PGY-3 Adult Rotator Orientation for Pediatric Neurology

Welcome to your Pediatric Neurology Rotation! We hope that you have an educational and enjoyable time with us. Here is a guide to help you out while you are at St. Louis Children’s Hospital.

A week prior to the start of your rotation, please email Regina Triplett at rtriplett@wustl.edu and Kim Wiltrout at kwiltrout@wustl.edu to set up a time to meet to go over the specifics of the rotation.

LOCATIONS:

Pediatric Neurology Office – 1260 North West Tower (NWT), 12th floor
This is where we often do computer work (there is a computer for you to use) and have daily noon conferences and journal club.

How to Find It: The Northwest Tower is the building on top of the SLCH parking garage; you run directly into it when you’re walking down the link hallway to get to SLCH. Take the elevator to the 12th floor, then walk down the only hallway available until almost the end, when you see the Peds Neuro sign/door on the left. You may have to ring the doorbell to get in the first time if you have not gotten badge access yet. For badge access, contact Lori Nichols before your rotation at ncholsl@neuro.wustl.edu

High Yield Locations Within the Children’s Hospital
- The ED is on the 1st floor. Radiology is also on the 1st floor down the hall from the ED entrance.
- The NICU is the 5th floor of the Children’s Hospital.
- The CICU is on the 7th floor and the PICU is on the 7th floor (most neurology patients) and 8th floor.
- The neuro floor is the 12th floor, and is where the EMU is.
- Call room is on the 12th floor, between the old and new towers, and you should have badge access. Please ask the PGY4/PGY5 peds resident to show you the call room location on your first day!

Phone numbers to know:
Neuro office 314-454-6120, press 7 to get someone to pick up quickly
EMU attending usually sits at 314-454-3796
EEG lab (techs) 314-454-6237
12th floor resident workroom 314-454-3793 or 314-454-3791
SLCH operator 314-454-6000
Children’s Direct (Our DAL): 314-747-7001
**General Overview**

1. **Consult Team:** During the weekday, you will be a member of the pediatric neurology consult team.

2. **Call and Weekends:** You will take 1 weeknight call per week on Wednesdays from 5 pm until 7 am. On weekends, you will primarily work Sundays (sometimes Saturdays if there are 2 adult neurology residents on the service at the same time) from 7 am until the early afternoon and you will cover the Consult and NICU Consult services plus ED and Outside calls.

3. You will be assigned one journal club presentation while on the rotation. Journal club is every Tuesday from 12-1 pm in 1260 NWT. Sometimes instead of Journal Club, there is a Resident Town Hall that you do not need to attend.
**Consult Service:**

**Typical Schedule**

0700: Receive email sign-out from on-call resident (if you are the on-call resident, please send an update email sometime between 6 and 7 am to notify the floor, NICU and consult residents of any new patients admitted overnight and any major updates)

0745 (0715 on Fridays for Grand Rounds): Meet in PICU (7th floor) for Huddle to discuss active PICU patients with ICU team

0800-0900: Pre-round on new/old consult patients

0900: Round with attending. (If there is a patient hooked up to EEG, rounds will start in the EMU (typically on Mondays and weekends) or the 7th floor ICU EEG station.)

1700: Sign-out to night call resident

** Your continuity clinic will be on Tuesday afternoons.**

**Team Structure:** There is an adult PGY-3 rotator and a pediatric PGY-3 or 2 adult PGY-3 rotators on the team at all times. You may also have a general pediatrics resident/intern and a medical student.

The consult team responsibilities include consulting on all patients from PICU, pediatrics floors, ER, and CICU (if older than 6 months), in addition to taking Children’s Direct calls from outside facilities from 7am – 5pm.
**Call Responsibilities**

**Please make sure you are able to forward the pagers (Consults, NICU, floor) prior to your first night on-call. You can set up your phone to automatically do the page forwarding. The Peds Neuro Chiefs or your Consult team PGY4/5 can show you how to do this.**

**Page Forwarding for Child Neurology (iPhones)**

Page Forwarding (adding “Coverage Exception”):
1. Dial 314-454-7777 from a landline telephone.
2. Press * when the prompt plays, “Please dial the ID number.”
3. Enter 10-digit service pager messaging ID (see below) and press #.
5. The prompt announces if you currently have a coverage exception.
7. Enter your personal 10-digit messaging ID and press #.
8. The prompt confirms the messaging ID you entered.
9. Hang up. You will immediately get a Spok text telling you that you’re covering the pager.

