Yukon-Kuskokwim HEALTH CORPORATION

CLINICAL RESOURCE BOOK

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CLINICAL GUIDELINES

Arranged by system, and then alphabetical.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Consultations

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.

SRC providers do not have the luxury of paging the provider STAT to bedside. However, the SBAR case presentation and the documentation requirements listed on this protocol still apply.

Provider needs consultation about patient at YKHC

Consulting provider located in Bethel?

No

Page the appropriate provider:
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.

Be prepared with the following information:
1. State your name, title, and department (e.g. ED physician, outpatient NP, second year resident, etc.)
2. State purpose of call (e.g. quick question, possible admission, management advice, etc.)
3. Provide name, 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.Use SBAR (see box).
5. Ask a **specific question** about management.
6. If patient is to be transferred, state 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. Be prepared with the following information:
1. State your name, title, and department (e.g. ED physician, outpatient NP, second year resident, etc.)
2. State purpose of call, including if you want a formal consult (e.g. quick question, possible admission, management advice, etc.)
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.Use SBAR (see box).
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.

Note: consultants are encouraged to document their recommendations in a separate note or as an addendum to the provider note. If done, this note does not obviate the initial provider's documentation requirements.

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.

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 to the team 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 further documentation and ongoing management.

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 assess this patient in person…"
"I would like to transfer this patient via medevac to ANMC…"

Note about Disagreements

If there is a disagreement regarding the management of a patient and a consensus cannot be reached, a third opinion shall be obtained. This can either be from another YKHC provider or from a provider from another facility. At any time, the Clinical Director on call can also be notified to assist.

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 8/3/21.
Click here to see the supplemental resources for this guideline.
If comments about this protocol, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Guideline Guideline

Miscellaneous

- Goal is guidelines are to be reviewed every two years with revisions and updates as appropriate. Updates may happen sooner as needed.
- If a guideline has not been reviewed in the past five years, it will be decommissioned until it is revised.
- Deadlines for feedback will generally be a period of two weeks.
- At any time, anyone may send feedback on a guideline. This feedback will be saved for the next guideline revision.
- Minor changes including (but not limited to) correction of typos, changes in test names, small additions, updating hyperlinks, and changes in contact information may be made and published without committee approval.

Topic identified for new guideline
OR
Guideline due for an update/revision

↓

A member of the clinical staff is identified to be the point person for the new guideline/revision.

↓

The point person works on the guideline in partnership with a member of the Clinical Guideline Committee.

↓

When a draft has been completed, the pdf is sent to a small group of interested parties.

↓

Feedback is gathered, and revisions are made.

↓

The next draft is sent to the entire medical staff as well as other clinical groups (including pharmacy, RT, and nursing), as appropriate.

↓

Feedback is gathered, and revisions are made.

↓

Final draft is approved by Clinical Guidelines Committee.

↓

Date of approval is recorded on the guideline, which is published on the wiki and in the Clinical Resource Book.

↓

Final draft is emailed to medical staff and interested parties with description of new/ updated guidelines.

Wiki Supplements

- The long-term goal for the guidelines is for every guideline to have a corresponding supplement page on the wiki.
- The guideline will be information needed to take care of a patient in the moment.
- The wiki supplement will include references, resources, historical background, past versions, and other information.

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Yukon-Kuskokwim HEALTH CORPORATION

Critical Care & Emergency Medicine Guidelines

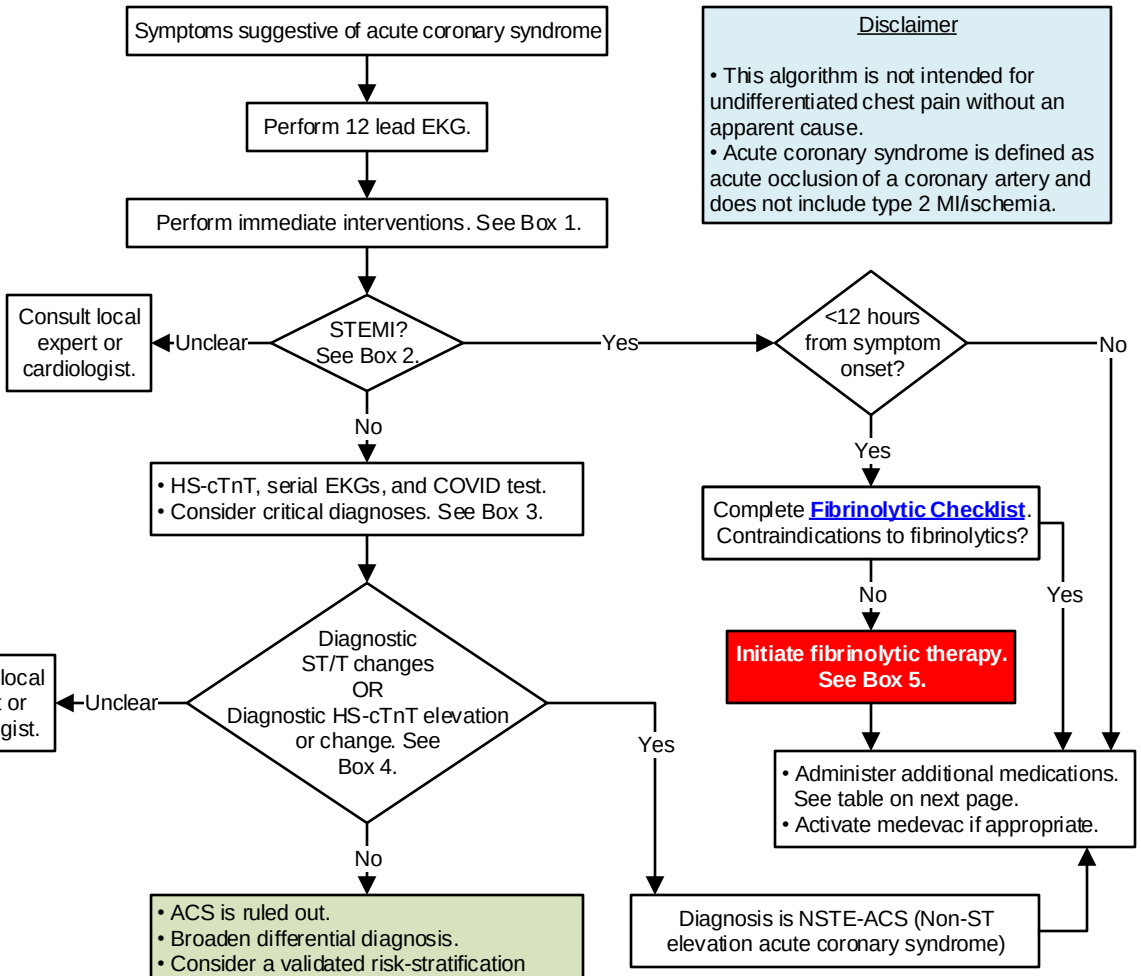
Critical Care & Emergency Medicine

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management



Box 1: Immediate Interventions

- Supplemental oxygen *prn* to maintain SpO_2 90-96%.
- Aspirin 325 mg PO (chewed).
- Nitroglycerin 0.4 mg sublingual *prn* pain (up to three times as BP permits) unless contraindicated. Contraindications: recent phosphodiesterase use, sBP <90, right ventricular infarct (consider when evidence of inferior wall ischemia).

NOTE: pain relief with nitroglycerin (or lack thereof) is not diagnostic of cardiac ischemia.

Disclaimer

- This algorithm is not intended for undifferentiated chest pain without an apparent cause.
- Acute coronary syndrome is defined as acute occlusion of a coronary artery and does not include type 2 MI/ischemia.

Consulting Cardiology

- For all STEMI patients, consult PAMC Cardiology by calling the PAMC ED at (907) 212-3433 and asking for the cardiologist on call. For beneficiary patients, ANMC Cardiology should be made aware of the transfer on a non-urgent basis.
- For NSTE-ACS patients, consult ANMC Cardiology for beneficiary patients and PAMC Cardiology for non-beneficiary patients.

Box 2: STEMI Criteria

Symptoms consistent with acute myocardial ischemia AND (A or B):

New ST-elevation at the J-point in two contiguous leads with the cut-point:
- ≥ 1 mm in all leads other than V2-V3
- V2-V3:
  - ≥ 2 mm in men ≥ 40 years old
  - ≥ 2.5 mm in men < 40 years old
  - ≥ 1.5 mm in women

Box 3: Critical Differential Diagnosis

- Aortic dissection
- Tension pneumothorax
- Pulmonary embolism
- Perforated peptic ulcer

Box 4: HS-cTnT Evaluation for Acute Cardiac Injury

The lowest reported value is "<6 ng/L," which equates to "undetectable."

FDA-approved normal values (99th percentiles in healthy subjects) are:
- Men: <22
- Women: <14
- Change in one hour (Δ1h) : <3

Cutoffs are arbitrary and do not correspond to any evidence-based positive-predictive value for ACS.

Repeat measurements rely on a rate of change; therefore, repeat measurements should be drawn at exactly one hour (or the chosen interval) after the initial.

This information is from data available February 2020. Please see wiki page for further information.

Box 5: Fibrinolytic Therapy (Tenecteplase)

Goal: administer ≤ 30 minutes from arrival.
Rapidly complete the fibrinolytic checklist and consent.

Dosing:
- <60 kg: tenecteplase 30 mg IV bolus
- ≥60 kg to <70 kg: tenecteplase 35 mg IV bolus
- ≥70 kg to <80 kg: tenecteplase 40 mg IV bolus
- ≥80 kg to <90 kg: tenecteplase 45 mg IV bolus
- ≥90 kg: tenecteplase 50 mg IV bolus

Administer concurrent aspirin, clopidogrel, and anticoagulant therapy. See tables 1 and 2.

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 12/2/20.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Megan_Young@ykhc.org and Andrew_Swartz@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management

Nitroglycerin (NTG)
• Contraindications: PDE-inhibitor use, cardiogenic shock, RV infarct, sBP<90, marked tachycardia or bradycardia.
• Sublingual dosing: 0.4 mg SL Q5 minutes up to three doses
• IV dosing: start at 10-20 mcg/min, titrate Q3-4 minutes to typical range 60-100 mcg/min

Beta-Blockers
• No evidence of benefit from routine immediate beta-blocker.
• Indicated for HTN and/or ongoing ischemia refractory to NTG.
• Contraindications: cardiogenic shock, RV infarct, symptomatic asthma.
• Cautions: risk for cardiogenic shock (bradycardia, HR>110, sBP<120, age>70, increased time since STEMI onset), inferior MI, controlled asthma.

Emergency Department Medication Summary

	STEMI <12 hours	STEMI >12 hours	NSTE-ACS
Oxygen	Maintain SpO_2 90-96%	Maintain SpO_2 90-96%	Maintain SpO_2 90-96%
Nitrates (*prn* pain, HTN)	Sublingual or drip	Sublingual or drip	Sublingual or drip
Fibrinolytic	Tenecteplase See page 1, Box 5	Not indicated	Not indicated
Antiplatelet agents: Aspirin	325 mg PO (chewed)	325 mg PO (chewed)	325 mg PO (chewed)
Antiplatelet agents: $P2Y_{12}$ receptor blocker	Clopidogrel Age ≤75: 300 mg PO Age >75: 75 mg PO	Clopidogrel 600 mg PO	Consult cardiology.
Antiplatelet agents: Glycoprotein IIb/IIIa inhibitor	Eptifibatide (Integrilin) Per cardiologist. Typically given after PCI.	Eptifibatide (Integrilin) Per cardiologist. Typically given after PCI.	Eptifibatide (Integrilin) Per cardiologist. Typically given after PCI.
Anticoagulation	Enoxaparin (see table for dose)	Enoxaparin (see table for dose)	Enoxaparin (see table for dose)
Beta-blocker	Metoprolol 5 mg IV *prn* Q5 minutes (max 15 mg)	Metoprolol 5 mg IV *prn* Q5 minutes (max 15 mg)	Metoprolol 5 mg IV *prn* Q5 minutes (max 15 mg)
Morphine	No longer routinely given; associated with increased mortality. Reserve for significant pain refractory to NTG and beta-blocker.		

At time of Dx unless contraindicated

Enoxaparin Dosing

	Age <75 years and STEMI	Age ≥75 years and STEMI	Any age and NSTE-ACS
Creatinine clearance ≥30 mL/min	30 mg IV + (1 mg/kg SC now then Q12h) Max dose 100 mg	0.75 mg/kg SC Q12h Max dose 75 mg	1 mg/kg SC now then Q12h
Creatinine clearance <30 mL/min	30 mg IV + (1 mg/kg SC now then Q24h) Max dose 100 mg	1 mg/kg SC Q24h Max dose 100 mg	1 mg/kg SC now then Q24h

NOTE: Enoxaparin and unfractionated heparin are NOT dialyzable; ESRD/dialysis patients should receive fondaparinux, which is not on the YKHC formulary. Discuss with cardiologist if appropriate.

Inpatient Medication Summary

NOTE: The following table is meant to be a basic reference as a starting point. Please consult Cardiology for full recommendations in all ACS patients.

ACE-inhibitor	Lisinopril 2.5 – 5 mg PO daily Give unless contraindicated. Typically started prior to hospital discharge. Unclear if ED initiation is beneficial.
Statin	Atorvastatin 80 mg PO daily Give unless contraindicated. Typically started prior to hospital discharge. Unclear if ED initiation is beneficial.
Beta-blocker	Metoprolol XL 25-50 mg PO Q12-24h *prn* Give unless contraindicated. Typically started prior to hospital discharge.
Clopidogrel	75 mg PO daily
Aspirin	81 mg PO daily
Enoxaparin	Dose above. Consult Cardiology for duration.

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 12/2/20.
Click here to see the supplemental resources for this guideline.
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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management

Fibrinolytic Checklist

INDICATIONS *(initial yes or no)*		
YES	**NO**	
		Presentation consistent with acute coronary syndrome (coronary artery occlusion)
		AND at least one of the following: • 1 mm J-point elevation in two contiguous leads (other than V_2-V_3) • In leads V2-V3 Men ≥ 40 years: ≥ 2 mm J-point elevation Men <40: ≥ 2.5 mm J-point elevation Women: ≥ 1.5 mm J-point elevation
ABSOLUTE CONTRAINDICATIONS *(initial yes or no)*		
YES	**NO**	
		History of any intracranial hemorrhage
		History of prior ischemic stroke, significant closed head injury or facial trauma, or intracranial or spinal surgery in the previous three months
		Presence of a cerebral vascular malformation
		Presence of a primary or metastatic intracranial malignancy
		Symptoms or signs suggestive of an aortic dissection
		Any bleeding diathesis
		Any active bleeding that is severe or has high potential for life-threatening blood loss; this does not include menstrual bleeding
		sBP > 180 and/or dBP >110 at presentation in patient at low risk of cardiac death (age < 55, no prior MI, and Killip class I).
		Terminal illness, defined as end of life care or documented/expressed patient wish to abstain from high risk or invasive procedures
RELATIVE CONTRAINDICATIONS *(initial yes or no) – If any of below are present, used shared decision making with patient.*		
YES	**NO**	
		Age 65-74 (ICH relative risk 3.12 [2.54-3.83]); Age ≥ 75 years (ICH relative risk 5.40 [4.40-6.63])
		History of chronic severe poorly controlled HTN
		sBP > 180 and/or dBP >110 at presentation in patient at high risk of cardiac death (age ≥ 55, Hx prior MI, or Killip class ≥ II).
		History of ischemic stroke more than three months ago
		Dementia OR any known intracranial disease that is not an absolute contraindication
		Traumatic or prolonged (>10 minutes) cardiopulmonary resuscitation
		Major surgery in the previous three weeks
		Internal bleeding in the previous 2-4 weeks
		Active peptic ulcer
		Non-compressible vascular punctures
		Pregnancy
		Current warfarin therapy (the risk of bleeding increases as the INR increases)

This checklist is advisory for clinical decision-making and may not be all-inclusive. Risks and benefits will need to be assessed individually.

Physician signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management

PROCEDURE CONSENT

I hereby authorize _____ and such assistants as he/she may designate, to perform the following operation or procedure:

TECHNICAL DESCRIPTION	Intravenous thrombolytic therapy for acute STEMI (ST-elevation myocardial infarction).
LAY DESCRIPTION	Give clot-dissolving medication through an IV to dissolve the clot which is causing a heart attack.

_____ has discussed with me the information briefly summarized below:

BENEFITS	• When PCI is not available within two hours, thrombolytic medication is the "standard of care" for achieving coronary reperfusion within 12 hours of acute STEMI onset. • When administered within 6 hours of pain onset, about 1 in 40 persons will have their life saved. • When administered between 6-12 hours after pain onset, about 1 in 60 persons will have their life saved. • Decreased risk of developing heart failure. • A STEMI patient who receives thrombolytic medication is about 3-5 times more likely to have their life saved than to have brain bleeding (see below).
RISKS *(some, but not all)*	• About 1 in 100 persons will experience non-life-threatening bleeding. • About 1 in 100-250 persons will experience bleeding into the brain which usually results in either death or significant disability.
RISKS OF NOT HAVING THE PROCEDURE	• Higher risk of death. • Higher risk of developing heart failure.
ALTERNATIVE TREATMENTS	None are available at this facility.

Patient signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Physician signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

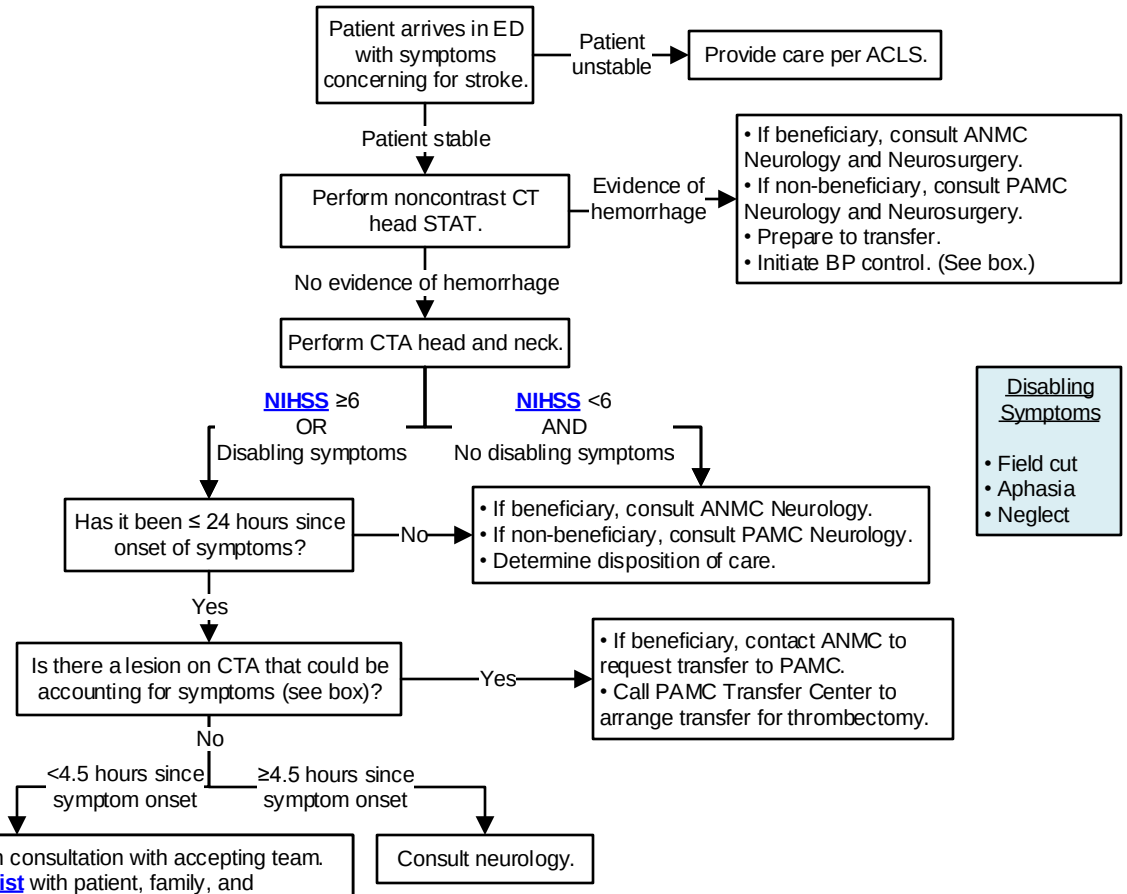
Cerebrovascular Accident

Immediate Management (in village, en route, or upon arrival)

- Consider ASA 81 mg (PO or PR) if no headache or vomiting.
- Blood glucose.
- EKG, if possible.
- Place two large-bore IVs.
- Notify radiology tech and radiologist.
- Have appropriate staff on standby.
- Have tenecteplase ready.
- Transport directly to CT, if stable.
- COVID screen/BINAX.
- Calculate **NIHSS**.

General Care for Strokes

- Supportive care for airway, breathing, circulation
- VS including weight
- Telemetry
- Appropriate neurologic status documentation and repeat checks
- Glucose goal 140-180; repeat glucose checks if NPO.
- Maintain normothermia (eg acetaminophen PR as needed)
- NPO until swallow study
- BP control (see box)



Disabling Symptoms

- Field cut
- Aphasia
- Neglect

BP Control

BP Goals
- Acute ischemic stroke or TIA: <220/120 mm Hg
- Acute ischemic stroke s/p thrombolytics: <185/110 mm Hg
- Intracerebral hemorrhage: <180/90 mm Hg
- Subarachnoid hemorrhage: <140-160/90 mm Hg

Patient eligible for reperfusion therapy except if BP>185/110; lower BP by below regimen, then proceed:
- Nicardipine 5 mg/hour IV, titrate up by 2.5 mg/hour every 5 to 15 minutes, max 15 mg/hour; adjust to maintain proper BP (nicardipine is preferred)

OR
- Labetalol 10 to 20 mg IV over 1 to 2 minutes, may repeat x1

OR
- Hydralazine or enalaprilat may also be considered.

If blood pressure is not maintained at or below 185/110 mmHg, do **not** administer tenecteplase.

During and after reperfusion therapy to maintain BP <180/105:
- Labetalol 10 mg IV then continuous infusion 2 to 8 mg/min
- Nicardipine 5 mg/hour IV, titrate to desired effect by 2.5 mg/hour every 5 to 15 minutes, max 15 mg/hour

Phone Numbers

- Providence Transfer Center: (907) 212-7363, press 1 for STEMI/stroke
- ANMC Transfer Center: (907) 729-BEDS or Tiger Connect the Transfer Center
- ANMC Neurology: Tiger Connect

Thrombolytics at YKHC

- Tenecteplase is the only thrombolytic stocked in the ED at YKHC. Dose for CVA is 0.25 mg/kg IV once (max 25 mg).
- Alteplase must come from the pharmacy, if desired.

If giving thrombolytics

- Goal time from door to drug: <60 minutes.
- Attempt to place all lines and tubes (ETT, Foley, NG) prior to administering drug.
- Monitor until transfer: frequent VS and neuro checks.
- BP control per box.
- If any neurologic worsening, repeat head CT.

Criteria for Possible Thrombectomy

- <24h since last well
- NIHSS ≥ 6 or disabling symptoms such as aphasia, neglect, field cut
- Good previous function
- **ASPECTS** >6
- Lesion in carotid, M1, M2, basilar, P1, or A1 arteries

Note about Disposition

- Most patients with stroke should be transferred, either for intervention at PAMC or for work-up and therapy.
- Consider NOT transferring:
  - Patients who decline transfer.
  - Patients with resolved symptoms. (Calculate **Canadian TIA** or **ABCD²** score).
- **You may need to advocate for your patients to receive the standard of care.**

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 2/1/22. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact EPeek_Ehlinger@ykhc.org or Jeremy_Wood@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Cerebrovascular Accident

Thrombolytic Checklist

INDICATIONS *(initial yes or no)*		
YES	**NO**	
		Less than 4.5 hours since onset of symptoms or last known normal.
		NIHSS greater than 5 (or less than 5 with disabling symptoms).
		Symptoms are NOT rapidly improving.
		Symptoms are NOT due to untreated hypoglycemia (BG<50).

ABSOLUTE CONTRAINDICATIONS *(initial yes or no)*		
YES	**NO**	
		CT evidence of hemorrhage OR extensive area of hypodensity (irreversible injury).
		GI/GU bleed in the last 21 days.
		Severe, uncontrolled, hypertension >185/110.
		Current intracranial neoplasm.
		Active internal bleeding or known aortic dissection.
		Any bleeding diathesis.
		Presentation suggestive of SAH or endocarditis (not septic emboli).
		History of intracranial hemorrhage.
		Anticoagulation (warfarin or DOAC in the last 48 hours or therapeutic-dosed heparinoids).
		Any of the following in the last three months: ischemic stroke, intracranial surgery, intraspinal surgery, or serious head trauma.

RELATIVE CONTRAINDICATIONS *(initial yes or no) – If any of the following relative contraindications are present, consider expert consultation prior to giving thrombinolytic and/or consider these with consent and shared decision-making.*		
YES	**NO**	
		History of GI or GU hemorrhage.
		Arterial puncture in a non-compressible site in the last seven days.
		Seizure at onset with postictal neurologic impairment.
		Major surgery in the last 14 days.
		Pregnancy.
		Onset 3-4.5 hours with NIHSS >25 (higher bleeding risk) or age >80 (higher bleeding risk).
		Untreated AVM or aneurysm.
		Systemic malignancy.
		History of arterial dissections.
		Blood glucose greater than 400 (associated with worse outcomes).

This checklist is advisory for clinical decision-making and may not be all-inclusive. Risks and benefits will need to be assessed individually.

Physician signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Consent

Cerebrovascular Accident

PROCEDURE CONSENT	
I hereby authorize _____ and such assistants as he/she may designate, to perform the following operation or procedure:	
TECHNICAL DESCRIPTION	Intravenous thrombolytic therapy for acute ischemic stroke.
LAY DESCRIPTION	Give clot-dissolving medication through an IV to dissolve the clot which is causing a stroke.
_____ has discussed with me the information briefly summarized below:	
BENEFITS	• Thrombolytic medication is a treatment that may restore blood flow to the brain. • In studies, if these drugs were given less than three hours after the stroke started, 33% of patients given thrombolytic drugs had a good outcome. In patients who did not get thrombolytic drugs, 23% got better. Ten people would have to get the drug to help one person have a better outcome. • If these drugs were given between three and four and a half hours after the stroke started, 35% of patients given thrombolytic drugs had a good outcome, and 30% of patients who didn't get the drug also got better. Twenty people would have to get the drug to help one person have a better outcome. • Patients who receive this drug within three hours of the stroke starting have a 10% increase in chance of disability-free survival. • Patients who receive this drug between three and four and a half hours from the stroke starting have a 5% increase in chance of disability-free survival.
RISKS *(some, but not all)*	• In a large study of stroke patients, 6.8% of them had bleeding in their brain after receiving thrombolytic drugs for stroke, compared to 1.3% of those stroke patients who did not receive the drug. If we give this drug 18 times, it will probably make one person have bleeding in their brain. • Among all people given this drug, 2% die from a hemorrhage.
RISKS OF NOT HAVING THE PROCEDURE	• Higher risk of developing permanent, disabling stroke symptoms.
ALTERNATIVE TREATMENTS	No other treatments available at this facility. Only monitoring symptoms and rehabilitation.

Patient signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Physician signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Expected Death Protocol

Patient with serious illness with expected death.

Preparation, as appropriate

- Complete **Medical Orders for the Scope of Treatment (MOST)** order form. Review with patient and family regularly.
- Review DNR/DNI status at least once an admission.
- Place DNR/DNI order in RAVEN.
- Update code status on RAVEN banner by going to Ad hoc → Code Status form.
- Remember, all decisions regarding end-of-life care may be modified at any time per patient and family wishes.
- Complete **Expected Home Death** form and send to AST/BPD.
- Communicate with village health aides.
- Place on RAVEN banner by going to AdHoc → Patient Registries and check off "Expected Home Death."
- When discharging home, ensure all support is in place, including family care plan, comfort meds (consider sublingual morphine and lorazepam), incontinence supplies, etc.

When death appears imminent

- Communicate with nurses or health aides and family. Speaker phone and/or Vidyo are very helpful for village communication.
- Be supportive of staff, especially health aides. Be as present as possible. Caring for a dying patient is very stressful, especially for newer health aides; good communication can decrease some of the burden they feel.

After a home death has occurred

- Medical providers can pronounce death remotely after speaking with a qualified representative, which includes health aides. Representative must ascertain that there is no heart beat or spontaneous breathing.
- Send **Expected Home Death** form to the State Medical Examiner and AST/BPD. If this form was not completed prior to death but would have been indicated, it is acceptable to fill it out after death. This will expedite things for the family.
- Contact CHAP on call to request support for health aides.

Notifications

- State Medical Examiner (888 332-3273) only if manner of death was unrelated to terminal illness and/or suspicious in any way.
- Life Alaska (888 543-3287) if patient was <85 years. Obtain reference number.
- AST(800 478-9112) if in village or BPD (543-3781). Even if an Expected Home Death form has been completed, law enforcement requests a phone call at the time of death.

Documentation

- Death Note in RAVEN should be an Alert Note that includes: time of death, ME case number (if applicable), Life Alaska reference number, circumstances of death, and documentation that all required notifications have occurred. May use Free Text template and autotext "..death" for a fillable note.
- Forward death note to Chief of Staff and designated Medical Records representative.
- Complete the **Death Certificate Worksheet** for deaths that are not ME cases.
- If death occurred in the hospital, complete **Notification of Death** form.

Helpful Phone Numbers

- Alaska State Medical Examiner: 888 332-3273
- Life Alaska: 907 562-5433
- Alaska State Troopers (AST): 800 478-9112
- Bethel Police Department (BPD): 543-3781

Helpful Forms

Note: Copies of the death packet are also kept on the inpatient unit.

- **Medical Orders for the Scope of Treatment (MOST)**
- **Expected Home Death**
- **Death Certificate Worksheet**
- **Notification of Death**

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 9/2/20.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Unexpected Death Protocol

Unexpected patient death occurs.

Fetal/neonatal death: Was there a heartbeat at birth?

No

≥ 21 weeks AND > 500 grams?

No

Diagnosis is miscarriage. Follow appropriate protocols and document in mother's chart.

Yes

Diagnosis is fetal demise. Document in mother's chart. No birth certificate is generated.

- Notify Medical Examiner.
- Notify State Epidemiology.
- Examine fetus. Document exam in mother's chart using Free Text template and autotext "..fetaldemise" for a fillable note.
- Examine placenta, membranes, and cord. Send for pathology.
- See **Stillbirth Procedure** for guidance on additional testing.
- If family requests autopsy or genetic testing, please contact Lab Director during business hours.

Yes

Diagnosis is neonatal death. RAVEN chart made. Birth certificate generated.

Death due to known medical cause

Unknown cause of death (found at home, sudden unexpected infant death (SUID), etc.) or Other cause of death (trauma, homicide, suicide, etc.)

- Leave all medical devices (airway, IV, etc.) in place.
- If in Bethel, ensure that Bethel Police Department has been notified and follow their instructions.
- If in a village, ask if village law enforcement is available. If not, ask a health aide to be the point person for the troopers. Ensure that the scene is safe. Instruct the CHA/P to make sure no one touches or covers the body or anything around it. Call the Alaska State Troopers and make a report. Give the CHA/P's cell phone number to the troopers.
- Whenever possible, talk to the family directly. Express condolences and tell them that no one may touch, cover, or move the body. Explain that this is so that we can help them find answers about what happened.
- If other people in the home may be at risk, notify OCS or APS, as appropriate.

- Communicate with nurses or health aides and family. Speaker phone and/or Vidyo are very helpful for village communication.
- Be supportive of staff, especially health aides. Be as present as possible. Caring for a dying patient is very stressful, especially for newer health aides; good communication can decrease some of the burden they feel.
- If death occurred in a village, contact CHAP on call to provide support to health aides.
- Medical providers can pronounce death remotely after speaking with a qualified representative, which includes health aides. Representative must ascertain that there is no heart beat or spontaneous breathing.

Required Notifications

Ensure you have next of kin's name and phone number prior to making these calls.

- If death occurred outside of hospital, call AST (800 478-9112) if in village and BPD (543-3781) if in Bethel.
- State Medical Examiner (888 332-3273).
- Life Alaska (888 543-3287) if <85 years old. Obtain reference number.

Documentation

- Death Note in RAVEN should be an Alert Note that includes: time of death, ME case number (if applicable), Life Alaska reference number, circumstances of death, and documentation that all required communication has occurred. May use Free Text template and autotext "..death" for a fillable note.
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Helpful Phone Numbers

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- Life Alaska: 907 562-5433
- Alaska State Troopers (AST): 800 478-9112
- Bethel Police Department (BPD): 543-3781
- State Epidemiology: 907 269-8000
- OCS Intake (for reports): 800 478-4444
- APS Intake (for reports): 800 478-9996

Helpful Forms

Note: Copies of the death packet are also kept in the ED and inpatient.

- **Death Certificate Worksheet**
- **Notification of Death**

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).

Normal / Abnormal → Is patient improving?

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

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

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. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

High-Flow Nasal Cannula (Pediatric)

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. (See box.)

↓

• Page respiratory therapist.
• Page pediatric hospitalist.

↓

• Activate medevac.
• PREPARE PATIENT. (See box.)

↓

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

↓

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

↓

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

↓

Titrate FiO2 to maintain sats >92%.

↓

Frequent gentle nasal suction as needed.

↓

Reassess at least every 20-30 minutes.

↓

Signs of Clinical Improvement
• ↓RR
• ↓retractions
• ↓irritability
• improved air movement
• decreased apnea

↓

Maintain current settings until medevac arrives.

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

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.
• All newborns on HFNC must remain in the nursery.

Apnea

If patient has apnea with poor or worsening response to stimulation, prepare for intubation.

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.

SUPPORTIVE MEASURES

• Control fever, as it can be an independent cause of respiratory distress.
• Nasal suction ± nasal saline or saline nebs.
• IV hydration.
• Consider back-to-back or continuous albuterol.
• Consider phenylephrine 0.25%, 1 spray to each nostril once.

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 blankets and towels for shoulder rolls and 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.

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.
Click here to see the supplemental resources for this guideline.
Approved by Clinic Guidelines Committee 11/27/22.
If comments about this guideline, please contact Amy_Carson-Strnad@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intubation (Adult and Pediatric)

Prepare

Predict difficult airway and post-intubation hypotension (See below for Push-Dose Epinephrine):
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, push-dose epinephrine (see below).
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.
5. Optimize positioning: shoulder roll for infants and children, ramp positioning for obese patients.

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.

PUSH-DOSE EPINEPHRINE
- Mix 9 mL of NS with 1 mL of epinephrine 1:10,000 (or 0.1 mg/mL) to make epinephrine 10 mcg/mL.
- Adult dose is 0.5-2 mL Q 2-5 minutes (5-20 mcg).
- Pediatric dose is 0.1 mL/kg, max 2 mL.

Pre-medicate (optional)

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

PEDIATRICS:
Atropine – onset <1 minute. Use for <1 year or if using ketamine. 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

ADULTS, choose one agent. Reduce doses if risk of hypotension.
1. Etomidate 0.3 mg/kg: first line for most patients.
2. Ketamine 1-2 mg/kg.
3. Propofol 2 mg/kg.
4. Midazolam 0.1-0.3 mg/kg.

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

Paralyze

ADULTS, choose one:
1. Rocuronium 1-2 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.

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

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.

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 12/7/21.
Click here to see the supplemental resources for this guideline.
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)

Predictors of Difficult Intubation

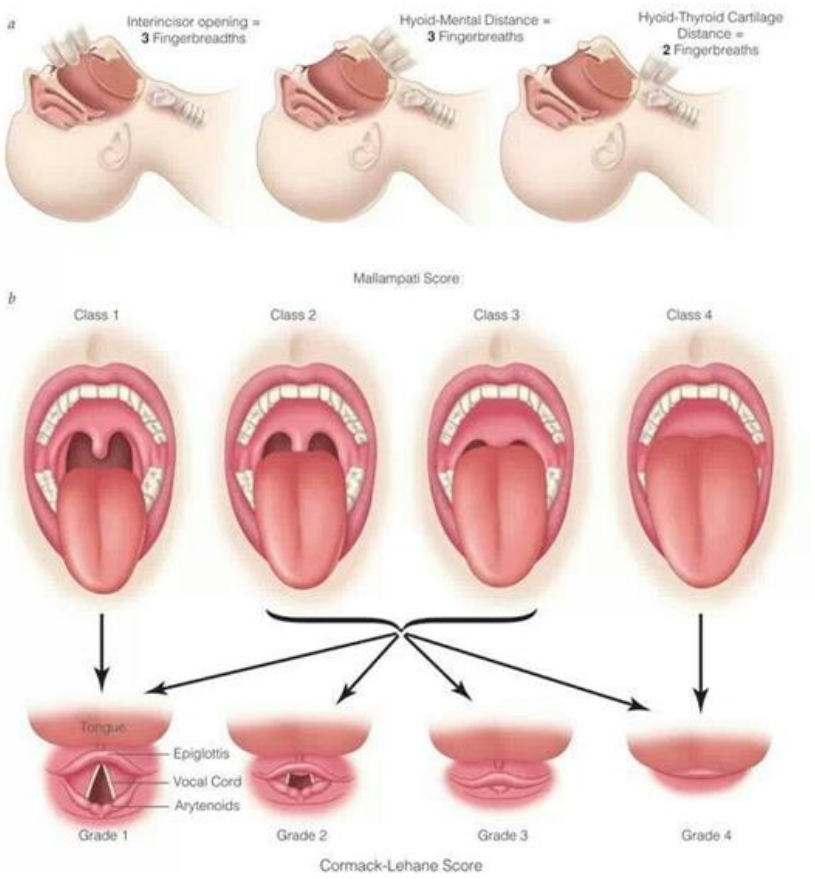
Predictors of Difficult Intubation

- 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



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

Difficulty with BVM

Predictors of Difficulty with BVM	
R	**R**adiation/**R**estriction
O	**O**bstruction/**O**besity/**O**SA
M	**M**ask seal/**M**ale/**M**allampati ≥3
A	**A**ged
N	**N**o teeth

Options if having difficulty with BVM

- 2-hand technique with 2 providers
- Oral/nasal airways
- Positioning
- Consider no paralytics

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Initial Ventilator Settings for an Intubated Adult

ADULTS: 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.

PEDIATRICS: Suggested Starting Ventilator Settings

1. Set FiO_2 to 1.0 and titrate to maintain SpO_2 92-94%. Goal is to decrease FiO_2 to <0.5 if possible.
2. Set Tidal Volume (Vt) at 8-10 mL/kg. If concern for ARDS, set Vt to 6-8 mL/kg.
3. Goal is inspiratory plateau pressures <30 cm H_2O.
4. Set respiratory rate by age, increasing or decreasing based on disease process:
   Adolescents 12-15 breaths/minute
   Children 15-20 breaths/minute
   Infants 20-25 breaths/minute
   Neonates 25-30 breaths/minute
5. Set PEEP to 5 cm H_2O to optimize alveolar recruitment.
6. Set inspiratory time by age:
   Adolescents 1.0 second
   Children 0.7 second
   Infants/neonates 0.5 second
7. If using pressure support, set at 5-10 cm H_2O.
8. Get a blood gas ~30 minutes after any changes to ventilator settings.

Call PICU at (907) 297-8809 immediately to help troubleshoot any problems.

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.
  For high PCO_2: increase rate and Tidal Volume
  For low PO_2: increase FiO_2 and PEEP
- Obtain ABG prior to intubation, 30 minutes following intubation, and 30 minutes after vent changes.
- Goal plateau pressure < 30 cm H_2O; decrease Vt to lower plateau pressure.
  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.

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Approved by MSEC 12/7/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Travis_Nelson@ykhc.org or Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Medevac Activation: Village to YKHC

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.

May also consult **Military Transport for Emergencies** guideline.

Health Aide or Provider in village consults Wards Hospitalist/Emergency RMT for initial management and possible medevac of critically ill patient.

Notify pediatric hospitalist when activating a medevac for any child <12 years old.

Hospitalist consults ED Doctor on Duty to confirm appropriateness.

If patient is NOT a beneficiary, ask if they have a preferred medevac company. If not, suggest they **register for LifeMed insurance online**.

Activation of Medevac

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

LifeMed Dispatch 1-800-478-5433

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

Village Management:

Explicitly clarify whether ED Physician or Hospitalist will continue managing the patient with the health aide. (Typically this will be the ED physician)

Managing physician calls village Health Aide for updates, continues active management of the patient, and documents in EMR.

Managing physician updates ED physician & charge RN.

Blood Products

If appropriate, consider sending LifeMed crew with blood products. If this is anticipated:
1. Notify dispatch of plan, confirm whether LifeMed has available blood at hangar.
2. If no blood at hangar, contact YK bloodbank to request 2 units of "emergency release" blood to be prepared immediately.

Preterm Labor

1. See the **Labor Patient in a Village** and **Village Deliveries** guidelines.
2. Notify pediatrician. Take "go bag" from L&D with surfactant.
3. Remember to notify ED physician and OB charge RN.
4. If appropriate, consider contacting facilities in Anchorage to discuss suitability of ramp transfer.
5. Hospitalist remaining at YK will cover all emergency RMT for adults and peds, AND continue managing the preterm labor patient. Ask for help if needed (E1/E2, experienced clinic providers, CD on call, etc.).

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.

Consider Medevac Direct to Anchorage

Indications:
1. Obvious need for acute surgical intervention (e.g. hip fracture)
2. STEMI, obvious acute CVA
3. Intubated in field

MUST also be hemodynamically stable (not require stabilization at YK before transfer)

Notify LifeMed Dispatch immediately if considering.
Discuss with receiving facility specialist (e.g. orthopedics, ICU) and ER if needed.
Consult LifeMed regarding logistics of ramp transfer.

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

Medevac launches

1. Once in village, medevac crew calls managing physician to give report, establish treatment plan, and give ETA in Bethel.

2. Managing physician keeps receiving charge nurse informed of patient status/ETA of medevac.

Arrival in Bethel

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

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Medevac Activation: YKHC to Anchorage

If patient is an inmate: Physician must contact the Department of Corrections to determine accepting facility and so that arrangements can be made for public safety.

Patient in Bethel requires emergency transfer to higher level care.

Is patient a beneficiary?

Yes → Managing provider contacts ANMC transfer center (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 (may be ED physician).

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

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

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.

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.

If desired hospital is full, consult the AK Hospital Status dashboard: **https://alaska-dhss.maps.arcgis.com/apps/dashboards/8edf91ce0e474126a8c6ace0250f952c**

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.

Phone Numbers

- LifeMed Dispatch: *96 or (800) 478-5433
- Alaska Native Medical Center: Main operator: *97 or (907) 563-2662
  - Transfer Center: (907) 729-2337 or Tiger Text ANMC Transfer Center Coordinator
  - ED: (907) 729-1729
- Providence Alaska Medical Center: Main operator: (907) 562-2211
  - Transfer Center: (907) 212-7363
  - Trauma on call: (907) 212-2525
  - ED: (907) 212-3111
- Alaska Regional Hospital: Main operator: (907) 276-1131
  - Transfer Center: (844) 880-5522
- Fairbanks Memorial Hospital: Main operator: (907) 452-8181
  - House supervisor pager: (800) 607-3974
- Mat-Su Regional Medical Center: Main operator: (907) 861-6000
  - Transfer Center: (907) 861-6440
- Joint Base Elmendorf Richardson Hospital:
  - ED: (907) 580-5556
  - House supervisor: (907) 580-6413
- Department of Corrections On Call: (844) 751-4588

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Military Transport for Emergencies

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, neonatal care, 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 11/2/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pediatric Medevacs: Bethel to Anchorage

Call YKHC pediatric hospitalist via Tiger Connect "Peds Wards On Duty" 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. May suggest family **register for LifeMed insurance** online, which can be done just prior to activation.

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

Pediatric patient in Bethel requires medevac.

- Critical pediatric patient (including patients on HFNC, with suspected sepsis, in status epilepticus, etc.)
  - YKHC pediatric hospitalist (or other physician in consultation with YKHC pediatric hospitalist) can call ANMC PICU consultant at (907) 297-8809 for advice, management, and accepting physician.
    This phone is held by the PICU physician or NP. You may request the physician.
    Ensure the ANMC Transfer Center has been contacted by calling (907) 729-2337 or by Tiger Connect.
    - YKHC provider activates LifeMed. *96 or (800) 478-5433
      - ANMC PICU consultant stays available to support ongoing patient management as needed.

        YKHC provider 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, or orthopedic emergency
  - ED provider calls ANMC Transfer Center for accepting physician at (907) 729-2337 or contacts Transfer Center Coordinator by Tiger Connect.
    - 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) 929-7337.
      - ED provider activates LifeMed. *96 or (800) 478-5433
        - ED provider updates LifeMed Medical Control as needed.
- Noncritical: for bed space, diagnostic or specialty services not available at YKHC, etc.
  - ED provider calls ANMC Transfer Center for accepting physician at (907) 729-2337 or contacts Transfer Center Coordinator by Tiger Connect.
    - Please remember to update the YKHC pediatric hospitalist for any Chronic Peds Patient (CPP) being transferred.
      - ED provider activates LifeMed. *96 or (800) 478-5433
        - ED provider updates LifeMed Medical Control as needed.

Neonatal Transfers

Contact PAMC neonatologist at (907) 212-3614 for advice, management recommendations, etc.
Notify ANMC pediatric hospitalist on-call for any beneficiary infant transferred to PAMC NICU.

When to Transfer to PAMC NICU:
- GA <32 weeks
- BW <1500 grams
- Any newborn who required intubation
- Newborns requiring prompt surgical or medical subspecialty care
- No beds available at ANMC or non-beneficiary infant requiring transfer
- Discretion of NNP

When to Transfer to ANMC NICU:
- GA 32-34 weeks
- BW 1500-2200 grams
- Any baby who meets criteria for transfer per the Late Preterm guideline
- Term or early term babies with temperature instability, respiratory distress, supplemental O_2 requirement, hypoglycemia requiring IV treatment, need for IV antibiotics, etc.

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 6/8/21. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Protocol

Procedural Sedation and Analgesia Outside the OR

Does provider have privileges for procedural sedation? — No → Seek out colleague with privileges or Page CRNA on call.

Yes

Patient has a condition that meets indications.

There are no contraindications.

Perform Airway Risk Assessment. See box. Determine Expected Sedation Risk Level and plan accordingly. See box.

Discuss risks and benefits of procedural sedation with patient/guardian. Obtain written consent.

Ensure all equipment is present for Expected Sedation Risk Level. (See box.)

Choose appropriate sedation medication. See page 2. Calculate appropriate dose and confirm with team.

Perform time out:
- Correct patient
- Correct procedure
- Correct site

Administer medication.

RN documents medication administration time and effect and patient assessments on flowsheet.

Perform procedure.

Monitor patient through recovery. RN remains at bedside until patient is fully alert.

Indications for Procedural Sedation

Any procedure that cannot be accomplished with patient's current level of cooperation or pain tolerance.

Examples:
- Nonemergent chest tube placement
- Cardioversion
- I&D
- Laceration repair
- Fracture or joint dislocation reduction
- Pediatric foreign body removal
- Imaging

Contraindications

- Patient or caregiver refusal
- Hemodynamic instability
- Respiratory distress

Note: if benefits of procedure outweigh risk despite contraindications, refer to higher level of care or consult a local airway expert and discuss risks with patient/caregiver.

Airway Risk Assessment

See **Intubation guideline** for resources.

High-Risk History
- Stridor
- Obstructive sleep apnea
- Hx Trisomy 21
- Dysmorphic facial features
- Active respiratory tract infection
- Hx of difficult intubation
- Hx of cervical spine pathology

Exam
- Check that patient can open mouth fully and that TMJ function is normal.
- Look for micrognathia, loose teeth, dental appliance, and craniofacial abnormalities.
- Check that patient is able to extend neck >70°.
- Determine Mallampati Score and check 3-3-2 rule (in adults).

Note: Per ACEP, NPO times should not affect decision-making about procedural sedation.

Expected Sedation Risk Level

Airway Risk Assessment combined with expected depth of sedation should guide level of rescue preparation.

1. No risk factors present: No high risk findings in airway assessment and exam, ASA I-II.
Plan: standard monitoring and equipment, including:
- Cardiopulmonary monitor (three lead ECG & RR)
- Pulse-oximetry
- Supplemental oxygen should be prepared but not given unless otherwise indicated.
- BVM in room.
- Suction.
- End-tidal CO_2 monitor
- Reversal agents in room.

2. Risk factors present: some concern for airway status based on airway assessment and exam, but patient not expected to decompensate, and benefits of sedation outweigh risks.
Plan: discuss risks with patient/caregiver.
In addition to standard monitoring and personnel, the following must also be present:
- A healthcare provider dedicated to airway management (preferably an RT)
- Oral airway – correct size open and at bedside
- Nasal trumpet – correct size open and at bedside
- BVM with appropriately-sized mask should be open and prepared at bedside

Note: Consider CRNA at bedside.

Levels of Sedation

- Moderate sedation: patient responds to light tactile stimulation. Spontaneous ventilation is adequate. An IV is required only if IV medication is to be given. (For example, if ketamine is to be given IM with no IV agents planned, an IV is not necessary.)
- Deep sedation: noxious stimuli are required to elicit a response. Spontaneous ventilation and ability to maintain airway may be impaired. Not routinely performed in the ED outside of life-threatening situations.

Other Scenarios

Use of a single, non-dissociative agent is not considered sedation. This protocol does not apply to the following:

- Anxiolysis with a benzodiazepine: patient may be drowsy but responds appropriately to verbal commands.
- Analgesia with opioids: pain control with intact decision-making.

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 4/6/21. Click **here** to see the supplemental resources for this guideline.

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

Agent	Bolus Dose	Titration Dose	Onset	Duration	Reversal Agent	Comments
Etomidate	Patients >10 years: 0.2 mg/kg Patients ≤10 years: 0.2 mg/kg (0.1-0.3 mg/kg) Slow IV push over 30-60 seconds.	0.05 mg/kg Q3-5 min 0.05 mg/kg Q3-5 min	30-60 seconds 30 seconds	3-5 minutes 2-10 minutes	Time	• No analgesic effect. • Use IBW if BMI>30. • Consider lower dose (0.1 mg/kg) for age >60 years, concurrent opioids, or if recent alcohol use. • Administer via larger vessel. (antecubital or larger). • Precautions: 30% have myoclonus with transient skeletal/eye movements.
Ketamine	Adults: 1-2 mg/kg IV over 1-2 min 4-5 mg/kg IM Children >3 mo: 1-2 mg/kg IV over 1 min 4-5 mg/kg IM 5 mg/kg PO		30 seconds 3-4 min 30-120 seconds 5-10 min 20-45 min	10-20 min 20-30 min 20-60 min 30-90 min 60-120 min	• Time • For laryngospasm: Succinylcholine 0.25-0.5 mg/kg IV or 3-4 mg/kg IM	• Local anesthetic (eg. lidocaine) can increase effective duration. • Consider lower dose range for >60 years, concurrent opioids/alcohol. • Consider dosing by adjusted body weight if BMI>30. • Precautions: emergence reactions (treat with benzodiazepines), nausea/vomiting (pre-treat with ondansetron), transient increase in salivation. • Contraindications: pregnancy, age <3 months.
Propofol	Patients >2 yrs: IV load 0.5-1 mg/kg Children 6 mos – 2 yrs: IV load 1-2 mg/kg	Repeat 0.1-0.3 mg/kg Q30-60 seconds Repeat 0.1-0.3 mg/kg Q30-60 seconds Max cumulative dose 3 mg/kg	30-60 seconds	3-10 min	Time	• No analgesia. • Consider low dose for age >60, concurrent opioids/alcohol. • Consider dosing by adjusted body weight if BMI>30. • Separate administration of opioid and propofol by >20 minutes to decrease respiratory depression. • Pre-oxygenate with high flow supplemental oxygen at least 3 minutes prior to procedure. • Precautions: burning sensation during administration, hypotension, ↓CO, or bradyarrhythmias. • High risk of respiratory depression/failure. • Contraindications: allergies to egg, soybean, fat emulsion.
Morphine	Adults: 1-4 mg IV 10 mg PO Pediatrics: 0.05-0.1 mg/kg IV Max 4 mg		5-10 min IV 30 min PO 5-10 min	3-5 hours 2-3 hours	Naloxone 0.1 mg/kg IV. May repeat Q2 minutes.	• Reduce dose when combining with a benzodiazepine. • As opioids provide sedation and analgesia, administer them prior to benzodiazepines.
Fentanyl	Adults: 0.5 mcg/kg if given with other sedatives 0.5-1 mcg/kg Max 100 mg Pediatrics: 1 mcg/kg IV up to 50 mcg/dose	May repeat dose Q2min until desired sedation and analgesia achieved	<1 min 3-5 min	30-60 min	Naloxone 0.1 mg/kg IV. May repeat Q2 minutes.	• Reduce dose when combining with a benzodiazepine. • As opioids provide sedation and analgesia, administer them prior to benzodiazepines.
Midazolam	Adults: 2-5 mg IV Pediatrics (6 mos - 12 yrs): 0.2-0.3 mg/kg/dose IN 0.05 mg/kg IV	May repeat dose Q2min until adequate sedation. Max 0.3 mg/kg. May repeat dose Q5min until max dose of 0.5 mg/kg is reached. Age <5 max 6 mg; age >5 max 10 mg.	3-5 min	15-20 min	Flumazenil 0.01 mg/kg (up to 0.2 mg) IV over 15 seconds. May repeat Q1 minute.	• No analgesia. • Consider lower dose range for >60 years, concurrent opioids/alcohol. • Watch for dose-related hypotension.

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?

No

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.

Yes

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.
Click here to see the supplemental resources for this guideline.
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.

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

[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 (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 → Contact pediatric hospitalist. Page RT. → Consult PICU by direct line: (907) 297-8809. Request medevac.

Place on CR monitor. Bedside glucose.
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.

Order empiric antibiotics STAT.

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

Is patient maintaining airway without support? — No → Intubate per Intubation Guideline.

Yes

If not improving, give third bolus of NS 20 mL/kg.
Correct hypoglycemia.
Correct significant 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.
- Activate medevac.
- Consider VTC.

Continuing Management

- VS (including BP) at least Q15min.
- Blood glucose Q30 min.
- Maintenance IVF with D5 + NS.
- Consider Foley.

Goals

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

See Wiki RMT Section for more detailed recommendations.

See this resource for a helpful table comparing the presentation and findings in sepsis, acute COVID, and MIS-C.

Empiric Antibiotic Choice

≤28 days
Ampicillin 75 mg/kg AND gentamicin 5 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.

Vital Signs for Age
(Source: Harriet Lane Handbook)

Age	Heart Rate (beats/min)	Respiratory Rate (breaths/min)	Blood Pressure (mm Hg)	Mean Arterial BP (mm Hg)
0-3 months	110-160	30-60	65-85 / 45-55	50th percentile 55 + (age x 1.5)
3-6 months	100-150	30-45	70-90 / 50-65	
6-12 months	90-130	25-40	80-100 / 55-65	
1-3 years	80-125	20-30	90-105 / 55-70	5th percentile 40 + (age x 1.5)
3-6 years	70-115	20-25	95-110 / 60-75	
6-12 years	60-100	14-22	100-120 / 60-75	
>12 years	60-100	12-18	100-120 / 70-80	

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 2/1/22.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Amy_Carson-Strnad@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Status Epilepticus Treatment (Adult)

Definitions

- **This guideline is indicated for the emergent treatment of convulsive status epilepticus.**
- For atypical seizure-like presentations without evidence of impending hemodynamic instability, consult Neurology on call at ANMC or PAMC.
- Convulsive status epilepticus:
  - Seizure that lasts >5 minutes or occurs multiple times without regaining consciousness.
  - Diffuse, often tonic-clonic motor activity AND loss of consciousness.

Adult patient with seizure.

- ABCs and neurologic exam.
- **Bedside glucose STAT.**
- Obtain PIV x 2, continuous SpO_2, & cardiac monitor.
- Ensure BVM and suction at bedside.
- If possible, obtain labs (see box).
- Get AMPLE history.

After five minutes of seizure activity, patient meets criteria for treatment of convulsive status epilepticus (see Definitions box).

Village Management

See Emergency RMT Seizure Scenario on the wiki.

- ABCs. Prepare BVM and suction.
- Place patient on floor with space around.
- **Bedside glucose STAT.** If unable to get a glucose measurement, give glucose buccally.
- Follow flow for no IV in place.
- Discuss with E1/E2 and activate medevac.
- If seizure resolves, place patient in recovery position.

If IV access unsuccessful, begin treatment with "No IV" pathway while continuing to attempt access and/or placing IO.

