

Global Forum on Bioethics in Research (GFBR): The Ethics of Data Sharing and Biobanking in Health Research

13 – 14 November 2018



**Global Forum on
Bioethics in Research**

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Introduction

Welcome to the Global Forum on Bioethics in Research (GFBR) meeting on the “*Ethics of data sharing and biobanking in health research*”.

Data sharing and biobanking are increasingly being used to support global health research. These approaches have the potential to increase scientific efficiency by maximising the utility of data and samples. However, they also give rise to ethical challenges which are made harder in low- and middle-income country (LMIC) settings due to existing disparities in infrastructure and knowledge.

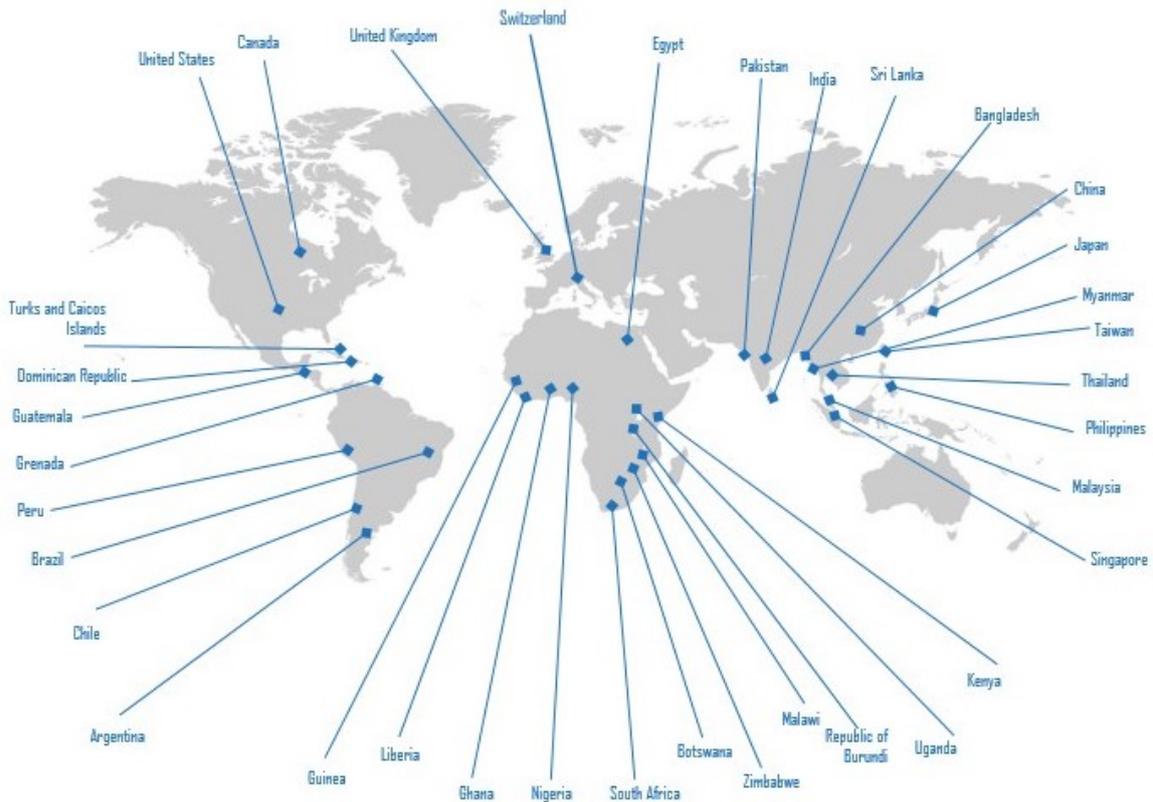
The theme of this meeting provides an exciting opportunity to build on the Forum’s legacy as a global platform for debate on ethical issues in international health research. Specifically, the meeting will bring together the global bioethics and research community and regulators to debate how to foster data sharing and biobanking practice that is equitable and respectful to the interests of those involved, including participants, communities, researchers and funders. These issues are particularly acute in global collaborative research which can give rise to concerns about ownership, control, and sustainability, particularly in LMIC settings. Ultimately if research is to be carried out efficiently, effectively and ethically, there is a need for robust governance practices and for more discussion as to what these processes should be.

We are very pleased to have participants from 36 countries (see map of participants’ countries) and a range of disciplines. We look forward to a meeting where the GFBR can help promote open global dialogue on how to address the challenges - and embrace the opportunities - for sharing data and samples ethically and equitably.

We would like to extend our thanks to our local host the South African Medical Research Council for their support in the preparation of the meeting and for sponsoring the conference dinner. We would also like to thank the Planning Committee of this meeting and the GFBR funders for their continuing support. We very much hope the meeting will be a positive experience for us all.

The GFBR Steering Committee

Anant Bhan, India;
Phaik Yeong Cheah, Thailand;
Katherine Littler, Switzerland;
Paul Ndebele, USA;
Michael Parker, UK;
Rachel Knowles, UK;
Barbara Sina, USA;
Ross Upshur, Canada;
Teck Chuan Voo, Singapore;
Douglas Wassenaar, South Africa;
Carla Saenz, USA
Dan O’Connor, UK.



Members of the GFBR Planning Committee for this meeting:

- Jantina de Vries, South Africa;
- Niresh Bhagwandin, South Africa;
- Calvin Ho, Singapore;
- Athula Sumathipala, UK;
- Susan Bull, UK;
- Claudia Emerson, Canada;
- Naomi Waithira, Thailand;
- Fabiana Arzuaga, Argentina;
- Gloria Mason, Liberia;
- Doug Wassenaar, South Africa;
- Ross Upshur, Canada;
- Katherine Littler, Switzerland.

Map credit: The Pixel/Shutterstock.com

Background to the GFBR

The GFBR is an informal partnership established by a number of organizations with a shared interest in the ethics of conducting research involving people in LMICs. The Forum meets annually, with an emphasis on discussion and the development of networks.

Meetings began in Bethesda, USA in 1999 and subsequently convened in: Bangkok, Thailand in 2000; Cape Town, South Africa in 2002; Brasilia, Brazil in 2002; Paris, France in 2004; Blantyre, Malawi in 2005; Karachi, Pakistan in 2006; Vilnius, Lithuania in 2007; and Auckland, New Zealand in 2008.

Following a period to reflect on the structure and funding of the Forum between 2009-13, the GFBR was re-launched at a satellite meeting of the International Association of Bioethics in Mexico City, Mexico in June 2014. It renewed its emphasis on providing a platform for individuals from LMICs to bring forward ethical issues affecting their research practice for dialogue and discussion. Three full meetings have taken place since the re-launch:

- 'Emerging epidemic infections and experimental treatments', Annecy, France, 2015
- 'The ethics of research in pregnancy', Buenos Aires, Argentina, 2016
- 'The ethics of alternative clinical trial designs and methods in LMIC research', Bangkok, Thailand, 2017

The GFBR fellowships scheme was launched in 2015 and takes place annually. The fourth round of fellowships will be launched at this GFBR meeting (see page 105).

The GFBR aims to provide a global platform to bring together key stakeholders from different geographical, cultural and scientific communities to debate the ethics, legal and public policy issues relating to international health research.

The key values of the GFBR are to:

- promote ethically conducted research;
- promote global development for health research ethics, particularly in LMICs; and
- facilitate partnerships between the global north and south.

GFBR meetings aim to:

- maintain and strengthen the protection of human participants in health research;
- provide a forum for LMIC perspectives on ethical issues in research;
- explore opportunities to enhance capacity for the ethical review of research;
- create a context for scientists, ethicists, community representatives, policy-makers, industry and other relevant stakeholders to collaborate and talk in an environment of mutual cooperation and respect.

These aims are kept under review and refined by the Steering Committee.

Agenda

Tuesday 13 November 2018

07:30	Planning Committee breakfast meeting (Boardroom)
08:00	Registration and posters to be displayed (Conference Centre Auditorium)
08:30	Welcome and introduction Doug Wassenaar, University of KwaZulu-Natal and Niresh Bhagwandin, South African Medical Research Council, South Africa
08:45	Keynote presentations 'How should we share?' Susan Bull, University of Oxford, UK 'Sharing is caring' Akin Abayomi, Global Emerging Pathogen Treatment Consortium
Theme 1	Respecting participants and communities
09:30	Chair: Claudia Emerson, McMaster University, Canada
10 min	Introduction to the theme
20 min	Case Study 1: Participant protection and good data governance for research using routine electronic records from a Health Information Exchange in the Western Cape Province, South Africa Nicki Tiffin, University of Cape Town, South Africa
20 min	Case Study 2: Respect for participants and communities: Education with cultural adequacy to conduct research in indigenous Peruvian communities about shared data and biobanking Agueda Munoz del Carpio Toia, Universidad Catolica de Santa Maria, Peru
20 min	Discussion
35 min	Breakout group discussion
11:15	<i>Tea/coffee break</i>
Theme 2	Advancing good governance – national developments
11:45	Chair: Doug Wassenaar, University of KwaZulu-Natal, South Africa
10 min	Introduction to the theme
20 min	Case Study 3: Taiwanese experience in data sharing in biobanking Michael Tai, Chungshan Medical University, Taiwan

20 min	Case Study 4: Establishment of the National Biorepository in Uganda: Some regulatory and ethical uncertainties Hellen Nasumba, Central Public Health Laboratories, Uganda
20 min	Discussion
35 min	Breakout group discussion
13:30	Lunch
Theme 3 14:30	Advancing good governance – international aspects Chair: Athula Sumathipala, Keele University, UK
10 min	Introduction to the theme
20 min	Case Study 5: Twenty years of ethical challenges in setting up and maintaining a twin registry and biobank in Sri Lanka Buddhika Fernando, Institute for Research and Development, Sri Lanka
20 min	Case Study 6: Rumours and fears endanger feasibility of biobanking in Liberia: Culturally-congruent standards are needed to ensure trustworthiness Mandella King, St. Joseph's Catholic Hospital, Liberia
20 min	Discussion
15:40	<i>Tea/coffee break</i>
16:10	Breakout group discussion (Theme 3 continued)
16:45	Pecha Kuchas Chair: Barbara Sina, Fogarty International Centre, USA <ul style="list-style-type: none"> • 'Zika in infants and pregnancy: Conducting research in the setting of a public health emergency' Regina Garcia, Guatemala • 'Case of a prospective protocol on stored blood samples without consent for future use' Ravi Vaswani, India • 'Ethical issues in HIV molecular epidemiology' Farirai Mutenherwa, Zimbabwe • 'Ethics of data sharing and biobanking: A policy paper: Who is the owner of my data?' Vina Vaswani, India • 'A protocol on access to biospecimens and biodata for research in the Caribbean' Derrick Aarons, Turks and Caicos Islands • 'Biobanking in Africa: Could religion and witchcraft create an ethical bottleneck?' Kenneth Onyedibe, Nigeria
17:15	<i>Meeting close</i>
18:15	Meet in the foyer for departure for dinner

Wednesday 14 November 2018

07:30	Steering Committee breakfast meeting (Boardroom)
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08:30	Summary – key themes from day 1 Mike Parker, University of Oxford, UK and Phaik Yeong Cheah, Mahidol Oxford Tropical Medicine Research Unit, Thailand
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Theme 4	Promoting equity
09:00	Chair: Jantina de Vries, University of Cape Town, South Africa

10 min	Introduction to the theme
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20 min	Case Study 7: The ethics of data sharing in the antenatal corticosteroids trial Sunil Vernekar, Jawaharlal Nehru Medical College, India
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20 min	Case Study 8: Research Ethics Committees' request for data sharing plan as part of the ethics review process: Data from the National Research Ethics Committees Survey in the Dominican Republic Julio Canario, National Research Center on Child and Maternal Health, Dominican Republic
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20 min	Case Study 9: The Worldwide Antimalarial Resistance Network's efforts to "level the playing fields" for data sharing by researchers in malaria endemic countries Karen Barnes, University of Cape Town, South Africa
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20 min	Discussion
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30 min	Breakout group discussion
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11:00	<i>Tea/coffee break</i>
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Theme 5	Policy and guidance
11:30	Chair: Calvin Ho, National University of Singapore, Singapore

10 min	Introduction to the theme
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15 min	Presentation 1: A critical reflection on the development of a biobanking governance framework in Argentina Ana Palmero, National Ministry of Health, Argentina
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15 min	Presentation 2: India's national guidelines on biobanking and data sharing and its ethical bearing on Indians Manjulika Vaz, St John's Research Institute, India
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15 min	Presentation 3: Critical review of the current governance framework on research involving human biological specimens in Malawi Wongani Nyangulu, Dignitas International, Malawi
15 min	Presentation 4: Governance of health data sharing in post-Ebola West Africa: Lessons, realities and prospects Alpha Ahmadou Diallo, University of Conakry and Ministry of Health, Guinea
20 min	Discussion
13:00	<i>Group photo and lunch</i>
13:45	Poster session
14:15	Breakout group discussion (Theme 5 continued)
14:50	Panel discussion: Key themes arising from the meeting Chair: Katherine Littler, World Health Organisation Panellists: Theme 1. Susan Bull, University of Oxford, UK Theme 2. Niresh Bhagwandin, South African Medical Research Council, South Africa Theme 3. Ross Upshur, University of Toronto, Canada Theme 4. Naomi Waithira, Mahidol Oxford Tropical Medicine Research Unit, Thailand Theme 5. Fabiana Arzuaga, Ministry of Science, Technology and Productive Innovation, Argentina
16:00	Presentation of poster, Pecha Kucha and GFBR awards and GFBR 2019 announcement Carla Saenz, Pan American Health Organisation, USA and Teck Chuan Voo, National University of Singapore, Singapore
16:15	<i>Meeting close</i>

Case studies

Case study 1: Participant protection and good data governance for research using routine electronic records from a Health Information Exchange in the Western Cape Province, South Africa

Nicki Tiffin^{1,2,3,4} and Andrew Boulle^{3,4}

1 Wellcome Centre for Infectious Disease Research in Africa, University of Cape Town

2 Division of Computational Biology, University of Cape Town

3 Provincial Health Data Centre, Health Impact Assessment, Western Cape Government Health

4 CIDER, School of Public Health and Family Medicine, University of Cape Town

Brief description of the research project

In the Western Cape Province, South Africa, data captured from routine electronic medical records (EMR) and administrative data are updated daily, collated and linked by the Provincial Health Data Centre (PHDC) in a comprehensive, real-time Health Information Exchange. The primary aim of the PHDC is to improve patient continuity of care and health outcomes using these collated data; with a secondary application for epidemiological and clinical research using derived datasets. This project therefore investigates ethics and data governance implications for sharing data from routine EMRs for research purposes; and explores the data governance structure currently implemented at the PHDC.

Background

The Western Cape Province has a population of approximately 6 million, with public sector health services (53 hospitals and 307 clinics) catering for the health care needs of 75% or more of the population. There is a heavy HIV/TB burden of disease as well as an appreciable burden of other health conditions and public health threats, including cardiovascular and metabolic conditions, interpersonal violence and road traffic accidents, and cancers. Because of the low socioeconomic status and precarious economic situation of many South African citizens, many can be considered to belong to vulnerable populations. This is exacerbated by the high prevalence of HIV and TB which can leave many individuals even further disenfranchised.

Routine, individualised medical records (including hospital, primary health care, pharmacy and laboratory databases) are collected by the Western Cape Government Health department (WCGH) on various electronic platforms to facilitate the provision of patient care at facilities. Facility visits, dispensing records and laboratory test results are individual pieces of evidence that, when combined, can also provide a granular, longitudinal dataset for each healthcare client. Such data can be combined to identify specific health conditions for each patient. These episodes can subsequently populate care cascades for each condition in each patient, describing the patient's care journey over time.

Ethical issues

The aim of the PHDC is to maximise individual and public health benefits whilst minimising possible harms, guarding against privacy infringements, respecting legislation, ensuring equity, and minimising the potential for data misuse. Data sharing policies must recognise the fundamental differences between using data with, or without, informed consent from participants. Where informed consent has been given by participants for a researcher to access specific data through the PHDC, the decision to share data is less complicated. Conversely, where no informed consent has been obtained from participants, requests for research datasets from the PHDC must be more carefully considered:

Respecting participants and communities

Data are collected at health care facilities for the sole purpose of providing good health care to clients of the public health system. This engenders a particular trust relationship between the client and the health care provider, as formalised by the Health Act of South Africa. WCGH clients see any health care provider currently available at a facility – so WCGH as an entity rather than an individual provider enters this implicit contract with their client. As per the Protection of Personal Information Act (POPI) in South Africa, the responsible party for the data, in this case the WCGH, is not permitted to repurpose the data for secondary use or to share an individual's data with third parties, without specific consent to do so.