**Role Phone Messaging ID #’s**
- Consult Pager: 314-407-6848
- NICU Pager: 314-490-0085
- Floor Pager: 106111

Adult rotators will take overnight call once each week, typically Wednesday. If you would like to switch with one of the PGY4 fellows, this needs to be discussed not only with the fellows but also with the attendings taking call that week.

**Call Responsibilities**
- Take calls from patient families for all physicians in the department
- Take calls from SLCH ER and other services.
- Manage all emergent consults.
- Take calls from outside ERs and hospitals.
- Accept transfers from outside facilities.
- Arrange direct admissions for patients when indicated.
- Arrange referrals to urgent clinic consult appointments.
1. If called in to see a patient for a new consult overnight, please write a consult note in Epic. **please call to discuss the plan with the on-call attending**
   a. If the patient is in the ER and being admitted to the 12th floor neurology service, you can assign the note to the on-call floor attending
   b. If the patient is in the NICU or CICU (and less than 6 months), you can assign the note (and should call to discuss the plan with) the NICU attending
   c. If the patient is remaining on the Consult service, you can assign the note to the Consult attending
   d. If the patient is seen in the ER and is DISCHARGED to home, you may assign the note to the person who you discussed the case with over the phone.

2. If called to discuss a patient but you do not have to physically come in to see the child, please document a call note in Epic. The only calls that NEED to be seen are stroke pages, kids in status epilepticus, or any other emergent/urgent issue you are called about and feel that seeing them will affect your management or you get the feel that a neurologist should lay eyes on them sooner rather than later. Non-urgent consults can wait until morning. However, if you are coming in to see a patient, you should call the attending to discuss the patient afterwards. NO ONE will fault you for calling them. You may ALWAYS call the on-call attending to discuss the patient.

**On-Call Attendings**
ALL OF THE ATTENDINGS ANTICIPATE HEARING FROM YOU WHEN YOU ARE ON CALL. If you are unsure about a decision, they would much rather help you sort it out now than potentially sort out an error in the morning.

Who to call: When the pediatric neurology PGY4/5s sign out to you at 1700, they should tell you who is on for each service.

1) Consult attending: Covers 12th floor non-EMU patients and Consult patients overnight Mon-Thurs. **This is your go-to person for any question regarding outside hospital calls/transfers, parent calls, non-EMU and non-NICU patients.**
2) EMU attending: Covers EMU and ketogenic diet initiation patients on 12th floor. They can give you a sign-out on EMU patients before your call starts on Wednesday as these patients are covered by NPs and not the pediatric neurology residents during the day. **If it is after 12pm on Friday, then the EMU attending becomes the weekend EEG attending and also takes over responsibilities of ICU EEG Attending.**
3) NICU attending: Covers NICU patient calls overnight Monday-Thursday. **All NICU cooling patients and emergency overnight consults need to be staffed over the phone with the NICU attending.**
4) ICU-EEG Attending: Call to discuss new continuous EEG hookups or for STAT EEGs overnight. Call if you have questions about the continuous EEGs running in the ICUs. Management decisions for seizures will be made with the consult attending. **If it is after 12pm on Friday, then the EMU attending becomes the weekend EEG attending and also takes over responsibilities of ICU EEG Attending.**
On Call Protocols

**All calls should be documented in a ‘call note’ in Epic. The name that comes across your pager is often spelled incorrectly. You must document the date and time of the call. Document the story and your plan. This is a legal document and part of the patient’s permanent medical record. It is also the primary means of communication with the patient’s neurologist and our nursing staff. These are important notes!** Please send your phone note to the primary neurologist so that they are aware of the encounter.