Labwork

Labs: BMP, Mg, Phos, CBC, lactate, EtOH, UDS, U/A, hCG. If concern for infection, send blood cultures and pro-calcitonin. Consider CK to trend over time.

IV in place

- Lorazepam 0.1 mg/kg IV @ 2 mg/min
  AND
- Levetiracetam 60 mg/kg IV (max 4500 mg). Give over 15 minutes.

Seizure continues 5 more minutes after lorazepam given.

- Lorazepam 0.1 mg/kg IV @ 2 mg/min.
- Prepare for intubation.

Seizure continues 5 more minutes.

Fosphenytoin 20 mg PE/kg IV (max 1500 mg). Give over 10 minutes. If seizure continues, give additional 10 mg PE/kg IV over 5-10 minutes.

- Contact ICU and activate medevac.
- **Intubate** patient.
  - Induction (choose ONE): Propofol 2 mg/kg OR midazolam 0.2 mg/kg.
  - Paralysis: Rocuronium 0.6 mg/kg (preferred over succinylcholine due to risk of rhabdomyolysis and hyperkalemia, but recommend this lower dose)
  - Consider sugammadex following intubation to avoid masking seizure activity. Discuss with intensivist.
- Be prepared to give vasopressors or push-dose epinephrine if needed.

Choose ONE:

- Propofol drip 20 mcg/kg/min, titrate to effect with goal 50-80 mcg/kg/min. Watch BP closely.
- Midazolam drip 0.1 mg/kg/hr gtt, titrate to effect

- Discuss further management with ICU.
- Prepare for medevac.
- Continue active management until patient leaves, including continuous VS, frequent labs, and monitoring of UOP.

No IV in place

Benzodiazepine (choose ONE):

- Midazolam 0.2 mg/kg IM (max dose 10 mg) x1.
- Diazepam 0.2 mg/kg (max 20 mg) PR x1.
- Diastat home dose x1.

AND

- Levetiracetam 60 mg/kg (max 4500 mg) PO (if able) or PR. To give PR, give tablets as well as one packet of water-soluble lubricant.

Seizure continues 20 more minutes.

- Activate medevac if in village.
- Fosphenytoin 20 mg PE/kg IM (max 1500 mg).

Seizure continues 20 more minutes.

Repeat benzodiazepine dose.

Seizure continues 20 more minutes.

Phenobarbital 20 mg/kg IM (max 1000 mg).

Treatments for Provoked Seizures

- Hypoglycemia: Dextrose 50% IV. Give 25 grams IV push.
- Hyponatremia: Sodium chloride 3% 100 mL infusion over 10 minutes.
- Hypocalcemia: Calcium gluconate 1-2 gram IV push.
- Eclampsia: Magnesium sulfate 4-6 grams IV over 20 minutes followed by 1-2 gram/hour.
- Alcohol withdrawal: Phenobarbital 260 mg IV push followed by 130 mg Q30-60 minutes.

Notes

- If seizure occurs in outpatient clinic, place patient on floor with space around and call a Rapid Response.
- Avoid using lorazepam IM due to erratic absorption.
- Avoid mixing different benzodiazepines.
- Monitor CK and renal function. Patient may require aggressive IV fluid administration if risk for rhabdomyolysis.
- Obtain neuroimaging if any focal abnormalities on neuro exam.
- Perform LP if unable to exclude intracranial infection. (Perform CT prior to LP.)

Post Seizure Care

- Seizure recurrence typically occurs within 2-6 hours.
- If history of seizures, may discharge with responsible adult if patient is improving. If first-time seizure, monitor in ED or clinic until mentation is at baseline. No air travel until >6 hours from event.
- Consider admission for prolonged post-ictal state or if concern for persistent metabolic abnormalities.
- Place urgent referral to Neurology if first-time seizure without known cause. Consult Neurology if considering urgent neurologic evaluation or medication initiation or adjustment.

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 3/1/22. Click **here** to see the supplemental resources for this guideline.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Status Epilepticus Treatment (Pediatric)

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

- ABCs. Ensure BVM at bedside and pediatric code cart within reach.
- **Bedside glucose STAT.**
- Obtain IV.
- Consult pediatrics.
- Obtain brief history.
- Prepare first-line medication. If in the ED or NW, get the Peds Seizure Kit (see box).

Seizure lasting ≥3 minutes
OR
More than one seizure in 24 hours without return to baseline.

No → Go to Pediatric Post-Seizure Evaluation guideline.

Yes

Peds Seizure Kit

- In the ED and Peds NW Pyxis.
- Type "seizure" and override.
- Includes:
  - Midazolam 10 mg/2 mL
  - Levetiracetam
  - Phenobarbital 130 mg/mL
  - Dosing cards from the pediatric critical care guide

Benzodiazepine (choose ONE)
- Midazolam 0.2 mg/kg IN/IM (max dose 10 mg) – single dose only.
- Lorazepam 0.1 mg/kg IV/IO (max dose 4 mg) – up to two doses Q5 minutes.
- Diastat home dose – up to two doses Q5 minutes.

Seizure continues 5 more minutes.

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 or fosphenytoin (kept refrigerated) IM. If giving either second-line drug, consult pediatrics and strongly consider activating a medevac.
- Consider placing IV and giving NS bolus 20 mL/kg.
- Low threshold to activate medevac for atypical or prolonged seizure.

Consult ANMC PICU at (907) 297-8809.

Age ≤ 2 months

Phenobarbital 20 mg/kg IV/IM.
If IV, give over 15 minutes or
1 mg/kg/minute (max 60 mg/min).

Seizure continues 5 minutes after infusion complete.

Phenobarbital 10 mg/kg IV/IM.
If IV, give over 15 minutes or
1 mg/kg/minute (max 60 mg/min).

Seizure continues 5 minutes after infusion complete.

Levetiracetam 40 mg/kg IV/IM.
If IV, give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Levetiracetam 20 mg/kg IV/IM.
If IV, give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Start midazolam or propofol infusion with PICU consultation.

Age >2 months

Levetiracetam 60 mg/kg IV/IM.
Max dose 4500 mg.
If IV, give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Fosphenytoin 20 mg PE/kg IV.
Max dose 1000 mg.
Give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Fosphenytoin 10 mg PE/kg IV.
Max dose 1000 mg.
Give over 5-10 minutes.

Seizure continues 5 minutes after infusion complete.

Phenobarbital 20 mg/kg IV or IM.
Max dose 1000 mg.
If IV, give over 15 minutes.

Seizure continues 5 minutes after infusion complete.

Phenobarbital 10 mg/kg IV or IM.
Max dose 1000 mg.
If IV, give over 15 minutes.

Seizure continues 5 minutes after infusion complete.

Start midazolam or propofol infusion with PICU consultation.

In all ages, if hemodynamic instability or myocardial dysfunction, avoid phenobarbital and use alternate agents.

In all ages, in consultation with the PICU, consider preparing for intubation and continuous infusion after second-line drug has been given. Continue giving medications as detailed in the flow while infusion is being prepared.

If giving midazolam, make drip of 1 mg/mL and start at rate 0.1 mg/kg/hour.

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

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 8/3/21. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Hampton@ykhc.org.

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Yukon-Kuskokwim HEALTH CORPORATION

Abuse/Assault Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sexual Assault Guideline (Adults ≥ 18 years)

**Note: When an adult patient discloses a sexual assault, it is his or her choice to report to law enforcement. Reporting without a patient's consent may breech his or her confidentiality.
A SART exam/kit can only be conducted by a trained SAFE/SANE. Law enforcement must be involved, unless the patient wishes to have an anonymous kit collection.

If patient is <18 years, please see **Pediatric Sexual Abuse Procedure**.

Adult victim reports sexual assault to ED or clinic staff.

Does patient want to report to law enforcement? (See **Note.)

No → • The SART team will not respond.
• It may be appropriate to request a TWC advocate at 543-3444.
• Patient is offered a medical exam with ED or clinic provider for testing and treatment of STIs and emergency contraception.
• For any questions, contact the SART Adult on-call phone at 545-4273.
• SANE/SAFE may do an anonymous kit collection in certain circumstances.

Yes

Provide patient with a private space to call law enforcement with jurisdiction. Provide support as needed.
• If assault occurred in a village, call Alaska State Troopers.
• If assault occurred in Bethel, call the Bethel Police Department.

Adult victim reports sexual assault to law enforcement.

Law enforcement performs preliminary interview.

Is the patient willing to cooperate with an investigation?

No → • The SART team will not respond.
• It may be appropriate to request a TWC advocate at 543-3444.
• Patient is offered a medical exam with ED or clinic provider for testing and treatment of STIs and emergency contraception.
• For any questions, contact the SART Adult on-call phone at 545-4273.
• SANE/SAFE may do an anonymous kit collection in certain circumstances.

Yes

Law enforcement activates SART team response if further investigation is indicated.

SART team performs interview.

Does the patient want a SART exam?

No → • The SART team will not respond.
• It may be appropriate to request a TWC advocate at 543-3444.
• Patient is offered a medical exam with ED or clinic provider for testing and treatment of STIs and emergency contraception.
• For any questions, contact the SART Adult on-call phone at 545-4273.
• SANE/SAFE may do an anonymous kit collection in certain circumstances.

Yes

• SART team performs a forensic medical exam with evidence collection.
• Team offers emergency contraception and testing and treatment of STIs.

SART Team Members

- Law enforcement
- SANE/SAFE (Sexual Assault Nurse Examiner/Sexual Assault Forensic Examiner)
- TWC advocate

Contact Information

- Tundra Women's Coalition:
  - Business Line: (907) 543-3444
  - Crisis Line: (907) 543-3456
  - Toll Free: (800) 478-7799
- Law Enforcement:
  - Bethel Police Department: (907) 543-3781
  - Bethel Post of Alaska State Troopers: (907) 543-2294
  - Aniak Post of Alaska State Troopers: (907) 675-4459
  - Emmonak Post of Alaska State Troopers: (866) 949-1303
  - St. Mary's Post of Alaska State Troopers: (907) 438-2019
- National Sexual Assault Helpline:
  - (800) 656-4673
  - Available 24 hours a day, 7 days a week.

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 12/2/20. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Strangulation

Goals

1. Evaluate carotid and vertebral arteries for injuries.
2. Evaluate bony/cartilaginous and neck soft tissue structures.
3. Evaluate brain for anoxic injury.

Note: Life-threatening injuries can be present up to one year after strangulation event.

Helpful Links

- S/Sx strangulation in **adults** and **children**
- Physiological consequences **timeline**

Patient presents with concern for strangulation

Are ANY of the following present?

- Airway: subcutaneous emphysema (can be a sign of tracheal or laryngeal rupture)
- Neurological: loss of consciousness, seizures, mental status changes, amnesia, cortical blindness, movement disorders, stroke-like symptoms
- HEENT:
  - Visual changes: spots, flashing lights, tunnel vision, etc.
  - Facial, intra-oral, or conjunctival petechial hemorrhage
  - Odynophagia
- Neck:
  - Ligature mark, neck contusion, soft tissue injury, swelling, carotid tenderness, etc.
  - Dysphonia/aphonia, hematoma, laryngeal fracture, recurrent laryngeal nerve injury
- Bladder or bowel incontinence
- Pulmonary: dyspnea, phrenic nerve injury

Yes to ANY

Rule Out Life-Threatening Injuries

- If GFR ≥30: CT angio of carotid/vertebral arteries. This is the gold standard for evaluation of vessels and bony/cartilaginous structures but is not very sensitive for soft tissue trauma.
- If GFR <30: non-contrast CT of neck. This study is less sensitive than CT angio for vessel injury but gives good visualization of bony and cartilaginous structures.

Injury identified

- Consult trauma surgery and plan to transfer.
- Consider ENT consult for laryngeal trauma with dysphonia.

No injury identified

How recent was event?

<48 hours ago

Observe in ED or admit to inpatient until 48 hours post-event based on severity of symptoms.

≥ 48 hours ago

No to ALL

Is there reliable home monitoring AND a safe place to go to?

Yes

- Discharge home with detailed instructions to return to ED if any neurological signs/symptoms, dyspnea, dysphonia, odynophagia dysphagia, or voice changes occur or worsen.
- Give custom Strangulation Patient Education handout.

No

- Consider discharge to TWC.
- May call TWC Crisis Line (543-3456) for assistance with safe shelter.
- Also may call SART on call at 545-4238 for further assistance.

Tundra Women's Coalition (TWC)

- Crisis Line: 543-3456
- Main office: 543-3444
- On-call advocate: 545-4328

Services Provided by TWC

- Emergency shelter
- Hospital accompaniment
- Information about community resources
- Legal advocacy
- Violent crime compensation
- Funds for emergency air or cab transportation

If patient would like to report incident:

- If occurred in a village: Alaska State Troopers 543-2294
- If occurred in Bethel: Bethel Police Department 543-3781

Use the following autotexts in your documentation:
- ..hpiStrangulation
- ..physStrangulation

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 11/2/21. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Suspected Physical Abuse Procedure (Pediatric)

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

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Approved by MSEC 7/6/21. Click **here** to see the supplemental resources for this guideline.
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 acute issues as appropriate. If patient is in village and stable please arrange to have patient sent to ED 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 appropriate work-up (see table). Use Child Abuse Power Plan.
- Take photos of any injury visible on exam, especially bruising. Take photos at a distance AND close-up to establish relative size and landmarks. Include ruler to establish scale.

↓

Send RAVEN communication to Child Abuse Pool detailing reports made to Law Enforcement and **OCS**.
May contact **Child Abuse On-Call** via Tiger Connect 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 send message to **Child Abuse On-Call** to help reach a safe discharge plan.

Contacts

- Child Abuse On-Call via Tiger Connect. May email ChildAbuse@ykhc.org with nonurgent questions.
- 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.

To complete the State of Alaska training for mandatory reporters, click **here**.

Note: Minor injuries (single bruise on forehead, occasional bruises on shins, minor oral trauma, etc.) in a child able to cruise or sit independently can be part of normal development.
Always ask caregivers for story behind injuries.
If history does not match injury or child's observed developmental level, strongly consider child abuse injury surveillance.

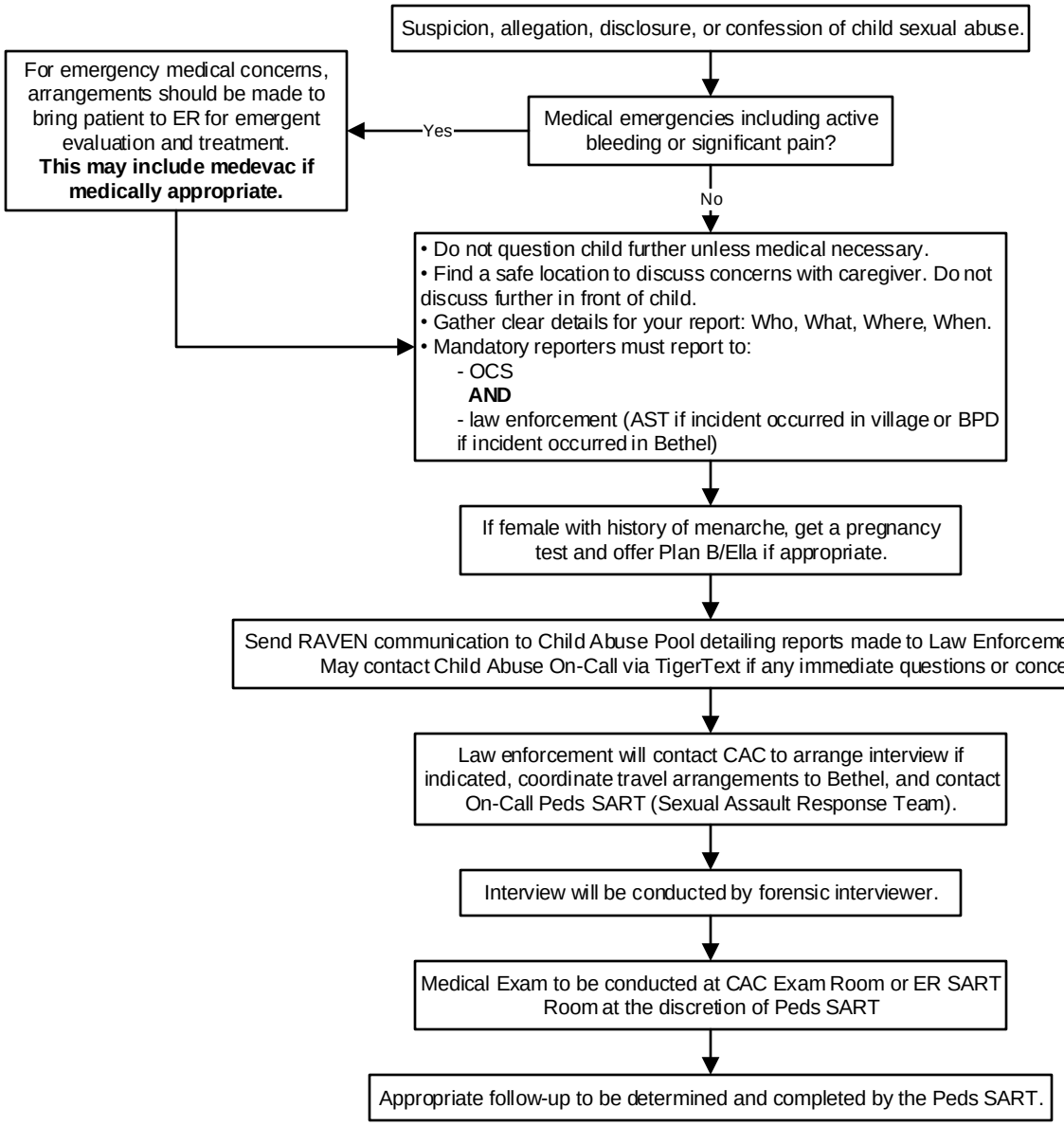
Child Abuse Injury Surveillance Table (Use Child Abuse Power Plan.)

	<6 months	6-24 months	2-5 years	>5 years
Full exam	Yes	Yes	Yes	Yes
Skeletal survey Including oblique rib films	Yes	Yes	If highly suspicious of severe abuse	If highly suspicious of severe abuse
Head CT Request 3D reconstruction and 3 mm slices	Yes	If neurological exam abnormal	If neurological exam abnormal	If neurological exam abnormal
Abdominal labs AST, ALT, lipase, bag or CC U/A	Yes	Yes	Yes	If abdominal trauma
Bone labs Calcium, magnesium, phosphorus, alkaline phosphatase, intact PTH, 25-OH	If fracture	If fracture	If fracture	If fracture
Coagulation studies PT/INR, PTT, factor VIII & IX activity levels, VWF activity & antigen, CBC with diff. Consider CK if significant bruising. If head trauma PT/INR, PTT, thrombin time, fibrinogen, D-dimer	If bruising	If concerning bruising	If concerning bruising	If concerning bruising
Head circumference	Yes	Yes	N/A	N/A
Urine drug screen ± expanded state screen (contact Child Abuse On Call if considering expanded screen)	Consider	Consider	Consider	No
Optometry consult (within 24 hours)	If head injury	If head injury	If head injury	N/A

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Suspected Sexual Abuse Procedure (Pediatric)



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.

To complete the State of Alaska training for mandatory reporters, click **here**.

Contacts

- On-Call Peds SART: (907) 444- 8643 or TigerText On-Call Peds SART.
- Child Abuse On-Call via TigerText. May email ChildAbuse@ykhc.org with nonurgent questions.
- Office of Children's Services (OCS): (800) 478-4444 or reportchildabuse@alaska.gov.
- 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 Age of Consent

- The age of consent is 16, provided the older partner is not in a position of authority (example: teacher, coach, minister).
- Any two people who are over the age of 16 can consent to sex in Alaska, but if one of the partners is under 16, and there is at least a 3 year age difference between the partners, it is illegal for them to have sex and must be reported.

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 3/1/22. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.

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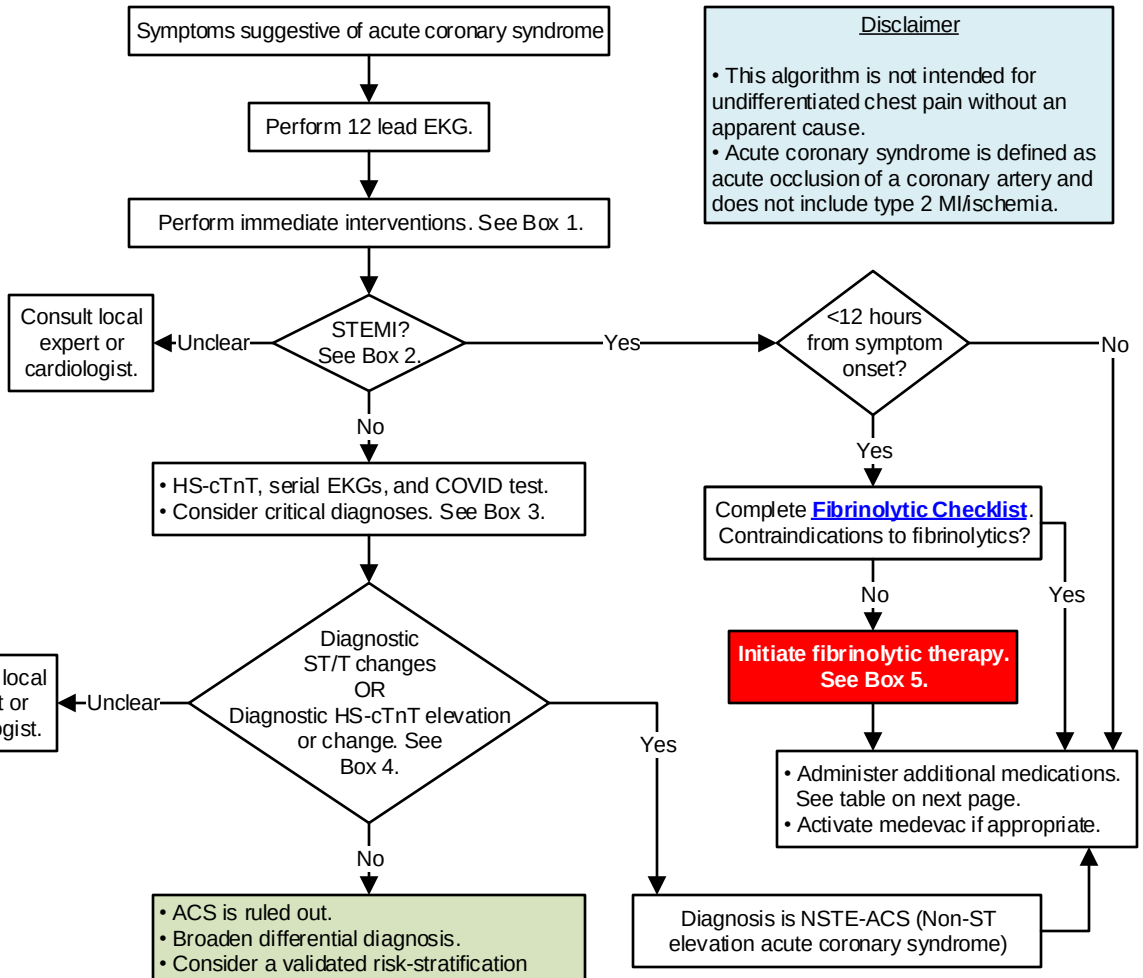
Cardiovascular

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management



Box 1: Immediate Interventions

- Supplemental oxygen *prn* to maintain SpO_2 90-96%.
- Aspirin 325 mg PO (chewed).
- Nitroglycerin 0.4 mg sublingual *prn* pain (up to three times as BP permits) unless contraindicated. Contraindications: recent phosphodiesterase use, sBP <90, right ventricular infarct (consider when evidence of inferior wall ischemia).

NOTE: pain relief with nitroglycerin (or lack thereof) is not diagnostic of cardiac ischemia.

Disclaimer

- This algorithm is not intended for undifferentiated chest pain without an apparent cause.
- Acute coronary syndrome is defined as acute occlusion of a coronary artery and does not include type 2 MI/ischemia.

Consulting Cardiology

- For all STEMI patients, consult PAMC Cardiology by calling the PAMC ED at (907) 212-3433 and asking for the cardiologist on call. For beneficiary patients, ANMC Cardiology should be made aware of the transfer on a non-urgent basis.
- For NSTE-ACS patients, consult ANMC Cardiology for beneficiary patients and PAMC Cardiology for non-beneficiary patients.

Box 2: STEMI Criteria

Symptoms consistent with acute myocardial ischemia AND (A or B):

New ST-elevation at the J-point in two contiguous leads with the cut-point:
- ≥ 1 mm in all leads other than V2-V3
- V2-V3:
  - ≥ 2 mm in men ≥ 40 years old
  - ≥ 2.5 mm in men < 40 years old
  - ≥ 1.5 mm in women

Box 3: Critical Differential Diagnosis

- Aortic dissection
- Tension pneumothorax
- Pulmonary embolism
- Perforated peptic ulcer

Box 4: HS-cTnT Evaluation for Acute Cardiac Injury

The lowest reported value is "<6 ng/L," which equates to "undetectable."

FDA-approved normal values (99th percentiles in healthy subjects) are:
- Men: <22
- Women: <14
- Change in one hour (Δ1h) : <3

Cutoffs are arbitrary and do not correspond to any evidence-based positive-predictive value for ACS.

Repeat measurements rely on a rate of change; therefore, repeat measurements should be drawn at exactly one hour (or the chosen interval) after the initial.

This information is from data available February 2020. Please see wiki page for further information.

Box 5: Fibrinolytic Therapy (Tenecteplase)

Goal: administer ≤ 30 minutes from arrival.
Rapidly complete the fibrinolytic checklist and consent.

Dosing:
- <60 kg: tenecteplase 30 mg IV bolus
- ≥60 kg to <70 kg: tenecteplase 35 mg IV bolus
- ≥70 kg to <80 kg: tenecteplase 40 mg IV bolus
- ≥80 kg to <90 kg: tenecteplase 45 mg IV bolus
- ≥90 kg: tenecteplase 50 mg IV bolus

Administer concurrent aspirin, clopidogrel, and anticoagulant therapy. See tables 1 and 2.

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 12/2/20.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Megan_Young@ykhc.org and Andrew_Swartz@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management

Nitroglycerin (NTG)
• Contraindications: PDE-inhibitor use, cardiogenic shock, RV infarct, sBP<90, marked tachycardia or bradycardia.
• Sublingual dosing: 0.4 mg SL Q5 minutes up to three doses
• IV dosing: start at 10-20 mcg/min, titrate Q3-4 minutes to typical range 60-100 mcg/min

Beta-Blockers
• No evidence of benefit from routine immediate beta-blocker.
• Indicated for HTN and/or ongoing ischemia refractory to NTG.
• Contraindications: cardiogenic shock, RV infarct, symptomatic asthma.
• Cautions: risk for cardiogenic shock (bradycardia, HR>110, sBP<120, age>70, increased time since STEMI onset), inferior MI, controlled asthma.

Emergency Department Medication Summary

	STEMI <12 hours	STEMI >12 hours	NSTE-ACS
Oxygen	Maintain SpO_2 90-96%	Maintain SpO_2 90-96%	Maintain SpO_2 90-96%
Nitrates (*prn* pain, HTN)	Sublingual or drip	Sublingual or drip	Sublingual or drip
Fibrinolytic	Tenecteplase See page 1, Box 5	Not indicated	Not indicated
Antiplatelet agents: Aspirin	325 mg PO (chewed)	325 mg PO (chewed)	325 mg PO (chewed)
Antiplatelet agents: $P2Y_{12}$ receptor blocker	Clopidogrel Age ≤75: 300 mg PO Age >75: 75 mg PO	Clopidogrel 600 mg PO	Consult cardiology.
Antiplatelet agents: Glycoprotein IIb/IIIa inhibitor	Eptifibatide (Integrilin) Per cardiologist. Typically given after PCI.	Eptifibatide (Integrilin) Per cardiologist. Typically given after PCI.	Eptifibatide (Integrilin) Per cardiologist. Typically given after PCI.
Anticoagulation	Enoxaparin (see table for dose)	Enoxaparin (see table for dose)	Enoxaparin (see table for dose)
Beta-blocker	Metoprolol 5 mg IV *prn* Q5 minutes (max 15 mg)	Metoprolol 5 mg IV *prn* Q5 minutes (max 15 mg)	Metoprolol 5 mg IV *prn* Q5 minutes (max 15 mg)
Morphine	No longer routinely given; associated with increased mortality. Reserve for significant pain refractory to NTG and beta-blocker.		

At time of Dx unless contraindicated

Enoxaparin Dosing

	Age <75 years and STEMI	Age ≥75 years and STEMI	Any age and NSTE-ACS
Creatinine clearance ≥30 mL/min	30 mg IV + (1 mg/kg SC now then Q12h) Max dose 100 mg	0.75 mg/kg SC Q12h Max dose 75 mg	1 mg/kg SC now then Q12h
Creatinine clearance <30 mL/min	30 mg IV + (1 mg/kg SC now then Q24h) Max dose 100 mg	1 mg/kg SC Q24h Max dose 100 mg	1 mg/kg SC now then Q24h

NOTE: Enoxaparin and unfractionated heparin are NOT dialyzable; ESRD/dialysis patients should receive fondaparinux, which is not on the YKHC formulary. Discuss with cardiologist if appropriate.

Inpatient Medication Summary

NOTE: The following table is meant to be a basic reference as a starting point. Please consult Cardiology for full recommendations in all ACS patients.

ACE-inhibitor	Lisinopril 2.5 – 5 mg PO daily Give unless contraindicated. Typically started prior to hospital discharge. Unclear if ED initiation is beneficial.
Statin	Atorvastatin 80 mg PO daily Give unless contraindicated. Typically started prior to hospital discharge. Unclear if ED initiation is beneficial.
Beta-blocker	Metoprolol XL 25-50 mg PO Q12-24h *prn* Give unless contraindicated. Typically started prior to hospital discharge.
Clopidogrel	75 mg PO daily
Aspirin	81 mg PO daily
Enoxaparin	Dose above. Consult Cardiology for duration.

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 12/2/20.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Megan_Young@ykhc.org and Andrew_Swartz@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management

Fibrinolytic Checklist

INDICATIONS *(initial yes or no)*		
YES	**NO**	
		Presentation consistent with acute coronary syndrome (coronary artery occlusion)
		AND at least one of the following: • 1 mm J-point elevation in two contiguous leads (other than V_2-V_3) • In leads V2-V3 Men ≥ 40 years: ≥ 2 mm J-point elevation Men <40: ≥ 2.5 mm J-point elevation Women: ≥ 1.5 mm J-point elevation
ABSOLUTE CONTRAINDICATIONS *(initial yes or no)*		
YES	**NO**	
		History of any intracranial hemorrhage
		History of prior ischemic stroke, significant closed head injury or facial trauma, or intracranial or spinal surgery in the previous three months
		Presence of a cerebral vascular malformation
		Presence of a primary or metastatic intracranial malignancy
		Symptoms or signs suggestive of an aortic dissection
		Any bleeding diathesis
		Any active bleeding that is severe or has high potential for life-threatening blood loss; this does not include menstrual bleeding
		sBP > 180 and/or dBP >110 at presentation in patient at low risk of cardiac death (age < 55, no prior MI, and Killip class I).
		Terminal illness, defined as end of life care or documented/expressed patient wish to abstain from high risk or invasive procedures
RELATIVE CONTRAINDICATIONS *(initial yes or no) – If any of below are present, used shared decision making with patient.*		
YES	**NO**	
		Age 65-74 (ICH relative risk 3.12 [2.54-3.83]); Age ≥ 75 years (ICH relative risk 5.40 [4.40-6.63])
		History of chronic severe poorly controlled HTN
		sBP > 180 and/or dBP >110 at presentation in patient at high risk of cardiac death (age ≥ 55, Hx prior MI, or Killip class ≥ II).
		History of ischemic stroke more than three months ago
		Dementia OR any known intracranial disease that is not an absolute contraindication
		Traumatic or prolonged (>10 minutes) cardiopulmonary resuscitation
		Major surgery in the previous three weeks
		Internal bleeding in the previous 2-4 weeks
		Active peptic ulcer
		Non-compressible vascular punctures
		Pregnancy
		Current warfarin therapy (the risk of bleeding increases as the INR increases)

This checklist is advisory for clinical decision-making and may not be all-inclusive. Risks and benefits will need to be assessed individually.

Physician signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acute Coronary Syndrome (ACS) Management

PROCEDURE CONSENT

I hereby authorize _____ and such assistants as he/she may designate, to perform the following operation or procedure:

TECHNICAL DESCRIPTION	Intravenous thrombolytic therapy for acute STEMI (ST-elevation myocardial infarction).
LAY DESCRIPTION	Give clot-dissolving medication through an IV to dissolve the clot which is causing a heart attack.

_____ has discussed with me the information briefly summarized below:

BENEFITS	• When PCI is not available within two hours, thrombolytic medication is the "standard of care" for achieving coronary reperfusion within 12 hours of acute STEMI onset. • When administered within 6 hours of pain onset, about 1 in 40 persons will have their life saved. • When administered between 6-12 hours after pain onset, about 1 in 60 persons will have their life saved. • Decreased risk of developing heart failure. • A STEMI patient who receives thrombolytic medication is about 3-5 times more likely to have their life saved than to have brain bleeding (see below).
RISKS *(some, but not all)*	• About 1 in 100 persons will experience non-life-threatening bleeding. • About 1 in 100-250 persons will experience bleeding into the brain which usually results in either death or significant disability.
RISKS OF NOT HAVING THE PROCEDURE	• Higher risk of death. • Higher risk of developing heart failure.
ALTERNATIVE TREATMENTS	None are available at this facility.

Patient signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Physician signature: _____

Printed name: _____ Date and time: _____

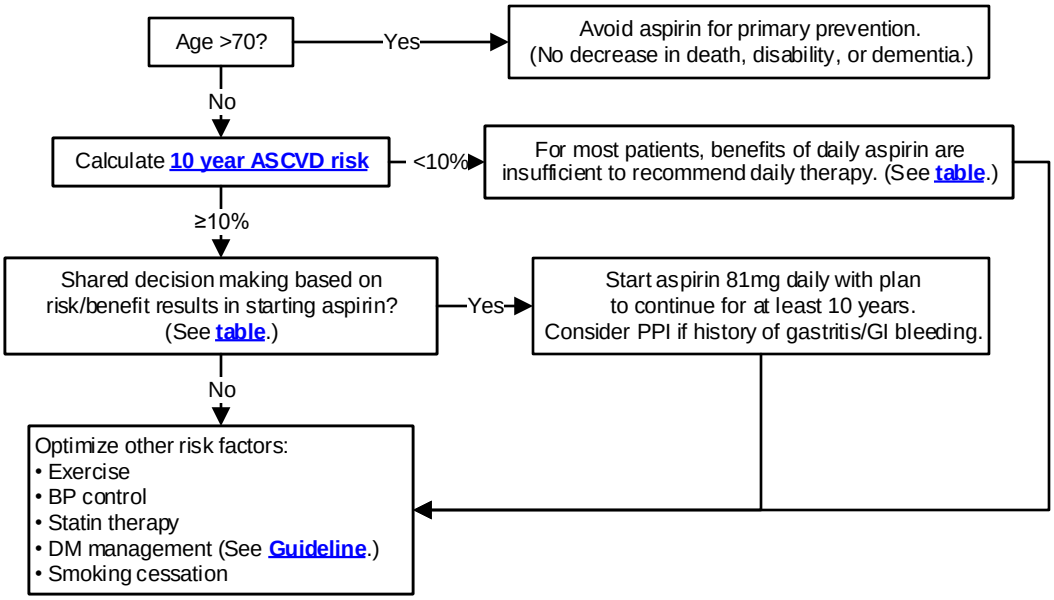
Witness signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Aspirin for Adults >40 Without Known Cardiovascular Disease



Notes

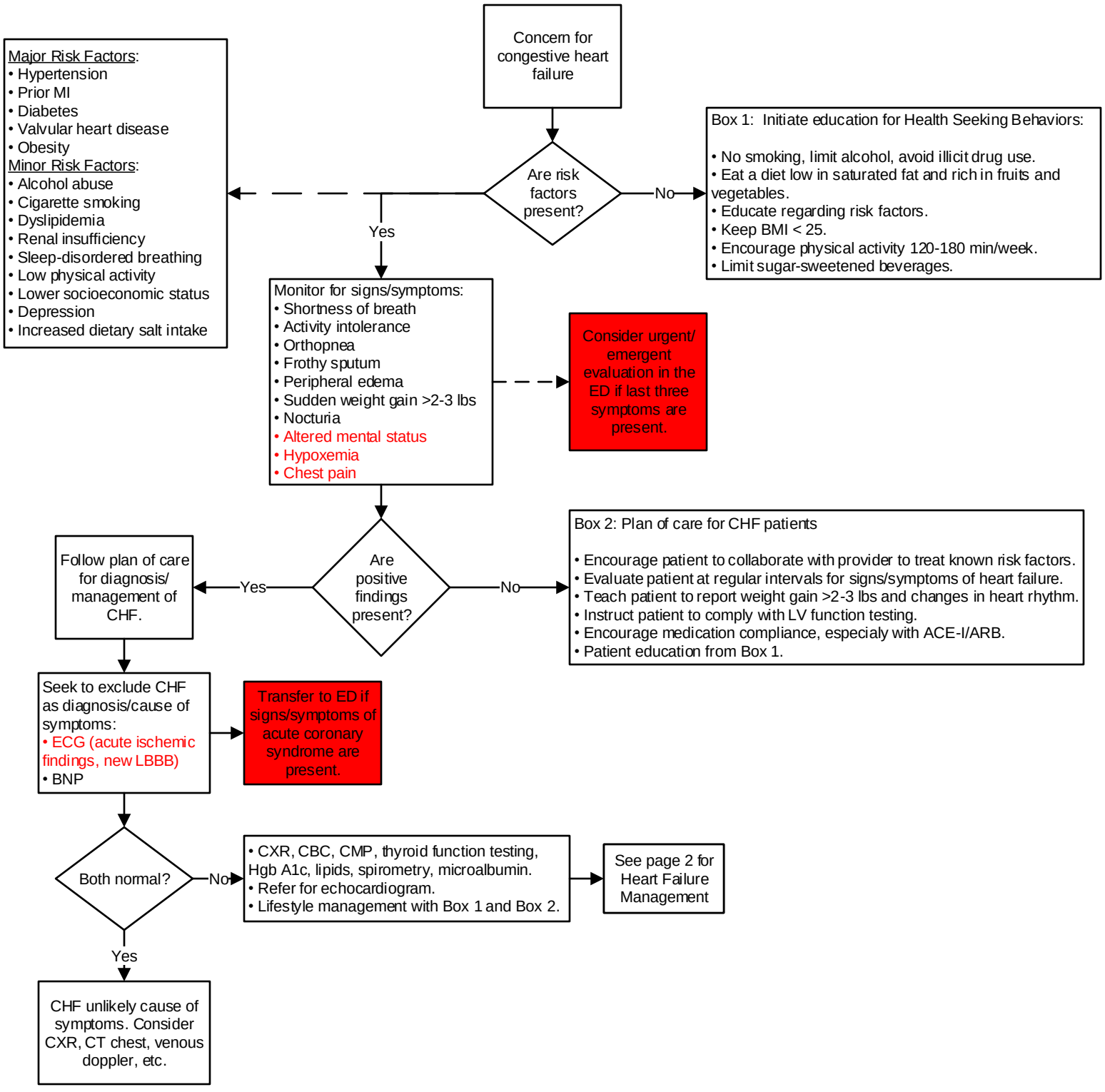
Aspirin produces significant reductions in mortality amongst survivors of cardiovascular disease, but its role in the primary prevention of cardiovascular disease amongst healthy adults is less clear.

See **table under "Possible Benefits"** for summary of RCT data for low dose aspirin in the primary prevention of cardiovascular disease.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Congestive Heart Failure, page 1



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. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Congestive Heart Failure, page 2

Stage A
At high risk for heart failure without structural heart disease or symptoms.

Patients with
- Hypertension
- Atherosclerotic disease
- DM
- Obesity
- Metabolic syndrome
- Patients on cardiotoxins
- Patients with FHx of cardiomyopathy

Goals:
- Heart healthy lifestyle
- Prevent coronary and vascular disease
- Prevent LV structural abnormalities

Drugs:
- ACE-I or ARB +/- thiazide
- Statin as appropriate
- Aspirin as appropriate

Stage B
Structural heart disease but without signs or symptoms of heart failure

Patients with
- Previous MI
- LV remodeling including LVH and low EF
- Asymptomatic valvular disease

Goals:
- Prevent heart failure symptoms
- Prevent further cardiac remodeling

Drugs:
- ACE-I or ARB
- Beta-blocker as appropriate
- Thiazide diuretics
- Statin as appropriate
- Aspirin as appropriate

In select patients:
- ICD
- Revascularization or valvular surgery as appropriate

Stage C
Structural heart disease with prior or current symptoms of heart failure

Patients with
- Known structural heart disease
AND
- Signs and symptoms of heart failure

Preserved EF

Goals:
- Control symptoms
- Improve quality of life
- Prevent hospitalizations
- Prevent mortality

Treatment:
- Identify and follow guidelines to treat co-morbidities (DM, HTN, CAD, afib)
- Diuresis to relieve symptoms of congestion

Drugs:
- ACE-I or ARB
- Beta-blocker
- Loop diuretic
- Statin as appropriate
- Aspirin as appropriate

Reduced EF

Goals:
- Control symptoms
- Improve quality of life
- Prevent hospitalizations
- Prevent mortality

Drugs:
- Diuretic
- ACE-I or ARB
- Beta-blocker
- Aldosterone antagonists**
- Statin as appropriate
- Aspirin as appropriate

For selected patients:
- Hydralazine/isosorbide dinitrate
- Digoxin
- Cardiac resynchronization therapy
- ICD
- Revascularization or valvular surgery

Stage D
Refractory heart failure

Patients with marked heart failure symptoms at rest

Goals:
- Control symptoms
- Improve quality of life
- Reduce hospitalizations
- Establish end-of-life goals

Options:
- Heart transplant
- Chronic inotropes
- Temporary or permanent mechanical circulatory support
- Experimental surgery or drugs
- Palliative care/hospice
- ICD deactivation

Calcium channel blocker contraindicated in Stage C.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Hypertension, Adults

BP Technique

- Use the appropriate sized cuff after 5 minutes of rest.
- Patient should be sitting or semi-reclining (not fully reclining).
- Confirm elevated levels at subsequent visits.

Patient >18 years, not pregnant

- Review meds for causes of increased BP.
- Implement lifestyle modifications.
- Set BP goal.

Definitions

- Normal: sBP <120 and dBP <80 mmHg
- Elevated: sBP 120-129 and dBP <80 mmHg
- HTN stage 1: sBP 130-139 or dBP 80-89 mmHg
- HTN stage 2: sBP ≥ 140 or dBP ≥90 mmHg
- Clinical CVD defined as: CHD, CHF, and stroke

Normal BP

Promote healthy lifestyle. Reassess yearly.

Elevated BP

Non-pharmacological interventions (see box). Reassess in 3-6 months.

HTN Stage 1

DM, CKD, known CVD, or **10-year ASCVD event risk** ≥ 10%?

Yes

For all ages, BP goal is <130/80 mmHg.
- Consider home BP monitoring.
- Non-pharmacological interventions (see box).
- Start anti-hypertensive.
- Reassess monthly until control is achieved.

At goal?

- **Yes** → Reassess Q3-6 months.
- **No** → Optimize/assess adherence. Consider intensification of therapy.

No

- Consider home BP monitoring.
- Non-pharmacological interventions (see box).
- For age ≥65, noninstitutionalized, ambulatory patients: sBP goal <130 mmHg. Use caution if starting two agents.
- For other populations, medication threshold is ≥140/90 mmHg.

Consider a more flexible BP goal if...

- Labile or postural hypotension
- History of side effects to multiple antihypertensives
- Older than 75, with a high burden of comorbidities or diastolic BP less than 55mmHg

HTN Stage 2

For all ages, BP goal <130/80mmHg.
- Consider home BP monitoring.
- Non-pharmacological interventions (see box).
- Start anti-hypertensive.
- Reassess monthly until control is achieved.

At goal?

- **Yes** → Reassess Q3-6 months.
- **No** → Optimize/assess adherence. Consider intensification of therapy.

For Difficult-to-Control BP

- Consider referral to cardiologist or nephrologist.
- If requiring three or more medications, screen for secondary causes of HTN.

Initial Monitoring

- FBS/A1c
- Complete blood count
- Lipid profile
- Serum creatinine with eGFR
- Na, K
- TSH
- Urinalysis
- EKG

Initial Drugs of Choice

- Thiazide diuretic (chlorthalidone is recommended first-line)
- CCB
- ACE-I
- ARB

Beta-blocker NOT first line except in pregnancy or women who may become pregnant.

With ACE-I, ARB, and thiazides, check BMP 2-4 weeks after initiating treatment, 2-4 weeks after dose increases, and at least yearly if stable.

Compelling Indications for Certain Drug Classes

- DM: thiazide diuretic, CCB, ACE-I, or ARB
- DM with albuminuria: ACE-I or ARB
- CKD with albuminuria: ACE-I or ARB
- Heart failure with reduced ejection fraction: GDMT βB (carvediolol or metoprolol succinate) and ACE-I or ARB, then spironolactone
- Heart failure with preserved ejection fraction: βB and ACE-I or ARB
- Stable ischemic heart disease: GDMT βB (carvedilol, metoprolol succinate, nadolol, or propranolol; avoid βB with intrinsic sympathomimetic activity; do not use atenolol), ACE-I or ARB (CCB if angina)
- Secondary stroke prevention: thiazide diuretic, ACE-I or ARB
- Pregnancy: methyldopa, nifedipine, and/or labetalol
- Race and ethnicity: black patients without HF or CKD (with or without DM): Thiazide diuretic or CCB. Of note, two or more BP lower medications are recommended in most black adults with hypertension to reach a goal of <130/80 mmHg.

GDMT: guideline-direct management and therapy

Non-Pharmacological Interventions

- Smoking cessation
- Control blood glucose and lipids
- Diet
  - Weight loss in adults who are overweight or obese
  - Healthy diet (e.g., DASH) that facilitates achieving desirable weight
  - Reduce sodium intake <1500 mg/day or aim for at least a 1000 mg/day reduction in most adults
  - Potassium supplementation (3500-5000 mg/day) preferably in diet, unless contraindicated
  - Limit alcohol to two drinks/day for men and one drink/day for women
- Physical activity: increase physical activity with a structured exercise program 90-150 minutes/week

References

1. Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Hypertension. 2018 Jun;71(6):e13-e115.
2. James PA, Oparil S, Carter BL, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA. 2014 Feb 5;311(5):507-20.
3. Wald DS, Law M, Morris JK, Bestwick JP, Wald NJ. Combination therapy versus monotherapy in reducing blood pressure: meta-analysis on 11,000 participants from 42 trials. Am J Med. 2009 Mar;122(3):290-300.

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If comments about this guideline, please contact Jason_Barrett@ykhc.org or Marsha_Dunkley@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Post-MI Management

Patient discharged from hospital with acute MI (STEMI and NSTEMI).

Appointment made in outpatient clinic or SRC within 1-2 weeks of discharge:
- Review cardiology plan, including medication list; echo with EF; and timeline for cardiology f/up, stress test, or diagnostic testing
- EKG
- CMP*
- Lipid panel*
- A1c*

*if not available from recent hospitalization

Angina Treatment

- Sublingual nitroglycerin as needed.
- Uptitrate metoprolol to goal HR 55-60.
- Consult cardiology for consideration of long-acting nitrates, calcium channel blockers, and/or ranolazine, repeat stress testing if needed.

How was patient revascularized?

- PCI
  - Drug-eluting stent → Aspirin + $P2Y_{12}$ inhibitor, Goal >1 year, Minimum 6 months
  - Bare metal stent → Aspirin + $P2Y_{12}$ inhibitor, Goal >1 year, Minimum 1 month
- CABG → Aspirin + $P2Y_{12}$ inhibitor, Goal >1 year, Minimum per surgeon discretion
- None, medical management → Aspirin + $P2Y_{12}$ inhibitor, Goal >1 year, No minimum

For All Patients (See Post-MI Medication Box):
- Beta blocker
- ACEi or ARB
- Statin

EF <40%? Yes → Aldosterone antagonist (See box.)

No

- Give PPSV23 if not previously given.
- Counsel about smoking cessation.

PCP follow up in 4-6 weeks:
- EKG if not done at first visit
- BMP
- Titrate medications as needed to reach goals.

Long-Term Follow-Up

- PCP follow up every 4-8 weeks as needed to obtain goal medical management.
- Cardiology follow up scheduled in 3-6 months, then per specialist.

Post-MI Medication Box

1. Antiplatelet therapy
- aspirin 81-162mg daily for life
- $P2Y_{12}$ inhibitor
  - clopidogrel 75mg daily
  - ticagrelor 90mg BID
  - prasugrel 5-10mg daily

Note: discuss with cardiology if considering stopping or holding DAPT within 1 year of MI with drug eluting stent.

2. Beta blocker: Goal HR 55-70. Avoid in patients with SBP <90, conduction abnormalities.
- metoprolol succinate starting dose 25-50 mg, target dose 200 mg daily (or maximum tolerated without side effects)
- atenolol starting dose 25 mg BID, target dose 50 mg BID
- carvedilol starting dose 6.25 mg BID, target dose 25 mg BID

3. ACEi/ARB: Goal BP <130/80. Continue at low dose even if at goal at baseline.
- lisinopril 5-40 mg daily
- losartan 25-100 mg daily

4. Statin therapy: Goal LDL<70
- high intensity (all patients age <75 yo)
  - atorvastatin 40-80 mg daily
  - rosuvastatin 20-40 mg daily
- moderate intensity (patients age >75 OR intolerant of high intensity)
  - atorvastatin 10-20 mg daily
  - rosuvastatin 5-10 mg daily
  - simvastatin 20-40 mg daily

Note: if not at LDL goal <70, consider adding second agent (ezetimibe, fibrate, PCSK9 inhibitor, etc.).

5. Aldosterone antagonist: Monitor BMP. Avoid if K>5, CrCl <30.
- spironolactone 12.5-50mg daily
- eplerenone 25-50mg daily

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Approved by MSEC 6/8/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Return to Table of Contents.

Yukon-Kuskokwim HEALTH CORPORATION

Gastrointestinal, Hematologic, & Endocrine Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Diabetes Mellitus, Type 2

Disclaimer: Diabetes is a complex disease; however, the management of diabetes is considered an essential skill of ambulatory care. Please be familiar with the ADA guidelines for treatment **here**, and the abbreviated version **here**.

Diagnostic Criteria

Unequivocal symptoms of hyperglycemia (thirst, polyuria, weight loss, and blurry vision) and either any one of the following OR any two of the following. (Take confirmatory test as close as possible to initial lab value to avoid treatment delays.)

- FPG* ≥ 126mg/dl
- 2 hour PG ≥ 200mg/dl during OGTT
- Hgb A1c ≥ 6.5
- RPG ≥ 200mg/dl and symptoms of hyperglycemia or hyperglycemic crisis

Note: Fasting is defined as no caloric intake for at least 8 hours.

Causal Factors

- Dietary pattern: liquid calories, processed foods/carbohydrates, to lesser extent fat intake.
- Physical inactivity.
- Excessive cortisol: usually past trauma or chronic stress.
- Iatrogenic: psychiatric meds or corticosteroids.

Lifestyle Management

- Self-care through sleep hygiene, mindfulness, nature, and similar efficacious stress reduction techniques.
- Advise developing a positive, supportive social network.
- Use patient centered SMART goals, including consideration of individualized targets, impact on weight, hypoglycemia risk, side effect profile of medications, and complexity of regimen. Choose regimen to optimize adherence and persistence.
- Exercise is medicine: Titrate to 150 min/week minimum.
- Advise 7-10% weight loss if obese.
- Recommend traditional Alaska Native diet with emphasis on maximizing plants and high fiber foods.

Screen all overweight or obese adults with one or more other **risk factors** and all adults >45 years for type 2 diabetes mellitus.

↓ See diagnostic criteria.

Confirm diagnosis and add to problem list in RAVEN.

↓

- Refer all new diagnoses of diabetes or prediabetes to the Diabetes Department.
- In RAVEN, order "Refer to Diabetes Program Internal" and select appropriate reason. Add additional comments/ questions/requests.
- Call 543-6133 for same-day counseling appointments.

↓

Schedule follow up appointment for 2-4 weeks and coordinate with diabetes department if possible.

↓

At initial and annual diabetes visits:

- Perform health measures (see box).
- Discuss and educate on pathophysiology in patient centered terms.
- Identify and quantify causal factors (see box).
- Initiate lifestyle management (see box).
- Set **A1c target** based on age and risk factors or complication risk.
- Set BG Monitoring goals and methods.
- Risk stratify patient by comorbidities and ASCVD risk (see box).
- Refer to appropriate diabetes resources (see box). Refer to Diabetes Department for all new diagnoses and annually (or more frequently) if not meeting A1c or lifestyle goals.

Comorbidities and ASCVD Risk

Comorbidities must be evaluated before medication initiation and at least annually. Document in chart and address in visit Assessment and Plan where appropriate. May use the 10 year ASCVD **Risk Calculator**.

- Heart failure
- CKD: classified based on cause, GFR, and albuminuria. See **link**.
- Hypertension
- Obesity
- Obstructive sleep apnea

Health Measures

- Review Health Maintenance in RAVEN.
- Give diabetes-related and dosed immunizations if due.
- Foot exam.
- Mental health screen (refer to BH if needed).
- Sexual health screen and family planning discussion.
- Labs if not already done: A1c, lipids, CMP, urine microalbumin.
- Refer to optometry.
- Refer to dental.

Remember: language matters.
See this **ADA resource**.

Diabetes Resources

- Diabetes Self-Management Education and Support (DSMES)
- Medical Nutrition Therapy (MNT)
- Continuous Glucose Monitor (CGM): usually for those with A1c >9, those on insulin, or those not achieving A1c goals. See **ADA paper**.
- Other (DM support group, exercise physiology for exercise Rx)

Abbreviations/Acronyms

ADA = American Diabetes Association
ASCVD = Arteriosclerotic cardiovascular disease
BH = Behavioral Health
CKD = chronic kidney disease
CMP = Complete Metabolic Profile
DM = Diabetes mellitus
FPG = Fasting Plasma Glucose
Hgb A1c or A1c for short = Hemoglobin A1c or glycosylated hemoglobin
HTN = Hypertension
OGTT = Oral Glucose Tolerance Test
OSA = Obstructive sleep apnea
PG = Plasma Glucose
RPG = Random Plasma Glucose
SMART = Specific, Measurable, Achievable, Realistic, Time-limited

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Approved by MSEC 9/2/20.
Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Elizabeth_Tressler@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Type 2 Diabetes Mellitus Management

Abbreviations

- DPP-4i = dipeptidyl peptidase 4 inhibitor or gliptins. YKHC formulary saxagliptin (Onglyza).
- GLP-1 RA = glucagon-like peptide-1 receptor agonist. YKHC formulary liraglutide (Victoza).
- SGLT2i = sodium-glucose co-transporter-2 inhibitor. YKHC formulary empagliflozin (Jardiance).
- SU = sulfonylureas. YKHC formulary glipizide.
- TZD = thiazolidinedione. YKHC formulary pioglitazone.

Medication selection is based on comorbidities and patient centered goals.

↓

Always begin with lifestyle interventions. These are essential as medication response is often dependent on lifestyle measures.

↓

Metformin: always first-line unless true allergy. If not tolerated, allow patient a break and then re-try.

↓

Indicators of high-risk for ASCVD or established ASCVD, CKD, or HF?

Yes → Consider using a SGLT2i or GLP-1 RA independent of baseline A1c or A1c target. SGLT2i for CKD or HF and GLP-1 RA if ASCVD predominates.

No → Using shared decision making with patient, choose from any of the four classes: GLP-1 RA, SGLT2i, DPP-4i, TZD
Use GLP-1 RA or SGLT2i if weight loss/maintenance a goal.

↓

Follow-up in 1-3 months.

↓

If not achieving targets, continue to add classes of medications
GLP-1 RA or SGLT2i
+
DPP-4i (do not combine with GLP-1 RA) or TZD (do not use if HF present)
+
SU or basal Insulin
(Always maximize non-insulin medications first, including injectable GLP-1 RA unless the patient has significant hyperglycemia and weight loss. Then add insulin early.)

↓

Follow up visits at least every three months until lifestyle and A1c goals achieved.

If not achieving A1c goals, consider using CGM, revise SMART goals, utilize DSMES, DM support group, screen for Diabetes Distress or other psychosocial issues.

↓

- If not achieving A1c goals and on four classes of medication including basal insulin, consider referral to ANMC Diabetes program and/or multidisciplinary discussion with diabetes team.
- Add prandial insulin as needed and ensure insulin teaching, self-management goals, and that patient is performing appropriate monitoring
- Continue to utilize a patient centered approach with shared decision making. Revisit lifestyle behaviors, patient specific motivators, psychosocial factors, and address medical comorbidities.

