UCSD Radiology Resident Call Guide

Updated April 2025

Table of Contents

Quick Reference

- If clinicians have questions about vRAD reads, advise them to communicate directly with vRAD
- If urgent studies sent to vRAD still do not have a read for >1 hour, residents may put in a preliminary report. This can be situation dependent, so please use your discretion.
- If residents don't feel comfortable preliming a body/chest/MSK MRI, and the study in question is both STAT and someone is calling for an immediate read, escalate to:
    - Chest
        - 1st contact: ER PM (5pm – 11pm), otherwise overnight faculty (if scheduled)
        - 2nd contact: vRad final
    - MSK
        - 1st contact: MSK fellow
        - 2nd contact: MSK attending
        - 3rd contact: vRad final
    - Body
        - 1st contact: ERPM faculty (5pm – 11pm), otherwise Body fellow
        - 2nd contact: Body attending
        - 3rd contact: vRad final
    - A significant portion of these exams are likely not impacting immediate treatment decisions, despite their STAT designation, and do not require evening/overnight escalation
- Residents may preview any studies sent to VRAD for educational purposes without generating a prelim dictation (if resident feels there is a discrepancy with the final vRad read, then the resident should call vRad -- the CT techs can give you the phone number or it can be found on the bottom of any vRad report).
- Optional: You can create an account with VRAD to check which studies have been sent, though this is typically not necessary.
    - access: https://access.vrad.com/login.aspx
    - Username: firstname.lastname (lower case)
    - Temporary password: admin will let you know
    - Rarely necessary to login, techs will send studies

Policy on Required Radiology Resident Trainee Communication with the On-Call Supervisor or On-Call Faculty Member After Hours:
Ectopic pregnancy where OB-GYN is planning to treat with methotrexate. As a general rule, this would be an attending-to-attending communication to be initiated by OBGYN attending/team
All STAT requests where the physician's order indicates an immediate Attending Radiologist interpretation (Policy Number UCSDHP 575.1)
Request by an ordering provider for immediate attending radiologist interpretation
Request by an ordering provider for immediate attending radiologist assistance with a non-interpretive need (e.g. protocoling or scheduling an urgent exam)
Resident self-driven request for help with an interpretation
Resident self-driven request for help with a non-interpretative need

ERPM/NF Workflow Overview

5 pm – 11 pm

	CT	MRI	X-ray	Ultrasound
ER/Trauma/Urgent care	Final	Neuro Prelim (Fellow) Body/Chest/MSK Prelim	Final	Final
Inpatient STAT	Neuro Stroke Codes NCCU studies Prelim vs final Other Final (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Neuro Prelim (Fellow) Body/Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Final	DVT Final Other Prelim
Inpatient Routine	Neuro Final (VRAD) Body Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis) Chest No read necessary	Neuro Prelim (Fellow) Body/Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Neuro, Body, MSK Prelim Chest No read necessary MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Prelim

11 pm – 7 am

Schedule A – Overnight faculty

	CT	MRI	X-ray	Ultrasound
ER/Trauma/Urgent care	Final	Neuro Prelim (VRAD) Body/Chest/MSK Prelim	Final	Final
Inpatient STAT	Neuro Stroke Codes NCCU studies Prelim vs final Other Final (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Neuro Prelim (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Final	DVT Final Other Prelim
Inpatient Routine	Neuro Final (VRAD) Body Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis) Chest No read necessary	Neuro Prelim (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Neuro, Body Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis) Chest No read necessary	Prelim
East Campus ED and Inpatient Stat	Prelim vs final Stroke Codes, all other studies Final (VRAD)			
East Campus Inpatient Routine	No read necessary, but prelim if someone calls			

11 pm – 7 am

Schedule B – No overnight faculty (VRAD)

	CT	MRI	X-ray	Ultrasound
ER/Trauma/Urgent care	ED Final (VRAD) Trauma Prelim	Neuro Prelim (VRAD) Body, Chest, MSK Prelim	Prelim	Prelim
Inpatient STAT	Neuro Stroke Codes NCCU studies Prelim Other Final (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Neuro Prelim (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Prelim	Prelim
Inpatient Routine	Neuro Final (VRAD) Body Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis) Chest No read necessary	Neuro Prelim (VRAD) Body, Chest Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis)	Neuro, Body Prelim MSK Prelim if someone calls or if for a serious potential diagnosis (e.g. necrotizing fasciitis) Chest No read necessary	Prelim
East Campus ED and Inpatient Stat	Prelim Stroke Codes, all other studies Final (VRAD)			
East Campus Inpatient Routine	No read necessary, but prelim if someone calls			

Weekend and Holiday Call

UCSD Weekend Call

- Hours: 7am – 5pm
- Upon arrival, post your name/phone number on the daily info page on radres.ucsd.edu
- Protocol and dictate ED, trauma, and inpatient UCSD studies
    - Check with attending/fellow regarding outpatients
- Before leaving, sign out any relevant information (pending studies, protocols, etc) to ERPM

Body
Location: Thornton
Contrast coverage: All Thornton/JMC CT & MRI scanners

Neuro
Location: Hillcrest
Contrast coverage: All HC CT & MRI scanners

Chest
Location: KOP (MSK or body reading rooms on the first floor)
Contrast coverage: All KOP CT & MRI scanners

MSK
Location: Typically KOP (MSK first or second floor reading room), but email attending week before to check
Contrast coverage: none