Remember you are NOT there to make long term decisions/plans, but to deal with immediate situations. Families should be instructed to call the next day (or Monday) to discuss medication adjustments and long term plans with their physician. For med refills, typically refill one week’s worth and have them call the office in the morning for a regular month prescription refill.

If a patient does not have a chart yet (because they are at an outside hospital etc.), then you can write the information in an email and email it to Lindsay Jones requesting that she make an Epic chart for the patient. She will then scan your email into the patient’s new chart as a call note. Verify the name and DOB of the patient you are being called about. The spelling of the name may be incorrect on your pager.

**NEVER** tell families that someone will call them (unless you plan to call them yourself). Tell them to call the office in the morning.
Common Calls
1) Calls from families
   - Remember, you are NOT on-call to make long-term decisions/plans, but to deal with immediate situations that may arise. It is often helpful to review the patient’s chart to see if their primary neurologist has documented a contingency plan to help with your decision making. Families should be instructed to call the next day (or Monday after a weekend) to discuss medication adjustments or further steps with their primary neurologist.
   - Medication Refill Requests: Give only enough for 1 week. Have them call in the morning for a regular month prescription.
   - NEVER tell families that someone will call them (unless you plan to call them yourself). Just tell them to call in the morning.

2) Calls from ER.
   - Step 1: Generate a plan with the ER resident. Any procedure that needs to be done that night should be done in the ER (placing IVs, drawing blood/urine, basic or advanced radiology, and LPs).
   - Step 2: Admit or Discharge?
     - If admitting to the 12th floor, contact the 12th floor senior resident to notify them of the impending admission. Given them the patient’s name, DOB, basic plan and anything to watch out for overnight. **Remember, the senior resident and intern overnight are NOT neurologists, so anticipate neurologic complications and tell them what the look for.**
       - Remind the pediatrics resident to call you if the ER tries to admit any patients without you knowing. ALL admissions to neurology should go through you!
       - There are specific criteria for neurology to co-cover neurosurgery patients automatically when they are admitted to the 12th floor—You will not necessarily be called about the automatic co-coverage admissions. If outside of these criteria, Neurosurgery is supposed to call you or the peds chief residents for approval. If Neurosurgery is unable to reach floor team, they may call you. Please don’t discourage communication between teams.
     - Neurology only admits to the 12th floor. If admitting to another service outside of 12th floor, that patient will be on the neurology consult service. If you saw the patient overnight, write a Consult Note. If you did not see the patient overnight, let the consult team know that a Consult Note needs to be performed in the morning.
     - If you physically see the patient in the ER overnight, you MUST call the attending and staff by phone if you want to send the patient home.
     - Neurology follow up: We are now asking about insurance plans, as we cannot accept Illinois managed plans (Meridian or Molina). We therefore cannot guarantee follow up, but make sure that an accurate phone number for the patient is in the chart, and should tell the ED that our schedulers will verify whether the patient can follow with us or will need a referral to Cardinal Glennon.

3) Calls from Children’s Direct (outside hospital calls)
   - Always return these calls promptly. (within 5 minutes during the day or 10 minutes in the middle of the night). Be polite because these calls are RECORDED.
   - Ask for the patient’s name and DOB and look to see if they have been seen in our neurology clinic before. Often times the outside hospital doesn’t know this information and you can get more information from the chart. Sometimes the patient is actually seen by Cardinal Glennon or Mercy and it saves a lot of time if you figure this out at the beginning of the call.
- Generate a plan with the outside hospital MD and decide whether the patient needs to be transferred to our hospital or discharged from their ER.
- If transferring to our hospital, decide if the patient should go to the ER or ICU.
  o Transferring to ER ➔ discuss patient with ER attending
  o Direct Admit to 12 ➔ discuss patient with the hospitalist
  o Transferring to ICU ➔ discuss patient with ICU attending
- YOU ARE NOT MEDICAL CONTROL FOR THE TRANSPORT (it is either the ER attending, hospitalist or ICU attending), but you should have a set of vitals, a coherent story, a recent examination, as well as a general plan from a neurologic perspective.
- Rules of Thumb:
  o If patient is at an outside hospital ER, they can go to our ER, floor or ICU. Default ER.
  o If patient is at an outside hospital ICU, they can only go to our ICU. (If looking well, could potentially transfer out of ICU quickly, but must arrive to ICU.)
  o If the patient is at an outside hospital floor, they can go to the ICU or to the floor; they cannot typically go to ED.
- **Be aware of nighttime direct admissions to the floor** -- Patients may be sicker than people advertise!!

