

## DATA TRANSFER AGREEMENT

ENTERED INTO BY AND BETWEEN

The Washington University  
MSC 1054-87-1600  
One Brookings Drive  
St. Louis, Missouri 63130-4899  
(hereinafter “the Data Provider”)

and

Wits Planetary Health Research Division,  
a Division of Wits Health Consortium (Pty) Ltd  
Registration Number: 1997/15443/07  
31 Princess of Wales Terrace, Parktown, Johannesburg, 2193, South Africa

(hereinafter “the Data Recipient”)

### WHEREAS:

- i. The Data Provider collected certain Original Study Data (as defined below) under the following studies:  
Project 1: Use of supplementary food and measures to control inflammation in malnourished pregnant women to improve birth outcomes
- ii. The Data Recipient is a member of the HE<sup>2</sup>AT Center Consortium carrying out the research project titled “*Developing Data Science Solutions to Mitigate the Health Impacts of Climate Change in Africa: the HE<sup>2</sup>AT Center*” (“HE<sup>2</sup>AT Project”) which is funded by the National Institutes of Health (NIH).
- iii. The Data Recipient has requested the Data Provider to transfer the Original Study Data collected by the Data Provider for the study in (i) above for purposes of the Data Recipient using the Original Study Data in the HE<sup>2</sup>AT Center Research Project 1, titled: “*Individual Participant Data meta-analysis to quantify the impact of high ambient temperatures on maternal and child health in Africa*” (“RP1 Study”) the details of which are set out in **Annexure “B”** attached hereto.
- iv. The Data Provider has agreed to provide the Original Study Data as set out in **Annexure “A”** hereto.
- v. The Parties agree that the transfer of the Original Study Data will be done in accordance with the terms and conditions of this Agreement.

### THEREFORE, THE PARTIES AGREE AS FOLLOWS:

#### 1. DEFINITIONS

In this Agreement, unless the context otherwise indicates, the following words will have the following meanings:

- 1.1 **"the/this Agreement"** shall mean this Agreement together with any Annexures hereto;
- 1.2 **"Commencement Date"** shall mean the date on which this Agreement shall become effective and binding upon the Parties and shall be the date of signature of the last Party to sign this Agreement;
- 1.3 **"Responsible Party"** means a public or private body or any other person which, alone or in conjunction with others, determines the purpose of and means for Processing Personal Data;
- 1.4 **"Original Study Data"** shall mean the health-related data listed in **Annexure "A"** hereto and any other data actually transferred by the Data Provider to the Data Recipient under this Agreement;
- 1.5 **"Data Protection Legislation"** shall mean any data protection or data privacy laws as may be applicable, including but not limited to POPIA, the Electronic Communications and Transactions Act 26 of 2005, the Consumer Protection Act 68 of 2008, and the General Data Protection Regulation (GDPR);
- 1.6 **"Data Subject"** means the person to whom Personal Data relates;
- 1.7 **"RP1 De-identified Data"** means data with the following information deleted; (1) information that identifies the Data Subject, (2) information that can be used or manipulated by a reasonably foreseeable method to identify the Data Subject or, (3) information that can be linked by a reasonably foreseeable method to other information that identifies the Data Subject;
- 1.8 **"HE<sup>2</sup>AT Center Data Management Plan"** means the data management plan applicable to the RP1 Study as may be amended and updated from time to time by the HE<sup>2</sup>AT Center Consortium;
- 1.9 **"HE<sup>2</sup>AT Center Consortium"** means the consortium members jointly working on the HEAT Center Project, as listed in **Annexure "C"**, as may be amended from time to time;
- 1.10 **"Core HE<sup>2</sup>AT Center Data Management Team"** a group of named personnel within the HE<sup>2</sup>AT Center Consortium responsible for the initial processing, harmonisation and integration of the Original Study Data;
- 1.11 **"Parties"** shall mean the parties to this Agreement, namely Wits Health Consortium (Pty) Ltd and **Washington University**; and the term **"Party"** shall refer to either of them;
- 1.12 **"person"** means a natural or juristic person;
- 1.13 **"Personal Data"** means any information relating to an identifiable, living, natural person, and where it is applicable, an identifiable, existing juristic person;
- 1.14 **"Processing"** (or its conjugates) shall mean any operation or set of operations, which is performed upon Personal Data, whether or not by automatic means, such as collection, recording, organization, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, blocking, erasure or destruction;

