Published in final edited form as:

J Investig Med. 2014 January ; 62(1): 84–87. doi:10.231/JIM.0000000000000019.

Pediatric Nephrologists' Beliefs Regarding Randomized Controlled Trials

Aaron G Wightman, MD^{1,*}, Assaf P Oron, PHD, Jordan M Symons, MD¹, and Joseph T Flynn, MD, MS¹

¹Division of Nephrology, Department of Pediatrics, University of Washington School of Medicine, Seattle Children's Hospital Division of Nephrology, Mailstop: OC.9.820, 4800 Sand Point Way NE Seattle, WA 98105, Fax: 206 987-2636

²Core for Biomedical Statistics, Seattle Children's Hospital Seattle, WA

Abstract

Background—Pediatrics and pediatric nephrology lag behind adult medicine in producing randomized controlled trials (RCTs). Physician attitudes have been shown to play a significant role in RCT enrollment.

Methods—We surveyed members of the American Society of Pediatric Nephrology regarding beliefs about RCTs and factors influencing decisions to recommend RCT enrollment. Regression analyses were used to identify effects of variables on an aggregate score summarizing attitudes toward RCTs.

Results—130 replies were received. 66% had enrolled patients in RCTs. Respondents in practice >15 years were more likely to have recruited a patient to a RCT than those in practice <5 years. Respondents were more willing to recommend RCT enrollment if the study was multicenter, patients were sicker or had a poorer prognosis, or if the parent or participant received a financial incentive versus the provider. In multiple regression analysis, history of enrolling patients in a RCT was the only significant predictor of higher aggregate RCT-friendly attitude.

Conclusions—Many pediatric nephrologists have never enrolled a patient in a RCT, particularly those in practice <5 years. Respondents who have not enrolled patients in RCTs have a less RCT-friendly attitude. Provision of improved training and resources might increase participation of junior providers in RCTs.

Introduction

Randomized controlled trials (RCTs) provide the highest level of evidence, are considered the gold standard method to evaluate the effects of a clinical intervention, and have resulted in significant advances in modern medicine (1–3). A well-documented example is 5-year survival from childhood acute lymphoblastic leukemia, which has increased from 25% to over 70% (4) as a result of RCTs. Nephrology as a general discipline ranks lowest in performance and completion of randomized controlled trials. (5) Pediatrics, subspecialty pediatrics, and pediatric nephrology lag behind adult medicine in producing randomized controlled trials. (6, 7) Inadequate sample size further plagues many completed RCTs. (8). This is illustrated by the recent Focal Segmental Glomerulosclerosis Clinical Trial (FSGS CT) whose findings were limited by the recruitment of substantially fewer than the 500 patients planned in the initial design. (9) The deficit of RCTs forces pediatricians to

extrapolate results from studies of adults and apply them to children, which can lead to inappropriate treatments. (10) Historical examples include the use of aspirin, (11) tetracyclines, (12) and chloramphenicol. (13)

There are multiple potential barriers limiting enrollment of children in RCTs. Certain risks of clinical research have greater importance in children including discomfort, pain, fear, separation from parents, effects on growing or developing organs, and size or volume of biological samples. A series of studies have identified other limitations to enrollment of children in RCTs including patient severity of illness, (14–16) prognosis, (17) number of study sites, (18) availability of institutional resources, (18, 19) need for additional clinic visits, and availability of incentives for enrollment. Parents and providers have reported that enrollment in a RCT makes patients “feel like guinea pigs”, (16) negatively affects doctor-patient relationships, (20, 21) restricts physician autonomy, (19) and denies patients the best new therapy through use of a control. (19) Parents and providers have also identified positive aspects of enrolling children in RCTs, reporting that RCTs improve the quality of care and allow patients to receive the best new therapies. (16, 19)

Physicians often serve as the primary recruiters for clinical trials and physician attitudes have previously been shown to play a significant role in participant enrollment in RCTs. (22–24) The beliefs held by pediatric nephrologists have not been investigated. We sought to better understand these beliefs regarding the role of RCTs in clinical research and to ascertain if pediatric nephrologists agree with previously reported limitations to participation in RCTs.