VA Weekend

- Hours: 7am – 5pm
- Location: VA MSK or Body reading room
- Upon arrival
    - Log into Microsoft Teams (attendings will often contact you this way)
    - "Page copy" the VA pager (9834) to your personal pager
    - Do not forward phones, the techs/ED/etc. will find you in either the MSK or Body room
- Duties
    - Read the IP/ED studies of all modalities
    - Prelim CTA runoff cases done as ED/IP; if a final read is needed, page IR or send to NTP
    - You will have a different attending for each subspecialty, and styles vary. Some will contact you periodically throughout the day, while others will just pick up studies from you. Some will want you to 'prelim' studies so the ED can see your preliminary read, while others will want you to leave them in draft until read out. Check with your attendings for specific preferences.
    - Call in an on-call sonographer or MRI technologist (see the "Non-interpretive tasks" section)
- Tips & Tricks
    - In order to find an on-call clinician (works during the day and after hours): Open CPRS -> open any patient chart -> go to the 'Tools' drop down menu -> select "On Call Schedules (SOCS)" -> this will open a webpage, which you can use select the service/specialty you need to reach and see their on-call calendar

Weekend Day Float

When scheduled for day float, you must report to the hospital within 1 hour of being called. You may be called in as needed for weekend call shifts or ERPM shifts. Night float absences will be covered by the ERPM resident, with weekend float filling in on ERPM. Please carry your pager and ensure that the chiefs have your current cell phone number.

Evening/Night Call

VA ER

Hours: Monday-Friday 5pm – 11pm
Location: VA MSK or Body reading room

Upon arrival:

- "Page copy" the VA pager (9834) to your personal pager
- Post your name and 10 digit # on RadRes

To dictate prelims:

- In Powerscribe, choose your signoff attending to be "staff, physician"
- Put the macro "IMPRESSION: THIS PRELIMINARY INTERPRETATION HAS NOT BEEN REVIEWED BY AN ATTENDING RADIOLOGIST" at the beginning of your impression. You can easily do this by using Matt Sharp's "overnight prelim shell" Powerscribe template, and completing the fields (exam name, date, comparison, technique, impression). Impression only prelims are acceptable for most studies, with the exception of radiographs and body ultrasound for which full drafts are requested.

VA duties:

- Prelim all VA studies (ED & IP) for all modalities, including MRI
- If "final read" is requested by the ordering clinician these can be sent to VA teleradiology (NTP)
- Protocol all VA studies if asked by tech, including MRI
- Call-in on-call sonographers/technologists as needed

UCSD ER-PM and NF

There are 3 residents on ER-PM/NF who rotate through a 9-day block: 3 ER-PM, 3 NF, and 3 off days, beginning on the Sunday of the new block. Please note that you are expected to be in town during your off days, as you may be needed for emergency backup. Fellows are on for 1 week at a time and switch on Mondays. The attending changes daily. Chest, MRI, MSK, Body, and Breast fellows are scheduled for ER-PM throughout the year; neuro fellows are not.

Currently, the attending and fellow will typically divide study or site (JMC vs HC) responsibility at the beginning of each shift or share the list. Residents will not be restricted in which ED cases they read; if you are asked to dictate specific cases only, please kindly decline and refer the requestor to Dr. Jaffray.

Occasionally, a particularly complex study may be left for the subspecialty attendings to read the next day. In that case, if the resident has already prepared a dictation, it is okay to leave it in the "wet read" pool as long as a prelim disclaimer (e.g. macro wet read) is in place; then the day attending can just pick it up. Some cases should be given a prelim and also signed out to the incoming day-time resident; a few common examples are strokes that happen near shift change when 3D recons are pending, small bowel follow-throughs, any particularly complex case, and when waiting for a call to communicate a finding.

Communication between the ER-PM team is usually through Epic group chat (useful for everyone to be kept in the loop). There is also a Zoom link on RadRes called 'Trauma ED' to facilitate communication with the overnight faculty (e.g., Dr. Ali G) — the passcode is 'Trauma.' All dictations should be assigned to the "WET READ" pool in Fluency, and should include the "wet read" macro template at the beginning of the impression. Fellows and attendings will pick up studies to sign from this pool. The benefit of assigning all studies to this

pool is that the preliminary report is available to clinicians once the resident assigns the study to the "WET READ" pool.

The primary worklist is "CALL ALL IP ED Urgent Care TODAY," which should have most studies and none of the unnecessary outpatient studies. You can set up your own personalized worklists based off of this main worklist (for instructions, see Optimizing Visage Worklists on ERPM/NF (M. Ghani, 2023), which can be found on RadRes under Call Guidelines). Be aware that sometimes when an ED patient is brought to CT or US, their location changes to outpatient temporarily and they can disappear from the main list.

Aidoc is very helpful in triaging studies. Make sure that the pulmonary embolism, intracranial hemorrhage, pneumothorax, and large vessel occlusion notifications are turned on.

Neonatal ICU ultrasounds (e.g. heads, kidneys) fall under ER-PM and should be prelimed, but the neonatal ICU plain films do not (Rady's will read them in the morning). ER-PM does not cover nuclear medicine, which is covered by the nuclear medicine attending on call. The only overnight breast cases are for breast abscesses, which falls under the purview of ultrasound. All arterial US studies (except carotids) are done through the vascular lab under vascular surgery, and if one of these studies needs to be done after hours, vascular surgery needs to be contacted to come in and do the exam themselves (paged by the ordering provider).

Many attendings will not read CTA run-offs/extremities. **If your attending does not read CTA run-offs, please have the techs send these to VRAD.** Do not put in a prelim if you do not know that your report will be signed off in a timely manner, as this is a medicolegal hazard.

With regards to reportable findings, please see the "Communicating Critical Results" section on page 19.

