Orientation Package for Pediatric Neurology 2025

Welcome to your pediatric neurology rotation at ACH!

This package has been prepared to help orient you to our division and enhance your education in pediatric neurology.

It includes the following:

1. **Our Department**
2. **Notes/Dictation**
3. **Rounds schedule**
4. **Tips for Service & Call including Departmental Contact Information**
5. **Guideline: "How to complete a good pediatric neurology consult"**
6. **Developmental screening for the non-pediatrician**
7. **Literature Package**
8. **Acute Stroke Consult Service**

Please review the enclosed information at the beginning of your rotation.

ACH Pediatrics Residents should also review the objectives for their neurology rotation provided by their program.

Both the staff and residents place a high priority on education and encourage you to ask questions and be active members of our team.

Have fun!

Lead Resident:
Ruixiang Sun
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Revised: Mar 4 2025

1. Department Info

The pediatric neurology service at ACH runs as a combination of both outpatient and inpatient care. You will be exposed to both.

The neurology team is separated into the general neurology team, and the neurocritical care (NCC) team. Usually, only pediatric neurology residents will be assigned to NCC, unless we have a large team and NCC is busy, or you have specific objectives you would like to meet by seeing NCC patients. NCC is responsible to urgent NICU and PICU consults, and follow these patients while they are admitted to intensive care.

The team is led by a single staff neurologist who is on service for 1 week at a time.
The staff neurologists and their particular areas of interest are:

Dr. Michael Esser	Section Head, Neurocritical Care
Dr. Colleen Curtis	General Neurology, Program Director
Dr. Aleksandra Mineyko	Stroke
Dr. Adam Kirton	Stroke
Dr. Jean Mah	Neuromuscular, Neuroinflammatory
Dr. Alice Ho	Epilepsy/Sleep
Dr. Julia Jacobs-Levan	Epilepsy
Dr. JP Appendino	Epilepsy
Dr. Morris Scantlebury	Epilepsy
Dr. Kara Murias	Developmental
Dr. Harvey Sarnat	Neuropathology
Dr. Serena Orr	Headache
Dr. Mary Dunbar	Stroke
Dr. Megan Crone	Neuromuscular
Dr. Kristine Woodward	Neurocritical Care
Leah Foster	NCC Nurse Practitioner
Lindsay Craddock	Headache Nurse Practitioner

A pediatric neurology resident usually runs the day-to-day operations of the service. There may be 1 or 2 on service at a time. The residents are (as of July 2024):

Dr. Jordan Van Dyk	PGY-5
Dr. Rebecca Lindsay	PGY-4
Dr. Ray Sun	PGY-3
Dr. Zeanna Jadavji	PGY-2
Dr. Amira Kalifa	PGY-1

Additional house staff may include a resident from pediatrics, adult neurology, or other residents or medical students on elective.

You will be asked to see consults on the ward and in the emergency department.
See attached: “How to complete a pediatric neurology consult”.

Depending on your rotation objectives, we will also assign you to a number of outpatient clinics. Pediatric residents will complete one week of clinics during their rotation. This is a new change coming this year and we are open to your feedback!

The day will usually start with rounds or teaching (please see below schedule) then followed by rounding on inpatients, attending to consults, attending clinics. If there are no rounds scheduled then we will meet in the team room at 8:00am to receive handover (end of the hall on the first floor by the outpatient neurology clinics). Evening handover occurs at 5:00pm.

2. Notes/Dictation

Residents and students are expected to complete a letter to the referring physician after each clinic visit. If you would like to dictate through ConnectCare, follow the AHS directions on how to download Epic onto your phone with a built in dictation system. We have some neurology consult and progress note templates you are welcome to use, including specific notes for epilepsy patients.

3. Pediatric Neurology Rounds Schedule

This schedule outlines the weekly rounds available while on pediatric neurology. You are expected to attend the rounds that are bolded.

Pediatric Neuroradiology Rounds	Monthly	Tuesday 8:00 (Zoom/In-person)
Pediatric Neurology Case Rounds	Weekly	Tuesday 8:00 (Zoom/In-person)
Neurosciences Grand Rounds	Weekly	Friday 8:00 (Zoom)
Pediatric Grand Rounds	Weekly	Wednesday 8:30 (Zoom)
Subspecialty Rounds (stroke, epilepsy)	Weekly	Thursday 7:30 (variable)
Pediatric/Adult Neurology Half Day	Weekly	Tuesday 12:15 (Zoom/In-person)
Pediatric Resident Academic Half Day	Weekly	Thursday 13:00 (Zoom/In-person)

Neurology and pediatric residents attend their respective academic half-days on Tuesday and Thursday afternoons. Visiting elective students may be assigned to clinics or be asked to see consults with the staff neurologist at that time. All students are encouraged to attend teaching sessions if time permits.

