

PICU Survival Guide

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Welcome to the Pediatric Intensive Care Unit. Below is a description of the curriculum for this rotation. Please review this information **before** the first day of the rotation.

[Important Note on Resident role/patient assignments](#)

The PICU attendings are committed to ensuring you have a high-quality education experience in a safe and supportive environment. Periodically, questions are raised about the “flow” of the unit, i.e., the number of patients you will follow and how patients are divided between providers. Because the PICU has such a wide range of patient acuity /complexity (from postoperative spinal fusion or a well-appearing DKA to an unstable patient requiring ECMO and CKRT) we do not have defined numbers and cutoffs but rather address the unit's current status. Additionally, there will be times when we all need to help our colleagues with patients who are not “officially” ours to keep patients and families safe and well cared for. If you ever feel that your assignment is unsafe or that your educational experience is being compromised, please know that you can discuss this with your attending.

Here are some answers to the FAQ.

1. Is there a cap on patient numbers?
 - There is no formal cap, but the general statement above applies. As the census and acuity vary, patient distribution will also vary.

2. How are patients divided between APPs and residents?
 - Our priorities include an excellent educational experience (exposure to variable patient numbers, acuity, problems/diagnoses) and a safe environment. For example, in the uncommon event your team (or at night, the whole unit) has only a few patients (<4- 5), the resident will have most or all patients to ensure learning, with the APP taking on an active helper role.
3. Who do I go to first with questions? APP? PICU Fellow? Attending?
 - This requires some judgment. If it is a straightforward question regarding orders, e.g., 'How do I order an NJ placement with IR? 'Anyone can answer, but the APP is probably the most knowledgeable. If the patient is acutely unstable, whoever is closest BUT, then the fellow and attending should be immediately notified. Use your judgment for in-between questions such as adjusting the ventilator, what fluids to give, etc. It is ok to say, "Should I ask you or _____ about this question." Learning to triage, ask, evaluate, develop a plan, and treat are key parts of your training and education! Know that you are smart and own it! But don't forget we are always reachable.
4. How about at night if the attending and APP are not in the unit/asleep?
 - It is okay to call the APP first about most questions, but if the issue seems critical, go first to the PICU Fellow or attending.
5. Are there patients such as those on ECMO, CKRT, or long-term patients who are only seen by the APP?
 - No, this would be an exception to the rule. Of course, for patients with complicated support such as ECMO, the APP/fellow will provide more than usual support for the resident.
6. How are patients divided at night?
 - The resident should cover one team and the APP the other. If there are two residents and an APP, the APP will assume an actively involved helper role.

Daily Schedule

- **0700-0900:** Pre-rounds – You are expected to receive a sign-out from the on-call resident, examine your patients, and collect data (labs/study results, etc.). Prioritize the sickest patients and those likely to transfer out first; inform the attending if you don't see everyone before rounds.
- **PICU SIMS** will be offered intermittently.
One resident should go every week (take turns). YOU DO NOT need to attend if it is your first day of service in the PICU.
 Before the sim, check in with your team's Fellows and Attendings regarding active issues with your patients to help you prioritize tasks.
- **0900:** PICU rounds- usual start time approximately 0900

- o Rounds will be conducted outside the patient's room.
 - o The PICU uses a team approach to patient care. Nurses and RTs will join rounds; please seek their input.
 - o Please do not enter orders as you present; it slows down rounds and can lead to errors. Likewise, waiting until after rounds to enter them leads to unnecessary delays. Therefore, enter them immediately after you present or ask the APP/resident on your team to enter orders during rounds. Also, instruct the RN to come to you with questions about the orders and REVIEW the orders entered (see order summary view) to ensure that all orders were entered completely and correctly.
 - o See below for guidelines on presenting patients.
- **Afternoons:** Reassess patients, follow up on consultant's notes, labs, radiological studies, and other relevant information, as well as new admissions and communication with families.
 - **Alternating Tuesdays 2:00 PM Resident Hands-on 20 min ventilator tutorials** with lead Respiratory Therapist. Come with questions! Check with your attending /fellow after rounds for dates.
 - **NEW Tuesdays/Fridays, Afternoon, exact time to be determined. Chalk talks** - Given by PICU 3 attending physicians or fellows. Topics - chosen by you! Look at the core topics on the PICU passport and request the talk you want
 - **Wednesday Fellows Conference** (times vary. Ask Fellows for time and topics). These are OPTIONAL lectures geared at fellows on various critical care conferences. Please join if you have time and interest.
 - **Feedback Wednesday—Please ask your attending physician and fellow attendees** for input if they don't approach you. Tip: Ask specific questions, such as "Are my presentations clear and concise?" "How am I doing on follow-up?" instead of "Can you give me feedback, or how am I doing?". You are more likely to get good answers than unhelpful "fine."
 - **1900:** Sign out to the on-call team. Ensure they understand the patient's overall disease process and goals for the ventilator, fluid balance, etc. Provide them with a "to-do" list of outstanding labs and study results to check, procedures to be performed, etc. Share any concerns regarding the patient's status. **Night-time patient assignments will adjust depending on physician and APP staffing- Please see updates on the orientation page under news and updates.**
 - **Nights "on-call":** Feel free to discuss *any* questions regarding patient management with the fellow/ APP/ attending. It is best for your learning to develop a plan and then discuss it with them instead of asking what to do.