The ERPM and NF residents are responsible for protocols from 5pm onwards, with the exception of Neuro and MSK MRI protocoling which is the responsibility of the section fellow until 11 pm.

If after 11pm you are ever in a situation where the volume of studies is exceeding your capacity to safely provide preliminary reports, studies can be sent to VRad. In these cases, you need to ask the tech to send out the specific studies you need sent to vRad. Periodically check to make sure the studies you sent out do get vRad reads.

ERPM

Hours: 5pm – 1 am
Location: KOP
Contrast coverage: KOP CT and MRI

Arrival instructions:

- Post your information on RadRes under Night (week) and/or Night (weekend/holiday)
- Call the operator to "page copy" the general radiology pager (5063) and VA pager (9834) to your personal pager. **Do not page forward, as this will prevent anyone else from getting the pager messages.** This pager's main purpose is to receive all stroke codes and incoming traumas.
- Contact the KOP CT/MRI techs through phone or Epic chat to touch base with them for the evening

ER-PM is officially from 5 pm-1 am for the resident and 5 pm-11 pm for the attending and the fellow. The resident's job is to pre-dictate or prelim studies based on the ER-PM guidelines and receive all of the phone calls (e.g., stroke codes, general inquiries, sonographers) so that the fellow and attending can focus on final signing reports.

Triaging patients on this shift can be difficult. **Be sensitive to ED/Trauma turnaround time, but do not neglect complex inpatients.** The resident is going to be responsible for most of the "prelim-only" studies, which can be very complex. It is okay to leave the ED and traumas to the fellow and attending as long as they are not falling behind. It is good practice to try to take all studies for a single patient, both for continuity of care and to avoid overlapping phone calls. In general, the resident should focus on studies that come directly to them for review (e.g. stroke and US). Pre-dictating the complex cases, including post-op neuro and cancer staging from the ED, can be particularly helpful since these can really slow down the attending or fellow. Do not forget to send stroke CTAs for final signature after 3D recons are completed, which generally have <1 hour turnaround time.

Although ER-PM is busy, do not rush through your dictations. Proof-read. **Work as fast as you comfortably can but do not overextend yourself – speed will come but do not sacrifice quality.** Do not be afraid to message the fellow or attending when you are unsure of something, even for a "prelim-only" study. Although you may be interacting remotely, remember you are a team.

The attending may tell the resident to prelim everything that comes in after a certain time (e.g. 10:30pm). Historically this has been accepted practice, but technically the fellow and attending are responsible for all studies timestamped before 11 pm and often will stay late. Switching to prelims helps them get out on time. This makes it easier for the resident, too.

After 11pm, the ER-PM resident becomes a secondary night float and helps prelim studies timestamped before 1am, when they should go home and get sleep for the next day. On slow nights, the NF resident may send ER-PM home early.

Night Float (NF)

Hours: Sun-Th: 8pm – 8am; Fri-Sat 8pm – 7am
Location: KOP
Contrast coverage: KOP CT and MRI

Arrival instructions:

- Post your information on RadRes like you would for any call shift
- Call the operator to "page copy" the general radiology pager (5063) and VA pager (9834) to your personal pager. **Do not page forward, as this will prevent anyone else from getting the pager messages.** This pager's main purpose is to receive all stroke codes and incoming traumas.

Upon arrival at 8pm, the NF resident acts as a secondary ER-PM resident until 11 pm, generally focusing on catching up on less pressing studies and those that need prelims only. After 11 pm, the NF resident becomes the primary resident.

Around 5am, it is acceptable to not prelim the "STAT" routine chest radiographs from the ICU if you are busy with other urgent studies.

The workflow for MSK studies is slightly unique. While issuing preliminary reports (11pm – 8am), if there is a patient that has multiple examinations, the MSK division asks that you dictate your entire prelim report for the multiple separate examinations onto only a single accession report and do not link the studies. The reason for this is that if individual reports are started on every study, or if the studies are linked, the day team cannot link/unlink those examinations and thus must report them separately or open each prelim report and delete them individually, either of which take a lot of time. This applies to CT and radiographs alike.

Example:

Patient has a right femur, right knee, right tibia/fibula, right ankle, and right foot radiographs. Whichever study you open first, please include the findings for all the other studies on that fluency report. You can use a phrase such as, “Please refer to this report for findings of the right femur, knee, tibia/fibula, ankle, and foot: ” prior to your dictation. The remaining studies should stay unreported on the Visage worklist, but you can ‘claim’ them as a reminder to yourself that you have already prelimed these under a different accession number.

In general, if you are unsure of a finding, be descriptive and give a differential. It’s usually better to overcall than under call. You may need to call the ordering team to discuss the case with them. **If necessary, you may contact your on-call attendings for assistance. Contact information can be found on RadRes: Rotations > Call Guidelines > Overnight Attending Contact Info. UCSD on call attendings are also listed in webpaging under the corresponding section (Radiology - Chest and Bone, Abdomen, Neuro, etc.).** Established guidelines for contacting attendings are noted on page 3 of this document (“Quick Reference”), but a good rule of thumb is to contact the on call attending when you are unsure and the diagnosis is going to change management overnight (i.e. going to surgery overnight).

One specific instance where a body fellow and/or body attending must be contacted at all hours for interpretation is for a MRI to rule out appendicitis on a pregnant patient. For these studies, the MRI techs should know to contact the body fellow or attending on call, but you may need to remind them. If there is a body fellow on call and there is no response in 30 minutes, then the body attending on call is contacted; after 30 more minutes, the study goes to vRad. The NF resident should not feel pressured to give a prelim read in these cases since this is UCSD policy.