Clearly, public health research and epidemiological studies can contribute significantly to improving the health of individuals and the population by driving evidence-based decision making within the health service; but equally, it seems inappropriate to disseminate an individual's health data – an especially private and sensitive type of personal data – for research without explicit agreement from that individual. Furthermore, deciding what truly benefits individuals and the health of the population is deeply subjective, and researchers are likely to have inherent bias in favour of data-sharing that supports the research enterprise and their own research interests.

Although it may be difficult to initiate this public discussion without promulgating alarm and distrust – especially in the light of current, prominent global cases of personal data misuse^{1,2} – the use of appropriate waiting room media may serve as a starting place to share concepts and ideas around options for health data use, and to open the conversation with clients of the health service.

Promoting equity

Where data can be ethically shared, the responsibility lies with the WCDH to ensure that they are shared with the primary purpose of improving health care and patient outcomes, to the benefit of health clients and/or health services who generated these data. This also requires an awareness of post-colonial tendencies for inequitable data sharing arrangements and 'helicopter science' by predatory researchers who offer no investment in the region, the health service and client outcomes, or data resources.^{3,4,5}

Advancing good governance

Data stewardship by the PHDC requires a strong data governance infrastructure that protects clients and promotes equity. This is implemented within WCGH, with formalised data-sharing guidelines that delineate data-sharing options according to dataset characteristics. These include whether data requests are from within WCGH to directly inform health service operations, or from external researchers such as those at academic institutions; whether participant informed consent and/or Institutional Ethics Review Board approval has been obtained; whether requested data will be anonymised and/or aggregated, and whether there is a risk of re-identification of individuals or stigmatisation of population groups. Currently, identified data will only be released beyond the health service if there is specific informed consent by participants in place. For de-identified or aggregated data, challenges still arise as to how to define the risk to health clients of re-identification due to data granularity or linkage to external datasets.

Conclusions

Going forward, a best-case scenario to work towards is the option at a first consultation within the public health service for each health client to provide, or explicitly withhold, informed tiered consent for (i) use of anonymised EMR for research; (ii) use of identified EMR for research and (iii) future contact from researchers to solicit study participation. Such an approach would need to be undertaken with extensive community engagement and discussion to ensure stakeholder representation. In the interim, other options include an information campaign offering the option to health care clients to opt out of their EMR data being used in anonymised, de-identified or aggregated health data sharing.

References

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5. D. Schroeder, J. Cook, F. Hirsch, S. Fenet, V. Muthuswamy, *Ethics Dumping: Case Studies from North-South Research Collaborations* (Springer International Publishing, 2017)

Case study 2: Respect for participants and communities: Education with cultural adequacy to conduct researches in indigenous Peruvian communities about shared data and biobanking

Agueda Munoz del Carpio Toia, Universidad Catolica de Santa Maria Peru, Peru

Brief description of the research project

The indigenous populations of Peru have a great ancestral cultural richness, but they also suffer from native environmental diseases and have genetic and genomic components that need to be researched. Collecting and biobanking samples from this population could be a great alternative for such research. This case study describes research with 40 Aymaras leaders of both genders from the Peruvian Highland and an educative intervention about biobanking.

The first research objective was to study Aymaras leaders' attitudes and perceptions about using biobanking for research with indigenous communities, and the ethical safeguards that indigenous communities would require before accepting such uses of biological material. The second objective was to assess the impact of an educative program, which used booklets with drawings, videos and socio dramas to provide information about the use of biobanking to find the cause of diseases, improvement of diagnoses and treatment for their communities and about the extraction of ethical aspects, storage and samples' use.

Results

Aymaras leaders were interviewed before and after the educative program, to assess its impact. Before the intervention, 96% of the leaders had objections about their samples' confidentiality, 92% were afraid about who could have access to their samples, 93% about how their information should be used by the researchers, 99% about the access rights of the obtained research results, 89% about how the process of informed consent should be conducted, and almost everyone had several questions about the final destination and destruction of their tissues.

After the educative intervention, the leaders improved their attitudes and perceptions about biobanking and its potential use in research into causes of diseases prevalent in the Aymaras, which could lead to an improvement in diagnoses and treatments for their communities.

Background

In Peru, more than 8 million people are indigenous, the majority of whom are Quechuas and Aymaras living in areas of high geographic altitude such as the Andean region and jungle areas (Amazonia). Multiple forms of research have been conducted in these communities, including social, anthropological and medical studies, including genetic research; research with medicinal plants and vaccines, etc.¹ Peruvian indigenous communities have a great cultural richness, traditions, their own way to conceive of the process of health and sickness. Also, two features of the indigenous populations are important to consider in the researches, the environment where our native populations live and the diseases' genetic components that still need to be researched, being the use of bio specimens a great alternative.

The indigenous communities are exposed to inadequate environmental and sanitary conditions, the presence of infectious diseases' vectors called reemergents, which affect populations and increase their vulnerability. In the last ten years, between 200,000 and 150,000 cases of Vector-borne diseases such as Malaria, arbovirosis, Bartonellosis, Leishmaniosis, Tripanosomiosis, Dengue, Chikungunya, Zika, Carrion Disease, and Chagas disease have been reported.² Indigenous communities also suffer illnesses due to poverty and limited access to health services, including multidrug resistant tuberculosis, malnutrition, anemia and chronic and degenerative diseases.

Nowadays we talk of genetic components related to diseases which could make the populations resistant to treatments for the anemia. For this, it is necessary to raise awareness in the communities about the possibility of developing research that promotes knowledge based on evidence and the use of biobanking, for studies that could contribute with data that could go further than public health.

Ethical issues with commentary on each issue

During this research we conducted focus groups (with community leaders and with Peruvian researchers), to identify the *ethics recommendations*, for biobanking research. The proposed recommendations included:

- Inclusion of indigenous leaders in the development of research proposals for biobanking indigenous samples;
- Ensuring the cultural adequacy of the informed consent with the help of translators and representative leaders of the indigenous communities for the use of secondary samples;
- Using samples to identify solutions for population health priorities;
- Promoting active communication between researchers and the indigenous community about relevant information for the results' return to the community and health system;
- Exchanging data with other institutions with similar indigenous populations;
- Ensuring that the interests of sample donors are protected by promoting data confidentiality, stigmatization prevention, and the right to accept or refuse participation in research with secondary samples;
- Creating organizations and regulations that ensure the ethical storage and destruction of the samples.

Collaborative research with biobanking in indigenous communities can have more benefits than risks if care is taken to promote consent, and maintain the privacy of medical and genetic data.

Commentary

Respect for autonomy and protection of confidentiality are key considerations in research on samples from indigenous communities. Collaborative research with genomic data exchanges related to health could provide solutions to communities with fewer resources for the research. Comprises the principle of justice and equity. It is necessary for ethical oversight of genetic and genomic data to link to the communities, as well as mechanisms of tissue storage and destruction, respecting the beliefs, customs and rituals of a community.

Research ethics committees can be strengthened by promoting active participation of community members and empowerment of institutions that protect shared data of biobanking internationally, and at all stages of the research process including sample collection, storage, study and destruction.

Conclusions

Before implementing research data sharing and biobanking in indigenous communities, it is necessary to develop processes respecting the sensitivity and customs of each culture. Culturally appropriate educative interventions can be effective tools in this context and can have a favorable impact on the acceptance of the use of biobanking in indigenous communities. It is also important to promote culturally appropriate educative programs, focused on indigenous communities and communities in general, about the importance of biobanking research, to sensitize the population. It is also important to provide information about effective measures to protect data confidentiality in the consent process.

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Case study 3: Taiwanese experience in data sharing in biobanking

Michael Tai, Chungshan Medical University, Taiwan

Background

The first biobank in Taiwan was officially established at 2005 in Academia Sinica (AS), the largest and most prestigious research institute in Taiwan. The purpose of this biobank is to discover genetic diseases of Taiwanese people and promote their health. The project aims to recruit two hundred thousand residents to participate. So far more than that number of people has taken part in a cohort study project by providing their personal information, living habits and about half of them have also donated bio-tissues that are deposited in the AS biobank for study. Starting with one biobank, the number of biobank in Taiwan has increased to 31 in the last 13 years. Among them three are population based and others are disease oriented.

The team at AS biobank has published many scholarly papers since its inauguration, mostly in the era of public health or statistical calculation of peoples' health status. But discovering the genetic roots of diseases and finding their cure are not as promising as expected. The Ministry of Health and Welfare under which these biobanks are registered, started evaluation visits to all biobanks two years ago with the intention of finding out whether these biobanks have functioned and produced results as originally expected.

The findings of the visits are that much monetary and personnel resources have been invested but the results are not as promising as originally hoped for. A new attempt thus has been introduced to integrate all biobanks through data-sharing while each biobank maintains its own uniqueness.

Brief description of the Biobank Structural Innovation Project

In order to promote the effectiveness of the biobank the Ministry of Health and Welfare of Taiwan has initiated a structural innovation project to integrate all biobanks in the areas of stored bio-data and information. This project is called the Biobank Integrating Platform. Its purpose is to promote data sharing and shorten the time of scientific and ethical review so that researchers can start their studies with a minimum of delay.

The first step is to create an intranet to gather detailed information on all biobanks' data and make it available to all other biobanks. In this way, each biobank no longer works on its own and is part of an integrated system. Each biobank still functions as originally established but all the bio-data is sent to the integrated platform for circulation to researchers. There is only one window or portal that researchers need to contact when searching for research data.

Secondly, a scientific review committee has been set up to do an initial review of all research protocols and then the biobank's IRB and Ethics and Governance Council (EGC) need only to do an expedited review to facilitate the reviewing process. The fees paid for access to the bio-data will go to the institutional biobank that provided the data.

Ethical issues

1. Before this integrated platform was established, some biobank directors themselves applied to access large amounts of data for their own studies. This has been criticized as a conflict of interest. Should the biobank director or manager be prohibited from using the data in his/her own bank? Is there any conflict of interest violated if he/she uses large amount of tissue from their own biobank material depriving others from access to the repository?
2. Who deserves formal credit when some great finding is discovered from the biobank data – the original institute that provided the sample tissues or the researcher and his/her institute?
3. Will the scientific reviewing committee doing the initial review deprive or undermine the right and duty of oversight of the local IRB/EGC?
4. Privacy of donors – the integrated platform assures donors that their personal identifiers will not be available to any research in order to ensure the protection of human subjects. But doubt has been raised about whether individuals' privacy can be absolutely safeguarded.

5. Charging fees – each biobank has a different scale of charges and some are quite expensive. Researcher, however, often cannot afford to pay the high costs. Should some mechanism be set up to make the samples and data affordable?

Conclusion and recommendations

The establishment of an integrated platform shortens researchers' search for data, ensures the good quality of bio-tissues needed for study, saves resources, enhances the quality of research and promotes the mutual collaboration of work among researchers.

Recommendation and discussion points

1. To address conflict of interest, I recommend that the director or manager of a biobank should be someone who only manages and promotes the use of the biobank instead of being an active scientist who uses the bio-data for research her/himself.
2. Creating a centralized IRB may facilitate the review processes. The system being recommended in Taiwan is to let the central IRB do the first review and, once approved, the local IRB needs only do an expedited review. When issues arise later on, whose responsibility would it be?

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Case study 4: Establishment of the National Biorepository in Uganda: Some regulatory and ethical uncertainties

Charles Kiyaga; Central Public Health Laboratories, Ministry of Health, P.O. BOX 7272, Kampala, Uganda and African Society for Laboratory Medicine, P.O.BOX 5487, Addis Ababa, Ethiopia

Isaac Ssewanyana; Central Public Health Laboratories, Ministry of Health, P.O. BOX 7272, Kampala, Uganda

Hellen Nansumba; Central Public Health Laboratories, Ministry of Health, P.O. BOX 7272, Kampala, Uganda

Brief description of the research project

The National Biorepository was set up in September 2016 out of a need to store human biological specimens to promote low cost public health and academic research. The National Biorepository is owned by the Government of Uganda under the custodianship of Central Public Health Laboratories (CPHL). For the last two years, National Biorepository has sought informed consent for long term storage and use of remnant clinical samples mainly from the centralized reference HIV early infant diagnosis (EID), viral load and isolates of antimicrobial drug resistance surveillance and disease outbreak investigations. A Biorepository Governance Committee has been appointed to oversee the activities of the bio-repository, provide direction on priority samples and to store and regulate access to the repository resources. Plans are underway to create collaborations with universities and research institutions to promote biospecimen access. In addition, the biorepository will provide training in bio-repository science to medical students and health workers.

The purpose of presenting this case is to seek ethical guidance on how to translate remnant clinical biospecimens for research purposes.

Background

In 2006, Uganda adopted a centralized model to scale-up its HIV Early Infant Diagnosis (EID) programme across the country. HIV viral load monitoring (VL) programme was brought on board in July 2014. Specimens such as Dried Blood Spots (DBS) and plasma are collected from all health facilities in Uganda and delivered to HUBS. A HUB is a coordination center of the sub-district network serving approximately 20-40 health facilities where several referral tests are done, including: CD4+ counts, Liver Function test, Renal Function tests, Complete Blood Counts etc. To date, there are 100 functional HUBS bringing together a network of over 2500 health facilities. EID and VL samples are transported from the HUBS to Central Public Health Laboratory for testing.¹ The total national coverage of both EID, VL for over 150,000 HIV exposed infants and 1,100,000 HIV patients on ART has resulted in the collection of over 1,000,000 remnant DBS and plasma specimens in a bio repository for future research. Approximately, 1,600 microbiological isolates are received from surveillance and epidemic investigations across various regions in Uganda. In September 2016, the National Biorepository proposed to set up infrastructure and resources to establish a biorepository for appropriate storage of specimens in a retrievable manner for future research purposes and to foster both local and international research collaborations.

Ethical issues with commentary on each issue

Planning and development: CPHL set up a task force to develop a proposal to store remnant specimens.² The proposal was submitted to an accredited Research Ethics Committee (REC) in Uganda. The protocol was reviewed and not approved, with an argument that establishment of Biorepositories was outside the scope of ethics review by the REC. The REC advised that it would only be within its scope if a researcher intending to use the stored biospecimens applied for ethics review. Additionally, we were advised to submit the protocol to UNCST. The protocol was submitted to UNCST early last year, but no formal feedback has been received to date despite back and forth discussions. For regulatory purposes, oversight of research involving humans as research participants in Uganda is done first at the organization level by RECs and second at national level by UNCST in collaboration with Uganda National Research Organization (UNHRO).³ Unfortunately,

UNCST currently has no regulations governing the establishment and operation of biobanks/biorepositories. This has resulted in an unregulated proliferation of independent research biobanks and/or biorepositories established to serve specific research interests in Uganda. Additionally, the regulatory body has apparently not yet mapped existing biorepositories/biobanks in Uganda. As a consequence, the National Biorepository proposal and Standard Operating Procedures remain unapproved by UNCST.

Commentary

1. UNCST together with stakeholders should generate biobanking guidelines and policies, and
2. Advocate for education on biobanking science and ethics in biobanking science in LMICs. Inadequate specialized ethics and regulatory knowledge seems to be the major cause of the lack of regulations or policies to guide biobanking science in Uganda.

Informed consent: Implementation of informed consent in a setting with no regulations on biobanking is challenging. National guidelines for Research Involving Humans as Research Participants state that a specific informed consent form shall be used for samples that are collected with the intention of being stored and used for future studies.³ This model offers the best protection for autonomy but has several limitations. It is difficult or impossible to gain specific consent, as intended uses of the biospecimens and data are unknown at the time of diagnostic testing. In low resource settings characterized by very high patient/human resource ratios, obtaining valid specific informed consent might not be effective as clinicians are already overburdened with the heavy workload that might undermine their effort to ensure that patients understand what they are being asked to consent to.⁴ Broad consent in cases where several possible future research uses are provided to research participants would be a good strategy to increase utilization of biospecimens and associated data and could foster international collaboration. Currently, UNCST has no guidance on the type of informed consent applicable to biobanking institutions, especially for remnant biospecimens of clinical origin. Currently, the National Biorepository allows access of stored biospecimen to researchers who seek approval through an accredited REC to waive informed consent for the use of human specimens for minimal risk research. This type of consent is however limited by the lack of national regulations. This also hinders collaborations.