- 1.15 **“Operator”** means a person who processes Personal Data for a Responsible Party in terms of a contract or mandate, without coming under the direct authority of that party;
- 1.16 **“HE<sup>2</sup>AT Project”** shall mean the project entitled *“Developing Data Science Solutions to Mitigate the Health Impacts of Climate Change in Africa: the HE<sup>2</sup>AT Center”* funded by the National Institutes of Health;
- 1.17 **“RP1 Study”** shall mean the specific study under the HE<sup>2</sup>AT Project titled: *“Individual Participant Data meta-analysis to quantify the impact of high ambient temperatures on maternal and child health in Africa”* as more fully described in **Annexure “B”** attached hereto;
- 1.18 **“RP1 Study Data”** shall mean all data resulting from processing of the Original Study Data during the RP1 Study, which includes but is not limited to, RP1 De-identified Data and Consortium Shared Data;
- 1.19 **“POPIA”** shall mean the South African Protection of Personal Information Act 4 of 2013 and regulations as amended from time to time;
- 1.20 **“Consortium Shared Data”** means data that has undergone, initial processing, harmonisation and integration and includes, amongst other variables, a limited set of indirect identifiers that are required for the purposes of conducting the RP1 Study analysis as described in **Annexure “B”**.
- 1.21 Words importing the singular shall include the plural and *vice versa*, and words importing the masculine gender shall include females. The head notes to the clauses to this Agreement are inserted for reference purposes only and shall not affect the interpretation of any of the provisions to which they relate.

## **2. TRANSFER AND USE OF DATA**

- 2.1 This Agreement shall commence on the Commencement Date and shall terminate on completion of the HE<sup>2</sup>AT Project.
- 2.2 Either Party may terminate this Agreement prior to the completion of the HE<sup>2</sup>AT Project by providing 30 (thirty) calendar days' prior written notice to the other Party. On early termination of this Agreement, the Data Recipient shall, where possible, immediately discontinue use of the Original Study Data and upon the Data Provider's instructions, either return all copies of same to the Data Provider, destroy all copies of the Original Study Data, or deal with the Original Study Data in any other manner requested by the Data Provider. Data Provider acknowledges that the ability to retrieve or delete Original Study Data already incorporated into the RP1 Study Data may be limited due to (1) this being impractical or impossible, (2) the need to maintain the integrity of the RP1 Study Data or (3) legal, operational, or regulatory requirements in accordance with applicable law. Where deletion is not possible, the Data Recipient shall, where practicable, anonymize or pseudonymize the Data to minimize any potential risks associated with its retention. The Data Recipient shall inform the Data Provider of any such measures taken.
- 2.3 Each Party shall pay its own costs incurred in the performance of this Agreement. Any given expense or cost can only be committed in writing by the Party responsible for the cost in

question. In no case can one Party commit an expense on behalf of another Party, without prior written consent.

