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<td>1 Stroke Fellow or PGY4 Neurology Resident</td>
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<td><strong>Saturday</strong></td>
<td>1 Vascular Attending</td>
<td>1 General PGY2 Neurology Resident cross covers both services (only general service if fellow is on)</td>
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<td><strong>Sunday</strong></td>
<td>1 Vascular Attending</td>
<td>1 General Attending</td>
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<td>1 PGY1 Medicine Intern</td>
<td>1 PGY1 Medicine Intern</td>
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<tr>
<td></td>
<td>1 APP</td>
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Schedule

• 6am-8am
  - receive sign-out from nightfloat (neuro resident, APP, Med A)
  - ensure the white board and epic lists are updated
  - Resident/Fellow helps the interns and APPs divide up the patients
  - Pre-round by looking though your patient’s charts and checking a brief and pertinent neuro exam on all of them. The PGY2 should do this for all the patients on their service, but prioritize the new and sick patients on busy days
• 8am-9am: Morning report, APC 5 – optional if on Code Black, otherwise mandatory
• 9am-9:15am: Multidisciplinary rounds. Say the patient’s diagnosis, whether they need PT, OT, speech, social work, and what their estimated length of stay is.
• 9:15am-11:45am: Attending Rounds. If you are not done discussing and seeing all the new admissions at least (ideally the whole service on a good day) there is likely a flow issue. Please discuss with the chief/fellow/attending or the program directors to address this
• 12pm-1pm: Noon Conference, APC 5 – Attendance REQUIRED
• 1pm-4:30pm: Afternoon work
• 4:30pm: group signout on BB7. Neurology residents and APPs sign out their patients to the on-call resident or Consult 2/3 resident. Give FYI on intern patients as they will be primarily covered by Med a night float. The non on call medicine intern signs out their patients to the on call medicine intern. The teams should decide who is going to get new patients the following morning depending on how busy their lists are.
• 7pm: On call medicine intern on both vascular and general sign out to Med A nightfloat. On call neurology resident and APP on vascular covering wards sign out to the nightfloat APP. Nightfloat neuro resident only covers general over the caps

Census

• Intern caps at 10 patients; can take up to 3 new patients per day
• APPs cap at 10 patients each; can take up to 3 new patients per day unless the service is very busy at which point they can take more than 3 news but still cap at 10
• Neurology PGY2 resident is responsible for over-the-cap (OTC) patients on either service
• If the census is high, please see Calling in Back Up on a Busy Call and Code Black under Policies

Overnight wards coverage

• Both general and vascular wards teams meet the NCCU, peds neuro, and consult residents for group signout at 4:30pm in BB7 workroom
• Intern patients covered by Med A
• Neurology resident and APP patients covered by Neurology consult 2 and 3 and on call resident until night float APP arrives
Long-term monitoring patients (LTM)

- Most weeks (typically Monday AM), 1-2 patients are directly admitted to the LTM unit on 6A
- General ward neurology PGY2 is solely responsible for all LTM patients
- A full H&P must be written on admission and progress notes on subsequent days, which cannot be copied from the attending’s note.
- These patients are staffed daily with set attendings from the epilepsy group rather than the on call general wards attending
- PGY2 residents will sign these patients out to the neurology on-call resident who will sign out to the nightfloat.
- **Medicine interns have no role in caring for these patients**

Roles

**PGY1**

- Interns rotate through neurology ward to learn neurology, have their neuro exam skills and reasoning assessed by the team
- Inters should have received signout from the intern that just came off their neurology rotation. If not, they should ask for it
- Make sure to have someone on the team observe you do a neurological exam
- Every wards patient must be examined daily and have the vitals and new results reviewed
- Not responsible for LTM (long term EEG monitoring) patients on the general team at any time
- all ER patients are admitted by the neuro consult residents. Floor to floor or icu to floor transfers should default to neurology resident. The neurology resident may delegate to the intern if they feel they have adequate experience
- the intern writes progress/transfer notes on their own patients and should include the following
  - overnight events
  - 2 relevant ROS
  - vitals
  - meds
  - new results from the last 24 hours, not an exhaustive list of all work up since admission (that goes in the hospital course of the discharge summary)
• neuro exam with a minimum of 5 components relevant to the patient's problem. you are not expected to do a full neuro exam on each patient as that is inefficient and often irrelevant to the patient's chief complaint. a full neuro exam is always done by the admitting neurology resident before you've seen them and should serve as a reference for your own to see if the patient's better or worse the next day. if you're not sure what the most important things to check on someone's exam are, check what was abnormal on the admitting H/P or ask someone on the team. the most important components are usually level of alertness, pupil size and reactivity, face droop, aphasia, strength in limbs, visual fields
• assessment/plan organized by problem, be sure to update daily
• discharge summaries are a lot more efficient if you update the hospital course daily or at least periodically. use the stroke discharge template for all strokes but the usual paragraph form is sufficient for non-stroke patients. be sure to check with the team as to who the patient should see in neuro clinic if at all as not everyone needs follow up

APP
• Only rotates on the vascular neurology team
• If an APP wants to rotate on general neurology for personal experience, they should check with the stroke fellow or chief first. If they join general neuro that day, they must stay with them for the whole day and not carry patients on both services simultaneously and sign their patients out to the whoever will be taking care of them on general the next day
• Please see intern and PGY2 sections for more info

PGY2
• Choose particularly interesting or challenging patients to follow yourself without an APP or intern
• Direct supervision of intern. Review the intern patients’ chart as if they were your own. This includes the neurological exam, vitals, labs, overnight events, notes, orders, DVT prophylaxis, discharge summaries. Ensure the intern’s notes are accurate including discharge summaries prior to the patient leaving. Use your judgement to determine when you can transition from direct to indirect supervision of your intern in part or completely. This will depend on your own level of comfort and that of your intern. Please let them know when you are comfortable making that transition and to what degree to set expectations. Remember that when an intern makes a mistake, it is because they are not adequately supervised
• Please be aware of the APP patients to the same level of detail as those of the intern’s. This is important because the PGY2 is on for the entirety of the rotation and the APPs
rotate every few days so the PGY2 ensures continuity of care. It is also important in case the APP needs to occasionally leave for a code stroke or interventional case. APPs should be viewed as colleagues rather than subordinates, please do not manage their patients. They will make decisions regarding their patients appropriate to their level of comfort. However you should be available for any questions they may have.

- If the H&P was electronically signed after midnight on the day of admission, a new note is not necessary unless there are major clinical changes
- Touch base with your intern several times a day, and always return their pages promptly, run the list multiple times during the day
- Not responsible for admitting any patients during the day with the exception of Epilepsy Monitoring Unit/LTM patients or outside hospital floor to floor transfers if you are not busy (otherwise will default to one of the consult residents)
- Patients newly admitted during the day by consult residents are usually managed by them until sign-out
- When the service is busy and the PGY2 is carrying several over the caps, they should discuss with the chief/fellow about focusing on their own patients while the chief supervises the intern and is available as a resource to the APPs. In such instances, the PGY2 should get sign out regarding those patients from the chief/fellow at the end of the day to ensure continuity of care

**Chief/Fellow**

- Acts as the attending in that all patients are presented to them, they go over imaging, teach, and lead rounds (examination and counseling of patients/families). The attending leads rounds on days when the chief/fellow has clinic, on weekends, or at the attending’s discretion at any time
- When meeting a patient/family, the chief/fellow should acknowledge the presence of the attending to ensure patients know the attending is providing direct supervision
- Remain on the team you are assigned to the entire week except for assisting the general wards residents with LPs at the beginning of the academic year until they comfortable doing them on their own
- Directly responsible for overseeing the PGY2’s management for the first 2 weeks they rotate on the wards. After that, they should be available as a resource to the PGY2 and allow them to act as the manager for the team
- Use your judgement depending on the complexity of the case and how busy the day is to allow the PGY2 to lead part or all of rounds
- Teach interns, students, and residents
- Provide feedback on juniors to the attending
• Ensure the PGY2 makes it to all didactics. If they must do something that can’t wait till after didactics, please do it yourself for the sake of their education

Tips
• While a person is presenting their patients on rounds, another person should be helping them out by putting in orders in real time. This saves times so that all the orders don’t have to be put in after rounds
• The intern patients should be presented first on weekdays as the APPs may still be looking up their patients and because the intern needs to be done early and leave for clinic some days. On weekends, the APP patient should be done first in case they need to break away for NIR cases/code strokes.
• Case managers are your best friends. Keep them informed and happy to ensure smooth flow of patients.
• Even if you know someone won’t be discharged that day when you discuss them at interdisciplinary rounds, let the case managers know when you expect them to be discharged so they can start working on them
• Don’t order tests unless they will change management
• Always discuss use, type, and timing of blood thinners with the chief, fellow, or attending
• Ask yourself if tests need to be done in house or whether they can be done as an outpatient
• Always set expectations regarding length of stay and inpatient treatment goals with patients and families to minimize issues down the road
• Ensure PT/OT evals have been completed and case manager knows their recommendations
• Case management needs to talk to the patient/family to obtain rehab choices
• Speak with your interns, APPs, and med students regarding the schedule for the week and weekend so you can anticipate and possibly rearrange scanty coverage during clinic and other times of anticipated absences
• On Mondays, ask what orientation your med students have already received and set expectations regarding presentation on rounds and patient care
• The PGY2 or chief should have the med student practice presenting patients to them before rounds when time permits
Consults

