SEMI ANNUAL RESEARCH REPORT

January – June 2018

Acknowledgements

The AMPATH Research Program Office is grateful to our sponsors and research partners who contribute to the success of our research program. Thank you to everyone who contributed to this report and our efforts to improve the health of people in Kenya and resource limited setting around the world.

Editorial Team

Shawn Grinter
Jepchirchir Kiplagat-Kirui
David Plater
Jerry Wagner
Eunice Walumbe

Contacts

Jepchirchir Kiplagat-Kirui
AMPATH Research Network Program Manager (Kenya)
AMPATH Center
P.O. Box 4606
Eldoret, Kenya
Email:research.manager@iukenya.org
Phone: +254 53 203 3471
Fax: +254 53 206 1992

Jerry Wagner
AMPATH Research Network
Program Manager (North America)
Indiana University Center for Global Health
702 Rotary Circle, RO101E
Indianapolis, IN 46202
Email:research.manager@iukenya.org
Phone: +1-317-274-4176
Fax: +1-317-274-9124

Please visit the AMPATH Research Program website to learn how our research programs are helping improve the health of the Kenyan people.

www.medicine.iu.edu/ampathresearch

CONTENTS

Abbreviations i

Vision, Mission, & Values ii

Strategic Priorities ii

Overview 1

New Program Initiatives 1

Grants 2

Publications 4

Study Reports 5

A Formative Study to Develop Culturally Valid Psychosocial Assessment Tools and Interventions to Promote Family Well-Being in Kenya 5

A Stage 2 Cognitive Behavioral Trial, Reduce Alcohol First in Kenya Intervention (RAFIKI) 6

A5263 'A Randomized Comparison of Three Regimens of Chemotherapy with Compatible Antiretroviral Therapy for Treatment of Advanced AIDS-KS in Resource-Limited Settings' 7

A5264/AMC067 A Randomized Evaluation of Antiretroviral Therapy Alone or with Delayed Chemotherapy versus Antiretroviral Therapy with Immediate Adjunctive Chemotherapy for Treatment of Limited Stage AIDS-KS in Resource-Limited Settings (REACT-KS) 8

A5288 'Management Using the Latest Technologies in Resource-limited Settings to Optimize Combination Therapy After Viral Failure (MULTI-OCTAVE)' 8

A5349/TBTC S31 Rifapentine-containing treatment shortening regimens for pulmonary tuberculosis: A randomized, open-label, controlled phase 3 clinical trial 10

AMPATH - Oncology Institute: HPV and Cervical Cancer in Kenyan Women with HIV/AIDS 11

Assessment of Airway Disease in Western Kenya 12

Bridging Income Generation with Gruop Interated Care(BIGPIC) 13

Can integration of effective family planning services into Anticoagulation Management Services (AMS) improve uptake? 15

Caregiver Interventions for Developmental Delays in Young Kenyan Children 16

Childhood Leukemia in Kenya Identified Through Malaria Slide Review 18

Community perceptions and perceived needs of street-connected children and youth in Eldoret Kenya: a qualitative investigation 18

Community-based provision of urine pregnancy tests as linkage to reproductive health services 20

Developing and Assessing a Community-Based Model of Antiretroviral Care 21

Developing Capacity of Moi Teaching and Referral Hospital / Moi University Institutional Research Ethics Committee (MTRH/MU IREC), Kenya to Prevent and Manage Research Misconduct. 22

Effect of free maternity care on maternal and fetal outcomes of preeclampsia/eclampsia at a teaching hospital in Western Kenya: A retrospective chart review. 23

Enhancing Preventive Therapy of Malaria In children with Sickle cell anemia in East Africa (EPiTOMISE) 25

Estimating the relative effectiveness of contraceptive implants for HIV-positive women on antiretroviral therapy. 26

ESYHI study - Identification, adaptation and piloting of innovative interventions to engage street-connected children and youth in the HIV prevention-care continuum in a resource-constrained setting 27

Ethnic Specific Risk Stratification in Early Pregnancy for Identifying Mothers at Risk of Gestational Diabetes Mellitus in Eldoret, Kenya 28

Evaluating Indicators of Poor Cardiac Function in Children and Adolescents Living with HIV in Western Kenya 29

FLTR Evaluation 30

HI-Train: Health Informatics Training and Research in East Africa for Improved Health Care 31

HIV-related Outcomes After Integration of HIV and Maternal and Child Health Services at Moi Teaching and Referral Hospital in Kenya (HAMMoCK) 32

IeDEA Comprehensive Adherence Measure for Pediatrics (ICAMP) 33

Improvements of diagnosis, staging, and support of children with Burkitt Lymphoma 35

Innovative Community Sourcing Techniques to Investigate Reproductive Health Issues in a Population Aged 13-65 Years in Western Kenya 37

Innovative public-private partnership to target subsidized antimalarials in the retail sector 38

LINKAGE AND ENGAGEMENT IN CARE OF HIV POSITIVE CHILDREN AND ADOLESCENTS 40

Linkage and Retention to Care in Western Kenya Following HIV Testing 41

Making Inroads to Strengthen the Health of Adolescents (MaISHA) 43

MCH STUDY (Evaluations at Infant and Child Visits a MCHs in western Kenya: A Needs Assessment) 44

Mental Health Screening and Phone-Based Counselling Support for Adolescents with HIV in Kenya 45

NEURODEV (Assessing Neurodevelopmental Delays in Children Born to HIV-infected Mothers in Western Kenya: A Pilot Study) 46

Neuropsychiatric Genetics of African Population-P 48

One Year Morbidity and Mortality of Infants Diagnosed with Perinatal Asphyxia or Low Birth Weight Admitted to The New Born Unit at Moi Teaching and Referral Hospital. 49

Optimizing Linkage and Retention to Hypertension Care in Rural Kenya 50

Patient-Centered Disclosure Intervention for HIV-Infected Children, Helping AMPATH Disclose Information and Talk about HIV Infection (HADITHI) 52

Pharmacovigilance in a Resource-Limited Setting: Approaches to Targeted Spontaneous Reporting for Suspected Adverse Drug Reactions to Antiretroviral Treatment 54

Phylogenetic Inference of Vertical versus Horizontal HIV Transmission among Adolescents in Western Kenya 55

'Point of Care CD4 testing for people who fail to engage in care after testing HIV positive'. 56

Prevalence of cardiac disease in pregnancy among a population of antenatal patients at a tertiary care institution in western Kenya 57

Prospective study of Lopinavir based ART for HIV Infected childreN Globally (LIVING study) 57

Randomized, Phase II Trial of CHOP vs. Oral Chemotherapy with Concomitant Antiretroviral Therapy in Patients with HIV-associated Lymphoma in Sub-Saharan Africa 59

SAFI (Stigma in AIDS Family Inventory) Validation Study 60

Spatial scales of Plasmodium falciparum generations; implications for elimination 61

STARTING AT THE ROOTS: USING HUMAN-CENTERED DESIGN TO DEVELOP AN ADOLESCENT PREGNANCY PROGRAM IN ELDORET, KENYA 63

Strengthening Referral Networks for Management of Hypertension Across the Health System (STRENGTHS) 64

Study of Newly Diagnosed Kaposi's Sarcoma 67

The role of mPHRs in Western Kenya 68

The Role of PD-1 Pathway and Tissue Microenvironment in HIV-Kaposi Sarcoma and Endemic Kaposi Sarcoma Cohort in Western Kenya 69

UNDERSTANDING BARRIERS AND FACILITATORS PREDICTING LINKAGE TO GROUP-BASED DIABETES AND HYPERTENSION CARE IN RURAL WESTERN KENYA: A MIXED-METHODS STUDY 70

Using Narrative Films to Combat HIV Stigma: Perspectives from HIV-Infected Adolescents and their Caregivers 71

Validating an Integrated Community Based Strategy of Peer Support in Pregnancy and Infancy 72

VINCRISTINE OPTIMIZATION IN KENYAN CHILDREN WITH CANCER 74

Viral Suppression among HIV-infected Children and Caregivers in Western Kenya 76

Virologic Treatment Failure and Drug Resistance in HIV-Infected Kenyan Children (RESPECT) study. 77

Appendix A: Bibliography 80

Appendix B: IeDEA Annual Report 84

Index 114

ABBREVIATIONS

ADAT	AMPATH Data Analysis Team
AMPATH	Academic Model Providing Access to Healthcare
AMWG	Adult Medicine Research Working Group
BSWG	Basic Science Research Working Group
CVMD	Cardiovascular and Metabolic Disease Research Working Group
IREC	Institutional Review and Ethics Committee
MTRH	Moi Teaching and Referral Hospital
MUCHS	Moi University College of Health Sciences
NCDs	Non-Communicable Diseases
ORWG	Oncology Research Working Group
PCWG	Pharmaceutical Care Research Working Group
PHPCWG	Public Health and Primary Care Research Working Group
PRWG	Pediatric Research Working Group
RHWG	Reproductive Health Research Working Group
RPO	Research Program Office
RSPO	Research and Sponsored Projects Office
SSRN	Behavioral and Social Science Research Working Group
TBWG	Tuberculosis Research Working Group

VISION, MISSION, & VALUES

VISION

We envision a **vibrant, world-class, Kenyan-led community** of **international researchers** in health and health care.

MISSION

Our mission is to **improve the health of people in resource-limited settings**, through the **identification**, development and **dissemination** of relevant and timely **information** on health and health care systems **for use by decision-makers** in medical care, public health, and public policy in Kenya and elsewhere in resource-limited settings.

VALUES

In our work we embrace:

- Service with **humility**
- A spirit of **collaboration** and **partnership**
- **Integrity** in relationships
- **Mutual respect** and **mutual benefit** in organizational partnerships
- A focus on **vulnerable populations**
- Efforts to **eliminate health disparities**

STRATEGIC PRIORITIES

In October 2015, the AMPATH Research Program held a strategic planning retreat to evaluate its performance and set strategic priorities to guide the development of the program. The following strategic goals were set by the program leaders and stakeholders who contributed to this planning process.

Over the next three years, the AMPATH Research Program will develop:

1. Stable, **resourced infrastructure for research** that enables the efficient conduct of high-quality, high-priority research
2. Successful **independent investigators** working in collaborative, interdisciplinary research teams to improve global health
3. Supportive, global health **research-intensive cultures** within the schools and departments of all AMPATH partners
4. Growth in key, high-yield, **research-related initiatives relevant to population health, policy-makers' questions, and healthcare delivery systems** and contextualized to resource-limited settings, including Basic and Translational Sciences Research, Biobanking, Oncology and NCDs, Population-focused Health, Informatics and Decision Support Systems, and Implementation Research dissemination.

OVERVIEW

The start of the New Year has brought new challenges and exciting developments for the AMPATH Research Program. In the first 6 months of this year, nearly a dozen new funded projects were added to AMPATH's research portfolio and added 41 new publications to AMPATH's research bibliography. We launched a new Research Program website, www.ampathkenya.org/research, and began piloting a new online process for researchers to submit new study proposals and access support from AMPATH's Research Working Groups and Cores.

Looking forward to fiscal year 2018-19, the AMPATH Research Program announced new initiatives to support the expansion of collaborative research through AMPATH. Among these new initiatives is the creation of a new Qualitative Research Core to support qualitative research training, specialized data management and analysis for qualitative research and more. The Research Program will also expand its video conferencing facilities in the Chandaria Centre to facilitate communication among research teams. The program has added new support to facilitate access to research data for unfunded research. Finally, the AMPATH Research Program announces a new challenge fund to help research working groups explore new opportunities to expand their membership and improve the support we provide to researchers.

The AMPATH Research Program's publication rate remained on par with previous years with over 40 articles published in peer reviewed journals during the reporting period. The number of new awards grew at a slightly faster pace than in the last three years with more than 20 new awards totaling nearly $6 million in new research and training awards in the first 6 months of 2018. This pushed AMPATH's cumulative total of research and training awards to almost US$125 million dollars. As of July 1, 2018, research and training awards comprised 65 percent (US$16 million) of AMPATH's Research and Sponsored Projects Office (RSPO) grant portfolio that includes more than 140 active research and training projects with more than US$ 24.7 million from over 80 sponsors. This excludes the USAID AMPATH Plus award.

The following report provides a snapshot of AMPATH's research activities from 1 January – 30 June 2018. It includes updates and progress from 58 research projects that were active during this period. Each update includes a summary abstract of the project's aims, an update on progress made during the reporting period, and the project's objectives for the next 6 months. The reports were provided by the project's Principal Investigator or their designee and with the exception of formatting are presented here largely unedited.

NEW PROGRAM INITIATIVES

Expanded Video Conferencing Facilities

Plans are underway to expand the video conferencing facilities available to AMPATH's research community. The AMPATH Research Program already maintains 4 conference rooms and 2 training rooms in the Chandaria Centre that investigators can use for conference calls, trainings, and other meetings. New video conferencing equipment will be added to AMPATH's existing facilities and will be available to all of AMPATH's research community and partners.

Qualitative Research Core

A new core infrastructure resource will be added to the AMPATH Research Program's 6 existing cores. Under the leadership of Violet Naanyu, the Qualitative Research Core will establish a new resource for researchers who conduct qualitative research. Researchers will be able to access core resources including qualitative research training, specialized data analysis for qualitative research, transcription services, and a cadre of staff trained in qualitative methods.

Research Working Group Innovation Fund

AMAPTH's research working groups are critical to the success of AMPATH's research programs. Working groups develop and support research collaboration, mentor new faculty, develop new research proposals, and set research priorities to

ensure our research is relevant to caregivers and their patients. In FY2019, we are challenging the working groups to reinvent themselves for the future and find new ways to support research and expand our research community to make it more open and inclusive. To support these efforts, each working group will receive a fixed budget of US$ 1,500 to support and expand their activities. It will be up to each group to prioritize and decide how to use these funds. The groups can also apply for additional funds from our new competitive challenge fund – a pool of US$5,000 that can be used to supplement working group innovations.

Data for Unfunded Research

In recent years, many investigators, particularly Kenyan students and junior faculty, have struggled to find support to access AMRS data for their unfunded research. Those who could pay for a data manager's time could access data but those who could not either had to wait in line or find other ways to access data for their projects. AMPATH's shift to the new POC system also removed the ability of researchers to go directly to paper records to manually access data. To address this gap, the AMPATH Research Program is committing 75% FTE salary support for a data manager to support unfunded research and access to POC data. Access to this support will be coordinated through ADAT.

Staff for RSPO

The recent withdrawal of staff seconded from MTRH along with a shrinking budget and increased demand for essential administrative services has left RSPO with projected budget and staffing shortage. To help mitigate the impact of these resource challenges on sponsored research projects, the AMPATH Research Program is providing salary support for two fulltime staff positions in RSPO in FY2019.

GRANTS

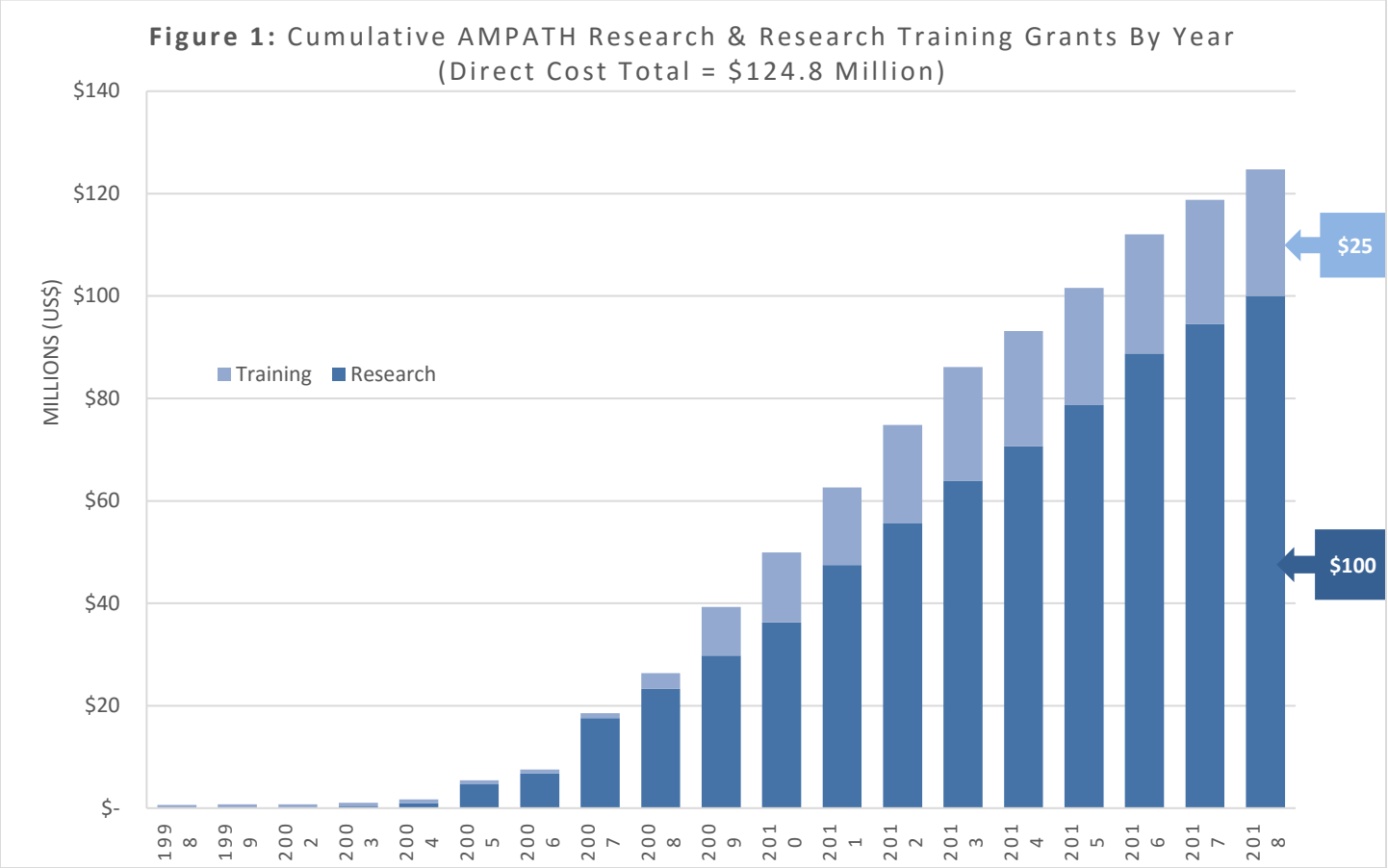
Investigators reported nearly US$ 5.9 million in new awards in the first 6 months of 2018. This increased AMPATH's cumulative total of research and training awards to US$124.8 million since the start of the program in 1998 (See Figure 1). Nearly a quarter of these awards provide training to develop new Kenyan investigators and their partners from North America including Fogarty supported training for clinical research and biostats and data management.

Pilot Awards

AMPATH collaborative research teams received $100,000 in pilot grants from the Indiana Clinical and Translational Sciences Institute (Indiana CTSI) and Indiana University Center for Global Health Global Health Research Pilot Grant Competition in 2018. The proposed projects will support pilot work to improve the delivery of complex care to HIV positive patients using the ECHO platform, address barriers to adolescent PrEP, provide urine pregnancy tests, and a variety of other topics (See Table 1). The six awardees for the 2017 competition add to the three studies awarded pilot grants for AMPATH related research in 2016.

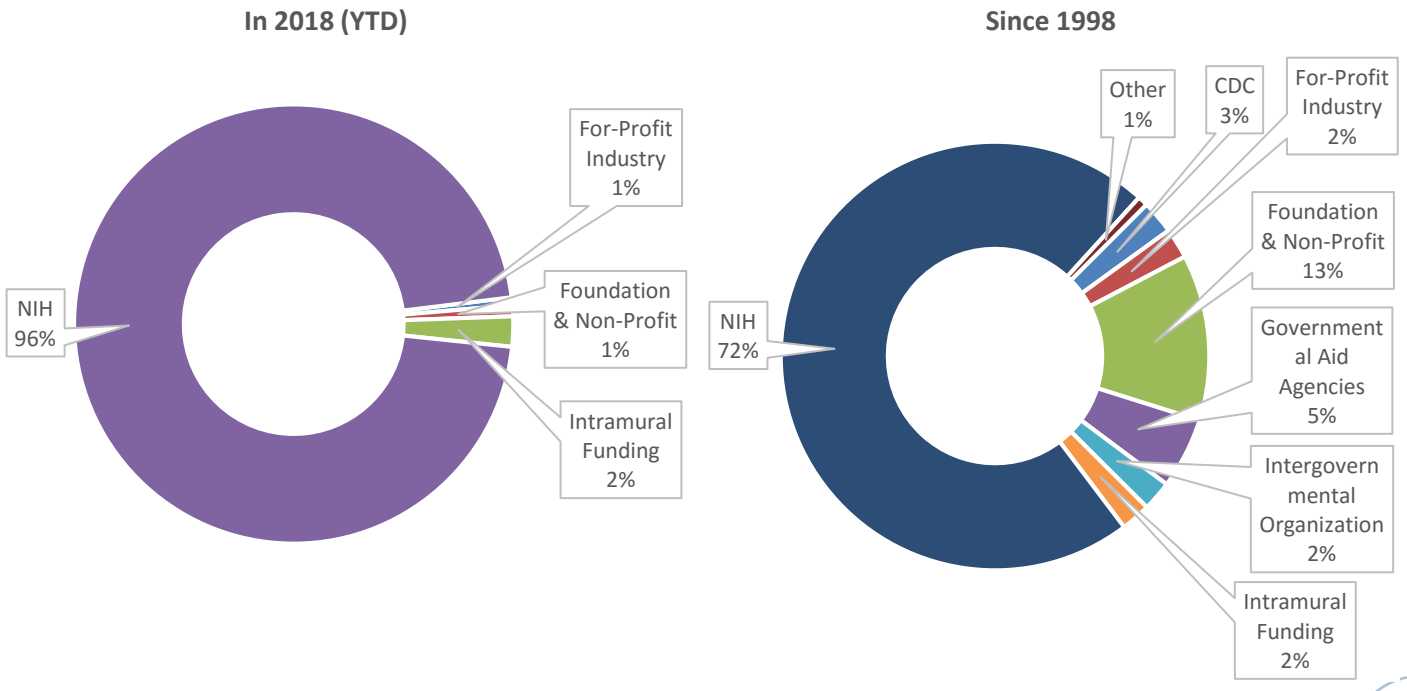
Table 1: 2018 CTSI Global Health Pilot Grant Awardees

Proposal Title	Co-PIs	Award
Improving the Delivery of Complex Care to HIV Positive Patients through Guided Practice using the HIV AMPATH Tele-ECHO Platform	Adrian Gardner (IU) Ali Shamim (MUCHS)	$20,000
Addressing Barriers to Adolescent PrEP in Western Kenya Using an Implementation Sciences Approach	Mary Ott (IU) Edith Ogalo (MUCHS)	$20,000
Community-based provision of urine pregnancy tests as linkage to reproductive health services	Caitlin Bernard (IU) Violet Naanyu (MUCHS)	$20,000
Caregiver-focused intervention for neurodevelopmental delays in young children in western Kenya	Megan McHenry Eren Oyungu (MTRH)	$20,000
Microfinance and Investments in Health in Rural Kenya	Molly Rosenberg (IU) James Akiruga (MUCHS)	$20,000



Since 1998, 72 percent of the awards AMPATH researchers were awarded came from the NIH. However, 96 percent of the awards received since the start of 2018 were from the NIH (See Figure 2).

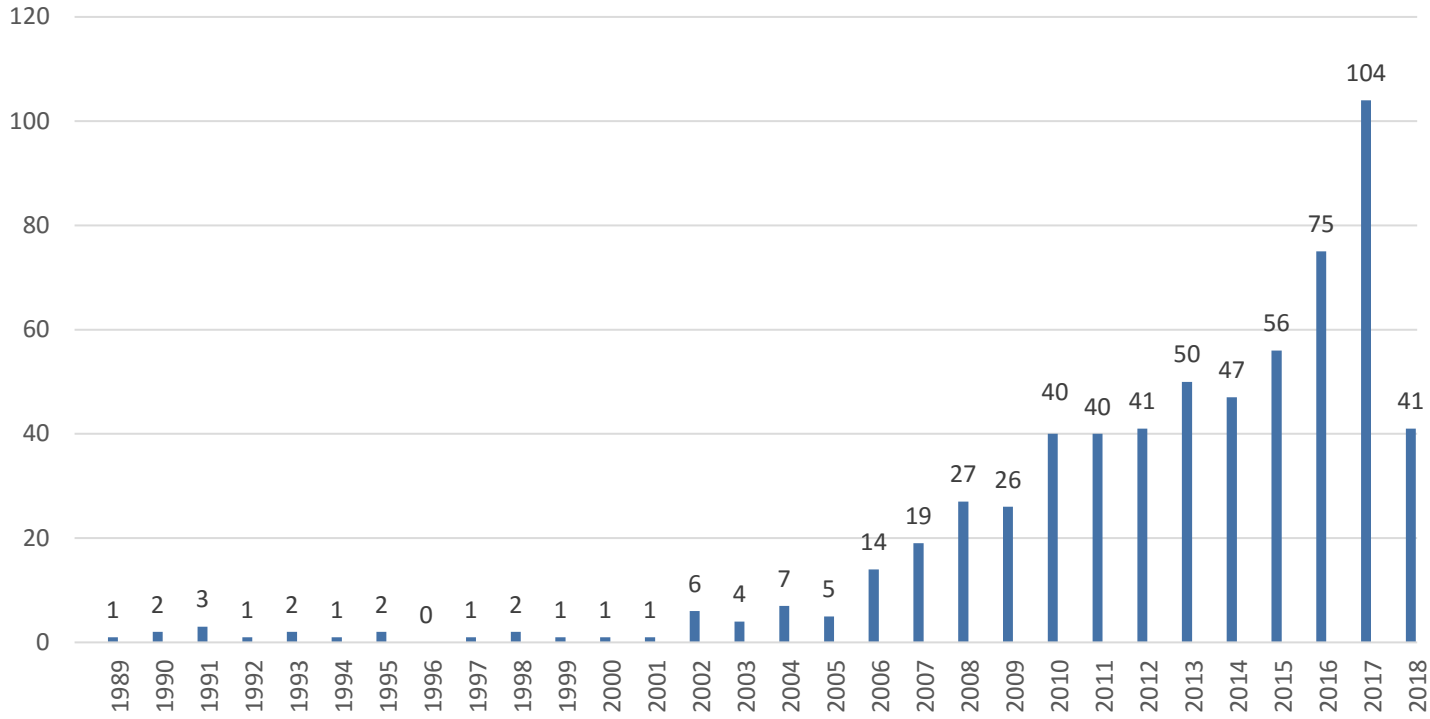
Figure 2: AMPATH Research Support by Sponsor Type in 2018 (YTD) and from 1998



PUBLICATIONS

AMPATH investigators published 41 articles in peer-reviewed journals since the start of 2018. This rate continues trends from previous years and is an important indicator of productivity for AMPATH's research community. A bibliography of all the publications produced from January – June 2018 is available at the end of this report.

Figure 3: Number of AMPATH Research Publications since 1989 (n=620)



STUDY REPORTS

The following reports were provided by AMPATH investigators and their study teams and cover the period of January – June 2018. The views expressed in these reports do not necessarily reflect the views of the AMPATH Research Program, its partners, or sponsors.

Study Title	**A Formative Study to Develop Culturally Valid Psychosocial Assessment Tools and Interventions to Promote Family Well-Being in Kenya**
Principal Investigator(s)	Eve Puffer, Duke University
Co-Investigator(s)	David Ayuku, Moi University
Working Group(s)	PRWG, SSRN
Description	This study aims to contribute to the evidence base related to effective interventions for families in low-resource settings who are experiencing conflict and difficulties in relationships that affect child and caregiver wellbeing alike. Results of this study will (a) inform whether a family therapy approach is feasible and promising in communities in and surrounding Eldoret, Kenya and (b) inform how family wellbeing and mental health can be measured in culturally-valid ways in this context. Our long-term research goal is to establish an evidence-based and culturally-anchored family therapy intervention for very low-resource settings to improve family functioning, thereby preventing negative outcomes including mental health problems and HIV risk. Our objectives in this study are to create a new measure of family functioning and to develop and pilot a family therapy intervention. We will first develop a measure of family functioning that includes both survey and direct observation to complement self-report. We will then use a community-based participatory research process to develop a family therapy intervention that integrates evidence-based family therapy strategies with existing community solutions. Specific Aim #1: Develop new measures of family functioning including both survey measures and direct observation of family interactions. Specific Aim #2: Develop a family therapy intervention that integrates evidence-based family therapy strategies with existing community-based strategies for solving family problems. Specific Aim #3: Conduct a pilot study of the intervention with families to test feasibility and acceptability.
Site(s)	Moi Teaching and Referral Hospital
Project Period	5/28/2013 - 12/31/2018
Funding Status	Funded - Grand Challenges Canada & Johnson and Johnson
Direct Award (USD)	$129,000
Update	For the measures validation study, a manuscript is being submitted. For the intervention evaluation, the single subject case series study is nearing its conclusion. We are continuing piloting with the goal of evaluating the supervision methods to improve scalability. Two manuscripts from the first round of piloting are currently under review,

	and conference presentations of these results have begun the dissemination of results process.
Future Plans	We expect to publish the manuscripts currently under review as described above; to complete the single case series design study and analysis of results; to continue the pilot evaluation of new supervision methods (completion expected late 2018 or early 2019).
Publication(s)	

Study Title	**A Stage 2 Cognitive Behavioral Trial, Reduce Alcohol First in Kenya Intervention (RAFIKI)**
Principal Investigator(s)	Rebecca Papas, Brown University
Co-Investigator(s)	B. Gakinya, Moi University
Working Group(s)	AMWG, SSRN
Description	This study will determine whether a group cognitive-behavioral therapy intervention that demonstrates preliminary evidence of reducing alcohol use among HIV-infected outpatients in western Kenya is effective when compared against a group health education intervention in a large sample over a longer period of time. It will be delivered by paraprofessionals, individuals with limited professional training. This approach is consistent with successful cost-effective models of service delivery in resource-limited settings in which paraprofessionals (e.g. clinical officers, traditional birth attendants and peer counselors) are trained.
Site(s)	Iten District Hospital, Moi Teaching and Referral Hospital , Turbo Health Centre, Webuye District Hospital
Project Period	7/2/2011 - 1/1/2018
Funding Status	Funded - National Institute on Alcohol Abuse and Alcoholism (NIAAA)
Direct Award (USD)	$2,268,832
Update	This study is closed
Future Plans	This study is closed
Publication(s)	

Study Title	**A5263 'A Randomized Comparison of Three Regimens of Chemotherapy with Compatible Antiretroviral Therapy for Treatment of Advanced AIDS-KS in Resource-Limited Settings'**
Principal Investigator(s)	Abraham Siika, Moi University
Co-Investigator(s)	Naftali Busakhala, Moi University
Working Group(s)	AMWG, ORWG
Description	This is an ACTG prospective, randomized, active-controlled clinical trial in which participants will be randomized 1:1:1 to oral etoposide (ET) plus antiretroviral therapy (ART), bleomycin and vincristine (BV) plus ART, or paclitaxel (PTX) plus ART. The primary objective will be to compare the clinical efficacy of two regimens, oral ET plus ART and BV plus ART, to PTX plus ART for initial treatment of advanced stage AIDS-KS.
Site(s)	Moi Teaching and Referral Hospital
Project Period	4/1/2014 - 2/28/2021
Funding Status	Funded - NIH – AIDS Clinical Trials Group (ACTG)
Direct Award (USD)	Not Reported
Update	The A5263 study was reviewed by the Division of AIDS Co-Infections and Complications DSMB Data Safety and Monitoring Board (DSMB) in March 2018 and the DSMB recommended important changes to the conduct of the A5263 study. As of March 13, 2018, 274 of a planned total of 386 participants had been enrolled into the study. Of these, outcome data on 257 participants were included in the efficacy analyses. After careful review of these data, the Board concluded that compared to Arm 1C participants, Arm 1B participants were underperforming with respect to the primary endpoint. Week-48 PFS rates (95% CI) at the time the study was closed were 43% (34,53) for the BV+ART arm and 63% (54,72) for the PTX+ART arm. There were no safety concerns about any of the treatment regimens; ~90% had HIV VL <400 copies/mL by week 12. The NCI leadership, and the leadership of the ACTG and AMC supported the DSMB conclusions and made the following recommendations: â€¢ Closed to screening and accrual, effective immediately. â€¢ Participants who are currently enrolled in A5263 to continue study treatments and follow-up per the current protocol version approved at the site. â€¢ IRBs and ethics committees be informed of the DSMB recommendations. As such follow up of already enrolled participants is ongoing at the site
Future Plans	Follow up the 22 enrolled participants who are still on study.
Publication(s)	

Study Title	**A5264/AMC067 A Randomized Evaluation of Antiretroviral Therapy Alone or with Delayed Chemotherapy versus Antiretroviral Therapy with Immediate Adjunctive Chemotherapy for Treatment of Limited Stage AIDS-KS in Resource-Limited Settings (REACT-KS)**
Principal Investigator(s)	Abraham Siika, Moi University
Co-Investigator(s)	
Working Group(s)	None
Description	A5264/AMC 067 is a phase III, open-label, prospective, randomized study stratified by CD4+ lymphocyte cell count and antiretroviral therapy (ART) history. The study will compare the KS tumor outcomes of ART alone or with delayed Etoposide (ET) to ART with immediate ET, for initial treatment of limited stage AIDS-KS in chemotherapy and radiation treatment na- HIV-1 infected participants who are currently not receiving ART.
Site(s)	Moi Teaching and Referral Hospital
Project Period	11/28/2012 - 6/30/2014
Funding Status	Funded - NIH - National Institute of Allergy and Infectious Diseases (NIAID) NIH - National Cancer Institute (NCI) NIH - National Institute of Dental and Craniofacial Research (NIDCR)
Direct Award (USD)	Not Reported
Update	This protocol is now closed. There are no protocol activities going on at the site.
Future Plans	There will be no further protocol activities.
Publication(s)	

Study Title	**A5288 'Management Using the Latest Technologies in Resource-limited Settings to Optimize Combination Therapy After Viral Failure (MULTI-OCTAVE)'**
Principal Investigator(s)	Abraham Siika, Moi University
Co-Investigator(s)	
Working Group(s)	None
Description	A5288 is an open-label phase IV, prospective interventional, strategy study in resource-limited settings (RLS) for HIV-infected participants with triple-class experience or

	resistance to [nucleoside reverse transcriptase inhibitors (NRTIs), non-NRTIs (NNRTIs), and protease inhibitors (PIs)] and who are failing their current regimen. The use of novel agents and contemporary management tools that include standard genotyping, plasma viral load (VL) monitoring will be evaluated. The screening genotype results and antiretroviral (ARV) history will be used to allocate potential participants to one of the four cohorts and for selection of ARV regimen for each potential participant. At sites where feasible and relevant(including MTRH) the study will also conduct an adherence study. This will be a randomized comparison of cell phone-based adherence intervention plus local standard-of-care adherence procedures (CPI+SOC) versus the SOC adherence procedures. The primary objective of the study is to use novel agents and contemporary management tools, including standard genotyping to select an appropriate third-line regimen, interventions to improve adherence and plasma viral load (VL) monitoring, in order to achieve a ? 65% rate of virologic control at 48 weeks of follow-up.
Site(s)	Moi Teaching and Referral Hospital
Project Period	12/18/2013 - 12/31/2015
Funding Status	Funded - NIH – AIDS Clinical Trials Group (ACTG)
Direct Award (USD)	Not Reported
Update	The primary analysis for protocol A5288, 'Management Using the Latest Technologies in Resource-Limited Settings to Optimize Combination Therapy After Viral Failure (MULTI-OCTAVE),' has been completed. The findings were presented at the Conference on Retroviruses and Opportunistic Infections (CROI) in Boston, Massachusetts, in March 2018. The main purpose of this study was to evaluate the ability of novel agents and contemporary management tools to achieve a â‰¥65% rate of virologic control at 48 weeks of follow-up in HIV-infected persons presenting with second-line antiretroviral treatment failure. The novel agents were: etravirine (ETR), raltegravir (RAL), and ritonavir-boosted darunavir (DRV/r). The contemporary management tools included standard genotyping at screening and in the case of virologic failure (VF) to select an appropriate regimen, interventions to improve adherence, and plasma viral load (VL) monitoring. Findings related to the adherence intervention component of the study will be presented separately. 545 persons participated in this study. At enrollment, drug resistance (moderate or high-level) to 0, 1, 2, and 3 ARV classes was identified in 22%, 20%, 30% and 27% of participants, respectively. Overall, 64% (95% CI 60, 68%) of study participants had VL â‰¤200 copies/mL at week 48. Viral suppression and VF differed across cohorts (see Table below). By week 48, Cohort A had the most Grade â‰¥3 adverse events (39%) and regimen discontinuations (13%). No differences in VL â‰¤200 copies/mL at week 48 or VF â‰¥24 weeks were observed in the randomized comparison of B1 & B2 cohorts. Regimens containing DRV/r and RAL with or without ETR were highly effective for participants with resistance to ritonavir-boosted lopinavir (LPV/r) who presented for 3rd line ART. More than half of participants without LPV/r resistance who remained on 2nd line ART did not achieve sustained viral suppression at week 48. This subgroup requires additional interventions to achieve viral suppression. This study was not designed or powered with the intent of comparing outcomes between the

	various resistance groups. Targeted real-time genotyping to select regimens for 3rd line ART can appropriately allocate more costly ARVs to those with greater resistance.
Future Plans	The 8 participants on study follow up will continue to be followed up during the next 6 months.
Publication(s)	

Study Title	**A5349/TBTC S31 Rifapentine-containing treatment shortening regimens for pulmonary tuberculosis: A randomized, open-label, controlled phase 3 clinical trial**
Principal Investigator(s)	Abraham Siika, Moi University
Co-Investigator(s)	David Lagat, Moi University
Working Group(s)	None
Description	This will be an international, multicenter, randomized, controlled, open-label, 3-arm, phase 3 non-inferiority trial. The primary objectives are: 1. To evaluate the efficacy of a rifapentine-containing regimen to determine whether the single substitution of rifapentine for rifampin makes it possible to reduce to seventeen weeks the duration of treatment for drug-susceptible pulmonary tuberculosis 2. To evaluate the efficacy of a rifapentine-containing regimen that in addition substitutes moxifloxacin for ethambutol and continues moxifloxacin during the continuation phase to determine whether it is possible to reduce to seventeen weeks the duration of treatment for drug-susceptible pulmonary tuberculosis
Site(s)	All Sites
Project Period	10/12/2017 - 1/31/2021
Funding Status	Unfunded -
Direct Award (USD)	
Update	Screening and enrollment has been progressing well with currently 39 participants meeting the eligibility criteria having been consented. There were 10 screening failures but 29 participants have been enrolled into the study. The 29 are in different stages of study follow up and this is progressing well
Future Plans	In the next six months, the site hopes to continue screening and enrolling more participants and follow up those already enrolled.
Publication(s)	