- 2.4 Data Provider retains ownership of the Original Study Data and retains all rights to distribute the Original Study Data to other third parties.
- 2.5 The Data Provider acknowledges and agrees that initially the Original Study Data shall be accessible only to the Core HE<sup>2</sup>AT Data Management Team for purposes of pre-processing, harmonisation and integration to produce Consortium Shared Data as set out in the HE<sup>2</sup>AT Center Data Management Plan.
- 2.6 The Data Recipient is hereby authorised to transfer and/or share the Consortium Shared Data with the HE<sup>2</sup>AT Center Consortium members for purposes of conducting the RP1 Study.
- 2.7 The authorization in clause 2.6 above is subject to HE<sup>2</sup>AT Center Consortium members entering into a Data Transfer Agreement on terms no less restrictive than the terms as provided for herein.
- 2.8 It is anticipated that the addition of new members to the HE<sup>2</sup>AT Center Consortium may take place as the HE<sup>2</sup>AT Project progresses. The following is established to streamline the integration of new members into existing agreements:
  - 2.8.1 The Data Recipient will provide written notice to the Data Provider of any new member/s to the HE<sup>2</sup>AT Center Consortium;
  - 2.8.2 The new member shall sign and be bound by the Data Transfer Agreement entered into by the existing HE<sup>2</sup>AT Center Consortium members as per Clause 2.7.
- 2.9 Subject to the terms and conditions of this Agreement, the Data Provider grants the Data Recipient and the HE<sup>2</sup>AT Center Consortium, the non-exclusive right to use the Original Study Data solely for purposes of the RP1 Study. The Data Provider shall be kept informed of any results of the RP1 Study stemming from the use of the Original Study Data.
- 2.10 The Data Recipient undertakes not to attempt to identify any Data Subject to whom Personal Data relates. The Data Provider will not provide any encryption key that could be used to re-identify the Data Subject in any Original Study Data provided to Data Recipient.
- 2.11 The Parties acknowledge their obligation(s) to comply with all applicable Data Protection Legislation and that violation of any applicable Data Protection Legislation may subject the non-compliant Party to fines, penalties, or claims imposed by regulatory authorities or third parties.
- 2.12 The Data Provider acknowledges and agrees that the HE<sup>2</sup>AT Center Consortium shall be entitled to publish or present the RP1 Study Data which may have utilized and/or incorporates the Original Study Data provided under this Agreement. In no event shall any individual level data or Personal Data relating to a Data Subject or person be published. The Data Recipient agrees that any publication or presentation referencing the Original Study Data shall follow the HE<sup>2</sup>AT Centre Authorship Policy included in **Annexure "D"** attached hereto and will appropriately acknowledge the Data Provider as the source of the data, in accordance with academic standards and practices. The HE<sup>2</sup>AT Centre Authorship Policy may be updated from time to time, which updates will be shared with the Data Provider.

- 2.13 The Data Provider acknowledges and agrees that RP1 De-identified Data may be made available by HE<sup>2</sup>AT Center Consortium members to third parties to support further research. Access by a third party to the RP1 De-identified Data shall be subject to a review and approval process managed by a Data Access Committee and shall be in accordance with the HE<sup>2</sup>AT Center Data Management Plan.
- 2.14 The Data Recipient may retain a copy of the Original Study Data in accordance with the HE<sup>2</sup>AT Center Data Management Plan for a period of 5 (five) years after the completion of the HE<sup>2</sup>AT Center Project for the purposes of concluding and correcting any analysis and publications resulting from the HE<sup>2</sup>AT Project. Any retention of Original Study Data beyond this 5 (five) year period will be further agreed with the Data Provider. The provisions of this Clause 2.14 shall not be applicable in the event of early termination in accordance with clause 2.2.
- 2.15 **To the best of** Data Provider's knowledge it is the sole and exclusive owner of all rights, title, and interest in and to the Original Study Data and that it has obtained the necessary ethical and legal consent required to provide the Original Study Data to the Data Recipient for the purposes set forth in this Agreement.
- 2.16 The Data Provider will transfer the Original Study Data as is without any implied warranty of quality, accuracy or fitness for a particular purpose. This Agreement does not grant any rights, license or other proprietary interest to the Data Recipient in the Original Study Data, save as provided for in this Agreement.
- 2.17 To the best of Data Provider's knowledge the Original Study Data is free and clear of any liens, claims, encumbrances, or any other rights or interests of any third parties and that no third party has any ownership, licence or other rights in or to the Original Study Data that would interfere with the Data Recipient's use of the Original Study Data as contemplated in this Agreement.
- 2.19 All ownership, rights, title and interest in and to the RP1 Study Data and any results generated during the RP1 Study shall vest with the HE<sup>2</sup>AT Center Consortium in accordance with the Data Transfer Agreement entered into between the HE<sup>2</sup>AT Center Consortium.