Lifestyle Management

- Self-care through sleep hygiene, mindfulness, nature, and similar efficacious stress reduction techniques.
- Advise developing a positive, supportive social network.
- Use patient centered SMART goals, including consideration of individualized targets, impact on weight, hypoglycemia risk, side effect profile of medications, and complexity of regimen. Choose regimen to optimize adherence and persistence.
- Exercise is medicine: Titrate to 150 min/week minimum.
- Advise 7-10% weight loss if obese.
- Recommend traditional Alaska Native diet with emphasis on maximizing plants and high fiber foods.

Shared decision making includes an educated and informed patient and their family/caregiver, patient preference, motivational interviewing, goal setting, ensuring access to DSMES, and empowering the patient.

Diabetes Distress refers to negative psychological reactions to the emotional burden and patient worries specific to their experience of managing a complicated and demanding chronic disease. See ADA **position statement**.

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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

H pylori/Dyspepsia (Adult and Pediatric)

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

Weight loss/ fecal blood?

Yes

No

Empiric Treatment with H2 Blocker or PPI

Improvement?

Yes

Follow up for recurrence of clinical symptoms

No

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

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. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Iron Infusion for Chronic Iron-Deficiency Anemia (Adult & Pediatrics)

Iron-Deficiency Anemia Work-Up

- Evaluate for blood loss.
- Evaluate for dietary deficiencies.
- Labwork classically shows:
  - ↓ Hgb
  - MCV < 80
  - Ferritin < 30
  - ↑ TIBC

Causes of Iron-Deficiency Anemia

- Decreased dietary intake.
- Severe/ongoing blood loss (especially GI or uterine).
- In toddlers: excess milk intake. (Recommended daily milk intake is <16 ounces.)
- History of gastric bypass.
- Malabsorption syndromes.
- Coexisting inflammatory state that interferes with iron homeostasis (example: rheumatoid arthritis or lupus).

Diagnosis of iron-deficiency has been established.

↓

Patient meets criteria for iron infusion, and patient or parent has agreed to infusion.

↓

Provider places order "Refer to Infusion – Internal." Include patient's phone number.

↓

Provider places future orders using "AMB IV Iron" or "PEDS IV Iron" Power Plans.

↓

- Provider updates Problem List with Iron-Deficiency Anemia.
- In the comments, provider states the plan (iron infusion with date ordered) and includes goal hemoglobin after infusions.

↓

Infusion clinic nurse schedules patient for infusion. Case Managers write Letter of Medical Necessity. Village clinic arranges travel.

↓

- Infusion(s) given per orders.
- All patients should have a follow-up hemoglobin level checked one month after infusion.
- If not at goal hemoglobin, patient should return to Bethel outpatient clinic for further evaluation.

See **Anemia in Pregnancy** guideline for indications in pregnancy.

Indications for Iron Infusion

If patient is hemodynamically unstable due to anemia, consider transfusion regardless of hemoglobin level. Ensure iron studies have been sent prior to transfusion.

- Hemoglobin between 5 and 7 in a hemodynamically stable, asymptomatic patient:
  - -Patients <18 years: iron infusion likely indicated. Consult pediatric hematologist.
  - -Patients ≥18 years: consider iron infusion alone vs transfusion followed by iron infusion based on clinical judgment.
- Hemoglobin between 7 and 8 with failure of oral iron therapy. Failure is defined as:
  - - Minimal improvement in hemoglobin level despite at least two months of compliance with oral iron (in children 6 mg/kg/day; in adults ferrous sulfate 325 mg PO daily with ascorbic acid 250 mg PO daily)
  - - Intractable GI side effects
  - - Non-compliance after at least three attempts at oral iron therapy.
- Other patients may receive iron infusion if recommended by a hematologist.

Note: Patients <2 should have a hematology consult prior to beginning an infusion. The Infusion Center does not generally treat children <2, so they are generally admitted to Inpatient Pediatrics for iron infusions.

Iron Replacement Dose Calculation

$$Total\ Iron\ Replacement\ Dose\ (in\ mg) = 0.6\ x\ weight\ x\ \left[100 - \left(\frac{actual\ hemoglobin}{desired\ hemoglobin}\right) x\ 100\right]$$

For pediatric patients:
- Using iron sucrose, this dose should be given in aliquots of 5-7 mg/kg until the full replacement dose has been given. Max dose is 100 mg for initial dose and 300 mg for repeat doses.
- Per Pediatric Hematology, may give children two iron sucrose doses 24 hours apart and then repeat in 1-2 weeks. Giving more frequent dosing or more than two daily doses in a row results in decreased absorption and increased side effects in children.

For adult patients:
- Dose is typically iron sucrose 300 mg IV daily x3 doses.

Side Effects/Reactions

Efficacy and safety have been evaluated in adults and children older than two years. Consult pediatric hematologist for children younger than two years.

Specific reactions (rare):
- Hypersensitivity, including anaphylaxis and angioedema. Stop infusion immediately and treat as anaphylaxis.
- Hypotension (related to high total doses or rapid infusions). Stop infusion and treat with IVF, as appropriate.
- Infection: avoid administering if active systemic infection.
- For IV infiltrates, place cold pack.

Resources

- Consult Peds Wards On Duty by Tiger Connect.
- A pediatric hematologist can be reached for further questions at Alaska Pediatric Oncology at (907) 929-3773.
- ANMC Adult Hematology Oncology can be reached at (907) 729-1180.

Last reviewed 7/6/21. Click **here** to see the supplemental resources for this guideline.

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

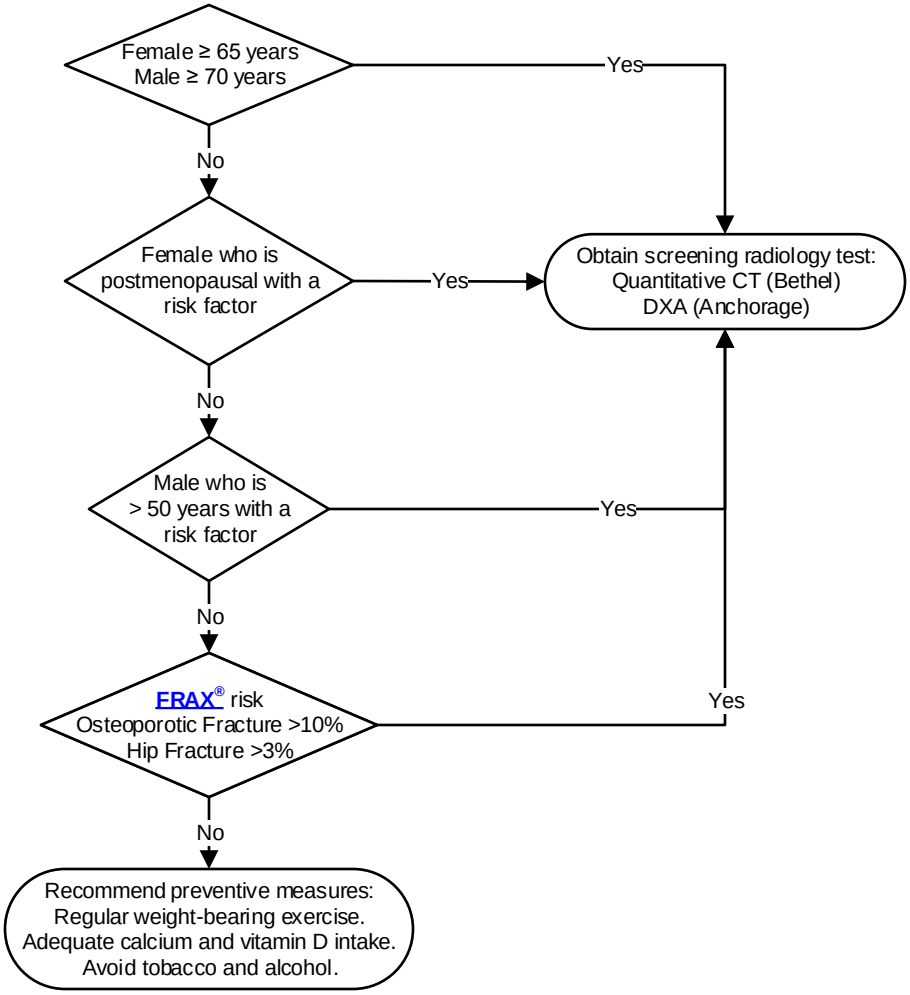
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Osteoporosis Screening

Risk Factors
- Osteopenia on X-ray.
- History of fracture without trauma.
- Tobacco use.
- Excessive alcohol use.
- Height loss more than ½ inch in one year.
- Height loss more than 1.5 inches total.
- At risk medication use (see box below).
- BMI < 20.
- Premature menopause.

At Risk Medications
- Systemic steroids >3 months
- Methotrexate
- Aromatase inhibitor
- Selective estrogen receptor modulator
- Proton pump inhibitor
- Heparin
- SSRI



Recommended Calcium Intake

Age	Sex	RDA mg/day
9-18	M+F	1300
19-50	M+F	1000
51-70	M	1000
51-70	F	1200
>71	M+F	1200

Recommended Vitamin D Intake

Age	Sex	RDA IU/day
14-70	M+F	600
>71	M+F	600

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Osteoporosis Treatment

Abbreviations
BMD – Bone mineral density
BTM – Bone turnover markers
FRAX® – Risk scoring algorithm

FRAX® High Risk for Fracture
10 year risk of major osteoporotic fracture ≥ 20% or hip fracture risk ≥ 3%.

If patient has one or more of the following:
- Lumbar spine or femoral neck or total hip T score ≤ -2.5
- CT bone density < 80 mg/cm^3
- History of a fragility fracture
- High FRAX® fracture probability

Evaluate for secondary causes of osteoporosis.

Some Secondary Causes of Osteoporosis
- Drugs
- GI-related illness
- Bone marrow disease
- Endocrine disorder
- Organ transplant

Correct calcium/vitamin D deficiency and address secondary causes of osteoporosis.

Educate patient on lifestype measures, fall prevention, and benefits and risks of medications.

Obtain dental evaluation of and treatment for risk of osteonecrosis of jaw.

Consider endocrinology consultation.

Prior fragility fracture

No → Start alendronate.

Reassess at least yearly.

Worsening?

Yes → Assess compliance. Reevaluate for secondary causes of osteoporosis.

Switch to zoledronic acid or denosumab.

No → Consider drug holiday after five years.

Resume therapy when fracture occurs, BMD declines, or BTM rises.

Yes → Start zoledronic acid or denosumab.

Place note in RAVEN that includes autotext "..OsteoporosisPreTreat" at least two weeks prior to visit for medication.

Reassess at least yearly.

Worsening?

Yes → Consult adult endocrinologist.

No → Consider drug holiday after six years with zoledronic acid.

Adapted from AACE/ACE 2016 Postmenopausal Osteoporosis Treatment Algorithm.

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

Yukon-Kuskokwim HEALTH CORPORATION

Infectious Disease Guidelines

Infectious Disease

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Amoxicillin Allergy Trials (Pediatric)

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.
• Children labelled as allergic to penicillin/amoxicillin often carry that label for the rest of their lives.
• 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 or diarrhea

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. True hives are uncomfortable. Ask if the rash bothered the child.
• 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.

Patient labeled with a penicillin/ amoxicillin allergy.

↓

Review history. (See box.)

↓

Was the reaction anaphylaxis (see box) or other life-threatening reaction (eg Stevens-Johnson syndrome, etc.)?

→ Yes:
• Do not give drug or perform trial.
• Update chart, including the Problem List and a comment on the allergy.
• Refer to Allergy & Immunology at 5.

↓ No

What was the reaction?

History

Chart review:
• Review notes in allergy alert. Find date allergy was added, and then review notes from that day. Was ED visit or hospital admission required?
• Review Multimedia Manager photos.
• Were steroids or other treatment given?
• Has patient received a drug of the same class since the allergy was reported? Was it tolerated? Were there symptoms?

History from patient/family:
What was the reaction?
- Vomiting and/or diarrhea?
- Rash?
  Age? Time from first dose?
  Hives? (See box.) Was it itchy?
  Blistering or peeling?
  Photos from family?
- Trouble breathing?
- Swelling of tongue/lips?
- Joint swelling or fever?
- Mucous membrane involvement?

Rash

True hives, skin blistering/peeling, or mucous membrane involvement

↓

• Do not give drug or perform trial.
• Update chart, including the Problem List and a comment on the allergy.
• Refer to Allergy & Immunology at 5.

Viral-appearing rash or other type of rash

↓

Not a true allergy.
• Educate and perform Amoxicillin Trial (see box).
• If patient/family refuses trial, update Problem List.
• Offer future trial or refer to Allergy & Immunology at age 5 for amoxicillin allergy testing.

Vomiting and/or diarrhea without any other S/Sx anaphylaxis

↓

Not a true allergy.
• Educate and perform Amoxicillin Trial (see box).
• If patient/family refuses trial, update Problem List.
• Offer future trial or refer to Allergy & Immunology at age 5 for amoxicillin allergy testing.

Other

↓

Get more history. Consider pediatric consult.

Amoxicillin Trial Procedure[2]

Use AMB Amoxicillin Trial Power Plan.

1. Obtain VS. Perform physical exam, including lung exam. Have appropriate dose of EpiPen or epinephrine.
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."

Notes:
• If patient is on a beta-blocker, stop this for 24 hours prior to procedure, if possible. Beta-blockers can interfere with treatment for anaphylaxis, if it occurs.
• Ensure that patients with asthma have optimal control prior to this procedure.

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 8/3/21. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Suspected Botulism

Potential exposure to botulism:
• Ingestion of fish/food fermented in an anaerobic environment or seal oil.
• Development of concerning symptoms thereafter (12-36 hours typical, but can be 6 hours to 10 days).

Clinical paradigm suggesting botulism?
• GI symptoms with autonomic or neurologic abnormality
• Cranial nerve deficit with no apparent cause
• Descending symmetrical paralysis or weakness with no apparent cause

AND

At least three of the five following symptoms present (botulism "diagnostic pentad")?
• Dilated or fixed pupils
• Diplopia
• Dry throat
• Dysphagia
• Nausea or vomiting

Other Symptoms

• Sore throat
• Dysarthria
• Hyporeflexia
• Urinary retention
• Ileus

No

Suspected Botulism

• Obtain appropriate labs (below).
• Admit for close clinical monitoring.

Yes

High Risk for Botulism

• Obtain blood for botulism testing before starting BAT.
• Start BAT. Watch for signs of anaphylaxis.
• Complete **BAT packet** found on State Epi website.
• Supportive care based on clinical picture.
• If not requiring higher level of care, admit for close clinical monitoring.

All cases:
• Contact AK State Office of Epidemiology.
• Collect lab specimens for testing at state lab:
  -Collect 5-10 ml of serum (or 20 ml whole blood) for botulism testing (before BAT)
  -Collect any stool (10-50 ml) and emesis (20 ml) for botulism testing
  -When possible, also collect suspect food (50 g, keep cold)
• Monitor clinically as an inpatient (Rapidly-progressing illness. 24 hours likely adequate):
  -Watch for "diagnostic pentad" symptoms above. Start BAT as appropriate.
  -Obtain FVC at baseline every 1-2 hours. Intubate if FVC declines 30%.
• Standard precautions are appropriate (not transmitted person-to-person).

Botulism Anti-Toxin (BAT)

• BAT does not reverse current anticholinergic symptoms but prevents progression by binding the toxin in the blood.
• No adverse effects of BAT have been reported thus far.
• Pharmacy can assist with the BAT packet forms to be completed when administered.

Resources

• AK State Office of Epidemiology **Website**:
  -907-269-8000 (M-F, 8-5) and 800-478-0084 (after hours)
• State Lab **Website**:
  -1-855-222-9918
Division of Public Health Healthcare Provider **Checklist**

Note: Botulism toxin only causes flaccid paralysis. Patients are awake, alert, and aware. Procedures should be explained and appropriate pain control and sedation for intubated patients should be provided.

Infant Botulism:

This is rare, with only 5 reported cases in AK in the past 65 years. If suspected, see Epi Procedure Manual, Botulism at State website.

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 12/2/20. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Lisa_Evans@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Bronchiectasis/Chronic Cough (<18 years)

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 Risk

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

Chronic Management

Acute 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. At every visit:
  - Patient and caregiver should repeat diagnosis.
  - Review plan for exacerbations.
  - Check that bronchiectasis is on Problem List.
• Annual PFTs if >5 years.
• Annual flu vaccine.
• Pneumococcal vaccines: PCV-13 series followed by one dose of PPSV-23 (Pneumovax) at ≥ 2 years.
• 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.

Transition of Care

• Review diagnosis and management with patient and caregiver at each visit. Patient and caregiver should verbalize diagnosis, treatment, and exacerbation plan.
• At age 17, a pediatrician should review chart and refer patient to pediatric pulmonology for chest CT, treatment plan, and handoff visit.
• At age 18, a pediatrician should schedule a transition of care appointment with family medicine, write an Alert Note that includes a summary of medical history and current treatment plan, and refer to adult pulmonologist.

• 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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Bronchiolitis/Wheezing (3–24 months)

NOTE:
• If <3 months or history of prematurity, keep patient in Bethel and have low threshold for admission.
• If patient is <90 days and febrile, please see **fever guideline**.

Risk Factors for Apnea

• RSV
• Post-conceptual age <48 weeks
• Low birth weight
• Tachypnea or bradypnea
• Decreased oxygen saturation on room air

Risk Factors for Severe Disease

• Age <3 months
• History of prematurity
• History of cardiopulmonary disease
• Exposure to tobacco smoke

Hypoxemia

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

Pulse-Oximetry Monitoring

• Pulse-ox may be ordered Q4h (not continuously) if patient >6 months and 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

Prevention

• Hand washing
• Encourage breastfeeding
• Tobacco cessation
• Palivizumab for high-risk infants

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, lethargy, and/or hypoxia.

Mild respiratory distress
Intermittent tachypnea, increased work of breathing, and/or hypoxia but tolerating PO intake well.

Obtain CXR

Evidence of pneumonia?

Yes → See **Pediatric Community-Acquired Pneumonia Clinical Guideline**

No → Continue SUPPORTIVE MEASURES with close follow-up as needed

• 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 to any → Make patient NPO. Start IVF. Transfer to Anchorage. Consider high flow nasal cannula.

No to all → Admit to YKHC Pediatric 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?

Improvement? 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. (May give Q2h nebs x3 on the floor, but if patient needs sustained Q2h treatment, initiate transfer to higher level of care.)
• Racemic epinephrine neb.
• Use with caution if HR > 200.

Improvement? Yes → Discharge home with close follow-up within a week.
Update vaccines prior to discharge.

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 and/or saline (0.9%) 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 Hx recurrent wheezing with viral illnesses, start budesonide 1 mg by nebulizer twice daily for 7 days.
• If unable to bring to Bethel and worsening, consult a pediatrician and consider systemic steroids.

Respiratory Viral Panel

• Send nasal swab for RSV, flu, and COVID.
• If flu positive, consider treatment with oseltamivir per **influenza guideline**, if appropriate.

Steroids

• Recent national guidelines recommend that children <4 with recurrent wheezing with viral illnesses should be given a 7-10 day course of inhaled steroids like budesonide or fluticasone.
• National guidelines recommend against systemic steroids as the potential harm is generally greater than the potential benefit.
If considering starting systemic 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 11/2/21. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org or Jennifer_Hampton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Croup/Stridor (6 months – 3 years)

Signs of Impending Airway Compromise

- Drooling
- Lethargy
- Tripod position
- Marked retractions
- Tachycardia
- Cyanosis or pallor
- Rapid progression of symptoms

NOTE: Use extra caution in children with airway anomalies or ANY history of prior intubation.

Child with stridor

Are there signs of impending airway compromise?

Yes

Be prepared for possible intubation:
- Activate medevac if in village.
- Page CRNA and pediatrician on-call.
- Obtain IV access x2.
- Prepare ET tubes 0.5 and 1.0 sizes smaller than what the Critical Care Guide recommends.

No

Do not routinely obtain CXR or airway imaging.

Important Supportive Measures

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

Dexamethasone 0.6 mg/kg by least invasive method possible (PO/IM/IV). (Max dose 16 mg.)

May use IV/IM form (10 mg/mL) orally (with flavoring or sugar) to minimize volume.

Is there stridor at REST?

Yes

No

The **Croup Severity Score** may be helpful in clinical decision making.

In Village

If no racemic epinephrine available, mix 0.5 mL/kg of 1 mg/mL (1:1000) epinephrine (max dose 5 mL) with 1 bullet of NS and give via nebulizer.

Give nebulized racemic epinephrine:
<10 kg: 0.25 mL mixed with 3 mL NS
≥10 kg: 0.5 mL mixed with 3 mL NS
Monitor pulse during and after administration.

Is there rapid improvement?

No

Yes

Monitor in clinic or ED for 4 hours.

Does patient meet Low-Risk Criteria?

Low-Risk Criteria

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

No

- If in village, bring to Bethel by fastest means possible.
- Consider repeating racemic epinephrine with CRM, budesonide neb, transfer, etc.
- Consult PICU if considering intubation.
- Consider alternate diagnoses (see DDx box).

Yes

- Discharge home with follow-up within 24 hours.
- May need to re-dose dexamethasone in 24 hours.
- Counsel parents to return for recurrent stridor and/or increased WOB.
- Give PEDS Custom Croup Education Handout.

DDx Stridor

- Croup (most common in ages 6 months to 3 years)
- Foreign body
- Tracheomalacia
- Angioedema
- Tracheitis
- Epiglottitis
- Abscess

Note: if prolonged symptoms (>3-5 days without any improvement), consider diagnosis other than croup.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 8/3/21. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@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.

Village Management

- If well-appearing and meets criteria for evaluation in Bethel, send on next commercial flight. If travel to Bethel will be delayed, infant must have recheck with health aide within 12 hours and be followed at least daily 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 per box below.

Sick-appearing

- Evaluate patient in Bethel ED.
- Perform immediate work-up:
  - CBC with manual differential
  - Procalcitonin, CRP
  - Blood culture
  - U/A, urine culture
  - CXR
  - LP if stable
  - RSV/flu/COVID swabs

Admit or medevac, as appropriate. Give antibiotics. (See box.)

Well-appearing

0-28 days

- Evaluate patient in Bethel ED.
- Perform immediate work-up:
  - CBC with manual differential
  - Procalcitonin, CRP
  - Blood culture
  - U/A, urine culture
  - CXR
  - LP if stable
  - RSV/flu/COVID swabs

Admit or medevac, as appropriate. Give antibiotics. (See box.)

29-60 days

- Evaluate patient in Bethel ED.
- Perform work-up:
  - CBC with manual differential
  - Procalcitonin, CRP
  - Blood culture
  - U/A, urine culture
  - Consider CXR, RSV/flu/COVID swabs

Meets all Low Risk Criteria (see box)?

No

- Perform LP.
- Give antibiotics. (See box.)
- Consider admission.

Yes

Evidence of UTI, AOM, or PNA?

Yes

- Consider LP based on clinical status, age, etc. LP not mandatory in well-appearing infants.
- Admission or daily follow-up until blood culture negative at least 36 hours.
- If UTI, treat empirically with cephalexin or ceftriaxone, pending speciation of culture.
- If AOM or PNA, use clinical judgment to decide on antibiotic treatment (oral or parenteral).

No

- LP and antibiotics unnecessary unless clinical status changes.
- Daily follow-up until blood culture negative at least 36 hours.

61-90 days

No temp >101.3
AND
Fevers resolve by 48 hours
AND
Meets all Low Risk History & Exam Criteria?

No

- Evaluate patient in Bethel.
- Perform work-up:
  - U/A, urine culture
  - Consider bloodwork and LP based on history, exam, and risk factors.

Yes

- Daily rechecks in village, outpatient clinic, or ED until improving.
- Low threshold to bring to Bethel ED if any concerns.

Low Risk Criteria

History & Exam
- Well-appearing (soothable, feeding well, etc.)
- No significant prior hospitalization.
- Gestational age >37 weeks.
- Neonatal course not complicated by: chromosomal anomaly, surgery (including G-tube), or infection.
- No evidence of invasive bacterial infection like cellulitis or osteomyelitis.

Lab
- Procalcitonin <0.5
- CRP <2
- Absolute neutrophil count (ANC) 1000-4000

CSF

- Do Multiplex PCR if any suspicion for meningitis.
- See Harriet Lane (not the results in RAVEN) for normal results by day of life.
- Do not use correction formulas for traumatic LPs.

If concerned for bacterial meningitis:

- Consult pediatrics and strongly consider medevac.
- If transferring, send any extra CSF on ice.

Acetaminophen

- Acetaminophen should NOT be given prior to vaccines, as there is some evidence it blunts the immune response.
- Acetaminophen should NOT be given around-the-clock in this age group.
- Acetaminophen MAY be given after a fever has been documented and the infant evaluated by a health aide or provider **EXCEPT in babies 61-90 days old who are being managed in the village as this may blunt the fever curve. If a child in the village is already scheduled to come to Bethel for further evaluation, acetaminophen may be given.**

Special Circumstances

1. If fever within 48 hours of immunizations, well-appearing, and meets all history & exam low-risk criteria: no work-up necessary but must follow-up in village or Bethel within 12-24 hours. If fevers are rising or infant is not well-appearing, perform evaluation as above.

2. Pre-treatment with antibiotics but otherwise meeting low-risk criteria: infant must be observed a full 48 hours off antibiotics.

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

NOTE: If 22-28 days old and well-appearing with low-risk lab criteria, recent studies allow deferral of LP if admitted ± antibiotics. Discuss with pediatrician and family if considering this option.

Antibiotic Treatment

- 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 5 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:
  - -If low suspicion for meningitis: ceftriaxone 50 mg/kg IV/IM Q24h
  - -If concern for meningitis: ceftriaxone 100 mg/kg IV once then 50 mg/kg IV Q12h AND vancomycin 20 mg/kg IV Q8h.
- Continue IV/IM antibiotics until cultures are negative at least 36 hours and patient is clinically stable or until specific organism and sensitivities are available to direct therapy.
- Dose #2 of ceftriaxone may be given 12-24 hours after dose #1.
- 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.

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 9/7/21. Click here to see the supplemental resources for this guideline.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Influenza (Adult and Pediatric)

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

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. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Megan_Young@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Lymphadenitis, Acute Cervical (Pediatric)

Pediatric patient presents with tender cervical lymph node with fever, redness, and/or warmth of the neck ≤2 weeks' duration

Look for infectious source to explain reactive lymphadenopathy, including pharyngitis, otitis, mastoiditis, etc. Treat as appropriate. Consider TB testing.

Size < 2 cm and no fluctuance

Recheck in 10-14 days. If no improvement, consider further work-up. (See box.)

Size 2-6 cm and no fluctuance

Unilateral

Consider CBC with diff, CRP, blood culture. Avoid ultrasound if symptoms ≤3 days.

Treat empirically with 7-10 day course of one of the following:
- Cephalexin 33 mg/kg (max 500 mg) PO TID
- Augmentin 45 mg/kg/dose BID if concern for poor dentition
- Clindamycin 10 mg/kg/dose TID.

Follow-up in 48-72 hours or sooner if worse.

Improvement:
- Complete full course of antibiotics.
- Follow-up if not resolved in 4-6 weeks.

No improvement:
- Consult ENT.
- Consider repeat bloodwork/further testing (see Box 1), broadening antibiotic coverage, imaging, etc.

Bilateral and symmetric

- Test for Group A Strep. Treat if positive.
- Consider Monospot testing if age > 13 years.
- Consider CBC with diff, CRP, LFTs, blood culture.

Supportive care

- Follow-up if no better in 2-4 weeks.
- Consider further work-up at this time. See Box 1.

Size > 6 cm or any size with fluctuance

- Consult ENT.
- Ultrasound if available.
- Consider CT neck.

Village Management

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

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, *Bartonella*

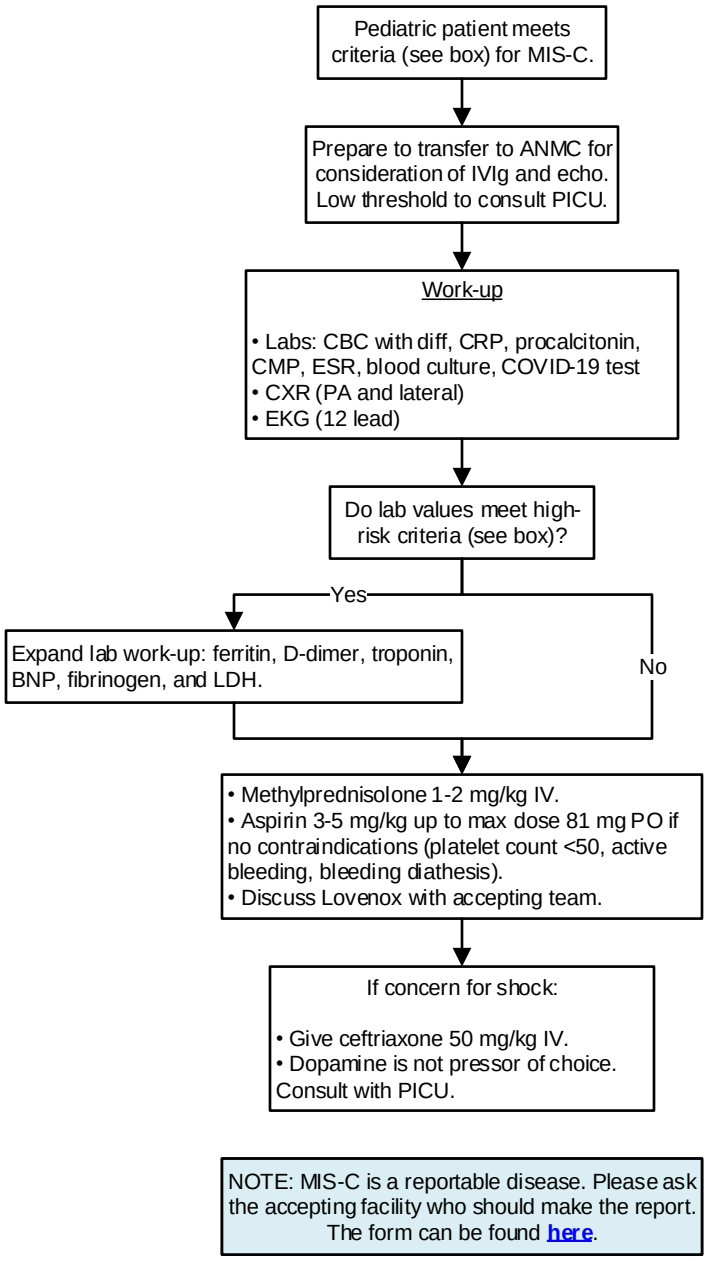
Less Common Causes to Consider
- Kawasaki disease; periodic fever with aphthous stomatitis, pharyngitis, and adenitis (PFAPA); leukemia; lymphoma; HIV; tularemia

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Care of a Pediatric Patient with Suspected Multisystem Inflammatory Syndrome (MIS-C)



NOTE: MIS-C is a reportable disease. Please ask the accepting facility who should make the report. The form can be found **here**.

Case Definition for Multisystem Inflammatory Syndrome in Children (MIS-C) According to the CDC

An individual <21 years presenting with:

1. Measured or subjective fever ≥ 100.4°F for ≥ 24 hours.

2. Laboratory evidence of inflammation with one or more of the following: elevated CRP, procalcitonin, ESR, fibrinogen, D-dimer, ferritin, LDH, IL-6, or neutrophils; low lymphocytes or albumin level.

3. Evidence of clinically severe illness requiring hospitalization with at least two organ systems involved:
   - Rash: polymorphic, maculopapular, petechial, NOT vesicular
   - GI symptoms: diarrhea, abdominal pain, vomiting
   - Extremity Changes: erythema and edema of hands and feet
   - Oral Mucosal Changes: erythema and cracking of lips, strawberry tongue, erythema of oral and pharyngeal mucosa
   - Conjunctivitis: bilateral bulbar conjunctival injection without exudate
   - Lymphadenopathy: cervical > 1.5 cm unilateral
   - Neurologic: headache, irritability, lethargy, AMS

4. No alternative plausible diagnoses.

5. Evidence of current or recent (within the last four weeks) COVID-19 infection.

May consider diagnosis even with negative COVID-19 testing if clinical suspicion is high.

High-Risk Lab Criteria

- CRP ≥ 3 and/or ESR ≥ 40

AND

- Lymphopenia < 1000, thrombocytopenia < 150,000, or sodium < 135

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Otitis Media, Acute (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

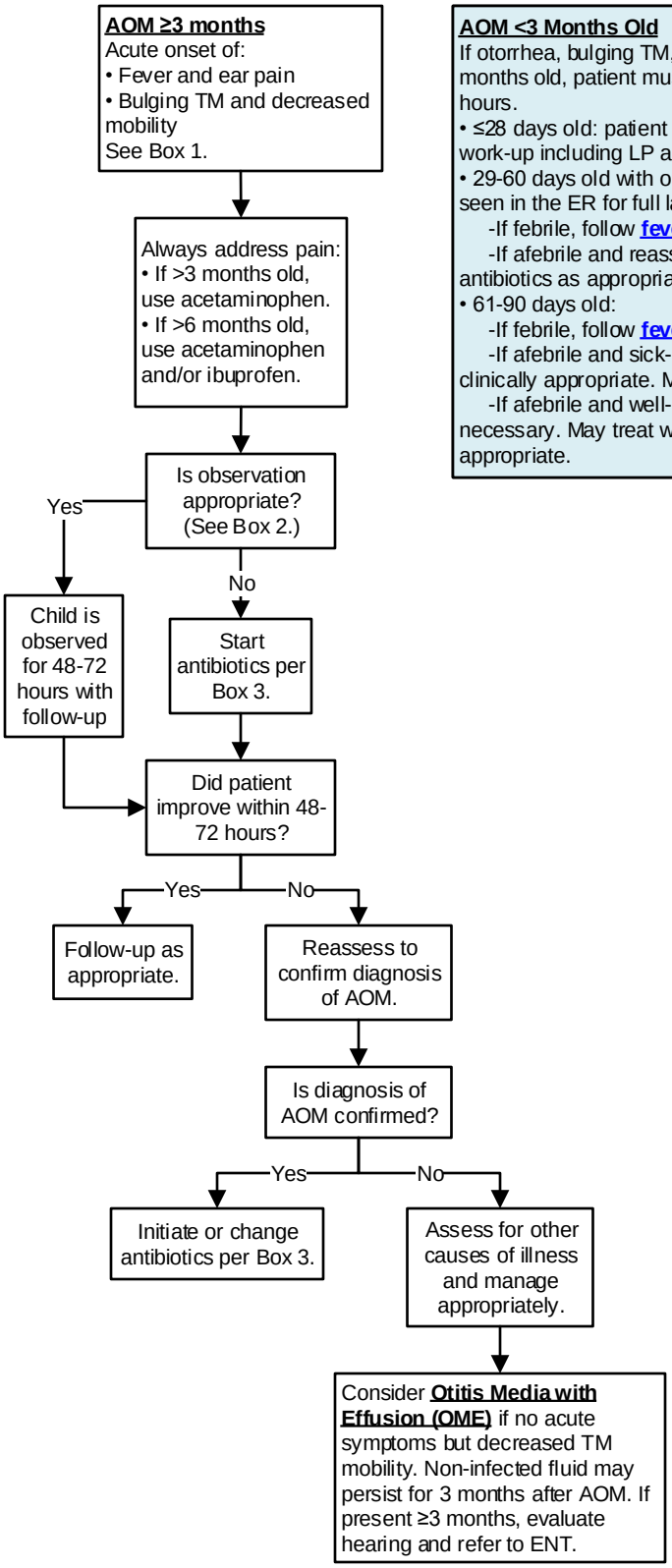
Try to avoid using cephalosporins. They are less effective at treating the most common organisms that cause OM.

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. Click here to see the supplemental resources for this guideline.
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

Peritonsillar Abscess & Cellulitis

Symptoms of Peritonsillar Abscess/Cellulitis

- Progressively increasing throat pain and swelling
- Muffled speech / change in voice
- Neck pain, typically unilateral
- Fevers, chills, myalgias
- Dysphagia, odynophagia

Labs

- CBC, BMP, CRP
- If needle aspiration, culture aspirate
- If SIRS or qSOFA >/= 2, add lactate, procalcitonin, blood cultures

Impending airway compromise?

Yes →
- Prepare for **intubation**. Anticipate difficult airway. Consider calling CRNA.
- Place IV; get labs. (See box.)
- Give antibiotics. (See box.)
- Transfer to higher level care.

No ↓

Signs/Symptoms of Impending Airway Compromise

- Drooling
- Patient in "sniffing position" (leaning forward)
- Anxious appearance with suprasternal retractions with or without stridor

Indications for CT Soft Tissue Neck with IV Contrast as Part of Initial Workup

- Toxic appearance
- Submental tenderness to palpation
- Neck stiffness, swelling, or pain with extension

Village Management

- Amoxicillin/clavulanic acid (preferred)
- If unable to swallow, IM penicillin OR ceftriaxone + clindamycin
- Ketorolac/acetaminophen
- Consider dexamethasone 10 mg.

Commercial flight to Bethel ER; discuss with ED MD if concern for airway compromise.

Consider CT. (See box.) ↓

Examination with ANY?

- Trismus
- Uvular deviation
- Peritonsillar swelling

No → Examination with peritonsillar erythema? No → Acute pharyngitis

Yes ↓

Attempt needle aspiration

No pus → Peritonsillar cellulitis

Pus ↓

Peritonsillar abscess

- Place IV; get labs. (See box.)
- Give antibiotics. (See box.)
- IV fluids.
- Consider dexamethasone 10 mg.
- Analgesia (non-opioid first).
- Monitor in ED minimum 3 hours.

Improving → Discharge on PO antibiotics with recheck in 24 hours.

Not improving ↓

Obtain CT neck with contrast. Deep tissue abscess → Consult ENT.

No deep tissue abscess ↓

Admit to inpatient on IV antibiotics.

Microbiology & Antibiotics

Continuum from pharyngitis > cellulitis/phlegmon > abscess. Often polymicrobial, typically GAS, *Strep viridans*, *Staph aureus*, fusobacterium, bacteriodes. MRSA coverage not indicated unless patient does not respond to initial antibiotic selection.

IV
Ampicillin/sulbactam 3 grams Q6h (preferred)
OR
Piperacillin/tazobactam 3.375 grams Q6h
OR
Ceftriaxone 1 gram Q12h + metronidazole 500 mg Q6h
OR
Clindamycin 600 mg Q6-8h (if penicillin allergy)

PO
Amoxicillin/clavulanate 875 mg BID (preferred)
OR
Cefpodoxime 300 mg Q12h + metronidazole 500 mg Q6h
OR
Clindamycin 300 mg Q6h (if penicillin allergy)

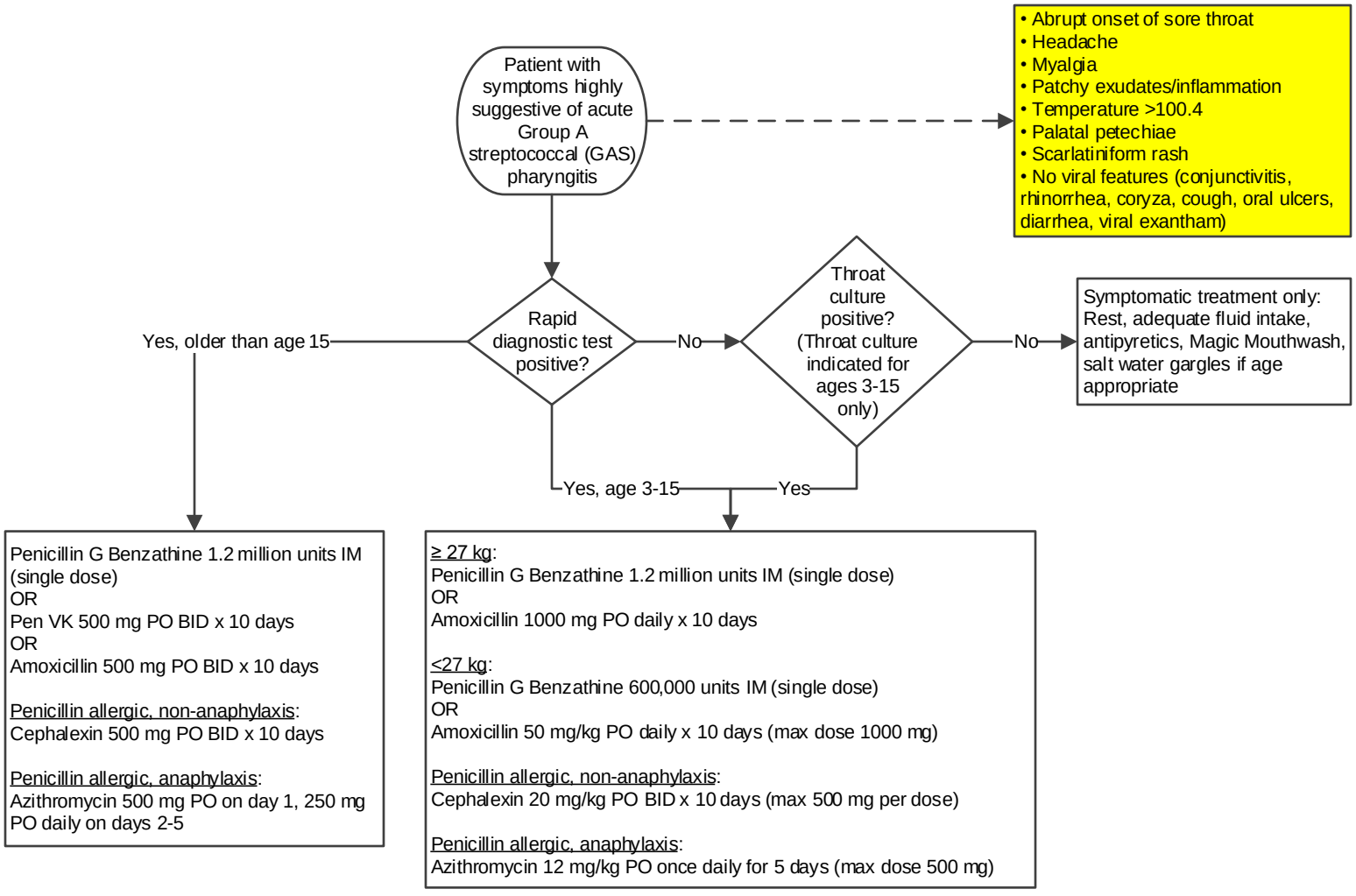
Treatment duration 14 days.

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 6/6/22. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Travis_Nelson@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pharyngitis (Adult and Pediatric)



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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Pneumonia (Adult)

Patient presents with symptoms suggesting community acquired pneumonia (CAP): Cough, dyspnea, fever, pleuritic chest pain

High Risk Patients
- Age > 65
- History of chronic heart/lung disease, liver disease, substance use disorder, HIV, cancer
- Hospitalized or received IV antibiotics within last 3 months

Appears ill, SpO2 < 92%, RR > 30, meets sepsis criteria?

No → CXR available?

No → Consider empirically treating village patients for pneumonia without CXR if:
- Convincing history and exam.
- No hypoxia, severe respiratory distress, or evidence of sepsis.
- No high risk comorbidities.
- OR if above conditions not met but patient declines travel.

→ • See Outpatient Antibiotics box. • Ensure close follow up in clinic.

Yes → • Initiate supportive care (O2, antipyretic). • Transfer to ER or contact emergency RMT.

Yes → Infiltrate on CXR?

No → Consider alternative diagnosis: asthma/COPD exacerbation, TB, bronchitis, CHF, PE, early in course of bacterial CAP.

Admission Criteria
- New supplemental oxygen requirement
- **Pneumonia Severity Index** Class III or higher
- Practical limitation to outpatient therapy (inability to tolerate oral meds, mental illness, homelessness, cognitive impairment)

Yes → Ill-appearing OR high risk patient (see box)?

No → • Start antibiotics. • Arrange follow-up.

Consider TB in all patients with pneumonia, especially if there is an upper lobe infiltrate, recurrent infiltrates, history of chronic cough, or hemoptysis. See the **Active TB** and **Latent TB** guidelines for more details.

Intensify Management
- IV, supplemental oxygen, monitors.
- CBC with diff, BMP/CMP.

Consider:
- COVID/flu/RSV swab
- TB testing, HIV (Note: ordering MTB-PCR does not mandate negative pressure room while awaiting result.)
- Sputum culture (if Hx bronchiectasis or covering MRSA/pseudomonas).
- Blood cultures and lactate if septic
- ABG if significant respiratory distress.
- D-dimer (if **Wells score** 1-2), BNP, troponin, ECG
- Procalcitonin & CRP (useful to trend after admission but should not be used to decide to start antibiotics)
- CT chest

Outpatient Antibiotics (Choose one regimen.)

For non-high risk patients:
- Amoxicillin 1 gram PO TID x5 days ± azithromycin 500 mg PO x3 days
- Doxycycline 100 mg PO twice daily x5 days

For high risk patients:
If uncertain, please consult on-call wards physician or ER physician.
1. Amoxicillin-clavulanate 875-125 mg PO twice daily x5 days OR Cefpodoxime 200 mg PO twice daily x5 days PLUS Azithromycin 500 mg PO daily x3 days OR Doxycycline 100 mg PO twice daily x5 days
2. Levofloxacin 750 mg PO daily x5 days

Suitable for outpatient treatment (see Admission Criteria)?

Yes → (Outpatient Antibiotics)

No → • Request admission. • Start antibiotics.

→ Risk for MRSA or *Pseudomonas* (see box)?

No → **Inpatient IV Antibiotics** (Choose one regimen.)
- Ceftriaxone 1-2 grams IV daily PLUS azithromycin 500 mg IV daily
- Ampicillin-sulbactam 1.5-3 grams IV Q6h PLUS azithromycin 500 mg IV daily
- Levofloxacin 750 mg IV daily

Note: This is also the suggested empiric regimen for aspiration pneumonia.

Yes → *If uncertain, please consult YK hospitalist and/or pharmacy before starting.*

If MRSA only: Vancomycin 15-20 mg/kg Q8-12h

If pseudomonas only: Cefepime 2 grams Q8h or piperacillin-tazobactam 4.5 grams Q6h

If both MRSA & *Pseudomonas*: Vancomycin + cefepime + levofloxacin with doses as above.

Improving in 24-48 hours?

Yes → • Transition to oral antibiotics (see outpatient box above) to complete 5 day minimum course. • No routine follow-up chest imaging necessary (unless recommended by radiologist).

No → Consider:
- Trend WBC/CRP/procalcitonin
- Obtain chest CT
- Alternate diagnoses (CHF, PE, TB, empyema, ILD, etc.)
- Consult ANMC pulmonology or ID

Risk for MRSA: Prior MRSA infection, Gram positive cocci on sputum gram stain

Risk for *Pseudomonas*: Prior *Pseudomonas* infection, Gram negative bacilli on sputum gram stain, hospitalization with IV antibiotics in the last 90 days

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 Clinical Guideline Committee 10/21/22. Click **here** to see the supplemental resources for this guideline.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Pneumonia (3 months – 18 years)

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
• COVID/flu/RSV panel
• Place PPD

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

Bacterial pneumonia suspected

Bacterial pneumonia NOT suspected

Bacterial pneumonia NOT suspected

Bacterial pneumonia suspected

Begin antibiotics per Treatment box.

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

Prescribe antibiotics for 7 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

No

Improvement?

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 7 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

NOTE: If known viral infection, viral pneumonia is likely; antibiotics not indicated. If influenza positive, see ***Influenza guideline*** *for oseltamivir criteria.*

Outpatient
1st line: amoxicillin 45 mg/kg/dose PO BID x7 days
2nd line: Augmentin 45 mg/kg/dose PO BID x7 days
3rd line: cefdinir 7 mg/kg/dose PO BID x7 days

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.
For Chronic Cough: See **Bronchiectasis/Chronic Cough guideline**.

NOTE: There is limited evidence to support the use of procalcitonin to guide antimicrobial treatment in pediatric pneumonia, so it should not be used to guide management decisions at this time.

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 12/7/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Hampton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Procalcitonin in Lower Respiratory Tract Infections (Adult)

For ANMC's Procalcitonin Pathway, click **here**.

For the supplemental resources associated with ANMC's Procalcitonin Pathway, click **here**.

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. Consider amoxicillin-clavulanate prophylaxis for open wounds.

If patient needs extensive 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 inpatient pharmacy on call to arrange the HAND CARRY to the village.

Patient is given Day 0 vaccine in village clinic.

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

Day 7 & 14 vaccine given in village.

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.

Notes:

- Day Zero is the first day the vaccine is given, not the day of the exposure.
- Immunoglobulin must be given within seven days of first vaccine dose.

Required Notifications:

- The Rabies Investigation Report 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 this and for recommendations from OEH.
- Forward your PowerChart note to Rabies Control Officer Pool and OEH Department Pool.
- Send message with MRN via Tiger Connect to OEHE On Call.

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.

Immunocompromised patients require an additional dose on day 28.

Other Resources

- See the **supplement** to this guideline on the wiki.
- **State of Alaska DHSS Rabies** page.
- Use the Power Plans "AMB/ED Rabies Prophylaxis" to find all necessary orders.
- See Division of Public Health **Rabies Post-Exposure Prophylaxis Treatment Sheet**.

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

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 12/2/20. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Abigail_Klager@ykhc.org.

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?

No → **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.

Yes

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.
Click here to see the supplemental resources for this guideline.
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 → Contact pediatric hospitalist. Page RT. → Consult PICU by direct line: (907) 297-8809. Request medevac.

Place on CR monitor. Bedside glucose.
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.

Order empiric antibiotics STAT.

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

Is patient maintaining airway without support?

- No → Intubate per Intubation Guideline.
- Yes

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

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

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.
- Activate medevac.
- Consider VTC.

See Wiki RMT Section for more detailed recommendations.

See this resource for a helpful table comparing the presentation and findings in sepsis, acute COVID, and MIS-C.

Continuing Management

- VS (including BP) at least Q15min.
- Blood glucose Q30 min.
- Maintenance IVF with D5 + NS.
- 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 75 mg/kg AND gentamicin 5 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.

Vital Signs for Age
(Source: Harriet Lane Handbook)

Age	Heart Rate (beats/min)	Respiratory Rate (breaths/min)	Blood Pressure (mm Hg)	Mean Arterial BP (mm Hg)
0-3 months	110-160	30-60	65-85 / 45-55	50th percentile 55 + (age x 1.5)
3-6 months	100-150	30-45	70-90 / 50-65	
6-12 months	90-130	25-40	80-100 / 55-65	
1-3 years	80-125	20-30	90-105 / 55-70	5th percentile 40 + (age x 1.5)
3-6 years	70-115	20-25	95-110 / 60-75	
6-12 years	60-100	14-22	100-120 / 60-75	
>12 years	60-100	12-18	100-120 / 70-80	

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Approved by MSEC 2/1/22.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Amy_Carson-Strnad@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sexually Transmitted Infections, Screening

Universal Screening Recommendations

- All sexually active patients starting at age 14: annual screening for GC/CT, HIV, and syphilis.
- Any time GC and CT are tested for, HIV and syphilis screening should also be performed if not done in the last 12 months.
- Regardless of sexual activity, all teenagers should be screened for HIV by the age of 18. Additionally, all teenagers should undergo yearly GC/CT screening with, at minimum, a dirty urine.

Symptoms of Genital Infection

- Sores (genital, oral, or anal)
- Discharge or burning
- Dysuria
- Groin pain
- Pelvic pain
- Sore throat
- Rectal itching
- Discomfort or pain with bowel movement
- Vaginal itching or odor
- Testicular pain, swelling, or twisted feeling
- Pain with ejaculation or sex

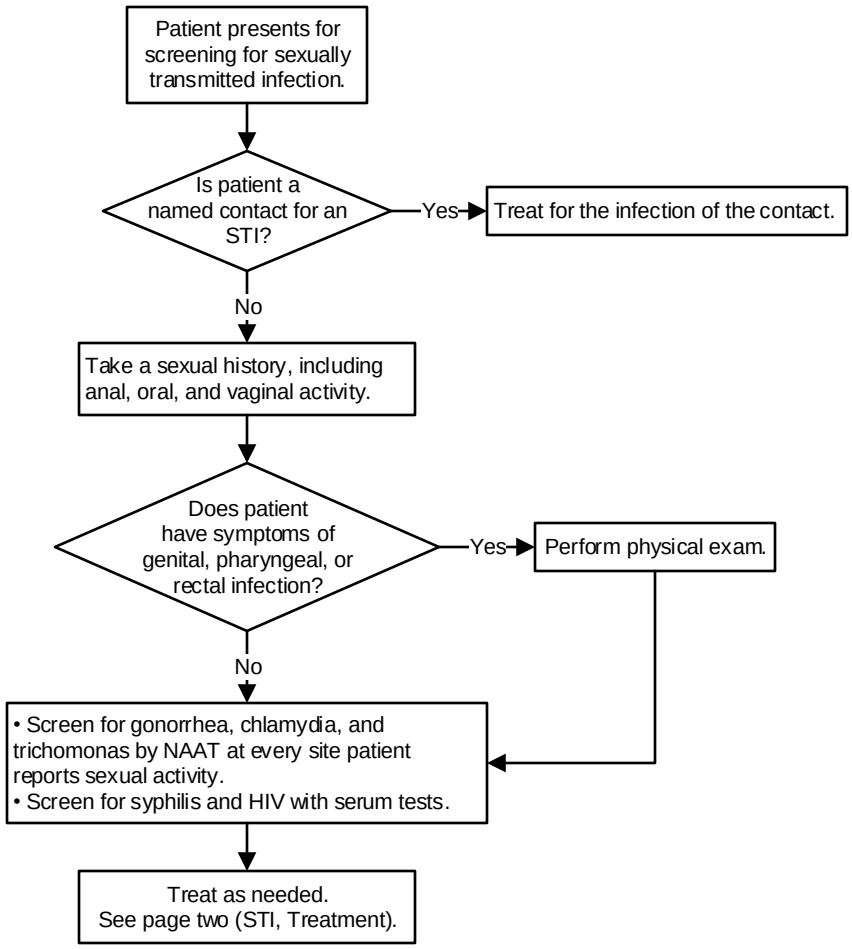
Age of Consent in the State of Alaska

Two people who are both 16 or older can legally agree to have sex with each other. When a person involved in sex is under the age of 16, Alaska law looks at the difference in ages to decide whether consent can be legally given.

- No person over 16 can legally have sex with someone who is 13 or younger.
- No person under 16 can legally have sex with someone who is 4 or more years older.
- No person under 16 can legally have sex with a person in a position of authority over them (including a teacher, coach, or minister).

A positive STI test in a patient who fits the above scenarios should be reported to OCS, law enforcement (BPD if in Bethel or AST if in a village), and the Child Abuse Pool in RAVEN.

Please note: There is no lower age limit for STI testing. Any patient may be tested, regardless of age, without special consent.



Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sexually Transmitted Infections, Treatment

Patient has a positive test for **Gonorrhea** (GC) from pharynx, rectum, or genitalia.

Is the infection pharyngeal?

Yes → • Treat with ceftriaxone:
- Patient ≥ 100 kg: 1000 mg
- Patient < 100 kg: 500 mg

• If patient has history of severe beta-lactam allergy, call HROB or STI case manager to discuss treatment.

→ Perform test of cure in two weeks.

No

Is the patient severely allergic to cephalosporins?

Yes → Treat with gentamicin 240 mg IM and azithromycin 2000 mg PO.

No

• Treat with ceftriaxone:
- Patient ≥ 100 kg: 1000 mg
- Patient < 100 kg: 500 mg

• If ceftriaxone not available, treat with cefixime 800 mg PO for all weights.

Test for reinfection in three months.

Expedited Partner Therapy (EPT)

EPT is a method of treating partners by asking the patient to take the doses to the partner. This is the standard of care for chlamydia at YKHC.

Process:
1. Treat the patient with azithromycin 1000 mg PO.
2. Give the patient pre-packaged doses for each sexual contact in the last three months. Give a handout explaining the process. This can be found under Patient Education→All→ "EPT Partner Chlamydia (Custom)."

Patient has a positive test for **Chlamydia trachomatis** (CT).

Is the infection rectal?

Yes → Treat with doxycycline 100 mg PO BID x7 days.

No

Treat with azithromycin 1000 mg PO x1.

Provide EPT for partner treatment.

Provide patient education handouts for the patient and all partners.

• If infection was pharyngeal or rectal, perform test of cure in one month.
• For other sites, test for reinfection in three months.

Patient has a positive test for **Trichomonas**.

Treat with metronidazole 2000 mg PO x1.

Provide must do contact investigation and provide prescriptions for all contacts from the last three months.