4. Tips for service & call

Admissions/discharge:

- There is a standard 'neurology admission – pediatric' order set under 'orders' on ConnectCare. Alternatively, you can search some peds neuro staff/residents and steal their order sets.
- **Provide family with nurse's contact card if they are to follow up in the neurology clinic**
- **When giving a nurse's business card to a patient/family in the ER or on the ward, let the nurse know about the patient (in person or via email).**

EEGs

- Monday to Friday we have daytime coverage from 7:30-16:00, and call coverage from 16:00 – 21:00 but then can only be paged for new business until 20:00.
- Weekend coverage is 8:30 – 16:00 with no call.
- EEG pager is 6984
- Anyone in the hospital can order routine EEGs, only neurology can order continuous LTM. If you are ordering LTM make sure you talk to the EEG techs and the neurologist reading LTMs. They are listed both in the EEG tech room and on the master call schedule, but the techs usually know who is reading LTM so I just ask them.
- **EEG reports should usually be on ConnectCare under the tab 'Chart Review' and then 'procedures' subheading**. If they are not, they can be found under the 'neurophysiology' drive under 'EEG and EP reports' but you have to know the date that the study was done (or can search their name within that folder).

MRIs

- Routine MRI's ordered on ConnectCare, need to **provide good clinical history** so the radiologist can choose the best sequences and add-ons (MRS, MRA, etc).
- **GA days are usually Tuesday, Wednesday, Thursday.** If you need GA on weekends or Monday/Friday they need to be put on the red list, which means we need to call the radiologist and also speak to anesthesia on call (look on ROCA under DI/IR anesthesia). If on the weekend or after business hours (800-1700) regardless of if it is with GA, you need to speak with the radiologist +/- anesthetist if with GA.

LPs

- LP kits can be found in the neurology clinic area, Unit 1, Unit 3, ED, PICU. Not all of them have manometers.
- LPs are sometimes done under conscious sedation. If in ED, an emerg doc can help you arrange ketamine in the procedure room and they will administer while you perform the LP. If on the unit, the charge nurse knows where the conscious sedation checklists are which you need to fill out before performing (we usually use Ativan or midaz). If it will be a very difficult procedure, they can be booked in the induction room (floor 3 by the ORs) but this needs to be done ahead of time (this is where anesthesia comes to help and have them quite sedated).

On Call

Neurology residents (adult and pediatric) will take a maximum of 9 home-call (1 in 3) per month. First 5 are overnight (start-08:00), any additional shifts up to a maximum of 4 are shortened (start -23:00). Please track any call you need to convert from home call to in house, as per the PARA guidelines below:

- Switched call stipend is paid for a scheduled home call shift during which a resident physician has spent at least **four hours** of the call shift **in hospital and at least one** of these hours is **after midnight and before 6 a.m. OR more than six (6) hours in hospital during the call period.**
- Switched call stipend is paid at the rate of in-house call, but counted as home call when determining call frequency maximums; it is designated as an "s" on on-call time sheets.
- To be eligible for the post-call day the individual would need to work after midnight.

You will field calls from:

- Parents of known patients
- Emergency, community and rural physicians
- Inpatient RNs, physicians

Helpful Questions to ask when receiving a call:

- Patient name, weight, home anti-seizure medications, any triggers for the seizure (ex. missed meds, intercurrent illness, head trauma, etc), usual neurologist, was a rescue given?
- Physician or family name and contact information

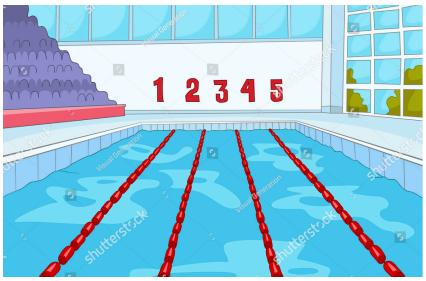
Weekend-call:

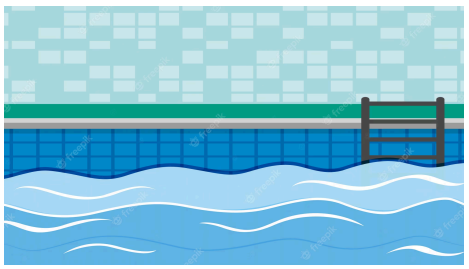
Staff have different preferences regarding how weekends will run. Generally, residents are expected to be at the hospital by 08:00, complete pending consults, and round on in-patients BEFORE the attending neurologist arrives at the hospital at ~10:00. Outstanding consults often take priority over in-patient rounding, but this is dependent on the status of the in-patients and acuity of the pending consult. **It is best to touch base with the attending neurologist on call for the weekend regarding their weekend preferences (this can be done by email or in-person).** If possible, it is beneficial to attend Friday afternoon handover (17:00) in the neurology team room, so you can meet the attending neurologist on call for the weekend, and set weekend expectations and preferences.

You should document all of your calls in writing on ConnectCare. If it was a phone call from a patient/doctor not currently in the ED or admitted to hospital, you can write a telephone note (from 'Telephone call' heading on the very top bar. If the patient is in the ED or admitted to hospital, please complete a consult or progress note.