### **3. RESPONSIBLE PARTY STATUS**

- 3.1 For purposes of this Agreement, the Data Recipient is the Responsible Party and the Data Provider is neither the Responsible Party nor an Operator.

### **4. RIGHTS OF DATA SUBJECTS**

The Parties agree that, as between them, Data Provider is best able to manage requests from Data Subjects for access, amendment, transfer, restriction, or deletion of Personal Data. In the ordinary course, the Data Recipient will not process sufficient information to link Personal Data to an identified individual who makes a request for access, amendment, transfer, or deletion of Personal Data. In the event that the Data Recipient receives a request from a Data Subject for such access, amendment, transfer, restriction, or deletion, the Data Recipient shall forward the request to Data Provider. In the event that the Data Provider receives a request from a Data Subject that affects the Personal Data disclosed to the Data Recipient or

the Data Recipient's ability to use or process such Personal Data, Data Provider shall promptly, and no later than five (5) business days notify Data Recipient. The Parties shall within 5 (five) business days, determine the appropriate steps to be taken.

## 5. DATA SUBJECT WITHDRAWAL

Data Recipient acknowledges that Data Subjects may withdraw their informed consent to the Processing of Personal Data at any time. Data Provider shall promptly notify Data Recipient of any such withdrawal upon which the Data Recipient will immediately discontinue use of the Data Subject's Personal Data.

## 6. SAFEGUARDS

- 6.1 Data Recipient will maintain a comprehensive privacy and security program designed to ensure that Personal Data will be used only in accordance with this Agreement and the HEAT Center Data Management Plan, or as required by applicable regulations, including the appointment of a Data Protection Officer. Data Recipient will apply adequate, commercially reasonable technical, physical, and administrative safeguards to protect the Personal Data.
- 6.2 Such safeguards shall be appropriate to the nature of the information to prevent any breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorized disclosure of, or access to Personal Data or any other unauthorized or unlawful use, access, alteration, loss, or disclosure of Personal Data relating to this Agreement (collectively, "**Security Breach**"). Data Recipient will also implement appropriate internal policies, procedures, or protocols to minimize the risk of occurrence of a Security Breach.
- 6.3 Once the Original Study Data has been transferred to the Data Recipient, the Data Recipient shall, in line with all applicable legislation and regulations, maintain a comprehensive privacy and security program to ensure the safekeeping and integrity of the Original Study Data.

## 7. SECURITY BREACH

- 7.1 Data Recipient shall notify Data Provider within twenty-four (24) hours of discovery of a potential or actual Security Breach. In the course of notification, Data Recipient will provide feasible, sufficient information for Data Provider to assess the Security Breach. Data Provider will determine, in consultation with Data Recipient, if notification to Data Subjects and/or government authorities is required by applicable regulations. Where Data Provider determines that notification is required by applicable regulations, Data Recipient shall be responsible for all reasonable costs and expenses associated with the provision of such notifications. Data Recipient will also take immediate steps to consult with Data Provider in good faith in the development of remediation efforts to rectify or mitigate the Security Breach.
- 7.2 Data Recipient will undertake remediation efforts at its sole expense or will reimburse Data Provider for Data Provider's reasonable expenses incurred in connection with Data Provider-performed remediation efforts. In addition to any method of notice described in this Agreement, notice to Data Provider of any Security Breach shall also be reported to Kevin Hardcastle; Telephone: 314-747-2305 or Email: [hardcastlek@wustl.edu](mailto:hardcastlek@wustl.edu)

## 8. PERSONNEL OBLIGATIONS

Data Recipient shall ensure that their respective personnel engaged in the Processing of Personal Data are informed of the confidential nature of the Personal Data, have received appropriate training on their responsibilities, and have executed written confidentiality agreements or are otherwise subject to professional obligations of confidentiality. The Parties shall ensure that access to Personal Data is limited to those personnel who perform services in accordance with this Agreement.

