Plan Overview

A Data Management Plan created using DMPonline

Title: Stratifying risk for depressive symptoms in young people living with HIV using serum and epigenetic biomarkers of inflammation

Creator: Arish Mudra Rakshasa-Loots

Principal Investigator: Jaime Vera, Arish Mudra Rakshasa-Loots

Contributor: Barbara Laughton, Janice Buckley, Caroline Foster, Rachel Temple

Affiliation: University of Edinburgh

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Project abstract:

People living with HIV are at three times greater risk for depression. HIV elicits inflammation, and inflammation has been linked to depressive symptoms in the general population. In our pilot studies, we have shown that inflammatory biomarkers partly mediate the risk for depressive symptoms in people with HIV.

We now aim to establish whether people with HIV with elevated concentrations of inflammatory biomarkers are likely to develop depressive symptoms in future. To do this, we will recruit young people with and without perinatally-acquired HIV in South Africa and England. Over 18 months, we will measure participants' depressive symptoms every two months, and serum and epigenetic inflammatory biomarkers every six months. We will determine whether these biomarkers mediate the association between HIV status and any subsequent depressive symptoms. Young people living with HIV and depression will shape the design, conduct, and dissemination of this research in both countries.

This project may enable depression risk stratification in young people with HIV using immune profiles, informing the delivery of early, individualised immunotherapy to treat depressive symptoms. Findings from this "case study" in HIV may extend more widely to stratification in young people with other inflammatory challenges, such as early-life adversity or psychosocial stress.

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the creator(s) as the source of the language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

Stratifying risk for depressive symptoms in young people living with HIV using serum and epigenetic biomarkers of inflammation

Data and software outputs

The data and software outputs your research will generate and/or re-use

This research will generate:

- Data on the demographic, clinical, and psychosocial characteristics of the participants.
- Data on depressive symptoms for participants: individual-item and total scores on the nine-item Patient Health Questionnaire (PHQ-9) collected at 9 time-points.
- Data on inflammatory biomarker concentrations for each participant: protein concentrations and and epigenetic scores ("EpiScores") for blood biomarkers of inflammation quantified at 3 time-points.
- Code used for analysis of generated data.

We will not collect names of participants in this research; all collected data will be coded with Participant IDs.

The metadata and documentation that will accompany the outputs

Data and analysis code generated in this research will be captured in electronic format in a secure digital repository. All personal identifiers will be removed from the data to preserve participants' anonymity. As part of the Informed Consent process, participants will be reminded that their data will be used in aggregate and anonymised format for analysis, and that this data will be made publicly available in anonymised form. Data will be stored in common open-source file formats (such as .CSV) alongside a README file with explanations of each included variable, in accordance with FAIR principles, for accessibility and comprehensibility.

When you intend to share your data and software

Data and analysis code generated in this research may be shared (in strictly anonymised format) in three different ways:

1. Restricted Sharing for Peer Review: Raw and/or processed data collected in this research may be shared confidentially with peer reviewers exclusively for the purposes of manuscript review, in line with policies for Registered Report articles which encourage open data sharing during the review process,
2. Restricted Sharing for Further Research: Raw and/or processed data collected in this research may be shared confidentially with other researchers upon request with the approval of the investigator group. Restricted sharing with other researchers will require that the recipients of the data sign a Data Sharing Agreeement before data is shared, and will be subject to standard stipulations including:
   - data sharing is for an ethically approved research project;
   - recipients will not use the data for any other purpose;
   - recipients will not try to reidentify any participants;
   - recipients will not share the data with anyone else.
3. Public Sharing: Processed anonymised data and analysis code will be shared publicly alongside the manuscript at the time of publication.

Where your data and software will be made available

Data and analysis code will be made available in an open access repository, either Open Science Framework (OSF) or the University of Sussex Research Data Repository. The latter is a free data archiving service for researchers at the University of Sussex to make their research data freely available online under licence. All data in the repository is stored in a system called Arkivum that keeps three separate copies of the data in separate geographic locations. Data kept in Arkivum is continually monitored and preserved for a minimum of 10 years.

How your data and software will be accessible to others

Data generated in this research and archived in a data repository will be linked (via DOI) with any publications arising from this research, so that potential users are able to access the data connected with the publication(s). Data discovery will be enabled using informative metadata attached to the archived dataset. Data accessibility will be enabled by archiving data in commonly-used file formats such as .CSV.

