Functional Outcome Trajectories After Out-of-Hospital Pediatric Cardiac Arrest

Faye S. Silverstein, MD[1]; Beth S. Slomine, PhD[2,3]; James Christensen, MD[4,5]; Richard Holubkov, PhD[6]; Kent Page, MStat[6]; J. Michael Dean, MD[6]; Frank W. Moler, MD[1]; for the Therapeutic Hypothermia to Improve Survival After Cardiac Arrest Trial Group

[1]Department of Pediatrics, University of Michigan, Ann Arbor, Michigan.

[2]Department of Neuropsychology, Kennedy Krieger Institute, Baltimore, MD.

[3]Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD.

[4]Department of Pediatric Rehabilitation Medicine, Kennedy Krieger Institute, Baltimore, MD.

[5]Department of Physical Medicine & Rehabilitation, Johns Hopkins University School of Medicine, Baltimore, MD.

[6]Department of Pediatrics, University of Utah, Salt Lake City, Utah.

A list of Therapeutic Hypothermia to Improve Survival After Cardiac Arrest trial group collaborators is given in the *Acknowledgments* section.

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For information regarding this article, E-mail: fsilvers@med.umich.edu

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Objectives: To analyze functional performance measures collected prospectively during the conduct of a clinical trial that enrolled children (up to age 18 yr old), resuscitated after out-of-hospital cardiac arrest, who were at high risk of poor outcomes.

Design: Children with Glasgow Motor Scale score less than 5, within 6 hours of resuscitation, were enrolled in a clinical trial that compared two targeted temperature management interventions (THAPCA-OH, NCT00878644). The primary outcome, 12-month survival with Vineland Adaptive Behavior Scale, second edition, score greater or equal to 70, did not differ between groups.

Setting: Thirty-eight North American PICUs.

Participants: Two hundred ninety-five children were enrolled; 270 of 295 had baseline Vineland Adaptive Behavior Scale, second edition, scores greater or equal to 70; 87 of 270 survived 1 year.

Interventions: Targeted temperatures were 33.0°C and 36.8°C for hypothermia and normothermia groups.

Measurements and Main Results: Baseline measures included Vineland Adaptive Behavior Scale, second edition, Pediatric Cerebral Performance Category, and Pediatric Overall Performance Category. Pediatric Cerebral Performance Category and Pediatric Overall Performance Category were rescored at hospital discharges; all three were scored at 3 and 12 months. In survivors with baseline Vineland Adaptive Behavior Scale, second edition scores greater or equal to 70, we evaluated relationships of hospital discharge Pediatric Cerebral Performance Category with 3- and 12-month scores and between 3- and 12-month Vineland Adaptive Behavior Scale, second edition, scores. Hospital discharge Pediatric Cerebral Performance Category scores strongly predicted 3- and 12-month Pediatric Cerebral Performance Category ($r = 0.82$ and 0.79; $p < 0.0001$) and Vineland Adaptive Behavior Scale, second edition, scores ($r = -0.81$ and -0.77;

$p < 0.0001$). Three-month Vineland Adaptive Behavior Scale, second edition, scores strongly predicted 12-month performance ($r = 0.95$; $p < 0.0001$). Hypothermia treatment did not alter these relationships.

Conclusions: In comatose children, with Glasgow Motor Scale score less than 5 in the initial hours after out-of-hospital cardiac arrest resuscitation, function scores at hospital discharge and at 3 months predicted 12-month performance well in the majority of survivors. (*Crit Care Med* 2016; 44:e1165–e1174)

Key Words: cardiac arrest outcome; coma prognosis; hypothermia

Children who remain comatose in the initial hours after resuscitation from a cardiac arrest (CA) are at great risk of poor neurodevelopmental outcomes. We completed a randomized controlled trial to determine if therapeutic hypothermia (target temperature, 33.0°C; 48 hr) improved survival and neurobehavioral outcome in children (2 d to 18 yr old) resuscitated after out-of-hospital (OH)-CA (THAPCA-OH, NCT00878644) (1). In contrast with the design of initial studies of hypothermia in comatose adult CA survivors (2, 3), in our comparator group, temperatures were actively managed to maintain normothermia (36.8°C) for the 120-hour intervention period. The primary THAPCA-OH outcome was a combined measure of survival and Vineland Adaptive Behavior Scales, second edition (VABS-II) age-corrected standard score greater than or equal 70 12 months later (1, 4–7). There were no outcome differences between the treatment groups (1).

The primary neurologic inclusion criterion was a Glasgow Coma Scale motor response below 5 within 6 hours after return of circulation; a score of 5 represents localizing pain or (for < 2 yr old) withdrawing to touch. This report focuses on functional outcome measures that were prospectively collected during the THAPCA-OH trial. We obtained baseline measures (Pediatric Cerebral Performance Category [PCPC], Pediatric Overall Performance Category [POPC] (8), and VABS-II (9, 10)) within 24 hours of enrollment. PCPC and POPC were rescored at ICU and hospital discharge. PCPC, POPC, and VABS-II were scored at 3 and 12 months. We examined the relationships between concurrent PCPC and VABS-II scores, evaluated the predictive strength of hospital discharge and 3-month function measures for 12-month performance, characterized the trajectories of functional outcomes in survivors, and determined the influence of selected factors (related to baseline characteristics, CA severity, and medical complications) on 12-month VABS-II scores.

METHODS

Study Population

Two hundred seventy of 295 randomized cases were eligible for the primary outcome; 25 were ineligible because baseline VABS-II scores were less than 70 (or for two, POPC and/or PCPC ≥ 3). One-year outcomes were available for 260 of 270 eligible cases; 87 of 260 survived for 1 year, and 12-month VABS-II scores were obtained in 85 of 87. Analyses that described the range of VABS-II scores in each PCPC and POPC category included all data. Analyses of predictive relationships between hospital discharge and 3-month measures and subsequent scores were restricted to data from survivors who were eligible for the primary outcome. The institutional review boards of all participating sites approved the protocol and informed consent documents.