9. **RECORDS / DATA PROCESSING REGISTER**

Data Recipient shall maintain a written record of all Processing activities that are carried out under this Agreement. Such record shall contain, at a minimum, (i) the name and contact details of any Operators; (ii) the name and contact details of the Operators' data protection officers; (iii) the categories of Processing that are carried out; (iv) transfers to other countries or international organizations and documentation of the suitable safeguards that are employed; and (v) a general description of the administrative, technical, and physical security measures that have been taken to safeguard the Personal Data. Data Recipient shall provide Data Provider with a copy of such records upon request.

10. **GOVERNMENT INSPECTIONS**

Data Recipient agrees to promptly, and in no case later than five (5) business days, notify Data Provider of any inspection or audit by a government authority concerning compliance with applicable regulations governing the Processing of Personal Data to the extent related to this Agreement.

11. **NOTICES**

Notices under this Agreement will be given by personal delivery, certified mail, or recognized overnight courier service to the person designated below:

**If to Data Recipient Principal Investigator:**

Attention: Matthew Francis Chersich (Research Professor)  
Wits Planetary Health Research  
27 St Andrews Road  
Parktown 2193  
Email: [Matthew.Chersich@tcd.ie](mailto:Matthew.Chersich@tcd.ie)

**If to Data Recipient (Legal):**

Attention: Alfred Farrell (CEO)  
Wits Health Consortium (Pty) Ltd, 31 Princess of Wales Terrace, Parktown, Johannesburg, 2193  
Email: [ceo@witshealth.co.za](mailto:ceo@witshealth.co.za)

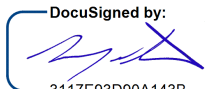

**If to Data Provider Investigator:**

Mark Manary  
MSC # 8116-0066-05  
Phone: 314-454-2178  
660 South Euclid Ave.  
St. Louis, MO 63110  
E-mail: [manarymj@wustl.edu](mailto:manarymj@wustl.edu)

**If to Data Provider (Legal):**  
The Washington University  
Attn: Joint Research Office of Contracts  
MSC 1054-87-1600  
One Brookings Drive  
St. Louis, MO 63130-4899  
E-mail: [ResearchContracts@email.wustl.edu](mailto:ResearchContracts@email.wustl.edu)

## 12. GENERAL

- 12.1 In no event shall Data Provider be liable for any use by the Data Recipient of the Original Study Data or for any loss, claim, damage, or liability, of any kind or nature, that may arise from or in connection with this Agreement or Data Recipient's use, handling, or storage of Data.
- 12.2 This Agreement does not constitute, grant nor confer any license under any patents or other proprietary interests of one Party to the other, except as explicitly stated in this Agreement.
- 12.3 This Agreement may be amended by written agreement between the Parties.
- 12.4 This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. A signed copy of this Agreement delivered by electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Agreement.
- 12.5 The provisions of this Agreement that by their nature are intended to survive termination or expiration of the Agreement shall survive such termination or expiration and shall remain in full force and effect.
- 12.6 The Data Recipient hereby acknowledges and accepts that the signatory of this Agreement on behalf of the Data Provider represents and warrants that they have the full authority and capacity to enter into and bind the Data Provider to the terms of this Agreement. The Data Recipient shall not be held liable or responsible in any manner for any breach of authority or lack thereof by the signatory. Should it be determined that the signatory did not possess the requisite authority to execute this Agreement, the Data Recipient shall remain indemnified and free from any and all claims, liabilities, losses, damages, or expenses arising therefrom.

DATA PROVIDER	DATA RECIPIENT
<div>DocuSigned by:  3117E93D90A143B... (signature)</div>	<div> (signature)</div>
Name: Megan White	Name: Adél van Antwerpen
Title: Director, Rsch Contracts	Title: Head: Legal Advisory Services
Date: 1/24/2025   10:49 AM CST	Date: 7 January 2025



## ANNEXURE A:

### DESCRIPTION OF DATA

The below list of variables is indicative, and the final variable list shall be finalised and recorded between Data Provider and Data Recipient based on data availability and relevance.

#### Data Source 1

**Project Title:** Use of supplementary food and measurements to control inflammation in malnourished pregnant women to improve birth outcomes in Sierra Leone

**Funder:** Children Investment Fund Foundation

**Data to be transferred:** Individual participant data for a limited set of variables from the original dataset/s relating to Maternal outcomes and/or fetal, neonatal and child outcomes.