Study Title	**AMPATH - Oncology Institute: HPV and Cervical Cancer in Kenyan Women with HIV/AIDS**
Principal Investigator(s)	Patrick Loehrer, Indiana University - Purdue University in Indianapolis (IUPUI)
Co-Investigator(s)	Darron Brown, Indiana University - Purdue University in Indianapolis (IUPUI)
Working Group(s)	ORWG, RHWG
Description	The core objective of this project is to better understand the natural history of oncogenic HPV infections in HIV-infected Kenyan women, and to identify potentially modifiable (and non-modifiable) factors that are associated with progression of oncogenic HPV infection to clinical disease, including cervical cancer. Our central hypothesis is that the incidence, persistence, and spectrum of HPV are all substantially greater in HIV-infected versus non-HIV-infected Kenyan women, and that this explains a higher incidence of cervical neoplasia in HIV-infected populations. We further hypothesize that these and other modifiable factors (such as concurrent STIs, sexual behaviors, nutrition, and environment) disproportionately and adversely impact outcomes of local therapies such as cryotherapy and Loop Electrosurgical Excision Procedure (LEEP) in HIV- infected women. The specific aims of this AMPATH-Oncology Institute are to: 1. Expand the capabilities and expertise of the current laboratories and biobanking capabilities in Kenya through AMPATH and the Kenya Medical Research Institute (KEMRI) 2. Identify potentially modifiable behavioral and biological factors that are associated with the duration of infection with oncogenic HPV and cervical dysplasia in HIV-infected and non-HIV-infected women from western Kenya 3. Assess the risk factors associated with the short and long term results of cryotherapy and LEEP in VIA- positive (including LEEP-eligible) HIV-infected and non-HIV-infected women in western Kenya. 4. Provide biostatistical and data management support for proposed projects in this application and for future pilot projects, and 5. To establish a sustainable, multi-institutional and transdisciplinary mentoring program fostering the development of new cancer researchers in Kenya
Site(s)	Moi Teaching and Referral Hospital
Project Period	9/19/2014 - 8/31/2019
Funding Status	Funded - NIH – National Cancer Institute (NCI)
Direct Award (USD)	$2,132,402
Update	The project has been run well with respective cores achieving their objectives. Total accrual goals have been reached for Project 1 and with modifications in the goals, 100% of the desired accrual for Project 2. Personnel have participated in various trainings such as the November 2017 African Organization for Research and Development in Cancer (AORTIC) conference in Rwanda, February 2017, the Kenya Obstetrics and Gynecologists Society (KOGs) Kenya Conference in April 2018, and the U54 Malawi

	conference in which beneficial discussions supportive of professional development were held. Kenyan researchers are gaining valuable experiences in molecular techniques, because all laboratory procedures are conducted in Kenya. No specimens are shipped to the U.S. for analysis. While this was challenging initially, the Kenyan researchers now feel very confident in these molecular biological assays. In addition, numerous Kenyans are gaining valuable experiences in preparing abstracts and manuscripts, and on presenting these papers at research meetings. Challenges of retention within projects are being addressed through use of community liaison officers as well as locater tracing of clients. Challenges of study accrual will be addressed through an amendment to include Chulaimbo as an additional study site for Project 2. Accrual was also hampered by a series of strikes, first by the physicians in Kenya in 2016 (which was subsequently resolved in March of 2017), and then subsequently, a nursing strike in the first quarter of 2017 that is still ongoing as of this report. We also have had concerns for the follow-up rates for Project 1 and in conversations with the participants note that reimbursement rates for travel and food are less than other comparable studies conducted through AMPATH. As such amendments to rectify this are under review. Another issue is the ongoing difficulty obtaining the reagents for evaluating STI, which resulted in lack of reporting to patients which was also impacting follow-up. We have now contacted >90% of participants with the results (others lost to follow up) with all but one patient receiving appropriate antibiotic therapy. Efforts to obtain alternative contact numbers instead of only using single contact from the patient to minimize LTFU rates.
Future Plans	As mentioned in prior reports, we had concerns regarding the accrual to the Cryotherapy arm in HIV-infected (and to a lesser extent the HIV-uninfected) women. We have opened the trial at sites that have an increased number of HIV-infected women (Webuye, Chulaimbo) and now have enough participants in the study to answer the research questions. We need to increase the number of HPV assays performed in Kisumu, Kenya by increasing delivery of needed reagents to the laboratory. We are addressing various means of accomplishing this important goal.
Publication(s)	

Study Title	**Assessment of Airway Disease in Western Kenya**
Principal Investigator(s)	Peter Kussin, Duke University
Co-Investigator(s)	David Lagat, Moi University
Working Group(s)	AMWG, PRWG
Description	The World Health Organization (WHO) has identified chronic respiratory diseases as the 3rd leading cause of death globally.1,2 Unfortunately, the prevalence of these diseases and their underlying biology in much of sub-Saharan Africa is unknown. To this end we propose to first describe the prevalence of obstructive respiratory disease in Uasin Gishu County, Kenya using medical histories, validated questionnaires, and pre-and post-

	bronchodilator spirometry. We will then classify obstructive airway disease phenotypes as either bronchodilator responsive (FEV1 or FVC >12% post-bronchodilator) or unresponsive.3 We will also examine risk factors associated with airway disease including occupational history, TB, HIV, and biomass fuel use. Finally, we will compare our phenotypes to novel exhaled gas signatures based on levels of exhaled carbon monoxide and nitric oxide as surrogates of air pollution and eosinophilic airway inflammation, respectively, providing insights into the underlying biology of chronic lung disease in our population as well as estimates of the impact of air pollution on lung health.
Site(s)	Community based research study across Uasin Gishu
Project Period	8/31/2016 - 12/31/2017
Funding Status	Funded - NIH - Fogarty International Center (FIC)
Direct Award (USD)	$91,873
Update	We are in the process of analyzing data for the manuscripts, which are partially drafted. We do not yet have preliminary findings.
Future Plans	We hope to complete a manuscript to submit for publicaiton.
Publication(s)	

Study Title	**Bridging Income Generation with Gruop Interated Care(BIGPIC)**
Principal Investigator(s)	Rajesh Vedanthan, Mount Sinai School of Medicine
Co-Investigator(s)	Jemima Kamano, Moi Teaching and Referral Hospital
Working Group(s)	AMWG, CVMD
Description	The objective of this proposal is to utilize a trans disciplinary implementation research approach to address the challenge of reducing CVD risk in low-resource settings. The research aims at integration of group medical visits and microfinance with the additional social network characteristics.Aim 1: Identify the contextual factors, facilitators, and barriers that may impact integration of group medical visits and microfinance for CVD risk reduction, using a combination of qualitative research methods: 1) baraza; and 2) focus group discussions among individuals with diabetes or at increased risk for diabetes, microfinance group members, and rural health workers. Then develop a contextually and culturally appropriate integrated group medical visit-microfinance model. Aim 2:Evaluate the effectiveness of group medical visits and microfinance groups for CVD risk reduction among individuals with diabetes or at increased risk for diabetes, by conducting a four-arm cluster randomized trial

	comparing: 1) usual clinical care; 2) usual clinical care plus microfinance groups only; 3) group medical visits only (no microfinance); and 4) group medical visits integrated into microfinance groups. Aim 3: Evaluate the incremental cost-effectiveness of each intervention arm of the trial.
Site(s)	Bumala A Health Centre, Bumala B Health Centre, Chulaimbo Sub-District Hospital, Endebess Sub-District Hospital, Angurai, Moding, Akichelesit, Malaba, Aboloi, Kamolo, Changara, Ziwa, Kipkabus, Chepngoror
Project Period	4/1/2015 - 4/1/2015
Funding Status	Unfunded -
Direct Award (USD)	
Update	Administrative - All-Investigator conference call held on 4th April, 2018; Positive feedback attained from participants on call - Procurement of necessary supplies for point of care testing, training, and stationery ongoing Aim 1: Barriers/facilitators/contextual factors - manuscript writing ongoing Aim 1.1 (Barriers, Facilitators, & Contextual Model): - Manuscript writing ongoing Aim 2 (Cluster RCT): -Logistics of trial Roll Out: o Working with AMPATH's Chronic Disease Management (CDM) and Safety Net teams regarding logistics of trial rollout o Intervention rollout closed; thus far 24 facilities have been rolled out (6-GMV, 6-GMV-MF, 6-UC, 6-MF) ï‚§ A total of 2380 participants (Male=746, Female=1634) have been enrolled thus far. ï‚§ A total of 1245 participants (Male= 416, Female=829) have completed 3-month follow ups ï‚§ A total of 150 participants (Male= 47, Female=103) have completed 12-month follow ups - Microfinance training for the facilities that were randomized to microfinance arm is ongoing - Training on Group Facilitation on going for participants randomized to group medical visit arm - Operations manual modified to suit current implementation procedures Data collection, entry, & management: o Data collection, entry, and management procedures ongoing. - Process evaluation: o REDCap programming of data collection instruments completed, testing done and data entry for patient attendance registers on-going o Process evaluation activities have begun (13 Key Informant Interviews completed for research assistants and clinical officers, CHV and GESP written test ongoing, 6 written test completed for clinical officers, A total of 7 FGD completed for drop out and retained patients) Aim 2.1(Mediation & Moderation Analysis): - Social network survey (SNS): o SNS currently being administered to all participants at baseline and 3-month f/u o Abstract presented in the last ACC Conference Aim 3 (Cost Effectiveness Analysis): - Costing questionnaire survey (CQS): o CQS currently administered to study participants o Intervention cost tracking done, 1st quarter report finalized o 2nd quarter report underway
Future Plans	Aim 1: o Manuscript preparation Aim 1.1 o Manuscript preparation Aim 2: o Complete enrollment of all participants by end of September o Finalize group formation trainings in all sites by October o Continue with process evaluation activities o Continue 3-month f/u assessments o

	Initiate 12-month f/u assessments Aim 2.1: o Administer social network survey to study participants at appropriate assessment periods Aim 3: o Administer survey to study participants at appropriate assessment periods o Finalize 2nd quarter report
Publication(s)	

Study Title	**Can integration of effective family planning services into Anticoagulation Management Services (AMS) improve uptake?**
Principal Investigator(s)	Astrid Christoffersen-Deb, University of Toronto
Co-Investigator(s)	Imran Manji, Moi Teaching and Referral Hospital
Working Group(s)	RHWG
Description	The purpose of the study is to evaluate whether integration of family planning education and free, on-site provision of all reversible family planning methods in Anticoagulation Monitoring Service (AMS) Clinic can improve uptake of long-acting reversible contraception (LARC; specifically intrauterine contraceptive devices (IUCDs) and contraceptive implants) in this high-risk population. Our hypothesis is that implementation of an educational intervention emphasizing long-acting reversible contraception (LARC) combined with free on-site provision of LARC within Anticoagulation Monitoring Service (AMS) can improve uptake of these methods by 250% in this population. Our objectives are to: 1) Determine whether integration of education about and free provision of highly effective long-acting reversible contraceptive methods within Anticoagulation Monitoring Services (AMS) is feasible. 2) Determine whether integration of education about and free provision of highly effective long-acting reversible contraceptive methods within Anticoagulation Monitoring Services (AMS) can improve uptake of long-acting reversible contraceptive methods (IUCDs and contraceptive implants). 3) Determine whether integration of education about and free provision of highly effective long-acting reversible contraceptive methods within an Anticoagulation Monitoring Services (AMS) Clinic can prevent unplanned pregnancies. In order to evaluate these objectives we will provide the intervention and follow the participants for the following 1 year time period. At 3-month, 6-month, and 12-month follow-up we will evaluate whether they are using any method of family planning and whether they have experienced subsequent unplanned pregnancies. This data will be compared to the same group of women prior to implementation of the education intervention and free, on-site provision of all reversible contraceptive methods.
Site(s)	Moi Teaching and Referral Hospital
Project Period	4/20/2015 - 8/31/2016
Funding Status	Unfunded -

Direct Award (USD)	
Update	In the last six months, a manuscript was prepared and submitted it to Contraception journal. Comments from the publishing authors were received and addressed. A revised manuscript has been resubmitted. An abstract was also submitted and accepted for an oral presentation at a conference for family planning.
Future Plans	Over the next 6 months, we still plan to do longitudinal analysis of 6 & 12 month data and also do an overall analysis of all the data available to evaluate whether our primary objective of increasing use of long term methods of family planning was achieved. Additionally, we will present our study and the findings at the 2018 International Conference on Family Planning.
Publication(s)	

Study Title	**Caregiver Interventions for Developmental Delays in Young Kenyan Children**
Principal Investigator(s)	Megan McHenry, Indiana University
Co-Investigator(s)	Eren Oyungu, Moi Teaching and Referral Hospital
Working Group(s)	PRWG
Description	PROBLEM STATEMENT: One promising intervention for neurodevelopmental delays in resource-limited settings is the Care for Child Development Intervention (CCDI) Program developed by UNICEF, in partnership with the World Health Organization.6,7 In the CCDI program, trained providers support families by promoting sensitive and responsive caregiver-child interactions and teaching them about cognitive stimulation and social support.6 The program is adaptable cross-culturally and has been used in over 40 countries.6,8 While few published evaluation studies look at the outcomes of implementing the CCDI program, one study performed in Pakistan showed that the program improved cognitive, language, and motor neurodevelopmental outcomes at 12 and 24 months of age, compared with a control group.9 In resource-limited settings, like Kenya, implementation of a neurodevelopmental intervention for neurologically typical children may divert significant resources from a smaller population who may gain greater benefits from the intervention. Additionally, most of the preventative services, such as weight checks and immunizations, are performed within the Maternal-Child Health clinics, and community health workers do not have the reach necessary to promote child health promotion on a large scale. There are reports indicating that care for child development has been implemented in some parts of Kenya as part of on-going child survival or nutrition programs. However, there hasn't been any evaluation of the intervention to produce data that could guide further implementation and escalation. JUSTIFICATION: Neurodevelopmental interventions are most effective if administered early, when the brain is growing rapidly and has the greatest plasticity.5 However, due to the overwhelmed healthcare systems in resource-limited settings, new interventions are often challenging to introduce and must be carefully evaluated to determine their

	benefits. Effective, sustainable interventions that can be integrated into the current models of care in resource-limited settings are critically needed to improve the neurodevelopmental outcomes of young children in these settings. Without such interventions, millions of children will be unable to reach their full developmental potential. In our study, we will only administer the intervention to children known to have neurodevelopmental delays. By focusing on adapting the intervention to be only a clinic-based treatment, a small number of community members could be trained to administer the program and increase the potential for sustainability. If the clinic-based group sessions prove to be effective for young children with neurodevelopmental delays, this would help inform the key areas of fidelity needed to maintain effectives of the intervention. This study is a critical first step to evaluating the CCDI program's potential as a cross-cultural intervention that is sustainable and effective for the children at highest risk for neurodevelopmental delay. These results will have significant impacts in improving early childhood neuro development both in Kenya and worldwide. OBJECTIVES The Broad objective of this proposal is to pilot the CCDI program as an intervention to treat neurodevelopmental delays among 56 young children in Kenya SPECIFIC AIMS Aim 1: Determine the feasibility of a randomized controlled trial protocol to examine the effectiveness of the CCDI Program for Kenyan children with neurodevelopmental delays aged 18-24 months within a public Maternal-Child Health (MCH) clinic setting. Hypothesis: The CCDI Program will be feasible, as measured by â‰¥90% of participants being willing to be randomized to either the intervention or the control group; â‰¥ 80% attending all 10 biweekly caregiver meetings; â‰¥80% of children returning for their 6 month follow-up; and â‰¥80% returning for 12 month follow-up. Aim 2: Determine the acceptability, facilitators, and barriers of the CCDI Program for use in eligible children. Hypothesis: The CCDI Program will be acceptable, as determined by an analysis of prospective, concurrent, and retrospective acceptability,10 and specific facilitators and barriers to the program will be identified. Using focus group discussions and semi-structured interviews with caregivers, clinical providers, and community leaders, we will determine aspects of the program are acceptable, facilitators, and barriers to improved neurodevelopmental care and allow the CCDI program to function optimally in this setting. Aim 3: Estimate the effect size of the CCDI Program to reduce neurodevelopmental delays in young Kenyan children. Hypothesis: We can demonstrate a 40% decrease in the number of children with neurodevelopmental delays, as determined by a culturally adapted Bayley Scales of Infant and Toddler Development, 3rd edition (BSID-III),11,12 standardized score with implementation of the CCDI Program. This data will inform sample size justification for a future intervention study.
Site(s)	Moi Teaching and Referral Hospital
Project Period	7/9/2018 - 7/1/2019
Funding Status	Funded - Indiana CTSI Thrasher Early Investigator Award
Direct Award (USD)	$45,000

Update	We have just started recruiting and enrolling patients. We are recruiting from our NEURODEV study, and thus far we have recruited 26 participants.
Future Plans	Our goal is to have 36 participants in our study and we hope to finish recruiting them in the next 1-2 weeks. We also hope to complete our baseline assessments, including key informant interviews and focus groups, prior to the start of the groups.
Publication(s)	

Study Title	**Childhood Leukemia in Kenya Identified Through Malaria Slide Review**
Principal Investigator(s)	Terry Vik, Indiana University
Co-Investigator(s)	F. Njuguna, Moi University
Working Group(s)	ORWG, PRWG
Description	The aim of this study is to improve the case detection rate of leukemia by retrospectively reviewing blood smears done for malaria screening to identify children with leukemia in defined population cohorts. If the case detection rate can be improved by utilizing a common and well established procedure, then there is potential to identify children, refer them earlier for treatment and save lives.
Site(s)	Kitale District Hospital
Project Period	7/1/2012 - 6/30/2015
Funding Status	Funded - Alex's Lemonade Stand Foundation
Direct Award (USD)	$200,000
Update	Still working on manuscript, awaiting input from co-author
Future Plans	Complete the manuscript.
Publication(s)	

Study Title	**Community perceptions and perceived needs of street-connected children and youth in Eldoret Kenya: a qualitative investigation**
Principal Investigator(s)	Lonnie Embleton, University of Toronto
Co-Investigator(s)	David Ayuku, Moi University

Working Group(s)	PRWG, SSRN
Description	Very little research exists that explores public perceptions and reactions to street-connected children and youth in low- and middle-income settings and how this impacts the care and services they receive; and no one has explored this topic to date in our setting. Moreover, no one has investigated street-connected youth's opinions and perceptions of their treatment by the public and their needs in relation to the provision of healthcare and services in Eldoret. Gathering youth's opinions and perspectives on their treatment and care will assist with the design and development of services and interventions for this vulnerable population. When youth are involved in the design and development of programs they are more likely to uptake services and seek care that is responsive to their needs. Similarly, exploring the opinions and perspectives of local policymakers, community members, and healthcare providers concerning street-connected children and youth, which influence their decision-making (ethical or unethical) in regards to the provision of programs, services, treatment, support, and care for this population is vital to reduce the harms associated with street-involvement. Gathering this data represents the first step in designing and developing effective evidenced-based interventions and policies, in a community-based participatory manner, which are responsive to the perspectives of street-connected children and youth and community members within the local social-cultural context. SPECIFIC AIMS AIM 1: Explore and describe the perceptions of community members across different social strata about the causes, characters, and needs of street-connected youth in Eldoret, Kenya. AIM 2: Describe the experiences of street-connected youth in Eldoret, Kenya, aged 15-24, with stigma and discrimination on the streets and when accessing services and healthcare. AIM 3: Elucidate ideas concerning appropriate service delivery and care for street-connected youth in Eldoret, Kenya from community members across different social strata 3.1) Identify street-connected youth's opinions on what will assist or facilitate access to healthcare and specifically explore their needs in relation to HIV prevention.
Site(s)	Other community-based sites in Eldoret
Project Period	9/5/2016 - 12/31/2016
Funding Status	Unfunded -
Direct Award (USD)	
Update	Community Perceptions activities for the period Jan - June 30, 2018: An amendment was completed February 2018 to include 10 new study sites. In each site it was proposed that we interview a police officer, a children's officer and 2 street connected youth. The amendment was approved and data collection began in May 2018. We were able to collect 16 in-depth interviews from 4 sites. February 2018 a one week retreat was held to develop codebooks for 3 publications: Healthcare, Stigma, Human Rights. The codebooks were finalized June 2018. Coding is ongoing and should be completed September 2018.

Future Plans	In the next 6 months we hope to complete analysis and produce three manuscripts for publication.
Publication(s)	

Study Title	**Community-based provision of urine pregnancy tests as linkage to reproductive health services**
Principal Investigator(s)	Faith Yego, Moi University
Co-Investigator(s)	Winstone Nyandiko, Moi Teaching and Referral Hospital
Working Group(s)	RHWG
Description	Kenyan families experience persistently high rates of maternal and neonatal mortality, which disproportionately affects women with low income and education and those who live far from health services. Key proven interventions include prevention of pregnancy and birth spacing, early entry to antenatal care, and facility delivery. However, creative, cost-effective interventions are urgently needed to link particularly vulnerable populations with these important health services. Previous research has shown that equipping community health volunteers (CHVs) with a tool as simple as a urine pregnancy test and training to provide post-test counseling is effective in improving linkages to antenatal care and family planning services. Our proposal includes a multi-phase process to collect qualitative data through a needs assessment (Phase 1), use community input to develop (Phase 2) and implement a pilot intervention study (Phase 3) assessing the ability of CHV-based provision of urine pregnancy tests with CHV-provided and phone-based post-test counseling to link women with antenatal care and family planning services, and collect qualitative program evaluation data (Phase 4). This will provide much-needed information for how to effectively utilize and strengthen CHVs as part of a sustainable reproductive health care delivery system to improve maternal and neonatal mortality. Our broad objectives are to determine whether the use of community-based provision of urine pregnancy tests with post-test counseling and referral to care is acceptable to community health volunteers (CHVs) and participants and to determine which method of post-test counseling and referral to care, CHV-provided or phone-based, is more acceptable and more effective. Participant outcomes, including the primary outcome of utilization of ANC or family planning care, will be measured by telephone questionnaires one to three months post-enrollment. CHV outcomes will be determined by telephone questionnaires as well as review of CHV log books.
Site(s)	Port Victoria Sub-District Hospital, Turbo Health Centre
Project Period	4/2/2018 - 4/2/2020
Funding Status	Funded - Indiana CTSI

Direct Award (USD)	$14,139
Update	We got IREC approval, Currently Waiting for NACOSTI permit before we can begin data collection
Future Plans	Phase 1: We are planning to conduct FGDs with CHVs and women in the community to determine needs assessment for intervention . Phase 2 will involve Community based participatory model for program development .
Publication(s)	

Study Title	**Developing and Assessing a Community-Based Model of Antiretroviral Care**
Principal Investigator(s)	Abraham Siika, Moi University
Co-Investigator(s)	Kara Wools-Kaloustian, Indiana University
Working Group(s)	TBWG
Description	ART Co-ops study will develop and assess an alternative care model that is established on the platform of a HIV-infected peer-group (ART Co-op) and facilitated by community health workers (CHWs). This model of care is intended to decentralize ART services and bring them closer to the patients. Specifically, we will: 1. Develop an acceptable and sustainable model for extending HIV care and treatment into the community. 2. Perform a pilot study comparing the outcomes of patients enrolled in the ART Co-ops program to those receiving standard of care. 3. Determine the cost savings and cost effectiveness of ART Co-ops.
Site(s)	Kitale District Hospital
Project Period	2/9/2015 - 2/9/2017
Funding Status	Funded - Centers for Disease Control and Prevention
Direct Award (USD)	$924,042
Update	1. Patient follow up was completed on the 28th of February 2018. 2. The last focused group discussion for post intervention perceptions was done on the 28th of February 2018. 3. Tracing of lost to follow up participants started in March and was completed end of May 2018. 4. Data analysis begun in early June 2018. 5. The study performance period with CDC ended on the 30th of June 2018. 6. Post period performance activities begun in July 2018.

Future Plans	1. Complete data analysis and publish the generated manuscripts. 2. Complete site close out and equipment handing over procedures as per the guidelines set out by CDC. 3. Convene the last DSMB meeting once data analysis is complete.
Publication(s)	

Study Title	**Developing Capacity of Moi Teaching and Referral Hospital / Moi University Institutional Research Ethics Committee (MTRH/MU IREC), Kenya to Prevent and Manage Research Misconduct.**
Principal Investigator(s)	Edwin Were, Moi University
Co-Investigator(s)	Jepchirchir Kiplagat, Moi University
Working Group(s)	None
Description	Research Integrity and Oversight (RIO) is a 3-year project whose overall goal is to increase the capacity of Moi Teaching and Referral Hospital / Moi University Institutional Research and Ethics Committee (MTRH/MU IREC) to prevent, detect and manage research misconduct in Moi University College of Health Sciences, Kenya by developing and implementing a scalable modular institutional framework for preventing, detecting and managing research misconduct. The aims of the project are to: 1. To estimate the prevalence of research misconduct in recent HIV research and document perceptions on occurrence of the research misconduct 2. To document perceptions on the current capacity to prevent, detect and manage research and the characteristics of a model institutional framework to manage research misconduct 3. To identify and document international best practices through broad literature review and benchmarking visits to United States and sub-Saharan Africa institutions where such capacity exists and is functional and utilize the body of knowledge gathered and involve local research stakeholders and international bioethics experts, to adapt the international best practices to the local setting and formulate a scalable modular institutional framework for prevention, detection and management of RM in Kenya 4. Implement, on a pilot basis, the model institutional framework in MTRH/MU IREC specifically and Moi University, broadly, and document the lessons learned
Site(s)	Moi Teaching and Referral Hospital
Project Period	8/31/2017 - 8/31/2020
Funding Status	Unfunded -
Direct Award (USD)	
Update	The following details the list of tasks that we accomplished between January and June 2018 1. Online Survey on Research Misconduct: We sent out the survey to 667 investigators and recorded a response rate of 17.2%. Over half of the respondents were

	females (52%). Most of respondents worked in academic institutions (30%) and public hospitals (29.9%). The mean duration of involvement in research was 7.1 years with a mean of 9 publications per researcher. Majority of respondents (85.7%) reported to have attended a training on research ethics. Personal experiences of Fabrication, Falsification and Plagiarism were reported by 23.4%, 21.9% and 21.9% of the respondents respectively. Analysis of the data collected from the online survey is underway. 2. Benchmarking visits: We sent 3 people to conduct the bench marking activity at Indiana University between 1st and 7th April 2018 and the exercise was successful. The team also had an opportunity to attend a conference on Plagiarism. We have also identified University of South Africa (UNISA) as the other institution and plans are underway for our team to conduct the bench marking visit from 1st to 7th July 2018. 3. Personnel: We hired 3 Research Assistants and trained them on qualitative methods in May 2018. We have engaged them to organize FGDs and In-depth interviews, transcribe the recordings and code the transcripts. We also sought services from a facilitator to manage qualitative data and prepare it for analysis. This is on performance based engagement. 4. We held the second TAC conference meeting for on 25th April 2018 5. Conference grant application: We responded to a grant application to host a symposium on Research Misconduct in Kenya and if funded we hope to host this in February 2019 as a primer to the planned national workshop to develop the Institutional Framework for prevention and Management of Research Misconduct. The grant application is for about $50,000. 6. Prof. Simeon Mining, the Research Director at Moi University, has joined the RIO project as a member of TAC. 7. FGDs and IDIs with investigators and REC leaders: The exercise is ongoing. So far we have conducted 1 in-depth interview, 1 focus group discussion and have scheduled several appointments with respondents. Transcription and coding of already collected data is ongoing.
Future Plans	1. Continue conducting FGDs and IDIs with investigators and REC leaders 2. Conduct a bench marking exercise at the University of South Africa 3. Continue with scoped literature review 4. Create a steering committee to plan for the Research Misconduct Workshop in February 2019 5. Conduct data Analysis and manuscript writing 6. Hold 3rd TAC Quarterly meeting
Publication(s)	

Study Title	**Effect of free maternity care on maternal and fetal outcomes of preeclampsia/eclampsia at a teaching hospital in Western Kenya: A retrospective chart review.**
Principal Investigator(s)	Astrid Christoffersen-Deb, University of Toronto
Co-Investigator(s)	
Working Group(s)	RHWG

Description	The aim of this study is to determine the incidence of diagnosis and treatment of pre-eclampsia and eclampsia at MTRH. We will measure the maternal and neonatal outcomes in women with these diagnoses. We will evaluate the data in order to determine areas for improvement in our diagnosis and management of pre-eclampsia/eclampsia in order to decrease maternal and neonatal morbidity and mortality at MTRH. Finally, we would like to evaluate the effect free maternal care has played in the measured incidence and outcomes of pre-eclampsia and eclampsia at our institution. Specifically, we will: 1. Determine and compare the incidences of pre-eclampsia within our institution in the year before and the year after the initiation of free maternal care in June, 2013 2. Evaluate the maternal and neonatal outcomes, including major causes of morbidity and mortality in each group. Again we will compare these before and after the initiation of free maternal care in June, 2013. 3. Evaluate the risk factors for adverse maternal and neonatal outcomes 4. Evaluate the adherence of treatment in our facility in accordance with World Health Organization standards, again comparing treatment before and after the initiation of free maternity care in June, 2013. The data for this study is collected using a comprehensive 100-item data collection form, including patient demographics, symptomatology, documented clinical signs and laboratory results, delivery details, and maternal and neonatal outcomes
Site(s)	Moi Teaching and Referral Hospital, Saboti Sub-District Hospital
Project Period	1/12/2015 - 12/31/2015
Funding Status	Unfunded -
Direct Award (USD)	
Update	The above-mentioned study is in its final stages of data analysis and manuscript preparation. We anticipate submitting for publication by the start of the new year. Summary of Results: - A total of 19374 deliveries occurred, 43% in the year before and 56.3% in the year after free maternity. - A total of 2333 cases were identified using both the Riley Mother Baby Discharge Database and the Riley Mother Baby Pharmacy Database. - 849 of those cases could not be found in the records office - After inclusion/exclusion criteria 1063 records were included for analysis - There was a significant difference in premature births before and after free maternity care (14.8% vs 21.2% p=0.02) - Over the 2 years, and assuming the 849 missing files would be included, the prevalence of a hypertensive disorder presenting to MTRH for care and delivery over the two years was 9.87% - There was a significant difference in women presenting with gestational hypertension before and after free maternity (4.1% vs 8.1%, p=0.009), with no difference detected in proportion of the more severe categories (mild PET, severe PET, eclampsia, and HELLP) - There was a significant difference in maternal deaths before and after free maternity (1.15% vs 3.03%, p=0.042), although absolute numbers are small
Future Plans	we will be submitting a new IREC proposal for expedited review to apply the data collected above to an existing prediction model for mortality from preeclampsia as eternal validation. That will also be extended by the start of the new year.

Publication(s)	
Study Title	**Enhancing Preventive Therapy of Malaria In children with Sickle cell anemia in East Africa (EPiTOMISE)**
Principal Investigator(s)	Festus Njuguna, Moi University
Co-Investigator(s)	Steve Taylor, Duke University
Working Group(s)	PHPC
Description	Children with SCA are particularly vulnerable to infectious diseases and in malaria endemic areas, malaria is one of the leading causes of hospitalization and death among children with SCA. The current recommendation is chemoprevention with daily proguanil. However, this regimen suffers from suspected low adherence rates and probable reduced efficacy due to parasite resistance to antifolate drugs. We are conducting a randomized, three-arm, open-label, clinical trial of malaria chemoprevention in children with sickle-cell anemia at a single site in Homa Bay, Kenya in order to identify more effective chemotherapy regimens for malaria in children with SCA. Our primary objective is to compare the efficacy of daily proguanil with monthly sulfadoxine/pyrimethanine-amodiaquine (SP-AQ) and with monthly dihydroartemisinin-piperaquine (DP) on the incidence of falciparum malaria in children with SCA. The secondary objective is to compare the efficacy of these malaria chemoprevention strategies on the incidence of major complications of SCA. We will enroll 246 children of both genders between 1 and 10 years of age with laboratory-confirmed SCA living in malaria-endemic portions of Homa Bay or Migori Counties, randomize to one of three (1:1:1) malaria chemoprevention regimens, and followed up monthly for 12 months in order to record clinical episodes of malaria or SCA-related morbidity. Analyses will compare the efficacy of each regimen to prevent malaria and SCA morbidity. Blood samples will be taken every three months (5 time points - baseline, 3, 6, 9, 12 months) for laboratory testing and dried bloodspots will also be collected. Participants will also receive a malaria rapid diagnostic test using a finger-prick blood sample when they are ill.
Site(s)	Homabay County Hospital
Project Period	6/1/2016 - 2/28/2017
Funding Status	Funded - NIH
Direct Award (USD)	$621,633
Update	The Homa Bay County Hospital site was officially activated and started screening procedures in December 2017, however, enrollment did not start until January 23, 2018. As of July 17, 2018 we have enrolled over 70 participants into the study. Conducted over 170 follow up visits; these follow up visits include laboratory samples for safety

	monitoring, ECGs, hemoglobin electrophoresis, and when necessary, provision of meningococcal vaccines. We have had two monitoring visits in (March 1st - 2nd and June 27th -29th) conducted by an independent clinical research associate (CRA), and will continue these visits on a quarterly basis. Key data points include - Six acute care visits; 14 SAEs, all SAEs were hospitalizations with 64% (9/14) of those hospitalizations due to Pain Crisis, 3 for severe anemia, with only one participant hospitalized for malaria. None of these SAEs were elevated to the status of SUSAR. There was one participant death, which was due to severe malaria, and was reported to all appropriate human subjects review boards overseeing the study. All SOPs were updated as applicable to be in-line with protocol amendments and recommendations from the monitor. The protocol has been amended, submitted, and approved by both Moi and Duke Institutional Review Boards (IRB) three times. The team established Community Advisory Board (CAB) guidelines to facilitate the formation of CAB team which will comprise of community representatives from with Homabay County. Submitted an abstract to ASTMH conference scheduled for October 2018. Fully established the clinic space where the study is being conducted. In addition, we have added a medical safety monitor to the study for independent reviewing of SAEs to determine if they should be elevated to a SUSAR. The first DSMB meeting will be held on September 6th, 2018, with subsequent DSMB meetings held every six months thereafter. The key team members have a weekly call to discuss study progress, highlights and challenges, we anticipate this continuing as long as needed.
Future Plans	It is expected that enrollment will continue as planned with the last participant planned for enrollment by the end of 2019, and the last participant visits the end of 2020. Final data cleaning and analysis will take place in the first half of 2021, with a manuscript planned for submission and the final report submitted to NHLBI by the end of 2021. We plan to convene the 1st CAB meeting in July or August 2018. Continue team calls as needed.
Publication(s)	

Study Title	**Estimating the relative effectiveness of contraceptive implants for HIV-positive women on antiretroviral therapy.**
Principal Investigator(s)	Beatrice Jakait, Moi Teaching and Referral Hospital
Co-Investigator(s)	Rena Patel, University of Washington
Working Group(s)	RHWG
Description	This project aims to study the effect of antiretroviral medications (particularly Efavirenz) on the effectiveness of hormonal contraceptives. The main output to help develop the evidence base for the relative effectiveness of implants with concomitant efavirenz-based ART among HIV positive women in western Kenya
Site(s)	All Sites

Project Period	5/23/2016 - 2/28/2017
Funding Status	Funded - NIH
Direct Award (USD)	$12,727
Update	Since March 2018, upon Dr. Patel's return from maternity leave, various aspects of the project have gained speed. The primary data analysis is slowing moving forward, with additional data cleaning and quality checks being finalized. A secondary analysis by Dr. Caitlin Bernard has also gained momentum. By Dec 2018, we are hopeful to have these two analyses turned into draft manuscripts.
Future Plans	By Dec 2018, we are hopeful to have these two analyses turned into draft manuscripts.
Publication(s)	

Study Title	**ESYHI study - Identification, adaptation and piloting of innovative interventions to engage street-connected children and youth in the HIV prevention-care continuum in a resource-constrained setting**
Principal Investigator(s)	Paula Braitstein, University of Toronto
Co-Investigator(s)	David Ayuku, Moi University
Working Group(s)	PRWG
Description	This is an 18-month project funded by the Canadian Institutes for Health Research (CIHR) aiming to identify, adapt, and pilot interventions to engage street-connected children and youth (SCY) into HIV prevention, care and treatment. The first stage requires a comprehensive literature review identifying potential interventions from the literature; the second stage requires narrowing down the possible selection of interventions by their feasibility, cost, ethics, and potential effectiveness; and the third stage is to pilot and evaluate 2-3 interventions.
Site(s)	Moi Teaching and Referral Hospital
Project Period	4/1/2016 - 9/30/2017
Funding Status	Funded - Canadian Institute of Health Research
Direct Award (USD)	$76,285
Update	We received approval from IREC and are in the process of starting the mDOT intervention, which is known as Enabling Adherence to Treatment (EAT). We have hired a pharmacy technician who will administer ART and provide a small meal to street youth six times a week. This intervention will include street youth who are HIV positive, on

	anti-TB medication or on antibiotics and will run for one year. The intervention will begin in July or August 2018. We also received IREC approval for an amendment to enable us to carry out key informant interviews with healthcare providers and policy makers to elicit their opinions on this intervention prior to, and during the intervention. We have three manuscripts currently under review.
Future Plans	Over the next six months we will hope to complete our pre-intervention interviews and start the EAT intervention. We will also be presenting data from the VMMC intervention at the 22nd International AIDS conference.
Publication(s)	