Test for reinfection in three months.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 8/3/21. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact David_Compton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Sinusitis, Bacterial (>4 years)

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

If considering the diagnosis of bacterial sinusitis in a child younger than 4, please consult a pediatrician.

Fever and rhinorrhea in **>4 years old**

Consider bacterial sinusitis

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

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

If no improvement

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

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

Treatment

1st line High-dose Augmentin 45 mg/kg/dose PO BID for 10-14 days
2nd line Cefdinir 14 mg/kg/dose PO daily for 10-14 days

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

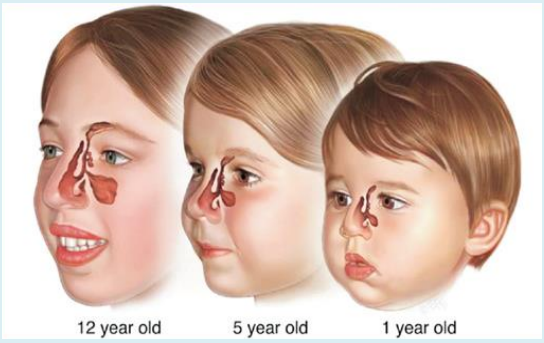
For PCN allergy: Please obtain a pediatrics consult. Do not prescribe azithromycin or Septra. The most common pathogens in pediatric sinusitis have high resistance rates to these antibiotics. Try to avoid fluoroquinolones.

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 ENT consult.

NOTE: 90-98% of pediatric sinus infections are caused by viruses. When caused by bacteria, the most common pathogens are non-typeable *Haemophilus influenzae*, *Streptococcal pneumoniae*, and *Moraxella catarrhalis*.

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..0i67k1j0l5j0i5i30kl3j0i8i30k1.34240.34657.0.35299.2.2.0.0.0.0.200.398.0j1j1.2.0...0..1c.1.64.psy-ab..0.2.395...0i30k1.0.rSFh1aHlq74#imgrc=IDSBxCfrF0AkWM:&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 11/2/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Skin and Soft Tissue Infection, page 1

Skin and Soft Tissue infection identified

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.

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)

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

Yes → Consider empiric oral antibiotic therapy

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.

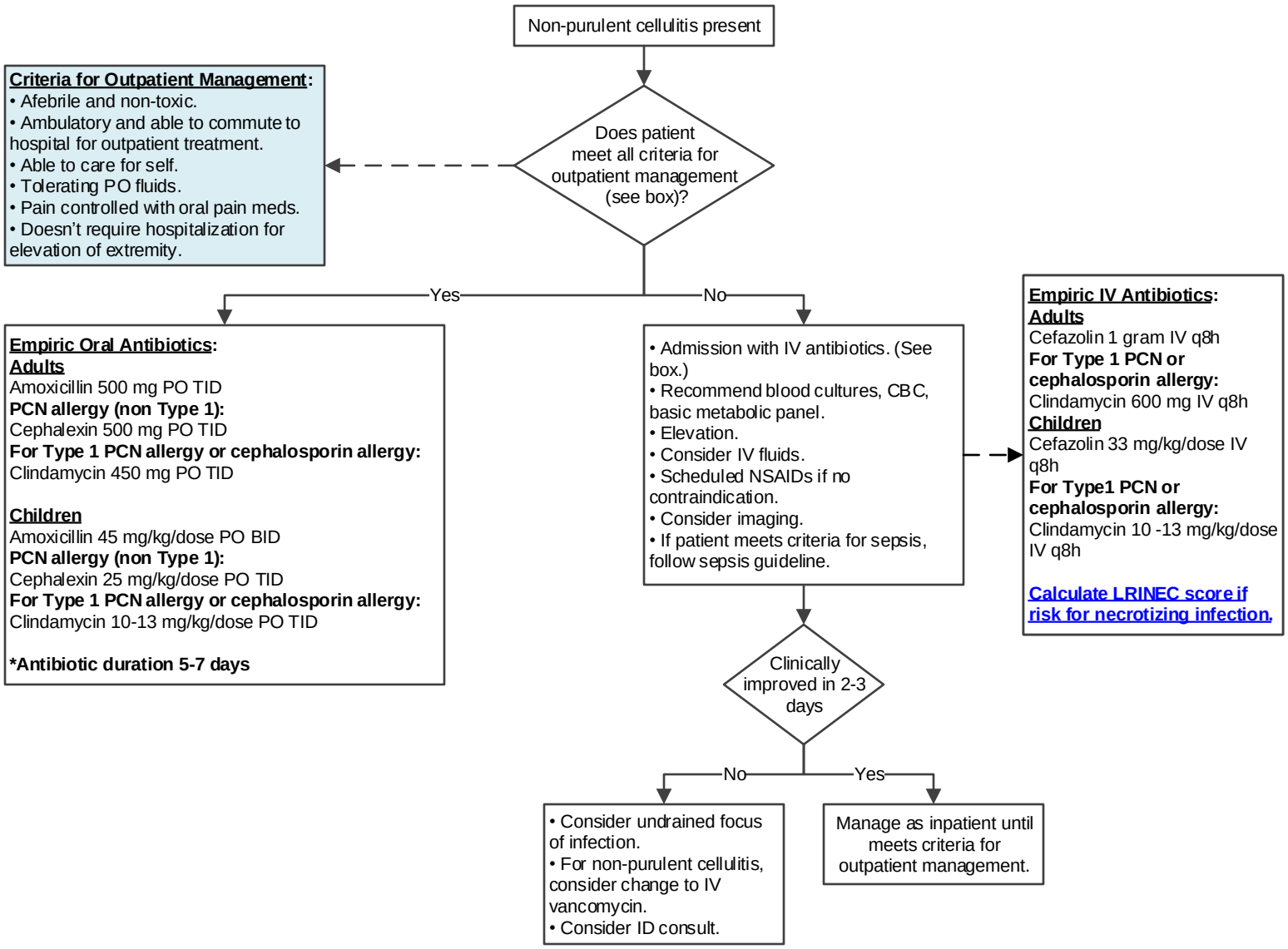
BOX 2: Criteria for Outpatient Management:
- Afebrile and non-toxic
- Ambulatory and able to commute to hospital for outpatient treatment
- Able to care for self
- Tolerating PO fluids
- Pain controlled with oral pain meds
- Doesn't require hospitalization for elevation of extremity

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. Click here to see the supplemental resources for this guideline.
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

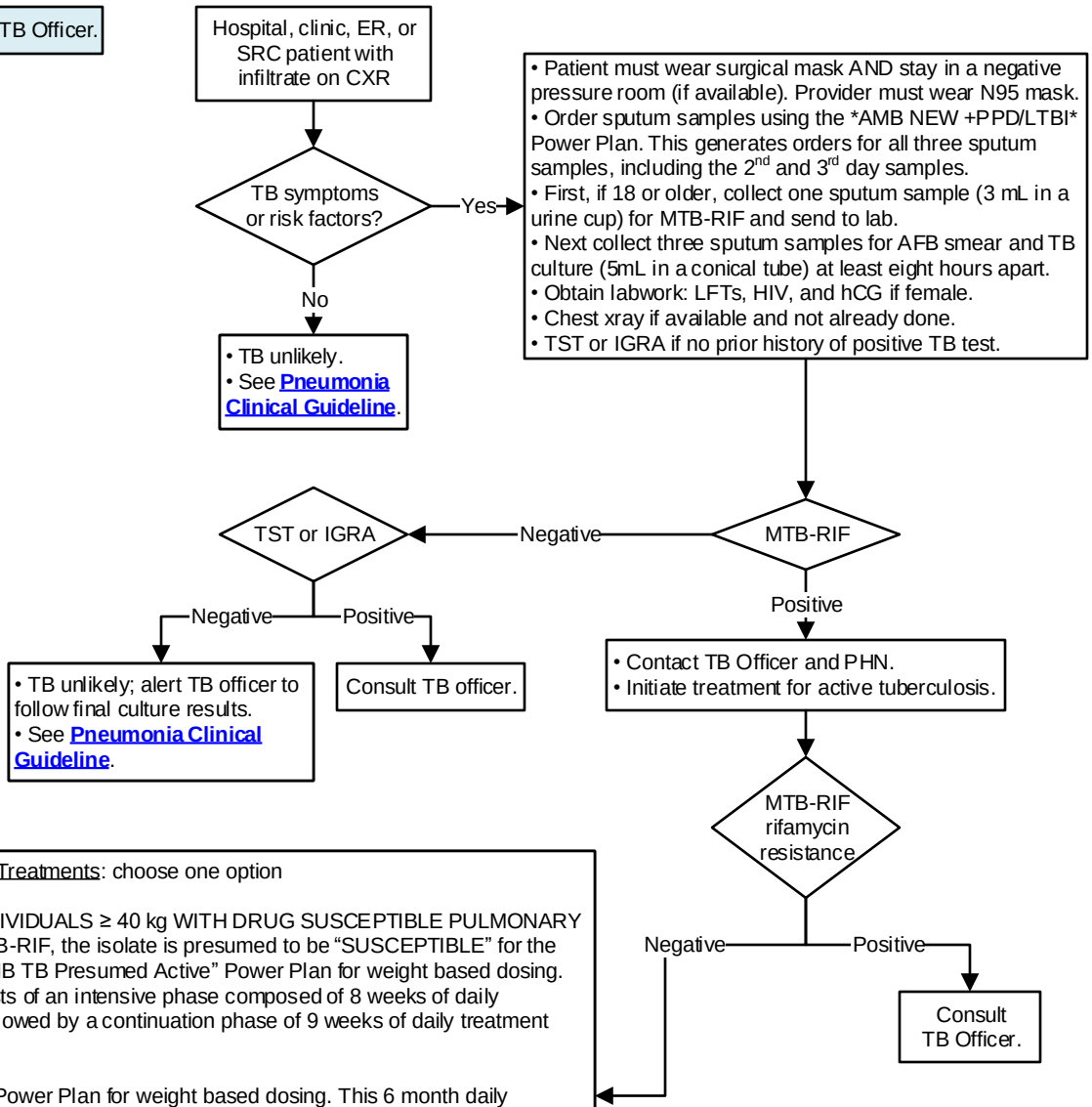
Tuberculosis, Active Pulmonary(≥14 Years)

If you diagnose active TB, please contact a TB Officer.

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. Consult TB Officer.

<u>TB Symptoms and Risk Factors</u>
(clinical judgment required)

- Hemoptysis
- Cough > 3 weeks
- Fever
- Night sweats
- Weight loss
- Persistent pneumonia
- Atypical CXR
- Household contact of active TB
- Prior active or latent TB infection
- Foreign born from endemic area
- Immunosuppression (HIV, diabetes mellitus, prednisone >15 mg/day for > 1 month, or TNF-alpha blocker)
- Born before 1960 and long-term resident of western Alaska or other endemic area



<u>Active TB Treatments</u>: choose one option

1. "RPT-MOX" (FOR NON-PREGNANT INDIVIDUALS ≥ 40 kg WITH DRUG SUSCEPTIBLE PULMONARY TB ONLY): If no rifamycin resistance on MTB-RIF, the isolate is presumed to be "SUSCEPTIBLE" for the purpose of initiating this option. See the "AMB TB Presumed Active" Power Plan for weight based dosing. This 4 month daily treatment regimen consists of an intensive phase composed of 8 weeks of daily treatment with RPT, MOX, INH, and PZA followed by a continuation phase of 9 weeks of daily treatment with RPT, MOX, and INH.

2. "RIPE": See "AMB TB Presumed Active" Power Plan for weight based dosing. This 6 month daily treatment regimen consists of an intensive phase composed of 8 weeks of daily treatment with RIF, INH, PZA, and EMB followed by a 4 month continuation phase of RIF and INH.

- For both options, at least 5 of the 7 weekly doses should be administered by DOT.
- When on INH, give pyridoxine (vitamin B6) 50 mg by mouth daily to prevent neuropathy.
- If patient is pregnant or HIV infected, please consult a TB officer.
- Dosing is per **CDC guidelines**.
- Start treatment immediately, either inpatient or with 2 week prescription through YK pharmacy. Consult TB Officers and PHN regarding ongoing prescriptions.

<u>Abbreviations</u>

AFB: acid-fast bacilli
DOT: directly observed therapy
EMB: ethambutol
IGRA: interferon gamma release assay, e.g. QuantiFERON Gold
INH: isoniazid
LTBI: latent TB infection
MOX: moxifloxacin
MTB-RIF: mycobacterium tuberculosis nucleic acid amplification test that also tests for rifamycin resistance
PZA: pyrazinamide
RIF: rifampin(a rifamycin)
RPT: rifapentine (another rifamycin)
TST: tuberculosis skin test

<u>How to Consult a TB Officer</u>: Send a message via Tiger Connect to "TB Officers" Team.

<u>Contact Information</u>

- Public Health Nursing (PHN):
  Phone: 907-543-2110
  Fax: 907-543-0435
  All directly-observed therapy (DOT) will be arranged by PHN.
- Curry Center TB Warm Line: (877) 390-6682
- Dr. Jacob Gray, ANMC Infectious Disease (Tiger Text)
- State Epidemiology: (907) 269-8000

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 5/5/22. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Robert_Tyree@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Tuberculosis, Latent (≥14 years)

Symptoms

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

Do not perform TB skin test or QuantiFERON Gold on anyone with a prior positive.
QuantiFERON Golds can be ordered Monday through Thursday only, and they cannot be done in villages.

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.

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

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

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.

No → Thirty minute appointment in Bethel for:
- Physical exam
- Chest X-ray
- Labs: LFTs, HIV, and hCG if female

Abnormal chest X-ray? Yes → ACTIVE TB IS SUSPECTED

No → LTBI

ACTIVE TB IS SUSPECTED

- 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, if 18 or older, 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.

LTBI

- Call PHN with plan of care.
- Begin treatment per box, using LTBI Power Plan.
- Send LTBI prescriptions to the YKHC pharmacy and securely email notification to **LTBI_Case_Managers@ykhc.org**.

MTB-RIF positive? No → • Consult TB officer regarding whether to treat for active TB • Consider treating for **CAP**.

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

Sputum positive? No response to CAP tx? Yes → Active TB. Contact TB officer and see **Active TB Guideline**.

Sputum positive? No response to CAP tx? No → LTBI. Continue full course of treatment per LTBI case managers.

LTBI Treatments: Choose one option.
DOT is optional for all three treatment options.

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)

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, the preferred treatment is INH for 9 months. In HIV infection, avoid rifampin and rifapentine.

How to Consult a TB Officer: Send a message via Tiger Connect to "TB Officers" Team.

Contact Information

- Public Health Nursing (PHN):
  Phone: 907-543-2110
  Fax: 907-543-0435
  All directly-observed therapy (DOT) will be arranged by LTBI Case Managers.
- Curry Center TB Warm Line: (877) 390-6682
- Dr. Jacob Gray, ANMC Infectious Disease (Tiger Text)
- State Epidemiology: (907) 269-8000

Abbreviations

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

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 5/5/22. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Robert_Tyree@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Tuberculosis Evaluation & Treatment (<14 years)

**High Risk

- Age <6 months
- Close contact with active TB
- Suspected active TB
- Immunocompromised
- HIV positive

- Annual screening starting at 12 months old
- TB exposure
- Clinical concern for TB

History of positive PPD, positive Quantiferon, or active TB?

Yes → Symptoms concerning for active TB?

No → If <2 years old, place PPD. Otherwise, place PPD or check Quantiferon.

Symptoms concerning for active TB? Yes → Patient ≥10 years old and located in a non-SRC village?

Symptoms concerning for active TB? No → New positive PPD (10 mm induration or 5 mm induration if high risk**) or positive Quantiferon?

Close contact with active TB? No → Patient ≥10 years old and located in a non-SRC village?

Close contact with active TB? Yes / No → No further evaluation at this time.

Close contact with active TB? Yes → Consult pediatric TB officer, State Epi, and/or TB Warm Line.

Patient ≥10 years old and located in a non-SRC village? Yes → Consult TB officer.

Patient ≥10 years old and located in a non-SRC village? No → Obtain CXR.

New positive PPD (10 mm induration or 5 mm induration if high risk**) or positive Quantiferon? Yes → Obtain CXR.

New positive PPD (10 mm induration or 5 mm induration if high risk**) or positive Quantiferon? No → TB exposure?

Obtain CXR.

- Positive → 1. Obtain sputum or gastric aspirate samples x3 for AFB testing.*
  2. Consider empiric treatment for community-acquired pneumonia.
  3. Isolate per guidelines.
  4. Perform LP in any child <12 months old strongly suspected of having active TB. Order "AFB" and change specimen type to "CSF."
- Negative → Treat for LTBI. Check HIV and LFTs.

TB exposure?

- No → No further evaluation at this time.
- Yes → Patient <5 years old or immunocompromised?

Patient <5 years old or immunocompromised?

- No → Follow clinically. If no prior TB history, repeat PPD/Quantiferon 10 weeks after last exposure.
- Yes → 1. Obtain CXR and consult TB officer if abnormal.
  2. Consider obtaining sputum or gastric aspirate samples x3 for AFB testing,* especially if <12 months old.
  3. Check HIV and LFTs.
  4. Give window prophylaxis until 1) patient is ≥6 months old or 2) 10 weeks after last exposure, whichever is later. Then repeat PPD/ Quantiferon.

1. Obtain sputum or gastric aspirate samples x3 for AFB testing.*
2. Consider empiric treatment for community-acquired pneumonia.
3. Isolate per guidelines.
4. Perform LP in any child <12 months old strongly suspected of having active TB. Order "AFB" and change specimen type to "CSF."

AFB positive or no improvement after pneumonia treatment?

- No → Continued concern for active TB?
  - No → New positive PPD (10 mm induration or 5 mm induration if high risk**) or positive Quantiferon?
    - Yes → Treat for LTBI. Check HIV and LFTs.
    - No → Follow clinically. If no prior TB history, repeat PPD/Quantiferon 10 weeks after last exposure.
  - Yes → Treat for active TB. Check HIV and LFTs.
- Yes → Treat for active TB. Check HIV and LFTs.

CXR Findings in Pediatric TB May Include:

- Lobar infiltrates
- Atelectasis
- Hilar adenopathy
- Miliary pattern
- Cavitary lesions (uncommon)

Symptoms Concerning for Active TB

- Fever > 2 weeks
- Persistent cough > 2 weeks
- Failure to thrive/weight loss
- Erythema nodosum
- Hemoptysis (uncommon in kids)

***Samples**

Induced sputum samples are preferred over gastric aspirations. Induced sputum samples should be collected at least eight hours apart. Three samples should be sent for AFB Smear and Culture and two should be sent for Xpert MTB-RIF (run by state lab). See the **Pediatric Induced Sputum Collection Protocol**.

Contact Information

To Contact a TB Officer: Send a message via Tiger Connect to "TB Officers" Team. Please notify this team about any child with any suspicion for TB.

Public Health Nursing: Phone: 907-543-2110, Fax: 907-543-0435
Alaska State Epidemiology: (907) 269-8000
TB Warm Line/Curry Center: (415) 502-4700 or (877) 390-6682

Consult TB Officer If:

- Patient is immunocompromised.
- Repeat PPD/Quantiferon is positive.
- Patient has past history of positive TB test or disease AND recent close contact with active TB.

- Medications are typically prescribed by a TB officer in partnership with Public Health.
- Please see the **Alaska Pediatric TB Manual** or the **Curry Center TB Reference** for more information.

Abbreviations: TB- tuberculosis; CXR- chest X-ray; PPD- purified protein derivative; AFB- acid-fast bacilli; HIV- human immunodeficiency virus; LFTs- liver function tests; Xpert MTB-RIF- rapid test for Mycobacterium tuberculosis and rifampin resistance.

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 6/6/22.
Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Mien_Chyi@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

UTI (Adult)

Patient presents with symptoms of cystitis: Dysuria, urinary urgency/ frequency, suprapubic abdominal pain

- Obtain UA.
- Obtain GC/CT and trichomonas if genital pruritus/discharge.

Notes

- Incidental positive urine cultures in asymptomatic patients are generally not treated (UNLESS pregnant).
- Patients with indwelling urinary catheters will have chronic colonization and abnormal UA. Treatment should be reserved for febrile illness or other clear indication of new acute infection.

UA consistent with UTI?

< 5 squamous epithelial cells/HPF
> 5 WBC/HPF
AND one of the following:
(+) leukocyte esterase
(+) nitrite (indicates significant bacteriuria; sensitive but not specific)
(+) bacteria

No →
- Pursue alternate diagnosis.
- Consider urine culture.

Yes ↓

Fever, chills, flank pain, CVA tenderness, ill appearance, hemodynamic instability, WBC casts in UA?

Yes → **Pyelonephritis**

- Labs, fluids, antiemetics, analgesics as appropriate.
- Consider imaging if critically ill or concern for obstruction.

Able to be treated outpatient? (taking PO, not septic, not pregnant)

Yes →
In ED:
Ceftriaxone 1 gram IV (preferred)
OR
Levofloxacin 750 mg IV

Discharge medication:
Cephalexin 1 gram PO twice daily x10-14 days
OR
Levofloxacin 750 mg PO daily x5 days

No ↓

- Admit to inpatient.

- Empiric treatment
Ceftriaxone 1 gram IV Q24h (preferred)
OR
Levofloxacin 750 mg IV Q24h
OR
Ciprofloxacin 400 mg IV Q12h

- If MDRO risk without Hx ESBL
Piperacillin/Tazobactam 3.375 grams IV Q6h
OR
Cefepime 1 gram IV Q6h

- If Hx ESBL
Meropenem 1 gram IV Q8h

Risk Factors for Multi-Drug Resistant Organism (MDRO)

- Prior MDRO
- UTI developed during inpatient hospitalization
- Use of TMP-SMX, fluoroquinolone, or 3rd or 4th generation cephalosporin in past 3 months

Improving?

Yes →
- Narrow based on sensitivities.
- Discharge on PO antibiotics.

No →
- Obtain imaging to rule-out obstruction.
- Broaden to meropenem to cover ESBL.

No ↓

Functional urinary tract abnormalities, BPH, calculi, obstruction, chronic catheterization?

No → **Simple UTI/Cystitis**

Nitrofurantoin 100 mg PO twice daily x5 days (first line if <65 years and no known Hx ESBL)
OR
Cephalexin 500 mg PO twice daily x5-7 days (first line if > 65 years)

If allergic to both:
Ciprofloxacin 250 mg PO twice daily x3 days

Yes ↓

Complicated UTI

Able to be treated outpatient? (taking PO, not septic, not pregnant)

Yes →
- Empiric antibiotics based on prior urine cultures.
- Definitive treatment based on culture.
- If no prior urine culture, treat as pyelonephritis.
- Antibiotic duration 3-5 days after clinical improvement.

No ↓
- Admit to inpatient.
- Manage as pyelonephritis.

→ Admit to inpatient.

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 Clinical Guideline Committee 10/21/22.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Kaia_Pearson@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

UTI (3 months – 5 years)

Risk Factors for UTI

- Constipation
- Bubble baths
- Poor hygiene
- Uncircumcised boy

High Concern for UTI

- Fever >102
- No source
- Fever >48 hours
- History of UTI

May use **UTI Risk Calculator** to help risk-stratify.

Signs and Symptoms of UTI

- Fever
- Dysuria
- Hematuria
- Vomiting
- Abdominal pain
- New daytime or nighttime wetting
- Increased frequency of voiding
- Malodorous urine

Differential Dx for Dysuria

- Vulvovaginitis
- Candida infection
- Bowel-bladder dysfunction
- Poor hygiene
- Sexual abuse (consider collecting dirty urine for GC/CT; see **Suspected Pediatric Sexual Abuse Procedure Guideline** for more information)
- Age-appropriate self-exploration
- UTI

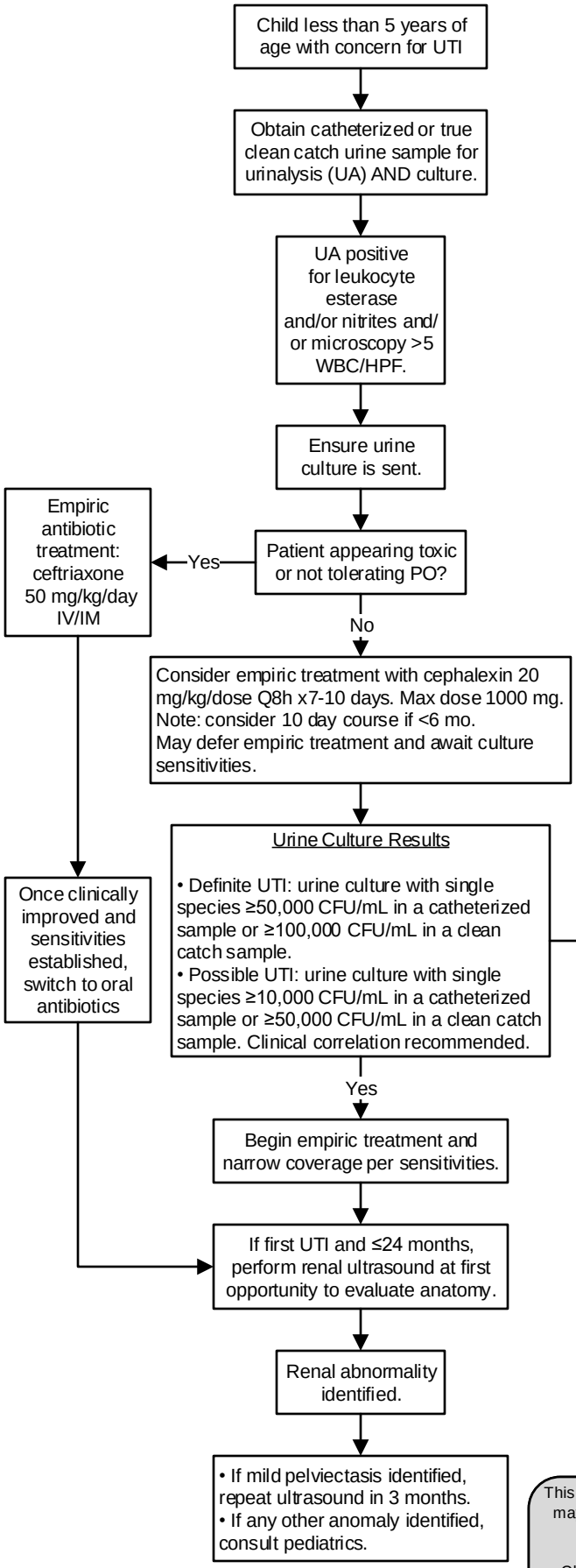
Resistance

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

Indications for VCUG

- Recurrent UTI.
- Major anomaly on ultrasound. Consult pediatric urologist and consider obtaining VCUG in Anchorage.

Note: study available in Bethel 1-2 times per year when radiologist in-house.



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 empirically in the village without sending clean catch urine sample for culture.
- Consider symptomatic care (see box) for possible vulvovaginitis.
- If patient has dysuria, increased frequency, new-onset enuresis, and/or abnormal clean catch urinalysis, consider further evaluation in Bethel.

DO NOT…

- Treat any child for UTI empirically without culture pending.
- Routinely collect urine via bag.
- Routinely perform a test of cure.
- Routinely start UTI prophylaxis.
- Perform suprapubic taps.
- Routinely obtain bloodwork for uncomplicated UTI.
- Add UTI to Problem List until confirmed by culture.

NOTE: For infants <90 days with fever, 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 12/7/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Hampton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Varicella, Suspected

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 80-85% 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

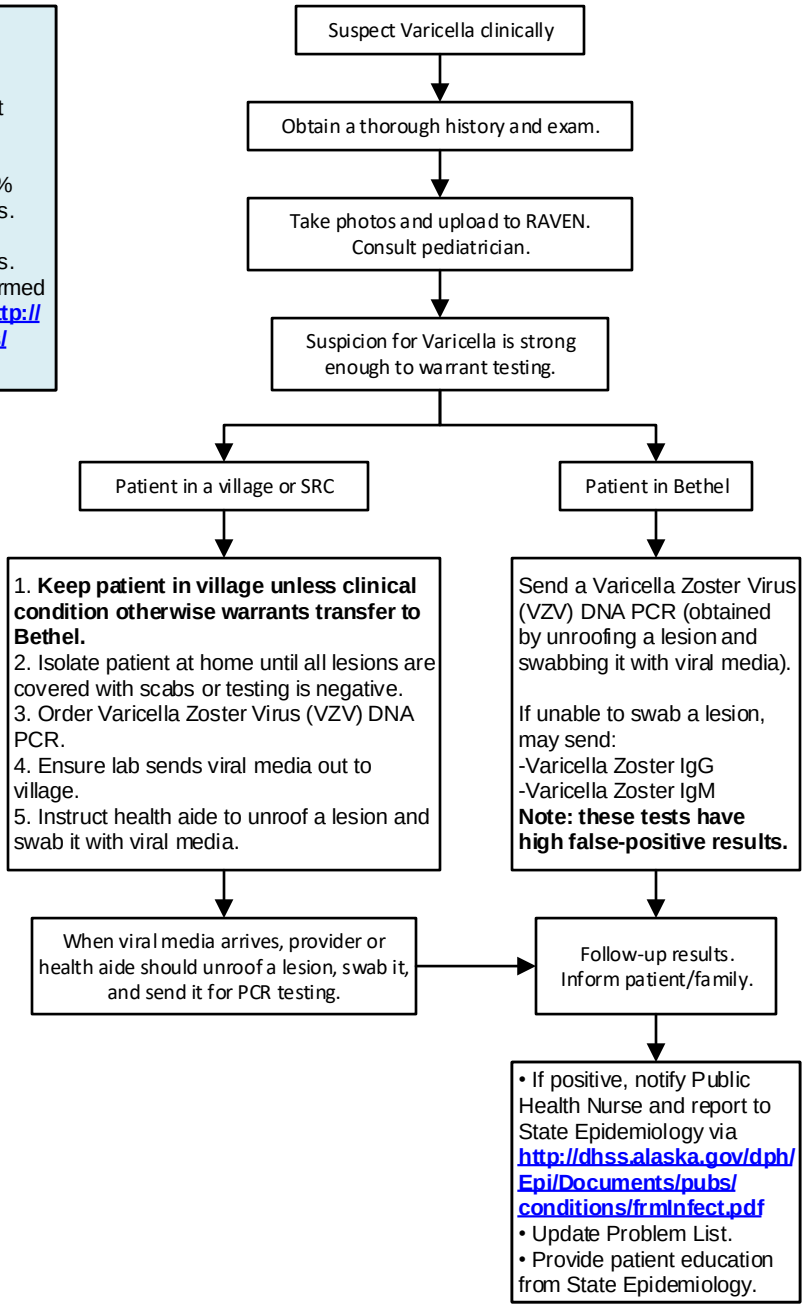
- Hand-foot-mouth disease
- Scabies
- Stomatitis
- Eczema herpeticum
- Diffuse impetigo

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 that often starts on the head and then moves down.
- 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.

Return to Table of Contents.

Yukon-Kuskokwim HEALTH CORPORATION

Neonatal/Pediatric Growth & Development Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Failure to Thrive in Children <24 Months

Criteria

- Weight for age <5th percentile on WHO Growth Chart (0-24 months). (Note: The growth chart in RAVEN defaults to the CDC. Select the WHO growth chart by clicking on "CDCWHO.")
- Weight for length <5th percentile on WHO Growth Chart (0-24 months).
- Decrease across two major percentile lines over a 3-6 month period.

High-Risk Criteria
(Consider admission.)

- <1 month: not regaining birth weight by 21 days of life, continued weight loss after 7 days of life.
- 1 month-12 months: no weight gain, weight loss, weight for length z-score of -2 or lower. (Note: to see z-score in RAVEN, select the weight for length growth chart and click "table.")
- Medical instability
- Moderate to severe malnutrition with concern for refeeding syndrome
- Moderate to severe dehydration
- Failed outpatient managements including multiple missed appointments
- Suspected abuse/neglect

Frequency of Weight Checks

- <1 month: Q1-3 days
- 1-6 months: Q1-2 weeks
- 6-12 months: Q2-4 weeks
- 12-24 months: Q2-4 weeks

Patient at risk for malnutrition or failure to thrive (FTT)

Please have a low threshold to consult a pediatrician for any child you are concerned about.

Initial Evaluation

- Full history (see box on **next page**). Use autotext "..hpiFTT."
- Full physical exam (see box on **next page**). Use autotext "..physFTT."

Does patient have any High-Risk Criteria? (See box.)

Yes

- Consider differential diagnosis.
- Perform lab work-up (see box).
- Consider admission.

- Daily naked weights.
- Strict I/O, calorie counts.
- If breastfeeding, do weights pre- and post-feeds. (Naked except for diaper that should not be changed until after weight.)
- Implement initial feeding recommendations per box on **next page**.

Is patient gaining adequate weight after 2-3 days?

No

- Implement secondary feeding recommendations on **next page**.
- Consider transfer to higher level of care if patient does not gain weight after these measures.

Yes

Discharge with:
- Detailed feeding plan that includes timing, volume, calorie density, supplements, etc.
- Scheduled follow-up per box. If returning to village, consider a weight check in 24-48 hours in outpatient clinic before returning to village.

No

- Give feeding recommendations per box on **next page**.
- Schedule weight checks at frequency in box.
- Consider fortification of feeds.

At weight check, is patient gaining adequate weight?

Yes

Continue scheduled weight checks until adequate weight gain at three consecutive visits.

Differential Diagnosis: General Categories and Symptoms

Inadequate Intake
- Long intervals between feeds (Sleep >3 hours if <2 months old)
- Falling asleep during feeds
- Limited number and volume of feeding per day
- Improper mixing of formula
- Lactation problems: poor supply, difficulty with latching
- Limited urine diapers (<1 wet diaper per 8 hours)
- Food insecurity/inability
- Excessive vomiting/spitting up/reflux
- Increased hunger cues/caregiver isn't recognizing cues
- Symptoms of maternal depression
- Birth weight not regained in 2 weeks
- Oral Motor Dysfunction

Malabsorption
- High volume, extremely loose stools
- Clay-colored stools
- Greasy or significantly foul-smelling stools
- Chronic diarrhea
- Abdominal distention, gassiness with diarrhea
- Blood in stools

Increased Metabolic Demand
- Cardiac: heart murmur, tachypnea, sweating or cyanosis with feeds, feeding fatigue
- Respiratory: noisy breathing, tachypnea, difficulty breathing with feeds, nasal obstruction
- Neurologic: increased or decreased tone, abnormal movements
- Metabolic/genetic: abnormal newborn screen, dysmorphic features
- Renal: urologic abnormalities, renal tubular acidosis
- Endocrinology: tachycardia, diaphoresis

Lab Workup, By Age

Use Power Plans "PED Pediatric Failure to Thrive" and "AMB Peds Failure to Thrive" to place orders in RAVEN.

- <1 month:
  - Verify Newborn Screen, CMP, CBC, urinalysis.
  - Consider metabolic evaluation.
- 1-24 months:
  - CBC, CMP, urinalysis, TSH, HIV, PPD (if <6 months but only actionable if positive) or Quantiferon (if >6 months), celiac screen if > 6 months and gluten exposure (total IgA tissue transglutaminase, IgG deaminated gliadin peptide).
  - Consider sending stool for occult blood, metabolic evaluation.

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 3/1/22.
Click **here** for supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Failure to Thrive in Children <24 Months

History

Use autotext "..hpiFTT" to document in RAVEN.

General
- Recurrent fevers or infections
- Detailed birth history

Cardiovascular
- Sweating and/or fatigue with feeds

GI
- Constipation
- Vomiting

Neurologic
- Depressed mental status, inconsolability, sleepiness
- Developmental delay
- Abnormal movements

Feeding
- Breastfeeding
  - Frequency, length, number per day, longest interval between feedings, night vs day?
  - One or both breasts, softer after feeding, ± nipple shield, any pain or difficulty with latch?
  - If pumping, how much is produced?
  - Can you see or hear the baby swallow?
  - Any supplementation (expressed breast milk or formula)?
  - Does baby fall asleep at breast?
- Formula
  - Frequency, length, amount per feed and per day, longest interval between feeds, night vs day?
  - Type of formula and recipe
  - Type and size of bottle and nipple
  - Any supplementation (either addition to the bottle or solids)?
- Swallow problems
  - Coughing during feeding
  - Wet or gurgly sounds during or immediately after feeding
  - Frequent upper respiratory tract infections, fevers, or pneumonia
- Reflux
  - Coughing, choking, gagging, or any respiratory symptoms with feeds
  - Spitting up/vomiting
  - Arching, fussiness, or discomfort with feeds

Social
- Who feeds the baby? Who lives at home? Is there a feeding schedule?
- If bottle fed, are there concerns about obtaining enough formula?

Elimination
- Number of wet and stool diapers per 24 hours
- Stool appearance (consistency, color, any orange/red crystal/powder, any blood or mucus)

Please see **ANMC's Preterm Nutrition Resource** for more information, including recipes for mixing high caloric density formula.

Initial Feeding Recommendations

Breastmilk/Formula
- Minimum Intake Recommendations:
  - Term Infant: 108 kcal/kg/day = 162 mL/kg/day of 20 kcal/oz formula/breast milk
  - Preterm Infant: 110-130 kcal/kg/day = 177 mL/kg/day of 22 kcal/oz preterm formula
- Feeding Frequency:
  - <3 months: Q3h or ≥8 feeds/day. No more than 3 hours between feeds.
  - ≥3 months: Q3h during day with ≥6 feeds/day
- Wake the baby to feed if necessary.

For Solids
- Infant must be taking at least 24 oz/day of formula or breastmilk.
- Limit any other fluids like water or juice.
- By 12 months, goal 4-6 servings of >4 tablespoons per day.

Secondary Feeding Recommendations

- If patient is able to tolerate goal feed volume, increase volume by 10% to max 180 mL/kg/day OR increase caloric density by 2 kcal/ounce to max 24 kcal/ounce.
- Allow at least 24 hours to assess tolerance to any changes.
- If patient is taking solids and >9 months, consider increasing calories in solids.
- If patient is not able to consistently and safely take enough by mouth to gain weight, consider NG feeds.

Physical

Use autotext "..physFTT" to document in RAVEN.

General
- Cachexia, decreased subcutaneous stores, decreased muscle bulk
- Relative macrocephaly
- Lack of caregiver bonding or responsiveness to patient
- Dysmorphic features or syndromic appearance

HEENT
- Scleral icterus
- Nasal congestion or obstruction
- Cleft lip or palate
- Macroglossia or ankyloglossia
- Micrognathia

Respiratory
- Stridor
- Difficulty breathing, tachypnea
- Abnormal breath sounds including wheezing, crackles, etc.

Cardiovascular
- Murmurs
- Diminished or absent peripheral pulses

GI
- Hepatosplenomegaly
- Abdominal distension
- Palpable stools

Skin
- Jaundice
- Rashes or skin breakdown (including in diaper area)
- Severe atopic dermatitis)

Neurologic
- Depressed mental status, inconsolability, sleepiness
- Developmental delay
- Abnormal movements

Caloric Needs by Age

If preterm, use corrected age.

- <37 weeks: 110 -130 kcal/kg/day
- 37 weeks-6 months: 108 kcal/kg/day
- 7-12 months: 98 kcal/kg/day
- 12-24 months: 75-95 kcal/kg/day

Average Daily Weight Gain by Age

Age (corrected)	Median (grams/day)	
	Girls	Boys
2-4 weeks	29	34
4 weeks-2 months	34	40
2-3 months	24	27
3-4 months	20	21
4-5 months	16	17
5-6 months	13	14
6-8 months	11	11
8-10 months	9	9
10-12 months	8	8
12-15 months	4-9.5	4.5-10
15-18 months	4-9.5	4-9
18-21 months	4-9.5	4-9
21-24 months	3.5-9	3.5-9

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 3/1/22.
Click **here** for supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Care of Late Preterm Newborns

Preterm infant born at YKHC

Unstable or GA <35 weeks

35 – 36.6 weeks AND stable

Transfer to NICU. See **Pediatric Medevac: Bethel to Anchorage** Guideline.

Yes

BW <2200 grams?

No

• Encourage mother to express breastmilk.
• If infant is stable, encourage bonding and breastfeeding while awaiting medevac.

NOTE: If infant of any GA is unstable at any time, please contact the pediatric hospitalist (Tiger Connect Peds Wards on Duty) and prepare for transfer.

• Admit patient to OB using the Late Preterm Power Plan.
• Infant is observed in the mother's room or in the Newborn Treatment Room for at least four hours to ensure stability.
• VS Q4h, including temperature, throughout entire stay.
• Weigh baby Qshift.
• Blood glucose screening per **protocol** for full first 24 hours of life.
• Establish feeding plan with parents (see box).
• Ensure parents are educated (see box).
• Follow Late Preterm Goals of Care worksheet (to be placed on baby's hard chart).
• On day of birth, schedule outpatient appointment for DOL 4-5 to ensure appointment availability.

Parent Education

• Educate parents regarding vulnerability of late preterm neonate and late preterm protocol.
• Attach completed Late Preterm Crib Card to crib.
• Ensure parents have received the Late Preterm Handout and use as a resource.
• Emphasize need for follow-up with outpatient appointment prior to return to village.
• Ensure and encourage proper pediatric follow-up.
• Education regarding feeding plan and follow-up resources.

Huddle at 24 hours of Life

(to include bedside nurse, charge nurse, family medicine hospitalist, and pediatric hospitalist if needed)

• Points to discuss: how the baby is feeding, %weight loss, can we safely manage the baby's needs, unit acuity/staffing ratios, does the baby need to be transferred at this time, time for next huddle (if needed).
• If infant receives three "strikes" on the Late Preterm Goals of Care worksheet, there must be a huddle to discuss if the infant should be transferred.

Infant Stability

• Temperature ≥97.7 (axillary) for 6 hours in open crib.
• Cardiovascular and respiratory stability as determined by the medical team.
• Able to tolerate oral feeds without color change or increased WOB: breastfeeding or tolerating 5-10 ml EBM or formula at a minimum of every 3 hours.

Goals for Discharge

• All late preterm babies are admitted for at least 72 hours.
• Weight loss <8% below BW.
• Temperature ≥97.7°F x24 hours in an open crib.
• Well-established feeding plan.
• Follow-up appointment scheduled in outpatient clinic in Bethel in 24-48 hours. If weekend, may have this follow-up on OB by pediatric hospitalist.
• Must have warm handoff with message sent to provider seeing patient for follow-up that includes minimal requirements to be met for discharge back to village.
• Follow-up weekly in village or outpatient clinic until corrected GA of 40 weeks.
• Prescribe Poly-Vi-Sol WITH Iron at discharge.

Definitions

• GA: gestational age at birth
• Late preterm: GA 34 weeks 0 days to 36 weeks 6 days
• Early term: GA 37 weeks 0 days to 38 weeks 6 days
• Term: GA 39 weeks 0 days to 40 weeks 6 days

Characteristics of Late Preterm Infants

• Low birth weight
• Low body fat
• Poor thermoregulation
• Low glycogen stores
• Low tone
• Poor state regulation
• Immature immune system
• Immature suck and swallow
• Delay in bilirubin metabolism

Late Preterm Infants Are at Risk For:

• Hypothermia
• Hypoglycemia
• Sepsis
• Poor feeding and infrequent feeds can lead to inadequate maternal milk supply
• Breast feeding failure
• Poor suck and swallow may lead to inadequate milk intake
• Excessive weight loss, failure to thrive
• Hyperbilirubinemia with late rise (expect peak on DOL 5)
• Increased readmission rate (5-13 times that of term infants)
• Respiratory instability in upright car safety seats or other upright infant devices
• Hospital readmission

Feeding Plan

Infants meeting any of the following criteria should be assessed for the need for supplementation:
• Birth weight <2500 grams
• Poor reserve (evidenced by temperature instability or hypoglycemia)
• Poor feeding (LATCH <7 or <10 minutes at breast)
• Weight loss >3% per day or >8% total
• Minimum volumes for both bottlefed and breastfed babies:
  0-24 hours: 5-10 mL
  25-48 hours: 10-20 mL
  49-96 hours: 20-30 mL
• If bottlefeeding, advance feeds as tolerated.

If Breastfeeding

• Lactation evaluation within 24 hours of birth.
• **LATCH score** documented at least Qshift.
• Infant should be put to breast at least Q3h.
• Use Supplemental Nursing System (SNS) **to ensure measurable amounts each feed with the above minimum volumes.**

Supplementation

• Supplementation should be given by SNS (preferred), cup, or finger feeds rather than nipple and bottle. May receive formula if milk volume not meeting fluid needs.
• Mother to pump every 3 hours after nursing unless infant nursing vigorously.
• Bedside nurse and medical team should re-evaluate feeding plan daily.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 8/3/21. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Amy_Carson-Strnad@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Newborn Early Onset Sepsis/GBS

Is infant ≥ 35 weeks?

No → This guideline does not apply to infants <35 weeks. Consult pediatrics. See this link for resources.

Yes

Is one or more of the following present?

- Any maternal fever during antepartum period
- Prolonged rupture of membranes
- GBS positive or unknown

No → Routine care. Consult pediatric hospitalist with any questions or concerns.

Yes

- Go to the Kaiser Neonatal Early-Onset Sepsis Calculator.
- Enter infant and maternal information.
- The first question will ask your local incidence of newborn sepsis. In the drop-down box, choose the CDC national incidence.

- Follow recommendations for blood culture, antibiotics, and vital sign frequency based on early-onset sepsis risk for infant's clinical status.
- "Well-appearing," "equivocal," and "clinical illness" are defined here.
- Note: If the calculator recommends observation, this should be for at least 48 hours with vital signs Q4h.

→ If any clinical concerns about infant, consult pediatric hospitalist.

If giving antibiotics:
- Send CBC with differential and CRP.
- Order ampicillin and gentamicin, using Neofax or the Neonatal Resuscitation Summary for dosing.
- Consult pediatric hospitalist and prepare to transfer infant to NICU.

Note: CBC and CRP are not routinely recommended anymore. However, they can be useful to trend if starting antibiotics. Thus, we recommend they be obtained if starting antibiotics.

Signs of Neonatal Sepsis

- Temp ≥ 100.4 or ≤ 97.5
- Irritability
- Poor Feeding
- Hypoglycemia
- Hypothermia
- Tachypnea
- Tachycardia
- "Not acting right"

If any of these signs are present, consider obtaining a pediatrics consult.

References

- *Pediatrics* 2019: Management of Infants at Risk for Group B Streptococcal Disease
- *Pediatrics* 2018: Management of Neonates Born at ≥ 35 0/7 Weeks' Gestation with Suspected or Proven Early-Onset Bacterial Sepsis

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Jaundice in a Baby <4 Weeks

Routine screening of newborns at 24 hours of life

Well-appearing infant ≥ 35 weeks presents with new or worsening jaundice

Infant with persistent jaundice at 3-4 weeks old if breastfed or 2 weeks old if formula-fed

Newborn in the nursery

Post-hospital discharge

Check transcutaneous bilirubin level.

• Evaluate infant in Bethel in outpatient clinic or ED.
• Check transcutaneous bilirubin (TcB) level if able.

TcB available

Enter level into **PediTool Calculator**.

TcB unavailable

Is level < 15 mg/dL AND is level ≥3 mg/dL below phototherapy threshold when gestational age (GA) and neurotoxicity risk factors are considered?

No

• Check serum total and direct bilirubin level.
• If direct bilirubin >1 mg/dL, do not start phototherapy. (See Concerning Scenarios Box.)
• Consider venous blood draw to maximize chances of getting a non-hemolyzed specimen.

≥ 14 days old

• **PediTool Calculator** does not apply.
• If total bilirubin >15 mg/dL or direct bilirubin >1 mg/dL, consult pediatric hospitalist.

< 14 days old

Enter serum level into **PediTool Calculator**.

Yes

• Incorporate recommendations from **PediTool Calculator** into clinical decision making.
• It is an option to give phototherapy if the total bilirubin level is 2-3 mg/dL below the treatment level. Used shared decision making with mother.
• if calculator recommends repeat level in 48 hours, consider checking this earlier (in 24 hours) for patients who live in villages.

Concerning Scenarios

• If jaundice is visible before 24 hours of life, check level immediately.
• If infant is not well-appearing, consider sepsis, consult pediatric hospitalist, and follow recommendations on **fever <90 days guideline**.
• If total bilirubin level is within 2 mg/dL of or over the threshold to start an exchange transfusion, the NICU should be consulted.
• If direct bilirubin >1 mg/dL, do not start phototherapy. Direct hyperbilirubinemia requires a work-up and often gastroenterology consultation. Phototherapy is contraindicated. Obtain pediatrics consult.

How to Use PediTool Calculator

(Note: Website may not work in Firefox.)

1. Enter infant's gestational age, age in hours, and total bilirubin level.
2. Note if infant has any neurotoxicity risk factors. (See box.)
3. Click "submit."
4. The next page will plot the level on a graph. You will see if the infant meets criteria for phototherapy and/or exchange transfusion.
5. If not starting phototherapy, scroll down to the table labelled, "Post-birth hospitalization discharge follow-up for infants who have NOT received phototherapy." Follow these recommendations for repeat levels.

Neurotoxicity Risk Factors

*Use this list to answer question on **PediTool calculator**.*

• Isoimmune hemolytic disease (positive DAT, etc.), G6PD deficiency, or other hemolytic condition
• Sepsis
• Clinical instability in past 24 hours

Phototherapy

1. Order using one of the following:
   • PED Pediatric Admission Power Plan→PED Phototherapy sub-phase
   • OB/Newborn orders folder→OB Newborn Phototherapy Power Plan
2. Check hemoglobin and hematocrit on all patients receiving phototherapy. May obtain via heel stick when checking bilirubin.
3. Check serum total bilirubin level Q12h (or more frequently if neurotoxicity risk factors or concern for ongoing hemolysis). If level is trending up, consult pediatrician and consider broadening differential and work-up. Note: Transcutaneous bilirubin is not reliable until 24 hours after phototherapy has been stopped.
4. Encourage frequent feeding, but try to limit time out of phototherapy to no more than 20 minutes Q3h.
5. IV fluids are unnecessary unless infant has signs of dehydration.
6. Keep infant supine with eye protection while under phototherapy.
7. Stop phototherapy when serum total bilirubin level is ≥ 2 mg/dL below the phototherapy initiation level, using the hour of life at which phototherapy was initiated.
8. Obtain rebound bilirubin level 6-12 hours after stopping phototherapy if patient required phototherapy in first 48 hours of life, if concern for hemolysis, or if DAT positive.

Direct Antibody Test (DAT)

• Order a DAT if:
  - Mother has positive or unknown antibody screen.
  - Mother is type O or Rh negative and did not receive RhIg during pregnancy.
  - The infant's total bilirubin level has a high rate of rise (0.3 mg/dL/hour in first 24 hours or 0.2 mg/dL/hour after first 24 hours).
• If infant has a positive DAT, check transcutaneous bilirubin immediately and then retest Q4h x2 then Q12h x3.

Labs for Expanded Work-up

Consider in infants with jaundice at <24 hours of life, rising levels despite phototherapy, or recurrent jaundice.

• Blood type, DAT (Direct Antibody Test, or Coombs)
• CBC with manual differential and reticulocyte count
• CMP
• Thyroid studies (if prolonged or recurrent)
• GGT
• G6PD

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 Clinical Guideline Committee 10/21/22.
Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Justin_Willis@ykhc.org or Mien_Chyi@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
>48 hours of life	≥ 60 mg/dL

Symptoms of Hypoglycemia

- Irritability
- Tremors/jitteriness
- Exaggerated Moro reflex
- High-pitched cry
- Seizures
- Lethargy
- Floppiness
- Cyanosis
- Apnea
- Poor Feeding

Indications for Screening of Asymptomatic Newborns

- SGA (<10%ile BW) or IUGR
- LGA (>90%ile BW)
- Infant of Diabetic Mother
- Late preterm (34 0/7 – 36 6/7) or post-term (>42 weeks)
- Perinatal stress (C-section for fetal distress, maternal preeclampsia or severe HTN, etc.)
- Physician discretion

0-4 HOURS OF AGE

At Risk Infants (See Indications Box)

Begin feeding within one hour of birth. First glucose should be obtained 30 minutes after completion of first feed.

- < 35 → 1. Administer Glucose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Glucose Gel (NOT one hour after feed).
  - < 35 → <25 → 1. Administer Glucose Gel immediately per dosing chart. 2. Notify provider immediately. 3. Obtain IV, start D10 infusion, and transfer to a higher level of care.
  - < 35 → ≥ 35 → 25-34 → 1. Administer Glucose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Glucose 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.**

GLUCOSE 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?

- No → ≤ 35?
  - Yes → 1. Administer Glucose 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 Glucose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Glucose Gel (NOT one hour after feed).
    - → At or Above Target BG?
      - No → Is this 3rd dose of Glucose Gel?
        - Yes → 1. Administer Glucose 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 Glucose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Glucose Gel (NOT one hour after feed).
      - Yes → **STOP WHEN**:
        - Late preterm or SGA/IUGR: infant is 24 hours old AND last four consecutive BGs in target range for age
        - Other infants: when last four consecutive BGs in target range for age
- Yes → 1. Continue feeds q 2-3 hours. 2. Assess for hypoglycemia by obtaining and documenting pre-feed BG.
  - → At or Above Target BG?
    - No → 1. Administer Glucose Gel immediately per dosing chart. 2. Place skin to skin and feed again. 3. Repeat BG at 1 hour after Glucose Gel (NOT one hour after feed).
    - Yes → **STOP WHEN**:
      - Late preterm or SGA/IUGR: infant is 24 hours old AND last four consecutive BGs in target range for age
      - Other infants: when last four consecutive BGs in target range for age

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

- Give Glucose 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 12/7/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Amy_Carson-Strnad@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Neonatal Resuscitation Summary

NICU (907) 212-3614 – Ask for attending neonatologist on call.