Methods

Subjects

Our target population included members of the American Society of Pediatric Nephrology (ASPN). The ASPN includes 711 members, 439 of whom are attending pediatric nephrologists (the remaining members are either trainees or nonphysicians). ASPN membership includes the majority of pediatric nephrologists practicing in the United States and Canada. Per ASPN policy, the survey was sent to all members, however the survey text indicated it was designed only for pediatric nephrologists.

Measurements

We developed the survey using an iterative process. First all instrument items were written according to accepted guidelines for survey development. (25) Next the survey was reviewed by 2 local experts in survey design to assess content validity and to facilitate item reduction. Finally, we pretested the survey with a group of locally practicing pediatric pulmonologists (n=8). At each stage of design, comments from experts and participants were reviewed and the survey was revised. The survey was completed using Catalyst software (www.catalyst.uw.edu).

The final survey (see Appendix) contained 6 questions about provider beliefs regarding RCTs, 13 questions about factors influencing provider decisions to recommend enrollment in a RCT, and 3 demographic questions. All questions about provider beliefs regarding RCTs used a 5-point Likert scale format expressing agreement (strongly agree, agree, unsure, disagree, strongly disagree). All questions about factors influencing provider decisions used a 5-point Likert scale response format expressing likelihood to refer a patient for enrollment in a RCT (always, more willing, unchanged, less willing, never).

Protocol

The survey request was presented a single time by e-mail with a link to the survey itself in an internet-based format. No financial incentive was given for participation. Per ASPN policy, no reminders were given. Survey responses were anonymous.

Data Analysis

The primary study outcomes were pediatric nephrologists' agreement with previously reported limitations to participation in RCTs and factors that could increase likelihood of recommendation for enrollment in RCT's.

For univariate analyses of question pairs, paired t-tests were used to evaluate mean differences. Statistical analysis was performed using R2.15. (26)

Linear regression was used to assess the effects of demographic variables. In the first analysis, single question responses were used as the outcome. In the second analysis, an aggregate "RCT friendliness" value was used as the outcome. The "RCT friendliness" value consisted of an aggregate of average values of the 18 opinion questions divided into 7 conceptual groups. The "RCT friendliness" attitude score was calculated by converting the answers to integers on the scale 1–5 with the answer most supportive of RCTs receiving 5, calculating the average answer within each of 7 conceptual question groups, and averaging the group averages. A higher score was consistent with a more positive view towards enrolling patients in a RCT.

This study was approved by the Institutional Review Board of Seattle Children's Hospital.

Results

The survey was completed by 130 pediatric nephrologists. Demographics are summarized in Table 1. Pediatric nephrologists more than 15 years from fellowship were more likely to have ever enrolled a patient to a RCT than those who were less than 5 years from fellowship (96% vs. 34%). The majority of participants practiced in an academic center with a minority of time devoted to clinical research.

Most pediatric nephrologists agreed or strongly agreed that enrollment in a RCT improves the quality of a patient's care (70%), allows patients to receive the best new therapies (53%), and disagreed or strongly disagreed that enrollment in a RCT may negatively effect the doctor-patient relationship (90%) or make patients feel like "guinea pigs" (80%).

Univariate analysis revealed that responders were more willing to recommend enrollment in a RCT if the study was multicenter rather than single center ($p<.001$). Pediatric nephrologists were more willing to recommend enrollment if the patient had a severe illness rather than a mild one, or had a poorer prognosis rather than a good one ($p<.001$). Finally, providers were more willing to recommend enrollment in a RCT if the parent or patient received a financial incentive versus the provider ($p<.001$, $p<.0001$). Requirement of additional clinic visits (61% unchanged likelihood) or additional blood draws (60% unchanged likelihood) did not affect most providers' willingness to recommend enrollment.

In univariate regression analysis, a history of recruiting a patient to an RCT predicted disagreement that enrolling patients in RCT's makes them feel like "guinea pigs" (effect size -0.5 , t-statistic -3.42). Belief that one had adequate institutional resources to recommend enrollment in randomized controlled trials was not associated with any demographic characteristics, including history of recruiting a patient to a RCT, nor was it associated with any of the questions about provider beliefs.

