.
- See if travel by boat, snow machine, or ATV is possible.
- Ask LifeMed dispatch to talk to the local crew about other creative ideas.
- Discuss with seasoned YK providers to ask for ideas.
- Discuss options with ER physician.

No other option is viable

- Notify Clinical Director (CD) on call and discuss transport options.
- Is activating the Rescue Coordination Center (RCC) appropriate?

No

- Make a plan with the health aides to provide appropriate care for the patient until a regular transport can be safely arranged.
- Plan for frequent reassessments.
- Prepare to change the plan if the patient's status deteriorates.

Yes

Call the RCC at (800) 420-7230 to begin the process of activating military transport.

Call LifeMed Dispatch to ask if LifeMed crew will be able to go with the military on the flight. **DO NOT CALL THE CREW DIRECTLY.**

Can LifeMed crew go?

Yes → Communicate with LifeMed per usual procedures.

No

Ask RCC about medical capabilities of the anticipated crew. GET DETAILS.

Do arrangements sound appropriate to deliver the necessary level of care?

Yes → Proceed with plan per RCC. Communicate appropriately.

No

- Discuss with CD on call.
- Consider sending YKHC clinical staff.
- If approved, ask for volunteers with appropriate backgrounds.
- Strongly consider calling local LifeMed crew to help assess the risk and safety of the plan.

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.)

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 Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Critical Care and Medevac Guide: Patient in Bethel

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.

Pediatric patient in Bethel requires medevac.

Critical pediatric patient (including patients on HFNC, with suspected sepsis, in status epilepticus, with PEWS ≥ 8, etc.)

Pediatric hospitalist (or other physician in consultation with pediatric hospitalist) can call ANMC PICU consultant for advice, management, and accepting physician.
(907) 297-8809
This phone is held by the PICU physician or NP. You may request the physician.
Ensure the ANMC Transfer Center has been contacted.

YK provider activates LifeMed.
*96 or (800) 478-5433

ANMC PICU consultant stays available to support pediatric hospitalist with ongoing patient management as needed.

Pediatric hospitalist may request that ANMC PICU consultant update LifeMed Medical Control if able.

YKHC provider remains in control of management until patient leaves facility.

Trauma, Surgical, Orthopedic Emergency

ER provider calls ANMC Transfer Center for accepting physician at (907) 729-2337 or by Tiger Text.

For all pediatric trauma cases and surgical cases in children >4 years, call the ANMC general surgeon on call.
For surgical cases in children ≤4 years, call the pediatric surgeon on call through the ANMC operator or their office at (907) 375-8333.

Noncritical: for bed space, diagnostic or specialty services not available at YKHC, etc.

ER provider calls ANMC Transfer Center for accepting physician at (907) 729-2337 or by Tiger Text.

Please remember to update the pediatric hospitalist for any CPP patient being transferred.

ER provider activates LifeMed.
*96 or
(800) 478-5433

ER provider updates LifeMed Medical Control as needed.

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

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 9/3/17; minor revisions approved 10/2019.
If comments about this guideline, please contact Jane_McClure@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Emergency Department Guidelines

Emergency Department Guidelines

For Pediatric Critical Care Weight-Based Guide, see
https://yk-health.org/wiki/File:Pediatric_critical_care_guide.pdf

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intubation (Adult and Pediatrics)

Prepare

Predict difficult airway and post-intubation hypotension:
1. Shock Index (SI) = HR/sBP. If >0.8, high likelihood of post-intubation hypotension. Optimize resuscitation with fluids/blood prior to intubation if possible.
2. Have at bedside: BVM with correct size mask, OPA/NPA, suction, LMA/i-Gel, bougie.
3. Predictors of difficult intubation: see next page. ***Consider contacting anesthesiology if difficult airway is anticipated!***
4. Prepare several doses of all medications, including an extra dose of paralytic and boluses of post-intubation sedation.

Pre-oxygenate

Goal SpO_2 > 93% for three minutes. Mask *and* NC in all patients.
Non-rebreather with flush rate O_2 if spontaneously breathing.
Bag-mask ventilation if no spontaneous breathing.
Non-invasive PPV if in ARDS.

Pre-medicate (optional)

FOR ADULTS, may choose one or more:
1. Fentanyl 2-4 mcg/kg
2. Ketamine 0.1-0.3 mg/kg
3. Rocuronium 0.1 mg/kg

FOR PEDIATRICS:
Atropine – onset <1 minute. Use for younger than 12 months. Use doses on Pediatric Critical Care Guide (code sheets).
Consider using in any patient at risk for bradycardia associated with airway manipulation, shock, hypoxia, acidosis, or severe electrolyte abnormalities.

Induce

FOR ADULTS, choose one:
1. Etomidate 0.3 mg/kg: first line for most patients.
2. Ketamine 1-2 mg/kg
3. Propofol 2 mg/kg: caution hypotension.
4. Midazolam 0.1-0.3 mg/kg: caution hypotension.

FOR PEDIATRICS:
Midazolam AND fentanyl, using doses on Pediatric Critical Care Guide (code sheets).
May need to repeat fentanyl dose.

Paralyze

FOR ADULTS, choose one:
1. Rocuronium 1 mg/kg: duration 30-40 minutes.
2. Succinylcholine 1-2 mg/kg: duration 3-5 minutes; see warning on next page.
3. Vecuronium 0.1 mg/kg: duration 45-65 minutes.

FOR PEDIATRICS:
Rocuronium, using doses on Pediatric Critical Care Guide (code sheets).
DO NOT USE SUCCINYLCHOLINE.

Perform video or direct laryngoscopy

Fails → **Bag-mask ventilation ± OPA or supraglottic airway (LMA/i-Gel)**

Succeeds → Consider making changes:
- Try other form of laryngoscopy.
- Change provider doing the procedure.
- Contact anesthesia.
- Change patient position.
- Use bougie.

Succeeds

Fails → **Cricothyrotomy**

Succeeds

Confirm placement:
1. Visualize tube through cords.
2. End tidal CO2 detector turns and remains yellow after 6 breaths.
3. Bilateral breath sounds.
4. No noise over epigastrium.
5. *Normal waveform on $EtCO_2$ capnography (gold standard).*
6. Confirmation on CXR.

PEDIATRICS
- Secure tube with silk tape.
- Do not use a commercial tube holder device for tubes 5.0 and smaller.
- Always place NG/OG tube for decompression.

Continuing sedation/analgesia

FOR ADULTS:
1. Fentanyl 1-4 mcg/kg/hour, bolus 50-100 mcg.
2. Midazolam 0.02-0.1 mg/kg/hour, bolus 1-5 mg.
3. Propofol 5-80 mcg/kg/minute, bolus 1-2 mg/kg.
4. Ketamine 0.5 mg/kg/hour, bolus 1-2 mg/kg.

FOR PEDIATRICS:
- Fentanyl continuous infusion with boluses Q15minutes *prn*, using doses on Critical Care Guide. Give bolus prior to starting drip.
- Consider midazolam boluses if needed. Consider continuous infusion if needed. Watch for hypotension.

Post-intubation care

- Obtain ABG.
- Place NG/OG tube.
- Elevate head of bed 30-45°.
- BP Q3 minutes x30 minutes.
- Place in-line suction.
- Consider nebulized treatments.
- Consider C-collar.

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 or Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intubation (Adult and Pediatrics)

Supplement I: Predictors of Difficult Intubation

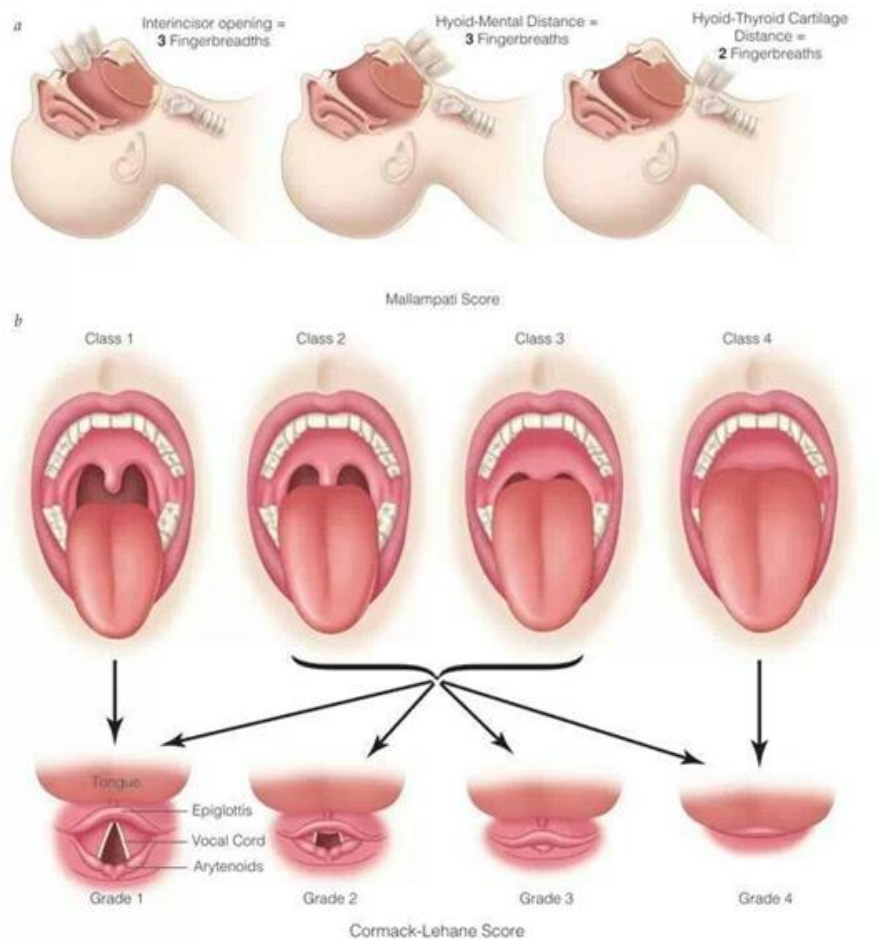
Predictors of Difficult Intubation

- 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	**L**ook: trauma, large tongue
E	**E**valuate 3:3:2 rule.
M	**M**allampati score ≥ 3
O	**O**bstruction
N	**N**eck 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, denerving neuromuscular disease
Use after acute phase of burns, major trauma, crush injury

Relative contraindications:
Elevated ICP
Pseudocholinesterace deficiency

Treatment of malignant hyperthermia:
Dantrolene 2.5 mg/kg IV, redosing based on expert guidance

Resources: Guideline adapted from Strayer Airway Algorithm, Austin Hospital Airway Algorithm
Predictors of Difficult Intubation: **http://medind.nic.in/iad/t05/i4/iadt05i4p257.pdf**

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Approved by MSEC 2/5/20.
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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Initial Ventilator Settings for an Intubated Adult

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: PaO_2 55-80 mmHg or SpO_2 88-95%.
Use a minimum PEEP of 5 cm H_2O. Consider use of incremental FiO_2/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 H_2O; 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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

High-Flow Nasal Cannula for Pediatric Patients

REMEMBER:
- No pediatric patient may be kept at YKDRH on HFNC unless medevac is on weather-hold.
- Maintain patient on HFNC until medevac arrival.
- Requirements for HFNC:
  - □ The patient must have 1:1 nursing care until he/she has stabilized. After stabilization, nursing care may be 2:1 until medevac arrival.
  - □ The patient must have a respiratory therapist at bedside until stabilized.
- Prior to starting HFNC, physicians, bedside nurses, charge nurses, and RT will huddle to determine which unit will care for the patient. This will be decided on a case-by-case basis. Considerations include:
  - □ How long is the patient expected to remain at YKDRH? Will that time exceed the time provided by an H-cylinder?
  - □ How much risk will be added by moving the patient after stabilization on HFNC?
  - □ Experience level of nurses who will care for the patient.
- All newborns on HFNC must remain in the nursery.

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 exhalation, decrease flow rate until exhalation 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 Sweet-Ease.
- Try environmental changes to comfort a fussy baby: caregiver may hold patient in semi-recumbent position, patient may be swaddled, patient may be fanned if hot, lights may be dimmed, etc.
- Consider mild anxiolysis in consultation with medical control.
- Consider higher levels of flow to improve washout.

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.

↓

- Determine optimal patient location with team.
- Activate medevac.
- PREPARE PATIENT (see box).

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

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

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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 every 20-30 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.
- Consider back-to-back nebs with albuterol or normal saline.
- Consider phenylephrine nasal spray 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 blue seat (stored in the ED) 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 patients ≤ 4 kg.
- High-flow cartridge to be used with larger cannula and produces flow rates of 5-40 LPM.

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 4/14/20.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Myocardial Infarction

Patient presents with chest pain suggestive of MI
Substernal/Left sided chest pain, shortness of breath, diaphoresis, nausea

For non-native patients, please consult Alaska Cardiology Associates.

Focused history and physical exam.
Focus on fibrinolytic therapy analysis.

Immediate treatment within 10 minutes: Oxygen 4L NC.
Aspirin 162-325 mg PO. (Clopidogrel 300 mg PO if allergy.)
Nitroglycerin SL q5 min prn chest pain.
Morphine 2-4 mg IV, repeat in 5 minutes for effect.

Immediate assessment within 10 minutes:
CK-MB, Troponins, CBC, BMP, magnesium, PT/PTT, EKG, & CXR.

Assess 12 Lead EKG

ST Elevation in 2 contiguous leads or new LBBB

Consider activating medevac.

If HR>60 and SBP>100 and no signs of pulmonary edema:
Metoprolol 5 mg IV q5 min x 3 doses and Metoprolol 50 mg PO x 1 dose.

Nitroglycerin 5mcg/min IV and titrate to 200 mcg/min for effect and SBP>90.

Enoxaparin 1mg/kg SC q12 hours.

Time from onset < 12 hours?

No

Persistent chest pain?

Yes

Cardiology consultation

No

Continual monitoring and assessment. Admit or transfer.

Yes

Thrombolysis, if no contraindication.
Goal - door to drug < 30 min.

Consult Cardiology and transfer.

ST Depression/T-wave Inversion

If HR>60 and SBP>100 and no signs of pulmonary edema:
Metoprolol 5 mg IV q5 min x 3 doses and Metoprolol 50 mg PO x 1 dose.

Nitroglycerin IV or paste.

Enoxaparin 1mg/kg SC q12 hours.

Consider a glycoprotein 2b3a inhibitor.

Cardiology consult

Non-Diagnostic EKG

Complete H&P to risk stratify (DM,CAD,CHF).

1st set of markers positive at 0-6 hrs?

Yes

No

Repeat markers at 6-12 hours.

Positive markers?

Yes

No

High Risk Patient?

Yes

1. Aspirin EC 81-325 mg PO daily.
2. Consider Metoprolol.
3. Consider Enoxaparin 1mg/kg SC q12 hours.
4. Consider nitroglycerin paste or IV.

Consider Cardiology consult depending on clinical situation; consider inpatient work-up, outpatient work-up, or transfer.

No

1. Aspirin EC 81-325 mg PO daily.
2. Consider metoprolol.

Outpatient work-up

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.**

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.

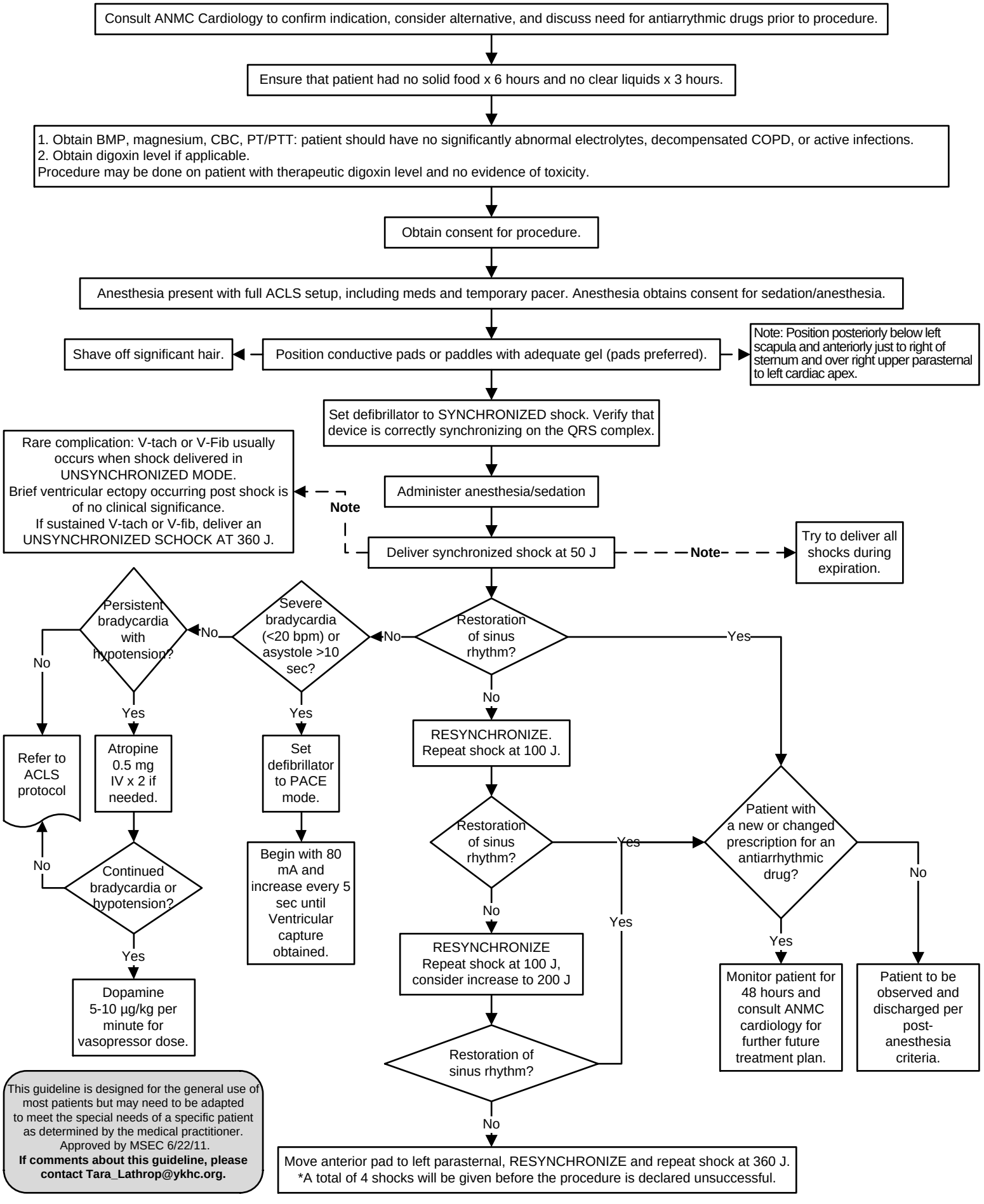
High Risk Criteria

- 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 makers

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Atrial Fibrillation and Atrial Flutter



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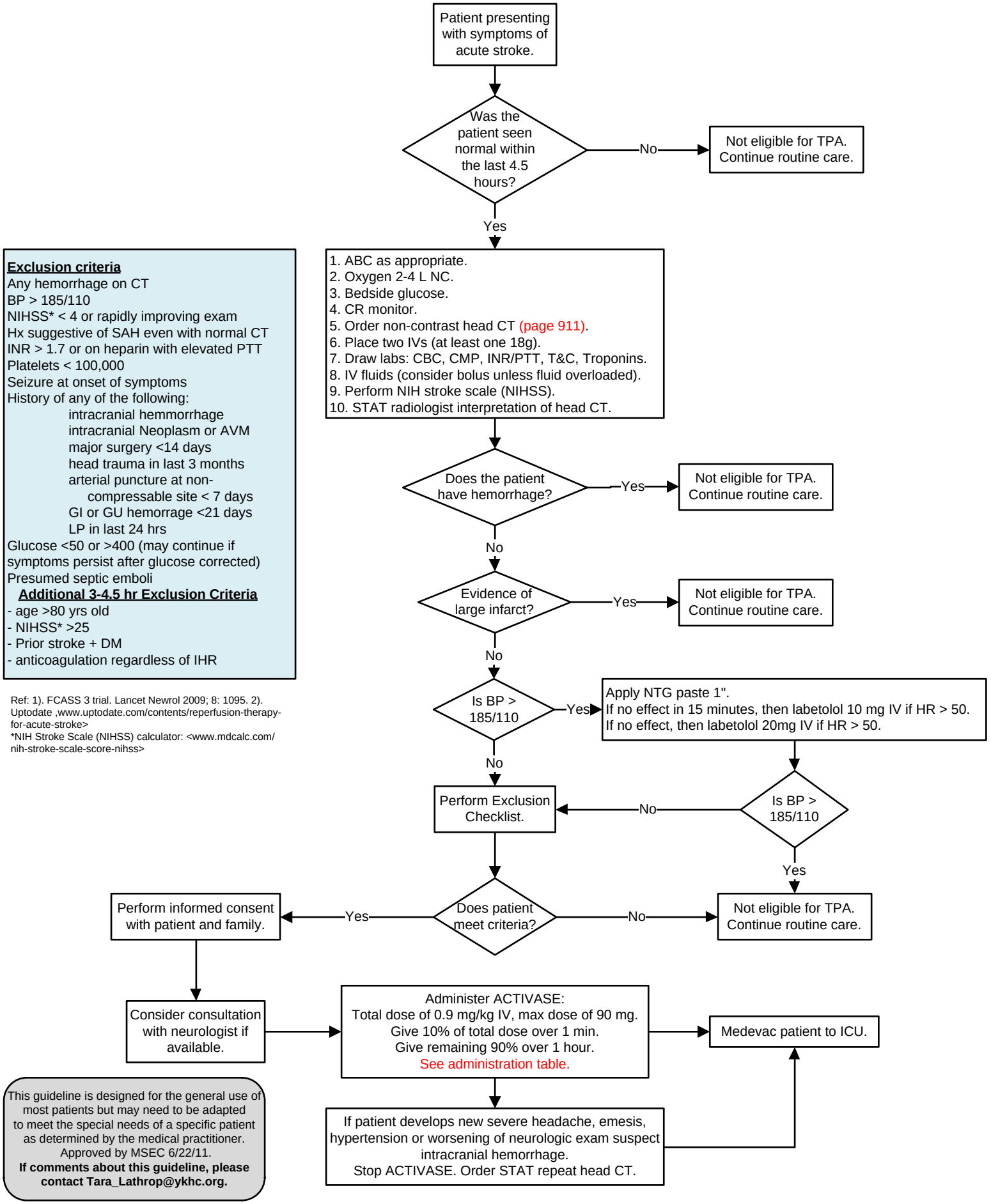
Approved by MSEC 6/22/11.
If comments about this guideline, please contact Tara_Lathrop@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Ischemic Stroke



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 hemmorrhage
- intracranial Neoplasm or AVM
- major surgery <14 days
- head trauma in last 3 months
- arterial puncture at non-compressable site < 7 days
- GI or GU hemorrage <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 Newrol 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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Approved by MSEC 6/22/11.
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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sepsis (Adult)

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

Consider sepsis EARLY in *any* patient with suspected infection.

Does pt meet criteria for sepsis or septic shock?

No → *Reassess after initial evaluation:*
Consider
• fever, leukocytosis, hypotension?
• unexplained altered mental status?
• tachypnea? especially if lungs CTA and SaO_2 WNL?
• unexplained organ dysfunction?
• clinical concern during ongoing care?

Yes

Airway stable?

No → ET intubation with target tidal volume 6 mL/kg for pts without ARDS

Yes

Large bore IV x2.
LABS INCLUDING LACTATE & BLOOD CULTURES.
START FLUID RESUSCITATION immediately: Give 1 L NS or LR bolus with target at least 30 mL/kg within 1-3 hours.

START EMPIRIC ANTIBIOTICS (see guidelines) within 1 hour of recognition of sepsis/septic shock.

REASSESS FREQUENTLY
Assess for adequacy of fluid resuscitation or complications from fluid therapy.

Monitor vital signs, UOP, shock index (HR/SBP > 0.7), mental status, and clinical exam.

Use more than one method to assess resuscitation adequacy and use dynamic variables if possible.

CONSIDER CONSULT/TRANSFER if unstable or not improving and **ACTIVATE MEDEVAC EARLY** if needed.

Is MAP > 65 after 3L of IVF or is patient having complications from volume therapy?

Yes → **START NOREPINEPHRINE** or other vasopressor (see guidelines) and **TITRATE** fluids and pressors to **MAP >65.**

Place a central line ASAP but do NOT delay pressors — a well-secured large bore peripheral IV may be used to initiate pressors.

Consider intubation to facilitate appropriate volume resuscitation.

Consider hydrocortisone (see guidelines) *only* for septic shock not responsive to adequate fluid resuscitation and vasopressors.

No

If initial lactate is > 2:

RECHECK LACTATE 1-2 hours after starting resuscitation.

GUIDE RESUSCITATION TO NORMALIZE LACTATE.
Primary goal should be to achieve a relative lactate clearance of at least 10% in 1-2 hours.

Lactate > 4 may indicate hypoperfusion and the need for aggressive/continued fluid resuscitation.

GET SOURCE CONTROL and obtain additional cultures PRN.

Continue to reassess frequently while awaiting admission or transfer.

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.

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.

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 7/12/17.
If comments about this guideline, please contact Tara_Lathrop@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sepsis Antibiotics (Adult)

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

Vancomycin[1] 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-tazobactam[3] 4.5 grams IV Q8h.
OR
If in shock: **Cefepime** 2 grams IV Q8h.

AND

Gentamicin[2] 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

Vancomycin[1] 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-tazobactam[3] 4.5 grams IV Q6h.
OR
If in shock: **Cefepime** 2 grams IV Q8h.

AND

Levofloxacin 750 mg IV Q24h.
OR
Gentamicin[2] 7 mg/kg IV Q24h. Consult pharmacy for max dosing.

Meningitis

Dexamethasone 10 mg IV prior to antibiotics.

AND

Vancomycin[1] 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:

Gentamicin[2] 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-tazobactam[3] 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-tazobactam[3] 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:
Vancomycin[1] 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-tazobactam[3] 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-tazobactam[3] 4.5 grams IV Q6-8h.
OR
Cefepime 1 gram IV Q6h.

AND

Vancomycin[1] 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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Approved by MSEC 7/12/17.
If comments about this guideline, please contact Tara_Lathrop@ykhc.org.

[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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sepsis Vasoactive Medications (Adult)

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 inoptropic 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 shot; 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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sepsis/Shock (Pediatric)

Shock Criteria

2 or more of the following:
- Temp <96.8 or >100.4
- Abnormal WBC count (<5 or >15)
- Abnormal HR
- Abnormal RR

AND

Signs of End-Organ Involvement:
- Altered mental status
- Delayed cap refill
- Cold/mottled extremities
- Weak pulses
- Difference between central and peripheral pulses
- Significantly decreased UOP
- Hypotension
- Bounding/brisk pulses with rapid cap refill

Patient meets criteria for severe sepsis/shock → Call pediatric hospitalist. Page pharmacist and RT. → Consult PICU by direct line: (907) 297-8809.

Place on CR monitor.
Start supplemental oxygen. Prepare BVM.
Get access: IV/IO x2.
Bolus: NS 20 mL/kg x2 over ≤ 10 minutes.
Reassess volume status after each bolus.

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

Labs: bedside glucose, blood culture, electrolytes, CBC, lactate, ionized calcium, procalcitonin.

Order empiric antibiotics STAT.

Is patient maintaining airway? — No → Intubate per Pediatric Intubation Guideline.

Yes

If not improving, give third bolus of NS 20 mL/kg.
Correct hypoglycemia.
Correct hypocalcemia.

Is there continuing hypotension, poor pulses, change in mental status, or delayed cap refill?

Yes → Start vasopressor and consider methylprednisolone for fluid-refractory shock in consultation with the PICU.

Continue to reassess and give boluses of NS 20 mL/kg unless patient develops rales, respiratory distress, hepatomegaly, or a gallop.

If shock persists, consider a second pressor, calcium chloride, etc. in consultation with PICU.

No → Monitor closely per Continuing Management Box while awaiting medevac.

Village Management
- Consult pediatric hospitalist.
- Aggressive hydration: IV or PO.
- Supplemental oxygen via nasal cannula.
- Monitor glucose.
- Treat hypoglycemia with Insta-Glucose tubes buccally – NOT rectally.
- Ceftriaxone 100 mg/kg IM.
- May give Epinephrine 0.01mg/kg SC.
- Activate medevac.
- Consider VTC.

See Wiki RMT Section for more detailed recommendations.

Continuing Management
- VS (including BP) at least Q15min.
- Blood glucose Q30 min.
- Maintenance IVF with DNS.
- Consider Foley.

Goals
- Cap refill <2 sec
- Normal BP for age
- Normal pulses
- Warm extremities
- UOP > 1 mL/kg/hour
- Normal mental status

Empiric Antibiotic Choice

≤28 days
Ampicillin 50 mg/kg AND gentamicin 4 mg/kg. If concern for meningitis, give cefepime 50 mg/kg IV. If concerned about HSV or neurologic impairment, add acyclovir 20 mg/kg.

>28 days
Ceftriaxone 100 mg/kg (max 2000 mg)
AND vancomycin 20 mg/kg (max 2000 mg)

If CVL in place, immunocompromised, or significant Hx antibiotics in past 30 days
Cefepime 50 mg/kg (max 2000 mg)
AND vancomycin 20 mg/kg (max 2000 mg)

If allergic to PCN
Meropenem 15 mg/kg (max 500 mg)
AND vancomycin 20 mg/kg (max 2000 mg)

If suspecting Staph or Strep:
Consider adding clindamycin 13 mg/kg IV for anti-toxin effect.

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

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Fever ≥ 100.4°F in Infants 0-90 Days

Infant 0-90 days with recorded or reported rectal temperature ≥100.4°F

Evaluation and management in Bethel

Sick-appearing

Well-appearing

0-28 days

29-90 days

Perform full work-up, including:
- CBC with manual differential
- CRP
- Procalcitonin
- Blood culture
- U/A, urine culture
- CXR
- LP if stable
- RSV, flu nasal swabs

Admit or medevac, as appropriate. Give antibiotics (see Treatment Box).

Perform partial work-up:
- CBC with manual differential
- CRP
- Procalcitonin
- Blood culture
- U/A, urine culture
- Consider CXR

Meets all Low Risk Criteria (see box)?

No

Strongly consider performing LP if stable. Consider giving antibiotics (see Treatment box).

Yes

Observe in Bethel with no antibiotics with daily follow-up until cultures are negative at 48 hours. Inform family of plan. Patient Education Handout is available (Fever Follow-Up Instructions-PEDS).

Village Management
- If well-appearing, send to Bethel on next commercial flight.
- If travel to Bethel will be delayed, infant must have recheck with health aide within 12 hours and be followed closely until seen in Bethel.
- If infant is not well-appearing, consult peds to discuss treatment options.
- If giving ceftriaxone IM in the village, DO NOT say "ceftriaxone per CHAM." Give the health aide the exact dose.

Low Risk Criteria
- Well-appearing
- Previously healthy
- Full term >37 weeks
- No focal bacterial infection, such as pneumonia or UTI.
- WBC count 5-15
- Absolute band count <1500
- Procalcitonin <0.5
- No thrombocytopenia
- U/A with negative nitrites, negative leukocyte esterase, <10 WBC/HPF

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

1. 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.

2. 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.

3. 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.

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 Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Influenza (Adult and Pediatrics)

Testing Recommendations	
Suspected Influenza in the Ambulatory Setting: • Patients considered High Risk for Complications (See below.) • Adults >65 years of age • Children <2 years of age • Patients with complicated influenza-like illness that may warrant treatment • Individuals with febrile illness of unclear etiology or as part of a sepsis evaluation ***It is not recommended to perform testing in most ambulatory patients who present with uncomplicated flu-like illness.***	**Suspected Influenza in the Inpatient Setting:** All patients admitted with febrile illness or respiratory symptoms should be tested.

High Risk for Influenza Complications:
- **Chronic Pulmonary Disease** (including asthma and pediatric patients with chronic lung disease and recurrent respiratory infections)
- **Cardiovascular Disease** (except for hypertension)
- **Diabetes Mellitus**, or other metabolic disorders
- **Immunosuppressed** (chronic steroids/biologics, chemotherapy, AIDS, etc.)
- **Pregnant** or **Postpartum up to 2 weeks**
- **Morbid Obesity** (BMI >40)
- <19 years of age receiving **long-term aspirin therapy**
- **Renal, hepatic, hematologic impairment/disease**
- **Neurologic and neurodevelopment conditions** (cerebral palsy, epilepsy, moderate-severe developmental delay, neurodegenerative disorders, etc.)

Treatment Recommendations	
Indications for Treatment • All patients with confirmed influenza, regardless of timing, who: - Have severe, complicated, or progressive illness. - Require hospitalization. - Are high risk for influenza complications (see above). • Can be considered based on supply and clinical judgment in low risk patients within 48 hours of symptom onset.	**Treatment NOT Recommended** • Non-institutionalized (hospital or other health care facility) patients age 2-64 years not at high risk for influenza complications. • Patients with uncomplicated illness after 48 hours of symptom onset.

Chemoprophylaxis Recommendations

Chemoprophylaxis of household members is not routinely recommended except for:
-Medically high-risk (see above) close contacts within 48 hours of exposure

** For neonates born to mothers with influenza, defer to Seattle Children's Hospital Infectious Disease Physician Consult Line for formal recommendations: (206) 987-7777.*

Influenza Treatment Dosing for Oseltamivir

	Age/Weight	Dose	Renal Dose Adjustments	Duration
Neonates	**PMA <38 weeks**: 1 mg/kg/dose PO q12hr **PMA 38-40 weeks**: 1.5 mg/kg/dose PO q12hr **PMA >40 weeks**: 3 mg/kg/dose PO q12hr **>2 weeks**: 3 mg/kg/dose PO q12hr *Confirm with Seattle Children's Hospital Infectious Disease Physician Consult Line (206) 987-7777.*		CrCl <30mL/min: usual dose given q24hr *additional dose adjustment needed for hemodialysis (consult pediatric nephrology in all cases)	5 days
Infants	Term, 3-8 months 9-11 months	3 mg/kg/dose PO q12hr 3.5 mg/kg/dose PO q12hr		5 days
Children 1-12 years	<15 kg 15-23 kg 23-40 kg	30 mg PO q12hr 45 mg PO q12hr 60 mg PO q12hr		5 days
Adults and Children ≥ 12 years	>40 kg or >12 years	75mg PO q12hr	CrCl 30-60 mL/min: 75mg PO q24hr CrCl 10-30mL/min: 30 mg PO q24hr Hemodialysis: Consult nephrology	5 days

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pneumonia (Adult)

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

If multiple TB risk factors, see Adult TB guideline.

Obtain CXR especially if patient has ≥ 2 of these signs: Temp. > 100.4, HR > 100/min, abnormal chest exam, RR> 20/min, 02 Sat <90%, history of chronic lung disease

CXR shows infiltrate?

No → Chronic lung disease?

No →
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.

Yes

If yes, consider

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

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

No →

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

Yes

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.

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

Yes →

No

PSI 71-90

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

No

PSI ≥ 91

Yes →

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

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

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°F (35°C) or > 104°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
PO2< 60, Sp 02 sat < 90%(room air)	+10
Pleural effusion	+10

Patient with 02 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.

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

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Procalcitonin in Adults

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	• 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).		• 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	• Stop antibiotics. • Consider continuing if clinically unstable.		• 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	• Stop antibiotics. • Consider continuing if clinically unstable.		• 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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Community-Acquired Pneumonia > 3 months

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.

Cough + fever

Institute SUPPORTIVE MEASURES
Then reassess respiratory distress

Moderate to severe respiratory distress
Sustained tachypnea, increased work of breathing, and/or hypoxia

Mild or no respiratory distress
Intermittent tachypnea, increased work of breathing, and/or hypoxia

- CXR (PA & lateral)
- CBC, CRP, and blood culture
- RSV and flu if <3 years
- Place PPD

Consider CXR if <5 years old given high rates of pneumonia in Alaska Native population.

Infiltrate | No infiltrate | No infiltrate | Infiltrate

Begin antibiotics per Treatment box.

Consider other diagnoses: RAD, bronchiolitis, TB, acidosis, toxins, etc.

Prescribe antibiotics for 10 days per Treatment box.

- If <1 year old: requires >2 L supplemental oxygen to prevent hypoxia or improve WOB?
- If ≥1 year old: requires >3 L supplemental oxygen to prevent hypoxia or improve WOB?
- Requires neb treatments more frequently than Q2-3h for >8 hours?
- Sustained tachycardia, tachypnea, or respiratory distress despite treatment?
- Significant pleural effusion?

Yes | No

Transfer to Anchorage

- Admit to YKHC Peds Inpatient Unit, using PED Admission/Respiratory Infection PowerPlan.
- Place PPD if older than 6 months and no PPD in past 6 months.

After 48-72 hours

Improvement?

No

Yes

- Patient improving with increased appetite and activity, less WOB, and decreasing fever curve?
- No hypoxia on room air?
- Tolerating home therapy with competent caregivers?
- Immunizations UTD?
- Negative PPD?

No | Yes

- Consult pediatrics.
- Consider repeating CXR and labs.
- Consider IVF.

- Change to oral antibiotics for total of 10 days of treatment.
- Discharge home with follow-up within 48-72 hours.
- No routine follow-up CXR unless recurrent infiltrate in same lobe; in that case, repeat CXR in 4-6 weeks.

