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Understanding constraints and enablers of turnaround time for ethics review: The case of institutional review boards in Tanzania

Mwifadhi Mrisho[1,2,*], **Zaynab Essack**[2,3]

[1]Ifakara Health Institute, P.O. Box 78373, Dar es Salaam, Tanzania

[2]University of KwaZulu-Natal, School of Applied Human Sciences, Psychology. Private Bag X01, Scottsville 3209, Pietermaritzburg, South Africa

[3]Centre for Community-Based Research, Human and Social Capabilities Division, Human Sciences Research Council, South Africa

Abstract

Background—Independent ethics review of research is required prior to the implementation of all health research involving human participants. However, ethics review processes are challenged by protracted turnaround times, which may negatively impact the implementation of socially valuable research. Previous research has documented delays in ethics review in developed and developing countries. This study aimed to determine the extent of variability in turnaround times for protocol review among different IRBs within Tanzania.

Methods—This descriptive cross-sectional study employed a mixed-methods approach, with qualitative and quantitative components. Seven institutional review boards (IRBs) were purposively sampled from the 15 accredited IRBs operational in Tanzania during the study period, April 2017 to April 2018. Quantitative data were analysed using STATA software and qualitative data were analysed thematically.

Results—The median time for review across all IRBs was 32 days, with a range of 1 to 396 days. Qualitative results identified five key themes related to turnaround time from interviews with participants. These included: 1) procedures for receiving and distribution of protocols; 2) number of reviewers assigned to protocols; 3) duration of reviewing protocols; 4) reasons for delayed feedback; and 5) training of REC members.

Conclusion—The study showed that the median days for ethical approval in Tanzania was 32 days. We observed from this study that electronic submission systems facilitated faster turnaround

[*]Corresponding author Ifakara Health Institute, P.O. Box 78373, Dar es Salaam, Tanzania, Tel: +255-22-2774714, Fax: +255-22-2771714, MM: mwifadhi.mrisho@gmail.com.

Authors' contributions

MM collected, analyzed and interpreted the data. He also wrote the first draft of the manuscript. ZE supervised data collection, commented on the analysis and interpretation of the data, and was a major contributor in writing the manuscript. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests

times. Failure to adhere to the submission checklists and guidelines was a major obstacle to the turnaround time.

Keywords

Turnaround time; ethical review in Tanzania; Constraints and enablers of turnaround time; Institution review boards in Tanzania; Delays in approval process

Background

Independent ethics review is a fundamental principle of research ethics. All research protocols involving human participants are typically reviewed by institutional review boards (IRBs) (or research ethics committees (RECs)/ ethics review boards (ERBs), as referred to in some countries) for critical review of the research protocol and accompanying documents, including, data collection tools, informed consent forms, data-sharing plan, investigator CVs, and any other relevant documents related to the study (Kruger, Ndebele et al. 2014; Nyeboer and Page 2017).

The aim of research ethics is to minimise the possibility of exploitation and research fatigue by ensuring that research participants are not merely used but are treated with full respect and dignity while contributing to the improvement of society or knowledge (Ndebele 2011). Ethics review of research proposals followed a history of unethical research during the Second World War, and the Tuskegee Syphilis Study (Thomas and Quinn 1991). Ethics violations in research still persist. For example, as recently as 2014, Facebook employees performed an experiment titled “Massive-scale contagion via social networks” without research participants’ knowledge or consent (Kramer, Guillory et al. 2014), underscoring the continued critical value of research ethics and ethics review.

Independent ethics review of research is required prior to the implementation of all health research involving human participants (Association 2014). The Declaration of Helsinki (1964) stipulated that this committee, comprised of qualified members, should be independent, transparent in its functioning, and located in the host country. IRBs have the authority to approve or reject research protocols depending on the scientific and ethical merit of the research (Silaigwana and Wassenaar 2015). The committee is expected to monitor ongoing research, taking into account laws and regulations of the country where the research is implemented (Association 2014).

There has been unprecedented increases in health research in Africa, potentially straining a relatively weak ethics review system (Nyika, Kilama et al. 2009). Efficient management of time is critical when implementing research with human participants (Kawar, Pugh et al. 2016). Ethics review processes are further burdened by protracted turnaround times. Research has documented increasing delays in the total turnaround times (i.e., total time between submission and approval) with ethics review in both developed and developing countries (Jamrozik 2004; Wald 2004; Warlow 2004; Angell, Bryman et al. 2008; Schwenzer 2008; Cleaton-Jones 2010; Millum and Menikoff 2010; Clarke 2014; Nxumalo 2017)]. For example, a study at 43 sites in the US found that the median time

for IRB approval was 286 days, with a minimum of 52 days and a maximum of 798 days (Greene and Geiger 2006; Petersen, Simpson et al. 2012).

Slow turnaround times impact the commencement of research activities (Gold and Dewa 2005), potentially prolonging the timeline and pressurising the research budget, which may complicate the researcher-funder relationship, threaten the successful completion of projects, and negatively affects researchers' satisfaction with the ethics review process and their ethics compliance (Liddle and Brazelton 1996; Ashcraft and Krause 2007). Time delays can also weaken investigator interest in researching a rapidly emerging problem (Nolen and Putten 2007; Silberman and Kahn 2011).

Research on the ethics review process has documented several constraints. These include the review process being slow, cumbersome and inconsistent (Straight 2009), excessively delaying research (Marsh, McMaster et al. 2008) and demotivating investigators (America 2009). A lack of capacity to review protocols has also been recorded (Emanuel, Wendler et al. 2004; Silberman and Kahn 2011). These constraints contribute to perceptions that IRBs hinder research (Silberman and Kahn 2011) "without clear evidence of effectiveness at protecting human participants" (Grady 2015) p.2.

