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Outcomes of Shared IRB Compared with Multiple Individual Site IRB Models in a Multisite Clinical Trial

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Conflict of Interest

The authors report no conflict of interest.

Condensation: Compared to use of multiple site IRBs, the single shared IRB may be more efficient for multicenter studies.

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Abstract

Background: Institutional review boards play a crucial role in initiating clinical trials. Though many multicenter clinical trials utilize an individual IRB model, where each institution uses their own local IRB, it is unknown if a shared (single IRB) model would reduce the time required to approve a standard IRB protocol.

Objective: The objective of this study was to compare processing times and other processing characteristics between sites using a single IRB and those using their own site IRBs in a multicenter clinical trial.

Study Design: This was a retrospective study of sites in an open-label, multicenter randomized control trial from 2014–2021. Participating sites in the multicenter Chronic Hypertension and Pregnancy (CHAP) trial were asked to complete a survey collecting data describing their IRB approval process.

Results: Forty-five sites participated in the survey (7 used a shared IRB and 38 used their own individual IRBs). Most sites (86%) using the shared IRB model did not require a full board IRB meeting prior to protocol approval, compared to one site (3%) within the individual IRB group ($p < 0.001$). Median total approval times (41 vs. 56 days; $p = 0.42$), numbers of submission rounds (1 vs. 2, $p=0.09$), and numbers of IRB stipulations (1 vs. 4; $p=0.12$) were lower for the shared than individual site IRB model, but these differences were not statistically significant.

Conclusion: Our findings support the hypothesis that the shared IRB model for multicenter studies may be more efficient in terms of cumulative time and effort required to obtain approval of an IRB protocol. Given that these data have important implications for multicenter clinical trials, future research should evaluate these findings using larger or multiple multicenter trials.

Keywords

Institutional Review Boards (IRB); Federal Regulations; Multicenter Studies; IRB efficiency; Chronic Hypertension and Pregnancy Study

INTRODUCTION

In 1974, federal regulations mandated institutional review boards (IRB) for research with human participants.¹ For decades, many institutions used the individual IRB model in which each institution reviews research protocols to ensure fair treatment of research participants. However, the need for larger, geographically diverse cohorts has increased, leading to a growth in large multicenter research studies.^{2–6} For multicenter research studies, each participating site may delegate the primary responsibilities of reviewing a standard research protocol to one participating institution (shared or individual IRB model). Although the National Institutes of Health (NIH) released a policy to promote the use of a shared IRB model for multicenter research studies in 2016, many multicenter studies continue to utilize multiple individual site IRBs.^{7–9} More recently, the NIH mandated that multicenter studies with a grant application submitted after January 25, 2018 or an initial IRB approval after January 20, 2020 must utilize the shared IRB model.¹⁰

The practice of using multiple individual IRBs for a standard research protocol for multicenter research studies has been criticized for wasting valuable time and resources without demonstrable benefits for human subjects.^{11, 12} Further, some studies have reported inconsistencies in the interpretation of federal guidelines across institutions, often leading to disparate decisions being made for the same research protocol.¹³ We have previously shown that using the multi-site IRB model for multicenter research studies may lead to delays of greater than 60 days due to stylistic requests, as opposed to substantive regulatory requests.¹⁴ Although the shared IRB model falls in line with initiatives implemented by authorities such as the NIH, the National Center for Advancing Translational Science (NCATS), and the Office of Human Research Protections (OHRP),¹⁵ few studies have objectively demonstrated the expected benefits of utilizing a shared IRB model.

The Chronic Hypertension and Pregnancy (CHAP) trial is a large multicenter research study funded by the National Heart Lung and Blood Institute (NHLBI) in 2014.¹⁶ The overall objective of the CHAP trial is to test the effectiveness and safety of antihypertensives for women with mild chronic hypertension during pregnancy. The current study investigated the IRB models used at CHAP trial sites; some sites opted to utilize their own IRB, while others chose a shared IRB model with one center serving as the centralized IRB hub. Our objective was to test for differences in IRB processing times and other characteristics, including stipulations (i.e., editorial modifications, regulatory requests, verbiage/language modifications, formatting etc.) between site (individual) IRBs and shared IRB models.

METHODS

In the CHAP study (5U01HL12338) pregnant women (N=2404) with mild CHTN (<160/105 mmHg) were randomized to either antihypertensive therapy or usual care (antihypertensive medication only if BP ≥ 160/105 mmHg) prior to 23 weeks of gestation. Exclusion criteria included multifetal pregnancies, known medical co-morbidities, severe chronic hypertension, and contraindications to the antihypertensive therapy. Study startup was in November 2014, and the sites had the option of using their own IRB or a shared IRB at the leading site (UAB). All sites were encouraged to use the shared IRB model at no additional cost to the university-based institution.