- Place PPD if older than 6 months and no PPD in past 6 months.
- Discharge home with follow-up within 48-72 hours.
- No routine follow-up CXR unless recurrent infiltrate in same lobe; in that case, repeat CXR in 4-6 weeks.

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.

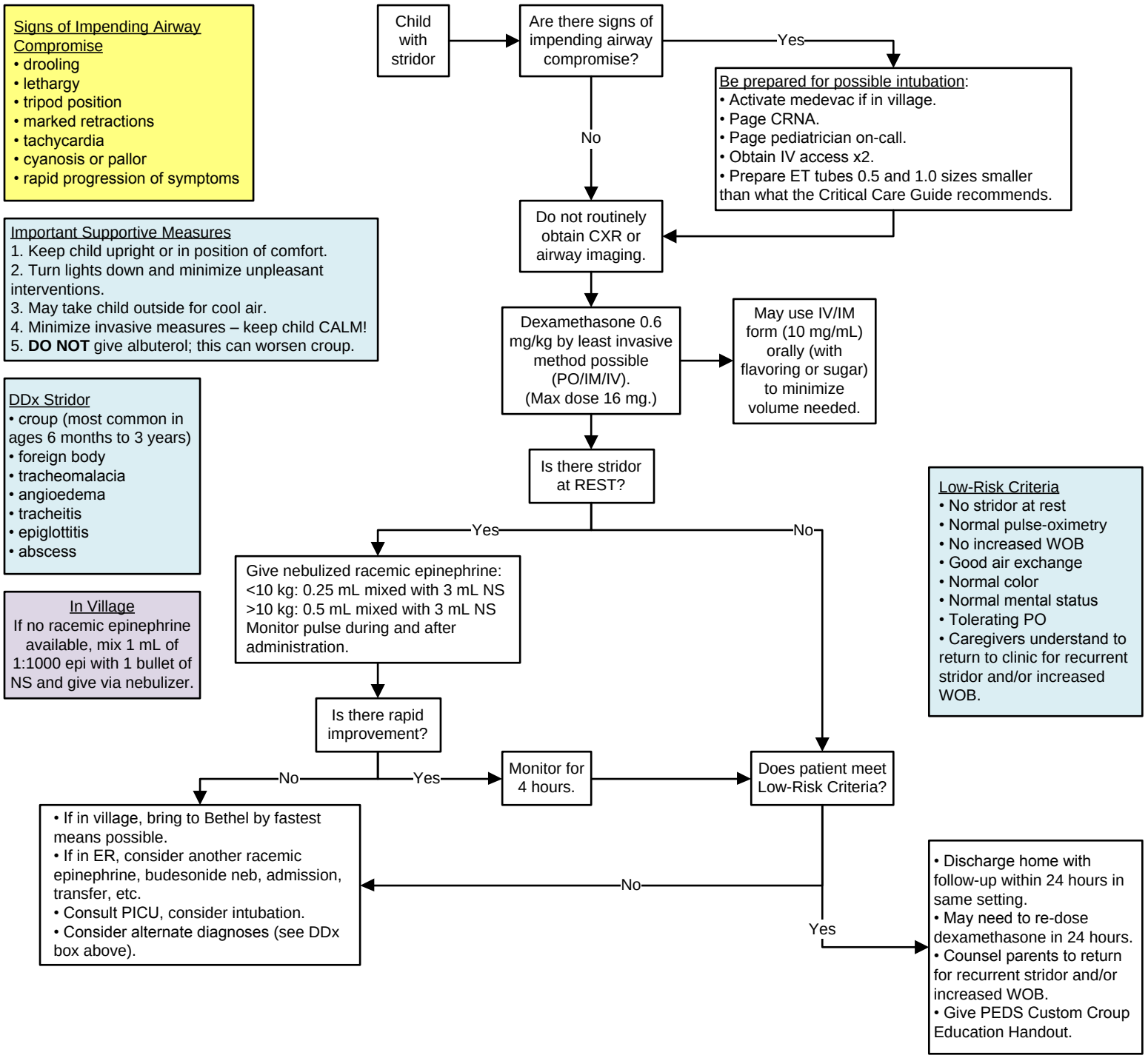
RUL infiltrate: consider starting with Augmentin/Unasyn to cover for oral anaerobes. Consider thickener.

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 Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Croup/Stridor



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Approved by MSEC 10/9/19.
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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Bronchiolitis/Wheezing in 3–24 Months

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.

Wheezing in a 3-24 mo patient

Institute SUPPORTIVE MEASURES. Then reassess respiratory distress.

Moderate to severe respiratory distress
Sustained tachypnea, increased work of breathing, and/or hypoxia

Mild respiratory distress
Intermittent tachypnea, increased work of breathing, and/or hypoxia

Obtain CXR

Evidence of pneumonia?

Yes

See Pediatric Community-Acquired Pneumonia Clinical Guideline

No

- Requires >2 L supplemental oxygen to prevent hypoxia or improve WOB?
- Requires neb treatments more frequently than Q3-4h for >8 hours?
- Has sustained tachycardia, tachypnea, or respiratory distress despite treatment?

Yes

Transfer to Anchorage. Consider high flow nasal cannula.

No

Admit to YKHC Peds Inpatient Unit with IV fluids.

After 48-72 hours

- Patient improving with increased appetite and activity, less WOB, and decreasing fever curve?
- No hypoxia on room air?
- Tolerating home therapy with competent caregivers?
- Immunizations UTD?

Yes

Discharge home with close follow-up within a week

No

Consider:
- Nasal steroids (Pred-Forte 1 spray each nostril BID x5 days) and/or Neo-Synephrine (1 spray each nostril BID x3 days).
- More frequent albuterol/hypertonic saline nebs.
- Racemic epinephrine neb.

Improvement?

Yes

No

Continue SUPPORTIVE MEASURES with close follow-up as needed

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

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.

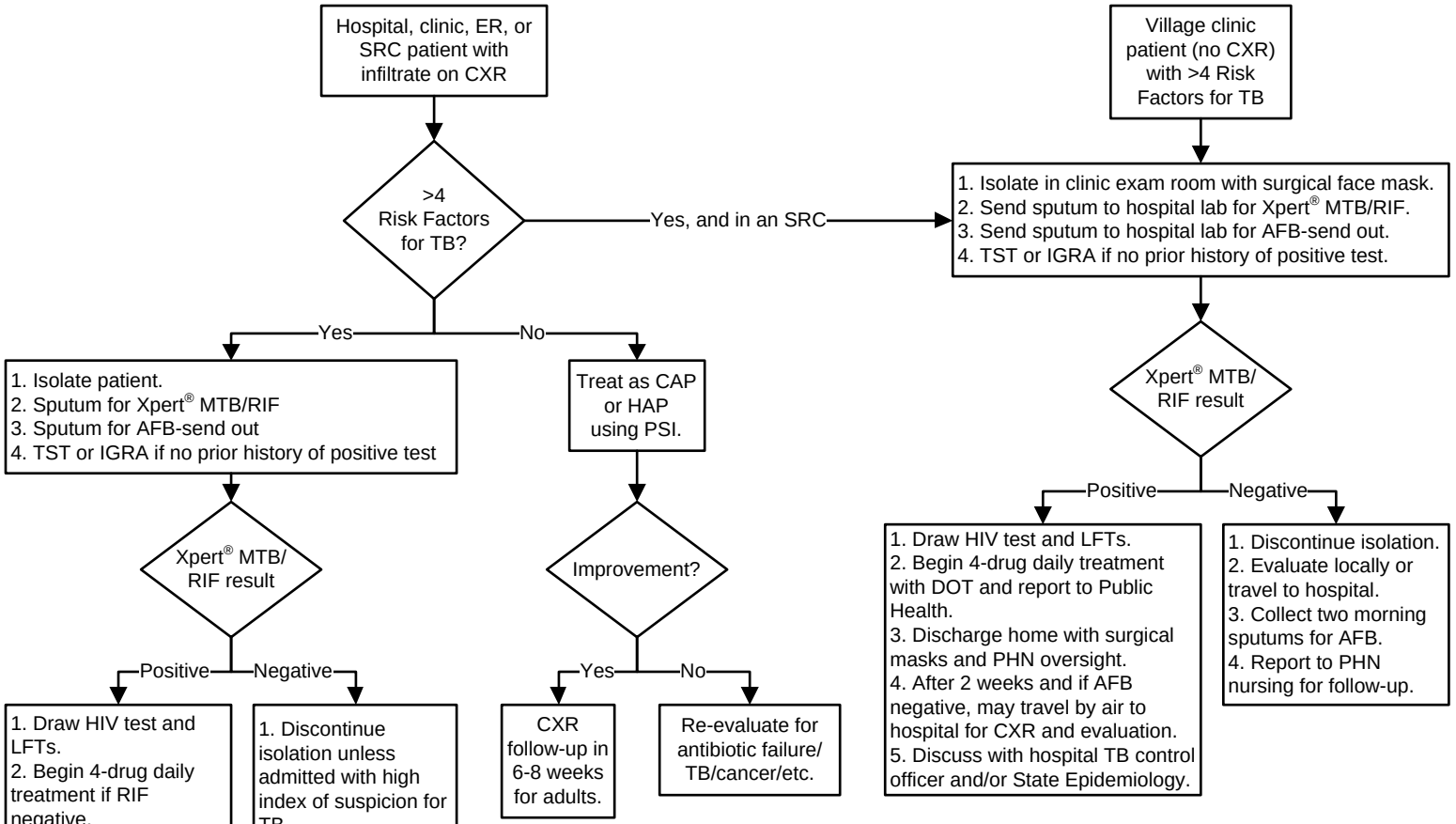
NOTE ABOUT STEROIDS:
National guidelines recommend against systemic steroids as the potential harm is generally greater than the potential benefit.
If considering starting steroids, please consult a pediatrician.

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 Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Active Pulmonary TB for Patients >14 Years



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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Skin and Soft Tissue Infection, page 1

Skin and Soft Tissue infection identified

Abscess present?

Yes → Cutaneous abscess → Perform incision and drainage. Obtain wound culture. Place drain if possible (Derma-stent or Penrose). Hot pack. Soak q2h. Schedule NSAIDs. Update Tdap. Elevate if extremity.

No → Purulent drainage or exudate?

Yes → Purulent cellulitis

No → Non-purulent cellulitis → See Page 2

DO NOT use guideline for the following:
- Diabetic ulcer
- Vascular ulcer
- Necrotizing fasciitis
- Human or animal bite cellulitis
- Thrombophlebitis
- Erythema nodosum
- Toxic shock syndrome
- Herpes zoster
- Fish finger
- Bacteremia
- Periorbital or orbital cellulitis
- Osteomyelitis
- Perineal/vulvar/perianal infections

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

Cellulitis >10 cm or >1% BSA in child (size of child's palm)

Yes → Consider empiric oral antibiotic therapy

No, antibiotics not indicated → Outpatient management with daily follow up until continuous improvement is demonstrated

Empiric Oral Antibiotic Therapy

Adults
Septra DS 1 tab 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 (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**
Doxycycline does not cover *Strep pyogenes.
Discharge with topical chlorhexidine wash if recurrent abscess and patient has no running water.

Does patient meet all criteria for outpatient management (see Box 2)?

Yes → Outpatient management with daily follow up until continuous improvement is demonstrated

No →
- Admission with IV antibiotics. (See box.)
- Recommend blood cultures, CBC, basic metabolic panel.
- Elevation and heating pad.
- Consider IV fluids.
- Scheduled NSAIDs if no contraindication.
- Consider imaging.
- If patient meets criteria for sepsis, follow sepsis guideline.
- Calculate LRINEC score.

Empiric IV Antibiotic Therapy
1. Vancomycin:
   - <12 years: 15 mg/kg IV q6h. Trough before 6th dose.
   - 12–18 years: 15 mg/kg IV q8h. Trough before 6th dose.
   - Adults: 1 gram IV q12h. For obese patients, dose 15 mg/kg IV q12h using ideal body weight. No troughs if therapy <72 hours.
   - Dosing changes to be made by pharmacy using AUC/MIC or clincalc.com/vancomycin
2. Clindamycin 600 mg IV q8h. Restricted to vancomycin allergy.
3. Linezolid 600 mg IV/PO q12h. Restricted to MRSA resistance/allergy. ID consult recommended.
4. Consider coverage for *H. influenzae* A/B in children with rapidly progressing cellulitis/abscess, temp >104°F, systemic symptoms (listlessness, lethargy): ceftriaxone 75 mg/kg IV/IM q24 hours in addition to above.

Patient improving?

Yes → Manage as inpatient until meets criteria for outpatient management

No →
- Review culture and sensitivities
- Consider imaging.
- Consider repeat incision and drainage

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

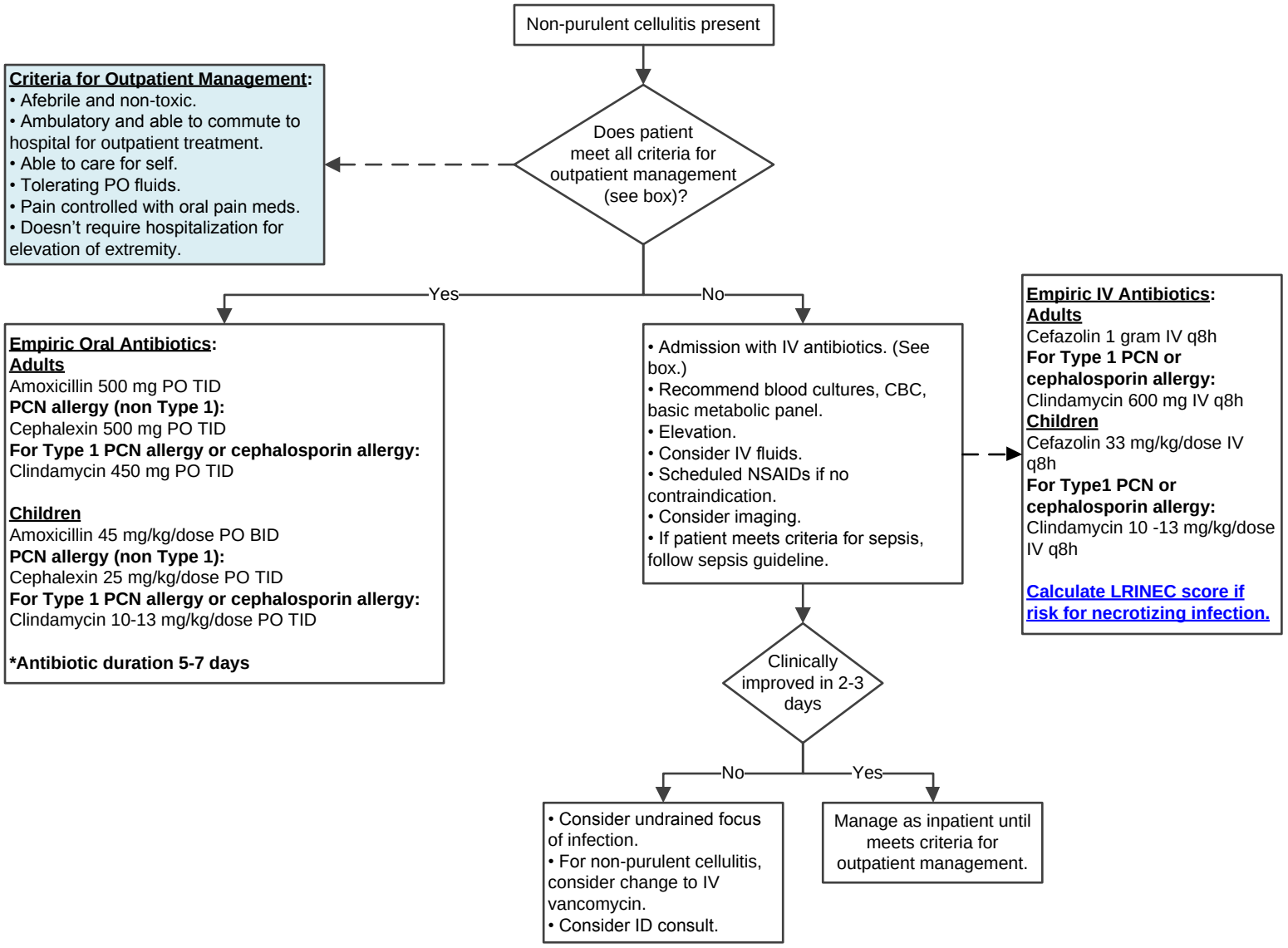
BOX 2: Criteria for Outpatient Management:
- Afebrile and non-toxic
- Ambulatory and able to commute to hospital for outpatient treatment
- Able to care for self
- Tolerating PO fluids
- Pain controlled with oral pain meds
- Doesn't require hospitalization for elevation of extremity

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 4/14/20.
If comments about this guideline, please contact Elizabeth_Bates@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Skin and Soft Tissue Infection, Page 2



Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

UTI (Adult)

Abnormal clean catch UA:
< 5 squamous epithelial cells AND ONE of the following:
• >5 WBCs
• Positive leukocyte esterase
• Positive nitrite
• Bacteria

Patient presents with signs/ symptoms of acute cystitis and a urinalysis suggestive of UTI. If complicated or catheter associated, see below.

If acute onset of dysuria, urinary frequency or urinary urgency, don't forget to test for STI if appropriate.

Signs or symptoms of acute pyelonephritis?

No

1. Nitrofurantoin 100 mg PO BID for 5 days OR
2. Cephalexin 500 mg PO BID for 7 days (use first for patients >65)
If no other options exist:
3. Ciprofloxacin 250 mg PO BID for 3 days

UTI associated with fever, chills, back/flank pain, suprapubic pain

Yes

• Always obtain culture and sensitivities.
• Consider blood cultures if ill/septic.

Able to be treated as outpatient?

No

1. Ceftriaxone 1 gram IV daily
OR
2. Levofloxacin 750 mg IV/PO daily

• Narrow therapy when culture data allows.
• If not improving within 48-72 hours, consider imaging to rule out obstruction or other complications.
• Duration of therapy as for outpatient.

• Must NOT BE PREGNANT.
• Able to tolerate PO.
• Not septic.
• Able to recheck within 24 hours.

Yes

Give a single dose of either:
Ceftriaxone 1 gram IV/IM
OR
Gentamycin 3 mg/kg IV/IM

AND one of the following oral options:
1. Cephalexin 1 gram PO BID for 14 days OR
2. Levofloxacin 750 mg PO daily for 5 days

TMP/SMX DS PO BID for 14 days is acceptable if culture is sensitive.

• If known ESBL: use nitrofurantoin first (not for complicated ESBL or for age >65).
• If sensitive: TMP/SMX or fluoroquinolne.
• If allergic to susceptible antibiotics may use fosfomycin 3 g PO q48 hours x3 doses.

Complicated UTI/catheter-associated UTI

UTI with coexisting functional anomalies of urinary tract: BPH, calculi, obstruction, neurogenic bladder, chronic catheter transplant, neutropenia.

Obtain culture and sensitivities.

Able to be treated as outpatient?

Yes

• If old culture results available use empirically while awaiting new culture and sensitivities
• Definitive treatment when culture available.
• If no old culture results, use outpatient pyelonephritis treatment above
• Duration of therapy 3-5 days after defervescence or elimination of catheter.
• If female </= 65 consider 3 day course for catheter associated infection if catheter is removed.

No

• Obtain imaging studies if critically ill.
• If no risk for MDRO:
1. Ceftriaxone 1 gram IV q24h OR
2. Levofloxacin 750 mg IV q24h
• If risk for MDRO:
1. Cefepime 1 gram IV q8h extended infusion OR
2. Pip/Tazo 3.375 gram IV q6h or Q8h extended infusion +/- gentamycin 3 mg/kg IV q24h
3. Consider adding MRSA coverage if septic shock is present (get blood cultures from 2 sites).
• If known ESBL:
Meropenem 500 mg IV Q6h

• Narrow therapy when culture data allows and patient is clinically improved.
• Duration of therapy: 5-14 days depending on agent and rapidity of response.
• If nidus of infection (stone, catheter) will need longer treatment.
• Prostatitis may require as long as 6 weeks of oral therapy.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

UTI in Children 3 Months – 5 Years

Child less than 5 years of age with concern for UTI

Obtain catheterized or true clean catch urine sample for urinalysis (UA) AND culture.

UA positive for leukocyte esterase and/or nitrites and/or microscopy >5 WBC/HPF.

Ensure urine culture is sent.

Patient appearing toxic?

Yes → Empiric antibiotic treatment: ceftriaxone 75mg/kg/day IV/IM

No → Consider empiric treatment with cephalexin 20 mg/kg/dose Q8h x10 days.
May defer empiric treatment and await culture sensitivities.

Positive urine culture with single species ≥50,000 CFU/mL in a catheterized sample or ≥100,000 CFU/mL in a clean catch sample?

No → No UTI. Stop antibiotics.

Yes → Begin empiric treatment and narrow coverage per sensitivities.

Once clinically improved and sensitivities established, switch to oral antibiotics

If first UTI, renal ultrasound at first opportunity to evaluate anatomy.

Renal abnormality identified.

• If mild pelviectasis identified, repeat ultrasound in 3 months.
• If any other anomaly identified, consult pediatrics.

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.

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.

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.

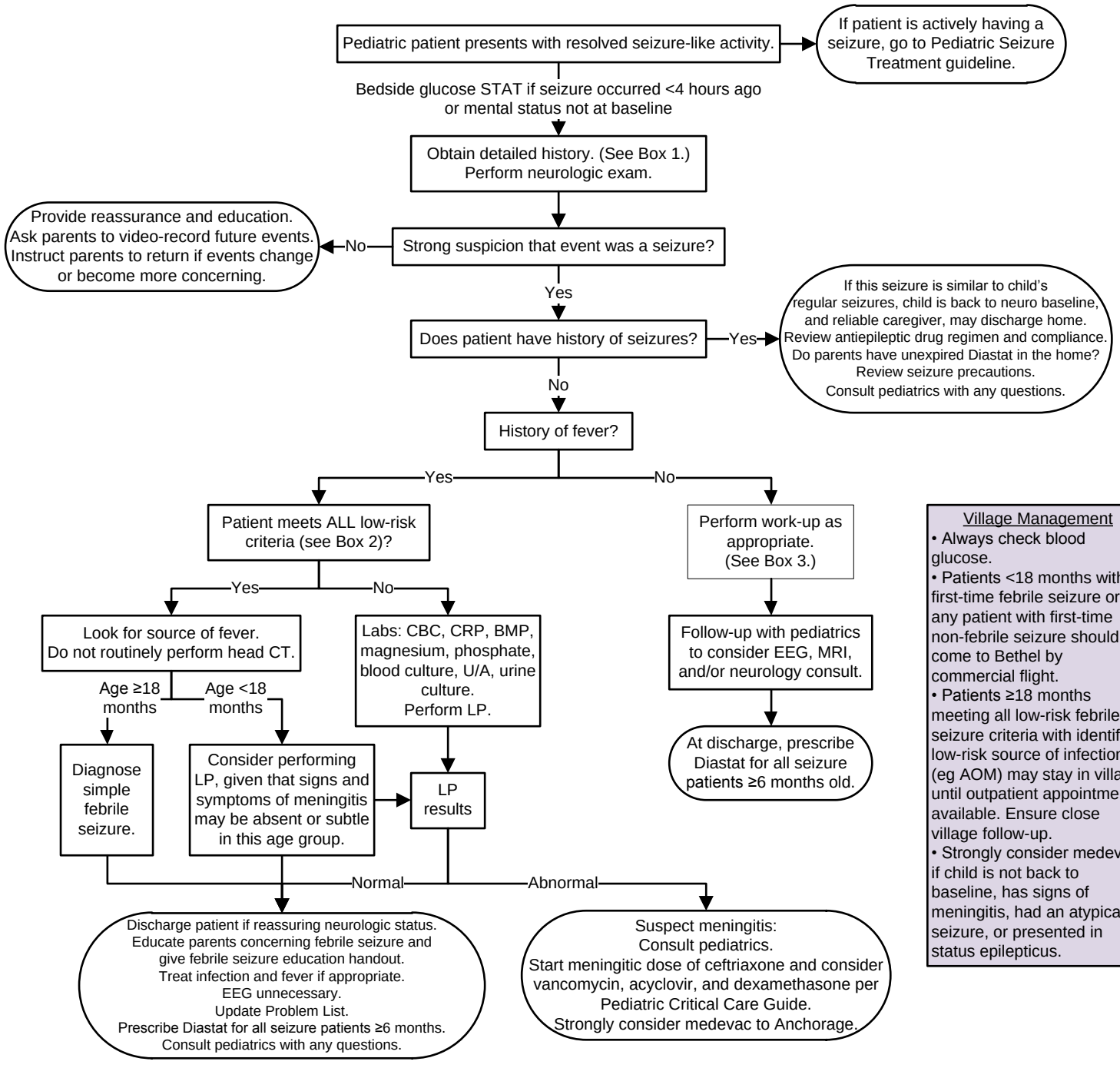
NOTE: Any infant with a fever <90 days must go to the Emergency Department for evaluation.
See the Fever in Infants 0-90 Days Guideline.

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 Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Post-Seizure Evaluation



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 proceeded 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 meningeal 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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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Seizure Treatment

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.

Pediatric patient is having a seizure.

ABCs.
Bedside glucose STAT.
Obtain IV.
Consult pediatrics.
If first seizure: BMP, magnesium, phosphate, CBC, CRP, blood culture.
Obtain brief history.

Seizure lasting ≥3 minutes.

No → Go to Pediatric Post-Seizure Evaluation guideline.

Yes

Benzodiazepine IV/IO, intranasal, or PR.

Seizure continues 5 more minutes.

Repeat benzodiazepine dose.

Seizure continues 5 more minutes.

Prepare for possible intubation.

Consult ANMC PICU at (907) 297-8809.

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.

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.

Age ≤ 12 months

Phenobarbital 20 mg/kg IV or IM.

Seizure continues 10 more minutes.

Phenobarbital 10 mg/kg IV or IM.

Seizure continues 10 more minutes.

Keppra 20 mg/kg IV or IM.

Seizure continues 10 more minutes.

Keppra 20 mg/kg IV or IM.

Seizure continues 10 more minutes.

Start propofol with PICU consultation.

Age >12 months

Keppra 20 mg/kg IV or IM. Max dose 2000 mg.

Seizure continues 10 more minutes.

Keppra 20 mg/kg IV or IM. Max dose 2000 mg.

Seizure continues 10 more minutes.

Fosphenytoin 20 mg/kg IV. Max dose 1500 mg.

Seizure continues 10 more minutes.

Fosphenytoin 10 mg/kg IV. Max dose 1500 mg.

Seizure continues 10 more minutes.

Phenobarbital 20 mg/kg IV or IM. Max dose 1000 mg.

Seizure continues 10 more minutes.

Phenobarbital 10 mg/kg IV or IM. Max dose 1000 mg.

Seizure continues 10 more minutes.

Start propofol with PICU consultation.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Head Injury in Patients < 18 Years Old

Head injury in a child <18 years.

If GCS ≤ 8, intubate and refer to PALS stabilization algorithms.

Low Risk
GCS=15
AND
No risk factors (see Intermediate and High Risk boxes)

→ Discharge with head injury education and competent caregiver

Intermediate Risk
GCS=15
AND one or more of the following:
- Occipital, parietal, or temporal scalp hematoma
- Loss of consciousness > 5 seconds
- Not acting normal per parent
- **Severe mechanism of injury****
- If older than 2: vomiting or severe headache
- Amnesia

High Risk
One or more of the following:
- GCS≤14
- **Altered mental status***
- Signs of skull fracture
- Focal neurological deficits
- Seizure
- Loss of consciousness > 1 minute

***Altered Mental Status**
- agitation/irritability
- inconsolability
- somnolence/lethargy
- slow response
- repetitive questions

Factors to consider when deciding to observe vs perform head CT:
- Provider experience
- Multiple vs isolated findings
- Worsening signs/symptoms
- Age <3 months
- Parental preference

**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

C-spine Imaging
- Spinal motion restriction should be continued in neurologically abnormal patients until spinal column or cord injury has been excluded.
- See Nexus Criteria for C-spine imaging protocol.

Observation
- Observe in the ER 4-6 hours post-injury.
or
- If presenting >4 hours post-injury AND not improving per caregiver, observe 4 hours.

→ Not improved → CT Scan: Perform noncontrast head CT with spinal motion restriction

Improved → Discharge with head injury education and competent caregiver. Consider concussion follow-up (see Concussion Management box).

CT Scan → Normal / Abnormal

Normal → Is patient improving? → Yes → Discharge with head injury education and competent caregiver. Consider concussion follow-up (see Concussion Management box).

Is patient improving? → No → Consult PICU and trauma service.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

First Trimester Bleeding, Ectopic Pregnancy Diagnosis, and Treatment of Non-Viable Early Pregnancy

1
Nomenclature

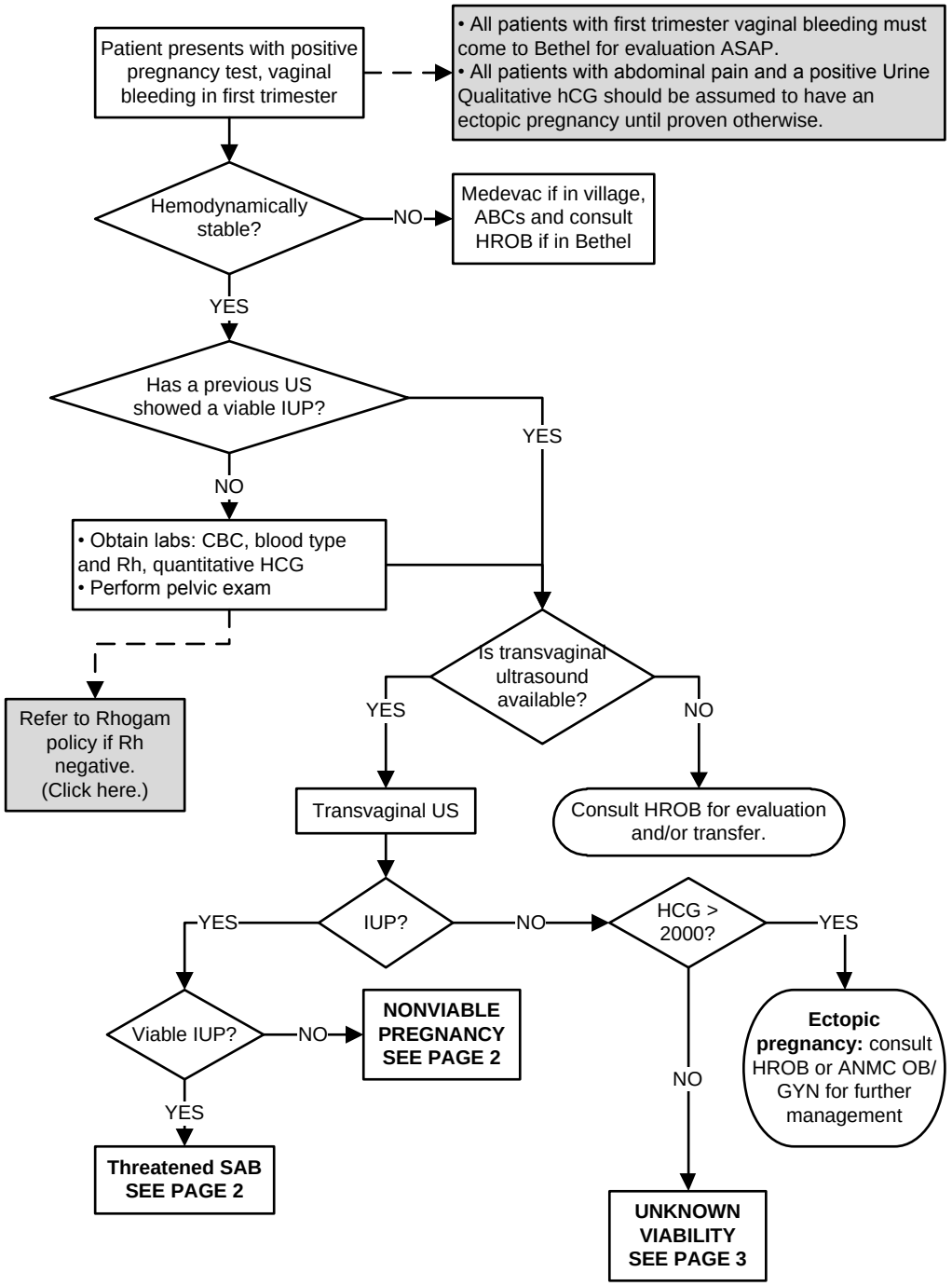
- **Viable** – A pregnancy is vialble if it can potentially result in a liveborn baby.
- **Nonviable** – A pregnancy is nonviable if it cannot possibly result in a liveborn baby. Ectopic pregnancies and failed intrauterine pregnancies are nonviable.
- **Intrauterine pregnancy of uncertain viability** – 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.

2
Findings diagnostic of Pregnancy Failure

- Crown-rump length of ≥7mm and no heartbeat
- Mean sac diameter of ≥25mm 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

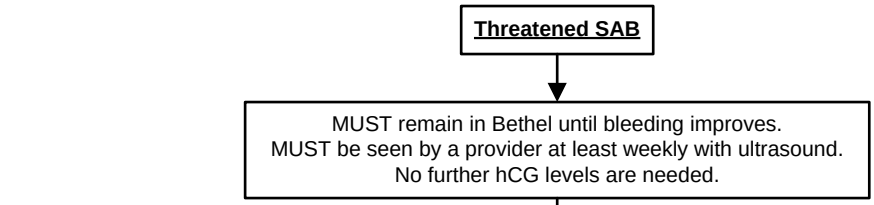
- In a woman with a positive urine or serum pregnancy test, an intrauterine fluid collection with rounded edges containing no yolk sac is most likely a gestational sac; it is certain to ba a gestational sac if it contains a yolk sac or embryo.
- Transabdominal imaging without transvaginal scanning my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



Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

First Trimester Bleeding, Ectopic Pregnancy Diagnosis, and Treatment of Non-Viable Early Pregnancy



Following hCG to negative*

- A provider or case manager MUST be responsible for this.
- Contact GYN CM at 543-6557 or communicate in RAVEN for assistance and instruction.
- Patient can be discharged from care when ectopic pregnancy is ruled out by falling hCG values and normal exam.

If patient elects wait and see option
- Must be reliable patient.
- Must stay in Bethel.
- Must be followed up every 48 hours for repeat hCG.
- Must follow hCG to negative*

If patient elects Misoprostol option:
- Consult HROB.
- Must be reliable patient.
- Must stay in Bethel.
- Dose is 800 mcg placed in posterior fornix of vagina (may consider 400mcg buccally but not as effective).
- Patient is followed every 24 hours until uterus is empty and bleeding subsides.
- Offer ibuprofen for cramping.
- Dose can be repeated in 24 hours if uterus is not empty.
- Must follow hCG to negative*

If patient elects D&C option:
- Consult HROB.
- Dr. Elizabeth Roll is also available for D&C.
- Consider office-based D&C.
- If during daytime hours and HROB agrees, call 6177 to schedule procedure.
- If on weekend, have patient remain NPO after midnight on Sunday and provider to call 6177 at 8am on Monday morning to schedule procedure.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

First Trimester Bleeding, Ectopic Pregnancy Diagnosis, and Treatment of Non-Viable Early Pregnancy

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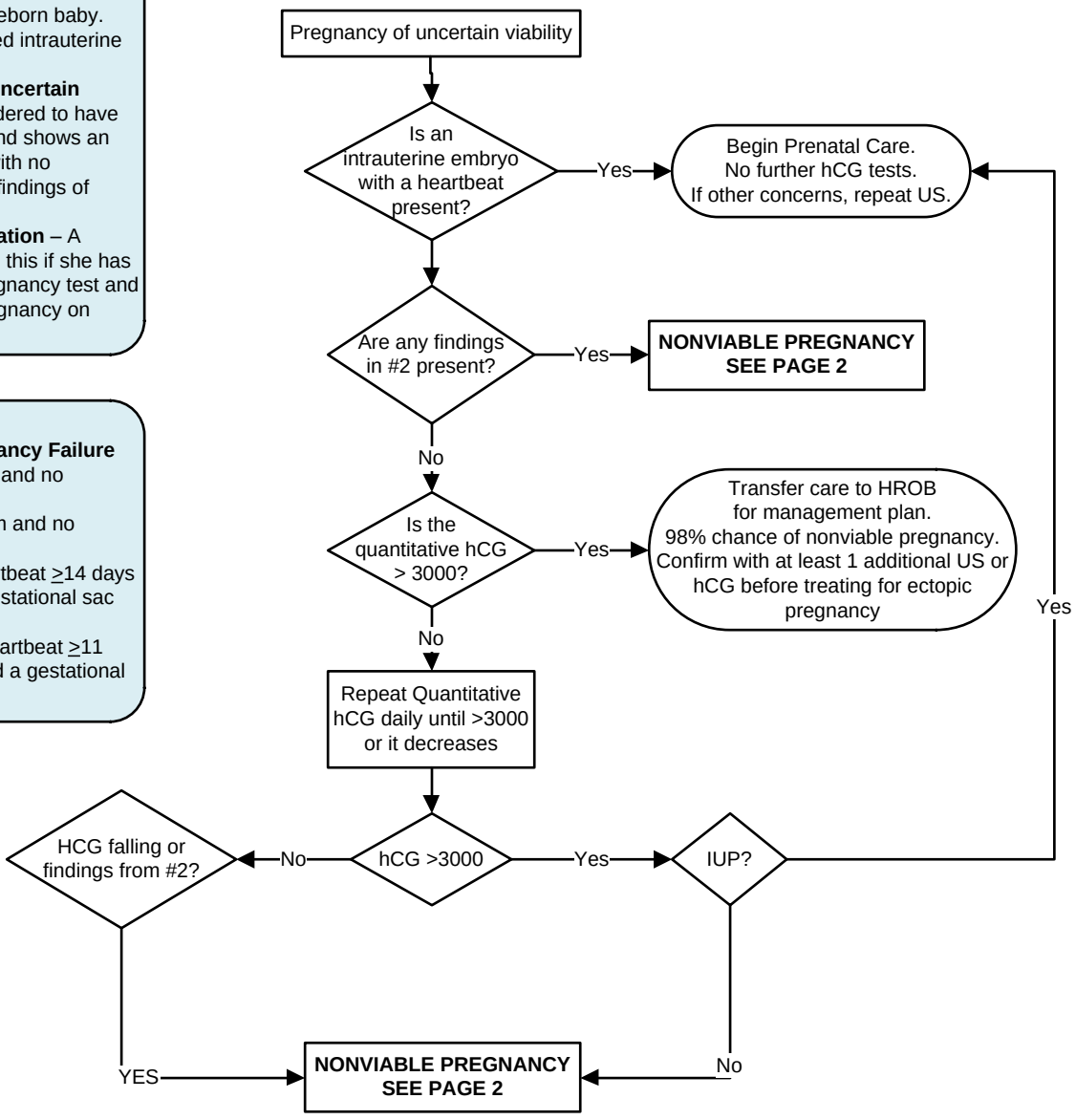

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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Frostbite

Patient identified as having potential frostbite

For patients in village clinic, see CHAM.