When “RCT friendliness” attitude score was considered the outcome, in univariate regression analysis, history of RCT enrollment (effect size 0.29, T-statistic 3.64, $p < .001$), adequate financial resources (as a numerical score; effect size 0.08 $p = .02$), and limited research time ($< 30\%$) (effect size -0.32 , $p = .01$) were significant predictors. In multivariate regression analysis, history of enrolling patients in a RCT remained a statistically significant predictor of higher aggregate “RCT-friendly” attitude (effect size 0.24, $p = .003$) while the other two covariates became borderline significant ($p = .05$ for each).

Discussion

Randomized controlled trials have contributed to many of the advances in medicine. However, pediatric nephrologists complete fewer randomized controlled trials than other specialists. The reason for this is unknown. The rarity of pediatric kidney disease underscores the imperative for trained physician researchers to enroll as many willing and eligible participants as possible in trials with adequate resources, genuine ambiguity regarding the best intervention (equipoise), and in acknowledgement of the conflicting roles of clinician and researcher. Failure to recruit sufficient patients results in underpowered studies and increased possibility of inclusion bias. (27)

We found that 70% of pediatric nephrologists agreed or strongly agreed that enrolling patients in randomized controlled trials improves the quality of their care. This is consistent with research previously published in other specialties. (19) Despite this, one-third of pediatric nephrologists have never enrolled a patient in a RCT, particularly those less than 5 years from completing fellowship. Providers who have not enrolled patients in RCTs have less RCT-friendly attitudes. Lack of recruiting children to RCTs and poorer overall attitudes toward them may reflect a lack of training among pediatric nephrologists in obtaining consent and recruiting patients to randomized controlled studies, as was demonstrated in neonatologists in the multicenter Euricon study. In that study, 95% of recruiting neonatologists had never received formal training on obtaining consent from parents. (28) The majority of neonatologists reported learning to approach families from observation of more senior colleagues and many felt this training to be inadequate. Adequate resources also likely play a role in clinician willingness to enroll children in a RCT. Only half of responding pediatric nephrologists agreed that they had adequate institutional resources, however in linear regression lack of institutional resources was not associated with history of enrolling children in RCTs or “RCT-friendly” score. In contrast, in the FSGS-CT, sites that did not enroll participants rated support from the coordinating center of the trial significantly lower than enrolling sites. (24)

To enroll children in a RCT, providers must view the outcome of the investigation as having uncertain results. Our results suggest that a significant percentage of providers discount therapeutic equipoise, which is essential when considering the benefits of a potential RCT. Investigators in the FSGS CT trial reported similar results. Nearly half of respondents questioned the feasibility and soundness of the trial and chose not to recruit patients. (24) In our study, 39% of responding pediatric nephrologists agreed or strongly agreed with the belief that “enrolling patients in RCTs may restrict my management of them.” This may reflect the conflict held by many physicians when balancing the dual roles of clinician and researcher, which has been reported as a barrier to recruitment in RCTs (16).

Consistent with previously reported parental beliefs, a majority of pediatric nephrologists agreed that RCTs allow children to receive best new therapy and that participation in RCTs improves the quality of children’s care. (16) Consequently, concerns about clinical care for the patient do not appear to be a barrier to RCT recruitment. Also pediatric nephrologists were more likely to recruit patients to RCTs if they were sicker or carried a poor prognosis.

(16, 17, 20) This suggests providers view these children as having the most favorable risk-benefit ratio but highlights a potential barrier to RCT recruitment for those patients who may not be as sick, even though RCTs would likely prove useful in this population as well.