The current study was exempt from IRB review at all participating sites. Sites received a pretested data collection instrument (Appendix A) adapted from a previous publication by our group.¹⁴ Trained research team members at each site were responsible for abstracting the data from their IRB regulatory records and submitting the form to the CHAP data coordinating center. The items on the data form included the time from the initial IRB response to the final approval for each institution. The number of IRB stipulations, the number of times the protocol was submitted, specific reasons for delays greater than 60 days for the initial IRB process, and the total number of full board meetings per IRB were also collected. Sites were categorized into two groups: shared IRB and individual site IRB models. Institutions that opted to use the shared IRB model relied on the central IRB hub (The University of Alabama at Birmingham; UAB), while the individual IRB sites utilized their own institutional IRBs. In primary analyses, the central IRB hub was included in the individual group as they had to use their own individual IRB for the original submission.

We conducted additional analyses assuming that the central IRB hub (UAB) site belonged to the shared group. The Kruskal-Wallis test was used to compare continuous and count data between the two IRB models. The data are summarized as median and ranges. Fisher's exact test was used to compare categorical measures (proportions) between the two IRB models. Hypothesis tests are considered statistically significant at the 0.05 alpha level. The analyses for this manuscript were generated using SAS/STAT[®] software, Version 9.4 of the SAS System.

RESULTS

The CHAP trial screened 73 university-affiliated sites across the United States. Twenty-eight sites did not complete the data collection form for the current study, and were excluded, resulting in inclusion of 45 sites in this analysis. Seven sites utilized the shared IRB model, and 38 utilized their own (individual) IRB. The median (range) number of IRB meetings per month at institutions did not differ between IRB models; 4 (1–10) and 2 (1–20) for the shared and individual models, respectively ($p=0.36$). All of the protocols for the shared model were submitted electronically, and 89% of the individual IRBs submitted their protocols electronically.

Outcomes of the IRB models including approval times are summarized in Table 1. The total number of days from initial submission until the final protocol approval was a median (range) of 41 (7–165) for the shared IRB group and 56 (0–183) for the individual IRB models ($p = 0.42$). For the individual IRB group, 42% experienced a delay > 60 days for a protocol approval, compared to 29% for the shared IRB model ($p = 0.68$). The median number of stipulations (range) were 4 (0–70) for the individual IRB group and 1 (0–6) for the shared IRB group; $p = 0.12$. The median number (range) of IRB submission rounds prior to approval were 2 (0–6) and 1 (1–2) for the individual and shared IRB groups, respectively ($p = 0.09$). Eighty-six percent of the sites using the shared IRB model did not require a full board review meeting before accepting the study protocol, compared to only 3% for the individual site IRB model. For the individual IRB model, the site with the highest time to approval (183 days) also had the highest number of stipulations ($N=70$). There were no requests for substantive protocol changes for the shared IRB model.

COMMENT

Principal Findings

This study found that sites utilizing the shared IRB model required fewer IRB meetings before the protocol was approved. In addition, there was a tendency for sites within the shared IRB model to have fewer submission rounds and a lower number of stipulations than sites that utilized the individual IRB model.

Results

To our knowledge, this is one of the first and largest studies directly comparing shared (centralized) vs. individual multisite IRB models within one clinical trial. Although the time to IRB approval was not statistically significantly less with shared IRB vs. individual site IRBs, the shared model required a median of fewer full board IRB meetings to approve the

CHAP study protocol. The shared IRB model also required fewer rounds of IRB submission (albeit not statistically significant) and a smaller number of stipulations to be addressed before protocol approval. Of note, no substantive protocol modifications were required by either model. These results indicate that the shared IRB model may be more efficient for investigators and IRBs by reducing effort and constricting timelines for multicenter clinical studies. These results suggest that implementing a shared IRB model could potentially reduce delays for clinical trial startup and reduce the workload for institutional IRBs. Taken together, this study highlights the potential benefits of collaboration between academic institutions for research efficiency but does not definitively confirm them.

Although one might assume that the use of many individual reviews for multicenter studies might improve the ethical integrity of research, it is also postulated that this is unnecessary, duplicative, and of no direct benefit in protecting human subjects.¹¹ Others have reported that the individual multisite IRB model leads to greater administrative burden and costs without demonstrable benefit for investigators or institutions.^{15,17} For instance, the National Cancer Institute found that participation in a shared IRB model was associated with faster reviews (33.9 days) fewer hours of research staff (6.1 hours), and a net savings of \$717 per initial review.¹⁸ Others have shown that implementing a shared IRB can save more than 150 hours. Another study found that implementing a shared IRB saves more than 151 days in redundant protocol review.¹⁹ These findings further suggest that implementing a shared IRB model for multicenter studies across research institutions may save almost half a year for investigators and institutions without weakening regulatory oversight.