**Dataset includes these important variables:**

#### **Essential variables:**

- Unique ID (study ID and participant ID)
- Date of delivery of the newborn OR date of maternal outcomes
- Location, at a minimum: city of delivery, or city of follow-up (data on location of household, birth facility, or study clinic are preferable)

#### **Maternal outcomes (indicative list):**

- Gestational age at delivery
- Antepartum and postpartum haemorrhage
- Hypertensive disorders in pregnancy
- Anaemia in pregnancy
- Adverse events
- Gestational Diabetes Mellitus
- Health facility visits

#### **Fetal, neonatal and child outcomes (indicative list)**

- Prematurity (see also gestational age at delivery)
- Mortality (including cause)
- Infant growth
- Admission to neonatal intensive care units or paediatric ward

#### **Other variables**

- Maternal age
- Date of interviews or examination
- Mode of delivery
- Facility of delivery location, or catchment area of facility
- Location of research site
- Type of facility (health center/hospital)
- Maternal HIV status
- Gravidity, parity
- Maternal anthropometry (weight, height, BMI, MUAC)

#### **Associated metadata/documentation**

- Study protocol
- Codebooks
- Do files
- Documentation on definitions, components and processing of the data

**Purpose of Data Transfer:** The data will be used to quantify the current and future impacts of heat exposure on maternal and child health in sub-Saharan Africa.

## **ANNEXURE B:**

### **DESCRIPTION OF STUDY**

**Study title:** Individual Participant Data meta-analysis to quantify the impact of high ambient temperatures on maternal and child health in Africa

**Study rationale:** Global temperatures have already increased by 1.1°C since the industrial revolution and are projected to rise by a further 1-2 degrees over the coming decades. Africa is the continent hardest hit by climate change and temperatures are rising at twice the global rate in many parts of the continent.

The harmful impacts of extreme heat on health are well recognised, affecting a range of population groups, including pregnant women and children. There remain, however, major gaps in evidence on the size of temperature impacts, and which outcomes are most affected. Gaps in evidence are especially large in Africa. A study drawing together the rich data collected in trials and cohorts across the continent could provide the information needed to develop solutions to this rapidly escalating public health problem.

An Individual Participant Data (IPD) meta-analysis entails systematically locating, appraising, transforming, and analysing participant-level data from multiple studies which have a common outcome of interest. Unlike classic systematic reviews which use aggregated study-level data extracted from a publication, an IPD involves analyses of raw participant-level data from multiple studies. This approach can overcome many of the biases of classic systematic reviews, and the challenges in understanding heterogeneity and methodological diversity across published studies.

Analysing pooled participant-level data from multiple settings and time periods also holds several notable advantages over analyses of individual databases from a single location and time, most especially through increasing statistical power and generalisability.

The IPD forms parts of the HEAT Center (Heat and Health African Transdisciplinary Center) which consists of partners from South Africa (University of Cape Town and Wits Health Consortium, and IBM-Research Africa), Côte d'Ivoire (University of Peleforo Gon Coulibaly), Zimbabwe (CeSHHAR), and the United States (Universities of Michigan and Washington). The Center is funded through the United States NIH Harnessing Data Science for Health Discovery and Innovation in Africa (DS-I Africa) program. DS-I Africa aims to make optimum use of existing data resources across Africa to address the most pressing health concerns on the continent.

**Study objectives:** The overall objective of the study is to use innovative data science approaches to quantify the current and future impacts of heat exposure on maternal and child health in sub-Saharan Africa.

The specific objectives are:

1. To locate, acquire, collate and transform prospectively collected data from cohort studies and randomized trials on maternal and child health in sub-Saharan Africa.
2. To develop a collaboration between the HE<sup>2</sup>AT Center and investigators of each of the studies who contribute participant-level data.
3. To link health outcome data spatially and temporally with weather and other environmental data, as well as with socio-economic and related factors.
4. To utilize classic statistical methods and novel machine learning approaches to understand and quantify the impact of heat exposure on maternal and child health.
5. To document variations in the relationship between heat exposure, and other environmental data, and maternal and child health outcomes across different settings, climate zones and population groups in sub-Saharan Africa.

