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BY CECILIA MILFORD, DOUGLAS WASSENAAR, AND CATHERINE SLACK

Research in developing countries is often financed by well-resourced, developed countries and conducted in vulnerable host communities with diverse cultural backgrounds.¹ Moreover, multinational research is frequently conducted according to the regulatory frameworks of wealthier sponsor countries,² which may be inappropriate to host country conditions and raise ethical concerns about potential exploitation of host communities and participants,³ insensitivity to community ethos, the scope of sponsor-investigator obligations, and the appropriate communication of research results to participants.⁴

The capacity of research ethics committees (RECs) in developing countries to review research proposals is also a frequently cited problem.⁵ These RECs, which are required to interpret international ethics guidelines in specific socioeconomic and cultural conditions, often operate in complex environments characterized by power inequalities among government, funders, researchers, and/or communities. In addition to interests of government and other institutions,

money, prestige, custom, or ignorance may influence ethical review,⁶ thereby compromising RECs' independence,⁷ especially where it is difficult to challenge authority and debate complex issues.⁸ Developing country RECs may lack transparency, and conflicts of interest may be present.⁹ Self-appointed private commercial and noncommercial RECs may lack expertise, accountability, and open dialogue.¹⁰ Local expertise, technologies, and financial resources are often constrained.¹¹ There may be few trained and independent personnel in these regions to serve on committees, which could lead to bias and favoritism.¹² High turnover of staff¹³ may impact continuity of expertise. These challenges, although relevant in developed country review,¹⁴ may be more extreme in developing country contexts.

HIV vaccine trials—which are often international collaborations between resource-poor nations and organizations drawn from more resourced countries—may be especially challenging to RECs in developing countries. These trials are designed to test safety, immunogenicity, and efficacy of candidate vaccines in preventing HIV infection (or disease) in healthy, uninfected volunteers. Early phase I



safety trials are conducted with small numbers of low-risk volunteers. Later phase II immunogenicity trials are conducted with larger numbers of volunteers, and phase III efficacy trials are conducted with thousands of volunteers at high risk of infection. All phases are randomized, placebo-controlled, and double-blinded. Host communities are often vulnerable due to poverty, illiteracy, and the stigma associated with HIV/AIDS.¹⁵ The ethical complexities¹⁶ of conducting HIV vaccine trials in developing countries include ensuring meaningful community participation; fair selection of volunteers; sound, culturally sensitive consent processes;¹⁷ monitoring of ongoing social harms; obligations of sponsors to ensure HIV treatment to volunteers who become HIV infected during trials in resource-poor contexts;¹⁸ and ensuring fair access to posttrial benefits, capacity development, and effective products.¹⁹

In response to the complexities of conducting research in developing countries, numerous new initiatives are aimed at increasing capacity for ethical review of health research in such countries.²⁰ These include funding from the WHO-UNAIDS African AIDS Vaccine Programme; the National Institutes of Health's (NIH) Fogarty International Center, the South African Research Ethics Training Initiative (SARETI); the International Research Ethics Network for Southern Africa (IRENSA); the NIH Department of Clinical Bioethics; the Wellcome Trust; the European Commission; the Global Bioethics Forum; and the World Health Organization (WHO). The Pan African Bioethics Initiative (PABIN) aims to support capacity and networking in research ethics in Africa, and the African Malaria Network Trust (AMANET) has been building capacity for African RECs involved in malaria research.²¹ A recent European Union (EU) initiative (Networking

for Ethics on Biomedical Research in Africa—NEBRA) aims to enhance ethics review capacity in West Africa.

Despite these initiatives, little empirical research has been conducted in developing countries to determine REC capacity to review and approve clinical trial protocols,²² including protocols for HIV vaccine trials. Research to date reveals the need to develop appropriate local ethical guidelines²³ and policy,²⁴ to train REC members,²⁵ and to increase REC independence, diversity of membership, and monitoring of approved protocols.²⁶ Other studies indicate that RECs are concerned about the cultural appropriateness of studies, relevance of the research to the host country, and a need for local language consent forms.²⁷ One study found that developing country researchers believed that RECs were more concerned with politics than with protecting the interests of research participants.²⁸

With regard to HIV vaccine research, researchers in Uganda report many social, political, legal, ethical, and behavioral barriers.²⁹ These include public misconceptions and media misinformation, a lengthy review process, and inadequate national regulatory mechanisms.³⁰ In Kenya, reviewers report that they often do not have the training to understand complicated immunology concepts.³¹ In general, African ethics reviewers state that lengthy protocols,³² monitoring protocols, and inadequate funding and ethics capacity training make review difficult.³³

The purpose of our study was to identify perceived resource and capacity building needs of African RECs for the review of HIV vaccine trial protocols. Results should inform the development of focused and cost-effective training initiatives and related research to support protocol review of HIV vaccine trials. Debate of the ethical issues raised by

the RECs is beyond the scope of this article.