4) Calls from PICU/CICU/NICU/floors for consultation
- Most of the floor consults can wait until the next morning (i.e. migraine, hypotonia with developmental delay). Give the floor a plan and include them in the update email so that the patient can be seen the following day.
- Most (if not all) consults from any ICU need to be seen when they call you. Go in, see the patient, and call your attending to discuss an initial plan. Then document that you discussed the patient with the attending over the phone. Often times your initial examination is the only exam the neurology consult team will have for days/weeks because the patient ends up intubated, sedated or paralyzed.

5) Overnight Stat EEG or video EEG request
- The default is that you will go in to see the patient. If the patient is paralyzed or it is an “automatic” EEG hookup but not clear neurologic issue (i.e. post cardiac arrest, ECMO), it is often reasonable to defer seeing the patient until the morning, but you must discuss this with the on-call consult attending and make sure they agree.
- Automatic cEEG hookups include post-cardiac arrests, new ECMO patients, cooling babies, and severe TBIs (but need to discuss the TBI hook-ups with neurosurgery). You do not need to ask an attending before calling EEG techs. Do send an email with one-liner to the EEG attending on-call. However, you should still come in and see the patient, unless the patient is pharmacologically paralyzed or it is not a clear neurologic issue, then can ask the consult attending if you still need to come in. Should be a conversation with consult attending either way.
- Sometimes it sounds like the patient is having seizures and they are not, and other times it sounds like the patient is fine but you find them in subtle status epilepticus. It is REALLY hard to tell over the phone.
- If you think the patient is having a seizure when you go in to see them, don’t wait for the EEG to start treatment. You should hover to make sure the patient gets their medication in a timely fashion.
- Note: If you are hooking a patient up to video EEG, the tech will ask you if you want CT or MRI compatible leads. Default for a new hook up with concern for status who has no recent MRI should be MRI compatible, unless the patient has obvious contraindications (cooling, ECMO, VAD, etc.)
All requests for STAT EEG (M-F 1430-0700 and weekends) and long-term video monitoring should first be discussed with your consult or NICU attending, AND then must also be discussed with the ICU-EEG attending.

- If you request a stat EEG or long-term monitoring for a patient, you should look at the EEG and read it yourself before requesting a read from the attending.

EEG Techs: we have an EEG tech in house overnight every night. You can always reach the EEG tech by paging them through Spok via the name “SLCH EEG TECH ON CALL.”

6) Neonatal Hypothermia Protocol page
   - YOU MUST GO SEE THE PATIENT
   - After you go in and see the baby and get the story, call the NICU attending on-call and make a decision about whether to cool or not. This is time dependent and should be initiated before 6 hours of life (although window can be expanded up to 24 hours with clearly missed HIE or seizures – you should discuss this with your attending and NICU team).
   - Once you have decided to cool, the NICU team should place the continuous EEG order. You should email the EEG attending a one-liner (as this is an automatic hookup) and page EEG techs to let them know.

7) Stroke Page – sickle cell and non-sickle cell
   - YOU MUST GO SEE THE PATIENT
   - When you see the patient, perform the pediatric NIH stroke scale and make sure the appropriate work-up and evaluation is being performed.

If you are called about a patient who sees Neurology in another practice, i.e. Cardinal Glennon, a private neurologist in St. Louis, a neurologist in a different city or state, the person calling you should first attempt to speak with whoever is on call for the patient’s primary neurologist. If the patient is planning to transfer care to us but has not yet, the previous neurologist should still be making management decisions. We, typically, do not do urgent second opinions (but might in extenuating circumstances).