Study Title	**Ethnic Specific Risk Stratification in Early Pregnancy for Identifying Mothers at Risk of Gestational Diabetes Mellitus in Eldoret, Kenya**
Principal Investigator(s)	Wycliffe Kosgei, Moi Teaching and Referral Hospital
Co-Investigator(s)	Astrid Christoffersen-Deb, University of Toronto
Working Group(s)	RHWG
Description	Gestational diabetes mellitus (GDM) is a form of diabetes that develops in pregnancy and can lead to adverse maternal and fetal outcomes. There is not currently a screening program to identify women with GDM in Kenya and other low and middle income countries. The aim of the study is to determine the prevalence of GDM in a rural and urban Kenyan population, develop an accurate score based on easily obtainable risk factors to stratify women at risk of GDM in this population, and determine if a selective screening strategy would be cost-effective in Kenya. This is a prospective cohort study aiming to recruit 4000 women who are <20wks gestation attending antenatal clinic at different project sites.
Site(s)	Huruma Sub-District Hospital, Moi Teaching and Referral Hospital, Uasin Gishu District Hospital, Reale Hospital, Langas Hospital
Project Period	7/14/2015 - 7/13/2018
Funding Status	Funded - Medical Research Council
Direct Award (USD)	$564,629
Update	A preliminary analysis of our data highlighted several key learning's related to the care and diagnosis of gestational diabetes in our population. With a prevalence rate of 2.83%, this is much lower than expected for the population. From the preliminary results, there was also no significant correlation between the value of point of care and venous blood sampling in the diagnosis for GDM as well as early testing (below 20 weeks GA) versus the existing goal standard. With 3520 participants enrolled into the study so far, 2770

	have completed the 2nd visit and 1484 participants have completed the Oral Glucose Tolerance Test (3rd visit). Our retention rate at the third visit is 42.10% of the total enrolled participants. Of the 1484 participants who have completed the 3rd visit (OGTT), 42 participants have been diagnosed with gestational diabetes and referred to home glucose monitoring clinic for further care. Over the last six months, some challenges have come up that interfered with the rate of participant recruitment and follow up. With low awareness about GDM and associated risk, there have been cases of participants not completing subsequent V3 after a normal finding at the initial blood test visit. The strike in the health care sector also affected the study as mothers looked for alternative care areas away from our recruitment centres. Other factors that affected the study over the past months include disqualification of participants due to not meeting some inclusion criteria e.g. gestation age of below 20weeks, lost pregnancies discovered after an ultrasound visit, time factor of the OGGT test, inability of participants to complete this test due to vomiting among others. In an effort to create more support, we put in measures to increase partner involvement by offering free testing of glucose and pressure checks to them. Another recruitment site was added to increase diversity of participants' SES as well as to improve our enrolment numbers. A no cost application was put in to extend the study period to give the team more time to increase recruitment numbers in order to arrive at a conclusion that is relevant and significant to the population under study.
Future Plans	Over the next 6 months, we plan to continue with the enrolment of mothers into the study contingent on receiving approval of a no-cost extension of about 9 months. We aim to have at least 3000 participants having completed the 3rd visit (OGTT) by study end. The extension will also give time for enrolled participants to complete all pending visit. We aim to complete postpartum follow up call (visit 4) for mothers who have delivered, and have all GDM+ participants do visit 5. We also plan to ensure all data entry is up to date as data cleaning is on-going. We also plan to put down measures to that will help create more awareness of the study to mothers and health care providers.
Publication(s)	

Study Title	**Evaluating Indicators of Poor Cardiac Function in Children and Adolescents Living with HIV in Western Kenya**
Principal Investigator(s)	Andrew McCrary, Duke University
Co-Investigator(s)	Winstone Nyandiko, Moi Teaching and Referral Hospital
Working Group(s)	CVMD, PRWG
Description	The Ped HIV - Echo Study (PHES) seeks to define predictors of poor cardiac function in children and adolescents living with HIV. PHES has several core components that hold significant potential for defining the prevalence of cardiac dysfunction in this population, elucidating predictors of poor cardiac function, and begin to illuminate etiologies of cardiac dysfunction. Our central hypothesis is that echocardiographic evidence of early

	cardiac dysfunction is present in children and adolescents living with HIV and the dysfunction can be defined in terms of patient's immune status, HIV history, and same day biomarker levels. The specific aims for the PHES project are to: 1) Define the prevalence of early cardiac dysfunction using strain imaging compared in a large cohort of children and adolescents living with HIV, and compare with traditional echocardiographic measures of function. 2) Determine the impact of concurrent HIV viral load level on strain values. Additionally, we will model the impact of time with unsurpressed viral replication as the study population were almost entirely perinatally infected. 3) Measure the correlation between cardiac dysfunction (defined by strain) and inflammatory (IL-6 and tnf-?) and cardiovascular (pro-BNP) biomarkers.
Site(s)	Moi Teaching and Referral Hospital
Project Period	9/12/2017 - 12/31/2018
Funding Status	Funded - International AIDS Society
Direct Award (USD)	$136,199
Update	Enrollment continued through April 2018. Active recruitment is now finished. Overall, 644 participants in the pediatric and adolescent clinics were recruited and received an echocardiogram. We are working to complete laboratory testing of inflammatory biomarkers. We anticipate primary analysis to be completed in the next 2 months.
Future Plans	Over the next six months, we will complete the planned first laboratory assessment for inflammatory biomarkers. Additionally, we will complete the planned primary analyses.
Publication(s)	

Study Title	**FLTR Evaluation**
Principal Investigator(s)	Paula Braitstein, University of Toronto
Co-Investigator(s)	Sylvester Kimaiyo, Moi University
Working Group(s)	AMWG
Description	The FLTR evaluation aims to evaluate the core aspects of the HIV prevention-care continuum, using a combination of quantitative and qualitative methods. We investigate issues related to Finding, Linking, Treating, and Retaining people living with HIV in AMPATH catchments, involving behavioral scientists, biostatisticians, epidemiologists, among others.
Site(s)	Bunyala, Chulaimbo, Teso

Project Period	7/1/2014 - 7/31/2017
Funding Status	Funded - Eli Lilly Foundation
Direct Award (USD)	$300,000
Update	Over the last six months the study team has been analyzing data and writing the final paper for this study. Closeout of the study with RSPO is on-going where a closeout meeting has been held and a final project performance report prepared.
Future Plans	In the next six months, the study team expects to complete development of the paper and publish for the findings to be used by other researchers and results be available to the public.
Publication(s)	

Study Title	**HI-Train: Health Informatics Training and Research in East Africa for Improved Health Care**
Principal Investigator(s)	Abraham Siika, Moi University
Co-Investigator(s)	Martin Were, Vanderbilt University
Working Group(s)	TBWG
Description	With increased deployment of eHealth systems, comes the need for an appropriate health information technology workforce. This workforce includes: (a) Local level: Health IT professionals, eHealth specialized programmers, data managers, implementation managers, support specialists and reporting personnel; (b) Institutional level: chief medical information officers; and health information management specialists, (c) administrative: regional and national eHealth coordinators and eHealth monitoring and evaluation specialists, and (d) Other: health information privacy and security specialists and HI researchers. End users, institutional managers and policy makers also need to be appropriately trained on the relevant eHealth systems. Alarmingly, most sub-Saharan countries remain woefully unprepared to systematically train an adequate workforce to support the eHealth systems already being deployed. Countries like Uganda and Kenya recognize an emergent need for national strategies to build health informatics human capacity. These countries have appropriately developed national eHealth capacity-building strategies Implementing the strategies however requires direct leadership by Higher Education Institutions in the relevant countries. The urgency for sustainable mechanisms to increase HI workforce and research capacity in developing countries is self-evident. This goal can only be realized by having enough faculty members from developing countries fully trained in Health Informatics. These staff faculty can then be part of a well-functioning and high quality HI program moving forward. Recognizing this need, and the multidisciplinary competencies needed for HI training and research, our team identified partner institutions with complementary capabilities to support

	advanced Health Informatics training in East Africa for our project. Aims 1) Provide post-graduate (Masters and PhD) level training in Health Informatics and research. The focus will be on post-graduate training for health professionals and computer science personnel to help them become HI faculty at their institutions. 2) Increase number of women and marginalized populations in faculty-level training in Health In-formatics and research at the LMIC higher education institutions. 3) Improve the quality and quantity of Health Informatics research conducted primarily by re-searchers based in the LMIC countries in collaboration with our Northern partners. 4) Provide model curricula, educational programs and approaches for faculty-level health informatics training that can be emulated by regional higher education institutions.
Site(s)	Moi University, Makerere University, University of Bergen
Project Period	12/5/2013 - 6/30/2019
Funding Status	Funded - NORAD - Norwegian Agency for Development Cooperation
Direct Award (USD)	$2,757,830
Update	The MSc. HI Programme moved to Nairobi Campus and there was a new intake of eleven students who commenced their programme in February, 2018. Four of the students are on Scholarship. Three are from marginalized areas. The HI-Train Annual meeting with partners took place in April 2018 and thereafter on 6th April,2018 the Ph.D Curriculum was reviewed. Six of the first Cohort students have submitted their intent to submit thesis letters and a Mock Defense Seminar will be conducted on 26th July, 2018. The Project had their Annual Muzima Hackathon Event held at Masinde Muliro University of Science & Technology between 8th and 11th June, 2018 an event that brought together computing students from Universities within the Western Region and developers from Moi University. A Gender Mentorship programme was also conducted in February at Moi University Nairobi Campus.
Future Plans	The Project/Institute plans to roll out Video Conferencing, to facilitate distance classes and we intend to recruit another set of MSc. HI students, We are also planning to conduct the Mock Defense Seminar for the first Cohort in preparation for Graduation and to also hold the Annual HI-Train Leadership meeting with Norehd in Uganda.
Publication(s)	

Study Title	**HIV-related Outcomes After Integration of HIV and Maternal and Child Health Services at Moi Teaching and Referral Hospital in Kenya (HAMMoCK)**
Principal Investigator(s)	John Humphrey, Indiana University
Co-Investigator(s)	Julia Songok, Moi University

Working Group(s)	PRWG, RHWG
Description	The integration of HIV services within maternal and child health (MCH) services is a recently implemented strategy to improve outcomes for pregnant and postpartum women and their HIV-exposed infants (HEI) in Kenya. However, there are significant evidence gaps concerning the outcomes of HIV-infected pregnant and postpartum women and their HEIs who receive integrated HIV-MCH services. The overall objective of this study is to understand the outcomes of HIV-infected pregnant and postpartum women and their HEIs who receive integrated HIV-MCH services at Moi Teaching and Referral Hospital. Our specific aims are: 1) Describe HIV-infected women's engagement in the HIV care (time to ART initiation, adherence to clinic visits, retention, linkage of infant into care, retention of infant to post-breastfeeding HIV testing) cascade during pregnancy and the subsequent 2 years; 2) Determine the viral suppression rates for HIV-infected pregnant and postpartum women attending integrated HIV-MCH clinics at MTRH; 3) Determine the MTCT rate for infants of HIV-infected women enrolled in integrated HIV-MCH clinics at MTRH at 2 months, 12 months, and 18 months post-delivery, and following cessation of breastfeeding. To accomplish these aims, we will utilize IeDEA infrastructure to review the AMPATH electronic medical record to identify all HIV-infected pregnant and postpartum women and their HEIs who have received care at an MCH clinic at MTRH from 2016 to 2017 (n ? 1,000 mother-infant dyads). This research is significant because it will inform strategies for optimal service delivery in the era of Option B+/universal ART eligibility and integrated HIV-MCH services.
Site(s)	Moi Teaching and Referral Hospital
Project Period	3/5/2018 - 6/1/2019
Funding Status	Unfunded -
Direct Award (USD)	
Update	We have obtained IREC/IRB approval and received the dataset. The data is currently being cleaned and preliminary analysis is being undertaken.
Future Plans	We hope to prepare a manuscript for submission.
Publication(s)	

Study Title	**IeDEA Comprehensive Adherence Measure for Pediatrics (ICAMP)**
Principal Investigator(s)	Rachel Vreeman, Indiana University
Co-Investigator(s)	Winstone Nyandiko, Moi University
Working Group(s)	PRWG

Description	The primary objective of the proposed study is to validate an adherence questionnaire for pediatric and adolescent patients at 3 IeDEA sites using electronic dose monitors (Medication Event Monitoring Systems, or 'MEMS', MWV/AARDEX, Switzerland) as external criterion for adherence. While the adherence questionnaire (known as the Comprehensive Adherence Measure for Pediatrics - Short Form, or 'CAMP-SF') has been previously validated in a large, urban referral site at AMPATH in the East Africa IeDEA region, re-validation is warranted to ensure external and internal validity is upheld across resource-limited sites. In conducting this validation study, we will also collect valuable, detailed prospective data on adherence to ART among this sample of HIV-infected children and adolescents using electronic dose monitoring. The study has the following specific aims and hypotheses: Specific Aim 1: Validate a 10-item adherence questionnaire for routine use as an adherence measurement tool in resource-limited settings. Hypothesis 1a: Adherence estimates from the CAMP-SF will be reliable and valid across 3 IeDEA sites in East Africa, Southern Africa and Asia-Pacific when compared with MEMS electronic dosing data. Specific Aim 2: Describe pediatric adherence to ART prospectively over 6 months using electronic dose monitoring (i.e., MEMS) and the CAMP-SF among a sample of HIV-infected children and adolescents at 3 IeDEA sites. Hypothesis 2a: Rates of adherence to ART will be similar for children across different IeDEA sites. Hypothesis 2b: More pediatric non-adherence will be reported during prospective evaluation using the CAMP-SF than in existing rates reported in IeDEA datasets for children. Specific Aim 3: Evaluate factors associated with adherence among a sample of HIV-infected children and adolescents at 3 IeDEA sites. Hypothesis 3a: Risk of medication non-adherence is increased among older children, children with lower disease stages, children with higher CD4 counts, children with a higher medication burden, and orphaned children. Hypothesis 3b: Sites will differ in factors that may influence adherence, including number of children initiating ART; availability of nutritional support, adherence support, disclosure support, and pediatric formulations; and routine use of standardized adherence measures. Specific Aim 4: Assess evidence of the impact of ART non-adherence on clinical outcomes such as treatment failure and mortality, and programmatic factors such as loss-to-follow up. Hypothesis 4a: Medication non-adherence by MEMS is associated with increased risk of changing to second-line antiretroviral medications. Hypothesis 4b: Medication non-adherence by MEMS is associated with increased risk of mortality. Hypothesis 4c: Medication non-adherence by MEMS is associated with high risk of loss to follow-up.
Site(s)	Busia District Hospital, HIV-NAT Clinic, Bangkok, Thailand; Rahima Moosa Mother and Child Hospital, Johannesburg, South Africa
Project Period	8/1/2014 - 7/31/2016
Funding Status	Funded - NIH - National Institute of Allergy and Infectious Diseases (NIAID)
Direct Award (USD)	$171,257
Update	All study follow-up and data collection is now complete at all three IeDEA study sites - Busia clinic at AMPATH (Busia, Kenya), HIV-NAT clinic (Bangkok, Thailand) and Rahima Moosa Mother Child Hospital (Johannesburg, South Africa). We enrolled a total of 319 children aged 0 to 16 on ART from Kenya (n=110), South Africa (n=109), or Thailand

	(n=100). Children were followed for 6 months of adherence monitoring using Medication Event Monitoring Systems (MEMSïƒ') with at least one viral load measure. At month 3 and 6, children or their caregivers were administered a 10-item adherence questionnaire. Repeated measures analyses were used to compare responses on questionnaire items to: MEMSïƒ' dichotomized adherence (ï‚³90% of doses taken vs. <90%), 48-hour MEMSïƒ' treatment interruptions, and viral suppression (<1,000 copies/mL). Items associated with outcomes (p<.10) were coefficient-weighted to calculate a total adherence score, which was tested in multivariate regression against MEMSïƒ' and viral suppression outcomes. Odds ratios (OR) and 95% confidence intervals (95%CI) were calculated. In the last six months, we have been analyzing the patient and adherence MEMS data from all sites. We have completed preliminary analyses and found evidence that the questionnaire we were testing performed well across sites but that non-adherence was still a major concern for children enrolled in this study, particularly for children in the Kenyan and South African sites. We identified some differences among the different international cohorts: Children from Thailand (mean 12.5 years) were significantly older compared to Kenya (9.5 years) and South Africa (9.3 years). Mean MEMSïƒ' adherence was highest in Thailand (80% of doses taken) and slightly lower in South Africa (78%) and Kenya (75%). Child-reported adherence and caregiver-reported adherence using the questionnaire were consistent with external adherence criteria. Child-reported adherence was significantly associated with dichotomized MEMSïƒ' adherence (OR 1.8, 95%CI 1.4-2.4), 48-hour treatment interruptions (OR 0.41, 95%CI 0.3-0.6), and viral suppression (OR 3.4, 95%CI 1.7-6.7). The questionnaire performed well across sites; however, different cut-points may be appropriate. For example, MEMSïƒ' non-adherent children in Kenya had a lower adherence score (0.98) compared to South Africa (1.77) or Thailand (1.58). In conclusion, we found high levels of nonadherence to ART in this international cohort of children, while demonstrating the validity of a short questionnaire to screen for nonadherence across diverse global settings. Preliminary findings across sites were presented in an oral presentation at the Adherence 2018 meeting in Miami, Florida June 8-10, 2018. These findings have also been written up in a manuscript titled, 'Adherence to antiretroviral in HIV-infected children in Kenya, South Africa, and Thailand,' and will be submitted to the Journal of International Providers in AIDS Care.
Future Plans	Over the next 6 months, we plan to: 1.We expect to complete data cleaning and data analysis. 2.Prepare manuscripts for publication with our partner sites and conference presentations
Publication(s)	

Study Title	**Improvements of diagnosis, staging, and support of children with Burkitt Lymphoma**
Principal Investigator(s)	Terry Vik, Indiana University
Co-Investigator(s)	Festus Njuguna, Moi University

Working Group(s)	CVMD, ORWG, PRWG
Description	The first objective and aim of this administrative supplement is to improve diagnostic testing including flow cytometry and genetic analysis by Fluorescence in situ Hybridization (FISH), to increase the speed and accuracy of diagnosing Burkitt Lymphoma (BL) in children in Kenya. A second objective and aim will be to use financial interventions that have been shown to decrease the rate of abandonment in other cohorts of patients with BL in Africa to test feasibility to decrease the high abandonment rate at our hospital, MTRH, based on our historical control group. The pilot project to be supported by this supplement will improve infrastructure and train clinical staff in the methods of clinical trial management of children with BL in western Kenya. The research support team for the project will ensure collection of diagnostic and staging information, and coordinate follow-up of patients enrolled on the study. The study will be extended to a second hospital, JOORTH, through collaborators in Kisumu. The study pathologists will coordinate the performance of diagnostic tests including immunohistochemistry, flow cytometry, and eventually FISH studies. Dr. Vance will train the research staff in FISH techniques at the primary performance site, and transfer the technology back to Kenya. The numbers of patients available for study at both the hospitals, MTRH and JOORTH, should make completion of this project feasible, as only 40 confirmed BL patients are needed, and up to 50 patients are diagnosed annually at the combined sites. AMPATH and MTRH will provide infrastructure for the clinical testing and care of patients. The parent cancer center clinical research staff will aid in the auditing of patient charts of children enrolled on the study. Study data will be audited periodically throughout the study to ensure accuracy, completeness of data and compliance with research ethics. The main outcomes to be monitored include: percent of required observations completed, number of patients confirmed to be eligible for the trial, Number confirmed to have a diagnosis of BL by each of the three tests of immunohistochemistry, flow cytometry, or FISH, and number of patients with complete staging by Murphy staging criteria. Additionally, number of patients who abandon treatment will be tracked, along with the time point that they abandon. Finally, overall one-year survival points will also be captured. The aim to improve diagnosis and decrease abandonment by comparing results at the end of the study to historical rates will measure the success of this project. Assuming the success of this project, next steps will be to partner with other sites in the region to propose a larger trial with a potential treatment outcome that can be measured and validated across multiple countries and treatment centers, ultimately improving the outcome for children with BL.
Site(s)	Moi Teaching and Referral Hospital
Project Period	9/1/2016 - 8/31/2018
Funding Status	Funded - NIH - National Cancer Institute (NCI)
Direct Award (USD)	$225,072
Update	We have completed enrollment for the study. Subjects continue to be followed in clinic for outcome measures. FISH genetic testing has started and samples are available to complete that testing by the end of 2018. Additionally, samples for IHC testing are are

	under analysis and plans for completing them are also projected for end of 2018. Results of testings and of outcomes hope to be submitted for the Annul ASCO meeting next spring.
Future Plans	Continue to follow patients enrolled in the treatment portion of the trial and update their data in the REDCap database over the coming 6 months. Finish all the diagnostic testing on the patient samples this fall as well.
Publication(s)	

Study Title	**Innovative Community Sourcing Techniques to Investigate Reproductive Health Issues in a Population Aged 13-65 Years in Western Kenya**
Principal Investigator(s)	Astrid Christoffersen-Deb, University of Toronto
Co-Investigator(s)	Faith Kosgei, Moi University
Working Group(s)	PHPC
Description	In this project, we will use innovative community-sourcing technologies (the TIMBY suite of tools) to generate a series of investigative stories to help answer arising questions on maternal and child health matters as well as surrounding and related issues. We aim to demonstrate feasibility of using TIMBY phone application to generate evidence on reproductive health matters as well as in developing targeted interventions and disseminate them to key stakeholders.
Site(s)	Mois Bridge Health Centre
Project Period	5/26/2017 - 5/26/2018
Funding Status	Funded - Other
Direct Award (USD)	$20,860
Update	In the past 6 months, mentorship and training programs have continued for the 12 reporters with more reports being synced to the dashboard. Transcripts of the verified reports have been compiled for analysis. An abstract was submitted and accepted for a poster/video presentation in Canada at the SOGC conference that was held on the 26th of June.
Future Plans	Over the next 6 months, we plan to do analysis of our data to assess common and recurrent themes in the reports. We aim to complete writing a project descriptive manuscript once initial analysis is done and apply for publications in relevant journals. Also, we plan to do a scale-up of the project contingent on getting funding. Additionally, we hope to partner with other projects to use our platform as is relevant.

Publication(s)	
Study Title	**Innovative public-private partnership to target subsidized antimalarials in the retail sector**
Principal Investigator(s)	Wendy Prudhomme, Duke University
Co-Investigator(s)	Diana Menya, Moi University
Working Group(s)	PHARMCRWG
Description	In most malaria-endemic countries, a large fraction of fevers are treated in the informal health sector where diagnostic testing is uncommon and effective drugs are expensive. For many families, particularly in rural areas, the first source of treatment for fevers are retail medicine outlets such as chemists, pharmacists and small, unregulated medicine shops.These retail outlets, also referred to as the 'informal health sector', are more accessible than formal health services, but effective drugs are expensive and most clients purchase cheaper, ineffective therapies to which high levels of resistance exist. The Global Fund piloted a drug subsidy called the Affordable Medicines Facility - malaria (AMFm) to reduce the prices of effective, high quality ACTs in the private sector. AMFm was launched in 2010 and provided quality-assured ACTs to wholesale markets at substantially reduced prices in seven pilot countries, including Kenya. $339 million dollars were earmarked for subsidies and 155.8 million doses were delivered in the first 18 months of the program (ICF International, 2012). Prices of subsidized ACTs in most pilot countries dropped below that of cheaper, ineffective drugs and substantial cost savings were seen by the end consumer. In Kenya, the retail market share of ACTs increased from 12% to 61% in the first 18 months of the program (Tougher et al., 2012). However, there is concern that dramatically lowering the price of ACTs opened the door to over-treatment and overuse of ACTs. The overall objective of this study is to evaluate the public health impact of targeted antimalarial subsidies through scale-up by determining the community-wide effects of targeting an antimalarial subsidy through a partnership between CHVs and the private retail sector. Cluster-randomized design was used to assign community units to either an intervention or control arm. The study is being be carried out in two sub-counties in Western Kenya (Bungoma East and Kiminini) with similar malaria burden but different access to health services. Community Units (CUs) in each sub-county were the clustered and randomized. There are 32 CUs in total across both sub-counties, 20 in Bungoma East and 12 in Kiminini. Half of the community units in each study area (10 in Bungoma East sub-county and 6 in Kiminini) were randomly allocated to the intervention and the remainder of the community units to the comparison arm. In the intervention arm a conditional subsidy is offered in the form of a voucher providing for the purchase of a WHO-qualified ACT at a reduced, fixed price to those with a positive malaria test that can be redeemed at a local drug retailer, while individuals in the comparison arm only receive standard community health volunteer (CHV) visits. Cross-sectional household surveying at pre-intervention, and 6 months, 12 months, and 18 months post-baseline will be used to determine any change in the percent of fevers that are tested for malaria and the effect of testing on subsequent

	drug purchasing decisions. The primary hypothesis to be tested is that offering a fixed-price voucher that reduces the cost for ACT purchase in the retail sector conditional on a positive malaria test (targeted subsidy) can improve uptake of testing for malaria and will increase the proportion of fevers tested for malaria before treatment. The primary outcome of this study is to compare the percent of fevers that receive a malaria test from any source between the intervention and control arms. The secondary outcomes of this study will also be measured and compared between intervention and control arms. The main secondary outcome is the percent of all ACTs used that were taken by people with a malaria positive test. Additional secondary outcomes are: the percent of all ACTs used that were taken by people without a test, the percent of those with a positive test who got an ACT, and the percent of those with a negative test who got an ACT.
Site(s)	Bungoma East Subcounty in Bungoma County and Kiminini Subcounty in Trans-Nzoia County
Project Period	1/1/2014 - 12/31/2018
Funding Status	Funded - NIH
Direct Award (USD)	$1,654,917
Update	In the last six months the study team made significant progress in completing Aim 2 data entry, analyses, and results dissemination. The final remaining data from encounter booklets collected by CHWs and data recorded by participating shops continues to be entered and prepared for analysis. The primary Aim 2 main outcomes manuscript was accepted for publication in PLOS Medicine in May 2018. A manuscript describing the endpoint and overall CHW process evaluation and discrete choice experiment findings has also just been submitted for review at a high-impact, peer-reviewed journal. Please see a full list of publications below. Targeted teams are currently drafting numerous other manuscripts on topics including: cost of febrile illness and RDT, trust and beliefs about RDT, and polypharmacy for treatment of febrile illness.
Future Plans	Several important manuscripts describing findings from this study are being finalized and are expected to be submitted for publication by December 2018. Moi staff members based in Kenya will finish key data cleaning, analysis, and study archiving tasks. Final remaining data from the encounter booklets collected by CHWs and data recorded by participating shops is being entered. This data has been especially difficult to enter, clean, and prepare for analysis because paper forms from every interaction between a CHW and an RDT recipient had to be collected from hundreds of collaborating CHWs and shops. Dr. O'Meara (PI) and Dr. Saran (Postdoctoral Associate) will attend the American Society of Tropical Medicine and Hygiene Annual Meeting, the preeminent international malaria meeting, in October 2018 to present additional findings. Their presentations will focus on study findings drawn from the CHW discrete choice analysis results. A presentation and report of the main study outcomes will be presented to the Kenyan National Malaria Control Programme Operations Research Working Group in the next quarter. To expand the reach and impact of our work, we also aim to develop another policy brief and cost-effectiveness analysis that would be shared more broadly

	in international scientific fora and policy organizations such as the World Health Organization (WHO), Unitaid, the Department for International Development UK (DFID), and the Global Fund to Fight AIDs, Tuberculosis, and Malaria (GFATM).
Publication(s)	

Study Title	**LINKAGE AND ENGAGEMENT IN CARE OF HIV POSITIVE CHILDREN AND ADOLESCENTS**
Principal Investigator(s)	Paula Braitstein, University of Toronto
Co-Investigator(s)	Samson Ndege, Moi University
Working Group(s)	PRWG
Description	The HIV care cascade is a model that outlines the sequential steps or stages of HIV treatment and care that people living with HIV go through from initial diagnosis to achieving the goal of viral suppression. Despite several advances in HIV diagnostics and therapeutics over the years, many infected children and adolescents (CA) are unable to experience these benefits due to non-entry, delayed entry or disengagement at various steps of the care continuum. There are limited data available for both adults and children to elucidate engagement in the HIV care cascade from population-based settings. Data from HBCT enable estimates of engagement in care among all those currently living with HIV in a given community. We have a large dataset containing data from two rounds of home-based counseling and testing (HBCT) and care and treatment data from the AMPATH Medical Records System. This study will make use of these existing data to conduct retrospective observational analyses of engagement in care and mortality among HIV-positive children and adolescents identified through HBCT for three high HIV burden catchments. In addition we prospectively traced a random sample of HIV-positive children and adolescents identified through HBCT who according to our data are not linked to care, for one catchment only. Our specific aims are: Aim 1: With existing data, determine the proportion of children and adolescents (age <18 years at HBCT) with known HIV infection through HBCT who have ever and are currently engaged with care and initiated/receiving ART in three catchments (Bunyala, Chulaimbo, Teso). Aim 2: With existing data, characterize the risk and protective factors for CA living with HIV failing to link to care as defined by having an initial clinical encounter and initiation of ART (Bunyala, Chulaimbo, Teso). Aim 3: Determine the outcomes of CA living with HIV who failed to link to care and initiate ART in one catchment (Bunyala). Using prospective ascertainment of participants who failed to link to care, we hypothesize that a high proportion of those who failed to link to care will have moved out of the area, or be deceased at the time of ascertainment. We will then revise our analyses and incorporate these data into our estimates of engagement in care and mortality among these populations.
Site(s)	Bunyala, Teso and Kisumu West Sub-Counties

Project Period	2/1/2018 - 12/31/2019
Funding Status	Funded - NIH
Direct Award (USD)	$121,141
Update	Regulatory Site and Ethics Approvals for the Study have been received from the Institutional Research and Ethics Committee (IREC), Indiana University IRB, University Of Toronto IRB and the National Commission for Science, Technology and Innovation (NACOSTI). Request for amendment of the protocol was submitted to IREC and we are awaiting approval so as to officially commence the study. Start-up meeting for the study was held on 23rd March 2018 with attendance by Research Projects Sponsored Office (RSPO) representatives, IeDEA Country Co-ordinator, the Project Co-ordinator and the Principal Investigator. Requests for study supplies have been made for purchase of laptop, scanner, project field supplies, furniture, stationery and airtime to facilitate study implementation. Some of these supplies have been received while others are still at different stages of procurement. Some of the study personnel are already on board while hiring process is on-going for PHCT counselors, Data Manager, Data Assistant and Biostatistician.
Future Plans	In the next 6 months, the study team will implement the following activities: -Training of study personnel on the study protocol and data collection. -Tracing of study participants. -Data entry and management.
Publication(s)	

Study Title	**Linkage and Retention to Care in Western Kenya Following HIV Testing**
Principal Investigator(s)	Becky Genberg, Brown University
Co-Investigator(s)	Juddy Wachira, Moi University
Working Group(s)	AMWG, SSRN, PHPCWG
Description	This project is focused on identifying the individual, psychosocial, and structural barriers to timely linkage and retention. This project has three specific aims: 1. To comprehensively describe linkage and retention to HIV care following home-based counseling and testing by examining time from testing to linkage and the socioeconomic, demographic and structural determinants of linking to care. We will conduct retrospective and multilevel analyses using existing de-identified clinical and facility-level data collected within AMPATH, defining linkage to care as the completion of an initial HIV clinical encounter with a provider following testing. We will also examine factors that predict retention in HIV care over time. 2. To characterize the psychosocial and structural facilitators and barriers to linkage and retention to care following positive HIV diagnosis through HBCT and PITC. We will conduct a qualitative study to examine

	the psychosocial factors inhibiting or motivating linkage to care, experiences in accessing care, and factors that promote or interrupt retention among those who tested positive via HBCT or PITC. We will also collect data from clinicians and community health workers to examine how features of the healthcare system facilitate or constrain linkage and retention to care. 3. To develop and implement a feasibility study of a pilot psychosocial intervention aimed at increasing linkage to care among individuals testing positive for HIV. The content of this intervention pilot will be informed by the results of Aims 1 and 2. The first aim of this study involves secondary analysis of data collected during home-based counseling and testing linked to medical records data. This data will include information collected as part of routine testing procedures and care, for those who successfully linked to care. AIM 2 will employ qualitative approaches to identify barrier and facilitators to linkage and retention. AIM 3 will include information collected as part of routine care, for those who successfully linked to care. Specifically, medical record reviews at baseline and post-intervention.
Site(s)	
Project Period	6/4/2012 - 12/20/2013
Funding Status	Funded - Eli Lilly Foundation, Bill and Melinda Gates Foundation, NIH - National Institute of Mental Health (NIMH), NIH - National Institute of Allergy and Infectious Diseases (NIAID)
Direct Award (USD)	$152,806
Update	Over the last six months, we have continued to analyze and write-up our qualitative data from Aim 2 of this project. This data was collected from HIV care providers and patients and focused on barriers to linkage and retention to HIV care. We have submitted 4 papers for publication, 2 of which have been accepted.
Future Plans	Over the next 6 months, we will complete the final paper from the health care providers data and submit it for publication. In addition we will finish the analysis of the qualitative data from people who did not link to care and finish the write-up of that phase of the project. We expect all project activities to be completed by June 2019.
Publication(s)	1. Genberg BL, Lee H, Hogan JW, Some F, Wachira J, Wu XK, Braitstein P. Point of diagnosis and patient retention in HIV care in western Kenya. JAIDS 2018; 78(4):383-389. 2. Wachira J, Genberg B, Kafu C, Koech B, Akinyi J, Owino RK, Laws MB, Wilson IB, Braitstein P. The perspective of HIV providers in western Kenya on provider-patient relationships. J Health Communication 2018 (epub ahead of print). 3. Wachira J, **Genberg B**, Kafu C, Braitstein P, Laws MB, Wilson IB. Experiences and expectations of patients living with HIV on their engagement with care in western Kenya. Patient Preference and Adherence 2018 (epub ahead of print).