Study Methods

Fifteen African countries with identifiable RECs were selected according to their involvement or planned involvement in HIV vaccine trials.³⁴ At the time our study was conducted, both Uganda and Kenya had already conducted HIV vaccine trials. Botswana was preparing for its first trial (which began in June 2003).³⁵ South African committees were reviewing initial protocols (approved in September 2003).³⁶ Tanzania and Cote d'Ivoire had national AIDS vaccine plans. Ethiopia, Senegal, Zambia, Nigeria, Zimbabwe, Malawi, Cameroon, Burkina Faso, and The Gambia were all at different levels of trial preparedness.

Contact details of all RECs in the above-mentioned countries were obtained via snowball sampling. Over 300 potential sources from workshops, web searches, and the U.S. Office for Human Research Protections (OHRP) were contacted to assist with the identification of African RECs. Details were verified for a total of 71 RECs in the 15 selected African countries.³⁷

This study was approved by the University of KwaZulu-Natal's Nelson R. Mandela School of Medicine ethics committee, a local REC. Details of respondent RECs and the countries from which they originated were to be kept confidential in public reports on findings. Confidentiality was assured to enhance accuracy of reporting without fear of publicly being seen as underresourced or lacking capacity to review large international studies. Assuring confidentiality also prevents adverse perceptions of host institutions and national competencies. In keeping with this agreement, our study reports only regional summaries, rather than specific REC or national data.

Self-administered questionnaires

were compiled, drawing on existing scales for self-audit of RECs, including the *European Guidelines for Auditing Independent Ethics Committees*³⁸ and the *Quality Assurance Self Assessment Tool*.³⁹ Additional items were based on challenges identified in the literature. The questionnaire, which is available on request from the authors, consisted of 40 main questions and eight sections (demographics; training; guideline use; REC procedures; laws regulating research; financial and material resources; affiliation; and committee composition). A detailed information sheet informed potential respondents of the aims, risks, benefits, confidentiality, outputs, feedback, and sponsors of the study. Completion of the questionnaire was taken as an indication of consent. No incentives were provided for this study apart from a guarantee of feedback and the indirect prospect of further training, which may have increased response rates.

The questionnaires (English or French) were distributed in late 2002 and early 2003 to chairpersons and/or administrators of 71 RECs. Follow-up telephone calls were made to all contacts to ensure they had received the questionnaire. Questionnaires were redistributed as necessary. Reminder telephone calls were made to those contacts that had requested them.

Either the REC chair or administrator completed all questionnaires, though it is not clear whether they were completed individually or in a group setting. The quantitative data set was analyzed using basic descriptive statistics. Responses to open-ended questions were extracted, coded, and summarized. Each respondent REC was sent a confidential copy of its individual data superimposed on a summary result. This served to verify the analysis and enabled each respondent to compare his or her committee's profile relative to the whole sample.

Study Results

Regional results are presented as percentages to facilitate regional comparisons. However, because of the low number of respondents, exact numbers are also given. Findings specific to HIV vaccine trial protocol review are specified as such. Other results apply to ethical review in general. For the purposes of this research, Southern Africa comprises South Africa, Zimbabwe, Botswana, Zambia, and Malawi; West Africa comprises Nigeria, The Gambia, Senegal, Cote d'Ivoire, Cameroon, and Burkina Faso; and East Africa is Tanzania, Uganda, Ethiopia, and Kenya. Results are presented either as a summary of the whole sample or regionally for either Southern, East, or West African RECs.

There was a 61% response rate (n=43), but 11% (n=8) of those who responded declined to complete the questionnaire. This response rate is considered good for mail surveys that do not undertake efforts to increase responses.⁴⁰ Reported reasons for noncompletion of the questionnaire included perceived lack of involvement in HIV vaccine trials (n=3, 4%), incomplete formation/inactivity of RECs (n=3, 4%), and concerns about confidentiality (n=2, 3%). No further explanations were sought. Two national RECs failed to respond despite numerous follow-ups. The results thus depict 35 RECs from 13 African countries.