- If it is a known patient, please update their primary neurologist and nurse by routing a copy of your note on ConnectCare.
- If you hear from ED about a referral (MUNC or other referral), please write a note with what you discussed including where you advised to refer the patient, and route this to "CGY ACH PEDIATRIC NEUROLOGY TRIAGE"

You will need to decide when the patient should be seen (i.e. in emergency, urgent clinic, regular follow-up). Often, you will be able to make AED changes or suggest Ativan over the phone. The on call neurologist is always available to help you make plans. They should be aware of any new consults, admissions, discharges.





POOLS, POOLS, POOLS!!! BOOKING URGENT EEGS AND CLINIC APPOINTMENTS

When you receive a call overnight about a patient who has to be seen urgently (within 24h to 72h) but not emergently, you can consider booking them into urgent clinic during weekdays. This clinic is run by the general neurology service. We have ONE EEG spot every weekday available at 10am with an associated urgent clinic appointment afterwards. Remember to check for urgent clinic spots during handover before you start your call.

To book an urgent clinic appointment, please open up a telephone encounter ("telephone call" button at the top of your screen) → write a note → route the note to the following pools/people:

1) Triage Pool: CGY ACH PED NEUROLOGY CL REFERRAL TRIAGE
2) Nursing Pool: CGY ACH PED NEUROLOGY CL CLINICAL SUPPORT
3) Booking Pool: CGY ACH PED NEUROLOGY CL SCHEDULING
4) Staff on service during the day
5) Senior on during the day
6) Staff on service with you overnight

To book an associated urgent EEG, route the note also to:

7) Neurophysiology Pool: CGY ACH PED NEUROPHYS PRG REFERRAL TRIAGE
8) If the EEG is booked overnight for the following morning, please also PAGE the EEG pager (6984).

*** HOT TIP: The first time you do this, before clicking on the "pools", favorite them. This will make it easier in the future!

Booking into MUNC (Marvel-ous Urgent Neurology Clinic)

New urgent clinic run by: Dr. Aleks (Fury) Mineyko, Dr. Alice (The Hulk) Ho, Dr. Colleen (Nebula) Curtis, and Dr. Mary (Thor) Dunbar. Runs on Tuesday mornings. ED physicians can refer directly here without calling neurology on call. If ED staff do call, advise them to please put as much detail as possible to help with triaging. Pro tip: appointment is **not** linked with an EEG spot.

Goal of the clinic is to provide easy, appropriate access to urgent outpatient neurology follow up of patients seen in the Emergency Department by a physician, who would benefit from being seen by neurology within the next week AND do not require immediate neurology consultation or admission to hospital.

1. Patient > 1 month old presenting to ER with a second non-febrile or unprovoked seizure within a 6-month period and is not already followed by neurology.

2. Patient > 1 year of age with frequent (multiple per week) paroxysmal events suspicious for seizure who is otherwise medically stable and does not require admission to hospital. (eg. staring events, repetitive motor movements)
3. Infant

Not accepted:

- Patients with acute, persistent, or transient focal neurologic symptoms suspicious for stroke require a call to the neurology team on call.
- Consults for a second opinion.
- Patients who are already followed by neurology.
- Patients who require admission to hospital.

Process:

- In ConnectCare, ED sends a referral to neurology with 'MUNC' in the notes section and status marked 'Urgent', put as much detail as possible to help with triaging.
- Indicate which criterion from the list above is met

Paging

- Go to insite webpage. Click on 'ROCA' at top of page to search who is on call.
- Go to insite webpage. Click on 'paging' then 'Calgary area paging system'. Can search by pager number or name.
- Remember to leave phone number to call back on (5**** numbers can be called from outside of hospital (403-955-****) but 7**** numbers can only be called from inside the hospital. If I get a page asking to be called back on a 7 number, I page the person back with my phone number or… google the hospital phone number, talk to switchboard, and ask them to transfer you to that extension.

5. How To Complete A Good Pediatric Neurology Consult

Completing a quality consult in child neurology rests on the same principles as any other area of medicine. However, there are a few elements of pediatric neurology that are different and learning and practicing these will improve your abilities at assessing and managing children with neurological problems.

History

- *ID* – include age and hand preference
- *HPI* – try to get a detailed history of all the chief complaint
    - Headaches – frequency, location, duration, nature (?throbbing), associated symptoms (?aura, photo/phonophobia)
    - Seizures – frequency, onset (try to be as precise as possible), duration, post ictal weakness/speech problems, loss of sphincter control, ?multiple types
- *ROS* – include both general and neurologic symptoms
- *PMHx* – child's as well as maternal pre and perinatal history
- *Medications/Allergies/Immunizations*
- *Developmental history* – If you don't know your milestones, grab a developmental screen from the clinic and work through it with the family

- *Family history* – there are a lot of genetic conditions in neurology. Make sure you ask about consanguinity and ask *specifically* about people with neurological symptoms, not just "any neurological problems." Ask about >5 miscarriages, learning disabilities, trouble with balance or walking, visual or hearing problems, etc.
- *Social History* –Make sure to ask about family, school, and other social situations. It is also helpful to know about health care coverage in case medication will be recommended.