Study Title	**Making Inroads to Strengthen the Health of Adolescents (MaISHA)**
Principal Investigator(s)	Leslie Enane, Indiana University
Co-Investigator(s)	Edith Apondi, Moi Teaching and Referral Hospital
Working Group(s)	PRWG
Description	The objective of this project is to investigate critical gaps in care for adolescents with HIV, and the underlying barriers complicating care for adolescents. The direct causes of severe illness among adolescents with HIV will also be explored. To achieve our project objective, we will pursue the following specific aims: Aim 1. To quantify missed opportunities along the HIV care cascade among adolescents prior to hospitalization in western Kenya, by examining timing and outcomes of HIV diagnosis, linkage to and retention in care, and viral suppression. This will be accomplished through a prospective study of hospitalized adolescents in western Kenya. Measures of engagement in HIV care prior to hospitalization will also be assessed. Secondary Aim: To determine the causes of hospitalization and mortality among adolescents with HIV in western Kenya. Hospital record data and consultation with care providers will be utilized to determine causes of hospitalization and mortality. Aim 2. To define critical barriers contributing to delays or failures in the care cascade, as well as facilitators to care, and to identify areas of potential intervention. Barriers and facilitators to the long-term retention of adolescents in care will be specifically explored. This will be accomplished through qualitative inquiry of youth with HIV and their caregivers. Phase I will be a prospective mixed-methods study of youth with HIV that will specifically investigate barriers and facilitators to long-term retention of adolescents in HIV care. This will include interviews with key informants: hospitalized youth and their caregivers, and peer mentors; and focus groups of youth engaged in HIV care and their caregivers. Phase II will be a prospective mixed-methods study of hospitalized adolescents that will determine outcomes along the care cascade, causes of hospitalization and mortality, and qualitative barriers and facilitators to care at each stage.
Site(s)	Chulaimbo Sub-District Hospital, Kitale District Hospital, Moi Teaching and Referral Hospital (MTRH)Webuye District Hospital
Project Period	10/1/2016 - 6/30/2019
Funding Status	Funded - Thrasher Research Fund, Indiana University - Center for AIDS Research, IU Center for Global Health
Direct Award (USD)	$57,500
Update	During this reporting period, recruitment of hospitalized adolescents and their primary caregivers continued for the second phase of the study. Semi-structured interviews were done with the caregivers and adolescents who consented and were able to participate. The aim of the interviews was to uncover the critical missed opportunities

	and barriers to care along the HIV care cascade for these adolescents prior to their hospitalization. Over this reporting period a total of 19 caregiver-adolescent dyads were recruited, this included 12 female adolescents and 7 male adolescents. Hospital chart reviews were also done, to abstract data regarding causes of hospitalization and mortality for these adolescents with HIV. In addition, recruitment and in-depth interviews with youths who have served as peer mentors under the AMPATH (Academic Model Providing Access to Healthcare) program continued. The interviews investigate barriers and facilitators to HIV care for adolescents and explore areas of intervention to retain them in HIV care. A total of 11 peer mentors (8 males and 3 females) were recruited during this reporting period. Given the expertise of these peer mentors in adolescent HIV care and the complex challenges involved, these participants have shared very rich information on the barriers and facilitators to adolescent HIV care. We therefore amended our project to include a second round of interviews with them to ensure full exploration of the possible areas of intervention to engage adolescents in care. This amendment was approved by both institutional review boards before we conducted the second round of interviews. Coding of the already completed scripts began, we prepared two abstract for presentation, one was presented at the NOPE conference as an oral presentation and the other was presented as a poster at the AIDS 2018 conference.
Future Plans	Over the next reporting period, recruitment of hospitalized adolescents with HIV will continue. We also plan to continue with the second round of interviews with youth peer mentors. Focus group discussions with adolescents engaged in HIV care will be done during the upcoming school holidays. The main aim of the FGDs will be to explore areas of intervention to better retain adolescents in HIV care. We are currently developing the guides which center on potential interventions addressing the emerging challenges to adolescent's retention in HIV care. We will continue with thematic analysis, preparation of abstracts and manuscripts for publication from each phase of this work.
Publication(s)	

Study Title	**MCH STUDY (Evaluations at Infant and Child Visits a MCHs in western Kenya: A Needs Assessment)**
Principal Investigator(s)	Megan McHenry, Indiana University
Co-Investigator(s)	Eren Oyungu, Moi University
Working Group(s)	PRWG
Description	The specific aims for MCH study are : Aim 1: To identify the evaluations and preventative care performed at MCH clinics and identify additional preventative areas that MCH clinical staff are interested in investigating further. Aim 2 :To determine the frequency of visits for children attending MCH clinics and also identify at what ages a child is more likely to have visited the MCH. Aim 3.:To determine the scope to which child development is currently evaluated at the MCH clinics and documented in the Mother

	and Baby Booklets. The study took place in western Kenya at the following MCH clinics: MTRH, Turbo, Webuye, Mosoriot, Burnt Forest, and Kitale. During this study, we recruited two groups of study participants. The first was clinical staff working at each of the MCHs. The second group were caregivers who brought young children to the MCH. This study was reviewed and approved by the Indiana University School of Medicine Institutional Review Board and the Moi University Institutional Research and Ethics Committee.
Site(s)	Busia District Hospital, Matayos Health Centre, Mois Bridge Health Centre, Mt. Elgon District Hospital, Uasin Gishu District Hospital
Project Period	9/26/2016 - 9/26/2017
Funding Status	Unfunded -
Direct Award (USD)	
Update	The results were analyzed and the perspectives of the caregivers and the data from the mother-data books was written up within a thesis by an MPH student involved with this study.
Future Plans	In the upcoming weeks, we hope to convert this completed thesis into a manuscript. Additionally, we may also analyze the data from the clinical staff and combine it with data from the caregivers regarding child development and submit that as a separate paper.
Publication(s)	
Study Title	**Mental Health Screening and Phone-Based Counselling Support for Adolescents with HIV in Kenya**
Principal Investigator(s)	Rachel Vreeman, Indiana University
Co-Investigator(s)	Winstone Nyandiko, Moi University
Working Group(s)	PRWG
Description	The objective of this pilot study is to explore options to provide mental health services and support to Kenyan youth living with HIV (YLWH) using a readily available potential tool-WhatsApp (WA) - and a counselor-guided WhatsApp group designed to provide education and counseling to YLWH. We will gather critical preliminary data related to the use of tele-therapy and tele-peer support for HIV-infected adolescents in Kenya to achieve the study aims. Throughout six months of follow-up, the enrolled group of adolescents will receive group and individual counseling via WhatsApp, with the option for peer group chatting related to key topics as well. In addition, they will receive adherence monitoring, testing for viral suppression, and mental health evaluations at

	baseline and at 6 months of follow-up. The specific aims are: Aim 1: Assess the feasibility, acceptability, and usability of a cell phone-based intervention to provide mental health services (tele-therapy and tele-peer support) for HIV-infected adolescents in Kenya. Aim 2: Evaluate the user engagement with both the cell phone-based intervention and the clinical care system throughout the monitoring period using counselor reports, usage tracking, and clinical database evaluation. Aim 3: Describe key clinical, mental, and emotional health outcomes for this cohort during the monitoring period, including medication and clinic adherence, viral suppression, depression symptoms and other behavioral or emotional symptom reports, and engagement with support services such as peer support groups.
Site(s)	Turbo Health Centre
Project Period	1/1/2017 - 7/31/2018
Funding Status	Funded - Indiana University - Center for AIDS Research
Direct Award (USD)	$10,000
Update	The study 'Mobile Mental Health Monitoring and support for Adolescents with HIV in Kenya' project successfully enrolled 30 adolescents aged 10-19 years from Turbo clinic in western Kenya and each were assigned a smartphone and a WhatsApp group for tele-counseling, in addition to in-person peer support groups at the clinic. Over the last six months, adolescent participants have participated in two peer support groups at the Turbo clinic, totaling five peer support groups at Turbo clinic from the study's start to June 2018. We have also started to transcribe and translate the WhatsApp discussions so that we can begin qualitative analysis on the tele-counseling intervention. We also issued all participants electronic dose monitors (MEMS caps), and these data have all been retrieved and the MEMS caps returned to the study. Analysis on the MEMS caps adherence data will begin shortly. Participants have been involved in monthly individual counseling meetings with the counselor at Turbo clinic on their return-clinic day. The six month follow up has now ended with 29 participants (One of the participants withdrew from the study) and study intervention activities are completed.
Future Plans	In the next six months, we plan to complete data entry of individual patient characteristics into a REDCap database, finish transcribing and translating qualitative data from the WhatsApp group conversations and individual counseling sessions, clean all MEMS adherence data, and to begin qualitative and quantitative analysis. We hope that by the end of the next six-month period, we will be able to report on and disseminate early findings from this study.
Publication(s)	

Study Title	**NEURODEV (Assessing Neurodevelopmental Delays in Children Born to HIV-infected Mothers in Western Kenya: A Pilot Study)**

Principal Investigator(s)	Megan McHenry, Indiana University
Co-Investigator(s)	Eren Oyungu, Moi University
Working Group(s)	PRWG
Description	The specific aims for Neurodev (Assessing Neurodevelopmental Delays in Children Born to HIV-infected Mothers in Western Kenya: A Pilot Study) are: Aim 1. To utilize qualitative methods to determine the perceived etiology, manifestations, and intervention options for child NDDs from the perspectives of clinical staff and caregivers of HIV-infected and HIV-exposed children in Kenya. Aim 2: To develop brief, candidate neurodevelopmental screening questions that are clinically relevant and culturally acceptable by utilizing developmental assessments validated in other settings and incorporating contextual caregiver and clinicians' perspectives.Aim3 : To evaluate the feasibility of implementing a validation study to examine NDD screening methods in a pilot sample of children under three years of age born to HIV-infected mothers. In Phase One, we utilized semi-structured interviews (SSIs) and focus group discussions (FGDs) with caregivers and clinicians to understand current knowledge and beliefs about NDDs. FGDs were chosen for caregivers to generate information on collective views of neurodevelopment and the meanings and implications that lie behind those views. SSIs were chosen for clinical staff to address several key questions specific to their individual training and experiences, while allowing both the interviewer and clinical staff to further pursue an idea or response in more detail. Phase Two will allow us to pilot key methods needed for future validation testing of these items. As we aim towards a large validation study to assess the reliability and validity of these screening questions in this setting, we will conduct prospective feasibility testing, piloting these questions during cognitive interviews with caregivers and clinical officers, in the clinical setting in Kenya and also piloting the implementation of the gold standard for developmental screenings - lengthy, comprehensive developmental assessments of young children. No modifications have been made to the specific aims as stated in the original proposal. We have ongoing Institutional Review Board and local ethics committee approval for the aims.
Site(s)	Matayos Health Centre, Mois Bridge Health Centre, Uasin Gishu District Hospital
Project Period	1/10/2016 - 9/30/2017
Funding Status	Funded - Indiana University - Center for AIDS Research
Direct Award (USD)	$597,800
Update	We are ongoing with the pilot phase of recruiting children with three different categories of HIV exposure: HIV-infected, HIV-exposed but uninfected, and HIV-unexposed. We have so far enrolled 123 study participants against the target study population of 225 children, and administered the BSID-III to a total of 123 children, the enrollment phase is expected to be on-gong for the next six months. To further explain developmental delays among these children, we have document psychosocial factors related to developmental delays based on the results of previous results. All the

	recruited children have also provided blood for determination of biological factors associated with developmental delays.
Future Plans	While we have nearly completed our recruitment of HIV-exposed, uninfected children, we will need to recruit more HIV-unexposed and HIV-infected children. We will continue with this recruitment until we have at least a minimum of 30 participants in each category. We hope that within the next 6 months, all labs will be obtained on patients, the CBCs and ferritins will all be run in Eldoret at MTRH. The PBMCs will be shipped to the U.S. for further immunological testing.
Publication(s)	

Study Title	**Neuropsychiatric Genetics of African Population-P**
Principal Investigator(s)	Prof. Lukoye Atwoli, Moi University
Co-Investigator(s)	Dr. Edith Kwobah, Moi University
Working Group(s)	SSRN
Description	In the recent years there have been significant insights into the complex etiologies of neuropsychatric brain disorders. For example, neuropsychiatric genetics has achieved success with the identification of 108 loci for schizophrenia according t the Schizophrenia Working Group 2014. Furthermore, meta-analyses of genome-wide association study results encompassing thousands of samples have been completed for other psychiatric disorders including attention-deficit disorders, bipolar disorder autism spectrum disorder, and major depressive disorder. However published results on neuropsychiatric disorders have often not included samples of Africa ancestry. The study takes a case-control design. Cases will be individuals with schizophrenia or Bipolar disorder and Controls will be age, sex and ancestry matched individuals from the same geographic locations. Specific Aims 1. To determine the phenotypic presentation of psychotic disorders in African population. 2. To describe the genetic variation between patients with psychotic disorders and those without in African population. 3. To examine the association between genetic variation and risk for schizophrenia and Bipolar disorder in African populations. 4. To provide opportunities for training of African scientists in neuropsychiatric genetics research. The Moi site will recruit a total of 4000 participants over 4 years, consisting of 2000 cases and 2000 controls. The study is an opportunity for Kenya to be involved in neuropsychiatric genetic research and therefore contribute to subsequent treatment innovations that may arise fro insights from the genetic research.
Site(s)	Iten District Hospital, Kapenguria District Hospital, Kitale District Hospital, Moi Teaching and Referral Hospital, Webuye District Hospital, Kakamega and Kapsabet
Project Period	2/28/2017 - 3/1/2022

Funding Status	Funded - Broad Institute of MIT and Harvard.
Direct Award (USD)	$252,150
Update	Accomplishment 1. Procurement and set up of office team 2. Recruitment and training of personnel 3. Pilot data collection, extraction and shipment. 4. Recruitment break down-Total enrolled is 303 participants, controls are 204 and Cases are 99. Female Category for controls so far 122 while cases are 38. Male category for controls are 82 while cases are 61. Challenges. 1. Low turn out due to the rainy season 2. Unstable network making it sometimes difficult to send data to server
Future Plans	1. Scaling up recruitment 2. Matching the case-control participants
Publication(s)	

Study Title	**One Year Morbidity and Mortality of Infants Diagnosed with Perinatal Asphyxia or Low Birth Weight Admitted to The New Born Unit at Moi Teaching and Referral Hospital.**
Principal Investigator(s)	Julia Songok, Moi University
Co-Investigator(s)	
Working Group(s)	PRWG
Description	A prospective cross-sectional study looking at the one year morbidity and mortality of infants with low birth weight (LBW) and perinatal asphyxia admitted to the new born unit (NBU) at Moi Teaching and Referral Hospital (MTRH). We hope to enroll 420 infants and follow them up until they are one year of age. Data will be collected on admission diagnosis, demographics, anthropometric measurements, treatment and follow-up and outcomes during admission and at one year of age. The objectives of the study are to determine the one year mortality rate of infants admitted to the NBU, determine the attrition and readmission rate, to determine the proportion of newborns with perinatal asphyxia or low birth weight and grade the severity and to determine the obstetric, medical and socio-economic factors associated with better short term and long term outcomes.
Site(s)	Moi Teaching and Referral Hospital
Project Period	10/23/2017 - 10/23/2019
Funding Status	Unfunded -
Direct Award (USD)	

Update	Participant enrollment did not begin as planned. A review of the study protocol showed that there was a need to look for more funding opportunities to achieve set objectives of the study. We just received additional funding from MTRH.
Future Plans	We intend to start participant enrollment and follow up in the next few months. A submission to IREC to amend the study period in the event we start enrollment within the next 6 months.
Publication(s)	

Study Title	**Optimizing Linkage and Retention to Hypertension Care in Rural Kenya**
Principal Investigator(s)	Rajesh Vendanthan, Mount Sinai School of Medicine
Co-Investigator(s)	Jemima Kamano, Moi University
Working Group(s)	CVMD
Description	Hypertension awareness, treatment, and control rates are low in most regions of the world. A critical component of hypertension management is to facilitate sustained access of affected individuals to effective clinical services. In partnership with the Government of Kenya, the Academic Model Providing Access to Healthcare (AMPATH) Partnership is expanding its clinical scope of work in rural western Kenya to include hypertension and other chronic diseases. However, linking and retaining individuals with elevated blood pressure to the clinical care program has been difficult. To address this challenge, we propose to develop and evaluate innovative community-based strategies and initiatives supported by mobile technology. The objective of this project is to utilize a multi-disciplinary implementation research approach to address the challenge of linking and retaining hypertensive individuals to a hypertension management program. The central hypothesis is: community health workers (CHWs), equipped with a tailored behavioral communication strategy and a smartphone-based tool linked to an electronic health record, can increase linkage and retention of hypertensive individuals to a hypertension care program and thereby significantly reduce blood pressure among these patients. We further hypothesize that these interventions will be cost-effective. To test these hypotheses and achieve the overall objectives, we will pursue the following specific aims: Aim 1: Identify the facilitators and barriers to linking and retaining individuals with high blood pressure to a hypertension care delivery program, using a combination of qualitative research methods: 1) baraza (traditional community gathering) form of inquiry; 2) focus group discussions among individuals with elevated blood pressure during home-based testing; and 3) focus group discussions among CHWs. Subsidiary Aim 1.1: Using identified facilitators and barriers, develop a tailored behavioral communication strategy guided by the Health Belief Model modified by incorporating emotional elements for the CHWs to use with hypertensive patients, focusing on regular and timely attendance at hypertension clinic. We will test the communication strategy for face and content validity using focus group discussions with CHWs and individuals with elevated blood pressure. Subsidiary Aim 1.2: Using

	identified facilitators and barriers, develop a smartphone-based tool linked to the AMPATH Medical Record System (AMRS) to be used by CHWs to optimize linkage and retention of hypertensive patients to the care program, and evaluate the usability and feasibility of this tool using think-aloud technique, mock patient encounters, focus group discussions, and participant observation. Aim 2: Evaluate the effectiveness of CHWs equipped with a tailored behavioral communication strategy and a smartphone-based tool in improving linkage and reducing blood pressure among hypertensive patients, by conducting a cluster randomized trial comparing: 1) usual care (CHWs with standard training on recruitment of individuals with any chronic condition); 2) CHWs with an additional tailored behavioral communication strategy; and 3) CHWs with a tailored behavioral communication strategy an also equipped with smartphone-based tool linked to the AMRS. The co-primary outcome measures will be: 1) documented linkage to care following home-based testing, and 2) one year change in systolic blood pressure among hypertensive individuals. Aim 3: Evaluate the incremental cost-effectiveness of each intervention arm of the cluster randomized trial. Cost effectiveness will be presented both in terms of costs per unit decrease in blood pressure and in terms of costs per reductions in cardiovascular disease (CVD) risk by extrapolating one-year blood pressure reductions to CVD risk reductions based on the QRISK2-2011 CVD risk calculator specific for Black African populations. This research will generate innovative and productive solutions to the expanding global problem of hypertension, and will add to existing knowledge on scalable and sustainable strategies for effectively managing hypertension and other chronic diseases in low- and middle-income countries.
Site(s)	Mosoriot Rural Health Training Centre, Turbo Health Centre
Project Period	5/4/2012 - 3/31/2017
Funding Status	Funded - NIH
Direct Award (USD)	$2,104,519
Update	o Conducted project dissemination activities to provide feedback and communicate the closure of the study. This was carried out for the study sites (Turbo and Mosoriot divisions) involving the stakeholders; Community Health Workers, Community Extension Workers, PHO's, Facility in charges, Sub-county and the County Health Management teams, AMPATH care, and Research team members. o Closure of procurement and contracts o Termination of staff contracts, Provision of Certificates of service and release of assets and other resources o Organized for a staff meeting to complete the closure of the project and present findings o Submitted our final performance report to the NIH o Conducted a post project end review o Held final DSMB meeting Subsidiary Aim 1.2 (Smart-phone-based tool) o Content validity manuscript in preparation o Data cleaning completed o Data analysis ongoing Aim 2 (Cluster RCT) o Data cleaning completed o Data analysis ongoing oOutcomes abstract being finalized o Manuscript in preparation Aim 3 (Cost Effectiveness Analysis) o Manuscript in preparation o Data analysis completed Other o 2 staff members attended The Kenya Association of Physicians Conference in Mombasa to

	present abstracts on Implementation Challenges and Association between physical activity and severity of blood pressure among people with elevated blood pressure
Future Plans	Manuscript preparation and finalization
Publication(s)	

Study Title	**Patient-Centered Disclosure Intervention for HIV-Infected Children, Helping AMPATH Disclose Information and Talk about HIV Infection (HADITHI)**
Principal Investigator(s)	Rachel Vreeman, Indiana University
Co-Investigator(s)	W. Nyandiko, Moi University
Working Group(s)	PRWG
Description	The purpose of this study is to assess the effect of a patient- and family-centered intervention guiding disclosure to HIV-infected Kenyan children using a randomized trial comparing the intervention to routine care. The primary endpoint will be probability of disclosure among children, with secondary endpoints of adherence, clinical outcomes, psychological distress and social outcomes. Phase One, which will last 6 months, focuses on cultural adaptation of the intervention materials through intensive patient participation, including focus groups and cognitive interviewing; selecting narrative components; and training dedicated disclosure counselors. Phase Two consists of a randomized design to examine whether the culturally adapted, multi-component HADITHI intervention increases the prevalence of disclosure to HIV-infected children in western Kenya compared to children receiving usual care. HIV-infected children ages 10-15 years who are enrolled in HIV care within the eight selected AMPATH clinics in western Kenya will be eligible for study enrollment and have a comprehensive patient assessment every 6 months for 2 years.
Site(s)	Burnt Forest Sub-District Hospital, Chulaimbo Sub-District Hospital, Khunyangu Sub-District Hospital, Kitale District Hospital, Moi Teaching and Referral Hospital , Mosoriot Rural Health Training Centre, Turbo Health Centre, Webuye District Hospital
Project Period	9/1/2012 - 9/1/2016
Funding Status	Funded - NIH - National Institute of Mental Health (NIMH)
Direct Award (USD)	$1,886,804
Update	This was a cluster-randomized trial of a counseling intervention that consisted of a curriculum for disclosure and adherence counseling (video-taped narratives and animated, tablet-based educational modules), dedicated counselors to provide family and one-on-one, facilitated peer support groups, and additional materials including pamphlets, FAQ summaries, written narratives for discussion. The primary outcome was

	disclosure status, treated as a time-to-event outcome, measured on a discrete time scale. All study intervention and follow-up of patients is complete. Over the last six months, we have been conducting preliminary analyses of the data. 285 children and their caregivers were followed. Their mean age was 12.3 years, 52% were female. Their average time-on-treatment was 4.4 years, mean CD4% of 28%, with 95% on first-line ART. At baseline, 32% of children reported knowing their HIV status already (no difference between control and intervention groups.) Disclosures in both control and intervention arms increased over follow-up, but the intervention arm had significantly more disclosures. Using child-reported disclosure, the prevalence of disclosure increased significantly between baseline and 24 months of follow-up from 29.2% to 58.5% in control arm and 33.2% to 74.0% in intervention arm. This was a significant difference in disclosure prevalence for the intervention group at 24 months (difference of 15.5%, 95% confidence interval: 3.7, 27.3). Thus, the intervention group had both more disclosures and earlier disclosures, with the largest increase in disclosures at 6 months. The secondary mental and behavioral health outcomes are still under analysis, but overall, there were not significant differences in mental and behavioral health outcomes at the end of the two years. However, trends suggested mental and behavioral distress increased at month 6 in intervention group as disclosures increased, and then decreased compared to controls thereafter. Viral load measures were drawn at 24 months, and 118 of 250 participants (47%) had detectable viral load at the level of >40 copies/mL. Individuals in intervention group had lower odds of having detectable viral load (odds ratio = 0.80, 95% CI: 0.22-2.84) and higher odds of achieving viral suppression (2.29, 95% CI: 0.89-5.39) although neither was statistically significant. Presentations and Publications in the last 6 months: An abstract 'A randomized, controlled trial of a patient-centered disclosure counseling intervention for Kenyan children living with HIV,' was submitted and accepted for oral presentation at the AIDS 2018 meeting in Amsterdam, as well asa n oral presentation at the International Workshop on HIV Pediatrics in Amsterdam, The Netherlands. The presentation will focus on the intervention aim 1 analysis. The author list: Rachel C. Vreeman, Winstone M. Nyandiko, Irene Marete, Ann Mwangi, Carole I. McAteer, Alfred Keter, Michael L. Scanlon, Samuel O. Ayaya, Josephine Aluoch, Joseph Hogan A manuscript entitled, 'Resilience through knowing? Evaluating a patient-centered disclosure intervention for HIV-infected children in Kenya' was submitted to the journal AIDS for a special issue on mental health and HIV. The manuscript is currnetly under review. The author list: Rachel C. Vreeman, Winstone M. Nyandiko, Irene Marete, Ann Mwangi, Carole I. McAteer, Alfred Keter, Michael L. Scanlon, Samuel O. Ayaya, Josephine Aluoch, Joseph Hogan
Future Plans	Over the next 6 months, we plan to: â€¢ Complete key data analyses for each of the study objectives. â€¢ Complete the evaluation of drug level concentrations on hair samples sent to UCSF to the laboratory of Dr. Monica Gandhi, as well as compile evaluations assessing the feasibility and validity of this type of testing in our population. â€¢ Submit manuscripts for publications on our findings.
Publication(s)	

Study Title	**Pharmacovigilance in a Resource-Limited Setting: Approaches to Targeted Spontaneous Reporting for Suspected Adverse Drug Reactions to Antiretroviral Treatment**
Principal Investigator(s)	Paula Braitstein, University of Toronto
Co-Investigator(s)	B Jakait, Moi Teaching and Referral Hospital
Working Group(s)	AMWG
Description	Little is known about the toxicity profile of combination antiretroviral treatment (cART) in African populations where genetic differences, co-morbidities, and malnutrition together may influence the adverse reactions of cART in this population. The purpose of this project is to evaluate the feasibility and effectiveness of five approaches to Targeted Spontaneous Reporting (TSR) for documenting SADR in the resource constrained clinical setting in western Kenya. The approaches include; TSR 1: The completion of the Kenya National Suspected Adverse Drug Reaction form for patients with a change or discontinuation in their cART. These forms are then forwarded on to the National pharmacovigilance (PV) office at the Pharmacy and Poisons Board (PPB) in Nairobi. TSR 2: Use of routinely-used clinical encounter forms that have been enhanced to specifically collect a relatively small amount of SADR data to be collected by the provider seeing the patient during the clinical visit. TSR 3 and TSR 4: Involve conducting in-depth interviews on 1,000 patients receiving cART treatment to prompt patients about SADR and their impact on patient adherence and quality of life. Patients undergoing interviews are randomly assigned to be interviewed by an HIV peer (TSR 3) or a pharmacy personnel (TSR 4) who will have received the same training for the project. The interviews will be conducted over 12 months or a maximum of 12 scheduled clinical visit (Whichever comes first). TSR 5: Use of data routinely captured in the pharmacy when clinicians substitute or change a patient's regimen, including documentation if such an event occurred on the prescription form and the cause of the event (i.e. toxicity, treatment failure, TB drug interaction, pregnancy, other).
Site(s)	Moi Teaching and Referral Hospital
Project Period	10/1/2012 - 12/31/2013
Funding Status	Funded - World Health Organization (WHO)
Direct Award (USD)	$162,000
Update	Over the last six months we have had discussions with the investigators on the format and sequence in publications. We will be working with a new biostatistician to analyze the data.
Future Plans	We hope to have completed the analysis and circulated drafts of the manuscript to the co-authors.
Publication(s)	

Study Title	**Phylogenetic Inference of Vertical versus Horizontal HIV Transmission among Adolescents in Western Kenya**
Principal Investigator(s)	John Humphrey, Indiana University
Co-Investigator(s)	Winstone Nyandiko, Moi University
Working Group(s)	PRWG
Description	HIV is the leading cause of death among adolescents in sub-Saharan Africa. However, the identification and epidemiologic impact of different modes of HIV transmission within the adolescent population remain unclear. For adolescents newly diagnosed with HIV who also have an HIV-positive mother, it can be unclear whether the adolescent's infection occurred through vertical (i.e. mother-to-child) or horizontal (e.g. unprotected sex) transmission. Characterizing the contributions of vertical and horizontal transmission among adolescents in sub-Saharan Africa is important, as it can enhance understanding of the epidemiologic drivers of HIV infections and inform the implementation of tailored prevention and treatment strategies. The objective of this proposed pilot study is to identify methods to distinguish modes of HIV infections among Kenyan adolescents 10-19 years of age via the following specific aims: 1) examine the feasibility of phylogenetic inference to determine HIV infection through vertical versus horizontal transmission in adolescents, and 2) compare demographic, clinical and laboratory characteristics of vertical and horizontal predicted-infection in HIV-infected adolescents and their mothers. This study will be conducted at the Academic Model Providing Access to Healthcare (AMPATH) Center, a large HIV treatment and research facility in western Kenya, in collaboration with Indiana University and Brown University. We will enroll 20 HIV-infected adolescent-mother dyads in whom the mode of infection is uncertain and 10 HIV-infected child-mother dyads in whom vertical infection is highly likely. HIV viral load testing and pol sequencing will be performed for all subjects, including those with undetectable viral load by archived DNA genotyping. The epidemiologic linkage and clustering of HIV sequences among adolescent-mother dyads will be inferred phylogenetically and compared to (i) phylogenetic clusters of child-mother dyads that likely represent vertical transmission; and (ii) non-phylogenetic prediction of mode of infection, based on demographic and clinical risk factors elicited through a chart review and epidemiologic survey. We hypothesize that phylogenetic inference will differentiate vertically and horizontally-acquired infections, and that characteristics will differ between horizontally and vertically infected adolescents. This study will also add insight into the natural history of perinatally infected individuals who are diagnosed as adolescents, as current estimates of survival and disease progression are limited by an inability to confirm vertical infection in these individuals. This proposal will employ an innovative phylogenetics approach to address a key priority for HIV research in sub-Saharan Africa, namely, the uncertain impact of vertical and horizontal transmission among adolescents living in HIV-affected families.
Site(s)	Mois Bridge Health Centre

Project Period	5/1/2017 - 4/30/2018
Funding Status	Funded - Indiana CTSI
Direct Award (USD)	$20,000
Update	We have not yet initiated enrollment due to personal circumstances of the PI but are set to begin enrollment in August 2018.
Future Plans	We hope to complete enrollment.
Publication(s)	

Study Title	**'Point of Care CD4 testing for people who fail to engage in care after testing HIV positive'.**
Principal Investigator(s)	Paula Braitstein, University of Toronto
Co-Investigator(s)	Samson Ndege, Moi University
Working Group(s)	AMWG
Description	This supplement responds to unique aspects of Specific Aim 1 of the East Africa-International epidemiological Databases to Evaluate AIDS (IeDEA) grant, which seeks to 'Determine the short and long-term outcomes of adults and children along the entire spectrum of HIV care.' Our broad aim is to inform and evaluate the implementation of AMPATH's HIV treatment and prevention work by fully characterizing the cascade of HIV care in population-based settings and identifying gaps and opportunities for improvement. The primary objective of this study is to characterize the outcomes of HIV-positive adults who did not engage with HIV care following the catchment-wide HBCT campaign held from Dec 2009-Feb 2011 in Bunyala.
Site(s)	Bunyala Sub-county
Project Period	2/2/2015 - 2/1/2016
Funding Status	Funded - NIH
Direct Award (USD)	$62,432
Update	Continuing ethics approval was received for the study in March 2018 to facilitate preparation of the final paper which is currently on-going.
Future Plans	Over the next six months, the study team expects to complete the paper and publish and officially close the study.

Publication(s)	

Study Title	**Prevalence of cardiac disease in pregnancy among a population of antenatal patients at a tertiary care institution in western Kenya**
Principal Investigator(s)	Dr. Bett Kipchumba, Moi Teaching and Referral Hospital
Co-Investigator(s)	Dr. Felix Barasa, Moi Teaching and Referral Hospital
Working Group(s)	CVMD
Description	This is a cross-sectional study that seeks to determine the point prevalence of cardiac disease among 600 pregnant women receiving antenatal care at the Moi Teaching and Referral antenatal care clinic. The main objectives of the study will be to 1. Use focused echocardiography to as a screening tool evaluate cardiac structure and function; 2. Use focused echocardiography as a screening tool to determine the prevalence of cardiac disease among pregnant women attemting MTRH antenatal clinic; 3.Determine the proportion of pregnant women with cardiac disease who endorse clinical symptoms as a potential means to develop a screening tool; 4. Promote a case-finding culture for cardiac disease in pregnancy
Site(s)	Moi Teaching and Referral Hospital
Project Period	2/5/2018 - 2/5/2019
Funding Status	Funded - Mt. Sinai Hospital
Direct Award (USD)	$3,422
Update	The project officially began on 4th February 2018. 611 women were enrolled into the study and had echocardiagraphic examination of their heart performed at the MTRH antenatal clinic. All data collected was input directly into the study REDCAP database and cleaned. Of the 611 women enrolled, 15 women from the low risk ANC clinic were identified as having anomalies in their hearts structure or functioning.
Future Plans	We hope to analyse data and have an initial manuscript ready by December 2018.
Publication(s)	

Study Title	**Prospective study of Lopinavir based ART for HIV Infected childreN Globally (LIVING study)**
Principal Investigator(s)	Prof. Winstone Nyandiko, Moi University

Co-Investigator(s)	Prof. Samuel Ayaya, Moi University
Working Group(s)	PRWG
Description	The study entitled Prospective study of Lopinavir based ART for HIV Infected childreN Globally (LIVING study) is an open-label, prospective, non-randomized, multi-centre, single arm phase IIIb clinical study. It is looking at a new formulation of lopinavir/ritonavir (LPV/rtv) that has been developed as pellets (very small tablets) that do not require refrigeration, do not contain alcohol and are expected to be more acceptable than LPV/rtv liquid for infants and young children. This implementation study is being carried out to provide supportive clinical data on the feasibility, effectiveness, safety, and tolerance, pharmacokinetics and acceptability of LPV based therapies in routine treatment setting. Primary objective: • Evaluate the effectiveness of LPV/r pellets in addition to AZT/3TC (or ABC/3TC) paediatric fixed dose combination (FDCs) tablet under routine treatment conditions in HIV infected infants and young children who cannot swallow tablets. Secondary objectives: • Document the safety of LPV/r pellets and AZT/3TC or ABC/3TC • Assess the population pharmacokinetics of LPV/r and NRTIs when administered as LPV/r pellets plus AZT/3TC or ABC/3TC • Measure adherence to the new formulation • Evaluate children acceptability of the LPV/r pellets and associated dual NRTIs as well as ease of use by the caregiver. (It has to be noted that this study is not intended to compare the treatment modalities, but rather to evaluate in field/programmatic conditions their individual effectiveness and safety in different settings of some of the most affected endemic countries.)
Site(s)	Moi Teaching and Referral Hospital, Uasin Gishu District Hospital
Project Period	6/1/2016 - 12/31/2018
Funding Status	Funded - Drugs for Neglected diseases initiative - Geneva
Direct Award (USD)	$225,180
Update	Over the last six months, 25 study participants have been exited from the study after having completed 24 months of follow up in our AMPATH site. Sixty four patients are now on active follow up in the study. Some of the challenges so far experienced include low suppression rate of viral load due to poor adherence for a few of the study patients. Some of the causes of poor adherence` include some caregivers forgetting medication or having social problems that interfere with how children take their medication. But majority have managed to keep the viral load suppressed (90% of the study population) and the difficult cases have been referred to social work and counseling for further support and intervention On preliminary findings, We have had an abstract presented at AIDS conference 2018 by Prof Wamalwa from findings of sites with complete data. As quoted from the DNDi newsletter at https://www.dndi.org/wp-content/uploads/2018/07/DNDi_Paediatric-HIV_2018.pdf By February 2018, interim results of the LIVING study were released, showing that 83% of the children in the study were virologically suppressed at 48 weeks with the 2-in-1, compared to 55% at the beginning of the study. These results show that the 2-in-1 LPV/r pellets is effective and

	well-tolerated by children. Caregivers found the formulations to be 'highly-acceptable' due to the ease of storage and packaging. Nevertheless, the 2-in-1 pellets are not fully 'taste-masked,' meaning they still have a bitter taste if not given quickly with food or drink, and are not adapted for the youngest children.
Future Plans	In the next six months we hope to complete study follow up for all enrolled patients. The study closes out at the end of the year and we hope to finalize on data collection and have all the patients who had been in the study continue smooth follow up in the normal care program. We expect a final study report to be submitted, with final analysis of the study.
Publication(s)	

Study Title	**Randomized, Phase II Trial of CHOP vs. Oral Chemotherapy with Concomitant Antiretroviral Therapy in Patients with HIV-associated Lymphoma in Sub-Saharan Africa**
Principal Investigator(s)	Naftali Busakhala, Moi University
Co-Investigator(s)	Evangeline Njiru, Moi Teaching and Referral Hospital
Working Group(s)	ORWG
Description	Patients will be randomized to one of two treatment arms: either standard, intravenously delivered CHOP, delivered over six 3-week cycles or oral chemotherapy delivered over three 6-week cycles. Formal assessment of objective response (complete response [CR]/partial response [PR]/stable disease [SD]) will be performed following cycle 6 for CHOP and following cycle three for the oral regimen, and the patient will then be followed for relapse and survival. Patients found to have progressive disease (PD) at any time will come off study and receive the local standard of care treatment for their disease.
Site(s)	All Sites
Project Period	9/1/2015 - 8/31/2018
Funding Status	Funded - NIH
Direct Award (USD)	$75,000
Update	The study is open for enrollment, 2 study participants are currently on follow-up. Other sites in Africa namely; Uganda, Zimbabwe, and Malawi have been open to start recruitment. There was a temporal hold on the recruitment of study participants as result challenges in procuring of study drug (procarbazine) in US but this has since been resolved and the study drug supplied to all active sites and we are hopefully that more

	study participants will be recruited. A successful study monitoring visit was conducted by the sponsor in Eldoret to evaluate the conduct and progress of study.
Future Plans	We anticipate to enroll more study participants into study given that all the study sites in Africa have been opened to recruit potential study participants.
Publication(s)	

Study Title	**SAFI (Stigma in AIDS Family Inventory) Validation Study**
Principal Investigator(s)	Rachel Vreeman, Indiana University
Co-Investigator(s)	Winstone Nyandiko, Moi University
Working Group(s)	PRWG
Description	For families raising HIV-infected children in resource-limited settings, HIV/AIDS-related stigma shapes every aspect of the children's HIV management, from daily adherence to medication to decisions about pediatric HIV disclosure. We do not know the most effective strategies to reduce stigma for HIV-infected children and their families in resource-limited settings nor how to measure its effects on physical, emotional, or social outcomes. We want to learn more about how stigma affects families. As part of the HADITHI study, SAFI aims to develop and test a reliable, valid instrument to measure HIV/AIDS stigma as perceived, enacted, and internalized by Kenyan families with HIV-infected children. The specific aims for the SAFI validation study are to: Aim 1: Identify and modify H/A stigma questionnaire items for maximum reliability and content validity to measure perceived, enacted and internalized H/A stigma among Kenyan families with HIV-infected children. Aim 2: Assess the validity of the measures of perceived, enacted and internalized H/A stigma compared to independent construct measures including pediatric adherence to therapy and children's physical, psychological and social outcomes. Aim 3: Examine whether disclosure of a child's HIV status to the child reduces perceived, enacted, or internalized stigma for families with disclosed children compared to families with non-disclosed children. We thus propose assembling, adapting, and then validating measurement items for assessing the relevant domains of H/A stigma experienced by HIV-infected children and their caregivers in sub-Saharan Africa.
Site(s)	Burnt Forest Sub-District Hospital, Chulaimbo Sub-District Hospital, Khunyangu Sub-District Hospital, Kitale District Hospital, Moi Teaching and Referral Hospital , Mosoriot Rural Health Training Centre, Turbo Health Centre, Webuye District Hospital
Project Period	12/17/2013 - 11/30/2015
Funding Status	Funded - NIH - National Institute of Mental Health (NIMH)

Direct Award (USD)	$567,828
Update	We have been able to complete the preliminary analyses validating this stigma measurement questionnaire among children and their caregivers. First, our evaluations revealed a signficiant degree of HIV-related stigma with which families in western Kenya are coping. Among our cohort of 285 children and their caregivers, almost half of children reported that it was important to keep HIV status secret. About 10% reported delays taking their medicines so that others would not see. Between 7%-14% of children and caregivers reported feeling stress, anxiety, depression, and sadness due to child's HIV status. The stigma instrument showed high validity compared to emotional and behavioral outcomes, and our study adds to the limited literature on the reliability and validity of stigma measures for children living with HIV in sub-Saharan Africa. Test-retest reliability was high; responses by both children and caregivers were consistent from month 18 to 24. Both child and caregivers' stigma questionnaire item responses showed high construct validity with the Strengths and Difficulties Questionnaire (SDQ), while several caregiver stigma items also showed construct validity with the GHAC General Health domain, MEMS Â® adherence, and viral loads. The stigma measurement items showing the highest construct validity were: â€¢ Experiencing discrimination â€¢ Feeling stressed and/or anxious due to HIV stigma â€¢ Feeling depressed and/or sad due to HIV stigma â€¢ Hopes for future changing negatively due to HIV Thus, this initial study of the SAFI questionnaire reveals that HIV-infected children and their caregivers in this Kenyan cohort reported fearing or experiencing HIV stigma, with caregivers generally reporting higher levels of stigma. The SAFI instrument has utility for screening for HIV-related stigma among children and their families, as demonstrated by construct validity with primary criterion constructs. Utility may be improved by testing to reduce number of items for a short-form questionnaire, which will be some of the additional analysis work to follow. Screening for HIV stigma with a validated instrument may be an important clinical strategy to identify families who would benefit from counseling or other support services.
Future Plans	Over the next six months, we hope to complete data analysis and disseminate our findings through published manuscripts. We currently have a manuscript on our preliminary findings submitted and under review at the journal AIDS and Behavior. Publications: Our findings will be presented as a poster at the AIDS 2018 conference in July 2018 in Amsterdam. The poster is entitled, 'Validation of an HIV/AIDS stigma measure for children living with HIV and their families.' The author list is Rachel Vreeman, Michael Scanlon, Wanzhu Tu, James Slaven, Carole McAteer, Josephine Aluoch, Samuel Ayaya, and Winstone Nyandiko
Publication(s)	

Study Title	**Spatial scales of Plasmodium falciparum generations; implications for elimination**
Principal Investigator(s)	Andrew Obala, Moi University

Co-Investigator(s)	Wendy O'meara, Duke University
Working Group(s)	PHPC
Description	Malaria is a major public health problem, with an estimated 198 million cases occurring world-wide in 2013. Effective strategies to reduce malaria transmission and disease have been highly successful leading to a 40% reduction in malaria cases in sub-Saharan Africa since 2000. It has been observed that infections cluster geographically and such clustering becomes more pronounced as transmission declines. The science of identifying 'hotspots' of infection or foci of transmission is a growing area that promises to help target interventions more effectively. However, it has not been shown whether infected individuals in close physical proximity (i.e. in the same household) are jointly infected due to simply living in a risky place, or because an infected household member is a risk factor for nearby susceptible individuals. If the former, then targeting hotspots should focus on reducing environmental risk factors in the area around a hotpsot. If the latter, then interventions to identify and treat 'transmitters' will reduce transmission and reduce the incidence of new cases. Therefore, we need to understand the spatial scale of malaria transmission to predict the impact of community case detection and hotspot targeting. To shed light on this important issue, we propose two scientific objectives. First, we will measure the genetic relatedness of infections within the same household compared to the relatedness of infections at further distances. We will determine whether this relationship differs in fever 'hotspots' (geographic clusters of high fever incidence) and fever 'coldspots'. Parasite DNA from dried blood spots collected from a moderate endemic study area in western Kenya (approximately 15 km by 28 km encompassing more than 80 villages) will be sequenced at a moderately polymorphic gene using deep sequencing techniques. This will provide evidence for local, focal transmission if nearby infections are more closely related or will point to mixed transmission whereby infections only begin to differ as you reach the distance of mosquito flying ranges. Our second objective is to trap malaria mosquito vectors and identify infected mosquitoes. We will determine the source of the mosquito's infection by sequencing parasites in the mosquito salivary glands and comparing to parasite genotypes in humans. By doing so, we can find out whether infections are being transmitted at a household scale or transmission is 'well mixed' geographically and only limited by the range of the mosquito. If successful, this will be the first report of linking individual infections in mosquitoes to their human source. The ability to track infections from human to mosquito and back again would allow us to understand the dynamics and scale of transmission in a way that has not previously been possible. We expect to scale up this approach to larger populations in subsequent studies. These results will provide insight into the expected impact of interventions designed to target hotspots.
Site(s)	Ziwa Sub-District Hospital
Project Period	2/15/2017 - 1/31/2019
Funding Status	Funded - NIH
Direct Award (USD)	Not Reported