Final note on EEG’s: If you admit a patient overnight who will need an EEG the following day, call the EEG lab at 314-454-6237 and leave a message with the patient’s name, location, and relative priority level for the EEG.
How to handle new-onset seizures:
1) Any patient who is not yet back to baseline after an appropriate amount of time being monitored should be admitted to Neurology for observation.
2) Our standard workup from the ER if going home is CBC, CMP, Mg, Phos, UDS, +/- EKG.
3) You can refer a patient to the New-Onset Seizure Clinic if the patient is:
   - older than 6 months
   - developmentally normal (other than ADHD or mild speech delay)
   - has never been evaluated by a neurologist (including yourself)
   - back to baseline
To do this, Ask the physician to get the name and phone number of the parent, and then send your call note to Rachel Hillen to set up NOSC appointment.
-- Any patient who is 6 months or younger with new-onset seizure should be admitted.
-- Regardless of age, if seizures are new and pretty frequent (multiple per day) should probably admit for expedited evaluation.
-- Always remember to review seizure precautions and first aid with anyone being discharged from the emergency department.

How to handle Urgent Consults:
If you take a call about a patient who does not warrant admission but should be seen within the next 2 weeks, and the patient is not a candidate for NOSC, you can refer them for an urgent outpatient consult appointment. To make the referral, get the name and phone number for the parent and send your phone note to the “wu nl ped scheduling pool” in Epic with a note to them to schedule the patient for urgent clinic. The parent should be given the office number 314-454-6120.

Common Issues or Questions:
Febrile Seizures
- Simple febrile seizures – less than 15 minutes, no focal features, one seizure in 24-hour period.
  o If back to baseline and identified source of fever, patient does not need admission or Neurology follow-up (but should follow-up with PMD in 1-2 days).
- Complex febrile seizures – greater than 15 minutes, focal onset, or greater than one in 24-hour period.
  o Typically does not need HCT/MRI or LP if completely back to normal and are older than 18 months.
  o If there is any question or doubt, then get these studies and/or discuss with attending.
- If presenting with febrile status epilepticus, strongly consider LP to r/o bacterial meningitis or HSV encephalitis
  - May have fever before, during, or after seizure.
  - Patient must be GREATER THAN 6 MONTHS, and typically not older than 5 years.
    - If patient less than 3 months, any seizure should be treated as a rule-out sepsis (blood, urine, CSF culture with empiric antibiotics and acyclovir). Patient should be admitted.
    - If patient 3-6 months, AAN practice parameter says to do LP, but if child looks great and there is an identified source for fever, can defer LP and watch closely. Patient should be admitted.

**Increased Seizure Frequency (probably most common call)**
- Ask about missed doses
  - Consider checking drug levels if history of, or concern for noncompliance
- Ask about infectious symptoms
- If patient is back to baseline and parent is comfortable with watching at home going home from ER, consider prescribing clonazepam (or ask if they have it) and can administer to “quiet things down” until they can call the office in the morning to discuss with their primary neurologist.
  - Clonazepam forms including: 0.5mg tablets (can be halved/quartered and crushed); 0.5mg/0.25mg/0.125mg wafers or oral-dissolving tablets (go with ODT over wafers because insurance doesn’t like to approve wafers).
    - 0.125mg BID x 3 days = patients <20kg
    - 0.25mg BID x 3 days = patients 20-50kg
    - 0.5mg BID x 3 days = patients >50kg
  - If patient on clobazam (Onfi), can consider giving one-time extra dose rather than clonazepam.
  - Since it is a controlled substance, you will have to call it in to the pharmacy if ER does not provide a prescription.
- If you are asked about increasing the home dose of AED, check notes in Epic to see if the primary neurologist had a pre-determined plan (You can search PDNL med plan). If not, it is best to defer to having the parent call in the AM. The exception to this is if the patient is taking levetiracetam, you can increase the dose by roughly 20% or 10 mg/kg/day, whichever seems like a more appropriate jump, as long as the primary neurologist was not planning to wean off of it, and they have not already maxed out the dose (max 80-100 mg/kg/day).