**Methods:** Full details of the study have been published in the BMJ Open journal<sup>1</sup> and are summed here. We will systematically locate eligible studies through a mapping review of publication databases, the searching of data repositories, and through communicating with experts in the field. Eligibility is based on study- and individual-level criteria. To be eligible, the study needs to include longitudinal data, have enrolled or plan to enrol at least 1000 pregnant women in sub-Saharan Africa, have collected data on key maternal and child outcomes and be identified in publications between January 2012 and June 2022 or through other means such as trial registries or suggestions from other researchers. At an individual level, participants need to have been recruited during pregnancy or intrapartum and have data available on date and location of childbirth. For studies with no date of childbirth, data should be available on date and location of diagnosis of an adverse maternal health outcome, or end of pregnancy in cases of maternal deaths or abortion. Location information may include facility of birth, or city of the study, for example. The datasets from individual studies will be harmonised through the recoding of raw individual participant data into a common set of variables. Various traditional statistical models such as time-series analysis, time-to event analysis and generalised additive models, as well as novel machine learning approaches will be used to quantify associations between high ambient temperatures, and adverse maternal and child outcomes. Data analysis occurs in several stages. Firstly, each study will be analysed individually. Then, data from the individual studies are aggregated to provide a pooled estimate of effect. If heterogeneity between studies is high, then aggregation across studies may not be done, or may only be done in particular groups of studies that share common characteristics.

**Ethical and legal considerations:** The study has received ethics approval from the Human Research Ethics Committee of the University of the Witwatersrand, South Africa (Ref. No. 220605). There is minimal risk to individual study participants. Participant privacy will be protected as far as possible through the removal of participant identifiers before data transfer, data encryption, and security measures such as limiting the personnel who have access to data, and data storage in secure, password-protected servers. Data sharing across countries can involve legal considerations depending on legislation in particular countries.

**PROSPERO registration:** PROSPERO 2022 CRD42022346068 Available from: [https://www.crd.york.ac.uk/prosperto/documents/PROSPERO\\_registration\\_form.pdf](https://www.crd.york.ac.uk/prosperto/documents/PROSPERO_registration_form.pdf) [https://www.crd.york.ac.uk/prosperto/display\\_record.php?ID=CRD42022346068](https://www.crd.york.ac.uk/prosperto/display_record.php?ID=CRD42022346068)

**Funding acknowledgement:** The study is funded by the Fogarty International Center and National Institute of Environmental Health Sciences (NIEHS) and OD/Office of Strategic Coordination (OSC) of the National Institutes of Health under Award Number U54 TW 012083.

## **ANNEXURE C:**

**HEAT CENTER CONSORTIUM MEMBERS AS AT DATE OF SIGNING THIS DATA TRANSFER AGREEMENT:**

Wits Health Consortium (Pty) Ltd, South Africa\*  
University of Cape Town, South Africa\*  
International Business Machines (IBM) Corporation through its Thomas J. Watson Research Center, USA\*  
University of Peleforo Gon Coulibaly, Côte d'Ivoire\*  
Centre for Sexual Health and HIV AIDS Research (CeSHHAR), Zimbabwe\*  
University of Michigan, United States  
University of Washington, United States

\*Only these HE2AT Center Consortium Members shall have access to the Consortium-Shared Data for purposes of the RP1 Study analysis

## **ANNEXURE D:**

### **AUTHORSHIP GUIDELINES FOR STUDIES WHO CONTRIBUTE DATA**

Study Principal Investigators, Site Principal Investigators, and additional contributing study members will be invited to be part of the authorship group for any publications that include use of the data from their study.

The authorship guidelines adhere to the ICMJE criteria for authorship, which include:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

The authorship guidelines and study acknowledgements are based on an appreciation of the substantial contribution made by Principal Investigators in providing data from their study, and in recognition of the work involved in conducting the study.