Resident role/expectations for night shift:

- o You should review patient charts and labs before night rounds. These start at approximately 21:00 but vary. Check with the attending /fellow after you receive the signout.
- o You should examine your patients and check in with bedside RN pre-rounds (prioritize most critical patients first). Let attending know if they cannot see all patients, which may occur if there are admissions or unstable patients.
- o In round presentations, integrate what you have gathered from your exam, chart review, and RN discussions. Do not just read off CORES. Think critically about your patients.
- o **The expectation is that you are in the unit throughout the night. Being present ensures patients get good care and that the nurses/RTs give you the first notification on your patients. Please let the charge RN know if you leave for more than a short time (about 15 minutes). If the unit is quiet and you go to the call room to sleep, please let the charge RN know and check in with the bedside nurses before leaving.**
- o When admitting patients on the night shift, discuss with your fellow/attending before morning sign-out which team the patient will be assigned to.

Phones:

- Please sign in to the Voalte Me app and assign yourself to your patients every shift. Medical students, ensure all your team members (residents, fellows, APP attendings) know where to find you in Voalte.

Where to find patient information

- Look at am X-rays and address anything urgent (e.g., advancing ETT, etc.)
 - Note ETT placement
 - CT placement
 - Effusion/ pneumothorax
 - Atelectasis
 - NG/NJ placement
 - CVL/PICC placement
- Collect lab, micro, and radiology reports and clinical notes from COMPASS. If you can't find results in the lab flow sheet, check the order tab to ensure they are pending. **NB** The data in the micro tab is sorted by the date last updated, not by chronological order.

- Collect information from Compass. **Graphics View** is an excellent place to look for VS trends and I/O and infusion rates for continuous sedatives, analgesics, and vasoactive medications. **Caredex View** summarizes current meds/standing labs/meds/resp treatments. **Flowsheets/micro tab** for labs.
Please note: Urine output is reported in ml/kg/hr. Also, report any important trends, such as decreasing output over time.
- Vasoactive medications such as norepinephrine, epinephrine, and milrinone are generally dosed in mcg/kg/min. Sedation/ analgesics/ relaxants should be reported in mg/kg/hr except for fentanyl and Precedex, which are mcg/kg/hr.
- VS reporting should focus on general trends and most recent values, not just the range over the last 24 hours.
- **Respiratory View** has the most up-to-date ventilator settings. If the patient is in volume control mode, note the pressure required to deliver a specified volume; if in pressure control mode, note volumes obtained for the pressure set.
- Perform a bedside exam and speak with the bedside RN/RT regarding any changes through the night.

Presenting on Rounds

- **Admissions:** in addition to your general presentation, please include a differential diagnosis and your thoughts and questions about their care plan. If we know what you are thinking.
- **Daily rounds:** Presentations should follow an organized format and include the areas below. **If needed, please alert RN and RT (if needed) that we are about to round on their patient.** If you are not presenting, please be prepared to look up information on the presenting NP/PA or resident's patient in Compass (i.e., culture updates, radiological results, etc.). Also, enter orders discussed on rounds on their patient so they can finish their presentation.

General presentation format

Patient identifier: Identify the patient and their current medical issues. "This is PICU day number 5 for this 4-year-old with acute respiratory failure due to RSV with Moraxella pneumonia and anemia".

The bedside RN will then lead the ABCDE section for ICU liberation (Pain scores, spontaneous breathing trial results if performed, RASS sedation scores, CAPD scores for delirium, and current patient mobility level).

Brief update: of significant events in the past 24 hours.

A summary by systems, including your thoughts on the patient's care plan on each system.