One other unique situation that can arise happens when there is a patient sent for MRI with concern for septic arthritis. Residents may prelim these MRIs, keeping in mind that we cannot judge sterility of collections on imaging. Therefore, the prelim should include a statement to the effect of, ‘any effusion may be considered septic in the appropriate setting and joint aspiration should be considered.’ If a joint aspiration is requested to be performed overnight, then the MSK fellow would need to be involved. That being said, most of the time ortho is okay with the joint aspiration being performed first thing in the morning; so, prior to contacting the MSK fellow, please inquire with ortho or the primary team whether the procedure can happen in the morning.

VA coverage while on NF

After 11pm on weekdays and after 5pm on weekends, NF assumes the same responsibilities as the VA-ER shift. **All ED and IP studies at the VA need a prelim. Unlike UCSD, this includes the early morning ICU chest radiographs (there are not many).**

The NF resident can choose to prelim any MRI studies or have them sent to The VA teleradiology program, called National Teleradiology Program (NTP). If you plan to send a MRI to NTP, this should be communicated to the MRI tech at the time that you call them in. CT studies requesting “Attending read” are automatically sent to NTP by the CT techs. If a study has already been completed and the ordering physician decides that they want an attending-level read, then they must write it in their note in CPRS. The NF resident can also request cases to be sent to NTP – generally when the case is very complicated or it is too busy; this requires calling the CT tech and asking them to send out the study. Please check periodically to make sure that any study that has been sent out drops off of the list, indicating that NTP has it.

One exception is stroke codes, which will receive prelim by resident on call at all times; these are not supposed to be sent to NTP.

If a study is sent to NTP, do not prelim that study (either in writing or verbally via phone if a clinician asks) -- remind the clinician that the study has been sent to NTP and the read will come from them. In very rare cases (e.g. when there is a technical problem sending a case to NTP), the VA operator has the VA on call attending schedule and pager/phone number which can be used as back-up.

The NF resident frequently needs to call in sonographers, MRI techs, and sometimes even CT techs overnight. Instructions are detailed below in the “Non-interpretive tasks” section of this document.

Since CPRS is not available on the UCSD VA station, it can be confusing who to page for inpatient findings. Often, paging the ordering physician will work (hopefully will have forwarded to cross-cover) or find the VA pager for that VA service on webpaging. Strokes at the VA will often not get a call from the scanner, so the resident has to call the VA neurology pager to discuss the case (usually after the CTA has been done).

To call the VA from UCSD, dial 858-552-8585 to reach the main line. Then, either dial the 4-digit extension if you know it, or dial ‘0’ to be connected to the VA operator.

To use the UCSD VA workstation, call for a PIV exemption (and password change) because there is no PIV reader. Instructions are detailed below in the “Non-interpretive tasks” section of this document. It can take a long time to set up, and up to 30 minutes for it to go through, so it is best to do this at the end of the week prior to starting ERPM/NF to ensure you don’t have any delays during your first shift.

The process for preliming studies on the UCSD VA workstation is that same as when you are at the physical VA. See the “VA-ER” section of this document for details.

Non-interpretive tasks

Non-interpretive skills are very important on these shifts. You will be called about a wide variety of policy questions, such as CT scans on a pregnant woman, MRI clearance, MRI protocols, contrast reactions and prophylaxis, use of IV contrast before labs are drawn, among other things. After 11pm, you may need to consult the on-call attending.

IT Disruption/PACS Outage

Occasionally, the PACS system may go down. If this occurs at UCSD, the protocol in place is to use Sectra IDS7, which is a full enterprise PACS for all users outside of Radiology that can be used anytime that Visage is unavailable. This backup option is in place to prevent the hospital from going on Stroke Bypass and Trauma Diversion (which must be reported to the California Department of Public Health). All Radiologists are able to login with their AD credentials. It has downtime worklists configured to ensure patient care is uninterrupted.

UCSD PACS:

- Call the PACS on-call x10244 (619-471-0244) or p3936 (619-290-3936).

VA PACS:

- If the issues are during business hours, please submit a YourHTM work order.
    - Business hours (0600 – 1800).
    - If no response within 30 minutes, please contact Engineering trouble desk x53301.
- If the issues occur after hours, please contact the Engineering trouble desk x53301 to get the HTM on-call technician.

VA Computer Access / Long-term PIV Exemption

There are several ways that your VA computer and remote access can be impaired:

- If you don't log into the VA regularly, you will run into problems – after 30 days your VA Computer Account will be locked, and after 90 days you will be "disusered." If you get "disusered", it can take 24-96 hours to reactivate your account. **It is your responsibility to make sure you maintain your VA access by regularly logging in, and ensure it is working in advance of being on call (weekends, evenings, or nights).** To request Active Directory Account reactivation, call the Enterprise Service Desk at (855) 673-4357. Note that if the ESD representatives are unable to reactivate you, it may be because your Annual Mandatory TMS Training is overdue.
- In order to complete your TMS training, you may need a functional PIV card. If your PIV card is expired or not functional, you should reach out to Mr. Joaquin Mendoza (Joaquin.Mendoza@va.gov) to request assistance in reactivating your TMS account so you can complete your training if your card is not working. Mr. Mendoza is the TMS Manager for the whole San Diego VAMC and is currently the only person who can reactivate a deleted TMS account.
- For US citizens, PIV cards are valid for 3 years (so they typically expire during your R3-R4 transition). For non-US citizens, PIV cards are valid for only 6 months. If you let your PIV card expire, you will need to start the process over and get your fingerprints redone. To avoid this, residents should contact Stephanie Heimback (Stephanie.Heimback@va.gov) 6 weeks prior to your card expiration to be renewed and you won't have to get re-fingerprinted. If you need to get fingerprints redone, you need to fill out a fingerprint/SAC form and take that in on a walk-in basis Mon-Fri 0700-1430. You will also need to bring one form of ID. After the prints are received and cleared, she will place your usaccess application; you will receive an autogenerated email stating to schedule a photo appointment.

