

SICU & BURN CLINICAL ASSIGNMENT **ARROWHEAD REGIONAL MEDICAL CENTER**

SICU Staff	David T.Wong, MD	Chief of Critical Care Services
	Brandon Woodwood, MD	SICU and Burn
	D Nguyen, PharmD	Trauma Director
	Paul	ICU Pharmacists, x02330
		ICU Nutritionist, x00035

SICU Team	PGY-2 ARMC General Surgery Resident	0-2
	PGY-2 ARMC Emergency Medicine Resident	0-2
	PGY-2 LLUH General Surgery Resident	0-1
	PGY-1 ARMC General Surgery Intern	0-1
	PGY-2 ARMC OB/GYN Resident	0-1
	Students	0-2
	Pulmonary ICU Fellow ARMC	0-1
	Anesthesia ICU Fellow LLUMC	0-1

Goals: Provide safe, peri-operative care of complicated surgical, burn, and trauma patients. Begin study of pre-operative risk factors. Begin study of interrelationships of medical, social and economic consequences of critical illness and burn.

Required Conferences (Zoom meetings during COVID period, No physical meetings)

- **Morbidity and Mortality and Grand Rounds:** Every Monday 0700, Oak Room
 - Zoom ID: 938 3141 4340, Passord: 989671
 - All M&M's from the previous week are presented and discussed with background evidence based learning.
 - Turn in M&M forms by Thursday to Janet Dana on the 3rd floor surgery department in the MOB.
 - All complication must have Healthcare Matrix filled out
 - Most senior SICU resident is responsible for overseeing this process
- **Basic Science Lecture** Every Monday 1600, Redwood (Located on third floor of medical office building) *Optional*
 - Zoom ID: 929 0819 3630, Password: 577260
 - Lecture presented by ARMC or Kaiser Attending on weekly topic
- **Trauma Conference** Every Wednesday 0700, Oak Room
 - Zoom ID: 939 1397 3640, Password: 284988
 - Multidisciplinary conference between surgery, emergency medicine, orthopedics, anesthesia, and neurosurgery.

- SICU Multi-disciplinary Conference Every Wednesday 1115, SICU Conference Room (Located in between 2200 and 2300 unit) *(on hold during COVID period)*
 - Multidisciplinary conference between surgeons, nursing care, nutrition, social work, case manager, physical therapist, occupational therapist, and speech therapist. ***Bring extra copies of updated list for everyone.
 - Call Charge from both units and case manager to get meeting started if services are not attending
 - Especially go over discharge planning and transfers. Discuss problems not addressed during rounds with multidiscipline team.
- Junior Lecture Conference Every Thursday 0730, SICU Conference Room
 - Zoom ID: 929 0819 3630, Password: 577260
 - Interactive lecture based on junior weekly ACS SCORE topic
 - Be prepared, ask fellow General Surgery resident to print out questions
- Tumor board Conference Every Thursday 1200, Citrus Hall (Located on first floor of medical office building) *Optional*
 - Multidisciplinary conference between surgery, medicine, radiology, pathology, and oncology.
- Burn Multi-disciplinary Conference Every Tuesday 1400, BURN Conference Room (Located in Burn Unit) *Mandatory for BURN Resident*
 - Multidisciplinary conference between surgeons, nursing care, nutrition, social work, case manager, physical therapist, occupational therapist, and speech therapist. ***Bring extra copies of updated list for everyone.
- SICU Conference Every Thursday 1300, SICU Conference Room (Arranged by Fellow on rotation)
 - Presented by SICU residents and students.
 - Every resident, intern, and student must present once in their 4 week rotation on a critical care topic of their choice.
 - SICU Fellow should organize this conference including discussion of literature based on topics

Daily Notes

- Notes need to be completed by rounding time; in EHR under SICU/BURN template. Please place in 'draft' form and assign to Attending covering for the week.
- Fill out the notes with the last 24 hours of vital signs and the previous 24 and last 3 hours of intake and output
 - Break-down the intake and output by PO, IV, Blood Products, Urine output, Drain output, Blood loss etc. Hourly average for outputs.
 - Fill out specific type of fluids patient is on
 - Fill out last several hours of urine output
 - Do not record or order CVP monitoring

- Write specific sedation dosing, pressor dosing
- Document :
 - Foley, Foley Day #, and Reason foley is in
 - Document central and Aline, Day #, Reason we still the line
 - Document Antibiotic Day / Total Number of Days and the reason
 - Document Daily chemical dvt prophylaxis with dosage or contraindication
- Assessment and Plans by System: Neuro, CV, Pulm, GI, GU/FEN, Heme/ID, Endo, MSK/Skin
- Summarized daily and long goal plans at the end of your note

Rounds:

Every day at 8 o'clock; subject to change based on attending operating room schedule. Meet at the first room on the SICU list. SICU Attendings alternate on a weekly bases. On Monday's, All Attending's will round on SICU and BURN together.