GESTATIONAL AGE (weeks)	24	26	28	30	32	34	36	38	40
ESTIMATED WEIGHT (grams)	**700**	**900**	**1100**	**1350**	**1650**	**2100**	**2600**	**3000**	**3500**
EQUIPMENT/SUPPLIES: NG/OG Tube - 5 French ♦ UVC <32 weeks - 3.5 French ♦ UVC ≥32 weeks - 5 French ♦ UAC - 3.5 French for all gestational ages									
Laryngoscope Blade	00	00	00	0	0	0	0	0-1	0-1
ETT Size	2.5	2.5	2.5-3.0	3.0	3.0	3.0-3.5	3.5	3.5-4.0	3.5-4.0
ETT Depth lip to tip. *Place at T2 above the carina.*	6.5-7 cm	6.5-7 cm	7 cm	7-7.5 cm	7.5 cm	8 cm	8.5 cm	9 cm	9.5 cm
UVC insertion. *Place just above diaphragm. Add umbilical stump length.* **May insert UVC 2-4 cm for emergency access.**	6.5 cm	6.9 cm	7.2 cm	7.5 cm	8 cm	8.7 cm	9.4 cm	10 cm	10.8 cm
UAC insertion. *Add umbilical stump length.* **High line at T6-T9 (preferred).**	11.1 cm	11.7 cm	12.3 cm	13 cm	14 cm	15.3 cm	16.8 cm	18 cm	19.5 cm
UAC insertion. Low line at L3-L4. *Add umbilical stump length.*	7.7 cm	7.9 cm	8.1 cm	8.4 cm	8.7 cm	9.1 cm	9.6 cm	10 cm	10.5 cm
Needle decompression. *See kit and protocol in neonatal code cart.*	18 gauge	18 gauge	18 gauge	18 gauge	18 gauge	16 gauge	16 gauge	16 gauge	16 gauge
VITAL SIGNS: Heart Rate 120-160 ♦ Respiratory Rate 30-60 ♦ Mean Blood Pressure = Gestational age in weeks									
INITIAL VENTILATOR SETTINGS									
Positive Inspiratory Pressure (PIP) cm H_2O	16-22	16-22	16-22	16-22	18-24	18-24	18-24	20-28	20-28
Positive End Expiratory Pressure (PEEP) cm H_2O	4-6	4-6	4-6	4-6	4-6	5-6	5-6	5-6	5-6
Inspiratory Time (seconds)	0.3-0.35	0.3-0.35	0.3-0.35	0.3-0.35	0.3-0.35	0.3-0.35	0.35-0.4	0.35-0.4	0.35-0.4
Respiratory Rate (breaths per minute)	30-45	30-45	30-45	30-45	20-40	20-40	20-40	20-40	20-40
Saturation Goal after 10 Minutes	88-95%	88-95%	88-95%	88-95%	88-95%	88-95%	88-95%	95-98%	95-98%
MEDICATIONS									
Epinephrine **IV/IO 0.1 mg/mL** 0.1-0.3 mL/kg. *May repeat every 3 minutes for asystole.*	0.1-0.2 mL	0.1-0.3 mL	0.1-0.3 mL	0.1-0.4 mL	0.2-0.5 mL	0.2-0.6 mL	0.3-0.8 mL	0.3-0.9 mL	0.4-1 mL
Epinephrine **ET ONLY 0.1 mg/mL** 1 mL/kg. *May repeat every 3 minutes for asystole.*	0.7 mL	0.9 mL	1.1 mL	1.3 mL	1.6 mL	2.1 mL	2.6 mL	3 mL	3.5 mL
Curosurf (poractant alfa 80 mg/mL) 2.5 mL/kg. Give Curosurf <26 weeks OR 26-29 weeks requiring ≥40% FiO_2 OR >29 weeks with CXR-proven RDS.	1.8 mL	2.2 mL	2.8 mL	3.4 mL	4 mL	5.2 mL	6.6 mL	7.6 mL	8.8 mL
FOR HYPOGLYCEMIA: Give D10 bolus 2 mL/kg IV/IO at 1 mL/min. Increase D10 maintenance fluid rate by 1 mL/hour for <2 kg or 2 mL/hour for ≥2 kg.	1.4 mL	1.8 mL	2.2 mL	2.7 mL	3.3 mL	4.2 mL	5.2 mL	6 mL	7 mL
Ampicillin **(Dilute to 100 mg/mL)** 50 mg/kg IV/IM	35 mg (0.35 mL)	45 mg (0.45 mL)	55 mg (0.55 mL)	68 mg (0.68 mL)	83 mg (0.83 mL)	105 mg (1.05 mL)	130 mg (1.3 mL)	150 mg (1.5 mL)	175 mg (1.75 mL)
Gentamicin (2 mg/mL) 5 mg/kg IV as one-time dose. May give IM. **DO NOT USE IN VILLAGE.**	3.5 mg (1.75 mL)	4.5 mg (2.25 mL)	5.5 mg (2.75 mL)	6.8 mg (3.4 mL)	8.2 mg (4.1 mL)	10.4 mg (5.2 mL)	13 mg (6.5 mL)	15 mg (7.5 mL)	17.6 mg (8.8 mL)
Volume Expanders: NS or albumin 10 mL/kg IV/IO. Give over 15-30 minutes; give faster if unstable; give slower for extreme premies.	7 mL	9 mL	11 mL	13.5 mL	16.5 mL	21 mL	26 mL	30 mL	35 mL
D10 Maintenance Fluids: <750 grams give 90-100 mL/kg/24 hours ♦ ≥750 grams give 80 mL/kg/24 hours. Goal blood glucose is 35-110 mg/dL.	3 mL/hour	3 mL/hour	3.7 mL/hour	4.5 mL/hour	5.5 mL/hour	7 mL/hour	8.7 mL/hour	10 mL/hour	12 mL/hour
Phenobarbital (130 mg/mL) 10 mg/kg IV/IO/IM/PR. May give additional 10 mg/kg dose.	7 mg (0.05 mL)	9 mg (0.07 mL)	11 mg (0.08 mL)	13.5 mg (0.1 mL)	16.5 mg (0.13 mL)	21 mg (0.16 mL)	26 mg (0.2 mL)	30 mg (0.23 mL)	35 mg (0.27 mL)

Reviewed and updated by YKHC Pediatrics, OB Nursing, and Pharmacy in conjunction with Providence Alaska Medical Center NICU Staff. MSEC approved 8/3/21.

Epinephrine 0.1 mg/mL

• This is the pre-filled syringe concentration.
• Draw up doses by inserting needle through the thick rubber stopper.

Ampicillin 100 mg/mL

Products needed:
• Ampicillin 500 mg vial
• Sterile water for injection, 10 mL vial

How to mix:
1. Reconstitute 500 mg vial with 4.8 mL sterile water for injection. This will result in a 100 mg/mL final concentration.
2. The Neonatal Resuscitation Summary (page 1) lists the total dose and volume – draw up dose from vial.
3. Dose must be used within 1 hour of reconstitution.

Administration:
• Doses less than 500 mg can be injected via slow IV push over 3 to 5 minutes.
• Not compatible with D10W.
• Administer before gentamicin – do not administer at the same time.

Gentamicin 2 mg/mL

Product needed:
• Gentamicin 100 mg/50 mL pre-mixed bag.

DO NOT ADMINISTER THE BAG – the dose will be administered via syringe pump.
The Neonatal Resuscitation Summary (page 1) lists the total dose and volume – draw up this volume from the bag and **immediately dispose of the bag.**

Administration:
• Administer after ampicillin – do not administer at the same time.
• Administer via **syringe pump** over 30 minutes.
• Compatible with D10W.

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Yukon-Kuskokwim HEALTH CORPORATION

Neurology Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

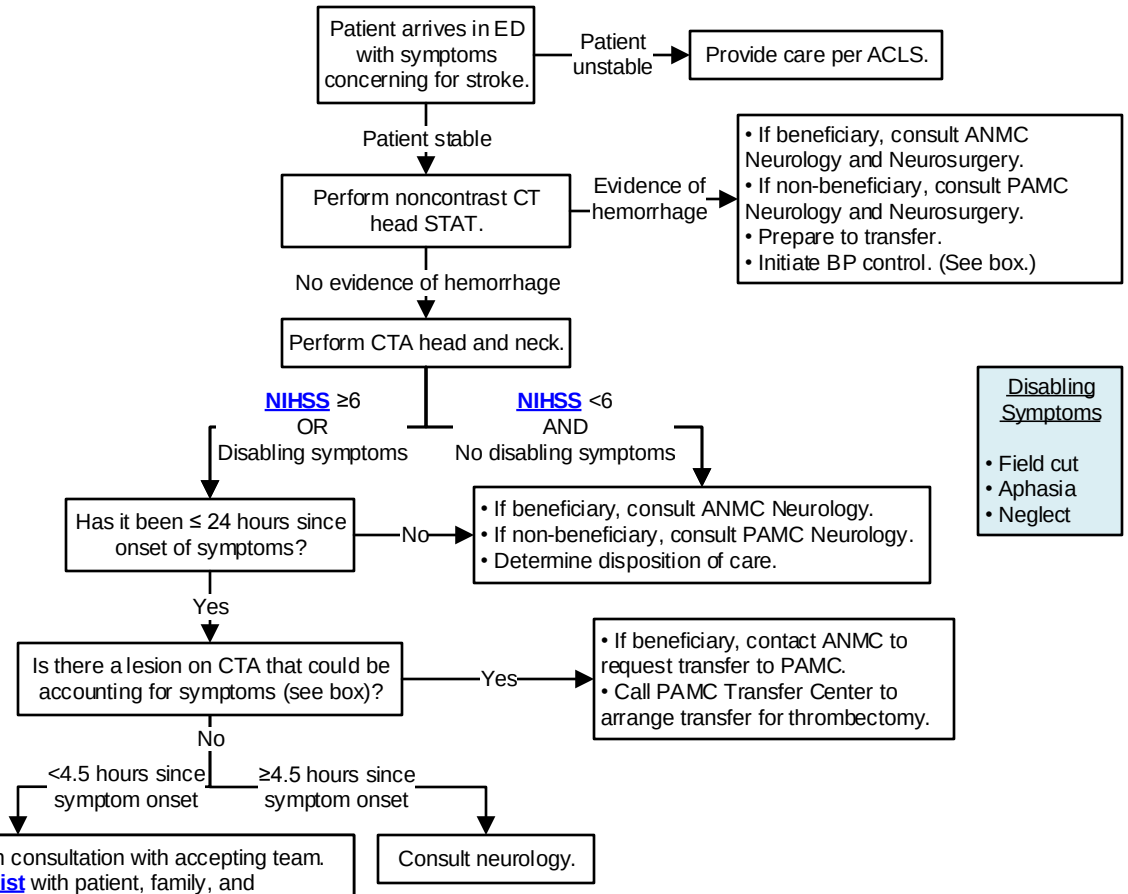
Cerebrovascular Accident

Immediate Management (in village, en route, or upon arrival)

- Consider ASA 81 mg (PO or PR) if no headache or vomiting.
- Blood glucose.
- EKG, if possible.
- Place two large-bore IVs.
- Notify radiology tech and radiologist.
- Have appropriate staff on standby.
- Have tenecteplase ready.
- Transport directly to CT, if stable.
- COVID screen/BINAX.
- Calculate **NIHSS**.

General Care for Strokes

- Supportive care for airway, breathing, circulation
- VS including weight
- Telemetry
- Appropriate neurologic status documentation and repeat checks
- Glucose goal 140-180; repeat glucose checks if NPO.
- Maintain normothermia (eg acetaminophen PR as needed)
- NPO until swallow study
- BP control (see box)



Disabling Symptoms

- Field cut
- Aphasia
- Neglect

BP Control

BP Goals
- Acute ischemic stroke or TIA: <220/120 mm Hg
- Acute ischemic stroke s/p thrombolytics: <185/110 mm Hg
- Intracerebral hemorrhage: <180/90 mm Hg
- Subarachnoid hemorrhage: <140-160/90 mm Hg

Patient eligible for reperfusion therapy except if BP>185/110; lower BP by below regimen, then proceed:
- Nicardipine 5 mg/hour IV, titrate up by 2.5 mg/hour every 5 to 15 minutes, max 15 mg/hour; adjust to maintain proper BP (nicardipine is preferred)

OR
- Labetalol 10 to 20 mg IV over 1 to 2 minutes, may repeat x1

OR
- Hydralazine or enalaprilat may also be considered.

If blood pressure is not maintained at or below 185/110 mmHg, do **not** administer tenecteplase.

During and after reperfusion therapy to maintain BP <180/105:
- Labetalol 10 mg IV then continuous infusion 2 to 8 mg/min
- Nicardipine 5 mg/hour IV, titrate to desired effect by 2.5 mg/hour every 5 to 15 minutes, max 15 mg/hour

Phone Numbers

- Providence Transfer Center: (907) 212-7363, press 1 for STEMI/stroke
- ANMC Transfer Center: (907) 729-BEDS or Tiger Connect the Transfer Center
- ANMC Neurology: Tiger Connect

Thrombolytics at YKHC

- Tenecteplase is the only thrombolytic stocked in the ED at YKHC. Dose for CVA is 0.25 mg/kg IV once (max 25 mg).
- Alteplase must come from the pharmacy, if desired.

If giving thrombolytics

- Goal time from door to drug: <60 minutes.
- Attempt to place all lines and tubes (ETT, Foley, NG) prior to administering drug.
- Monitor until transfer: frequent VS and neuro checks.
- BP control per box.
- If any neurologic worsening, repeat head CT.

Criteria for Possible Thrombectomy

- <24h since last well
- NIHSS ≥ 6 or disabling symptoms such as aphasia, neglect, field cut
- Good previous function
- **ASPECTS** >6
- Lesion in carotid, M1, M2, basilar, P1, or A1 arteries

Note about Disposition

- Most patients with stroke should be transferred, either for intervention at PAMC or for work-up and therapy.
- Consider NOT transferring:
  - Patients who decline transfer.
  - Patients with resolved symptoms. (Calculate **Canadian TIA** or **ABCD²** score).
- **You may need to advocate for your patients to receive the standard of care.**

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 2/1/22. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact EPeek_Ehlinger@ykhc.org or Jeremy_Wood@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Cerebrovascular Accident

Thrombolytic Checklist

INDICATIONS *(initial yes or no)*		
YES	**NO**	
		Less than 4.5 hours since onset of symptoms or last known normal.
		NIHSS greater than 5 (or less than 5 with disabling symptoms).
		Symptoms are NOT rapidly improving.
		Symptoms are NOT due to untreated hypoglycemia (BG<50).

ABSOLUTE CONTRAINDICATIONS *(initial yes or no)*		
YES	**NO**	
		CT evidence of hemorrhage OR extensive area of hypodensity (irreversible injury).
		GI/GU bleed in the last 21 days.
		Severe, uncontrolled, hypertension >185/110.
		Current intracranial neoplasm.
		Active internal bleeding or known aortic dissection.
		Any bleeding diathesis.
		Presentation suggestive of SAH or endocarditis (not septic emboli).
		History of intracranial hemorrhage.
		Anticoagulation (warfarin or DOAC in the last 48 hours or therapeutic-dosed heparinoids).
		Any of the following in the last three months: ischemic stroke, intracranial surgery, intraspinal surgery, or serious head trauma.

RELATIVE CONTRAINDICATIONS *(initial yes or no) – If any of the following relative contraindications are present, consider expert consultation prior to giving thrombinolytic and/or consider these with consent and shared decision-making.*		
YES	**NO**	
		History of GI or GU hemorrhage.
		Arterial puncture in a non-compressible site in the last seven days.
		Seizure at onset with postictal neurologic impairment.
		Major surgery in the last 14 days.
		Pregnancy.
		Onset 3-4.5 hours with NIHSS >25 (higher bleeding risk) or age >80 (higher bleeding risk).
		Untreated AVM or aneurysm.
		Systemic malignancy.
		History of arterial dissections.
		Blood glucose greater than 400 (associated with worse outcomes).

This checklist is advisory for clinical decision-making and may not be all-inclusive. Risks and benefits will need to be assessed individually.

Physician signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Cerebrovascular Accident

PROCEDURE CONSENT

I hereby authorize _____ and such assistants as he/she may designate, to perform the following operation or procedure:

TECHNICAL DESCRIPTION	Intravenous thrombolytic therapy for acute ischemic stroke.
LAY DESCRIPTION	Give clot-dissolving medication through an IV to dissolve the clot which is causing a stroke.

_____ has discussed with me the information briefly summarized below:

BENEFITS	• Thrombolytic medication is a treatment that may restore blood flow to the brain. • In studies, if these drugs were given less than three hours after the stroke started, 33% of patients given thrombolytic drugs had a good outcome. In patients who did not get thrombolytic drugs, 23% got better. Ten people would have to get the drug to help one person have a better outcome. • If these drugs were given between three and four and a half hours after the stroke started, 35% of patients given thrombolytic drugs had a good outcome, and 30% of patients who didn't get the drug also got better. Twenty people would have to get the drug to help one person have a better outcome. • Patients who receive this drug within three hours of the stroke starting have a 10% increase in chance of disability-free survival. • Patients who receive this drug between three and four and a half hours from the stroke starting have a 5% increase in chance of disability-free survival.
RISKS *(some, but not all)*	• In a large study of stroke patients, 6.8% of them had bleeding in their brain after receiving thrombolytic drugs for stroke, compared to 1.3% of those stroke patients who did not receive the drug. If we give this drug 18 times, it will probably make one person have bleeding in their brain. • Among all people given this drug, 2% die from a hemorrhage.
RISKS OF NOT HAVING THE PROCEDURE	• Higher risk of developing permanent, disabling stroke symptoms.
ALTERNATIVE TREATMENTS	No other treatments available at this facility. Only monitoring symptoms and rehabilitation.

Patient signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Physician signature: _____

Printed name: _____ Date and time: _____

Witness signature: _____

Printed name: _____ Date and time: _____

Place patient ID sticker here.

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).

Normal / Abnormal → Is patient improving?

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

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

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. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Seizure Evaluation (<18 years)

Pediatric patient presents with resolved seizure-like activity.

→ If patient is actively having a seizure, go to **Status Epilepticus Treatment guideline**.

Bedside glucose STAT if seizure occurred <4 hours ago or mental status not at baseline

Obtain detailed history. (See Box 1.)
Perform neurologic exam.

Strong suspicion that event was a seizure?

- No → Provide reassurance and education. Ask parents to video-record future events. Instruct parents to return if events change or become more concerning.
- Yes

Does patient have history of seizures?

- Yes → Assess for triggers: infection/fever, missed doses, sleep deprivation, significant weight gain, etc. If this seizure is similar to child's regular seizures, child is back to neuro baseline, and reliable caregiver, may discharge home. Review antiepileptic drug regimen and compliance. Confirm that parents have unexpired Diastat in the home. Review seizure precautions. Consult pediatrics with any questions.
- No

History of fever?

- Yes

Patient meets ALL low-risk criteria (see Box 2)?

- Yes

Look for source of fever. Do not routinely perform head CT.

- Age ≥18 months → Diagnose simple febrile seizure.
- Age <18 months → Consider performing LP, given that signs and symptoms of meningitis may be absent or subtle in this age group.

- No

Labs: CBC, CRP, BMP, magnesium, phosphate, blood culture, U/A, urine culture. Consider LP.

LP results, if applicable

- Normal → Discharge patient if reassuring neurologic status. Educate parents concerning febrile seizure and give febrile seizure education handout. Treat infection and fever if appropriate. EEG unnecessary. Update Problem List. Prescribe Diastat for all seizure patients ≥6 months. Consult pediatrics with any questions.
- Abnormal → Suspect meningitis: Consult pediatrics. Start meningitic dose of ceftriaxone and consider vancomycin, acyclovir, and dexamethasone per Pediatric Critical Care Guide. Strongly consider medevac to Anchorage.

- No

Perform work-up as appropriate. (See Box 3.)

Follow-up with pediatrics to consider EEG, MRI, and/or neurology consult.

At discharge, prescribe Diastat for all seizure patients ≥6 months old.

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 for evaluation.
- 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 5 years of age.
2. Fever present.
3. Seizure generalized (nonfocal).
4. Seizure duration <15 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
- CBC, 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 without contrast prior to LP if concerning neurologic status, persistently altered mental status, history of trauma, focal neurological findings, or focal seizure.

Consider using the **Bacterial Meningitis Score for Children** to help rule-out meningitis.

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by MSEC 8/3/21. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Hampton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Status Epilepticus Treatment (Pediatric)

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

- ABCs. Ensure BVM at bedside and pediatric code cart within reach.
- **Bedside glucose STAT.**
- Obtain IV.
- Consult pediatrics.
- Obtain brief history.
- Prepare first-line medication. If in the ED or NW, get the Peds Seizure Kit (see box).

Seizure lasting ≥3 minutes
OR
More than one seizure in 24 hours without return to baseline.

No → Go to Pediatric Post-Seizure Evaluation guideline.

Yes

Peds Seizure Kit

- In the ED and Peds NW Pyxis.
- Type "seizure" and override.
- Includes:
  - Midazolam 10 mg/2 mL
  - Levetiracetam
  - Phenobarbital 130 mg/mL
  - Dosing cards from the pediatric critical care guide

Benzodiazepine (choose ONE)
- Midazolam 0.2 mg/kg IN/IM (max dose 10 mg) – single dose only.
- Lorazepam 0.1 mg/kg IV/IO (max dose 4 mg) – up to two doses Q5 minutes.
- Diastat home dose – up to two doses Q5 minutes.

Seizure continues 5 more minutes.

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 or fosphenytoin (kept refrigerated) IM. If giving either second-line drug, consult pediatrics and strongly consider activating a medevac.
- Consider placing IV and giving NS bolus 20 mL/kg.
- Low threshold to activate medevac for atypical or prolonged seizure.

Consult ANMC PICU at (907) 297-8809.

Age ≤ 2 months

Phenobarbital 20 mg/kg IV/IM.
If IV, give over 15 minutes or
1 mg/kg/minute (max 60 mg/min).

Seizure continues 5 minutes after infusion complete.

Phenobarbital 10 mg/kg IV/IM.
If IV, give over 15 minutes or
1 mg/kg/minute (max 60 mg/min).

Seizure continues 5 minutes after infusion complete.

Levetiracetam 40 mg/kg IV/IM.
If IV, give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Levetiracetam 20 mg/kg IV/IM.
If IV, give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Start midazolam or propofol infusion with PICU consultation.

Age >2 months

Levetiracetam 60 mg/kg IV/IM.
Max dose 4500 mg.
If IV, give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Fosphenytoin 20 mg PE/kg IV.
Max dose 1000 mg.
Give over 10 minutes.

Seizure continues 5 minutes after infusion complete.

Fosphenytoin 10 mg PE/kg IV.
Max dose 1000 mg.
Give over 5-10 minutes.

Seizure continues 5 minutes after infusion complete.

Phenobarbital 20 mg/kg IV or IM.
Max dose 1000 mg.
If IV, give over 15 minutes.

Seizure continues 5 minutes after infusion complete.

Phenobarbital 10 mg/kg IV or IM.
Max dose 1000 mg.
If IV, give over 15 minutes.

Seizure continues 5 minutes after infusion complete.

Start midazolam or propofol infusion with PICU consultation.

In all ages, if hemodynamic instability or myocardial dysfunction, avoid phenobarbital and use alternate agents.

In all ages, in consultation with the PICU, consider preparing for intubation and continuous infusion after second-line drug has been given. Continue giving medications as detailed in the flow while infusion is being prepared.

If giving midazolam, make drip of 1 mg/mL and start at rate 0.1 mg/kg/hour.

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

This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner. Approved by MSEC 8/3/21. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Hampton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Status Epilepticus Treatment (Adult)

Definitions

• **This guideline is indicated for the emergent treatment of convulsive status epilepticus.**
• For atypical seizure-like presentations without evidence of impending hemodynamic instability, consult Neurology on call at ANMC or PAMC.
• Convulsive status epilepticus:
- Seizure that lasts >5 minutes or occurs multiple times without regaining consciousness.
- Diffuse, often tonic-clonic motor activity AND loss of consciousness.

Adult patient with seizure.

• ABCs and neurologic exam.
• **Bedside glucose STAT.**
• Obtain PIV x 2, continuous SpO_2, & cardiac monitor.
• Ensure BVM and suction at bedside.
• If possible, obtain labs (see box).
• Get AMPLE history.

After five minutes of seizure activity, patient meets criteria for treatment of convulsive status epilepticus (see Definitions box).

Village Management

See Emergency RMT Seizure Scenario on the wiki.
• ABCs. Prepare BVM and suction.
• Place patient on floor with space around.
• **Bedside glucose STAT.** If unable to get a glucose measurement, give glucose buccally.
• Follow flow for no IV in place.
• Discuss with E1/E2 and activate medevac.
• If seizure resolves, place patient in recovery position.

If IV access unsuccessful, begin treatment with "No IV" pathway while continuing to attempt access and/or placing IO.

Labwork

Labs: BMP, Mg, Phos, CBC, lactate, EtOH, UDS, U/A, hCG.
If concern for infection, send blood cultures and pro-calcitonin.
Consider CK to trend over time.

IV in place

• Lorazepam 0.1 mg/kg IV @ 2 mg/min
AND
• Levetiracetam 60 mg/kg IV (max 4500 mg). Give over 15 minutes.

Seizure continues 5 more minutes after lorazepam given.

• Lorazepam 0.1 mg/kg IV @ 2 mg/min.
• Prepare for intubation.

Seizure continues 5 more minutes.

Fosphenytoin 20 mg PE/kg IV (max 1500 mg). Give over 10 minutes. If seizure continues, give additional 10 mg PE/kg IV over 5-10 minutes.

• Contact ICU and activate medevac.
• **Intubate** patient.
- Induction (choose ONE): Propofol 2 mg/kg OR midazolam 0.2 mg/kg.
- Paralysis: Rocuronium 0.6 mg/kg (preferred over succinylcholine due to risk of rhabdomyolysis and hyperkalemia, but recommend this lower dose)
- Consider sugammadex following intubation to avoid masking seizure activity. Discuss with intensivist.
• Be prepared to give vasopressors or push-dose epinephrine if needed.

Choose ONE:
• Propofol drip 20 mcg/kg/min, titrate to effect with goal 50-80 mcg/kg/min. Watch BP closely.
• Midazolam drip 0.1 mg/kg/hr gtt, titrate to effect

• Discuss further management with ICU.
• Prepare for medevac.
• Continue active management until patient leaves, including continuous VS, frequent labs, and monitoring of UOP.

No IV in place

Benzodiazepine (choose ONE):
• Midazolam 0.2 mg/kg IM (max dose 10 mg) x1.
• Diazepam 0.2 mg/kg (max 20 mg) PR x1.
• Diastat home dose x1.
AND
• Levetiracetam 60 mg/kg (max 4500 mg) PO (if able) or PR. To give PR, give tablets as well as one packet of water-soluble lubricant.

Seizure continues 20 more minutes.

• Activate medevac if in village.
• Fosphenytoin 20 mg PE/kg IM (max 1500 mg).

Seizure continues 20 more minutes.

Repeat benzodiazepine dose.

Seizure continues 20 more minutes.

Phenobarbital 20 mg/kg IM (max 1000 mg).

Treatments for Provoked Seizures

• Hypoglycemia: Dextrose 50% IV. Give 25 grams IV push.
• Hyponatremia: Sodium chloride 3% 100 mL infusion over 10 minutes.
• Hypocalcemia: Calcium gluconate 1-2 gram IV push.
• Eclampsia: Magnesium sulfate 4-6 grams IV over 20 minutes followed by 1-2 gram/hour.
• Alcohol withdrawal: Phenobarbital 260 mg IV push followed by 130 mg Q30-60 minutes.

Post Seizure Care

• Seizure recurrence typically occurs within 2-6 hours.
• If history of seizures, may discharge with responsible adult if patient is improving. If first-time seizure, monitor in ED or clinic until mentation is at baseline. No air travel until >6 hours from event.
• Consider admission for prolonged post-ictal state or if concern for persistent metabolic abnormalities.
• Place urgent referral to Neurology if first-time seizure without known cause. Consult Neurology if considering urgent neurologic evaluation or medication initiation or adjustment.

Notes

• If seizure occurs in outpatient clinic, place patient on floor with space around and call a Rapid Response.
• Avoid using lorazepam IM due to erratic absorption.
• Avoid mixing different benzodiazepines.
• Monitor CK and renal function. Patient may require aggressive IV fluid administration if risk for rhabdomyolysis.
• Obtain neuroimaging if any focal abnormalities on neuro exam.
• Perform LP if unable to exclude intracranial infection. (Perform CT prior to LP.)

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

Yukon-Kuskokwim HEALTH CORPORATION

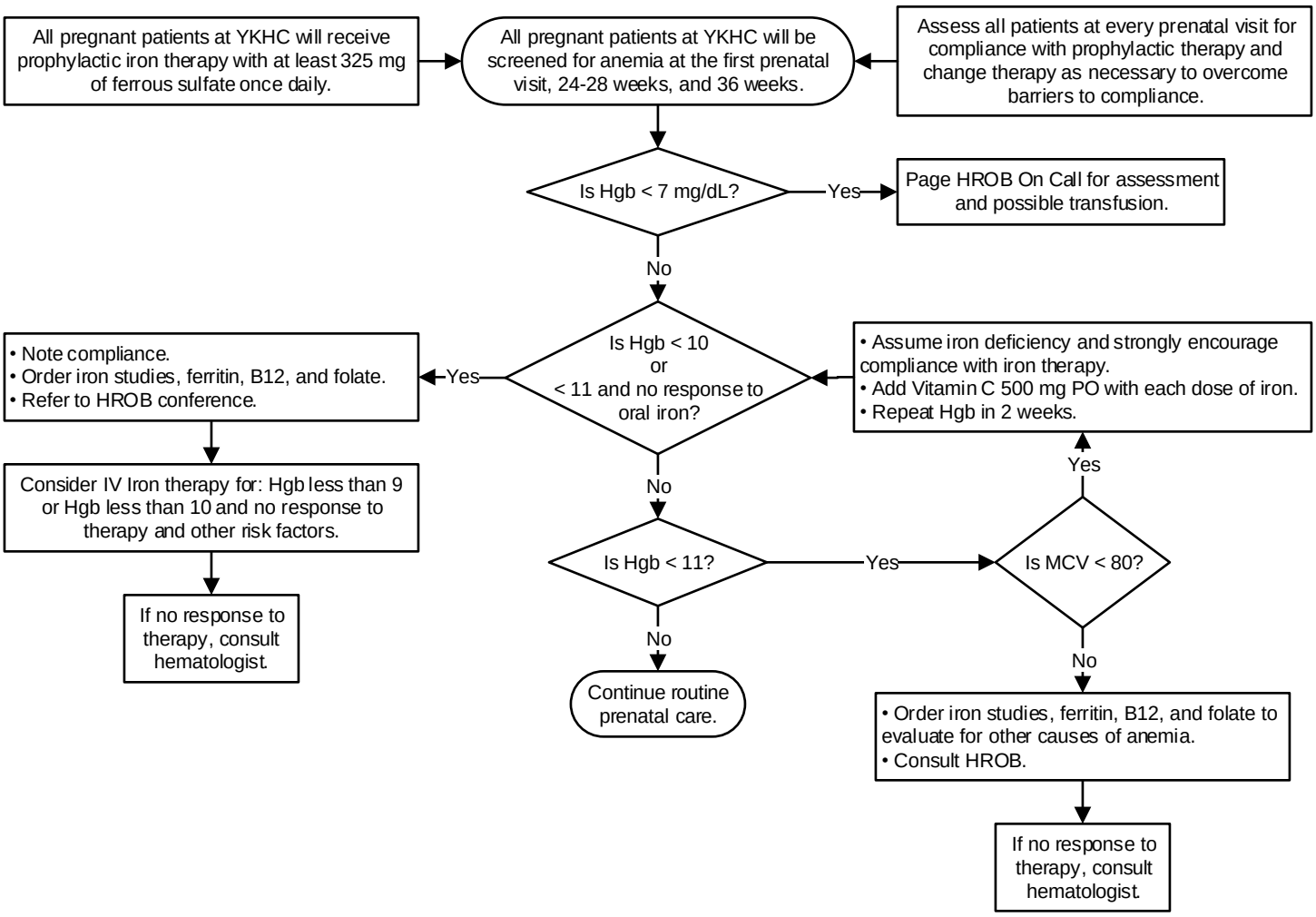
Obstetrics Guidelines

Obstetrics

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Anemia in Pregnancy



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Approved by MSEC 5/4/21. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Diabetes, Gestational

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
Pregnancy with one or more of the following levels:

- Fasting ≥92 mg/dL
- 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?

- 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.
- No → Reassess medication dose and choice. Consult DM education team/OB/GYN.

Non-Adherent Patients

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

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

Fetal Monitoring

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

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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Ectopic Pregnancy Treatment

D&C Prior to Methotrexate?

D&C 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.

Work-up

- 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 ≥ 4 cm
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 or is there a large mass?
- No → Single Dose Regimen
- Yes → Two Dose Regimen

Single Dose Regimen

- Single dose MTX 50 mg/m^2 IM on 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 50 mg/m^2 and repeat hCG measurement on days 4 and 7 after second dose.

Two Dose Regimen

- Administer 50 mg/m^2 on day 1.
- Repeat 50 mg/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 50 mg/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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

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

1
Nomenclature

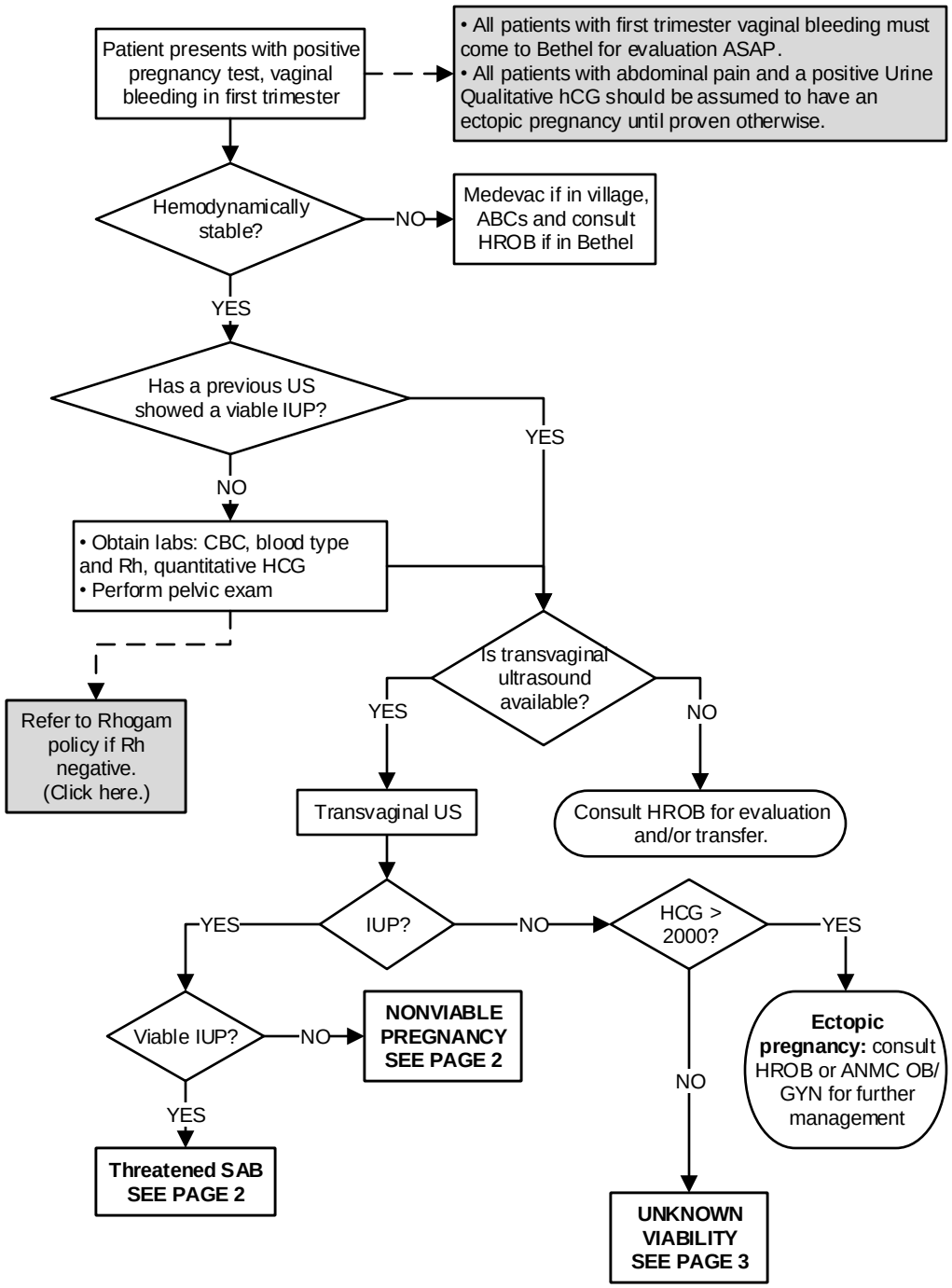
- **Viable** – A pregnancy is vialble if it can potentially result in a liveborn baby.
- **Nonviable** – A pregnancy is nonviable if it cannot possibly result in a liveborn baby. Ectopic pregnancies and failed intrauterine pregnancies are nonviable.
- **Intrauterine pregnancy of uncertain viability**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

Threatened SAB

MUST remain in Bethel until bleeding improves.
MUST be seen by a provider at least weekly with ultrasound.
No further hCG levels are needed.

Viable pregnancy?

YES → Return to Village

NO

NONVIABLE PREGNANCY

Consult HROB for management plan
No further US or Quantitative HCG are necessary

Options:
1. D&C
2. Misoprostol
3. Wait and see

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

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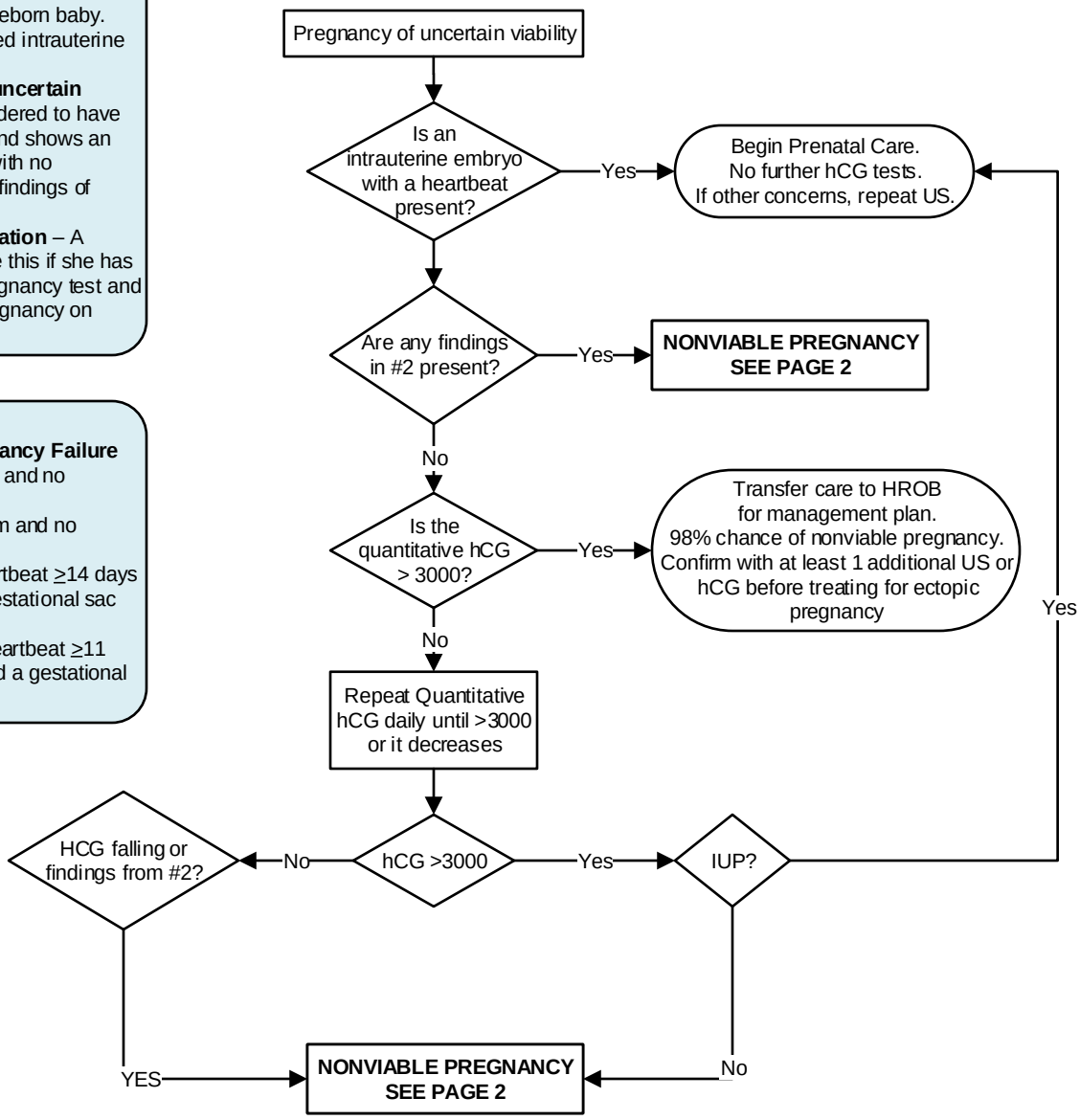

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Maternal GBS Prophylaxis

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.

Please note: YKHC does not use the neonatal option available here. Please see the **Newborn Early-Onset Sepsis/GBS guideline** for more details.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

HIV Prenatal Screening and Care

OPT OUT

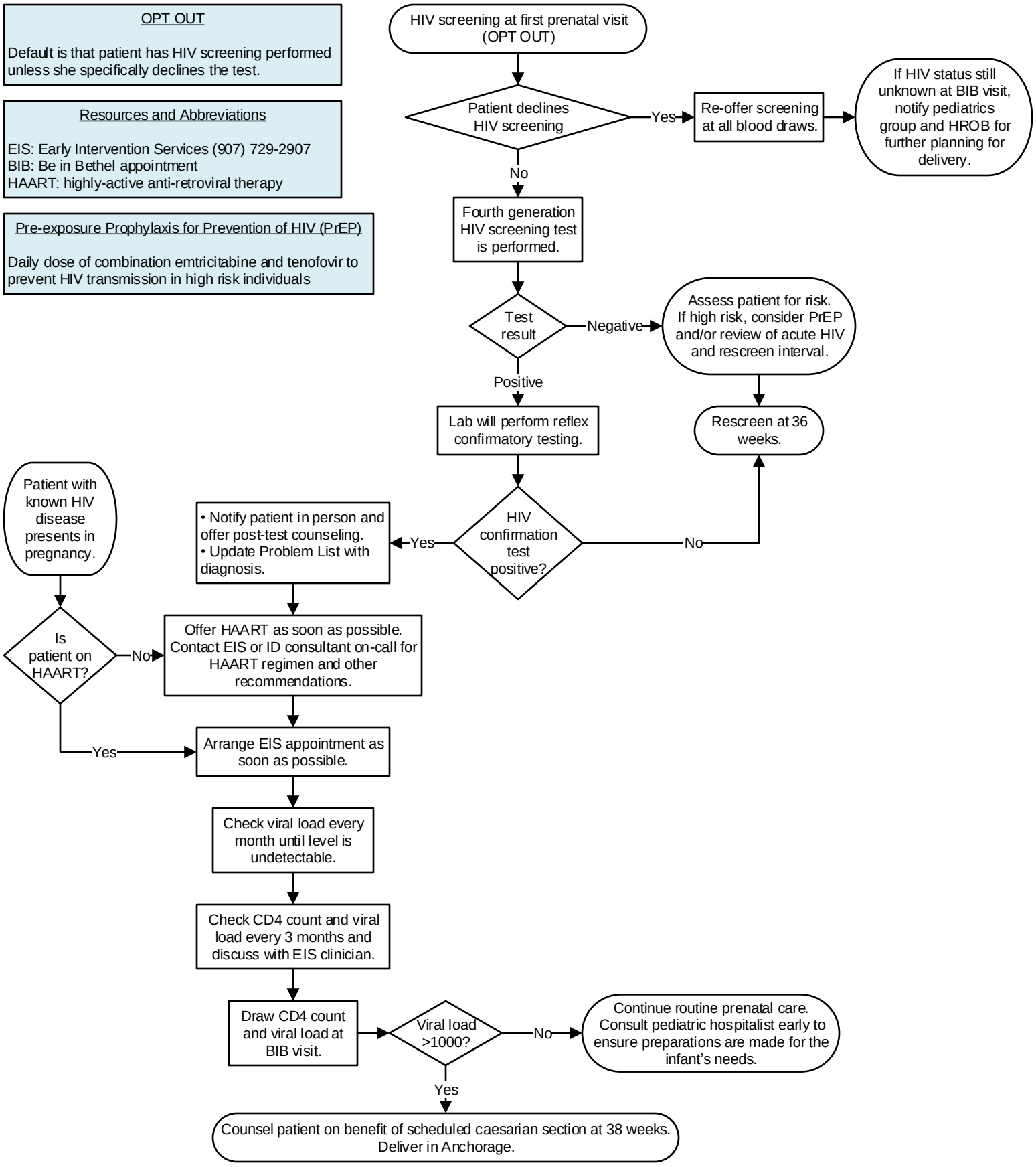
Default is that patient has HIV screening performed unless she specifically declines the test.

Resources and Abbreviations

EIS: Early Intervention Services (907) 729-2907
BIB: Be in Bethel appointment
HAART: highly-active anti-retroviral therapy

Pre-exposure Prophylaxis for Prevention of HIV (PrEP)

Daily dose of combination emtricitabine and tenofovir to prevent HIV transmission in high risk individuals



Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Hypertension in Pregnancy, Chronic

Diagnostic Criteria

History of hypertension (BP ≥ 140/90) prior to pregnancy
or
Persistent hypertension (BP > 140/90) prior to 20 weeks gestation
or
Hypertension (BP > 140/90) persisting beyond 12 weeks post-partum

Gestational Hypertension (GH) Diagnostic Criteria

BP ≥140/90 measured on two occasions at least four hours apart.

First Prenatal Visit with History of Chronic Hypertension

- Obtain preeclampsia labs.
- Refer to HROB meeting for discussion.

Preeclampsia Labs

- CBC
- CMP
- Random urine protein to creatinine ratio

Severe HTN, renal, cardiac, or connective tissue disorders?

Yes → Refer to ANMC OB Service.

No

First Trimester

- Monitor BP every 2-4 weeks.
- Fetal ultrasound to confirm EDC prior to 14 weeks gestation.

Second Trimester

- Monitor BP every 2-4 weeks.
- If patient with symptoms of severe features of preeclampsia, obtain preeclampsia labs and see **Hypertension, Severe** guideline for further management.
- Aspirin 162 mg daily starting at 12 weeks gestation and continuing until delivery to prevent complications.
- After 20 weeks, serial fetal U/S every 4 weeks to evaluate growth.

Severe Features of Preeclampsia

- sBP ≥ 160 OR dBP ≥ 110
- Renal insufficiency
- Pulmonary edema
- Thrombocytopenia (platelets <100K)
- Impaired liver function
- IUGR
- Cerebral or visual symptoms
- Severe, unremitting headache

Superimposed preeclampsia present?

Yes → Refer to **Gestational Hypertension/ Preeclampsia** guideline.

No

Signs/Symptoms of Superimposed Preeclampsia

- Any signs/symptoms of severe features
- Worsening proteinuria
- Worsening hypertension

Third Trimester

- Monitor BP every 2 weeks.
- If patient with symptoms of severe features of preeclampsia, obtain preeclampsia labs and see **Hypertension, Severe** guideline for further management.
- BPP weekly after 34 weeks gestation.
- NST/AFI anytime patient is in Bethel between 28-36 weeks.

No

Consult OB/GYN at 37 weeks for timing of delivery.
MUST be delivered by the EDC or transferred to Anchorage.

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

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Approved by Clinical Guideline Committee 10/21/22.
Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact David_Compton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Hypertension, Gestational/Preeclampsia

How to Take a BP

- Patient should be seated for 15 minutes and calm.
- Patient should not chew or smoke.
- The appropriate sized BP cuff should be used.

Severe Features of Preeclampsia

- sBP ≥ 160 OR dBP ≥ 110
- Renal insufficiency
- Pulmonary edema
- Thrombocytopenia (platelets <100K)
- Impaired liver function
- IUGR
- Cerebral or visual symptoms
- Severe, unremitting headache

Gestational Hypertension (GH) Diagnostic Criteria

- BP ≥140/90 measured on two occasions at least four hours apart.
- Only one elevated BP is needed to proceed with this guideline.

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

Full Maternal/Fetal Evaluation

- Preeclampsia labs (see box)
- Tests for fetal wellbeing (NST, BPP)
- Ultrasound for growth

Preeclampsia Labs

- CBC
- CMP
- Random urine protein to creatinine ratio

Any signs or symptoms of severe features?

Yes → Preeclampsia/Gestational Hypertension with Severe Features

No → Random protein to creatinine ratio >0.3*?

No → Gestational Hypertension

Yes → Preeclampsia

*If random protein to creatinine ratio is between 0.15 and 0.3, obtain 24 hour urine protein.
- If ≥300, diagnosis is preeclampsia.
- If <300, diagnosis is gestational hypertension.

Consult HROB on call.

Is patient able to participate in care plan?

No → Consider inpatient monitoring versus transfer to Anchorage.

Yes → **Outpatient Monitoring in Bethel**

- Daily kick counts.
- Office visit 2 times per week.
- NST twice weekly.
- AFI and preeclampsia labs once a week.
- Ultrasound for growth every 3 weeks.
- Transfer care to Inpatient OB at 38 weeks for delivery or transfer to Anchorage.

Any signs or symptoms of severe features?

No → Outpatient Monitoring in Bethel

Yes → Preeclampsia/Gestational Hypertension with Severe Features

Preeclampsia/Gestational Hypertension with Severe Features

Treat blood pressure per **Hypertension, Severe** guideline.

Admit and consult OB/GYN.

- Magnesium sulfate: 4 grams IV bolus over 20 minutes, then 2 grams/hour IV.
- Check preeclampsia labs.
- Monitor fetal wellbeing.
- Obtain OB ultrasound to evaluate for IUGR or oligohydramnios.
- Monitor for signs and symptoms of magnesium toxicity.

If possible, transfer to Anchorage.
If transfer not possible, consult HROB.

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Yukon-Kuskokwim HEALTH CORPORATION

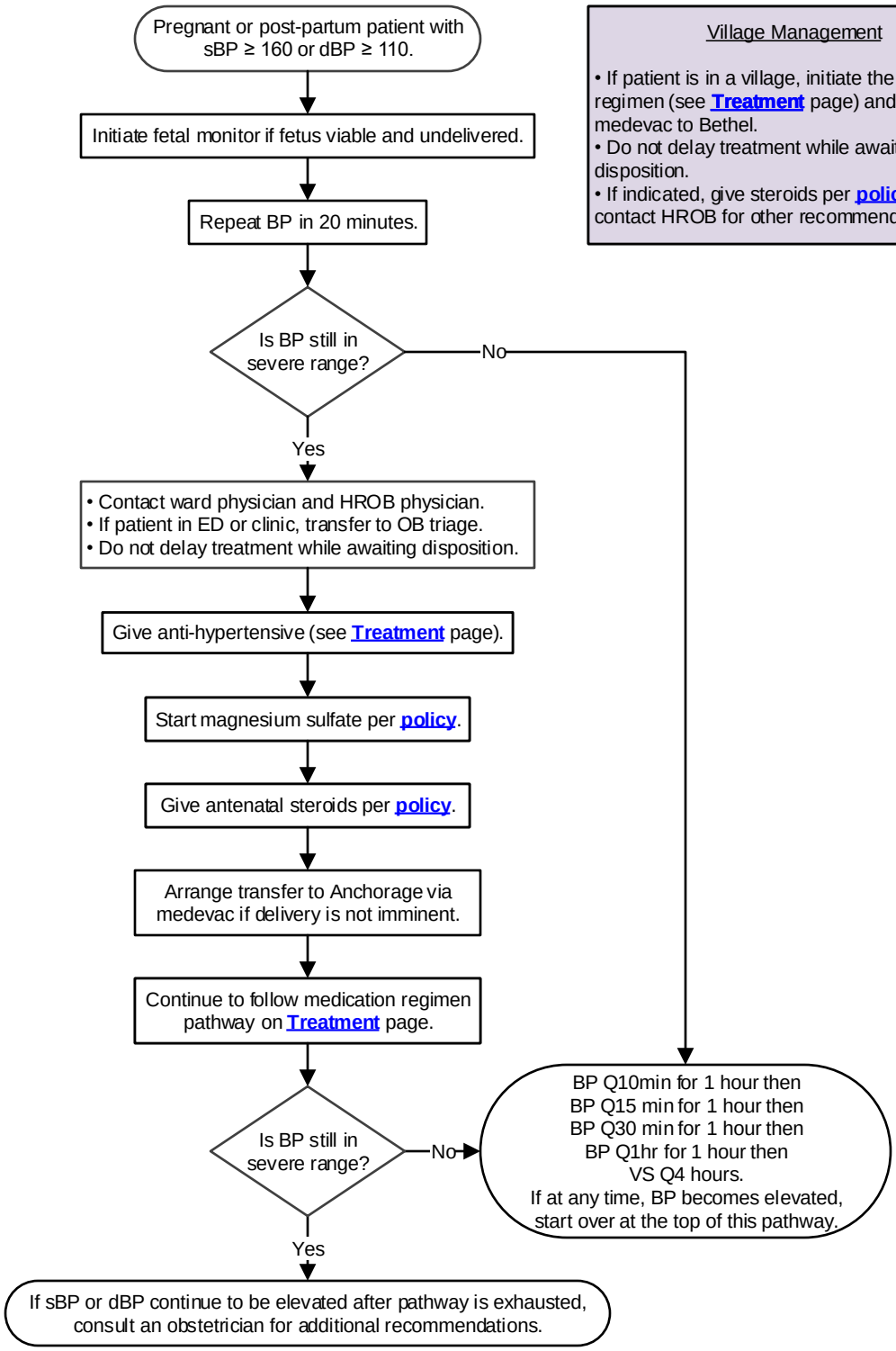
Clinical Guideline

Hypertension in Pregnant and Post-partum Patients, Severe

BP Technique

- Use the appropriate sized cuff after 5 minutes of rest.
- Patient should be sitting or semi-reclining (not fully reclining).
- Repeat with manual cuff after a minimum of 20 minutes if sBP ≥ 160 or dBP ≥ 110.

Severe range BP is defined as sBP ≥ 160 or dBP ≥ 110.



Village Management

- If patient is in a village, initiate the nifedipine regimen (see **Treatment** page) and activate medevac to Bethel.
- Do not delay treatment while awaiting disposition.
- If indicated, give steroids per **policy** and contact HROB for other recommendations.

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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Hypertension in Pregnant and Post-partum Patients, Severe

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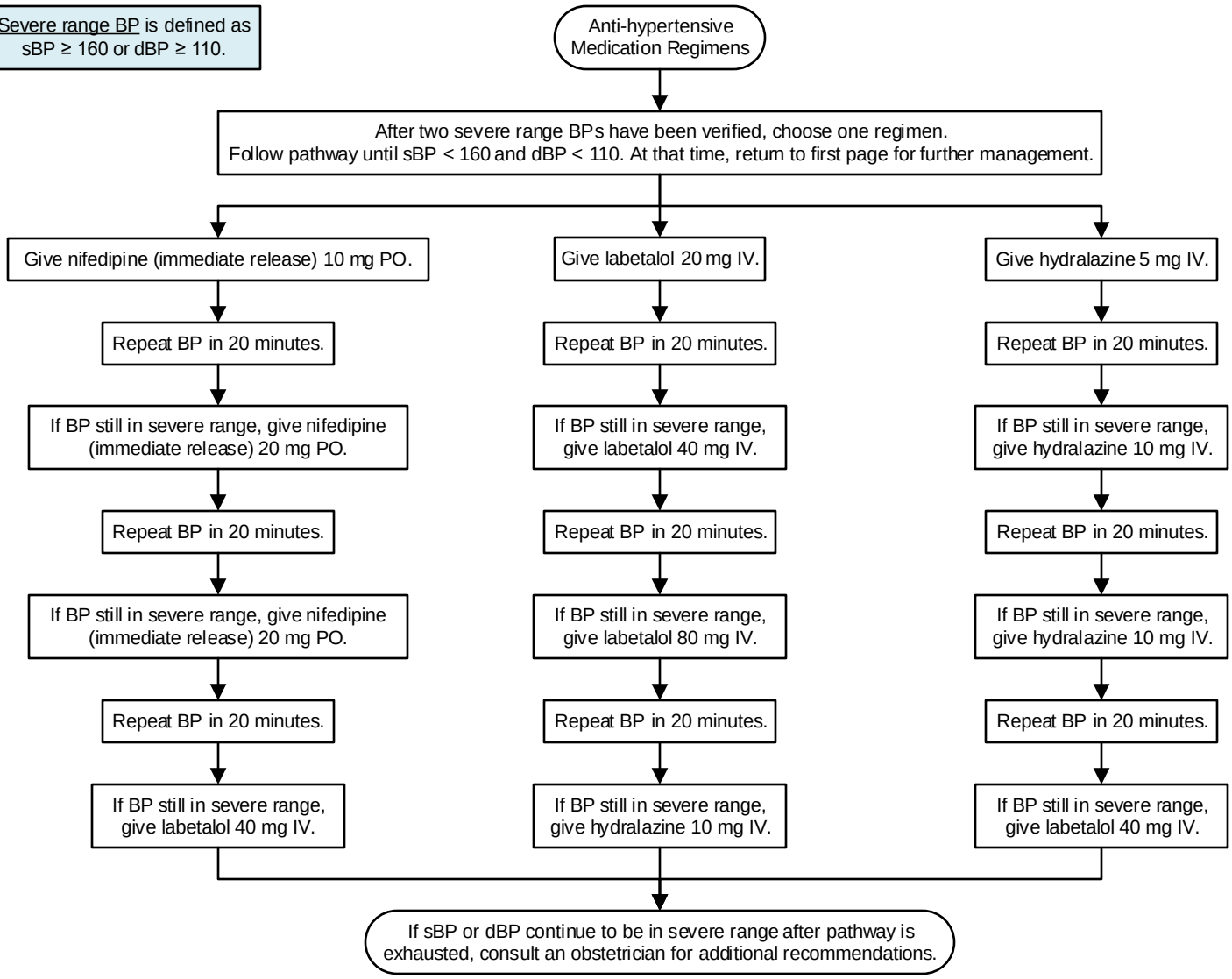

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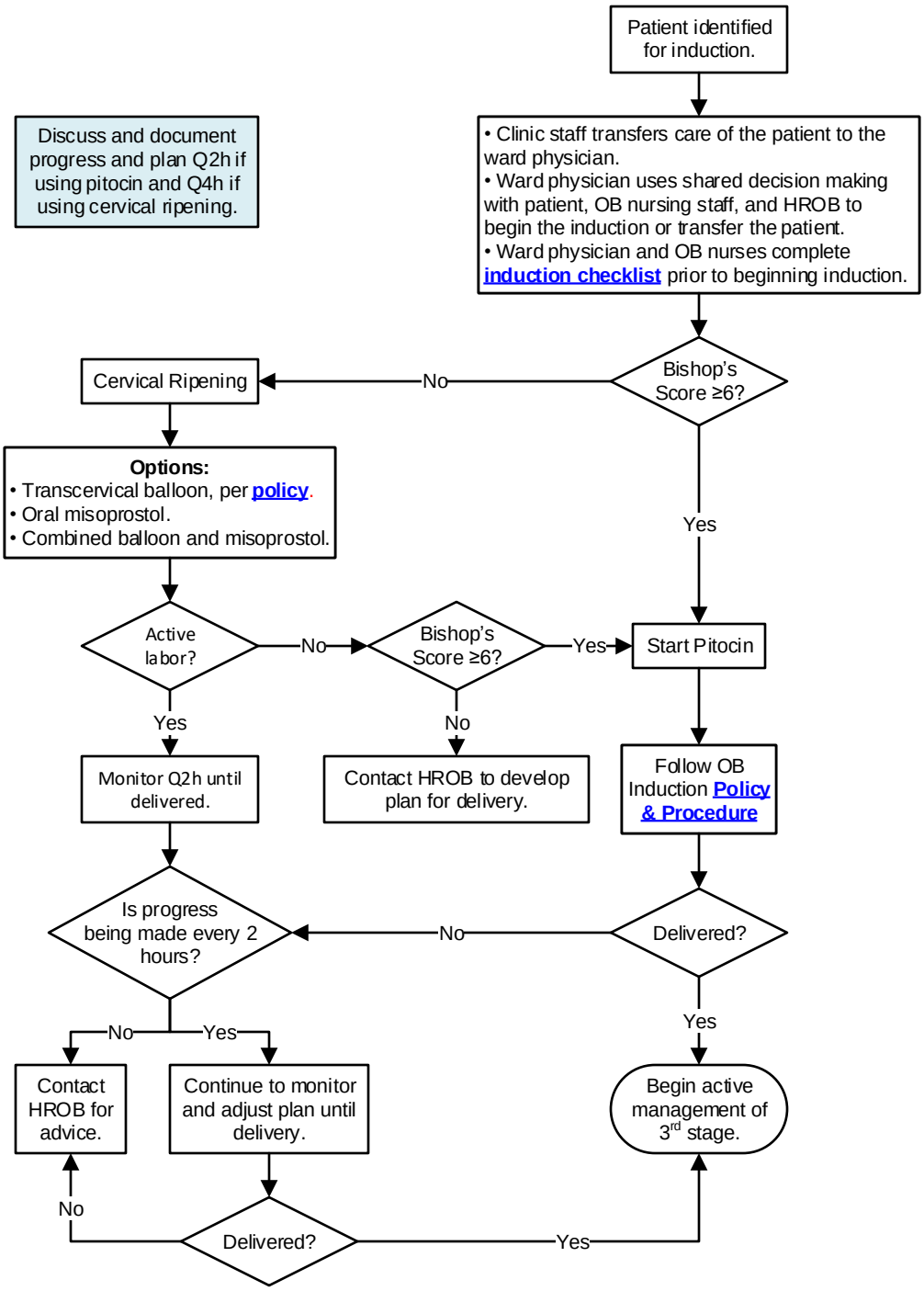
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Induction of Labor



Induction Time Frames for Specific Diagnoses
*(See **Policy and Procedure**.)*

- Preeclampsia or **Gestational Hypertension**: 38 weeks, must be delivered or transferred by 39 weeks.
- Preeclampsia or **Gestational Hypertension** with severe features: Medevac to Anchorage.
- **Chronic Hypertension**: 38 weeks, must be delivered or transferred by 39 weeks.
- **Intrahepatic Cholestasis of Pregnancy (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 (optional).
- This list is not all-inclusive. Consult HROB for other diagnoses.