- To request a long-term/permanent PIV exemption which allows you to log in to the VA computers on site without a PIV card and also at the VA station at UCSD (night float), you should call the Enterprise Service Desk at (855) 673-4357 and you state that you are a “health trainee resident physician who will be accessing a non-VA hospital computer without a PIV reader.” Our understanding is that these long-term/permanent exemptions last for 60 days, but different trainees have had different experiences. **It is your responsibility to check that you still have access to the UCSD VA station before starting each NF rotation.**
- In accessing the KOP VA workstation, the Powerscribe login is different than the PACS login. Please Phillip Revilee (Philip.Revilee@va.gov) for a PowerScribe login well ahead of starting nights.

Intravenous Contrast

Please see relevant documents on RadRes, including:
- UCSD Intravenous Contrast Media Guidelines
- UCSD Contrast Policy
- ACR Manual on Contrast Media

The above documents have the most up-to-date information regarding our internal contrast policy, as well as information from the ACR. Please do be aware that there is an "emergencies" exception to our contrast policy, which says that in the setting of an emergency where information from the scan is critical to patient treatment/management, contrast can be administered without regard for renal function, allergy, or pregnancy.

MRI Protocolling (UCSD)

Until 11pm, the Neuro fellow on call is responsible for protocoling and preliming Neuro MRIs, and the MSK fellow on call is responsible for protocoling (but not preliming) any MSK MRIs that they are contacted about. The ERPM resident is responsible for all other MRI protocols and prelims before 11pm. After 11 pm, the NF resident protocols all MRI studies, including Neuro and MSK.

The MRI techs will generally call or Epic message when they need a protocol, but you should periodically check the list for any ER/urgent IP studies needing protocols. **Inpatient and ED MRIs to be performed overnight <u>do</u> need protocols and MRI screening.** If these are ordered during the day, the parent radiology service should protocol, but sometimes they are ordered later and require the ERPM/NF resident to protocol and screen. This can be challenging if the patient has MRI safety issues that need to be sorted out. If there are major MRI safety questions that arise overnight, then the study can wait until the following morning.

In general, residents should **not** need to protocol outpatient MRIs overnight. These studies should be identified by the parent services and/or oncoming MRI tech staff early and sorted out before 5pm, but unfortunately this does not always happen. If there is an issue with this workflow, please notify Dr. Yen (e.g. by adding him to the Epic chat) and he can loop in MRI leadership.

If you are unsure of which MRI protocol to choose, sometimes asking the MRI techs can be helpful. For complex studies after hours, the resident may choose to contact the section fellow for help with the protocol.

Some helpful MRI protocol tips by specialty:
- MSK
    - Osteomyelitis:
        - Pick the location of the ulcer and add IV contrast.
        - If it is for a sacral ulcer, ask that they prone the patient (if the patient can tolerate; proning the patient allows us to differentiate non-enhancement due to gravity/pressure

from non-enhancement due to tissue necrosis).
        - If it is an extremity ulcer, ask the techs to mark the location of the ulcer. Also, ask the techs to use STIR instead of PD FS or T2 FS, since FS tends to fail especially in toes and fingers.
    - Occult (usually hip) fracture:
        - Unless there is a concern for underlying malignancy, an MRI without contrast is sufficient.
    - If they are ordering more than 2 studies, you may ask them to pick their top 2. Each MRI takes about 30 min. Many patients cannot lie still for more than an hour, so any study after the second one is going to be motion degraded.
- Neuro
    - Dissection
        - MRA can be used for cases which are equivocal on CTA.
        - The Neck MRA+C protocol Includes language for the techs for acute dissection, however it is always appreciated if you include "Axial black blood" in the comments. If the suspected dissection is at the skull base, please also note that for appropriate coverage on axials.
    - Stroke
        - To expedite MRI, the Stroke team must order “Acute Stroke Brain MRI” and coordinate directly with the MRI technologist at the scanner about next available per protocols.
        - Residents may be called for expedited screening. Radiographs may be required per protocols.
        - MRA may be ordered if patient had contraindication for CTA, and the stroke team should be communicating that with the technologist prior to arrival.
        - The acute stroke protocol button may also be used for non-stroke code IP/ED.
        - If patients are not able to hold still in the scanner, the exam may end after the DWI.

MRI Clearance

Relevant resources:

- MRI policy reference links on the Pulse Intranet: https://pulse.ucsd.edu/departments/imaging-services/department/mri/Pages/policies-procedures.aspx
- Helpful MRI Safety website and links from UCSF: https://radiology.ucsf.edu/patient-care/patient-safety/mri
- http://www.mrisafety.com/SafetyInformation_view.php?editid1=192
- https://mriquestions.com/bullets-and-shrapnel.html

There are specific policies and workflow for patients with cardiac devices, vagal nerve stimulators, and retained metallic foreign bodies.

The policy for retained metallic foreign bodies can be found here: https://pulse.ucsd.edu/departments/imaging-services/department/mri/Documents/Guidelines%20MRI%20Imaging%20in%20Patients%20with%20Retained%20%20Metallic%20Foreign%20Bodies.pdf
The policy is that the radiologist/tech team should obtain radiographs (or potentially utilize CT) to identify whether metallic foreign bodies are present, and if so, where. The decision to scan when there is a retained metallic foreign body is a risk-management decision. Avoid scanning unknown metallic foreign bodies, like bullets and shrapnel, if they are positioned in close proximity to vital organs, nerves, or significant vasculature. See the policy for further details.