Immediate Emergent Treatment

STABILIZE PATIENT: Airway, Breathing, Circulation → Assess for and treat hypothermia

Consider Photos
1. Initials, date, and time with tape measure.
2. Post-debridement for monitoring.

RAPID REWARMING of affected area using warm water bath at **98.6-102.2° F** → Consideration should be given for thrombolytics in the first 24 hours, consult with ANMC orthopedics

1. LABS:CBC, CMP
2. IV Fluids for hydration and pain control with IV Morphine → **Strongly Consider Hospital Admission, especially with extremity frostbite**

Wound care referral upon admission

TOPICAL TREATMENT:
1. Aloe Cream (Dermaide) Q 6 hours
2. Unless infection is strongly suspected **do not use** topical antibiotics
3. If infection is suspected, use bacitracin
4. For exposed skin layers, use adaptic to prevent adhesion and then use Kerlex fluff roll gently wrapped around affected area to protect.
5. Soaking with mild bleach bath: 10-15 min BID – 1.5 mL of 6% sodium hypochlorite per gallon of bath water (60 mL for the 40 gallon tub)

DEBRIDEMENT
1. Clear Bulla may be debrided or aspirated at time of admission or initial treatment.
2. Leave hemorrhagic blister and bulla intact as that indicates deeper, more vascular tissue damage.

Note: people in crises such as frostbite have lots of time to think and are open to change. Alcohol, nicotine, and behavior modification counseling are very effective during these times.

REFERRALS AND CONSULTS:
1. Behavioral Health referral for severe frostbite or if alcohol is involved.
2. Nutrition consult
3. Tobacco cessation referral

NURSING ORDERS:
1. Elevate area
2. Non weight-bearing – this includes blankets AVOID ANY PRESSURE

MEDICATION:
1. Pain management
2. Ibuprofen 400 mg QID
3. Protein Supplement, if indicated
4. Vitamin C 500 mg daily
5. Multivitamin one daily
6. Stool softener

LONG TERM CONSIDERATIONS:
1. Neurontin for nerve pain – start with 300 mg TID
2. Grief counseling if loss of body part at appropriate time
3. Physical Therapy for rehabilitative care
4. Referrals as needed for surgery (3 months)
5. DME for supplies.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Burns

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.

Patient presents with a burn.

↓

CABs

↓

Respiratory compromise?
Inhalation injury?
Singed mouth?
Circumferential burn of neck?

→ Yes → Immediate endotracheal intubation

↓ No

Assess total body surface area (TBSA).
Assess depth.

↓

Adult TBSA > 10%?
Child TBSA > 5%?
Severe criteria (see box)?

→ Yes →
- IV access
- Analgesia
- Labs: CBC with diff, CMP, UDS, EtOH, CK, coags.
- If inhalation injury, add: carboxyhemoglobin, ABG.
- Give IVF per Parkland formula.

↓

Consult General Surgey

↓

Transfer to higher level of care via commercial flight or medevac as appropriate.

↓ No

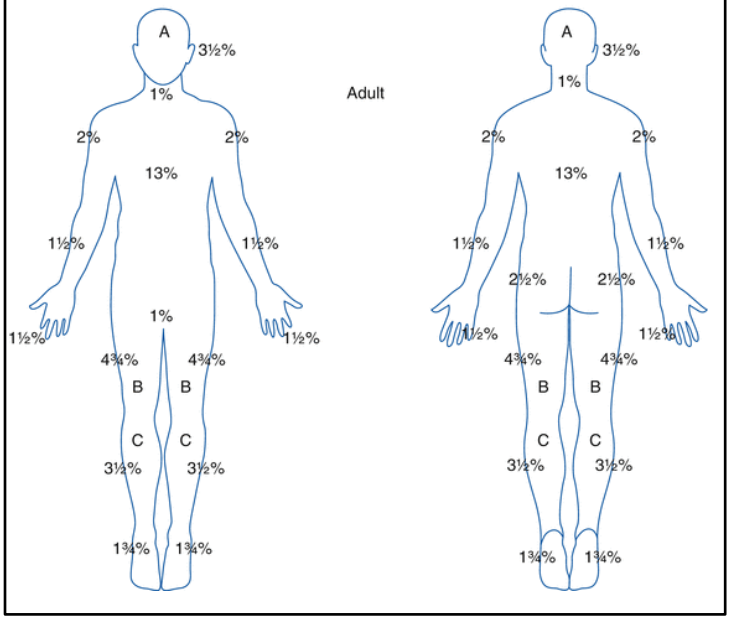
Wound Care
- Cleanse in dilute betadine or chlorhexidine.
- Apply non-adherent or hydrocolloid dressing to superficial burns.
- Apply Bacitracin under Xeroform to partial-thickness burns.
- Elevation/compression (caution for signs of nerve compression).

↓

Close follow-up

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Rabies

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.)

No → Provide usual wound treatment

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

Yes or maybe

Patient in village?

No →

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.

Yes →

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.

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

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.

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

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.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acetaminophen Overdose

Contact Poison Control at 800-222-1222 for:
- pediatric patients <12 years of age
- polysubstance or Tylenol PM overdose
- any questions or advice

Patient presents with acute acetaminophen ingestion.

Intentional overdose → Notify BH on call.

Hours post-ingestion

< 4 hours:
- Consider activated charcoal if airway intact.
- If history is complete and toxicity is likely, start acetylcysteine 30-60 minutes after activated charcoal.
- Draw acetaminophen level and LFTs at 4 hours post ingestion.
- Consider UDS and aspirin level.

> 4 hours or unknown:
- Draw acetaminophen level, BMP, LFTs, and INR.
- Consider starting acetylcysteine while awaiting results.
- Consider UDS and aspirin level.

Plot results on nomogram.

Below toxicity: LFTs normal?
- Yes → Behavioral Health evaluation if intentional; otherwise discharge.
- No → Consider delayed diagnosis of overdose and other causes of elevated LFTs (hepatitis, etc.). Treat as appropriate.

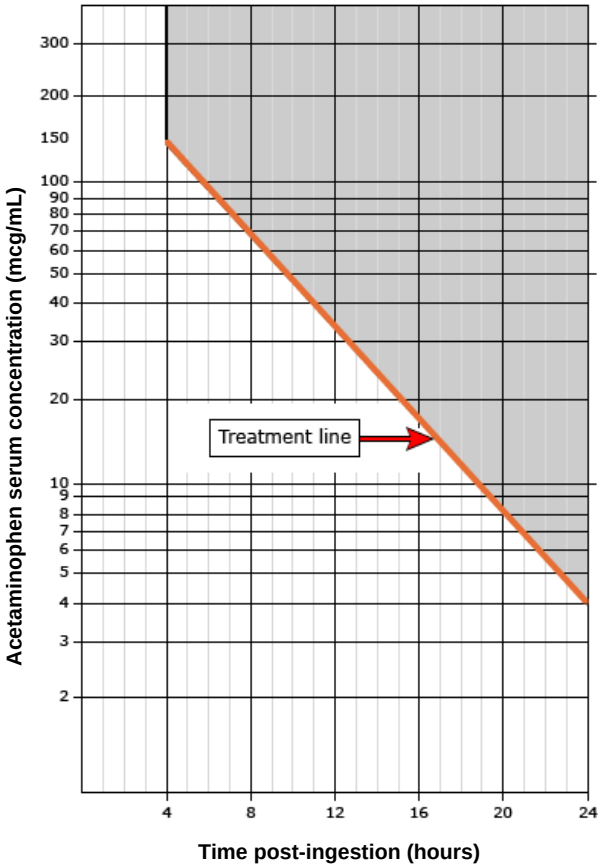
Above toxicity → Admit to hospital for IV or PO acetylcysteine. Consider consult with toxicologist/Poison Control.

Recheck acetaminophen level, BMP, LFTs, and INR Q6h.

- Acetaminophen level <15.5 and normal LFTs and INR → Discontinue therapy.
- Acetaminophen level or LFTs elevated, INR>2, or hepatic encephalopathy → Continue acetylcysteine and consult Poison Control. Consider transfer.

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

1. 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 ½ NS. See website http://acetadote.com/dosecalc.php for details on dose and dilution, especially in children under 40 kg.

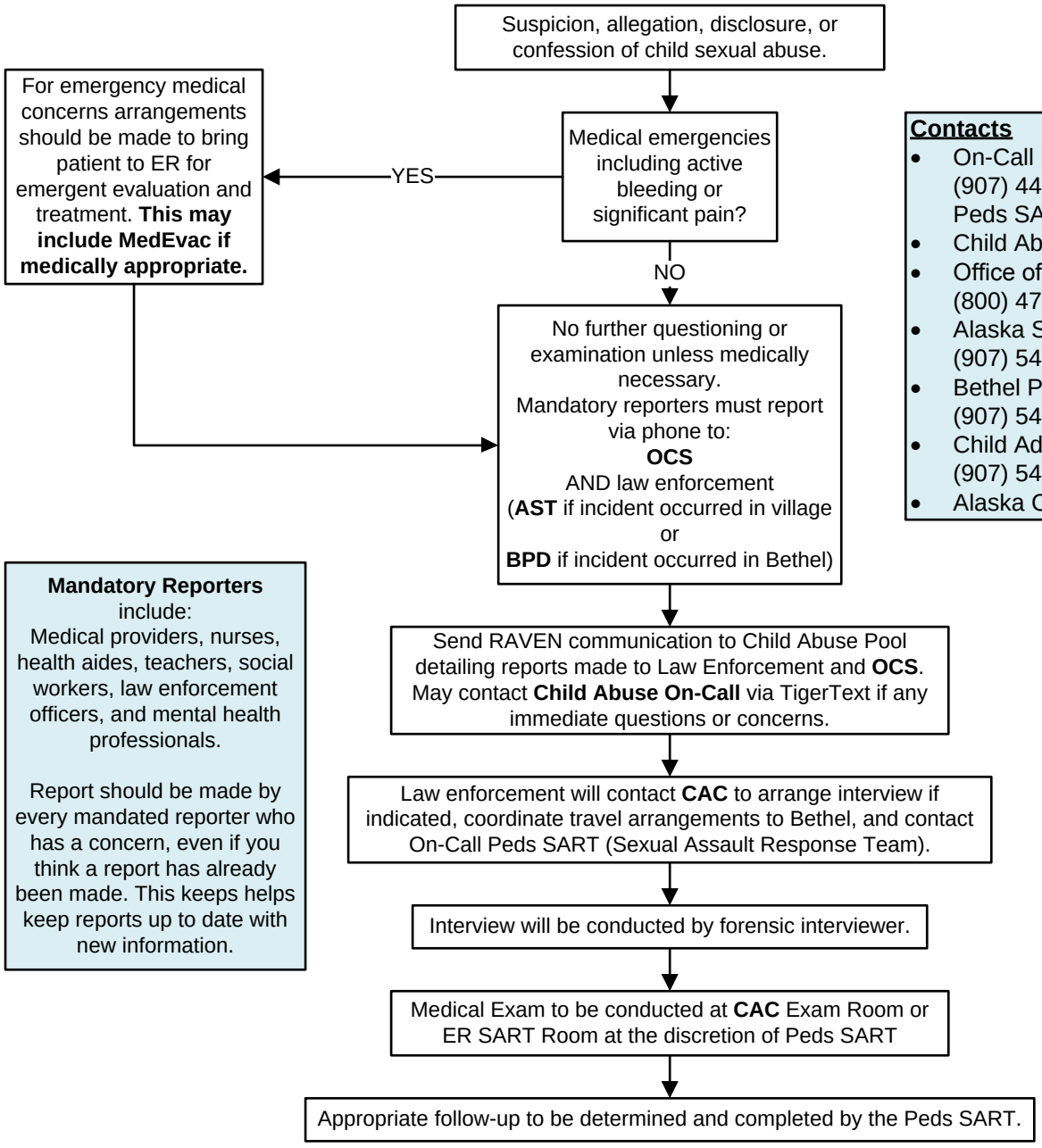
2. PO 72 Hour Protocol: Dilute with strongly-flavored juice or soda. Mix one part medication with three parts juice/soda.
Loading dose is 140 mg/kg.
Maintenance dose of 70 mg/kg Q4h for up to 72 hours.
The villages carry vials of inhalation/oral solution that is 200 mg/mL in 30 mL vials.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Suspected Pediatric Sexual Abuse Procedure



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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Suspected Child Physical Abuse Procedure

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

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.

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 to: **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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Alcohol Hangover/Withdrawal

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.

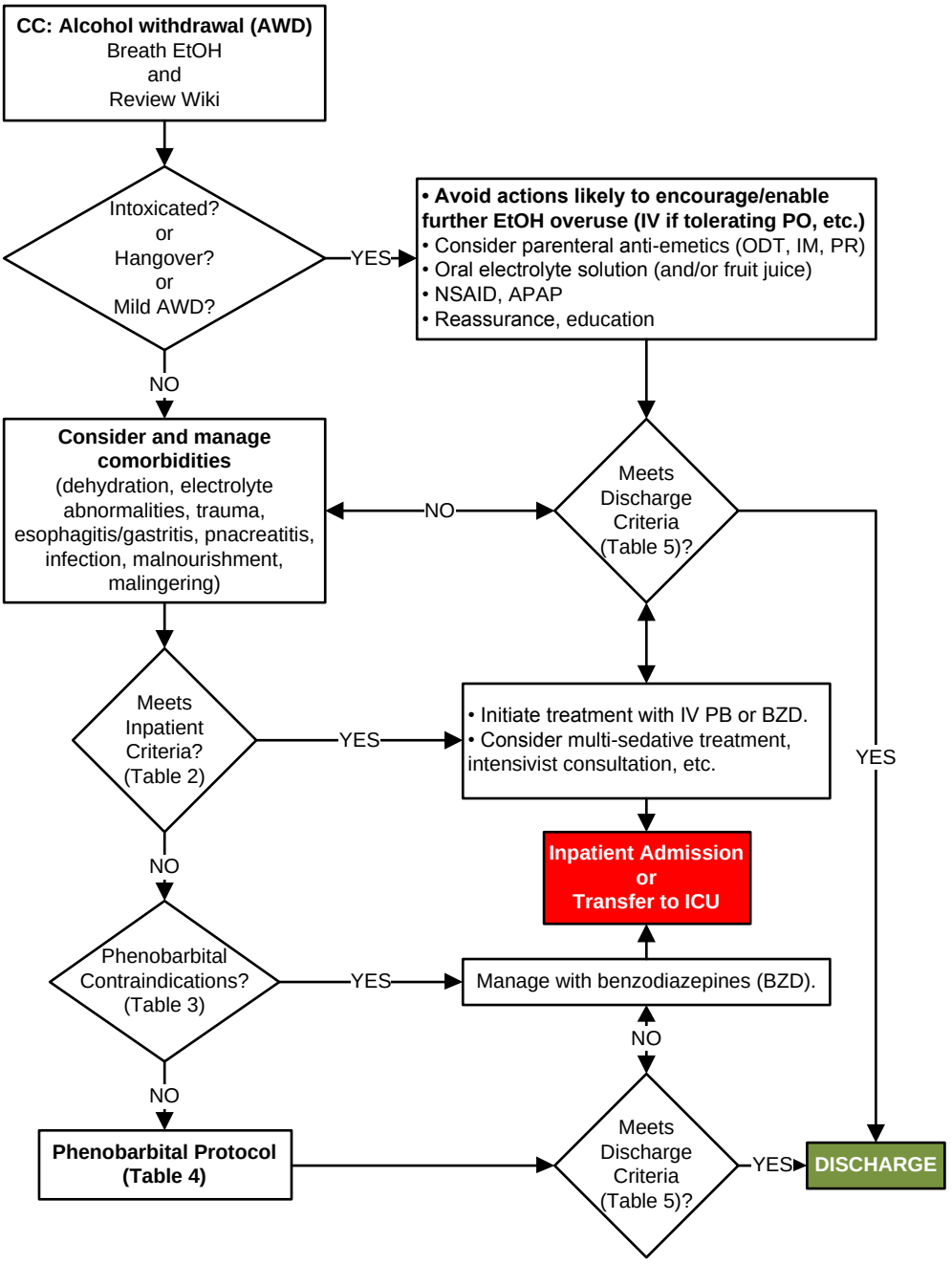
Table 3: Phenobarbital Contraindications
Absolute: Hx allergy, adverse reactions, or porphyria
Relative: current significant sedative level (including EtOH, BZD, or anti-psychotics)

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



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 10/9/19.
If comments about this guideline, please contact Megan_Young@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intoxicated ED Patient

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

Patient arrives in Emergency Department

Vital signs taken

Provider assesses patient

Patient is a minor

Patient is kept in Emergency Department

Discharged to home when a sober adult relative is located

Once sober, if no sober adult available to take custody, then OCS notified and will take custody of patient if they cannot locate a guardian.

Patient is a T-47

Patient is kept in Emergency Department

Behavioral Health on-call is notified

- Admit to inpatient unit
- Discharged to home
- Transferred to another facility

Patient is an adult with a medical problem

Patient is kept in Emergency Department

Medical tests are ordered and interpreted, patient is treated for medical condition and stabilized.

- Admit to inpatient unit
- Discharged to home
- Transferred to another facility
- Taken to jail when medically cleared
- Discharge to sober adult willing to take custody of the patient prior to the patient being sober.

Patient is an adult without a medical problem

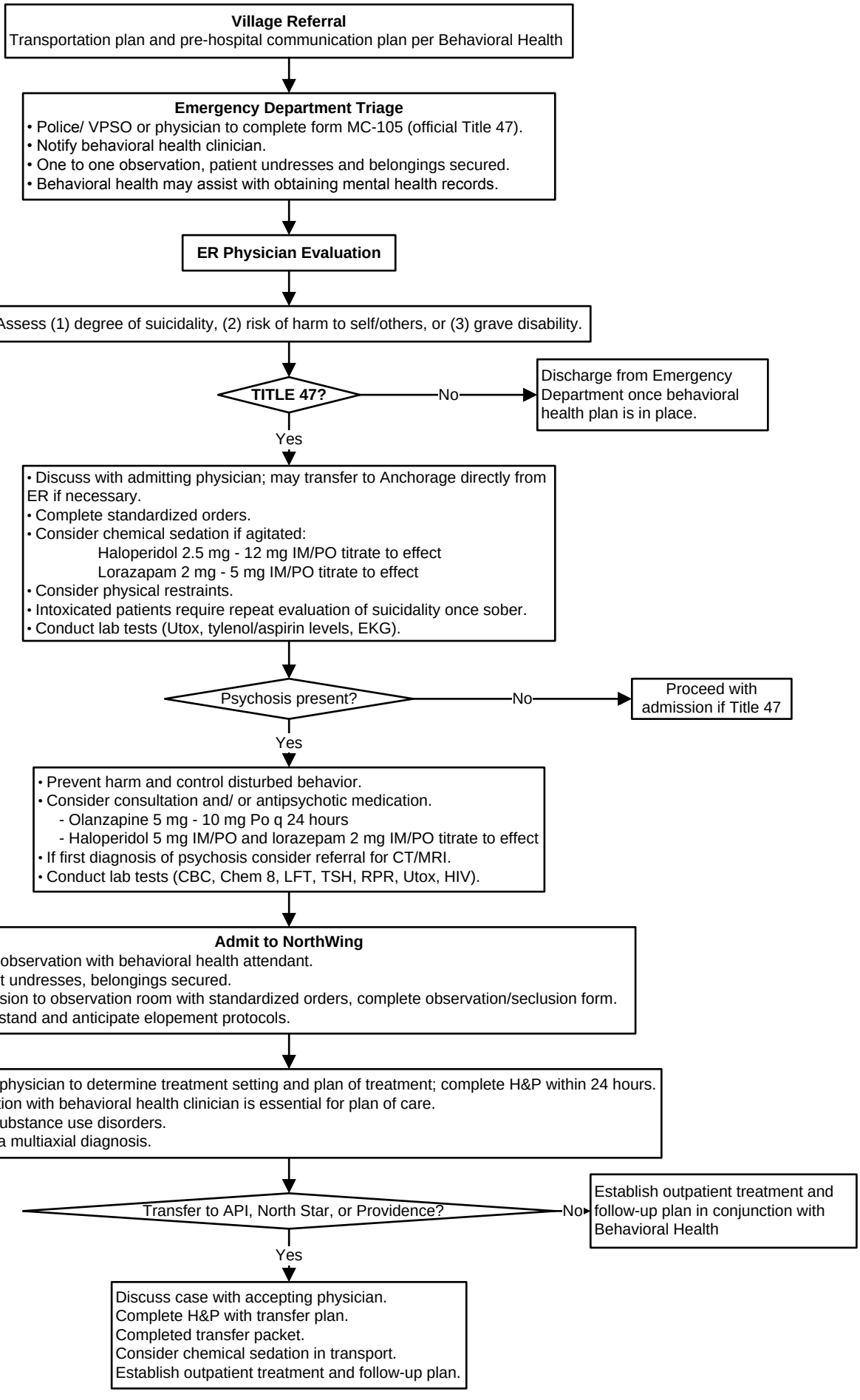
- Patient is taken to jail after medical screening exam
- If jail is full, patient remains in the Emergency Department until clinically sober
- Discharge to sober adult willing to take custody of the patient prior to the patient being sober.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Title 47 Hold



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.**

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Amoxicillin Allergy Trials

Background

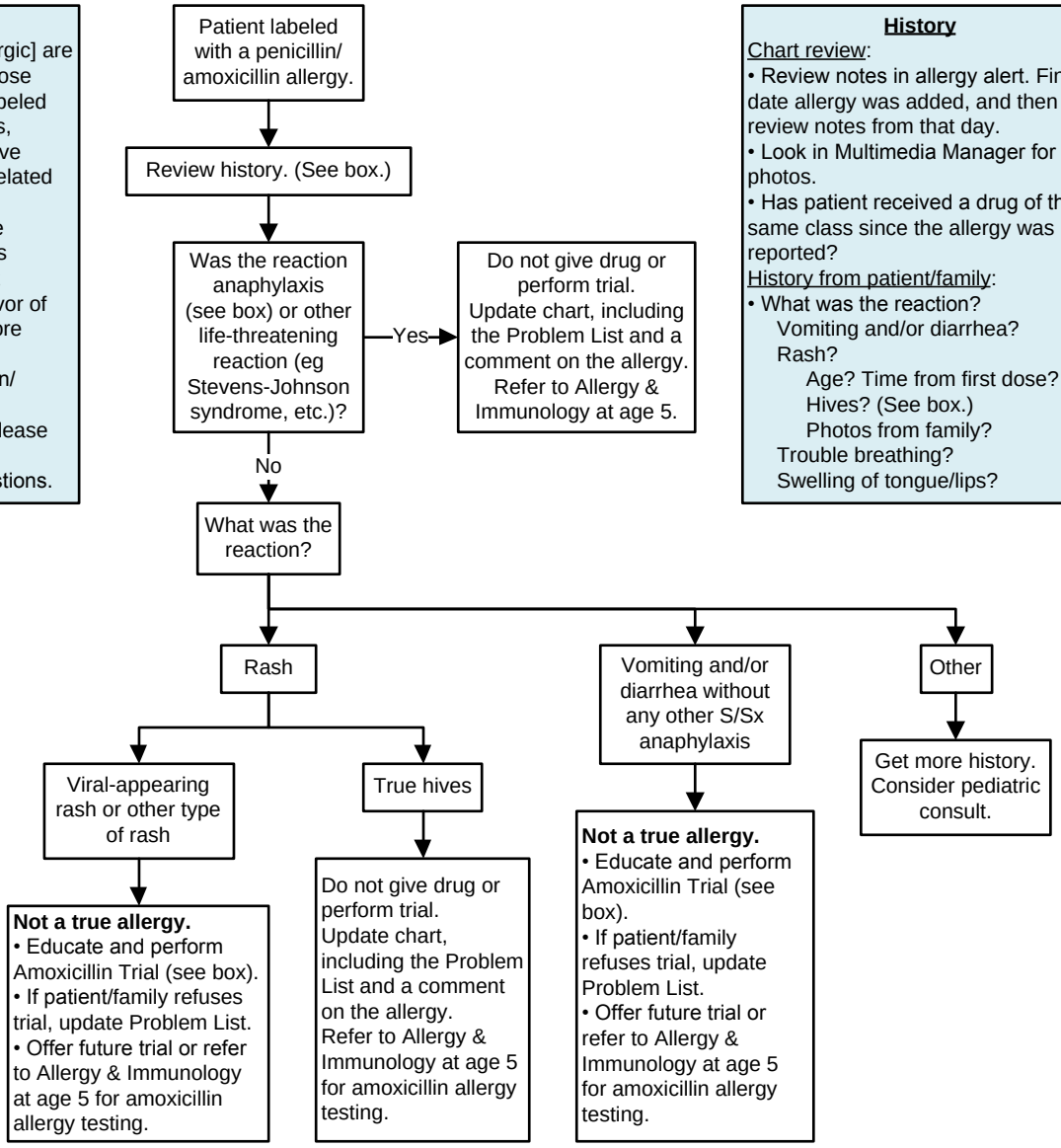
• Only 4-9% of those...labeled [penicillin-allergic] are currently allergic. It is important to identify those who are not allergic, because children mislabeled as penicillin-allergic have more medical visits, receive more antibiotic prescriptions, and have longer hospitalizations with more antibiotic-related 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.



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 Procedure[2]

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."

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.

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

Yukon-Kuskokwim HEALTH CORPORATION

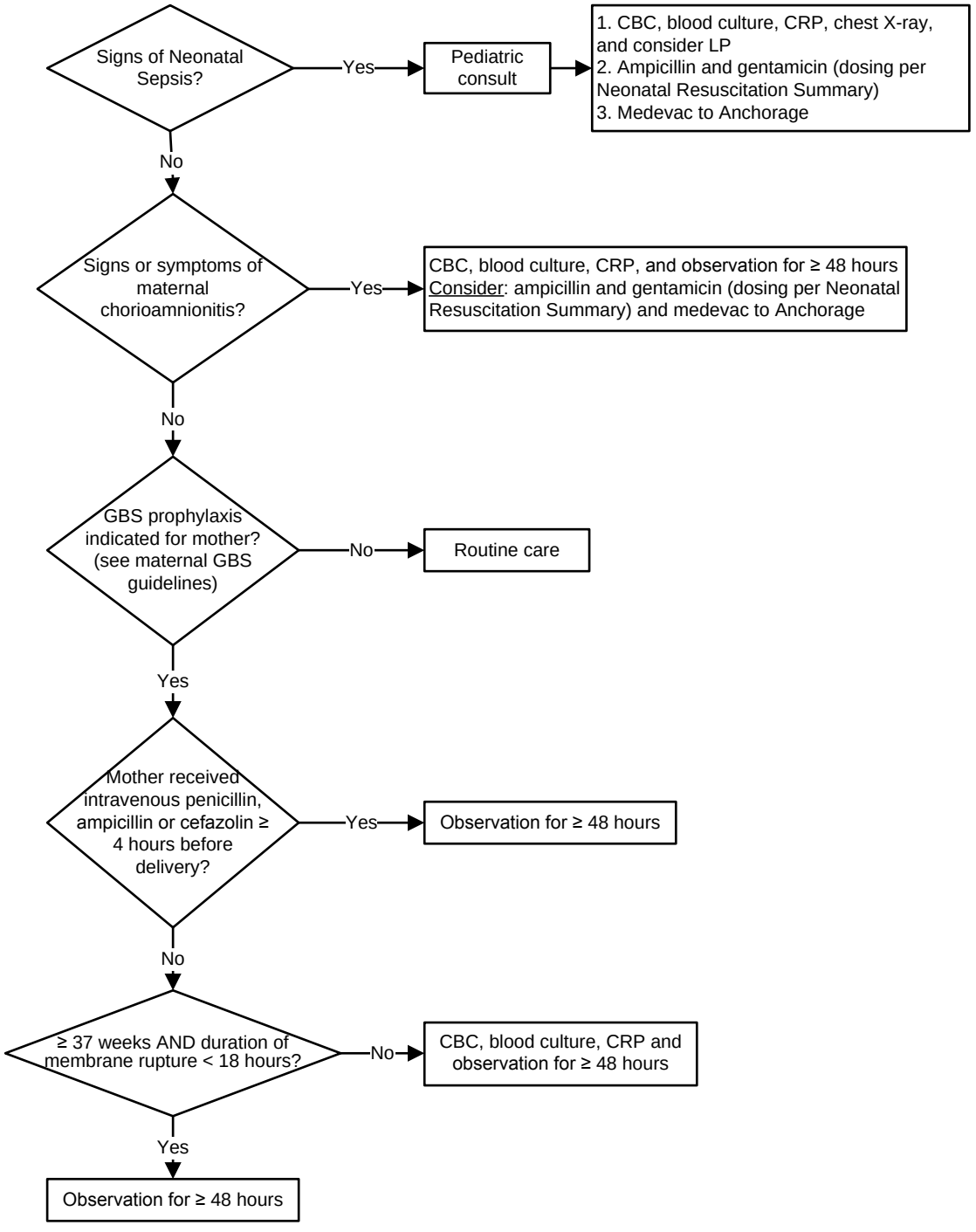
Clinical Guideline

Newborn GBS Exposure: Evaluation and Treatment

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Neonatal Jaundice

Newborns ≥ 35 weeks gestational age

Jaundice present at < 24 hours of life?

- No → Check transcutaneous bilirubin (TcB) after 24 hours of life.
- Yes → Immediately check transcutaneous bilirubin (TcB).

Plot transcutaneous bilirubin (TcB) results on neonatal bilirubin graph or use Bilitool.org.

Risk factors for Development of Severe Hyperbilirubinemia
- Jaundice < 24 hours of life
- ABO or Rh incompatibility, especially with positive antibodies
- Gestational Age less the 38 weeks
- Previous sibling received phototherapy
- Cephalohematoma or significant bruising
- Polycythemia

Low Risk Zone/ Low Intermediate Risk Zone

No routine recheck indicated while inpatient. Unless condition changes of new risk factors identifed.

High Intermediate Risk Zone

Obtain total serum bilirubin (TSB) and venous direct bilirubin and plot using Bilitool.org.

- High Risk Zone → • Notify provider. • Obtain total serum bilirubin (TSB) and venous direct bilirubin if not already done. • Obtain direct Coombs and retic count if mother is type O, Rh negative, or antibody positive. • Place baby under phototherapy while awaiting TSB results.
- High Intermediate Risk Zone → Repeat transcutanous bilirubin (TcB) after 36 hours of life and plot using Bilitool.org.
- Low Risk Zone/ Low Intermediate Risk Zone → No routine recheck indicated while inpatient. Unless condition changes of new risk factors identifed.

Repeat transcutanous bilirubin (TcB) after 36 hours of life and plot using Bilitool.org.

- Low Risk Zone/ Low Intermediate Risk Zone
- STOP phototherapy
- High Intermediate Risk Zone OR High Risk Zone → Obtain total serum bilirubin (TSB) and plot results using Bilitool.org.

Obtain total serum bilirubin (TSB) and plot results using Bilitool.org.

- Low Risk Zone/ Low Intermediate Risk Zone
- High Intermediate Risk Zone OR High Risk Zone → Phototherapy for 12-24 hours and repeat **total serum bilirubin (TcB is not accurate after starting phototherapy)**. Repeat TSB every 12 hours until baby is no longer in the High Risk or High Intermediate Risk Zone.

High Risk Zone

Plot transcutanous bilirubin (TSB) results using Bilitool.org.

- Low Risk Zone/ Low Intermediate Risk Zone → STOP phototherapy. No routine recheck indicated while inpatient. Unless condition changes or new risk factors identified.
- High Intermediate Risk Zone
- High Risk Zone → Phototherapy for 12-24 hours and repeat **total serum bilirubin (TcB is not accurate after starting phototherapy)**. Repeat TSB every 12-24 hours until baby is no longer in the High Risk or High Intermediate Risk Zone.

Phototherapy for 12-24 hours and repeat **total serum bilirubin (TcB is not accurate after starting phototherapy)**. Repeat TSB every 12 hours until baby is no longer in the High Risk or High Intermediate Risk Zone.

Routine rebound check is NOT routinely recommended. However, check rebound TSB 6-12 hours from stopping phototherapy if:
baby has hemolytic disease (direct Coombs positive and retic count >7%)
OR
if phototherapy was stopped before 3 days of life.

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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Neonatal Glucose Screening

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

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

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.

- <35: 1. Administer Dextrose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Dextrose Gel (NOT one hour after feed).
- >35: 1. Continue feeds q 2-3 hours as long as BG >35. 2. Assess for hypoglycemia by obtaining and documenting pre-feed BG. **3. Move to algorithm below once > 4 hours of life.**

From the Dextrose Gel box:
- <25: 1. Administer Dextrose Gel immediately per dosing chart. 2. Notify provider immediately. 3. Obtain IV, start D10 infusion, and transfer to a higher level of care.
- 25-35: 1. Administer Dextrose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Dextrose Gel (NOT one hour after feed). **4. Move to algorithm below once > 4 hours of life.**
- >35: 1. Continue feeds q 2-3 hours as long as BG >35. 2. Assess for hypoglycemia by obtaining and documenting pre-feed BG. **3. Move to algorithm below once > 4 hours of life.**

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.

At or Above Target BG?
- Yes: 1. Continue feeds q 2-3 hours. 2. Assess for hypoglycemia by obtaining and documenting pre-feed BG.
- No: **≤ 35?**
  - Yes: 1. Administer Dextrose Gel immediately per dosing chart. 2. Notify provider immediately. 3. Obtain IV, start D10 infusion, and transfer to a higher level of care.
  - No: 1. Administer Dextrose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Dextrose Gel (NOT one hour after feed).

Is this 3rd dose of Dextrose Gel?
- Yes: 1. Administer Dextrose Gel immediately per dosing chart. 2. Notify provider immediately. 3. Obtain IV, start D10 infusion, and transfer to a higher level of care.
- No: 1. Administer Dextrose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Dextrose Gel (NOT one hour after feed).

At or Above Target BG?
- No: 1. Administer Dextrose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Dextrose Gel (NOT one hour after feed).
- Yes: **STOP when you have four CONSECUTIVE BGs in Target Range for Age**

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

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Induced Sputum Collection Protocol

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.

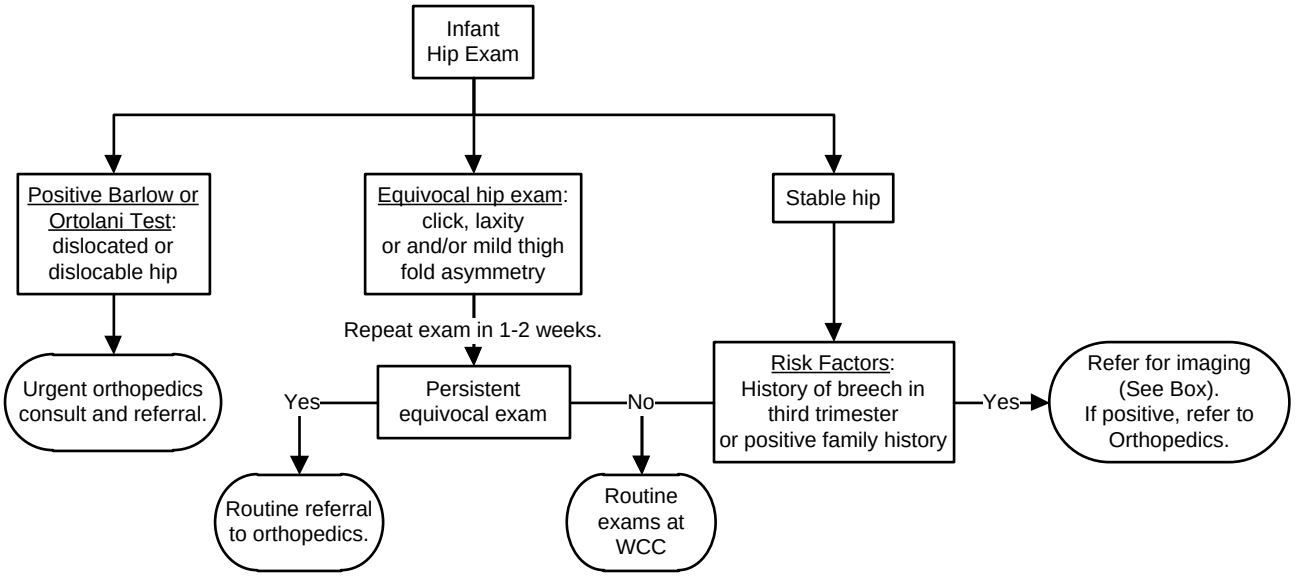
   b. Standard sputum cultures do not have a minimum volume and can be placed in a sterile specimen cup.