One of the key pragmatic concerns regarding ethics review relates to slow and variable turnaround times (Mamotte and Wassenaar 2009). There are numerous plausible explanations of variable turnaround times of ethics review (Clarke 2014). According to Gold and Dewa (2005), the process of ethics review at several sites can be overwhelming, time-consuming, and costly (e.g., money for printing documents). According to Adam et al. (2014), researchers lack confidence in the quality of IRBs. Turnaround time is considered a critical metric of the efficiency of IRBs (Adams, Kaewkungwal et al. 2014; Nesom, Petrof et al. 2019). The average turnaround and processing times have been reported in the literature as a key indicator in the assessment of IRB efficiency (Ahmed and Nicholson 1996; Rikkert, Lauque et al. 2005; Candilis 2006; Nelson J. 2013; Adams, Kaewkungwal et al. 2014). Further, Silaigwana and Wassenaar (2016) have documented that efficiency of IRBs depend on many issues including the intricacy of the proposed research, the quality of submitted application, adequacy of financial resources, and the capacity and abilities of the IRB staff (Silaigwana and Wassenaar 2016). The situation is further aggravated when an institution's IRB secretariat has inadequate resources to support the review process (Moore, 2012).

In addition, the effectiveness of IRBs has been undermined because of the IRB system's failure to adapt to the changing research environment (Christian, Goldberg et al. 2002). The current practice for research ethics review, which involves seeking ethics approval from each institution's IRB, is not very conducive to collaborative, multi-country research due to the delays related to the requirement of protocol review in different countries (Gold and Dewa 2005).

In Tanzania, the responsibility to promote research integrity falls within the mandate of the Commission of Science and Technology (COSTECH) (Diyamett, Szogs et al. 2010); however, currently there is an ongoing effort to develop a National Framework for Research Integrity. In the absence of a national framework to guide the conduct of research in

Tanzania, IRBs, where they exist, have been serving that purpose (Tanzania Commission for Science and Technology 2015). With regard to health research, in the mid-1970s, this was managed under the umbrella of the East Africa High Commission, through the East African Medical Research Council (Magesa, Mwape & Mboera, 2011). However, after the collapse of the East African Community, the National Institute for Medical Research (NIMR) was established by an Act of Parliament (No. 23 of 1979) (Magesa, Mwape & Mboera, 2011; United Republic of Tanzania, 1979).

According to Ikingura, Kruger and Zeleke (2007, p. 154), the "national research ethics committee in Tanzania was established in 2002" to function "under the auspices of the Medical Research Coordinating Committee (MRCC)" which is "an overall coordinating body for health research in Tanzania". The MRCC established the National Health Research Ethics Committee (NatHREC) to oversee ethics review, and approve and monitor health research in the country (Ikingura, Kruger et al. 2007). This committee is hosted by and functions under the NIMR. However, in order to increase the efficiency and reduce the delays, NIMR authorized institutions mandated to conduct health research to form IRBs so as to review research proposals for health research. At the time this study was being implemented, there were 15 IRBs accredited by NIMR. The main role of these institutions was to issue clearance certificates for research teams involving Tanzanian researchers. However, research involving external collaborators, should be submitted to NIMR for the approval (Mashalla et al. 2009). The external collaborator/researcher will also be required to apply for a research permit from COSTECH. For clinical trials, approval is required from Tanzania Medical and Device Authority (TMDA).

Given increasing health research across Africa, including Tanzania, there is a need to understand the nature of these constraints and enablers arising from protocol review in order to address the problems encountered (Barchi, Kasimatis Singleton et al. 2014; Kuyare, Marathe et al. 2014). As mentioned earlier, slow turnaround times and time delays with review are chief among the constraints documented with ethics review (Mamotte and Wassenaar 2009; Adams, Kaewkungwal et al. 2014). Authors have recommended further research to verify and explore the element of turnaround time so as to distinguish between pre-review, post-review and pre-approval delays (Mamotte and Wassenaar 2009). To this end, this study aimed to determine the extent of variability in turnaround times for protocol review among different IRBs within Tanzania and identify the key factors that enable or constrain turnaround times of protocol review, in order to inform appropriate interventions.

Methods

This descriptive cross-sectional study employed a mixed-methods approach, with qualitative and quantitative supplementary components. Mixed methods research supports methodological triangulation, therefore improving scientific rigour (Onwuegbuzie and Johnson 2006; Tashakkori and Teddlie 2010; Silverman 2013; Morse 2016).

The quantitative data were obtained retrospectively from databases of seven purposively selected IRBs, namely, the National Health Research Ethics Review Committee (NatREC), Ifakara Health Institute-Review Board (IHI-IRB), Mbeya Medical Research Ethical

Committee, Muhimbili University of Health and Allied Sciences Ethical Committee (MUHAS), Kilimanjaro Christian Medical University Collage Ethical Committee (KCMC) and Catholic University of Health and Allied Sciences Ethical Committee (CUHAS). However, some of the protocols had incomplete records and were not included. The study reviewed minutes and records for the protocols submitted between April 2017 and April 2018. Further, key informant interviews were carried out with relevant stakeholders to explore their perspectives on the ethics review processes in the country.