Ultimately remember: there is always an alternative to MR, especially in the acute setting. The alternative may not be ideal, but we don't want to cause harm. In general, patients under sedation (including post-operative

patients) with shrapnel/bullets should not be scanned, since the patient will be unable to verbalize or feel pain should there be movement of metal components or RF-induced burn injuries. If you are not comfortable clearing a patient for MRI, then it is best and safest to wait and defer to the day team.

Outpatient CT and MRI Examinations

Outpatient CT and MRI examinations are scheduled 24/7 at KOP where the ER-PM/NF residents are stationed. Hence, residents may occasionally be asked to complete certain tasks by the technologists related to these studies.

For STAT add-on outpatients PE studies, technologists must have a radiologist check images before the patient can be sent home or taken off the table, and it is good practice to put in a prelim (e.g. “no acute findings, full subspecialty read in the am”).

Residents should **periodically check Aidoc for any unexpected urgent/emergent findings on outpatient studies that occur after hours**. Such findings may include intracranial hemorrhage, PE, pneumothorax, etc. If found, the radiologist must alert the ordering provider. Since these scans generally occur after hours, it may be difficult to get in contact with the ordering provider. You may try contacting the on-call trainee/attending for that service (e.g., the on-call heme-onc fellow) through UCSD webpaging. Otherwise, if no provider is available to take the read, the patient should be contacted directly and advised, such as instructions to go to the ED if necessary (using your best clinical judgement).

The ERPM/NF residents are responsible for providing contrast coverage at KOP and will be expected to manage contrast reactions and extravasations.

Some technologists are unfamiliar with the evening departmental policies and procedures, which differ from daytime, and will ask you to perform certain tasks that are **not** the responsibility of ERPM/night float, which include:

- Overnight residents should **not** be asked to protocol outpatient CT or MRI exams or provide MRI clearance (checking for orbital metal and abandoned cardiac leads), as these tasks should be completed by the respective divisions during normal day time hours. If residents are frequently asked to protocol outpatient studies or clear patients for metal, please make the chiefs/program directors and MRI leadership aware.
- Some technologists have asked residents to protocol CT or MRI examinations or perform MRI clearance for scans that are scheduled far in advance or the next day during normal day time hours. Residents are encouraged to defer these tasks to the day team in order to focus on more pertinent, acute tasks.
- Residents should not be asked to clear outpatient ILD studies after 5pm. If a CT tech calls and asks you to do this, please gently remind them of this policy and refer them to their lead CT technologist or CT supervisor, who are both aware of this policy.

Imaging in Pregnancy

Relevant documents

- UCSD Policy - Imaging of Pregnant Patient (2022)

CT in pregnancy
UCSD policy states that, “Prior to all abdominal imaging (requiring radiation) of female patients between the ages of 12-55 years will be asked if they are or may be pregnant. If a patient may possibly be pregnant, they must be given a questionnaire asking Last Menstrual Period and whether they are pregnant. They must sign before imaging, unless the acuity of their illness and need for therapy supersedes the possible risk to a fetus.”

Similar to daytime shifts, attendings should be notified of CT A/P on pregnant patients. This is not necessary for CT scans on anatomy other than abdomen/pelvis.

MRI in pregnancy

- **For appendicitis:**
  - These studies require a body fellow and/or attending prelim.
  - The tech should contact the on-call body fellow or attending prior to scanning, but sometimes you may need to remind them of this.
- **For neuro MRI:**
  - Only non-contrast exams. The team can follow up with faculty the following day about if additional imaging is needed.

Ectopic Pregnancy

From Dr. O'Boyle: Several years ago after legal cases that ensued regarding inappropriate treatment of pregnancies with Methotrexate, a task force was formed with OB/GYN, Body Imaging and Pharmacy. This task force was authorized by UCSD Risk Management. Any suspected ectopic pregnancy that may be treated with Methotrexate must first have the ATTENDING OB/GYN who is managing the case and the BODY IMAGING ATTENDING of the day (in house or on call if after hours) review the case together before MTX is administered. So if you are on call or an evening or night shift, these cases need to involve the BODY IMAGING attending and not the fellow or the attending that is covering if they are not BODY. This is to protect the patient and the fetus as well as to medicolegally protect our residents and faculty.

If you are concerned for ectopic, provide a prelim and notify the ordering MD just like any other critical finding. If the ordering team is planning methotrexate therapy, attending-to-attending communication is required and is generally initiated by the OB/GYN attending/team.

Second Reads

UCSD policy states that **residents are not allowed to provide preliminary reports (in writing or verbally as a "curbside") on outside images uploaded into PACS**. Outside studies have already been interpreted at the other site by a board-certified radiologist. The outside facility is required to provide that report with the images to the care team. These reports are increasingly available via CareEverywhere in Epic; some are scanned in Epic media with other clinic transfer notes, and in rare cases they are available in PACS with the outside images.

Second reads are only performed during the day after attending approval and generally for discussing a patient at tumor board before the patient is scanned at UCSD. If contacted to give your opinion on an outside study for clinical decision making, state that the patient will need repeat imaging at UCSD before radiology can comment, which should be protocolled to focus on any remaining clinical questions. Second reads are not available on an emergent basis. We are happy to tailor (and expedite within the limits of UCSD scheduling) imaging at UCSD to address any outstanding clinical questions not addressed by the outside report and refer to the outside studies as a comparison. When in doubt, the faculty requesting the over-read can speak with the service faculty on duty/on-call about the patient and imaging needs.