Commentary

1. A regulation that permits the use of an 'opt out' principle for human tissue leftovers from diagnostic sampling would be applicable in the National Biorepository setting, considering that most biospecimens stored are remnants from diagnostic testing.

Community engagement: A stakeholder consultation meeting was conducted in 2018. The stakeholders comprised UNCST, Lawyers from Ministry of Justice and Constitutional Affairs, REC, District Health Officers, Hospital directors, University lecturers and students and development partners. Information was shared about the Biorepository such as current status and future prospects; the National Biorepository Governance and the National Biorepository Legal and Ethical issues. Resolutions from this meeting included: (1) Clinical and laboratory request forms should be modified to include a broad consent for storage and future use for research. (2) UNCST was tasked to write biorepository guidelines based on international standards. (3) For remnant samples already in storage without consent, the National Biorepository should seek government advice through the attorney general. (4) UNCST was tasked to fast-track the compilation of biobanking specific policies and guidelines.

Commentary

1. Advocate for massive community engagement with relevant stakeholders, such as periodic stakeholder meetings and
2. Create brochures to create public awareness and understanding as well as promote research participation.

Discussion points

1. What type of informed consent is applicable for a biobank that targets storage of remnant clinical specimens and would want to make them available for future public health surveillance and research?
2. How best may we overcome the apparent obstacle of lack of prior informed consent for specimens that are already stored in the National Biorepository?
3. Are there already useful models/best practices informed consent forms available for biobanking?

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Case study 5: Twenty years of ethical challenges in setting up and maintaining a twin registry and biobank in Sri Lanka

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Description of the research project

The research projects are based around the Sri Lankan twin registry, a population-based twin register consisting of 9,570 twin pairs and 46 triplets from the Colombo district of Sri Lanka, and a separate volunteer register comprising 7,000 twin pairs and 86 triplets. The first wave of research using the register was the Colombo Twin and Singleton Study (COTASS) in 2005, to estimate prevalence, heritability and gene-environmental interplay of a range of psychiatric disorders (depression, somatisation, PTSD, and substance abuse), resulting in 18 publications and another 8 papers from the twin research consortium: the CODATwins Project which pooled data from 67 worldwide twin projects. A follow-up study of the same cohort was completed in 2016, examining the prevalence and inter-relationship of key cardiovascular/metabolic risk markers and diabetes with depression and anxiety. The Sri Lankan Twin Registry Biobank was established in 2012 as a major component of the second wave data collection of COTASS. The biobank consists of 3,483 serum and 3,360 DNA samples of twins and singletons, and is the first twin bio-specimen biobank in South Asia. Two papers have been published using the follow-up data and two papers submitted, while more are planned. In 2018, the Medical Research Council, UK, awarded a pump-priming grant to set up an infant, child and adolescent twin registry for mental health research. Ethical sensitivities are similar in all projects, arising from the research focus including a vulnerable group (minors, some having mental illness), involving proxy consent, potential for complex genetic and omics research, sensitive personal data and international collaborations in a different culture.

Background

The Sri Lankan twin registry, set up in 1997 with funding from the Wellcome Trust, is the first twin register in South Asia, and it is still one of the very few large-scale, functional, population based twin registries in a low and middle income country (LMIC). Since the twin registry was set up at a time when research ethics was at a nascent stage of being codified in Sri Lanka, the team at the Institute for Research and Development, Sri Lanka (IRD), faced multiple challenges in ensuring that the ethical challenges specific to building a database in an LMIC were addressed. As the project progressed, the twin database expanded in to a biobank, bringing about further challenges related to the collection, storage, use and protection of bio-specimens. The lack of a broad ethical framework and overarching guidance was a key issue at the time. This was complicated by the lack of effective guidance on managing relationships with influential international research collaborations, in a manner that was both respectful of cultural sensitivities of the research participants/communities, and ensured that funds were utilized to their full potential, while research benefits were shared equitably. This case study will discuss how the IRD identified, managed and overcame challenges in setting up the twin registry, the biobank and the ensuing research projects.

Ethical challenges

1. True community engagement through developing mutual respect and trust
2. Ethical guidelines and a governance framework that is fit for purpose
3. Long-term benefit through capacity building vs rapid gains through data/sample transfer to high income countries (HIC)

Challenge 1: True community engagement through developing mutual respect and trust

'Double dealing on genetic twins' screamed the headlines of a leading Sri Lankan daily newspaper (Daily Mirror, July 9, 2002) – stating that *'genetic information of Sri Lankan twins may be pirated to multi-national companies for research on various inherited disorders,'* framing it as a warning from medical experts and setting off a negative media campaign that sensationalized cultural sensitivities and concerns founded on past misdemeanours by other researchers and historical injustices. The IRD recognised that the concerns, though unfounded in this situation, were valid expressions of the mistrust the community had towards unethical researchers. The response from the IRD was to engage in extensive awareness raising and community engagement activities, using multiple routes

ranging from regular newspaper advertisements, feature articles, radio talks, exhibitions, leisure activities and television programmes to the usual small group discussions and focus groups, as well as sensitising other professional and academic groups. The tri-lingual magazine of the IRD, 'Gaveshana' (Explorations), which is mainly aimed at school children and undergraduates as well as the wider general public, published thematic issues on twin research, ethics and governance. The IRD also carried out many Wellcome-funded ethics training courses at both basic and advanced levels, earning a reputation that later led to the UNESCO Ethics capacity building programs being delivered in Sri Lanka collaboratively with the IRD (2017). Cultural activities engaging twins, publication of a newsletter in the local languages called 'Twin News', regularly updated and distributed among the members of the twin registry, all helped build not just understanding and awareness of the research work that was carried out, but clearly helped the twins to understand that the research team viewed them as participants with an important role to play in an activity that would benefit humankind. This feeling of mutual respect and camaraderie between the research team and the participants was the key factor that helped the IRD team overcome negative publicity and carry out two waves of research among these twins since 1997.

Challenge 2: Ethical guidelines and a governance framework that is fit for purpose

Many ethical guidelines and frameworks were developed in, reflect on and address the issues that dominate ethics in a Western context and rarely address real life issues faced by LMIC researchers. For example, the case studies usually provided are rarely applicable in the developing world context and fail to address the most common issues faced by clinicians/researchers in this part of the world. The response of the IRD was to set standards for ourselves, based on a blend of the existing guidelines and the customs, social and moral norms of the Sri Lankan culture. The IRD developed and published research ethics guidelines titled 'Research Ethics from a Developing World Perspective' with the help of many Sri Lankan academics and researchers as well as input from world-leading Ethics experts. The IRD also engaged in extensive work in ethics capacity building under the theme 'Ethics: A friend of Research.'

Challenge 3: Long-term benefit through capacity building vs rapid gains through data/sample transfer to HIC

Our HIC partners in this project were most respectful of cultural sensitivities and generous in sharing their expertise, gave first authorship to Sri Lankan researchers, encouraged and supported capacity building, exemplifying what North-South research collaborations could be and setting the standard for what the IRD looked for in subsequent collaborations. Given the pressure on timelines, however, there was some pressure on the Sri Lankan team to consider transferring biological material to outside the country since it would take time to develop necessary expertise in Sri Lanka. Though sharing anonymised data was not an issue, the detrimental impact of LMICs being relegated to mere data gatherers and losing the long-term benefits of developing capacity in LMIC, in our view, outweighed the benefits of faster research output achieved by transferring the bio-specimens abroad. The team decided to delay genetic work until 2012, by which time we were confident of our ability to effectively manage multiple ethical and technical challenges. This collaborative approach is not necessarily the norm, and if capacity building in LMICs is made a condition in collaborations, it would have an exponential positive impact on improving capacity of data analysis in LMICs.

Discussion and conclusions

We identify two key matters as needing urgent intervention: the first is the need to develop implementation guidelines with specific examples to clarify application in LMIC contexts. Secondly, to be responsive to strong cultural sensitivities on issues such as exportation of bio-samples during international collaborations, and the need to develop institutional infrastructure and human resource capacity in LMIC partners. It is critical to appreciate that the ownership of bio-samples and data remains with the country of origination. Some funding agencies themselves have already initiated this step; however, research grants are often administered through HIC institutions, which, in some cases have limited prior experience of LMIC work. Hence there is a need for building awareness among HIC Researchers (as much as those in LMIC). Funding agencies such as the MRC UK and the Wellcome Trust could play a vital role in imparting their equitable and collaborative philosophy to other institutions.

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Case study 6: Rumours and fears endanger feasibility of biobanking in Liberia: Culturally-congruent standards are needed to ensure trustworthiness

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Brief description of the research project

In early 2016, the Barcelona Institute for Global Health (ISGlobal) established a research collaboration in Liberia with the Saint Joseph's Catholic Hospital (SJCH) and the Liberia Medicines and Health Products Regulatory Authority (LMHRA). With funding from the European and Developing Countries Clinical Trials Partnership, two ISGlobal-led projects started.^{1,2} Both aiming at building hospital and regulatory authority staff capacities to conduct research on infectious diseases. During the 2014-16 Ebola outbreak, many patients with infectious diseases other than Ebola (i.e. malaria) saw neglected their healthcare needs. Capitalizing on ISGlobal expertise on basic and applied research for the development of new diagnostic, preventive and elimination tools for malaria, special emphasis has been placed in the frame of these two projects in building local capacities to support malaria research in Liberia.

Background

The 2011 and 2016 Malaria Indicator Surveys did not measure prevalence of *Plasmodium falciparum* among pregnant women in Liberia. In 2016-17, with the purpose of contributing to the strengthening of Liberia's health system preparedness to provide healthcare services for all citizens during future public health emergencies, we carried out a mixed-methods study that aimed to assess the burden of malaria among pregnant women attending antenatal care at the SJCH.³ Within this study, qualitative research methodologies were used to explore pregnant women's, traditional leaders' and health personnel's perspectives on barriers and opportunities for pregnant women to consent to participate in malaria research. To inform the design of the study and to plan dissemination at community-level, a group of ten traditional leaders received training in medical research ethics and were invited to constitute a Community Advisory Board (C.A.B). An ancillary aim to the qualitative inquiry and to the C.A.B activities was to explore drivers of acceptability to engage in research that may involve collection, transport, storage, and use of blood specimens. In 2018, as part of a current Training Program in Diagnostics Research, the project consortia is studying the feasibility to create a SJCH-hosted biorepository of blood samples obtained from malaria-exposed individual attending hospital services. The purpose of this biorepository would be threefold: i) to support the development of improved cost-efficient high-sensitive malaria diagnostic tools; ii) to support quality assessment of presumably substandard and unregistered Rapid Diagnostic tests that are known to be easily available over-the-counter in Liberia, and iii) to provide information of the burden of malaria and antimalarial resistance to guide public health interventions.

Ethical issues

The ethics issues below draw from the qualitative inquiry findings:

1. Cultural issues
2. Lack of accountability/good governance
3. Limited access to free healthcare services
4. Fear of discrimination
5. Lack of trust in healthcare and researchers
6. Fear of commercialism participant for researchers' benefit

Cultural issues: Culturally, any activity involving blood is of a sensitive nature. Liberians are used to giving blood in clinical settings only. Exposure to Ebola vaccine trials in Monrovia made some people believe that specimens were being collected from trial subjects with illicit purposes. How the population will interpret that blood samples are requested for unspecified research is something that deserves thorough exploration prior to setting a BioBank at the SJCH.

Lack of accountability/good governance: The communities are aware that, during the Ebola epidemics, there were various initiatives that involved collection of specimens that were shipped abroad for research or public health purposes (i.e. Ebola vaccine trials, Ebola Treatment Centers, Plasmapheresis Unit). Unless governance and communication is improved, communities invited to

assent to BioBanking in Liberia may perceive that the destination and usage of exported samples cannot be controlled by local research staff and, hence, that fair conditions for storage, retrieval, tracking and disposal of specimens cannot be guaranteed to the study participants.

Limited access to free healthcare services: Due to difficulties to access free-of-charge healthcare services, there is a risk that therapeutic misconception may motivate some people to consent to participate in BioBanking research. If the BioBank is located in a hospital, clear information on risks, benefits and compensation needs be provided during the consent process to all approached individuals to avoid undue inducement to participate.

Fear of discrimination: There is widespread fear that samples collected in clinical and research settings may be tested for stigmatizing diseases (i.e. HIV) against the person's will. This fear may make broad consent inappropriate as people may want to know the exact intended use of their samples and may want to be reassured that research staff will not perform certain diagnostics tests.

Lack of trust in healthcare and research: There is a generalized lack of trust in the healthcare and research establishment. Lack of trust will compromise autonomous informed decisions to participate in BioBanking research. Methods to increase community members' trustworthiness need to be thoroughly discussed with the C.A.B.. However, some individuals may have also stopped trusting their traditional authorities because some traditional leaders are – allegedly – collaborating with the Ministry of Internal Affairs. Innovative individual-targeted approaches to improve trustworthiness needs to be created and implemented ahead of the creation of a BioBank at the SJCH.

Fear of commercialism participant for researchers' benefit: In relation with the export of specimens, a widespread rumor is that researchers monetize them abroad and manage to raise revenue that is never shared with the researched communities. Sustainability of a BioBank in Liberia could largely depend on cost recovery of its running costs. A pay-per-service system may accentuate this rumor. Seemingly, as per our study participants' narratives, some community members may not oppose to the commercialization of their samples should a benefit sharing plan engaging them and their communities be in place.

Conclusions and recommendations

1) A stepped wedge consent could help potential BioBank participants approached in the frame of this capacity building project decide exactly what clinical, public health and research use of their data and samples they authorize, as well as to what type of communication from the BioBank regarding the use, export, retrieval and disposal of their samples they expect to receive. In this scenario, all participants should offer the option to provide a totally anonymized consent.

2) To improve trustworthiness, a clear accountability and benefit sharing plan needs to be agreed upon by research, regulatory, hospital staff and the affected communities. In addition to improving communication on research plans and activities being carried out by the consortia at the SJCH, the C.A.B and the community members need to receive accurate information on accountability, human resources, financial and sustainability issues. A transparent attitude and willingness to negotiate a revenue sharing schedule may help communities gain trust in BioBanking research in Liberia.