Functional Assessment Measures

PCPC and POPC. These six-point scales (1 = normal; 2 = mild disability; 3 = moderate disability; 4 = severe disability; 5 = coma or vegetative; and 6 = brain death) are widely used to describe PICU patient outcomes (8, 9); scoring criteria are described in the **supplemental data** (Supplemental Digital Content 1, http://links.lww.com/CCM/C7). PCPC rates neurologic functioning, whereas POPC rates overall health, including neurological functioning.

VABS-II. The VABS-II (10) is a semistructured caregiver interview-based measure of function, examining communication, daily living, socialization, and motor skills. It assesses adaptive behaviors, defined as "the individual's performance on daily-life activities necessary for personal and social independence." The VABS-II Adaptive Behavioral Composite score was selected because it is standardized for the full age range and expected functional outcome range of the study population. Parent-caregiver rating forms and survey interview forms yield equivalent responses. The survey interview is suitable for centralized administration; telephone administration was validated versus in-person administration (11). In normative populations, the mean VABS-II score is 100 (SD = 15).

Baseline Scoring. Within 24 hours of study enrollment, site research coordinators scored baseline prearrest function. PCPC/POPC was scored from medical records and family interviews. A primary caregiver completed the baseline VABS-II rating form. Twenty-four subjects without a baseline VABS-II were included in the primary outcome if POPC and PCPC scores were 1–2.

ICU and Hospital Discharge. PCPC/POPC was scored at ICU and hospital discharge by site research coordinators from review of medical records.

Three-and 12-Month Scoring. A trained research assistant (at Kennedy-Krieger Institute, Baltimore, MD) conducted semistructured telephone interviews to obtain PCPC, POPC, and VABS-II scores at 3 and 12 months (for the primary outcome groups, $n = 90$ at 3 mo and $n = 85$ at 12 mo). Neuropsychologic and neurologic evaluations were obtained after the 12-month VABS-II in about 2 of 3 of survivors. Results of neuropsychologic testing and their relationships with VABS-II composite, domain, and subdomain scores at 12 months have been reported (12); neurologic examinations will be reported separately.

Data Analysis

Distributions of binary and categorical factors were compared using the Fisher exact test. Continuous factors were compared using the Wilcoxon signed rank test. Magnitudes of Pearson correlation were compared using Fisher z transformation (13). Magnitudes of correlations between two measures were

compared using Dunn and Clark *z* statistic (14). Comparisons of magnitudes of correlation of selected measures with two other measures (specifically, assessing whether correlations of hospital discharge PCPC with VABS-II at 3 and 12 mo differ) were performed using Hotelling *t* statistic (15). To quantify association of baseline and other factors with 12-month

TABLE 1. Relationships of Selected Variables to 12-Month Vineland Adaptive Behavior Scales, Second Edition, Composite Scores

Factor	Univariate Coefficient[a] ± SE	Univariate *p*	Model 1, Baseline Only Coefficient[a] ± SE	Model 1, *p*	Model 2, All Factors, Coefficient[a] ± SE	Model 2, *p*
Baseline characteristics						
Treatment (hypothermia vs normothermia)	2.68 ± 6.33	0.67				
Age (yr) at CA (continuous, per year increase)	−1.09 ± 0.51	0.04	−1.76 ± 0.50	< 0.001	−2.15 ± 0.47	< 0.001
Gender (male)	1.04 ± 6.99	0.88				
Race		0.13				
Ethnicity		0.74				
Baseline VABS-II score	0.15 ± 0.20	0.47				
SES (education level)		0.22				
Some high school or less	Reference					
High-school graduate/general educational development	−3.13 ± 9.04					
Vocational school or some college	12.67 ± 9.38					
College degree	15.11 ± 9.84					
Graduate or doctoral degree	10.06 ± 10.25					
Family function measure	2.02 ± 7.46	0.79				
CA etiology		0.01				
Respiratory	Reference		Reference		Reference	
Cardiac	24.43 ± 8.13		31.08 ± 7.73	≤ 0.001	30.46 ± 7.15	< 0.001
Other/unknown[b]	4.58 ± 8.66		26.2 ± 9.18	0.006	22.00 ± 8.04	0.008
Arrest severity measures						
No. of epinephrine doses (per one-dose increase)	−2.23 ± 1.28	0.09	−3.49 ± 1.24	0.006	Not in final model	
Prerandomization lactate (per 1-unit increase)	−1.87 ± 0.91	0.04	Not in final model		Not in final model	
Complications over 120-hr intervention period						
Clinical or electroencephalogram-diagnosed seizures	−12.07 ± 6.17	0.05			Not in final model	
Repeat CA	−13.09 ± 12.0	0.28				
Post 120-hr intervention						
Duration of ICU stay	−0.50 ± 0.16	0.003			−0.65 ± 0.15	< 0.001
Duration of hospital stay	−0.41 ± 0.09	< 0.001				

CA = cardiac arrest, VABS-II = Vineland Adaptive Behavior Scales, second edition.

[a]Coefficients are from linear regression models with 12-mo Vineland Adaptive Behavior Scales, second edition, scores as outcome in subjects eligible for THAPCA-OH primary outcome. Factors marked "not in final model" were considered as predictors in the multivariable model and then excluded using stepwise selection criteria.

[b]Other cardiac arrest etiologies include: neurologic event, multiple-organ system failure, drug overdose, electrolyte imbalance, and unknown.