Update	As reported in the previous semiannual update, data and sample collection is ongoing. The Aim 2 field research team continues to visit enrolled households monthly to collect basic demographic and behavioural information including who slept in the home, how frequently bed nets were used, and to collect dried blood spot samples from each eligible member. On-demand malaria diagnostic testing is also provided to household members with suspected malaria illness. Six private medicine outlets continue to provide free antimalarials to patients with confirmed malaria illness. Weekly mosquito collection at each enrolled household is also ongoing and mosquitoes collected from household continue to be sorted by genus and archived for dissection to identify infection in the salivary glands and abdomen. Two shipments of mosquito and DBS samples were sent from Eldoret, Kenya to the Taylor Lab for processing in January and April 2018. Processing of Aim 1 DBS and mosquito samples is ongoing at the Taylor Lab at Duke University. All RDT-positive participants with samples collected to date have been identified and P. falciparum infection has been confirmed and typed using a species-specific real-time PCR assay. The study team has optimized and finalized the high-throughput parasite genotyping and multiplex sequencing protocols in the last reporting period. Currently, Taylor Lab PhD student, Kelsey Sumner, is in Eldoret from May-August to assist with the conduct of fieldwork.
Future Plans	Study households will be visited weekly for entomology collections and monthly for survey and DBS collections through December 2018. Our focus during the next project period will be to complete all Aim 2 mosquito and DBS processing and matching of parasite haplotypes in mosquito and human samples collected during spring and summer 2018. We will also conduct preliminary analyses and draft manuscripts of main outcomes in the coming year.
Publication(s)	

Study Title	**STARTING AT THE ROOTS: USING HUMAN-CENTERED DESIGN TO DEVELOP AN ADOLESCENT PREGNANCY PROGRAM IN ELDORET, KENYA**
Principal Investigator(s)	EDITH APONDI, Moi Teaching and Referral Hospital
Co-Investigator(s)	Heather Millar, University of Toronto
Working Group(s)	RHWG
Description	Our proposed project involves using a participatory design process (human centred design) to create an adolescent-friendly antenatal care clinic in line with Kenya's National Adolescent Sexual and Reproductive Health Policy. The organizations coming together are AMPATH and IDEA Couture from Toronto, Canada. We are proposing to improve adolescent pregnancy services in Uasin Gishu County with two objectives: Objective 1: Develop an adolescent pregnancy care intervention to improve maternal, newborn and child health care using a human-centered, participatory, iterative design process. Objective 2: Evaluate the impact of this adolescent pregnancy care program on uptake of services and pregnancy outcomes. By employing a human-centered

	design strategy, local participation in and ownership of the design outcome will enable a more effective and sustainable approach to the development of a care program for pregnant adolescents. This program will address current barriers to care utilization and outcomes as they relate to the experience of pregnancy at the patient and provider level. In doing so, this approach will lead to overall improvements in antenatal care attendance, facility delivery, maternal and neonatal outcomes, postnatal care attendance, exclusive breastfeeding, and family planning uptake.
Site(s)	Moi Teaching and Referral Hospital
Project Period	8/1/2018 - 7/31/2020
Funding Status	Funded - Sick Kids - Toronto
Direct Award (USD)	$20,000
Update	Proposal writing. Awaiting Ethics approval.
Future Plans	Awaiting Ethics Approval. We plan to have a stakeholders meeting. Phase 1: Develop a design team; design thinking training by a team from IDEA Couture. Phase 2: Conduct a qualitative needs assessment.
Publication(s)	

Study Title	**Strengthening Referral Networks for Management of Hypertension Across the Health System (STRENGTHS)**
Principal Investigator(s)	Constantine Akwanalo, Moi University
Co-Investigator(s)	Jemima Kamano, Moi University
Working Group(s)	CVMD
Description	Hypertension is a major risk factor for cardiovascular disease (CVD), and 80% of global mortality due to CVD occurs in low- and middle-income countries (LMICs). In LMICs, lack of coordination between different levels of the health system threatens the ability to provide the care necessary to control hypertension and prevent CVD-related morbidity. Strong referral networks have improved health outcomes for chronic disease in a variety of settings. Health information technology (HIT) and peer-based support are two strategies that have improved care coordination and clinical outcomes. However, their effectiveness in strengthening referral networks to improve blood pressure (BP) control and reduce CVD risk in low-resource settings is not known. The Academic Model Providing Access to Healthcare (AMPATH) partners with the Kenya Ministry of Health (MOH) to provide care for non-communicable chronic diseases (NCDs), including hypertension and CVD, at all levels of the health system. The Kenya MOH Health Sector Referral Strategy 2014-2018 calls for improving the referral system at every level of the

	health system. AMPATH has piloted both HIT and peer support for NCDs, and both strategies are feasible in this setting. However, the impact of integrating HIT and peer support to strengthen referral networks for hypertension control is not known. The objective of this proposal is to utilize the PRECEDE-PROCEED framework to conduct transdisciplinary, translational implementation research focused on strengthening referral networks for hypertension control. The central hypothesis is that HIT integrated with peer support will be effective and cost-effective in strengthening referral networks, improving BP control, and reducing CVD risk among patients with hypertension in western Kenya. We hypothesize that HIT and peer support will synergistically address barriers to hypertension control at the patient, provider and health system levels. We further hypothesize that changes in referral network characteristics may mediate the impact of the intervention on the primary outcome, and that baseline referral network characteristics may moderate the impact of the intervention. To test these hypotheses and achieve the overall objective, we propose the following specific aims: Aim 1: Conduct a baseline needs and contextual assessment for implementing and integrating HIT and peer support to strengthen referral networks for hypertension control, using a mixed-methods approach, including: observational process mapping and gap assessment; baseline referral network analysis; and qualitative methods to identify facilitators, barriers, contextual factors, and readiness for change. Sub-Aim 1.1: Use data from the baseline needs and contextual assessment to develop a contextually and culturally appropriate intervention to strengthen referral networks for hypertension control using a participatory, iterative design process. Conduct pilot acceptability and feasibility testing of the intervention. Aim 2: Evaluate the effectiveness of HIT and peer support for hypertension control by conducting a two-arm cluster randomized trial comparing: 1) usual care vs. 2) referral networks strengthened with an integrated HIT and peer support intervention. The primary outcome will be one-year change in systolic blood pressure (SBP) and a key secondary outcome will be CVD risk reduction. Sub-Aim 2.1: Conduct mediation analysis to evaluate the influence of changes in referral network characteristics on intervention outcomes, and a moderation analysis to evaluate the influence of baseline referral network characteristics on the effectiveness of the intervention. Sub-Aim 2.2: Conduct a process evaluation using the Saunders framework, evaluating key implementation measures related to fidelity, dose delivered, dose received, recruitment, reach, and context. Aim 3: Evaluate the incremental cost-effectiveness of the intervention, in terms of costs per unit decrease in SBP, per percent change in CVD risk score, and per disability-adjusted life year (DALY) saved. This research project will add to the existing knowledge base on innovative and scalable strategies for strengthening referral networks to improve control of NCDs in lower-MICs. If proven to be effective, it has the potential to be a scalable model for other low-resource settings globally.
Site(s)	Burnt Forest Sub-District HospitalKitale District HospitalMoi Teaching and Referral Hospital (MTRH)Mosoriot Rural Health Training CentreTurbo Health CentreWebuye District Hospital
Project Period	9/1/2017 - 5/31/2018
Funding Status	Funded - NIH - National Heart, Lung, and Blood Institute (NHLBI)

Direct Award (USD)	$268,469
Update	Administrative â€¢ Project start up meeting was held between investigators and Research and Self Sponsored Projects Office (RSPO). We have continued to have all-Investigator conference calls which are being held monthly thus the last Tuesday of the month and weekly calls which are held every Tuesday between available investigators and coordinator to facilitate project startup and with this we have had a positive feedback attained from participants. â€¢ We hired a Study coordinator who will be responsible for coordination of the project activities, three (3) research Assistants, Data Manager and one project driver to help facilitate the execution of project activities. â€¢ A consultant's engagement plan has been developed and in the process of being fully executed â€¢ Sub contracts have been executed for the respective institutions thus Sinai (Vedanthan)/IU & Purdue (Dick & Pastakia) /UT Austin (Mercer) â€¢ Developed Study's Procurement plan which was approved. â€¢ Procurement of various study equipment's and supplies have been made. This includes study vehicle to facilitate field work. â€¢ Have obtained our registration of trial in ClinicalTrials.gov. Identifier number is: NCT03543787 â€¢ Have conducted the training to our research team in preparation for our study activities where we featured Consenting process, qualitative and quantitative data collection, research ethics and process evaluation. â€¢Community entry to the Five counties that are covered by our study thus Bungoma County, Busia County, Uasin Gishu county, Nandi county and Trans Nzoia county. We have also finalized our community entry in the three counties thus Busia, Trans Nzoia and Nandi counties. â€¢ Submitted our Protocol to NACOSTI for approval. Development of Protocols, forms and Manuals â€¢ The project protocol and participant consent forms were approved by Moi/MTRH Institution Research and Ethics Committee (IREC). â€¢ All translated informed consents forms both in English and Kiswahili to be used during the trial thus process observations consents both for providers, referral network analysis, Key informant interviews, Baraza consents and Focused Group Discussions have been submitted to Moi/MTRH IREC and IRB and got approval. This also included guides to be used for the Key informant interviews, Key Informant interviews, semi structured interviews and community gatherings (mabaraza). â€¢ Submitted amendments to have our research personnel and visiting students from Mount Sinai, University of San Francisco and University of North Carolina Gillings School of Global Public Health, Chapel Hill, NC attached to the study added to the study through IREC and IRB and got approval. â€¢ Submission was made for the stakeholder's engagement paper. The STRENGTHS methods paper is in final stages of preparation.
Future Plans	â€¢ Complete community entry for Uasin Gishu county and Bungoma county. â€¢ Review our protocol in regards to the statistical comments received from NIH in preparation of our aim one activities and submit. â€¢ Finalize on the Study's Manual of operations. â€¢ Piloting of tools to be used for aim one activities; observation process mapping, Referral network analysis, Focus Group discussion, Mabaraza and Key Informant Interviews to access feasibility and usability of the tools before we roll out our aim one activities. â€¢ Transcription of the collected data. â€¢ Hire of Senior programmer who will be responsible for the development of our Health Information Technology Tool to be used for STRENGTHs study. â€¢ Have the team to participate in the Human centered design approach for social innovation to help in preparation of the

	design process. â€¢ Send two representatives to attend the TREIN/Hy-TREC Bi-Annual Awardee workshop and the Nepalese National Research Symposium. â€¢ To fully execute our consultant engagement plan. â€¢ Continue with the development of our papers and publications STRENGTHS Methods paper,Referral Networks Systematic review and Stakeholder engagement paper â€¢ Conduct aim one activities; 3 Mabarazas, 6 Focus Group discussion and 12 Key Informant
Publication(s)	

Study Title	**Study of Newly Diagnosed Kaposi's Sarcoma**
Principal Investigator(s)	Dr. Naftali Busakhala, Moi University
Co-Investigator(s)	
Working Group(s)	ORWG
Description	To achieve our scientific objectives, we will identify a community-based sample of HIV-infected adults with newly diagnosed KS. We propose to use a rapid case ascertainment (RCA) approach to quickly evaluate patients suspected to have KS. RCA refers to the swift and thorough evaluation of a patient with a new disease diagnosis. We note that RCA does not refer to a new technique for making diagnoses of KS, but it instead refers to the process of rapidly assessing status and extent of disease once the diagnosis has been made. It is most useful for diseases that are potentially rapidly progressive and potentially fatal. It involves the establishment of a system whereby when a diagnosis is made, a central team is made aware, and the affected patient is rapidly evaluated. It has been mainly used in the cancer field to facilitate epidemiologic research for establishing population-level incidence and stage of cancer at time of diagnosis.
Site(s)	Angurai Health Centre
Project Period	9/1/2015 - 8/31/2019
Funding Status	Funded - NIH
Direct Award (USD)	$750,186
Update	As end of July 2018, the Study has managed to see 250 encounters of which 130 Cases have been enrolled of which 98 are active while 32 are deceased. All of the Deaths have been documented. We have so far done 227 total follow-ups. The study has also enrolled 14 Controls matched to 2 Cases.
Future Plans	The study will continue to enroll cases and controls over the next several months. Follow-up of cases will also continue as stipulated in the protocol.

Publication(s)	
Study Title	**The role of mPHRs in Western Kenya**
Principal Investigator(s)	Martin Were, Vanderbilt University Medical Center
Co-Investigator(s)	Jessica Ruff, Vanderbilt University Medical Center
Working Group(s)	CVMD
Description	This study aims to identify patterns of cellphone use in Kenya and evaluate the role of mobile personal health records (mPHR) for patients with chronic diseases in LMICs. Working with key stakeholders, we will use a user-centered approach to inform the development of the mPHR application. The mPHR will be pilot-tested with patients who have hypertension and HIV in Kenya, and its acceptability and uptake will be evaluated. This work will be conducted in close collaboration with the local community, the Ministry of Health, the AMPATH care program, and the Institute of Biomedical Informatics at Moi University in Kenya. The specific aims of this study are as follows. Aim 1: Identify current smartphone usage patterns and barriers to its use for mPHR for chronic disease care in LMICs. Aim 2: Develop an acceptable model for implementing mPHR for chronic disease care in LMICs. Aim 3: Develop a modular mPHR application to support patients with chronic diseases in LMICs. Aim 4: Evaluate usability and feasibility of the mPHR solution among patients with hypertension/stroke or HIV/AIDS in Western Kenya.
Site(s)	Huruma Sub-District Hospital, Moi Teaching and Referral Hospital (MTRH)Turbo Health Centre
Project Period	9/1/2017 - 8/31/2019
Funding Status	Funded - NIH - National Institute of Neurological Disorders and Stroke (NINDS)
Direct Award (USD)	$13,000
Update	Over the last six months, we were able to accomplish our goals of obtaining IREC approval from Moi University and IRB approval from Vanderbilt University. We hired and trained 3 research assistants and nearly completed participant enrollment and data collection for Aims 1 and 2. We faced some difficulty enrolling patients for focus groups due to lower than expected smartphone penetration but switched to in-depth interviews, which has improved our enrollment rates. We have not completed any preliminary analysis of the data.
Future Plans	Over the next six months, we will complete data collection for Aims 1 and 2, complete data analysis, and apply for grant funding to complete Aims 3 and 4. We also anticipate the submission of at least one manuscript from this data.

Publication(s)	
Study Title	**The Role of PD-1 Pathway and Tissue Microenvironment in HIV-Kaposi Sarcoma and Endemic Kaposi Sarcoma Cohort in Western Kenya**
Principal Investigator(s)	Patrick Loehrer, Indiana University
Co-Investigator(s)	Asirwa Chite, Indiana University
Working Group(s)	ORWG
Description	Even before the HIV pandemic, equatorial Africa had among of the highest KS incidences in the world. In this area, 'endemic KS' (the term given to the HIV-unassociated form of KS) was manifested primarily as indolent localized disease in men and represented 4 to 10% of adult cancers. Although sub-Saharan Africa was already a hotbed for KS, the clinical manifestations and impact of the disease dramatically changed with the onset of the HIV epidemic in the 1980's when the incidence of KS and other HIV associated malignancies exploded. The advent of anti-retroviral therapy (ART) improved prognosis of HIV-associated KS, but survival remains unacceptably poor in low to middle income countries(LMIC). A recent Cochrane review on late stage KS showed that in 6 studies in which chemotherapy was added to HAART, no survival benefit was seen above that of ART therapy alone nor amongst the different types of chemotherapy. Endemic KS, while less likely to progress to visceral disease, leaves patients with profound functional disabilities often requiring treatment. Because this population is HIV negative, ART is not used. Research that leads to a better understanding of the biology of KS must be explored to provide alternative therapies to ART and standard chemotherapy. Based upon preliminary data from UCSF which supports the role of PD1 pathway and tissue micro-environment in KS, we propose to conduct a prospective analysis on two patient cohorts. Cohort 1: KS in HIV-infected subjects who have failed at least one KS-directed chemotherapeutic intervention; and Cohort 2: KS in HIV-negative patients (i.e. endemic KS) who have failed at least one KS-directed chemotherapeutic intervention.
Site(s)	
Project Period	10/1/2015 - 9/30/2018
Funding Status	Funded - NIH - National Cancer Institute (NCI)
Direct Award (USD)	$158,406
Update	The study is open for enrollment; we have managed to enroll 32 study participants. We have been able to successfully ship KS biopsy samples to Infectious Disease Institute Labs in Kampala, Uganda for analysis of the PDL1; all the samples shipped have been analyzed.

Future Plans	We expect to complete the enrollment of the remaining study participants, complete data entry and cleaning in the next six months in readiness for data analysis.
Publication(s)	

Study Title	**UNDERSTANDING BARRIERS AND FACILITATORS PREDICTING LINKAGE TO GROUP-BASED DIABETES AND HYPERTENSION CARE IN RURAL WESTERN KENYA: A MIXED-METHODS STUDY**
Principal Investigator(s)	Dan (Tina) Tran, Purdue University
Co-Investigator(s)	Constantine Akwanalo, Moi Teaching and Referral Hospital
Working Group(s)	CVMD
Description	1. Aim 1: Identify patients who screen positive for diabetes and/or hypertension but do not link to group- based care 2. Aim 2: Evaluate characteristics predicting linkage to group-based care 3. Aim 3: Explore barriers and facilitators influencing linkage to group-based care Our study has completed recruitment (n=105). We have also completed aim 1 of the study. We are in the process of analyzing our data to achieve aim 2 (predictors for linkage to group-based care). Aim 3 activities are set to take place in August 2018. The study will complete by the end of August 2018.
Site(s)	Webuye District Hospital,Milo Community, Milo Health Center
Project Period	7/1/2017 - 8/31/2018
Funding Status	Funded - NIH - National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
Direct Award (USD)	$10,000
Update	1. Aim 1: Identify patients who screen positive for diabetes and/or hypertension but do not link to group- based care 2. Aim 2: Evaluate characteristics predicting linkage to group-based care In the last 6 months, our study has completed recruitment (n=105). We have also completed aim 1 of the study. We are in the process of analyzing our data to achieve aim 2 (predictors for linkage to group-based care).
Future Plans	3. Aim 3: Explore barriers and facilitators influencing linkage to group-based care We aim to complete activities to support Aim 3 in the next one month (August 2018). The study will complete by the end of August 2018.
Publication(s)	

Study Title	**Using Narrative Films to Combat HIV Stigma: Perspectives from HIV-Infected Adolescents and their Caregivers**
Principal Investigator(s)	Rachel Vreeman, Indiana University
Co-Investigator(s)	Winstone Nyandiko, Moi University
Working Group(s)	PRWG
Description	The objective of this pilot study is to assess the cultural acceptability, credibility, and quality of narrative films created to illuminate the experiences of HIV-infected adolescents coping with HIV-related stigma, as well as to identify ideal viewing audiences and potential settings in which to show these films. The long-term goal of this study is to better understand how the HADITHI films can be implemented within communities in western Kenya in a culturally-appropriate and sensitive manner. The specific aims are: Aim 1: To explore the perspectives of HIV-infected adolescents and their caregivers on the cultural acceptability, quality, credibility, potential audiences, and potential settings for showing the four HADITHI narrative films addressing adolescents' experiences with HIV stigma in Kenya. Aim 2: To describe the impact of the HADITHI films on the attitudes, beliefs, and knowledge about HIV and HIV-related stigma held by HIV-infected adolescents and their caregivers. Aim 3: To evaluate whether viewing the HADITHI films alter experienced, perceived, or internalized stigma reported by HIV-infected adolescents and their caregivers.
Site(s)	Moi Teaching and Referral Hospital
Project Period	4/1/2017 - 4/30/2018
Funding Status	-
Direct Award (USD)	
Update	Over the last six months, transcription/translation of the focus group discussions, quantitative data entry into the REDCap database, and cross-checking for preparation of data analysis has been completed. Analysis for both quantitative and qualitative data has commenced. In preliminary analyses of the quantitative data, looking at the results with all the participants combined, participants perform significantly worse on the Genberg Discrimination questions immediately after watching the films. This likely indicates that they more strongly recognize and identify the extent to which persons living with HIV in the community are experiencing stigma after being sensitized by the films. However, they show significant improvement from baseline in Discrimination, Equity, and Total Genberg scores at 3 month follow-up. When you look at adolescents and caregivers separately, it seems that the improvements at follow-up are primarily attributable to improvements in caregivers' scores. The mean differences in scores for adolescents at

	follow-up are smaller in magnitude and not statistically different. Given that caregivers' mean scores were lower at baseline, though, caregivers had a greater potential for improvement than adolescents.
Future Plans	Within the next six months, we plan to complete qualitative and quantitative data analysis. The analysis will be compiled into an abstract for submission to the Pediatric Academic Society annual meeting in 2018. A manuscript describing the creation of the films is also underway. In addition, the preliminary results from this study are being used to shape the implementation of our new R21 grant which will use the stigma films as part of a teacher training intervention to modify teachers' knowledge, attitudes, and beliefs about HIV through training sessions with primary and secondary school teachers in Uasin Gishu county.
Publication(s)	

Study Title	**Validating an Integrated Community Based Strategy of Peer Support in Pregnancy and Infancy**
Principal Investigator(s)	Julia Songok, Moi University
Co-Investigator(s)	Astrid Christoffersen-Deb, University of Toronto
Working Group(s)	PHPC, RHWG
Description	This project seeks to address the inequities that drive maternal and infant mortality in sub-Saharan Africa by validating an intervention that builds community empowerment in MNCH and facilitates processes of accountability using CHV-led women's groups (Chamas). Chama cha MamaToto (chamas) is a peer-support model that groups together pregnant women in the same community. Central to our approach is the integration of health, social and financial literacy education with a savings/loans program. Chamas are designed to improve MNCH by generating positive peer support for women to advocate for themselves and account for the care they receive. We have combined best practices from women's health groups and microfinance programs to design an integrated service delivery platform that is low-cost, self-sustaining and self-managed. Its a randomized cluster trial to be implemented in 4 sub counties in Trans Nzoia county where a cluster is a community unit.
Site(s)	Cherangany Health Centre, Saboti, Kiminini, Cherangani and Kwanza Sub counties
Project Period	10/1/2017 - 10/1/2018
Funding Status	Funded - Grand Challenges Canada, ABBVIE
Direct Award (USD)	$197,510

Update	We have faced significant hurdles with our timeline on this grant due to a year of repetitive strikes during the 2017 election year. As a result, we are running one year behind schedule and have had a no cost extension granted through October 1, 2019. Since the election year has passed, we are now rapidly meeting our milestones. Project activities have been fast paced in 2018. We began recruitment in Trans Nzoia for our cluster RCT on November 27, 2017. We had anticipated completing recruitment by the end of December and beginning project activities by January 2019. This was not possible due to the slow uptake of services by pregnant women and the women presenting for ANC clinic late into their pregnancy. As a result, we extended recruitment by 3.5 months. To ensure that this did not delay us further, we conducted the tracing of women for Chamas concurrently with recruitment. We also organised for a community sweep in the four sub-counties where the program is being implemented in order to encourage women to seek early antenatal care. This improved the number of women presenting to clinic where registration was to take place. The community sweep involved home visits to pregnant women by the CHVs who referred the women to the health facility. We had a target sample size of 600 women in the intervention sites and 550 women in the control sites, which has been achieved. Since recruitment lasted longer than planned, some women no longer met our inclusion criteria. We conducted a 3 day refresher training of 74 CHVs on consenting, group dynamics and leadership, facilitation of Chamas and data management for health, social and financial components of the program in January 2018 due to our delay in starting. Chama sessions began in March 2018, with some starting later than others due to challenges in: tracing women recruited from the facilities and low turnout for some of the Chamas. Currently, all the 42 groups have started their meetings and have had 6-8 meetings in total. Our target was for the groups to have met a minimum of 10 times before they graduate into cycle 2. Our team in Trans Nzoia and officials from NHIF offices have formed a strong coalition. We are working to ensure all our mothers in the chama program obtain this coverage. We have been able to achieve a lot but this has come with some challenges which include, prolonged recruitment period which made some women fall out of our inclusion criteria for gestational age, tracing of women has also been a challenge considering most of the phone numbers given were out of service or belonged to other people who sometimes were not willing to link us to the mothers, some of the women gave either wrong or inaccurate directions. Low attendance in Chama sessions because the culture in this area does not allow women to leave their homes during the first 1-2 months after delivery. The heavy rains have also affected attendance. Considering that access to some of our Chamas are dirt roads, mobility is greatly diminished.
Future Plans	Chama sessions will continue meeting along with our biweekly supervisory visits and monthly supervisory visits. Our Chamas run through the calendar year and as a result, we will complete the first cycle in December 2018 and begin our end line assessment in early 2019. Currently data entry has been completed and the team is finalizing data cleaning to enable analysis of baseline data collected. Monthly CHV/SCHMT feedback/review meetings will continue being held. In addition, we will conduct home visits in the Cherangany, Kiminini and Saboti sub-counties to invite women who had delivered back to Chamas. We also plan to meet with the Community Health Education Workers of the 4 sub counties. We will have a 3-day training for elected GISHE officials to help them have a better understanding of the management of the financial management and benefits of the Chamas.

Publication(s)	
Study Title	**VINCRISTINE OPTIMIZATION IN KENYAN CHILDREN WITH CANCER**
Principal Investigator(s)	Jodi Skiles, Indiana University - Purdue University in Indianapolis (IUPUI)
Co-Investigator(s)	Festus Njuguna, Moi University
Working Group(s)	ORWG, PRWG
Description	In resource-limited settings, access to chemotherapeutic agents is confined to a few therapies. Vincristine (VCR) is a mainstay in such settings due to its low cost and lack of myelosuppression, however, little is known regarding its disposition and true optimal dosing, especially in the pediatric population. Negative clinical outcomes, such as serious side effects due to drug overdosing or lack of efficacy due to sub-therapeutic dosing, may result. VCR is associated with highly variable cumulative dose-dependent peripheral neuropathy (VIPN). While pediatric oncology patients in the U.S. who receive VCR experience significant VIPN and excellent disease outcomes, Kenyan children with cancer who receive VCR experience little to no VIPN, highlighting the opportunity for optimization of VCR in this population. While there are clearly multiple factors that contribute to poor disease outcomes in Kenya, suboptimal dosing of VCR is the piece we aim to address in this study. The biological basis for the minimal VIPN we have observed in Kenyan children is uncertain but includes such things as genetic differences in VCR pharmacologic pathways as well as genetic variability in susceptibility to neuropathy. This gap in knowledge provides a clear opportunity to optimize use of this medication in Kenyan children with cancer and evaluate genetic associations with VIPN in order to personalize this medication for individual children once VCR dosing is augmented. Preliminary data has shown that Kenyan children with cancer (n=100) experience minimal VIPN. Despite the negligible neuropathy observed, subclinical VIPN can be detected using a very detailed, non-invasive assessment tool that we developed for detecting even very minor toxicity. Utilization of this tool in Kenyan children allowed us to identify an association between VIPN severity, CYP3A5 genetic polymorphisms, and an individual's ability to metabolize VCR, such that children with an allelic variant of CYP3A5 that results in a high VCR metabolizer phenotype experience less VIPN. Variability in VCR response and toxicity may be particularly significant within Africa, where human genetic variability is greatest, and where ~90% of Kenyans patients were fast VCR metabolizers. In one recent study, pharmacokinetic (PK) variability was linked to overall survival in children with acute lymphoblastic leukemia (ALL), such that children with faster VCR clearance had a greater chance of relapse. If VCR disposition, response, and neurotoxicity are linked, it may be possible to optimize dosing based on easily obtained knowledge of genetic polymorphisms responsible for disposition and subsequent neurotoxicity variability. This research is of particular importance in Africa, where VCR is one of few available anticancer drugs and is used in the treatment of over half of all cancer patients. Furthermore, given that most Kenyan children are CYP3A5 high expressers and thus VCR fast metabolizers, they may tolerate and benefit from higher doses of vincristine than are conventionally used in the U.S. and Africa. This

	proposed prospective study will be conducted in two parts, which will both enroll pediatric patients age 1-18 years with newly diagnosed acute lymphoblastic leukemia or nephroblastoma. Part I will be a VCR dose escalation phase (in combination with routine multi-agent chemotherapy) to determine the maximum tolerated dose of VCR in a population of Kenyan children with cancer. Part II will be utilize the maximum tolerated dose of vincristine determined from Part I in place of the standard dose of VCR in combination with routine multi-agent chemotherapeutic protocols. DNA and pharmacokinetic samples will be collected on all subjects to allow determination of biomarkers of development of VIPN. Subjects will be monitored closely for development of toxicity with laboratory assessments as well as detailed neuropathy assessments. The specific aims (SA) for this proposal are as follows: SA1: To determine the maximum tolerated dose (MTD) of VCR administered in conjunction with conventional chemotherapy in cohorts of Kenyan children with ALL or Wilms tumor receiving VCR as part of their anti-cancer treatment. SA2: To validate our pilot study findings and to further evaluate the association between common or functional variants in genes in the vinca alkaloid pharmacologic pathway and across the human genome with VCR PK, VIPN, and disease response in the same populations as SA1. SA3: To further develop our pharmacologic prediction model of VIPN describing associations between pharmacogenetic, pharmacokinetic, and clinical biomarkers and carefully characterized VIPN in the same population of patients as SA1. SA4: To evaluate the validity and reliability of several chemotherapy-induced peripheral neuropathy (CIPN) measurement approaches when used to quantify neuropathy and associated neuropathic pain in Kenyan children receiving vincristine.
Site(s)	
Project Period	2/3/2014 - 1/31/2018
Funding Status	Funded - NIH- National Cancer Institute (NCI), NIH – Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
Direct Award (USD)	$103,254
Update	Recruitment to this study began in February 2014. In September 2015, we observed our first dose-limiting toxicity at Dose Level 3 manifesting in the form of cranial nerve neuropathy presenting as diplopia. An additional 3 subjects were enrolled at Dose Level 3 in accordance with the protocol. Unfortunately, it was noted that patients in Dose level 3 had a statistically significantly higher rate of death compared to historical controls. While it is not clear whether the cause of the increased rate of death is related to the VCR dose escalation, out of concern for patient safety, enrollment to Dose Level 3 was suspended and a prompt report was submitted to the IRB and IREC. All patients who were previously receiving dose level 3 were dose-reduced to Dose Level 2. In accordance with the protocol, an additional 3 subjects were enrolled on Dose level 2 to ultimately define Dose level 2 as our MTD. No further dose-limiting toxicities have been observed since that time. The last enrolled subject completed therapy in December 2017. Biospecimens have arrived in the US and are currently being analyzed.

Future Plans	Hopeful submission of manuscript for publication
Publication(s)	

Study Title	**Viral Suppression among HIV-infected Children and Caregivers in Western Kenya**
Principal Investigator(s)	John Humphrey, Indiana University
Co-Investigator(s)	Edith Apondi, Moi University
Working Group(s)	PRWG
Description	The suppression of HIV viral load through administration of antiretroviral therapy is a key objective for all HIV-infected patients. However, optimal approaches to family-centered HIV management are not well known, particularly when children and their caregivers are both in need of HIV treatment. In order to better understand viral suppression among HIV-infected children who also have HIV-infected parents or caregivers, we will conduct a retrospective review of all HIV-infected child-caregiver dyads receiving HIV care at the AMPATH program in western Kenya from January 2015 to December 2016. We will achieve the following specific aims: (1) Characterize viral suppression in HIV-infected children and in their HIV-infected caregivers; (2) Estimate the association between viral non-suppression in children and their HIV-infected caregivers; (3) Identify factors associated with viral non-suppression among HIV-infected child-caregiver dyads. The knowledge gained from this study will inform our understanding of the management of HIV in HIV-affected families. This may lead to better strategies to improve the delivery and monitoring of antiretroviral therapy in these families in the future.
Site(s)	Angurai Health Centre
Project Period	1/1/2017 - 12/31/2017
Funding Status	Funded - Indiana University - Center for AIDS Research
Direct Award (USD)	$12,500
Update	Over the last six months, we have completed the analysis and presented the results at CROI 2018 in Boston, MA. The analysis is challenging, and we are currently making some modifications to the approach and repeating the analysis. The manuscript is largely finished and is awaiting this final step before submission. In brief, we found that HIV-infected children with unsuppressed, HIV-infected caregivers were nearly three times more likely to be virally unsuppressed, compared to children with suppressed caregivers.