Structure

- 1 neurology attending, 1 chief resident, 3 neurology residents staggered throughout the day, 1-2 Medicine Residents, med students. Additionally, there are sometimes PA students, psych residents, and medicine residents from Memorial Hospital
- Chief resident obtains the consult pager from night float resident at 7:45am and assigns consults and follow-ups to the team throughout the day
- The on call chief resident is available for questions day or night at all times except Sat (24 hours) and Sun until 4:30 or if the stroke fellow is on call (strokes only). At these times, the chief is off and the junior residents must call the attending directly with any consults
- Code strokes are only seen by neurology residents
- Consults are only seen at RIH and Women & Infants. Hasbro consults are done by the peds neuro resident. Please see the peds neuro rotation for details
- Pager is handed off by the chief to the call resident at 4:30pm
- 3 neurology resident shifts (either PGY2 or PGY3):
  - Consult 1: 8am - 6pm
  - Consult 2: 11am - 9pm
  - Consult 3: 2pm - 12am

Schedule

- 8am-9am: Morning Report
- 9am-9:30am: run consult list with chief resident in noon conference room on APC 5
- 9:30am-12pm: see consults
- 12pm-1pm: Noon Conference
- 1pm-4:30pm: Attending rounds

Expectations for all team members

- All consults should be seen in a timely manner with the most acute patients being seen first
- All residents MUST leave the hospital at the end of their shift. Do not take new consults that you do not think you can finish by the end of your shift. Time to wrap up notes and orders should be accounted for. Passing on consults to the incoming resident is an expectation and should not be something that only happens when things are busy.
- PGY2s must call the chief/attending to discuss every consult
- PGY3s must call the chief/attending for all code strokes and send outs from the ED. They only need to call for other things if they have questions/concerns
- If you are asked to see a consult that you think is not necessary, you can explain your reasoning to the consulting team and offer another plan such as a clinic appointment if applicable. However if the team still wants the consult, you may not refuse it
• If you receive a code stroke or other emergency near the end of your shift, please go make sure the patient is stable and initiate any time sensitive management. On your way down to that consult, let the chief or incoming consult resident know of your situation so they can relieve you once they get there. You must not stay beyond your shift to wrap up urgent consults provided there is a resident available to relieve you. It’s ok to start these consults and have someone else wrap them up. However please avoid starting nonurgent consults that you will not have time to finish before the end of your shift
• If time permits, ask the attending to observe you perform a consult in its entirety and/or the neuro exam on a patient at least once during the week
• Always set the consulting team’s expectations regarding when the consult will be seen to avoid call backs and frustration on both ends
• After the attending has seen the patient, be sure to document whether this patient needs in house or outpatient follow up. If so, note which clinic and the time frame
• If peds calls with a consult or question, direct them to the peds neuro consult resident from 8:00am-4:30pm Mon-Fri. Outside of those times they must call the peds neuro attending directly who may then ask you to see that patient. You cannot see a peds patient or curbside without a minimum of indirect supervision from the peds neuro attending who is informed about that case

Chief role
• Return all pages promptly
• At the beginning of attending rounds, go over all send outs from the ED that the attending didn’t hear about to get feedback on your indirect supervision of junior residents
• Lead rounds including demonstrating exams on patients, counseling, and imaging interpretation. This is your service and the attending is there to guide you
• It is ALWAYS okay to call the attending 24/7. However at the PGY4 level, you should have a preliminary plan when calling to discuss
• Know the important details of every consult you delegate to a resident or student
• Consults given to students should be paired with a resident so the resident can write the billable note for the attending to sign and appropriately supervise the student. The student should write their own separate note
• Do not pull residents out of didactics for nonurgent consults
• Delegate consults appropriate to a resident’s/student’s proficiency and efficiency
• Provide constructive feedback to every team member at the end of the rotation and report it to the attending so they can fill out their evaluations
• Leave “TO Dos” and “FYIs” on BB7 Whiteboard for overnight and weekends
Tips

- When there are multiple consults pending and you have no help, identify who the sickest patients are and evaluate them as efficiently as possible. Triaging is a skill that takes time to build. Talk to a senior resident or attending if you are having trouble.

- If time permits, write the HPI and exam prior to presenting your consult case to the chief or attending - this will help to make your presentation clear and concise.

- When performing chart review prior to seeing a consult, it is helpful to start pre-writing your note and incorporating pertinent history and hospital course thus far prior to your evaluation.

- After seeing patient, jot the exam into your incomplete note or on a paper before you forget it.

- You should finish writing each note before moving on to the next patient assuming your next patient is stable. Otherwise you may be writing 10 consult notes at the end of a 24 hour shift and it will take you twice as long to do when you’re tried.

- Goal should be to read about patient, evaluate them, place orders and finish the note in 1-1.5 hours.
Neurocritical Care Unit (NCCU)

Structure

- 2 teams each covering 9 patients each for a total of 18 patients
- each team has: 1 neurocritical care attending and 1 PGY2 neurology resident + 1 NCCU-APP or 2 NCCU-APPs. This is the schedule 7 days per week. On Sundays, the NCCU PGY2 has the day off and an off service PGY2 or 3 covers for them
- each resident or NCCU-APP carries up to 4-5 patients regardless of whether the problem is primarily neurological or neurosurgical
- overnight, the NCCU is covered directly by the NCCU-APPs. The neurology consult residents or nightfloat are contacted with neurological questions but this is rare and usually involves interpreting an EEG

Workflow

- 6am-8am: Get signout from overnight APP and Pre-round
- 8am-9am: Morning report - REQUIRED
- 9am-11:45am: attending rounds
- 12pm-1pm: Noon Conference - REQUIRED
- 1pm-4:30pm: Afternoon work
- 4:30pm: signout in BB7 work room to consult or on call resident and update the BB7 white board with to dos

Expectations

- If you didn’t do so when you transferred the patient out earlier in the day, make sure to give verbal sign-out to the wards team at 4:30 sign-out
- Direct admissions to NCCU from outside hospitals are admitted by the NCCU during the day; new admissions from the consult resident should be signed out to the NCCU resident or APP taking care of them, who will subsequently help manage them
- Sign out all patients who are going to a service other than neurology to the Consult Chief so they will be followed on the consult team – transfer patient to consult list on Epic
- Do not hesitate to ask questions or bring clinical concerns to your attending or the NP/PA
- Know your patients extremely well to round efficiently and effectively
- Present in the following order: HPI (new patients only), 24 hour events, vitals, home and current meds, infusions, I/O, labs, imaging, exam, organ systems based plan
- You are the direct liaison with the family and will be expected to eventually lead family meetings in conjunction with the attending
- If you want to learn to do lines and intubations, you should let the attending/APP know. As they are not ACGME requirements, you are not obligated to learn these skills
Admitting to the NCCU

- If no beds, discuss with APP or attending about possibility of putting patient in a different ICU or moving someone out of the NCCU to make room
- Admitting note needs to be completed before patient arrives to the NCCU
- Inform NCCU PGY2 resident and APP about patient if during day. After 4:30pm, sign out directly to consult 2, consult 3, or nightfloat resident and the NCCU-APP
- The NCCU attending does not need to be contact about and admission when a chief resident is on unless the chief resident has questions
- Important orders not to miss:
  - For ICHs: Repeat head CT at 6 hours, INRs post-reversal, troponins, Blood pressure parameters
  - Vent and sedation orders, precedex
  - When appropriate, notify neurosurgery if not notified by the ED

Transferring out of the NCCU

- Flag patient for transfer, notify NCCU secretary and BB7/7B charge nurse. alert if they need q2h or q4h vitals
- Write a transfer note
- Write the name on the BB7 or 7B whiteboard depending on where they’re going and sign out directly to the wards team taking the patient over. This should be done at 4:30 group sing out at the latest
- These patients are managed by neurology residents only until rounded on the next day (if assigned to an intern)
- In rare instances, the NCCU attending and NCCU PGY2 will be the primary neurology consultants for NCCU patients boarding in other ICUs due to lack of beds in the NCCU. This will be determined by the NCCU attending
Pediatric Neurology

Structure
- 1 attending, 1-2 Neurology residents, medical students at times
- this is a daytime Mon-Fri rotation. Overnight and weekend consults typically wait till a weekday. If a consult is urgent, the peds team must call the peds neuro attending directly. The peds neuro attending will either provide recommendations over the phone or ask the in house neurology consult resident to see the patient and then discuss with them
- The resident will receive a hard copy of the ACGME chief neurology milestone (1 sheet) from the program coordinator and must return it to her on Friday with the attending’s written assessment of their milestone

Schedule
- 8am-8:15am: receive pages from peds teams regarding patients that came in overnight and need to be seen that day
- 8:15am-9am: Morning Report
- 9am-11:45am: see consults and follows, attending may round with you in the morning or afternoon depending their schedule
- 12pm-1pm: Noon Conference
- 1pm-4:30pm: see consults and follows, attending may round with you in the morning or afternoon depending their schedule
- 4:30pm: sign out in BB7 work room

Expectations
- Resident carries the pediatric neurology pager from 8am-4:30pm and is responsible for Hasbro ED, Hasbro floor consults along with W&I NICU consults (do residents go independently to NICU or do they always go with the attending?)
- When in Thursday resident clinic, call operator and sign pager out to the attending during your clinic hours (only when you don’t have 2 residents on pediatrics)
- All consults must be staffed directly with the peds neuro attending the same day
- Disposition: discharged, admitted to pediatric neurology (yellow team), other pediatric team or PICU
- The peds team manages ALL orders, day-to-day management, daily progress notes, and discharges patients. The neuro resident only acts as a consultant
- You are not expected to physically pre-round on follow up patients, but you should know their history and current presentation
• Peds writes H&P’s for admitted patients; you must still write a consult note unless told otherwise by the attending

