Demographic Characteristics of Pediatric Continuous Renal Replacement Therapy: A Report of the Prospective Pediatric Continuous Renal Replacement Therapy Registry

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Background: This article reports demographic characteristics and intensive care unit survival for 344 patients from the Prospective Pediatric Continuous Renal Replacement Therapy (ppCRRT) Registry, a voluntary multicenter observational network.

Design, setting, participants, and measurements: Ages were newborn to 25 yr, 58% were male, and weights were 1.3 to 160 kg. Patients spent a median of 2 d in the intensive care unit before CRRT (range 0 to 135). At CRRT initiation, 48% received diuretics and 66% received vasoactive drugs. Mean blood flow was 97.9 ml/min (range 10 to 350 ml/min; median 100 ml/min); mean blood flow per body weight was 5 ml/min per kg (range 0.6 to 53.6 ml/min per kg; median 4.1 ml/min per kg). Days on CRRT were <1 to 83 (mean 9.1; median 6). A total of 56% of circuits had citrate anticoagulation, 37% had heparin, and 7% had no anticoagulation.

Results: Overall survival was 58%; survival differed across participating centers. Survival was lowest (51%) when CRRT was started for combined fluid overload and electrolyte imbalance. There was better survival in patients with principal diagnoses of drug intoxication (100%), renal disease (84%), tumor lysis syndrome (83%), and inborn errors of metabolism (73%); survival was lowest in liver disease/transplant (31%), pulmonary disease/transplant (45%), and bone marrow transplant (45%). Overall survival was better for children who weighed >10 kg (63 *versus* 43%; $P = 0.001$) and for those who were older than 1 yr (62 *versus* 44%; $P = 0.007$).

Conclusions: CRRT can be used successfully for a wide range of critically ill children. Survival is best for those who have acute, specific abnormalities and lack multiple organ involvement; sicker patients with selected diagnoses may have lower survival. Center differences might suggest opportunities to define best practices with future study.

Clin J Am Soc Nephrol 2: 732–738, 2007. doi: 10.2215/CJN.03200906

Continuous renal replacement therapy (CRRT) is a well-established modality for the care of critically ill patients who require renal support. Since early descriptions of hemofiltration by Kramer in 1977 (1), CRRT has advanced from extemporaneous, free-flow, arteriovenous systems to dedicated devices that use efficient, pumped veno-venous techniques. Pediatric providers have adopted these methods for critically ill children; pediatric use of CRRT continues to grow (2).

Compared with adults, fewer children require CRRT as part of critical care support. Consequently, pediatric CRRT study is hampered by low sample size and single-center evaluation, limiting the ability to generalize findings across pediatric patients and centers. Application of adult CRRT study data to pediatrics may be inappropriate, given the differences in age, size, body habitus, and comorbidities. The pediatric practitio-

Received September 24, 2006. Accepted March 29, 2007.

Published online ahead of print. Publication date available at www.cjasn.org.

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ISSN: 1555-9041/204–0732

ner requires pediatric-specific information to guide effective CRRT use for the critically ill child.

To provide a more comprehensive view of pediatric CRRT, the Prospective Pediatric Continuous Renal Replacement Therapy (ppCRRT) Registry began subject enrollment in 2001. The objectives of the ppCRRT Registry are to describe prevalent methods for pediatric CRRT, gain insight as to which methods may lead to better outcomes, and generate hypotheses for focused CRRT trials. The objectives of this report are to describe the demographics of patients who receive CRRT, characterize prevalent techniques for therapy, and provide insight on outcomes and effectiveness of CRRT in the pediatric population. We describe a general overview of pediatric CRRT as performed at larger pediatric centers in an effort to demonstrate the utility of this therapy and to generate hypotheses for pediatric-specific trials in the future.