- **Neuro:** medications, exam, test results (drug levels, EEG, etc.). Whether sedation level is appropriate (the RN's input is essential here). And your plan /
- **Resp:** RT when available; will report here if not. Discuss ventilator settings. State the mode of ventilation (Volume or pressure control), ventilator rate, peak inspiratory pressure (what is set in PC or achieved in VC), tidal volume (what is set in VC or achieved in PC), PEEP, FiO₂, and pressure support. Include therapies, your exam, X-ray findings, and your plan.
- **CV:** Vital signs, medications including stress dose steroids if being administered (inotropes should be stated in mcg/kg/min) Ica, lactate (if performed), your exam, and your plan.
- **FEN/GI:** fluid balance, feeds or TPN rate and type (i.e., Enfamil 24cal/oz at 20cc/hr or TPN with D25 at 15cc/hr and 2 gr/kg amino acids and 1gr/kg IL), urine output (cc/kg/hr.) labs, medication, and exam. Caloric intake should be reported in Kcal/kg/day. Conclude with your plan.
- **Heme:** labs and therapy (Vitamin K, Neupogen, transfusions). State if the results are stable or increasing/decreasing and your plan.
- **ID:** Tmax, medications, and all culture results (ask the APP /other residents to recheck culture results for updates when we are rounding on your patient). Conclude with your plan.
- **Social:** update on parent's presence/concerns and patient's emotional state when applicable.
- **Quality measures:** We will Review quality measures as a team
- **RN will recap the plan. (if not present for some reason you should recap)**

Remember, if you do not know something, say, "I don't know, but I will look it up" (or, whenever possible, the other resident/APP to check while you continue your presentation). *Misinformation could harm a child.*

PICU Notes

- We are using electronic dynamic documentation.
- The H&P and progress notes can be found on Compass by going to:
 - Power Note/Dyn Doc

- o Click Add and select Dynamic documentation
 - o Use PICU History and Physical or PICU Progress Note **NOT** Pediatric Notes
- Complete the chief complaint, HPI, ROS, Physical Exam, A/P, and Quality Section for each note and refresh all other boxes (medications, vitals, labs, etc.) before submitting.
- For assessment and plan, please list the following and include any diagnoses under each section.
 - o Neurologic
 - o Respiratory
 - o Cardiovascular
 - o FEN/GI
 - o Hematologic
 - o Infectious Disease
 - o Other: ortho, endo, skin, etc.
 - o Example: Neurologic: Dx: acute postoperative pain
 - First-line treatment scheduled Tylenol q6h
 - Second-line TX oxycodone q4h prn
 - Third-line TX morphine q2h prn
- You are responsible for completing quality measures at the bottom of the note. An auto text phrase is available from your team's APP, or you can access one from our NP Robyn Barrett's shared auto text folderquality. Please add the QA section to all your notes and update them daily.
- When you are done with a new H&P on your patient, please **sign the document and send it to the attending to sign**. Let the attending know when you are done so they can add their part and save/sign the note.
- For each new admission, please be sure to also:
 - o Notify/Dictation note for PCP – see a copy in the radiology room or PICU website
 - o Make sure there is an "Admit to PICU" order placed
 - o Place "orders reconciliation" order (see below)
 - o Home meds are reconciled
 Verify medications with one of the following approved sources:
 - 1) medication bottle
 - 2) pre-op H&P
 - 3) pharmacy
 Admission meds are reconciled.

End of Rotation Notes

- Provide an interim summary for all your patients and sign them out to the incoming resident.

Orders in PICU

- Please notify RN or RT of all new orders- this will ensure timely attention to your requests.

- We will need to clean up orders daily to make orders more accurate and streamlined for patient safety and minimize headaches. To this end, the following will occur.
 - RNs will review orders at each shift and bring to the team's attention the rounds of duplicate/outdated/ inconsistent orders to the team's attention
 - APPs/Residents should clean up orders daily and place 'Orders Reconciliation Complete.'

Supervision /Assistance:

- The PICU will be staffed by a PCCM attending physician 24 hours a day, seven days a week.
- Utilize the PICU Fellows, Critical Care Nurse Practitioners, Physician Assistants, RNs, and RTs to assist you with caring for your patients. RNs and RTs are also excellent teachers, and since they are at the patient's bedside more than we are, their input is valuable.
- **You should discuss all significant patient changes and ALL NEW PATIENT ARRIVALS AND TRANSFERS OUT OF THE UNIT WITH THE ATTENDING.** Important changes include, but are not limited to, significant ventilator changes, hypotension, change in neurological status, bleeding, and severe electrolyte abnormalities. **It is essential to evaluate the patient, make a tentative management plan, and discuss it with the attending before implementing it.** Also, remember to communicate significant issues on post-op patients with the appropriate surgical team (If not sure what/when to report, check with the PICU attending)