• The need for follow up consult notes for a particular patient should be discussed with the peds neuro attending

• Calls from outside pediatricians need to be discussed with the attending before providing advice/recommendations

• When you discuss a patient with the peds neuro attending, anticipate questions specific to that case and create contingency plans as the peds team will call often. You should include contingency plans in your note. Common questions include
  • Are we continuing EEG overnight/over the weekend?
  • What should we do if the EEG leads fall off? Keep them off or call in techs to put them back on?
  • What should we do if they have another seizure?
  • When can they be discharged and does the peds neuro team need to be notified?
  • When will you be available to answer the family’s questions?
  • When are you going to round on the patient?
  • When do they need clinic follow up (if at all)?
  • What neurological changes can be expected to develop and should not be concerning?
  • Do we need to get antiepileptic levels
  • Do we need daily labs
  • What clinical changes require acute brain imaging and should it be a CT or MRI?
  • Should we call acutely if the patient has a seizure?
Night Float

Structure

- Saturday – Thursday (Fri night is off and covered by an off service resident)
- PGY3 Neurology resident for 1st half of the year
- PGY2 Neurology resident for 2nd half of the year
- Arrive at 8:45pm. Receive sign out from call resident, Consult 2 and/or Consult 3 in BB7 work room
- carry pager until 7:45am at which point you pass it on to the chief on weekdays or the on call resident on weekends
- Go to morning report from 8am-9am

Expectations & Tips

- APP and vascular neurology resident patients are covered by the nightfloat APP. If there is no nightfloat APP on a particular day, the neurology night float resident will cover these patients
- All medicine intern patients on both services will be covered by medicine nightfloat
- The neurology night float resident will only cover over the cap general patients directly and will serve as back up for APP and medicine night float covered patients provided there is a nightfloat APP
- Please see consults rotation for everything else

Additional Tips

- Overnight, staff with Chief Resident except for Saturday nights where you call the neurology attending specific to a case (NCCU, vascular, or general neurology)
- It’s more efficient for both you and your senior to “bunch” calls to chief/attending for nonurgent consults. For all code strokes and neurological emergencies be sure to call immediately
Resident Continuity Clinic

Structure

• One half day every Thursday during one of these slots:
  ▫ AM Clinic: 9am – 12pm
  ▫ PM Clinic: 1pm – 4:30pm
• Up to 6 patients per clinic (PGY2s start with 4)
• 1 new (1 hour), 1 ED/inpatient new (30 min) and 4 follow up’s (15 min). Despite the short time for follow ups, the no show rate is high and co residents can help each other out if things can busy
• If you are on wards or NCCU, your clinic will be in the afternoon
• Consult 2 (11am-9pm) has clinic on Thursday morning (starting at 9am)
• Consult 3 (2 pm -12: 00 am) will have clinic on Thursday afternoon
• If you are the wards resident, sign out your patients to the neuro resident on the other wards team i.e general if you’re on vascular or vice versa
• There will be several occasions throughout the year when a full day clinic (both morning and afternoon sessions) is scheduled. This is to satisfy the required number of clinics per year.

Expectations

• Interns also have weekly clinic, and they should sign out their patients to the other intern as well as you on the wards. Ensure that the covering intern has an updated paper copy of your team’s signout.
• When starting on wards – talk with your intern the first day to find out when their clinic day is to ensure there is no mix up about coverage
• Take patient from waiting room and bring them to room when they arrive, and walk them to check out when you are done. Let the medical assistant at the front know when they need follow up and what tests have to be ordered if any to make the plan clear to them and your patient
• Staff with clinic attendings to devise a plan. They may or may not see every patient with you depending on the complexity
• Ask that an attending observe one of your clinic encounters from start finish on days where it’s not busy
• Check your clinic schedule routinely at the beginning of the wee to ensure there are no errors
• When switching calls or rotation assignments or taking days off, please be mindful of your Thursday clinic commitments. You should ask the clinic chief resident if you have questions.

• Send a copy of your note to the primary care. The easiest way to do this is highlight your note in epic and click the route button. Make sure the medical assistants update the patient’s primary care in Epic with their fax number so that this is possible.

• If you receive correspondence from lawyers or others seeking medical records, please pass these on to the clinic nurse or clinic manager.

• If you receive other paperwork such as disability questionnaires, discuss with your preceptors how to fill out (or not fill out) these forms for the particular patient.

• The Neurology Clinic does not routinely endorse the State of RI medical marijuana applications.

• The Neurology Clinic does not have a mechanism to prescribe and monitor long term opioids for pain management.

Phone Coverage

• For patients of the neurology resident clinic, the patient’s primary neurologist should be the first point of contact during business hours (Monday-Friday, 8 AM-4:30 PM) unless the resident is on vacation, night float, or an away elective. During in-house or local electives, the neurology resident should be reachable during the day. Neurology residents should notify the clinic of planned away elective time, so pages can be directed appropriately. Please refer to the schedule on MedRez for the most up-to-date neurology resident schedule.

• If the neurology resident is away or on vacation, then the Wards Chief should be responsible for covering patients of the resident who is unavailable. The on call wards chief can be found by looking at MedRez.

• After hours (4:30 PM -8 AM), or on weekends, the neurology call pager (401-350-0795) receives all urgent pages for neurology resident clinic pages. The on-call neurology resident is responsible for fielding emergent patient calls including but not limited to requests for refills (eg., patient ran out of seizure medications), medication reactions or side effects, or any other questions or symptoms which need to be addressed. Any calls from an attending’s patient should be directed to the on call general neurologist by the operator.

Tips

• You can look your patients and pre write your notes in your email which can then be copy/pasted during clinic. Do not open the encounter note in Epic prior to the patient’s
arrival at the appointment. When patients no-show (which happens frequently) open encounters creates a problem for the staff.

- Not every patient needs an in person follow up. Many patients can be given your card and asked to call as needed to discuss issues with you and then you can ask that an appointment be scheduled for them depending on the issue

- Pick one day in the week to routinely follow up on your clinic patients’ results and clear your Epic inbox. This prevents build up of material in your inbox and ensures timely communications with your patients

- When you see a patient, set expectations about:
  - Goals of today’s appointment
  - Whether they need a follow up appointment and why
  - When they should come to the ER. This is especially important for people with migraine or epilepsy
  - When you will be calling them with results
  - Whether they need a follow up appointment, when it should happen, and what you will accomplish at that visit

- Be sure to document everything for your patients in the after visit summary that will be printed for them. This is important as patients often will come alone and may not remember or be unable to communicate your recommendations to their family members/care takers

- If someone comes from a nursing home, rehab, or other facility with a carbon copy paper asking for your recommendations to be written down, you can simply print our your entire clinic note instead. This is more legible, professional, and avoids the redundancy of having to repeat your recommendations from your note.
EEG

Structure

- 1 EEG attending, 1 fellow, 1 resident
- EEG techs come intermittently and update the list of inpatient/outpatient for review
- Attempt to read EEGs in the AM and review your attempts with fellow. If adequate, present to attending in the afternoon.

Schedule

- 8am-9 AM: morning report, APC 5
- 9am-12pm: review EEGs with fellow, EEG lab at APC 6
- 12pm-1pm: Noon conference, APC 5
- 1pm-4:30pm: review EEGs with attending, EEG lab at APC 6
- Thursdays: ½ day resident continuity clinic

Goals (ACGME Milestones)

- Describe EEG in objective and standardized terms
- Recognize normal EEG and its variants
- Describe normal EEG features of wake and sleep state
- Recognize common EEG artifacts
- Interprets common EEG abnormalities
- Interpret uncommon EEG abnormalities
- Recognize EEG patterns of status epilepticus
- Describe normal and some abnormal EEG features of wake and sleep states in children

Resource

- [AAN - Interpretation of the Normal Adult EEG: Normal Patterns and Common Artifacts](Free)
EMG

Structure
- Mon-Thu
  APC 6 EMG lab
  0900-1200, 1300-end (usually 1700)

- Friday
  APC 5 Clinic – MDA and/or ALS clinic with the fellow and attending
  0830 - 0500

- Break from rotation for the usual didactics: morning report, noon conference, grand rounds

What
- 8 week continuous rotation during which the resident learns to interpret and perform routine nerve conduction studies and EMG under the supervision of the neuromuscular techs, fellows, and attendings

- During the rotation the resident is expected to present at least once at the neuromuscular conference on a topic of their choosing

- Recommended reading (both hardcopy and PDF copies available):

  Electromyography and Neuromuscular Disorders: Clinical Electrophysiologic Correlations. Preston, D., and Shapiro, B.

Goals (ACGME Milestones):
- Explains an NCS/EMG procedure in nontechnical terms
- Uses appropriate terminology related to NCS/EMG Pathology
- Describes NCS/EMG data
- Lists NCS/EMG findings in common disorders
- Interprets NCS/EMG data in common disorders
- Describes common pitfalls of NCS/EMG
- Formulates basic NCS/EMG plan for specific, common clinical presentations
- Performs, interprets, and creates a report for NCS/EMG
Psychiatry Consults – coming soon
Neuropathology

Objective:
The neuropathology rotation is designed to give PGY-4 neurology residents exposure to the fundamentals of normal and abnormal CNS histology and the diagnostic process by which pathologic specimens are evaluated. This rotation is covered in several two week blocks throughout the final year of neurology residency. The purpose is to gain an appreciation of the complexity and stepwise process by which pathologic diagnoses are made and to assist the resident in preparing for the neuropathology segment of the board examination. For full details, please refer to the handbook distributed by the course director, Dr John Donahue, at the beginning of the rotation. It is full of helpful suggestions, resources, as well as board-style questions.