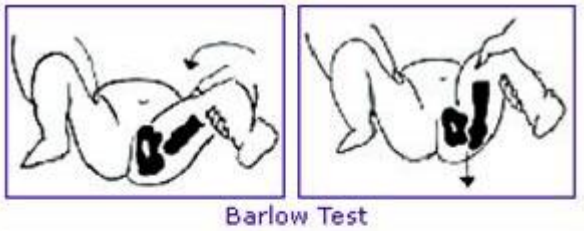
***Contraindications to above procedure**: oxygen saturation of <92% despite supplemental oxygen therapy, inability to protect the airways, severe bronchospasm, or designation as inappropriate by the clinician for another reason (eg, midface trauma). After exclusion or resolution of these conditions,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

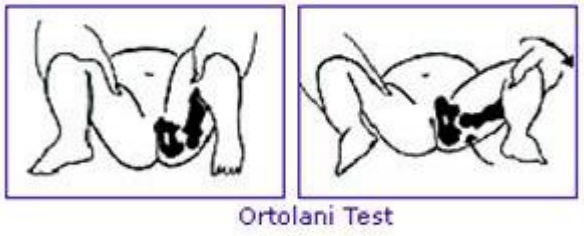
Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Infant Hip Exam and Surveillance Protocol







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.

<u>Imaging</u>

1. 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.
2. 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.

<u>Orthopedics Consults & Referrals</u>

1. 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.
2. 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.

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Treatment Protocol

Pediatric Endocrine Emergency Protocols

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-hydoxybutyrate, acetoacetate
  - Lactate, ammonia, Save 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/m^2 IV bolus (lower end of range if less sick, higher end of range if more sick) followed by 50-65 mg/m^2/day, divided q6h
  - If no IV access, SoluCortef IM or Dexamethasone IM
  - SoluCortef 50-65 mg/m^2 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/m^2 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/m^2 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/m^2/day, divided every 6 hours.

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

- Loading dose hydrocortisone IV or IM 50 mg/m^2 x1 then 50 mg/m^2/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/m^2 IM (better for CAH because has fludrocortisone activity at high doses, but only lasts about 6 hours), or Dexamethasone 1.5-2 mg/m^2 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/m^2 IV or IM on call to the OR prior to anesthesia; and continue stress doing for 24 hours after procedure.

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Treatment Protocol

Pediatric Endocrine Emergency Protocols

Hypercalcemia

Critical sample: Ca, Phos, iPTH
• Other labs: 25-OH-D, 1,25 $(OH)_2$ D, 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/m^2/day
    ▫ Saline diuresis generally works rapidly, but only as long at it is continued, and usually does not normalize calcium.
• Consider calcitonin 4 units/kg IV/IM/SQ q12h
    ▫ Tachyphylaxis common (often 2nd-line therapy y
    ▫ 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 $(OH)_2$ D, 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.

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Treatment Protocol

Pediatric Endocrine Emergency Protocols

Thyroid Storm (Thyrotoxic Crisis)

Score ≥45 → highly suggestive of thyroid storm; 25–44 →thyroid storm; and <25 → 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").

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Treatment Protocol

Pediatric Endocrine Non-emergency Recommendations

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. (TSI, 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)

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Treatment Protocol

Pediatric Endocrine Non-emergency Recommendations

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 dietician, 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.

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Pediatric Endocrine Non-emergency Recommendations

Type I 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.

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Treatment Protocol

Pediatric Diabetic Ketoacidosis Management Protocol

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/m^2/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 = [((Glucose -100)/100) x 1.6] + Pt's Na [glucose is mg/dL]
[¥]BSA (m^2)= sq root [(wt(kg) x ht(cm))/3600]; estimated BSA = (wt(kg) x 4 + 7)/(90 + wt(kg))
[‡]Anion Gap = Na – (Cl + HCO_3); 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/m^2/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/m^2/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/m^2/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).

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Treatment Protocol

Pediatric Diabetic Ketoacidosis Management Protocol

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 O_2 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 (pCO_2 <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.

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Treatment Protocol

Pediatric Diabetic Ketoacidosis Management Protocol

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
Woflsdorf 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 1

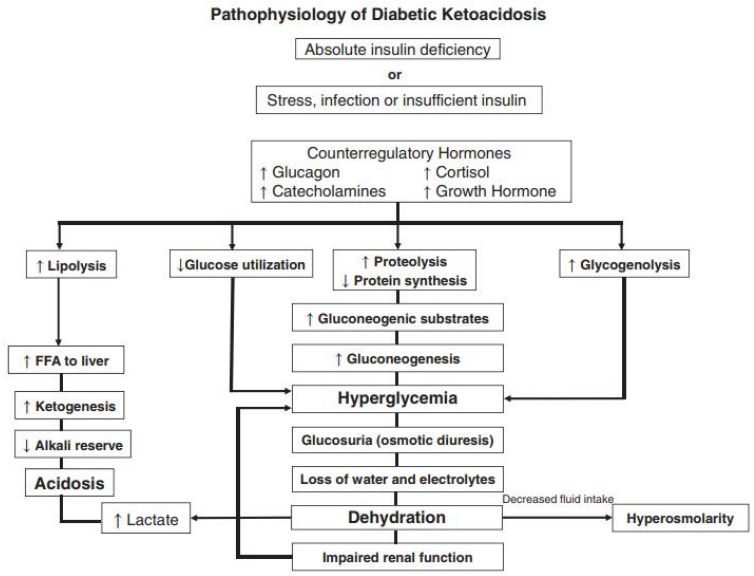

FIGURE 1 Pathophysiology of diabetic ketoacidosis. Copyright© 2006 American Diabetes Association. From diabetes care, Vol. 29, 2006:1150-1159. Reprinted with permission of *The American Diabetes Association*

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

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Obstetrics Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

First Trimester Bleeding, Ectopic Pregnancy Diagnosis, and Treatment of Non-Viable Early Pregnancy

1
Nomenclature

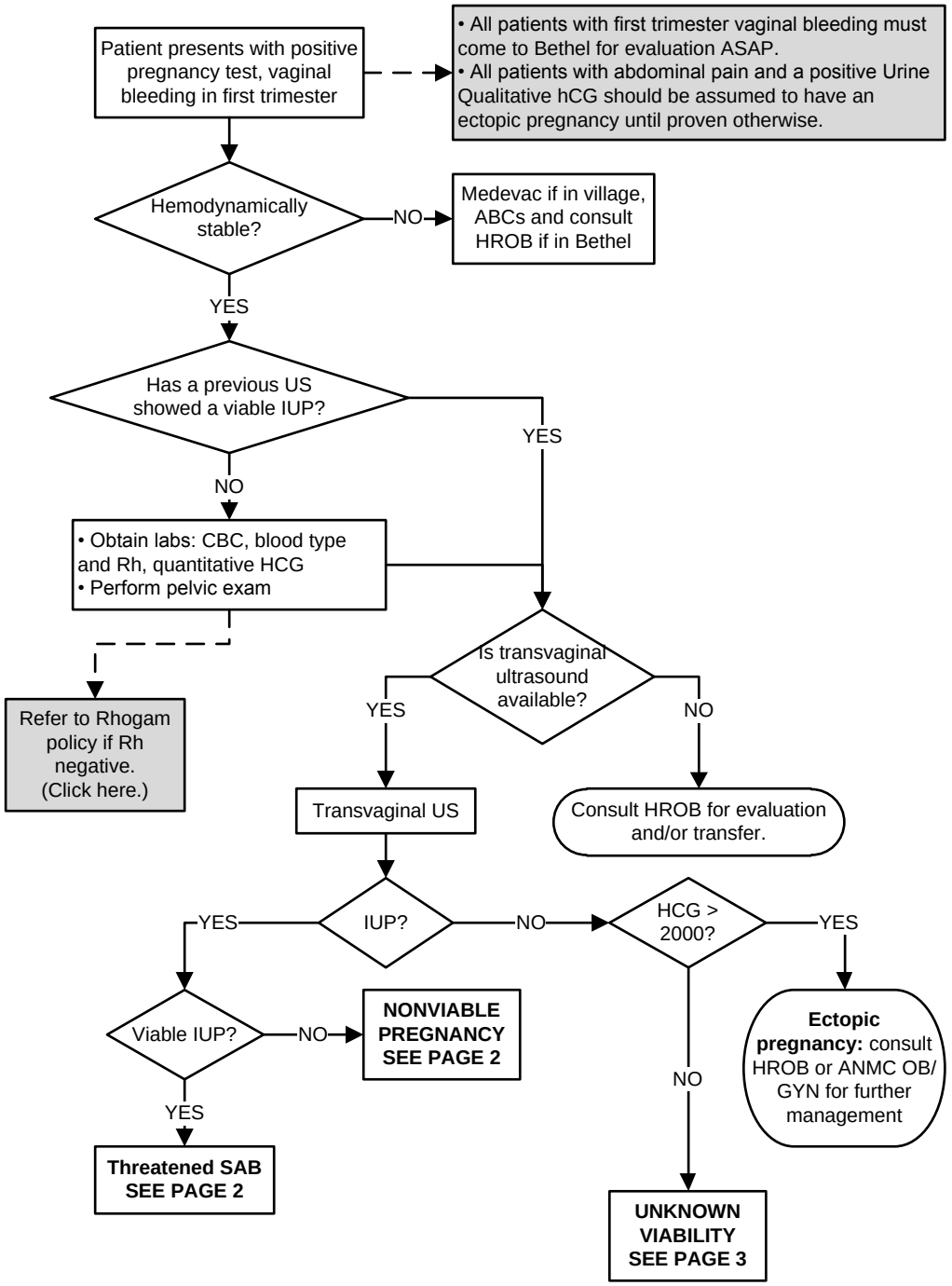
- **Viable** – A pregnancy is vialble if it can potentially result in a liveborn baby.
- **Nonviable** – A pregnancy is nonviable if it cannot possibly result in a liveborn baby. Ectopic pregnancies and failed intrauterine pregnancies are nonviable.
- **Intrauterine pregnancy of uncertain viability** – 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.

2
Findings diagnostic of Pregnancy Failure

- Crown-rump length of ≥7mm and no heartbeat
- Mean sac diameter of ≥25mm 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 ba a gestational sac if it contains a yolk sac or embryo.
- Transabdominal imaging without transvaginal scanning my 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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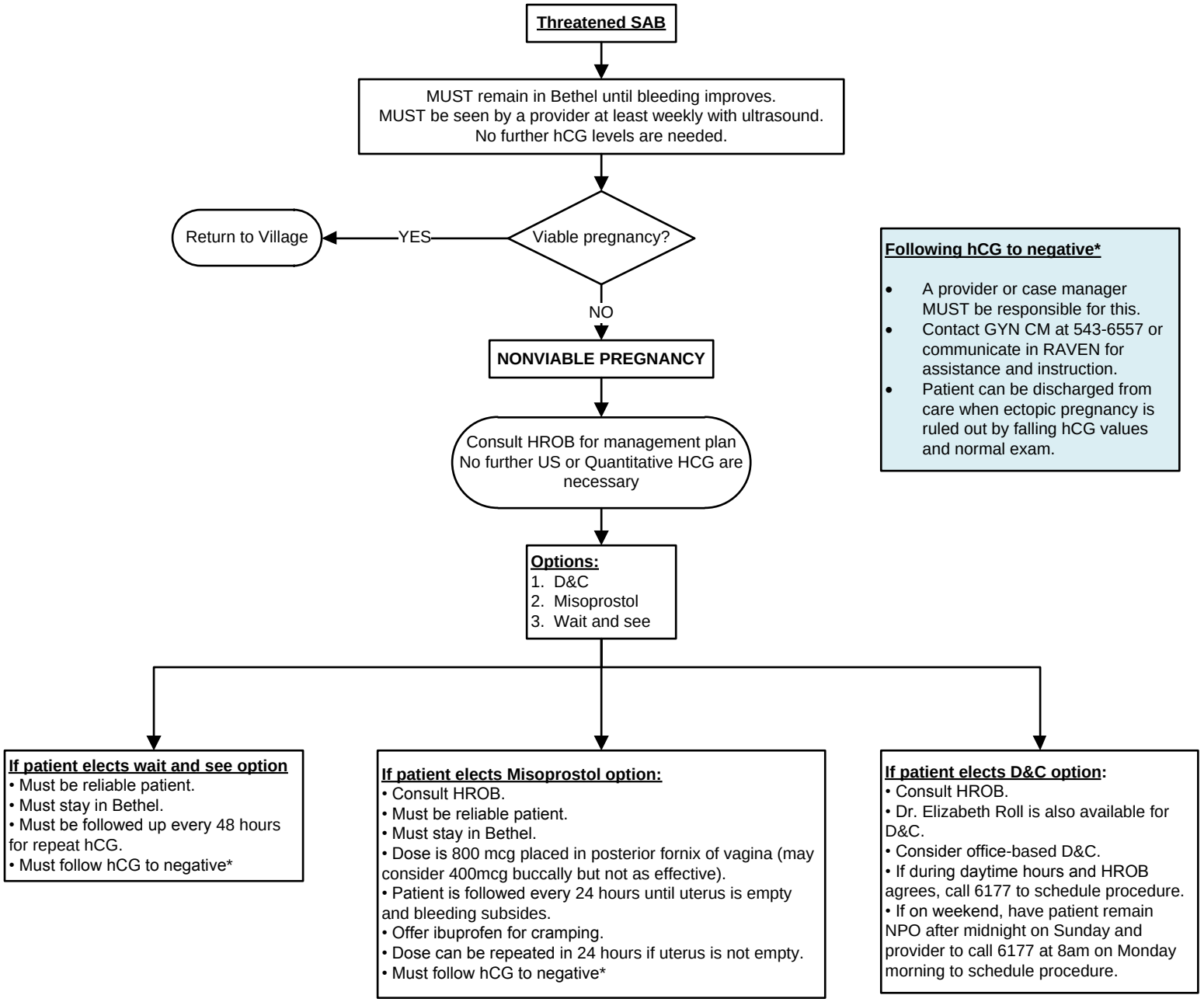
Clinical Guideline

First Trimester Bleeding, Ectopic Pregnancy Diagnosis, and Treatment of Non-Viable Early Pregnancy



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Clinical Guideline

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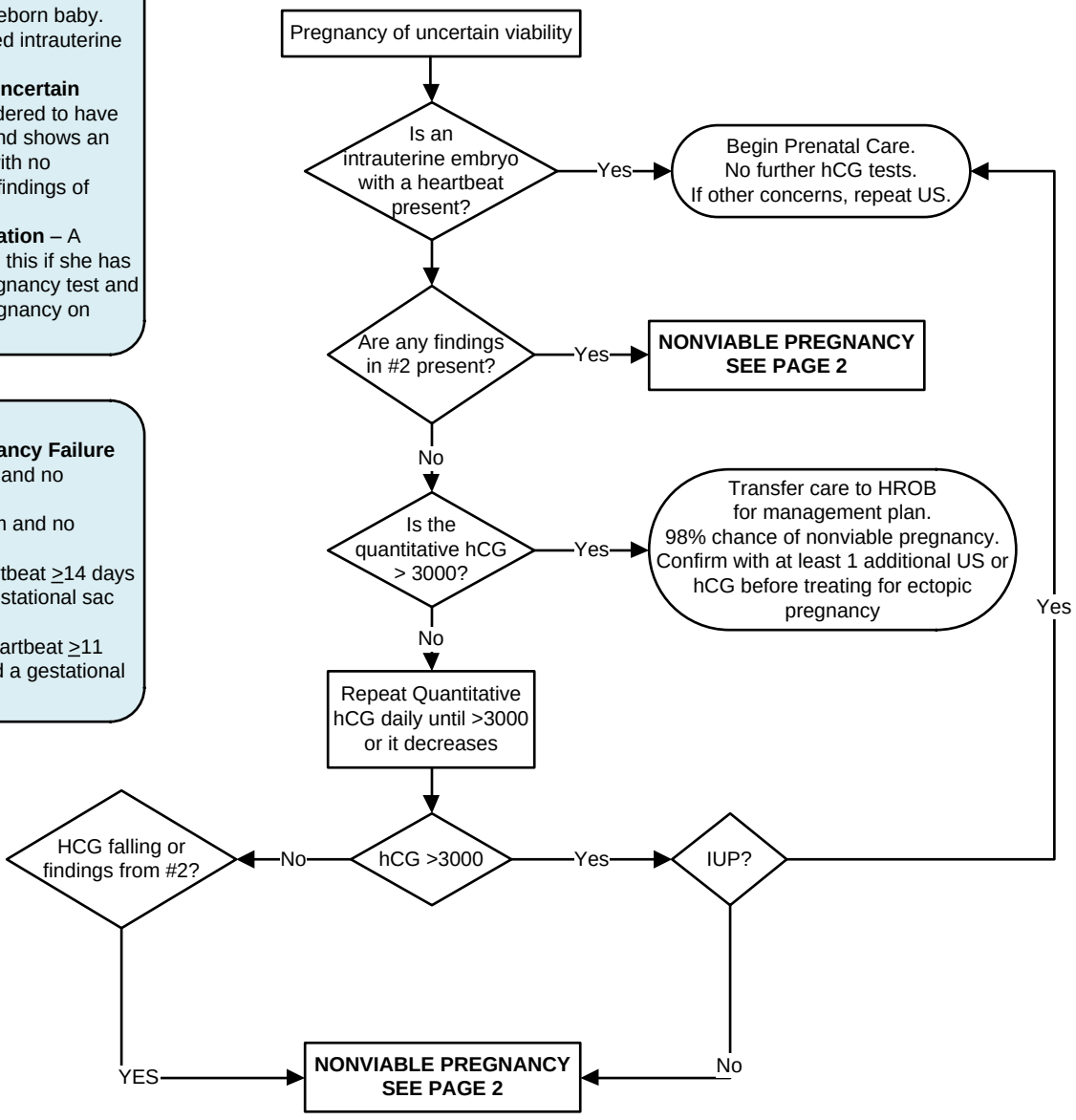

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Clinical Guideline

Ectopic Pregnancy Treatment

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 that 3.5cm
- Embryonic cardiac motion

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 ≥ 3cm
Cardiac activity
Pregnancy in location other than a tube
- Yes → Consult HROB for immediate surgery or transfer
- No

Platelets, kidney and liver function normal?
- No → Consult HROB for immediate surgery or transfer
- Yes

Is the hCG >5000?
- No

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.

- Yes

Two-dose regimen
- Administer 50 mg/m^2 on day 0.
- Repeat 50mg/m^2 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/m^2 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.

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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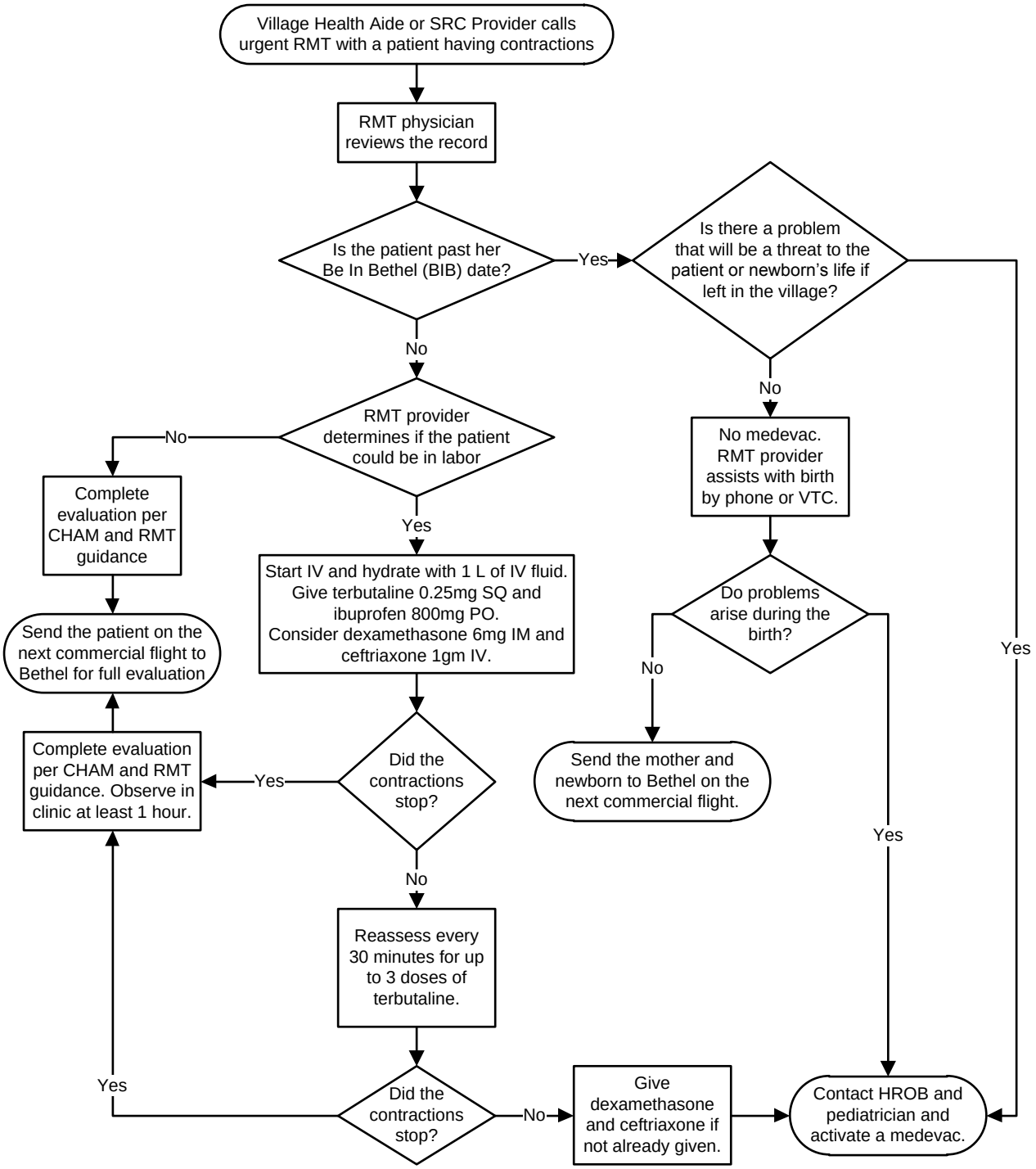
Clinical Guideline

Labor Patient: Village



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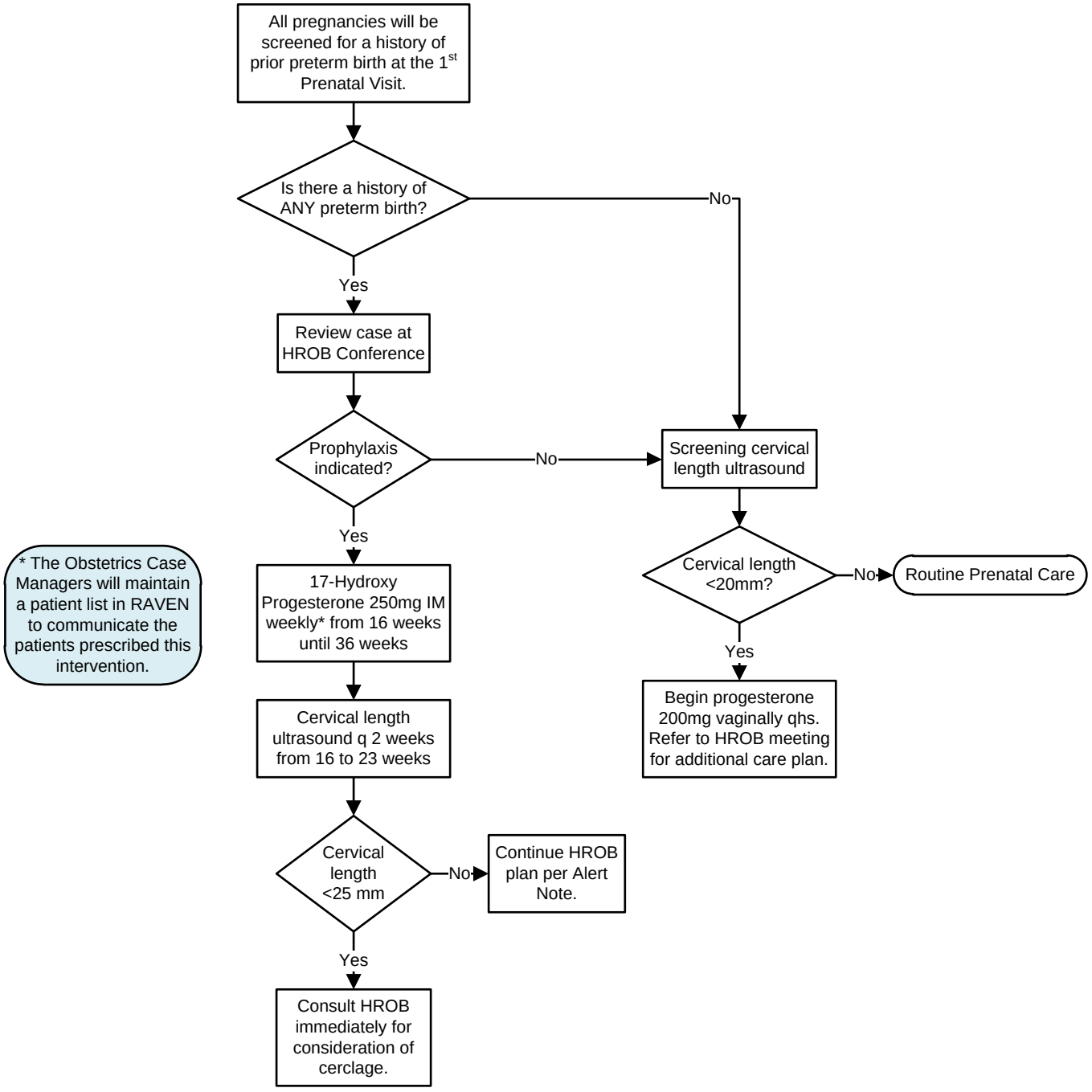
Clinical Guideline

Preterm Labor: Screening and Prevention



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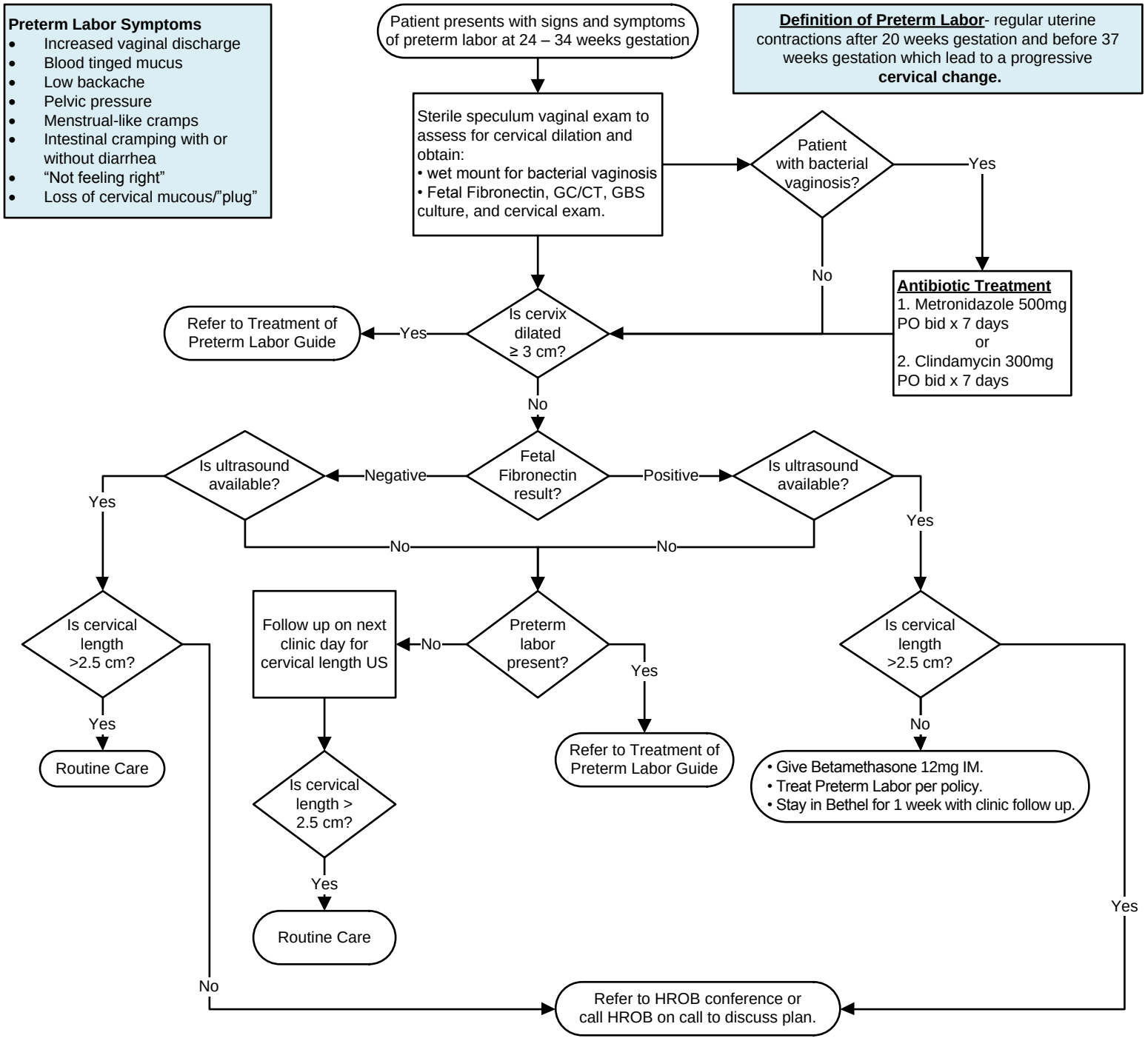
Clinical Guideline

Preterm Labor: Evaluation

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"

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



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

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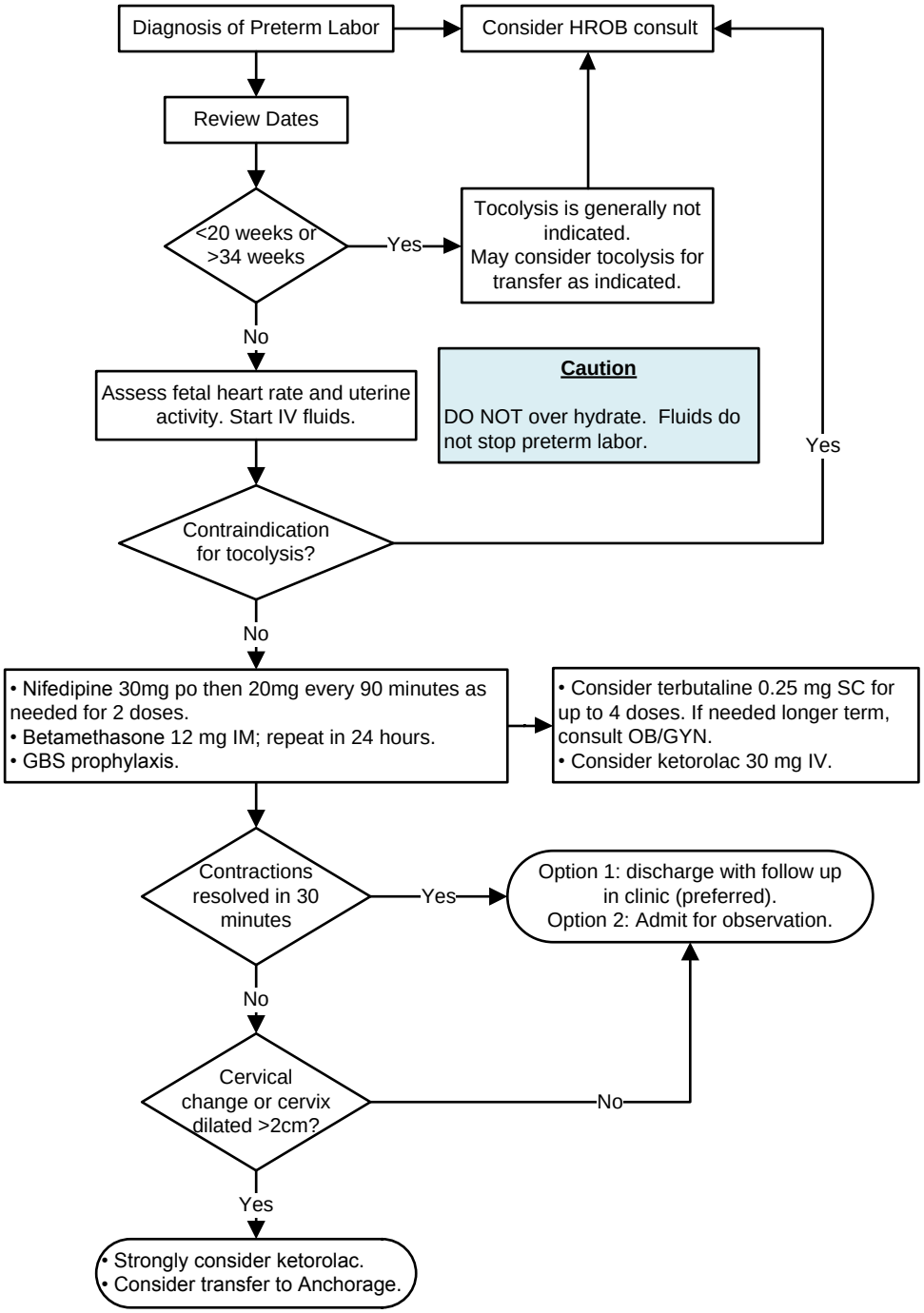
Clinical Guideline

Preterm Labor: Treatment

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

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)



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Clinical Guideline

Gestational Diabetes

First prenatal visit: Screen all women with a HgA1C

- ≥6.5% → Add diagnosis of diabetes.
- <6.4 % → If the first prenatal screen is before 24-28 weeks and is negative, at 24-28 weeks screen below.

Screening test: fasting or fed plasma glucose value one hour after 50 gram glucose load.

- ≥180 mg/dL → Go directly to SMBG or offer GTT if patient resists testing.
- 140 - 179 mg/dL → Fasting 2 hour oral glucose tolerance test: 75 gram load scheduled within one week

Diagnostic Criteria for GDM utilizing two hour 75g GTT

Gestational Diabetes Mellitus	Fasting ≥92 mg/dL
Pregnancy with one or more of the following levels:	1 hour glucose ≥180 mg/dL
	2 hour glucose ≥153 mg/dL

- Add appropriate diagnosis to problem list i.e. GDM or pre-gestational diabetes
- Give patient log book to document goals, blood glucose, and food plan.
- Dispense glucose meter and supplies.
- Refer to DM educator (543-6133) for education and Medical Nutrition Therapy.
- Consider referral to diabetes department for Continuous Glucose Monitor placement.
- Patient will record blood glucose levels fasting and 2 hours after 3 meals.
- Review nutrition and physical activity goals.

75% of Self-Monitoring Blood Glucose (SMBG) targets (fasting glucose <95 mg/dL and 2 hour post-prandial glucose <120 mg/dL) within target range after 1-2 weeks?

- Yes → • Weekly phone follow up by DM educators. • Weekly review at high risk OB (HROB) rounds. • HROB team will change testing and treatment plans as needed.
- No → **Initiate Medical Therapy.** Consult OB/GYN for assistance. Refer to Anchorage for delivery.

Patient to record SMBG levels before breakfast and two hours after start of three meals. Weekly follow-up by DM educators and weekly review at HROB rounds.

SMBG targets reached after one week?

- No → Reassess medication dose and choice. Consult DM education team/OB/GYN.
- Yes → Patient to record SMBG levels before breakfast and two hours after start of three meals. Weekly follow-up by DM educators and weekly review at HROB rounds.

All patients with GDM get tested at the 6 week post-partum visit with two hour 75 gram GTT. A_1C can be performed as an alternative at >12 weeks post-partum.

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.

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.

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Clinical Guideline

Molar Pregnancy

-Quantitative βhCG >100,000
-Vaginal bleeding
-Hyperemesis
-Cystic enlargement of ovaries

Suspect Molar Pregnancy: no intrauterine embryo or ultrasound suspicious for Molar Pregnancy.

Administer Rhogam if Rh negative

Testing:
CBC, CMP, PT/PTT, Blood type, and Rh factor, Quantitative hCG, pelvic ultrasound, chest X-ray. Consider TSH, free T4 if signs/symptoms of hyperthyroidism.

Signs or symptoms of medical complications, hyperthyroid, severe anemia, coagulopathy, PIH

Yes → Stabilize, consult with ANMC OB/GYN service, and transfer to ANMC via medevac.