**Baclofen pumps:** When a baclofen pump malfunctions, withdrawal can be life-threatening. Remember the mnemonic “itchy, twitchy, bitchy.” Patients in withdrawal can show autonomic dysregulation (fever, tachycardic, tachypneic, hypertensive, flushing), increased muscle tone, seizures, agitation, complain of intense pruritus, and have facial or total body jerks. GIVE ENTERAL BACLOFEN UNTIL THE PUMP IS FIXED! NG/GT/PO, whatever. Call neurosurgery and your attending.

**VP shunts:** If you hear about a patient with epilepsy along with CP/MR/global developmental delay, who is having increased seizure frequency, ask if they have a shunt, since parents/physicians often neglect to mention it, and shunt malfunction can be a cause of increased seizure frequency. Shunt malfunction usually presents with somnolence, headache, vomiting, increased seizure frequency, and
Cushing’s triad if allowed to progress, but vital signs are often unremarkable or hard to interpret if the child is irritable.

**Migraine management** (The migraine protocol will be changing this year. Ask us for updates!)
In ER, start with NS bolus, Toradol 1 mg/kg (max 30 mg), and Compazine 0.1 mg/kg (max 10 mg) IV. Unlike Barnes, SLCH ER will usually give only 1 dose before they are ready to admit for further management but you can try a dose of SQ triptan in the ER.

**Therapeutic hypothermia in the NICU**: Please see the guideline that will be emailed to you and reviewed during your orientation with the Peds Neuro Chiefs.

**The extra vital sign**: For a child less than 3 years old, the OFC is the “extra vital sign” to a pediatric neurologist. Please always know the OFC and percentile in relation to the other growth parameter percentiles when presenting to the attending. Also, remember to obtain the developmental history. (Grab a Denver II)

**High-dose steroids**: In kids we use 30 mg/kg/day divided in q6h doses (max 1 gm per day).

**When to come in from home**:  
**Come back to the hospital whenever your exam is essential to the urgent management of the patient.**

Examples (these are only examples, always refer to the above general principle):
- You or the examiner is uncertain if the patient has stopped seizing.
- You are confused by the reported exam and need a better exam to make management decisions.
- You are uncertain if the patient is seizing at all (especially ICU).
- NICU baby initiating cooling
- You or the requesting team thinks a patient may need VEEG or a STAT EEG.
- Refractory status epilepticus.
- Possible strokes.
- Any neuromuscle patient (especially MG) with respiratory complaints or GBS
- Any spinal cord complaints.
Weekends:
Sunday: The weekend fellow will round on the 12\textsuperscript{th} floor with the floor attending while the adult rotator covers the consult/NICU service (old and new patients) and rounds with the Weekend Helper attending. \textbf{You will need to forward the pagers (Consult and NICU) to yourself at 0700 on Sunday morning.}

After you see consults in the morning, you will touch base with the teams and update them on the plans. Once floor rounds are complete, you will sign out the consult/NICU service and any patients awaiting disposition from OSH/ER to the weekend fellow. Although our goal is to sign out at noon, do not expect to necessarily be able to leave then if your morning consults are not wrapped up.
Conferences
1) Adult rotators should attend the daily noon core pediatric neurology curriculum.
2) Journal Club: Tuesdays from noon to 1 pm in the 12 NWT Conference Room.
   Adult rotators will present once during their time on pediatrics. Attendance to other journal clubs
   during your time on pediatrics is expected.
   See schedule for dates when each individual will present.
   Please email your article in pdf form to Lori Nichols (nicholsl@neuro.wustl.edu) no later
   than the Thursday before you present.
3) Neuroradiology Conference: Thursday mornings from 0700-0800 on the 3rd floor of SLCH in the
   auditorium. It is highly recommended you go as it is frequently interesting and helpful for care of
   inpatient consults.
4) Peds Neuro Noon Lectures: There are noon conferences every day but Wednesday (we go to CNS
   conference) with the faculty in the NWT conference room that you are expected to attend. Ask your
   fellow or chief resident for the schedule of noon conferences while you are on service.