Materials and Methods

The ppCRRT Registry is a voluntary, multicenter collaborative effort designed to evaluate various clinical and therapeutic aspects of pediatric CRRT. Details of the ppCRRT Registry design have been reported (3). The ppCRRT Registry was designed in a prospective observational format; all centers practice according to local standard of care and have agreed to collect the same data. This analysis comprises data that were collected from thirteen US pediatric centers: Texas Children's Hospital, Houston; Children's Hospital, Boston; Children's Hospital & Regional Medical Center, Seattle; C.S. Mott Children's Hospital, Ann Arbor; University of Alabama Children's Hospital, Birmingham; Children's Mercy Hospitals and Clinics, Kansas City; Children's Healthcare of Atlanta at Egleston; Columbus Children's Hospital, Columbus; All Children's Hospital, St. Petersburg; DeVos Children's Hospital, Grand Rapids; Lucile Packard Children's Hospital, Stanford; Children's National Medical Center, Washington, DC; and The Cleveland Clinic, Cleveland. The institutional review board for each center approved the study before patient enrollment.

Eligible patients receive CRRT in the intensive care unit (ICU); any patient who receives CRRT is considered eligible for inclusion regardless of the indication or diagnosis. Patients remain enrolled in the study until the primary outcome—either survival to or death before ICU discharge—is reached. Patients who receive CRRT through an extracorporeal membrane oxygenation device are not eligible to participate in the ppCRRT Registry.

Patients' families provided informed consent at or around the time of CRRT initiation before collection of any data. Although participating centers attempt to enroll as many eligible patients as possible, centers do not record missed patients or patients who are approached for enrollment and then decline participation. Collected data included patient and clinical information (age, gender, diagnosis, weight, fluid balance from ICU admission, indication for CRRT initiation, use of diuretics and/or vasoactive drugs, Pediatric Risk of Mortality [PRISM-II] score (4), days in ICU before and after initiation of CRRT, and outcome) as well as technical information regarding the CRRT prescription (modality, blood flow rate, dialysate, replacement fluids, anticoagulation, circuit life, complications, and reasons for changing or discontinuing CRRT). Collected data were de-identified before entry into a central database that is maintained at Texas Children's Hospital, Houston.

Local investigators identified for each patient an indication for CRRT from a predetermined list (fluid overload and electrolyte imbalance, fluid overload only, electrolyte imbalance only, prevent fluid overload to allow intake, or other). The term "electrolyte imbalance" included biochemical abnormalities that are associated with kidney dysfunction (*e.g.*, azotemia, hyperkalemia). Patient assignment to one of these four indications was left to the local investigators, on the basis of their clinical judgment. Local investigators also identified a primary and, if appropriate, a secondary diagnosis for each patient. On the basis of these diagnoses and any additional comments submitted by local investigators, two of the authors (S.L.G. and J.M.S.) chose a principal diagnosis category for each patient.

When data for a specific query were missing from a patient's record, that patient was not included in the analysis of that query. We defined patient weight as the first recorded weight for the patient at admission to the ICU. We defined CRRT modality on the basis of the presence or absence of dialysate and/or filter replacement fluids, as follows: Circuits using no dialysate or filter replacement fluids, slow continuous ultrafiltration; circuits using filter replacement fluids only, continuous venovenous hemofiltration (CVVH); circuits using dialysate only, continuous venovenous hemodialysis (CVVHD); and circuits using both dialysate and filter replacement fluids, continuous venovenous hemodiafiltration (CVVHDF). We defined percentage of fluid overload using the method described by Goldstein *et al.* (5): [(fluid in) − (fluid out)/(ICU admission weight)] × 100, where fluid in (or out) is the amount of fluid in liters from the time of admission to the ICU up to the initiation of CRRT, and weight is measured in kilograms.

Results were summarized as frequencies and percentages or, when appropriate, range, mean, and median. Comparisons of dichotomous variables were performed using χ^2 test; continuous variables were compared by ANOVA. Statistical analysis was performed using Stata Statistical Software: Release 9 (StataCorp LP, College Station, TX).