Future Plans	Submit the manuscript to a peer-reviewed journal.
Publication(s)	

Study Title	**Virologic Treatment Failure and Drug Resistance in HIV-Infected Kenyan Children (RESPECT) study.**
Principal Investigator(s)	Rachel Vreeman, Indiana University
Co-Investigator(s)	Winstone Nyandiko, Moi University
Working Group(s)	PRWG
Description	This study will involve retrospective and prospective analysis of blood sampling from patients enrolled in a previous NIH-funded (Vreeman, 1K23MH087225) randomized controlled trial titled, 'Evaluation of a Comprehensive Strategy to Measure Pediatric Adherence to Antiretroviral Therapy' or the 'CAMP study.' That was conducted between May 2010 and October 2013. This particular cohort provides an unprecedented and timely opportunity to characterize longitudinal processes that lead to treatment failure and drug resistance development among HIV-infected children in a sub-Saharan African setting, and its translation into evidence-based interventions. The specific aims of this study are: Specific Aim 1: Determine prevalence of viral failure and examine resistance mutations among a retrospective study cohort of 685 prenatally HIV-infected Kenyan children on 1st-line ART. Specific Aim 2: Investigate associations between specific adherence patterns, ART drug levels and other demographic and clinical factors, with viral failure and drug resistance. Specific Aim 3: Study long-term immunologic, virologic and drug resistance outcomes and their associations in prospectively re-enrolled study participants Specific Aim 4: Enhance analyses of viral failure, drug resistance accumulation and associated demographic and clinical factors by examining the longitudinal banked samples available for a subset of the study cohort (n=327). Specific Aim 5: Develop a data-driven intervention algorithm to identify children at risk for viral failure and resistance.
Site(s)	Matayos Health Centre, Mois Bridge Health Centre, Uasin Gishu District Hospital
Project Period	8/2/2016 - 7/31/2020
Funding Status	Funded - NIH
Direct Award (USD)	$613,511
Update	We have been able to complete significant drug resistance testing (DRT) of the stored samples of the cohort of children from the prior CAMP studies who have extensive adherence data. In DRT of the 207 children were enrolled in 'CAMP Phase Two', caregiver report, MEMS, and drug levels revealed significant adherence issues. While only 21% of caregivers reported their children missing doses in the past 30 days, 45% were <90%

adherent on MEMS, 31% had treatment interruptions, and 33% experienced treatment failure. There was high viral resistance in this cohort, with 81% having intermediate-high resistance to >1 drug on genotyping and 75% having high resistance to potential second-line ART (including tenofovir, etravirine, and relpivirine.) We have continued with participant recruitment and follow up. We have enrolled a total of 504 for the prospective assessments of participants that include blood draws for viral load levels, CD4 counts, drug levels and resistance testing. A total of 155 specimens have been shipped to the Dr. Rami Kantor's laboratory at Brown University for resistance testing. Three-month follow-up with MEMS adherence monitoring is still ongoing for a subset of about 28% of the enrolled participants, with 119 out of 130 participants enrolled having completed this additional monitoring. We have done 7 verbal autopsies. Data entry and verification in the REDCap database has been ongoing with weekly data quality checks by the data management team. Analyses of the viral suppression and drug resistance among the cohort in the prospective evaluation is ongoing, and the Kantor lab has continued to process and report these results. For the perinatally-infected children at AMPATH enrolled in RESPECT since April 2016, we prepared new hemaspots and dried blood spots (DBS), and those viremic were shipped in real-time and room temperature to the US for genotyping. Hemaspots and DBS were prepared for 308 participants, 52% female, median 14 years (IQR 11-16), median CD4%-30 (IQR 22-37), on antiretrovirals for median 8.4 years (IQR 7.1-10.2), current 64% NNRTI- and 36% PI-based. Viral failure was detected in 20%, associated with lower CD4% (20 vs. 32%, p<0,001). Of 63 with VL>1,000, Hemaspots and DBS from 49 participants (median VL 11,827 copies/mL; IQR 2,236-42,316) were shipped in median 7 days since collection (IQR 3-13), received in median additional 5 days (IQR 4-5); and extracted in median additional 2 days (IQR 0-66); total collection-to-extraction median 23 days (IQR 13-26). Genotypes were available for 29/49 children; 14 Hemaspots-lowest VL 7,500; 15 DBS-lowest VL 1,300; 38% female, median 15 years (IQR 13-16), median CD4%-17 (IQR 13-21), on antiretrovirals for median 8.2 years (IQR 6.6-10.1), current 59% NNRTI- and 41% PI-based. Overall genotype success was associated with higher VL (median 23,013 vs. 2,169 copies/mL, p<0.001). Hemaspot genotype success was associated with lower collection-to-extraction time (p=0.02). HIV-1 subtypes included A (66%), C (10%), D (17%), AD (3%) and AC (3%). Sequence quality was good with no hypermutation. RT resistance mutations were present in 90%; 90%-NNRTIs, median 2/patient, most common Y181C (41%) and K103N (38%); 72%-NRTIs, median 2/patient, most common M184V (59%) and L74V (21%); 72%-both classes, median 4/patient (IQR 3-6). None had major PI mutations. Intermediate-high predicted resistance to antiretrovirals with no current exposure included 76%-rilpivirine, 69%-etravirine, 16%-zidovudine and 10%-tenofovir. In one participant with both Hemaspot and DBS sequences, concordance was 98%. In summary, our cohort of Kenyan children and adolescents has high treatment failure and those who fail have extensive resistance. Real-time low-cost analyte genotyping, including the novel Hemaspot that avoids separate drying, is feasible within ~4-weeks, and may increase access to individualized resistance testing. Manuscripts, abstracts, presentations, resulted from this study in the last 6 months: An abstract with preliminary analyses from resistance results and their correlation with adherence and drug levels was submitted and accepted for a poster presentation at the AIDS 2018 meeting in Amsterdam in July, 2018. The abstract was titled, 'Characterizing adherence and drug level effects on viral outcomes in HIV-infected Kenyan children.' The author list is: Rachel Vreeman, Winstone Nyandiko, Allison DeLong, Mia Coetzer, Josephine Okoyo, Carole McAteer, Edwin Sang,

	Anthony Ngeresa, Samuel Ayaya, Joe Hogan, and Rami Kantor. An abstract entitled 'Extensive Drug Resistance in Perinatally-infected Western Kenya Children by Real-Time Testing of Hemaspots and Dried Blood Spots' has been submitted to the International Workshop on HIV Drug Resistance in South Africa. The author list is: W Nyandiko, R Vreeman, AK DeLong, A Manne, M Coetzer, A Ngeresa, E Sang, C McAteer, J Aluoch, E Jepkemboi, M Orido, C Ashimosi, F Sang, S Ayaya, JW Hogan, and R Kantor for the RESPECT (Resistance in a Pediatric Cohort) Study.
Future Plans	We plan to complete participants' enrollment, administration of the verbal autopsy forms to assess participants found to have died since the original study enrollment and follow-up to evaluate the participants' immunologic, virologic and drug resistance outcomes. We plan to complete data entry and cross-checking in the REDCap database, as well as to complete determination of current viral load and CD4 count levels and send the remaining blood samples for all participants to Brown University for phenotyping and resistance testing.
Publication(s)	

Appendix A: Bibliography

The following bibliography includes AMPATH research publications that were published between January 1, and June 30, 2018. A complete bibliography of AMPATH research publications published since 1989 along with full text articles is available online through the AMPATH Research Member Access Portal,

1. Seth, D., C. Thomas, K. Chelidze, A. Chang, M. Nolen, L. Watson, T. Maurer, C. Keung, J. Opondo, S. Kiprono, and E. Freeman, *339 Interdisciplinary dermatologic and wound care needs assessment in Western Kenya.* Journal of Investigative Dermatology, 2018. **138**(5, Supplement): p. S58.
2. Duffy, C., J. Moore, S. Saleem, A. Tshefu, C. Bose, E. Chomba, W. Carlo, A. Garces, N. Krebs, M. Hambidge, S. Goudar, R. Dernam, A. Patel, P. Hibberd, F. Esamai, E. Liechty, M. Koso-Thomas, M. Miodovnik, D. Wallace, E. McClure, and R. Goldenberg, *937: Mode of delivery for malpresentation and maternal outcomes in low- and middle-income countries.* American Journal of Obstetrics and Gynecology, 2018. **218**(1, Supplement): p. S554-S555.
3. Desmonde, S., F. Tanser, R. Vreeman, E. Takassi, A. Edmonds, P. Lumbiganon, J. Pinto, K. Malateste, C. McGowan, A. Kariminia, M. Yotebieng, F. Dicko, C. Yiannoutsos, M. Mubiana-Mbewe, K. Wools-Kaloustian, M.-A. Davies, V. Leroy, and A.P.W.G. for the International Epidemiology Databases to Evaluate, *Access to antiretroviral therapy in HIV-infected children aged 0–19 years in the International Epidemiology Databases to Evaluate AIDS (IeDEA) Global Cohort Consortium, 2004–2015: A prospective cohort study.* PLOS Medicine, 2018. **15**(5): p. e1002565.
4. Park, P.H. and S.D. Pastakia, *Access to Hemoglobin A1c in Rural Africa: A Difficult Reality with Severe Consequences.* Journal of Diabetes Research, 2018. **2018**: p. 5.
5. Brown, D.R., T. Maina, P. Tonui, J.M. Ong'echa, A. Ermel, K. Muthoka, S. Kiptoo, Y. Tong, Y. Wong, A. Moormann, A. Mwangi, J. Hogan, P.J. Loehrer, and E. Omenge, *AMPATH Oncology: Baseline HPV detection in Kenyan women enrolled in a longitudinal study of modifiable factors predicting cervical dysplasia.* Journal of Clinical Oncology, 2018. **36**(15_suppl): p. 5533-5533.
6. Maung, T.M., T. Oo, K.T. Wai, T. Hlaing, P. Owiti, B. Kumar, H.D. Shewade, R. Zachariah, and A. Thi, *Assessment of household ownership of bed nets in areas with and without artemisinin resistance containment measures in Myanmar.* Infectious Diseases of Poverty, 2018. **7**(1): p. 19.
7. Pastakia, S.D., D.N. Tran, I. Manji, C. Wells, K. Kinderknecht, and R. Ferris, *Building reliable supply chains for noncommunicable disease commodities: lessons learned from HIV and evidence needs.* Aids, 2018. **32 Suppl 1**: p. S55-s61.
8. Loehrer, P.J., B. Rosen, E.O. Orang'o, and J.R. Gralow, *Capacity building in sub-Saharan Africa: models of care.* The Lancet Global Health, 2018. **6**: p. S17-S18.
9. Embleton, L., D. Ayuku, D. Makori, A. Kamanda, and P. Braitstein, *Causes of death among street-connected children and youth in Eldoret, Kenya.* BMC International Health and Human Rights, 2018. **18**(1): p. 19.
10. V, N., J. Baliddawa, B. Koech, J. Karfakis, and N. Nyagoha, *"Childbirth is not a sickness; a woman should struggle to give birth": exploring continuing popularity of home births in western Kenya.* African journal of reproductive health, 2018. **22**(1): p. 85-93.
11. Skiles, J.L., C. Chiang, C.H. Li, S. Martin, E.L. Smith, G. Olbara, D.R. Jones, T.A. Vik, S. Mostert, F. Abbink, G.J. Kaspers, L. Li, F. Njuguna, T.J. Sajdyk, and J.L. Renbarger, *CYP3A5 genotype and its impact on vincristine pharmacokinetics and development of neuropathy in Kenyan children with cancer.* Pediatr Blood Cancer, 2018. **65**(3).
12. Green, E.P., H. Tuli, E. Kwobah, D. Menya, I. Chesire, and C. Schmidt, *Developing and validating a perinatal depression screening tool in Kenya blending Western criteria with local idioms: A mixed methods study.* Journal of Affective Disorders, 2018. **228**: p. 49-59.
13. Zuercher, K., M. Ballif, L. Fenner, S. Borrell, P.M. Keller, J. Gnokoro, O. Marcy, M. Yotebieng, L. Diero, E.J. Carter, N. Rockwood, R.J. Wilkinson, H. Cox, N. Ezati, A.l.G. Abimiku, J. Collantes, A. Avihingsanon, K. Kawkitinarong, M. Reinhard, R. Hoemke, R. Huebner, S. Gagneux, E.C. Boettger, and M. Egger, *Drug susceptibility testing and mortality in patients treated for tuberculosis in high-burden countries.* bioRxiv, 2018.
14. The Collaborative Initiative for Paediatric, H.I.V.E., C. Research Global Cohort, A.L. Slogrove, M. Schomaker, M.-A.

Davies, P. Williams, S. Balkan, J. Ben-Farhat, N. Calles, K. Chokephaibulkit, C. Duff, T.F. Eboua, A. Kekitiinwa-Rukyalekere, N. Maxwell, J. Pinto, G. Seage, III, C.A. Teasdale, S. Wanless, J. Warszawski, K. Wools-Kaloustian, M. Yotebieng, V. Timmerman, I.J. Collins, R. Goodall, C. Smith, K. Patel, M. Paul, D. Gibb, R. Vreeman, E.J. Abrams, R. Hazra, R. Van Dyke, L.-G. Bekker, L. Mofenson, M. Vicari, S. Essajee, M. Penazzato, G. Anabwani, E. Q. Mohapi, P. N. Kazembe, M. Hlatshwayo, M. Lumumba, T. Goetghebuer, C. Thorne, L. Galli, A. van Rossum, C. Giaquinto, M. Marczynska, L. Marques, F. Prata, L. Ene, L. Okhonskaia, P. Rojo, C. Fortuny, L. Naver, C. Rudin, S. Le Coeur, A. Volokha, V. Rouzier, R. Succi, A. Sohn, A. Kariminia, A. Edmonds, P. Lelo, S. Ayaya, P. Ongwen, L.F. Jefferys, S. Phiri, M. Mubiana-Mbewe, S. Sawry, L. Renner, M. Sylla, M.J. Abzug, M. Levin, J. Oleske, M. Chernoff, S. Traite, M. Purswani, E.G. Chadwick, A. Judd, and V. Leroy, *The epidemiology of adolescents living with perinatally acquired HIV: A cross-region global cohort analysis.* PLOS Medicine, 2018. **15**(3): p. e1002514.

15. Middleton, D.R.S., L. Bouaoun, R. Hanisch, F. Bray, C. Dzamalala, S. Chasimpha, D. Menya, C.G. Mbalawa, G. N'Da, M.A. Woldegeorgis, R. Njie, M. Koulibaly, N. Buziba, J. Ferro, H. Nouhou, F. Ogunbiyi, H.R. Wabinga, E. Chokunonga, M.Z. Borok, A.R. Korir, A.O. Mwasamwaja, B.T. Mmbaga, J. Schüz, and V.A. McCormack, *Esophageal cancer male to female incidence ratios in Africa: A systematic review and meta-analysis of geographic, time and age trends.* Cancer Epidemiology, 2018. **53**: p. 119-128.
16. Boyce, M.R., D. Menya, E.L. Turner, J. Laktabai, and W. Prudhomme-O'Meara, *Evaluation of malaria rapid diagnostic test (RDT) use by community health workers: a longitudinal study in western Kenya.* Malaria Journal, 2018. **17**(1): p. 206.
17. J, W., B. Genberg, C. Kafu, P. Braitstein, M.B. Laws, and I.B. Wilson, *Experiences and expectations of patients living with HIV on their engagement with care in Western Kenya.* Patient preference and adherence, 2018. **12**: p. 1393-1400.
18. Gatheru, Z., F. Murila, J. Mbuthia, F. Okoth, F. Kanyingi, F. Mugo, F. Esamai, Z. Alavi, J. Otieno, H. Kiambati, N. Wanjuki, and M.M. Obimbo, *Factors Associated with Hepatitis B Surface Antigen Seroprevalence amongst Pregnant Women in Kenya.* Open Journal of Obstetrics and Gynecology, 2018. **Vol.08No.05**: p. 12.
19. Croft, M.M., M.I. Marshall, M. Odendo, C. Ndinya, N.N. Ondego, P. Obura, and S.G. Hallett, *Formal and Informal Seed Systems in Kenya: Supporting Indigenous Vegetable Seed Quality.* The Journal of Development Studies, 2018. **54**(4): p. 758-775.
20. McClure, E.M., A. Garces, S. Saleem, J.L. Moore, C.L. Bose, F. Esamai, S.S. Goudar, E. Chomba, M. Mwenechanya, O. Pasha, A. Tshefu, A. Patel, S.M. Dhaded, C. Tenge, I. Marete, M. Bauserman, S. Sunder, B.S. Kodkany, W.A. Carlo, R.J. Derman, P.L. Hibberd, E.A. Liechty, K.M. Hambidge, N.F. Krebs, M. Koso-Thomas, M. Miodovnik, D.D. Wallace, and R.L. Goldenberg, *Global Network for Women's and Children's Health Research: probable causes of stillbirth in low- and middle-income countries using a prospectively defined classification system.* Bjog, 2018. **125**(2): p. 131-138.
21. Agarwal, A., K. Kirwa, M.N. Eliot, F. Alenezi, D. Menya, S.S. Mitter, E.J. Velazquez, R. Vedanthan, G.A. Wellenius, and G.S. Bloomfield, *Household Air Pollution Is Associated with Altered Cardiac Function among Women in Kenya.* American Journal of Respiratory and Critical Care Medicine, 2018. **197**(7): p. 958-961.
22. Siika, A., L. McCabe, M. Bwakura-Dangarembizi, C. Kityo, J. Mallewa, J. Berkley, K. Maitland, A. Griffiths, K. Baleeta, S. Mudzingwa, J. Abach, K. Nathoo, M.J. Thomason, A.J. Prendergast, A.S. Walker, D.M. Gibb, and R.T. Team, *Late Presentation With HIV in Africa: Phenotypes, Risk, and Risk Stratification in the REALITY Trial.* Clinical Infectious Diseases, 2018. **66**(suppl_2): p. S140-S146.
23. Mercer, T., A. Gardner, B. Andama, C. Chesoli, A. Christoffersen-Deb, J. Dick, R. Einterz, N. Gray, S. Kimaiyo, J. Kamano, B. Maritim, K. Morehead, S. Pastakia, L. Ruhl, J. Songok, and J. Laktabai, *Leveraging the power of partnerships: spreading the vision for a population health care delivery model in western Kenya.* Global Health, 2018. **14**(1): p. 44.
24. Alfred, O., T.T. M., K. Nicholas, N.E. K., K.J. H., P. Stephanie, F. Carey, and B.G. S., *Metabolic Syndrome Among Antiretroviral Therapy-Naive Versus Experienced HIV-Infected Patients Without Preexisting Cardiometabolic Disorders in Western Kenya.* AIDS Patient Care and STDs, 2018. **32**(6): p. 215-222.
25. Hu, L., J.W. Hogan, A.W. Mwangi, and A. Siika, *Modeling the causal effect of treatment initiation time on survival: Application to HIV/TB co-infection.* Biometrics, 2018. **74**(2): p. 703-713.

26. Njuguna, B., S. Vorkoper, P. Patel, M.J.A. Reid, R. Vedanthan, C. Pfaff, P.H. Park, L. Fischer, J. Laktabai, and S.D. Pastakia, *Models of integration of HIV and noncommunicable disease care in sub-Saharan Africa: lessons learned and evidence gaps.* Aids, 2018. **32 Suppl 1**: p. S33-s42.
27. Patel, P., C.E. Rose, P.Y. Collins, B. Nuche-Berenguer, V.V. Sahasrabuddhe, E. Peprah, S. Vorkoper, S.D. Pastakia, D. Rausch, and N.S. Levitt, *Noncommunicable diseases among HIV-infected persons in low-income and middle-income countries: a systematic review and meta-analysis.* Aids, 2018. **32 Suppl 1**: p. S5-s20.
28. Olney, J.J., J.W. Eaton, P. Braitstein, J.W. Hogan, and T.B. Hallett, *Optimal timing of HIV home-based counselling and testing rounds in Western Kenya.* J Int AIDS Soc, 2018. **21**(6): p. e25142.
29. Wachira, J., B. Genberg, C. Kafu, B. Koech, J. Akinyi, R.K. Owino, M.B. Laws, I.B. Wilson, and P. Braitstein, *The Perspective of HIV Providers in Western Kenya on Provider-Patient Relationships.* J Health Commun, 2018: p. 1-6.
30. Genberg, B.L., H. Lee, J.W. Hogan, F. Some, J. Wachira, X.K. Wu, and P. Braitstein, *Point of Diagnosis and Patient Retention in HIV Care in Western Kenya.* JAIDS Journal of Acquired Immune Deficiency Syndromes, 2018. **78**(4): p. 383-389.
31. Njuguna, B., J. Kiplagat, G.S. Bloomfield, S.D. Pastakia, R. Vedanthan, and J.R. Koethe, *Prevalence, Risk Factors, and Pathophysiology of Dysglycemia among People Living with HIV in Sub-Saharan Africa.* Journal of Diabetes Research, 2018. **2018**: p. 12.
32. Enane, L.A., R.C. Vreeman, and C. Foster, *Retention and adherence: global challenges for the long-term care of adolescents and young adults living with HIV.* Current Opinion in HIV and AIDS, 2018. **13**(3): p. 212-219.
33. Kiplagat, J., A. Mwangi, A. Keter, P. Braitstein, E. Sang, J. Negin, and C. Chasela, *Retention in care among older adults living with HIV in western Kenya: A retrospective observational cohort study.* PLoS One, 2018. **13**(3): p. e0194047.
34. RL, G., N. RO, S. D, S. S, M. W, E. F, M. D, G. AL, F. L, C. E, C. M, M. M, T. A, L. A, B. VL, M. JL, F. H, S. J, L. EA, B. CL, K. NF, M.H. K, C. WA, K. N, N. F, P. IS, L.-G. W, H. D, H. MS, K.-T. M, M. M, W. DD, and M. EM, *Routine antenatal ultrasound in low- and middle-income countries: first look – a cluster randomised trial.* BJOG: An International Journal of Obstetrics & Gynaecology, 2018. **0**(0).
35. Giles, M.L., A.C. Achhra, A.G. Abraham, A.D. Haas, M.J. Gill, M.P. Lee, M. Luque, C. McGowan, M. Cornell, P. Braitstein, N. de Rekeneire, R. Becquet, K. Wools-Kaloustian, and M. Law, *Sex-based differences in antiretroviral therapy initiation, switching and treatment interruptions: global overview from the International Epidemiologic Databases to Evaluate AIDS (IeDEA).* J Int AIDS Soc, 2018. **21**(6): p. e25149.
36. Ruchman, S., A. DeLong, W. Matelong, E. Okidi, V. Orango, J. Kamano, G. Bloomfield, J. Hogan, C. Horowitz, V. Naanyu, S. Pastakia, V. Fuster, T. Valente, and R. Vedanthan, *SOCIAL NETWORK CHARACTERISTICS OF PATIENTS WITH HYPERTENSION AND DIABETES IN WESTERN KENYA.* Journal of the American College of Cardiology, 2018. **71**(11, Supplement): p. A1788.
37. Lee, H., J.W. Hogan, B.L. Genberg, X.K. Wu, B.S. Musick, A. Mwangi, and P. Braitstein, *A state transition framework for patient-level modeling of engagement and retention in HIV care using longitudinal cohort data.* Statistics in Medicine, 2018. **37**(2): p. 302-319.
38. Saleem, S., S.S. Tikmani, E.M. McClure, J.L. Moore, S.I. Azam, S.M. Dhaded, S.S. Goudar, A. Garces, L. Figueroa, I. Marete, C. Tenge, F. Esamai, A.B. Patel, S.A. Ali, F. Naqvi, M. Mwenchanya, E. Chomba, W.A. Carlo, R.J. Derman, P.L. Hibberd, S. Bucher, E.A. Liechty, N. Krebs, K. Michael Hambidge, D.D. Wallace, M. Koso-Thomas, M. Miodovnik, and R.L. Goldenberg, *Trends and determinants of stillbirth in developing countries: results from the Global Network's Population-Based Birth Registry.* Reproductive Health, 2018. **15**(1): p. 100.
39. Apondi, E., J.M. Humphrey, E. Sang, A. Mwangi, A. Keter, B.S. Musick, F.K. Nalugoda, J. Ssali, E. Bukusi, C.T. Yiannoutsos, K. Wools-Kaloustian, and S. Ayaya, *Trends Over Time for Adolescents Enrolling in HIV Care in Kenya, Tanzania, and Uganda from 2001-2014.* J Acquir Immune Defic Syndr, 2018.
40. Mabeya, H., S. Menon, S. Weyers, V. Naanyu, E. Mwaliko, E. Kirop, O. Orango, H. Vermandere, and D. Vanden Broeck, *Uptake of three doses of HPV vaccine by primary school girls in Eldoret, Kenya; a prospective cohort study in a malaria endemic setting.* BMC Cancer, 2018. **18**(1): p. 557.
41. Paul, D.W., D.K. Lagat, N. MacIntyre, J.R. Egger, D.M. Murdoch, L.G. Que, and P.S. Kussin, *Validation of spirometry prediction equations in western Kenya.* The International Journal of Tuberculosis and Lung Disease, 2018. **22**(1): p.

112-118.

APPENDIX B: IEDEA ANNUAL REPORT

East Africa International Epidemiologic Database to Evaluate AIDS (IeDEA) Year 12 Science Report Grant Year: August 1, 2017 - July 31, 2018

Kara Wools-Kaloustian M.D. M.S.
Director, Division of Infectious Diseases
Professor of Medicine
David H. Jacobs Scholar of Infectious Diseases
Indiana University School of Medicine
Co-PI East African IeDEA

Constantin T. Yiannoutsos, Ph.D.
Professor of Biostatistics
Indiana University School of Public Health
Richard M. Fairbanks School of Public Health
Department of Biostatistics
Indiana University
Co-PI East African IeDEA

Grant Number: U01AI069911
May 14, 2018

A. Specific Aims:

No change in specific aims from the cycle three original application

B. Studies and Results

B1. Infrastructure:

Structure of the consortium
There have been no changes in the consortium over the past year and the consortium currently consists of nine active HIV-treatment programs (Kenya-2, Tanzania-3, Uganda-4, the Tanzanian National AIDS Control Program (NACP), five U.S. universities and the University of Toronto. The composition of the consortium is outlined in Table 1. The EA IeDEA Executive Committee continues to be composed of the Regional PIs at Indiana University (Yiannoutsos, Wools-Kaloustian), the senior Regional Data Manager (Musick), and a PI from each site. The EA IeDEA EC meets on a bi-monthly basis. The EA IeDEA EC is responsible for approving all concept sheets for new projects, meeting abstracts, and manuscripts.

Table 1: Composition of Consortium and Data Infrastructure

Country	Site	EMR Platform	Date Data Transfer to RDC
Canada	University of Toronto	N/A	N/A
Kenya	Academic Model Providing Access to Health Care (AMPATH), Eldoret	OpenMRS (AMPATH Medical Records System)	15 Feb 2018
	Family AIDS Care and Education Services (FACES), Kisumu	OpenMRS	expected May 2018
Tanzania	National AIDS Control Program	N/A	N/A
	Tumbi Regional Hospital	OpenMRS	28 Feb 2018
	Morogoro Regional Hospital	OpenMRS	15 Mar 2018
	Kisesa Health Center	Microsoft Access	14 Feb 2018
Uganda	Infectious Diseases Institute, Kampala	Custom system	15 Jan 2018
	Mbarara University ISS Clinic	OpenMRS	expected April 2018
	Masaka Regional Hospital	OpenMRS	7 Mar 2018
	Rakai Health Sciences Program, Rakai	OpenMRS Express	12 Feb 2018
U.S.	Indiana University	N/A	N/A
	Brown University	N/A	N/A
	Columbia University	N/A	N/A
	University of California, Riverside (currently: Ohio State University)	N/A	N/A
	University of California, San Francisco	N/A	N/A

Each of the four specific aims is managed by a project (Specific Aim) working group, which meet on a monthly basis in order to develop new projects and monitor existing projects falling within their purview. The leaders of the project working groups join the EA IeDEA EC every fourth month in order to report on project progress. During Year 12 the EA-IeDEA PIs met briefly in person at the all Africa IeDEA Meeting (November 2017) in order data access issues.

Data Infrastructure and Management:
All clinical sites contributing data to the consortium have stable electronic medical records systems (EMRS), which have not encountered significant issues over the last year. The EMR platform being used by each site as well as the date of last data transfer to the Regional Data Center (RDC) is outlined in Table 1. The composition of the East African IeDEA Regional Database as of March 2018 is outlined in Table 2. Please note that February

and March 2018 submissions are still undergoing processing so the numbers outlined in Table 2 represent those data that have been fully processed. The EA RDC has generated analysis data sets for 11 concept proposals and has updated existing analysis data sets for 7 other proposals since May 2017. The EA IeDEA Concept Tracker can be found on the EA-IeDEA website www.iedea-ea.org (Password available upon request).

Table 2: Patient Enrollment as of March 2018

Country	Program /Site	Adults Enrolled No.	(%)	Adults Receiving ART No.	(%)	Children Enrolled No.	(%)	Children HIV Infected No.	(%)	Children Receiving ART No.	(%)
Kenya	AMPATH	162,616	51.1	116,959	71.9	49,227	76.0	18,983	38.6	14,084	74.2
	FACES	33,494	10.5	26,046	77.8	9,526	14.7	3,379	35.5	2,825	83.6
Uganda	Masaka	25,966	8.2	20,006	77.0	2,601	4.0	2,523	97.0	1,938	76.8
	Mbarara	27,818	8.7	16,766	60.3	77	0.1	77	100.0	31	40.3
	IDI	31,030	9.7	17,324	55.8	11	0.01	11	100.0	1	9.1
	Rakai	14,647	4.6	10,815	73.8	1,022	1.6	969	94.8	788	81.3
Tanzania	Morogoro	10,401	3.3	7,199	69.2	1,189	1.8	1,062	89.3	832	78.3
	Tumbi	9,115	2.9	4,802	52.7	913	1.4	889	97.4	520	58.5
	Kisesa	3,385	1.1	2,509	74.1	195	0.3	192	98.5	156	81.3
TOTAL		318,472	83.0	222,426	69.8	64,761	17.0	28,085	43.4	21,175	75.4

Regulatory:
The dates of original approvals and continuing reviews are outlined in Table 3. Projects with prospective data collection are submitted for regulatory approval separetly from the core approvals and are not outlined in Table 3 due to space constraints.

Table 3: Status of Regulatory Approvals

Country	Site	Formal Name of IRB/IREC	Original Approval	Latest CR	Expiration
Kenya	AMPATH	Moi University College of Health Sciences & Moi Teaching and Referral Hospital Institutional Research and Ethics Committee (IREC)	20 Jun 2006	28 Oct 2017 1 Feb 2018	27 Oct 2018 Consortium 31 Jan 2019 Database
	FACES	Kenya Medical Research Institute/National Ethics Review Committee (ERC)	11 Nov 2008	29 Jan 2018	8 Feb 2019
Tanzania	Morogoro Regional Hospital	The United Republic of Tanzania National Institute for Medical Research Coordinating Committee	25 May 2007	5 June 2017	24 May 2018
	Tumbi Regional Hospital		25 May 2007		
	Kisesa		11 Sept 2012		
Uganda	Mbarara University ISS Clinic	Mbarara University of Science & Technology Institutional Review Committee (MUST- IRC)	Local IRB: 20 Jun 2006 UNCST: 20 Jul2006	8 Jun 2017 27 June 2016	15 Jun 2018 2 Jul 2019
	Masaka Regional Hospital		Local IRB: 20 Jun 2006 UNCST: 20 Jul 2006	8 Jun 2017 27 June 2016	15 June 2018 2 July 2019
	IDI	Makerere University School Medicine Research & Ethics Committee (MUSOMREC)	Local IREC: 3 Sep 2008 UNCST: 3 Feb 2009	4 Sept 2017 2 Jul 2013	2 Sept 2018 2 July 2019
	Rakai	Uganda Virus Research Institute Science & Ethics Committee (UVRI-SEC)	Local IREC: 9 Nov 2010 UNCST: 8 Apr 2011	14 Nov 2017 2 Jul 2013	9 Nov 2018 2 July 2019
CANADA	University of Toronto EA IeDEA Consortium	HIV Research Ethics Board	2 June 2015 Protocol #31597	17 May 2017	1 June 2018
US	Indiana University Consortium (10/13/17) & Database (10/16/17)	Indiana University Institutional Review Board	24 May 2006	14 Oct 2017 9 Sept 2017	13 Oct 2018 18 Sept 2018
	University of California at San Francisco (UCSF)	University of California at San Francisco Committee on Human Research	20 June 2006	23 April 2018	22 April 2019
	Columbia University	Columbia University Medical Center Institutional Review Board	8 July 2006	Exempt	NA
	University of California at Riverside (UCR)	Not determined	project not started	NA	NA
	Brown University/Miriam Hospital	Project not started	Project not started	NA	NA

Education, Training, and Mentoring **:**
IeDEA-EA continues to serve as a platform for training and mentoring of PhDs, post-Doctoral Fellows, and junior faculty both in the U.S. and internationally. Details of individuals mentored during Year 12 of this grant are outlined in Table 4.

Table 4: IeDEA-EA Mentees and Trainees

Trainee/Mentee	Affiliation	Position	Mentor	Project	Mentorship Focus
Apondi, Edith	AMPATH	Associate Lecturer	Vreeman	Project 1.2: The Adolescent care cascade	Leadership Project design & implementation
Byakwaga, Helen	IDI	Lecturer	Martin	Project 3.1 Knowledge, attitudes and behaviors: Providers and their impact on patient outcomes	Leadership Project design & implementation
Enane, Leslie	IUSM	Assistant Professor	Vreeman Wools-Kaloustian	Project 1.2: The Adolescent care cascade	Project design & implementation
Goodrich, Suzanne	IUSM AMPATH	Research Assistant Professor	Wools-Kaloustian	Project 2.1: Prevalence and impact of alcohol use in patients enrolling in HIV care Project 2.2: *Assessing the syndemics of substance use and mental illness*	Leadership
Humphrey, John	IUSM AMPATH	Research Assistant Professor	Wools-Kaloustian	Aspirational Project SA1: Integration of data from decentralized PMTC services into the AMRS Supplement: Improving Estimates of Mother-to-Child Transmission in Western Kenya: A Mixed Methods Prospective Cohort Study	Project design & implementation
Ioannis, Pat	University of Athens	MSc Student	Yiannoutsos	SA 2: Previous Grant Cycle Project: Alcohol Use Assessment Sentinel Cohort (AUAC)	Analytic Methods
Thomadakis, Christos	University of Athens	PhD Student	Yiannoutsos	Longitudinal models of CD4 lymphocyte counts in HIV-positive individuals before and after ART initiation with missing data under multiple censoring mechanisms	Analytic Methods
Miles, Caleb	UC Berkeley	Postdoctoral Fellow	Petersen	SA 1 Previous Grant Cycle Project: Low Risk Express Care	Analytic Methods
Mpofu, Philani	IU	University of Athens	Yiannoutsos	A pseudo-likelihood method for estimating misclassification probabilities when outcome data are partially observed	Analytic Methods
Park, Jun	IU		Yiannoutsos	Methods Innovation: Inference on the cumulative incidence in studies with double-sampling designs	Analytic Methods
Tran, Linh	UC Berkeley	Quantitative analyst Google	Petersen	SA1 Previous Grant Cycle Project: Low Risk Express Care	Analytic Methods

Innovations in Data Harmonization Methods:

Under the leadership of Ms. Beverly Musick, the IeDEA Data Exchange Standard (IeDEA-DES) was modified to include date variables for next scheduled visit and first positive HIV test as well as several variables to improve linkage between tables. Work is also underway to expand the DES to new domains including hospitalizations, non-AIDS diagnoses, screening and diagnostic data, and adolescent-specific data.

Documentation of the current IeDEA-DES can be found at IeDEADES.org, and is freely available for public use. EA-IeDEA is also contributing to expansion of the data standard and to innovations in data harmonization by contributing to projects led by CCASANET (HARMONIST) and Southern Africa (GRADUATE). The IeDEA- DES continues to be adapted based on feedback from global collaborators and shaped by the evolving HIV epidemic and new research interests. This standardization effort and the increased awareness of the benefits

of global data harmonization will significantly improve collaborations seeking to understand the impact of the global response to the HIV epidemic.

Analytic Innovation:
The EA-IeDEA analytic team spearheaded by Drs. Yiannoutsos and Bakoyannis, has been working on solving incomplete programmatic data. Two often critical outcomes in EA-IeDEA studies are disengagement from HIV care and death. One major problem in sub-Saharan Africa is the substantial underreporting of death which

Table 5: Data Harmonization, Analytic Innovations and other collaborations

EA Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
Supplement	BD2K	Musick/Yiannoutsos	Completed Scientific paper in preparation	N/A
55	CD4 trajectory among HIV positive patients receiving HAART in HIV care centres	Syriopoulou (as Kiragga replacement) Yiannoutsos	completed	Poster(1) Manuscript under review in BMC Infectious Diseases(2)
65	Double robust efficient estimators of longitudinal treatment effects: Comparative performance in simulations and a case study	Petersen Miles	submitted	Under review: Int'l Journal of Biostatistics(3)
82A	Adjusting for incomplete failure ascertainment in joint models: A multiple imputation approach	Yiannoutsos		Dropped as an active concept
83	Statistical designs and methods for double-sampling for HIV/AIDS Studies	Yiannoutsos Bakoyannis	Work ongoing	Paper(4) Oral Presentation(5) Manuscript under review Journal of American Statistical Association(6)
96	Causal inference methods for comparative effectiveness analysis of antiretroviral therapy initiation rules for HIV-infected Children in Eastern Africa	Hogan	Analysis completed Manuscript forthcoming	N/A
104	Accounting for Stratified Interference in Evaluating the Impact of a HIV Low-risk Express Care Task-shifting Program	Petersen Tran	Completed	Poster(7) Under revision at Biometrics(8)
114	Adjustment of outcome misclassification based on external validation data in nonparametric cumulative incidence estimation	Bakoyannis, Edwards	Work ongoing	N/A
118 (43,82B)	Adjusting for incomplete failure ascertainment in multi-state Markov Models (MSMM 2017)	Yiannoutsos	Work ongoing	Paper(9) Oral(10)
121	The IeDEA Data Exchange Standard: a common data model for global HIV cohort collaboration	Musick, Yiannoutsos	Manuscript draft circulating	N/A
127 (82B)	Efficient estimation of partly linear transformation models with interval-censored competing risks data	Bandyopadhyay (New Collaborator) Bakoyannis Mwangi	Concept Sheet Under review	N/A

results in seriously biased cumulative incidence and risk factor effect estimates of death and disengagement from HIV care. This in turn precludes accurate estimation of the HIV care "cascade". Drs. Bakoyannis and Yiannoutsos have developed both nonparametric and semiparametric approaches to deal with this problem when outreach data from a small sample of lost patients are available (double-sampling designs). Such double-sampling data are available in AMPATH and IDI within EA-IEDEA and, increasingly, in other IeDEA regions (namely IeDEA-SA and a small number of sites in Central Africa). Drs. Bakoyannis and Yiannoutsos, along with their student Philani Mpofu, are currently working on the issue of adjusting for outcome misclassification in studies without double-sampling designs (as it is the case in most IeDEA sites and studies) in semiparametric competing risks models. Further work on interval-censored data (data involving events where the data of occurrence is not known) is in development with another student, Jun Park and Dr. Bakoyannis Publications and abstracts from this worked are cited in Table 5.

In collaboration with the team at the University of California, Berkley (Caleb Miles, Linh Tran, Mark van der Laan, and Maya Petersen) IeDEA EA has been exploring how to account for stratified interference in evaluating the impact of programmatic interventions such as Low Risk Express Care. Initial analysis of the Low Risk Express Care data, a task-shifting program spearheaded by Dr. Wools-Kaloustian, suggested that immediate availability of and enrollment into the program causes a small, yet significant improvement in patients' risk of death or disengagement from HIV care over immediate availability and no enrollment, and that similarly, no immediate availability causes a small, yet significant improvement over immediate availability and no enrollment. One concern in this analysis is that patients' outcomes may be affected by other patients' treatment assignment (shifting some care tasks from clinical officers to nurses). Specifically, it is possible that on top of the individual shift decisions themselves, the proportion of patients shifted will have an effect on patients' outcomes. Such a phenomenon, known as *stratified interference*, renders patients' outcomes dependent, and presents challenges not addressed by classical causal inference methods. The UC Berkley team is addressing this issue by accounting for this form of interference in a simplified point-treatment setting. Development and results of this approach was submitted by Caleb Miles to the Atlantic Causal Inference Conference.

Inter-institutional collaborations
In addition to the collaborations with UC Berkley, IeDEA-EA has had extensive worldwide collaborations developing analytic methods and mathematical modeling with numerous academic and quasi-academic institutions in the US and internationally. These collaborations are outlined in Table 6. East Africa is leading the IPM2 Supplement in collaboration with Southern Africa and CEPAC (see IPM2 supplement update within SA 1)

IeDEA-EA contact	Leader	Institution	Project
Yiannoutsos	Peterson	UC Berkley	Accounting for stratified interference in evaluating the impact of programmatic interventions
Yiannoutsos	Tianchen Qian/Constantine Frangakis	Johns Hopkins	Deductive semiparametric estimation in double-sampling designs with application to PEPFAR
Yiannoutsos	Christos Thomadakis/Giota Touloumi	University of Athens	Longitudinal models of CD4 lymphocyte counts in HIV-positive individuals before and after ART initiation with missing data under multiple censoring mechanisms *(Affiliated with IPM2)*
Yiannoutsos	Andrea Ciaranello	Harvard University	Pediatric CEPAC model (*Affiliated with IPM2)*
Yiannoutsos	Sophie Desmonde	University of Toulouse	Pediatric CEPAC model *(Affiliated with IPM2)*
Yiannoutsos/Bakoyannis	John Stover	Avenir Health	UNAIDS SPECTRUM adult and pediatric model *(Affiliated with IPM2)*

Table 6: Analytical collaborations

Contributions to Global IeDEA:
IeDEA-EA continues to contribute to the global administration of IeDEA. In Year 12, EA-IeDEA was responsible for organizing the Global IeDEA PI meeting held in conjunction with CROI in Boston, MA. A series of breakfast and lunch work group meetings for Mental Health and Substance Use, Cancer, Strategic Data, Pediatrics, IeDEA Pediatric Methods and Modeling (IPM2) and Executive Committee, were conducted between March 5-8, 2018. EA-IeDEA responsibilities included working with the CROI affiliated activities committee to

select a hotel, negotiating contracts for the meeting venue, food service, audio/visual, financial payment to the hotel and other meeting needs. The on-site staff from EA-IeDEA who coordinated these meetings included the Program Manager, a Data Manager, the Senior Data Manager as well as the Global IeDEA Operations Coordinator from NA ACCORD.

IeDEA-EA continues to provider leadership for the global IeDEA Working Groups with four of the current working groups being chaired by members of the EA-IeDEA Consortium: Ms. Beverly Musick, Data Harmonization; Dr. Jeff Martin, Cancer; Dr. Rachel Vreeman, Pediatrics; and Dr. Constantin Yiannoutsos, Strategic Data. Dr. Wools-Kaloustian provides back-up for the global IeDEA EC Chair Dr. Annette Sohn.

EA-IeDEA contributes both data and leadership to the Multiregional IeDEA Analyses as outlined in Table 7.