The highest response rate was from West Africa (60%, n=6), followed by Southern Africa (54%, n=19) and East Africa (38%, n=10). Because the highest numbers of respondents were from Southern Africa, regional analyses may be skewed. However, percentages are included in an attempt to make these results more relevant.

The results reflect the self-perceived capacity of RECs to review HIV vaccine trial protocols. Due to the length of the questionnaire and the complexity of the data, this arti-

cle focuses only on the structure, function, and independence of RECs, perceived capacity, training needs in relation to HIV vaccine trials, usefulness of guidelines, and resources.

■ **Structure and Functions of Committees.** Medical doctors (40%, n=185) formed the bulk of REC members, with ethicists (1%, n=4) being underrepresented. There were very few lawyers (6%, n=27) or community members (7%, n=30). The remaining committee members included scientists (19%, n=89), nurses (8%, n=39), religious leaders (4%, n=19), and other nondefined personnel. On average, respondent RECs reviewed eight protocols per meeting, with a range from zero to more than 40 per meeting. Thirty-four percent (n=11) of respondent RECs meet monthly, whereas a quarter (n=8) reported meeting on an ad hoc basis.

■ **Financial and Material Resources.** A third of RECs (32%, n=10) reported they received funding, whereas RECs in six of the 12 countries represented had no access to funding. Forty-two percent (n=5) of those RECs that had reviewed HIV vaccine trial protocols received some funding compared with 38% (n=5) of those committees that had not reviewed these types of protocols. At a regional level, 44% (n=8) of RECs in Southern Africa, 25% (n=1) in West Africa, and 11% (n=1) in East Africa reported receiving funding, which came either from levying a review fee, from government, from the affiliated university or institution, or from pharmaceutical companies.

RECs were asked about their access to infrastructure. Although most had access to some resources, over 40% (n=13) did not have dedicated office space. Many only had access to computers, email, and the Internet through institutional and personal support. Two thirds (n=20) had administrative support, an important resource. Almost 42%

(n=5) of RECs with no office space reported limited or no capacity to review HIV vaccine protocols compared with 22% (n=4) of those that did have office space. Of those that had no secretarial support, 50% (n=5) reported limited to no capacity, compared with 21% (n=4) of RECs that had secretarial support. In general, those committees that had reviewed HIV vaccine trial protocols were better resourced than those that had not. Also, the Southern region was best resourced, followed by East Africa, with West Africa having the greatest infrastructure needs.

■ **Perceived Independence.**

When asked whether they believed that RECs in their countries were truly independent, 65% (n=20) responded favorably. Ten percent (n=3) said that some RECs were not truly independent, whereas the remainder were uncertain. Almost 79% (n=15) of RECs with dedicated office space felt that the RECs in their countries were truly independent. In contrast, 58% of RECs without dedicated office space felt that RECs were not truly independent.

Respondents were asked to indicate whether listed factors were challenges to the independence of their committees (Table 1). The most common reported challenge to independence was pressure from sponsors (28%, n=9). Almost 13% (n=4) reported pressure from political powers. There were also perceptions of biased committee members (9%, n=3) and lack of transparency of RECs (6%, n=2). There was one report of bribery and another of unequal treatment of applicants in the review process.

■ **Ethical Guidelines and Legislative Frameworks.**

Respondents were asked to rate the appropriateness of a list of international ethical guidelines for use in their country. Ratings were very appropriate, somewhat appropriate, not really appropriate, or very inappropriate. The UNAIDS guidelines

on HIV vaccine research⁴¹ were rated as very appropriate by 67% (n=18) of respondents. Of the RECs that had actually reviewed HIV vaccine protocols, all but one gave the UNAIDS guidelines the highest rating. Fifty-eight percent (n=18) of respondents said the Declaration of Helsinki guidelines⁴² were very appropriate, whereas 48% (n=14) rated the CIOMS guidelines⁴³ as very appropriate. The Belmont Report⁴⁴ ranked lowest. All committees that had actually reviewed HIV vaccine trial protocols felt that all guidelines listed were very appropriate for use in their countries.