Results

Demographics

The ppCRRT Registry enrolled and recorded data on 350 patients from January 1, 2001, through May 12, 2005. Six patients had incomplete records (no listed outcome [survival *versus* death], 3; enrollment identification number but all data missing, 3) and therefore were eliminated from our analysis, leaving 344 patients for review. Selected characteristics for 344 patients at the 13 participating centers are displayed in Table 1. A total of 58% of all patients were male. Patient weight ranged from 1.3 to 160 kg; 24% weighed <10 kg. Ages ranged from newborn to 25 yr; 80% of patients were older than 1 yr at the time of CRRT initiation, and 10% were younger than 1 mo. Patients spent a median time of 2 d in the ICU before CRRT initiation (range 0 to 135 d). At CRRT initiation, 48% of patients were receiving diuretics and 66% were receiving at least one vasoactive drug by continuous infusion.

CRRT Technical Characteristics

Table 2 displays technical characteristics of the CRRT procedures recorded in the ppCRRT Registry. The most commonly used modality was CVVHD (48%), followed by CVVHDF (30%), CVVH (21%), and slow continuous ultrafiltration (1%). Citrate anticoagulation was used in 56% of circuits, heparin was used in 37% of circuits, and 7% used no anticoagulation. Nine circuits used both citrate and heparin and were not included in this analysis. The femoral vein was the most common initial vascular access site (73%). Mean blood flow rate was 97.9

Table 1. Characteristics of patients enrolled in the ppCRRT Registry[a]

Characteristic	Center													All Centers
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Patients (*n*)	56	47	45	45	34	33	23	21	15	11	7	6	1	344
Male (%)	54	60	60	58	65	52	52	81	60	64	43	50	0	58
Weight (kg; *n*)														
<10	26	8	13	4	11	4	7	2	5	1	0	2	0	83 (24%)
10 to 20	6	13	10	13	6	7	4	4	3	3	1	0	0	70 (20%)
20 to 30	5	9	2	5	2	5	0	3	1	3	0	1	1	37 (11%)
30 to 50	9	7	9	11	4	8	4	3	3	1	1	2	0	62 (18%)
50 to 70	6	4	8	8	5	5	6	5	2	2	3	1	0	55 (16%)
>70	4	6	3	4	6	4	2	4	1	1	2	0	0	37 (11%)
Age (*n*)														
<1 mo	14	7	2	2	5	0	3	0	0	1	0	2	0	36 (10%)
1 to 6 mo	6	0	3	1	3	2	4	0	0	0	0	0	0	19 (6%)
6 mo to 1 yr	5	0	5	1	1	0	0	0	3	0	0	0	0	15 (4%)
1 to 3 yr	5	10	6	3	4	4	2	2	5	1	1	0	0	43 (13%)
3 to 5 yr	1	1	4	8	3	2	2	3	0	2	0	0	1	27 (8%)
5 to 10 yr	7	13	6	7	4	8	2	4	2	4	0	1	0	58 (17%)
10 to 15 yr	10	8	6	7	8	7	5	6	2	3	1	2	0	65 (19%)
15 to 21 yr	5	8	11	13	6	9	5	6	3	0	3	1	0	70 (20%)
>21 yr	3	0	2	3	0	1	0	0	0	0	2	0	0	11 (3%)
On diuretic at CRRT initiation (%)	38	49	51	62	15	48	61	52	73	55	14	100	100	48
Pressors at CRRT initiation (*n*)														
0	19	23	9	7	9	21	6	11	4	5	3	0	1	118 (34%)
1	11	10	11	14	13	4	5	5	3	2	2	3	0	83 (24%)
2	19	9	18	14	10	5	7	0	2	0	2	0	0	86 (25%)
≥3	7	5	7	10	2	3	5	5	6	4	0	3	0	57 (17%)
ICU days before CRRT initiation (median)	2	2	5	3	2	1	2	1	1	3	5	2.5	1	2