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Case study 7: The ethics of data sharing in the antenatal corticosteroids trial

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Brief description of the research project

Preterm birth is a major cause of neonatal mortality, currently responsible for 28% of the deaths overall. The administration of antenatal corticosteroids (ACS) to women at high risk of preterm birth is a powerful perinatal intervention to reduce neonatal mortality in resource rich environments. The effect of antenatal steroids to reduce mortality and morbidity among preterm infants in hospital settings in developed countries with high utilization is well established, yet they are not routinely used in developing countries.¹⁻³

Scaling up ACS has been a priority for some international health organizations. For this purpose, the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)'s Global Network for Women and Children's Health Research Antenatal Corticosteroids Trial (ACT) was conducted to assess the feasibility, effectiveness, and safety of a multifaceted intervention designed to increase the use of ACS at all levels of health care at seven study sites in low and middle-income countries (LMIC).¹⁻⁴

Background

Methods: The Antenatal Corticosteroids Trial (ACT) was an 18-month, two-arm, parallel, cluster-randomised trial done in geographical clusters at seven sites of the Global Network for Women's and Children's Health Research. Clusters were distinct geographical rural and semi-urban settings in Argentina, Zambia, Guatemala, Belgaum (India), Nagpur (India), Pakistan, and Kenya. Intervention clusters received a multifaceted intervention that consisted of health-provider training, posters, pregnancy disc, and uterine height tape to facilitate identification of women at risk of preterm birth, and kits for provision of antenatal corticosteroids.¹⁻⁴

To reduce bias, the outcome data were collected independently by trained Registry Administrators in a prospective maternal and newborn health (MNH) registry, which enrolled and collected outcomes for all pregnant women residing within the study clusters, defined geographic areas which included health facilities. In addition, in the ACT intervention clusters, process data were collected on the use of ACS and the characteristics of the eligible women.⁵⁻⁷

Results and conclusions: The primary outcome was 28-day neonatal mortality among infants less than the 5th percentile for birthweight. The less-than-5th-percentile birthweight group (referred to as less-than-5th-percentile infants) was a proxy for preterm birth. The intervention effectively increased the use of antenatal corticosteroids to 45% of women delivering infants less than the 5th percentile for birthweight, compared with about 10% in control clusters. Among the entire population, the intervention resulted in a significant increase in neonatal deaths of 3.5 per 1000 livebirths and an increase in perinatal deaths of 5.1 per 1000 births. This harmful effect was concentrated among infants at and above the 25th percentile for birthweight. The intervention was also associated with a significant 3.6% absolute increase in suspected infection among mothers of less-than-5th-percentile infants and a significant 0.8% increase among all women.¹⁻⁴

These results suggest that ACS more than other components of the intervention may have contributed to the overall increased neonatal mortality. ACS may have also been involved in the observed increased risk of neonatal infection and death. The use of birthweight percentile instead of gestational age to define the target subgroup for the primary analysis misclassified some preterm infants as term infants. A possible explanation for the relative increase in neonatal and perinatal mortality in the whole population is that the study screening method used to determine risk of preterm birth was fairly non-specific, identifying some women who delivered at term as at risk of preterm birth, leading to potentially harmful use of antenatal corticosteroids for infants not delivered preterm. An alternative explanation could be that mistaken identification of women at risk who ultimately delivered a term baby adversely affected the quality of perinatal care and thereby increased perinatal mortality. Because of the poor gestational age dating available for those

participating in the ACT trial, we can make no definitive statement about the impact of the intervention on stillbirth rates in smaller and earlier gestational age fetuses.^{3,4}

In summary, this intervention strategy was not only ineffective at reducing neonatal mortality in less-than- 5th-percentile infants, but also increased mortality in the population overall. Furthermore, the strategy seemed to increase the risk of maternal infectious morbidity. Further trials are urgently needed to clarify the effectiveness and safety of ACS on neonatal health in low resource settings.^{3,4}

Ethical issues, recommendation and conclusion

Data sharing has now-a-days become an efficient way of conducting large scale biomedical research. Ethically it is relevant to adopt data sharing since it minimises the known risk and potential harm to the participants from unnecessary exposure to previously tested interventions. Also economically it helps the LMIC researchers to come out with newer ideas from the existing database which could help to tackle their local community health problems.^{8,9}

There is a greater trend towards open access policy followed by the funding agencies to promote efficient use of the resources and maximise the value of their research outputs. Data sharing should be carried out in a way that protects the interests of individuals and affected communities while ensuring the maximum benefit to health using shared data. But there are no concrete rules or guidelines which can help the researchers to share or conduct secondary analyses on the existing databases.^{8,9}

In this regard we faced some of the ethical issues for data sharing after the completion of our ACS Trial.

1. Since ACS study presented negative results, a keen interest was generated among the different funding agencies and researchers around the world to analyse the data to get more meaning out of it. This needs to give access to raw data of the study.
2. The ACS Trial was completed in March 2014. According to the policy of the funding agency, we need to share the ACS data by giving public access to it after the primary publication, for further secondary analysis. In this case it is difficult to abide by the rules since the outcomes of the ACS trial were captured in Maternal & Newborn Health Registry (MNH registry) which remains an ongoing study.
MNH registry was started in 2008 by NICHD Global Network and since then it has been continued as a population based registry to document maternal and newborn mortality as well as their trends over time.⁵⁻⁷
3. The questions that arise here for the proper implementation of data sharing policy are:
 - a. Whether to provide access to only analysis/results or for raw data/ individual participant data. (What data to be shared)
 - b. Whether to provide access to the raw data of studies which are completed or ongoing also. (When should the data be shared)

There is a need to have good discussion and consensus on the ethical issues of data sharing and frame universal guidelines so that the researchers can properly adopt the open access policy in medical research.

Commentary on ethical issues

Sharing of research data beyond the primary research outputs has been claimed to contribute in the understanding of health and disease and overall improvement of healthcare. But there exist some inequalities between the higher and lower incomes settings with regards to the capacity for data storage and sharing of research outputs hindering the principle of equitable sharing. There is a need to develop specialist expertise to create an awareness of the development of policies that promote equitable data sharing in medical research.¹¹

According to the NIH view, data should be made widely and freely available while safeguarding the privacy of participants and protecting the confidential and intellectual data. (NIH data sharing policy) NICHD Data and Specimen Hub (DASH) established by NICHD enables the investigators to organise, store and mine data from NICHD funded research studies for secondary research use.¹²

Equitable sharing of research data requires acquisition and maintenance of multiple interrelated capacities. Concerns have been expressed about the abilities of some researchers in low and middle income settings to effectively compete with highly resourced secondary researchers to publish initial and subsequent analyses of data.¹³ With regards to the recognition of primary researchers, co-authorship on secondary analyses has been considered to be a method of acknowledging the scientific contribution of primary researchers.¹⁴

The secondary analyses from data sharing should be mutually beneficial to primary researchers from middle and low income settings and also to the secondary researchers from high resource settings. It should address the local problems or issues along with an impact on global health. The primary researchers should be given opportunity to be involved in the development of the research ideas, designing of the secondary analyses, etc. There should be proper capacity building of the primary researchers in terms significant investment in human resources, technology and infrastructure and also the expertise to conduct high quality analyses for their research data. Some of the above mentioned issues could be addressed by adopting a collaborative approach to data sharing. Collaborative approach is thought to support trust building and capacity development and increase the benefits of primary researchers in terms of acknowledgement and authorship.

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Case study 8: Research Ethics Committees' request for data sharing plan as part of the ethics review process: Data from the National Research Ethics Committees Survey in the Dominican Republic

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Brief description of the research project

The National Research Ethics Committees Survey aimed to identify the number of existing Research Ethics Committees (REC) in the Dominican Republic, their composition, organization, activities, ethics review and decision-making processes. The survey was implemented throughout 2017 and concluded in 2018. The last survey on REC was conducted in 2009, and no updated data were available since that period.¹ Around 400 health care organizations, academic and research oriented organizations, both public and private, were contacted to verify the existence of a REC. A total of 25 RECs were identified and 19 of them completed the survey through an interview. RECs were asked whether they request a data sharing plan as part of the ethics review process. We found that the participating RECs were not asking for a data sharing plan as part of their review process. Its policies do not include data sharing terms nor do they have in place standard operational procedures nor templates to evaluate data sharing plans.

Background

The Dominican Republic (DR) is a middle-income country located in the Caribbean and shares the Hispaniola Island with Haiti. DR has a population of about 10 million inhabitants.² Health disparities persist as the poorest one-third of the population does not have health insurance and the percentage of out-of-pocket health expenditures is one of the greatest in the Americas.² Research outputs from basic sciences and technology based research is increasing in recent years since the launch of a national funding scheme through the Ministry of Higher Education, Science and Technology. However, the health research system is almost nonexistent and it lacks appropriate governance, is under-resourced and the absence of trained scientists in the different areas of medical research is currently stopping progress in this area.^{3,4}

In the DR, most health research activities are conducted by the international pharmaceutical industry, other international institutions and universities. The implication of this trend is that funds are not allocated towards the diseases and conditions affecting the most vulnerable nor are they directed towards improving outcomes of the healthcare system, and policy development.³ At the same time, local personnel are contracted as 'principal investigators' when in practice they are only dealing with data collection of samples or biological materials. Where research is conducted by pharmaceutical companies, confidentiality requirements are in place to protect industry rights and the data is not shared with local researchers nor do they participate in data analysis.

This systematic neglect to build research capacity has real consequences. For instance, in 2016 the Dominican Republic reported one of the largest Zika virus outbreaks in the Americas. The first case of Zika was confirmed in January 2016 and decreased by May 2017. Incidence of Guillian-Barré Syndrome was high, however most of the cases had an uncomplicated course.⁵ Yet despite the scale of the outbreak in the DR, national researchers were not participating as meaningful collaborators, and leading to complaints that participation and sharing of responsibilities were not optimal.⁶

Ethical issues with commentary

The International Ethical Guidelines for Health-Related Research Involving Humans states that: "there are compelling reasons to share the data of health-related research".⁷ One of them is the increasing availability of data that will allow secondary analysis, potentially responding to research questions that are useful for increment our knowledge on disease, conditions, health system operations, and the like.⁸ Data-sharing policies are now present in various countries and organizations, but have not yet been established in the Dominican Republic. In this context, equity means ensuring access to data that was originally collected from LMICs and developing local

capacity to access and analyze the data with the purpose to achieve equity and diminish health disparities.

1. Would it be reasonable for RECs to request a data sharing plan? Even when CIOMS guidelines suggest that there are compelling reasons to share data, it still not clear in which instances a REC will have the mandate and authority to request it. We know that RECs are not requesting beforehand a data plan as part of their review process, but for instance, would the researcher have a duty to respond to that request even though in a legal sense this is an unregulated component in many LMICs? The decision to ask for data sharing plan applies to any type of research and regardless of the sponsor institution?

2. Should data from LMICs be shared internationally and for what reason? Although there is an increased recognition of the importance of collaborative research efforts globally, much more needs to be done in the context of LMICs to ensure that collaborations are fair and equitable. Data sharing policies and practices are relatively new and still absent in most LMICs. Technology advances increase dramatically our ability for the collection and storage of large amount of individual data. This brings challenges and opportunities for a more open, accountable and transparent science, for greater public scrutiny of data and its outputs, and for the improvement of the security measures to safeguard privacy and to prevent breaches to confidentiality.⁷ Respect for persons is a fundamental ethical principle in health research. Open access and the sharing of data gathered from LMICs constitute a way to demonstrate respect for persons and communities. Embracement of data sharing is a vigorous expression of reciprocity and a sign of the good will to collaborate at solving pressing health issues in LMICs. Trust is at stake in this matter since concerns of exploitation may be present. If research data will be of benefit of all involved, and risks to individuals are addressed and participant best interest considered, one could argue that there is little place for ethical concerns in data sharing. International institutions should play a role at ensuring that data from LMICs be shared and reuse by local researchers.^{9,10} In this regard, what kind of international cooperation will be needed to promote equitable data sharing? Still, if data from LMICs would be shared internationally, who is going to monitor that this is done consistently and that the data gets actually analyzed by local researchers for the benefit of individuals and communities? Could capacity building efforts be demanded as integral part of data sharing plan?

3. What if local agency on health research is minimum? The lack of awareness regarding data sharing policies and practices around health research in LMICs is an outstanding issue. In addition, law specific to biomedical and clinical research does not exist. The current regulation in the DR rely on an administrative level rule that requires ethical approval for experimental research protocols involving human subjects but how can LMICs with similar socio-political backgrounds move forward in a time where technological advances are drastically changing the current affairs? In this context, collaborative work encompasses fair sharing beginning by identifying and empowering local research teams allowing them to participate in all phases of the research project, not just in the data collection phase. To provide opportunities to conduct complex data analysis by themselves may require mentorship and full exposure to the research environment where the data is stored, curated and analyzed. To promote the inclusion and education of data scientist as part of the research team in LMICs will prompt and facilitate ownership of the data, as have been pointed out by some researchers that many projects in LMICs have struggle with data management.¹⁰ In this scenario, public engagement should take place and work on the awareness, not only for data sharing and biobanking regulations but for other related aspects of research monitoring such as trials registration, publication of results with respect and promotion of co-authorship.

Conclusions

There is the need to advocate for policies on data sharing and biobanking in LMICs. The fact that sponsors considered that funding applications in genomics must involve data sharing plans does not mean that this does not come with challenges. Question regarding where the data repository is located is secondary to the question about whether researchers from the country where data was collected are able to conduct a secondary analysis based on the available data.

Recommendations

1. Open debates to clarify basic questions regarding the meaning, “pros” and “cons” of data sharing and biobanking policies should be promoted in each country and region. Policy makers, researchers, funding agencies and community representatives should be informed regarding these issues and to move forward to create or renew data sharing policies and practices. Expertise to inform the development of policies on data sharing is needed.^{10,11} Much more efforts should be directed towards informing research stakeholders in LMICs in regard to data sharing policies. A strategy that could prove to be effective is to draw similar regulation to data sharing policies to international collaborations as for clinical trials registration. Fostering public engagement is key.

2. As collaborative efforts on bioethics are increasing in the Latin America region, as an example the creation of the Central America and Caribbean Network of Research Ethics Committees, it may serve as a means to disseminate knowledge, policies and practices regarding data sharing and biobanking.

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Case study 9: The Worldwide Antimalarial Resistance Network's efforts to "level the playing fields" for data sharing by researchers in malaria endemic countries

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Brief description of the research project

The WorldWide Antimalarial Resistance Network (WWARN) was established in 2009 to understand and curtail the threat of antimalarial resistance. Key to the delivery of WWARN's research aims was engaging with global malaria researchers and convincing them to share their data with the central WWARN repository, at a time before data sharing was required by policy makers, funders and publishers. As the real and perceived barriers to data sharing were many and diverse, WWARN developed a number of strategies to enable and encourage ethical and equitable sharing of reliable data to inform malaria treatment policies and practices. This case study will focus on efforts to promote equity in sharing of data by, and with, researchers from malaria-endemic countries.

Background

Malaria is a poverty related disease, and its control and eventual elimination are threatened by the emergence and spread of resistance to all currently available antimalarials, including the pivotal artemisinins that have played a central role in global decreases in malaria burden since 2000. Promptly sharing reliable data on the efficacy of medicines to treat (or prevent) malaria has the potential to prevent or slow antimalarial drug resistance. However, requests to share data to address this critical global health threat have resulted in expressions of concern from researchers, including that the quality of raw data may be scrutinised or study outputs challenged by external researchers, and that researchers in resource-constrained malaria-endemic settings are less able to benefit from the fruits of data sharing than researchers in better resourced settings.

WWARN is committed to ethical, open and transparent practices which respect the rights of patients/study participants, researchers and organisations contributing to the WWARN Data Repository. Over the past decade WWARN has worked with collaborators in over 280 institutions globally to develop and update its scientific, technical, ethical and governance frameworks to promote equity in data sharing. Key aspects of these efforts which address the primary concerns of the malaria research community are capacity strengthening and technical support in data standardisation and quality, as well as inclusion of primary data generators in secondary analyses.

The impact of these efforts are demonstrated by the size of the WWARN platform which, thanks to the contributions of the global malaria research community, now holds over 80% of the world's individual patient clinical trial data on artemisinin-based combination antimalarials. These data on factors affecting the efficacy of antimalarial medicines have been used to optimise treatment regimens, especially for vulnerable groups including pregnant women, young and malnourished children, and provides evidence to inform the development of new antimalarial drugs.

In addition to the successes of this pioneering model, there have been challenges in its application. Funding to deliver effective tools and training to support high quality data have been difficult and time-consuming to source, at times requiring us to support capacity strengthening even without such funding.

Ethical issues and commentary on each issue

This case study will focus on addressing two issues pertaining to **equitable data sharing** by and with researchers in malaria endemic countries, all of which are LMICs.

1. In order to address the concerns of many researchers, and not just those based in LMICs, that their raw data may not be entirely ready for international scrutiny and their study outputs challenged, WWARN has invested heavily in providing researchers with resources needed for data contributors to feel more confident in data that they share:
 - a. WWARN developed and continues to expand its toolkit to enhance the efficiency and quality of planning, executing, analysing and reporting of primary data collection.

- b. This is supported by WWARNs external quality assurance and proficiency testing programme, to enhance data quality and comparability for laboratories conducting antimalarial drug assays.
 - c. The WWARN Informatics platform accepts data submitted in almost any format, with the related protocol / case record forms / metadata / data dictionaries needed to ensure that data are useable for secondary analyses. The contributed data is curated and standardised using established data and statistical management plans. The data contributor receives a study report which includes an audit trail of any changes made during curation and transformation and a list of any outliers/unexpected results. The original data files and the resultant data set that complies with CDISC standards (where applicable) are stored in the WWARN registered repository, which meets the re3data standards (<https://www.re3data.org/>). These outputs are all available to the contributor and any individuals nominated by the contributor, enhancing the quality of their data sets.
2. In order to address the concerns of many researchers, primarily in LMICs, that they may be less able to benefit from the fruits of data sharing than researchers in better resourced settings, WWARN has developed a number of strategies to **enable equitable use** of secondary data to answer questions of public health importance:
 - a. WWARN has recently updated its technical, ethical and governance frameworks to **give data contributors more choice about how their data can be accessed**, either through contributor controlled access where the contributor will review each individual request, or through the WHO TDR hosted Independent Data Access Committee.
 - b. WWARN facilitates collaborative **study groups** of data contributors conducting individual patient / participant data (IPD) meta-analyses to answer important research questions that cannot be answered as reliably or efficiently by individual studies or aggregate data meta-analyses. A research question can be proposed by anyone, and researchers from malaria endemic countries may be best placed to identify important unresolved research questions, and can benefit from the technical and statistical support provided through the WWARN data platform. These study groups not only benefit from pooling the individual patient data shared but also from the expertise of each of the participants. Depending on each study group member's level of engagement, the members are authors, collaborators, or personally acknowledged in resulting publications.
 - c. **Increasing capacity building efforts** to enable researchers from malaria-endemic LMICs to be able to access and use secondary data to answer questions of importance to malaria and other NTD control and elimination efforts. These include online open access resources, successful training workshops conducted in East, West and Southern Africa, and to date hosting six EDCTP / TDR career development fellows from LMICs to gain the skills required to lead future efforts to make the best use of available data to inform policy and practice. As a part of the Infectious Diseases Data Observatory (IDDO), WWARN also contributes to work with other research communities to replicate this model for other neglected poverty-related diseases and emerging infections.