Be prepared with:

- All notes completed and assigned to correct Attending for the week. Make an extra copy of your electronic note to read off of when you are presenting.
- Extra copies of the SICU/BURN list for attending's and pharmacy staff
- Have a clean room table (extra are available in the SICU storage closet, Code 2222, it is located to the right just as you pass room 2212.)
- Have at least one extra computer, if there are more than three residents rounding, **have two computers**. One resident to present the patient, one resident to pull up imaging, laboratory, microbiology, medication record, and pathology results. One resident to put orders into the computers.
- Attempt to write orders during rounds. Complex orders can be entered by SICU pharmacists that's rounding with the team.

Other rounding advice:

- Know your patients, they may be here for a trauma or after surgery... but knowing a detailed past medical history, their exact trauma injuries, and details of their operation is essential to taking care of the patient, especially intraoperative events.
- Keep a cheat sheet on your patients to help recall important information and update columns on the SICU/BURN census list.
- Help each other out on rounds as much as possible. The goal is round **effectively and efficiently**. This should be easy to accomplish by taking different roles when you are rounding like grabbing charts, looking up imaging and labs, and writing orders when it isn't your patient being presented.
- Round at least twice a day, even hourly on critical care patients.

- There is a whole team devoted to critical care so communicate with the pharmacy, respiratory therapist, bedside nursing staff, and nutrition and attending staff.

M&M and Peer Reviews

- All patients admitted to BURN and SICU are to be added to the weekly Peer Review list and turned in the folder each Thursday.
- All M&M's must be turned in in a timely manner. If an ICU or BURN patient has any complication, you must present. You don't have to wait for the attending to tell you. Examples are re-intubation, self-extubation, IV filtration, graft failure, missed injuries, central and arterial line complications, chest tube complications.

Call Duty:

- Person on call will cover surgical and burn ICU
- Call is on a rotating basis with the surgical intensive care unit residents, burn resident, and surgical residents. Typically you will have 6-8 calls a month.
- The junior resident on call will be supervised by the trauma resident on call and attending
- Burn and SICU residents must check out with the resident on call.
 - Call Sign-out is at 5 o'clock PM. General surgery resident may not be available for sign-out till 6 o'clock PM occasionally if on day –call or in operating room
 - Alternate among team members to stay late for check out and let other team members go home early if all work is done.
 - Be prepared for sign out by having a list ready and up to date; be ready to explain the patient and **SBAR: Situation, Background, Assessment, and Recommendation.**
- When you are on call, do not hesitate to contact the ICU Attending on call for help managing patients
 - Before you call, know the patient. For example, don't call and say "John Doe has been hypotensive all day what should I do?"
 - If a patient is hypotensive and you don't know why.... Start by assessing their airway, breath sounds, and circulation. Run through the list of possibilities before you call. For example, patient John Doe who we admitted yesterday for traumatic brain injury and left femur fracture after motorcycle trauma is now hypotensive to the 60/30's. He is still intubated with good air exchange, his lungs are clear on exam, and there isn't a pneumothorax on chest x-ray. His hemoglobin is stable at 12 from this morning. His urine output has been adequate at 40 ml/hr. His blood pressure responds to fluid boluses, I think he may have adrenal insufficiency, and would like to start steroids. Do you have any other ideas?
 - **Always call if you are administering blood products, intubating, or starting pressors unless it was clearly discussed earlier.**

- Call the attending that rounded with you that day
 - If it isn't their ICU week but one of the ICU Attending is already on general surgery and trauma call, then you call them after hours.
 - If it is an issue with a patient another general surgeon just operated on, also call them first.