No

Suction D&C.
Consider transfer if uterus is >16 week size due to increased risk of complications.

Confirm pathology: molar pregnancy, complete or partial

Yes

Quantitative βhCG 48 hours after D&C and weekly

Plateau ± 10% over three weeks rise ≥ 10% over two weeks. Quantitative HCG + at six months.

Yes → **Post molar GTN:**
-CT chest, CBC, PT/PTT, CMP.
Consult GYN ONC in Anchorage.

No

Weekly Quantitative βhCG until negative x3 (<5)

Monthly Quantitative βhCG for 6 months

Contraception:
Encourage Depo Provera, Nexplanon, IUD

Definitions

GTN – gestational trophoblastic neoplasm
Complete Mole – a form of aberrant fertilization with proliferation of trophoblastic tissue with a normal karotype, no fetus, diffuse villous edema, and diffuse proliferation.
Partial Mole – a form of aberrant fertilization with proliferation of trophoblastic tissue with triploid karotype, 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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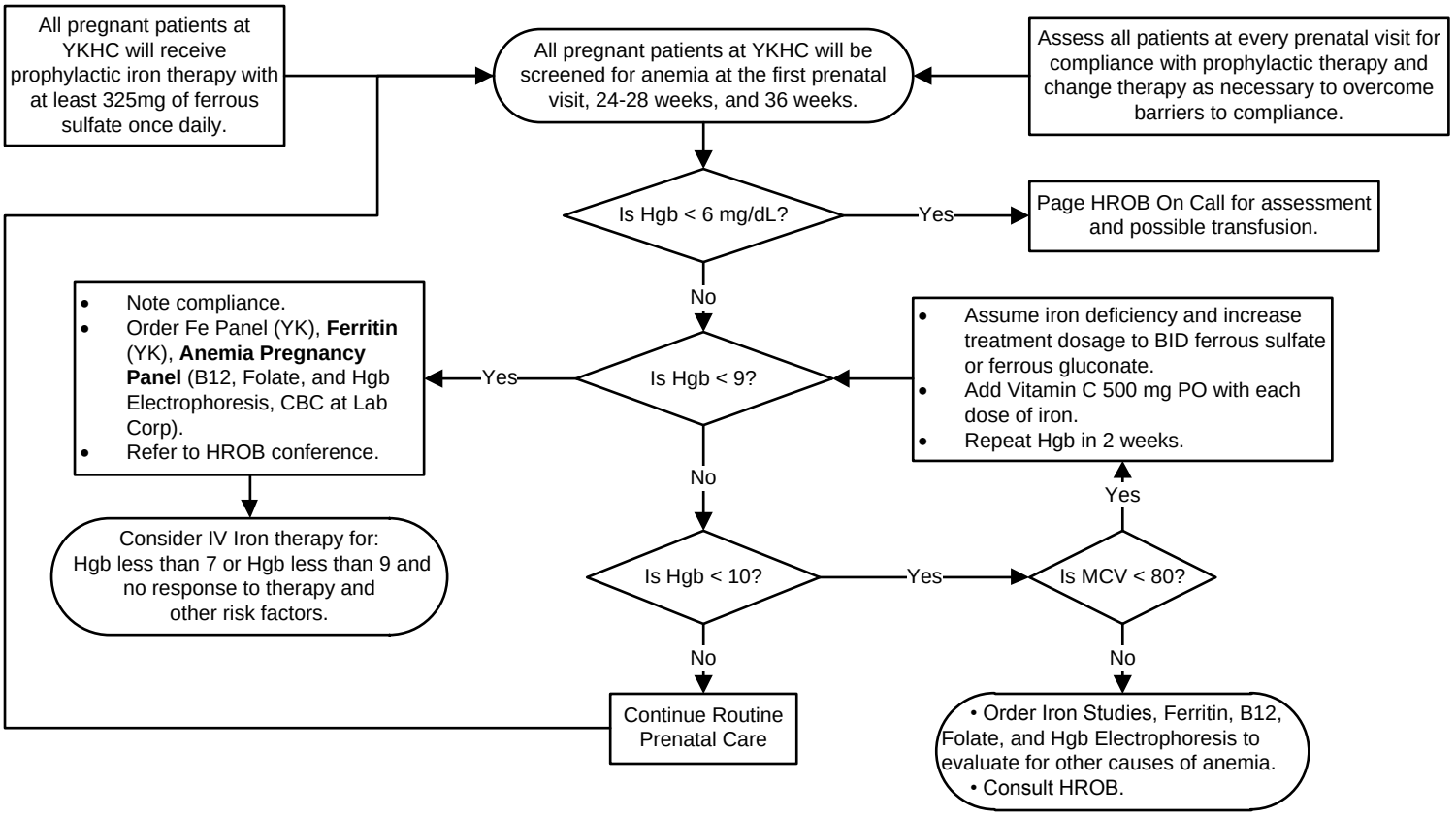
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Anemia in Pregnancy



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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Anti-D Immune Globulin

Reference Lab Policy
Rh Immune Globulin Work-up
Fetal Screen

Screening:
All patients will have a Blood Type and Antibody Screen done at their first visit.

Rh Negative?
- No → • Blood Type on newborn after birth as indicated. • No further testing of the patient for blood type.
- Yes

At the time of diagnosis:
- Note Diagnosis on problem list.
- Educate the patient.

Other situations which require anti-D Immune Globulin:
- Miscarriage/Abortion
- Ectopic Pregnancy
- Maternal Trauma: consult OB/GYN.
- Threatened abortion
- Maternal hemorrhage in 2nd or 3rd trimester
- External cephalic version
- Amniocentesis

The dose is always 300mcg at YKDRH due to blood bank stocking.

Third Trimester:
- Obtain Blood Type and Antibody screen at 28 weeks.
- Give 300 mcg anti-D Immune Globulin IM at 28 weeks after antibody screen.

On OB in Labor:
- Obtain Blood Type and Antibody Screen on admission.

On OB after delivery:
- Obtain ABO and Rh on newborn.
- Obtain Fetal Screen on mother.

Fetus Rh positive?
- No → No further workup or treatment.
- Yes

Fetal Screen positive?
- Yes → • Give two 300 mcg doses of anti-D Immune Globulin. • Send Kleinhauer-Betke (KB) test. • Consult OB/GYN. • Give additional doses as needed based on KB results
- No

Give the mother 300 mcg of anti-D Immune Globulin IM.

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 10/30/17.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

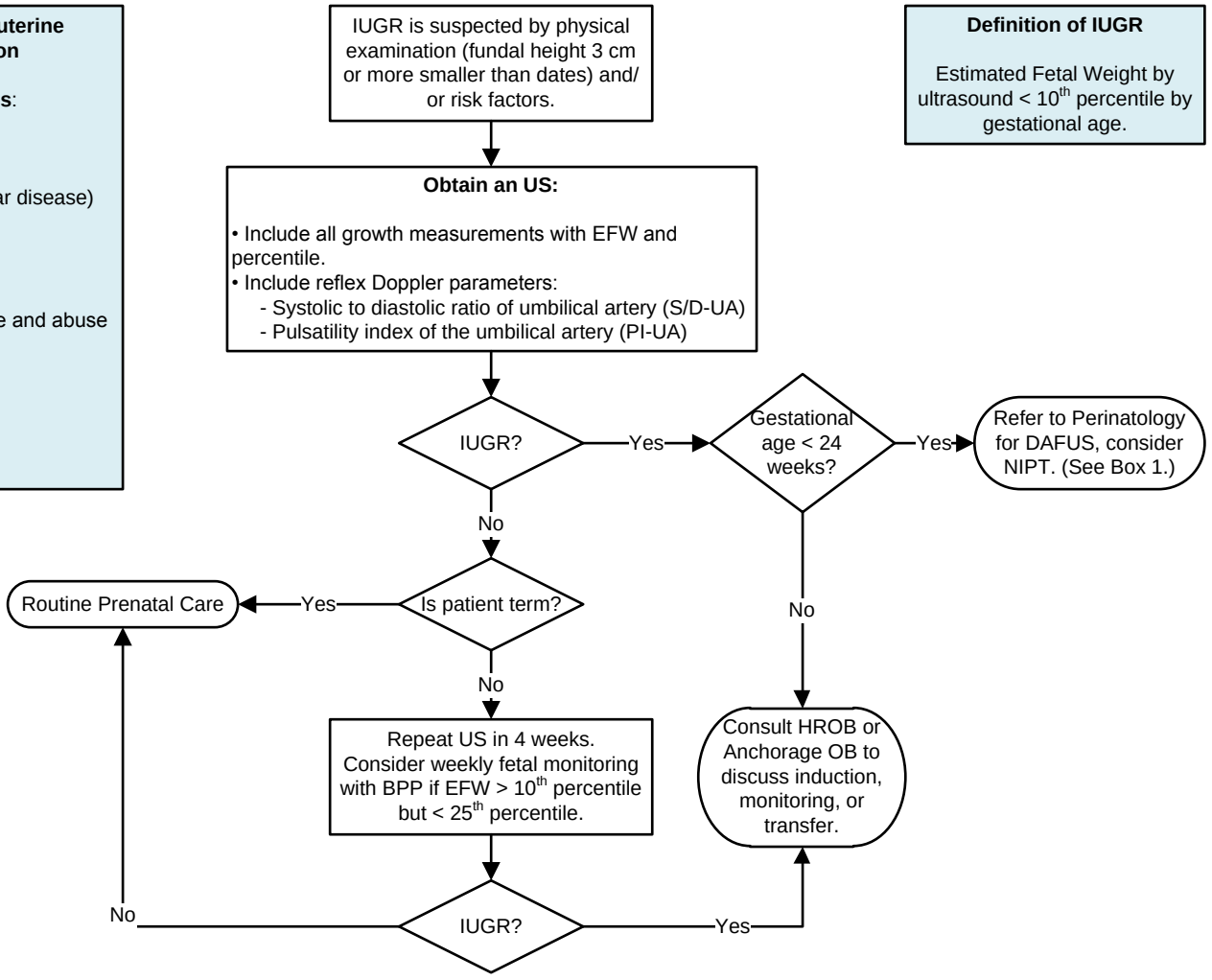
Clinical Guideline

Intrauterine Growth Restriction (IUGR)

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Oligohydramnios

Differential Diagnosis by Trimester

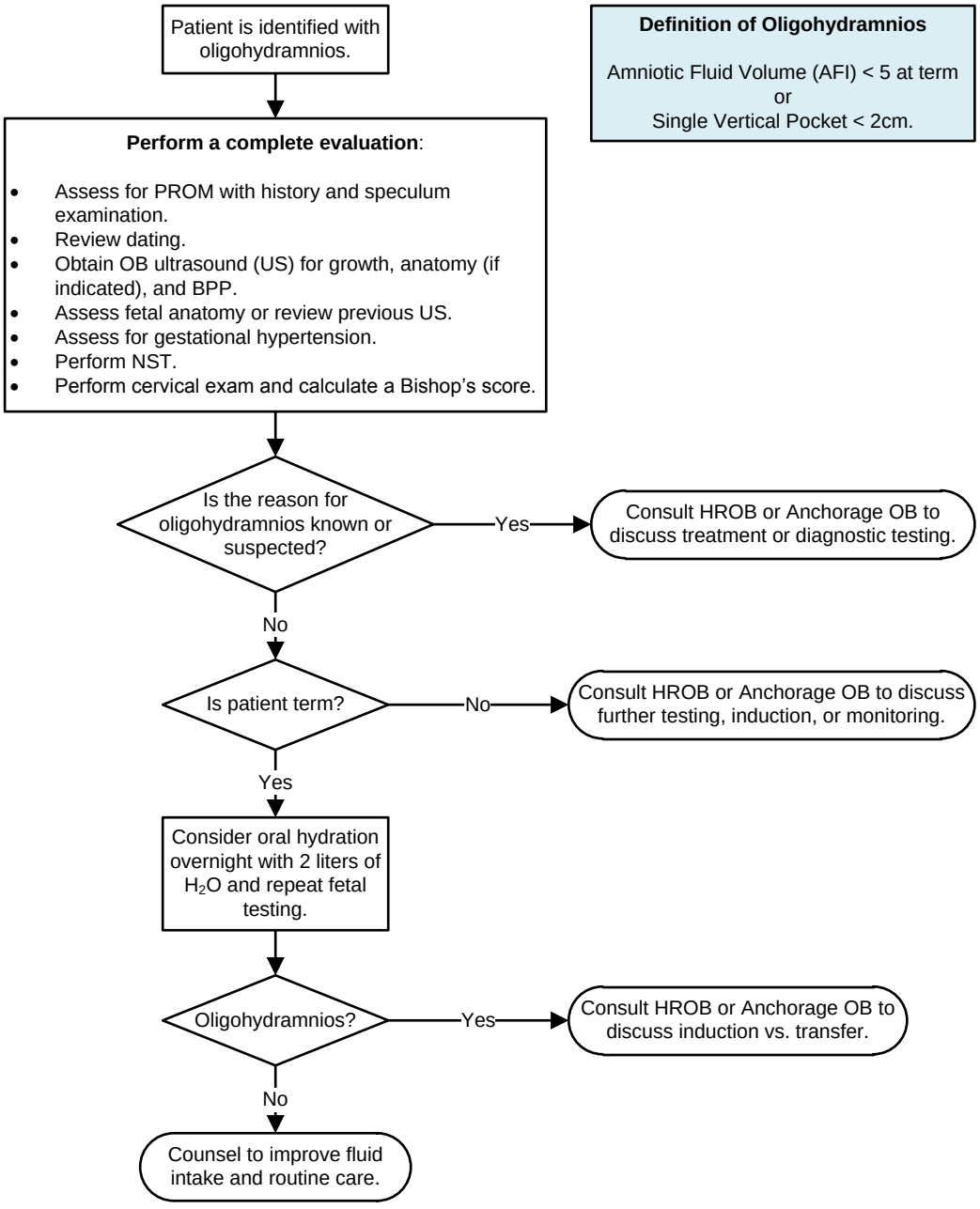
First
- Aneuploidy
- Fetal Anomaly

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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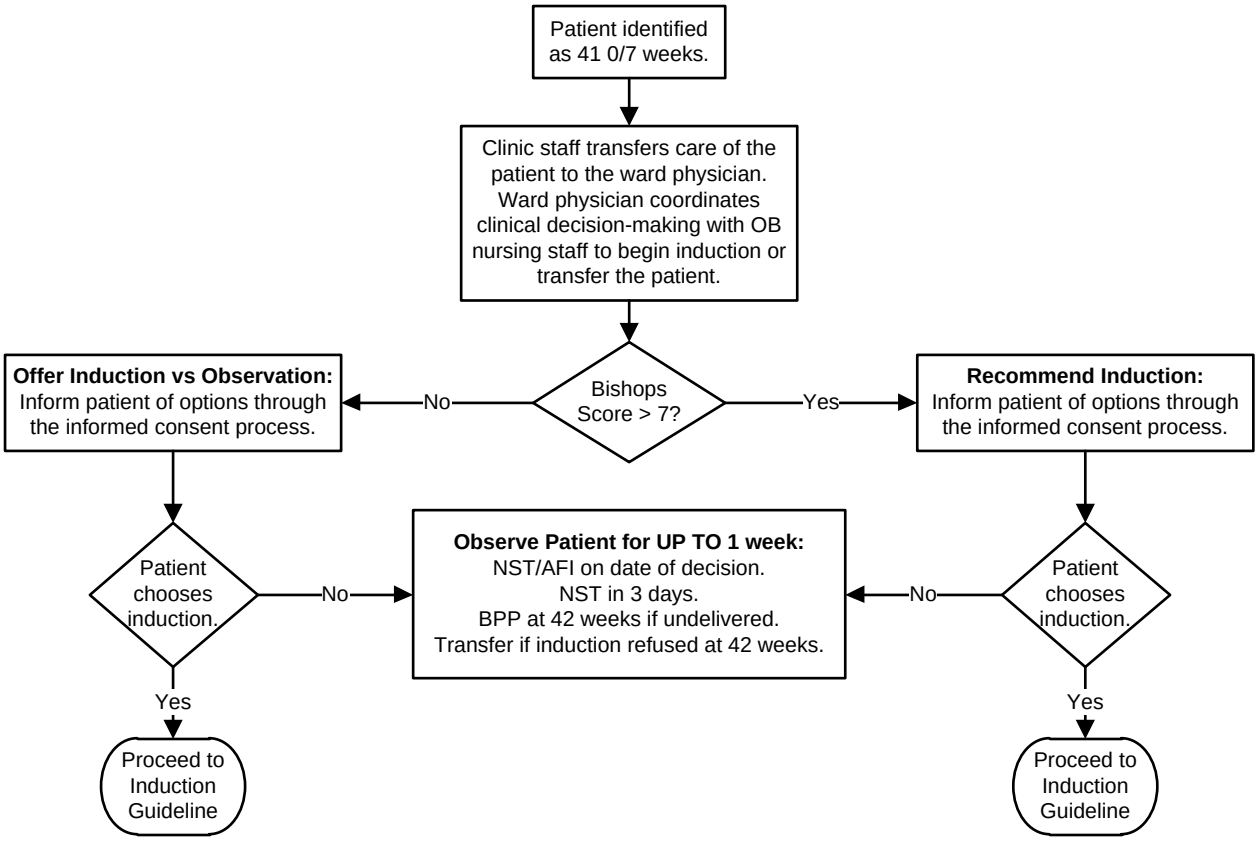
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Post-Dates Pregnancy



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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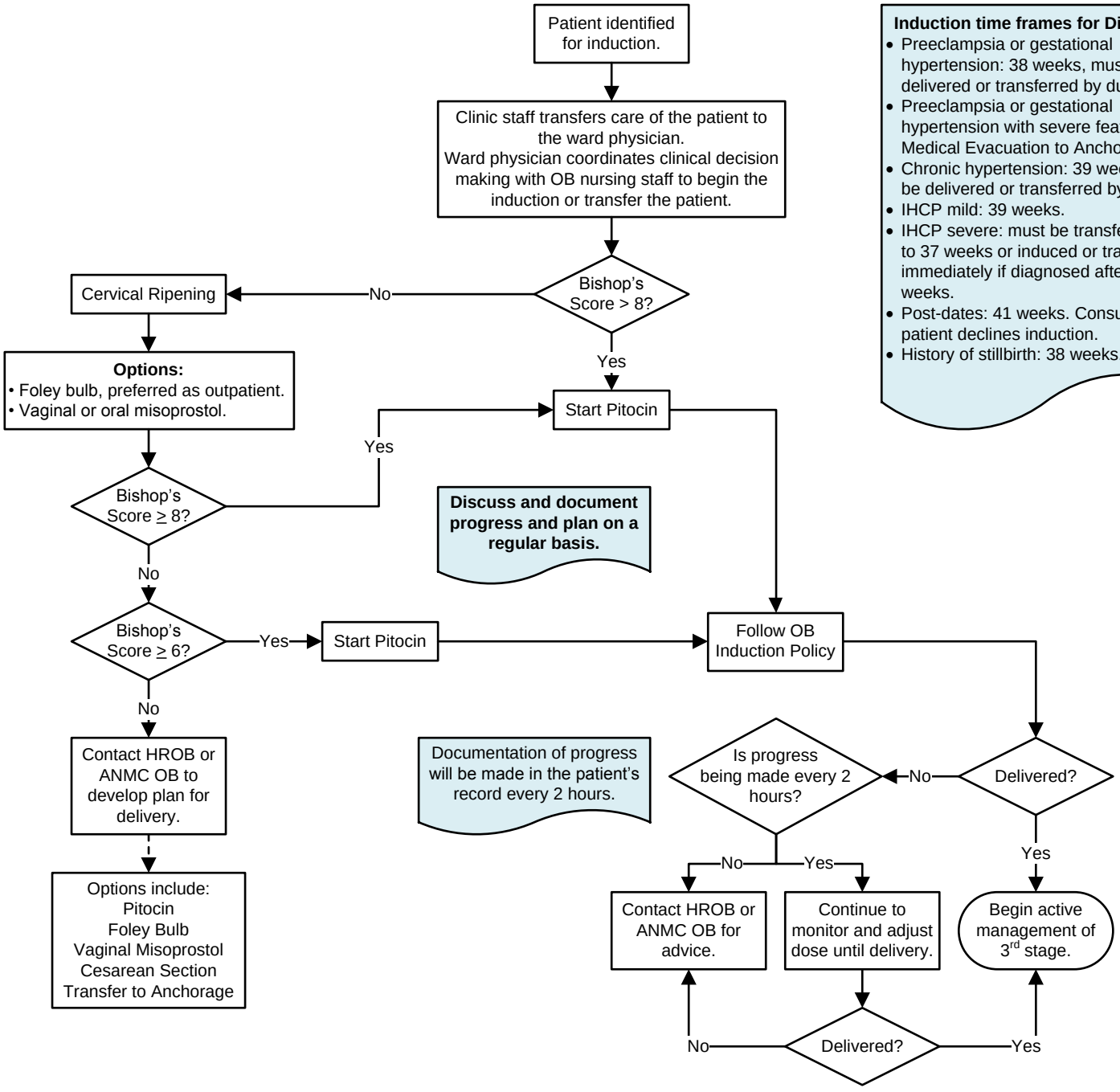
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Induction of Labor



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.

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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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intrahepatic Cholestasis of Pregnancy (IHCP)

Intrahepatic Cholestasis of Pregnancy (IHCP)
- Abnormal bile acid (BA) metabolism in pregnancy resulting in severe pruritus without rash.
- Mostly genetic etiology.
- 5% incidence in Yup'ik population.
- 5% incidence of stillbirth.
- MUST have elevated bile acids or LFTs.
- 40-70% recurrence in subsequent pregnancies.

Early Pregnancy: Consider the diagnosis if:
- History of severe pruritus in past pregnancy
- Unexplained stillbirth
- Hx of IHCP

Severe Pruritus:
- Insomnia.
- Worse on palms of hands and soles of feet.
- Excoriation present.
- Scratching during the exam.

Draw baseline BA & LFTs.

Abnormal →

IHCP:
- Begin Ursodiol 15mg/kg/day.
- Schedule antenatal surveillance at 32 weeks.

Normal → Repeat BA at 32 weeks or at onset of pruritus.

2nd or 3rd Trimester with pruritus

Is the pruritus severe?

Yes →

Are the BA & LFTs normal?

Yes →
- Stop Ursodiol if started.
- Repeat BA & LFT in two weeks.

No →

IHCP
- Begin Ursodiol 15mg/kg/day.
- Increase to 25mg/kg/day in one week if still itching.
- Antihistamines for sleep.
- Eucerin cream for itching.

No → Are the BA & LFTs normal?

Yes → **Pruritus Gravidarum:**
- Weekly BPP after 32 weeks.
- Symptomatic treatment.
- Deliver for usual indications.
- Recheck BA & LFTs weekly.

No →

HROB meeting referral. Begin fetal surveillance at 32 weeks:
- BPP weekly, may stay in village and return weekly.
- Fetal Kick Counts 3x per day.

Are TBA >40?

No → **Mild IHCP**: Induce at 39 weeks.

YES

Severe IHCP: Transfer to Anchorage for Delivery at 37 weeks.

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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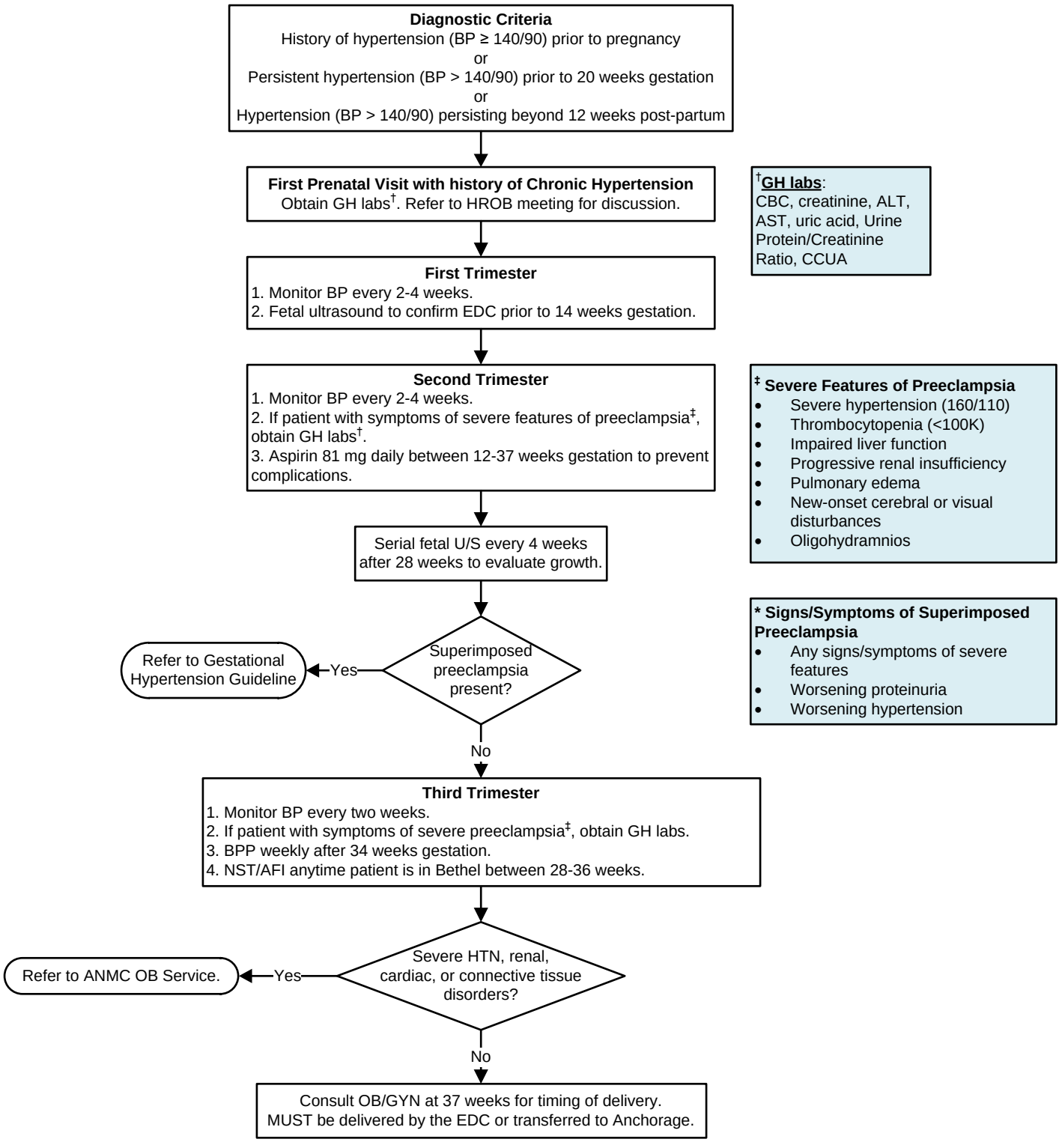
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Chronic Hypertension in Pregnancy



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

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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Gestation Hypertension

†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.

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.

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

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

Full maternal/fetal evaluation including: GH labs, Test for Fetal Wellbeing, ultrasound for growth

Any signs or symptoms from Box 1?

Yes

Preeclampsia/Gestation Hypertension with Severe Features

Admit and consult OBGYN.

- Magnesium Sulfate:4g IV bolus over 20 min, then 2g IV/hr
- GH labs
- Monitor fetal wellbeing
- Obtain OB ultrasound to evaluate for IUGR or oligohydramnios
- Monitor for signs and symptoms of Magnesium toxicity

Transfer to Anchorage

No

Protein/ creatinine ratio >0.3*?

No

Gestational Hypertension

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

Yes

Preeclampsia Consult HROB on call.

Is patient compliant?

No

Consider inpatient monitoring versus transfer to Anchorage.

Yes

Outpatient monitoring in Bethel
- Daily kick counts
- Office visit 1-2 times per week
- NST twice weekly
- AFI and GH labs once a week
- Ultrasound for growth every 3 weeks
- Transfer care to NW at 38 weeks for delivery or transfer to Anchorage.

Any signs or symptoms from Box 1?

No

Yes

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Approved by MSEC 7/12/17.
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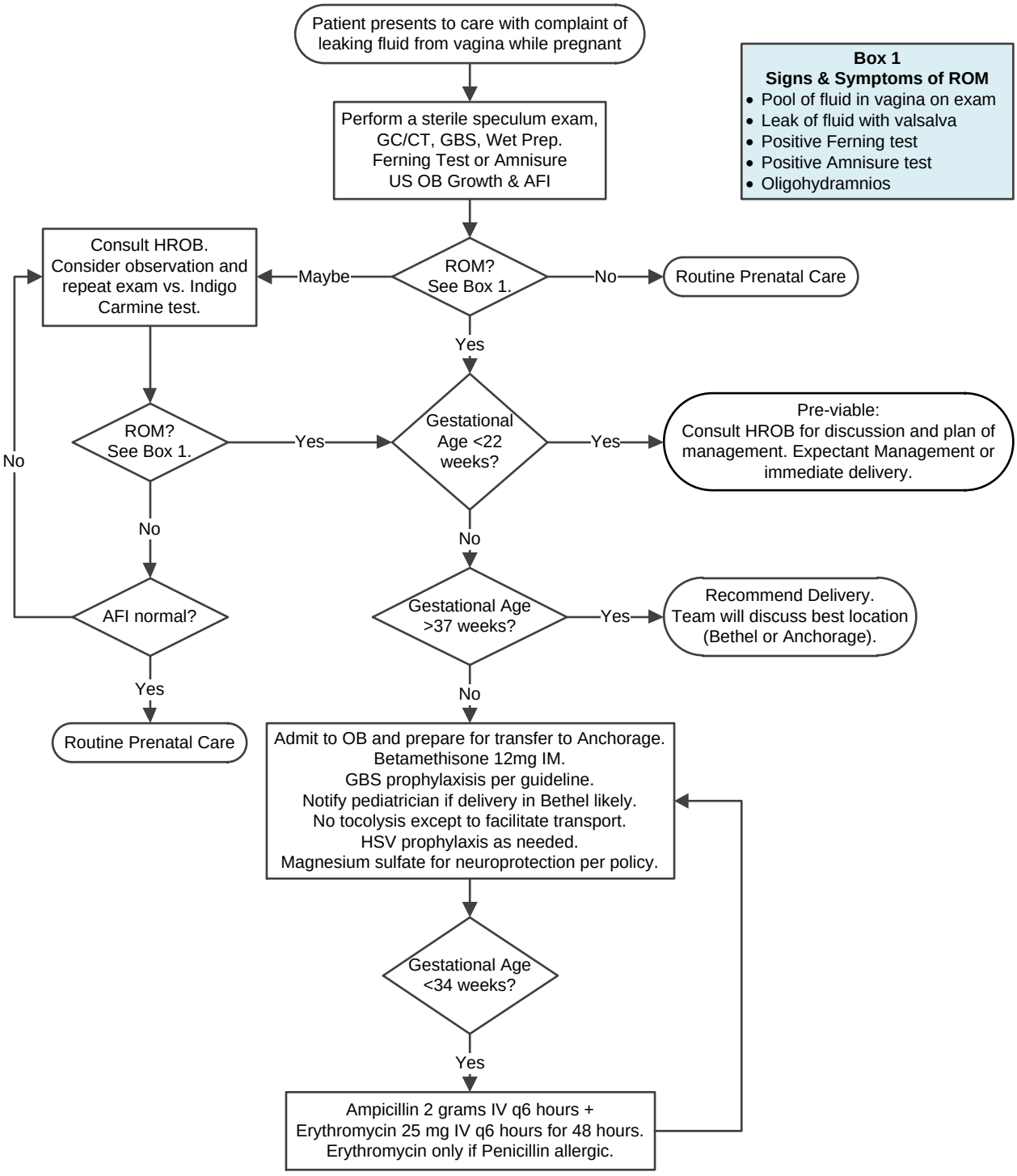
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Preterm Premature Rupture of Membranes



Box 1
Signs & Symptoms of ROM

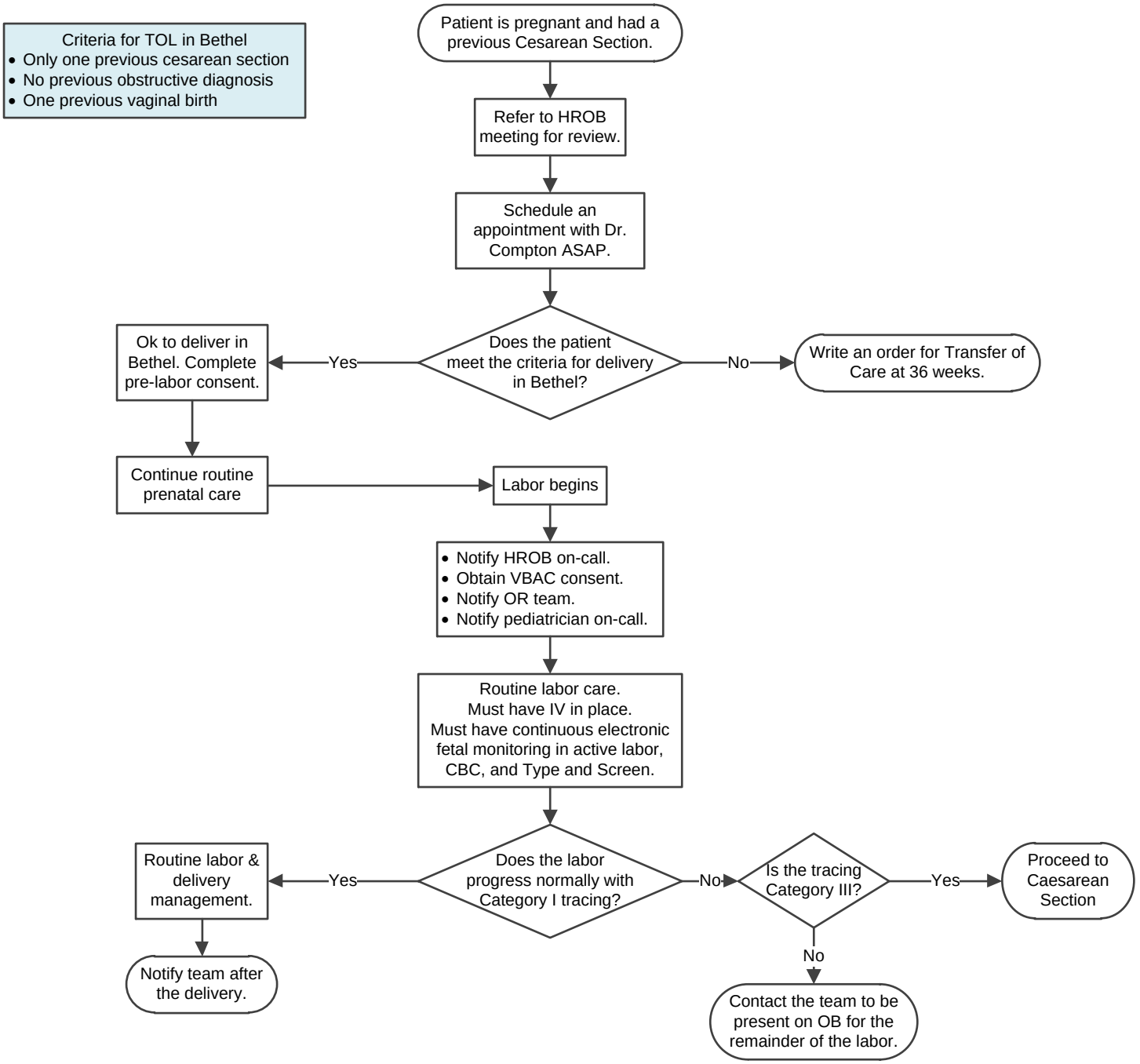
- Pool of fluid in vagina on exam
- Leak of fluid with valsalva
- Positive Ferning test
- Positive Amnisure test
- Oligohydramnios

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 7/26/17.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Vaginal Birth after Caesarean Section

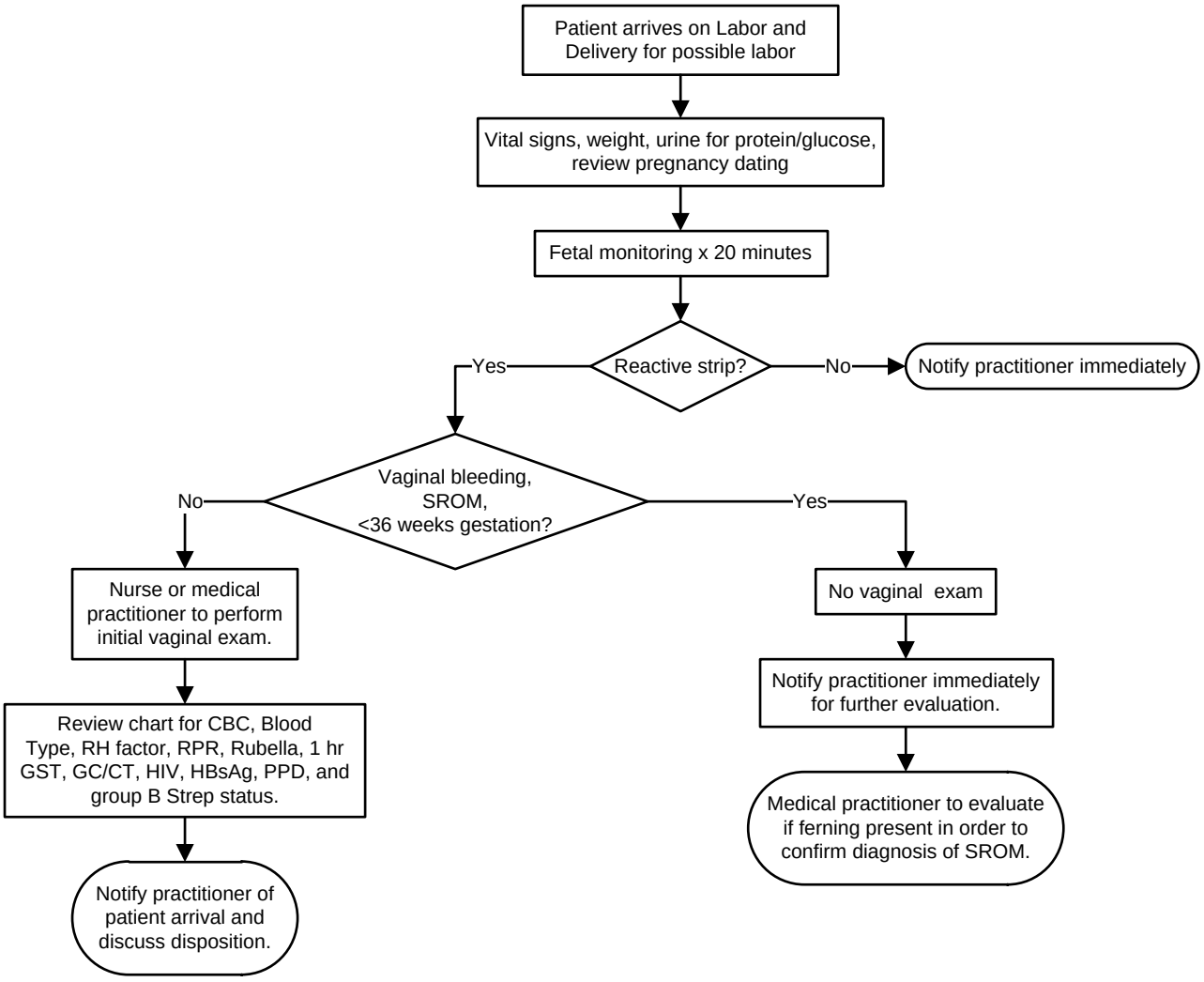


Obstetrics Protocols/Reference

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Antepartum Patient



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Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Prenatal Care Guidelines

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 gravida/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 abut 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 sumptoms of:
  - Rupture of membranes.
  - Preeclampsia.
  - Labor.
  - Itching.