Table 7: Multi-regional Projects in which EA IeDEA leads or participates

EA Concept Number	Global Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
40	MR019	Clinic and Patient-level determinants of durability of first-line regimen and time from first-line failure to second-line ART initiation in children in the International IeDEA Cohort	Wools-Kaloustian	Completed	Paper[11]
50	MR006	Pediatric cancer burden and treatment resources within the Pediatric IeDEA Consortium	Wools-Kaloustian	Completed	Paper[12]
51	MR017	Antiretroviral therapy initiation, durability and outcomes according to region and gender	Giles Law Braitstein	Under Review	Under review at JIAS[13]
58	MR043	Adherence to antiretroviral therapy (ART) for HIV-infected children and adolescents followed in Global IeDEA sites	Vreeman	Analysis in progress	N/A
59	MR014	Duration of first-line antiretroviral regimens in children: a global perspective	Wools-Kaloustian	Under Review	Under review Lancet ID[14]
59A	MR092	Second-line outcomes in CIPHER	Vreeman,	Analysis in process	Poster[15] Submitted to IAS[16]
61	MR013	Global epidemiology of adolescents with perinatal HIV-infection	Leroy (Wools-Kaloustian)	Completed	Paper[17]
63	MR064	Trends and disparities in the overall and cause-specific mortality between HIV-positive women from Europe, North America and sub-Saharan Africa	del Amo (Yiannoutsos)	Analysis completed Manuscript in process	N/A
66	MR045	Developing global surveillance estimates for perinatally infected adolescents on antiretroviral therapy transitioning to adulthood SPECTRUM	Sohn	Data submitted; Model updated; Editorial written	Paper[18]
67	MR048	SiZER maps to investigate significant features of weight changes in HIV-infected patients	Yiannoutsos	Manuscript completed;	submission to *Biostatistics & Epidemiology* pending[19]
70	MR053* MR090 MR091	Age-, CD4-, and viral load-stratified rates of opportunistic infections and mortality in youth ages 0-24: Descriptive analyses and derivation of inputs for simulation models	Desmonde (Wools-Kaloustian) (Yiannoutsos)	Analysis in process	Oral Presentation[20]
73	MR031	Liver disease in HIV treatment programmes within the IeDEA network: A survey on diagnostic, preventive and treatment practices	Wandeler Egger	Completed	Paper[21]

EA Concept Number	Global Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
74	MR049	Empirical evaluation of propensity score matching utilizing IeDEA observational cohort data evaluating 48-week treatment outcomes among ART-treated adults	Rutherford	Manuscript drafted	N/A
79	MR016	Collection of key Tuberculosis (TB) variables in ART Programs within the IeDEA consortium: diagnostics, treatment and risk factors for the incident TB	Pettit	Analysis in process, Manuscript circulating	N/A
84	MR056	Survival among HIV-infected individuals with KS in sub-Saharan Africa in the Era of Potent ART	Martin Bohlius	Manuscripts in prep: • Corrected survival • Excess mortality • Pace of ART initiation	Paper[22] Abstract[23]
85	MR042	Models of support for disclosure of HIV status to infected children and adolescents in resource-limited settings	Arrivé Ayaya Vreeman	Under Review	Under review at JIAS[24]
87	MR065	Evaluating Global HIV Prevention, Care and Treatment Services available for Children in IeDEA regions (Pediatric site assessment 2.0)	Vreeman	Analysis in progress	N/A
88	MR071	Association between clinic-level factors and individual retention, engagement, and loss to follow up following ART initiation in the IEDEA collaboration from 2009-2014.	Rebeiro Duda	Analysis in progress	Oral Presentation[25]
91	MR078 MR058 MR098	IeDEA-WHO Collaboration: Global analysis of retention in care in initial HIV care and treatment program	Egger	Completed	Paper[26]
92 105	MR074	Adolescent outcomes in the IeDEA global consortium (IeDEA-WHO collaboration 2016)	Sohn	Analysis Complete Drafting manuscript	N/A
93 106	MR063 MR079	IeDEA-WHO collaboration: global analysis of the pre-ART cascade and delay from diagnosis to start of antiretroviral therapy in HIV-infected children aged 0-19 years.	Leroy Dabis	Under Review	Under review Plos Med[27]
97	MR075 Adults only	Diagnosis, treatment and outcomes of extra-pulmonary Tuberculosis in HIV-co-infected adults and children	Zurcher Ballif	Under Review	Under review at JIAS[28]
98	MR076	Description and outcomes of HIV-infected patients treated for tuberculosis without microbiological confirmation in HIV care programs within the IeDEA Consortium	Humphrey	Analysis in progress	IAS Abstract submitted[29]
99	MR082	Growth of HIV-infected adolescents (10-19 years) in Africa and Asia	Leroy Jesson	Sub-analysis in progress	2 Posters[30, 31]
101	MR081	Use of cotrimoxazole prophylaxis in children starting antiretroviral therapy	Boettiger	Under Review	Poster[32], under review at JPIDS[33]
103	MR085 MR046*	2016 Update of concept "Immunodeficiency at the start of ART "a global view" (adults) COHERE collaboration	Egger	Under Review	Under review at CID [34]
105	MR074	Adolescent treatment outcomes in the IeDEA global consortium (IeDEA - WHO collaboration 2016)	Sohn	Analysis in progress	N/A

107	MR069	Site Capacity to screen, prevent, diagnose and Manage NCDs in low- to Middle-Income Countries	Mugglin Wester Egger	Manuscript in process	N/A

EA Concept Number	Global Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
107A	MR111	NCD Survey-Site Capacity to screen, prevent, diagnose and Manage NCDs in low- to Middle-Income Countries (Renal/Liver)	Wester Mugglin	Manuscript in process	N/A
108	MR096	Screening and treatment of mental disorders in HIV clinic settings in low- and middle-income countries within the global IeDEA network	Parcesepe	Under Review	Under review at JIAS[35]
109	MR097	Cohort profile update: The International Epidemiologic Databases to Evaluate AIDS (IeDEA) in sub-Saharan Africa	Egger Fenner	Awaiting site assessment data	N/A
110	MR105, 106 (parent MR074)	IeDEA-WHO Collaboration 2017: Viral outcomes on ART	Law Kariminia Jiamsakul	Report Completed	WHO Report[36]
111	MR100 (update of MR078)	IeDEA-WHO Collaboration 2017: Global analysis of retention in care in initial HIV care and treatment program	Egger Zaniewski Haas	Report Completed	WHO Report[37]
112	MR103 (update of MR059, MR080MR086)	IeDEA-WHO Collaboration 2017: Global analysis of delays from ART eligibility to antiretroviral treatment initiation among adults	Nash Tymejczyk Brazier	Report Completed	2 Posters[38, 39] WHO Report[40]
113	MR104 (update MR063, MR079)	IeDEA-WHO collaboration 2017: Global analysis of the pre-ART cascade and delay from diagnosis to start of antiretroviral therapy in HIV-infected children aged 0-19 years. 2004-2016	Leroy Desmonde, Malateste	Report Completed	WHO Report[41]
116	MR109	Trends in Baseline Characteristics and Treatment Outcomes of Infants and Young Children Starting Antiretroviral Therapy in Sub-Saharan Africa	Edmonds (Wools-Kaloustian)	EA data submitted	N/A
117	MR 077	Outcomes of children and adolescents treated with raltegravir in the IeDEA consortium	Patten Davies	EA data submitted Analysis in progress	N/A
119	MR114	Analysis of the implementation of antiretroviral treatment (ART) eligibility guideline expansions and impact on ART initiation among children and adolescents in sub-Saharan Africa	Nash Tymejczyk	EA data submitted Analysis in progress	N/A
120	MR116	Harmonist Data Toolkit Development: Request for IeDEA DES Datasets from All Regions	Lewis	EA data extraction in process	Oral[42]
121	MR115	The IeDEA Data Exchange Standard: a common data model for global HIV cohort collaboration	Duda Musick Yiannoutsos	Manuscript in process	N/A
122	MR not assigned	WHO ART forecasting module – data contribution on growth and malnutrition	Jesson	EA Submitted Analysis in progress	N/A
123	MR 117	Management of multidrug-resistant tuberculosis among ART programs in low- and middle-income countries within the global IeDEA network	Cox	Data Collection to be initiated	N/A

124	MR110 (Parent 69)	NCD survey: Site Capacity to Prevent and Treat Cervical Cancer and Breast Cancer	Rohner	Manuscript being drafted	Poster[43]
125	MR112	Implementation of 'Treat-all' in the Global IeDEA collaboration - results of a systematic site assessment	Nash	Manuscript circulating	Poster[44]

EA Concept Number	Global Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
Parent 61	MR102 (parent MR013)	Inequality in outcomes of adolescents living with perinatally-acquired HIV in sub-Saharan Africa	Slogrove Yotebieng	Completed	JIAS In Press[45]
Parent 79	MR113 (parent MR015) & combined with MR101	Clinical significance of drug resistance testing under programmatic conditions compared to a reference laboratory in HIV-infected and HIV-negative pulmonary tuberculosis patients from sub-Saharan Africa, Asia, and South America.	Zurcher, Ballif	Manuscript being drafted	Poster[46] IAS abstract submitted[47]
Parent 79	MR015	Impact of HIV infection on the population genomics of drug-resistant Mycobacterium tuberculosis: insights from macro-evolutionary analyses	Egger Fenner (Carter)	Analysis Underway	Poster[46] IAS Abstract submitted[47]
Supplement	Not on MR list	ICAMP: Prospective validation of an adherence monitoring tool among HIV-infected children and adolescents at IeDEA sites	Vreeman	Analysis Underway	oral presentation[48] for Adherence 2018

B2. Scientific Productivity:

Please note that all East African Concept Sheets may be accessed through the Project Tracking Document (Appendix)

SA-1: We will describe movement through the cascade and outcomes of HIV care with emphasis on the impact of life stage transitions.

Project 1.1. Estimating the HIV Care Cascade

Project Specific AIM (PSA) 1: *Estimate the HIV care cascade, inclusive of pre-ART outcomes*

Project Description: This study will use the IeDEA-EA *Clinic Cohort* restricted to ART-naïve patients ≥ 15 years enrolled in HIV care during 2016 only, to ensure homogeneity of program structure and adequate follow-up time. A multi-state model will be used to estimate retention in 5 steps of the HIV care cascade: (1) enrollment; (2) rates of ART eligibility within 3 months of enrollment; (3) ART start rates in eligible patients within 3 months of eligibility; (5) retention in the cascade after ART initiation or enrollment (for ART-ineligible patients). Retention rates at each step will be adjusted for attrition by tracing data at AMPATH and IDI.

Progress: There is an approved concept sheet and construction of the analysis dataset is underway. We anticipate that the analysis for this project will begin in late May or early June 2018.

Project 1.2: The Adolescent care cascade

PSA1: (*Descriptive) Identifying the models of care used for managing perinatally-infected adolescents*

Project Description: This project will develop and implement a facility-level survey of care programs for adolescents that will assess transition-related procedures, protocols and availability of adolescent-friendly services. Postulated models include transition from pediatric to adult clinics co-located in the same health facility or in another facility or a system where adolescents remain in the same HIV clinic, assume increasing responsibility for their care and are evaluated with adult-focused measures.

Progress: This concept was approved by the EA-IeDEA EC in May 2017. Data collection for the pilot survey, which examined site procedures for transitioning adolescents from pediatric to adult care, developed by Professor Ayaya, has been completed. Analysis of the pilot data is set to begin in Mya. Dr. Elul has drafted a broader questionnaire to examine availability of adolescent-friendly services as well as differentiated care for adolescents. This survey is currently being reviewed by the adolescent study team. We anticipate that it will be put into the field in June 2018 and completed by August 2018.

PSA2: *Estimating the Adolescent Care Cascade*

Project Description: Our objective in PSA 2 is to estimate the HIV care cascade for perinatally HIV-infected adolescents. Using IeDEA's Clinic Cohort Data, we will estimate the HIV care cascade—from diagnosis to enrollment in care to CD4 testing to retention in care to ART initiation to viral suppression to transitions from one form of service provision to another. The cascade will be estimated separately for the two most common models of care identified in PSA 1, to highlight gaps in care for each approach to managing perinatally-infected adolescents. We hypothesize that key outcomes like loss to program are associated with healthcare environment and patient-level factors.

Progress: The analyses related to the traditional HIV care cascade for adolescents are being incorporated into Project 1.1. Once data on the prevalent models of care for adolescents are available from Project 1.2, PSA 1, this concept will be updated to reflect steps in those cascades. We anticipate this will occur in Summer 2018, so that this concept can be completed in the Fall of 2018.

PSA 3: *Refine estimates of key adolescent outcomes utilizing a sampling-based approach.*

Project Description: PSA 3 will utilize a sampling-based approach to create an *Adolescent Sentinel Cohort,* from the *Clinic Cohort Database* for AMPATH and FACES, which will include perinatally infected adolescents (200 patients, anticipating tracing 180 of whom 150 will be alive and matched controls (300 patients) retained in care with characteristics (gender; current age; CD4 and age at enrollment, etc.) similar to traced patients to assess the impact of loss to program on death, viral suppression and resistance. Tracing procedures and the IeDEA-EA Lost to follow-up (LTFU) tracking form utilized in previous studies will be used for data capture.
Blood will be collected from traced subjects and control patients using finger stick and dried blood spot (DBS)/Hemaspot collection methods previously used by our team. Viral loads will be run at the AMPATH research lab and duplicate samples with detectable viral load will be shipped to Dr. Kantor's lab at Brown University for resistance testing.

Progress: A detailed protocol, inclusive of data collection tools and consent forms was submitted to IREC in March 2018. Once IREC approval is obtained, the protocol will be submitted to the IRBs at Indiana University, Columbia University and Brown University. We anticipate that prospective data collection for this project will begin in the Summer of 2018. Initial procurement and hiring plans, drafting of study SOPs and other implementation steps are moving forward at Moi University to facilitate a rapid project start once approval is secured.

Project 1.3: Pregnancy in the era of B+

PSA 1: *Temporal trends in incident pregnancy in IeDEA-EA*
PSA 2: *Patient and healthcare environment factors associated with incident pregnancy*

Project Description: In the previous grant cycle, we examined the effect of ART on incident pregnancy among HIV-positive women at HIV clinics in Kenya and Uganda. During this cycle we will rerun a similar analysis to determine if universal test and treat has impacted fertility trends.

Progress: This project has not yet been initiated due to changes in data collection procedures related to pregnancy. The data management team is assessing the completeness of data related to incident pregnancy. Should data collection be determined to be sufficiently complete, the concept will be re-launched.

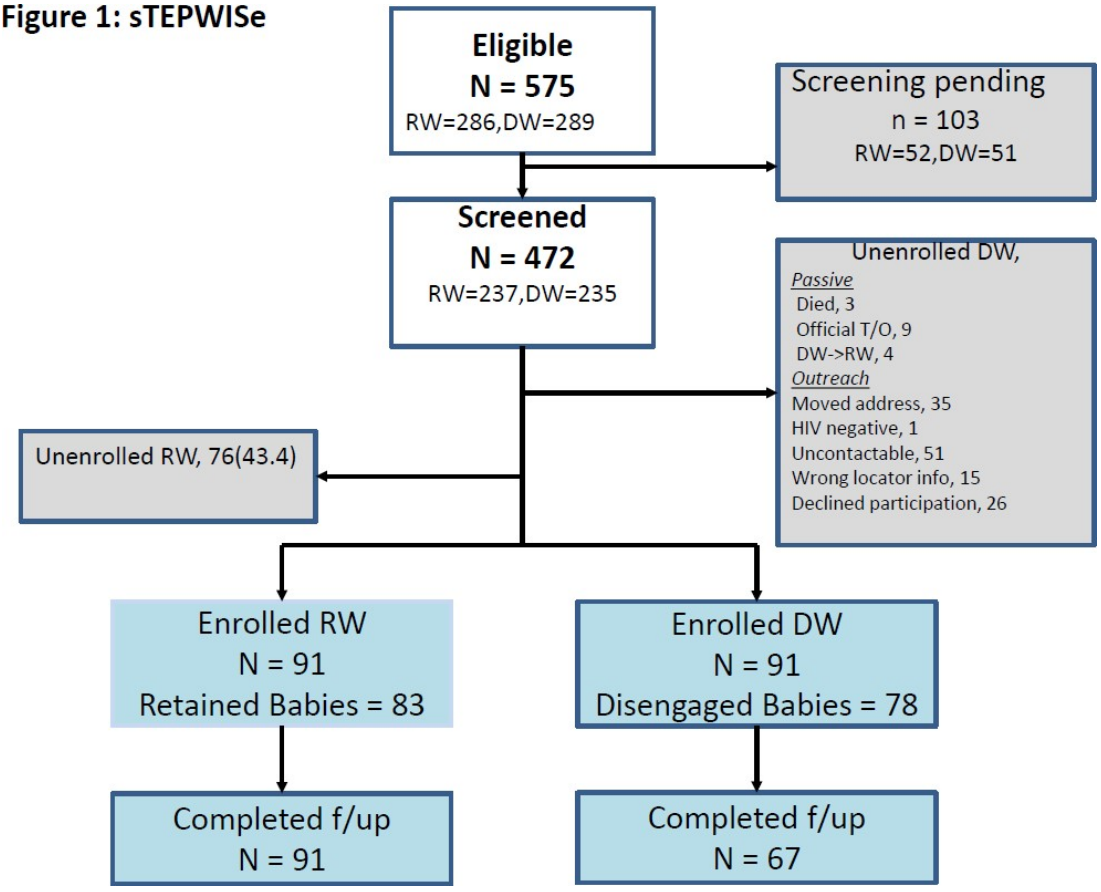
Single Site Studies: The sites in East Africa have been able to utilize the infrastructure funded through EA-IeDEA to conduct their own analyses. This year the Kisesa site submitted two abstracts to IWHOD that utilized this infrastructure.[49, 50]

Supplements SA 1: Funded Supplements SA1 are outlined in this section

Supplement 1.1: Tracing non-retained HIV Positive Pregnant Women enrolled in Option B+ and ascertaining their Babies outcomes (sTEPWISe)

Project Description: The overall goal of this proposal is to conduct a pilot study that will utilize a sampling based approach to assess the outcomes of mothers who have been enrolled in option B+ and to use these data to improve estimates of mother to child HIV transmission. This project will trace women, who initiated ART under option B+ and subsequently disengaged from care as well as enrolling a cohort of retained women. It will assess reasons for disengagement, as well as obtain corrected estimates of retention by evaluating the proportion of mothers who have re-engaged or died. It will also assess and compare HIV transmission rates among infants born to retained and disengaged mothers. **SA1:** Trace women, initiated ART under option B+ who disengaged from care and assess reasons for disengagement, as well as obtain corrected estimates of retention by evaluating the proportion of mothers who have re-engaged or died.**SA2:** Assess and compare HIV transmission rates among infants born to retained and disengaged mothers. **SA3**: To measure efavirenz (EFV) levels in the blood collected from all re-engaged and a matched

Figure 1: sTEPWISe



sample of retained women.**SA4:** To perform genotypic testing among retained and disengaged women with virologic failure defined as viral load ≥1,000 copies/ml in order to describe mutations that are known to confer drug resistance.

Progress: This study initiated enrollment in July 2017 and, to date, we have enrolled about half of the planned study population. Ninety- one disengaged and 91 retained women have been enrolled (Figure 1). A total of 161 babies havebeen enrolled (78 from disengaged women and 91 from retained women). The study team will continue enrollment from 6 sites in Kampala until study closure which is planned for July 2018.The study team investigators have had several teleconference calls

and three face-to-face meetings (November 2017 at the All IeDEA meeting in Kigali, Rwanda, at the CROI conference in Boston USA, March 2018, and at the IWHOD meeting in Fuengirola, Spain, March 2018).

Supplement 2.1: Enhancing the IeDEA East Africa Adolescent Sentinel Cohort for Longitudinal Assessments of Factors Critical to Adolescent Health [PI: Elul]

Project Description: This project is an expansion of the sentinel adolescent cohort original proposed in our application. The aims of this project are to: **SA1:** To determine the prevalence of understudied adolescent health care preferences, health behaviors, risk factors, and outcomes among PIA LTP and engaged in care; **SA2:** To characterize the health behaviors, risk factors, and outcomes of PIA in the Adolescent Sentinel Cohort longitudinally over time; **SA3:** To assess the feasibility of using verbal autopsy to determine causes of death among PIA found to have died.

Progress: The enhanced data collection proposed in this supplement has been integrated into the overall Adolescent Cohort protocol, which as noted previously, is currently under review at IREC.

Supplement: 2.2: Getting engaged: Rates, predictors and outcomes of HIV-positive children and adolescents identified or diagnosed through home-based HIV testing failing to link to HIV care in rural western Kenya [PI: Braitstein]

Project Description: This project leverage data that were collected during AMPATH's Homebased Counseling and Testing Initiative (HBCT) to examine linkage to care for children and adolescents testing positive for HIV during a community testing initiative. The aims of this project are: **SA1:** Determine the proportion of children and adolescents (age <18 years at HBCT) with known HIV infection (through HBCT) who have linked to care and initiated ART; **SA2:** Characterize the risk and protective factors for linkage to HIV-care (defined as having an initial clinical encounter documented in the system) and ART initiation for children and adolescents living with HIV;**SA3:** Determine the outcomes of children and adolescents living with HIV who failed to link to care and initiate ART.

Progress: The protocol for this project has been approved by the Moi University IRB and is currently being reviewed by the Indiana University IRB.

Supplement 2.3: Improving Estimates of Mother-to-Child Transmission in Western Kenya: A Mixed Methods Prospective Cohort Study [PI: Humphrey]

Project Description: This study was designed to collect information in a more longitudinal manner than the sTEPWISe study however the data collection was designed in such a way that the results of this study can be compared to the results of sTEPWISe thus allow for cross site/country comparison of the outcomes of women and infants who are lost to PMTCT services. This combined analysis will contribute to IPM2. The aims of this study are: **SA1:** To compare mother to-child transmission rates among mothers who are retained in antenatal care and mothers who disengaged from antenatal care; **SA2:** To compare HIV viral suppression rates among pregnant and postpartum women who are retained in care and who are disengaged from care;
SA3: To understand the barriers and enhancers to linkage and retention in care for HIV-infected pregnant

women and mother-infant dyads.

Progress: This study was initiated in March 2018. To date the study has enrolled 50 engaged and 1 non- engaged pregnant HIV-infected women in their third trimester of pregnancy. It is anticipated that enrollment of this cohort will be completed by the end of 2018. As noted previously, the data from this study will be analyzed against the data collected within sTEPWISe, within IPM2 to allow for a cross comparison between sites/countries.

Table 8: Current Specific Aim 1 and Specific Aim 1 Supplement Concept Sheets

Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
95	Models of Transitioning HIV-infected Adolescents on ART from Pediatric to Adult Health Care within the East African IeDEA Sites	Ayaya	In data collection	N/A
115	Project 1.2, PSA 1: Identifying the models of care used for managing perinatally-infected adolescents	Elul, Ayaya	Data collection survey to be created	N/A
126	Project 1.1: Estimating HIV care cascades, inclusive of pre-ART outcomes, for IeDEA-EA and important sub-populations and over time	Elul	Concept approved the EA Exec Committee	Paper[51]
Supplement 1.1	Tracing non-retained HIV Positive Pregnant Women enrolled in Option B+ and ascertaining their Babies outcomes (STEPWISE)	Kiragga	Data collection ongoing	Poster[52]

Multiregional Supplement Year 12 (EA Supplement 2.4): Pediatric and Adolescent Methods and Modeling Group for Policy and Decision Making (IPM2) (Separate report also provided to NICHD by Dr. Yiannoutsos)

Project Description: The IeDEA Pediatric Methods and Modeling Consortium (IPM2) a cross-regional IeDEA collaboration, was funded by the Eunice Kennedy Shriver NICHD in 2017. The core aim of this group is to carry out all functions related to analytical method development, data generation, collection and analysis and simulation modeling, in order to inform policy and decision making related to the HIV/AIDS pediatric and adolescent worldwide epidemic. The aims of this supplement are: **SAI:** Develop methods to address biases arising in the analysis of routine IeDEA program data; **SA2:** Design studies to augment routine program data and use statistical methods to inform broader population; **SA3:** Use results from these analyses to inform mathematical modelers (e.g., CEPAC, Spectrum).

Progress: The kick-off meeting for IPM2 was held in London in Oct. 2017 and was linked to the UNAIDS Modelling and forecasting meeting.

SAI: Develop methods to address biases arising in the analysis of routine IeDEA program data [Report provided by East Africa IeDEA- Constantin Yiannoutsos]

The “2” in IPM2 refers to the symbiotic relationship between statistical and mathematical modeling. One of the reasons of the deep and long-standing collaboration we have within IeDEA between our statistical and mathematical modelers is the realization that the latter cannot succeed without inputs derived from rigorous data analysis produced by the former while the former are acutely aware of the limitations of statistical modeling in capturing all the complexity and “moving parts” of the epidemic.

There two major poles of high-level methodological research within IeDEA are based at Indiana University in Indianapolis and the University of Cape Town, both founding institutions in IPM2. The largest mathematical modeling groups, at Harvard and Cape Town are also part of this consortium. In the past six months we have worked to provide estimates to the WHO ART module by re-purposing analyses done under the auspices of the IeDEA “second-line paper” from 2018 (Wools-Kaloustian et al, *JAIDS*, 2018) and are in the process of updating these analyses through a new multi-regional concept proposal. We are also supporting Drs. Jesson and

Desmonde in their analyses of weight band data for the same forecasting add-on module.
On the statistical methodology side, we are working closely with Drs. Kiragga and Humphrey to design and analyze the data from the two pMTCT protocols undertaken in East Africa, and are working with Dr. Olivia Keiser to identify funds for a third pMTCT study to be undertaken in Malawi. These data, the first ever in this patient population, and attendant statistical methodology which will use them to make critical adjustments to the entire programmatic cohort data, will provide a critical new window in the incremental direct (to the mother) and indirect (to the baby and the community) impact of Option B+ and will materially refine the underlying assumptions used by the Spectrum model.

We are also busy transporting a decade's worth of research from the adult to the pediatric and adolescent patient population. While our recent work within IeDEA on women's mortality (Jarrín Vera et al., IAS 2018 presentation) has direct application to maternal survival and other inputs in Spectrum, we will use work performed by our Indiana University and Vanderbilt investigators on mortality adjustments and patient churn (Bakoyannis et al., IWHOD 2018 and Rebeiro et al, *JAIDS*, 2017) and closely collaborate with our University of Cape on their analysis of the adult and adolescent tracing studies, undertaken with partial IPM2 support in early 2019. In addition, our University of Athens collaborators have used IeDEA-EA tracing data to generate preliminary estimates of CD4 "state" occupancy of re-engaging adult patients who disengage from care. They are in the process of transporting this groundbreaking analysis, which will also benefit the adult Spectrum program, to adolescent and pediatric population.

SA2: Design studies to augment routine program data and use statistical methods to inform broader population

East Africa lost to follow-up from PMTCT [Report provided by East Africa IeDEA-]: The two studies addressing loss to follow-up in women engaged in PMTCT programs in Kenyan and Uganda described under supplement 1.1 and 2.3 above will eventually contribute to this collaboration but are currently funded under other supplemental mechanisms. Please see details above.

Southern Africa lost to follow-up in Adolescents [Report provided by Southern Africa IeDEA- Mary-Ann Davies]: A large tracing study of people living with HIV who have been lost to program has been launched by the Southern Africa region of IeDEA. IPM2 funding supports adding of attached tracing for children and adolescents. These tracing studies have already started at SMART Mozambique, Dignitas (Malawi), and Lighthouse (Malawi) and tracing is expected to start by the end of June 2018 at CIDRZ (Zambia) and Lighthouse (Malawi). Data from traced individuals are being entered onto a REDCap questionnaire hosted in Bern, available in English or Portuguese. Total numbers of patients traced and entered as of April 11 2018 are outline in table 8. We anticipate that all tracing will be completed by the end of 2018. A draft concept for analysis of the pediatric and adolescent tracing data has been developed. This will be circulated to the IPM2 team by May 2018 with the aim of approval before the end of June 2018.

Table 9: Pediatric and Adolescent Tracing Study in Southern Africa IeDEA

Site	Number to be traced <16 years old	Number to be traced 16-25 years old	Methods used for tracing	Number traced & entered in REDCap, online (April 11, 2018)	Completion of tracing target date	Analysis of pediatric and adolescent tracing data
SMART Mozambique	94	132	Home visit	113	31 Dec 2018	Jan-June 2019
Malawi Dignitas	128	124	Phone call and home visit	51		
Malawi Lighthouse	111	141	Phone call and home visit	No data entered		
Zambia CIDRZ	Not yet sampled	Not yet sampled	Phone call and home visit	Not yet started		

During the next funding cycle we will therefore complete the tracing study data collection, analyse the data with planned abstract submission either to the Pediatric HIV Workshop 2019 or CROI 2020.

We will then use the tracing data to revise mortality estimates by age, CD4 count and duration on ART for children and adolescents, in time for input into the SPECTRUM/UNAIDS estimates meeting in the Fall of 2019. Analysis of the pediatric and adolescent tracing data will be conducted from January to June 2019 and will be part of a second-year funding request from IPM2. In the event that IPM2 is not renewed, funds will be sought from alternative sources.

In addition, since no tracing studies are currently being conducted in South Africa, a separate concept (SA 154) has been approved for tracing studies at Themba Lethu and Hlabisa in South Africa, where, in addition to tracing, there is linkage with existing death registries or health demographic and surveillance systems. This will allow comparison between results of tracing studies vs linkage to registries/surveillance systems. Both have submitted ethics and should be ready to start as soon as the project is approved locally. Each site aims to trace 500 individuals stratified by age, sex and time on ART – Themba Lethu will include adolescents and adults while Hlabisa will include children, adolescents and adults. It is anticipated that data collection at these sites will commence towards the end of 2018 and be concluded in the first half of 2019, with analysis from July-December 2019.

SA3: Use results from these analyses to inform mathematical modelers

Two internationally known groups of HIV mathematical modelers are working within this collaboration, investigators from the CEPAC model and the Thembisa Model.

Pediatric HIV Drug Formulations [Report provided by CEPAC – Andrea Ciaranello]: In the 2017-2018 IPM2 funding cycle, IPM2 and CEPAC have been working with the Avenir Health, developers of the SPECTRUM software, and the WHO, to generate a prototype for a SPECTRUM add-on that will serve to predict the demand for pediatric HIV drug formulations worldwide. Specifically, the ART forecasting module aims to conduct detailed clinical simulations within the pediatric CEPAC model to inform Spectrum analyses in generating estimates of youth < 15 years requiring specific ARV formulations. The ART forecasting module has three main components:

i. An annual site survey undertaken by the WHO which elicits information about the ART regimens used in each country
ii. Rates of switching to second-line regimens (all alternatively, duration of first-line regimens) by age and sex
iii. Weight bands by age and sex

Within CEPAC has been focusing on II and III:

II. Rates of switching to second-line regimens: Under assumptions based on the international WHO consolidated guidelines for treating and monitoring children between 2003-2016, we conducted separate placeholder model simulations for each year of ART initiation (2004-2016) and age at ART initiation (0-15 years) in a South African setting. For each of those combinations, the model tallies the number of children on first and second-line ART at specific time points. We developed an add-on tool that pulls these CEPAC outputs and calculates the proportion on first and second line ART, weighted by time on ART (< or ≥ 12 months). The tool then applies those proportions to pre-specified SPECTRUM estimates of children living with HIV generating specific estimates of children on each ART regimen, stratified by time on ART.

We are now in the process of repeating the placeholder simulations described above, and calibrate model outputs to data from the multi-regional IeDEA analysis on first-line ART durability and switching incidences (Wools-Kaloustian, *JAIDS*, 2018), to assess the validity of the assumptions about monitoring strategies, next-line availability and switching practices. An amendment to this concept sheet is being prepared for submission to the IeDEA Executive Committee, and analyses are anticipated to be completed in early May 2018 (ongoing work by Philani Mpofu and Constantin Yiannoutsos at Indiana University).

For the Calibration dataset, the site-level data regarding these parameters were assessed up to 2011-2012 for the majority of participants. To derive calibration targets for later calendar years, we have also proposed a second multi-regional concept within the IeDEA collaboration, looking at temporal trends in next-line availability and switching practices up to 2017. This is being submitted to the Executive Committee, with anticipated analysis after the next data merger in early 2019. However, production of a functioning prototype will be completed in this funding cycle. This new analysis and final refinements of this model will be part of a request for funds in a possible renewal.

III. Weight bands by age and sex: To project the pediatric ARV formulations, we will next model the dosing of each of the regimens based on the weight-based doses for pediatric ARVs from the WHO Consolidated Pediatric and Adult Guidelines. To assess the probability of being in each WHO weight band by age, up-to-date weight-by-age distributions were derived from the multiregional IeDEA cohort, stratified by sex and age at ART initiation. To account for improvements in early infant diagnosis and access to ART, and the subsequent effect on the growth curves, these distributions were also stratified according to year of ART initiation (before or after 2013). This work has been led by Julie Jesson, under an IeDEA multi-regional concept proposal recently approved by the IeDEA Executive Committee. This analysis will be completed in April 2018.

From May through September 2018, we will be able to update the model assumptions about monitoring strategies, next-line ART availability and switching practices, using data from the IeDEA multi-regional concept described above, and project forward under the same assumptions, in South African as well as priority countries identified by the WHO. These refinements, which will incorporate more up-to-date IeDEA data, will be part of a request of funding renewal and, assuming second-year funding is forthcoming, will form part of the second year scientific agenda of the IPM2 Consortium.

Extension of the Thembisa Model to include HIV testing and diagnosis in children [Report provided by Dr. Leigh Johnson]: The Thembisa model of the HIV epidemic in South Africa (www.thembisa.org) has been extended to include HIV testing and diagnosis in children (earlier versions of the model considered only early infant diagnosis). This makes it possible to assess the fraction of HIV-positive children who are diagnosed, and hence to assess progress towards the 90-90-90 targets (which in most countries are assessed only for the adult population). The model has been calibrated using routine HIV testing and ART data. Preliminary results suggest that levels of HIV diagnosis in HIV-positive children are substantially lower than those in adults, and that South Africa is unlikely to meet the 90% diagnosis target for children by 2020 unless major new pediatric HIV testing programs are introduced. To our knowledge, this is the first modeling study to have estimated the fraction of all HIV-positive children who are diagnosed in an African setting.

The model is currently also being calibrated to vital registration statistics in South Africa (total numbers of deaths in children in each year from 1997-2014 and at each age) to assess the validity of the model assumptions about mortality rates in HIV-positive children. It is hoped that this will lead to better assumptions, especially around rates of mortality in untreated children, and that these estimates will assist UNAIDS in the parameterization of the UNAIDS Spectrum model.

In the next funding cycle, we will update the model assumptions about mortality rates in treated children, using recent data from the IeDEA-Southern Africa collaboration. This will enable us to assess the impact that ART has had on mortality rates in children and the number of life years saved by ART, and could potentially pave the way for estimates of life expectancy in South African children receiving ART. In the next funding cycle, we also hope to compare the Thembisa, Spectrum and CEPAC model estimates of pediatric AIDS mortality in South Africa, and to understand factors accounting for model differences. We hope that this will lead to greater consensus amongst modelers as well as improved confidence in pediatric HIV model estimates globally.

Specific Aim 1 Supplement Requests

One Specific Aim 1 supplement request was submitted in 2018 and is outlined in Table 10. We also anticipate

the submission of a supplement request for Year 2 of IPM2 prior to the end of the grant year.

Table 10: Requests for Supplements Specific Aim 1 Submitted 2018

PI	Title	Aims
PI: Keiser – resubmitted to NIH 1/11/18	Improving Estimates of Mother-to-Child Transmission in Malawi: A Mixed Methods Prospective Cohort Study	SA-1: To compare mother to-child transmission rates among mothers who are retained in antenatal care and mothers who disengaged from antenatal care. SA-2: To compare HIV viral suppression rates among pregnant and postpartum women who are retained in care and who are disengaged from care. SA-3: To understand the barriers and enhancers to linkage and retention in care for HIV-infected pregnant women and mother-infant dyads.
PI: Yiannoutsos	Multiregional Supplement Year 12 (EA Supplement 2.4): Pediatric and Adolescent Methods and Modeling Group for Policy and Decision Making (IPM2) *Year 2 of Funding*	SAI: Develop methods to address biases arising in the analysis of routine IeDEA program data SA2: Design studies to augment routine program data and use statistical methods to inform broader population SA3: Use results from these analyses to inform mathematical modelers (e.g., CEPAC, Spectrum).
PI: Yiannoutsos	Estimating the cascade of HIV care under incomplete outcome ascertainment: An effort to provide rigorous+ inputs to the UNAIDS adult Spectrum model	This proposal endeavors to elicit support for the continued development of statistical methodology to derive estimates of the entire HIV care continuum from enrollment into HIV care to death and all intervening stages, while appropriately accounting for biases resulting from under-reporting of death and ignorance of the true treatment status among patients who have been lost to program

SA 1 Projects from Previous Grant Cycles

EA-IeDEA continues to work on finalizing projects related to this SA that were initiated under previous funding cycles. The status of these projects are outlined in Table 11.

Table 11: SA1 - Projects From Previous Grant Cycle

Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
19	Estimates and correlates of pediatric ART adherence	Vreeman	Completed	Paper[53]
20	Adolescent Care in East Africa	Apondi	Under Review	Under review at JAIDS[54]
27	Predicators and factors associated with treatment failure among HIV-infected children on ARVs	Marete	Manuscript circulated to co-authors	N/A
Expansion of 39	Expansion of global ART guidelines and trends in characteristics of patients at HIV care enrollment and outcomes prior to ART initiation (revision and replacement of EA Concept #39)	Elul	Analysis in progress	N/A
42	The incidence of first-line ART failure and incidence and determinants of initiation of second-line ART in adults meeting local criteria for first-line failure	Goodrich	Manuscript circulating to authors	N/A
43	Comparative effectiveness and opportunity costs of outreach strategies within antiretroviral treatment programs in East Africa	Rebeiro	Complete	Paper[55]
45	Clinical characteristics and outcomes of adolescents attending HIV clinics in IeDEA East Africa	Nuwagaba-Biribonwoha	Under Review	Under review JIAS[56]
46	PEPFAR: Programmatic and Clinical HIV Treatment Outcomes in Pregnancy	Holmes	Completed	Paper[57]

52	Supplement: Engagement in care among HIV-infected patients in resource limited settings: A Protocol for Assessing the Magnitude of and Reasons for Failure to Engage in Care among HIV-infected Patients in the East Africa International Epidemiologic Databases to Evaluate AIDS (IeDEA) Consortium	Geng Martin	Completed	Paper[58]

Table 11: SA1 - Projects From Previous Grant Cycle

Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
89	Pregnancy rates among HIV+ women using various combinations of ART and contraception	Patel, R.	Analysis in Process; Planned Manuscripts: • Analysis of BMI/TB meds-resubmit summer 2018 • Cohort analysis-late 2018 • Recurrent pregnancy-early 2019	Poster[59]
Supplement	Point of care CD4 Testing for people who fail to engage in care after testing HIV positive	Braitstein	Analysis in Process	N/A
Supplement	A Qualitative study of bottlenecks in access to HIV care and treatment in Kisesa, Tanzania Study	Waymoi	Completed	9 Papers[60-68]

SA-2: We will examine the impact of behavioral factors on retention within the cascade and subsequent outcomes concentrating on the syndemics of substance use and mental illness.

