Organizational Aspects of CRRT Programs: Development and Implementation-Staffing Considerations
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Options for Acute Renal Failure Treatment

- PD: Peritoneal dialysis
- IHF: Intermittent hemofiltration
- IHD: Intermittent hemodialysis
- CAVH: Continuous arteriovenous hemofiltration
- CVVH: Continuous venovenous hemofiltration
- CAVHD: Continuous arteriovenous hemodialysis
- CVVHD: Continuous venovenous hemodialysis
- CVVHDF: Continuous venovenous hemodiafiltration
Identify Key Interests for the Program

• Hemofiltration vs hemodialysis
• Ronco type dosing
• Schedule flexibility (SHIFT or Extended Daily therapies)
• Benefits for staff
• Define program objectives
Improving therapy
– Advance standard of care for patients with acute renal failure

Managing resources
– Do not increase staffing requirements given current nursing crisis
– Manage costs
– Minimize complexity on hospital operations and workflow
Reasons for Initiating a CRRT Program

• CRRT:
  – Ease of system use to treat ARF patients
  – Enables higher doses of therapy to be delivered, consistent with current clinical literature
  – Allows for 24 hour therapy
  – Hemodynamic stability
  – Volume reduction allowing for fluids & nutrition
  – Cytokine removal
Key Players in Developing a CRRT Program

• Physicians- nephrologist, intensivist, cardiologist, surgeon, interventional radiologist
• Administration
• Nursing management- ICU &/or Acute Dialysis
• Nursing staff
• Pharmacy
• Dietitian
• Bio-med
• Purchasing
• Legal department
Clarify Program Operation

- ICU based
- Nephrology based
- Nephrology/ICU partnership
  - Each has advantages - institution driven
- Identify number & type of ICUs (patient population)
- Number of staff for each unit
# Staffing advantages

*(incremental nursing time per patient day)*

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<thead>
<tr>
<th></th>
<th>ICU Staff</th>
<th>Dialysis Staff</th>
<th>Total</th>
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<tr>
<td><strong>Intermittent HD in ICU</strong></td>
<td>--</td>
<td>5 hrs</td>
<td>5 hrs</td>
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<tr>
<td><em>(1:1 dialysis staff, 2 tx/staff day; no change in ICU staffing)</em></td>
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<tr>
<td><strong>CRRT – ICU Administered</strong></td>
<td>12 hrs</td>
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<td>12 hrs</td>
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<td><em>(1:1 ICU staff vs. normal 2:1, 24 hrs/tx)</em></td>
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<td><strong>EDT – Dialysis Administered</strong></td>
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<td>2:1 5 hrs</td>
<td>3-5 hrs</td>
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<td><em>(2 or 3:1 dialysis staff, 10 hrs/tx; no change in ICU staffing)</em></td>
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<td>3:1 3.3 hrs</td>
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<tr>
<td><strong>EDT – ICU Administered</strong></td>
<td>5 hrs</td>
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Notable nursing requirement increase

Nursing-efficient more intensive therapy
Getting the Program Started

• Understanding of CRRT theory-physicians & nursing staff
• Policies & procedures
• Orders
• Flowsheets
• Protocols
• Equipment
• Nursing staff training
Getting started

• Research CRRT
  – Understand why & who will benefit

• Articles
Implementation key points

- ICU is a technical environment- CRRT requires clinical competence
- Careful planning & support
- Anxiety & comfort level
- Preparation- reading, discussion, hands on training, experience
Implementation key points

• Equipment function
• Patient selection- unstable, sickest patients
• Mastering clinical skills
  – General skills- access, anticoagulation, drawing blood, giving medications
  – Troubleshooting
Policies and Procedures: Development

• Purpose- safely initiate, maintain and discontinue CRRT
• Scope- who will be affected
• Policy statements- who will be delivering treatment, limitations, special considerations
• Related policies and support material
• Equipment
• Procedures and documentation
Protocol: Development

• Purpose- provide for standardized care of CRRT patients

• Organization:
  – Overview of the disease process
  – Review of current evidence based clinical practice
  – Step by step treatment plan

• Ongoing process to review and revise
Benefits of Protocol Use

- Educational resource for staff
- Improves continuity of patient care
- Nurses are able to make decisions and make changes in care based on clear evidence based guidelines
- Enhance nursing efficiency
- Improved nursing job satisfaction
Protocol Development

• Access care:
  – Blood flow rates
  – Dressing changes
  – Addressing poor flow and clotting

• Anticoagulation:
  – Dosing
  – Lab draws
  – Making adjustments
Methods of Staff Training

• Select the method best for your institution
  – “Train the world”
  – “Select” ICU
  – “Pilot group”
Train the World

• Advantages
  – Everyone will “know” how
  – Ability to start in all ICUs

• Disadvantages
  – If no practical experience, lose knowledge & confidence
  – Initial cost of training for little benefit
  – Negative experience
“Select” ICU

- **Advantages**
  - Focus on one staff & patient population
  - Identify staff available to cover all shifts
  - Identify key users to act as resources

- **Disadvantages**
  - Doesn’t allow for other populations to be treated (may be biased)
Example Scheduling

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<td>1st SHR</td>
<td>C RRT Expert user Backup</td>
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<td>3rd SHIFT</td>
<td>C RRT Expert user Backup</td>
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Pilot Group

• Advantages
  – Pilot group can be evenly divided by shift & experience
  – Allows staff member to go where patient needs treatment

• Disadvantages
  – Accounting for staff time when performing CRRT in “other” units
Train the World

- After program established: refine P/P, identify best practices & expert users
- Need to have all staff trained for CRRT
  - Train in small groups of 20 for supported experience
  - Utilize annual competencies- have “station” for CRRT training (allows you to train a large number of staff), then support staff with preceptors as they use the system
Training staff

- Focus on what the learner needs to learn
- Concepts & principles:
  - Definitions
  - “if/then” relationships
  - Judgement & decision making
  - Problem solving- role playing
- Demonstration & practice
- Learning increases when learners are asked to discuss experiences or answer direct questions
Initial Training

• CRRT theory
• Prescription plan & operating parameters
• Use of orders & flowsheet (documentation)
• Equipment training- system components & operation
• Troubleshooting- dealing with alarms, issues
• Bedside experience

• Consideration:
  – Training nephrology & ICU staff together or separate
Training- helpful hints

• Encourage active participation (hands on) for staff
• Involve as many staff as possible in “hands on” (class size: 2-6 staff: 1 trainer)
• Engage staff by asking questions & encouraging their involvement
• Use orders & flowsheets during equipment training
• Provide time for additional follow up training
• If nephrology is involved- use dialysis staff in bedside training
Patient treatments

• 1 staff in charge of CRRT- others observe
• $1^{st}$ treatment- 1:1 or 2:1 if patient critical
• Encourage other staff to visit during treatment for “bedside training”
• Choose more stable patients to start
• Identify “champions”- utilize as educators & resource
Follow up Training

• Additional troubleshooting classes as staff has experience & questions
• Weekly meetings- lessons learned
• Updates to staff
• Staff questionairres
Establishing your program

- Develop a CRRT committee (multi-disciplinary) to review issues & concerns
- Training class for new staff- theory & equipment
- Allow for "hands-on" by using "training stations"
- Use a preceptor in the clinical area for first treatment experience
- Skills checklist to document training & use
- Follow up class or newsletter to provide additional information
- Annual competencies
Establishing your program

• Training your nursing staff & assuring competency & confidence is key to program success
• Nursing staff is on the front line 24 hours/day