Eighty-four percent (n=30) of respondents said that developing appropriate national guidelines was a priority. The variable use of ethical guidelines across committees, insensitivity to local conditions, and the difficulty of adapting international guidelines to local conditions were all rated as important challenges to the use of guidelines by 70% (n=23) of respondents. A total of 28 RECs from 13 countries indicated that they would value assistance in adapting the UNAIDS HIV vaccine trial guidelines⁴⁵ for local conditions. Knowledge of local legal frameworks governing research was inconsistent and unclear.

■ **Perceived Capacity to Review HIV Vaccine Trial Protocols.** RECs were asked to rate their perceived

capacity to review protocols for HIV vaccine trials on a rating scale of “excellent-good-moderate-limited-no capacity.” Capacity was not defined. Of the 81% (n=26) of respondent RECs that had reviewed clinical trial protocols, 38% (n=12) said they had reviewed protocols for HIV vaccine trials. However, 66% (n=21) reported that they would be reviewing such protocols in the future.

RECs reported varying levels of perceived capacity to review HIV vaccine trial protocols. Only one REC reported excellent capacity to review these protocols. Forty-three percent (n=13) reported moderate capacity to review these protocols, whereas almost a third (30%, n=9) reported limited to no capacity. Significantly, more than 70% (n=22) reported moderate, limited, or no capacity to review HIV vaccine trial protocols.

Of the RECs that had experience reviewing protocols for HIV vaccine trials, 45% (n=5) reported that they had good to excellent capacity to review such protocols, whereas 18% (n=2) felt they had limited capacity to do so. Of the RECs that did not have such experience, 21% (n=3) said they had good to excellent capacity to review protocols for HIV vaccine trials. All RECs, except the one that reported excellent capacity, agreed that a lack of training in ethics applied to HIV vaccine trials was a challenge.

Table 1.

Perceived Challenges to Independence of RECs

Issues	Agree	Disagree	Uncertain
Pressure from sponsors	28% (n=9)	63% (n=20)	9% (n=3)
Pressure from political powers	13% (n=4)	75% (n=24)	12% (n=4)
Biased committee members	9% (n=3)	72% (n=23)	19% (n=6)
Lack of transparency of RECs	6% (n=2)	75% (n=24)	19% (n=6)
Offers of favor/money to RECs	3% (n=1)	81% (n=26)	16% (n=5)
Unequal treatment of applicants in review	3% (n=1)	84% (n=27)	13% (n=4)

Regional differences emerged in reported capacity to review protocols for HIV vaccine trials. Overall, self-reported capacity for the excellent to good range was higher in some RECs in Southern and East Africa than in West African RECs. Thirty percent (n=5) of RECs in Southern Africa, 33% (n=3) in East Africa, and no West African RECs reported good or excellent capacity to review HIV vaccine trial protocols. For the moderate to limited range, 50% (n=2) of West African RECs reported moderate capacity and 50% (n=2) reported limited capacity. For Southern African RECs, 53% (n=9) reported moderate capacity and 18% (n=3) reported limited capacity. Moderate review capacity was reported by 22% (n=2) of East African RECs, and limited capacity by 33% (n=3). The only region with RECs reporting no capacity to review HIV vaccine trial protocols was East Africa (n=1, 11%).

■ *Perceived Training Needs.*

Less than half (40%, n=49) of all members received ethics training prior to joining their committees, while just over half (52%, n=69) had received training after assuming their position on the committees. Although 29% (n=6) of chairs received some training in ethics involving HIV vaccine research, only 6% of ordinary members had received any training in this area.

Respondents rated the importance of 20 listed training needs as very important, quite important, not so important, or unimportant. At least 60% of RECs viewed all training needs issues as important overall (combined ratings of very important and quite important), though at least 90% agreed on the importance of eight training needs: 1) scientific aspects of HIV vaccine trials; 2) determinations to run phases; 3) potential risks of HIV vaccine research; 4) appropriate risk reduction techniques; 5) posttrial access to benefits; 6) placebo-controlled trials; 7) monitoring and oversight; and 8)

vaccine product not meeting prevailing subtype (clade) (Table 2).

Even RECs that have reviewed HIV vaccine trial protocols viewed these issues as important, with 100% of these RECs identifying scientific trial issues and determinations to run phases as important training needs. Other scientific aspects, such as placebo-controlled trials and the clade of the vaccine, were viewed as important by 92% (n=11 and n=12, respectively) of the committees that had reviewed protocols for HIV vaccine trials. Monitoring and oversight (91%, n=10) and social and behavioral studies (90%, n=9) were also rated as important by a high proportion of these committees. The issues that received lower rankings by RECs overall included the selection of minors as subjects (75%, n=24), community participation (69%, n=20), and privacy and confidentiality (60%, n=18). Of the committees with experience reviewing HIV vaccine trials, 55% (n=6) said that privacy and confidentiality were important for training, and 50% (n=5) said the same for community participation (Table 2).