Outpatient Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Skin and Soft Tissue Infection, Page 1

Skin and Soft Tissue infection identified

Abscess present?

Yes → **Cutaneous abscess**

Perform incision and drainage. Obtain wound culture. Place drain if possible (Derma-stent or Penrose). Hot pack. Soak q2h. Schedule NSAIDs. Update Tdap. Elevate if extremity.

No → **Purulent drainage or exudate?**

Yes → **Purulent cellulitis**

No → **Non-purulent cellulitis** → See Page 2

Cellulitis >10 cm or >1% BSA in child (size of child's palm)

Yes → **Consider empiric oral antibiotic therapy**

No, antibiotics not indicated → **Outpatient management with daily follow up until continuous improvement is demonstrated**

Does patient meet all criteria for outpatient management (see Box 2)?

Yes → Outpatient management with daily follow up until continuous improvement is demonstrated

No →

- Admission with IV antibiotics. (See box.)
- Recommend blood cultures, CBC, basic metabolic panel.
- Elevation and heating pad.
- Consider IV fluids.
- Scheduled NSAIDs if no contraindication.
- Consider imaging.
- If patient meets criteria for sepsis, follow sepsis guideline.
- **Calculate LRINEC score.**

Patient improving?

Yes → Manage as inpatient until meets criteria for outpatient management

No →

- Review culture and sensitivities
- Consider imaging.
- Consider repeat incision and drainage

DO NOT use guideline for the following:

- Diabetic ulcer
- Vascular ulcer
- Necrotizing fasciitis
- Human or animal bite cellulitis
- Thrombophlebitis
- Erythema nodosum
- Toxic shock syndrome
- Herpes zoster
- Fish finger
- Bacteremia
- Periorbital or orbital cellulitis
- Osteomyelitis
- 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 tab 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 (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**
Doxycycline does not cover *Strep pyogenes.
Discharge with topical chlorhexidine wash if recurrent abscess and patient has no running water.

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

Empiric IV Antibiotic Therapy

1. Vancomycin:
   - <12 years: 15 mg/kg IV q6h. Trough before 6th dose.
   - 12–18 years: 15 mg/kg IV q8h. Trough before 6th dose.
   - Adults: 1 gram IV q12h. For obese patients, dose 15 mg/kg IV q12h using ideal body weight. No troughs if therapy <72 hours.
   - Dosing changes to be made by pharmacy using AUC/MIC or clincalc.com/vancomycin
2. Clindamycin 600 mg IV q8h. Restricted to vancomycin allergy.
3. Linezolid 600 mg IV/PO q12h. Restricted to MRSA resistance/allergy. ID consult recommended.
4. Consider coverage for *H. influenzae* A/B in children with rapidly progressing cellulitis/abscess, temp >104°F, systemic symptoms (listlessness, lethargy): ceftriaxone 75 mg/kg IV/IM q24 hours in addition to above.

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Approved by MSEC 4/14/20.
If comments about this guideline, please contact Elizabeth_Bates@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Skin and Soft Tissue Infection, Page 2

Non-purulent cellulitis present

Does patient meet all criteria for outpatient management (see box)?

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.

Yes

Empiric Oral Antibiotics:

Adults

Amoxicillin 500 mg PO TID

PCN allergy (non Type 1):

Cephalexin 500 mg PO TID

For Type 1 PCN allergy or cephalosporin allergy:

Clindamycin 450 mg PO TID

Children

Amoxicillin 45 mg/kg/dose PO BID

PCN allergy (non Type 1):

Cephalexin 25 mg/kg/dose PO TID

For Type 1 PCN allergy or cephalosporin allergy:

Clindamycin 10-13 mg/kg/dose PO TID

***Antibiotic duration 5-7 days**

No

- Admission with IV antibiotics. (See box.)
- Recommend blood cultures, CBC, basic metabolic panel.
- Elevation.
- Consider IV fluids.
- Scheduled NSAIDs if no contraindication.
- Consider imaging.
- If patient meets criteria for sepsis, follow sepsis guideline.

Empiric IV Antibiotics:

Adults

Cefazolin 1 gram IV q8h

For Type 1 PCN or cephalosporin allergy:

Clindamycin 600 mg IV q8h

Children

Cefazolin 33 mg/kg/dose IV q8h

For Type1 PCN or cephalosporin allergy:

Clindamycin 10 -13 mg/kg/dose IV q8h

Calculate LRINEC score if risk for necrotizing infection.

Clinically improved in 2-3 days

No

- Consider undrained focus of infection.
- For non-purulent cellulitis, consider change to IV vancomycin.
- Consider ID consult.

Yes

Manage as inpatient until meets criteria for outpatient management.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

UTI (Adults)

Abnormal clean catch UA:
< 5 squamous epithelial cells AND ONE of the following:
• >5 WBCs
• Positive leukocyte esterase
• Positive nitrite
• Bacteria

Patient presents with signs/ symptoms of acute cystitis and a urinalysis suggestive of UTI. If complicated or catheter associated, see below.

If acute onset of dysuria, urinary frequency or urinary urgency, don't forget to test for STI if appropriate.

Signs or symptoms of acute pyelonephritis?

No:
1. Nitrofurantoin 100 mg PO BID for 5 days OR
2. Cephalexin 500 mg PO BID for 7 days (use first for patients >65)
If no other options exist:
3. Ciprofloxacin 250 mg PO BID for 3 days

UTI associated with fever, chills, back/flank pain, suprapubic pain

Yes:
• Always obtain culture and sensitivities.
• Consider blood cultures if ill/septic.

Able to be treated as outpatient?

No:
1. Ceftriaxone 1 gram IV daily
OR
2. Levofloxacin 750 mg IV/PO daily

• Narrow therapy when culture data allows.
• If not improving within 48-72 hours, consider imaging to rule out obstruction or other complications.
• Duration of therapy as for outpatient.

• Must NOT BE PREGNANT.
• Able to tolerate PO.
• Not septic.
• Able to recheck within 24 hours.

Yes:
Give a single dose of either:
Ceftriaxone 1 gram IV/IM
OR
Gentamycin 3 mg/kg IV/IM

AND one of the following oral options:
1. Cephalexin 1 gram PO BID for 14 days OR
2. Levofloxacin 750 mg PO daily for 5 days

TMP/SMX DS PO BID for 14 days is acceptable if culture is sensitive.

• If known ESBL: use nitrofurantoin first (not for complicated ESBL or for age >65).
• If sensitive: TMP/SMX or fluoroquinolne.
• If allergic to susceptible antibiotics may use fosfomycin 3 g PO q48 hours x3 doses.

Complicated UTI/catheter-associated UTI

UTI with coexisting functional anomalies of urinary tract: BPH, calculi, obstruction, neurogenic bladder, chronic catheter transplant, neutropenia.

Obtain culture and sensitivities.

Able to be treated as outpatient?

Yes:
• If old culture results available use empirically while awaiting new culture and sensitivities
• Definitive treatment when culture available.
• If no old culture results, use outpatient pyelonephritis treatment above
• Duration of therapy 3-5 days after defervescence or elimination of catheter.
• If female </= 65 consider 3 day course for catheter associated infection if catheter is removed.

No:
• Obtain imaging studies if critically ill.
• If no risk for MDRO:
1. Ceftriaxone 1 gram IV q24h OR
2. Levofloxacin 750 mg IV q24h
• If risk for MDRO:
1. Cefepime 1 gram IV q8h extended infusion OR
2. Pip/Tazo 3.375 gram IV q6h or Q8h extended infusion +/- gentamycin 3 mg/kg IV q24h
3. Consider adding MRSA coverage if septic shock is present (get blood cultures from 2 sites).
• If known ESBL:
Meropenem 500 mg IV Q6h

• Narrow therapy when culture data allows and patient is clinically improved.
• Duration of therapy: 5-14 days depending on agent and rapidity of response.
• If nidus of infection (stone, catheter) will need longer treatment.
• Prostatitis may require as long as 6 weeks of oral therapy.

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.
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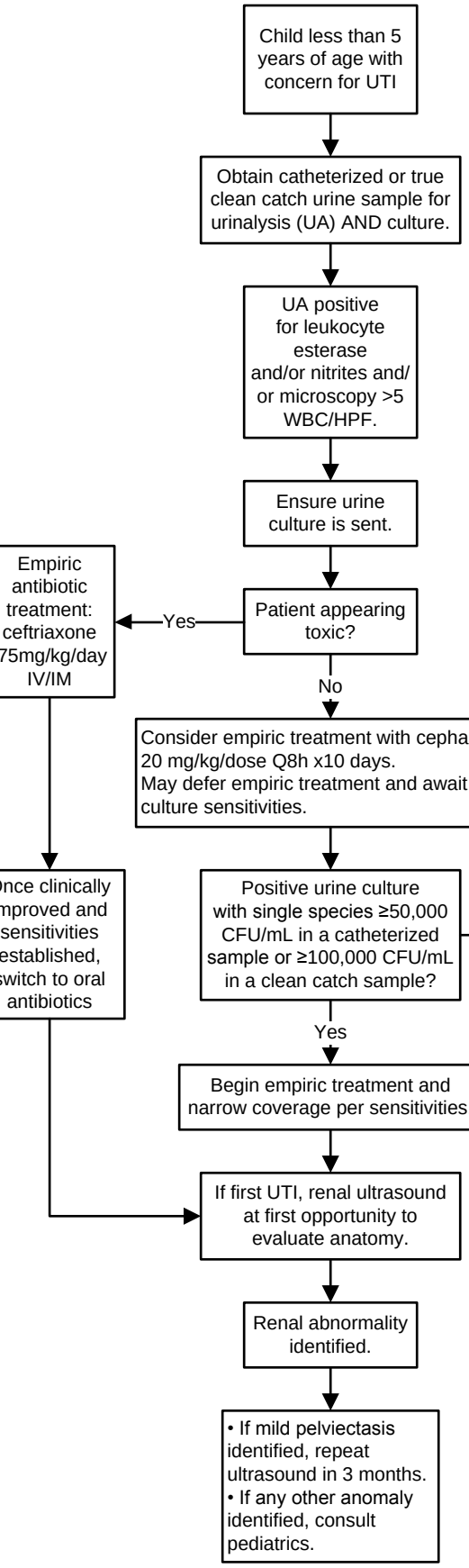
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

UTI in Children 3 Months – 5 Years



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.

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.

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.

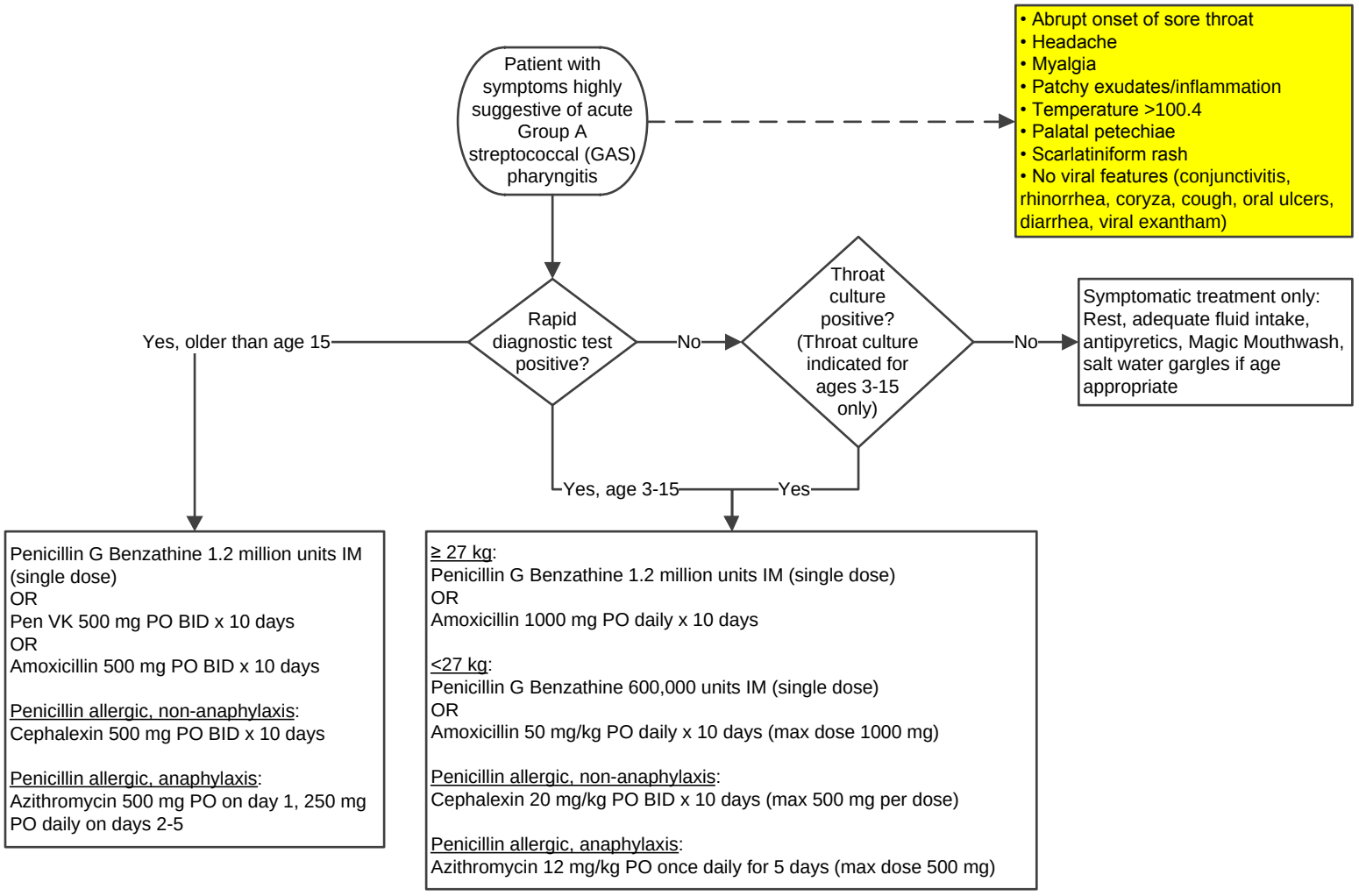
NOTE: Any infant with a fever <90 days must go to the Emergency Department for evaluation.
See the Fever in Infants 0-90 Days Guideline.

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 Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Group A Strep Pharyngitis (Adult and Pediatrics)



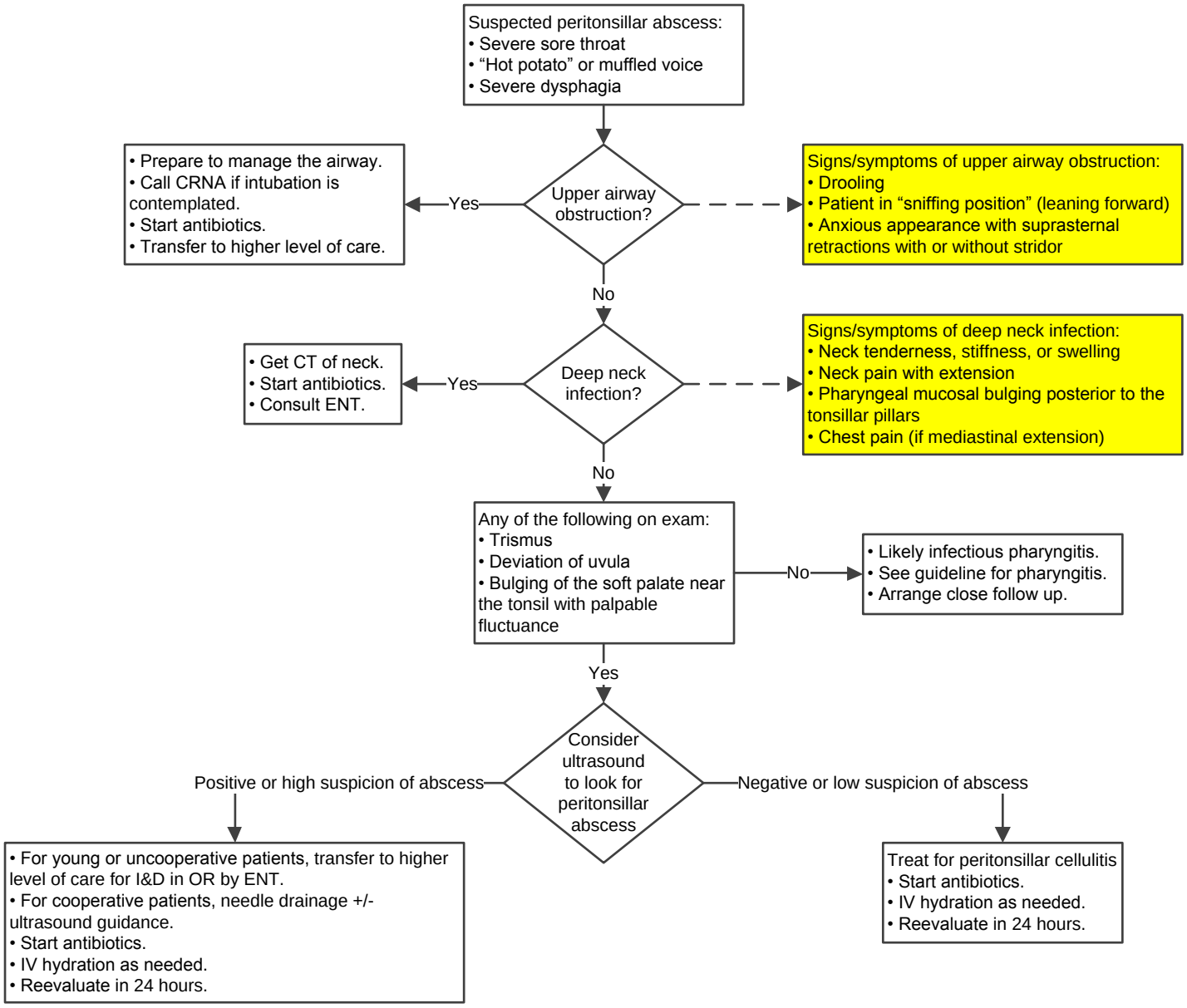
Considerations:
- Consider testing for oral GC/CT in at-risk populations.
- Testing for Group A streptococcal (GAS) pharyngitis is NOT recommended for acute pharyngitis with clinical features that strongly suggest viral etiology.
- Routine use of back-up cultures for those with a negative rapid test is not needed for adults; there is a low incidence of GAS in adults and risk of subsequent acute rheumatic fever is exceptionally low.
- It is NOT recommended to test for GAS in patients under the age of 3; the risk of rheumatic fever in this age group is exceptionally low.
- Patients are contagious for 24 hours after starting antibiotic treatment.
- Treatment for asymptomatic GAS carriers is not recommended, nor is testing or empiric treatment of household contacts.

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 4/14/20.
If comments about this guideline, please contact Elizabeth_Bates@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Peritonsillar Abscess (Adult and Pediatrics)



Antibiotics for peritonsillar abscess:
Ampicillin-sulbactam 3 grams IV q6h for adults and 50 mg/kg/dose (based on ampicillin, max 3 grams) IV q6h for pediatrics.

If penicillin allergic:
Clindamycin 600 mg IV q6h for adults and 13 mg/kg/dose (max 600 mg) IV q8h for pediatrics.

If severe disease:
Consider coverage for MRSA with vancomycin.

Once able to transition to oral:
Amoxicillin-clavulanate 875 mg PO BID for adults and 45 mg/mg/dose (max 875 mg) PO BID for pediatrics.

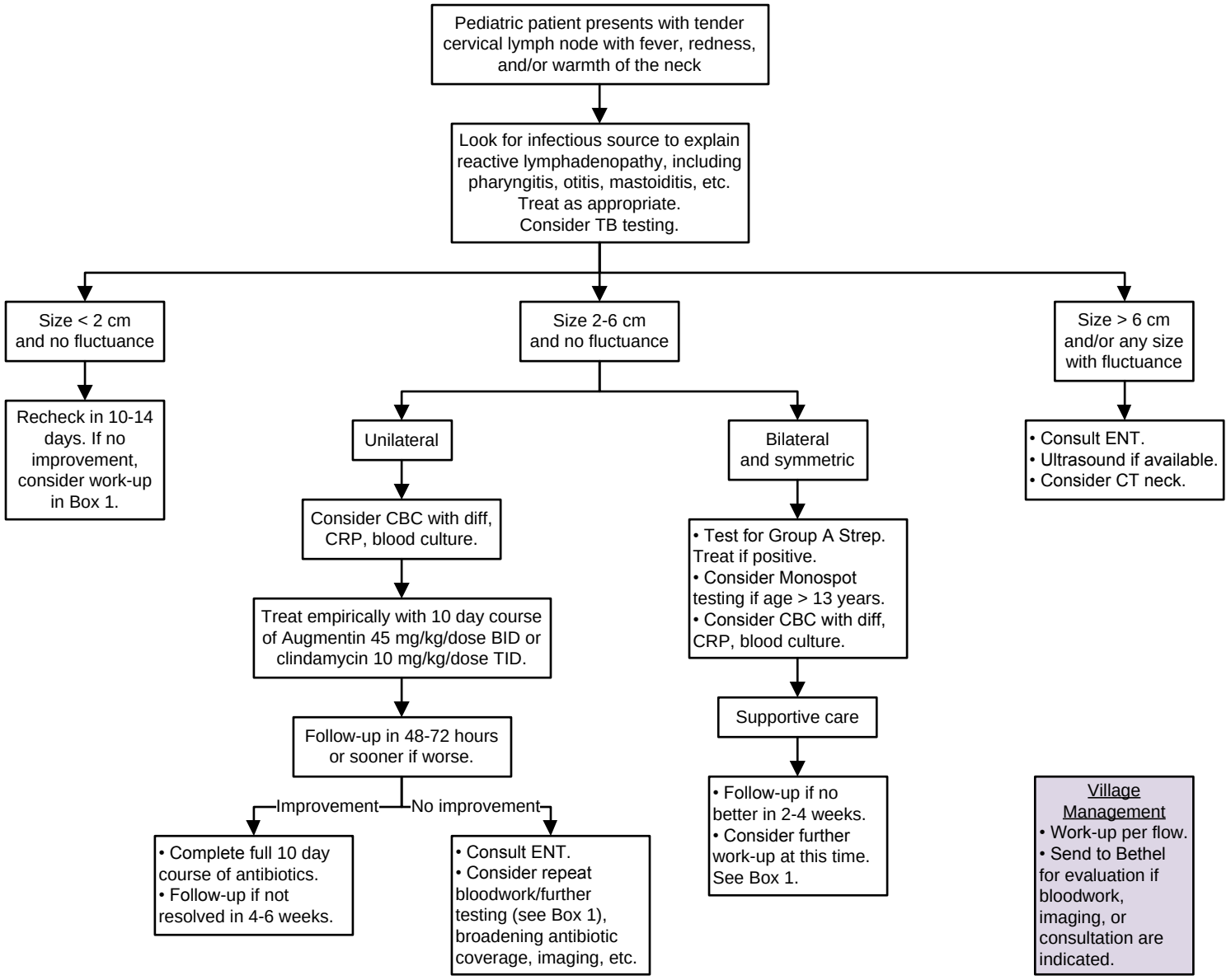
If penicillin allergic:
Clindamycin 300 mg PO 4 times daily for adults and 13 mg/kg/dose PO 3 times daily for pediatrics.

Total duration of treatment: 14 days

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Acute Cervical Lymphadenitis



Village Management
- Work-up per flow.
- Send to Bethel for evaluation if bloodwork, imaging, or consultation are indicated.

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

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 12/13/17; reviewed and reapproved 10/2019.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Otitis Media (3 months – 12 years)

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

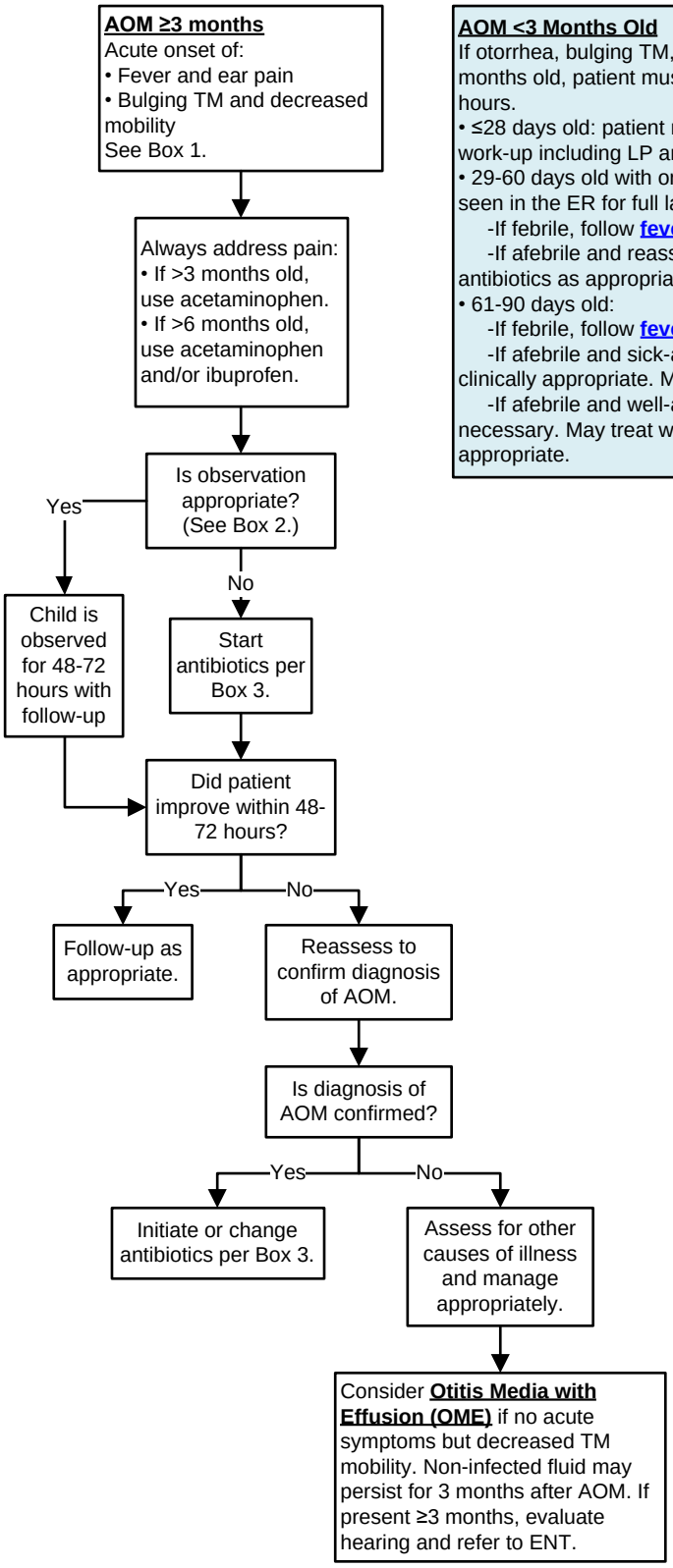
Try to avoid using cephalosporins. They are less effective at treating the most common organisms that cause OM.

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 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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sinusitis (>5 years)

Differential Diagnosis
-foreign body
-seasonal/environmental allergies
-recurrent/back-to-back viral rhinitis or nasopharyngitis

Fever and rhinorrhea in **>5 years old**

Consider sinusitis

If considering the diagnosis of sinusitis in a child younger than 5, please consult a pediatrician.

Persistent Illness
Nasal discharge and daytime cough for >10 days **with no improvement**

Observe for 3 days. Follow-up by phone or by appointment.

Worsening Course
One week of worsening nasal discharge, daytime cough, and fever after initial improvement

Severe Onset
Fever >102 and purulent nasal discharge for >3 consecutive days

If no improvement

Treatment

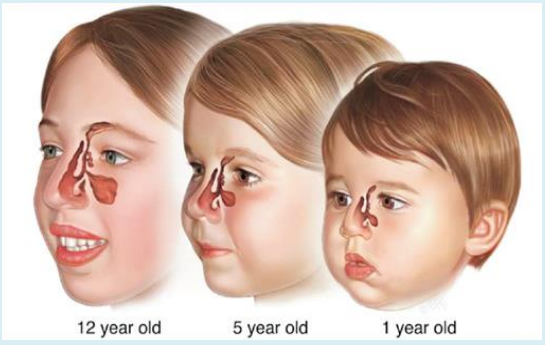
1st line	High-dose amoxicillin 45 mg/kg/dose PO BID for 14 days
2nd line	High-dose Augmentin 45 mg/kg/dose PO BID for 14 days
3rd line	Cefdinir 14 mg/kg/dose PO daily for 14 days

Try to avoid using cephalosporins. They are less effective at treating the most common organisms that cause sinusitis. Additionally, cefdinir takes 3-5 days to reach the villages.
For PCN allergy: Please obtain a pediatrics consult. Do not prescribe azithromycin or Septra. The most common pathogens in pediatric sinusitis have high resistance rates to these antibiotics.

Follow-up by phone or by appointment at 3 days. If no improvement, consider broadening to next line of treatment.

Follow-up 10-14 days after starting treatment. If still symptomatic, consider lengthening course to total 21-28 days of treatment.

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&tbm=isch&sa=1&ei=rTiHWt3rCIHRjAP4hKaICA&q=sinus+development&oq=sinus+development&gs_l=psy-ab.3..0i67k1j0l5j0i5i30k1l3j0i8i30k1.34240.34657.0.35299.2.2.0.0.0.0.200.398.0j1j1.2.0....0...1c.1.64.psy-ab..0.2.395...0i30k1.0.rSFh1aHlq74#imgrc=lDSBxCfrF0AkWM:&spf=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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Bronchiectasis/Chronic Cough

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."

Bronchiectasis or Bronchiectasis Rrisk

Add to CPP registry.
Update Problem List with ICD10 code.

Chronic Management

Comorbidity Management
• Aspiration: trial thickener if <3 years, feed with swaddling in side-lying position at 45 degrees with slow-flow nipple, consider speech therapy.
• TB: place PPD, send sputum/gastric aspirates if indicated (see Pediatric TB Evaluation & Treatment guideline).
• Asthma: bronchodilators, inhaled steroids.
• CF: confirm that negative on newborn screen.

Maintenance Management
• Follow-up with pulmonology clinic Q3-6mo and pediatrician or health aide Q2-3mo to check symptoms and medications.
• Annual PFTs if >5 years.
• Annual flu vaccine.
• Pneumococcal vaccine.
• Treat dental caries.
• Optimize environmental health with woodstove safety, vents, irritant reduction, smoking cessation, etc.
• Airway clearance: P&PD/chest PT, consider acapella.
• Consider allergy testing.
• Ensure good transition to family medicine/adult pulmonology at age 18 with CT prior to transition.

Acute Management

• Persistent infiltrate >6 weeks
or
• Chronic wet cough ≥4 weeks
or
• Fever, increased wet cough, dyspnea, etc.

Treat with Augmentin 45 mg/kg/dose BID or cefdinir 14 mg/kg/dose daily for at least 2 weeks.
Chest physiotherapy TID.
Recheck after two weeks.
Consider systemic steroids if significant bronchospasm.

Improved

Stop antibiotics.
Follow-up in 2-3 months.
Restart antibiotics for additional 2 week course if cough recurs.

Not improved

Continue antibiotics and recheck after two more weeks.

Improved

Stop antibiotics.
Follow-up in 2 months.
Restart antibiotics if cough recurs.

Not improved

Consult pulmonologist.
Do sputum culture (via RT in Bethel) and adjust antibiotics per sensitivities.
Consider repeat CXR.

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Approved by MSEC 12/13/17.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guidelines/Treatment Protocols

Latent Tuberculosis Infection (≥14 years)

If patient has symptoms concerning for TB, see **Active TB Guideline**. Do not send patient to Bethel unless patient is medically unstable.

Patient ≥14 years with:
New positive TB skin test
OR
New positive Quantiferon-Gold

At least one symptom? Yes → Patient in village? Yes → DO NOT PUT A PATIENT WHO MAY HAVE ACTIVE TB ON A PLANE UNLESS ACUTELY ILL; this could expose the other passengers. Perform evaluation in village, as able.

Patient in village? No → At least one symptom? No → Thirty minute appointment in Bethel for:
- Physical exam
- Chest X-ray
- Labs: LFTs, HIV, and hCG if female

Abnormal chest X-ray? Yes →
- Patient must wear surgical mask AND stay in a negative pressure room, if available, until MTB-RIF result is negative.
- Collect sputum samples using the "AMB NEW +PPD/LTBI" Power Plan. This generates orders for all three sputum samples, including the 2nd and 3rd day samples.
- First collect one sputum sample (3 mL in a urine cup) for MTB-RIF and send to lab.
- Next collect three sputum samples for AFB smear and TB culture (5 mL in a conical tube) at least eight hours apart.
- Obtain labwork: LFTs, HIV, and hCG if female.
- Chest X-ray if available.

Abnormal chest X-ray? No → LTBI
- Call PHN with plan of care.
- Begin treatment per box, using LTBI Power Plan.
- Print LTBI prescriptions and fax to PHN.
- Follow-up sputum smears and cultures, if indicated.

MTB-RIF positive? No → LTBI

MTB-RIF positive? Yes → Active TB. Contact TB officer and see **Active TB Guideline**.

Sputum smear or culture positive? Yes → Active TB. Contact TB officer and see **Active TB Guideline**.

Sputum smear or culture positive? Not positive or not indicated → LTBI. Continue full course of treatment per Public Health.

Symptoms
- Cough for more than three weeks
- Weight loss
- Fever
- Night sweats
- Hemoptysis

What is a positive TB skin test?
- At least 10 mm of induration OR >5 mm of induration for patients who are high risk for TB (See box).
- Must be read 48-72 hours after placement to be a true negative.
- If positive, the induration can remain up to seven days and can be read until then.

High Risk for Tuberculosis
1. Immunosuppressed, HIV positive, prednisone >15 mg/day for >1 month, TNF-α blocker.
2. Suspicious chest X-ray.
3. Household contact with active TB.

LTBI Treatments: Choose one option

1. 3HP: INH 15 mg/kg PO weekly, rounding to nearest 50 mg (max dose 900 mg) x 12 weeks
AND
Rifapentine PO weekly x12 weeks.
Rifapentine Dosing:
  - 32.1-49.9 kg: 750 mg
  - >50 kg: 900 mg (max dose)

DOT optional.

2. Rifampin 10 mg/kg PO daily (max dose 600 mg) x4 months.

3. INH 5 mg/kg PO daily (max dose 300 mg) x9 months.

If on INH, give pyridoxine (vitamin B6) 50 mg PO daily to prevent neuropathy.

If patient is pregnant or HIV infected, contact TB Officer.