How to Admit a Patient

- Add the patient to the SICU and Burn List
 - Also Add the patient to the weekly M&M SICU and Burn Census
- Write appropriate Admission Orders (This typically includes Admit Orders (Also check the MRSA Admission Swab for ICU and Burn Admissions), +/- Sedation, Antibiotics, Rehab, and Consult Sheets). The senior residents will often write these orders for you and are available to help
 - Burn Patients: Don't forget to write for wound care orders and medications
- Write an SICU or Burn Admission Note with full H&P template
 - For Burn, use the H&P template even for consults so that you don't have to cut and paste when you admit a patient and a H&P is required. Make a copy of the burn consult and lund and browder to put in folder in burn unit for every consult.
- For traumas: I recommend write a separate sheet with final radiology reads and for poly-trauma patients, will often draw a stick figure map of injuries.

How to Downgrade a Patient

- Orders (Fill out a new admit order sheet), Medication reconciliation form, PT/OT Form
- Add the patient to the General Surgery team list
 - If the patient came in as a trauma and did not have an operation by general surgery, the patient goes on the trauma/ACS list.
 - If the patient underwent an operation, the patient goes on the list of that resident, can be either general surgery team 1, team 2, or trauma/ACS
 - Please fill in appropriate columns correctly and put the plan and things to follow up on in last column.
- Must communicate downgrade to the intern on that team AND the senior resident. If you don't know who to call you can check the team list or call 4149 (intern on call) and 4168 (senior on call) and ask which person to call.
- Transfer Summary: Should be written so someone can read this and be up to date on past medical history, events of the current hospital stay, and current assessment and plan. (Example below)
- The most important thing about downgrading is that you communicate the downgrade with the team and add the patient to the list and do not delete patient off your list until they have physically left the unit. As long as they are physically in the unit, you will still round on the patient. **New rule: When the patient is downgraded and has left the unit, keep the patient on your list. Do not delete them until during the day you physically go up and check their chart and see someone has rounded on the patient.**

Example Downgrade Summary

ID: 55 year old male admitted 6/2 after high speed motor cycle trauma. + LOC, intubated in the field.

Initial Injuries: Left femur fracture, Traumatic Brain injury, bilateral hemopneumothorax, Grade V Splenic Laceration

Past Medical History: COPD, HTN

Past Surgical History: Open Appy @ age 20

Home Medications: Albuterol Inhaler, hydrochlorothiazide 25 mg PO Q day

Allergies: PCN (rash)

Social History: Heavy tobacco 60 pack year history, Heavy ETOH

Hospital Course: Patient was intubated in the field, upon arrival to ARMC patient was a GCS of 3T. ET Tube was found to be placed esophageal and was replaced in the airway. Bilateral chest tubes were placed in trauma bay for decreased breath sounds bilaterally with hypotension. After chest tubes were placed, patient was stable and imaging was done which showed Grade V Splenic laceration with free fluid, hemo-pneumothorax, left mid-femur fracture, and a small intra cranial bleed. Imaging of the spine was negative for injury.

Patient was taken to the operating room and underwent exploratory laparotomy. The patient underwent splenectomy... There was 2 L estimated blood loss and the patient received 2 units of packed red blood cells. On HD #2, POD #1, hemoglobin remained stable, after sedation was weaned, patient was a GCS 11T. Orthopedic surgery performed an intra-medullary rodding of the Left femur. On HD #3, POD #2, patient was able to extubated without any complications. He was started on a regular diet.

AP

Neuro: Traumatic brain Injury, Neurosurgery consulted: recommended 7 day course of Dilantin. DVT prophylaxis started after stable head CT. Patient has been GCS 15, able to move all extremities, no neuro deficits. Needs TBI DC Instructions.

Pain control for fracture and s/p ex lap: On ATC Norco 5 with Norco 10 for breakthrough.

CV: History of hypertension: currently controlled without home medication.

Monitor blood pressure; if needed re-start home HCTX 25 mg PO

Pulm: COPD, Heavy ETOH Use: Continue bronchodilators

GI: s/p exlap and splenectomy, POD #3, tolerating diet, with bowel movement this morning,

GU: Foley discontinued this morning. Monitor for urine output after removal.

Hypokalemia, K replaced this morning, f/u K level in morning

Heme/ID: Anemia: s/p 2 units of PRBC intra-operative from blood loss 2/2 to splenic injury. Hemoglobin stable at 9 x 48 hours with DVT prophylaxis started s/p splenectomy: vaccines prior to DC

Endocrine: No issues

MS/Skin: Left femur fx, s/p IMN, POD #2. WBAT Left LE. PT written for.