Calling in Technologists at the VA

After-hours US and MRI requests at the VA are coordinated through the on-call resident. The schedule and contact info for all on-call technologists and sonographers can be found on RadRes under Contact > VA Technologist Info.

Unless notified otherwise, there is 24-hour CT coverage at the VA and coordination with the resident is not

needed.

In general, technologists/sonographers should only be called in when a study will change management or ED disposition (e.g. strokes, spinal cord compromise, or when a patient may need to go to the OR overnight). For both MRI and US, there are well-defined criteria for calling in a technologist (listed in each subsection below). Please review the list of indications when discussing with the ordering provider whether a scan will be obtained overnight.

It is the on-call radiologist's responsibility to contact the designated on-call technologist to report to the VA for emergent after-hours exams. It is expected the on-call technologist will be on site within 30 minutes of being contacted to report. For scan requests that occur close to shift change, it may be worth asking the ordering provider if the scan can wait until the day team arrives. However, **never promise that a patient will be added on first thing in the morning**; MRI typically has outpatients already scheduled in the morning that cannot be easily rearranged.

Issues with contacting the on-call technologist
If the on-call technologist does not answer the phone, please try calling again (at least three times from a UCSD landline). If the technologist still does not respond, or if the updated monthly technologist schedule is not posted, please contact the modality supervisor for assistance first.

- MRI supervisor: Zari Pirsateh, 619-7472-1902
- US supervisor: Costi Ciobanu, 702-355-0190
- CT supervisor: Warren S. Spitz, 610-203-8088

If all else fails, it is ok to try to contact Dr. Gentili, understanding that he may not answer between 10pm and 6am or if he is out of town. If there is persistent difficulty contacting a technologist, Dr. Gentili should be informed by email either the night of or the next day.

Ultrasound
Normal Operational Hours:

- Monday through Friday, 7am – 12am
- On-call hours:
    - Monday through Friday, 8pm – 7am
    - Weekends and Holidays, 24 hours

After hour ultrasound requests must be coordinated through the radiology on-call resident. Specific indication for on-call ultrasound include:

- Carotid ultrasound for stroke code to be ordered by the Stroke Code Fellow/Attending only
- Carotid ultrasound for acute TIA symptoms to be ordered by the on-call neurology attending only
- Post–procedural pseudo-aneurysm
- Biliary tract disease (CT scan to be performed first)
- Tubo-ovarian abscess
- Testicular torsion
- Ovarian torsion
- Ectopic pregnancy (must have current positive urine/serum HCG test)
- Vaginal bleeding in a pregnant patient (must have current positive current urine/serum HCG test)
- Non-menstrual vaginal bleeding (includes postpartum bleeding). Before approving, the following must be documented:
    - Clinical pelvic examination
    - Evidence of abnormal labs (e.g. low or decreased hemoglobin)
- Gallstones, renal stone, and appendicitis on confirmed pregnant patients. No fetal evaluation will be done.
- DVT

- Renal Transplant less than 6 weeks post-transplant.

MRI
Normal Operational Hours:
- Monday-Friday, 5:30am – 10:30pm
- On-call hours:
    - Monday through Friday, 10pm – 5:30am
    - Weekends and Holidays, 24 hours

While there is an in-house technologist Monday-Friday 5:30 AM until 10:30 PM, it is the responsibility of the ordering provider to contact the on-call resident **after 5:00 PM** Monday-Friday and 24 hours Saturday, Sunday, and holidays, in order to discuss emergent cases so that an appropriate protocol for the examination can be given to the technologist by the radiologist. Specific indication for emergent MRI is a high likelihood of:
- Cord compression (cauda equina syndrome)
- Epidural abscess
- Posterior circulation stroke
- Appendicitis, gallstones and renal stones in confirmed pregnant patients (ultrasound to be done first with inconclusive findings)

CT
Operational Hours:
- 24-hour on-site coverage 7 days a week, unless notified otherwise

Communicating Critical Results

Relevant documents:
- UCSD Critical Results (2022) -- please review the UCSD critical results reporting for your reference

Generally, most positive acute findings should be communicated; see the linked policy above for specifics. As a rule of thumb, it's usually best to call the ED directly, page whoever is listed as first call, or page trauma (6917 for the resident for new traumas, 6363 for admitted traumas). Epic message can be used in some cases; however, you must ensure that readback is obtained. For truly emergent findings, phone call/paging should be used rather than Epic chat.

Remember, stroke codes require verbal communication. **For Hillcrest and JMC, you communicate with the stroke code team. For East Campus, you communicate with the EC ED MD. For the VA, you communicate with the stroke code team** (but you will often not get a call from the scanner, so you will likely have to page the VA neurology pager to discuss).

Additionally, it's generally helpful to communicate something you're hedging about; talking to the provider can often clarify some of the history and help narrow the differential or finding. Sometimes this can help you figure out what to do with indeterminate findings or let you know what they are clinically worried about. Err on the side of calling people to discuss the case and document the discussion, even if it is not official policy to call. This is helpful for communication and also builds a professional connection, fostering trust and a sense of teamwork. You will get to know the trauma resident and intern, many of the ED residents and attendings, ICU fellows, and a few others.

General Advice *(compiled from prior residents)*

It is common to be nervous about starting ER-PM and night float, but you should pick it up within a few shifts. You will be surprised at how much you know. This is your chance to work independently and integrate all that you have learned. It is actually quite fun, edifying, and a preview of life after residency. It may be busy but do not stress out; you are not really alone and you have been preparing for this for the past 1.5 years (more, actually). It really is a highlight of our residency program, even if you have heard the upper years complain about it. You will come across findings you have never seen before or have only read about – learning how to approach these unknown cases is the next step in your evolution to become an independent radiologist.