Unlike other pediatric specialists, only a minority of pediatric nephrologists agreed that enrolling patients in randomized controlled trials may negatively affect the doctor-patient relationship, (19, 21) suggesting that this was not a barrier to recruitment. Also pediatric nephrologists were more willing to recommend enrollment in RCTs if the study was multicenter rather than single center. (18) This is likely a reflection of the rarity of many pediatric nephrology disorders and therefore the need for multi-center RCTs to achieve appropriate power in a given study. Unlike parent reports, few pediatric nephrologists agreed or strongly agreed that participation in RCTs makes children feel like “guinea pigs.” (16) This may suggest a need to further evaluate discrepancies between the attitudes of pediatric nephrologists and their patients’ families.

Our study has some important limitations. It is possible that our sample does not truly represent the current population of pediatric nephrologists in North America. We received 130 responses, which is approximately 30% of the active membership of the ASPN; however, we were unable to calculate an exact response rate since we had no way of tracking how many PNs received the survey. In 2011, there were 730 American Board of Pediatrics (ABP) board certified pediatric nephrologists in the United States of America with an average age of 56.4 years and 41% were 61 years or older (ABP.org). 41% of the responding pediatric nephrologists to our survey completed training less than 5 years ago. While this may limit applicability to all practicing pediatric nephrologists, our overrepresentation of junior pediatric nephrologists highlights the lesser participation in RCTs and associated poorer overall RCT attitudes in those newest to the field. The survey did not consider the effect of patient advocacy groups and voluntary health organizations on nephrologists’ beliefs about RCTs. Patient advocacy groups and voluntary health organizations, in collaboration with academic medical centers, have played an important role in patient recruitment for many clinical trials. (29) Inherent in any survey is the possibility of response bias. In this survey question pairs were in a fixed order subjecting them to the possibility of order related framing. This cannot be fully accounted for in univariate analysis of question pairs.

On the other hand, we are not aware of any other published data examining the important question of pediatric nephrologists’ beliefs about RCTs. We were able to create and apply a rigorously designed and internally validated survey with responses from 130 pediatric nephrologists. Comparable surveys of pediatric nephrologists have had response rates of 20–40%. (30, 31)

Our results suggest an opportunity for improved training and resources to encourage junior providers to participate in RCTs. Pediatric nephrologists may be more likely to enroll patients in studies that are multicenter, involve sicker children with poor prognosis, or if the parent or child receives compensation rather than the physician. Next steps could include a more focused approach interviewing pediatric nephrologists who have recently completed training, a systematic assessment of existing research education curricula in fellowship training, and interviewing parents and nephrology patients to understand better their beliefs regarding enrollment in RCTs.

Acknowledgments

Funding: This research was supported in part by NIH training grant: 5 T32 DK007662.

The authors would like to thank Edgar Marcuse MD for aid in survey design and the division of Pediatric Pulmonology at Seattle Children's Hospital for acting as a pilot group.