Abbreviations
3HP: three month regimen of INH and rifapentine
AFB: acid-fast bacilli
DOT: directly-observed therapy
hCG: pregnancy test
HIV: human immunodeficiency virus
INH: isoniazid
LFT: liver function tests
LTBI: latent tuberculosis infection
MTB-RIF: mycobacterium tuberculosis nucleic acid amplification test that also tests for rifampin resistance
PHN: Public Health Nursing
TB: tuberculosis
TNF-α: tumor necrosis factor alpha

TB Officers
- Philip Johnson MD
- Elizabeth Roll MD
- Robert Tyree MD
- Mien Chyi MD (pediatrician)
- Kimberly Fisher DO (pediatrician)
- Cynthia Mondesir MD (pediatrician)

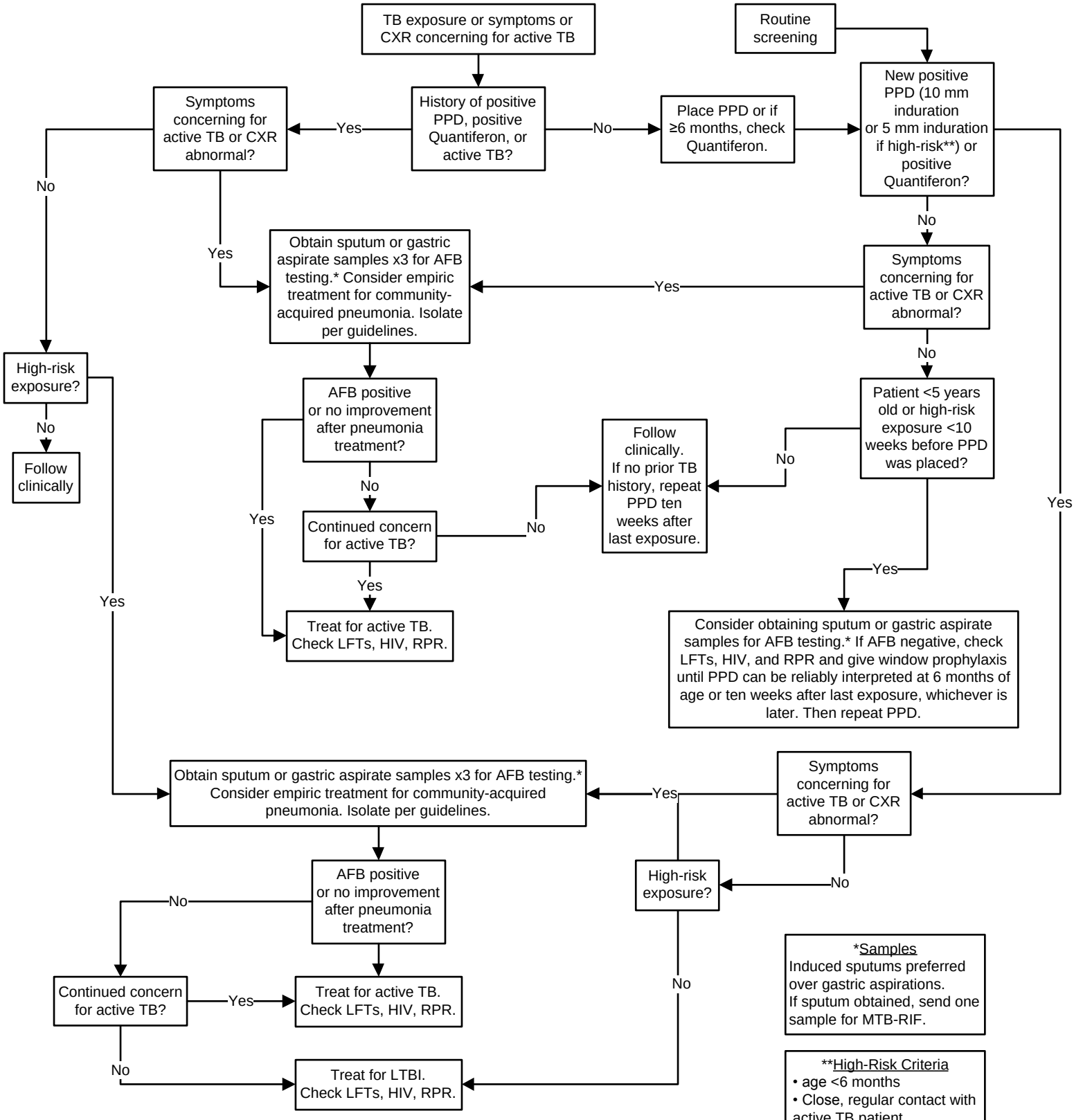
Contact Information
- Public Health Nursing (PHN):
  Phone: 543-2110
  Fax: 543-0435
  All directly-observed therapy (DOT) will be arranged by PHN.
- Curry Center TB Warm Line: (877) 390-6682
- State Epidemiology: (907) 269-8000
- State Epidemiology Lab: (907) 334-2100

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 4/14/20.
If comments about this guideline, please contact Robert_Tyree@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Tuberculosis Evaluation and Treatment



*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

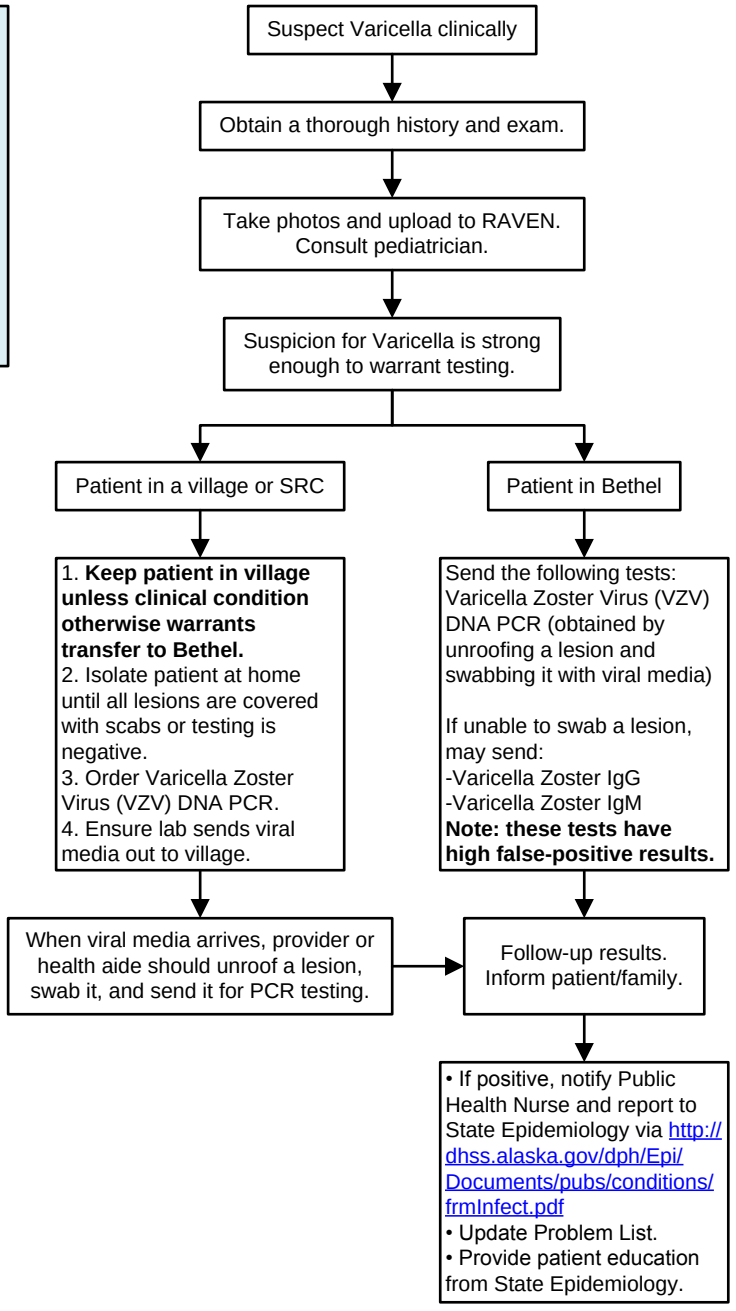
Abbreviations: TB- tuberculosis; CXR- chest X-ray; PPD- purified protein derivative; AFB- acid-fast bacilli; HIV- human immunodeficiency virus; LFTs- liver function tests

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Evaluation of Possible Varicella



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/frmInfect.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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

H pylori/Dyspepsia

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

Testing/Treatment strategy → Dyspepsia

Dyspepsia → Weight loss/ fecal blood?

Weight loss/ fecal blood?
- Yes → If adult: Perform Upper Endoscopy. If child: Consult pediatrics.
- No → Empiric Treatment with H2 Blocker or PPI

Empiric Treatment with H2 Blocker or PPI → Improvement?

Improvement?
- No → If adult: Perform Upper Endoscopy. If child: Consult pediatrics.
- Yes → Follow up for recurrence of clinical symptoms

If adult: Perform Upper Endoscopy. If child: Consult pediatrics. → H. Pylori identified by histology and/or CLO test from EGD **AND** Endoscopy reveals the following:
- Duodenal ulcers
- Gastric ulcer
- MALT lymphoma
- Intestinal metaplasia

H. Pylori identified by histology and/or CLO test from EGD **AND** Endoscopy reveals the following: → Treat for H. Pylori with antibiotics

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.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Type 2 Diabetes

Diagnostic Criteria
Hemoglobin A1c ≥ 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 Powernote 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, CCUA 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 conseling 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.

FPG ≥ 126 or RPG ≥ 200 or A1c ≥ 6.5 and < 9

Yes

MNT and physical activity/SMBG
AND
Start Metformin[1] unless contraindicated

Goals reached at 2-3 months?†

No

Place referral order in RAVEN, "Refer to Diabetes Program Internal"
AND
MNT and physical activity/SMBG
AND
Metformin[1]
AND
Second oral agent or insulin:[2,3]
-Thiazolidinedione (pioglitazone)
-sulfonylurea (glimepiride, glyburide, glipizide)
-DPP-4 inhibitor (saxagliptin)
-GLP-1 receptor agonist (liraglutide)
-insulin[3]

Yes

Monitor using SMBG targets and lab monitoring and continue medications

Goals reached at 2-3 months?†‡

Yes

No

Place referral order in RAVEN "Refer to Diabetes Program Internal"
AND
Add 3rd agent (see antihyperglycemic therapy chart)

Goals reached at 2-3 months?‡

No

Place referral order in RAVEN "Refer to Diabetes Program Internal"
AND
Titrate over 2-3 months; reinforce MNT, activity, and medication adherence.

Goals reached at 2-3 months?‡

A1c ≥ 9

Yes

Place referral order in RAVEN, "Refer to Diabetes Program Internal"
AND
MNT and physical activity/SMBG
AND
Metformin[1]
AND
Second oral agent or insulin:[2,3]
-Thiazolidinedione (pioglitazone)
-sulfonylurea (glimepiride, glyburide, glipizide)
-DPP-4 inhibitor (saxagliptin)
-GLP-1 receptor agonist (liraglutide)
-insulin[3]

Goals reached at 2-3 months?†‡

No

Place referral order in RAVEN "Refer to Diabetes Program Internal"
AND
Add 3rd agent (see antihyperglycemic therapy chart)

Goals reached at 2-3 months?‡

No

Place referral order in RAVEN "Refer to Diabetes Program Internal"
AND
Titrate over 2-3 months; reinforce MNT, activity, and medication adherence.

Goals reached at 2-3 months?‡

RPG > 300 [4 †] or A1c > 10 [4 †]

Yes

MNT and physical activity/SMBG
AND
Metformin[1]
AND
Basal insulin (glargine)
AND
Bolus insulin[3]
OR
GLP-1 receptor agonist (liraglutide)

Goals reached at 2-3 months?[4†]

No

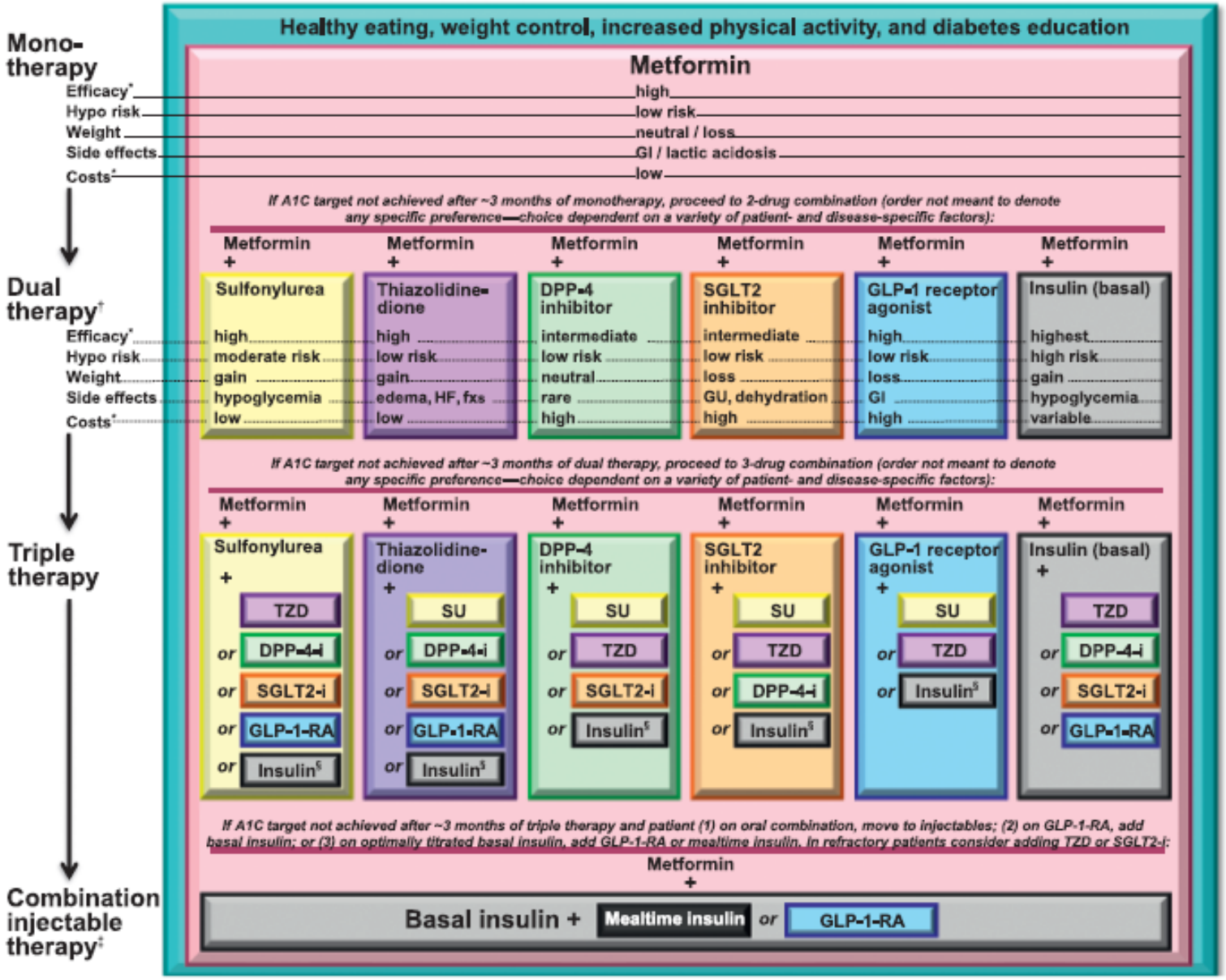
Place referral order in RAVEN
"Refer to Diabetes Program Internal"
AND
Consult ANMC or endocrinologist.

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 3/2015.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Type 2 Diabetes



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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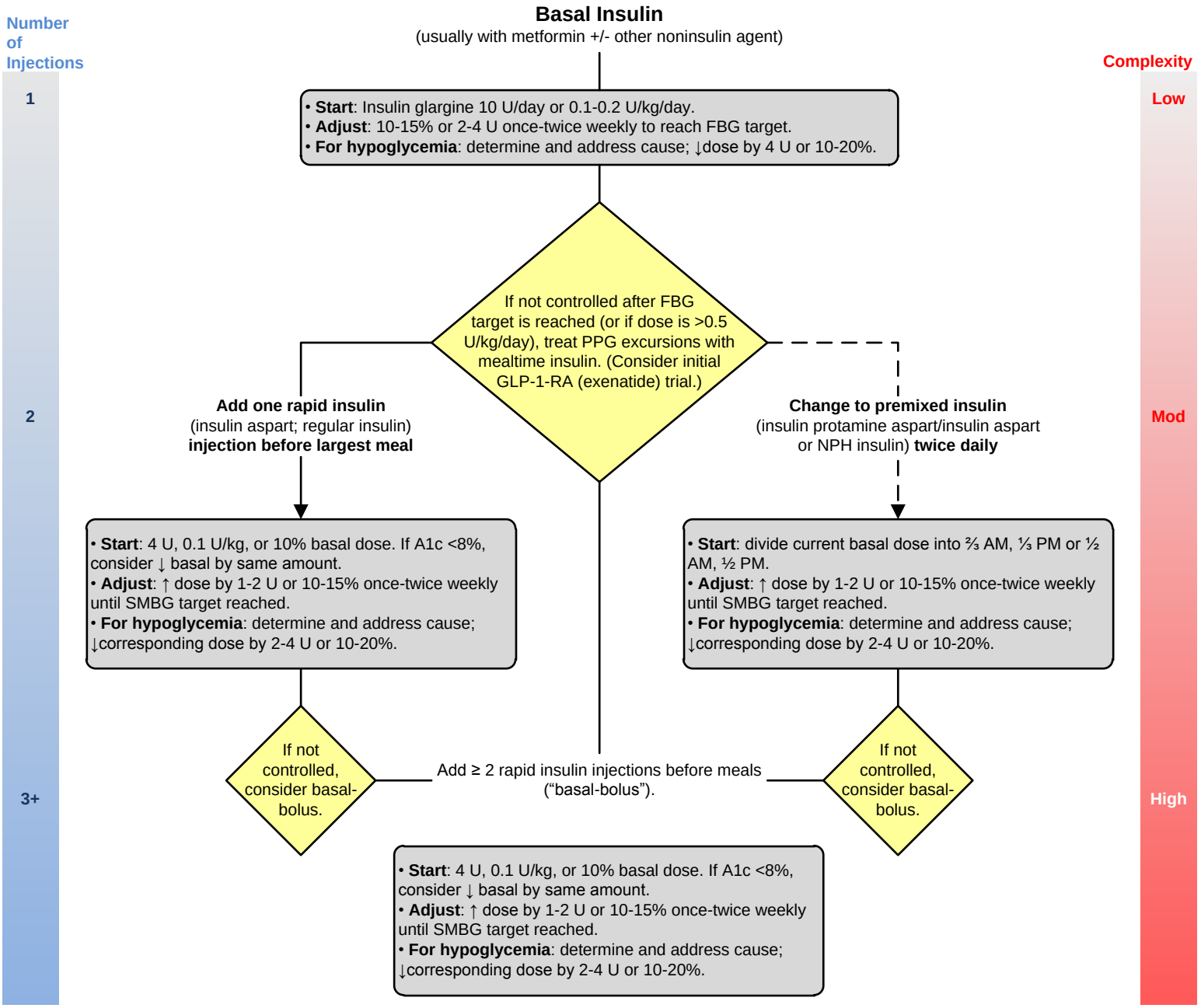
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Type 2 Diabetes



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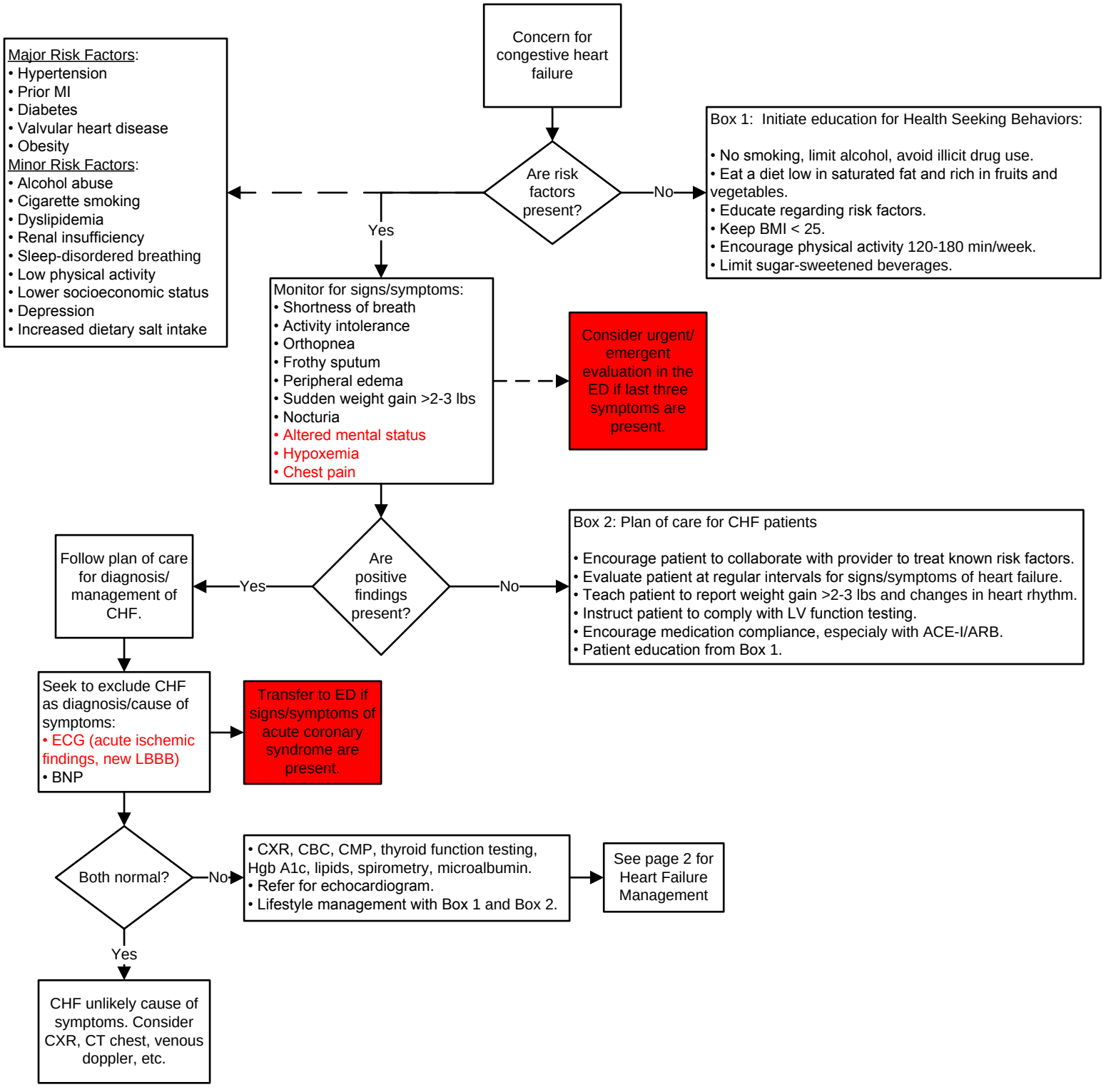
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Congestive Heart Failure, page 1



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Approved by MSEC 7/12/17.
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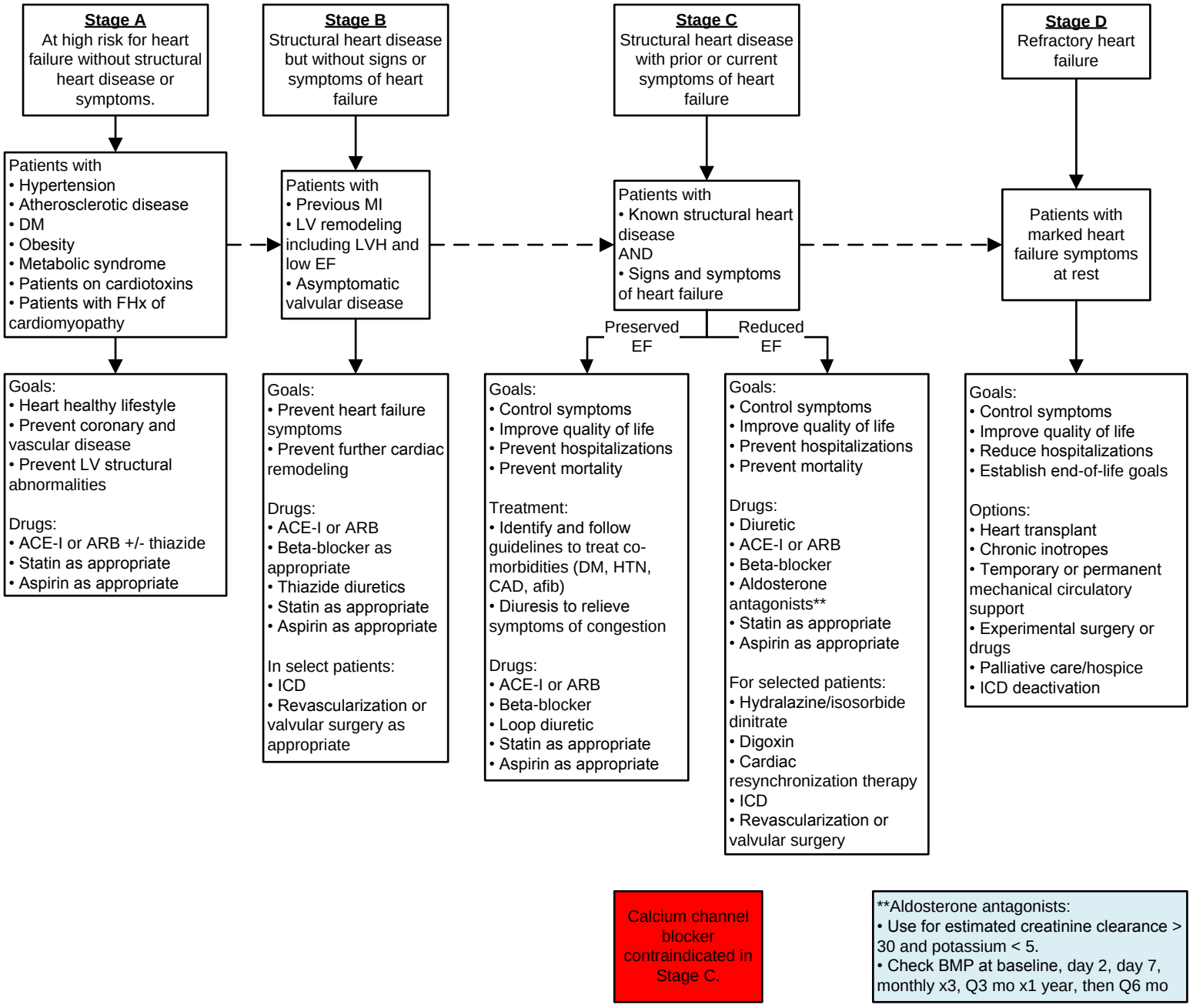
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Congestive Heart Failure, page 2



Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Hypertension

Age ≥ 18 years, non-pregnant, with hypertension.

Implement lifestyle modifications.
Set BP goal.
Initiate anti-hypertensive medication based on algorithm.

Initial monitoring:
- EKG
- Hgb A1c
- TSH
- CMP
- Pregnancy test
- Microalbumin

DM or CKD?

Yes → All ages with DM present but no CKD → BP goal < 140/90

Yes → All ages and races with CKD present ± DM → BP goal < 140/90

No → Age ≥ 60 years → BP goal < 150/90

No → Age < 60 years → BP goal < 140/90

Consider compelling indications.

Ethnicity?

Nonblack → Start thiazide, ACE-I, ARB, or CCB, alone or in combination.

Black → Start thiazide or CCB, alone or in combination.

Start ACE-I or ARB, alone or in combination with another class.

Check BMP or CMP in two weeks except for CCB.

At BP goal?

Yes → Continue treatment and monitoring.
Check CMP, A1c, and lipids every year.
Check microalbumin every 1-3 years.

No → Reinforce lifestyle modifications and adherence.
Titrate medications to maximum doses or consider adding another medication (ACE-I, ARB, CCB, thiazide).

At BP goal?

Yes → Continue treatment and monitoring.
Check CMP, A1c, and lipids every year.
Check microalbumin every 1-3 years.

No → Reinforce lifestyle modifications and adherence.
Add a medication class (eg beta blocker, aldosterone antagonist, etc.) and titrate to maximum doses.

At BP goal?

Yes → Continue treatment and monitoring.
Check CMP, A1c, and lipids every year.
Check microalbumin every 1-3 years.

No → Reinforce lifestyle modifications and adherence.
Titrate medications to maximum doses, add another medication, and/or refer to hypertension specialist.

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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Approved by MSEC 6/2017.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Myocardial Infarction – Post-Discharge Care

Discharge from hospital with a diagnosis of MI

Risk stratification and Plan developed by cardiologist at discharge

Appt made at Regional Area Hospital at discharge or w/in 1-2 wks of discharge

Risk Stratification:

A. Invasive (catheterization) workup
  1. Full revascularization done
    a. medical therapy (per algorithm)
    b. stress test at 6 weeks post MI
  2. Without full revascularization
    a. medical therapy
    b. stress test at 4-6 week post MI
B. Noninvasive workup
  1. High risk patient
    a. medical therapy
    b. scheduled invasive workup and revascularization
  2. Low risk patient
    a. medical therapy
    b. repeat stress test 4-6 week post MI
C. No stratification
    a. medical therapy
    b. consider invasive workup for refractory symptoms

Congestive Heart Failure? — Yes → Modify Guideline based on **Heart Failure Regimen**

No

Did patient undergo stent placement? — Yes → ASA ec 325mg PO daily and Clopidogrel 75mg PO daily x 1 month then ASA alone. *Stented patients may need 3-6 months of combined treatment.

No

ASA Allergy? — Yes → Clopidogrel 75mg PO daily

No → ASA ec 81-325mg PO daily

Beta Blocker	ACE I - Ramipril 2.5-10mg po qd or Lisinopril 5-40mg po qd AHA Step 2 Diet Smoking cessation counseling	Maximize dosage until patient has side effects and to maintain SBP> 90 and HR > 55
Atenolol 25-100mg po qd or Metoprolol 25-200mg po qd		

LDL > 70 — Yes → Add:
1. Atorvastatin 10-80mg po qd
OR
2. Simvastatin 20-80mg po qd

No

HDL < 40? — Yes → Recommend exercise and Consider Niacin as tolerated

No

Hypertension? — Yes → Treat for goal of BP <130/85, <120/80 if LVD

No

6 weeks follow-up with Primary Care Provider
1. Baseline EKG
2. Discuss Code Status
3. Chemistry Panel (if on ACE or diuretic)
4. LFT's (if on a statin)

3 month follow-up with Primary Care Provider
1. Lipids
2. LFT's (if on a statin)

6 month follow-up with Primary Care Provider
1. LFT's (if on a statin)

Follow-up Cardiology Clinic Regional Area Hospital or ANMC within 6 months

Heart Failure Regimen (LVEF < 45 %)

Week 2 - Uptitrate ACE-I, same β-Blocker dose
(Toprol XL 12.5 mg PO daily or Coreg 3.125 mg PO bid)
Week 3 - Uptitrate ACE-I
(Ramipril 5-10 mg PO daily or Lisinopril 20-40 mg PO daily), same β-Blocker, recheck BMP
Week 4 - Uptitrate β-Blocker
(Toprol XL 25 mg PO daily or Coreg 6.25 mg PO bid), recheck BMP
Week 6 - Uptitrate β-Blocker
(Toprol XL 50 mg PO daily or Coreg 12.5 mg PO bid), recheck BMP
Week 8 - Uptitrate β-Blocker
(Toprol XL 100 mg PO daily or Coreg 25 mg PO bid), recheck BMP
Week 10 -Uptitrate β-Blocker
(Toprol XL 150-200 mg PO daily or for large people Coreg 50mg PO bid), recheck BMP
Week 12 - Add spironolactone 12.5-25mg PO daily if K<4 & creat<1.5

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 Ellen_Hodges@ykhc.org.

Coming soon...

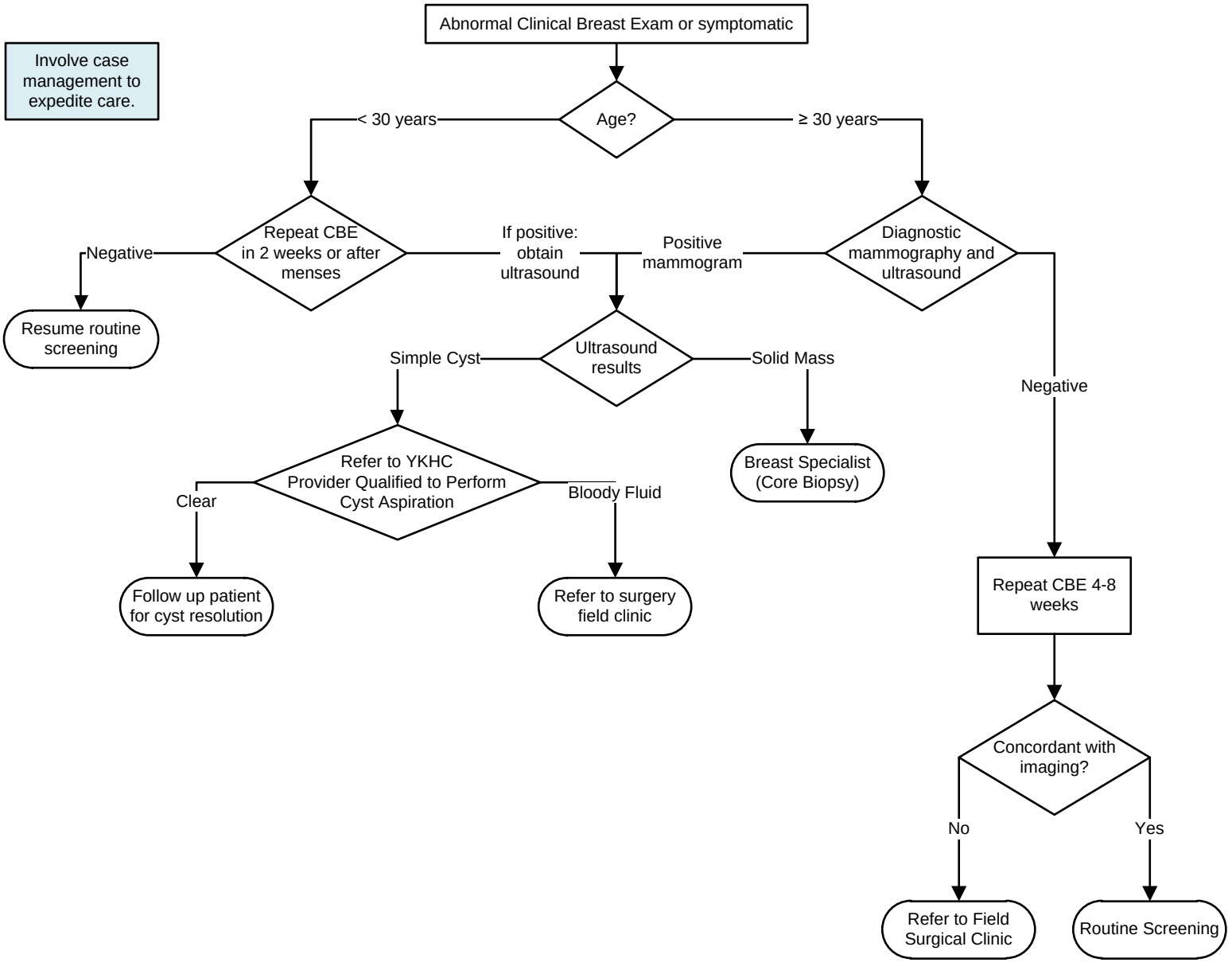
Coming soon...