Physical Exam

Observation – much of your impression will need to come from observing the child while you take the history. With young children, these may form the bulk of your exam.

Format – a structured approach to the neurological exam can be helpful and make you less likely to forget something. While difficult in small children, you should try and include the following elements of the neurological examination:

- *Vital signs* – include trends (ie. 'tachycardic, trending down from 150-130s'; 'on 0.5L NP currently, previously 2L maximum on [date]')
- *General statement* – include dysmorphic features, neurocutaneous signs
- *Growth* – height, weight and head circumference with percentiles.
- *Cognitive* – comment on LOC, behavior, affect. If there are concerns about cognitive delay, describe deficits here e.g. can do simple arithmetic only, unable to read grade 2 passage, etc.
- *Language* – simple assessment is naming (identify 3 objects), comprehension (2-step task), repetition ("no ifs ands or buts"), and fluency
- *Cranial nerves* – describe your findings rather than generalizing "II to XII intact". Try to describe the findings in order of the cranial nerves (ie. start with CNII, end with CNXII).
- *Motor* – bulk, tone, power
- *Deep Tendon reflexes, plantar response, clonus* (+/- primitive reflexes)
- *Sensory* – test light touch, pin prick, temp, vibration, proprioception, Romberg, and cortical sensation as needed
- *Coordination* – finger-to-nose, rapid alternating movements, fine finger movements, heel-to-shin
- *Gait* – Posture, stance, arm swing, turning, etc. including toes, heels, and tandem walk
- *Systemic* – put this last – HEENT (fontanelles, dysmorphisms), cardiac, resp, GI, GU, derm, MSK

Follow this order when you are presenting the exam to the team. You should complete a full neurological and general physical examination for each new patient.

Impression

Try to summarize the main issues in 2-3 sentences. In neurology, the next step is often an attempt to "localize" the lesion. Don't feel you need to know all the detailed neuroanatomy but think about where the problem might be in big categories. Below is an approach to localization:

1) Symptoms pattern (UMN vs LMN vs mixed)

a) UMN (central)
- Weakness
- Spasticity
- Hyperreflexia
- Extensor plantar response/Positive Babinski

b) LMN (peripheral)
- Weakness
- Atrophy
- Reflex loss
- Fasciculations

2) Localization (Central vs Peripheral)

a) Central:
- Subarachnoid space/meninges: headache, aLOC, CN deficits
- Cerebral cortex: UMN hemiplegia (weak on one side with brisk reflexes) +/- hemisensory loss, aphasia, neglect, hemianopia, dementia, seizure
- Basal ganglia: chorea, athetosis, dystonia, tremor, rigidity
- Thalamus: LOC or memory disturbance, hemisensory loss +/- pain, hemiataxia neglect or aphasia
- Cerebellum: ataxia, tremor, nystagmus
- Brainstem: CN deficits, impaired LOC, crossed or bilateral motor or sensory deficits
- Spinal cord: LMN weakness at level of lesion, UMN below level of lesion, sensory level present, dissociated sensory loss, neurogenic bladder

a) Peripheral:
- Dorsal root ganglion: sensory loss and reflex loss
- Anterior horn cell: LMN weakness and reflex loss
- Spinal nerve roots: Radicular pain; motor, sensory, reflex loss in specific root distribution
- Plexus: mixed nerve and root distribution
- Peripheral nerves: pain; motor, sensory, and reflex loss in specific nerve distribution OR distal symmetric sensory loss +/- weakness
- Neuromuscular junction: fatigable weakness (motor only), reflexes intact
- Muscle: proximal muscle weakness (motor only), DTRs may be lost

3) Time frame

a) Acute (mins to hrs)
- Ischemia
- Seizure
- Trauma

b) Subacute (days to weeks; pattern of symptom progression smooth, stair-step, or crescendo)
- Expanding lesion (tumours, abscesses, etc)

c) Recurrent-remittent (episodic attacks with rapid recovery to baseline)
- TIA
- Seizures
- Migraine
- MS

d) Chronic-progressive (months to years)
- Friedreich's ataxia
- Huntington's chorea

4) Etiology

a) VITAMIN CD

b) Neuro specific stuff: Demyelination, epilepsy, migraine

Hot tips:

- If cranial nerve involvement, follow the course of the nerve and think about associated symptoms you would expect at each spot
    - Ex/ CN6: subarachnoid space, cavernous sinus, superior orbital fissure, orbit, nucleus in pons

Differential Diagnosis
Depending on the problem, a classification scheme may be helpful:

VITAMIN D GETS
Vascular, Infectious, Toxic, Autoimmune, Metabolic, Inflammatory, Neoplastic, Drugs, Genetic, Endocrine, Trauma, Structural

Plan
Based on your impression and differential, list the investigations and management you would suggest. This is often best done as a problem list with a plan for each issue.

Following a structured approach will improve your skills in neurological history taking and examination. The above are just a few suggestions – you will pick up things from the neurologists as you go along.