DVT prophylaxis: Lovenox 40mg Q Day

Incisions: Ex lap and left femur, open to air with staples in place

Bedside Procedures

Trach's + PEG's

You will get consults for tracheostomy and percutaneous endoscopic gastrostomy tube placements from our service and from medical intensive care unit and neurosurgery service

- Do a consult History and Physical
- Pay attention to why patient needs procedure past medical history, bleeding disorders, past surgical history, particularly prior abdominal history for PEG tube
- Review all medications, laboratory findings, and imaging, particularly any neck imaging for trach patients and abdominal imaging for PEG patients (is their liver or colon lying high over the stomach)
- Obtain Consent
 - Esophagogastroscope with percutaneous gastrostomy tube placement, possible open
 - Bronchoscopy, percutaneous tracheostomy
- Discuss with attending, fill out scheduling slip (for PEG's only), let resp supervisor know x 3590
- Must keep track of all trach and PEG's for the month in case there are complications and to do trach changes POD #7

Central Lines and Chest Tubes

You will get numerous consults for central venous catheters, chest tubes, and arterial lines from all services in the hospital

- Do a consult H &P, pay particular attention to coagulopathy, contraindications to line placement etc
- Do not do procedure alone until you have been signed off
- Notify attending you are doing procedure in case there is a complication
 - If there is a complication; immediately notify the attending and senior on-call
- Always perform a time-out before every procedure; confirm imaging for chest tube placement in the room
- Always dictate and fill out op note
- Always fill out Central Line Placement (CLP Note, Bright yellow)
- When you are doing a central line, prior to dilating, always connect a single lumen IV tubing to see if you see pulsation you are in the artery.

General SICU And BURN Advice

- Always sign every order in SICU and BURN patients chart in a timely manner. It is a privilege to be able to do telephone and verbal orders. CMS requires orders to be signed within 24 hours. Sign all orders whether or not you agree with them
- Restraints need to be signed within 24 hours. You must have your license to sign them. If you do not have your license, please bring the orders to the attending's attention while you are rounding

- Always follow-up on everything you order and do. If you order labs or a chest-xray follow-up. If you give a patient Lasix don't wait until the next morning when you round to find out if the patient responded.
- Do NOT miss a compartment syndrome. Vascular patients need to be constantly checked on with a documented exam. Please notify senior and attending for changes or any concern.
- If you do not know what to do with a burn patient, please call the senior on call to evaluate (4168). Give all burn patients going home, give a handout for burn clinic. If you apply Mepilex they should return to burn clinic in 10-14 days.
- Burn residents are expected to be in Burn Clinic every Wednesday unless you are post-call.
- You can not clear C-Spine until you have your license. Please ask the attending while you are rounding or the on-call senior for help.
- Please finish all dictations prior to your last week on the service. This includes operative notes, discharge summaries, and death summaries. Do not leave them for the next resident who has never met the patient.
- All Burn patients require an initial Lund and Browder and a 24 hour update. This must be filled out in a timely manner.

General SICU team responsibilities

- SICU team will be responsible for all general surgery patients in the ICU along with the general surgery service
- Ongoing communication with the general surgery service and subspecialties regarding patient status and changes
- SICU will follow the ventilatory status after three days of traumatic neurosurgery patients until extubation
- The SICU team will see surgical subspecialties, orthopedics, oral-maxillary-facial, and ENT unless the medicine service was consulted for the critical care.
- SICU team will provide hospital wide elective central venous line placement when consulted

PGY-2 Responsibilities

- Day to day supervision of service. Prepare resident call schedule if not set by surgical staff. Avoid calls on first and last day of service. Intern call and clinic schedules are set by the family practice/transitional year program (please adjust call accordingly).
- Instruction of students during care of ICU patients
- Daily assignments of ICU care duties
- Preparation of weekly ICU Morbidity and Mortality
- Call duty as assigned
- Communication with patient family as appropriate
- Minute to minute care as needed in unstable ICU patients
- Present one topic in ICU
- Reading as appropriate to fulfill objectives, see objectives below

- The resident may participate in surgery only if ICU duties are complete

PGY-1 responsibilities

- Instruction of students during care of ICU patients
- Performed daily assigned duties by PGY-2
- Communication with patient family as appropriate
- Call duty as assigned.
- Minute to minute care as needed of unstable ICU patients
- Attendance of all assigned conferences
- Present one topic in ICU conference
- Reading as necessary to fulfil rotation objectives, see objectives below