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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Approved 6/6/22. Click here to see the supplemental resources for this guideline.
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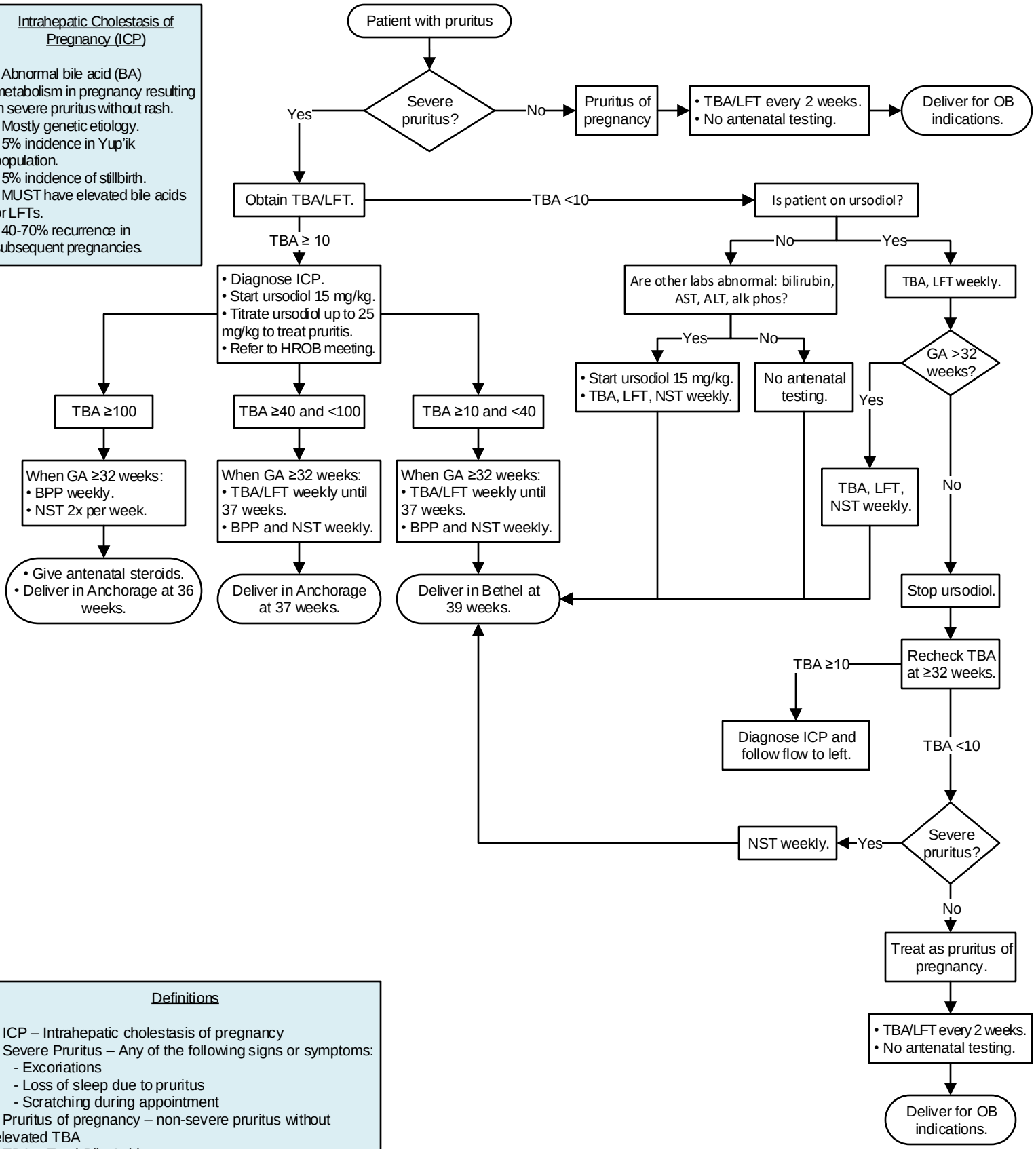
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intrahepatic Cholestasis of Pregnancy (IHCP)

Intrahepatic Cholestasis of Pregnancy (ICP)

- 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.



Definitions

- ICP – Intrahepatic cholestasis of pregnancy
- Severe Pruritus – Any of the following signs or symptoms:
  - Excoriations
  - Loss of sleep due to pruritus
  - Scratching during appointment
- Pruritus of pregnancy – non-severe pruritus without elevated TBA
- TBA – Total Bile Acids
- LFT – Liver Function Test
- Other lab criteria for ICP
  - Total Bilirubin >1
  - AST 2x normal
  - ALT 2x normal
  - Alkaline phosphatase (AP) >300

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 3/1/22. Click here for supplemental resources for this guideline.
If comments about this guideline, please contact David_Compton@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

IUGR is suspected by physical examination (fundal height 3 cm or more smaller than dates) and/ or risk factors.

Definition of IUGR

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

Obtain an US:

- Include all growth measurements with EFW and percentile.
- Include reflex Doppler parameters:
  - Systolic to diastolic ratio of umbilical artery (S/D-UA)
  - Pulsatility index of the umbilical artery (PI-UA)

IUGR? — Yes → Gestational age < 24 weeks? — Yes → Refer to Perinatology for DAFUS, consider NIPT. (See Box 1.)

IUGR? — No → Is patient term? — Yes → Routine Prenatal Care

Gestational age < 24 weeks? — No → Consult HROB or Anchorage OB to discuss induction, monitoring, or transfer.

Is patient term? — No → Repeat US in 4 weeks. Consider weekly fetal monitoring with BPP if EFW > 10th percentile but < 25th percentile.

Repeat US in 4 weeks. Consider weekly fetal monitoring with BPP if EFW > 10th percentile but < 25th percentile. → IUGR? — No → Routine Prenatal Care

IUGR? — Yes → Consult HROB or Anchorage OB to discuss induction, monitoring, or transfer.

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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Approved by MSEC 7/12/17.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

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Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

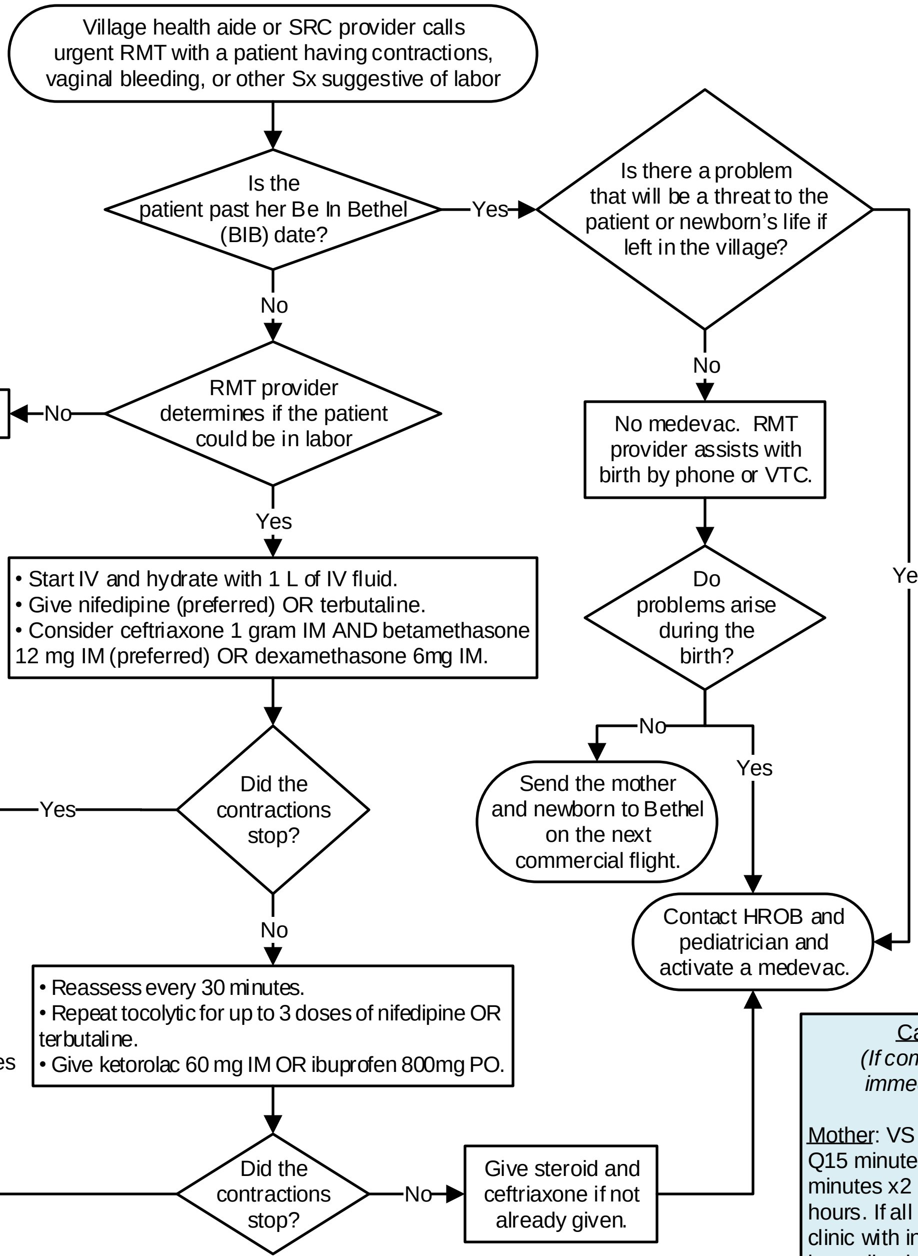
Labor Patient: Village

Things to Consider

Risk factors:
- History of maternal complications, parity
- Placental location
- No availability of continuous fetal monitoring in the village

Management considerations:
- Check U/A
- Monitor BP closely

Do not place a patient on a commercial flight if she could deliver en route regardless of gestational age.



Dosing Schedule for Tocolytics
- Nifedipine
  - Dose 1: 30 mg PO
  - Dose 2: 20 mg PO
  - Dose 3: 10 mg PO
- Terbutaline: 0.25 mg SC x3

Care After Birth
(If commercial flight not immediately available)

Mother: VS and fundal checks Q15 minutes x1 hour, then Q30 minutes x2 hours, then Q1h x3 hours. If all is well, may leave clinic with instructions to return immediately for return of bleeding or passing clots.

Baby: VS with axillary temperatures Q30 minutes x2 hours, then Q1h x4 hours. Low threshold for blood glucose after first feed. Ensure vitamin K, erythromycin, and hepatitis B vaccine are given. If all is well, may leave clinic with instructions to return immediately for any concerns, especially trouble breathing, fast breathing, pauses in breathing, etc.

If activating a medevac for village labor…

- Do not send a resident.
- Ensure that all Tiger Connect roles are covered by back-up physician.
- Notify E1/E2 physician, as they are medical control.
- Get OB/Pediatric **Village Delivery Backpack** from OB. Ensure it contains unexpired FFN, GC/CT swab, GBS swab, sterile speculum, etc.
- Discuss with pediatrician the need to bring surfactant.
- Bring warm clothing (extra gear in peds call room under the bed), snacks, drinks, money, motion sickness medication, etc.
- Coordinate with pediatrician and plan to meet at LifeMed hangar at 3600 Tower Road. Tell LifeMed Dispatch if there will be a delay of >20 minutes.

In the village…

- Help the crew, follow their instructions, and expect to carry equipment.
- If GA<34 weeks, perform a sterile speculum exam, obtain FFN, swab for GBS and GC/CT, and obtain urine sample for culture.
- If no concern for placenta previa, check cervix after obtaining cultures.
- Make decision about disposition based on cervical exam, possible complications, and risk/benefit of travel. Discuss with HROB if any uncertainty.
- Notify OB charge nurse of disposition ASAP so they can prepare.
- If village delivery is anticipated, see **Village Deliveries (Pediatrics) Resource** for newborn care and preparation.

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Approved by MSEC 4/6/21.
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Yukon-Kuskokwim HEALTH CORPORATION

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.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Oligohydramnios

Differential Diagnosis by Trimester

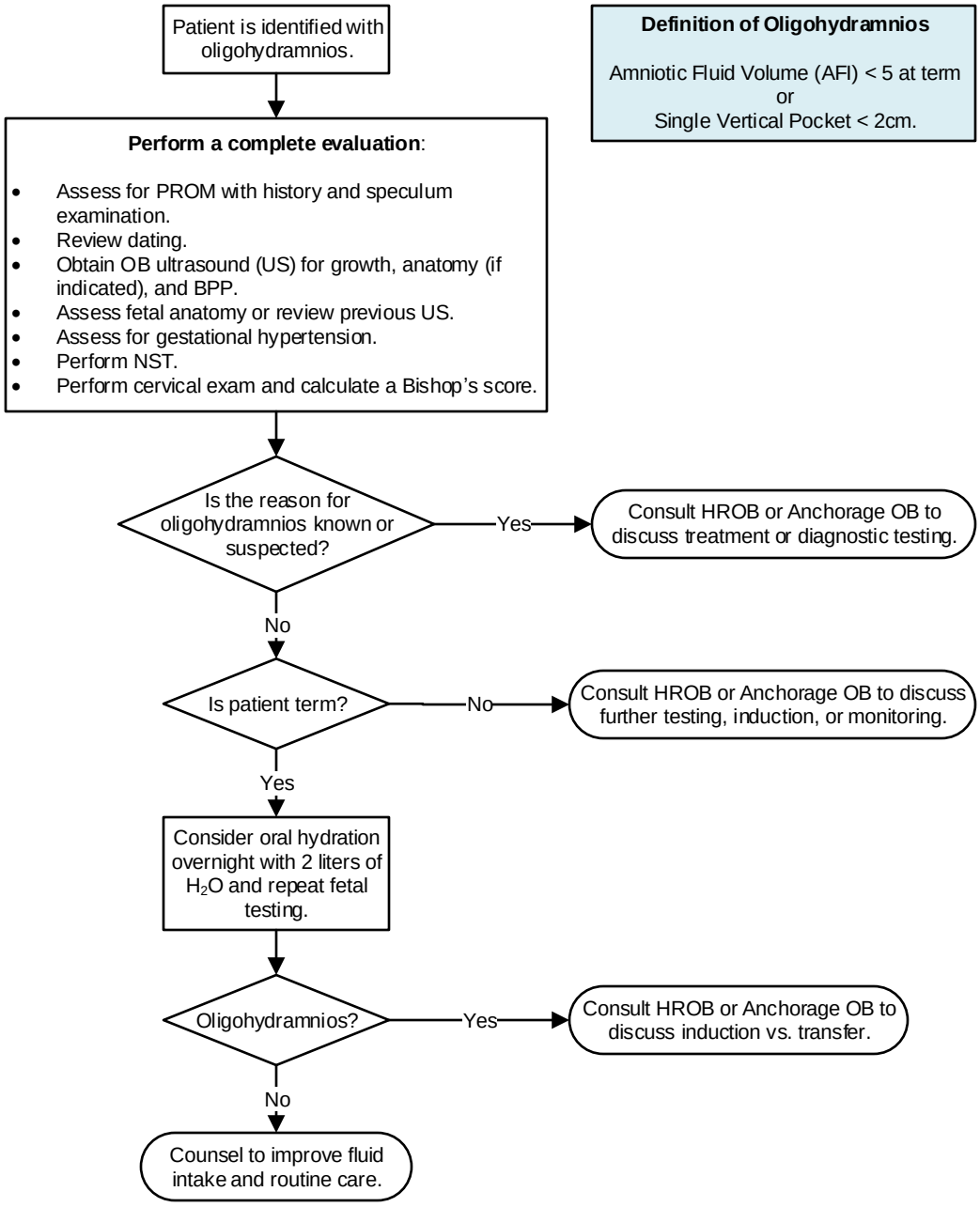
First
- Aneuploidy
- Fetal Anomaly

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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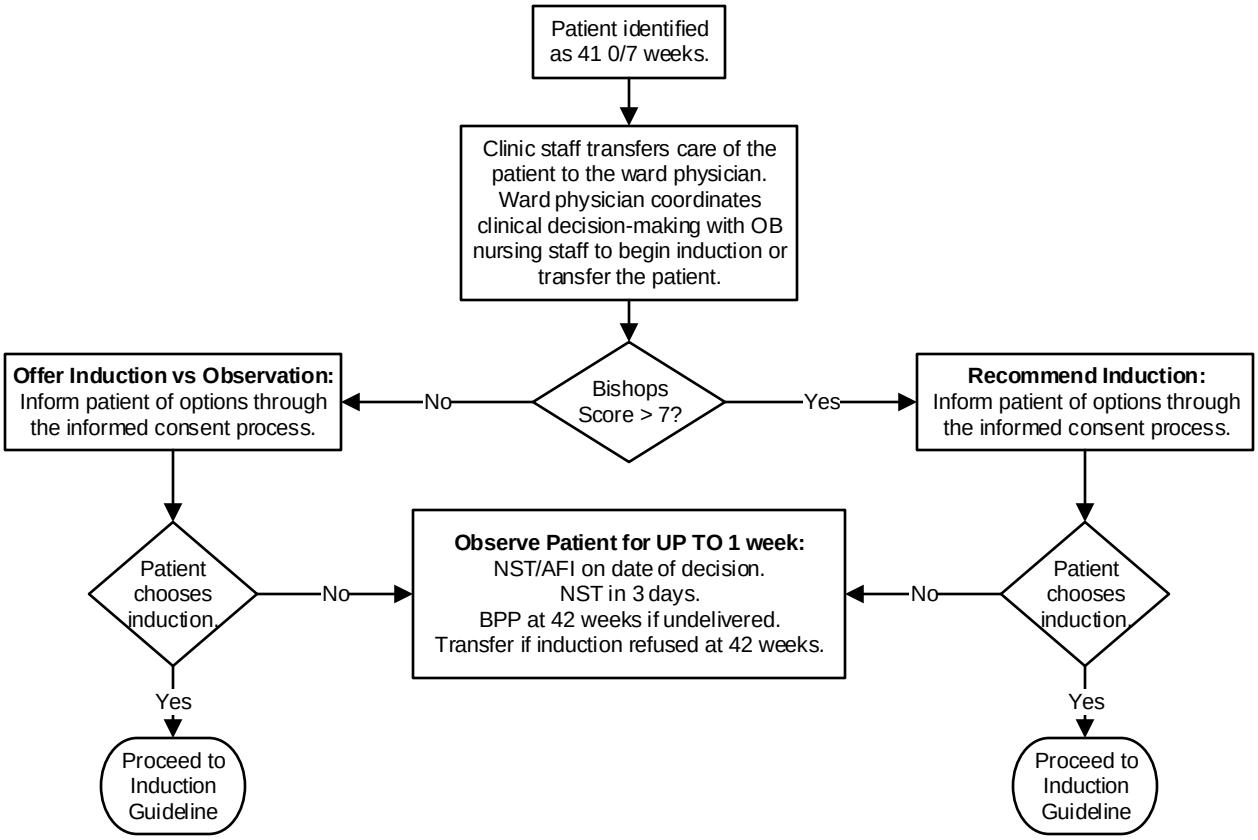
Yukon-Kuskokwim HEALTH CORPORATION

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

Prenatal Care

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.
- Labs: urinalysis, urine culture, blood type and screen, HBsAg, Hepatitis C antibody, CBC, Rubella titer, HIV testing, treponemal testing, HgA1c, 25-OH vitamin D.
- Set up room for pelvic to do PAP (only do a PAP if it is due), GC/CT and trichomonas (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.
- Tdap after 24 weeks.
- GST – 50 g:
  - If result >140 mg/dL, schedule 2 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. Draw Quantiferon if failed to have PPD read.

PROVIDER

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

36 Weeks/BIB Date

- Labs: CBC, treponemal testing, HIV testing, GBS culture, GC/CT and trichomonas.
- Review TB status. Draw Quantiferon if status unknown.
- Schedule appointments to be seen each week by Bethel provider through 41 weeks.
- Complete Prematernal Home/Medical Clearance paperwork.
- Ask about any symptoms of:
  - Rupture of membranes.
  - Preeclampsia.
  - Labor.
  - Itching.

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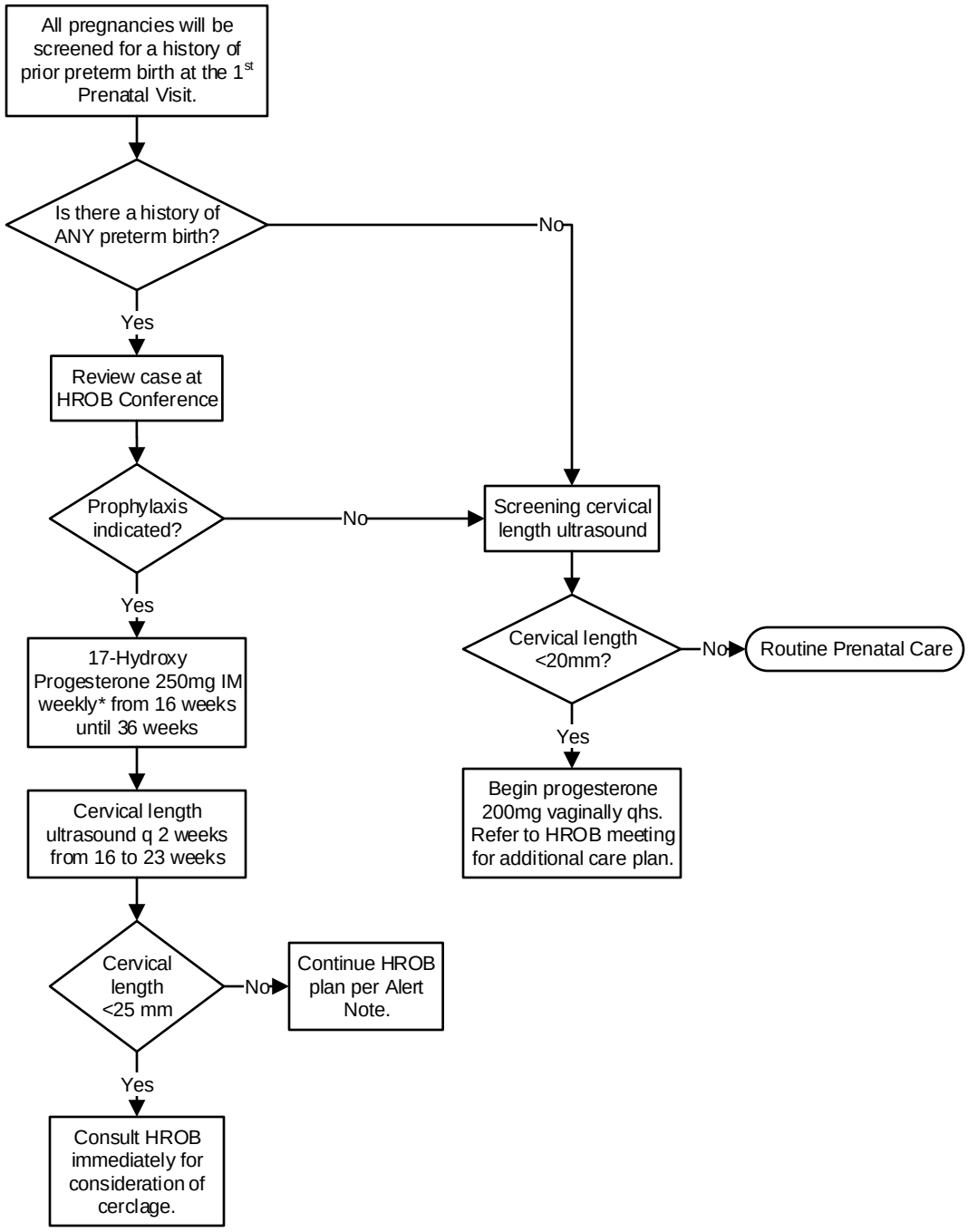
Approved by MSEC 7/6/21.
Click here to see the supplemental resources for this protocol.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Preterm Labor: Screening and Prevention



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

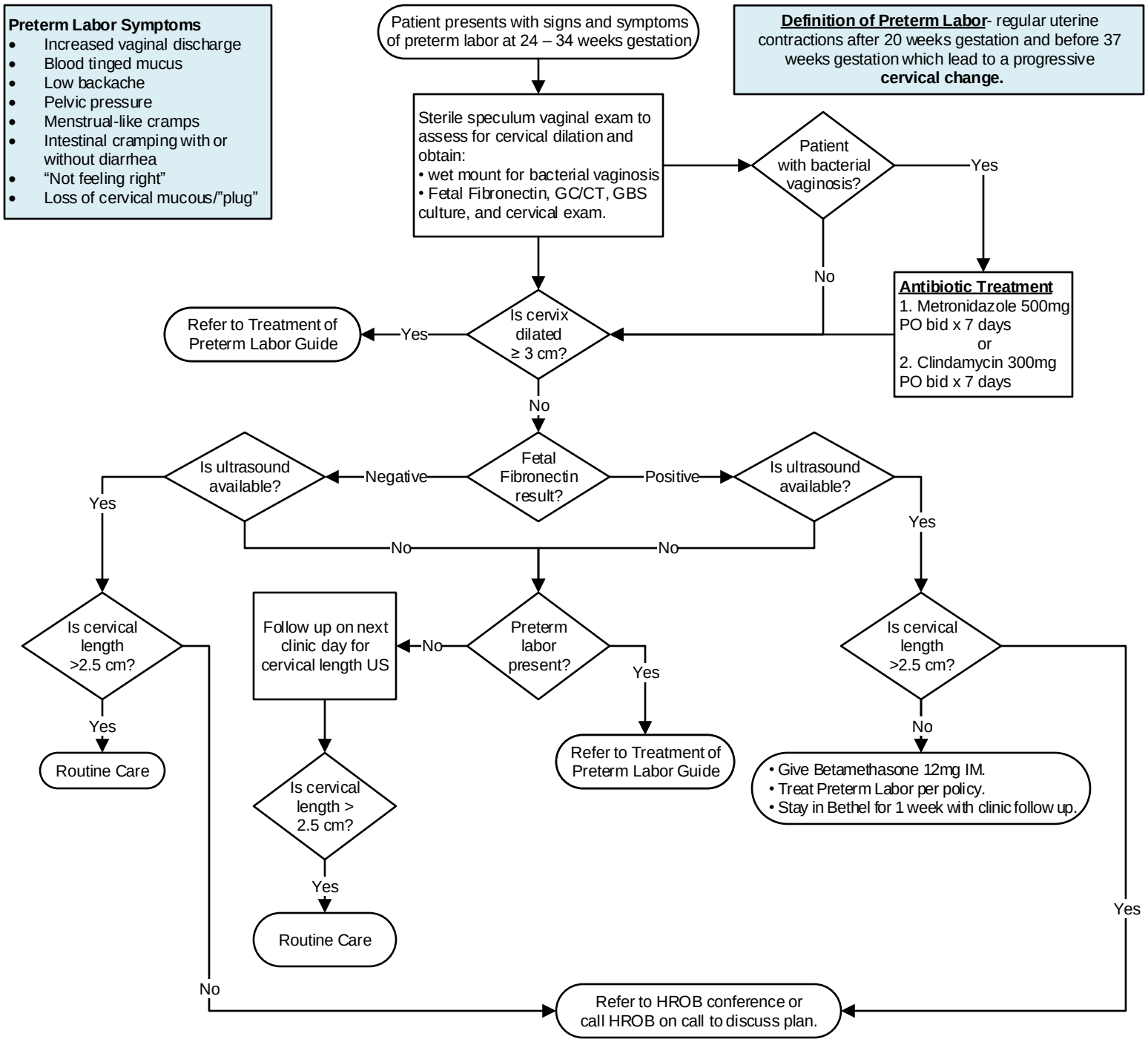
Yukon-Kuskokwim HEALTH CORPORATION

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.

Yukon-Kuskokwim HEALTH CORPORATION

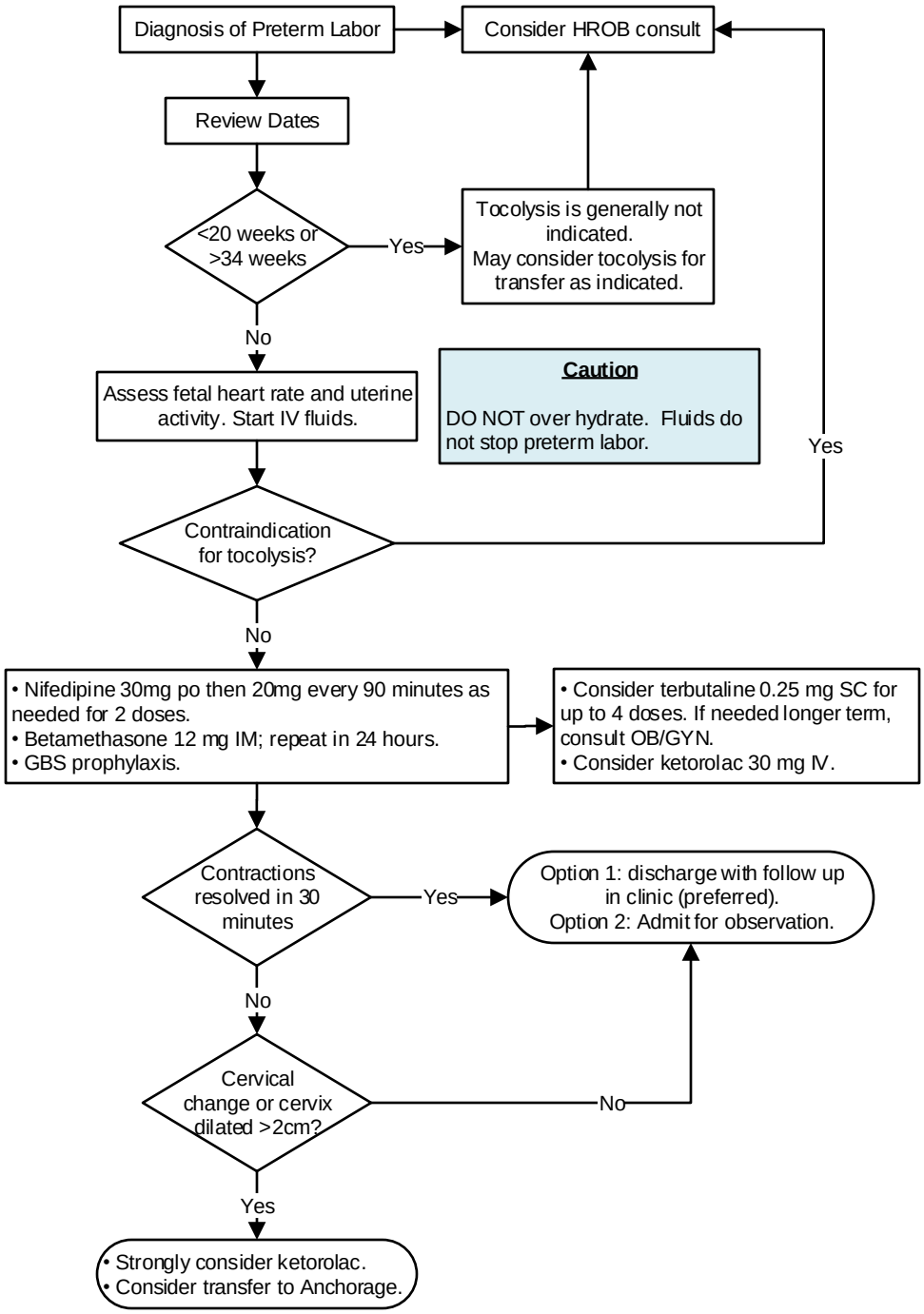
Clinical Guideline

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

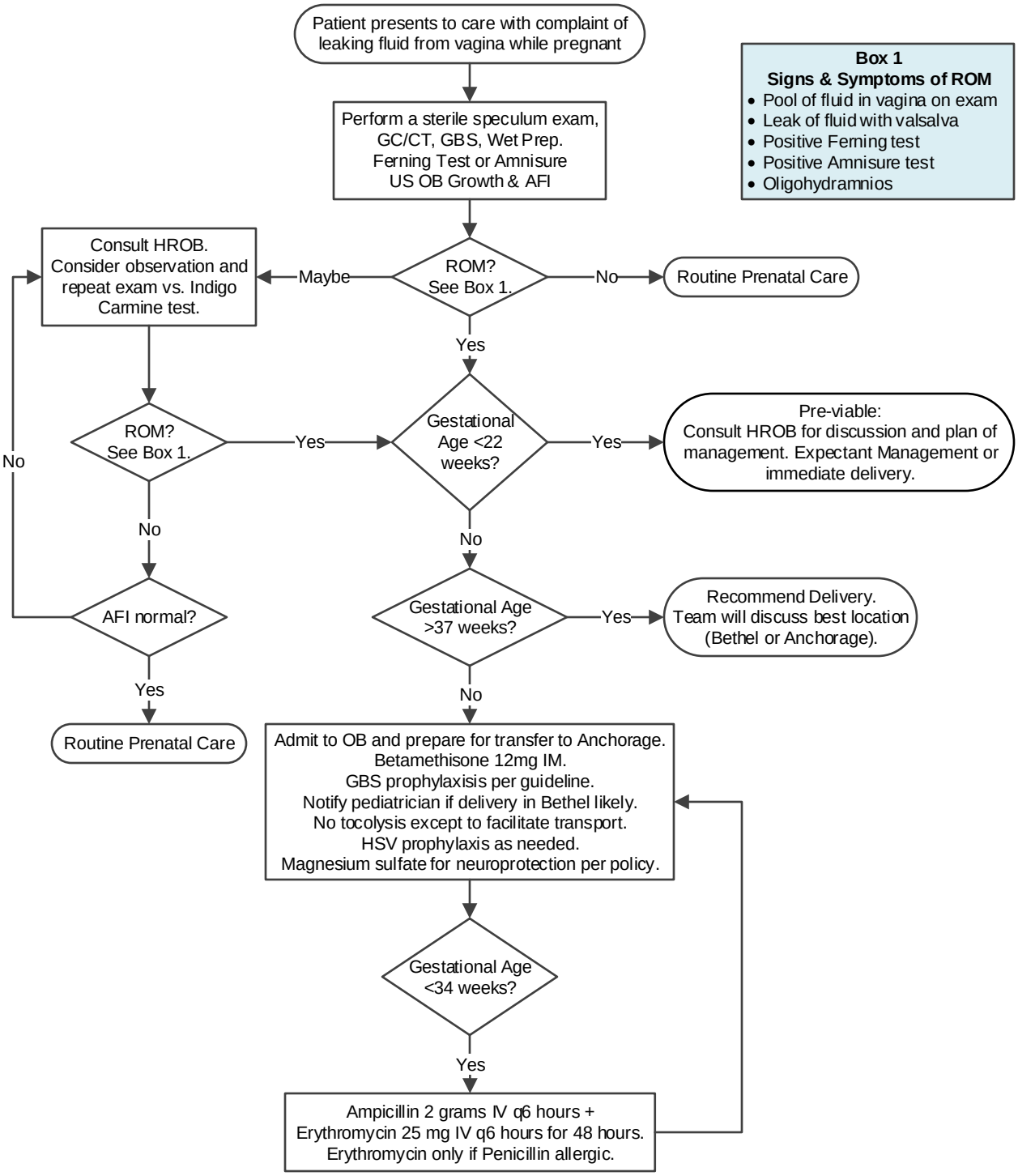
Contraindications to terbutaline
- Diabetes
- HTN
- Suspected placental abruption (relative)



Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Preterm Premature Rupture of Membranes



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Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Ellen_Hodges@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Rhogam®

For more information, see **Rh Immune Globulin Work-up** Policy & Procedure.

At first prenatal visit, check blood type and antibody screen in all patients.

Rh negative?

No → • Blood Type on newborn after birth only as indicated.
• No further testing of the patient for blood type.

Yes

• Note diagnosis on Problem List.
• Educate the patient.

At 28 weeks

• Obtain labs on RHIG Workup (Antenatal) Power Plan.
• Give RHIG (Rhogam®) 300 mcg IM after antibody screen.

When Patient is in Labor

Obtain blood type and antibody screen on admission.

After Delivery

• Obtain ABO and Rh on newborn.
• Obtain fetal screen on mother.

Newborn Rh positive?

No → No further workup or treatment.

Yes

Fetal screen positive?

Yes → • Give the mother RHIG (Rhogam®) 300 mcg x2 doses (for total 600 mcg) Immune Globulin.
• Send Kleinhauer-Betke (KB) test.
• Consult OB/GYN.
• Give additional doses based on KB results.

No

Give the mother RHIG (Rhogam®) 300 mcg IM.

Other Situations Which Require anti-D Immune Globulin

- Miscarriage/Abortion
- Stillbirth
- Ectopic Pregnancy
- Maternal Trauma: consult OB/GYN.
- Threatened abortion
- Maternal hemorrhage in 2nd or 3rd trimester
- External cephalic version
- Amniocentesis

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

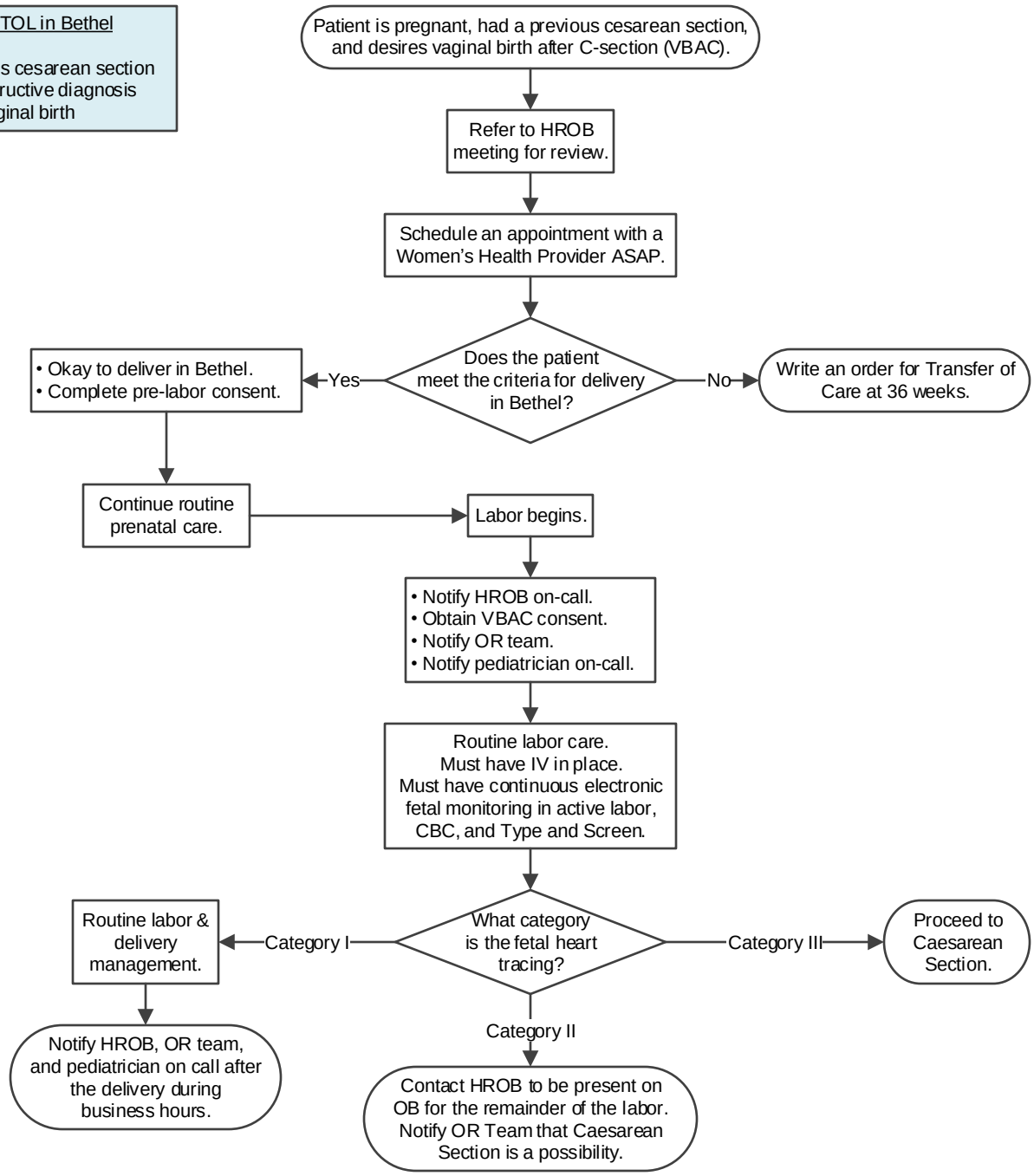
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Vaginal Birth after Caesarean Section

Criteria for TOL in Bethel

- Only one previous cesarean section
- No previous obstructive diagnosis
- One previous vaginal birth



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Yukon-Kuskokwim HEALTH CORPORATION

Preventative Health Care Guidelines

Preventative Health Care

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Amoxicillin Allergy Trials (Pediatric)

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.
• Children labelled as allergic to penicillin/amoxicillin often carry that label for the rest of their lives.
• 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 or diarrhea

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. True hives are uncomfortable. Ask if the rash bothered the child.
• 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.

Patient labeled with a penicillin/ amoxicillin allergy.

↓

Review history. (See box.)

↓

Was the reaction anaphylaxis (see box) or other life-threatening reaction (eg Stevens-Johnson syndrome, etc.)?

Yes → • Do not give drug or perform trial. • Update chart, including the Problem List and a comment on the allergy. • Refer to Allergy & Immunology at 5.

No ↓

What was the reaction?

History

Chart review:
• Review notes in allergy alert. Find date allergy was added, and then review notes from that day. Was ED visit or hospital admission required?
• Review Multimedia Manager photos.
• Were steroids or other treatment given?
• Has patient received a drug of the same class since the allergy was reported? Was it tolerated? Were there symptoms?

History from patient/family:
What was the reaction?
- Vomiting and/or diarrhea?
- Rash?
  Age? Time from first dose?
  Hives? (See box.) Was it itchy?
  Blistering or peeling?
  Photos from family?
- Trouble breathing?
- Swelling of tongue/lips?
- Joint swelling or fever?
- Mucous membrane involvement?

Rash

True hives, skin blistering/peeling, or mucous membrane involvement → • Do not give drug or perform trial. • Update chart, including the Problem List and a comment on the allergy. • Refer to Allergy & Immunology at 5.

Viral-appearing rash or other type of rash → **Not a true allergy.** • Educate and perform Amoxicillin Trial (see box). • If patient/family refuses trial, update Problem List. • Offer future trial or refer to Allergy & Immunology at age 5 for amoxicillin allergy testing.

Vomiting and/or diarrhea without any other S/Sx anaphylaxis

Not a true allergy. • Educate and perform Amoxicillin Trial (see box). • If patient/family refuses trial, update Problem List. • Offer future trial or refer to Allergy & Immunology at age 5 for amoxicillin allergy testing.

Other

Get more history. Consider pediatric consult.

Amoxicillin Trial Procedure[2]

Use AMB Amoxicillin Trial Power Plan.

1. Obtain VS. Perform physical exam, including lung exam. Have appropriate dose of EpiPen or epinephrine. 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."

Notes:
• If patient is on a beta-blocker, stop this for 24 hours prior to procedure, if possible. Beta-blockers can interfere with treatment for anaphylaxis, if it occurs.
• Ensure that patients with asthma have optimal control prior to this procedure.

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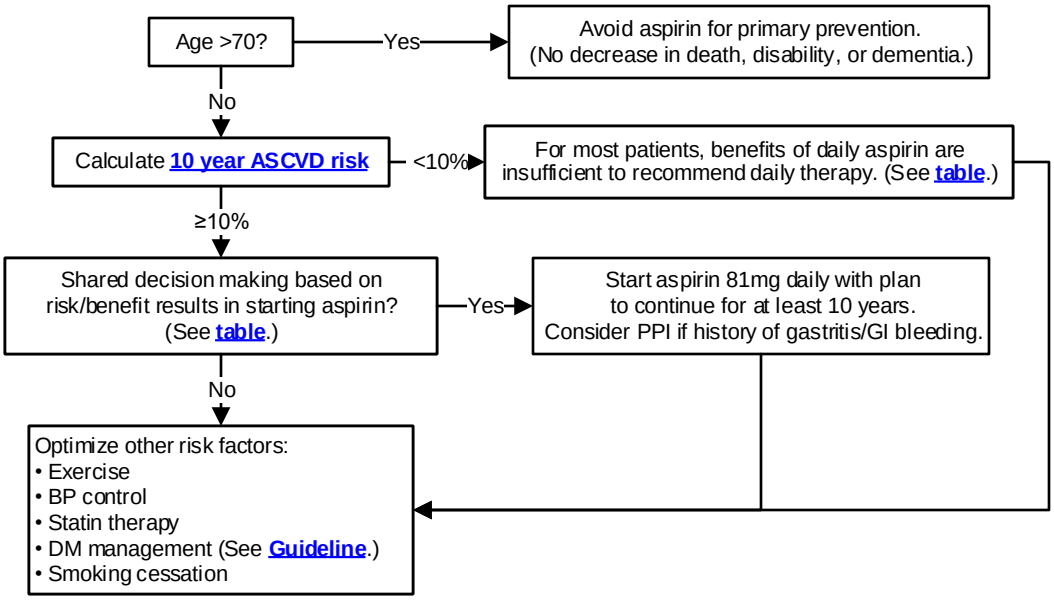
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Aspirin for Adults >40 Without Known Cardiovascular Disease



Notes

Aspirin produces significant reductions in mortality amongst survivors of cardiovascular disease, but its role in the primary prevention of cardiovascular disease amongst healthy adults is less clear.

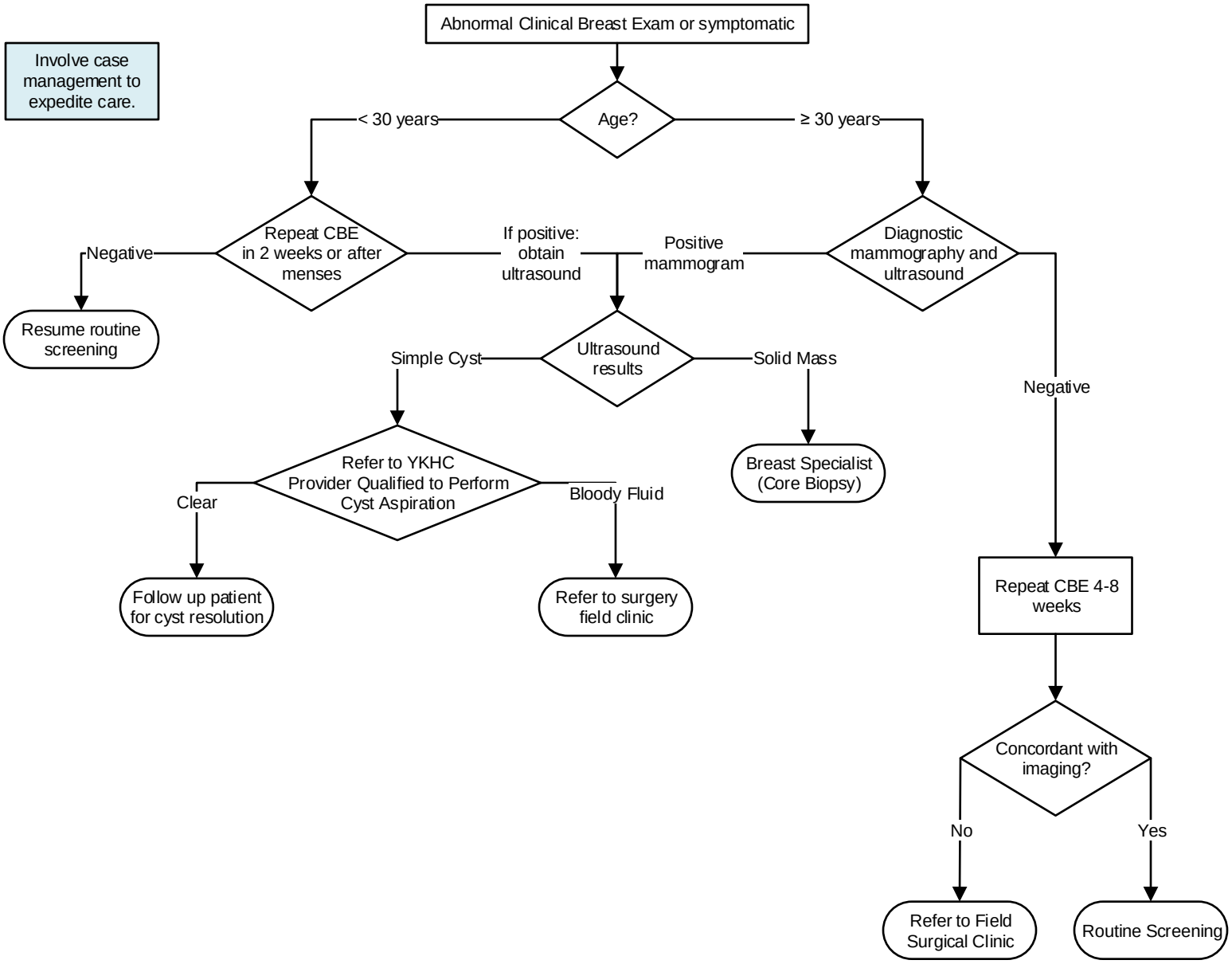
See **table under "Possible Benefits"** for summary of RCT data for low dose aspirin in the primary prevention of cardiovascular disease.

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

Lead Evaluation (Pediatric)

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

Perform capillary lead screening:
- At 1st and 2nd year well check.
- If child <6 years with no prior screening or 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 – 3.5 mcg/dL
- Educate family on lead sources.
- Retest in one year if patient is <6 years.

Capillary level 3.5-9.99 mcg/dL
- Educate family on lead sources.
- Check venous level within 1 month.

Capillary level 10-19.99 mcg/dL
- Educate family on lead sources.
- Bring patient to Bethel or SRC and check venous level, CBC, and iron profile within 1 month.

Capillary level ≥20 mcg/dL
- Educate family on lead sources.
- Bring patient to Bethel and check venous level, CBC, iron profile, and abdominal X-ray.
  - Level 20-44.99: perform work-up within one week.
  - Level ≥45: perform work-up within 24-48 hours. Consider empiric chelation, as venous level may take over a week to return.
  - If change in mental status or neurologic findings at any level, transfer by medevac.
- Consult pediatrics.

Venous level <3.5 mcg/dL but detectable
- Retest in one year if patient <6 years old.

Note: If child has had two levels <3.5 mcg/dL, no further testing is needed.

Venous level ≥3.5
- Contact State Environmental Public Health at (907) 269-8000.
- Check venous level in all children <5 years in same home.

Venous level 3.5-19.99 mcg/dL
- If level 3.5-9.99: repeat venous level in 3 months.
- If level 10-19.99: repeat venous level in 1 month.

Is level decreasing?
- No → Consider abdominal X-ray to rule-out ingestion. Offer family YKHC OEH consult.** Recheck in 1 month.
- Yes → Check venous level Q3mo until level is <3.5, then in one year. If level remains <3.5, no further testing is needed.

Is level decreasing?
- Yes → Check venous level Q3mo until level is <3.5, then in one year. If level remains <3.5, no further testing is needed.
- No → Call Poison Control. Consult pediatrics. NOTE: YKHC formulary does not have the preferred chelation agents, so patients requiring chelation must be transferred.

Venous level ≥20 mcg/dL
- 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), call 543-6420 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 3/1/22. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Justin_Willis@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Primary Care for Ex-Premies - Checklist

Initial Visit

☐ Review NICU/Nursery course and summarize highlights in note. Update Problem List. Make patient CPP.

☐ Enter birth weight and gestational age so that RAVEN Growth Chart will correct for gestational age. (Go to Growth Chart → Enter New → Measurement → Preterm Growth Chart: Change date to DOB, enter gestational age at birth, and enter birth weight.)

☐ Check height and weight. Do not discharge to village if not having appropriate weight gain (at least 25 grams per day for 4-5 consecutive days), temperature <97.7, or rising bilirubin level.

☐ Check bilirubin level if appearing jaundiced.

☐ Ensure infant is receiving fortified formula (ie Neosure) if discharged from the NICU on it. Infant should remain on this formula until 6 months corrected gestational age.

☐ Place order: "Refer to Family, Infant, Toddler Program."

☐ Place order: "Refer to Audiology Internal." In comments, type, "Premature infant: needs evaluation by 9 months corrected gestational age."

☐ If born <34 weeks, place order: "Refer to Child Family Developmental Services External", CFDS Sub-Specialty drop down "NICU Graduate Clinic."

☐ Place referrals for any subspecialists per NICU/nursery discharge summary.

☐ If Hgb level <9.5 g/dL at discharge, repeat hemoglobin level 2 weeks after discharge. If still <9.5 g/dL, repeat 2 months post-discharge.

☐ Write Vitamin D prescription with 11 refills and ensure receiving 800 IU Vitamin D supplementation. (Poly-vi-sol with iron has 400 IU of Vitamin D per drop.)

☐ Write iron prescription with 11 refills and ensure receiving iron supplementation (Poly-vi-sol or iron polysaccharide). Needs 2 mg/kg iron supplementation for first year of life. (Note: Poly-vi-sol with iron contains 11 mg/mL of iron.)

All Subsequent Visits until Child is 24 Months Old

☐ Review and update Problem List.

☐ Assess growth based on corrected gestational age. Consult pediatrics if: there is a need to increase/decrease feeding calories, head circumference growth >1.25 cm/week, or infant is crossing major percentile lines.

☐ Review feeding, sleep, and development in detail.

☐ Check on FIT involvement. If family has not been contacted by FIT, reach out to Peds Wards on Duty, who will contact the FIT liaison.