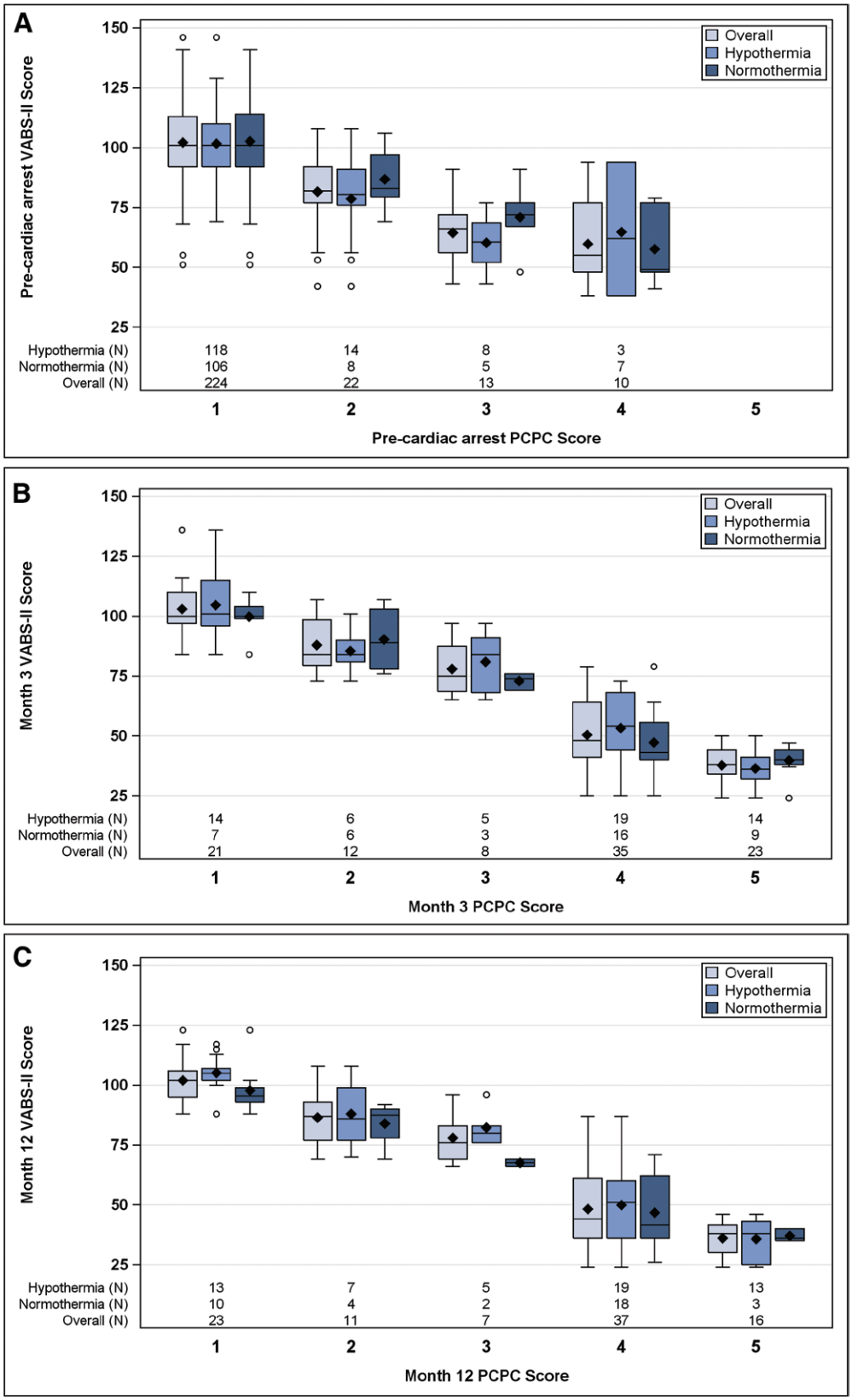

Figure 1. Relationship of Vineland Adaptive Behavior Scales, second edition (VABS-II) and Pediatric Cerebral Performance Category (PCPC) scores. **A**–**C**, The VABS-II scores that corresponded to each PCPC score category in all THAPCA-OH enrolled subjects with available data at baseline ($n = 269$) (**A**), at 3 mo ($n = 99$) (**B**), and at 12 mo ($n = 94$) (**C**). PCPC category definitions are as follows: 1= normal; 2 = mild disability; 3 = moderate disability; 4 = severe disability; and 5 = coma or vegetative. Data for all cases (*left bar*) and separately for hypothermia (*middle bar*) and normothermia (*right bar*) groups are presented as box and whisker plots. Each shaded box represents the interquartile range (IQR) (middle one-half of the data), the horizontal line within the box is the median, and symbols (◊) are means; upper and lower whiskers represent the maximum and minimum values excluding outliers (defined as data points more than 1.5 IQRs from the box). The relationships between VABS-II scores and PCPC categories are all significant ($p < 0.001$) (Pearson correlations: **A**, $r = -0.61$; **B** and **C**, $r = -0.9$). There were no differences in the relationships between VABS-II scores and PCPC categories between normothermia and hypothermia groups.

VABS-II scores, standard linear regression models were fit with VABS-II as the outcome variable and the factors (continuous or categorized) as predictors. Factors showing a trend of association ($p < 0.10$) in univariate models were considered as candidate predictors for inclusion in multivariable models, which were fit by a backward stepwise selection routine, retaining factors with p value less than 0.10. Separate multivariable models were fit using baseline predictors only (**Table 1**, model

1) and using baseline predictors and postrandomization factors (Table 1, model 2). Analyses were fit using SAS software version 9.4 (SAS Institute Inc., Cary, NC), excepting correlation comparisons, performed in R version 3.1.1 (16) using the package cocor (17).

RESULTS

Supplementary Table 1 (Supplemental Digital Content 1, http://links.lww.com/CCM/C7) details baseline characteristics in the eighty-seven 12-month survivors included in the primary outcome; there were no group differences. Cardiopulmonary resuscitation (CPR) duration could not be accurately ascertained in many survivors and was not compared. CA etiology was a respiratory event in about two thirds; the initial ECG rhythm was asystole, bradycardia, or pulseless electrical activity in a similar fraction. At ICU discharge, 30 of 87 had PCPC scores of 1–2; at hospital discharge, 32 of 87 had PCPC scores in this range.

We evaluated the relationships of concurrently obtained PCPC and VABS-II scores in all cases with available data (**Fig. 1**, ***A–C***) at baseline (n = 269) (A), at 3 months (n = 99) (B), and at 12 months (n = 94) (C). Data are presented as box and whisker plots to illustrate the full range of VABS-II scores associated with each category. Mean VABS-II scores were close to 100 in cases assigned a PCPC score of 1 and declined with higher PCPC scores. Pearson correlations between PCPC and VABS-II were –0.61 at baseline, –0.90 at 3 months, and –0.90 at 12 months ($p < 0.001$, for all); the magnitude of correlation was higher for 3-month and 12-month assessments than for baseline and not different between 3- and 12-month time points. There were no differences in the correlations between the treatment arms. **Supplementary Table 2** (Supplemental Digital Content 1, http://links.lww.com/CCM/C7) summarizes VABS-II scores that corresponded to PCPC and POPC categories in these datasets; because relationships of VABS-II scores with PCPC and POPC categories were very similar, for subsequent predictive analyses, only PCPC scores were used.