References

1. Peto R, Collins R, Gray R. Large-scale randomized evidence: large, simple trials and overviews of trials. *J Clin Epidemiol*. 1995 Jan; 48(1):23–40. [PubMed: 7853045]
2. Eden T. Evidence based medicine. *Arch Dis Child*. 2000 Apr; 82(4):275–7. [PubMed: 10735828]
3. Barton S. Which clinical studies provide the best evidence? The best RCT still trumps the best observational study. *BMJ*. 2000 Jul 29; 321(7256):255–6. [PubMed: 10915111]
4. Chessells JM. Treatment of childhood acute lymphoblastic leukaemia: present issues and future prospects. *Blood Rev*. 1992 Dec; 6(4):193–203. [PubMed: 1486288]
5. Strippoli GF, Craig JC, Schena FP. The number, quality, and coverage of randomized controlled trials in nephrology. *J Am Soc Nephrol*. 2004 Feb; 15(2):411–9. [PubMed: 14747388]
6. Cohen E, Goldman RD, Ragone A, Uleryk E, Atenafu EG, Siddiqui U, et al. *Arch Pediatr Adolesc Med*. 1985–2005 Mar; 164(3):283–8. [PubMed: 20194264]
7. Aripin KN, Choonara I, Sammons HM. A systematic review of paediatric randomised controlled drug trials published in 2007. *Arch Dis Child*. 2010 Jun; 95(6):469–73. [PubMed: 20501540]
8. Campbell H, Surry SA, Royle EM. A review of randomised controlled trials published in Archives of Disease in Childhood from 1982–96. *Arch Dis Child*. 1998 Aug; 79(2):192–7. [PubMed: 9797608]
9. Gipson DS, Trachtman H, Kaskel FJ, Greene TH, Radeva MK, Gassman JJ, et al. Clinical trial of focal segmental glomerulosclerosis in children and young adults. *Kidney Int*. 2011 Oct; 80(8):868–78. [PubMed: 21734640]
10. Shaddy RE, Denne SC. Clinical report--guidelines for the ethical conduct of studies to evaluate drugs in pediatric populations. *Pediatrics*. 2010 Apr; 125(4):850–60. [PubMed: 20351010]
11. Starko KM, Ray CG, Dominguez LB, Stromberg WL, Woodall DF. Reye's syndrome and salicylate use. *Pediatrics*. 1980 Dec; 66(6):859–64. [PubMed: 7454476]
12. Mello HS. The mechanism of tetracycline staining in primary and permanent teeth. *J Dent Child*. 1967 Nov; 34(6):478–87. [PubMed: 4864181]
13. Craft AW, Brocklebank JT, Hey EN, Jackson RH. The 'grey toddler'. Chloramphenicol toxicity. *Arch Dis Child*. 1974 Mar; 49(3):235–7. [PubMed: 4825630]
14. Amiel P, Moreau D, Vincent-Genod C, Alberti C, Hankard R, Ravaud P, et al. Noninvitation of eligible individuals to participate in pediatric studies: a qualitative study. *Arch Pediatr Adolesc Med*. 2007 May; 161(5):446–50. [PubMed: 17485619]
15. Walterspiel JN. Informed consent: influence on patient selection among critically ill premature infants. *Pediatrics*. 1990 Jan; 85(1):119–21. [PubMed: 2296479]
16. Caldwell PH, Butow PN, Craig JC. Pediatricians' attitudes toward randomized controlled trials involving children. *J Pediatr*. 2002 Dec; 141(6):798–803. [PubMed: 12461496]
17. Taylor KM, Feldstein ML, Skeel RT, Pandya KJ, Ng P, Carbone PP. Fundamental dilemmas of the randomized clinical trial process: results of a survey of the 1,737 Eastern Cooperative Oncology Group investigators. *J Clin Oncol*. 1994 Sep; 12(9):1796–805. [PubMed: 8083703]
18. Siminoff LA, Zhang A, Colabianchi N, Sturm CM, Shen Q. Factors that predict the referral of breast cancer patients onto clinical trials by their surgeons and medical oncologists. *J Clin Oncol*. 2000 Mar; 18(6):1203–11. [PubMed: 10715289]
19. Benson AB 3rd, Pregler JP, Bean JA, Rademaker AW, Eshler B, Anderson K. Oncologists' reluctance to accrue patients onto clinical trials: an Illinois Cancer Center study. *J Clin Oncol*. 1991 Nov; 9(11):2067–75. [PubMed: 1941065]
20. Taylor KM. Integrating conflicting professional roles: physician participation in randomized clinical trials. *Soc Sci Med*. 1992 Jul; 35(2):217–24. [PubMed: 1509310]
21. Taylor KM, Shapiro M, Soskolne CL, Margolese RG. Physician response to informed consent regulations for randomized clinical trials. *Cancer*. 1987 Sep 15; 60(6):1415–22. [PubMed: 3621123]