☐ Give all vaccines per routine schedule based on chronologic age.

☐ Administer ASQ at **9 months**, **18 months**, and **24 months** chronologic age.

☐ Administer **MCHAT-R** at 18 months and 24 months chronologic age.

☐ Ensure specialty appointments/referrals have been made.

☐ If on caffeine, alter dose based on **Caffeine Protocol, Post-NICU Discharge Resource**.

☐ If diagnosis of Bronchopulmonary Dysplasia or Chronic Lung Disease of Prematurity, check blood pressure at each visit. For normal neonatal and infant BPs, see **this page**, table 1 and figures 1A and 1B.

☐ If infant qualified for Synagis, ensure monthly doses are given during RSV season until course is complete. Ensure patient is scheduled for these visits. Check Problem List for when next dose is due and how many doses will complete infant's course. If concerns or questions, email YKHCSynagis@ykhc.org.

☐ Ensure receiving Vitamin D 800 IU supplementation (Poly-vi-sol with iron has 400 IU of Vitamin D per drop).

☐ Ensure receiving iron supplementation (Poly-vi-sol or iron polysaccharide). Needs 2 mg/kg iron supplementation for first year of life. (Note: Poly-vi-sol with iron contains 11 mg/mL of iron.)

Documentation: Use the autotext "..pednicugrad" for a summary of this checklist for charting purposes.

To consult the pediatrician on call, send a message through Tiger Connect to Peds Wards on Duty.

General Information

- Soy milk formulas should not be given to preterm infants.
- Physiologic reflux is more common in preterm infants. There is no evidence to support the use of gastric acidity inhibitors. H_2 blockers and PPIs are associated with gastroenteritis, pneumonia, and bone fractures.
- Catch up growth of premature infants occurs for head first (3-8 months), then weight, then length.
- Recommend every member of the household is up to date on Tdap, COVID, and seasonal influenza vaccines to protect these high-risk infants.

Criteria for Referral to Child Family Developmental Services (CFDS) Birth to Three High Risk Clinic

This is a specialty clinic in Anchorage that follows high-risk infants.

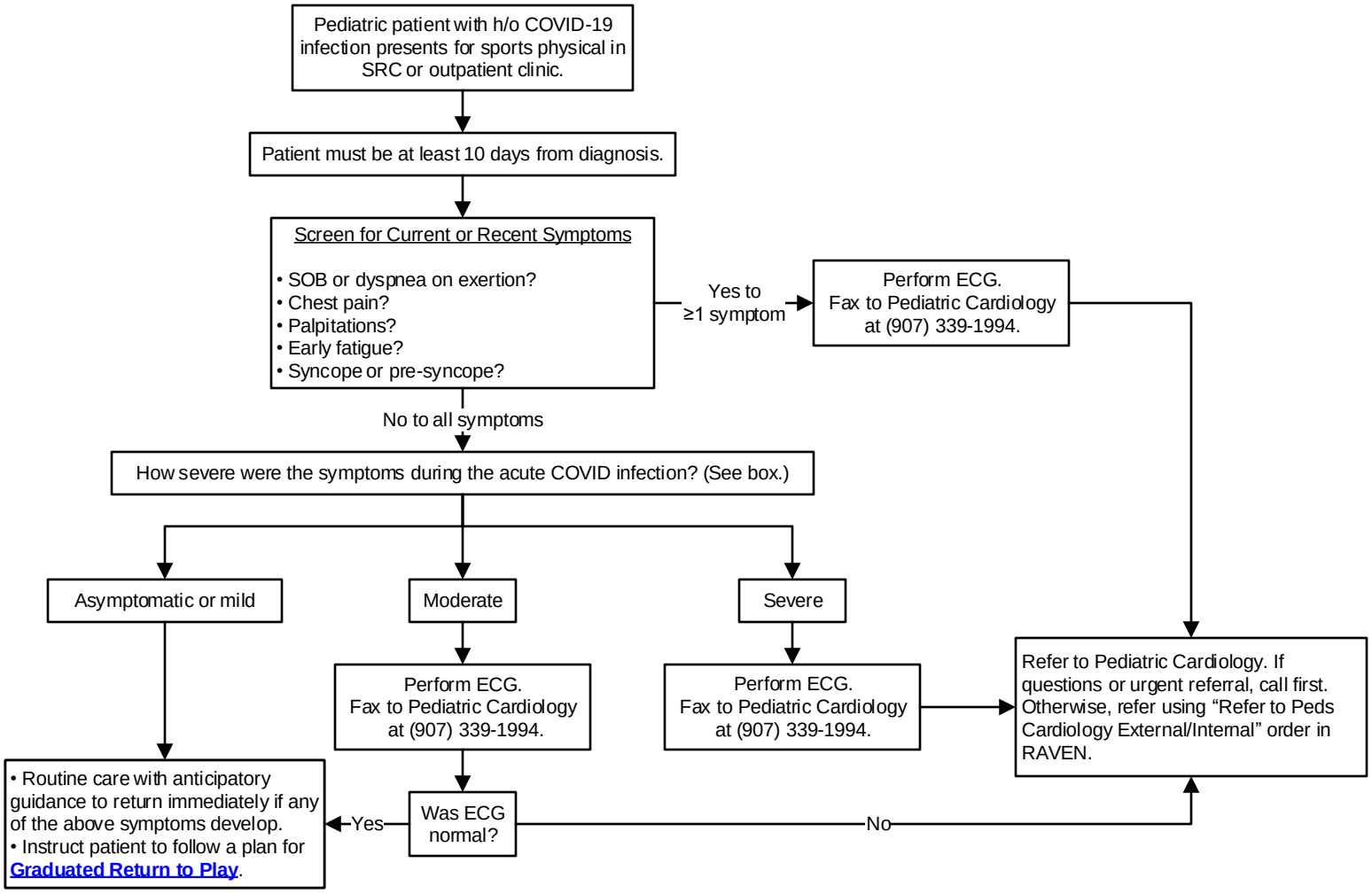
- Birth weight (BW) <1500 grams.
- Gestational age <34 weeks.
- Cardiorespiratory depression at birth
- Apgar score <5 at 5 minutes
- Prolonged hypoxia, acidemia, hypoglycemia, or hypotension requiring pressors.
- Persistent apnea requiring medication.
- Oxygen support for >28 days and X-ray findings consistent with chronic lung disease.
- Extracorporeal membrane oxygenation (ECMO)
- Persistent pulmonary hypertension of the newborn (PPHN)
- Seizure activity
- Intracranial pathology, including intracranial hemorrhage, periventricular leukomalacia, cerebral thrombosis, cerebral infarction, or any developmental/central nervous system (CNS) abnormality
- Other neurological insult, including hypoxic ischemic encephalopathy (HIE), kernicterus, sepsis, CNS infection
- Confirmed prenatal exposures to alcohol, methamphetamines, opiates, or Suboxone.

Please see the **Care of Late Preterm Newborns** guideline for information about late preterm babies who were cared for at YKDRH and were not admitted to a NICU.

Yukon-Kuskokwim HEALTH CORPORATION

COVID-19 Clinical Guideline

Sports Clearance for Pediatric Patients with History of COVID-19



Symptom Severity Classification for this Guideline

- Mild: no fever, <3 days of symptoms
- Moderate: prolonged fevers and bedrest, hospitalization not required, no abnormal cardiac testing throughout course
- Severe: hospitalized, abnormal cardiac testing, or MIS-C

Note: Providers may use their clinical judgment and perform an ECG if cardiac concerns not addressed by this guideline.

Phone Numbers

Seattle Children's Pediatric Cardiology of Alaska (located in Anchorage):
- Phone: (907) 339-1945
- Fax: (907) 339-1994

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 ad hoc committee for COVID-related guidelines 8/24/21. Click here to see the supplemental resources for this guideline.

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

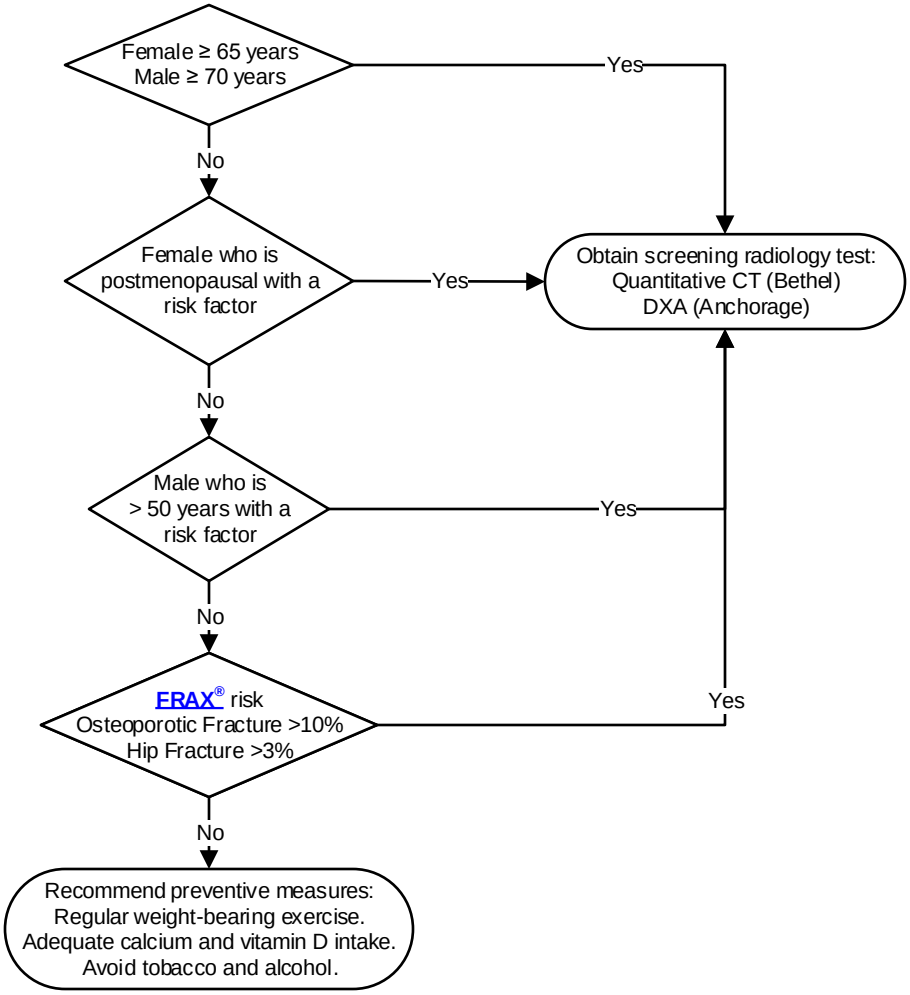
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Osteoporosis Screening

Risk Factors
- Osteopenia on X-ray.
- History of fracture without trauma.
- Tobacco use.
- Excessive alcohol use.
- Height loss more than ½ inch in one year.
- Height loss more than 1.5 inches total.
- At risk medication use (see box below).
- BMI < 20.
- Premature menopause.

At Risk Medications
- Systemic steroids >3 months
- Methotrexate
- Aromatase inhibitor
- Selective estrogen receptor modulator
- Proton pump inhibitor
- Heparin
- SSRI



Recommended Calcium Intake

Age	Sex	RDA mg/day
9-18	M+F	1300
19-50	M+F	1000
51-70	M	1000
51-70	F	1200
>71	M+F	1200

Recommended Vitamin D Intake

Age	Sex	RDA IU/day
14-70	M+F	600
>71	M+F	600

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 9/2/20. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact David_Compton@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Osteoporosis Treatment

Abbreviations
BMD – Bone mineral density
BTM – Bone turnover markers
FRAX® – Risk scoring algorithm

FRAX® High Risk for Fracture
10 year risk of major osteoporotic fracture ≥ 20% or hip fracture risk ≥ 3%.

If patient has one or more of the following:
- Lumbar spine or femoral neck or total hip T score ≤ -2.5
- CT bone density < 80 mg/cm^3
- History of a fragility fracture
- High FRAX® fracture probability

Some Secondary Causes of Osteoporosis
- Drugs
- GI-related illness
- Bone marrow disease
- Endocrine disorder
- Organ transplant

Evaluate for secondary causes of osteoporosis.

Correct calcium/vitamin D deficiency and address secondary causes of osteoporosis.

Educate patient on lifestype measures, fall prevention, and benefits and risks of medications.

Obtain dental evaluation of and treatment for risk of osteonecrosis of jaw.

Consider endocrinology consultation.

Prior fragility fracture

No → Start alendronate.

Reassess at least yearly.

Worsening?

Yes → Assess compliance. Reevaluate for secondary causes of osteoporosis.

Switch to zoledronic acid or denosumab.

No → Consider drug holiday after five years.

Resume therapy when fracture occurs, BMD declines, or BTM rises.

Yes → Start zoledronic acid or denosumab.

Place note in RAVEN that includes autotext "..OsteoporosisPreTreat" at least two weeks prior to visit for medication.

Reassess at least yearly.

Worsening?

Yes → Consult adult endocrinologist.

No → Consider drug holiday after six years with zoledronic acid.

Adapted from AACE/ACE 2016 Postmenopausal Osteoporosis Treatment Algorithm.

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

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Yukon-Kuskokwim HEALTH CORPORATION

Psychiatry Guidelines

Psychiatry

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, BP<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.

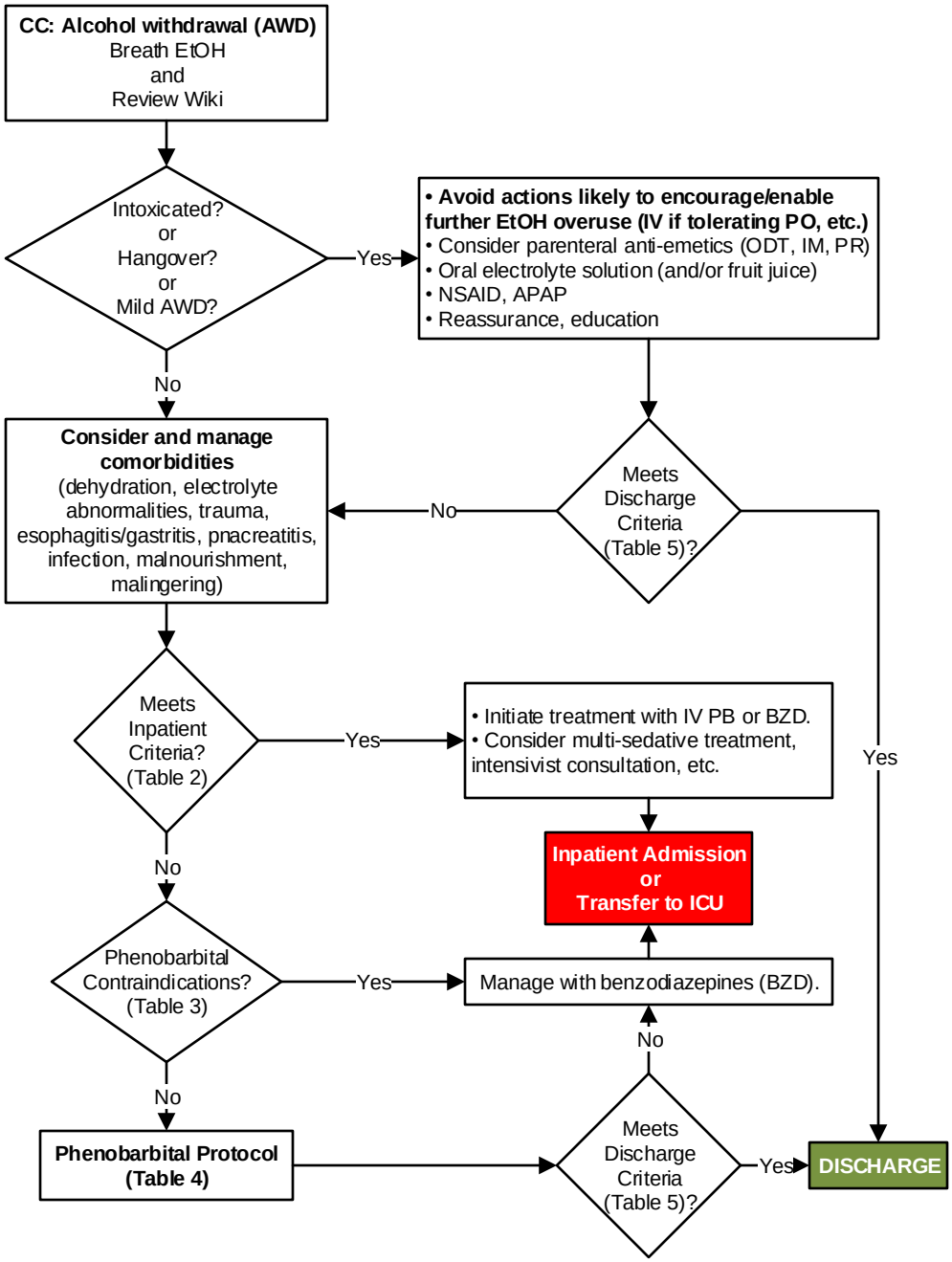
Table 3: Phenobarbital Contraindications
Absolute: Hx allergy, adverse reactions, or porphyria
Relative: current significant sedative level (including EtOH, BZD, or anti-psychotics)

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:
Alcohol Withdrawal in the YK Delta
Phenobarbital for Alcohol Withdrawal

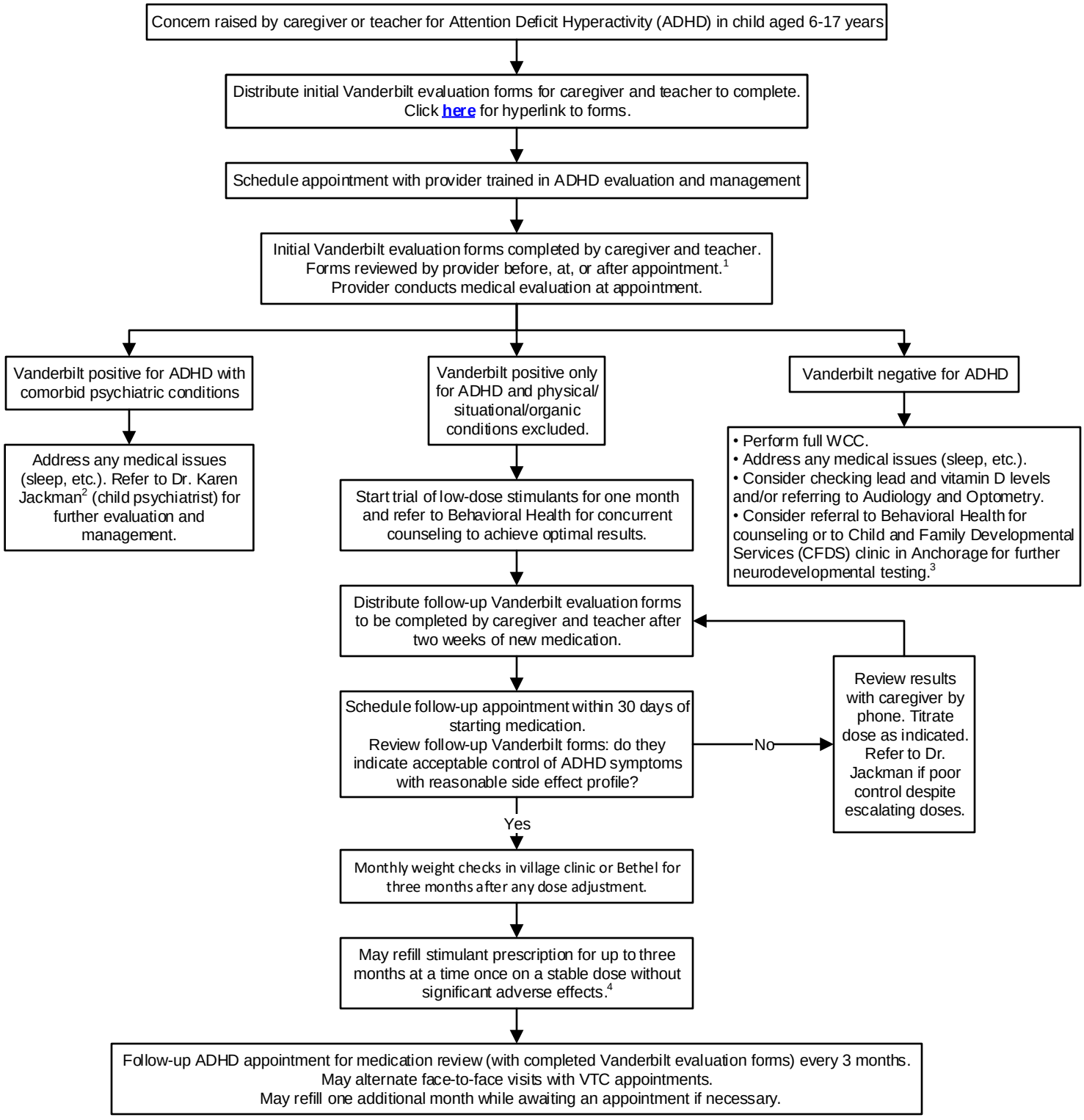


This guideline is designed for the general use of most patients but may need to be adapted to meet the special needs of a specific patient as determined by the medical practitioner.
Approved by Clinical Guideline Committee 10/21/22.
If comments about this guideline, please contact Clinical_Guidelines@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Attention Deficit Hyperactivity Disorder (Pediatric)



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.

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. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Kimberly_Fisher@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Intoxicated Patient in the ED

Special Circumstances

- **Involuntary Psychiatric Hold**
  - Suicidal or homicidal ideation, gravely disabled.
  - Must be sober prior to BH evaluation.
- Minor
  - OCS report via reportchildabuse@alaska.gov.
  - Discharge to sober adult (guardian or someone designated by guardian).
- Violent
  - Deescalate if able.
  - Restraint or medication sedation to maintain safety.

Mode of Arrival

1. BPD, CSP, AST
2. Walk in
3. EMS
4. LifeMed

- Vitals
- POC Glucose
- GCS
- History
- Medical Screening

Note: Non-emergent procedures can be delayed/ declined if intoxication impairs patient's ability to consent or maintain safety.

Note: Alcohol can mask other causes of altered mental status. Use clinical judgment to determine need for head imaging.

- Hemodynamically unstable
- GCS <8
- Severe Trauma
- Emergent Illness

→ Care per ACLS/ATLS
→ Consider Narcan
→ Consider occult illness/trauma

→ Transfer to higher level of care when appropriate.

- Vitals not reassuring
- Glucose abnormal
- Non-ambulatory
- GCS 8-13
- +Trauma/Illness
- Concern for safety/SI

→ Maintain in ED
→ Continuous pulse-oximetry
→ Full evaluation/exam
→ ± Labs, imaging as appropriate
→ Treatment

- Vitals reassuring
- Glucose normal
- GCS 13-15
- Ambulatory
- Medically stable

→ **Discharge Statuses**

- Remand
- PC
- Care of sober adult
- Self care if sober

No medical indication for admission

→ Stable or improving

Medical indication for admission

→ Admit to Inpatient once sober.

Common Complications of Acute Alcohol Intoxication

- Hypoglycemia
- Electrolyte abnormality
- Hypothermia
- Occult trauma
- Co-ingestion/intoxication
- Gastritis
- Pancreatitis
- Hepatitis
- Occult infection
- Aspiration
- Exacerbation of chronic illness
- Victim of physical/sexual assault

Alcohol Metabolism

- (Serum Alcohol - 80) / (20 to 30) = Time to sobriety
- BRAC x 1000 = Serum Alcohol
- Serum alcohol <80 is considered sober.

Deescalation Strategies for Adolescents

- If not immediately dangerous, attempt simple, nonrestrictive strategies:
  - Verbal de-escalation.
  - Reduction of environmental stimuli (a quiet room is much better than a loud hallway).
  - Offer basic needs (ex, food, warm blanket).

Medications

Use caution when giving medications to intoxicated patients, as alcohol can intensify sedation effects.

- Oral vs Intramuscular - If the patient is cooperative, offer oral medications first
  - May give the patient sense of some control.
  - Avoid trauma of being physically restrained for IM shot.
  - Many medications are equally effective in oral form
  - If patient is not cooperative, the oral route is not going to be an option.
- Benzodiazepines
  - Lorazepam – 0.05-0.1 mg/kg/dose (PO/IM/IV)
  - Midazolam – 0.25-0.5 mg/kg/dose PO; 0.2-0.3 mg/kg IN; 0.1-0.15 mg/kg/dose IM
- First Generation Antipsychotics
  - Haloperidol – 0.5-5 mg PO; 0.05-0.15 mg/kg IM (up to 5 mg/dose)
- Second Generation Antipsychotics
  - Risperidone – 0.25-2 mg PO/ODT
  - Olanzapine – 2.5-5 mg PO/ODT
- Others:
  - Diphenhydramine – 1 mg/kg/dose (PO/IM)
  - Ketamine
    - Rapid onset due to high bioavailability (even when given IM)
    - No QT prolongation issues
    - Safe even in overdose (important when you aren't sure of patient weight)
    - No respiratory depression (rarely, may see laryngospasm)

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Approved by MSEC 3/1/22.
Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Megan_Young@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Involuntary Psychiatric Admissions

This guideline only applies to medically stable patients.

Patient in village.

- Health aide sends RMT for potential Involuntary Psychiatric Admission.
- Provider instructs health aide to contact BH on call if not done already.
- If patient has medical concerns, provider manages as appropriate (e.g. NAC for acetaminophen overdose, hemorrhage control for wounds).
- RMT provider can sign title paperwork or talk to BH about who should sign.
- Patient brought to Bethel with escort. (See box.) BH arranges travel.

Patient in Bethel.

Behavioral Health coordinates transfer to Bethel ED, MC-105 (T-47), and escort by Bethel Police.

Escorts

- Must be sober and responsible and ensure patient arrives safely. May be TPO/VPO or Trooper.
- If patient is a minor, try to get a parent or legal guardian to be escort so they can sign treatment documents and assist with placement if needed.

Contact

- Behavioral Health Emergency Services (BHES):
  - x6499
  - Tiger Connect BH Emergency Crisis Response On Call (not listed under roles)
- Psychiatry: Tiger Connect role Psych On Call

Is patient intoxicated?

Yes → MC-105 (T-47) maintained until alcohol level <80.

No → ED provider evaluates patient.

Definitions

- MC-100: Petition for Order Authorizing Hospitalization for Evaluation. Must be confirmed by a judge.
- MC-105: Notice of Emergency Detention and Application for Evaluation, often referred to as "Title 47." May be completed by law enforcement or physician.

Is the patient any of the following?
1. Threat to self
2. Threat to others
3. Gravely disabled

Yes

- MC-105 (T-47) is maintained.
- ED provider rules out organic causes, obtains labwork (CBC, BMP, LFT, TSH, acetaminophen level, salicylate level, blood alcohol level, HIV, syphilis screen, GC/CT, UDS), and determines when patient is medically stable.
- BH or psychiatry provider evaluates patient and completes MC-100.

Admission

- Hospitalist admits patient to hospital using BH Inpatient Admission order set along with general admission orders.
- Hospitalist writes H&P, addressing both psychiatric and medical conditions.
- When patient is medically stable, hospitalist signs patient over to psychiatry service:
  - Hospitalist documents in a note that patient is cleared for transition to psychiatry service.
  - Hospitalist confirms plan with charge nurse and psychiatry service verbally or via Tiger Connect.
  - Hospitalist places communication order "The patient is transferred to psychiatry service."
  - Hospitalist does not need to round on patient any longer but may choose to remain involved as needed and may be re-consulted for concerns.

No

- MC-105 (T-47) is allowed to lapse.
- Behavioral Health evaluates patient and works with provider to determine disposition, which may include home with a safety plan, CRC, or voluntary admission to Inpatient Unit.

Medications to Treat a Combative Patient
(Use ED T-47, Psychiatric Disorder Power Plan.)

- Olanzapine 5-10 mg IM/PO Q30 minutes up to max total dose 20 mg.
- Droperidol 5-10 mg IM/IV Q30 minutes, max 20 mg total dose. } Do not combine.
- Haloperidol 2.5-10 mg IM/PO Q30 minutes, max 20 mg total dose. }
- Diphenhydramine 25-50 mg IV/IM/PO Q4-6h.
- Risperidone 2-4 mg PO Q2h.
- Lorazepam 2-10 mg IV/IM/PO Q30 minutes, titrate to effect. No max dose. Avoid in intoxicated patients due to risk of respiratory depression.
- Ketamine 0.1-2 mg/kg IV Q10 minutes, max 2 mg/kg total dose.
- Ketamine 1-5 mg/kg IM Q30 minutes, max 5 mg/kg total dose. Consider for temporary control when other medications have failed or if immediate sedation is needed to prevent harm to patient or staff.

CAUTION: There is a risk of respiratory depression with all sedative medications, especially in the setting of alcohol use. Start with 1-2 agents and titrate. Do not add additional medications until prior medications are given time to work. All patients receiving sedative medications must be on continuous pulse-oximetry when they are no longer combative. 1:1 monitoring is required due to ligature risk. Consider ET CO_2 monitoring.

Services at YKHC

- Behavioral Health (BH): Masters level clinicians (MSW, LPC, etc.) who provide consultation services and are physically present in the hospital. They field calls from patients, assist Pyschiatry in determining whether a patient needs involuntary hospitalization, and coordinate the logistics for where psychiatric patients go. They do not have legal authority to place psychiatric holds and do not have admitting privileges. **It is ultimately a physician's responsibility to determine suitability of psychiatric hold and appropriate disposition.** Non-physician providers may evaluate and treat these patients and maintain existing T-47s. If a new T-47 needs to be initiated, a physician must sign off on it.
- Psychiatry: All inpatient psychiatric care (including discharge or transfer to a higher level of care) is provided by a psychiatric physician or an advanced practice psychiatric provider under direct supervision by a psychiatric physician. Psychiatry will manage all patients on the psychiatry service, will be responsible for all patients on Title 47 commitments with the aid of BHES, and will also provide consultation for psychiatric patients on the Inpatient Unit.
- Inpatient Hospitalists: Family medicine physicians who admit patients, stabilize medical problems, and transfer to psychiatric service when medically stable. Hospitalist determines whether a patient has medical concerns requiring active ongoing inpatient management (e.g. infection, electrolyte abnormality, alcohol withdrawal). If medical problems, hospitalists remain primary service of record until active medical problems are resolved, writing daily progress notes, placing orders, and billing as usual with psychiatry consulting. If no medical problems, hospitalist may immediately sign patient over to psychiatry service. They can defer all psychiatric management to psychiatry service or collaborate with psychiatry team in rendering diagnoses and ordering medications. This should be communicated clearly both in the note and via direct conversation with psychiatry service.

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 2/1/22. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Travis_Nelson@ykhc.org or Kaia_Pearson@ykhc.org.

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Yukon-Kuskokwim HEALTH CORPORATION

Trauma/Injury/Ingestion Guidelines

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Acetaminophen Overdose (Adult and Pediatric)

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.

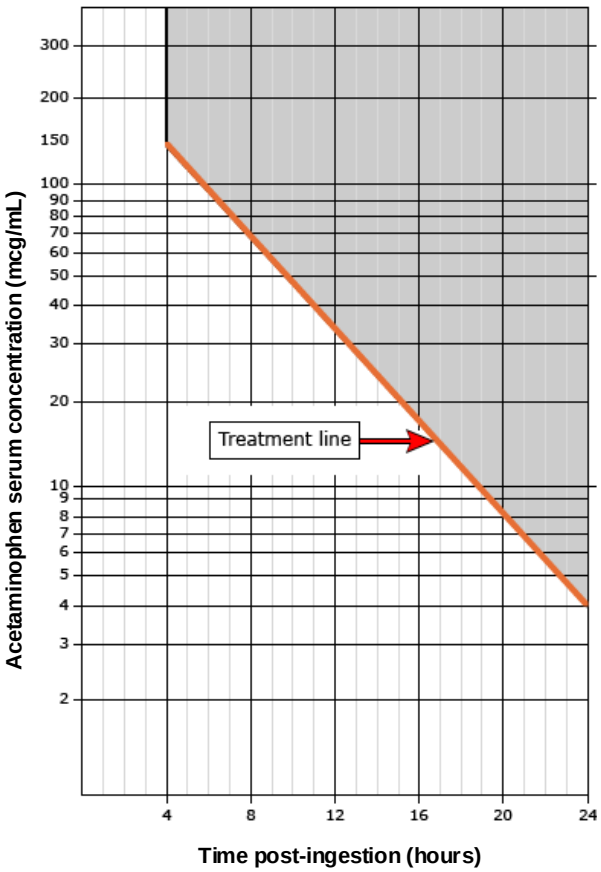
Above toxicity → Admit to hospital for IV or PO acetylcysteine. Consider consult with toxicologist/Poison Control.

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

- Acetaminophen level undetectable 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 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.
See **this resource** for details on dosing, including diluent and dosing volumes for weight.

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. Minor changes 4/8/21.
Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Burns (Adult and Pediatric)

Severe Criteria

- Circumferential burns
- Burns across joints
- Burns of face, neck, or groin
- Electrical/chemical burns
- Inhalation injuries/respiratory distress
- Trauma (refer to ATLS)
- Any full-thickness (3rd degree) burns

Disposition Considerations/Criteria

Village: *wound care by health aides over RMT, consider PT by telehealth.*
- Pain controlled on PO regimen.
- No sign of wound infection.
- Unlikely to require further debridement.
- Patient/caregiver/health aide able to perform dressing changes.

Outpatient (ED/Outpatient Clinic/PT): *daily follow-up for wound management and ROM exercises.*
- Wound infection improving on PO antibiotic regimen.
- Debridement not more than once/day.
- Dressing changes not more than twice/day.
- Need for PT assessment not more than twice/week.

Inpatient YKHC:
- Pain uncontrolled on oral medications.
- Dressing changes more than twice/day.
- Wound infection requiring IV antibiotics.
- Nonambulatory (including wounds on both feet).

Inpatient ANMC:
- Critical illness.
- Wound requiring operative debridement or grafting.
- Surgeon recommends higher level of care.
- Child with severe criteria.
- If expected wound care exceeds currently available resources at YKHC.

Patient presents with a burn injury.

↓

Assess VS, circulation, airway, and breathing.

↓

Are there signs of impending airway compromise? See Box. → Yes → Consider early endotracheal intubation.

↓ No

Assess total body surface area (TBSA) affected by partial or full thickness burns.

↓

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 ABG, carboxyhemoglobin.
- If TBSA >15% in adult or >10% in child, give IVF per Parkland formula. See Box.

↓ No

Wound Care

- Debridement as appropriate. Consider sedation.
- Cleanse in dilute chlorhexidine solution.
- Apply bacitracin or mupirocin and cover with Adaptic.
- Wrap with dry gauze.
- Elevate/compress affected extremities.

Consult General Surgeon.

↓

Determine disposition. See Box.

Signs of Impending Airway Compromise

- History of enclosed space fire (including house fire)
- Burn injury or soot in oropharynx
- Stridor or wheezing
- Circumferential burn of neck

Village Management

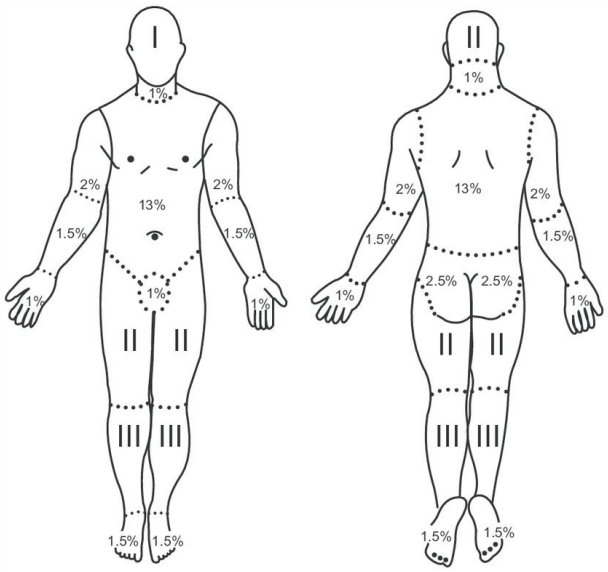
For any burn that warrants travel to Bethel, instruct health aides to apply bacitracin and NOT silvadene to avoid painful cleaning of wounds in Bethel.

Findings Concerning for Abuse

- Delay in seeking care
- Variations in history
- Injuries inconsistent with history
- Immersion injuries
- Uniform depth
- Well-demarcated burn margins
- Geometric pattern/object imprint

If any concern for abuse, send a message to Child Abuse on Call by Tiger Connect.

Lund and Browder Chart to Estimate TBSA in Adults and Children



Age	0	1	5	10	15	Adult
Front or back half	(%)	(%)	(%)	(%)	(%)	(%)
I (Head)	9½	8½	6½	5½	4½	3½
II (Thigh)	2¾	3¼	4	4¼	4½	4¾
III (Leg)	2½	2½	2¾	3	3¼	3½

Modified Brooke/Parkland Formula

Only used if TBSA >15% in adults or >10% in children.

(weight in kg) x 2-4 mL x %TBSA = total fluid to be given over 24 hours
Do not convert %TBSA to a decimal. For example, 15% TBSA would be 15.

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

LR to be used unless mitigating circumstances.

Classification of Burns by Depth

Burns evolve over time; initial TBSA and depth classification can change and often the difference between deep partial thickness and full thickness can only be determined operatively.

- 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.

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 12/2/20. Click here to see the supplemental resources for this guideline.
If comments about this guideline, please contact Travis_Nelson@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Frostbite (Adult and Pediatric)

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.

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).

Normal / Abnormal → Is patient improving?

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

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

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. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

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. Consider amoxicillin-clavulanate prophylaxis for open wounds.

If patient needs extensive 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 inpatient pharmacy on call to arrange the HAND CARRY to the village.

Patient is given Day 0 vaccine in village clinic.

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

Day 7 & 14 vaccine given in village.

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

- See the **supplement** to this guideline on the wiki.
- **State of Alaska DHSS Rabies** page.
- Use the Power Plans "AMB/ED Rabies Prophylaxis" to find all necessary orders.

Notes:
- Day Zero is the first day the vaccine is given, not the day of the exposure.
- Immunoglobulin must be given within seven days of first vaccine dose.

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

Required Notifications:

- The Rabies Investigation Report 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 this and for recommendations from OEH.
- Forward your PowerChart note to Rabies Control Officer Pool and OEH Department Pool.

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.

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 12/2/20. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Abigail_Klager@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Strangulation

Goals

1. Evaluate carotid and vertebral arteries for injuries.
2. Evaluate bony/cartilaginous and neck soft tissue structures.
3. Evaluate brain for anoxic injury.

Note: Life-threatening injuries can be present up to one year after strangulation event.

Helpful Links

- S/Sx strangulation in **adults** and **children**
- Physiological consequences **timeline**

Patient presents with concern for strangulation

Are ANY of the following present?

- Airway: subcutaneous emphysema (can be a sign of tracheal or laryngeal rupture)
- Neurological: loss of consciousness, seizures, mental status changes, amnesia, cortical blindness, movement disorders, stroke-like symptoms
- HEENT:
  - Visual changes: spots, flashing lights, tunnel vision, etc.
  - Facial, intra-oral, or conjunctival petechial hemorrhage
  - Odynophagia
- Neck:
  - Ligature mark, neck contusion, soft tissue injury, swelling, carotid tenderness, etc.
  - Dysphonia/aphonia, hematoma, laryngeal fracture, recurrent laryngeal nerve injury
- Bladder or bowel incontinence
- Pulmonary: dyspnea, phrenic nerve injury

Yes to ANY

Rule Out Life-Threatening Injuries

- If GFR ≥30: CT angio of carotid/vertebral arteries. This is the gold standard for evaluation of vessels and bony/ cartilaginous structures but is not very sensitive for soft tissue trauma.
- If GFR <30: non-contrast CT of neck. This study is less sensitive than CT angio for vessel injury but gives good visualization of bony and cartilaginous structures.

Injury identified

- Consult trauma surgery and plan to transfer.
- Consider ENT consult for laryngeal trauma with dysphonia.

No injury identified

How recent was event?

<48 hours ago

Observe in ED or admit to inpatient until 48 hours post-event based on severity of symptoms.

≥ 48 hours ago

No to ALL

Is there reliable home monitoring AND a safe place to go to?

Yes

- Discharge home with detailed instructions to return to ED if any neurological signs/symptoms, dyspnea, dysphonia, odynophagia dysphagia, or voice changes occur or worsen.
- Give custom Strangulation Patient Education handout.

No

- Consider discharge to TWC.
- May call TWC Crisis Line (543-3456) for assistance with safe shelter.
- Also may call SART on call at 545-4238 for further assistance.

Tundra Women's Coalition (TWC)

- Crisis Line: 543-3456
- Main office: 543-3444
- On-call advocate: 545-4328

Services Provided by TWC

- Emergency shelter
- Hospital accompaniment
- Information about community resources
- Legal advocacy
- Violent crime compensation
- Funds for emergency air or cab transportation

If patient would like to report incident:

- If occurred in a village: Alaska State Troopers 543-2294
- If occurred in Bethel: Bethel Police Department 543-3781

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 11/2/21. Click **here** to see the supplemental resources for this guideline.
If comments about this guideline, please contact Jennifer_Prince3@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline
Care of a Pediatric Patient with Suspected Multisystem Inflammatory Syndrome (MIS-C)

Pediatric patient meets criteria (see box) for MIS-C.

↓

Prepare to transfer to ANMC for consideration of IVIg and echo. Low threshold to consult PICU.

↓

Work-up

- Labs: CBC with diff, CRP, procalcitonin, CMP, ESR, blood culture, COVID-19 test
- CXR (PA and lateral)
- EKG (12 lead)

↓

Do lab values meet high-risk criteria (see box)?

Yes → Expand lab work-up: ferritin, D-dimer, troponin, BNP, fibrinogen, and LDH.

No

↓

- Methylprednisolone 1-2 mg/kg IV.
- Aspirin 3-5 mg/kg up to max dose 81 mg PO if no contraindications (platelet count <50, active bleeding, bleeding diathesis).
- Discuss Lovenox with accepting team.

↓

If concern for shock:

- Give ceftriaxone 50 mg/kg IV.
- Dopamine is not pressor of choice. Consult with PICU.

NOTE: MIS-C is a reportable disease. Please ask the accepting facility who should make the report. The form can be found here.

Case Definition for Multisystem Inflammatory Syndrome in Children (MIS-C) According to the CDC

An individual <21 years presenting with:

1. Measured or subjective fever ≥ 100.4°F for ≥ 24 hours.

2. Laboratory evidence of inflammation with one or more of the following: elevated CRP, procalcitonin, ESR, fibrinogen, D-dimer, ferritin, LDH, IL-6, or neutrophils; low lymphocytes or albumin level.

3. Evidence of clinically severe illness requiring hospitalization with at least two organ systems involved:
   - Rash: polymorphic, maculopapular, petechial, NOT vesicular
   - GI symptoms: diarrhea, abdominal pain, vomiting
   - Extremity Changes: erythema and edema of hands and feet
   - Oral Mucosal Changes: erythema and cracking of lips, strawberry tongue, erythema of oral and pharyngeal mucosa
   - Conjunctivitis: bilateral bulbar conjunctival injection without exudate
   - Lymphadenopathy: cervical > 1.5 cm unilateral
   - Neurologic: headache, irritability, lethargy, AMS

4. No alternative plausible diagnoses.

5. Evidence of current or recent (within the last four weeks) COVID-19 infection.

May consider diagnosis even with negative COVID-19 testing if clinical suspicion is high.

High-Risk Lab Criteria

- CRP ≥ 3 and/or ESR ≥ 40

AND

- Lymphopenia < 1000, thrombocytopenia < 150,000, or sodium < 135

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Emergency Use of Molnupiravir

Molnupiravir

- Mechanism: The oral prodrug of a ribonucleoside with activity against RNA viruses.
- Regimen: 800 mg PO twice daily for five days. Initiate within five days of symptom onset.
- Main concerns: Risk of fetal toxicity.

If considering administration in a village, a pharmacist MUST be consulted.
- Weekdays: Send message via Tiger Connect to "Village Ops Pharmacist."
- Weekends: Send message via Tiger Connect to "Inpatient Pharmacy."

Criteria:
- Age ≥18 years.
- Lab-confirmed COVID-19
- Mild to moderate disease in the outpatient setting
- High risk of progressing to severe illness.
- Alternative antiviral therapies not accessible or clinically appropriate.

↓

No contraindications, warnings, or precautions. (See box.)

↓

Counsel patient and document per requirements in box.

↓

- Prescribe molnupiravir as soon as possible after positive COVID test and within five days of symptom onset.
- Patient should take molnupiravir 800 mg (four 200 mg capsules) PO twice daily for five days.

Adverse Reactions

In the clinical studies quoted in the EUA, the following adverse events were reported: diarrhea, nausea, and dizziness.

Contraindications, Warnings, and Precautions

- Molnupiravir is NOT authorized for use in patients who are hospitalized, requiring supplemental oxygen, or requiring more than their baseline supplemental oxygen flow rates due to COVID.
- Pregnancy: Due to risk of fetal toxicity, molnupiravir is NOT recommended for use during pregnancy.
- Breastfeeding: Not recommended to breastfeed during treatment period and for four days after the last dose. Instruct patients to pump and discard milk.
- Patients with childbearing potential:
  - Females: Instruct patients to use effective contraception during the treatment period and for four days after the last dose.
  - Males: Instruct patients with partners of childbearing potential to use effective contraception during the treatment period and for three months after the last dose.
- <18 years: Due to risk of bone and cartilage growth disruption, molnupiravir is NOT recommended for patients younger than 18 years old.

Documentation Requirements for Molnupiravir

Communicate and document the following in the medical record:
- **Fact Sheet for Patients and Parents/Caregivers** given to patient/caregiver.
- Inform patient/caregiver of alternatives to receiving molnupiravir. See **clinicaltrials.gov** for emerging data.
- Inform patient/caregiver that molnupiravir is an unapproved drug that is authorized for use under Emergency Use Authorization.

Reporting of Adverse Events

The prescribing health care provider is responsible for mandatory reporting of all medication errors and adverse events potentially related to molnupiravir. Reports must be made within seven days of the event.
Serious adverse events include: death; life-threatening adverse event; inpatient hospitalization or prolongation of existing hospitalization; persistent or significant incapacity or substantial disruption of the ability to conduct normal life function; congenital anomaly/birth defect; or medical or surgical intervention to prevent death, a life-threatening event, hospitalization, disability, or congenital anomaly.

Submit report to FDA MedWatch by completing the online form **here**.
The report should include "use of molnupiravir under Emergency Use Authorization (EUA)" in the "Describe Event" section.

See the **FDA MedWatch program** for more information.

Resource: Fact Sheet for Health Care Providers Emergency Use Authorization (EUA) of Molnupiravir.
Updated March 2022. Click **here** for source.

Approved 6/6/22.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Emergency Use of Paxlovid

Ritonavir-Boosted Nirmatrelvir (brand name Paxlovid)

- Mechanism: Nirmatrelvir is a protease inhibitor; ritonavir is a cytochrome P450 3A4 inhibitor that increases nirmatrelvir concentrations.
- Regimen: Paxlovid is packaged with nirmatrelvir 150 mg x2 and ritonavir 100 mg. Take all three pills (nirmatrelvir 300 mg and ritonavir 100 mg) PO twice daily for five days. Initiate within five days of symptom onset.
- Main concerns: Significant drug-drug interactions.

If considering administration in a village, a pharmacist MUST be consulted.
- Weekdays: Send message via Tiger Connect to "Village Ops Pharmacist."
- Weekends: Send message via Tiger Connect to "Inpatient Pharmacy."

Criteria:
- Age ≥12 years and weight ≥40 kg
- Lab-confirmed COVID-19
- Mild to moderate disease in the outpatient setting
- High risk of progressing to severe illness.

↓

No contraindications (see box)
AND
No anticipated **drug-drug interactions** (see box)

↓

Counsel patient/caregiver and document per requirements in box.

↓

- Prescribe Paxlovid as soon as possible after positive COVID test and within five days of symptom onset.
- Patient should take nirmatrelvir 300 mg (two 150 mg tabs) and ritonavir 100 mg PO twice daily for five days.

Adverse Reactions

In the clinical studies quoted in the EUA, the following adverse events were reported: dysgeusia, diarrhea, hypertension, and myalgia.

Contraindications

- Paxlovid is NOT authorized for use in patients who are hospitalized, requiring supplemental oxygen, or requiring more than their baseline supplemental oxygen flow rates due to COVID.
- Do not give to any patient with known hypersensitivity to any ingredient of Paxlovid.
- Review patient's medications (including herbal supplements) for drug-drug interactions, summarized at the **NIH COVID Treatment Guidelines** website and on pages 9-15 of the **EUA Fact Sheet for Health Care Providers**.

Special Populations

- Pregnancy & Breastfeeding: There are no available data in these populations to use to make a recommendation.
- Renal Impairment:
  - Moderate (eGFR ≥30 to <60 mL/min): change dose to nirmatrelvir 150 mg (one tab) and ritonavir 100 mg (one tab)
  - Severe (eGFR <30 mL/min): not recommended
- Hepatic Impairment: not recommended if **Child-Pugh Score** Class C.

Documentation Requirements for Paxlovid

Communicate and document the following in the medical record:
- **Fact Sheet for Patients and Parents/Caregivers** given to patient/caregiver.
- Inform patient/caregiver of alternatives to receiving Paxlovid. See **clinicaltrials.gov** for emerging data.
- Inform patient/caregiver that Paxlovid is an unapproved drug that is authorized for use under Emergency Use Authorization.

Reporting of Adverse Events

The prescribing health care provider is responsible for mandatory reporting of all medication errors and adverse events potentially related to Paxlovid. Reports must be made within seven days of the event.
Serious adverse events include: death; life-threatening adverse event; inpatient hospitalization or prolongation of existing hospitalization; persistent or significant incapacity or substantial disruption of the ability to conduct normal life function; congenital anomaly/birth defect; or medical or surgical intervention to prevent death, a life-threatening event, hospitalization, disability, or congenital anomaly.

Submit report to FDA MedWatch by completing the online form **here**.
The report should include "use of Paxlovid under Emergency Use Authorization (EUA)" in the "Describe Event" section.

See the **FDA MedWatch program** for more information.

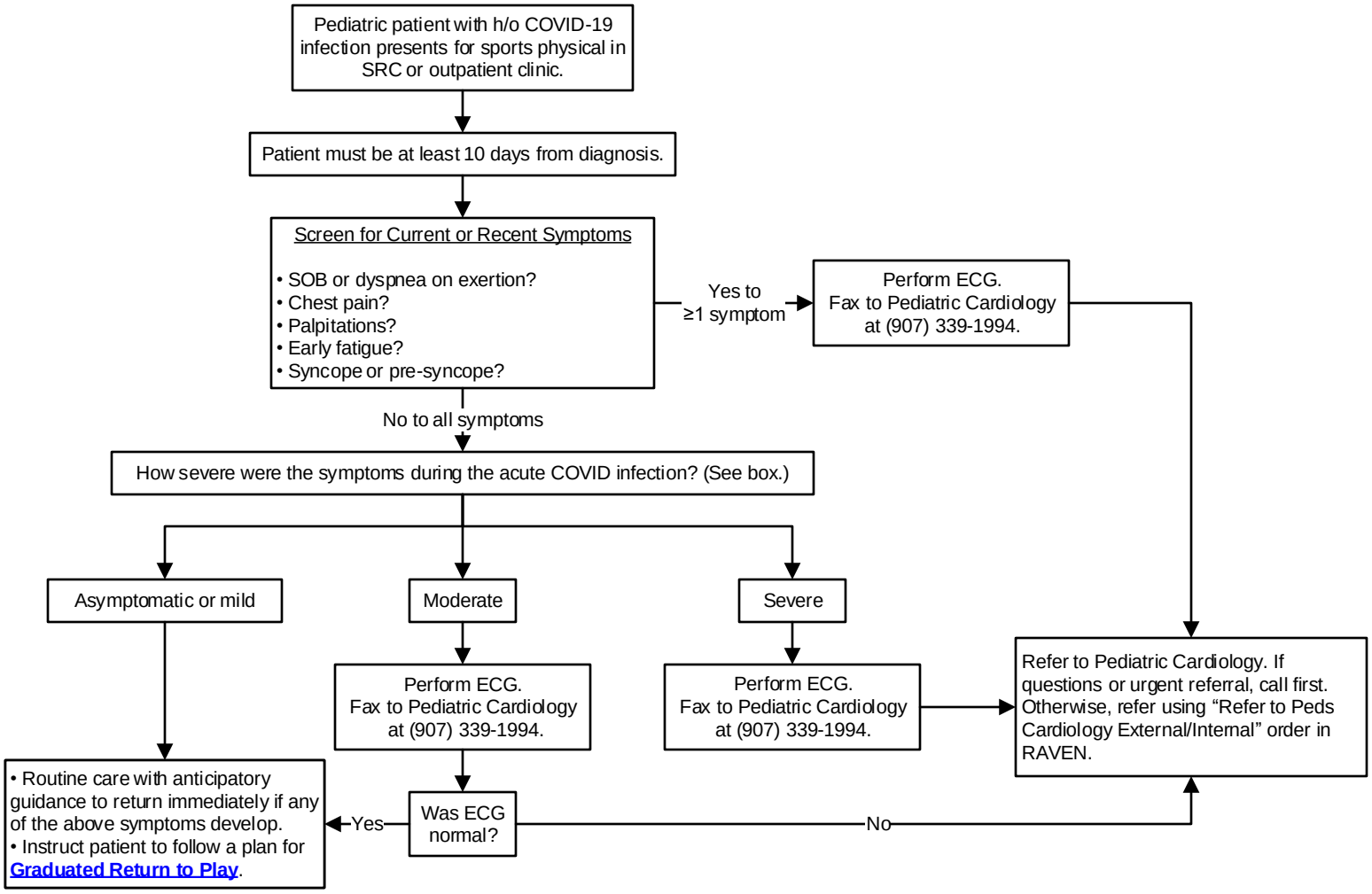
Resource: Fact Sheet for Health Care Providers Emergency Use Authorization (EUA) of PAXLOVID.
Updated April 14, 2022. Click **here** for source.

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 6/6/22.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

COVID-19 Clinical Guideline

Sports Clearance for Pediatric Patients with History of COVID-19



Symptom Severity Classification for this Guideline

- Mild: no fever, <3 days of symptoms
- Moderate: prolonged fevers and bedrest, hospitalization not required, no abnormal cardiac testing throughout course
- Severe: hospitalized, abnormal cardiac testing, or MIS-C

Note: Providers may use their clinical judgment and perform an ECG if cardiac concerns not addressed by this guideline.

Phone Numbers

Seattle Children's Pediatric Cardiology of Alaska (located in Anchorage):
- Phone: (907) 339-1945
- Fax: (907) 339-1994

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 ad hoc committee for COVID-related guidelines 8/24/21. Click here to see the supplemental resources for this guideline.

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

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Guideline

Emergency Use of Tixagevimab & Cilgavimab

Criteria

• Patient with moderate-to-severe immune compromise due to a medical condition or receipt of immunosuppressive medications or treatments and may not mount an adequate immune response to COVID-19 vaccination.
• Patient in whom vaccination with any available COVID-19 vaccine, according to the approved or authorized schedule, is not recommended due to a history of severe adverse reaction (e.g., severe allergic reaction) to a COVID-19 vaccine(s) and/or COVID-19 vaccine component(s).

Limitations of Authorized Use

Tixagevimab & cilgavimab are NOT authorized for use in individuals:

• For treatment of COVID-19
• For post-exposure prophylaxis of COVID-19 in individuals who have been exposed to someone infected with COVID-19.
• Pre-exposure prophylaxis is not a substitute for vaccination in individuals for whom COVID-19 vaccination is recommended.
• In individuals who have received a COVID-19 vaccine, this drug should be administered at least two weeks after vaccination.

Patient ≥ 12 years and ≥ 40 kg with no active COVID infection and no recent exposure to a person with COVID.

↓

Patient meets criteria for tixagevimab & cilgavimab. (See box.)

↓

Patient has no contraindications. (See box.)

↓

Consult COVID-19 Response Team.

↓

Counsel patient/caregiver and document per requirements in box.

↓

• Dosage: two separate IM injections; see **EUA** for more details as dose has changed.
• When patient has arrived and signed consent for injection, place order and send message to "Inpatient Pharmacy On Call" with patient information and location during normal business hours.
• Inpatient pharmacist then prepares injections in the clean room.
• Monitor patients during intramuscular injection and for least one hour after injection is complete.

↓

Repeat Dosing

• Data indicate that tixagevimab & cilgavimab may be effective for preexposure prophylaxis for 6 months post-administration.
• While COVID-19 remains in circulation, individuals who qualify for tixagevimab & cilgavimab, per the conditions of the EUA, can be redosed, but the dosing interval is undetermined.