6. Developmental Screening for the Non-Pediatrician

Developmental screening is an important part of every pediatric neurology consultation. It can be intimidating, but if you memorize a few key milestones, you should be able to decide whether a patient is on track or delayed.

- Children who are in school with a normal academic performance and normal sports activities need only a brief assessment to rule out any red flags.
- Younger children need a more detailed evaluation. Ask about regression/loss of skills and plateau/no new skills.
- Ask about the four areas of functioning: gross motor, fine motor, speech/language, social/adaptive. Cognitive is another area (ie. numbers, letters, colours).

<u>Below are the bare bones of milestones to memorize:</u>

Age	**Gross Motor**	**Fine Motor**	**Speech/Language**	**Social**
1 month				Social smile – red flag if not present at 2 mo
3 months			*Coos*	
4 months	Rolls front to back No head lag	Reach and grasp objects to mouth		Moro extinguished
6 months	Tripod sit	Ulnar grasp	*babbles*	
8 months	*Sits alone*	Transfer across midline		
9 months	Pull to stand		"mama" "dada" appropriate	Separation anxiety
12 months	Cruises	*Pincer grasp*	*12-19 months minimum acceptable # words is age – 10* *Most children have 100 words by age 2*	Peek-a-boo
15 months	*Walks independently*			*Points to needs*
18 months	Stairs with help	Uses spoon		Points to body parts
24 months			*2-3 word phrases* 50% understandable	Parallel play
3 years	Tricycle	Draws circle	Prepositions 75% understandable	
4 years	Hop on 1 foot	Draws square	*Speech intelligible*	Toilet trained
5 years	Skips	Draws triangle	Alphabet	

More detailed chart below:

The Division of Developmental Pediatrics,
Department of Pediatrics, Faculty of Medicine and Dentistry, University of Alberta

SNAPSHOTS* DEVELOPMENTAL MILESTONES

Mnemonic	Gotta Find Strong Coffee Soon‡				
	G = Gotta	F = Find	S = Strong	C = Coffee	S = Soon
Age	**Gross Motor**	**Fine Motor**	**Speech / Language**	**Cognitive / Problem Solving**	**Social / Emotional**
Newborn	Primitive reflexes – step, place, Moro, Babinski, ATNR Flexor posture	Primitive reflexes – grasp	Primitive reflexes – root, suck Alerts to sound Startles to loud sounds Variable cries	Visual focal length ~10" Fix & follow slow horizontal arc Prefers contrast, colours, face Prefers high pitched voice	Bonding (parent → child) Self-regulation/soothing
2 mos	Head steady when held Head up 45° prone	Hands open half of time Bats at objects	Turns to voice Cooing	Prefers usual caregiver Attends to moderate novelty Follows past midline	Attachment (child → parent) Social smile
4 mos	Sits with support Head up 90° prone, arms out Rolls front → back	Palmar grasp Reaches and obtains items Brings objects to midline	Laugh, razz, "ga", squeal	Anticipates routines Purposeful sensory exploration of objects (eyes, hands, mouth)	Turn-taking conversations Explores parent's face
6 mos	Postural reflexes Sits tripod Rolls both ways	Raking grasp Transfers hand to hand	Babble (nonspecific)	Stranger anxiety Looks for dropped or partially hidden object	Expresses emotions: happy, sad, mad Memory lasts ~24 hrs
9 mos	Gets from all 4s → sitting Sits well with hands free Pulls to stand Creeps on hands and knees	Inferior pincer grasp Pokes at objects	"Mama", "dada" (specific) Gestures "bye bye", "up" Gesture games ("pattycake")	Object permanence Uncovers toy "Peek-a-boo"	Separation anxiety
12 mos	Walks a few steps Wide-based gait	Fine pincer (fingertips) Voluntary release Throws objects Finger-feeds self cheerios	1 word with meaning (besides mama, dada) Inhibits with "no!" Responds to own name 1-step command with gesture	Cause & effect Trial & error Imitates gestures and sounds Uses objects functionally, eg rolls toy car	Explore from secure base Points at wanted items Narrative memory begins
15 mos	Walks well	Uses spoon, open top cup Tower of 2 blocks	Points to 1 body part 1-step command no gesture 5 words Jargoning	Looks for moved hidden object if saw it being moved Experiments with toys to make them work	Shared attention: points at interesting items to show to parent Brings toys to parent
18 mos	Stoops and recovers Runs	Carries toys while walking Removes clothing Tower of 4 blocks Scribbles, fisted pencil grasp	Points to object, 3 body parts 10-25 words Embedded jargoning Labels familiar objects	Imitates housework Symbolic play with doll or bear, eg "Give teddy a drink"	Increased independence Parallel play
2 yr	Jumps on two feet Up & down stairs "marking time"	Handedness established Uses fork Tower of 6 blocks Imitates vertical stroke	Follows 2-step command 50+ words, 50% intelligible 2 word phrases "I", "me", "you", plurals	New problem-solving strategies without rehearsal Searches for hidden object after multiple displacements	Testing limits, tantrums Negativism ("no!") Possessive ("mine!")
3 yr	Pedals trike Up stairs alternating feet	Undresses Toilet trained (2 ½ - 3 ½ yrs) Draws circle, cross + Turns pages of books	3-step commands 200 words, 75% intelligible 3-4 word phrases W questions ("why?") States full name, age, gender	Simple time concepts Identifies shapes Compares 2 items (eg "bigger") Counts to 3	Separates easily Sharing, empathy Cooperative play Role play ("pretending")
4 yr	Hops on one foot Down stairs alternating feet	Draws x, , diagonals Cuts shape with scissors Buttons	Sentences,100% intelligible Tells a story Past tense	Counts to 4 Opposites Identifies 4 colours	Has preferred friend Elaborate fantasy play
5 yr	Balance on one foot 10 secs Skips May learn to ride bicycle (if available)	Draw person (10 body parts) Tripod pencil grasp Prints name, copies letters Independent ADLs, incl tying	5000 words Future tense Word play, jokes, puns Phonemic awareness	Counts to 10 accurately Recite ABC's by rote Recognises some letters Pre-literacy and numeracy skills	Has group of friends Follows group rules Games with rules