Admitting a new patient

This can sometimes be overwhelming, especially if the patient is unstable. Here are a few suggestions

- **Surgical patients:** Be present when an admission returns from the OR so you can hear the surgeons, anesthesiologists, + RNs report. This is an excellent time to ask questions and understand some of the issues your patient may face. Pay particular attention to whether there were airway or ventilatory issues, bleeding, or hypotension. Listen to the surgeon's description of the operation and their concerns for the patient in the perioperative period.
- **From the ER or Floor.** Do a quick assessment of the patient (airway, breathing, circulation), check labs, and begin writing some initial orders with assistance from the attending. Then go back and thoroughly examine the patient, review the

chart, and interview and update parents once the patient is stabilized. New patients should always be given a differential diagnosis.

Notifying PCP: Please use the template for PCP notification found below or on the poster in the PICU workroom (also below) for ALL patients admitted to PICU.

Procedures

- We know you are anxious to do procedures. Hopefully, you will have opportunities to learn endotracheal intubations, arterial and central lines placement, and chest tube placement. Importantly, you should complete peripheral IV placement, learn good techniques for bag-mask ventilation, airway management (including use of oral and nasal airways), arterial punctures, and IO placement since these are the procedures you are more likely to use in an emergency in your future pediatrics practice (unless you chose PCCM).
- Before a procedure, ensure you have all the necessary equipment and personnel.

For intubations

- Suction (check that is working)
- ETT (elected size and one size smaller)
- Stylet
- C-Mac laryngoscope blade(s) hooked up and ready to go
- Bag and Mask (make sure oxygen is flowing and adjust PEEP valve to necessary PEEP per attending instructions)
- IV access (make sure it is WORKING)
- BP is taken every 3-5 minutes during the procedure
- ETCO₂ monitor
- Appropriately sized oral airway selected in case needed
- Glideslope available in case of difficult intubation (ask RT)

For central lines and arterial lines

- Line, sterile towels, sterile gowns, gloves, hats and masks, sterile dressing (biopatch and Tegaderm), chloraprep swab, sterile saline (from bedside RN)
- BP is being taken every 5 minutes.

Procedure notes should be completed in the EMR under bedside procedures. The EMR has templates for intubation, central lines, arterial lines, Lumber puncture, and chest tubes. Below are examples of free text procedure notes for general reference.

- **Arterial lines:** The patient was prepped and draped in the usual sterile fashion. A ___ gauge catheter was placed (including using the Modified-Seldinger technique if a guidewire was used) in the right/left radial, DP, and PT femoral artery. The catheter drew easily and had a typical arterial waveform. There were no complications.
- **Central line:** The patient was prepped and draped in the usual sterile fashion. A ___ gauge ___ lumen catheter was placed using the Modified-Seldinger technique in the ___ (right/left IJ, Femoral, subclavian) vein. The catheter drew easily from all lumens. There were no complications. Include comment on X-ray findings regarding the position of the line tip if an IJ or subclavian line was placed.
- **Intubation:** The patient was sedated and relaxed with ____. The patient was intubated with _____ (size/cuffed or uncuffed) ETT using ___ type and size of laryngoscope blade. The placement was confirmed with ET Co2. Chest X-ray shows the tip of the ETT _____. Note if there were any complications/difficulties/more than one attempt.

Transfers

- Be sure appropriate monitoring is ordered, e.g., continuous pulse-oximetry, an A/B monitor with appropriate alarm limits, and telemetry if needed.
- Phone the accepting Resident or APP with a report.
- **Write a transfer note on every patient.**
- **Remember to write off-service notes on all your patients at the end of the rotation.**

Conferences:

- **Second Thursday of the month, resident didactics 1230-4 pm** Conference rooms 3&4
- **12:30 3rd Wednesday of each month:** Residents can attend the monthly PICU Morbidity and Mortality conference. Participation in this conference will provide exposure to physician peer review and quality assurance processes.

Goals and Objectives

The Pediatric Intensive Care rotation is an experience for senior residents in recognizing, triaging, stabilizing, and managing children with acute severe illnesses and complex medical conditions, as well as using medical technologies. Residents' complete experiences during the day and night to understand the extent of care needed for critically ill children.

Patient Care:

Goal: Demonstrate effective evaluation and treatment for patients requiring intensive care in the inpatient setting.

