CRRT Pediatric Mobility Pathway: A Pilot Study

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Introduction

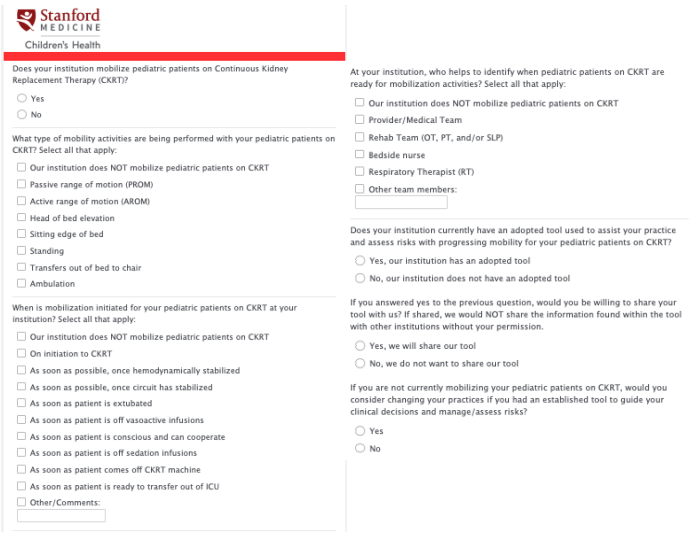
- Adult studies have reported the benefits of early mobilization in critically ill adults that include improved mobility and strength and decreased length of stay in the intensive care unit and total hospital stay.
- Data on safety and feasibility of mobilizing pediatric patients on continuous kidney replacement therapy (CRRT) is limited.
- Our PICU established an early mobility program to mobilize patients in the first 24-72 hours after PICU admission, but for patients on CRRT, mobility was still limited to bed rest.
- Patients on CRRT were excluded from early mobility program due to concerns for catheter dislodgement and blood flow issues.
- Barriers to early mobilization include lack of standard practice, safety concerns, coordination with multidisciplinary team, and resources.

Objective/Aims

- Establish an early mobility pathway for patients on CRRT.
- Evaluate feasibility and safety of mobility in pediatric patients on CRRT.

Methods and Materials

- National survey was distributed to email distribution lists for rehabilitation programs and pediatric intensive care nurses to define standard of care for mobility for pediatric patients on CRRT



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Does your institution mobilize pediatric patients on Continuous Kidney Replacement Therapy (CKRT)?
- Yes
- No

What type of mobility activities are being performed with your pediatric patients on CKRT? Select all that apply:
- Our institution does NOT mobilize pediatric patients on CKRT
- Passive range of motion (PROM)
- Active range of motion (AROM)
- Head of bed elevation
- Sitting edge of bed
- Standing
- Transfers out of bed to chair
- Ambulation

When is mobilization initiated for your pediatric patients on CKRT at your institution? Select all that apply:
- Our institution does NOT mobilize pediatric patients on CKRT
- On initiation to CKRT
- As soon as possible, once hemodynamically stabilized
- As soon as possible, once circuit has stabilized
- As soon as patient is extubated
- As soon as patient is off vasoactive infusions
- As soon as patient is conscious and can cooperate
- As soon as patient is off sedation infusions
- As soon as patient comes off CKRT machine
- As soon as patient is ready to transfer out of ICU
- Other/Comments:

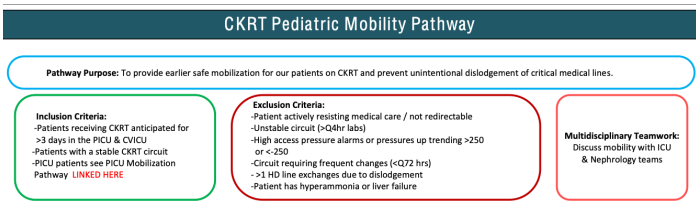
At your institution, who helps to identify when pediatric patients on CKRT are ready for mobilization activities? Select all that apply:
- Our institution does NOT mobilize pediatric patients on CKRT
- Provider/Medical Team
- Rehab Team (OT, PT, and/or SLP)
- Bedside nurse
- Respiratory Therapist (RT)
- Other team members:

Does your institution currently have an adopted tool used to assist your practice and assess risks with progressing mobility for your pediatric patients on CKRT?
- Yes, our institution has an adopted tool
- No, our institution does not have an adopted tool

If you answered yes to the previous question, would you be willing to share your tool with us? If shared, we would NOT share the information found within the tool with other institutions without your permission.
- Yes, we will share our tool
- No, we do not want to share our tool

If you are not currently mobilizing your pediatric patients on CKRT, would you consider changing your practices if you had an established tool to guide your clinical decisions and manage/assess risks?
- Yes
- No

- Following the survey results, the CRRT Mobility Pathway was developed and adopted for use at our institution.
- Data was collected on patients who followed pathway to evaluate safety and feasibility