We will include one author per included study (usually study PI), but additional country-PI will be included for multi-country studies. The listed authors of the studies which are contributing data will be named in alphabetical order by surname, from positions 4<sup>th</sup> author to second-last author. As such, authorships 1-3 and last authorship will be reserved for those who contributed most to the work, and as per ICMJE.

Some journals may place a restriction on the number of authors that may be listed and require that additional authors beyond that number should be included as part of the '*HE<sup>2</sup>AT Center Study Group*'. In this situation, the HE<sup>2</sup>AT Center Steering Committee will have the right to make a decision on final authorship, taking into consideration the studies which contributed most participants to the IPD.

The study group will be published in an Appendix where journals will allow this, or otherwise be listed in the acknowledgement section. Here, listing will be done by role in the study and/or by Study/site. Any additional contributors from a study, who adhere to ICMJE criteria will be listed as part of the '*HE<sup>2</sup>AT Center Study Group*' in an Appendix where journals will allow this, or otherwise be listed in the acknowledgement section.

The name of the funder of the contributing study and of other Principal Investigators will be included in the acknowledgements, as relevant.

Study Principal Investigators may be granted access to the RP-1 De-Identified Data for secondary analyses, provided they complete the Data Request Forms, which will then be reviewed by the Data Access Committee (DAC). Decisions around data access are governed by the HE<sup>2</sup>AT Center's Data Management Plan and the Publication Policy Standard Operating Procedures.

## Certificate Of Completion

Envelope Id: DC2EF893-516C-4C60-93FA-983486BDD86B

Status: Completed

Subject: Please Docusign: DUA with Wits Health Consortium (FE'd)

Source Envelope:

Document Pages: 12

Signatures: 1

Envelope Originator:

Certificate Pages: 5

Initials: 0

James Callahan

AutoNav: Enabled

1 Brookings Drive

Envelopeld Stamping: Disabled

St. Louis, MO 63130

Time Zone: (UTC-06:00) Central Time (US & Canada)

james.c@wustl.edu

IP Address: 128.252.172.10

## Record Tracking

Status: Original

Holder: James Callahan

Location: DocuSign

1/13/2025 | 12:11 PM

james.c@wustl.edu

## Signer Events

Megan White


mmwhite@wustl.edu

Director, Rsch Contracts

Washington University in St. Louis

Security Level: Email, Account Authentication (Optional)

## Signature

DocuSigned by:  
  
3117E93D90A143B...

Signature Adoption: Uploaded Signature Image  
Using IP Address: 128.252.172.19

## Timestamp

Sent: 1/13/2025 | 12:19 PM

Viewed: 1/24/2025 | 10:33 AM

Signed: 1/24/2025 | 10:49 AM

## Electronic Record and Signature Disclosure:

Accepted: 1/24/2025 | 10:33 AM

ID: 4e862397-9918-41cc-9578-6f9c8e3796ed

## In Person Signer Events

## Signature

## Timestamp

## Editor Delivery Events

## Status

## Timestamp

## Agent Delivery Events

## Status

## Timestamp

## Intermediary Delivery Events

## Status

## Timestamp

## Certified Delivery Events

## Status

## Timestamp

## Carbon Copy Events

## Status

## Timestamp

Itumeleng Adams

iadams@witshealth.co.za

Security Level: Email, Account Authentication (Optional)

**COPIED**

Sent: 1/24/2025 | 10:49 AM

Viewed: 1/27/2025 | 03:06 AM

## Electronic Record and Signature Disclosure:

Not Offered via DocuSign

## Witness Events

## Signature

## Timestamp

## Notary Events

## Signature

## Timestamp

## Envelope Summary Events

## Status

## Timestamps

Envelope Sent

Hashed/Encrypted

1/13/2025 | 12:19 PM

Certified Delivered

Security Checked

1/24/2025 | 10:33 AM

Signing Complete

Security Checked

1/24/2025 | 10:49 AM

Completed

Security Checked

1/24/2025 | 10:49 AM

## Payment Events

## Status

## Timestamps



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