Student responsibilities

- Performed daily assigned duties
- Attendance at assigned conferences
- Present one topic in ICU conference
- Participation in care of ICU patients as appropriate for student's level of expertise
- Call duties
- Daily reading, regarding interesting ICU patients (not only assigned patients)
- Experience as appropriate, depending on student's level, in simple procedures in perioperative surgical patients

Fellow responsibilities

- Guide twice a day rounding
- Administrative duties, oversee:
 - M&M, guide discussion
 - Thursday presentations and Journal club
 - Run multidisciplinary conference
- Education of residents and students
- One weekend coverage
- See goals and objectives for Fellow level
- Oversee Critically Ill Burn patients along with SICU patients
- SICU Consults
- Arrange bedside procedure like percutaneous tracheostomy and gastrostomy

Resident and Student Objectives:

(Fellow objectives listed in more detailed Goals and Objective lists)

Monitoring

- Learn how to place central venous catheters and arterial lines
- Interpretation of pulmonary artery catheter data
- Interpretation of arterial and mixed venous blood gas

- Transport of critically ill patients
- Cardiovascular
- Recognize and classify the presence of shock state
 - Distinguish between noncardiogenic vs cardiogenic respiratory failure
 - Cardiac arrhythmias – develop differential diagnosis and management
 - Apply ACLS principles
 - Hypertensive emergencies
 - Vasoactive and inotropic therapy
 - Hemodynamic physiology of critically ill patients
- Respiratory
- Recognize and treat acute and chronic respiratory failure
 - Recognition and acute management of pulmonary embolism
 - Be acquainted with the terms assist control, SIMV, pressure control, pressure support, CPAP, pressure regulated volume control
 - Be able to wean a non-complicated patient from the ventilator
 - Ability to write routine ventilatory orders
 - Use of non-invasive respiratory support (CPAP/ BiPaP)
 - Recognize upper airway obstruction
 - Principles of O₂ therapy and injury
 - Arterial blood gas interpretation
- Renal
- Be able to manage the following electrolyte disturbances:
 - Hypo- and hypernatremia
 - Hypo- and hyperkalemia
 - Hypo- and hypermagnesemia
 - Hypo- and hypercalcemia
 - Hypo- and hyper phosphatemia
 - Diagnose pre-renal renal insufficiency versus acute tubular necrosis
 - Understand basic acid-base disorders
 - Management of renal failure
 - Fluid and electrolyte therapy in the critically ill
- Central Nervous System
- Recognition and management of coma, head and/or spinal cord injury
 - Management of intracranial hypertension
 - Understand persistent vegetative state
 - Recognize and management of drug overdose/neurologic side effects
 - Principles of sedation, analgesia, and neuromuscular blockade
 - Discuss intervention and prognosis of patients
 - Brain death evaluation
 - Recognize the social impact of critical illness on the patient and family
 - DNR orders
 - Principles of informed consent
 - Rights of patients

Withholding and withdrawing life support
Advance directives

Metabolic\Endocrine

- Recognize and acute management of:
 - Hypoadrenal crisis
 - Diabetes insipidus
 - Diabetes ketoacidosis
 - Hypo and hyperthyroid states
- Principles of alimentation
 - Enteral vs Parental feeding
 - Ability to write TPN orders
- Discuss the metabolic response to tissue injury

Infectious Disease

- Recognition and acute management of sepsis
- Prevention and management of hospital-acquired and opportunistic infections
- Principles of antibiotic selection and dosage
- Infection risks to health care workers

Hematologic Disorders

- Recognition and acute management of
 - Defects in hemostasis
 - Hemolytic disorders
 - Hypercoagulable states
- Anticoagulation and fibrinolytic therapy
- Blood component therapy

Gastrointestinal Disorders

- Recognition and acute management of:
 - Acute GI bleed
 - Hepatic failure
 - Perforation of a viscus
- Principles of prophylaxis against stress ulcer bleeding

Orientation packet and Contact list

Provided on start date and upon request prior to start date

Outcome Assessment:

Students and residents will be evaluated daily during rounds and during procedures. A mid- and end-rotation performance evaluation will be performed for feedback and evaluation.

SICU Bibliography

Neurologic System

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Cardiovascular System

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Respiratory System

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Fluids and Nutrition

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