Schedule:
The schedule is variable, but in general runs Monday-Friday from 8 AM to approximately 3-4 PM. Depending on the day of the week, there are various conferences involving neurology, pathology, radiology and neurosurgery which the neuropathology rotating resident may attend. Please always defer to the pathology attending for the final outline of the schedule for the week.

- **Monday:** 8 AM - 9 AM Neuro resident conference in APC 5; 9:00 -10:30 AM Neurosurgery Grand Rounds in the George Auditorium; 12 PM - 1 PM Noon Conference in APC 5; 2 PM Signout in POB 322
- **Tuesday:** 8 AM - 9 AM Neuro resident conference in APC 5; 10:00-11:00 AM Neuropathology Consensus Conference in POB 322; 12 PM - 1 PM Noon Conference in APC 5; 2 PM Signout in POB 322 *please check with neuropathologist to see if there is brain cutting.
- **Wednesday:** 8 AM - 9:30 Neurology Grand Rounds in the George Auditorium; 12:00 - 1 PM Neuroradiology Conference; 1:00 -2:00 PM Memory Clinic meeting in APC 133; 2 PM Neuropathology Signout in POB 322. *Please check to see if forensic brain cutting is occurring the day before with the neuropathologist
- **Thursday:** 8 AM - 9 AM Morning Neurology Conference in APC 5; 9 AM -12 PM Neurology Resident Continuity Clinic APC 5; 2:00 PM Pathology Signout in POB 322
- **Friday:** 8 AM - 9 AM Morning Neurology Conference in APC 5; 12:00 PM - 1 PM Either Neuro Resident Noon Conference in APC 5 OR Tumor Board in the Cancer Center 1st floor Conference Room; 2:00 PM Pathology Signout in POB 322 *please check to see if there is brain cutting with the neuropathologist

Making the Most of the Rotation
There is a significant amount of downtime on the rotation. Being self-directed with learning and reading is the best way to make the most of this rotation. The neuropathology rotator syllabus contains helpful information regarding neuropathology books that may be of interest to the resident and also a plethora of board-style questions to test your knowledge.
Recommended Reading:
Escarolle and Poirier's Basic Neuropathology and Modern Surgical Neuropathology, which may be found used at discounted prices on Amazon or other booksellers. Please note that Brown Library's Clinicalkey also gives us FREE access to several neuropathology textbooks, including Prayson's Neuropathology which retails for hundreds of dollars online. As always, reading about the conditions discussed on signout rounds and asking questions will also help further your clinical knowledge.
Neurology Outpatient Clinic (NOC) - coming soon
VAMC (VA Medical Center)

Structure:
PGY-4 neurology residents have the opportunity to provide both outpatient and inpatient care at the Providence VAMC. The rotation consists primarily of outpatient clinic on the 5th floor of the VAMC.

Subspecialty outpatient clinics at the VA include:

- Traumatic Brain Injury (Dr. Mernoff)
- Movement Disorders (Dr. Chang)
- ALS (Dr. Mernoff)
- EMG (Dr. Berger)
- Botox (Dr. Chang)

They will also schedule some undifferentiated new patients for you to see. During your rotation, the neurology attendings may assign you to see some inpatient consults at the same location. This typically happens a few times each week. The neurology consulting service at the VA does not generally handle acute stroke patients, who are transferred to RIH.

Schedule:
The schedules are prepared by Dr. Stephen Mernoff, the Chief of Neurology at the Providence VAMC. Clinic is held Monday through Friday and typically starts at 9am (except on Wednesdays, to accommodate for attendance at RIH Neurology Grand Rounds). On the first day, you should expect to get there earlier (8:30am) to go over scheduling and expectations with the attending. There is a break from 12-1pm allotted for lunch, and then afternoon clinics generally start at 1pm.

You are expected to attend Grand Rounds at RIH on Wednesday mornings but are otherwise excused from morning report and noon conference at RIH while rotating at the VA. If there is another lecture or conference at RIH that you would like to attend, discuss this with Dr. Mernoff at the start of your rotation to see if they can accommodate your request.

Expectations:
- See new and follow-up patients in clinic, take a full history and perform an exam, then staff the patient's case with the attending
- Rotate through specialty multidisciplinary clinics such as the ALS clinic, where patients are seen by multiple providers at once in a group setting.
- Help to teach medical students that complete their Neurology rotations at the VA.
- Perform new daytime consults on inpatients admitted to the VA hospital, and staff the cases with an attending who is in-house. Generally you will then see the patient at bedside with the attending.
• If a patient requires transfer to Rhode Island Hospital for further neurologic care, you should contact the on-call resident (if during off-hours) or consult chief (during the day) to facilitate continuity of care.

Preparing for your rotation at the VA:
• At least one month prior to your first VA rotation, it is important that you contact Jennifer Koziol (401-273-7100 x3579, email Jennifer.Koziol@va.gov) to make sure that your VA online training, computer login, and identification card are up-to-date. Even if you worked at the VAMC as an intern, the badges, fingerprints, and computer logins do expire and will need to be reissued.
• You will be using the VA EMR program, CPRS. If you have never used CPRS before your PGY-4 year, please mention this to Jennifer Koziol when you contact her to set up your computer access and identification.
• A few weeks before your VA rotation, please reach out to Dr. Mernoff (Stephen.Mernoff@va.gov), to let him know what your clinic schedule will be while you are at the VA. He will put together a schedule for you accordingly.

Logistics:
Residents are expected to arrange their own transportation

Address:
830 Chalkstone Avenue
Providence, Rhode Island 02908

• You can enter through the ER at the front of the main building, then follow signs to main elevators and go up to the 5th floor. Once you exit the elevators, if you face the window the clinic will be on your right.
• Parking at the VA can be difficult to find. You can park in the employee lots, but do not park in the patient/ visitor areas. It is recommended that you arrive at least 30-40 minutes before your clinic starts to look for parking. There is a playground/ ball field off of Chalkstone Ave, next door to the VA hospital, where parking can sometimes be found after the hospital parking lots fill up.
• There is a kitchen/ breakroom behind the receptionist's desk in the 5th floor clinic. There is a fridge and microwave available if you choose to bring lunch.
ELECTIVE

- Residents outline their electives over the next 6 months at their semi annual meetings
- The residency coordinator keeps a spreadsheet of everyone’s electives
- Each elective will be associated with an online evaluation sent to a supervising faculty member where applicable
- All extra mural electives must be approved by the program director
-HOW TO...-
DO WEEKDAY CALL

Structure
• Monday-Thursday, 4:30pm – 9pm
• Meet for signout on BB7 at 4:30pm
• The day call resident will hold the pager and return all calls until 8pm, at which time they pass off the pager to the consult 3 resident (who holds it until nightfloat arrives at 9pm)

Expectations
• If you have a sign patient on the floor, you should defer consults to Consult 2 or 3 residents
• The call person should ideally see ER consults or floor patients that they think are going to be admitted to their service and assign other consults to the consult 2 or 3 person. This allows them to present them to the attending on rounds the next day and provide continuity of care. Of course this is not always possible.
• The Wards resident MUST be out by 9pm!
• Be cognizant of when someone’s shift is finishing up so they can get out on time
• Be aware of who is available to do consults and what their current work load is in order to distribute work equitably

*Please see consults rotation for additional expectations and tips*
DO FRIDAY CALL

Structure
- Done by a PGY2 (Jan-Jun) or PGY3 (Jul-Dec) resident
- Carries consult pager from 4:30pm on Friday until 7:45am on Saturday
- Generally is scheduled for ICU rotation on Sunday
- Consult 2 resident helps until 9pm
- Consult 3 resident helps until 12am

Expectations
- Discuss all cases with attendings Saturday morning and see as many cases with them as you can. Usually one service will have more overnight admission than the other. The service with more admission should round with that attending while you see your consults and discuss your admission with the other attending. You then interrupt rounds on the other service to present your consults and admission to the other attending and leave.
  - You should not round with the attending on patients who were consulted on by other residents
  - Do not stay to help with follow ups or addition consults after 8am
  - Write all admission and consults on the BB7 white board
    - Put G next to general consult and V next to vascular consult patients so the attendings know who they need to round on
    - Add all new admission and consults to the appropriate lists on Epic

*Please see consults rotation for additional expectations and tips*
WORK ON THE WEEKEND

Structure

<table>
<thead>
<tr>
<th></th>
<th>Vascular Wards</th>
<th>General Wards</th>
<th>Consults</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Saturday</strong></td>
<td>1 Vascular Attending</td>
<td>1 General PGY2 Neurology Resident</td>
<td>1 Consult Resident (7:45am – 9pm)</td>
</tr>
<tr>
<td></td>
<td>1 APP</td>
<td>cross covers both services</td>
<td><strong>assistance from:</strong></td>
</tr>
<tr>
<td></td>
<td>1 PGY1 Medicine Intern</td>
<td>(only general service if fellow is on)</td>
<td>1 NCCU resident (end of rounds-4:30pm)</td>
</tr>
<tr>
<td></td>
<td>1 Stroke Fellow (5 months of the year)</td>
<td></td>
<td>1 Wards Resident (end of rounds-9pm)</td>
</tr>
<tr>
<td><strong>Sunday</strong></td>
<td>1 Vascular Attending</td>
<td>1 Vascular PGY2 Neurology Resident</td>
<td>1 Consult Resident (7:45am – 9pm)</td>
</tr>
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<td>1 NCCU resident (end of rounds-4:30pm)</td>
</tr>
</tbody>
</table>