Because predictive analyses were restricted to the survivors who were eligible for the primary outcome of THAPCA-OH, we replicated the 3- and 12-month comparisons of VABS-II and PCPC scores in these survivors at 3 months (n = 84) and 12 months (n = 85); trends were the same (**Supplementary Fig. 1**, Supplemental Digital Content 1, http://links.lww.com/CCM/C7).

Figure 2 illustrates the relationship between hospital discharge PCPC score and subsequent PCPC measures in the primary outcome group survivors at 3 months (A) and 12 months (B). Each

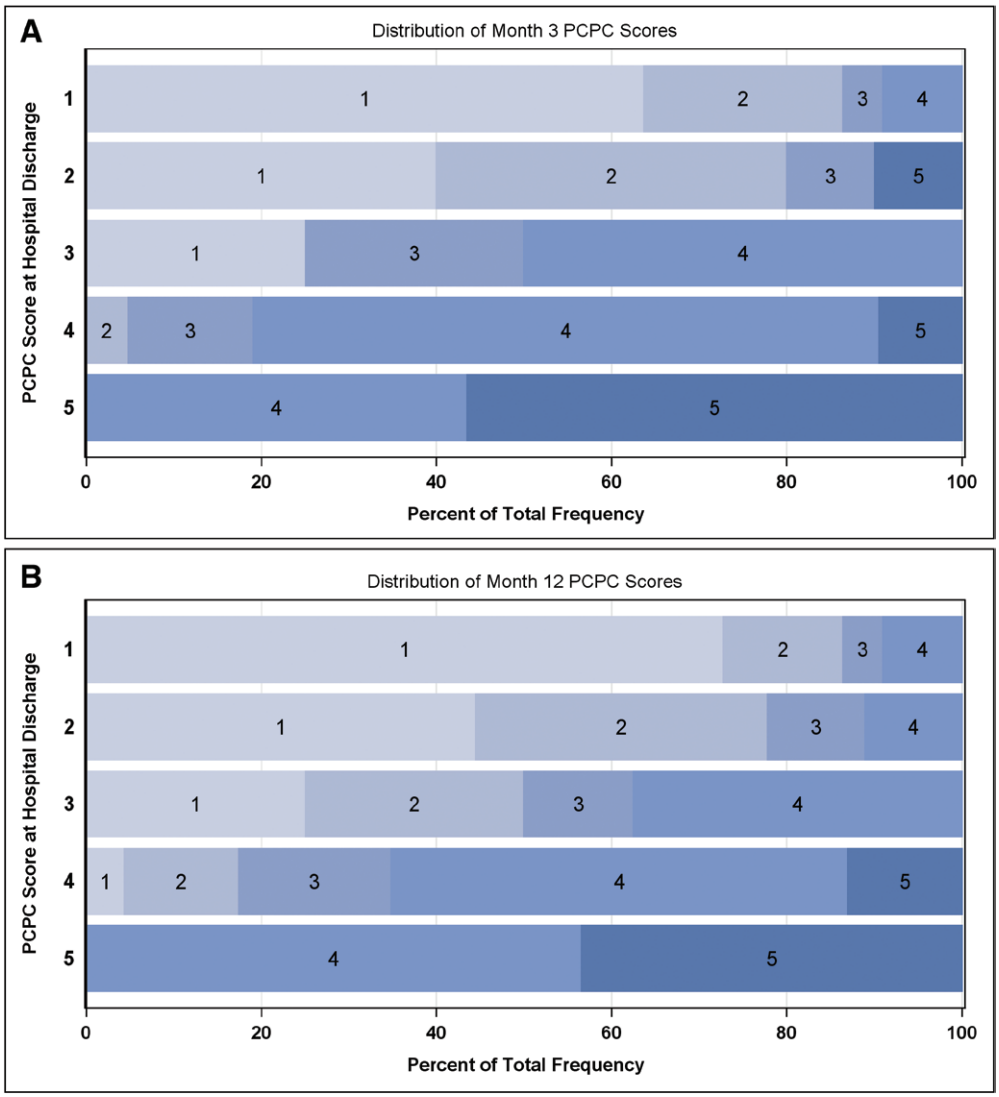

Figure 2. Hospital discharge Pediatric Cerebral Performance Category (PCPC) score and 3- and 12-mo PCPC scores. These graphs illustrate the distributions of 3-mo (**A**) and 12-mo (**B**) PCPC scores that corresponded to each category of hospital discharge PCPC score in THAPCA-OH primary outcome group survivors. The *y*-axis labels are hospital discharge PCPC scores; numbers of survivors per PCPC category with available data at 3 mo (**A**) and 12 mo (**B**), respectively were as follows: PCPC 1, $n = 22$ and 22; PCPC 2, $n = 10$ and 9; PCPC 3, $n = 8$ and 8; PCPC 4, $n = 21$ and 23; PCPC 5, $n = 23$ and 23. Each horizontal bar illustrates the percentage of cases in each PCPC category at follow-up (numbers within each section of the bars are the assigned follow-up scores). Hospital discharge PCPC scores strongly influenced subsequent scores (Pearson correlations: $r = 0.82$ and 0.79; both $p < 0.0001$). Treatment group had no effects (not shown).