Despite the advantages of the carefully selected approaches used and the progress made to date, ensuring ethical and equitable data sharing that leads to improved malaria treatment remains a complex and ambitious objective. This GFBR forum provides an opportunity to debate ongoing challenges.

Conclusions and recommendations

Equitable data sharing requires investments in the resources needed to enable researchers in LMICs to efficiently achieve required data standards, and benefit equally from access to individual patient data shared as well as investments in the management of platforms supporting complex data integration and analyses. Without these investments, the recent requirements for data sharing by an increasing number of funders, publishers and regulatory agencies risk exacerbating inequities between researchers in well-resourced and resource-limited settings, and data reuse is unlikely to produce the expected public health benefits. This is of particular concern for research in poverty-related infectious diseases such as malaria.

Recommendations

1. Increase investment in readily accessible resources needed to enhance the quality and efficiency of primary data collection and incentivise data sharing, and allocate specific funding to data platforms supporting poverty related disease research communities.

2. Innovations are needed in approaches for including data contributors in secondary data analyses while adhering to international guidelines on authorship criteria, as well as increasing the capacity of researchers in LMICs to conduct secondary data analyses.

Policy and guidance papers

Presentation 1: A critical reflection on the development of a biobanking governance framework in Argentina

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Context

This proposal provides an overview of a regulatory framework that is being developed by the National Ministry of Health of Argentina for biomedical research (other than clinical trials), and with focus on biobanking and sample/data sharing. It will also discuss the impact of the 2016 CIOMS Ethical Guidelines on this development.

With increasing overseas research collaborations involving scientists in Argentina, biobanking and the secondary research use of data and samples have raised ethical and regulatory concerns.^{1,2,3} The current research governance framework in Argentina includes legal and ethical oversight of biomedical research involving human subjects and regulation for clinical trials. The main guidelines are The Ethical Guidelines in Biomedical Research Involving Human Subjects⁴ and the national regulation on Good Clinical Practices for Clinical Trials⁵. The first document was promulgated by the National Ministry of Health. It gives general guidance for conducting biomedical and health related research, and is consistent with the recommendations in international ethical documents. It also gives directions on review standards for research ethics committees, as well as membership requirements and functions. The second document is a regulation of the National Administration of Drugs, Food and Medical Technology (ANMAT), prescribed in accordance with the ICH-GCP. The requirements in this document is mandatory for any clinical trial that is conducted in Argentina. However, there is no legislation or guidelines in relation to biobanking, as well as the sharing of biological materials and related data for research purposes.⁶

As biobanks for research purposes are not included in the legal framework, researchers and research ethics committees have been left with the responsibility of taking decisions on their own. This situation carries the risk of different standards being applied and inadequate safeguards for the rights and welfare of research participants. For this reason, researchers, especially those working in the field of genomics, have called for clearer regulatory guidance on data and sample sharing. In response, the National Ministry of Health convened a technical commission composed of interested stakeholders, including: scientists of public biobanks, representatives of the Ministry of Science and Technology, scientists of the National Institute of Cancer, bioethicists, lawyers and researchers.⁷ The following comments relate to my role as coordinator of this commission.

The commission has identified several concerns that have arisen from the lack of a specific biobanking governance framework. One concern relates to the meaning of “biobanking” and related activities that will require regulatory or ethical oversight. Many public and private biobanks have emerged in Argentina and the region.^{8,9} There are even institutions with collections that may not be formally declare as biobanks. There is also a current initiative of establishing a public population biobank.¹⁰ However, these biobanks are being developed without legal or ethical oversight. Existing biobanks do not have a proper governance system that ensure ethical requirements are observed. These requirements include those relating to informed consent, keeping donors informed of future studies, return of results of unanticipated findings and confidentiality.

Where data and samples are transferred overseas, it is unclear if this is pursuant to an appropriately drafted material transfer agreement (MTA), as there is currently no requirement to that effect. In international collaborations, an agreement may be imposed on local researchers with no possibility

of negotiating unfavorable terms that could relate to confidentiality, intellectual property rights and return of results.

Hence, at present the commission is working on developing a governance framework for biobanking and data/sample sharing that fall out of the scope of existing clinical research regulation. For this purpose, 2016 CIOMS Guidelines serve as a helpful reference, particularly Guideline 11 (on Collection, storage and use of biological materials and related data), and Guideline 12 (on Collection, storage and use of data in health-related research). These guidelines were helpful to identify the key points that the future regulation will address to respond the above-mentioned concerns:

(1) The term “biobank”: The term refers to both large population biobanks and small biorepositories consisting of bio-specimens in laboratories, and will thereby include all existing biological material collection;

(2) Biobanks as custodians: As custodians of biological materials and related data, biobanks will be responsible for the quality of the materials and data, and for ensuring that donors’ rights (such as confidentiality, access to information and feedback) are respected;

(3) Governance system: The regulation will give guidance on governance mechanisms that are needed to protect donors’ rights and achieve harmonization in biobanking operations;

(4) Broad consent-taking process will be permitted to allow for unspecified future uses and review of future research by a research ethics committee to ensure that the proposed use agrees with the donor’s consent; and

(5) MTA to regulate the transfer of material and data: The elements of the agreement will be enumerated to allow researchers and institutions to negotiate fair terms relating to secondary uses, return of results and benefits.

Critical reflection and recommendation

The development of a biobanking governance framework is important to support the advancement of biobanking in Argentina, and the CIOMS guidelines have been helpful in setting out the key ethical issues. However, there are a number of aspects to improve on in order to promote local and international collaboration, as well as to protect the rights of participants and local researchers. Infrastructure and specialized personnel are required for more effective and ethically responsible data and sample management. Training for researchers is also needed to promote the benefits of data and sample sharing and in ensuring that ethical requirements, such as informed consent, withdrawal of consent, and confidentiality, are observed. Training should include members of ethics committees who are involved in the review of studies that use stored materials or data, and the consent procedures entailed. Unless ethics committees are properly trained, they are likely to be cautious in approving studies with broad consent and sample/data sharing for future uses. This is primarily because broad consent may conflict with current national guidance, as well as the mistrust from a history of exploitation of LMICs.

Also, community engagement needs to be enhanced to promote public trust in biobanking. Research is required to better understand public views and attitudes towards biobanking studies and sample/data sharing. To address this gap, several strategies such as community consultation, surveys and interviews, are required. In addition, educational materials should be developed to support the comprehension of these studies in order to allow free and informed choice to be exercised through a broad consent process.

As a recommendation, these issues should be considered as benefits that could be expected from international research collaboration in terms of contributions to capacity building for research and review.¹¹

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Presentation 2: India's national guidelines on biobanking and data sharing and its ethical bearing on Indians

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India's biomedical research regulatory context

In India, clinical trials for new therapies and new medical devices are regulated by the Drug Controller General of India (DCGI) through its Central Drugs Standard Control Organisation, under the Ministry of Health and Family Welfare. All clinical trials are required to be registered at the Clinical Trials Registry - India (CTRI) and have to comply with the regulations of Schedule Y of the Drugs & Cosmetics Act 1940 and its recent amendments and follow the Indian Good Clinical Practice Guidelines (2001). Adherence to ethical standards in the conduct of clinical trials and medical research is regulated by the Indian Council of Medical Research (ICMR) through its National Ethical Guidelines for Biomedical and Health Research involving human participants, first formulated in 1980, then revised in 2000, 2006 with the latest in 2017. The 2006 Guidelines, consistent with the provisions in Schedule Y 2005 Amendments, primarily focussed on regulations of clinical trials and the requirements and responsibilities of Institutional Ethics Committees (IECs) and Investigators in carrying out ethical clinical research. Upholding of individual autonomy through informed consent, and the assessment and mitigation of risk to ensure that the physician -investigator does no harm and strive for beneficence, come through as the central ethical principles.

Regulations pertaining to biobanks in India

The 2006 Indian Council of Medical Research (ICMR) ethical guidelines for biomedical research had limited coverage of biobanking, which was addressed under the chapter on Human Genetics and Genomics. This concern with genetic information is understandable, given that Article 20 of the UNESCO Draft Declaration on Human Genetic Data urges that "States may consider establishing a framework for the monitoring and management of human genetic data, human proteomic data and biological samples based on the principles of independence, multi-disciplinarity, pluralism and transparency, as well as the principles set out in Declaration...".¹ It also required regulatory agencies to broaden the definition of a researcher to include a molecular biologist and basic science researcher and to widen the scope of research ethics from that pertaining to clinical trials to include bio-medical ethics, which encompasses new and emerging science and technologies. In India, till around 2013 there has been relatively little discourse on potential bioethical issues related to biobanking. While the attractiveness of biobanks and biobanking research has not escaped India, as is apparent with biobanks (mostly of stem cells, cord blood and 'waste tissue') having been set up as "research centres" in the private sector, mostly by private hospitals or diagnostic companies.² However, no formal registration with a regulatory authority appears to be required and hence no official data is available on the numbers or locations of biobanks in India. It was also unclear under the 2006 Guidelines, if stored biological samples used for research constituted human subject research and if residual samples from clinical trials or diagnostic studies constituted a biobank.³

Current guidelines for biobanking and data sharing in India

The 2017 ICMR Guidelines addressed the gap of the 2006 Guidelines by devoting a new section to Biological materials, Biobanking and Data sets. A group of experts used review articles, international guidelines and multiple consultations to formulate and finetune these guidelines. The main components are addressed at two levels:

- **Issues for the researcher** – which covers the definition of biological materials, biobanking and data sets; storage aspects including safety requirements and quality maintenance; and sample typology based on identity linkage and related confidentiality concerns; and
- **Issues for the donors** – recognising the time-lag between the collection of the sample and the actual research, multiple forms and multiple tiers of consent options are provided, including for a waiver of consent and re-consent for secondary or extended use of the sample, including paediatric sample obtained from a donor who has reached the legal age of majority. An Ethics Committee is expected to review these ethical aspects when the proposal is submitted for its approval. The consent form is also the instrument which is expected to address issues of access to data linked to the sample, return of incidental and end of

research findings to donors, sharing of sample / data with researchers/ national or international institutions, potential collaborations and commercialisation and benefit sharing.

Other key ethical aspects covered are related to:

1. **Ownership**, where researchers can have no claim to ownership or custodianship but the biobanks or the institution holding the collection, have custodianship or trusteeship over the samples on behalf of the donor who retains ownership and the right to withdraw both the biological material and the related data.

2. **Transfer of samples**, where Material Transfer Agreements, regulatory clearances with appropriate Memoranda of Understanding, and clearances from the Directorate General of Foreign Trade are required for inter-institutional, inter-country and commercial transfers.

3. **Benefit sharing**, where the potential commercial value of the biological sample or data, even if not known at the time of the start of research, is committed to be shared with the donors, their families and or their communities. This could be in the form of access to the products, tests or discoveries resulting from the research as well.

Ethics Committee oversight

Ethics Committees, whether of the Institution housing the stored samples or of an independent biorepository, have a key role in the use and oversight of the biological material and data repositories for research. It is expected for all such research proposals to be reviewed and approved by the Ethics Committee concerned.

Governance of the biobank

In the ICMR 2017 Guidelines, it is suggested that biobanks have well-structured SOPs for collection, coding, anonymization, storage, access, retrieval and sharing of biospecimens and data. It is also recommended that a governance structure be in place with representation of both science, ethics, internal and external members. An entity within this governance structure is expected to oversee regulatory aspects of material transfer and data transfer agreements. The name 'Technical Authorization Committee' has been suggested for this entity, which is expected to work in tandem with the Ethics Committee.

Ethical management of databases for research

If a data repository is to be used for a specific research purpose or for commercialisation, ethical review is required. Data mining, access control, and data usage must be approved by the Ethics Committee. Data privacy, data accuracy, data security and the possibility of legal liability are to be taken into consideration when data is outsourced or sold. Health data sets when exploited for commercial purposes must adhere to open access provisions, sharing, rights and benefit sharing requirements. Above all, measures to protect privacy and confidentiality of individuals must be in place.

Gaps between ethical guidelines, regulations and actualization

In India, the low level of health literacy, paternalism between doctors and patients and therapeutic misconception in all forms of medical research, make the idea of consent in biobanking, a mere formality without empowering the persons concerned. Multi-tiered consent and re-consent become additional challenges as locating people through phones or emails is not easy. Broad consent reinforces the notion of the public that consent is taken not to respect the wishes of the person but to protect the interests of the researcher and the institution.⁴ While researchers, Ethics Committees and the sponsors of research focus on patents and other legal arrangements as the best means for monetary benefit-sharing⁵, consent forms are written up in such a way that prevents the donors from having any claims over the outcomes of the research.⁶ Several practical issues exist in returning individual research results to donors due to difficulties, ranging from researchers accessing donors, to layers of identity encryption done to protect confidentiality. The challenges are also that of resources, both financial and personnel and the time and counselling needed with the disclosure of results. In the context of India, where healthcare access is difficult for the majority, return of

'actionable' findings which have 'clinical significance' should be an ethical obligation and a moral duty of researchers where this is beneficial to the participants.

Conclusion and policy recommendation

To ensure that altruistic donors of biological samples and health data are sufficiently empowered, public engagement in addition to sound regulation is essential. Public understanding can be stoked through engaged deliberation, and the practical aspects of re-consent and return of results can be discussed. While filling up appropriate consent forms seems to be the priority of procedures in regulations, it is reciprocity and distributive justice that emerge as an ethical lacuna in biobanking research. More clearly spelt out mechanisms for return of incidental (but beneficial) individual or group findings and other forms of benefit need to be developed. Ethical focus on 'common good', reciprocity ('two-way altruism') and collective values need to be entrenched in biobanking policies and furthered through ongoing public engagement.

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Presentation 3: Critical review of current governance framework on research involving human biological specimens in Malawi

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Introduction

The government of Malawi allows access, collection, storage and use of human biological specimens for health-related research, but only for presently approved research protocols that meet ethical requirements including specific informed consent having been obtained from research participants. It does not permit use of stored specimens for future unspecified research nor does it allow broad consent to be obtained from participants for this purpose. We review the governance framework on use of human biological specimens and data and make recommendations to maximize the social value of this type of research while ensuring adequate regulation and oversight.

Precluded future research use of human biological materials

The Government of Malawi through its National Commission for Science and Technology (NCST) has established a relatively comprehensive governance framework on accessing, collecting, storing and using human biological specimens for research. This framework is a composite of ethical requirements on use of human specimens and data from various guidelines produced by NCST and the national health sciences research committee (NHSRC). This framework is summarized in a document published by the NCST titled "What is the National Regulatory Requirement and Position on Accessing, Collection, Storage and Use of Human Biological Specimens for Research in Malawi?". This document states that researchers are allowed access, collection, storage and use of human biological specimens. However, this is only for approved research protocols that have met requirements, including obtaining informed consent. Regulatory requirements do not allow researchers to collect biological specimens that are not required to address their immediate study objectives.¹ Furthermore, for specimens collected for a presently approved study, "tests on biological specimens should only be as described in the approved proposal; specimens collected for a particular purpose should not be used for other purposes".¹ When specimens are collected, they may be stored for an initial period of 5 years.² In the event that tests/analyses are incomplete, investigators can request approval to store specimens for a further 5-year period from the research ethics committee.³ If no approval is given, the specimens must be safely discarded or destroyed, though no mechanism exists to confirm safe disposal of specimens. Tests/analyses of stored specimens must be carried out in Malawi unless there are exceptional circumstances preventing this.² Such circumstances include, lack of technology to conduct the tests, need for further tests to confirm results, and for quality control and validation of results. In these cases, investigators can request approval to export the specimens. This should be done under pursuant to a Material Transfer Agreement (MTA).³ Current MTA documents do not have provision for proof of specimen destruction.