- Team members
  - House staff/APPs
    - 1 PGY2 or PGY3 On Call Consult resident (7:45am – 9pm)
    - 1 Ward Resident (6:00am – 9:00pm). Can help with consults after they finish wards but must leave after 9:00 pm signout. The week’s vascular wards PGY2 takes one weekend day and the general wards PGY2 takes the other day
    - 1 NCCU Resident (6:00am – 4:30pm). Can help with consults after they finish NCCU rounds. Must leave after 4:30pm sign out
    - 2 PGY1 medicine interns (1 on vascular and 1 on general both Sat and Sun)
  - Sat and Sun
    - 7am-7pm
      - 1 APP for code stroke/interventional cases
      - 1 APP for vascular ward (carries up to 10 patients)
    - 7pm-7am
o 1 APP that covers all APP and vascular ward resident
covered patients, responds to code strokes with residents,
and assists in endovascular cases
  ▪ Stroke fellow on Saturday during the day (5 months of the year)
  ▪ 1 Nightfloat resident (starting 9pm Sat and Sun) until 8:00am the
    following morning
  ▪ all team members update their respective portions of the white board at
    the end of their call

• Attendings
  • 1 General wards attending that also staffs general consults
  • 1 Vascular wards attending that also staffs vascular consults
  • 1 NCCU attending
  • 1 Peds Neuro attending. Any request to see a peds consult on the weekend
    cannot come from the peds team and must be approved by the peds neuro
    attending
  • there is no dedicated consult attending, consults are divided between the in
    house general and vascular attendings

On Call Consult Resident
• Receive and triage all new consults and follow ups
• See consults yourself until the wards and NCCU residents are free (typically around
  noon)
• If outside hospitals call for transfers, please direct them to express care (the transfer
  center) 401-444-3000. Please do not accept outside hospital transfers, this should only
  be done by the vascular neurology attending regardless of what service they are going to
• If you receive outpatient phone calls from patients or the operator, please direct them to
  the on call general neurology attending
• Bunch up non-urgent consults to discuss with the on-call chief, fellow, or attending by
  phone but call immediately for all emergencies or when there are acute management
  issues. This includes all code strokes
**Wards Resident**

- 6am – 8am: Pre-round
- 8am: Both wards attendings arrive for rounds on BB7 to check out the white board but go back to their respective units to round. Do not have both teams round in the BB7 work room simultaneously as it is noisy and disruptive.
- Start rounds with the attending responsible for the sicker/busier/service with more new admissions (use your judgement). Meanwhile the other attending should be seeing their consults on their own. Then switch. The goal is to get the overnight resident out. The PGY2 should be rounding with the attending on each service sequentially unless the stroke fellow is there in which case the PGY2 should only take care of the general service and both general and vascular ward round would happen simultaneously as they do on weekdays. The ward PGY2 should get signout from the fellow after rounds when a fellow is on.
- Be aware of the APP’s patients in case they need to go an acute stroke/endovascular case you should be covering their patients in the interim
- You **do not need to see every wards patient since you are usually the senior for both wards services on the weekend.** Focus on new/active patients and those the intern/APP request help with
- After both attendings round on their respective wards services, all residents, interns, and APPs from all services typically migrate to the BB7 work room to keep everyone centralized

**NCCU resident**

- Runs just like a weekday except rounds tend to be quicker and you will be staying till 4:30pm to help the on call consult resident

**Nightfloat Resident**

- Signout to On Call resident at 7:45 am
- Discuss all cases with attendings Saturday and Sunday morning and see as many cases with them as you can. Usually one service will have more overnight admission than the other. The service with more admissions should round with that attending while you see your consults and discuss your admissions with the other attending. You then interrupt rounds on the other service to present your consults and admission to the other attending and leave
  - You should not round with the attending on patients who were consulted on by other residents
  - Do not stay to help with follow ups or additional consults
*Please see consults rotation for additional expectations and tips*
ORDER EEGS

- EEG techs normal hours are 7AM-3:30PM. So, plan ahead.
- Routine (20 min) are done in the EEG lab (APC 6) during the week
- Prolonged/portable routine are done at the bedside
  - ICU patients, wards patients who need longer monitoring or challenging to move off the floor
  - Please page the EEG tech (350-4040) to inform them about these patients
- Concern for status epilepticus (convulsive or nonconvulsive) is the only reason to call in EEG tech during off hours.
- If emergent EEG needed, only neurology residents or neurology attendings may call in tech. Pager is 350-4040.
- ***EEG techs are unreachable from midnight to 6am. You must treat clinically during these times.***
- EEG tech is in house during the day
- They need to know who can be taken off entirely, or who needs to stay on (and turn over the machine). It’s good to habitually let them know after you round with your attending, otherwise they will call you
- The overnight resident and wards residents should be aware who needs to stay on
  - Consult Chief resident should communicate to the weekend residents who needs to stay on as well as criteria for discontinuing EEGs
- EEGs must be interpreted by us on the spot!
  - EEG attending is available by phone for emergencies and will call with emergent findings. The attending will routinely put the reports in Epic in the afternoon 7 days a week
RUN CODE STROKES

*IF IN DOUBT OR IF THERE IS A DISAGREEMENT BETWEEN YOU ANOTHER PROVIDER, CONSULT THE STROKE PROTOCOLS ON THE LIFESPAN INTRANET. THE PROTOCOLS ARE ALWAYS CHANGING AND THIS IS WHERE THE MOST UPDATED INFORMATION IS. IF A DISAGREEMENT REMAINS, BYPASS THE CHIEF RESIDENT AND CONTACT THE ON CALL STROKE ATTENDING IMMEDIATELY

Some facts about code strokes

- Neurological emergencies
- Can be initiated by anyone in the hospital
- There are 3 criteria for activation:
  - Clinical suspicion for stroke
  - Ongoing neurological symptoms (cannot be resolved)
  - Last known well (LKW) within 16 hours
- ED and EMS code stroke pages are sent out by medcomm (the little desk inside the entryway in the ER)
- Floor code strokes are sent out by the operator who is contacted by that unit’s clerk or nurse
- Floor code strokes are over headed everywhere in the hospital, but ER code strokes are only overheaded in the ER. All code strokes are sent to the consult pager regardless of location
- If you would like to receive code strokes on your personal pager all the time, just ask the operator
- tPA can be given to patients up to 4.5 hours of LKW. At our institution, we do not exclude patients between the 3-4.5 hour window based on ECASS 3 criteria
- An NVC-APP will accompany you to all code strokes from 7am-7pm, but not overnight. The 2 of you will parallel process to ensure timely treatment. Resident focuses on tPA and APP focuses on endovascular
- Remember a code stroke consult is NOT a fast neuro consult. It happens in 2 stages, getting an abbreviated neuro exam and asking the 4 screening questions to make acute decisions on endovascular and tpa. After these acute decision are made, the non urgent portions of the H/P are done i.e. reflexes, gait, family and social history
- As soon as you determine the patient is not a candidate for tPA, notify the patient’s nurse to cancel the code stroke immediately. This does several things:
o Frees up the ER CT scanner for other cases
o Makes the nurse your best friend because they don’t have to document the stuff in the code stroke flow sheet
o If they are stable, moves the patient out of the critical care bay and makes them a non-time sensitive consult

**Code stroke protocol**

*The following division of labor between the neurology resident and APP is a suggestion for what seems to be the most efficient way to run most code strokes. However, as you will see every code stroke is different and the most efficient flow will vary with each case. Be in constant communication with each other so you help each other parallel process and do not repeat each other’s work*

- NEVER send a student or rotator to see a code stroke on their own. If you want them to practice running one, it should be under your direct supervision and should not affect the time to treatment
- Do not waste time calling the ED/floor – go directly to the bedside
- Arrive ASAP - expected time is within 5 minutes, but the sooner the better
  - Walk, don’t run, as it scares people in the hospital
  - No place takes >5 minutes to walk to in the hospital
- Upon arrival, ensure the patient is the correct patient
- Identify yourself as the neurology resident running this code to the patient and other providers – people will be happy to see you as strokes scare everyone (except us)
- If you happen to get to the patient before they are in CT, get an abbreviated exam (aphasia, drift in 4 limbs) and go over the 4 exclusion criteria in your stroke cards en route to ED. If there is a family member there, grab them and ask them to stay put right outside the scanner so they can accompany you and the patient to the critical care room after the scan
- Most of the time the patient will already be on the CT table. You can continue to examining/speaking with them until the techs are ready to run the scan. The techs will sometimes stop when you touch the patient or talk to them. Politely remind them to please keep doing what they’re doing, you will work around them, and get out of their way once they’re ready to run the scan
- While the patient is getting scanned, use your time efficiently
  - Find EMD, ED team, or family for more collateral info
- The APP can stay in the scanner and ensure there is no bleed and put in an order for the CT/CTA if the ED hasn’t already
- Look up the patient’s medical record on Epic or in nursing home paperwork
  - Often the contact information can be found in here—start calling to get collateral if necessary
  - Focus on exclusion criteria (anticoagulant use, recent surgery, prior ICH, etc.) and history of prior strokes/baseline exam

- The non-con CT head is always done before the CTA. If it shows a bleed, it will be obvious and you should ask for labetalol and a cardene drip to be prepared. It is a judgement call as to whether you want to add on a CT/CTA at the time.