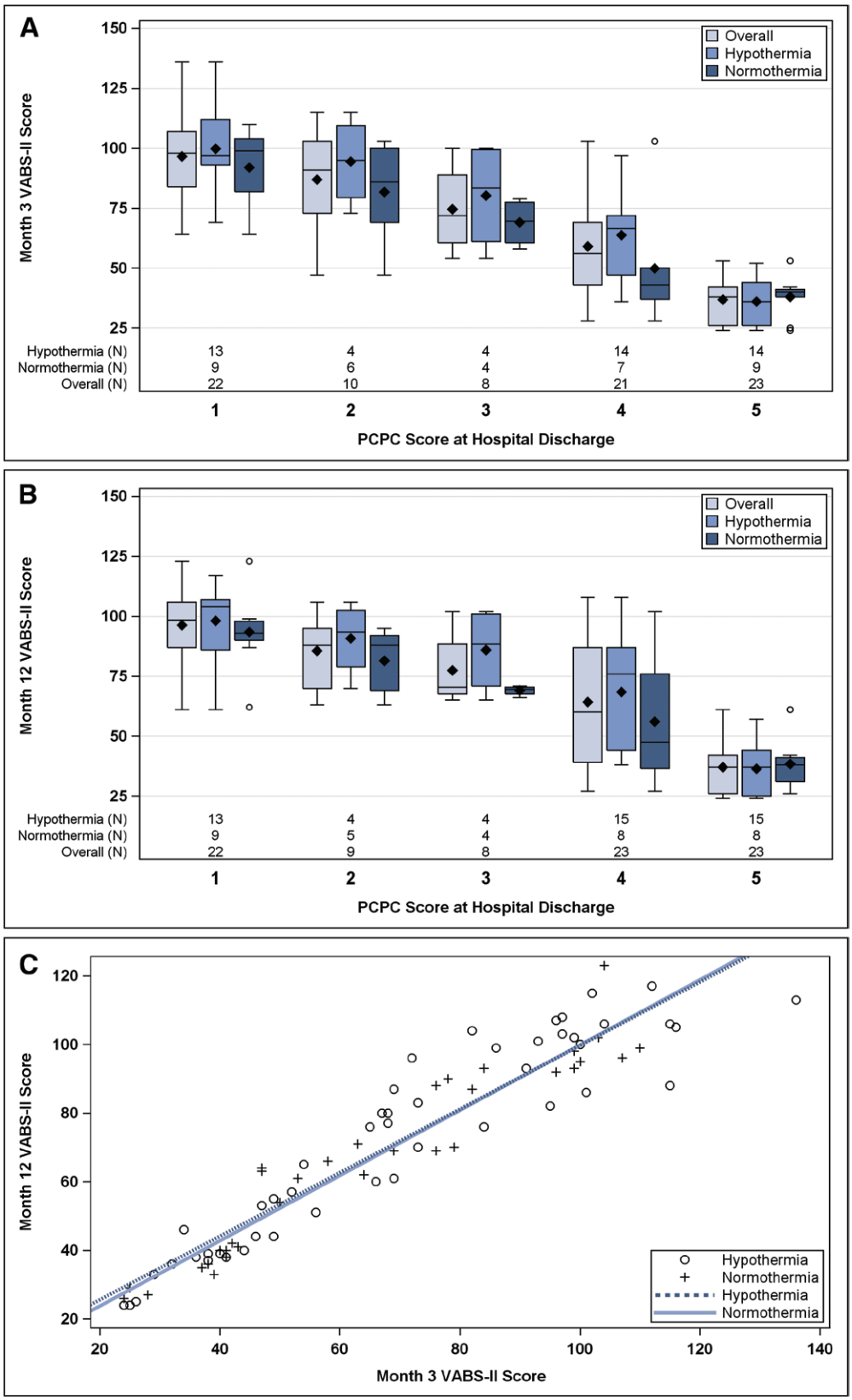

Figure 3. Hospital discharge Pediatric Cerebral Performance Category (PCPC) score and 3- and 12-mo Vineland Adaptive Behavior Scales, second edition (VABS-II) scores. **A** and **B**, Three-month (**A**) and 12-mo (**B**) VABS-II scores that correspond to each category of hospital discharge PCPC score in THAPCA-OH survivors eligible for the primary outcome. Data are presented for all cases (*left bar*) and for hypothermia (*middle bar*) and normothermia (*right bar*) groups, as box and whisker plots. Each shaded box represents the interquartile range (IQR) (middle one-half of the data), the horizontal line within the box is the median, symbols (◊) are means, and upper and lower whiskers represent the maximum and minimum values, excluding outliers (defined as data points more than 1.5 IQRs from the box). Hospital discharge PCPC scores strongly influenced 3-mo (**A**) and 12-mo (**B**) VABS-II scores (Pearson correlations: $r = -0.81$ and -0.77, respectively; $p < 0.0001$; no effect of treatment group). **C**, Corresponding 3- and 12-mo VABS-II scores; scores were tightly linked in both treatment groups ($r = 0.95$; $p < 0001$).

horizontal bar illustrates the proportion of survivors in each PCPC category in relationship with their hospital discharge PCPC scores. Hospital discharge PCPC scores strongly influenced subsequent performance, and trends were similar at both time intervals (Pearson correlations: $r = 0.82$ and 0.79; both $p < 0.0001$) with no treatment-group differences (not shown). Overall, from hospital discharge until 12 months, 42 of 85(49%) remained in the same PCPC category, and only 10

of 85(12%) changed by at least two categories. Eighty-four percent of cases with scores of 1–2 (normal or mild disability) at hospital discharge remained in this range. No case scored at PCPC 5 (coma or vegetative) at hospital discharge improved beyond a severe disability category; however, about half were scored in the severe disability group (PCPC = 4) at 12 months. Only 35% with severe disability scores (PCPC = 4) at discharge attained higher scores subsequently.

Supplementary Figure 2 (Supplemental Digital Content 1, http://links.lww.com/CCM/C7) compares 3- and 12-month PCPC scores. Three-month measures strongly influenced 12-month function (Pearson correlation: $r = 0.95$; $p < 0.0001$); however, there were modest improvements in a significant minority (including about 1/3 of cases described as comatose or vegetative at month 3). No case changed by more than one PCPC category between 3 and 12 months.

Hospital discharge PCPC scores also strongly predicted 3- and 12-month VABS-II scores (**Fig. 3**, ***A*** and ***B***) (Pearson correlations: $r = –0.81$ and $–0.77$; both $p < 0.0001$); there was no difference between treatment groups. Similarly, there was a strong relationship between 3-month PCPC category and 12-month VABS-II score (Pearson correlation: $r = –0.85$; $p < 0.0001$, not shown). Fifteen survivors attained VABS-II scores greater than or equal to 100 at 12 months; of note, their hospital discharge PCPC scores ranged from 1 to 4 (10 with PCPC = 1, one with PCPC = 2, two with PCPC = 3, and two with PCPC = 4). The range of 12-month VABS-II scores corresponding to each PCPC category was widest for those who were in the severe disability category (PCPC = 4) at hospital discharge.