Ethical analysis

Autonomy: The principle of respect for persons as outlined in the Belmont report⁴ is applied in the informed consent process. According to 2014 NCST document, researchers are not allowed to use stored biological specimens for future unspecified research. Potential participants are denied the right to make informed choices about the use of their biological materials in potentially beneficial future research. It is neither stated nor explained why participants are not allowed to provide consent for subsequent research use. Malawi ethical guidelines do not state whether participants may be re-contacted for further consent. It is also not stated whether a waiver of consent would be provided for such future research use. Denying potential participants this right unduly limits their exercise of autonomous decision-making.

Social value and justice: Emerging technological advancements allow for potentially greater and as yet unknown research applications of stored specimens. In addition, human resources, materials and capital are expended during collection, transport and storage of these specimens. Discarding or destroying specimens would therefore lead to loss of present and future scientific and economic benefit, from the failure to maximize benefit derivable from these already collected specimens, while potentially wasting more precious resources having to collect and maintain them again. In many regulatory systems, specimens that are anonymized need not be destroyed. However, this is not provided for in the current guidelines and so diminishing potential value to communities which provided them.

Recommendations and ethical justification

Allow participants to provide broad consent for future research use: Malawian citizens who wish to donate their biological specimens for future unspecified research use should be allowed to do so. This respects their autonomy, and also satisfies the principle of respect for persons.

Develop guidelines to protect those with diminished or no decision-making capacity: Malawian guidelines on informed consent have provisions on individuals without decision-making capacity to participate or contribute to research. However, they make no reference to research involving future unspecified use of human biological specimens obtained from such individuals. We recommend a consultative process to produce guidelines to protect these vulnerable individuals whilst allowing them to contribute to socially valuable research.

Community engagement: Community engagement is needed to assess the views of participants and develop guidelines that are sensitive to the ethical, social, political and cultural context of Malawi. This will help make research more acceptable and meaningful to affected communities.

Public education: Malawian society is not free of superstition. Recent history suggests that collection and use of specimen for future unspecified research may be viewed negatively. The social unrest and violence that accompanied rumors of vampirism (blood sucking and organ trafficking) are potent examples of the lack of public understanding of science. Increased awareness through education can dispel these beliefs and make research more acceptable.

Update Material Transfer Agreement: The current MTA form does not have provision for proof of destruction of specimens, making it difficult for local ethics review boards and the government to determine the fate of specimens collected from local communities. This increases the risk of misuse. We recommend including in the documentation a requirement for proof of specimen destruction to be submitted when the specimen is no longer needed.

Conclusion

Malawi has a comprehensive framework that governs research on stored human biological specimens. However, some ethical requirements are narrow and restrictive and may hinder research with considerable social value. As research on human biological specimens becomes more prominent in Malawi, there is a need for clearer guiding policy in order to maintain the delicate balance between necessary oversight, and promoting robust and beneficial research on stored human biological specimens.

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Presentation 4: Governance of health data sharing in post-Ebola West Africa: Lessons, realities and prospects

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Realities and challenges to good governance

The sharing and responsible application of health data, such as information relating to morbidity, mortality and system resources are important to support decision-making at policy and institutional levels. As such, it is essential to have a consistent and robust data governance framework. Governance has many dimensions and covers several domains: international and national policy, ethical guidelines published by the WHO and other similar bodies, laws and regulations, translation and implementation of ethical norms as good practices (such as sound data management), stakeholders interactions, transparent and appropriate system of rights protection, appropriate access to and sharing of information. More broadly, good governance of a health system requires analyzing trends, defining standards, planning and acting to ensure the protection of the rights to health, safety and individual and collective well-being.

The governance of data practices relates to organizational, managerial and ethical capacities, while specific regulations highlight the tools, principles and ethical values relating to the production and management of data for decision-making and action. Thus, to better understand the underlying issues, three critical points will be described: interest in the data, contextual requirements and sharing of real-time health data and related guidelines. It should be emphasized that the sharing of real-time health data includes surveillance data and scientifically validated data, both of which can be demanding (in terms of time and resources) to generate if they are to be robust and ethically sound. Regarding (international) guidelines, these are not sufficiently disseminated or internalized, hence gaps still exist in relation to critical aspects of data practices. To address this challenge, it is not only essential to disseminate and promote these guidelines, but to also adapt them to the contexts and situations where they are applicable.

The performance of a health data management system for action and innovation is dependent on the volume, scale and quality of the data that it comprises. Such data includes information pertaining to the health status of populations and the resilience of the health system. In addition, data that relates to the social determinants of health may also be important, as there is strong interdependence between the environmental and social context in an epidemic-prone society. Such data could relate to health workers' attitudes and the behaviors of patients and community members in dealing with illness, prevention and treatment. The Ebola epidemic in West Africa other has been unprecedented not only because of the poor knowledge of the disease, but especially also about its spread.

Increasingly, human health data is no longer in and of itself sufficient to effectively anticipate health threats because of the human-animal-environment interface. This highlights the importance of linkages between health data at all stages of life with social, economic and environmental data. Clearly, planning an epidemic response and quality management of integrated disease control under resource constraint is closely correlated with data availability, reliability, and continued use of data analysis, research and innovation. Lack of data and poor data quality (due to it being partial or incomplete) have been detrimental to disease control and effective health system functioning, even if scientific and technological advances have helped to fill some gaps through real-time analysis and data optimization.

There is also a lack of information about the values and preferences of patients and their families, their communities and health care providers, even though patient-centered care is increasingly being emphasized. This development coincides with a new initiative that has been introduced to improve community health services. Individuals and communities are now realizing the need to establish themselves as responsible actors for their health and well-being. In addition, advances in Information and Communication Technology (ICT) gives them the means to achieve this. Overall, it is reasonable to argue that an efficient approach to health system strengthening could be through advancing data

sharing mechanisms, platforms and practices, which will then help to empower patients or research participants.

Ethical lessons from the Ebola epidemic in West Africa

Whether in the context of research, disease prevention, surveillance or effective response to health emergencies, data sharing continues to present challenging ethical issues such as informed consent, community engagement and mutual trust. In the context of West Africa, these ethical issues have been especially contentious where data and samples are shared both within and outside of the region.

The Ebola epidemic in West Africa has shown the need for a more efficient and effective means of sharing biological materials and related data. Since then, discussions have focused on setting up an Ebola data platform in relation to these materials and data obtained from Guinea, Sierra Leone and Liberia. Discussions with policy makers and stakeholders helped to define secure storage mechanisms and identify ethical concerns for integrated data access. Some of the concerns and aims relate to protection of human rights, transparency, service delivery and reducing the information gap for the scientific community. One of the key goals is to enable post-epidemic data sharing through developing: practical modalities for implementing such a platform with Ministries of Health in the affected countries, data protection measures, and appropriate conditions of access.

In the field of health sciences, a major challenge with data and sample sharing for research purposes arises from the difficulties in balancing the rights (or interests) of research participants (or data subjects) on the one hand, and the interests of researchers and society more broadly to promote scientific and technological advancement. For the latter, their concerns include appropriate organization of data, data repository used and the costs of storing and sharing samples and digital or paper-based data. Where governance is concerned, policymakers and researchers recognize the importance of improving transparency, accountability and sustainability. The concerns of the former are recurrent and persistent, and relate to a range of ethical considerations, particularly confidentiality, anonymity, security and well-being.

The advantages of the Ebola data sharing approach are the compilation of a mass of disparate data within a single and harmonized database, secure storage, the opportunity to be accessed by researchers according to pre-established principles and conditions. The data sharing system consists of responding to the research and training needs, and prioritizes the informational needs of Ebola-affected communities. An aim of the system is to support the evaluation of policies and intervention strategies and to ensure preparedness to cope effectively with future epidemics. The resulting benefits (i.e. knowledge, products and risks management) need to be shared in accordance with social justice and equity. On this basis, I would argue that Ebola survivors, ethics committees, researchers, and communities need to benefit most from data sharing. To the question of how should this be decided? Ideally, this should be by mutual agreement and in accordance with any applicable directives and regulations.

Ebola data sharing platform

It is with this vision in mind that the theme of the 3rd Sub-Regional Conference of West Africa was dedicated to strengthening post-Ebola health systems. The conference was held in Conakry, and attended by colleagues from the health communities of three countries (Guinea, Sierra Leone and Liberia) that were most affected by the Ebola outbreak, to discuss the establishment of an Ebola data platform. The platform, which will involve international cooperation, has the objective of consolidating and harmonizing all the clinical, epidemiological and laboratory data obtained from patients with Ebola haemorrhagic fever and affected communities in West Africa. This data will be made available to the public and to scientific and humanitarian health communities to disseminate knowledge about the disease, support the expansion of research in West Africa, and improve patient care and future response to an outbreak. Separately, the West Africa Research Consortium is committed to supporting the development of the platform.

Additionally, the Minister of Health in each of the West African country involved has appointed a representative to the Steering Committee of the Ebola data platform. The presence of these

representatives is essential to ensure that these countries have the opportunity to define the goals, development and governance of the platform together with the international partners which have led the initiative. These appointments are also intended to maximize the impact of the platform, to respond to the needs of Ebola-affected communities, and to support the training of scientists in the most affected West African countries. Other representatives on the Steering Committee include individuals appointed by the following organizations: the West African Health Organization; World Health Organization; West Africa Group for the Control of Emerging and Re-emerging Infectious Diseases (or "WATER"); Médecins Sans Frontiers; the Wellcome Trust; International Medical Corps; and Oxford University Charitable Scientific Organization. Steering Committee members contribute their expertise to directing the policies, strategies and management of the platform. Operationally, the Steering Committee meets face-to-face twice a year and holds conference calls every three months. The members of the Steering Committee sit for a three-year term, and is renewable once.

Progress on the platform To date

Discussions at the conference in Conakry highlighted the need for greater integration of data, data security, and data sharing through the establishment of a searchable database. Strategic directions and policy commitments were also emphasized as essential. For example, the need for compilation, secure storage and accessibility of Ebola data was demonstrated with the technical and financial support of the partners. A group of national experts (from Oxford University and elsewhere) and foreign researchers have been appointed to pilot the project for the three countries. Data collected during the Ebola epidemic was carried out by the Coordination Cell Unit, together with supervisors of health facilities operating at different levels, and with the support of international partners like WHO and CDC, among others. In the post-epidemic context, all data has been stored at the Urgency Operation Center where governance practices and principles have been improved on. As one of its key stakeholders, Oxford University has contributed to the design of the platform, led in advocacy with the authorities as well as in the formalization of the partnership. This institution continues to contribute immensely to the viability and influence of the platform within the West African region.

Open and enriching stakeholders' discussions have helped to allay fears, and have facilitated the establishment of a true partnership on data sharing at regional and international levels. The scope, the pace and the scale of the implementation of the platform illustrate that political commitments have been effective so far.

Conclusion and recommendations

Challenges relating to sample and data sharing that arose since the Ebola outbreak in West Africa have shed light on ethical and legal, as well as healthcare, infrastructures that were lacking in fragile health systems and measures that could be introduced to address them. Access to data and scientific knowledge on infectious diseases is of particular interest to low-income countries that struggle with these diseases and have limited means to address them. How to apply such data and knowledge on an evidentiary basis to address policy and healthcare concerns is a further challenge for low-resourced health systems. Experiences with the Ebola data sharing platform that is being developed has been constructive, and is a good example of an international collaboration that is a means of collective learning on the production and use of data as evidence on the one hand, and on public-private partnerships that engage with local partners and communities on the other.

To support meaningful and effective data sharing, further evaluation of ongoing reforms in West Africa (particularly Guinea) is needed. Data governance needs to be revisited and adapted to meet new requirements. Finally, health data security must be supported by strong data management, which has multiple components including policy, communication, procedures, regulations, monitoring and evaluation of actions and retrievability. The lessons and experiences gained during and after the Ebola epidemic deserve to be closely studied in order to build health system resilience through evidence-based approaches.

“Pecha Kucha” presentations

“Pecha Kucha” translates from Japanese roughly as “chit-chat”. Pecha Kucha presentations are designed to be delivered quickly and concisely, with slides **automatically** advancing every 20 seconds. They are an informal opportunity for GFBR participants to find out about each other’s research, viewpoints and experience.

The format does not allow for questions at the end of each presentation but you are welcome to discuss the presentations after the session or during breaks.

1	Regina Garcia Zika in infants and pregnancy: Conducting research in the setting of a public health emergency
2	Ravi Vaswani Case of a prospective protocol on stored blood samples without consent for future use
3	Farirai Mutenherwa Ethical issues in HIV molecular epidemiology
4	Vina Vaswani Ethics of data sharing and biobanking: A policy paper: Who is the owner of my data?
5	Derrick Aarons A protocol on access to biospecimens and biodata for research in the Caribbean
6	Kenneth Onyedibe Biobanking in Africa: Could religion and witchcraft create an ethical bottleneck?

1. Zika in infants and pregnancy: Conducting research in the setting of a public health emergency

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Background

Zika was declared as a Public Health Emergency of International Concern by the World Health Organization from February 1st until November 18th 2016, as it was spread among 76 countries worldwide. Zika virus (ZIKV) infections have recently been associated with microcephaly, other birth defects and neurological disorders like Guillain–Barré syndrome. The Zika in Infants and Pregnancy study is being implemented in ten research sites across Brazil, Colombia, Guatemala, Nicaragua, Peru and Puerto Rico. It aims to assess the strength of the association between ZIKV infection during pregnancy and adverse maternal/fetal outcomes and the risk of vertical transmission. Clinical and demographic data as well as biospecimens (blood, urine, saliva and vaginal secretions) for ZIKV testing are collected from mothers (first trimester to 6 weeks postpartum) and infants (birth, 3, 6 and 12 months). Guatemala participated in this study as part of an ongoing collaboration with the National Institute of Health and the University of Colorado. In the Guatemalan site, one thousand pregnant women and their infants who attend Ministry of Health Hospitals in the coastal regions, have been enrolled. Specimens are handled and shipped under cold chain conditions to the laboratory at central INCAP offices in Guatemala City. Serologic and molecular testing is performed in serum samples using the assays designed by the Centers for Disease Control and Prevention Zika MAC-ELISA (IgM antibody capture enzyme-linked immunosorbent assay) and Triplex Real-time RT-PCR Assay, respectively. The remaining biospecimens are stored at -80°C and -20°C for further analyses.

Ethical issues

In addition to central ethical reviews, the site specific reviews included the University of Colorado, the Ministry of Health and the INCAP Institutional Review Boards. Main issues brought up by these IRBs included: give support the local MOH offices in ensuring that they carry out all protective measures for the communities where our participants reside; use of a clear, concise and simple language to comprehend the informed consent (including risks and benefits), for which a pictorial consent was developed; define the available resources to women and neonates if they are diagnosed with Zika as a result of this study; indicate which specimens and how should they be organized for long term storage and discarded. All study staff (field and laboratory) was trained and certified in ethical aspects of conducting research; additional training was provided to study clinicians who performed the consent process. Because of the design of the study, specific questions were included in the consent regarding storage of samples and data for future use in other Zika related studies; future contact about any study in the future interested in using their samples and shipment of samples to international reference laboratories for further Zika studies. All biospecimens follow proper quality control measures at collection, processing, handling and storage to ensure high standards of quality. To guarantee the anonymity and maintain privacy and confidentiality of the specimens and data, all participant information has been de-identified as part of the study protocol. When biospecimens are no longer required and it has been determined that it will be discontinued, it should be disposed consistent with the principles of consent, privacy and confidentiality, in accordance with Guatemalan legislation and regulation to the disposal of human materials and bio-hazardous waste. Currently over 150,000 aliquots of all specimen types are stored.