Sample size and data collection process

This study drew its sample from 15 accredited IRBs that existed during the study period. Purposive sampling (Etikan, Musa et al. 2016) was used to select seven IRBs for inclusion in the study to represent the diversity of IRBs, such as those belonging to universities, research institutions and hospitals. In terms of the qualitative sample, seven secretaries and five deputy secretaries of the seven visited IRBs were involved as key informants. The reason for the inclusion of deputy secretaries was to get supplementary information from different section/departments of the visited IRBs. In addition, nine members of IHI-IRB were involved in this study, as well as ten IHI investigators. Only one of the approached IHI-IRB members refused to participate. A list of IHI principal investigators (PI) who had submitted protocols in the previous year was developed and the PI of every fifth application was randomly selected to participate in the study. From that list, those who agreed to participate were consulted for an interview, guided by a semi-structured interview guide. The interview guide used for this study was developed by the authors and pre-tested prior to data collection. The interviews were conducted in Swahili language. Interviews lasted approximately one hour, and were audio-recorded with participants' consent. In this study, we also developed a tool (data extraction sheet) with the following information: Serial Number, protocol title, PI, date received comments, and date of the approval of the protocol (Appendix 6). This tool was used to extract data in from the visited IRBs and the information generated helped to calculate the turnaround time.

Data analysis

Quantitative data were analysed using Stata software, version 10 (StataCorp 2007). Descriptive statistics were conducted to determine the extent of variability in turnaround time for ethics review of protocols among different IRBs within Tanzania. This study also assessed the time taken from submitting protocols to receiving feedback or ethics approval.

Qualitative data were analysed using thematic analysis (Braun and Clarke 2006). All audio recordings were transcribed verbatim, and translated into English. The lead author coded and categorised the transcripts according to the themes informed by the study objectives, using Excel software. The Excel spreadsheet was used to distil the qualitative information from the respondents.

Ethics approval and consent to participate

This study was reviewed and approved by the Ethics Review Boards of Ifakara Health Institute (IHI), located in Dar es Salaam (IHI/IRB/No: 002 – 2017), University of KwaZulu-Natal in South Africa (BREC Ref. No. BE089/17), and the National Institute of Medical

Research in Tanzania (NIMR) (NIMR/HQ/R.8a/Vol. IX/2534). Anonymity of all study participants was ensured by removing all identifying information from analysis and reports. This study was undertaken by an experienced researcher who ensured adequate information about the study was available to research participants. Individual written informed consent was obtained prior to the interview from all participants; it was drawn up in the Swahili language. The informed consent form explained the aim and reasons for the study, any potential risks and benefits, and the anticipated time taken to complete the interview. Participants were given a chance to ask questions during the informed consent process, and they were also informed that they could withdraw from the study at any time without penalty.

Results

Quantitative findings: Turnaround time

Data were reviewed from seven IRBs (as shown in Table 1). Since data obtained from the records were limited for most of the IRBs because of poor record keeping, the results are reported using median time instead of mean days. The average turnaround time for each institution was as follows: IRB 1– 42 median days, IRB 2 – 27 median days, IRB 3 – 63 median days, IRB 4 – 90 median days, IRB 5 – 15 median days, IRB 6 – 21 median days and IRB 7 – 28 median days. IRB 5 and IRB 6 were the best performers in terms of the turnaround time. The median time for review across all IRBs was 32 days, with a range of 1 to 396 days (Table 1). The minimum number of days taken across all IRBs was 1 (that means protocols were reviewed on the day submitted), and the maximum was 396 days. In the researcher's observation, turnaround time tended to be shorter in IRBs with good records (such as date of submission, date comments sent or received and date when approval was received), as compared to the IRBs where records were poor.

Qualitative findings: Key factors that enable or constrain turnaround time of reviewing protocols

Qualitative results suggested that five thematic issues related to turnaround time emerged from interviews with participants, namely, 1) procedures for receiving and distribution of protocols; 2) number of reviewers assigned to protocols; 3) duration of reviewing protocols; 4) reasons for delayed feedback; and 5) training of REC members. These will be presented in the following sections.

Procedures for receiving and distributing protocols

This study explored procedures for receiving, distributing and reviewing protocols. Most IRB secretaries acknowledged that protocols are received and checked based on a committee-developed checklist and guidelines. Both hard and soft copies of protocols are received by committees. Protocols led by local PIs are reviewed and approved if they meet requirements as per checklist, but proposals with external collaborators are reviewed and then channelled to NIMR for national approval. Generally, the processes for submitting protocols to IRBs are similar, as described in the quotes below:

> "Based on the checklist, we receive, we check as per checklist; we compile and send protocols to the reviewers." (Secretariat, Participant 1 [P1])
>
> "Four hard copies are submitted. They are registered at registry. In the unit, department of health ethics, protocols are checked based on the checklist. They are given number at the registry. They are stamped at the finance department as confirmation that the fee has been paid." (Secretariat, P3)
>
> "Protocols are received from the PI, checked against the checklist and see if fee has been paid. If the protocol is incomplete, it is returned to the PI for completion." (Secretariat, P6)
>
> "The secretariat receives the protocols and distributes to members; we receive both soft and hard copies. One IRB members is in Pemba Island. There is a requirement of receiving hard and soft copies. The meeting is held on the last Tuesday of the month but there is expedited review as well." (Secretariat, P4)
>
> "Students' proposals are received from Director of Postgraduate Studies, while research proposals from investigators are received direct in this office of research and publication. Proposals from Director of Postgraduate Studies (DPS) are expedited review and proposals from investigators are categorised into two: local PI and external PI." (Secretariat, P5)

IRB members reported that, with soft or electronic submission, documents can be accessed faster compared to hard copy. In addition, one can comment immediately or after reading the protocols. Members also reported that reading a soft copy was easy as one could increase the font size to read according to their preference. Electronic submissions also ensure that protocols reach reviewers without any errors, and reduce the chance of losses. For example, the following typical excerpts from participants were reported:

> "The protocol is accessible; one can do the review at his/her convenient time. The documents are accessed faster than waiting for the hard copies to be delivered. And the inconveniences of having the hard copies handed to the member, while the member is not in the office to receive them; there could be a potential for losses. The electronic copy increases the chance of getting the protocol to the reviewer, conveniently, without any error. Reading through the screen is easy; one can increase the font size and read according to their convenient sight. Writing and sharing the comments is easy; one can respond immediately after or while reading the protocol documents." (Member, P8)