A few committees rated some issues as unimportant. These included participant selection in vulnerable populations (n=2), women (n=2), and minors (n=2); assessment of understanding in informed consent (n=2); community participation (n=2); access to treatment for HIV infection (n=1); privacy and confidentiality (n=1); cultural sensitivity to informed consent (n=1); placebo-controlled trials (n=1); and incentives for participation (n=1). It is not clear whether an “unimportant” rating demonstrated that these RECs have adequate training in such issues, or whether they are unaware of the significance of such issues.

■ *Challenges to RECs.*

Respondents were also asked whether they agreed or disagreed that certain general issues presented challenges. Overall, 97% (n=30) agreed that committee members had

inadequate training in the ethics of HIV vaccine trials. Slightly fewer RECs that had reviewed HIV vaccine trial protocols (91%, n=10) agreed. Over 87% (n=27) of all respondents and 73% (n=8) of those that had reviewed HIV vaccine trial protocols agreed that there was a lack of general and sufficient ongoing training for members in health research ethics. Seventy-five percent (n=24) of all respondents agreed that competence to review HIV vaccine trial protocols presented a challenge, whereas 64% (n=7) of those that had reviewed these protocols agreed. Overall, 80% (n=25) of respondents agreed that they had inadequate ability to monitor approved protocols. A higher proportion of RECs that had actually reviewed HIV vaccine trial protocols (91%, n=10) agreed that monitoring approved protocols was a challenge (Table 3).

Discussion

In this study, we examined membership, structure, and training characteristics of RECs in 13 African countries, as well as REC perceived training and capacity building needs. The general finding from this study is that African RECs view their capacity to review HIV vaccine trial protocols as “moderate to limited,” though the rating was more optimistic among committees that had experience reviewing such protocols. Intuitively, the overall reported moderate to limited capacity to review protocols for HIV vaccine trials appears consistent with reported inadequate access to infrastructure and limited funding. Moreover, this self-reported capacity could also be related to the fact that of 152 members of the respondent RECs, only seven (5%) reported receiving training in the ethics of HIV vaccine trials.

Training in “scientific aspects” was identified as the most pressing capacity building need. This matches reported experiences of African committees⁴⁶ and the complexities of

Table 2.
Perceived Training Needs

<i>Training needs</i>	<i>Overall</i>	<i>Southern</i>	<i>East</i>	<i>West</i>	<i>Had not reviewed HIV vaccine trial protocols</i>	<i>Had reviewed HIV vaccine trial protocols</i>
Scientific design issues	97% (n=31)	100% (n=18)	100% (n=9)	75% (n=4)	95% (n=19)	100% (n=12)
Determinations to run phases	97% (n=28)	100% (n=16)	88% (n=7)	100% (n=5)	94% (n=17)	100% (n=11)
Potential risks of HIV vaccine research	97% (n=31)	94% (n=17)	100% (n=9)	100% (n=5)	100% (n=20)	83% (n=11)
Appropriate risk reduction techniques	94% (n=30)	94% (n=17)	88% (n=8)	100% (n=5)	100% (n=20)	83% (n=10)
Post trial access to benefits	94% (n=29)	89% (n=15)	100% (n=9)	100% (n=5)	100% (n=19)	83% (n=10)
Placebo controlled trials	91% (n=29)	84% (n=15)	100% (n=9)	100% (n=5)	90% (n=18)	92% (n=11)
Monitoring and oversight	90% (n=28)	82% (n=14)	100% (n=9)	100% (n=5)	90% (n=18)	91% (n=10)
Vaccine products not prevailing clade	90% (n=27)	88% (n=15)	100% (n=9)	75% (n=3)	89% (n=16)	92% (n=12)
Access to treatment for HIV infection	87% (n=27)	76% (n=13)	100% (n=9)	100% (n=5)	89% (n=17)	83% (n=10)
Potential benefits of HIV vaccine research	87% (n=27)	82% (n=14)	100% (n=8)	100% (n=5)	94% (n=17)	83% (n=10)
Social and behavioral studies	86% (n=25)	75% (n=12)	100% (n=8)	100% (n=5)	84% (n=16)	90% (n=9)
Interpretation of preclinical studies	84% (n=27)	72% (n=13)	100% (n=9)	100% (n=5)	90% (n=18)	75% (n=9)
Subject selection: vulnerable populations	84% (n=26)	76% (n=13)	89% (n=8)	100% (n=5)	84% (n=16)	83% (n=10)
Assessment of cultural sensitivity to consent	81% (n=25)	70% (n=12)	89% (n=8)	100% (n=5)	80% (n=16)	82% (n=9)
Incentives for participation	77% (n=24)	65% (n=11)	89% (n=8)	100% (n=5)	84% (n=16)	67% (n=8)
Subject selection: women	77% (n=24)	70% (n=12)	78% (n=7)	100% (n=5)	84% (n=16)	67% (n=8)
Assessment of understanding for informed consent	77% (n=24)	65% (n=11)	88% (n=8)	100% (n=5)	84% (n=16)	67% (n=8)
Subject selection: minors	75% (n=24)	61% (n=11)	89% (n=8)	100% (n=5)	80% (n=16)	67% (n=8)
Community participation	69% (n=20)	60% (n=9)	66% (n=6)	100% (n=5)	79% (n=15)	50% (n=5)
Privacy and confidentiality	60% (n=18)	56% (n=9)	44% (n=4)	100% (n=5)	63% (n=12)	55% (n=6)