[a]Weight range across all centers: 1.3 to 160 kg; Age range across all centers: newborn to 25 yr. CRRT, continuous renal replacement therapy; ICU, intensive care unit; ppCRRT, Prospective Pediatric Continuous Renal Replacement Therapy.

ml/min (range 10 to 350 ml/min; median 100 ml/min); mean blood flow rate scaled to body weight was 5 ml/min per kg (range 0.6 to 53.6 ml/min per kg; median 4.1 ml/min per kg).

Survival

Table 3 shows overall survival and survival by center. Overall survival was 58%. Center-specific survival ranged from a low of 33% at center 12 to a high of 100% at center 13, although center 13 enrolled only one patient. Differences in survival among all centers, including those with low enrollment numbers, achieved statistical significance ($P = 0.041$ by χ^2). Of centers with 10 or more patients enrolled, survival ranged from a low of 36% (center 3, $n = 45$) to a high of 76% (centers 6 and 8, $n = 33$ and 21, respectively; $P = 0.027$ by χ^2).

Table 4 shows survival rates across all centers for the different indications for CRRT. Survival was lowest (51%) when CRRT was started for combined fluid overload and electrolyte imbalance. Survival was best for those who received CRRT for electrolyte imbalance only (68%) or in patients who received CRRT for indications listed as "other" (72%). "Other" indications for CRRT included intoxications and inborn errors of metabolism. Table 5 shows survival rates for various diagnoses. Survival was better for patients with principal diagnoses of drug intoxication (100%), renal disease (84%), tumor lysis syndrome (83%), and inborn errors of metabolism (73%); survival was lowest in liver disease or transplant (31%), pulmonary disease or transplant (45%), and bone marrow transplant (45%).

Table 6 shows survival across all centers compared with weight and age and also by PRISM-II score. Survival was lower for patients who weighed <10 kg (43%, $n = 83$) compared with children who weighed >10 kg (63%, $n = 261$; $P = 0.001$ by χ^2). Patients who were younger than 1 yr (44%, $n = 70$) had worse survival than patients who were older than 1 yr (62%, $n = 274$; $P = 0.007$ by χ^2). Patients with a PRISM-II score >10 had a significantly lower survival compared with those with PRISM-II score <10 (52 *versus* 66% survival; $P = 0.013$ by χ^2). When patients with a diagnosis that had a higher survival rate

Table 2. CRRT technical characteristics[a]

Characteristic	*n* (Circuits)	%
Modality		
CVVHD	746	48
CVVHDF	466	30
CVVH	321	21
SCUF	16	1
Anticoagulation		
citrate	843	56
heparin	553	37
no anticoagulation	113	7
Initial catheter position		
femoral	251	73
internal jugular	56	16
subclavian	30	9
other	6	2
Blood flow rate (ml/min)		
range	10 to 350	
mean	97.9	
median	100	
Blood flow rate scaled to body weight (ml/min per kg)		
range	0.6 to 53.6	
mean	5	
median	4.1	

[a]CVVH, continuous venovenous hemofiltration; CVVHD, continuous venovenous hemodialysis; CVVHDF, continuous venovenous hemodiafiltration; SCUF, slow continuous ultrafiltration.

(>70%) were excluded, smaller and younger patients still had significantly lower survival than their larger or older counterparts (<10 kg, 35% survival *versus* >10 kg, 56% survival [$P = 0.005$ by χ^2]; <1 yr, 33% survival *versus* >1 yr, 55% survival [$P = 0.005$ by χ^2]).

Table 7 shows survival across all centers related to time on CRRT. Patients who received CRRT for <1 d had lowest survival of 14%. For those who survived past 1 d, survival rates declined ($P = 0.047$) for each week a patient received CRRT: 1 to 7 d, 65%; 8 to 14 d, 55%; 15 to 21 d, 53%; 22 to 28 d, 43%; and >28 d, 35%.