We observed wide variability in the number of IRB stipulations requested before approval regardless of model. Many of the stipulations requested by individual IRBs involved grammatical and stylistic changes, including changes to the verbiage of the consent forms. One institution that utilized the individual IRB model requested 70 “major” edits and required edits to the consent forms on four separate occasions, resulting in a delay of >3 months for the protocol to be approved. In contrast, some institutions that utilized the individual IRB model requested no changes at all. In a previous study, we reviewed the characteristics and outcomes of five protocols utilizing individual IRBs at National Perinatal Research Centers.¹⁴ We found that the stipulations requested from individual IRB models often involved only minor stylistic and editorial changes. Another study that examined the effects of an individual IRB review in a multicenter clinical trial found that more than 75% of edits to the original consent form were due to institutional language preferences. They also reported that the revisions requested did not result in significant changes to the study protocol.¹⁵ Others have found that the cost of the IRB review process leads to delays in study conduct and contributes to increases in drug development costs.^{20–23} Thus, use of the shared IRB model could result in a more efficient review process and savings for both investigators and institutions.

Strengths and limitations

While this is one of the few and largest studies directly comparing IRB models, our findings are limited by the small number of sites that opted into the shared IRB model and the number of sites excluded from this study. Thus, we were unable to demonstrate significant

differences in times to approval. At the time of initiation of the CHAP trial, shared IRB models were not required, and many institutions were not familiar with the streamlined process in practice. One study that examined perceptions of the shared IRB model found that 76% of the participating centers had never used a shared IRB model despite having several multicenter studies. In addition, more than 73% of the cohort reported that the process seemed unnecessary.^{18, 24} Investigators have also reported concerns regarding the feasibility of collaborating with external IRB's, while others have noted concerns for legal liability of outsourcing the IRB process.²⁵ Despite these findings, larger studies have reported significant results between IRB models. Another limitation is the focus of this study on pregnancy. Though this is the first study to address this question in a cohort of pregnant women, we do not have reason to believe that these findings would be different in non-obstetric studies. The retrospective design of our study may also be associated with misclassification although many of the variables are likely to be reliably abstracted from regulatory records. On balance, these results provide evidence that implementing a shared IRB for multicenter studies could reduce burden for institutions and investigators and the associated costs, and potentially shorten the times to approval and study initiation without compromising regulatory oversight.

Clinical and Research Implications

This study adds to an emerging body of evidence that suggests that a shared IRB model has the potential to reduce study initiation and promote consistency of ethics reviews. This study also highlights a multisite study's ability to eventually reduce institutional burden and research costs. Larger studies involving more sites with shared IRBs and studies including non-pregnant populations are needed to confirm these findings and support the increasing requirements for shared IRB models for multisite studies.

Conclusion

Our study indicates that a shared IRB model may be more beneficial in multi-center obstetric studies. These data also suggest that streamlining the IRB process may be critical in accelerating clinical research for human participants.

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AJOG at a glance**A.** Why was this study conducted?

This study was conducted to test the efficiency of a single shared IRB compared to multiple site IRBs for a multicenter clinical trial.

B. What are the key findings?

A single shared IRB may be more efficient for multicenter clinical trials.

C. What does this study add to what is already known?

This study highlights the importance of streamlining the IRB process for a multicenter clinical trial to reduce the time, effort, and potential costs required to process and approve IRB protocols.

Table 1.

Outcomes of IRB models used in CHAP trial.

	Shared IRB (N=7)	Individual IRB (N=38)	p-value
Time from initial submission to final approval, days	41 (7–165)	56 (0–183)	0.424 [‡]
Time from initial submission to final approval greater than 60 days: N (%)	2 (29%)	16 (42%)	0.684 [‡]
Number of IRB submission rounds	1 (1–2)	2 (0–6)	0.087 [‡]
Number of stipulations from IRB prior to approval	1 (0–6)	4 (0–70)	0.122 [‡]
Total number of full IRB meetings prior to approval; N (%)			<0.001 [‡]
None	6 (86%)	1 (3%)	
One	1 (14%)	25 (63%)	
Two	0 (0%)	11 (29%)	
Three	0 (0%)	1 (3%)	

[‡]Kruskal-Wallis Test[‡]Fisher's Exact Test

All data are median (range) unless otherwise specified (Hub site=Individual IRB).

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