Figure 3*C* illustrates the remarkably close relationship between 3- and 12-month VABS-II scores in both treatment groups (Pearson correlations: overall, $r = 0.95$; hypothermia group, $r = 0.94$; normothermia group, $r = 0.96$; $p < 0.0001$, for all). Nine cases had changes in their VABS-II scores of greater than or equal to 15 points (1SD) between 3 and 12 months (increases in 6 and declines in 3); in only one case, did the score change influence the THAPCA-OH outcome category (i.e., from < 70 to ≥ 70).

Although the data demonstrated a robust relationship between PCPC score categories at hospital discharge and subsequent VABS-II scores, individual cases at the extremes or outside the ranges of the majority of scores were identified. Of 23 cases with PCPC scores in the severe disability category (PCPC = 4) at hospital discharge, 10 were ultimately classified in the favorable outcome range (12-month VABS-II scores, ≥ 70). Of interest, eight of 10 with substantial improvements were from the hypothermia group (**Supplementary Table 3**, Supplemental Digital Content 1, http://links.lww.com/CCM/C7). In contrast, four children with PCPC scores of 1–2 at hospital discharge had 12-month VABS-II scores in the 61–69 range (three in the normothermia group).

We analyzed the relationships of prearrest, CA and resuscitation, and early postintervention period events to 12-month VABS-II composite scores in survivors eligible for the primary outcome (Table 1). In univariate analyses, older age had a modest negative association, cardiac and other nonrespiratory CA etiologies had substantial positive associations, clinically or electrographically diagnosed seizures had an adverse association, and duration of ICU and hospital stays had modest but highly significant negative associations with 12-month scores. Factors showing a trend of association ($p < 0.10$) were considered as candidate predictors in two multivariable models: "model 1" only considered prerandomization predictors and "model 2" also evaluated postrandomization variables. In both, increasing age predicted worse outcome ($p < 0.001$), and cardiac and other nonrespiratory CA etiologies strongly predicted better scores ($p \leq 0.01$); in model 1, the number of epinephrine doses had a significant adverse association, as did duration of ICU stay in model 2.

DISCUSSION

THAPCA-OH compared survival and neurobehavioral outcomes in children (2 d to 18 yr old), who remained comatose after OH-CA resuscitation and were treated with hypothermia or normothermia; outcomes did not differ between these targeted temperature management interventions (1). The rationale for selection of the VABS-II composite score and the defined "favorable outcome" cutpoint, two SDs below the reference population mean, have been reported (4). Less than half of eligible survivors (42/85) attained the predetermined favorable outcome, VABS-II score greater than or equal to 70, and only 15 (of 260 eligible cases) attained the mean population norm score(≥ 100).

The 12-month outcome evaluation was a pragmatic compromise between the typical 18-month follow-up in neonatal encephalopathy trials and the 3- to 6-month time intervals applied in adult brain injury outcome studies. Three-month VABS-II scoring was incorporated to optimize retention and follow-up, to assess whether hypothermia influenced the recovery trajectory, and to evaluate the predictive accuracy of 3-month scores for 12-month outcomes. Retention rates were more than 90%, and hypothermia did not significantly influence the strong relationships between early (hospital discharge or 3 mo) and subsequent functional measures.

We collected PCPC scores to facilitate comparisons with other outcome studies in pediatric and adult CA survivors (18–22). In contrast with studies that emphasized relatively good outcomes in pediatric CA survivors, only 32 cases in the THAPCA-OH primary outcome group (about 35% of survivors) had PCPC scores of 1–2 at hospital discharge. A retrospective review of pediatric CPR survivors reported that 77% had the same PCPC score 1 year later as prior to the event and concluded that long-term survivors have little or no change in neurologic status; however, most of their cases had in-hospital CA (21). Another publication cited 87% good outcomes (PCPC = 1–2) at 1 year (22); this study included children with rapid postresuscitation recovery, whereas all children enrolled in the THAPCA-OH trial remained comatose at admission to the ICU.

Our data provided a unique opportunity to determine the ranges of VABS-II scores corresponding to each PCPC category. There was a consistent inverse relationship between

PCPC category and VABS-II score. Mean and median VABS-II scores corresponding to each PCPC category were similar in all analyses; the range of VABS-II scores was widest in the severe disability category (PCPC = 4). These results were not precisely comparable with published findings in a more diverse pediatric ICU patient population (9). In that study, outcomes were evaluated 1 or 6 months after hospital discharge and stratified by age, and PCPC categories were compared with scores obtained on an earlier version of VABS; trends were similar.

Hospital discharge PCPC scores had substantial predictive power for 3- and 12-month PCPC scores (r = 0.82 and 0.79) and VABS-II scores (r = –0.81 and –0.77), respectively, and did not differ between treatment groups. In addition, 3-month VABS-II scores were strongly correlated with 12-month performance on the same measures in both treatment groups. In future clinical trials of a similar pediatric population, a study design that incorporated primary outcome evaluation at 3 months after resuscitation could be considered; however, particularly in young infants, such an approach would not be advisable. Three-month assessments could provide robust measures for interim analyses.

Congruent with results of the THAPCA-OH trial, in analyses limited to 12-month survivors, hypothermia had no impact on VABS-II scores. In both univariate and multivariate analyses, older age had a modest deleterious effect; the factors contributing to this differential vulnerability are uncertain. The most potent variable identified was cardiac etiology, which was associated with higher scores than respiratory etiology. This trend likely reflects the deleterious effects of hypoxia prior to CA with respiratory etiology. Early seizures were associated with worse outcomes only in the univariate model; however, seizure burden and treatment efficacy were not assessed in the THAPCA-OH protocol, thus limiting interpretation of this association. In contrast with findings from other pediatric studies in high-risk populations (23, 24), socioeconomic status and family function measures had no impact on outcomes.

An important question is whether these results can influence clinical practice. In children who remain comatose after CA, families and physicians seek rapid and accurate prognostic assessments. On-going treatments, including sedation and paralytics, constrain the utility of neurologic examination. Early neuroimaging was not included in the THAPCA-OH protocol.