Adverse Reactions

• Most common adverse events (all grades, incidence ≥3%) are headache, fatigue, and cough.
• Hypersensitivity Including Anaphylaxis: Serious hypersensitivity reactions, including anaphylaxis, have been observed with IgG1 monoclonal antibodies like tixagevimab & cilgavimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive therapy.
• Clinically Significant Bleeding Disorders: As with any other intramuscular injection, tixagevimab & cilgavimab should be given with caution to individuals with thrombocytopenia or any coagulation disorder.
• Cardiovascular Events: A higher proportion of subjects who received tixagevimab & cilgavimab versus placebo reported myocardial infarction and cardiac failure serious adverse events. All of the subjects with events had cardiac risk factors and/or a prior history of cardiovascular disease, and there was no clear temporal pattern. A causal relationship between tixagevimab & cilgavimab and these events has not been established. Consider the risks and benefits prior to initiating tixagevimab & cilgavimab in individuals at high risk for cardiovascular events, and advise individuals to seek immediate medical attention if they experience any signs or symptoms suggestive of a cardiovascular event.

Contraindications

Tixagevimab & cilgavimab are contraindicated in individuals with previous severe hypersensitivity reactions, including anaphylaxis, to any component of the drug.

Documentation Requirements Prior to Administration of Tixagevimab & Cilgavimab

Communicate and document the following in the medical record:
• **Fact Sheet for Patients and Parents/Caregivers** given to patient/ caregiver.
• Inform patient/caregiver of alternatives to receiving tixagevimab & cilgavimab. See **clinicaltrials.gov** for emerging data.
• Inform patient/caregiver that tixagevimab & cilgavimab are unapproved drugs that are authorized for use under Emergency Use Authorization.

Pregnancy & Breastfeeding

• Pregnancy: There are insufficient data to evaluate a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. Tixagevimab & cilgavimab should only be used during pregnancy if the potential benefit outweighs the potential risk for the mother and the fetus.
• Breastfeeding: There are no available data on the presence of tixagevimab or cilgavimab in human milk or animal milk, the effects on the breastfed infant, or the effects of the drug on milk production. Maternal IgG is known to be present in human milk. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for tixagevimab & cilgavimab and any potential adverse effects on the breastfed infant from tixagevimab & cilgavimab.

Reporting of Adverse Events

The prescribing health care provider is responsible for mandatory reporting of all medication errors and adverse events potentially related to tixagevimab & cilgavimab. Reports must be made within seven days of the event.
Serious adverse events include: death; life-threatening adverse event; inpatient hospitalization or prolongation of existing hospitalization; persistent or significant incapacity or substantial disruption of the ability to conduct normal life function; congenital anomaly/birth defect; or medical or surgical intervention to prevent death, a life-threatening event, hospitalization, disability, or congenital anomaly.

Submit report to FDA MedWatch by completing the online form **here**.
The report should include "use of tixagevimab & cilgavimab under Emergency Use Authorization (EUA)" in the "Describe Event" section.

See the **FDA MedWatch program** for more information.

Resource: Fact Sheet for Health Care Providers Emergency Use Authorization (EUA) of Tixagevimab & Cilgavimab. Updated April 2022. Click **here** for source.

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 6/6/22.
If comments about this guideline, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

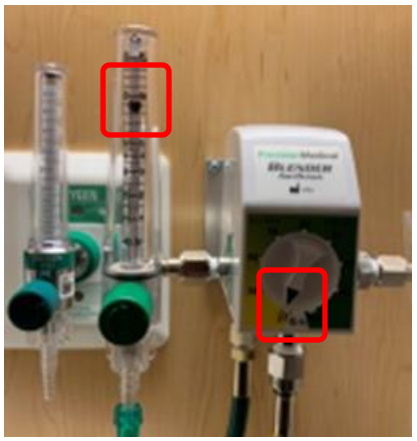
Neonatal Reference

Yukon-Kuskokwim HEALTH CORPORATION

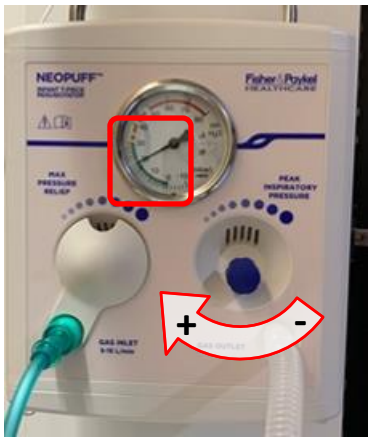
Clinical Resource

Setting Up the Neopuff™ T-piece Resuscitator in Patient Rooms on OB

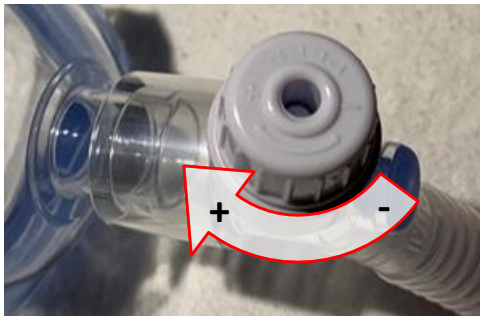
Attach the oxygen tubing to a 15 L flow meter.
Set blender to 21% and consider increasing depending on clinical status.
Set the flow meter to **10 L**.

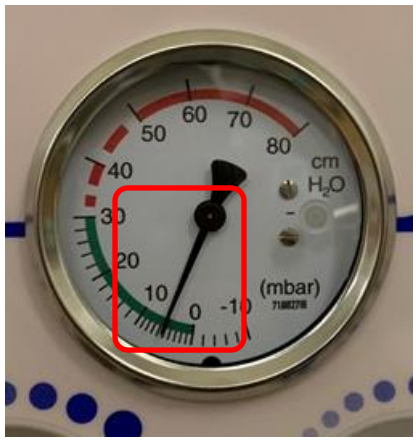


Occlude both the mask and the hole.
Set the PIP: Turn the knob labeled Peak Inspiratory Pressure until the arrow on the dial points to **20**.



Occlude only the mask.
Set the PEEP: Turn the PEEP knob until the arrow on the dial points to **5**.





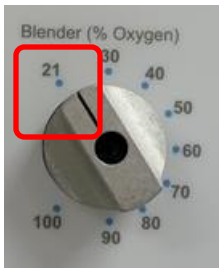
Troubleshooting: If you cannot achieve the desired pressures, try changing the liters on the flow meter or turning the Max Pressure Relief knob located under the flap.

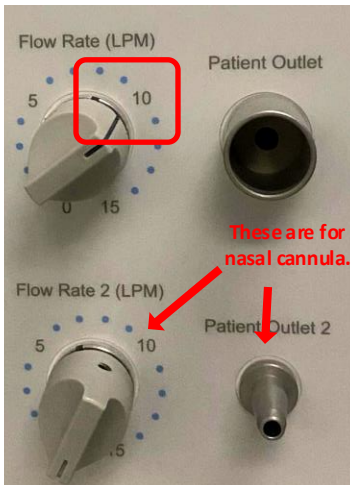
Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

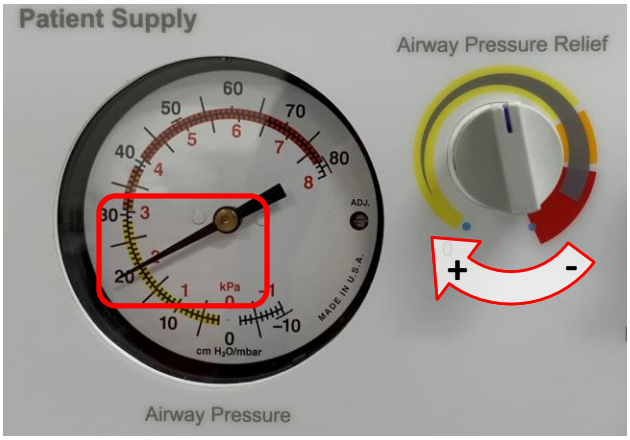
Setting Up the Neopuff™ T-piece Resuscitator in the Nursery

- Turn Gas Supply switch on. Down is ON.
- Set blender to 21% and consider increasing depending on clinical status.
- Set the top flow meter to **10 L**.
- The bottom flow meter is for use with nasal cannula.

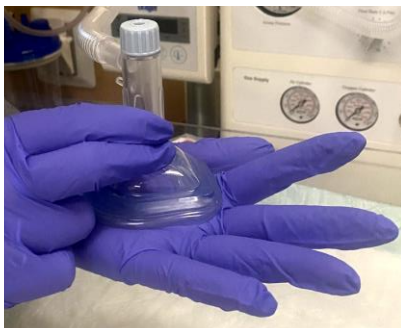


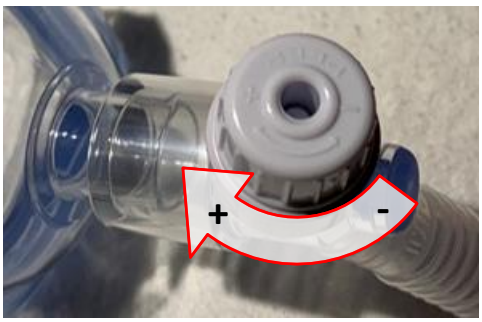


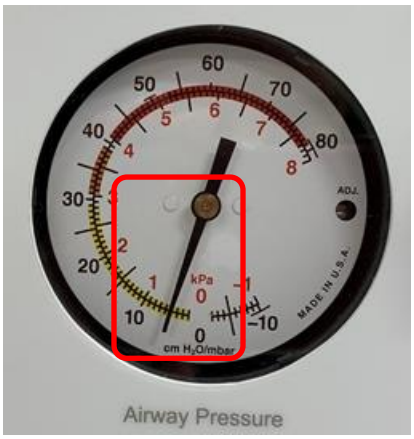
- Occlude both the mask and the hole.
- <u>Set the PIP</u>: Turn the knob labeled Airway Pressure Relief until the arrow on the dial points to **20**.



- Occlude only the mask.
- <u>Set the PEEP</u>: Turn the PEEP knob until the arrow on the dial points to **5**.







Troubleshooting: If you cannot achieve the desired pressures, try changing the liters on the flow meter.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

Neonatal Pneumothorax Evacuation Protocol

Coming soon...

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

Surfactant Administration Protocol

Indications for Curosurf®

- GA<26 weeks.
- GA 26-29 weeks with supplemental oxygen requirement ≥ 40%.
- GA>29 weeks with CXR-proven RDS.

Curosurf® Storage

- Curosurf® is stored at 36-46°F.
- If warmed and not opened or used, may be returned to refrigerated storage one time.
- Curosurf® is located in the OB medication refrigerator. If going on a medevac, ask the nurses to get the Curosurf®. It can be stored in a pink thermal bag that is kept next to it in the refrigerator.

Reference:

See this **YouTube video** for a demonstration of the Y catheter.

Preparation of Curosurf®

- Warm to room temperature and gently invert. Do not shake.
- Choose Curosurf® dose using the **Neonatal Resuscitation Summary** using estimated gestational age. If weight is known, calculate dose to be 2.5 mL/kg.
- Draw up total Curosurf® dose using a 20 gauge or larger needle.

Preparation of Equipment and Patient

- Prior to intubation, if possible, check the ETT cap and make sure it comes on and off easily.
- Make sure you have the correct size Y cap for the ETT size.
- Check fit of Y cap on ETT. Attach catheter and feed it down the tube until it is ½ cm past the tip. Look for the number or color that will tell you the depth of the catheter at this point.
- Intubate patient with ETT cap on tube.
- Verify placement and secure tube.

Administration of Curosurf®

- Infant should be supine.
- Disconnect Neopuff, bag, or ventilator.
- Remove ETT cap and replace with Y cap. (If ETT cap is stuck, cut the tube as high as possible and then place the Y cap.)
- Attach the Neopuff or bag to the larger port on the Y cap.
- Attach the catheter to the smaller port on the Y cap and advance it until it is at the desired depth.
- Inject the syringe of Curosurf® through the catheter.
- Pull the catheter all the way out but leave attached.
- Bag the baby at a rate of 40-60 breaths/minute for one minute.
- Allow the baby to recover.
- Remove the Y cap and replace the ETT cap.
- Resume ventilation.
- Do not suction for one hour after administration unless required for obstruction.
- Remember to adjust pressure on Neopuff as lung compliance improves.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

Village Deliveries (Pediatrics)

Preparation in the Village for the Health Aides

• Turn the heat up until everyone is sweating. May need extra space heaters.
• In the warmest part of the clinic, prepare a table with clean blankets, towels, saran wrap, etc.
• If the clinic has a dryer, instruct the health aides to warm the blankets there prior to birth.
• Ensure the following are prepared and functional: suction, oxygen tanks and tubing, BVM with smallest available mask, bulb suction.
• If available, set up desk lamps with old-style bulbs (not the spiral energy-efficient bulbs) to generate more heat.
• Seek out extra health aides or former health aides to help.

Preparation for Medevac

• Review prenatal history and note risk factors for the baby.
• Coordinate with family medicine hospitalist activating the medevac and LifeMed crew about when to meet at the hangar. The LifeMed hangar is located at 3600 Tower Road.
• Turn over the Tiger Connect role for "Peds Wards on Duty" to another pediatrician or the family medicine hospitalist staying behind.
• Establish roles with LifeMed crew. Discuss doses and equipment based on estimated GA.

What to Bring

• Curosurf if GA <32 weeks or unknown: located in the OB medication refrigerator. Place in pink thermal case.
• OB & Pediatric Village Delivery Backpack containing OB and pediatric supplies located in the nursery.
• Resources: **Neonatal Resuscitation Summary**, **Surfactant Administration**, **Neopuff Set Up Guide**, **Pneumothorax Evacuation**, **Neonatal Glucose Screening Guideline**.
• Warm clothing. (There is extra warm gear under the bed in the peds call room)
• Snacks, drinks, money, motion sickness medication.

Delivery is Imminent

• Set up monitor, Neopuff, and intubation equipment (all carried by LifeMed), using sizes recommended by **Neonatal Resuscitation Summary**.
• Activate chemical mattress just prior to delivery. Cover with single baby blanket.

For High Risk Deliveries, including GA <32 weeks:
• Discuss with neonatologist early – call (907) 212-3614.
• Activate medevac to Anchorage. Consider direct transfer from village, ramp transfer in Bethel, or further stabilization with NICU team in Bethel, as appropriate.
• Prepare polyurethane bag.

Delivery is not Imminent

• Hospitalist assesses mother, does vaginal exam, obtains cultures, etc.
• LifeMed crew cares for mother.
• Pediatrician should help however possible and otherwise stay out of the way.
• Occasionally a mother will be transported to Bethel dilated and in labor. This decision is made if the benefit of being at a higher level of care outweighs the risks of potential delivery en route.

Resuscitation

• Resuscitate per NRP algorithm. Remember that CPAP is a great tool for non-invasive respiratory support for transport.

For infants <32 weeks:
• Place infant directly into polyurethane bag without drying. If intubated, bag may cover face/head.
• Attempt IV or UVC access early.
• See **Surfactant Protocol**, if indicated.

Prior to Transport

• Communicate with OB staff so they are prepared.
• Ensure an Anchorage team has been activated, if needed.

Medications

• Give erythromycin to eyes and vitamin K IM if infant is stable.
• Hepatitis B and HBIg can wait until arrival in Bethel.
• Give ampicillin per Neonatal Resuscitation Summary for all preterm and high risk infants.
• Gentamicin should not be given in the village, as it is high-risk.

Temperature

• Hypothermia in newborns is defined as temp <97.7°F.
• Cold babies do very poorly.
It is better to over-prepare (use a polyurethane bag in term babies, etc.) rather than under-prepare.
• The baby pod carried by LifeMed does not have a heat source. It will not generate heat. Avoid placing the baby into it until it has warmed from being outside.
• Check axillary temperature at 5 minutes of life and then Q30 minutes.
• Place a hat and/or saran wrap on the baby as soon as possible.
• Do not remove hat, chemical mattress, or polyurethane bag until arrived at YKHC.
• You may tear holes in the bag to gain access to the baby for procedures.
• Avoid weighing premature babies, as this frequently contributes to heat loss in the village.

Procedures

Intubation
• Prepare equipment.
• Wipe upper lip and rest of face.
• If need for sedation is anticipated, use morphine 0.05 mg/kg.
• Intubate and confirm placement with auscultation and $ETCO_2$ detector.
• Tape tube with Benzoin and tape.
• Consider using Neopuff to ventilate en route rather than ventilator.

UVC *(Always attempt PIV placement first unless infant is very unstable.)*
• Use sterile technique.
• Flush catheter and stopcock with sterile saline. NOTE: the syringes for premade saline flushes are not sterile. You will have to use a sterile syringe to draw up flushes from a NS bag.
• If baby is in polyurethane bag, tear a small opening in the plastic.
• Place the UVC just far enough to get blood return.
• Cover skin around umbilicus with Tegaderm. Tape the UVC to the Tegaderm to secure it.

See **Surfactant Administration** and **Pneumothorax Evacuation** Resources.

Glucose

• Check glucose as soon as possible.
• See **Neonatal Glucose Screening Guideline**. Goal glucose is >35 in first four hours of life.
• On babies <32 weeks, start D10 maintenance as soon as IV access has been established.
• If unable to get a glucose, have a low threshold to give sugar in preterm or high risk infants.
• If oral dextrose gel unavailable, may give Sweetease, oral glucose, colostrum, formula, or homemade sugar paste. May smear on gums for buccal absorption.

Yukon-Kuskokwim HEALTH CORPORATION

Outpatient Protocols

Outpatient Protocols/Reference

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Chronic Pain: Narcotic Treatment Eligibility

Non-Narcotic Analgesics on the YKHC Formulary

Muscle Relaxants
- Baclofen
- Cyclobenzaprine
- Tizanidine

NSAIDS
- Aspirin
- Ibuprofen
- Indomethacin
- Meloxicam
- Nabumetone
- Naproxen

Topical Analgesics
- Capsaicin Cream
- Diclofenac gel
- Lidocaine patch
- Lidocaine topical jelly
- Mentholmethylsalicicylate (BenGay)

Other
- Acetaminophen

SNRI
- Duloxetine

Tricyclics
- Amitriptyline
- Nortriptyline

Neuropathic Pain Agents
- Carbamazepine
- Gabapentin
- Pregabalin

Headache Agents
- Butalbital/APAP/Caffeine (Fioricet)
- Rizaltriptan
- Sumatriptan
- Topiramate

Has the patient had chronic pain for >6 months that is interfering with his/her daily habits, subsistence activities, and/or job?

No → Optimize Pain Treatment Options (see box below) and non-narcotics.

Yes

Has the patient done ALL of the following?

- Seen ACT Clinician for ½ hour evaluation.
- Seen PT and performed home exercises.
- Tried three types of non-narcotic medications for at least six months.

No → Refer for these steps and plan follow-up after all have been completed.

Yes

Is the patient >45 years old?

No → Refer to Pain Committee for special consideration.

Yes

Does the patient have one of the following conditions?

- Orthopedic surgery
- Rheumatoid arthritis
- Severe spinal stenosis

No → Refer to Pain Committee for special consideration.

Yes

Perform all comprehensive assessments

- History
- Physical
- Previous record review
- Toxicology screen
- Opioid Risk Tool (Ad Hoc form in RAVEN)
- Brief pain inventory (found using RAVEN autotext "..painChronicHPI")
- Pain diary (an example can be found **here**)

ALL assessments are completed

Patient meets criteria for narcotic treatment. Complete **Controlled Substance Agreement** (Pain Contract) with patient and prescribe medications.

Follow-up at least Q6 months. See **next page**.

Note: A maximum of 3 months of short-acting chronic pain medications may be prescribed before an agreement is required. The reason for continued opioid use past seven days should be documented in the chart for each refill. No chronic pain medications should be continued past 3 months without a valid agreement.

Types of Pain and Recommended Management

Treatment options for all types of pain: sleep hygiene, yoga, meditation

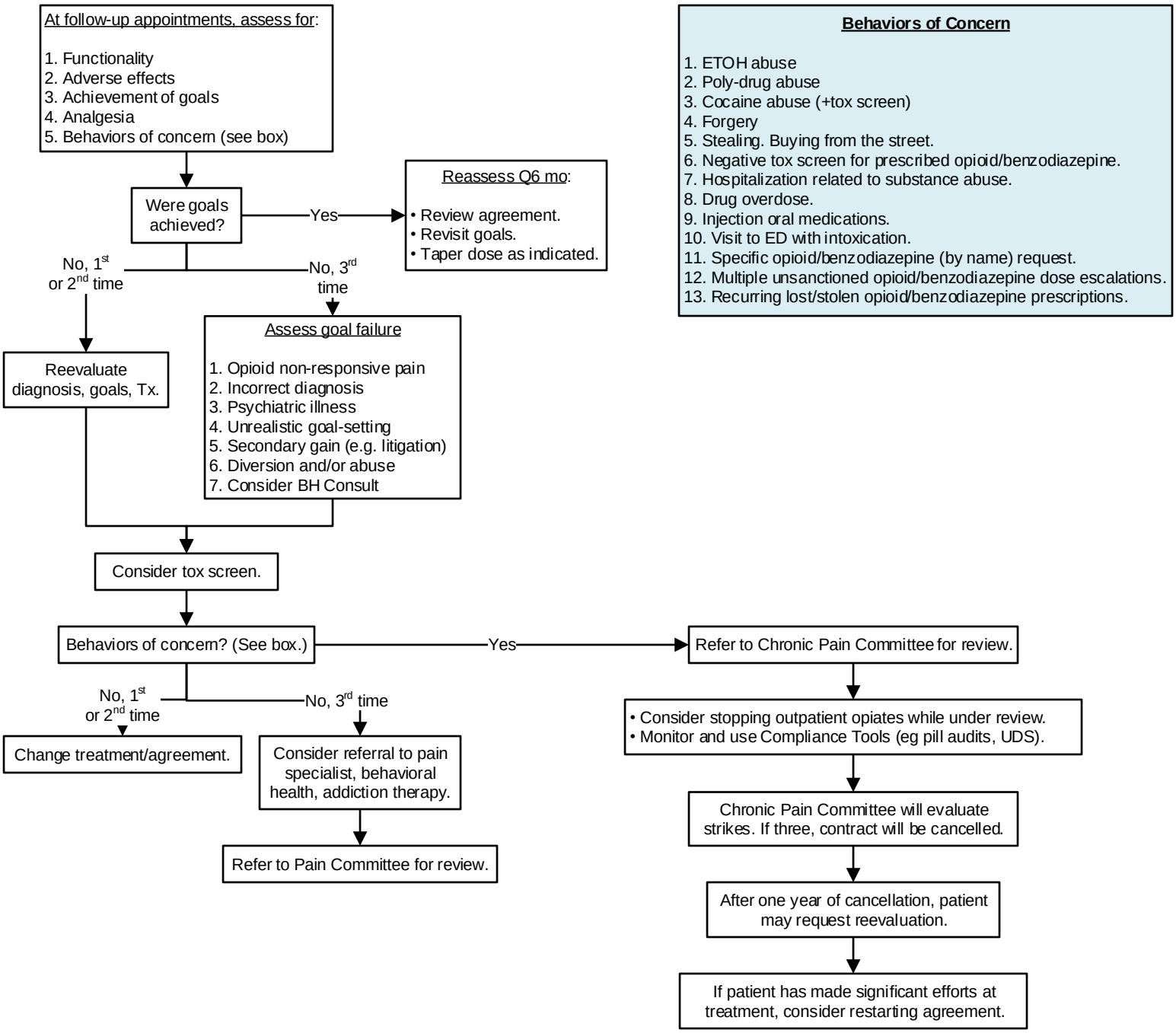
1. Nociceptive Pain (muscle, joint, or visceral): examples include strain, tension headache, osteoarthritis, low back pain, chronic cystitis, myofascial pain.
Suggested treatments: NSAIDs, acetaminophen, PT, trigger point or joint injections, capsaicin cream, lidocaine patch/cream, yoga, meditation
2. Neuropathic Pain:
Suggested treatments: NSAIDs, antidepressants (first-line TCAs, duloxetine), gabapentin
Management for specific conditions:
   - Nerve compression: EMG, MRI, referral to surgeon
   - Nerve damage: EMG
   - Nerve traction: EMG, PT, yoga, meditation
   - Migraine: sumatriptan, rizatriptan, beta-blockers, etc.
   - Reflex sympathetic dystrophy: lidocaine patch
3. Idiopathic Pain: examples include fibromyalgia
Suggested treatments: exercise, antidepressants (including duloxetine), yoga, meditation, sleep hygiene

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 2/1/22.
If comments about this guideline, please contact Heidi_Salisbury@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Follow-up of Chronic Pain Patients



Behaviors of Concern

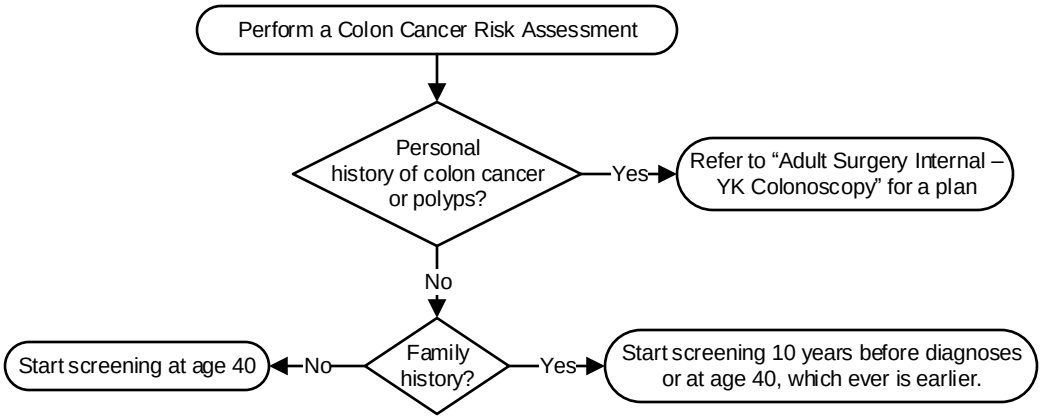
1. ETOH abuse
2. Poly-drug abuse
3. Cocaine abuse (+tox screen)
4. Forgery
5. Stealing. Buying from the street.
6. Negative tox screen for prescribed opioid/benzodiazepine.
7. Hospitalization related to substance abuse.
8. Drug overdose.
9. Injection oral medications.
10. Visit to ED with intoxication.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

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

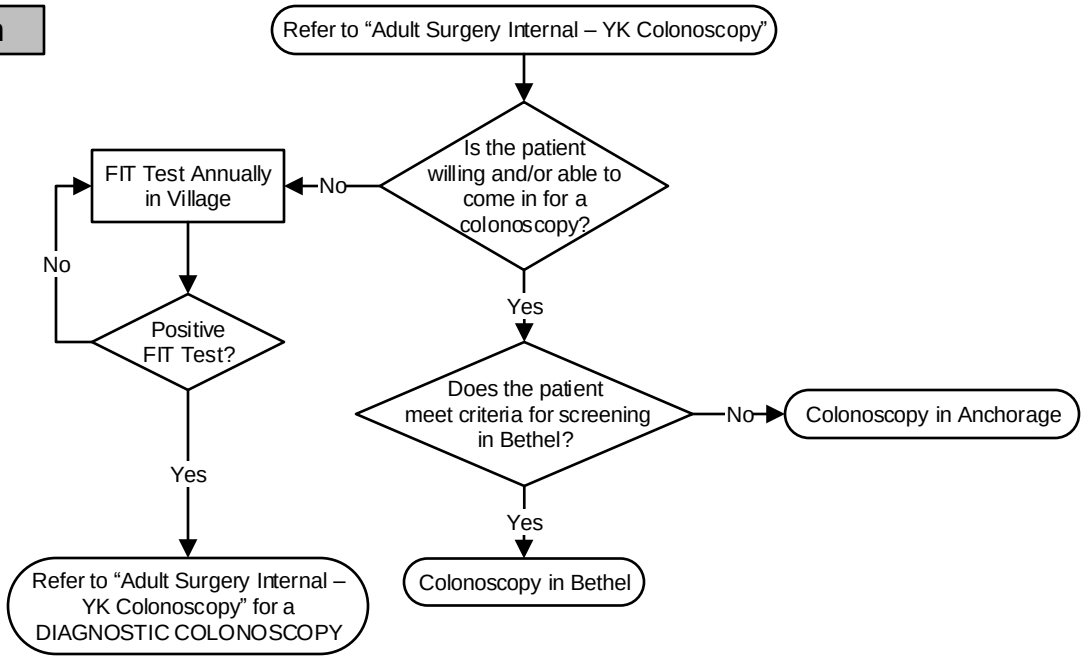
Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol
Colon Cancer Screening

When to Screen



How to Screen



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

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Pre-Anesthesia Management

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

Disease	Hb/Hct	Coags	Lytes	BUN/Cr	Glucose	LFTs	EKG	CXR	T&S
Hypertension			X				X		
Card – moderate	X		X	X			X		
Smoker > 20 years	X								
Malignancy	X								
Lymphoma	X (CBC)							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 for Elective Procedures (including endoscopy)

1. Patients who are not to be scheduled at YKHC:
    a. Patients with BMI > 45.
    b. Severe obstructive sleep apnea.
    c. Patients with pending cardiology, pulmonology, or sleep study referrals.
    d. Patients younger than 30 months.
    e. Patients older than 75 years.
    f. Medically unstable patients (for example, uncontrolled diabetes mellitus, uncontrolled hypertension, etc.).
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 contraindicated or otherwise documented in orders by physician.

Diabetes Management

1. Oral agents: Discontinue SGLT2 inhibitors 3-4 days prior to surgery. Discontinue all other oral agents the evening prior to surgery, except Metformin can be taken. No oral agents except Metformin the morning of surgery.
2. **For patients who take insulin, consult pharmacy.**
    For patients who take long acting insulin in the morning, take 50% dose of NPH insulin or 75% dose of long-acting insulin (lantus) the morning of surgery.
    For patients who take long acting insulin at night, take 75% dose of NPH or lantus the night before surgery.
    For patients who take short acting insulin (regular, aspart), stop this insulin when fasting begins.
3. Consume apple or cranberry juice up to two hours prior to arrival to surgery if insulin was given.
4. For insulin pumps, set to basal rate and continue throughout pre-operative period.
5. Upon arrival to Holding Area, obtain glucose level. Anesthesia will treat results.

Please send a message via Tiger Connect to "OR CRNA on call" with any questions about patient selection, etc.

See YKHC Policy & Procedure on Patient Selection Criteria for Ambulatory Surgery.

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 6/6/22.
If comments about this protocol, please contact Jennifer_Lent@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

Treatment Protocol

Pre-Anesthesia Management

NPO Guidelines

1. All patients are to be NPO after midnight the night before the procedure. Additionally, patients undergoing endoscopy or with delayed gastric emptying will receive more extensive NPO instructions.
2. Patient may brush his/her teeth but should not swallow toothpaste.
3. Gum and candy of any type are not allowed.
4. 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.

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.		

Pediatric Protocols/Reference

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

PAMC/YKHC Post-NICU Caffeine Protocol

IF ANY CONCERN FOR APNEA, please consult a pediatrician immediately to determine need for further evaluation, transfer, medevac, etc.

Recommendations on Management of Caffeine After NICU Discharge

- Recommended dose of caffeine is 12 mg/kg PO daily.
- Patient should be seen in Bethel by a pediatric provider within one week of returning to the region.
- Dose should be weight-adjusted every 1-2 weeks. This can occur in outpatient clinic with a pediatric provider or a pediatric consult, in an SRC with a pediatric consult, or in a village by RMT to Chronic Peds.
- Stop the caffeine when the baby is 42 weeks corrected gestational age.
- Discontinuation of caffeine may be delayed for another week so as not to coincide with immunizations, recent URI, or planned anesthesia (as all of these events can cause re-emergence of intermittent hypoxia with periodic breathing).

Note

When a baby is discharged from the NICU on caffeine, update the Problem List with the plan, including the target dose, how often to weight-adjust, and the expected end date (when 42 weeks corrected gestational age will be).

Rationale

- In the past, premature infants were given caffeine until about 34 weeks post-menstrual age. Some needed caffeine past this point and went home on caffeine and an apnea monitor.
- Recent studies have shown that many preterm infants who have been taken off caffeine will go on to have intermittent hypoxia and subclinical apnea and bradycardia events after discharge from the hospital.
- Evidence is also building that prolonged use of caffeine results in better neurodevelopmental outcomes.
- As of January 2019, caffeine has been continued in preterm infants after discharge from the PAMC NICU.
- The PAMC NICU stopped the routine use of apnea monitors for babies discharged on caffeine due to sub-optimal monitor technology and frequent frustration among parents and providers. They prefer to emphasize the importance of giving caffeine rather than use of apnea monitors.

Source

Adapted from letter from Alaska Neonatology Associates, Inc., Pediatrix Medical Group, an affiliate of MEDNAX.
1/10/2019
Providence Alaska Medical Center (PAMC)
Neonatal Intensive Care Unit (NICU)

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

Checklist for Complex Pediatric Patients Returning to YKHC Region

□ Has YKHC pediatric group been briefed and asked for feedback on concerns or issues?	□ N/A
□ Prior to patient returning, has care conference been scheduled with 1-2 pediatricians to represent group/consensus recommendations? Other key participants include: case managers, SRC providers, health aides, and family members.	□ N/A
□ Where will primary care occur – village, SRC, Bethel, or Anchorage?	□ N/A
□ Does home have electricity, running water, and a refrigerator?	□ N/A
□ Is there a back-up plan in place if electricity goes down?	□ N/A
□ Have family/caregivers received CPR training?	□ N/A
□ Does the family have needed emergency equipment? Ex: ambu bag (if no CHA available), suction, pulse-oximeter, oxygen, etc. Have they received training on how to use this equipment?	□ N/A
□ Does the family have needed supplies: medications, beds, commodes, syringes, dressings, wheelchair, lotions, etc.?	□ N/A
□ If the patient is at risk for seizures, has the family received Diastat or intranasal midazolam and received the appropriate training?	□ N/A
□ If the patient has a G-tube, are the caregivers comfortable replacing it? Do they have emergency supplies, including an extra G-tube and Foley catheters in the same French size and smaller sizes?	□ N/A
□ If the patient has a port, are the caregivers comfortable accessing it? Have they received the appropriate training? Do they have all the supplies needed to access it?	□ N/A
□ Has an Informed Consent to Return to Village been customized for this patient and approved by Risk Management (contact is Linda Weisweaver as of 11/2019)? [See Peds Folder → Informed Consent to Return to Village for template.]	□ N/A
□ Have the caregivers completed the Informed Consent to Return to Village?	□ N/A
□ If patient is returning to the village against medical advice, have Risk Management, Clinical Director, and appropriate administrators been made aware?	□ N/A
□ If the patient is DNR/DNI/Comfort Care, have the **Expected Home Death Forms** been completed? Has the **MOST Form** been completed? Does family have enough medications needed for comfort care?	□ N/A
□ Have all current and anticipated prescriptions with refills been ordered on the YKHC RAVEN Medication List?	□ N/A
□ Has the YKHC RAVEN Problem List been updated with care plans, follow-up needs, therapeutic parameters, etc.?	□ N/A
□ Has a clinic appointment been scheduled to establish care at YKHC?	□ N/A
□ Have the health aides been notified of the complex needs of this patient?	□ N/A
□ Have the nearest SRC providers been notified of the complex needs of this patient?	□ N/A
□ After the care conference: has a detailed note been placed in the chart summarizing the care conference? Has this note been sent by email to the pediatric group, case managers, and SRC providers?	□ N/A
□ Has family referral to YKHC BH been offered?	□ N/A
□ Have VTC appointments been set up for patient and family?	□ N/A

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

Dexamethasone in Meningitis

*The following is adapted from the "**ANMC Pediatrics Statement on Dexamethasone and Hearing Screening in Meningitis**," dated 2/4/20.*

Haemophilus influenzae type A

In recent years, *Haemophilus influenzae* type A (HiA) meningitis has been more common than other causes of bacterial meningitis in children admitted to ANMC. Many of these children have been transferred from YKHC. See this **State Epidemiology Bulletin** for information about Alaska cases in 2014-2018, including the outbreak in 2018.

The pattern of disease in HiA is similar to that seen in *Haemophilus influenzae* type B (HiB) meningitis. In HiB meningitis, dexamethasone has been shown to decrease the incidence of severe hearing loss. In Alaska, there have been multiple cases of sensorineural hearing loss associated with HiA meningitis. It is suspected that dexamethasone may confer similar benefits in HiA meningitis. As a result, our local experts (including infectious disease and endocrinology experts) recommend giving dexamethasone with all cases of suspected bacterial meningitis.

Dexamethasone

- Indications: A child >6 weeks old with clinical meningitis or visibly purulent spinal fluid.
- Timing: First dose should be given 10-20 minutes prior to or concurrent with the first dose of antibiotics; if given after antibiotics have been given, there is no evidence that dexamethasone will improve outcomes.
- Dose: Dexamethasone 0.15 mg/kg/dose IV.
- Course: If dexamethasone is initiated and HiA/HiB is confirmed, continue dexamethasone 0.15 mg/kg/dose IV Q6h for 2-4 days. If CSF culture/PCR show a different pathogen or are negative, stop the dexamethasone.

Hearing Screening

- All children with bacterial meningitis should be referred to audiology.
- Hearing evaluation should be scheduled one month after hospital discharge.

Yukon-Kuskokwim HEALTH CORPORATION

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).

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

Yukon-Kuskokwim HEALTH CORPORATION

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.

Yukon-Kuskokwim HEALTH CORPORATION

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

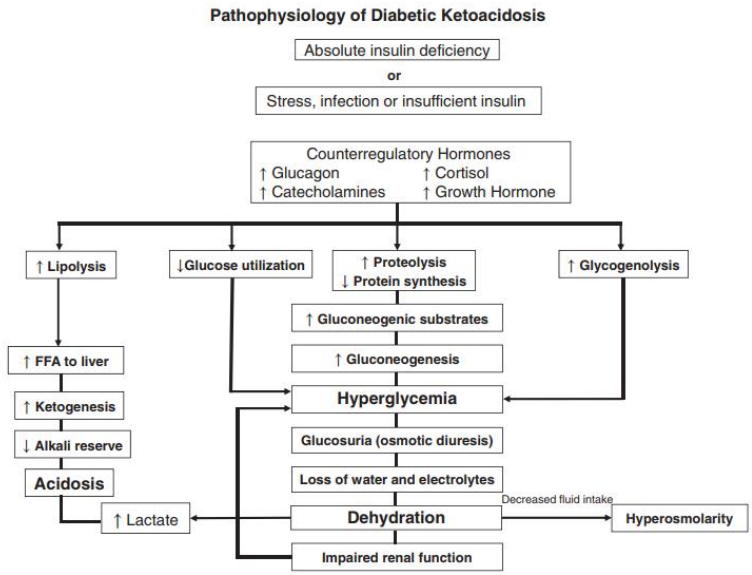


FIGURE 1 Pathophysiology of diabetic ketoacidosis. Copyright© 2006 American Diabetes Association. From diabetes care, Vol. 29, 2006:1150-1159. Reprinted with permission of *The American Diabetes Association*

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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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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Treatment Protocol

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 8–1. 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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How to Set Up ET CO_2 Monitoring on the SpaceLab™ Monitor for Ventilated Pediatric Patients

What You Need

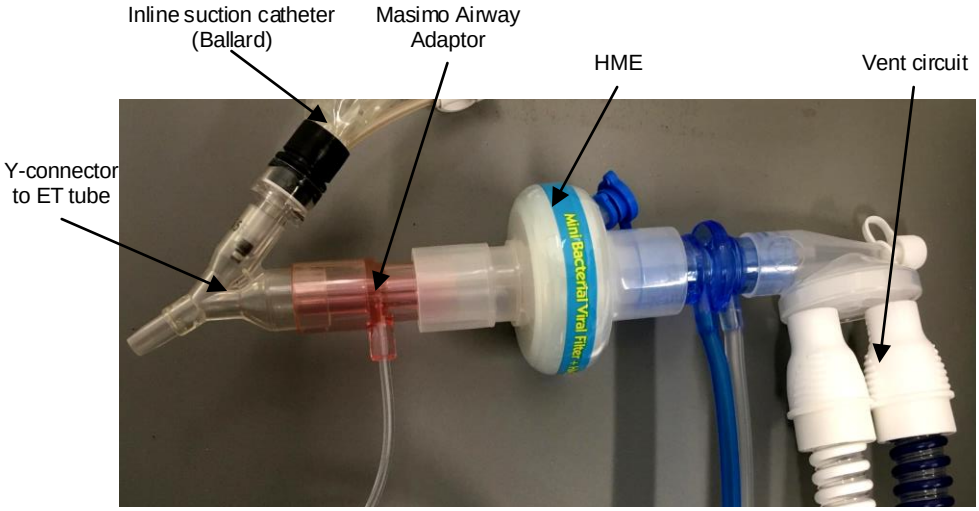
SpaceLab™ Monitor

Masimo Airway Adaptor (front and back of infant/neonatal package shown here)

Heated Moisture Exchanger (HME)

Vent Circuit

How to Set it Up



Plug into cartridge on back of monitor.

Troubleshooting: Things to Try if Unable to Get Reading

- Swap the cartridge on the back of the monitor with one from another room. (See photo to right.) Some monitors are not defaulted to monitor CO2 and must be set up: (1) After plugging cartridge in, screen will show "NO SAMPLING LINE – Check system." (2) Press "GAS." (3) Press "SETUP." (4) Press "RESUME CO2."
- Try new Masimo Airway Adaptor.
- Calibrate the monitor by pressing "cal" → "gas."
- Make sure there is no moisture in the adaptor.
- Check that all connections fit tightly.

Cartridge

This resource 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 Clinical Guidelines Committee 11/27/22.
If comments about this resource, please contact Leslie_Herrmann@ykhc.org.

Yukon-Kuskokwim HEALTH CORPORATION

How to Set Up ET CO_2 Monitoring on the Zoll™ Monitor for Ventilated Pediatric Patients

What You Need

Zoll™ Monitor with this cable

Zoll Airway Adaptor

- Neonatal/Pediatric adaptor (shown) is purple and is for ETT sizes 4.0 or smaller.
- Pediatric/Adult adaptor is clear and is for ETT sizes larger than 4.0.

Heated Moisture Exchanger (HME)

Vent Circuit

How to Set it Up

Plug cable into back of monitor.

Allow two minutes for monitor to warm up.

Inline suction catheter (Ballard)

Zoll Airway Adaptor

HME

Vent circuit

Y-connector to ET tube

Troubleshooting: Things to Try if Unable to Get Reading

- Make sure the Zoll has had two minutes to warm up.
- Try new Zoll Airway Adaptor.
- Make sure there is no moisture in the adaptor.
- Check that all connections fit tightly.

This resource 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 Clinical Guidelines Committee 11/27/22.
If comments about this resource, please contact Leslie_Herrmann@ykhc.org.

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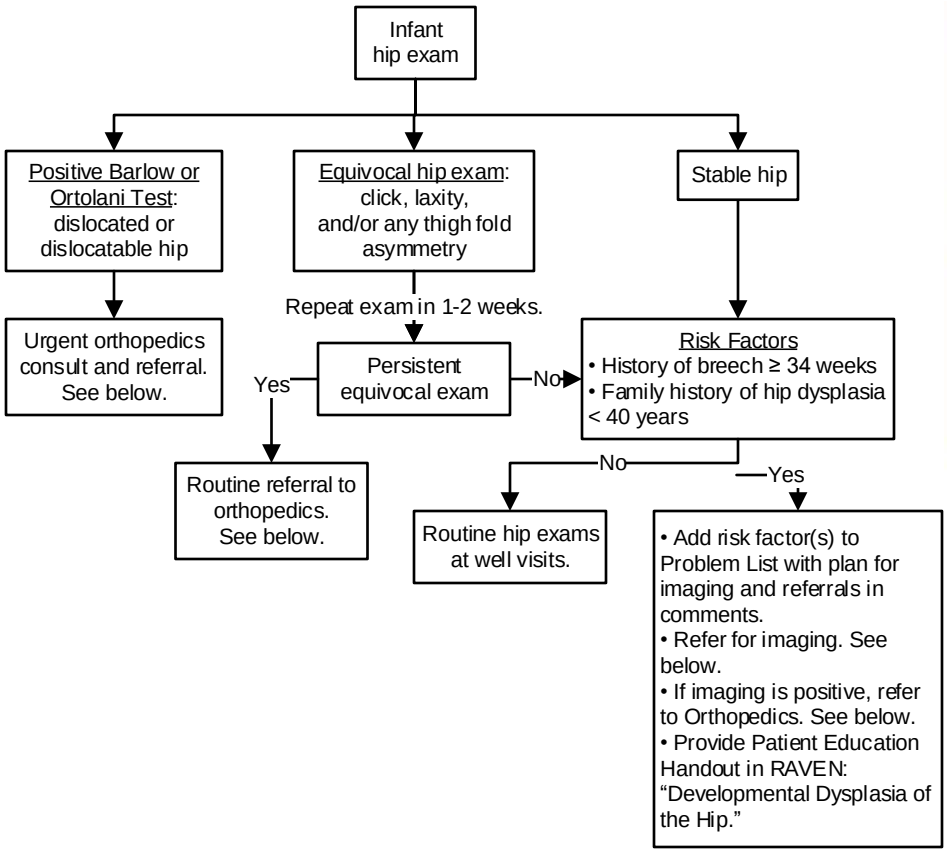
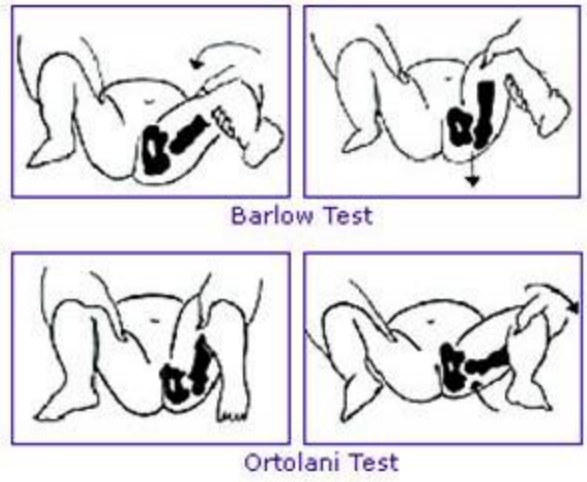
Treatment Protocol

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.

Orthopedics Consults & Referrals

1. Consultation:
   - Beneficiary patients: contact ANMC orthopedic surgeon on call at (907) 563-2662 (*97) or send message through Tiger Connect.
   - Non-beneficiary patients: contact Ken Thomas, MD 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.

Imaging

Patient must have either ultrasound or X-ray, as below.

1. Hip ultrasound: 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.
   - If patient is a beneficiary, request follow-up appointment at Southcentral Foundation Team B.
   - If patient is not a beneficiary, request follow-up appointment with a pediatric provider in Bethel.
   - Send a RAVEN Communication to Chronic Peds Case Manager Pool about the referral and level of importance.

2. X-ray, AP pelvis: over 4 months of age. (Note: in premature infants, ossification of femoral heads is delayed. May use corrected gestational age of 4 months or later.)
   - Performed at YKHC.
   - Place an order for "XR Pelvis (Pelvis AP only)" and put in comments "AP view with hips in neutral position to rule-out developmental dysplasia of the hip."
   - 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.

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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 an acceptable substitution.

2. Give 5 mL of 3% hypertonic saline solution via nebulizer over period of at least 10 minutes. 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.

Note: This process may induce a vagal response. The patient should be sitting up with feet supported or lying down, NOT standing. If vasovagal syncope does occur, immediately place the patient supine with the legs elevated.

5. Place specimen in appropriate collection container for desired test. Precise labeling is essential to prevent specimen rejection from state lab.

   a. For rule-out 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 in an AFB container (conical with orange top), with a minimum volume of 5 mL; add sterile water to dilute if necessary. Two samples should also be sent for Xpert MTB-RIF. These samples should be 3-5 mL of mucous in a sterile specimen cup. Do not dilute, or "saline wash" nares during suction for this specimen. AFB and Xpert may be obtained at the same time; if quantity not sufficient for both tests, prioritize the AFB.

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

   c. Label must contain full user name of collector and date and time of the collection. **This should be written below the barcode, NOT beside it.**

   d. Collect specimen in RAVEN. Confirm the correct accession number and deselect any additional (future) accession numbers. Ensure the collector ID, date, and time entered into RAVEN are an exact match to the written label.

***Contraindications to above procedure**: oxygen saturation of <92% despite supplemental oxygen therapy, inability to protect the airway, 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.

Note: This procedure can also be used for patients who are able to follow instructions but do not have a productive cough. In these cases, suction may or may not be necessary.

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Clinical Protocol

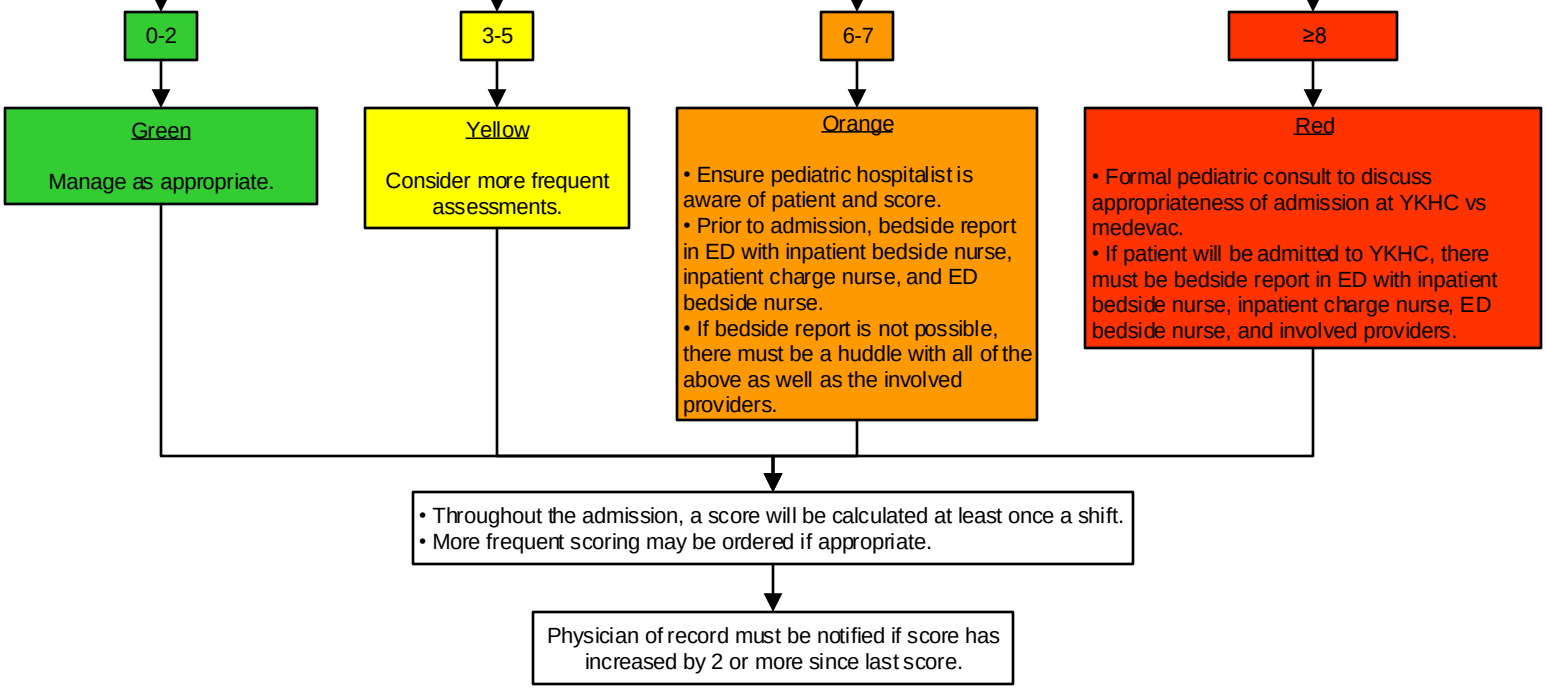
mPEWS Protocol for Pediatric Patients

mPEWS (modified Pediatric Early Warning System)

• YKHC uses the mPEWS to monitor admitted pediatric patients. Scoring is required prior to and throughout admissions to screen patients for acuity and help determine appropriate disposition.
• This is a scoring system that can help identify patients at risk for deterioration. YKHC uses it as a communication tool to highlight these patients.
• The score is calculated using the Ad Hoc form called "mPEWS," found in three places: (1) in ER encounters, under "mPEWS;" (2) in inpatient encounters, under "Assessments" → "mPEWS;" and in other encounters in "Asmt/Tx/Monitoring" folder.

Scoring details can be found at this link.

• The ED will calculate a score prior to admission to the inpatient unit using the most recent vital signs and several aspects of PMH. If PMH unclear, the provider of record will clarify.
• Upon admission, the Inpatient Unit will calculate a score using the first vital signs taken.



• Throughout the admission, a score will be calculated at least once a shift.
• More frequent scoring may be ordered if appropriate.

Physician of record must be notified if score has increased by 2 or more since last score.

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Clinical Resource

Documentation Requirements for Pediatric Nutritional Supplements

Documentation Requirements for Pediatric Nutritional Supplements

The following resource is from the Medicaid Certificate of Medical Necessity.

Medicaid, Medicare, and other insurers have specific requirements for medical provider documentation. If those requirements are not met, nutritional supplements will not be covered.

Use the autotext "..nutritionalsupplementdocumention."

Documentation Requirements for the Prescription of Nutritional Supplements:

The following objective documentation is required to show the medical necessity of the nutritional supplement being prescribed.

This information needs to appear in the body of the medical provider's chart notes:

- Diagnosis of the patient including ICD-10 code.
- Product being prescribed. (Example: Pediasure)
- Why product is medically necessary.
- Goal or target weight for the patient.
- Total daily caloric requirement.
- Total daily calories obtained from ingestion (oral) foods.
- Total daily calories to be obtained from nutritional supplement.

Documentation Example

Pediasure is medically necessary for this child.
Diagnosis: dysphagia (R13.10), G-tube dependence
Product: Pediasure
Medical Necessity: Patient has severe dysphagia. He is undergoing oral feeding therapy but is unable to take any degree of sufficient calories by mouth and is thus entirely dependent on a G-tube for nutrition. Pediasure will give him the nutrition he needs to survive.
Goal/Target Weight: currently at target weight of XX kg (XXth percentile for age when corrected for prematurity). Target weight along this trajectory in one year will be XX kg.
Total Daily Caloric Requirement: XX calories/day (usually estimate 100-120 cal/kg/day – adjust based on growth)
Total Calories Obtained from Oral Intake: 0 calories/day
Total Daily Calories to be Obtained from Nutritional Supplement: XX calories/day

For resources and information about nutritional supplements in former premature babies, please see the ANMC Guideline on Preterm Infant Nutrition through 2 Years Old.

Documentation Requirements for Pediatric Orthotics

The following resource is from Northern Orthopedics, Inc.

Medicaid, Medicare, and other insurers have specific requirements for medical provider documentation. If those requirements are not met, orthotic devices will not be covered.

Documentation Requirements for the Prescription of Orthotic Devices:

The following objective documentation is required to show the medical necessity of the orthotic services being prescribed.

This information needs to appear in the body of the medical provider's chart notes:

- Diagnosis of the patient.
- Item being prescribed and why it is needed.
- How long the patient is expected to use the item.
- If this is to be custom or non-custom item. (When custom, please specify why a non-custom item will not work.)

If you are prescribing repairs/adjustments or a replacement to an existing orthosis:

- Document that the patient still requires a functioning orthosis.
- Explain why the current orthosis is no longer able to function as intended.

Please fax chart notes documenting this required information to Northern Orthopedics, Inc. Fax: (907) 561-2157.

If you have any questions about this required documentation feel free to call Northern Orthopedics, Inc. at (907) 561-1777.

Yukon-Kuskokwim HEALTH CORPORATION

Clinical Resource

Suspected Septic Arthritis & Osteomyelitis

Please see the **ANMC Pediatric Acute Hematogenous Septic Arthritis/Osteomyelitis Guideline**.

- Please note: this guideline was designed at ANMC, where recommended labs, MRI, and operative management are immediately available and antibiotics can be started after these interventions.
- When evaluating a patient at YKHC with possible septic arthritis or osteomyelitis, strongly consider empiric antibiotics if there is going to be a delay of >6 hours to perform the recommended work-up (joint aspiration, surgical drainage, etc.), as noted in ANMC's guideline.
- Always discuss antibiotics with ANMC consultants and advocate for empiric usage if appropriate. Keep in mind possible delays, including weather, transport difficulties, and other emergencies. If deferring antibiotics, ensure that patient is closely monitored for development of worsening infection.
- Always feel free to consult YKHC pediatric hospitalist with any questions.