*Milestone ages approximate the 50th percentile.
‡ Sector heading mnemonic created by P. MacPherson, Class of 2012, University of Alberta Faculty of Medicine and Dentistry.

Pearls:

- Hand dominance before 12 months is a red flag.
- Try to estimate the developmental age if you suspect delay.
- Refer to the Denver Developmental Screening for more detailed assessment.

7. Literature Package for Pediatric Neurology Rotation

Please see our website for other educational materials:
https://sites.google.com/view/pediatricneurologyuofc/academic-resources/reading-material

These are available to help you cover some of the more common topics encountered in child neurology. The target audience is the pediatric resident but others rotating through the service should also find these useful.

These readings are not mandatory but will significantly supplement your learning and allow you to learn about common conditions you may not encounter during your rotation.

Please see the PICU Guidelines for TBI, Status Epilepticus, and Status Dystonicus guidelines on AHS InSite.

Other references you may find helpful are available in the library (neurology section):

1. Pediatric Neurology – Swaiman (2006)
2. Child Neurology – Menkes and Sarnat (2005)
3. Disorders of the Nervous System in Childhood – Aicardi (2000)
4. Neurology of the Newborn – Volpe (2001)
5. Pediatric Neuroimaging – Barkovitch (2001)
6. Aid to Examination of Peripheral Nervous System (ask a resident)
7. www.geneclinics.org
8. http://www.ucalgary.ca/library
9. ACH -- https://www.albertahealthservices.ca/findhealth/facility.aspx?id=1010904

8. Acute Stroke Service – Information updated July 2021.

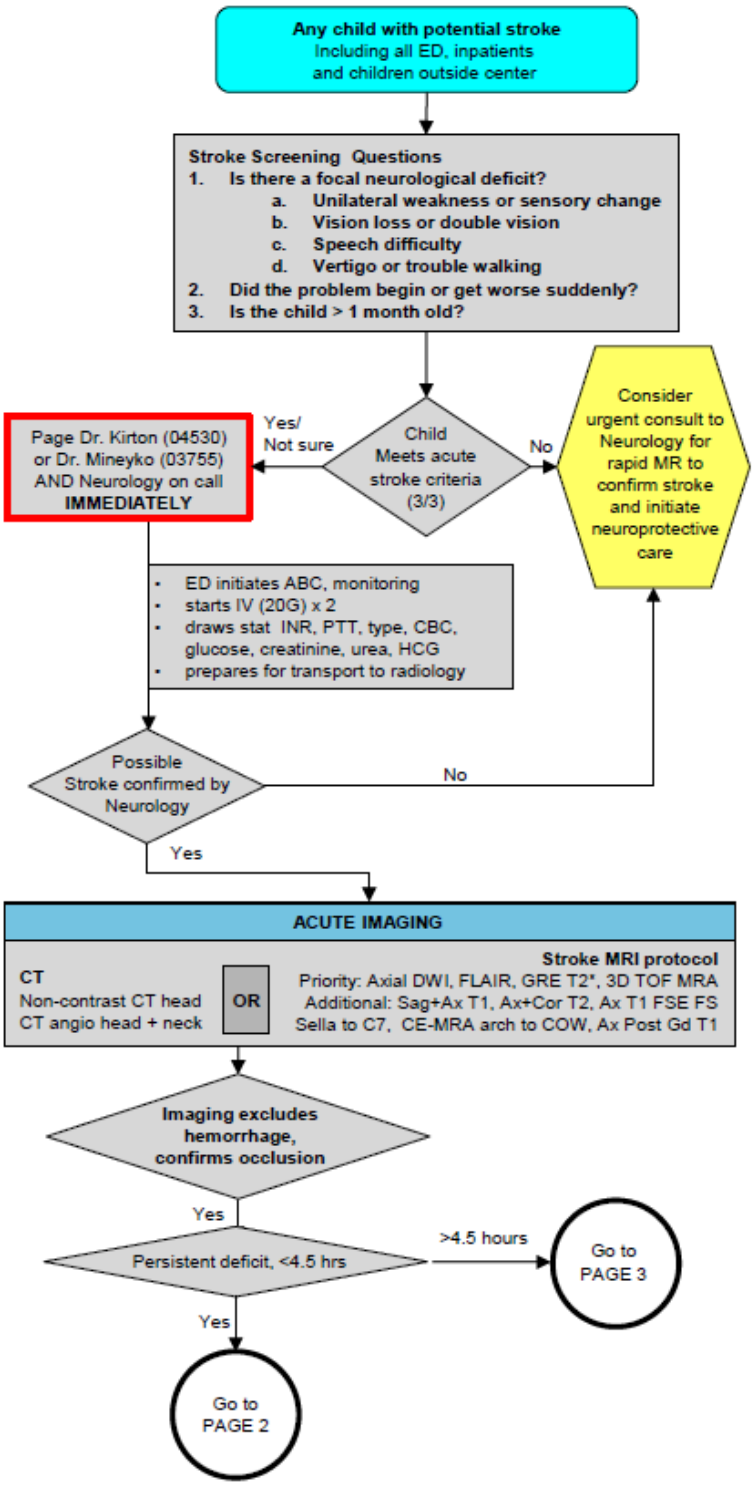
The Acute Stroke Consult Service remains available 24/7/365. This service has reduced the time to first imaging, diagnosis, and treatment. Its primary aim is to provide immediate assessment and management assistance in **emergency** situations.