- If the non CT head doesn’t show a bleed and you haven’t encountered any exclusion criteria thus far, the tPA should be mixed by the ER nurse. This determination can be made by the neuro resident or APP in the scanner, bleeds are usually obvious and can be seen on the control room monitors. If there is any question ask the ER radiologist in the reading room next door. The neuro resident or APP should make sure the tPA gets mixed by asking for a verbal confirmation (Who is this person’s nurse?->I am->Would you please mix the Tpa?->Yes). If there is resistance, refer them to the stroke protocol on the intranet. If there is further resistance, call the stroke attending immediately

- While the patient is getting their CTA head and neck, the ER nurse should be mixing the tPA, the APP should go to the ER radiology reading room to confirm the CT and CTA read and the neuro resident should be getting further collateral or can accompany the APP to the reading room. Do not go back to the reading room a second time after the APP has already gotten the read unless there is a discrepancy you need to clarify. This is an inefficient use of precious code stroke time and irritates the radiologists (understandably). You are not responsible for checking the APP’s information, you are a team and must trust each other and parallel process

- Once the patient comes out of the scanner, they get weighed

- They then get parked in critical care rooms 1 through 6

- At the point the APP will be back with a read as to whether there is a LVO (large vessel occlusion) or not. If there is not, the APP can check to see if you still need their help with getting meds from pharmacy, tracking down family, arranging for a hyperacute MRI et. Otherwise they can leave. If there is and LVO, the APP will contact the on call neurointerventional (NIR) attending and send out an LVO page.

- While the APP is figuring out the LVO stuff, make sure to complete the NIHSS. If your 4 screening questions for tPA were negative, call your Chief Resident (Wards Chief during 8a-4p M-F; Consult Chief after 4pm) or Vascular Attending ASAP to discuss in 2 lines and give the tpa

- DO NOT ASK PATIENT/FAMILY IF IT’S “OK” TO GIVE TPA. This presents it as an option and introduces uncertainty. tPA should be an assent, not a consent. When someone
refuses tPA, it is usually because you are not selling it properly. Please see the code stroke lecture on the resident drive on how to sell it.

- PGY2s should never administer tPA without discussing with the on call chief or attending first. PGY3s may administer tPA while or shortly after discussing with the attending or chief

- Shout out the time that tPA is given so the nurse can record it. “tPA bolus going in at 9:45am!” The neurology resident or APP will give the bolus and the ED nurse will hook up the drip

- If the patient is ready to go up to endovascular, do not hold them up in the ED to get tPA. tPA is available in the NIR suits and can be given by staff there

- Although you must trust the APP to obtain the correct read of the CTA and appropriately call the NIR attending for an LVO, you should always look at the CTA yourself at some point for your own education. A good time to do this is once you have given or excluded the possibility of tPA. This can be done on any of the ED bay/critical care computers

- Once tPA is given or the patient starts getting transported up to NIR (or both treatment options are excluded), announce that the code stroke is completed and thank everyone

- Call BB7 to inform the charge nurse a patient is being admitted to the stroke unit and has been given IV tPA. If they didn’t call the appropriate charge nurse for the unit they should go to

- After tPA is given, wrap up the non-urgent portions of your neuro exam and history then go complete your note if you don’t have another urgent consult pending. Again, do not hold up endovascular for it, you can do this on the way or after endovascular. You can go up to the NIR suite and watch the procedure if you don’t have other consults pending. Document the time you did your stroke scale as 5 minutes before the tPA was given in your note (Joint Commission requirement of NIHSS being done before tPA administration). If the patient didn’t get tpa or endovascular document the reason as it is the standard of care. i.e. out of window for tpa and endovascular or large area of established infarct on CT correlating with clinical exam excludes tpa and endovascular

- Give the ED the dispo (attending and floor), BP parameters, any other orders, and whether you’ve already called the charge nurse on that floor requesting a bed otherwise you will be paged about these questions after you’ve already left the patient’s bedside and will be interrupted during another consult

What to do about faulty activations

- STAY CALM AND BE POLITE

- If a patient does not meet all 3 code stroke criteria:
  - Clinical suspicion for stroke
  - ongoing neurological symptoms (cannot be resolved)
• last known well (LKW) within 16 hours
they should not be a code stroke activation and you should cancel it immediately. This is
important as the CT scanner and NIR suites stop their normal work flow waiting for this
patient. If you receive frequent inappropriate activations, please let the lead NVC-APP,
Gino Paolucci, know.

• If the team that activated the code stroke disagrees with your cancelling it despite your
explanation of the reasoning, have them speak with the on call stroke attending
immediately
• Always be polite and ask if the team would still like a regular neurology consult which
you can perform now or later depending on whether you have a sicker patient to see at
that time. If they do not want a regular consult, just write a 2 line (literally 2 lines)
significant event note explaining the reasoning for code stroke activation, cancellation,
and why a neuro consult was not needed

Tips

• LAST KNOWN WELL (LKW)
  o This is NOT the time the symptom was discovered unless it was acutely
    witnessed by someone (i.e. they were talking normally and then stopped mid-
    sentence)
  o Always confirm LKN with a reliable patient or eye witness—DO NOT simply take
    the word of another provider
  o Identify contact information by going through EPIC and talk directly with family
    members for aphasic, elderly or non-English speaking patients who seem
    unreliable
  o If LKN >4.5hrs, the patient is not a IV tPA candidate but may still be NIR eligible.
    DO NOT STOP THE CODE STROKE UNTIL IT IS DEFINITE THAT THE PATIENT IS
    NOT ELIGIBLE FOR TPA OR ENDOVASCULAR
  o Do not delay tPA for a foley, another IV to be put in, EKG, gown. Politely remind
    the nurse or tech that the tpa is the priority as per the code stroke protocol
    which can be referred to on the intranet
ADMIT PATIENTS

Rule 6

- This is a hospital wide rule that enables the ED to decide which service is most appropriate for a patient and improve their flow.
- If that service disagrees, the attending of that service has 1 hour to contact the attending of a different service which they think is a better disposition for them.
- If a different service is not identified after 1 hour, the patient is admitted to the service initially identified by the ED.

Note: just because the ED calls a neurology consult, this does not mean they intend to admit to our service. IMIS cannot use this to state that our attending needs to call them.

Expectations

- Verify medications – if unable to, please document in your note and sign-out for the day team to do this!
- Use the appropriate order set
- Ensure all imaging and tests are ordered
- Fill out MRI Screening form yourself, do not leave this for the day team except if extremely busy or unable to complete due to lack of family. This delays imaging for our patients and ultimately discharge!
- It is YOUR responsibility to inform the NCCU resident, ward resident, call resident or nightfloat about this patient
- Drag patient onto the appropriate group list in Epic
- Write name on the BB7 white board
  - Write important follow up or FYIs on the white board for the evening and/or nightfloat residents to do or be aware of. For example, “f/u 6 hr HCT at 2am to r/o ICH”
- Set expectations with family/patient:
  - Working diagnosis
  - What tests will happen and when
  - Which doctors/APPs will be taking care of them
  - Day time rounds between 9:30am-12pm – they should be there to ask their questions if possible
  - Estimated length of stay in the ED (if there are not free beds)
Tips on writing an admission note

- Chief complaint should be an actual complaint: right sided numbness & tingling. Not “stroke.” And NEVER CVA. Cerebrovascular accident is a ludicrous term, it is almost never an accident
- HPI: Concise, but enough detail to understand the story. Pertinent components of the PMH, but not every element of PMH. For example, gout is almost never relevant. Some HPIs require significant background information to be conveyed
- A lot of neurology is detective work. It’s often necessary to dig through the chart and document relevant history in a concise fashion
- Prior imaging/stroke details or EEGs are important to mention!
- Medication: All currently known, list how you obtained list (i.e. confirmed with family, CVS).
- Social Hx: Includes habits, occupation. Level of independence (ADLs) and ambulatory status are very important to know for baseline and dispo
- A full neurological exam must be documented on every initial consult/admission seen
- Make a template of a normal neurological exam adapted from macros used by attendings/senior residents
- Please provide at least 3 differentials for each assessment.
  - Even when the DDx is seizure, seizure, seizure... it is often worth addressing why it is not another Dx.
  - Additionally, provide a DDx for etiology or mechanism (i.e. seizure due to medication non-compliance, substance abuse/withdrawal, infection decreasing seizure threshold or acute R MCA cardioembolic stroke due to afib)

What does a full neuro exam include?

- **Mental Status:**
  - Level of alertness
  - Oriented to person, place, time. Person means another person, not one’s self
  - Fluency. Dysarthria is different from aphasia. it does not belong in mental status, it is a cranial nerve finding
  - Attention
  - Fund of knowledge
  - 3/3 registration and recall
- **Cranial Nerves**
  - II: Discs sharp, intraocular vessels appear normal, Visual fields full to confrontation. PERRL
  - III/IV/VI: EOM intact, no nystagmus noted
  - V: V1-V3 sensation in tact to LT/temp
• VII: Face symmetric.
• VIII: Hearing intact to conversation
• IX/X: Absent dysarthria, normal palatal elevation
• XI: Traps/SCM 5/5.
• XII: Tongue midline. If you notice a tongue deviation it’s usually due to a face droop and not a true tongue deviation. You can lift the side of the person’s face up at the cheek or have them push their tongue against your hand while their tongue is in their mouth to check

• Motor:
  • Tone and bulk normal for age. No fasciculations or atrophy noted.
  • Strength in 4 limbs

• Reflexes
  • In 4 limbs; No clonus

• Sensory:
  • Intact to LT, temperature and vibration throughout. No extinction.