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Breast Cancer Screening

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



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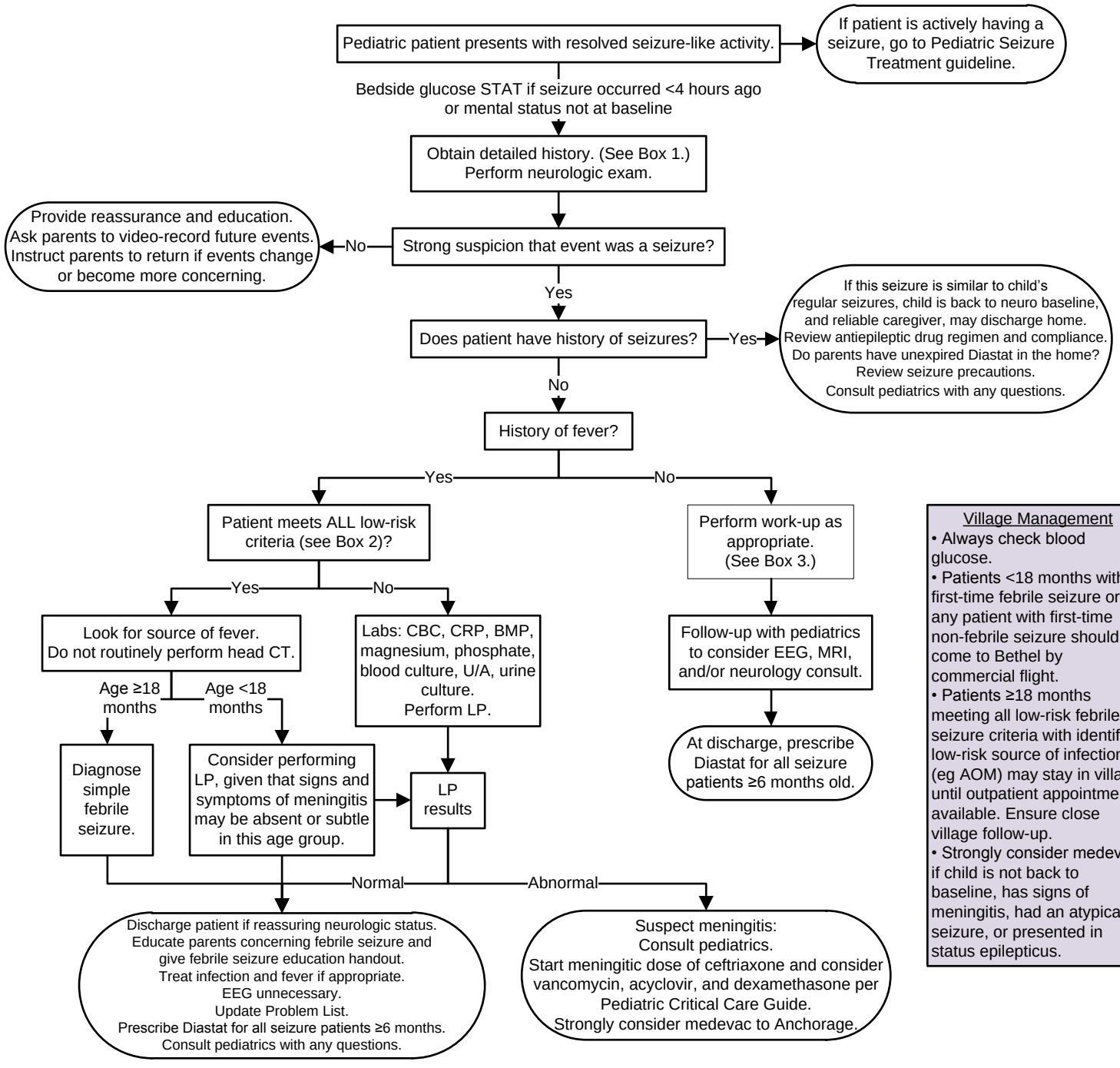
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Post-Seizure Evaluation



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 proceeded 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 meningeal 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:

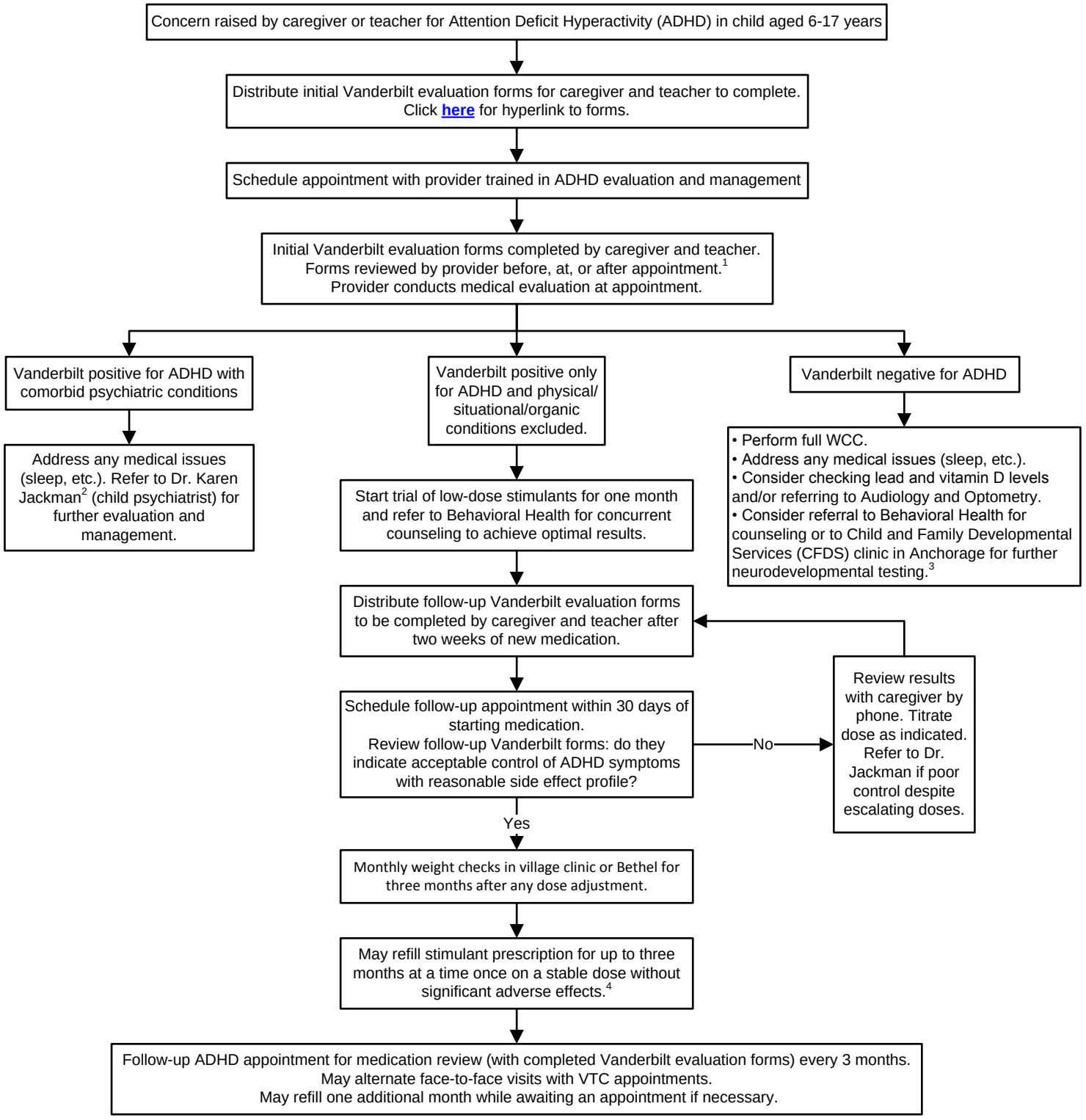
- Obtain head CT prior to LP if concerning neurologic status, persistently altered mental status, history of trauma, or focal neurological findings.

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 Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Attention Deficit Hyperactivity Disorder in Children



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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Lead Evaluation

RAVEN Orders
- Capillary lead level: order "Lead, State (Capillary)"
- Venous lead level: order "Lead Level, Venous Send Out"

Perform capillary lead screening:
- on all children at 1st and 2nd year well check
- if child <5 years with no prior screening or has unexplained developmental delays
- consider in anemia evaluation

Note: This guideline is for asymptomatic patients only. If patient is symptomatic, please consult pediatrics.

Capillary level 0.01 - 5 mcg/dL
- Educate family on lead sources.
- Retest annually with capillary test until 6 years old.

Capillary level 5-15 mcg/dL
- Educate family on lead sources.
- Check venous level in 1-3 months.

Capillary level 15-44 mcg/dL
- Educate family on lead sources.
- Bring patient to Bethel or SRC and check venous level within 1 month.

Capillary level ≥45 mcg/dL
- Educate family on lead sources.
- Bring patient to Bethel or SRC and check venous level within 24-48 hours.
- Begin management for venous level >45 while awaiting venous result.

Venous level <5 mcg/dL but detectable
Retest annually with capillary test until 6 years old.

Venous level 5-14 mcg/dL
- Contact State Environmental Public Health at (907) 269-8000.
- Check venous level in all children <5 years in same home.
- Repeat venous level in 3 months.

Is level decreasing?

- Yes → Check venous level Q3mo until level is <5, then annually until age 6 years.
- No → Consider abdominal X-ray to rule-out ingestion.
- Offer family YKHC OEH consult.**

Venous level 15-44 mcg/dL
- Contact State Environmental Public Health at (907) 269-8000.
- Check venous level in all children <5 years in same home.
- Repeat venous level in 1 month.

Is level decreasing?

- Yes → Check venous level Q3mo until level is <5, then annually until age 6 years.
- No → **Consult pediatrics** to consider inpatient management at YKHC or elsewhere for chelation. Contact Poison Control for advice.

Venous level ≥45 mcg/dL
- Contact State Environmental Public Health at (907) 269-8000.
- Check venous level in all children <5 years in same home.
- Obtain abdominal X-ray to rule-out ingestion.
- Refer family to YKHC OEH for home survey.**

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.

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 Kimberly_Fisher@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Amoxicillin Allergy Trials

Background

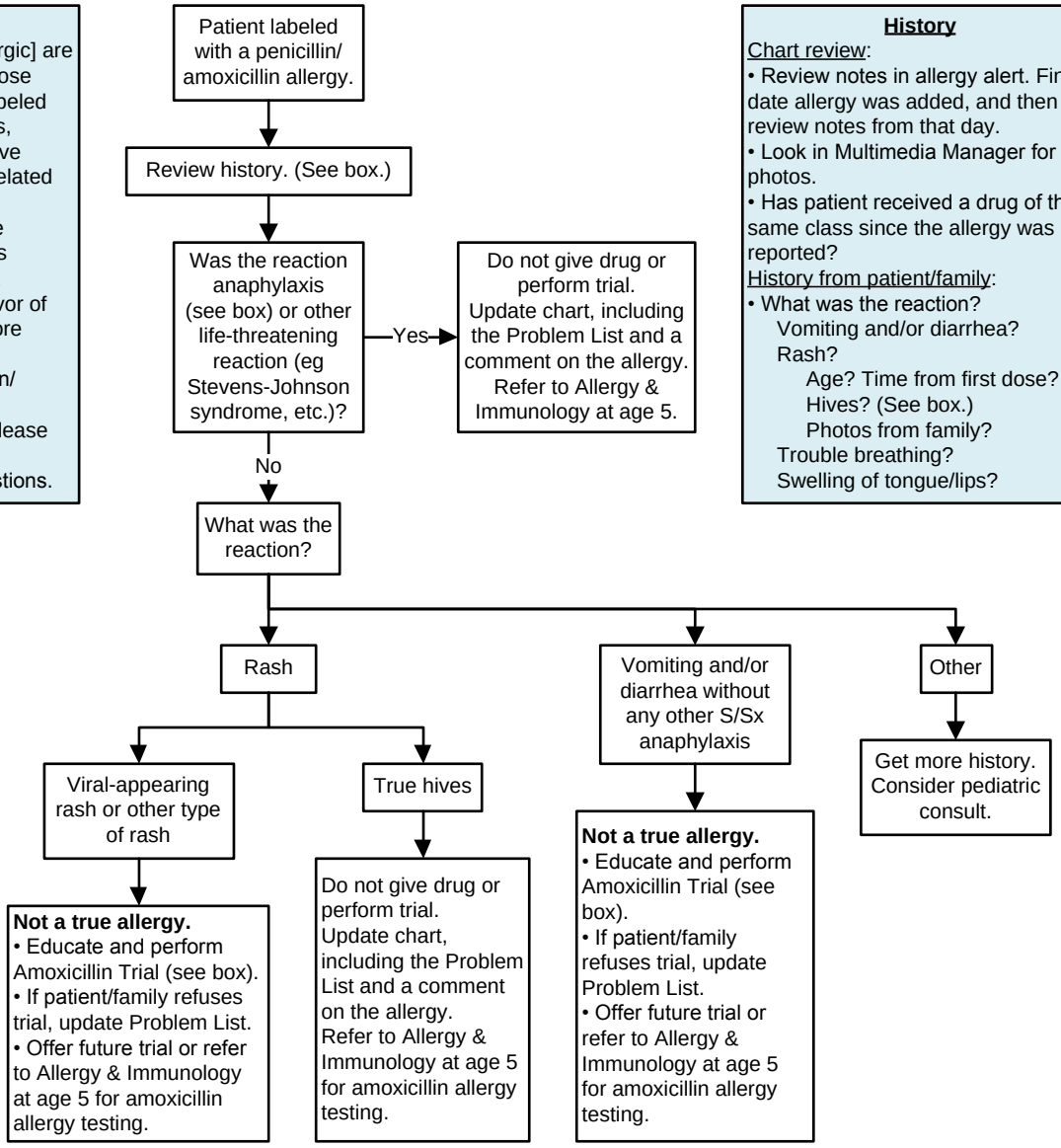
• Only 4-9% of those...labeled [penicillin-allergic] are currently allergic. It is important to identify those who are not allergic, because children mislabeled as penicillin-allergic have more medical visits, receive more antibiotic prescriptions, and have longer hospitalizations with more antibiotic-related 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.



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 Procedure[2]

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."

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.

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

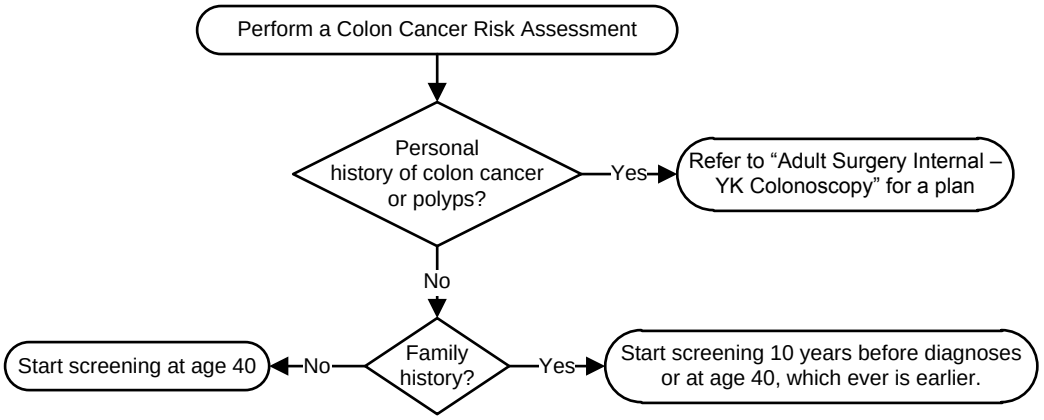
Outpatient Protocols/Reference

Yukon-Kuskokwim HEALTH CORPORATION

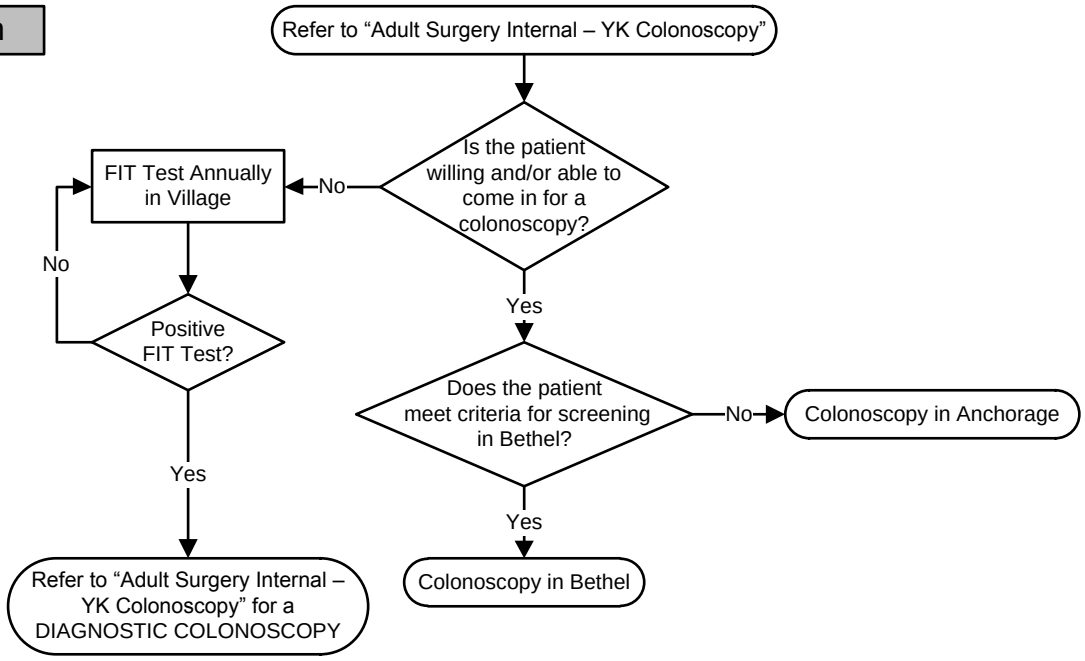
Treatment Protocol

Colon Cancer Screening

When to Screen



How to Screen



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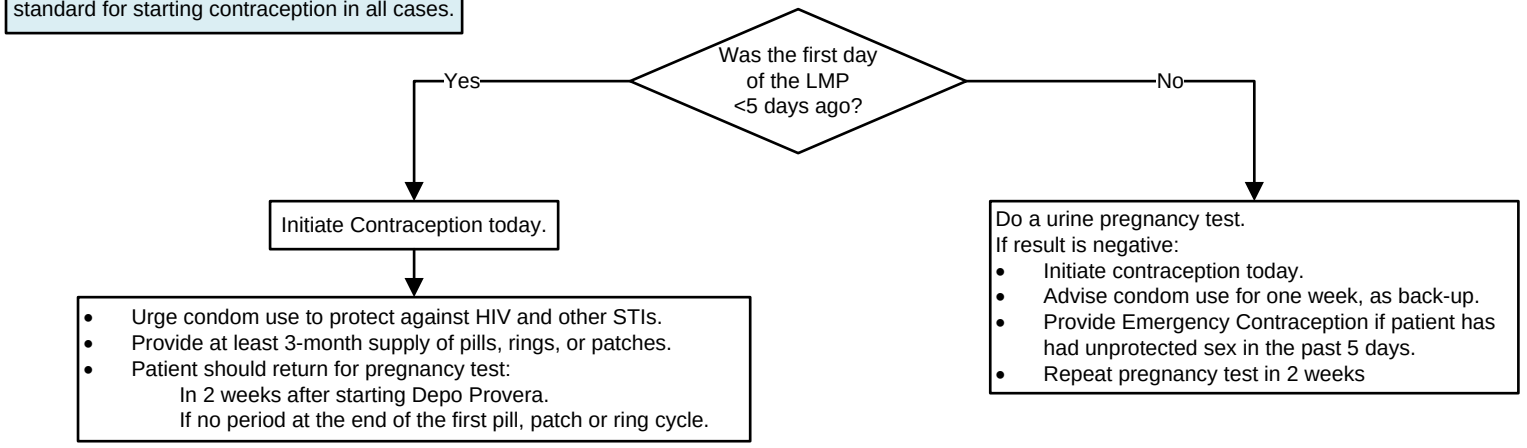
Approved by MSEC 12/14/16.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Contraception – Quick Start

This guideline is designed to establish a standard for starting contraception in all cases.



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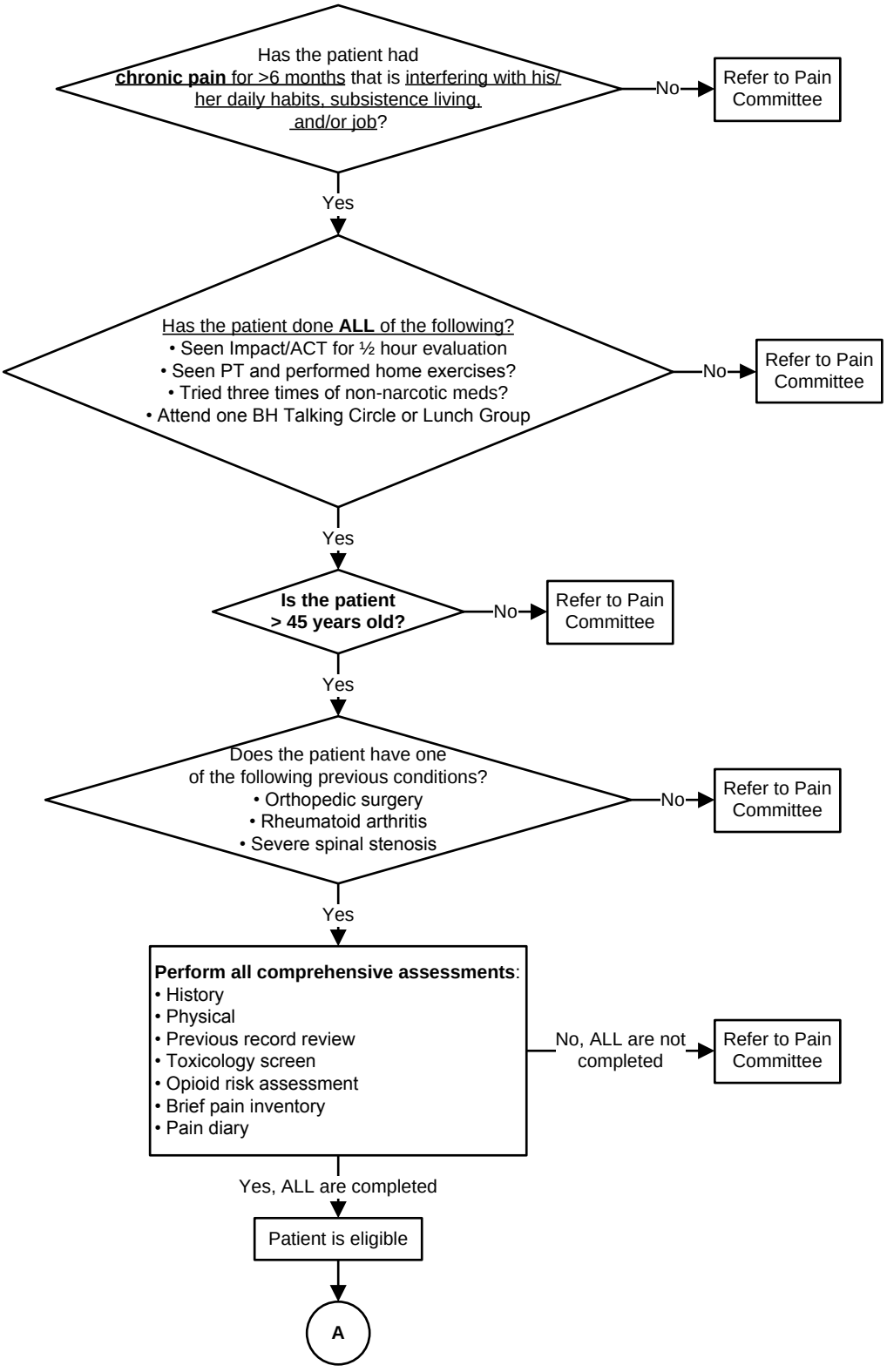
Approved by MSEC 3/25/13.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Chronic Pain: Narcotic Treatment Eligibility



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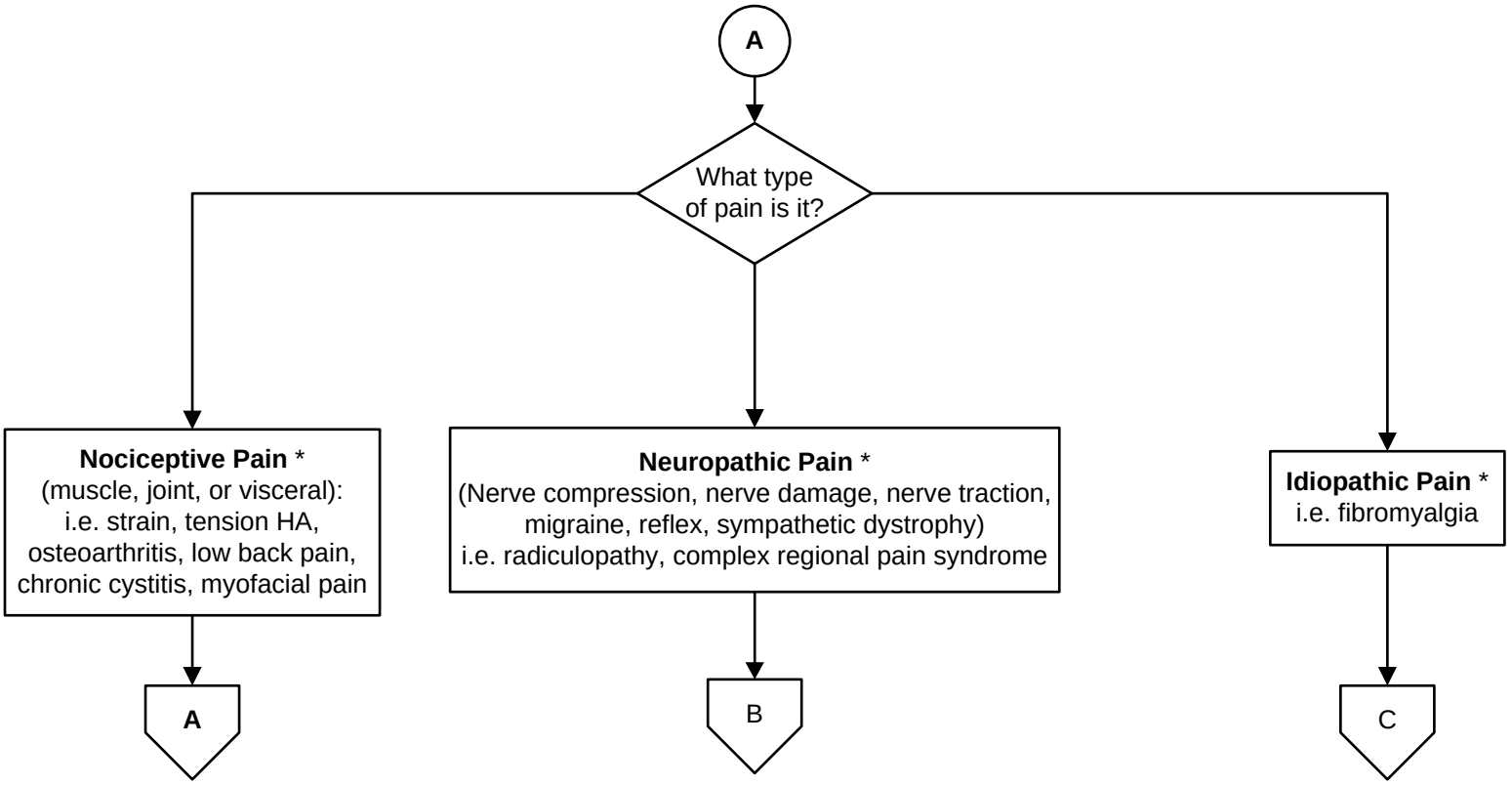
Treatment Protocol

Chronic Pain: Non-Narcotic Treatment



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

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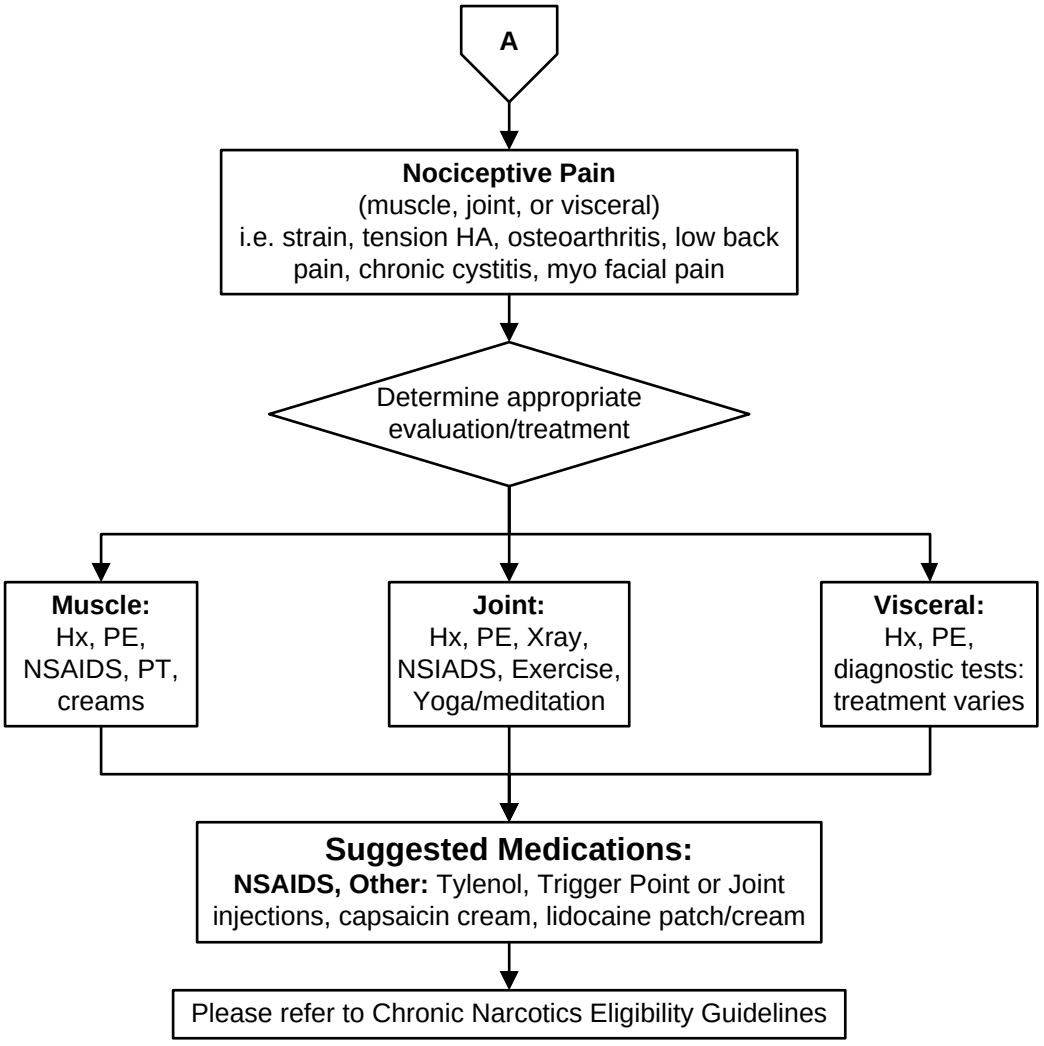

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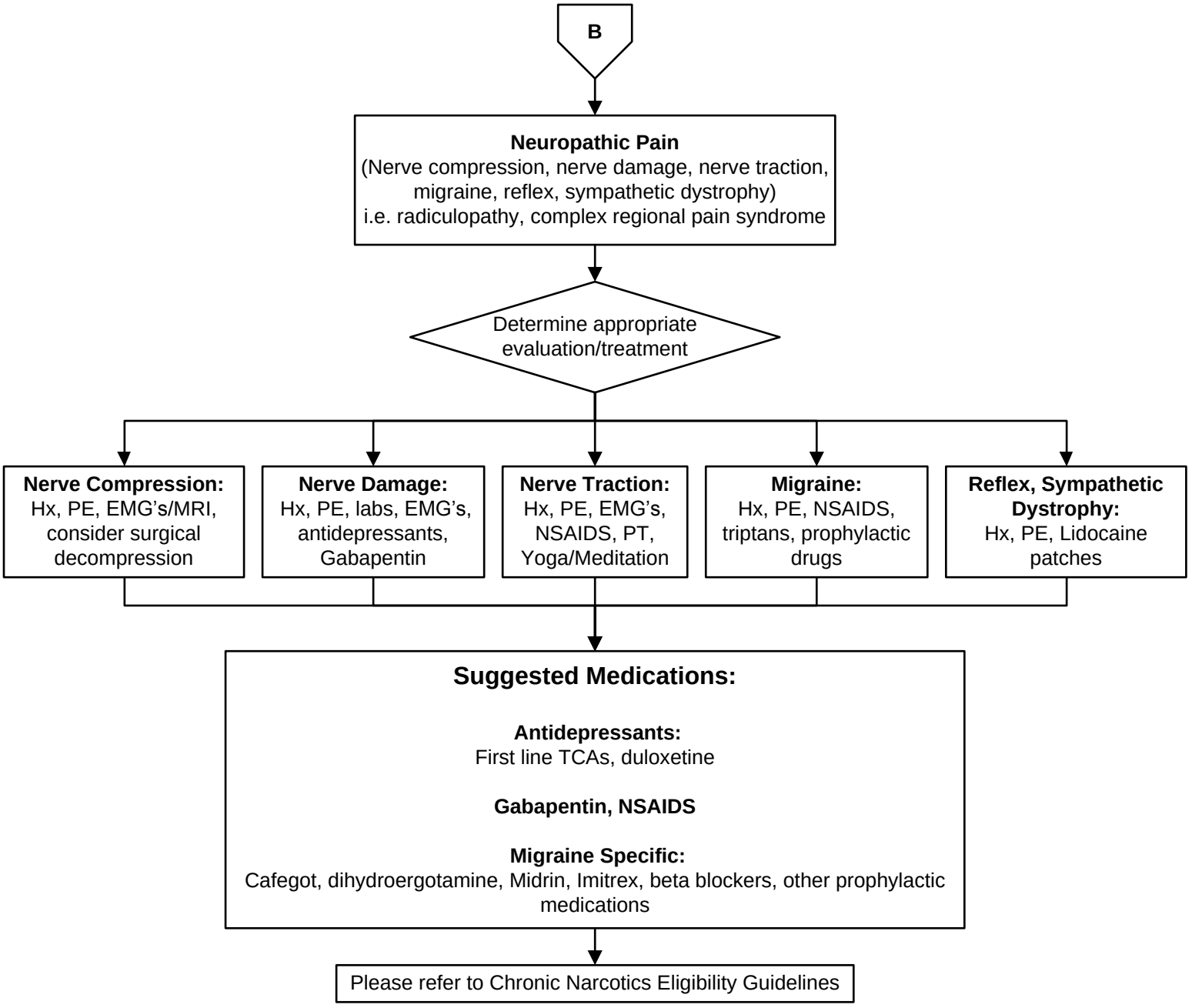

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Treatment Protocol

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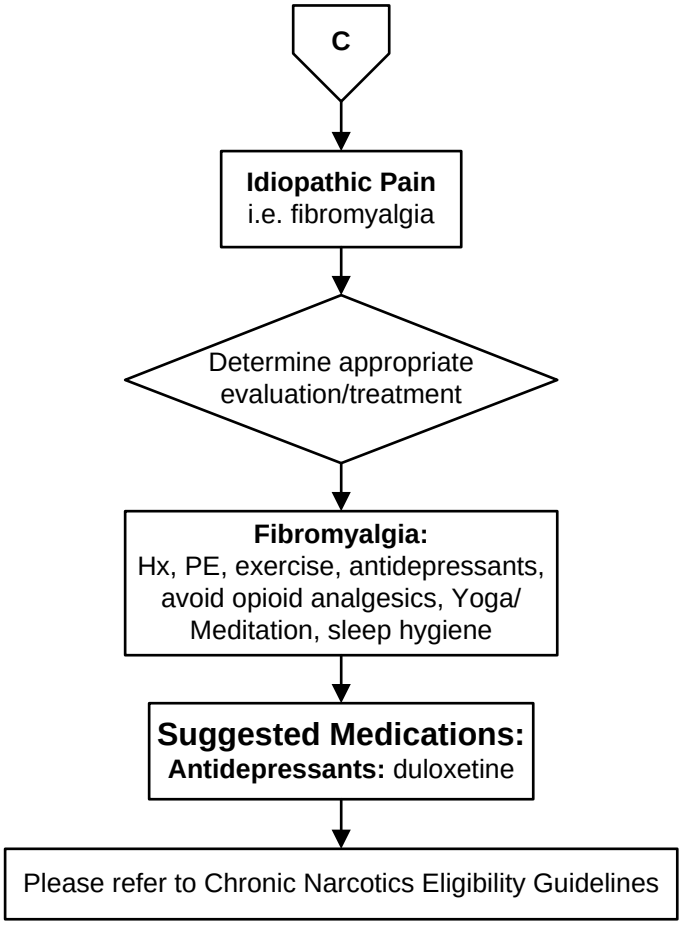

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Treatment Protocol

Case Manager/Pharmacy Re-assessment and Follow-up of Chronic Pain

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.

Were goals achieved?

Yes → Reassess q 6 months, review agreement, revisit goals, taper as indicated.

No, 1st time → Reevaluate diagnosis, goals, Tx.

No, 2nd time → Reevaluate diagnosis, goals, Tx.

No, 3rd time → **Assess goal failure:**
1. Opioid non-responsive pain
2. Incorrect diagnosis
3. Psychiatric illness
4. Unrealistic goal-setting
5. Secondary gain (e.g. litigation)
6. Diversion and/or abuse
7. Consider Behavioral Health Consult

Behaviors of concern (see box)?

Yes →
- Refer to committee for review via pain committee order
- Consider stopping outpatient opiates while under review
- Monitor and use Compliance Tools (eg pill audits, UDS)
- Review at pain review.
- Evaluate strikes; if three, cancel contract.
- Reassess with patient's request letter.
- If significant efforts of treatment, consider restarting agreement.

No, 1st time → Consider Toxicology Screen → Change treatment/ agreement.

No, 2nd time → Consider Toxicology Screen → Change treatment/ agreement.

No, 3rd time → Consider Toxicology Screen → Consider referral to pain specialist, behavioral health, addiction therapy. → Refer to Pain Committee via order

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.

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 1/21/15.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

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Treatment Protocol

Pre-Anesthesia Management

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

1. Patients who are not to be scheduled at YKHC:
    a. Patients with BMI > 45 (up to BMI of 45 is acceptable if no significant unstable CV, respiratory, or endocrine pathology is present).
    b. Obstructive sleep apnea perioperative risk score of 5 or 6.
2. 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.
3. DVT/VTE prevention methods will be implemented using SCIP Mechanical Prophylaxis Protocol unless ocntraindicated or otherwise documented in orders by physician.

Diabetes Management

1. 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.
2. Discontinue insulin after midnight for AM surgeries.
3. Take half usual dose of insulin the morning of surgery if surgery is scheduled to start at noon or later.
4. Take full dose of Lantus insulin up to time of surgery.
5. Consume apple or cranberry juice up to two hours prior to arrival to surgery if insulin was given.
6. For insulin pumps, set to basal rate and continue throughout pre-operative period.
7. 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.		