This is essentially any child with the **sudden onset of persistent, moderate-severe focal neurological deficits.** Management to facilitate access to emergency interventional options can then be immediately enacted. The Acute Stroke Protocol is attached and can also be found on the PICU and ER websites.

With any such scenario, please contact **Dr. Mineyko** immediately (pager 03755; on weekends can contact via cell #403-618-1551) or Dr. Kirton (pager 4530). There is no formal call schedule on ROCA. **Calls to stroke staff should be by the attending staff neurologist.**

ACH Acute Stroke Guideline: SCREENING

Last Updated: Mar 2017
Dr. Adam Kirton
Dr. Aleksandra Mineyko
Dr. Mary Dunbar



Neuroprotective care

- **NPO**
- **Head of bed flat**
- **Normotension**:
- target SBP 50th – 95 +15th %ile for age
- treat lows with NS +/- pressors,
- treat HTN with labetolol or ACEI
- **Normovolemia**: NS maint, bolus PRN
- **Normal O_2, CO_2 and pH**
- **Normothermia**: treat >37° with acetaminophen +/- external cooling
- **Normoglycemia**: no glucose to IV, target: 4-10
- **Seizure control**: AED ASAP with any suspected seizure activity (fos-PHT)

tPA contraindications

- **Allergy to tPA**
- **>4.5 hrs from last seen well**
- **Rapidly improving or PedNIHSS <6**
- **Stroke 2° to SBE, SCD, meningitis, marrow/fat embolism, or moyamoya**
- **ASPECTS ≤7**
- **Known ICH, AVM, aneurysm**
- **Persistent HTN (>95+15%ile)**
- **Platelets <100 X10^9/L**
- **Glucose <2.8 or >22 mM**
- **PTT >40 sec or INR >1.4**
- **LMWH within 24 hrs**
- **Pregnancy**
- **Imaging evidence of blood**
- **Intracranial dissection**
- **PedNIHSS >25 ®**
- **Arterial puncture at non-compress site or lumbar puncture <7d**
- **Stroke or major head trauma <3mo**
- **Neurosurgery <90 days ®**
- **Major surgery or biopsy <10d ®**
- **Malignancy or recent cancer Tx ®**
- **GI or GU bleeding <21days ®**

® = relative contraindication

Revised: Mar 4 2025

IV ALTEPLASE TREATMENT PROTOCOL

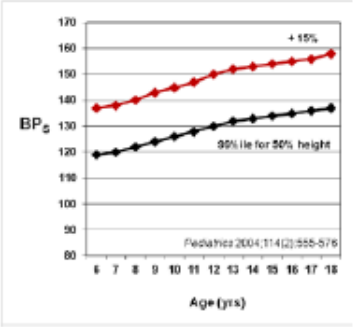
ALTEPLASE (tPA) CANDIDATE
<4.5 hrs from onset
Persistent, disabling deficit
Age ≥ 2 yrs
CT or MRI confirms eligibility
No contraindications

Patient in ER or PICU with cardioresp monitoring

Treatable BP by age?

No

Labetolol 0.2 mg/kg IV, push over 2-3 min
Repeat q15 min prn
Then go to PICU HTN guideline



Prepare and administer Alteplase
ED main med or trauma room
Activase 50mg vial: Add 50cc SW = 1 mg/ml
TOTAL DOSE = 0.9 mg/kg (max 60mg)
Bolus 10% of total IV push over 5 min
Infuse remaining via IV pump over 1hr

Angioedema:
1. IV diphenydramine 5 mg/kg/d div qid (max 300)
2. IV ranitidine 2-4 mg/kg/d divided q6-8h (max 200 mg/d)
3. IV hydrocortisone 1-5 mg/kg/d div q12-24h

Reassess: Improved?