Discussion

The ppCRRT Registry represents the largest and most varied pediatric CRRT experience to date; we describe 344 patients who received >60,000 h of CRRT. Patients in the ppCRRT Registry are distributed across all ages and weight groups and are therefore representative of pediatric nephrology and critical care practice. The majority of patients were school-age children, with nearly 60% of the patients in the ppCRRT Registry 5 yr of age or older. However, younger children were strongly represented in the Registry. The ppCRRT Registry data, therefore, confirm our ability to provide CRRT to nearly any child who requires acute renal replacement therapy.

Review of technical characteristics of the CRRT procedure indicates a preference among ppCRRT Registry participants for diffusion-based modalities, with CVVHD and CVVHDF used in 78% of circuits. There was also a preference noted for citrate anticoagulation (56%). Citrate anticoagulation has become more prevalent in pediatric CRRT, and the ppCRRT Registry reflects this change in practice (6). Initial vascular access is overwhelmingly by femoral catheter (73%), consistent with common practice in the pediatric critical care setting. Wide ranges in blood pump flow rate reflect the variation in patient size, access function, and the technical limits of the different blood pumps used. A device with a minimum blood pump speed of 30 ml/min would provide 10 ml/min per kg for a 3-kg infant but would provide 20 ml/min per kg for an infant who weighed 1.5 kg. By contrast, a 100-kg patient would receive 3.5 ml/min per kg with a blood pump speed of 350 ml/min and 1.8 ml/min per kg with a blood pump speed of 180 ml/min. This may call into question the utility of scaling blood flow to body weight, as is sometimes suggested for pediatric patients.

Overall survival of 58% is superior to previous pediatric reports (5,7,8). There was variability in survival between individual centers within the ppCRRT Registry. Three centers had fewer than 10 patients enrolled, which could have skewed survival rates among centers; review of survival rates excluding low-enrollment centers continued to show a statistically significant difference in survival. Differences in illness severity could have explained the variability among centers; median PRISM-II score across all centers was 12, suggesting relatively high illness severity in this population. Median PRISM-II score varied among the centers but did not seem to correlate with survival rate; some centers with higher median PRISM-II scores had survival rates superior to other centers with lower median PRISM-II scores. This may suggest that factors other than severity of illness at ICU admission are the source of intercenter differences in outcome, such as variability in patient population, CRRT technique, or approach to overall critical care at the various participating centers.

Survival seemed to be lower for patients with combined fluid overload and electrolyte imbalance, the classic findings associated with acute renal failure and potential multiorgan dysfunction syndrome. This compares with seemingly better survival in patients who initiated CRRT with isolated fluid overload or electrolyte imbalance, those for whom CRRT began in an effort to prevent fluid overload, and those with other indications for CRRT, such as inborn errors of metabolism or intoxications. However, these comparisons did not achieve statistical significance. Previous reports suggested that earlier initiation of CRRT might lead to better outcomes, (5,9,10), including a previous report from the ppCRRT Registry that evaluated outcome for pediatric patients with multiorgan dysfunction (11). Our analysis from this study can neither support nor refute this impression for the broader group of patients who require CRRT, and no specific conclusions can be drawn.

Survival differed with patient diagnosis. We interpret these data with caution given the observational nature of the ppCRRT Registry and the potential for overlap between disease categories (*e.g.*, presence or absence of sepsis in patients with other diseases). Our data suggest that survival on CRRT is best

Table 3. PRISM-II score and survival by ppCRRT center and overall[a]

Parameter	Center													All Centers
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Patients (*n*)	56	47	45	45	34	33	23	21	15	11	7	6	1	344
PRISM-II score (median)	16	13	12	13.5	11	9	8	12	18	17.5	11	24	—	12
Survivors (*n*)	33	31	16	24	19	25	14	16	10	7	3	2	1	201
% Survival	59	66	36	53	56	76	61	76	67	64	43	33	100	58

[a]Difference in survival comparing all centers: P (χ^2) = 0.041. Difference in survival comparing centers excluding those with <10: P (χ^2) = 0.027. Pediatric Risk of Mortality (PRISM-II) score data available for 312 of 344 patients.