Our data highlight the prognostic limitations of early clinical assessments. The study population included children who were unresponsive to deep pain after resuscitation and then recovered to normal or close to normal function; no specific characteristics identified these cases, although younger age and a cardiac etiology exerted positive influences. In addition, although severe disability scores at hospital discharge strongly predicted poor 12-month function, 10 of 85 survivors improved substantially. Some cases could reflect scoring inaccuracies; interrater reliability among site coordinators was not evaluated. Information regarding posthospital discharge rehabilitation interventions was not systematically collected. Although we found no treatment-group differences in the predictive strength of early assessments for subsequent performance, eight of 10 who improved from severe disability to favorable outcome underwent hypothermia, and we question whether this treatment may sometimes delay clinical recovery.

These results provide new information about the trajectories of functional outcomes in children and adolescents who are resuscitated but remain comatose in the initial hours after OH-CA. The function scores obtained at hospital discharge and at 3 months predicted 12-month VABS-II composite scores well in the majority of survivors. These data will inform the designs of future clinical trials and help clinicians interpret the prognostic significance of functional assessments obtained at hospital discharge in this population.

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Gano (N); UCSF Benioff Children's Hospital, San Francisco, CA; J. Hutchison (PI), S. Schwartz (Sub-I), A. Guerguerian (Sub-I), K. Boutis (Sub-I), D. Clark (CRC), J. Van Huyse (CRC), K. Fusco (CRC), K. McBain (CRC), A. Krancevic (CRC), L. Toller (CRC), R. Gaiteiro (CRC), S. Furness (CRC), R. Askalan (N), C. Hahn (N), R. Sananes (P), Hospital for Sick Children, Toronto, Ontario, Canada; Dobyns (PI), L. Rappaport (Sub-I), E. Jewett (CRC), T. Wilson (CRC), B. Wathen (CRC), M. Dix (CRC), J. Allen (CRC), T. Garling (CRC), D. DiDomenico (CRC), D. Loyola (CRC), T. Bernard (N), J. Dise-Lewis (P), Children's Hospital of Colorado, Denver, CO; N. Pham (PI), K. Walson (Sub-I), J. Sturm (Sub-I), C. Stone (CRC), A. Wellons (CRC), S. Meisner (CRC), B. Weissman (N), A. Alexander (P), A. Johnson (P), Children's Healthcare of Atlanta, Atlanta, GA; D. Goodman (PI), C. Smith (PI), E. Powell (Sub-I), S. Shah (CRC), J. Chiambrietti (CRC), C. Lutz (CRC), C. Vitt (CRC), L. Jackson-McCarthy (CRC), N. Leannais (CRC), M. Wainwright (N), J. Goldstein (N), C. Weil (P), Robert Lurie Children's Hospital of Chicago, Chicago, IL; M. Porter (PI), J. Sullivan (Sub-I), M. Ruppe (Sub-I), J. Berkenbosch (Sub-I), M. McDonald (Sub-I), A. Calhoun (Sub-I), M. Thomas (CRC), A. Michael (CRC), J. Nasson (CRC), K. Kernen (CRC), V. Puri (N), L. Sears (P), Kosair Charities Pediatric Clinical Research Unit, Department of Pediatrics, University of Louisville and the Kosair Children's Hospital, Louisville, KY; U. Bhalala (PI), J.K. Lee (PI), M. Bembea (PI), D. H. Shaffner (Sub-I), A. Walker (Sub-I), M. Shackelford (CRC), A. Larson (CRC), J. Jamrogowicz (CRC), J. Kim (CRC), R. Felling (N), B. Slomine (P), Johns Hopkins Children's Center, Baltimore, MD; J. R. Christensen (PI), B.S. Slomine (Co-I), E. DeMatt (interviewer), M. Talley (interviewer), C. Rodweller (interviewer), Kennedy Krieger Institute, Baltimore, MD; K. Meert (PI), S. Heidemann (Sub-I), J. Clark (Sub-I), A. Pawluszka (CRC), M. Lulic (RA), M. Frey (CRC), L. Sivaswamy (N), S. Horman (P), L. Chiodo (P), Children's Hospital of Michigan, Detroit, MI; F. Moler (PI), T. Cornell (Sub-I), M. Weber (CRC), J. Reske (CRC), L. Conlin (CRC), M. Carlson (N), S. Warschausky (P), C. Young (P), T. Behnke (Program Administrator), D. Poszywak (procurement subcontract administrator), C.S. Mott Children's Hospital, University of Michigan, Ann Arbor, MI; J. Nowak (PI), H. Ortega (EM Sub-I), D. Milner (EM Sub-I), E. Zielinski (CRC), A. Overman (CRC), C. Leonard (CRC), M. Troy (P), E. Gilles (N), P. Huszar (N), J. Alden (P), Children's Hospital and Clinics of Minnesota, Minneapolis, MN; J. Pineda (PI), P. Oren (Sub-I), M. Shoykhet (Sub-I), S. Friess (Sub-I), K. Guilliams (Sub-I, N), D. Jaffe (Sub-I), T. Day (CRC), T. Hicks (CRC), L. Barganier (CRC), E. Fish (CRC), L. Toennies (CRC), P. Thurst (CRC), S. Blankenship (CRC), M. Noetzel (N), D. White (P), Washington University, St, Louis, MO; C. Schleien (PI), D. Schnadower (Sub-I), N. Talathoti (CRC), N. Sidhu (N), V. Hinton (P), Children's Hospital of New York/Columbia University Medical Center New York, NY; E. van der Jagt (PI), E. R. Taillie (CRC), E. Nazarian (Sub-I), L. E. Daugherty (Sub-I), C.O. Davis (Sub-I), J. Mulbury (N), H. Adams (P), University of Rochester Medical Center/Golisano Children's Hospital, Rochester, NY; G. Ofori-Amanfo (PI), S. Wrenn (CRC), T. Uhl (CRC), C. Milleson (CRC), K. Gustafson (P), W. Gallentine (N), S. Asbeck (P), Duke Children's Hospital, Durham, NC; E. Lloyd (PI), M. Hall (Sub-I), N. Khan (Sub-I), Daniel Cohen (Sub-I), J. Haines (CRC), K. Carter (CRC), L. Bird (CRC), S. Hough (CRC), W. Lo (N), K. Yeats (P), K. Morfing (P), Nationwide Children's Hospital, Columbus, OH; D. Wheeler (PI), G. Geis (Sub-I), E. Beckman (CRC), S. Banschbach (CRC), M. Monaco (CRC), B. Hallinan (N), N. Walz (P), Cincinnati Children's Hospital, Cincinnati, OH; K. Lidsky (PI), S. Bergant (CRC), A. Browning (CRC), J. Haky (CRC), N. Bass (N), R. Tangen (P), Rainbow Babies and Children's Hospital, Cleveland, OH; N. Thomas (PI), A. Shelly (CRC), J. Vallati (CRC), P. Carper (CRC), D. Spear (CRC), A. McMonagle (CRC), J. Stokes (CRC), H. Watts (CRC), W. Trescher (N), C. Flaherty-Craig (P), Penn State Children's Hospital, Hershey, PA; A. Topjian (PI), B. Berg (Sub-I), V, Nadkarni (Sub-I), S. Friess (Sub-I), J. Fitzgerald (Sub-I), P. Meaney (Sub-I), M. DiLiberto (CRC), C. Twelves (CRC), S. McGowan (CRC), M. Sisko (CRC), R. Ichord (N), J. Radcliffe (P), N. Hattiangadi Thomas (P), E. Alpern (EM Sub-I), K. Friedman (P), A. Sullivan (P), Children's Hospital of Philadelphia, Philadelphia, PA; E. Fink (PI), R. Hickey (Sub-I), R. Clark (Planning Committee), M. Bell (Sub-I), A. Abraham (CRC), R. Varma (N), S. Beers (P), J. Walters (P), H. Feldman (P), University of Pittsburgh Medical Center, Pittsburgh, PA; S. Shah (PI), K. Anand (Sub-I), C. Woodward (Sub-I), A. Hickerson (CRC), B. Moore (CRC), A. Nico West (CRC), M. Grandberry (CRC) N. Shah (N), N. Clanton (P), A. Adamson (P), L. Berkelhammer (P), O. King (P), A. Huling (P), L. White (P), University of Tennessee Health Science Center, Memphis, TN; J. Koch (PI), P. Okada (Sub-I), D. Miles (Sub-I), L. Raman (Sub-I), M. Green (Sub-I), E. Golson (CRC), A. Jones (CRC), D. Kelly (CRC), P. Plumb (CRC), K. Van de Bruinhorst (CRC), M. Dowling (N), P. Stavinoha (P), A. Hernandez (P), Children's Medical Center Dallas, University of Texas Southwestern Medical School, Dallas, TX; T. Wu (PI), C. Bauerfeld (Sub-I), M. Rodkey (Sub-I), H. Dibrell (CRC), S. Atkinson (N), L. O'Donnell (P), J. Eubanks (P), University of Texas Health Sciences Center at San Antonio, San Antonio, TX; K.S. Bennett (PI), R. Lane (Sub-I), J. Lilley (CRC), S. Bjerregaard (CRC), K. Jacobsen (CRC), A. Watson, (CRC), D. Stephens (CRC), M. DelaCruz (CRC), K. Cooley (CRC), N. Kwendakwema (CRC), B. Ameel (CRC), G. Jensen (CRC), M. Metcalf (CRC), R. Cole (CRC), R. Moore (CRC), T. Bennett (Sub-I), D. Morita (N), R. Burr (P), J. Henricksen (PICU MD), E. Hirshberg (Sub-I), A. Hubbard (Sub-I), B. Poss (Sub-I), J. Sweeney (Sub-I), G. Larsen (Sub-I), Primary Children's Medical Center, Salt Lake City, UT; J. Zimmerman (PI), J. McGuire (Sub-I), R. Farris (Sub-I), O. Yanay (Sub-I), J. Reid (Sub-I), L. Smith (Sub-I), S. Hamilton (CRC), R. Barker (CRC), S. Gospe (N), C. Amlie-Lefond (N), D. Breiger (P), A. Paolozzi (P), Seattle Children's Hospital, Seattle, WA. J. Berger (PI), D. Wessel (Sub- I), M. Sharron (Sub-I), A. Wratney (Sub-I), N. Dean (Sub-I), K. Brown (Sub-I), J. Reardon (CRC), E. Tomanio (CRC), F. Ramos (RA), J. Carpenter (N), S. Swanson (P), T. Brennan (P), P. Glass (P), M. Mintz (P), Children's National Medical Center, Washington, DC; M.T. Meyer (PI), M. Wakeham (Sub-I), S. Hanson