Number of reviewers assigned to protocols

Protocol submissions that met checklist requirements, were assigned to specific reviewers who are expert in the area to consider ethical and technical aspects of the research. Protocols were submitted to at least two or three reviewers at most committees. However, at IHI, ZAMREC and Mbeya IRBs, protocols were always submitted to all IRB members. It usually takes one week between receiving the protocol and the meeting. The circulation of the submitted protocols to the reviewers differed from one institution to the other. At NIMR, MUHAS and KCMC, a respondent reported: "It takes one to three days before the proposal

is assigned to the reviewer" (Secretariat, P6), while IHI, Bugando, ZAMREC and Mbeya IRBs take a week. Thereafter, reviewers were invited to attend a monthly meeting to finalise the review process. At IHI and ZAMREC, for example, protocols were reviewed every Friday and Tuesday of the end of the month, respectively. However, investigators could opt to pay an extra fee for expedited review.

Duration of protocol review

The time between receiving applications and assigning them to reviewers varied by committee from a few days to a week. The duration of protocol review by IRB members across IRBs was reportedly variable, from "one week" (Secretariat P7) to "between two weeks to two months" (Secretariat, P1)

Reasons for delays in turnaound time

i. **Delays related to IRB—**There were some cases where feedback was delayed, especially when protocols were assigned to three reviewers and some of them did not share their feedback with the secretariat timeously. In addition, in some instances, some members did not turn up for the meetings, potentially impacting on quorum requirements and resulting in the postponement of the meetings. Most IRB members volunteer for their role on committees and typically are employed full-time; hence, they have other conflicting responsibilities. The following excerpts describe the details:

> "Reviewers are busy with multiple obligations such as teaching, working in the hospital. So, when you send a proposal to the reviewers, comments are not coming on timely manner until you make several follow-ups; until you notify members, maybe close to the meeting day, so that they can read the proposal." (Secretariat, P6)

> "It depends: maximum of two to three weeks. If the reviewer didn't turn up or provide timely comments, we request another reviewer who attended the meeting to check the proposal. If there is a major issue in the proposal, it will wait for another meeting. If it is not reviewed on time, we give a week and remind the reviewer. However, if is not reviewed on time then the protocol is assigned to someone else." (Secretariat, P5)

> It was also reported that lack of experts to review complicated studies may delay the review process of protocols. In addition, lack of compensation for IRB members' time during review of protocols was highlighted a challenge.

ii. **Delays related to investigators—**In some instances, delays with review were attributed to investigators' failure to adhere to the submission guidelines, which resulted in delays in the timeous review of these protocols. For example:

> "…investigators do not conform with the guidelines eg the application form; submission of Material Transfer Agreement; following the protocol submission format; references; objectives are not SMART." (Member, P4)

> In addition, delays were also reported in terms of investigator responses to comments given by IRBs as reported below: “Yes, members may recommend but changes may take time due to the reasons that are beyond IRB” (Member, P3)

iii. Delay associated with in adequate record keeping—During the desktop review, it was difficult to get exact dates of when the feedback was sent to investigators after review, suggesting inadequate record-keeping. Most of the visited IRBs had no records of the date when the feedback was received from the reviewers or sent to the PI. The IRBs which kept good records, appear to also do well in terms of turnaround time.

iv. Other associated delays in review process—The following commonly raised queries were mentioned by participants. Firstly, requirements at institutional IRB level and the central IRB (NatREC), contributed to delays and duplication of efforts, and made the purpose of parallel submission redundant. The participants reported that an investigator may not submit proposals to the central level (NatREC) until the approval from a local IRB has been obtained. Likewise, other common problems associated with the review process were aligned to data management and dissemination plans which were either not written properly or not included in proposals. In addition, the issues of sample size determination and assumptions, data ownership, storage and data transfer, and hosting of data were among the things associated with the delays. For example, an investigator noted:

> “Material Transfer Agreement (MTA), and Data Transfer Agreement (DTA) should not be the reasons for delaying the project approval at institutional-IRB level whilst it is a legal document that is only recognized when completed and signed by NatREC.” (Investigator, P6)

Other issues raised by the participants related to investigators’ failure to submit accompanying documents and information relevant for ethics review including: a Data Safety and Monitoring Broad (DSMB) charter; specifying local representation of DSMB members for clinical trials; mentioning the amount of blood samples to be drawn; specifying the list of tests to be performed on the collected blood samples; and specifying how the samples would be stored or destroyed after the study.

Likewise, some other important things mentioned by respondents related to the informed consent form (ICF). Participants said that most of the protocols did not specify or justify how participant’s time would be compensated, the roles of each partner and/or contact information for the IRB. In addition, ICFs did not include critical elements such as risks, benefits or purposes of the study:

> “Issues about compensation is sometimes nowhere to be seen in the protocol or in the ICF. It may sometimes appear in the ICF but not in the protocol. In addition, the roles of each partners are not well specified and also lack of approvals from other review boards. Most protocols lack contact of the independent person from the IRBs and other ICF are not comprehensive enough to include issues such as risk, benefit and the purposes of the study.” (Member, P2)

In summary, majority of the participants reported that the most raised queries when reviewing protocols were found in the methodology, dissemination and ICF sections. Issues

in research questions and objectives not being Specific, Measurable, Attainable, Realistic, Time bound (SMART) were also reported by some participants.