HIV vaccine development.⁴⁷ Research that lacks scientific validity is *de facto* unethical insofar as it exposes participants to risks and inconveniences for no purpose.⁴⁸ Therefore RECs should be assured that research protocols are scientifically valid either via their own review or that of some other body. However, “scientific aspects” is a broad, unrefined category that could

encompass the design of candidate vaccines (e.g., to evaluate risks to volunteers) or the clinical trial itself. It may exclude “scientific” issues, such as interpretation of preclinical studies and clade issues, which were rated as important by slightly fewer RECs (84%, n=27 and 90%, n=27, respectively). The relative importance of this issue could be related to the fact that many of the REC mem-

bers have scientific backgrounds. It is necessary to explore in greater detail those scientific aspects that challenge RECs, perhaps in future workshops or research.

Making determinations to run trial phases was reported as a critical training need by many RECs. This might reflect anxiety around evaluating safety and immunogenicity data to determine whether efficacy trials

Table 3.

Overall Percentage of RECs Agreed Certain Issues Were a Challenge

<i>Issue</i>	<i>Overall</i>	<i>Had reviewed HIV vaccine protocols</i>
Lack of training: HIV vaccine trial ethics	97% (n=30)	91% (n=10)
Lack of ongoing training: Health research ethics	87% (n=27)	73% (n=8)
Lack of training: Health research ethics	87% (n=26)	80% (n=8)
Inadequate ability to monitor approved research protocols	80% (n=25)	91% (n=10)
Competence to review HIV vaccine trial protocols	75% (n=24)	64% (n=7)

are needed. Furthermore, it is often not clear whether trial phases should be implemented in both sponsor *and* host country or host country alone; or whether phase I/II trials that have been conducted in one country should necessarily be repeated in the community or country in which phase III trials are to be conducted.⁴⁹

RECs also expressed the need for training in potential risks of HIV vaccine trials and appropriate harm minimization measures. Estimating the likelihood and magnitude of risks is a notoriously difficult task⁵⁰ routinely expected of RECs. HIV vaccine trials pose physical and psychosocial risks for individuals and host communities ranging from unexpected side-effects to potential stigma and discrimination.⁵¹ The intensity and scope of harm minimization obligations are the subject of some debate.⁵²

Training in posttrial access to benefits was also perceived as important. RECs may need better guidance in evaluating claims of potential benefits,⁵³ including access to knowledge/results (in early trials) or to a product proven beneficial (in later trials). The latter is consistent with other developing country research⁵⁴ and reveals the problems of determining whether access to products should be limited to trial subjects and who will pay for post-trial access. Posttrial benefits may

include capacity development or technology and intellectual property⁵⁵ and have been the subject of debate surrounding Tenofovir and anti-AIDS drugs being tested in clinical trials in Asia and Africa.⁵⁶ These results are consistent with responses of RECs that had reviewed HIV vaccine trial protocols, as were results regarding training in scientific design issues and determination to run phases.