Remember that you are not truly alone and there are fail-safes in place: ED/surgery/neurosurg/neuro/ICU will also be looking at the imaging (especially for the very sick patients), AIDOC is second set of eyes, and you have vRad or the on-call fellows/attendings as backup if needed.

Only a few types of mistakes can result in any serious patient harm overnight, which are not usually subtle findings – examples would be brain herniation, brain bleeds, ischemic bowel/closed loop obstruction, type-A dissection, massive PE (and "massive" is a clinical diagnosis anyway), aortic rupture, acute limb ischemia, active arterial extravasation in a hemodynamically unstable patient, and necrotizing soft tissue infections.

If you want to, you can do a buddy call shift with the current R3s, but this is not generally necessary. A good resource for preparation is "One Night at the ED," a collection of scrollable CT scans covering most of the do-not-miss cases for body and chest with discussions, including post-surgical complications, various bowel obstructions, etc. http://radiology.cornfeld.org/EDindex.php

If you feel weak in a particular subject, then you can trade for a call shift in that subject, do some targeted reading, or simply review cases in Visage. The CQI/Good Call labels are a great resource to learn from. Challenge yourself with a new type of study/idea every day – get used to CTAs, MRI clearance, etc.

Many techniques exist for de-stressing, for example having a mantra to repeat when things get crazy. Find something that works for you. Make sure to eat regular, healthy meals – not just snacks. Bringing a "lunch" to eat around midnight-1am was very helpful.

Do not get sloppy with your search pattern just because it is a prelim. Beware the corner shots, which are a good source of both CQIs and GOOD CALLs. "Call Checklist and Pearls" on Radres has some helpful differentials and search patterns. Try not to get bogged down in details in the prelim.

Do not take CQIs or a lack of GOOD CALLs to heart. They are not given out evenly; some attendings are more prone to use these than others. Of course, it always hurts to get a CQI, but do not stress about it. Most misses do not get a CQI, and most good calls do not get a GOOD CALL – so do not rely on them for follow up. You may get e-mails about cases to review without a CQI (including the typical Stark e-mails). Be graceful when someone points out your mistakes. Say "thank you" and drop it. It is always possible to come up with an excuse (or rather explanation) but this does not allow you to grow from your mistakes. Learn from your colleague's mistakes too – you will view CQI conference differently.

Follow up on all of your cases the next day – if you wait any longer, the cases will no longer be fresh or you will not have the time. This generally means either coming in 15-20 minute early, staying late, or logging on and reviewing from home. On ER-PM, check the changes to your reports in Fluency before you leave – in addition to seeing your mistakes, you'll learn the fellow's/attending's style and they will notice and appreciate it. Check

the final reads for every single one of your prelims (even radiographs) every single day. You can track your cases in Fluency or by using Mmodal Scout/Catalyst.

Use all resources at your disposal. Look at notes and lab values, previous studies, Google/radiopaedia/articles/etc. It can be helpful to have anatomic maps up when reading studies, for instance an e-anatomy leg MRI with only arteries labeled when reading a CTA of the leg, or a labeled model of a bone when describing a fracture. You may occasionally need to send a sonographer back to get more images, or send a patient back to the CT.

It can be fun when just the ER-PM and NF resident are in the room together. It may be busy but also you will have time to chat and share cases between each other (also with your fellow and attending if it's a great case). Bringing food or treats to share is always nice. This is a good chance to commiserate or to share exciting moments. You control the room, including the lights, music, and temperature. Bring or stream your preferred playlists, or keep the room quiet. One resident mentioned using the "confidence booster" playlist on Spotify. Take care of yourself. Bring food and drink. Dress warm. Get up and go for short walks or stretching breaks. Even when it is busy, take a short break every now and then.

The hardest thing to deal with is the sleep disruption from the 3-3-3 day cycle. By the end of a NF shift, the resident may be very sleepy. If you are too tired to drive home, you can get an Uber/taxi and have it reimbursed by the GME office – please do this! Your safety is the most important thing.

On the topic of safety, walking to your car when leaving ERPM around 1am can be unsettling. Please call the UCSD Hospital Security line to get an escort to your car. Their number is 619-543-3762. They will come pick you up at the entrance of KOP in a car or golfcart and drive you right to your car.

Here are some ways to deal with sleeping issues:

- Circadian rhythm
    - On a typical day shift, a resident goes to work soon after waking up and does not sleep right after coming home. Trying to replicate this for this block would mean staying up until 9 am every day and sleeping until ~3-4 pm whether on ER-PM, NF, or off. Then ER-PM would be like a morning shift and NF like an evening shift. This is a good approach to try noting that other factors can make this hard (e.g., significant others, family, non-work obligations, etc).
- Block out bright lights
    - Wear sunglasses when outside to avoid the bright morning light giving your brain conflicting signals.
    - Blackout curtains, sleeping masks, or even a fort of pillows to sleep in the darkness.
    - Try to avoid screen time right before bed, especially bright blue light.
- Noise
    - White noise generators are very helpful for drowning out the daytime hubbub. There are free ones online (e.g. rain sounds on Youtube) and sound generators for purchase.
    - Earplugs
- Other tips
    - If you sleep hot, consider a cooling mattress (ex. Ooler brand).
    - If you feel wired by the end of the night, a few strategies that might help are having a "sleepy playlist," a relaxing bath, or a good book.
    - Deal with anxiety (e.g. about misses) before getting into bed.