Training of REC members

Most of the IRBs reported having trained their members using different approaches. However, for those whose new members had not been trained, it was reported that plans were underway to train them. Most of the members had completed online and short-term training organised by the NIMR NatREC, MUHAS and IHI. In addition, other avenues for training of IRB members involved participation in GCP training, whenever there was a clinical trial project training its team. Some of the members reported having qualitative research skills. This means that the secretariat would have consult external experts, potentially delaying the review process:

> "Mainly online training such as www.TREE.org. We are invited by other colleagues e.g. MUHAS and NIMR. Last training was 2017." (Secretariat, P1)

> "Last time members' training was 2008 (GCP training). However, different members have participated in different training, such as MUHAS and IHI, at different times." (Secretariat, P4)

> "Yes, we had training to review qualitative research, but I don't remember exactly the date. But in 2017, we did refresher training for the members recruited in 2016." (Secretariat, P5)

> "Most of the time, we use projects to train members whenever they train GCP to their project personnel. Likewise, there is online training such as Collaborative Institutional Training Initiatives (CITI) which provide certificates." (Secretariat, P6)

Discussion

The aim of this study was to determine the extent of variability in turnaround times for ethics review of protocols among different IRBs in Tanzania. This was an important goal for this study because knowing the turnaround time will not only help the investigators to plan for their studies but also help the regulators to evaluate and improve their services. The median time for ethics review across the visited sites was 32 days, which is consistent with other studies (Silverman, Hull et al. 2001; Clarke 2014; Kramer, Guillory et al. 2014; Caligiuri, Allen et al. 2017; Nxumalo 2017; Fontanesi, Magit et al. 2018). However, the maximum number of days for review ranged from 97–396 days.

Explanations for this discrepancy were attributed to delays in receiving comments from the reviewers, delays in receiving comments from the IRB and delays in PI responses to the comments. With the availability of better records, it could help to provide a clearer picture as to whether delays are attributable to the IRB or the investigator. In another study it was argued that the variation related to the turnaround time may be associated with the workload of reviewing protocols among the IRBs (Maskell, Jones et al. 2003; Nxumalo 2017; Nyeboer and Page 2017). This study suggests that the observed variability might have been attributable to differences in PIs receiving feedback from the secretariat and

responding to these. Tensions between investigators and IRBs have been reported elsewhere (Kramer, Guillory et al. 2014), due to the time taken to review protocols and its implication in initiation of research projects. Delay in receiving approval was mentioned as the main concern by most investigators (Kramer, Guillory et al. 2014; Nxumalo 2017; Nyeboer and Page 2017).

Turnaround time has been proposed as among the parameters to measure the quality of an IRB's work (Kramer, Guillory et al. 2014). However, the findings of this study do not provide conclusive reasons for the delays and whether they originate from the investigators or IRB. According to Nxumalo (2017), "the time taken by researchers to respond to the queries was the largest component of the pre-approval delay period and ended up affecting the whole review process turnaround time" (Nxumalo, 2017, p.32). It is therefore recommended that IRBs record the turnaround time as a parameter of quality in measuring IRB performance as proposed elsewhere (Caligiuri, Allen et al. 2017; Nxumalo 2017; Fontanesi, Magit et al. 2018). Importantly, IRBs should record turnaround time components, including pre-approval review, PI responses and post-response review time-periods. Still, these metrics typically focus on questions of structure and process, and may not necessarily reflect the IRB's actual outcome on the practice of study (Adams, Kaewkungwal et al. 2014; Kawar, Pugh et al. 2016).

The study also explored the key factors that enabled or constrained turnaround time of reviewing protocols in different IRBs. This study looked at the procedures for submission of protocols, assigning of protocols to the reviewers, duration it took to assign and review protocols, reasons for delayed feedback as well as training of IRB members across the visited IRBs. With regard to the procedures, most respondents who were the IRB secretaries acknowledged that protocols are received and checked based on the institution's checklist and the guidelines adapted from the NatREC [48]. In this study, one bottleneck to review related to some investigators failure to adhere to the checklist or guidelines, which is in line with other research (Getz, Zuckerman et al. 2011; Nyeboer and Page 2017). Many frustrations associated with delay in ethical review process could be reduced if applicants were educated to correct their proposals at earliest time of submission (Nxumalo, 2017; Wassenaar & Slack, 2016)

In IRB meetings, decisions were made by consensus. However, in some instances member absence resulted in an insufficient quorum, and hence postponement of the meetings, as documented elsewhere (Kass, Hyder et al. 2007). Generally, looking into the procedures for submission of protocols to the secretariat of the IRBs showed that these were more or less the same across IRB institutions in Tanzania and beyond (Ikingura, Kruger et al. 2007; Getz, Zuckerman et al. 2011). Delays and obstacles to the commencement of research projects associated with IRB procedures and their lack of consistency and efficiency have also been reported elsewhere (Hyman 2007; Klitzman 2008; Silberman and Kahn 2011; Klitzman 2012; Lidz, Appelbaum et al. 2012; Lidz and Garverich 2013; Kano, Getrich et al. 2015; Caligiuri, Allen et al. 2017; Nxumalo 2017; Nyeboer and Page 2017).

With regard to training of the IRB members, most of the IRBs reported that plans were underway to train new members. However, this was not guaranteed, as most of the IRBs

had limited resources and training opportunities (Krefting 1991; Kass, Hyder et al. 2007; Klitzman 2008; Ndebele, Wassenaar et al. 2014; Caligiuri, Allen et al. 2017; Mokgatla, IJsselmuiden et al. 2018). Most of the members had attended online and short-term training organised by the NIMR-NatREC, MUHAS and IHI. In addition, other avenues for training of the IRB members included GCP and online training in their institutions. In this regard, it is of paramount importance for the IRB members to be properly trained, and they must be supported to accomplish the important responsibilities of protecting potential research participants (Ikingura, Kruger et al. 2007; Ndebele, Wassenaar et al. 2014; Caligiuri, Allen et al. 2017; Nxumalo 2017; Mokgatla, IJsselmuiden et al. 2018). The secretariat in each of the visited IRBs should therefore ensure that IRB members benefit from regular training in order to protect the research participants. There are a number of online training opportunities for IRB members available, including Training and Resources in Research Ethics Evaluation (TRREE, n.d.), Collaborative Institutional Training Initiative (CITI program) and Protecting Human Research Online Training (PHRP).