At a regional level, fewer Southern African respondents reported problems with training than East or West African RECs. This may reflect a generally more resourced setting. The fact that West African RECs viewed no issue as unimportant suggests that REC capacity building programs in West Africa should be comprehensive.

Although we found higher levels of ethics training than reported in previous research in selected African and some other developing countries,⁵⁷ it is striking how little training members receive after they start serving on an REC. Our findings indicate a need for general research ethics training for all committee members, and for specific training in HIV vaccine research. Previous research has recommended a focus on conceptual rather than procedural issues in training.⁵⁸

Other studies also report perceived and actual lack of independ-

ence of certain RECs.⁵⁹ Overall, respondents in our study indicated they believed their RECs were truly independent, though they did identify some challenges to their independence. The RECs in our sample may indeed be independent of external influences, though it is also possible that respondents are not aware of these sensitive issues. The fact that RECs from West African countries did not perceive any factors as a challenge to their independence warrants closer investigation.

Poor funding for RECs could have several implications, including inadequate ability to monitor approved research⁶⁰ and poor infrastructure for effective protocol review. The lack of dedicated offices and support for RECs may be a challenge to the functioning and independence of RECs.

Underfunding suggests that ethical review may not be regarded as a core component of research. For ethics to be taken seriously, REC funding should be proportional to the funding of the scientific costs of the trials under review. Careful attention needs to be given to who funds research (government, research institutions, or fees) in order to preserve independence.⁶¹

Limitations of Study

We note several limitations to this study. First, self-report is subject to possible bias. The RECs that responded to our survey may have favorable records and their responses may be in the direction of overreporting resources and safety mechanisms. Alternatively, respondents may overreport their needs and capacity constraints in an attempt to secure funding. Furthermore, this was exploratory research and the questionnaire was not statistically validated. However, it elicited important descriptive data on resources available to African RECs. Another limitation is that respondents were asked to provide

details of all their committee members. The fact that one member responded on behalf of all members may have influenced the accuracy of the results.

The proportionally higher number of RECs in Southern Africa may have introduced a regional response bias. However, this is also indicative of the regional strength and proportional presence of RECs in Southern Africa. Furthermore, some responses might reflect low ethical sensitivity rather than the absence of challenges. This study was not equivalent to an audit, which might be a more accurate though costly way of verifying the reported data. However, it provides preliminary data to focus on in more detailed research.

Although the study may have promoted some reflection on ethical issues, this cannot be verified, as it was not asked. The questionnaire did not ask about the extent to which RECs network with each other. Networking could facilitate capacity building through learning from each other's experiences. The questionnaire itself is unlikely to have promoted networking, although all respondents were invited to make use of the contacts list we posted on the Internet. We have no record of how many RECs actually did so.

Conclusions and Recommendations

That African RECs rated their own capacity to review HIV vaccine protocols as "moderate to limited" suggests that these RECs could benefit from initial and ongoing training. We recommend that training for review of HIV vaccine trials emphasize the ability of RECs to evaluate scientific issues in HIV vaccine development and testing and to make complex risk-benefit determinations. Despite the emphasis on informed consent in the literature,⁶² consent issues were ranked relatively

low by respondents. In order to obtain a rich sense of particular demands, trainers should elicit case examples from attendees prior to workshops.

Although the results from our study depict resources and needs mainly in relation to HIV vaccine research, they may apply more broadly to all HIV prevention research in developing countries. RECs have an underlying need for sound ethics training. While there is a need for ethics training applied to HIV vaccine trials, generic ethics training needs could also be addressed by ethics initiatives and sponsors of ethics training programs. Various global sponsors of research ethics training in Africa should coordinate their efforts to ensure that training suits real needs and reaches appropriate individuals. While not addressed by our study, there is the possibility that a few relatively well-placed REC members are accessing repeated training opportunities with little net gain to overall review capacity where it is most needed. Despite the efforts of many ethics training programs, it remains unclear what impact these programs have had on REC ethics reviews, especially for reviews of protocols for HIV vaccine trials.

Our findings also suggest that other interventions apart from training per se would assist RECs in their core business of protocol review. These include ensuring that RECs have mechanisms for ongoing monitoring of approved protocols, assistance to negotiate with institutions regarding financial support for the REC, support to manage pressure from sponsor institutions, and assistance with developing appropriate national ethical guidelines for HIV vaccine development. We hope that data from the present study will assist with the development of focused and cost-effective initiatives to resource these RECs, as well as give direction for future research.

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