2. Case of a prospective protocol on stored blood samples without consent for future use

Ravi Vaswani, Centre for Ethics, Yenepoya University, Mangalore, India

Background

There is no single clear unambiguous definition of a biobank in the Indian regulations or guidelines. Research using cutting edge technology (especially in the field of genetics) is increasing in India, and consequently more and more stakeholders are increasingly interested in establishing biobanks within the country. There is a general lack of awareness of what a biobank is, what are its scope and limitations, how it should handle issues of research, academics and commerce, and critical analysis of the ethical issues involved. The Indian Council for Medical Research has recently revised the guidelines for biomedical research (2017). There is a section on biobanks and future use of stored samples in research. While this is a welcome step in the right direction, there is still a lack of clarity, on several ground-reality issues: what are the quality controls for a biobank, how a biobank should actually carry out its functions, the length of time for tissue storage, and its disposal. Tighter regulations are the need of the hour, before the situation gets out of control. In a developing country like India, with a lax set of biomedical research regulations, with a linguistic divide between the researcher and the researched, and a history of poor quality of the consent process in the traditional version of research – research on stored samples is fraught with many possible ethical transgressions. This case-based (anonymized) ethical analysis explores the ethical issues on the future use of stored samples in research and the role of biobanks in such activity in India.

Ethical issues

More and more research is happening on computer-generated data, using high-volume servers that can read thousands of terabytes worth of information in a few hours. Biological samples and data are shared across laboratories and research groups without anonymization or delinking of identifiers. Clear directions are lacking on ethical issues such as confidentiality and privacy. Benefit-sharing is a concern that needs to be addressed. Statements in the informed consent form on permission for future use of biological samples are couched in ambiguous language, or buried in the middle of technical jargon, or just simply assumed to be given. In its current state, informed consent processes fall short of providing participants with the autonomy necessary for informed decision-making. Who is the owner of the tissue/sample, who is the custodian, and who can share in the benefits of future research need clarification? Discordance between interdepartmental government agencies regarding permissions need to be sorted out. Biological material disposal happens without clear guidelines and quality checks.

Recommendations

Accreditation and licensing of biobanks should be strengthened and such information disseminated. Researchers and bioethicists need increased awareness and training on biobanks and future research on stored samples. Such training programs should include what constitutes biobanking, what are the boundaries separating healthcare from research, and what are the standards to maintain with regard to the informed consent process, privacy and confidentiality in anticipated future research on stored samples. Such proactive ethics interventions will ensure that in the process of doing exciting research, scientists will not step on the toes of the community, and the trust will be maintained between society and science.

3. Ethical issues in HIV molecular epidemiology

Farirai Mutenherwa, University of KwaZulu-Natal and KwaZulu-Natal Research Innovation and Sequencing Platform

Background

Phylogenetic analysis is widely recognized as a powerful tool for research, public health and clinical purposes. By sequencing HIV genes and examining the relatedness of different sequences and their mutation over time, inferences can be made about which viruses are closely genetically connected. The analyses of viral genetic linkage can provide fine scale information about HIV transmission dynamics, which is instrumental for the design of targeted prevention interventions and to assess their impact.

Despite the progressive use of phylogenetic approaches in HIV epidemiology and research, the ethical implications of the techniques have received minimal attention. We reviewed available literature and conducted in-depth interviews with experts in epidemiology, public health and research ethics to understand key ethical issues that may arise from the design, conduct and use of results from HIV phylogenetic research (HPR).

Ethical issues

Phylogenetic analysis has great potential to reduce the spread of HIV. However, balancing the public health benefits of HPR against risk become increasingly challenging as phylogenetic techniques become more advanced. Questions arise as to how HIV phylogenetics research messages are best communicated to different stakeholders and for results to be presented without compromising the rights, safety and wellbeing of individuals and sub-groups. While targeted prevention interventions and treatment programmes could be of public benefit, these could also be sources of stigma around communities viewed as high-risk. As the generation of HIV sequence data become increasingly affordable, there is need to maximize its utility while ensuring that appropriate safeguards are put in place to protect human research participants and identifiable communities.

4. Ethics of data sharing and biobanking: A policy paper: Who is the owner of my data?

Vina Vaswani, Director Centre for Ethics Yenepoya University Deralakatte, Mangalore, India

Background

India is a country with population of more than 1.2 billion. Any effort to make a data base is fraught with dangers of data safety and breach of privacy. The government of India initiative of enrolling every citizen to be a part of the national enrolment scheme—Unique Identification Authority of India (UIDAI)—a unique 12-digit number (Aadhar card) to identify Indian residents, incorporating biometric and demographic data was a herculean task. UIDAI had unanticipated links to insurance, date of birth, SIM card registration, and other similar activities. While people believed that their data was safe, Elliott Anderson, (a security researcher and telecommunications engineer) leaked out details of 20,000 Aadhaar card holders along with their fingerprints on Twitter. If this is the case with the national UIDAI data bases what guarantee can biobanks – which lock up the holy grail of genetic data – be safe. The nature and consequence and magnitude of such a breach of personal data resulting in invasion of privacy and harm to many. Would future biobank regulations allow for UIDAI link up with biobank registries too?¹ What should be the policies in place to have biobanks uphold the confidentiality of the data?

Ethical issues

The Indian Council for Medical Research², defines biobanking as an organized collection of human biological material with associated dataset stored for years in appropriate facilities for research and potential commercial purposes with inbuilt policies for transparency. Biological material could be kept for research, or for forensic purposes. How should biobanks and researchers using biobank materials or data consider the process of informed consent, the nature and type of research and need for re-consent? If there are future advancements which were not considered in the frame work for consent, re-consent would be required. Ethics committee members should be well versed with broad notion of consent, future specified use, unspecified use.³

Biobanks must be clear about guidelines on re-use of samples. Each donor should be specifically informed if the sample is to be re-used for a purpose other than that determined at the time of collection. Failure to do so could possibly lead to an erosion of public trust. When a researcher promises confidentiality, data protection, and convinces the ethics committee, the researchers and the ethics committees have the added burden to be more careful, when it comes to data-sharing.

Research is a collaborative activity with a strong trust quotient, yet right to privacy is nullified, when access to research data is given for a purpose other than for which it was collected. (Hansson 2006)

Public trust can only be maintained through upholding confidentiality.⁴ Trust building exercise is mutually beneficial. In spite of Government of India's regulation on bio-piracy, the implementation has been found wanting and there are recorded instances of specimens being shipped out overseas without formal approval. Similarly stored samples are used for research without ethical clearance.

Recommendation

I propose that a policy framework be made for governance of six key elements, along the lines elaborated by Chen and Pang: (a) Respecting donor and donees' biological samples and upholding their privacy and confidentiality; (b) Consultations with participants to inform them of the risks; (c) Fair and equitable sharing of benefits, data and for sharing samples benefits and data in a fair and equitable manner; (d) ensuring quality of data; (e) Cultivating trust to encourage participation and improving awareness and (f) Defining private sector role in knowledge use by using biobanks.

Thus, in India, there is an urgent need for developing new and strengthening existing regulations for the role and functioning of biobanks. The current Indian Council for Medical Research guidelines do not suggest a mechanism of checks and balances. The guidelines need to be strengthened with best practices.

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5. A protocol on access to biospecimens and biodata for research in the Caribbean

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Background

In 2016, in response to several requests from persons and institutions within and outside the Caribbean for access to its stored biological samples from various countries across the Caribbean in order to conduct research, the Caribbean Public Health Agency (CARPHA), the regional institution providing public health services to its 24 member states across the Caribbean, requested its Ethicist to develop a protocol to guide the Agency in addressing such matters.

There is currently no regulation, guidance, or governance document regarding research in the large majority of Caribbean countries, and no guidance exist on research with biological specimens (biospecimens) or biological data (biodata).

Biospecimens (e.g. serum, blood, urine) and related data are routinely gathered in the process of health care within the various countries of the Caribbean, and where no local facility exists to conduct certain sophisticated or specialized tests, the biological samples are transferred from those countries to CARPHA, based in Trinidad and providing the largest public health laboratory services in the Caribbean.

Ethical issues

These bio-specimens were collected from patients for a particular purpose (health care) on the basis of trust (and informed consent) between patients and health care personnel. No mention was made at the time that the bio-specimens might subsequently be used for a new purpose (research). However, in light of the pervasive long term consequences of Chikungunya in 2014, Zika in 2016, and other diseases, several approaches were made to CARPHA for permission to access their repository of stored blood and serum for various forms of research, including the development of possible vaccines as a long-term outcome.

Since the biospecimens were voluntarily provided to health care personnel for investigative purposes without any mention at the time of any other possible use, such bio-specimens cannot be used for research unless so authorized by a pertinent research ethics committee. Furthermore, bio-specimens that are specifically provided for health care investigations, or where expressly provided for research and teaching, should not be used in any work that is sponsored by a company for licensing or commercial purposes.

If persons are to be approached for bio-specimens that are likely to be sent outside a particular country to CARPHA, then **broad consent** for the process should be sought and obtained.

Recommendations

The wording (both verbal and written) by those seeking this 'broad consent' should specifically inform the patient about the possibility of research.

Agreed-upon policies and undertakings (e.g. Material Transfer Agreements - MTA) for the transfer of bio-specimens from one country to another, and issues of handing and subsequent disposal and destruction of bio-specimens, should exist prior to any transfer across jurisdictions. Where no such stipulations exist in a MTA, ownership of bio-specimens should be presumed to reside in the institution that currently possesses the bio-specimens, and access to bio-specimens shall be at the discretion of that institution.

6. Biobanking in Africa: Could religion and witchcraft create an ethical bottleneck?

Kenneth Onyedibe, Purdue University USA/Jos University Teaching Hospital Nigeria

Background

Religious beliefs and perceived witchcraft exist in various forms in Africa. It is a known fact that individuals with such beliefs and perceptions are not in the minority. In Yorubaland of Southwest Nigeria, there is some belief of a god of thunder “Ogun” who uses thunder to punish evil deeds. According to anthropologist Filip De Boeck, “There exist another world of mystics made up of water spirits, or ‘Mami Wata’, witches and wizards, zombies, transformers, half-men or half-leopard, etc”. All these “characters from the invisible or the imaginary” constantly intrude in the visible world, haunting the minds of populations, and representing a real danger for them. Witchcraft is believed to be present in churches, schools, hospitals and the courthouse in many parts of Africa.

Ethical issues

Wholesome and successful data sharing and biobanking in Africa cannot be achieved without understanding Africans, their spirituality, religiosity and their arguably rich cultural trimmings. Ethical framework has been the most controversial issue in the domain of biobanking. Hence, it is not surprising that there is a substantial literature focusing on ethical dilemmas in biobanking, such as informed consent, privacy, protection, and returning of results to participants. Biobanks deal with human samples, taking over the donors autonomy and limiting self-control over parts of their bodies which may provoke a number of fears. Most importantly, these fears are shaped by beliefs. In the presence of such fears there are no policy document reassuring these donors of non-interference of religion or witchcraft. Trust from sample donors is definitely at stake. If sample donors perceive any form of witchcraft in a biobank, that biobank is doomed.

Secondly, it is not inevitable to find researchers whose data sharing leanings are affected by their religion or beliefs. There are religious groups who totally refuse to give or accept blood products or take pills. What if a researcher shares any of these beliefs?

According to Article 18 of the Universal Declaration of Human Rights, “Everyone has the right to freedom of thought, conscience and religion; [] to manifest his religion or belief in teaching, practice, worship and observance”. How do we now handle religion and witchcraft as it affects biobanking? Not only do such beliefs pose serious problems of mistrust for biobanks and researchers, but also for bioethicists who are caught between human rights and intangible beliefs. Religion, magic and witchcraft are interrelated. Cultural and religious beliefs and practices have a tremendous impact on the policies designed to guide biobanks in our society. Whether the belief that witchcraft is real or not is inconsequential at this point in light of the fact that millions of Africans recognize it to be so and live their lives in its reality.

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1. Understanding perspectives on the collection, storage and use of biological samples for future unspecified research purposes: The case of Malawi

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Background

This is a study conducted by a team from Centre for Bioethics in Southern and Eastern Africa (CEBESA), with funding from College of Medicine Small Grants Award, which aimed at exploring the perspectives of key stakeholders participating in bio-medical research on the collection, storage and use of samples for future unspecified research purposes in Malawi. Due to the remarkable growth of medical research in low middle income countries mainly in Africa, there has been large volumes of biological specimens collected and stored with an intention of re-using them in future research. In 2012, the National Commission for Science and Technology (Malawi's Research Regulatory Board) issued a statement to prevent the collection and storage of secondary biological samples for future unspecified research. From empirical data, there are some ethical concerns that possibly led to the prevention of the collection and storage of samples for future research such as fear of exploitation, lack of regulations, concerns with confidentiality and ownership. The study was deemed an area of important research as there is deficit of data on ethical concerns with the current practices and the need to start a discussion on an ethically acceptable approach for re-use of samples for future research in Malawi.

Methodology

This study was exploratory in nature utilizing qualitative methods. The team conducted 5 Focus Group Discussions (FGDs) in the Southern, Central and Northern parts of Malawi, 3 FGDs were conducted with active research participants and 2 involved Community Advisory Board members (CABs). To increase the validity of the data, 13 In-depth interviews (IDIs) were also conducted, 3 IDIs were conducted with Research Ethics Committee Members, 3 with Malawi Research Regulatory Board personnel and 8 with researchers from 6 different research institutions.

Study Findings

Our study indicates that the majority of study participants acknowledged the practice of collecting and storing of biomedical samples for future research purposes, however, important ethical concerns are emerging. Participants alluded the costs associated with collection procedures, the complexity in sample collection procedures, the informed consent challenges, harm associated with collection and how precious these resources are perceived, as some of the reasons which motivates researchers and research institutions to collect, store and re-use the samples for other research purposes. In addition, emerging public health emergencies globally, render storing and re-using a unique opportunity for nations to quickly access samples. The following are the ethical concerns (1) with the current consenting procedures being specific for intended use and storage in Malawi, individual consent for future research could not be realized hence unethical making the storing unnecessary; (2) Mistrust among research institutions, collaborators and researchers with regards to the unethical use of the collected samples; (3) Perceived injustice on how benefits derived from the results of the research could be attributed back to research communities; (4) Lack of proper guiding framework, monitoring on collection, storage and re-use of the samples raising questions on roles, rights and responsibilities of key stakeholders in relation to participants safety and well-being.

Conclusion

With current regulations and practice, the collection and storing of samples for future research could be considered unnecessary, however, benefits of re-using are ethically justified and preventing re-use is deemed unethical. Though concepts of bio-repositories deemed favorable by study participants, stakeholder engagement and consultation remains critical.

2. The perspective of a research ethics committee in reviewing research proposals on sensitive clinical data from hospitals in Malaysia

Nor Hayati Othman, Hans Van Rostenberghe, Narazah Mohd Yusoff, Nik Hazlina Nik Hussein, Shukri Othman, Azlan Husin, Nor Azwany Yaacob, Siti Hawa Ali and Mohd Bazlan Hafidz Mukrim. Research Ethics Committee [JEPPEM], Universiti Sains Malaysia, Malaysia

Background

Research Ethics Committee of our university [JEPPEM] received 2 research proposals from 2 postgraduate students seeking for ethical approval for their studies. Both studies involve mining sensitive clinical data. One is a five year review of seminal analysis of husbands from couples with infertility and the other is a 10 year review of clinical data on women less than 45 years old who developed endometrial cancer. The former study protocol included identifying the couples who were investigated for infertility and examining data of semen analysis. The investigators would also identify the factors that are associated with abnormalities of semen such as smoking, past history of mumps and groin injuries. This study takes place in a University Hospital. The second study protocol is reviewing clinical data to identify possible risk factors in women who developed endometrial cancer at the age of less than 45 years. The investigators wish to study the survival of these patients after treatment; surgery versus no surgery. This study takes place in one public hospital under Ministry of Health. Both study proposals have obtained permission to look at patients' folders from the respective hospital directors. Both investigators are students undergoing professional course, Master of Obstetrics and Gynecology at Universiti Sains Malaysia.

Ethical issues with commentary on each issue

The investigators are medical officers who may be not be involved in managing those patients recruited in their studies, therefore accessing the folders of these patients are breaching confidentiality of the patients. Even though they obtained consent from the hospital director on behalf of the patients to get the research data from the patients' folders, these patients do belong to a vulnerable group and their data are sensitive data. If proper written consent or phone consent is required the following problems may occur; The patients' folders may contain outdated contacts of the patients; Infertility problem is often a taboo in our community and many women and men shy from talking about this subject; Seminal analysis is also a sensitive laboratory examination and most men are not comfortable talking about this examination; Endometrial cancers are commonly seen in women who are post-menopausal. When they occur in younger women, the causes include obesity, infertility, diabetes and excess estrogen from internal or external factors, which are also sensitive data; Phone consent may not be proper; Patients may no longer be on hospital follow up and face to face meetings for consent-taking purposes may be costly and impractical.