CKRT Pediatric Mobility Pathway

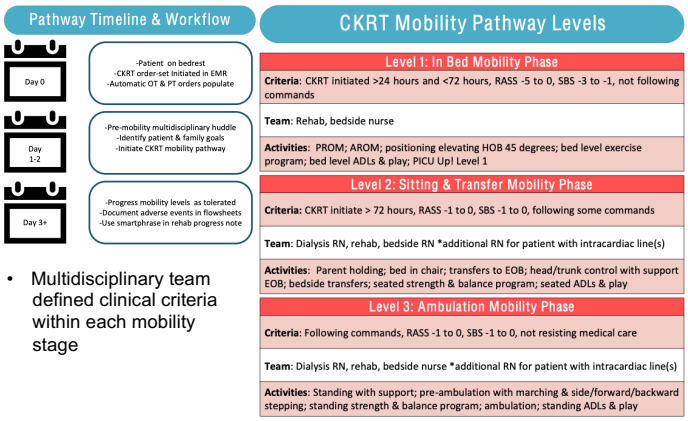
Pathway Purpose: To provide earlier safe mobilization for our patients on CKRT and prevent unintentional dislodgement of critical medical lines.

Inclusion Criteria:
-Patients receiving CKRT anticipated for >3 days in the PICU & CVICU
-Patients with a stable CKRT circuit
-PICU patients see PICU Mobilization Pathway LINKED HERE

Exclusion Criteria:
-Patient actively resisting medical care / not redirectable
-Unstable circuit (>Q4hr labs)
-High access pressure alarms or pressures up trending >250 or <-250
-Circuit requiring frequent changes (<Q72 hrs)
- >1 HD line exchanges due to dislodgement
-Patient has hyperammonia or liver failure

Multidisciplinary Teamwork:
Discuss mobility with ICU & Nephrology teams

Methods and Materials



Pathway Timeline & Workflow

Day 0
-Patient on bedrest
-CKRT order-set Initiated in EMR
-Automatic OT & PT orders populate

Day 1-2
-Pre-mobility multidisciplinary huddle
-Identify patient & family goals
-Initiate CKRT mobility pathway

Day 3+
-Progress mobility levels as tolerated
-Document adverse events in flowsheets
-Use smartphrase in rehab progress note

CKRT Mobility Pathway Levels

Level 1: In Bed Mobility Phase
Criteria: CKRT initiated >24 hours and <72 hours, RASS -5 to 0, SBS -3 to -1, not following commands
Team: Rehab, bedside nurse
Activities: PROM; AROM; positioning elevating HOB 45 degrees; bed level exercise program; bed level ADLs & play; PICU Up! Level 1

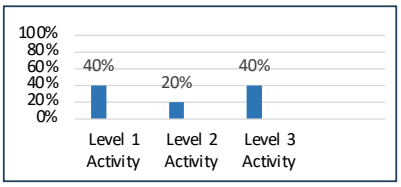
Level 2: Sitting & Transfer Mobility Phase
Criteria: CKRT initiate > 72 hours, RASS -1 to 0, SBS -1 to 0, following some commands
Team: Dialysis RN, rehab, bedside RN *additional RN for patient with intracardiac line(s)
Activities: Parent holding; bed in chair; transfers to EOB; head/trunk control with support EOB; bedside transfers; seated strength & balance program; seated ADLs & play

Level 3: Ambulation Mobility Phase
Criteria: Following commands, RASS -1 to 0, SBS -1 to 0, not resisting medical care
Team: Dialysis RN, rehab, bedside nurse *additional RN for patient with intracardiac line(s)
Activities: Standing with support; pre-ambulation with marching & side/forward/backward stepping; standing strength & balance program; ambulation; standing ADLs & play

- Multidisciplinary team defined clinical criteria within each mobility stage

Results

- 25 responses from the national survey
- 5 patients, average age of 12 years, were included in pilot study from May 2023 to December 2023
- Level of activity on CRRT in for the 5 patients:



Activity levels:
Level 1: Bed level range of motion
Level 2: Level 1 + and sitting up in bed
Level 3: Level 1+2 and out of bed to chair, sitting up in bed, and/or ambulate

- No adverse events including no hemodynamic instability or CRRT circuit or line issues.

Conclusions

- Mobilization of pediatric patients is feasible but need to assess risk factors for adverse events and coordinate safe mobilization with multidisciplinary team.
- From national survey results, standardization of mobility practices are limited and inconsistent for pediatric patients on CRRT.
- To our knowledge, this is the first mobility tool designed specifically for pediatric patients on CRRT.
- Goal of pathway is to promote earlier and safe mobility events for patient's on CRRT.
- This novel CRRT Pediatric Mobility Pathway may help standardize mobility practices across the interdisciplinary ICU team.
- Results from this pilot study will be used to guide future larger studies to evaluate other outcome measures

Acknowledgements/Contact

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Contact: Deana Rosaia drosaia@stanfordchildrens.org

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