1. Collect a history and complete a physical exam pertinent to the complexity and severity of the patient presentation and chief complaint.
2. Interpret physical exam findings, radiologic and diagnostic testing results, and responses to therapeutic actions to present a cohesive assessment and plan during PICU rounds.
3. Recognize the vital signs, physical exam findings, and clinical scenarios that indicate Clinical decompensation and development of resuscitative and support skills to achieve initial stabilization of the critically ill child.
4. Develop technical skills in procedures commonly performed in the ICU, including airway management, central and peripheral access, foley catheter and enteral tube placement, and defibrillator use.
5. Provide detailed hand-off to facilitate the safe transition of patients to other PICU providers and from the PICU to other care areas.

Medical Knowledge:

Goal: Demonstrate knowledge of pediatric critical care topics for the general pediatrician.

1. Understand the pathophysiology and evidence-based management of common diseases managed in the PICU, including (but not limited to): sedation, analgesia, blood gas interpretation, respiratory failure, and support modalities (HFNC, BiPAP, and ventilator management), hemodynamics monitoring, assessment and management of shock including vasoactive therapy, and fluid and electrolyte management, Endocrine emergencies (DKA, HHS, adrenal crisis), transfusion medicine and management of the trauma injuries.
2. Apply antibiotic stewardship principles in selecting, monitoring, and managing antibiotics used in pediatric patients with critical illness;
3. Review topics for pediatric board preparation, as listed in the American Board of Pediatrics Content Specifications[

Interpersonal and Communication Skills:

Goal: Develop effective communication strategies for patients and families receiving pediatric intensive care unit care.

1. Demonstrate compassionate and effective communication with patients and families in the setting of critical illness or death.
2. Demonstrate insight into the psychosocial, cultural, ethical, spiritual, and legal issues that emerge in the care of critically ill children.
3. Demonstrates an open and responsive attitude to the needs of staff, families, and team members

Systems-Based Practice:

Goal: Function as part of an interdisciplinary team to care for patients with a critical illness.

1. Coordinate care with clinical providers, case managers, and home health services professionally to deliver safe and quality patient care.
2. Advocate for patient and family care preferences, incorporating family values, cultural preferences, and patient/family decisions for medical technology and end-of-life care.
3. Participate in quality measures to improve patient care

Practice-Based Learning Improvement:

Goal: Identify and perform appropriate learning activities to guide professional development in pediatric critical care.

1. Identify at least three personal goals for the rotation to be shared with the teaching faculty.
2. Seek and incorporate faculty feedback into daily practice.
3. Independently access medical information to support their own education and enhance patient care.

Professionalism:

Goal: Demonstrate a commitment to professional behavior.

1. Recognize limitations to personal knowledge and skills and appropriately seek supervision as appropriate.
2. Develop effective strategies to deal with the challenges of caring for critically ill children, including seeking guidance/assistance from faculty when needed
3. Treat patients, families, and staff with respect
4. Demonstrate effective team leadership by being responsive to staff needs and concerns regarding patients and their families

Evaluations and Feedback

During the rotation, Attendings will provide immediate feedback on oral presentations and interpretation of specific lab and clinical findings for problems outlined in the Goals and Objectives. We encourage you to discuss your progress and any concerns with your attending or Dr. Wilson. An evaluation form will be completed for each resident and student on the rotation, including feedback from several attendings; ED residents & Fellows should ask their program coordinators to assign evaluations to the attendings they worked in New Innovations. Please discuss any suggestions that may improve the

rotation for others and point out experiences that you feel are particularly useful for resident learning/experience.

PCP Notification

NOTIFICATION OF PRIMARY CARE PROVIDERS UPON EVERY
PICU ADMISSION (even readmission during the same hospital stay)

YOU **Must** Include the PCPs **First** and Last Name.

Steps

1. Call 512-324-0000 ext 40880
2. Type in your user ID (dictation code) *
3. Choose Work type 40 (PCP Dictation)
4. Give patient FIN#
5. Push 2 to record. 4 = stop, 5 = end

PLEASE SAY AT THE BEGINNING of THE DICTATION

“This is YOUR NAME dictating for the PCCA Service.”

Dear Dr.<PCP>,

Your patient, <PATIENT NAME, DOB>, was admitted on <DATE> to the PCCA service at Dell Children’s Medical Center of Central Texas. The admitting diagnosis is <DIAGNOSIS>. If you should have any questions regarding this matter, please call the attending on-call at 512-402-4236.

Sincerely, Pediatric Critical Care Associates

Cc < PCPs name> **Please spell first and last name, Not the clinic name. Add an address for out-of-town providers.**