No

Go to PAGE 3

Yes

Post-Treatment Care
Remains in PICU for minimum 48 hours.
No arterial punctures, invasive procedures or ACT (ASA, NSAID, UFH, LMWH) for 24 hours
Neuro vital signs q15min x 2hrs, then q30min x 6hrs, then q1hr x 16 hrs
Standard follow-up CT head in 24 hours

Neuroprotective care

Any neurological deterioration?

Order urgent CT head
Draw stat CBC, INR, PTT
Prepare 6-8 units cryoprecipitate (1U/5kg) (fibrinogen and factor VIII)
Prepare 6-8 units of platelets (1U/5kg)
Consult neurosurgery if signs elevated ICP or CT reveals bleed or mass effect

ALTEPLASE (tPA) contraindications:

- **Allergy to tPA**
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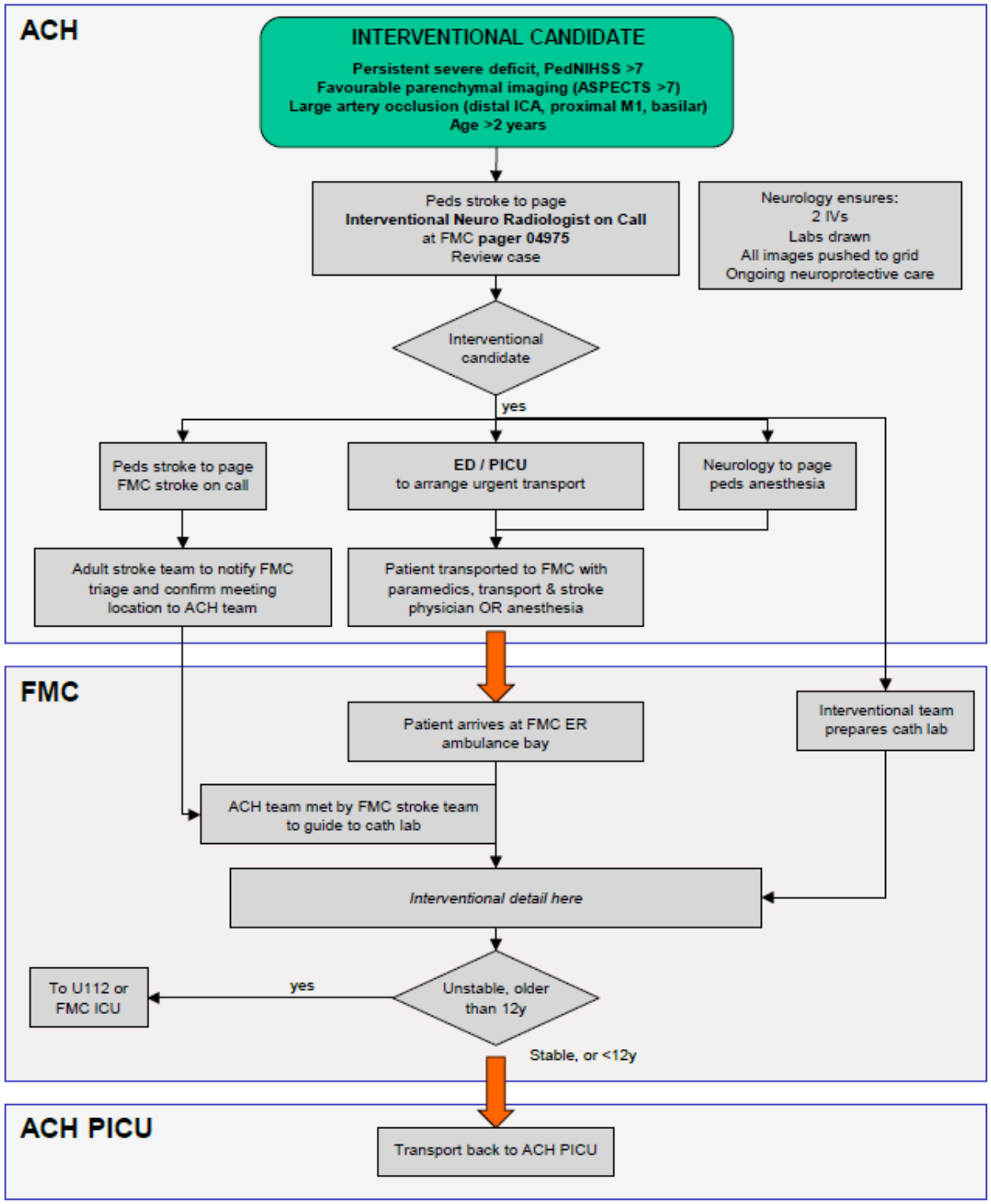
INTERVENTIONAL TREATMENT PROTOCOL



Revised: Mar 4 2025