Conclusions and two recommendations

Auditing clinical data for service improvement is encouraged in any hospital for improvement of patient care. However, when they are carried out systematically as research projects, investigators need to observe certain rules as not to breach ethical principles. Recommendations include; De-identifying patients at the point of data collection by employing a neutral person to de-identify the subjects /blind the identifiable data; Consent issues are difficult to sort out and consent by the hospital director on behalf of the patients may be acceptable provided privacy and confidentiality are well taken care off.

3. Data sharing in large-scale international collaborative research - National Family Health Survey (NFHS) as an example from India

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Background

Good quality research on the health situation of a country is crucial for policymaking. The National Family Health Survey (NFHS) is a large-scale survey conducted throughout India. It is a collaborative project involving Governmental and Non-governmental agencies from India and USA. Four rounds of the survey have been carried out so far. The last round (NFHS-4) had a sample size of more than 572,000 households. Data files of NFHS have been made available online for access to interested parties from 1995 onwards, seventeen years before the Government of India came up with its policy (National Data Sharing and Accessibility Policy) for making datasets of public funded research openly accessible. Experiences from this data sharing have probably allayed to some extent fears about data sharing among stakeholders and helped the Government of India come up with its data sharing policy in 2012.

Ethical considerations/issues

Promoting equity

Equitable sharing of data in international collaborations could be a challenge. The Demographic Health Survey (DHS) program which partnered in NFHS has a declared policy of 'fostering and reinforcing host country ownership of data collection, analysis, presentation, and use'. Data sharing of NFHS benefitted from this policy as well as the experience and data management capabilities of the DHS program. The data can be accessed through links from the Ministry of Health and Family Welfare (MoHFW) Government of India, the website of NFHS and the websites of the different collaborators. The DHS program website maintains the complete data set of NFHS as well as surveys from other countries. With all partners having equal access to analyzable data, the collaboration has managed the challenge of equitable sharing of data among all collaborators.

Advancing good governance

Data sharing requires time and resources that resource-constrained public health systems lack. Public health data is useful for the Government of India in resource allocation, prioritization, and planning. The data has secondary uses like academic research and technology development. The data management and sharing practices of DHS programme has helped the Indian collaborators to adopt best practices and build capacity among them. It has also probably helped development of the policy to facilitate access to Government of India owned shareable data through a wide area network, thereby permitting wider accessibility and usage by the public.

4. Developing research to improve informed consent practice in biobanking: A Sri Lankan experience

Jonathan Ives, Centre for Ethics in Medicine, University of Bristol, UK

This poster reports initial findings from a pilot study, funded by the Wellcome Trust, designed to examine the feasibility of conducting research to explore, understand, and inform consent practices in biobanking research in Sri Lanka. The project arose from observations made by researchers at the Institute for Research and Development that it was very challenging to obtain informed consent for their biobank, developed as part of the CoTass 2 study (Colombo Twin and Singleton follow-up study). Particularly challenging were attempts to communicate the risks and benefits of biobanking (including data sharing), as well as communicating and facilitating sufficient understanding of technical information. This raised questions about the quality of informed consent and informed refusal.

This gave rise to a pilot project being designed to explore public understandings of genomic research and genomic medicine, in a biobanking context, in an attempt to improve communication about genomic research and develop better, more appropriate, local informed consent processes. The methodology for the project draws on empirical bioethics, which seeks to conduct ethical analysis and/or analyse normative concepts (such as informed consent) in a way that is richly informed by relevant empirical data.

Preliminary data analysis suggests that lay understandings of genomic research are relatively poor, and this can be impacted by potential participants not accepting the scientific research paradigm. At the same time, data suggest that potential participants are less concerned about having full understanding about the research, and are more concerned with questions of trust and public good. This suggests that standard, imported, models of informed consent may not be appropriate in all Sri Lankan contexts.

Researchers should consider carefully the appropriateness of the informed consent process they are using, and consider alternative approaches that might focus on alternative, and culturally appropriate, values and understandings.

Blanket consent for data sharing may be given on the basis of the extent to which the participants feel they can personally trust the researcher they engage with, and that feeling of trust may be far more significant than any information given or understanding that the participant has. Researchers must consider carefully how to manage this.

In terms of the feasibility of conducting this research on a larger scale, there were significant challenges in recruiting people who did not consent to their samples being stored in the biobank, and this places limitations on the extent to which we can really understand reasons for refusal. Larger scale research is needed, and this will need to consider carefully how to access the experience of people who are reluctant to engage in research – which presents something of a catch-22. We suggest that an important first step toward this goal may be public engagement events.

5. Challenges of Institutional Review Board (IRB) in approval of data sharing and biobanking proposals amidst lack of country specific genomic research governance frameworks: Lessons learnt by Botswana IRBs

Mary Kasule, University of Botswana, Gaborone, Botswana

Background

Botswana remains one of the sub-Saharan countries with a high burden of HIV (17.6%), but is also widely considered one of the biggest success stories in the fight against HIV in Africa. The country also offers an opportunity to benefit from genomic research since it is thought to be one of the sub-Saharan countries with a diverse ethnicity and genetic diversity and can provide a great opportunity for studies aimed at understanding how they influence susceptibility or resistance to diseases especially HIV and its co-morbidities. Genomic research in Botswana is still in its infancy. In 2012, a North–South collaborative African Genomics Network (CAfGEN) project was funded by NIH and Wellcome Trust as part of the Human Health and Heredity in Africa (H3Africa). The project aimed at evaluating the “Host Genetic Factors Influencing HIV and TB Disease Progression in African Pediatric HIV”.

Ethics review challenges

The proposal was reviewed by the National Research Ethics Committee and the University of Botswana Institutional Review Board (IRB). Being the first of its kind, both IRBs encountered a challenges in the approval which led to delays in the initiation of the project. Major challenges hampering decision-making centred on participant’s protection, (informed consent), privacy and confidentiality, beneficence, data transfer and sharing as well as biobanking. This was a result of the weak research ethics regulatory system that has not kept pace with advancements in genomic research technology and lack of country specific genomic research guidelines. Furthermore, there was very little initial guidance from H3Africa as the consortium members were also still drafting policies on data sharing, access. Consultations with Ethics Committees and Community Advisory Boards were also still ongoing. Lack of early in-country stakeholder engagements also hampered dialogue on deciding on data governance, the right level of detail at which to share datasets, where and how to share as well as where to store the data since there lack of familiarity with how repositories operate. This created a problem on determination of governance. The reviews and decisions were based on the traditional clinical trials and biomedical research contexts to address the emerging ethical issues from data sharing and biobanking which were not adequate or relevant. The traditional consent process did not take care of appropriate consent models i.e. a “broad” consent model was applied. In the absence of national copyright and licensing laws regarding data sharing it was difficult to determine the benefits that would be accrued by the country for data shared and stored in biobanks, losing out on the impacts of the social value of the research.

Lessons learnt

Currently Botswana has embarked on engaging researchers and other stakeholders to come up with a harmonized ethics review system. With the model framework for governance of genomic research by developed by H3Africa, plans underway to implement and draft country specific genomic research guidelines. Capacity building in genomic research ethics review is being encouraged through training of IRB members and Community Advisory Board members. Researchers have also been trained at Masters and PhD levels who can serve on IRBs. Botswana is represented on the Collaborative Networks of the H3Africa Ethics and Community Engagement Working Groups and continues to train IRB members through the Forgyarty African Bioethics Training Programs at Johns Hopkins University, University of Kwazulu Natal and University of Stellenbosch.

6. Challenges in reviewing and approving the research protocol of pharmacogenomic studies of multi center international researches

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In present scenario lots of clinical trials related to the pharmacogenomics, biobanking, predictive genetic testing are implemented in India. When these protocols are taken up for review by the IRB the challenges faced are, there are no clear guidelines for the review particularly when the protocol is of multi center international research, ICMR in its latest edition of National Ethical Guidelines for Biomedical Research Involving Human Subjects 2017 deals with details of all issues regarding the conduct, storage and data sharing, but it does not deals with the international studies, and issues related to the outcome, sharing of the results etc.

The issues that I would like to discuss are:

- When protocol has to ship the sample outside the country there are no clear guidelines for Material Transfer Agreement
- Whether the protocol clarifies that what all test are conducted with sample collected
- Sample disposal methods
- Material sharing policies with other institutions
- What happens with the material in case of the merger and/ acquisition of the sponsors
- The method of sharing the outcome of the research to the participants
- Genetic consenting guidelines and challenges
- Guidelines for codeing and decoding the samples
- Reconsenting policy particular for the children enrolled at early ages
- Converting assent into consent at later stages.

However due to advances in the area of genomics, predictive genetic testing etc, developing country like India should take an active part, but when we ship the samples out side we should have to have clear guidelines regarding the testing of samples or else I personally feel that international agencies seeking the protocol in India should have to develop the testing facilities in India and part of the samples can be taken for QA testing. Hence along with advances in the genetic sciences, IRB should have sufficient guidelines to safeguard the rights and welfare of the participants. Globally there should be some guidelines for researcher, IRB members and participants to safe guard the interest of participants.

Conclusion and recommendations

To conclude the ICMR guideline gives broader guidelines, but still we may need further clarification regarding the Material Transfer Agreement guidelines, developing or setting up testing facilities in India instead of shipping outside the country, looking into the challenges in handling the genetic materials, clear policy regarding the disposal of the collected samples. And there should be comprehensive guidelines for banking of samples including sharing of the benefits to the participants etc.

7. Advancing stewardship as a model of governance for data sharing in biobanking research in Nigeria

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Background

Technological advances such as big data that have arisen in the field of genomics have brought biobank research and avenues for data sharing nearer home in sub-Saharan Africa. There is ample evidence that investment in biobanks and repositories as well as the number of collaborations in biobank/ genomic research have increased substantially in LMICs such as Nigeria.

Ethical issues

This convergence of biobanking and data sharing has raised profound, legal, ethical and social concerns such as the infringement of privacy of the research participant in Nigeria. This is further heightened by the absence of clear cut regulatory frameworks guiding the use to which this data may be put and the manner in which it may be shared.

Model suggested

The paper finds that governance models that are based on African communitarian ethics that reflect consultation, reciprocity and accountability are likely to be more acceptable alternatives to existing models of Governance. Stewardship emphasizes the duty of a biobank to protect the interests of tissue source and the communities, as well as preserve these interests legally and ethically.

It therefore proposes the stewardship model of governance backed by the legal structure provided by the charitable trust. The paper suggests an indigenous system of governance based on an ethical concept of stewardship backed by the legal institution of trusts. Trusts are a tested accepted and identifiable institution within the legal and cultural climates of Nigeria.

8. A principle and value based governance framework for genomics research and biobanking consortia in Africa

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Introduction

Genomics research and biobanking in Africa raises macro-level justice concerns. Some of which relate to: Access of samples and data, benefit sharing, fears of exploitation of African researchers and populations, intellectual property and the ownership/custodianship of samples and data. It is hoped that this macro-level justice issues may be overcome through governance.^{1,2,3} Given the limited discussions on governance for genomics and biobanking research in Africa, especially as it relates to addressing macro level justice issues, we sought to develop a principle based governance framework that could support genomics and biobanking projects that seek to promote the ideals of health justice. Our aim is not only to recommend principles that are critical in addressing these ethical issues but also to suggest ways in which they may be operationalised.

Method

Drawing on three pertinent theories of social justice: Lawrence Gostin's global governance for health; Jennifer Ruger's shared health governance and the African moral theory of *Ubuntu*, we developed a principle based governance framework for genomics research and biobanking in Africa that focusses on addressing macro level justice issues. We adopted this approach because questions of social justice are critical in discussions on governance of global health research and to provide a moral structure of what ought to be done.

Results

Solidarity, communitarianism, reciprocity, transparency, open sharing, accountability, deliberativeness, inclusivity and trust were identified as key principles and values in promoting justice and fairness in genomics research and biobanking in Africa. Preliminary analysis of in-depth interviews suggest that stakeholders support a more inclusive and consensus driven approach to decision making in genomics research and biobanking in Africa. Stakeholders would like to see more active involvement of research participants in governance structures. Based on this, we propose a governance framework for genomics research and biobanking.

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9. CIOMS (2016) guidance on data sharing and bio-banking: An analysis in view of the place of the human body in the African ontology of nature

David Nderitu, Egerton University, Kenya

Background

The Council for International Organizations of Medical Sciences (CIOMS) is at the fore in formulating global policies in bioethics that ensure that universal ethical principles are appropriately applied when conducting research in low and medium income countries (LMICs). Successive CIOMS versions (1982, 1993, 2002, and 2009) are built upon revisions and improvements of aspects of research involving human participants.

CIOMS (2016) titled *International Ethical Guidelines for Health-related Research Involving Humans* has among other things highlighted and enhanced the guidance on collection, storage and use of biological materials and related data in health related research (Guideline 11 and 12). The aspects of discussion in this guideline include guidance on Consenting- based on Guideline 9 – Individuals capable of giving informed consent and Guideline 7 – Community engagement, Confidentiality, Collection, Storage and Transfer, etc.

Commentary

The main concern of this analysis is whether CIOMS guidance on data sharing and bio-banking considers fundamental worldviews from LMICs. Particularly, the African ideology regarding the place of the human body in the ontology of nature is discussed as a point of concern.

The part of the globe dominated by the LMICs Africa, though not necessarily characterized by a homogenous cultural belief, has an elaborate ontology of nature, explained through a hierarchy of beings. In this ontology, the human being and therefore human body, through linkage of a *vital force* has a significant relationship with the higher beings above it i.e. God and divinities/ancestors and also with the lower beings including other animate and inanimate beings below them. This worldview influences beliefs and practices relating to the way human body is handled in Africa e.g. many African communities retain biological materials associated with life within their ancestral homesteads through shedding of childbirth blood in the homestead; burying of the placenta and the umbilical cord in the ancestral land and burial of amputated body parts and dead bodies in ancestral lands etc.

The beliefs about the body are likely to influence some attitudes and perceptions regarding donation, sharing and storage of human biological materials for research by research communities. Efforts can be made to reassure communities of maintenance of the meaning of human body in relation to the ontology during research. CIOMS should strive at highlighting such specific worldviews in order for it to be effectively contextualized in Africa.

10. Government data sharing policy: A key to research data access

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Background

With the rising inequity in health and health care outcomes between high and low middle income nations, concerted efforts are taken to reduce the disparity by transfer of technology and innovations. Collaborative health research with information and technology transfer is on the rise over decades, resulting in challenges on data ownership and transfer. Apart from the generic ethical concerns on study participants' privacy, confidentiality and benefits, several other ethical challenges prevail due to lack of clear guidelines on data sharing for all parties.

Recent policy level initiatives by the Government of India to promote data sharing and access within the government machinery is a big step towards accountability. The Government of India in 2012 introduced the National Data Sharing and Accessibility Policy (NDSAP) with an aim to facilitate access to government owned shareable data by public. This has been initiated for utilizing nonsensitive data generated by government machinery for the scientific, economic and developmental purposes by the public. Under the "OGD Platform India", collated access to resources which includes primary data such as population census, education census, economic survey; processed/value added data; and data generated through delivery of government services are available. The Digital India Program in 2015 included "Open Government Data Platform India" as one of the important initiatives under Information for all. Similarly, for science and technology, the Department of Biotechnology (DBT) and Department of Science and Technology (DST), Government of India has recently come up with open access policy to DBT and DST funded research, which emphasizes on depositing the full text research articles, meta data and supplementary materials on an online institutional repository or centralised repository of the funders.

Commentary, conclusion and recommendation

Government of India's effort to have a policy on data sharing and accessibility is laudable, however it is important to take cognizance of the ethical issues in data sharing of both research as well as public data prior to its implementation. The open access policy of funding agencies are silent of sharing data of translational research including epidemiological studies, genomics and Phase I to Phase III clinical trials. There exists no framework or guidelines that takes into account of the challenges associated with the current policy such as a monitoring body to enforce breach of confidentiality or related violations, explicit guidelines on what data be considered as insensitive, data quality assurance mechanisms and ethical concerns of misrepresentation or misinformation of shared data. A concerted effort by all stakeholders at international/national level could perhaps address the above issues so as to facilitate uniform ethical standards for data sharing.