Limitations of the study

Precautions should be taken when generalising the results of the study as it was carried out in only seven IRBs in Tanzania. Some of the protocols had incomplete records and these were excluded from the study. Likewise, data on the date when the feedback was provided to the PI was only available from a few IRBs; hence, differentiating different elements of turnaround time was not possible in this study. Therefore, results are not delineated according to whether the delay was aggravated by the IRB or investigators. Further studies will need to look at delays caused by both investigators and IRB members, and the implications for the review process. In the selection of protocols, the review category was not considered and this could have introduced bias in the turnaround time. For example, some IRBs reported same day turnaround times which may only be applicable for those protocols submitted as an expedited review.

Although this study was carried out in only a few IRBs and with limited records, the findings may nevertheless be generally applicable to other settings of Tanzania and beyond the borders. This study identified important factors that enabled or constrained turnaround time of reviewing protocols in different IRBs in Tanzania. Our efforts to triangulate results from various data sources were intended to maximise reliability of the results and lessen possible bias (Krefting 1991). Despite these potential concerns, the information provided will assist in planning a basis for monitoring the efficiency of IRBs in Tanzania.

Conclusion

This study highlighted important issues which need to be addressed in order to improve the turnaround time of protocol review in Tanzania and beyond. Participants in this study reported that electronic submission systems reduced delays and the workload of REC members compared to using a paper-based system. Failure of investigators to adhere to the submission checklists and guidelines also resulted in longer turnaround times. Delays in turnaround time to full approval were identified on the part of both the IRB

and investigators. Timely review is critical in ensuring that socially valuable research is implemented for the improvement of Tanzanian health systems and services.

Best Practices

Conclusion and recommendations

The evidence from this study indicates that most protocols are reviewed within approximately one-month of submission. However, some protocols were reported to take as long as a year to receive ethics approval which might impact the delay in start of the research in the country. This underscores an urgent need to address the issues related to the delays in approval process in order to improve the turnaround time in Tanzanian IRBs. There are four broad recommendations, presented below.

Recommendations for investigators

Investigators should adhere to the submission checklist and guidelines to avoid delays in the ethical approval process. Failure to adhere to the submission guidelines may result in delays in reviewing protocols in a timely manner. Adams et al. (2014) reported that the main factors causing delays were from the investigator's side in responding to the comments in a timely manner. It is therefore important for the investigators to respond to comments from the IRB in a timely manner to avoid unnecessary delays which may impede the review process.

Recommendations for IRB secretariat

It is also recommended that IRBs keep complete and accurate records and develop a clear template that may yield important information. This information may include the following: the submission date of the protocol, date reviewed, date when the comments were sent to investigators, date responses from investigators were received and date when full approval was granted. It is also recommended that IRBs develop their own electronic submission system as this can reduce the workload of using a paper-based system and therefore help to reduce the turnaround time. Likewise, authors (Caligiuri, Allen et al. 2017) have suggested an analytical framework for IRB quality improvement that considers adequacy of infrastructure, benchmarking and supportive technology be implemented.

Recommendations for capacity-building

Timely provision of feedback to investigators was noted as an important issue in the increasing performance of IRBs. Plans for updating standard operating procedures and guidelines should be in place for IRBs.

Recommendations for regulators or policy-makers

In Tanzania, the task to promote research integrity falls within the mandate of the Commission of Science and Technology (COSTECH) (Tanzania Commission for Science and Technology 2015); however, currently there is an ongoing effort to develop the National Framework for Research Integrity. In the absence of a national framework to guide the conduct of research in Tanzania, IRBs (where they exist) have been serving that purpose (Tanzania Commission for Science and Technology 2015). It is therefore recommended that

the Commission direct some funding that will assist in capacity-building for IRB members and monitoring of the already approved protocols.

Research Agenda—In this study we could not conclude which of the two sides, IRBs or investigators, caused delays. It is therefore recommended that future research explores the time from protocol submission to approval, taking into account when responses are provided. A further potential study area is to find out whether the complexity or type of protocols submitted to IRB contributes to the delays.

Educational Implications—This study is an attempt to documented increasing delays in the total turnaround times with ethics review in both developed and developing countries. This study aimed to determine the extent of variability in turnaround times for protocol review among different IRBs within Tanzania. This descriptive cross-sectional study combined two approaches, qualitative and quantitative components and represented IRBs belonging to universities, research institutions and hospitals. The study highlighted the need for capacity building on reviewing complex protocols for the IRB members and advised the secretariat to use E-Systems. Moreover, it suggests for ongoing training to both IRB members and investigators in order to improve the turnaround time.

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Appendix 6:: Data Extraction Tool

S/N	Protocol title	PI	Date Submitted	Date received comments	Date received approval

S/N	Protocol title	PI	Date Submitted	Date received comments	Date received approval

REFERENCES

Adams P, Kaewkungwal J, et al. (2014). “Is your ethics committee efficient? Using “IRB Metrics” as a self-assessment tool for continuous improvement at the Faculty of Tropical Medicine, Mahidol University, Thailand.” PloS one 9(11): e113356. [PubMed: 25406085]

Ahmed A and Nicholson KG (1996). “Delays and diversity in the practice of local research ethics committees.” Journal of medical ethics 22(5): 263–266. [PubMed: 8910776]

America I. D. S. o. (2009). “Grinding to a halt: the effects of the increasing regulatory burden on research and quality improvement efforts.” Clinical Infectious Diseases 49(3): 328–335. [PubMed: 19566438]

Angell EL, Bryman A, et al. (2008). “An analysis of decision letters by research ethics committees: the ethics/scientific quality boundary examined.” BMJ Quality & Safety 17(2): 131–136.