Table 4. Indications for CRRT and survival[a]

Indication	*n*	Survivors	% Survival
Fluid overload and electrolyte imbalance	157	80	51
Fluid overload only	100	61	61
Electrolyte imbalance only	44	30	68
Prevent fluid overload to allow intake	11	7	64
Other	32	23	72

[a]P (χ^2) = 0.088.

Table 5. Principal diagnoses and survival[a]

Parameter	*n*	Survivors	% Survival
Sepsis	81	48	59
Bone marrow transplant	55	25	45
Cardiac disease/ transplant	41	21	51
Renal disease	32	27	84
Liver disease/ transplant	29	9	31
Malignancy (no tumor lysis syndrome)	29	14	48
Ischemia/shock	19	13	68
Inborn error of metabolism	15	11	73
Drug intoxication	13	13	100
Tumor lysis syndrome	12	10	83
Pulmonary disease/ transplant	11	5	45
Other	7	5	71

[a]P (χ^2) < 0.001.

for children who have acute, specific, circumscribed abnormalities and lack multisystem involvement. Causes for acute renal failure in pediatric patients have changed over the years, with more children developing a need for renal replacement therapy as a result of multisystem dysfunction and secondary kidney injury (12,13). Despite lower survival numbers for ppCRRT Registry patients with more complex diagnoses, it should be noted that survival rates for all listed diagnoses except liver disease/transplant are higher than overall survival rates in previous reports. This likely speaks to improved total care in the pediatric ICU and lends credence to the use of CRRT as a part of integrated critical care support. Evaluation of the impact of CRRT on individual diagnoses will require more specific, formalized study.

Smaller (<10 kg) and younger (<1 yr) children had lower survival across all centers than their larger, older counterparts; this is consistent with previous retrospective findings from a single center demonstrating better survival for pediatric patients who have acute kidney injury and are older than 1 yr (13). As anticipated, excluding diagnostic groups with better survival revealed lower survival rates in the weight and age group analyses, but the statistically significant disadvantage to smaller and younger children persisted. Children with a higher severity of illness as measured by PRISM-II seemed to have a survival disadvantage when compared with those with lower severity of illness score. Previous authors have questioned whether PRISM-II is a good measure of illness severity in the setting of acute renal dysfunction (14); we considered this when designing the ppCRRT Registry, choosing PRISM-II for its simplicity, widespread use, and convenience as a marker of pediatric illness severity despite its limitations (3). Previous data analysis from the ppCRRT Registry noted that children who had multiorgan dysfunction and required CRRT had no significant difference of PRISM-II scores at ICU admission between survivors and nonsurvivors (11). Our findings in this analysis may further support the impression that overall illness severity is a determinant for outcome of the critically ill child who requires CRRT but that PRISM-II score may not be the best measure for such patients.

Survival for patients who received CRRT for <1 d was poor and likely represents a select population with profound illness and a very low likelihood of survival. Analysis of the remaining patients shows best survival for those who receive CRRT for 1 to 7 d and a progressive decrease in survival as duration of CRRT increases. Longer time on CRRT is likely indicative of

Table 6. Survival on CRRT by weight, age, and PRISM-II score

Parameter	*n*	Survivors	% Survival	*P* (χ^2)
All patients				
weight				
<10 kg	83	36	43	0.001
>10 kg	261	165	63	
age				
<1 yr	70	31	44	0.007
>1 yr	274	170	62	
PRISM-II				
<10	120	79	66	0.013
>10	192	99	52	
Excluding "high survival" principal diagnoses[a]				
weight				
<10 kg	62	22	35	0.005
>10 kg	203	113	56	
age				
<1 yr	51	17	33	0.005
>1 yr	214	118	55	
PRISM-II				
<10	82	45	55	0.239
>10	160	75	47	

[a]Principal diagnoses with survival >70%; see Table 4.