22. Kinney AY, Richards C, Vernon SW, Vogel VG. The effect of physician recommendation on enrollment in the Breast Cancer Chemoprevention Trial. *Prev Med.* 1998 Sep-Oct;27(5 Pt 1):713–9. [PubMed: 9808803]
23. Harth SC, Thong YH. Parental perceptions and attitudes about informed consent in clinical research involving children. *Soc Sci Med.* 1995 Dec; 41(12):1647–51. [PubMed: 8746864]
24. Ferris M, Norwood V, Radeva M, Gassman JJ, Al-Uzri A, Askenazi D, et al. Patient recruitment into a multicenter randomized clinical trial for kidney disease: report of the focal segmental glomerulosclerosis clinical trial (FSGS CT). *Clin Transl Sci.* 2013 Feb; 6(1):13–20. [PubMed: 23399084]
25. Sudman, SBN. *Asking Questions.* University of California; Jossey-Bass: 1982.
26. R Development Core Team. *R: A language and environment for statistical computing.* Vienna, Austria: R Foundation for Statistical Computing; 2010.
27. Deegens JK, Wetzels JF. Immunosuppressive treatment of focal segmental glomerulosclerosis: lessons from a randomized controlled trial. *Kidney Int.* 2011 Oct; 80(8):798–801. [PubMed: 21960168]
28. Mason SA, Allmark PJ. Obtaining informed consent to neonatal randomised controlled trials: interviews with parents and clinicians in the Euricon study. *Lancet.* 2000 Dec 16; 356(9247): 2045–51. [PubMed: 11145490]
29. Gallin EK, Bond E, Califf RM, Crowley WF Jr, Davis P, Galbraith R, et al. Forging Stronger Partnerships Between Academic Health Centers and Patient-Driven Organizations. *Acad Med.* 2013 Sep; 88(9):1220–4. [PubMed: 23887007]
30. Woroniecki RP, Flynn JT. How are hypertensive children evaluated and managed? A survey of North American pediatric nephrologists. *Pediatr Nephrol.* 2005 Jun; 20(6):791–7. [PubMed: 15809834]
31. Teh JC, Frieling ML, Sienna JL, Geary DF. Attitudes of caregivers to management of end-stage renal disease in infants. *Perit Dial Int.* 2011 Jul-Aug;31(4):459–65. [PubMed: 21454396]

Appendix 1: Survey Text

Question	Response
1. Have you ever enrolled a patient in a randomized controlled trial?	Yes/no
2. Would you recommend to your patients to participate in a randomized controlled trial if: Patients either receive only a standard therapy or a novel therapy	Always/more willing/unchanged/less willing/never
3. Would you recommend to your patients to participate in a randomized controlled trial if: The adverse effects are different in different arms of the study.	Always/more willing/unchanged/less willing/never
4. Would you recommend to your patients to participate in a randomized controlled trial if: The study was multi-center	Always/more willing/unchanged/less willing/never
5. Would you recommend to your patients to participate in a randomized controlled trial if: The study was single-center	Always/more willing/unchanged/less willing/never
6. Would you recommend to your patients to participate in a randomized controlled trial if: The patient has a severe illness	Always/more willing/unchanged/less willing/never
7. Would you recommend to your patients to participate in a randomized controlled trial if: The patient has a mild illness	Always/more willing/unchanged/less willing/never
8. Would you recommend to your patients to participate in a randomized controlled trial if: The patient has a poor prognosis	Always/more willing/unchanged/less willing/never

Question	Response
9. Would you recommend to your patients to participate in a randomized controlled trial if: The patient has a good prognosis	Always/more willing/unchanged/less willing/never
10. Would you recommend to your patients to participate in a randomized controlled trial if: The study will require additional blood draws	Always/more willing/unchanged/less willing/never
11. Would you recommend to your patients to participate in a randomized controlled trial if: The study will require additional clinic visits	Always/more willing/unchanged/less willing/never
12. Would you recommend to your patients to participate in a randomized controlled trial if: Patients are given a financial incentive to participate	Always/more willing/unchanged/less willing/never
13. Would you recommend to your patients to participate in a randomized controlled trial if: Parents are given a financial incentive to participate	Always/more willing/unchanged/less willing/never
14. Would you recommend to your patients to participate in a randomized controlled trial if: Providers are given a financial incentive to enroll patients	Always/more willing/unchanged/less willing/never
15. Please indicate your agreement with the following statements about randomized controlled trials: I feel that enrolling patients in randomized controlled trials improves the quality of their care.	Strongly agree/agree/unsure/disagree/strongly disagree
16. Please indicate your agreement with the following statements about randomized controlled trials: I feel that enrolling patients in randomized controlled trials makes them feel like "guinea pigs."	Strongly agree/agree/unsure/disagree/strongly disagree
17. Please indicate your agreement with the following statements about randomized controlled trials: I feel that enrolling patients in randomized controlled trials may negatively affect the doctor-patient relationship.	Strongly agree/agree/unsure/disagree/strongly disagree
18. Please indicate your agreement with the following statements about randomized controlled trials: I feel that enrolling patients in randomized controlled trials may restrict my management of them.	Strongly agree/agree/unsure/disagree/strongly disagree
19. Please indicate your agreement with the following statements about randomized controlled trials: I feel that randomized controlled trials allow my patients to receive the best new therapy.	Strongly agree/agree/unsure/disagree/strongly disagree
20. Please indicate your agreement with the following statements about randomized controlled trials: I feel that I have adequate institutional resources to recommend to my patients enrollment in randomized control trials.	Strongly agree/agree/unsure/disagree/strongly disagree
21. What percentage of your professional effort is devoted to clinical research	0%/1–30%/31–69%/ 70%
22. What best describes your principal area of practice	Academic Center/Private Practice
23. How many years have passed since completion of your fellowship	<5/5–15/>15