Whether limits to data and software sharing are required

As data generated in this research will be collected from human participants, all personal identifiers will be removed from the data and individual-level data will be anonymised.

How datasets and software will be preserved

Data generated in this research will be archived in an open-access repository (University of Sussex Research Data Repository or OSF), which both offer long-term data preservation. University of Sussex Research Data Repository will be the preferred repository for data sharing in this instance, as this service also offers data curation beyond the lifetime of the research project.

Research materials

What materials your research will produce and how these will be made available

This research will produce whole blood and blood serum samples collected from all participants in the UK and South Africa at 3 time-points per participant.

Whole blood samples will be collected and stored at -80C in dedicated storage spaces at each project site for a period of up to 1 year from initial collection. All samples (UK and South Africa) will then be transported to the Genetics Core at the University of Edinburgh Clinical Research Facility for DNA methylation analysis. The entire volume of whole blood collected at each time point will be consumed for these analyses, with no materials remaining for future research.

Serum samples will be stored at -80C at in dedicated storage spaces at each project site for a period of up to 1 year from initial collection. All samples (from UK and South Africa) will then be transported to the Stellenbosch University Immunology Research Group in Cape Town, South Africa for Luminex analysis, which will require a portion of the serum samples. Aliquots of blood serum samples remaining after these analyses will be stored for a period of up to 10 years in a secure biobank at the Stellenbosch University Biomedical Research Institute. Access to these samples will be made available to appropriately qualified researchers upon approval of a written request detailing the planned analyses and research design.

Resources required

You should consider what resources you may need to deliver your plan and outline where dedicated resources are required.

Resources required for management of data generated in the study:

- Dedicated data manager on staff at all project sites to carry out quality control and quality assurance checks.
- Secure electronic database (RedCap) to capture and store participant data electronically.
- Secure physical Site File at all project sites to store original informed consent forms and participant source data.

Resources required for management of materials generated in the study:

- Secure access to, and dedicated storage space in, -20C freezer at all project sites to store participant blood samples.
- Dedicated laboratory manager on staff at all project sites to carry out quality control and quality assurance checks and comply with local human tissue storage policies.
- Funding for long-term storage of blood serum samples in a secure biobank.

We recognise that costs for long-term storage of biological specimens beyond the lifetime of the award may not usually be permissible, but the blood serum samples which we will collect from participants in this study represent a high-value output for other researchers. Together with our dataset of depressive symptoms and clinical and demographic information, a longitudinal biobank of repeated blood sample measurements from young people living with HIV and carefully-matched young people without HIV from both the Global North and the Global South will offer substantial value to future HIV-related biomedical and psychosocial research. High-

throughput data can be obtained from these blood samples using only a fraction of the serum volume. Remaining aliquots of blood serum samples may thus be stored and used (with appropriate informed consent provided by participants at point of collection) in multiple future studies with high potential for impact. Therefore, we are requesting funding to store these serum samples securely in a repository at the Stellenbosch University Biomedical Research Institute (BMRI), which represents the largest and most sophisticated biobanking facility on the African continent.

Intellectual property

What IP your research will generate

We do not anticipate that any significant IP is likely to arise from this research. Should any unanticipated discoveries or inventions result from this research, these will be identified and captured in line with a pre-determined IP agreement between the University of Sussex and partner institutions.

How IP will be protected

Should any unanticipated IP arise from this research, these will be registered in South Africa and/or the UK in line with advice from IP professionals at the University of Sussex and relevant partner institutions.

How IP will be used to achieve health benefits

We do not anticipate any significant IP arising from this research. Should any unanticipated IP arise, this will be discussed with advisers at the University of Sussex, partner institutions, and the Wellcome Trust to determine the best course of action that prioritises benefits to the wider research community and to public health.

Provide the name and contact details for the person in your organisation (e.g. Technology Transfer Officer or Business Development executive) who can act as a point of contact for Wellcome in connection with the protection and commercialisation of this IP

Keith O'Brien
Intellectual Property Business Partner
Telephone: +44 (0) 1273 873579
Email: K.E.O-Brien@sussex.ac.uk