Ashcraft MH and Krause JA (2007). “Social and behavioral researchers’ experiences with their IRBs.” Ethics & Behavior 17(1): 1–17.

Association, G. A. o. t. W. M. (2014). “World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects.” The Journal of the American College of Dentists 81(3): 14. [PubMed: 25951678]

Barchi F, Kasimatis Singleton M, et al. (2014). “Fostering IRB collaboration for review of international research.” The American Journal of Bioethics 14(5): 3–8.

Braun V and Clarke V (2006). “Using thematic analysis in psychology.” Qualitative research in psychology 3(2): 77–101.

Caligiuri M, Allen K, et al. (2017). “A multisite study of performance drivers among institutional review boards.” Journal of clinical and translational science 1(3): 192–197. [PubMed: 29093967]

Candilis PJL, Arnold Charles W, Robert M; (2006). “The need to understand IRB deliberations.” IRB: Ethics & Human Research 28(1): 1–5.

Christian MC, Goldberg JL, et al. (2002). “A central institutional review board for multi-institutional trials.” New England journal of medicine 346(18): 1405–1408.

Clarke DL (2014). “Auditing the process of ethics approval for Master’s degrees at a South African university.” South African Journal of Bioethics and Law 7(1): 23–25.

Cleaton-Jones P (2010). “Process error rates in general research applications to the Human Research Ethics Committee (Medical) at the University of the Witwatersrand: A secondary data analysis.” South African Journal of Bioethics and Law 3(1): 20–24.

Diyamett B, Szogs A, et al. (2010). The making of the Tanzanian Science, Technology and Innovation System: Past, Present and Proposed Future Direction. International Conference: Making Innovation Work for Society.

Emanuel EJ, Wendler D, et al. (2004). "What makes clinical research in developing countries ethical? The benchmarks of ethical research." Journal of Infectious Diseases 189(5): 930–937.

Etikan I, Musa SA, et al. (2016). "Comparison of convenience sampling and purposive sampling." American journal of theoretical and applied statistics 5(1): 1–4.

Fontanesi J, Magit A, et al. (2018). "Systems approach to assessing and improving local human research Institutional Review Board performance." Journal of clinical and translational science 2(2): 103–109. [PubMed: 31660223]

Getz KA, Zuckerman R, et al. (2011). "Measuring the incidence, causes, and repercussions of protocol amendments." Drug information journal: DIJ/Drug Information Association 45(3): 265–275.

Gold JL and Dewa CS (2005). "Institutional review boards and multisite studies in health services research: is there a better way?" Health services research 40(1): 291–308. [PubMed: 15663714]

Grady C (2015). "Institutional review boards: purpose and challenges." Chest 148(5): 1148–1155. [PubMed: 26042632]

Greene SM and Geiger AM (2006). "A review finds that multicenter studies face substantial challenges but strategies exist to achieve Institutional Review Board approval." Journal of clinical epidemiology 59(8): 784–790. [PubMed: 16828670]

Hyman DA (2007). "Institutional review boards: is this the least worst we can do." Nw. UL Rev. 101: 749.

Ikingura J, Kruger M, et al. (2007). "Health research ethics review and needs of institutional ethics committees in Tanzania." Tanzania Journal of Health Research 9(3): 154–158.

Jamrozik K (2004). "Research ethics paperwork: what is the plot we seem to have lost?" Bmj 329(7460): 286–287. [PubMed: 15284159]

Kano M, Getrich CM, et al. (2015). "Costs and inconsistencies in US IRB review of low-risk medical education research." Medical education 49(6): 634–637. [PubMed: 25989411]

Kass NE, Hyder AA, et al. (2007). "The structure and function of research ethics committees in Africa: a case study." PLoS Med 4(1): e3. [PubMed: 17253898]

Kawar LN, Pugh DM, et al. (2016). "Understanding the role and legal requirements of the institutional review board." Clinical Nurse Specialist 30(3): 137–140. [PubMed: 27055033]

Klitzman R (2008). "Views of the process and content of ethical reviews of HIV vaccine trials among members of US institutional review boards and South African research ethics committees." Developing world bioethics 8(3): 207–218. [PubMed: 19046258]

Klitzman R (2012). "From anonymity to "open doors": IRB responses to tensions with researchers." BMC research notes 5(1): 1–11. [PubMed: 22214347]

Kramer AD, Guillory JE, et al. (2014). "Experimental evidence of massive-scale emotional contagion through social networks." Proceedings of the National Academy of Sciences 111(24): 8788–8790.

Krefting L (1991). "Rigor in qualitative research: The assessment of trustworthiness." American journal of occupational therapy 45(3): 214–222.

Kruger M, Ndebele P, et al. (2014). Research ethics in Africa: a resource for research ethics committees, African Sun Media.

Kuyare S, Marathe P, et al. (2014). "Projects not initiated by investigators: A retrospective analysis of the queries raised by the institutional ethics committees of a teaching hospital." Journal of Postgraduate Medicine 60(1): 46. [PubMed: 24625939]

Liddle BJ and Brazelton EW (1996). "Psychology faculty satisfaction and compliance with IRB procedures." IRB: Ethics & Human Research 18(6): 4–6. [PubMed: 11654744]

Lidz CW, Appelbaum PS, et al. (2012). "How closely do institutional review boards follow the common rule?" Academic Medicine 87(7): 969. [PubMed: 22622205]

Lidz CW and Garverich S (2013). What the ANPRM missed: additional needs for IRB reform, SAGE Publications Sage CA: Los Angeles, CA.