(Sub-I), Marc Gorelick (Sub-I), M. Christensen (CRC), D. Triscari (CRC), B. Horn (CRC), K. Murkowski (CRC), K. Hecox (N), C. Brosig (P), Medical College of Wisconsin, Milwaukee, WI; J. M. Dean (PI), R. Holubkov (biostatistician), B. Browning (program director), M. Gildea (project manager), R. Kuhn (project manager), K. Register (project manager), N. Tattersall (project manager), A. Vrem (project manager), A. Webster (biostatistician), A. Clark (biostatistician), K. Page (biostatistician), J. Wang (biostatistician), L. Herrera (data manager), J. Yearley (director data management), R. Enriquez (director information technology/information systems), D. Demarco (data center manager), M. Virtosu (senior software engineer), S. Zuspan (PECARN program director), J. Burr (CPCCRN program director), Data Coordinating Center (DCC), University of Utah, Salt Lake City, UT; V. Pemberton, J. Kaltman, G. Pearson, J. Troendle, National Heart, Lung, and Blood Institute, Bethesda, MD. Data Safety Monitoring Board. A. Zaritsky (Chair), Eastern Virginia University, Norfolk, VA; A. Atz, Medical University of South Carolina, Charleston, SC; D. Glidden, University of California San Francisco, San Francisco, CA; J. Lantos, Children's Mercy Hospitals, Kansas City, MO; M. Gausche-Hill, Harbor-UCLA, Torrance, CA; R. Ehrenkranz, Yale University, New Haven, CT.

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