• Coordination
  • no dysmetria in 4 limbs. The Romberg is a test of proprioception and belongs under sensation, not coordination

• Gait:
  • Normal stride and cadence. +Toe/heel/tandem walking.
DISCHARGE PATIENTS

The discharge summary includes the following components. It is the resident’s job to review all intern discharge summaries before the patient leaves

- **Medications**
  - Ensure the comments section includes the start and stop time for any new or scheduled blood thinners. i.e Aspirin 81mg. stop once INR is 2 or greater

- **HPI** – generally copy from H&P unless inaccurate

- **Hospital Course:** essential – ensure this is accurate and detailed
  - There is now a shared discharge summary to be used for strokes " strokedisc". Fill out every field in this template and if not applicable, write why that it
  - In addition to the strokedisc, you must include a brief paragraph outlining hospital course and reasoning of medical and dispo decision making
  - If a patient’s primary diagnosis if not stroke, do not use the strokedisc template and just use the usual paragraph form used by internal medicine

- **Neurologic exam at discharge:** This is very important and should be complete and accurate since patients may bounce back and you’ll want to know their most recent baseline exam
  - **DOUBLE CHECK ALL DISCHARGE EXAMS DOCUMENTED BY THE INTERN**

- **Follow up**
  - On the day of discharge, check with the attending whether the patient needs a follow up, with whom, and approximately when
  - Contact Vascular Neurology for follow ups – call or email information to the stroke secretaries
  - Ensure this is not automatic 2 week follow ups for any service. Epic will sometimes default to this it sets wrong expectations of patients, families, and primary cares

- **Diets**
  - especially if modified diet or TFs (type and rate)

- **Activity level**

- **After Visit Summary**
  - Explain in plain language what happened during their stay
  - Spell out diagnosis, appointments/times, med changes, outpatient tests and labs
HANDLE TRANSFERS

- **Outside hospital transfers**
  - Responsibility of the accepting attending to notify the person carrying the consult pager of the details

- **Floor to Floor transfers**
  - Responsibility of the resident/APP taking care of the patient to notify the resident/APP taking over care of the patient

- **Outside stroke transfers**
  - The consult pager would receive a page notifying them patient is on the way or arrived and where they will be arriving (usually the ED)
  - Essential to find out if IV tPA was given or not; and if a CTA was done. if not it will require extra work on our part to figure this out
  - Ideal to examine before intervention, but this should not delay groin puncture
  - Coordinate with BB7 charge nurse early to ensure open bed; if patient is intubated, work to make a NCCU bed ASAP

- **Tips**
  - If you know a transfer is en route and don’t feel you’ve received adequate information, you can call express care for family or outside hospital contact to collateral
  - Check the BB7 or 7B white boards to see which patients can be bumped to other units and make room for the transfer. You or the nurse should explain the reasoning to the patient as to why they’re being bumped. If the patient is encephalopathic and it’s not too late, notify the family member/care taker. But please do not wake them up in the middle of the night to let them know they’re moving to a new bed
-Policies-

CALLING IN BACK UP ON A BUSY CALL

• There are some measures that can be taken prior to calling in back up
  o When the total inpatient census is getting close to 35 or a particular service is busy, patients that are normally admitted to vascular can be admitted to general neurology and vice versa provided it is discussed with the attending of the receiving service.
  o The ward chief or fellow should shift from the attending role to a supervising resident role. They will take over directly supervising the intern and be the APP’s back up so the PGY2 can focus on taking care of over the caps
  o The residents should ask the attending to help with family meetings and speaking with patients

• If one of the on-call neurology residents or attendings feels patient safety is being compromised, they should call the program director (or associate program director if the program director is not available). The PD will assess whether an additional resident and/or attending need to be called in from home for back up.

• Calling someone in for back up should only happen if patient care is being compromised due high volume, acuity, or a last-minute personal/family emergency and provided that it cannot be handled by the in house team.

• Back up will not be called in due to flow issues in the ER or backed up nonurgent consults. The ER can contact the resident or attending for preliminary recs by phone and nonurgent consults can be passed on to the resident coming on to the next shift.

• If the census reaches 35 or greater the inpatient services will go on CODE BLACK, see below
CODE BLACK

When the combined inpatient census reaches 35 or more, the following email will be sent out to the transfer center (express care) and leadership. Residents and NVC-APPS will receive a group page

Despite taking intra-departmental measures, the inpatient neurology service is now at or above 35 patients and we are on CODE BLACK

The census is as follows:

vascular [INSERT NUMBER]
general [INSERT NUMBER]
total [INSERT NUMBER]

We are no longer accepting non-urgent neurology transfers to Rhode Island Hospital for the next 24 hours. I will email this group and call express care with an update tomorrow morning. I've personally notified express care by phone, including any protocol updates

1) continue to accept all emergent neuro cases including ELVOs and neuro ICU level patients. there is no need for additional calls to any of the on call attendings outside of the calls that are usually made. i.e. calling the vascular neuro attending for floor to floor transfers, calling the NIR attending for ELVOs, and calling the NCCU attending for ICU to ICU transfers

2) for all non-emergent neurology cases from outside hospitals, please let them know RIH is not accepting non-urgent transfers. if there is a question as to whether the transfer is necessary, please call either the vascular or general neurology attending on call depending on the type of case. The on call attending should review imaging on remotely using Lifeimage where applicable. The NIR attending should continue to be called about potential/actual endovascular cases as usual but not non-interventional cases. A transferring hospital “not having a neurologist” is usually not a sufficient reason to transfer as many of these cases can be resolved over the phone when discussing with the on call neurology attending. We are still in the process of working out transfers to the Miriam in the setting of a code black, please hold off on Miriam transfers until we get the final ok from Dr. Siket and finalize our protocol

3) patient on the neurology services with active medical issues and no/minimal active neurological issues can be transferred to medicine. This should be be done by paging 350-0354 as early as possible to determine if the patient is appropriate and they have the capacity to accept them. appropriate diagnosis that should be evaluated on a case by case basis include syncope with normal neuro exam, dizziness with normal CTA, and transfer out of neuro ICU with no active neuro issues

4) express care will record all requests for transfers for the next 24 hours on a spreadsheet and send to Dr. Saad the following morning to distribute to the on call neurologists and NIR
attending. The on call attending may wish to give feedback on the reasoning for acceptance/denial. This will be discussed at the weekly stroke center meeting and fed back to express care. The following 7 fields will be included:

- patient name
- diagnosis
- name of transferring hospital
- outcome (acceptance/denial)
- reason for acceptance/denial
- what service the patient went to (or what other hospital if known)
- which neurology or NIR attending the case was discussed with if applicable
SCHEDULE CHANGES, ABSENCES, AND SICK CALL

Schedule changes

• If a resident needs last minute coverage, it is their responsibility to find coverage and then notify the program directors and chief resident responsible for scheduling. This applies to all rotations, clinics, didactics presentations, grand rounds presentations, and any other assigned responsibility. If the nature of the emergency does not allow them time to make other arrangements, they should contact the program directors to arrange coverage for them.

• Be cognizant of the impact on duty hours, days off, minimum duration of rotation requirements, and clinic when you change your schedule

• All rotation and call changes must be approved by the program director

• Residents may not use single vacation days as part of switches

• Vacations must be taken for 7 days at a time

Sick Call/Personal Emergencies

• If someone needs to call out sick Mon-Fri, the first person to be pulled is double covered peds followed by the EEG resident

• If someone calls in sick Sat, Sun or on a holiday, an off-service resident will be pulled
CONFERENCE ATTENDANCE

- Attendance is mandatory
- Please use the sign in sheet for every morning report and noon conference. Use the evaluation form for grand rounds in lieu of the sign in sheet
- Absences are only excusable for time sensitive emergencies. Having a busy census is not an adequate reason unless the department is on CODE BLACK and a resident is on a service affected by it
- Chiefs should not send juniors to non emergent consults during didactics. If it is unclear whether a case is emergent, a resident should check it out and if it’s determined not to be an emergency, they should come back to conference and wrap up the consult afterwards
- All residents must attend at least 66% of didactics. If someone attends less than that, there will be a plan to make it up
- During July when new PGY2s start, it is the consult chief’s responsibility to respond to or assign another chief resident to respond to any emergent neuro consults during didactics so that they PGY2s have the opportunity to attend all didactics
- Residents on wards, away elective, vacation, or the VA are excused from noon conference and morning report. The nightfloat resident is excused from noon conference
- The chief resident(s) responsible for the year’s didactics must keep the google calendar for didactics updated for both residents and prospective applicants to view
EDUCATIONAL ALLOWANCE

- Each resident has $1500 that can be used during their PGY2-4 years. This money can be used to attend educational conferences or for boards. Other uses of this money must be negotiated with the program director.

- Each resident receives a neurologic text book every 6 months voted on by the residents. If the resident already has a copy of this book, they money may not be used for alternative purchases.