Mamotte N and Wassenaar D (2009). “Ethics review in a developing country: A survey of South African social scientists’ experiences.” Journal of Empirical Research on Human Research Ethics 4(4): 69–78. [PubMed: 19919320]

Marsh J, McMaster W, et al. (2008). “AOA Symposium: barriers (threats) to clinical research.” The Journal of Bone and Joint Surgery. American volume. 90(8): 1769. [PubMed: 18676910]

Maskell N, Jones E, et al. (2003). “Variations in experience in obtaining local ethical approval for participation in a multi-centre study.” Qjm 96(4): 305–307. [PubMed: 12651975]

Millum J and Menikoff J (2010). “Streamlining ethical review.” Annals of internal medicine 153(10): 655–657. [PubMed: 21079221]

Mokgatla B, IJsselmuiden C, et al. (2018). “Mapping research ethics committees in Africa: Evidence of the growth of ethics review of health research in Africa.” Developing World Bioethics 18(4): 341–348. [PubMed: 28470868]

Morse JM (2016). Mixed method design: Principles and procedures, Routledge.

Ndebele P (2011). “Research ethics.” The SAGE handbook of health care ethics. London: Sage: 306–325.

Ndebele P, Wassenaar D, et al. (2014). “Research ethics capacity building in Sub-Saharan Africa: a review of NIH Fogarty-funded programs 2000–2012.” Journal of Empirical Research on Human Research Ethics 9(2): 24–40. [PubMed: 24782070]

Nelson J (2013). “ Assessing Efficiency in Working with an IRB.” Journal of Clinical Research Best Practice 9: 1–4.

Nesom GL, Petrof I, et al. (2019). “Operational Characteristics of Institutional Review Boards (IRBs) in the United States.” AJOB empirical bioethics 10(4): 276–286. [PubMed: 31618119]

Nolen AL and Putten JV (2007). “Action research in education: Addressing gaps in ethical principles and practices.” Educational Researcher 36(7): 401–407.

Nxumalo BC (2017). An examination of timelines in the expedited ethics review process at the University of KwaZulu-Natal, biomedical research ethics committee.

Nyeboer J and Page SA (2017). “Improving the process of research ethics review.”

Nyika A, Kilama W, et al. (2009). “Composition, training needs and independence of ethics review committees across Africa: are the gate-keepers rising to the emerging challenges?” Journal of medical ethics 35(3): 189–193. [PubMed: 19251972]

Onwuegbuzie AJ and Johnson RB (2006). “The validity issue in mixed research.” Research in the Schools 13(1): 48–63.

Petersen LA, Simpson K, et al. (2012). “How variability in the institutional review board review process affects minimal-risk multisite health services research.” Annals of Internal Medicine 156(10): 728–735. [PubMed: 22586010]

Rikkert MO, Lauque S, et al. (2005). “The practice of obtaining approval from medical research ethics committees: a comparison within 12 European countries for a descriptive study on acetylcholinesterase inhibitors in Alzheimer’s dementia.” European journal of neurology 12(3): 212–217. [PubMed: 15693811]

Schwenzer KJ (2008). “Practical tips for working effectively with your institutional review board.” Respiratory care 53(10): 1354–1361. [PubMed: 18812000]

Silaigwana B and Wassenaar D (2015). “Biomedical research ethics committees in sub-Saharan Africa: A collective review of their structure, functioning, and outcomes.” Journal of Empirical Research on Human Research Ethics 10(2): 169–184. [PubMed: 25819759]

Silberman G and Kahn KL (2011). “Burdens on research imposed by institutional review boards: the state of the evidence and its implications for regulatory reform.” The Milbank Quarterly 89(4): 599–627. [PubMed: 22188349]

Silverman D (2013). Doing qualitative research: A practical handbook, SAGE publications limited.

Silverman H, Hull SC, et al. (2001). “Variability among institutional review boards’ decisions within the context of a multicenter trial.” Critical care medicine 29(2): 235. [PubMed: 11246299]

StataCorp L (2007). “Stata data analysis and statistical Software.” Special Edition Release 10: 733.

Straight TM (2009). “Clinical research regulation: challenges to the institutional review board system.” Clinics in dermatology 27(4): 375–383. [PubMed: 19539166]

Tanzania Commission for Science and Technology (2015). “Institutional Review Boards Survey Report”.

Tanzania Commission for Science and Technology (2015). “Institutional review boards survey report. Retrieved from http://www.costech.or.tz/documents-and-publications.”

Tashakkori A and Teddlie C (2010). Sage handbook of mixed methods in social & behavioral research, sage.

Thomas SB and Quinn SC (1991). “The Tuskegee Syphilis Study, 1932 to 1972: implications for HIV education and AIDS risk education programs in the black community.” American journal of public health 81(11): 1498–1505. [PubMed: 1951814]

Wald DS (2004). “Bureaucracy of ethics applications.” Bmj 329(7460): 282–284. [PubMed: 15284157]

Warlow C (2004). Clinical research under the cosh again, British Medical Journal Publishing Group.

Table 1:

Turnaround time for reviewing protocols in Tanzania: April 2017 to April 2018

IRB name	Number of protocols	Mean (days)	Minimum (days)	Maximum (days)	Median (days)	Standard deviation
IRB 1	48	48	1	147	42	33
IRB 2	80	27.6	12	152	26.5	18
IRB 3	10	63	17	101	63	29
IRB 4	44	114	10	396	90	84
IRB 5	11	55	6	235	15	70
IRB 6	30	26	1	97	21	22
IRB 7	20	44	1	153	28	40
Total	243	51	1	396	32	54