Appendix: Survey responses

Pediatric Nephrologist Beliefs About Randomized Controlled Trials (N=130)

Question	Response %				
Would you recommend to your patients to participate in a randomized controlled trial if:	Always	More willing	Unchange	Less willing	never
The adverse effects are different in different arms of the study.	7	19	45	27	2
The study was multi-center	31	40	28	1	0
The study was single-center	15	9	52	24	0
The patient has a severe illness	12	42	34	11	1
The patient has a mild illness	9	22	51	18	0
The patient has a poor prognosis	14	46	31	8	1
The patient has a good prognosis	10	13	54	22	0
The study will require additional blood draws	10	10	61	19	0
The study will require additional clinic visits	11	11	60	18	0
Patients are given a financial incentive to participate	10	29	56	4	1
Parents are given a financial incentive to participate	9	25	54	10	2
Providers are given a financial incentive to enroll patients	4	11	53	21	11
Please indicate your agreement with the following statements about randomized controlled trials:	Strongly agree	Agree	Unsure	Disagree	Strongly Disagree
I feel that enrolling patients in randomized controlled trials improves the quality of their care.	30	41	21	7	1
I feel that enrolling patients in randomized controlled trials makes them feel like "guinea pigs."	0	10	10	59	21
I feel that enrolling patients in randomized controlled trials may negatively affect the doctor-patient relationship.	0	3	7	63	27
I feel that enrolling patients in randomized controlled trials may restrict my management of them.	2	38	11	44	5
I feel that randomized controlled trials allow my patients to receive the best new therapy.	11	42	31	16	0

Question	Response %				
Would you recommend to your patients to participate in a randomized controlled trial if:	Always	More willing	Unchange	Less willing	never
I feel that I have adequate institutional resources to recommend to my patients enrollment in randomized control trials.	14	34	20	24	8

Table 1

Characteristics of Respondents (n=130)

Have you ever enrolled a patient in a randomized controlled trial?	N (%)
Yes	86 (66)
What percentage of your professional effort is devoted to clinical research?	
0%	14 (11)
1–30%	90 (69)
31–69%	17 (13)
70%	9 (7)
What best describes your principal area of practice?	
Academic Center	122 (94)
Private Practice	8 (6)
How many years have passed since completion of your fellowship?	
Fewer than 5 years	53 (41)
5 to 15 years	29 (22)
Greater than 15 years	48 (37)

Table 2

Univariate Analysis of Question Pairs

Question pair	Mean difference	Wilcoxon test p- value	Paired T- test p- value
Multi-center vs. single center	.88	<.0001	<.0001
Severe illness vs. mild illness	.32	<.01	<.005
Poor prognosis vs. good prognosis	.52	<.0001	<.0001
Additional visits vs. additional blood draws	.05	.3	.26
Patient financial incentive vs. Parent financial incentive	.13	<.005	<.005
Patient financial incentive vs. parent financial incentive	.68	<.0001	<.0001