- If a resident has the opportunity to present at a conference, the registration, travel, hotels, and printing fees will be covered by the department. The resident is responsible for daily transportation (taxi, car rental, public transport) as well as meals.
MEALS

- The hospital provides meals to residents on call via Freedom Pay. Please contact the GME office for any issues with it.

- The department provides residents with snacks, tea, coffee, and office supplies that are ordered at the beginning of the month by the program coordinator. Changes can be made provided we remain within the budget. Please speak directly with the program coordinator about any requested changes.

- The department provides lunch at noon conference every Thursday. During interview season, this is replaced by breakfast at morning report and lunch at noon conference on Tuesdays and Fridays.
MRIs in the Emergency Dept

The following was discussed with Dr. Tung (neuroradiology) on 10/11/17

- When a particular MRI is needed with contrast needed in the ED, please discuss the reasoning directly with the ED radiology resident to ensure it is protocolled appropriately.
- If you are told that it cannot be done in ED, please remind them that there is no such policy. If you are facing resistance, please ask the appropriate on call neurology attending to back you up. Involve the on call neuroradiology attending as needed.
- Please remember that ED MRIs are a privilege and should not be abused.
CODE OF CONDUCT

• Treat your colleagues and patients and as you would want to be treated
• Your primary duty is towards your patient
• Your behavior reflects on your co-residents, department, and specialty
• Except for PGY4s who take home call overnight, all resident must remain in house for the duration of their shift. Temporary leave from in house call must be cleared with the program director
• When juniors staff cases with senior residents or fellows, the senior’s recommendations should be followed even if there is a difference in opinion. If there is disagreement with the senior recommendation, the junior should feel empowered to discuss with the on call attending.
-Miscellaneous-

SEMI ANNUAL EVAL AND FEEDBACK

- 360 eval
  - Make sure to perform 360 feedback with all your team members (including the attending) at the end of a rotation.
  - Be sure to give people recognition and positive feedback!
  - Do not be afraid to give feedback about negative experiences, if you don’t they will continue to happen. If you’re not comfortable doing it with the attending or team you are working with, speak with your chief or program directors. You can also provide anonymous feedback via:
    - end of rotation evaluate form
    - annual GME survey
    - annual ACGME survey

- Clinical Competency Committee
  - Faculty who spend a significant portion of their clinical time working with residents in both inpatient and outpatient settings are selected. These faculty use written feedback given at the end of each rotation to assign residents their ACGME Neurology Milestones. This is done twice a year.

- Program Curriculum Committee (PEC)
  - Once a year, 1-2 residents from each year of training and a group of six core faculty meet and use the AGME surveys filled out by both residents and faculty to guide ways of developing the program.

- Semiannual evaluation
  - Each resident will have an individual, face-to-face semiannual evaluation with the program directors where the following will be reviewed
  - In addition to what is listed on the semiannual review form below, the following will be reviewed at each meeting
    - Faculty comments
    - Quiz review for chiefs
    - Electronic chart deficiencies (i.e. EPIC inbox is cleared)
    - Administrative access, certifications, demographics are up to date
    - Publications and website profile update

- 3 month evals during PGY2 year
  - PGY2s will have 2 additional “check-ins” in between their semiannual evals covering:
    - Personal, interpersonal, or programmatic concerns
    - Wellness/burn-out
# Neurology Resident Semi-Annual Review Form

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<thead>
<tr>
<th>Resident:</th>
<th>Evaluator:</th>
<th>Program Director □</th>
<th>Assistant Director □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation Date:</td>
<td>Evaluation Period:</td>
<td>Moonlighting: Yes □ No □</td>
<td></td>
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</tbody>
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## ACGME Milestones
- Evaluations Received and Reviewed: Yes □ No □
- At appropriate training level: Yes □ No □
- Areas for improvement/Comments:

## RITE - Residency In-Service Training Exam
- Previous Scores:
- Most recent score:

Conference attendance in last 6 months: ____% [Goal 66%]

Number of Academic goals met from last 6 months (study, publications, projects, electives): ____ of ____

## Academic Goals for next 6 months

Current level of burnout: none 1 2 3 4 ready to quit
- Do rotations need to be moved around? Yes □ No □

## Clinical Skills Evaluation Exercises (NEX forms)
- Ambulatory □  Child Neurology □  Critical Care □  Neurodegenerative □  Neuromuscular □

## Post Graduate Plans

Curriculum Vitae Reviewed: Yes □ No □

Program Feedback

<table>
<thead>
<tr>
<th>Resident Signature</th>
<th>Date</th>
<th>Program Director/Assistant Director Signature</th>
<th>Date</th>
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</table>
ELECTRONIC CALENDARS

The following can be copy/pasted into smartphones, tablets, and laptops. If copying these calendars does not work, please contact Dr. Saad to give you direct access from google cal.

VASCULAR WARDS ATTENDING
https://calendar.google.com/calendar/ical/tbemfr7jt94qp2tpf0f71b2h50%40group.calendar.google.com/public/basic.ics

GENERAL WARDS ATTENDING
https://calendar.google.com/calendar/ical/5jcocepib2v0h5nfoacooc9oq0%40group.calendar.google.com/public/basic.ics

CONSULTS ATTENDING
https://calendar.google.com/calendar/ical/u42g36un8alkoaigijr58d7jgs%40group.calendar.google.com/public/basic.ics

NCCU ATTENDING
https://calendar.google.com/calendar/ical/h302tq2di2t1bdhha7f2g9hko8%40group.calendar.google.com/public/basic.ics

NIR ATTENDING
https://app.qgenda.com/iCal?key=c91792a1-3ec3-4f1f-a276-770565012220

The residency calendar is maintained by the residency program coordinator and chief residents. It contains information relating to morning report, noon conference, LP clinic, Neuro Access clinic, ABPN and fellowship deadlines, departmental events, community outreach, and interview season events

RESIDENCY CONFERENCES AND EVENTS
https://calendar.google.com/calendar/ical/hdlj8g11m6uk2ds6mmk211il9k%40group.calendar.google.com/public/basic.ics
EPIC LISTS

• There are lists for all inpatient services
  ▪ General Wards
  ▪ Vascular Wards
  ▪ Pediatric Neurology
  ▪ ICU
  ▪ Consults

• When admitting or seeing a new consult, drag the patient onto the appropriate list

• Everything entered into the handoff is visible to everyone, please keep all communications professional

• Write a handoff with pertinent information; update daily if you are directly involved with the patient’s care
  ▪ Also important to communicate information to the Chief (I.e. IMIS attending called about pt X and was curious about Y; I told them Z)
THE WHITE BOARDS

The BB7 White Board
- Essential for collective communication of our dynamic services
- Contains all information for daytime vascular service coverage as well as all nighttime and weekend information for all neurology services in the hospital
- New admissions or transfers (NCCU or other service)
  - Write last name under appropriate team – these will be considered "new patients" for the next day
- Write "old" or "established" patients under the appropriate team, and whether it is covered by the intern or resident
  - Essential for nurses and nightfloat to know who is responsible for cross covering
  - This should be updated by the wards team after rounds every day
- List consults on the right side of the main board
  - This is essential on the weekend so attendings know which consults are new and need to be staffed
  - Place attending's initials (i.e. JC) next to consults needing to be seen on Saturday and Sunday – write down where the patient is located (JB234) and alert the attending in the morning who needs to be seen
- Bottom-Center
  - Used for follow ups and FYIs
  - If writing an EEG follow up, say what to look for and what to do in terms of AED management – writing "check EEG on Pt X" is not appropriate
- Left Side
  - Attending contact info
  - Pending Transfers

6B White Board
- Should contain information specific only to daytime coverage of the general neurology service
- All weekend/overnight coverage belongs on the BB7 white board
WHO ARE THE NVC-APPS?

Inaugurated in September 2016, the Neurovascular Center Advance Practice Provider (NVC-APP) program is a collaboration between the emergency department, interventional neuroradiology, and vascular neurology. The APPs (nurse practitioners and physician assistants) work alongside neurology residents of all levels of training and across systems of care for patients with stroke: code stroke process, interventional neuroradiology, and the vascular neurology inpatient service. Coverage is provided 24/7. The APPs also assist in training junior neurology residents at the beginning of each academic year and are involved in academic projects that are presented at national and regional conferences.

Code Strokes

The consult resident and APP parallel process with the resident focusing on tPA administration/exclusion and the APP focusing on LVO clot extraction/exclusion. Once the acute imaging is done, the APP discusses the findings with ER radiology. If an LVO is found, the APP contacts the NIR attending and prepares the patient for thrombectomy. The APP may also assist in tPA decision making and administration. If there is no LVO, the APP may leave the code stroke if the resident can manage the rest of the code on their own.

If there are multiple simultaneous code strokes, the APP can run a code stroke independently and touch based with the supervising attending about acute decision making. This frees up the consult resident to do the other code stroke independently.

Vascular Neurology Wards

1 APP carries up to 10 patients each. The PGY2 is the APP’s back up. When the service is busy, the intern’s list should be capped before the APP’s lists are. The ward APP serves as back up to the NIR APP for code strokes and interventional cases when the NIR APP is stuck in another case.

NIR (Neurointerventional Radiology)

When working in NIR, the APP acts as the point person for and assists in NIR.
Rhode Island Hospital Neurovascular Center
Stroke / Neurointerventional Radiology NPs/PAs

Gino Paolucci, NP
Lead Provider

Michael Clark, NP
Lindsey Fuller, PA
Lori Oliver, NP
Christina Watkins, NP
Katherine Quinn, PA
Rebecca Brierley, PA