Table 7. Survival with time on CRRT[a]

Days on CRRT	*n*	Survivors	% Survival
<1	7	1	14
1 to 7	201	131	65
8 to 14	75	41	55
15 to 21	30	13	53
22 to 28	14	6	43
> 28	17	6	35

[a]P (χ^2) = 0.009; P (χ^2) = 0.047 when excluding those <1 d.

greater severity of illness and delayed recovery from multiorgan dysfunction; such patients would be anticipated to have a higher mortality. However, we note that even those who received CRRT for >28 d still had a survival rate of 35%, only slightly below the overall survival rates reported in earlier studies. This seems to support further the role of CRRT as an important component in the overall care of the critically ill child and argues against arbitrary limits on duration of therapy.

This descriptive study has several limitations. The design of the ppCRRT Registry combines patients from multiple centers with varied populations and differing methods for the care of critically ill children. Investigators sought to evaluate multiple centers to obtain a broader overview of pediatric CRRT rather than seeking to study a specific therapeutic method or to control for clinical conditions. We lack data on rate of identification and capture for eligible patients across the various centers, which could have a significant effect on our data. Chertow *et al.* (15) discussed the effect of nonenrollment on a cohort study of acute renal dysfunction in adults, noting that nonenrollment could yield a survivorship bias. Therefore, results from this analysis related to patient survival must be interpreted with caution. Participating centers in the ppCRRT Registry represent a group of pediatric referral centers, and there may be multiple differences between patients and methods in these institutions compared with other hospitals in the community that provide similar care to critically ill children. Consequently, findings may not be generalizable beyond similarly equipped centers. The ppCRRT Registry studies patients only during their ICU stay, and although CRRT may provide hope for long-term survival in critically ill children, such conclusions must await future study.

Differing outcomes at individual centers in the ppCRRT Registry may suggest that there are specific approaches to CRRT in children that might be superior to others. It is our hope that this overview serves as a stimulus to the pediatric nephrology and critical care communities to consider specific, directed studies that can determine the best practices for the care of children who require CRRT.

Conclusion

Review of ppCRRT Registry data indicates that CRRT can be used successfully for a wide range of critically ill children, spanning the entire scope of patients who are seen in the pediatric ICU. Current techniques lead to overall outcomes that are superior to those noted in earlier reports, but individual variations persist among centers, suggesting a need to define best practices further. Survival seems better for children who have acute, specific abnormalities and lack multiorgan involvement. Although patients with selected diagnoses demonstrate lower survival rates, a substantial proportion of patients who are from across all diagnostic categories and require CRRT survive. We believe that these data demonstrate CRRT to be a useful tool in the care of the critically ill child. Further prospective study is required to identify the clinical features and therapeutic CRRT practices that can lead to improved outcomes.

Acknowledgments

An earlier analysis of these data was presented in abstract form at the 11th Annual International Conference on Continuous Renal Replacement Therapies; March 2 to 4, 2006; San Diego, CA.

The ppCRRT Registry receives grant funding from Gambro Renal Products, Dialysis Solutions Incorporated, Baxter Healthcare, and B Braun Incorporated. We appreciate the efforts of Cathy DiMuzio, Walter O'Rourke, Joseph Villanova, and Tony Annone to support the ppCRRT Registry.

We acknowledge Cheryl Baker, RN; Dawn Eding, RN; Theresa Mottes, RN; Joni Barnett, RN, BSN, CNN; Nancy McAfee, RN, MN, CNN; and Marena Hawk for invaluable assistance to the ppCRRT Registry.

Disclosures

None.

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