Project 2.1: Prevalence and impact of alcohol use in patients enrolling in HIV care

PSA1: *Determine the long term (2-3 year) outcomes of the* AUAC*.*
PSA2: *Assess strategies utilized by patients to address their hazardous alcohol use.*
PSA3: *(Bridging Aim to Project 2.2): Identify community, and clinic-based services available for the treatment of substance use and mental health disorders in clinics participating in Project 2.2.*

Project Description: PSA1 will utilize the established *Alcohol Use Assessment Sentinel Cohort* (AUAC) at FACES, AMPATH and Mbarara to assess the impact of hazardous alcohol consumption at baseline andfollow- up on adherence, mortality, loss to program and re-engagement. Data from the Clinic Cohort Database, the IeDEA-EA LTFU tracking form and the AUDIT will be used for data capture. Patients LTP will be traced per existing AUAC procedures. An audio recorded one-hour semi-structured interview will be conducted on 25% of patients with an AUDIT score >8 (about 50 patients). These interviews will ask questions related to interventions utilized or recommended, the perceived quality of intervention services, barriers and enablers to care and the perceived need of the patient to get help. A study specific semi-structured qualitative interview will be designed to identify and describe community and healthcare facility services available for management of substance use and mental health disorders, which will be conducted with key clinic personnel (the clinical officers-in charge, social workers) at the clinics in *Project 2.2*.

Progress: This project has been implemented at all sites. Data collection and lost-to-follow-up tracking data collection has been completed at AMPATH and at FACES. Mbarara will complete data collection in May 2018. Data entry is ongoing at all sites. Data cleaning and analysis will commence in June with a plans for a draft manuscript to be circulated in September 2018.

Project 2.2: *Assessing the syndemics of substance use and mental illness*

PSA 1: *Descriptive: Determine the prevalence of substance use (drug and alcohol) and mental health*

disorders in patients enrolling into care.
PSA 2: *Assess the impact of substance use, mental health disorders and dual diagnoses on patient adherence and retention in the cascade*
PSA 3: *Map the substance use and mental health treatment services utilized by the Behavioral Cohort.*

Project Description: Project 2.2 will establish a Sentinel Behavioral Cohort of 800 HIV-infected adults (≥18 years) newly enrolled at AMPATH, FACES, Mbarara and Tumbi. Subjects will undergo standardized validated assessments for mental health and substance use issues. The Sentinel Behavioral Cohort will be followed for 24 months. Cohort members who fail to return for a scheduled visit within 2 months will be tracked per existing protocols including use of the IeDEA-EA lost to follow-up tracking form. After 12 months of follow-up, a sample of patients found in the initial assessment as having mental health or substance use issues will be assessed by a semi-structured interview.

Progress: The project protocol informed consents, interview guides and ancillary documents are complete. Submission for the AMPATH site to Moi IREC was done in March 2018. FACES and Mbarara will submit for regulatory approval in April 2018. Staff training will take place in May 2018 with sites commencing enrollment following regulatory approval.

Supplements SA 2: There is one funded Supplements for SA 2.

Supplement 2.6: Characterizing the effects of alcohol and other drug use on engagement in the HIV care cascade among patients in IeDEA-affiliated clinics in East Africa: A Social Network Approach [PI Syvertsen]

Project Description: This project utilizes the Syndemics Sentinel Cohort as a platform and has the following aims: **SA1:** To examine how social network factors (e.g., network size, structure, composition) are associated with patterns of AOD, sexual behaviors, engagement in care, and HIV clinical outcomes among a sample of EA IeDEA-affiliated clinic patients who screen positive for alcohol and/or drug use and a comparison group; **SA2:** To qualitatively describe the nature and overlap of key relationships (e.g., risky and supportive) within patients' networks and assess their associations with HIV outcomes; **SA3:** To use mixed methods to explore the feasibility, acceptability, and potential format of a social network intervention to reduce AOD, improve HIV clinical outcomes, and increase linkages to HIV testing and care among networks of HIV+ people who use alcohol and/or drugs in East Africa.

Progress: The protocol, consent and questionnaires have been finalized and regulatory approval is pending.

Specific Aim 2 Supplement Requests: One Specific Aim 2 supplement request was submitted in 2018 and is outlined in Table 12.

Table 12: Requests for Supplements Specific Aim 2 Submitted 2018

PI	Title	Aims
PI: Castelnuovo	Using task shifting for depression screening and management within the Infectious Diseases Institute supported clinics in Kampala, Uganda	SA1: To evaluate the uptake of depression screening using the Patient Health Questionnaire-2 (PHQ-2) and the Patient Health Questionnaire-9 (PHQ-9) in the Kampala City Council Authority (KCCA) Clinics. SA2: To implement the management of depression using differentiated care models with linkage to an appropriate level of mental health care based on depression score. SA3: To follow up a cohort of patients with clinical depression at ART start and evaluate the impact of ART and the proposed differentiated care model through repeated depression score evaluations.

SA 2 Projects from Previous Grant Cycles:

EA-IeDEA continues to work on finalizing the AUAC project related to this SA that was initiated under the previous funding cycle (Table 13).

Table 13: Specific Aim 2 - Project From Previous Grant Cycle

Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
Supplement	Alcohol Use Assessment Sentinel Cohort (AUAC)	Wools-Kaloustian Goodrich	Analysis Finalized; 2 manuscripts anticipated with one in draft form	NA

SA-3: To understand contextual issues of care, we will examine the impact of the health care environment on retention within the cascade and subsequent outcomes.

Project 3.1 Knowledge, attitudes and behaviors: Providers and their impact on patient outcomes

PSA 1: *Enumerate providers and describe their knowledge, attitudes, professional social networks and behaviors regarding key evidence based practices.*
PSA 2: *Estimate the effect of provider characteristics on the quality of clinical practice*

Project Description: We will create a *Sentinel Provider Cohort* at Mbarara, FACES, and Morogoro. We will assess basic sociodemographic characteristics, educational and professional background and current job activities. Existing instruments will be used to assess workforce characteristics including motivation, burn-out and job satisfaction. In the second aim we will include provider characteristics as predictors of patient outcomes in multi-level analyses adjusting for patient-level characteristics for outcomes such as complete screening for TB the first visit; Documentation completeness; ART initiation in eligible patients; Ordering monitoring and diagnostic tests.

Progress: The protocol, data collection forms and consents have been finalized. Regulatory approval for Uganda (ISS Clinic) and Kenya (FACES) sites has been received. Tanzania (TUMBI) regulatory is under review. All eligible participants (25) for ISS Clinic were approached and 24 consented. We anticipate the FACES and TUMBI sites to start enrollment in May 2018 and August 2018 respectively.

SA-4: We will continue to explore HIV co-infections/co-morbidities and their outcomes with an emphasis on Kaposi's Sarcoma (KS) and cervical cancer.

Project 4.1. KS presentation, Incidence and survival in the ART era

PSA 1. *Update estimates of the foundational elements — incidence and survival — of KS in East Africa.*
PSA 2. *Determine stage of KS at disease presentation and reasons for delayed presentation.*

Project Description: In this project we utilize the *KS Sentinel Clinics* at AMPATH in western Kenya, IDI in Kampala Uganda, ISS clinic in Mbarara, Uganda and AHF-Uganda Cares Masaka Clinic in Uganda. Each of these clinics has integrated skin biopsies, supported by EA-IeDEA, for histological confirmation of KS as part of routine clinical care. Diagnoses of KS are subsequently recorded through capture of pathology laboratory reports as well as through interrogation of the *Clinic Cohort Database* for those diagnoses made solely on clinical grounds. Upon learning of a new diagnosis of KS, a supplemental set of questionnaires is administered to patients as soon as possible to assess the extent of the disease at presentation (i.e., stage) and reasons for delayed presentation. This process of identifying recently diagnosed conditions and making detailed measurements is referred to as Rapid Case Ascertainment (RCA). In summary, we using the base IeDEA infrastructure, which captures skeletal information collected during the course of clinical care, as a platform to make richer measurements in order to address more sophisticated questions and achieve more accurate inferences. The RCA aspect of this project is

funded by the UCSF U54.

Progress: The RCA protocol has been developed and is in place at all sites. A series of instruments have been designed to document socioeconomic characteristics, the sequence of events preceding diagnosis (as means to understand delays), symptoms associated with KS lesions, KS lesion burden, KS-specific therapy, and quality of life. These instruments were originally developed for use at the AMPATH site and subsequently adapted at the Ugandan sites. All sites have now received extensive training in the use of the instruments.

Regulatory submissions and approval. Regulatory approval is now in place at all sites.

Data collection and management. While some of the data is extracted directly from the ambient clinical and biopsy databases, the other data (e.g., stage of disease and reasons for delay) are collected on research-dedicated instruments. A REDCap database has been built to house these data.

Participant enrolment and preliminary findings. Enrollment has been ongoing at AMPATH since 2016. To date at AMPATH, 203 patients with KS have been screened. Of these, 70% were eligible (on the basis of a recent diagnosis), and we have been able to perform RCA (i.e., additional extensive data collection) on almost 75% of them. Of those who have had RCA performed, 47% were women, and the median age was 38 years old; the majority of participants (60%) had only a primary school education, and the median annual income was only $840 U.S. Most participants were diagnosed at an advanced stage of disease: the median number of anatomic regions involved with KS was 5 and 80% had evidence of edema. Of note, 45% had an undetectable viral load. We have also examined mortality using both information on death from the ambient clinical databases and the novel community tracking procedures that were pioneered by the EA IeDEA Consortium for patients who are lost to follow-up from their parent clinic. To date, the one-year cumulative incidence of mortality is 23%. The RCA Protocol has been pilot tested at both of the sites in Uganda, and, thus far, one participant has been enrolled at the AHF-Uganda Cares Masaka site. The Mbarara site is poised to enroll a participant at the next diagnosis of KS at the medical center.

Project 4.2. Cervical cancer screening uptake and predictors of VIA positivity in rural western Kenya
PSA 1: *Identify predictors of cervical cancer screening*
PSA 2: *Determine predictors of VIA positivity*
PSA 3: *Estimate the cervical cancer screening cascade from screening uptake to treatment*

Project Description: This study will utilizes the *Clinic Cohort* restricted to FACES and AMPATH and merges the data with each programs' Cervical Cancer Screening Database.

Progress: The concept for this project has been developed and approved by the EA-IeDEA EC. Data from the cervical cancer screening programs have been cleaned. Data has been linked to the patient level data in the master datasets from FACES and AMPATH. Preliminary descriptive data have been generated for AMPATH. We anticipate the descriptive data will be generated for FACES by August 2018. We anticipate completion of the analysis by December 2018 with a manuscript to follow shortly thereafter.

Table 14: Current Specific Aim 4 Concept Sheets

Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
100	Rates of Cervical Cancer Screening Uptake and Predictors of VIA Positivity among Women in a Rural Western Kenya	Omege Huchko	Data set created-need to merge with HIV data, statistician assigned	NA

SA 4 Projects from Previous Grant Cycles:

EA-IeDEA continues to work on finalizing projects related to this SA that were initiated under previous funding

cycles. The status of these projects are outlined in Table 15.

Table 15: Specific Aim 4 - Projects From Previous Grant Cycle

Concept Number	Concept Title	Concept Leader	Status	Product (Year 12)
69	ART and congenital anomalies- a systematic review of mother baby data on association of ART and congenital anomalies in Western Kenya	Apondi	Dataset in development – awaiting data from FACES	NA
Supplement	Building off the HIV Platform: Extension of Pharmacovigilance to Populations with Tuberculosis or Malignancies	Karwa Pasaki	Data cleaning in process	NA
WHO/Gates Funded	Pharmacovigilance & Toxicity Documentation in the Context of Antiretroviral treatment-threatening: Comparative Evaluation of 4 Strategies in a Resource-constrained setting	Karwa Pasaki	Primary data collection complete Analysis underway	NA

A. Significance:

The overall significance of this work remains the same as that outlined in the initial grant application.

B. Plans

The plans for each project are outlined within the project narrative.

Publications and Abstracts

1. Lok J, Syriopoulou E, Rabideau D, Musick B, Martin J, Wools-Kaloustian K, Bosch R, Mwangi A, Yiannoutsos C, editors. Adherence to combination antiretroviral (ART) therapy in sub-Saharan Africa. Conference on Retroviruses and Opportunistic Infections (CROI); 2018; Boston, MA.
2. Syriopoulou E, Lok J , Musick B, Martin J, Wools-Kaloustian K, Yiannoutsos C. Adherence to combination antiretroviral (ART) therapy in sub-Saharan Africa. 2018.
3. Tran L, Yiannoutsos C, Wools-Kaloustian K, Siika A, van der LaanM, Petersen M. Double robust efficient estimators of longitudinal treatment effects: Comparative performance in simulations and a case study (aka LREC compare). 2018.
4. Bakoyannis G, Yu M, Yiannoutsos CT. Semiparametric regression on cumulative incidence function with interval-censored competing risks data. Statistics in medicine. 2017;36(23):3683-707.
5. Bakoyannis G, Zhang Y, Yiannoutsos C, editors. Adjusting for outcome misclassification in cohort studies with competeing risks. 50th Annual meeting of the Soceity for Epidemiologic Research;2017; Seattle, WA.
6. Bakoyannis G, Zhang Y, Yiannoutsos C. Semiparametric regression and risk prediction with compteing risks data under missing cause of failure 2018.
7. Miles C, Petersen M, Yiannoutsos C, Wools-Kaloustian K, Siika A, van der Laan M, editors. Causal inference for a single group of causally connected units without network data. Atlantic Causal Inference Conference; 2017; Chapel Hill, NC.
8. Miles C, Petersen M, van der Laan M. Causal inference for a single group of causally connected units without network data. 2018.
9. Bakoyannis G, Zhang Y, Yiannoutsos C. Nonparametric inference for Markov processes with missing absorbing state. 2017.

10. Bakoyannis G, Musick B, Yiannoutsos C, editors. Estimating patient "churn" in the HIV care cascade: A doubly-robust estimation methodology based on partial tracing of patients lost to clinic International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

11. Wools-Kaloustian K, Marete I, Ayaya S, Sohn AH, Van Nguyen L, Li S, Leroy V, Musick BS, Newman JE, Edmonds A, Davies MA, Eboua FT, Obama MT, Yotebieng M, Sawry S, Mofenson LM, Yiannoutsos CT. Time to First-Line ART Failure and Time to Second-Line ART Switch in the IeDEA Pediatric Cohort. Journal of acquired immune deficiency syndromes. 2018.

12. Brown SA, Abbas S, Davies MA, Bunupuradah T, Sohn AH, Technau KG, Renner L, Leroy V, Edmonds A, Yotebieng M, McGowan CC, Duda SN, Mofenson L, Musick B, Wools-Kaloustian K. Brief Report: Pediatric Cancer Burden and Treatment Resources Within the Pediatric IeDEA Consortium. Journal of acquired immune deficiency syndromes. 2017;76(1):60-4.

13. Giles M, Achhra A, Abraham A, Haas A, Anastos K, Gill M, Po L, Luque M, Cornell M, de Rekeneire N, Braitstein P, Becquet R, Lyamuya R, Rouzier V, Law M. Gender differences in antiretroviral therapy initiation, switching and treatment interruptions: global overview from the International Epidemiologic Databases to Evaluate AIDS (IeDEA). 2017.

14. Collins I, Goodall R, Smith C, Abrams E, Balkan S, Ben-Farhat J, Davies M-A, Edmonds A, Leroy V, Nuwagaba-Biribonwoha H, Patel K, Paul M, Pinto J, Rojo P, Sohn A, Van Dyke R, Vreeman R, Maxwell N, Timmerman V, Duff C, Judd A, Seage III G, Williams P, Gibb D, Bekker L-G, Mofenson L, Vicari M, Essajee S, Mohapi E, Kazembe P, Hlatshwayo M, Lumumba M, Kekitiinwa-Rukyalekere A, Wanless S, Matshaba M, Goetghebuer T, Galli L, Geelen S, Thorne C, Warszawski J, Giaquinto C, Marczynska M, Marques L, Prata F, Ene L, Okhonskaia L, Noguera-Julian A, Naver L, Rudin C, Jourdain G, Volokha A, Rouzier V, Succi R, Chokephaibulkit K, Kariminia A, Yotebieng M, Lelo P, Lyamuya R, Marete I, Oyaro

15. P, Boulle A, Malisita K, Fatti G, Haas A, Desmonde S, Dicko F, Abzug M, Levin M, Oleske J, Chernoff M, Traite S, Purswani M, Teasdale C, Chadwick E, Wools-Kaloustian K. Incidence of switch to second-line antiretroviral therapy and associated factors in children with HIV: A global analysis.

16. Patel K, Smith C, Collins J, Goodall R, Abrams E, Sohn A, Van Dyke R, Conejo P, Ayaya S, Pinto J, Edmonds A, Paul M, Davies M-A, Leroy V, Vreeman R, on behalf of the Collaborative Initiative for Paediatric HIV Education and Research (CIPHER) Cohort Collaboration Duration of Second-line Project Team, editors. Outcomes of second-line antiretroviral therapy (ART) in HIV-infected children: a CIPHER cohort collaboration global analysis. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

17. Patel K, Smith C, Collins J, Goodall R, Abrams E, Mohamed T, Van Dyke R, Conejo P, Wools-Kaloustian K, Pinto J, Edmonds A, M. P, Davies M-A, Leroy V, Vreeman R, on behalf of the Collaborative Initiative for Paediatric HIV Education and Research (CIPHER) Cohort Collaboration Duration of Second-line Project Team, editors. Outcomes of second-line antiretroviral therapy (ART) in HIV-infected children: a CIPHER cohort collaboration global analysis. IAS conference on HIV science 2018; Amsterdam, Netherlands

18. Collaborative Initiative for Paediatric HIVE, Research Global Cohort C, Slogrove AL, Schomaker M, Davies MA, Williams P, Balkan S, Ben-Farhat J, Calles N, Chokephaibulkit K, Duff C, Eboua TF, Kekitiinwa-Rukyalekere A, Maxwell N, Pinto J, Seage G, 3rd, Teasdale CA, Wanless S, Warszawski J, Wools-Kaloustian K, Yotebieng M, Timmerman V, Collins IJ, Goodall R, Smith C, Patel K, Paul M, Gibb D, Vreeman R, Abrams EJ, Hazra R, Van Dyke R, Bekker LG, Mofenson L, Vicari M, Essajee S, Penazzato M, Anabwani G, E QM, P NK, Hlatshwayo M, Lumumba M, Goetghebuer T, Thorne C, Galli L, van Rossum A, Giaquinto C, Marczynska M, Marques L, Prata F, Ene L, Okhonskaia L, Rojo P, Fortuny C, Naver L, Rudin C, Le Coeur S, Volokha A, Rouzier V, Succi R, Sohn A, Kariminia A, Edmonds A, Lelo P, Ayaya S, Ongwen P, Jefferys LF, Phiri S, Mubiana-Mbewe M, Sawry S, Renner L, Sylla M, Abzug MJ, Levin M, Oleske J, Chernoff M, Traite S, Purswani M, Chadwick EG, Judd A, Leroy V. The epidemiology of adolescents living with perinatally acquired HIV: A cross-region global cohort

analysis. PLoS medicine. 2018;15(3):e1002514.

19. Sohn A, IeDEA pediatric working group. Taking a critical look at the UNAIDS global estimates on pediatric and adolescent HIV survival and death. 2016.

20. Harezlak J, Sarwat S2, Wools-Kaloustian K, Schomaker M, Balestre E, Law M, Kiertiburanakul S, Fox M, Huis in't Veld D, Musick B, Yiannoutsos C. SiZer Map to investigate significant features of the rate of change of body-weight profile for HIV infected patients in IeDEA study. 2018.

21. Desmonde S, Neilan A, Musick B, Pattern G, Chokephaibulkit K, Edmonds A, Duda S, Malateste K, Wools-Kaloustian K, Ciaranello A, Yiannoustsos C, Davies M-A, Leroy V, on behalf of the multiregional IeDEA pediatric working group, editors. Time-varying age– and CD4– stratified risks of mortality in perinatally HIV-infected children and youth aged 0-24 years before and after ART initiation, in the global pediatric IeDEA collaboration. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

22. Coffie PA, Egger M, Vinikoor MJ, Zannou M, Diero L, Patassi A, Kuniholm MH, Seydi M, Bado G, Ocama P, Andersson MI, Messou E, Minga A, Easterbrook P, Anastos K, Dabis F, Wandeler G, Ie DEAc. Trends in hepatitis B virus testing practices and management in HIV clinics across sub-Saharan Africa. BMC Infect Dis. 2017;17(Suppl 1):706.

23. Semeere A, Freeman E, Wenger M, Glidden D, Bwana M, Kanyesigye M, Asirwa FC, Rotich E, Busakhala N, Oga E, Jedy-Agba E, Kwaghe V, Iregbu K, Adebamowo C, Jaquet A, Dabis F, Phiri S, Bohlius J, Egger M, Yiannoutsos CT, Wools-Kaloustian K, Martin J. Updating vital status by tracking in the community among patients with epidemic Kaposi sarcoma who are lost to follow-up in sub-Saharan Africa. BMC Cancer. 2017;17(1):611.

24. Freeman E, Busakhala N, Asirwa F, Regan S, Wenger M, Chelidze K, Semeere A, Seth D, Wools-Kaloustian K, Bassett I, Martin J, editors. Kaposi's sarcoma severity, treatment and survival in a largecommunity-based HIV health care network in Kenya. International Investigative Dermatology; 2018; Orlando, FL.

25. Arrivé E, Ayaya S, Davies M-A, Chimbetete C, Edmonds A, Lelo P, Fong S-M, Razali K, Kouakou K, Duda S, Leroy V, Vreeman R. Models of support for disclosure of HIV status to HIV-infected children and adolescents in resource-limited settings. 2018.

26. Rebeiro P, Kim A, Jayathilake K, Duda S, Abo Y, Althoff K, Musick B, Sohn A, Wools-Kaloustian K, Nash D, Yiannoutsos C, McGowan C, for the International epidemiology Databases to Evaluate AIDS (IeDEA) consortium, editors. Site-level comprehensiveness of care and individual clinical retention among adults in the IeDEA collaboration, 2000-2016. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

27. Haas AD, Zaniewski E, Anderegg N, Ford N, Fox MP, Vinikoor M, Dabis F, Nash D, Sinayobye JD, Niyongabo T, Tanon A, Poda A, Adedimeji AA, Edmonds A, Davies MA, Egger M, African regionsof the International epidemiologic Databases to Evaluate A. Retention and mortality on antiretroviral therapy in sub-Saharan Africa: collaborative analyses of HIV treatment programmes. Journal of the International AIDS Society. 2018;21(2).

28. Leroy V, Desmonde S, Malasteste K. IeDEA-WHO 2016 collaboration Global analysis of the pre-ART cascade adn delay from diagnosis to start of antiretroviral therapy in HIV-infected children aged 0-19 years 2017.

29. Zürcher K, Ballif M, Kiertiburanakul S, Chenal H, Yotebieng M, Grinsztejn B, Michael D, Sterling T, Ngonyani K, Mandalakas A, Egger M, Pettit A, Fenner L, for the International EpidemiologyDatabases to Evaluate AIDS (IeDEA) network. Diagnosis and clinical outcomes of extrapulmonary tuberculosis in antiretroviral therapy programs in low- and middle-income countries: a multi-cohort study2017.

30. Humphrey J, Mpofu P, Pettit A, Carter E-J, Messou E, Marcy O, Crabtree-Ramirez B, Sterling T, Yotebieng M, Anastos K, Goodrich S, Musick B, Yiannoutsos C, Diero L, Wools-Kaloustian K, for the

International Epidemiology Databases to Evaluate AIDS (IeDEA) Network, editors. Mortality among HIV-positive adults treated for tuberculosis with positive, negative, or no microbiological test results in the IeDEA collaboration. IAS conference on HIV science 2018; Amsterdam, Netherlands

31. Jesson J, Schomaker M, Malasteste K, Wati D, Kariminia A, Sylla M, Kouadio K, Sawry S, Vinikoor M, Ayaya S, Vreeman R, Davies M-A, Leroy V, on behalf of the IeDEA global cohort consortium, editors. Stunting and Growth of HIV-Infected Adolescents: How to Interpret Programmatic Data? Conference on Retroviruses and Opportunistic Infections (CROI); 2018; Boston, MA.
32. Jesson J, Davies M-A, Leroy V, editors. Growth in adolescents. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.
33. Boettiger D, Law M, Sohn A, Davies M-A, Wools-Kaloustian K, Leroy V, Yotebieng M, Vinikoor M, Vreeman R, A E, Kariminia A, on behalf of the International Epidemiology Databases to Evaluate AIDS, editors. Temporal Trends in Global Pediatric Cotrimoxazole Use and Impact on Mortality. Conference on Retroviruses and Opportunistic Infections (CROI); 2018; Boston, MA.
34. Boettiger D, Law M, Sohn A, Davies M-A, Wools-Kaloustian K, Leroy L, Yotebieng M, Vreeman R, Edmonds A, Batte J, Adedimeji A, Kariminia A, on behalf of the International Epidemiology Databases to Evaluate AIDS. Temporal trends in cotrimoxazole use among children on antiretroviral therapy and the impact of cotrimoxazole on rates of mortality in children without severe immune deficiency 2017.
35. Anderegg A, The IeDEA and COHERE Cohort Collaborations, Egger M. Global trends in CD4 count at start of antiretroviral treatment: collaborative study of treatment programs. 2017.
36. Parcesepe A, Mugglin C, Egger M, Nalugoda F, Bernard C, Yunihastuti E, Althoff K, Jacquet A, Duda S, Wester CW, Nash D, IeDEA Consortium. Screening and management of mental health and substance use disorders in HIV treatment settings in low- and middle-income countries within the global IeDEA consortium. 2017.
37. Kariminia A, Jiamsakul A, Law M. IeDEA-WHO collaboration 2017: Viral outcomes on ART. 2017.
38. Zaniewski E, Haas A, Egger M. IeDEA-WHO Collaboration: Global analysis of retention in care in initial HIV care and treatment program in the IeDEA regions. 2017.
39. Tymejczyk O, Brazier E, Yiannoutsos C, Wools-Kaloustian K, Althoff K, Crabtree-Ramirez B, Van Nguyen K, Zaniewski E, Dabis F, d'Amour Sinayobye J, Anderegg N, Ford N, Wikramanayake R, Liu G, NashD, for the IeDEA Collaboration, editors. HIV Treatment and eligibility expansion and timely Antiretoviral treatment initiation following enrollment in HIV Care: A Meta-regression analysis of Programmatic data from 22 countries. Conference on Retroviruses and Opportunistic Infections (CROI); 2018; Boston, MA.
40. Tymejczyk O, Brazier E, Yiannoutsos C, Wools-Kaloustian K, Althoff K, Crabtree-Ramirez B, Zaniewski E, d'Amour Sinayobye J, Anderegg N, Ford N, Wikramanayake R, Nash D, on behalf of IeDEA, editors. Has 'Treat All' improved uptake of ART? A 10-country analysis of timeliness of ART initiation following the adoption of universal test and treat policies. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.
41. Tymejczyk O, Brazier E, Nash D. IeDEA-WHO Collaboration: Global analysis of delays from eligibility to antriretroviral treatment (ART) initiation among adults. 2017.
42. Leroy V, Desmonde S, Malateste K. IeDEA-WHO 2017 Collaboration: Global analysis of the pre-ART cascade and delay from diagnosis to start of antiretroviral therapy in HIV-infected children aged 0-19 years 2004-2016 2017.
43. Lewis J, Moragas E, Musick B, Riggen L, Sohn A, Kim H-Y, McGowan C, Yiannoustos C, Hogan B, Maxwell N, Ostinelli C, Malateste K, Duda S, editors. Informatics to the Rescue: Simplifying Data Standards and Data Quality Checking. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

44. Rohner E, Mugglin C, Jaquet A, Merati T, Wools-Kaloutstian K, Dzudie A, Jalil E, Bohlius J, Nash D, Egger M, Wester C, editors. Cancer prevention and care in HIV-positive women in low- and middle-income countries. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

45. Ellen Brazier1, Maruri F, Tymejczyk O, Wester C, Somi G, Ross J, Freeman A, Davies M-A, Poda A, Kimmel A, Yotebieng M, Nash D, for the IeDEA Collaboration, editors. Implementation of 'Treat-all' at sites participating in the Global IeDEA Collaboration – Results of a Systematic Site Assessment of227 HIV treatment programs in 44 countries, 2017. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

46. Slovgrove A, on behalf of the CIPHER Cohort Collaboration. Inequality in outcomes for adolescents living with perinatally acquired HIV in sub–Saharan Africa: a Collaborative Initiative for Paediatric HIV Education and Research (CIPHER) Cohort Collaboration analysis. 2018.

47. Zürcher Z, Ballif M, Fenner L, Gnokoro J, Yotebieng M, Diero L, Wilkinson R, Cox H, Ezati N, Rutaihwa L, Loo JC, Petersen T, Gagneux S, Böttger E, Egger M, on behalf of the International Epidemiology Databases to Evaluate AIDS (IeDEA) TB genomics project group, editors. Accuracy and clinical significance of TB drug resistance testing at TB clinics attached to ART programs International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

48. Zürcher K, Ballif M, Fenner L, Borrell S, Keller P, Gnokoro J, Yotebieng M, Diero L, Carter E-J, Rockwood N, Wilkinson R, Cox H, Ezati N, Abimiku A, Loo J-C, Petersen T, Avihingsanon A, Reinhard M, Hömke R, Huebner R, Böttger E, Gagneux S, Egger M, on behalf of the International Epidemiology Databases to Evaluate AIDS (IeDEA), editors. Drug susceptibility testing, HIV-coinfection and outcomes in patients treated for tuberculosis in low- and middle-income settings. IAS conference on HIV science 2018; Amsterdam, Netherlands

49. Vreeman R, Scanlon M, Tu W, Slaven J, McAteer C, Kerr S, Bunupuradah T, Chanthaburanum S, Technau K-G, Nyandiko W, editors. Adherence to antiretroviral therapy among HIV-infected children inKenya, South Africa, and Thailand 13th International Conference on HIV Treatment and Prevention Adherence 2018; Miami, FL.

50. Colombe S, R. M, Mtenga B, Lutonja P, Safari W, Beard B, Downs J, Urassa M, ToddJ, Changalucha J, editors. Cascade of Care For HIV-Seroconverters in Rural Tanzania: A Longitudinal Study. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

51. Todd J, Harklerode R, Beard J, Urassa M, Mbata D, Wamoyi J, Machemba R, Somi G, Rice B, editors. Surveillance of Linkage from HIV Testing to Enrolment in Care in Magu Tanzania. International Workshop on HIV Observational Databases, (IWHOD); 2018; Fuengirola, Spain.

52. Enane LA, Vreeman RC, Foster C. Retention and adherence: global challenges for the long-term care of adolescents and young adults living with HIV. Curr Opin HIV AIDS. 2018;13(3):212-9.

53. Kiragga A, Castelnuovo B, Twinomuhwezi E, Banturaki G, Nampala J, Achieng M, Musick B, Wools-Kaloustian K, Yiannoutsos C, editors. Poor outcomes among women who disengage from PMTCT services compared to retained women in in Urban Uganda. International Workshop on HIV Observational Databases, (IWHOD) 2018; Fuengirola, Spain.

54. Vreeman RC, Ayaya SO, Musick BS, Yiannoutsos CT, Cohen CR, Nash D, Wabwire D, Wools-Kaloustian K, Wiehe SE. Adherence to antiretroviral therapy in a clinical cohort of HIV-infected children in East Africa. PloS one. 2018;13(2):e0191848.

55. Apondi E, Humphrey J, Sang E, Mwangi A, Keter A, Musick B, Nalugoda F, Ssali J, Bukusi E, Yiannoutsos C, Wools-Kaloustian K, Ayaya S. Trends Over Time for Adolescents Enrolling in HIV Care in Kenya, Tanzania, and Uganda from 2001-2014. 2018.

56. Rebeiro PF, Bakoyannis G, Musick BS, Braithwaite RS, Wools-Kaloustian KK, Nyandiko W, Some F, Braitstein P, Yiannoutsos CT. Observational Study of the Effect of Patient Outreach on Return toCare:

The Earlier the Better. Journal of acquired immune deficiency syndromes. 2017;76(2):141-8.

57. Nuwagaba-Biribonwoha H, Kiragga A, Yiannoutsos C, Musick B, Wools-Kaloustian K, Ayaya S, Wolf H, Lugina E, Ssali J, Abrams E, Elul E, for the International epidemiologic Databases to Evaluate AIDS (IeDEA) East Africa Collaboration. Adolescent pregnancy: a critical barrier to retention on antiretroviral therapy (ART). 2017.

58. Holmes CB, Yiannoutsos CT, Elul B, Bukusi E, Ssali J, Kambugu A, Musick BS, Cohen C, Williams C, Diero L, Padian N, Wools-Kaloustian KK. Increased prevalence of pregnancy and comparative risk of program attrition among individuals starting HIV treatment in East Africa. PloS one. 2018;13(1):e0190828.

59. Bershetyn A, Odeny TA, Lyamuya R, Nakiwogga-Muwanga A, Diero L, Bwana M, Braitstein P, Somi G, Kambugu A, Bukusi E, Hartogensis W, Glidden DV, Wools-Kaloustian K, Yiannoutsos C, Martin J, Geng EH, East Africa International Epidemiologic Databases to Evaluate AC. The Causal Effect of Tracing by Peer Health Workers on Return to Clinic Among Patients Who Were Lost to Follow-up From Antiretroviral Therapy in Eastern Africa: A "Natural Experiment" Arising From Surveillance of Lost Patients. Clinical infectious diseases: an official publication of the Infectious Diseases Society of America. 2017;64(11):1547-54.

60. Patel R, Jakait B, Mocello A, Parks C, Akama E, Musick B, Blat C, Onono M, Bukusi E, Yiannoutsos C, Braitstein P, Wools-Kaloustian K, Cohen C, editors. No association between duration of implant use and pregnancy among HIV-positive women using concomitant efavirenz-containing antiretroviral therapy. IAS conference on HIV science 2017; Paris, France.

61. Wringe A, Moshabela M, Nyamukapa C, Bukenya D, Ondenge K, Ddaaki W, Wamoyi J, Seeley J, Church K, Zaba B, Hosegood V, Bonnington O, Skovdal M, Renju J. HIV testing experiences and their implications for patient engagement with HIV care and treatment on the eve of 'test and treat': findings from a multicountry qualitative study. Sexually transmitted infections. 2017;93(Suppl 3).

62. Wamoyi J, Renju J, Moshabela M, McLean E, Nyato D, Mbata D, Bonnington O, Seeley J, Church K, Zaba B, Wringe A. Understanding the relationship between couple dynamics and engagement with HIV care services: insights from a qualitative study in Eastern and Southern Africa. Sexually transmitted infections. 2017;93(Suppl 3).

63. Skovdal M, Wringe A, Seeley J, Renju J, Paparini S, Wamoyi J, Moshabela M, Ddaaki W, Nyamukapa C, Ondenge K, Bernays S, Bonnington O. Using theories of practice to understand HIV-positive persons varied engagement with HIV services: a qualitative study in six Sub-Saharan African countries. Sexually transmitted infections. 2017;93(Suppl 3).

64. Renju J, Moshabela M, McLean E, Ddaaki W, Skovdal M, Odongo F, Bukenya D, Wamoyi J, Bonnington O, Seeley J, Zaba B, Wringe A. 'Side effects' are 'central effects' that challenge retention in HIV treatment programmes in six sub-Saharan African countries: a multicountry qualitative study. Sexually transmitted infections. 2017;93(Suppl 3).

65. Ondenge K, Renju J, Bonnington O, Moshabela M, Wamoyi J, Nyamukapa C, Seeley J, Wringe A, Skovdal M. 'I am treated well if I adhere to my HIV medication': putting patient-provider interactions in context through insights from qualitative research in five sub-Saharan African countries. Sexually transmitted infections. 2017;93(Suppl 3).

66. Moshabela M, Bukenya D, Darong G, Wamoyi J, McLean E, Skovdal M, Ddaaki W, Ondeng'e K, Bonnington O, Seeley J, Hosegood V, Wringe A. Traditional healers, faith healers and medical practitioners: the contribution of medical pluralism to bottlenecks along the cascade of care for HIV/AIDS in Eastern and Southern Africa. Sexually transmitted infections. 2017;93(Suppl 3).

67. McLean E, Renju J, Wamoyi J, Bukenya D, Ddaaki W, Church K, Zaba B, Wringe A. 'I wanted to safeguard the baby': a qualitative study to understand the experiences of Option B+ for

pregnant women and the potential implications for 'test-and-treat' in four sub-Saharan African settings. Sexually transmitted infections. 2017;93(Suppl 3).

68. Bukenya D, Wringe A, Moshabela M, Skovdal M, Ssekubugu R, Paparini S, Renju J, McLean E, Bonnington O, Wamoyi J, Seeley J. Where are we now? A multicountry qualitative study toexplore access to pre-antiretroviral care services: a precursor to antiretroviral therapy initiation. Sexually transmitted infections. 2017;93(Suppl 3).

69. Bonnington O, Wamoyi J, Ddaaki W, Bukenya D, Ondenge K, Skovdal M, Renju J, Moshabela M, Wringe A. Changing forms of HIV-related stigma along the HIV care and treatment continuum in sub- Saharan Africa: a temporal analysis. Sexually transmitted infections. 2017;93(Suppl 3).

INDEX

ACTG....7, 9
ADAT....i, 2
adolescents29, 34, 40, 43, 44, 45, 46, 55, 64, 71, 78, 81, 82, 91, 92, 93, 94, 95, 97, 98, 99, 100, 102, 108, 109, 110, 111
Adult Medicine Research Working Group ..... *See* AMWG
Africa12, 22, 23, 25, 31, 32, 34, 36, 48, 55, 56, 59, 60, 61, 62, 69, 72, 74, 79, 80, 81, 82, 84, 85, 88, 89, 90, 91, 92, 93, 94, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 107, 109, 111, 112, 113
AIDS 2018 conference....44, 61
AIDS Clinical Trials Group (ACTG)....7, 9
AMPATH2, i, ii, 1, 2, 3, 4, 5, 11, 12, 14, 30, 33, 34, 36, 40, 41, 44, 50, 51, 52, 55, 56, 58, 63, 64, 68, 76, 78, 80, 85, 86, 87, 88, 90, 94, 95, 97, 103, 104, 105, 106
AMPATH Data Analysis Team..... *See* ADAT
AMPATH Research Program..... 2, ii, 1, 2, 5
AMPATH's research bibliography 1
AMWG ..... i, 6, 7, 12, 13, 30, 41, 54, 56
ART7, 8, 9, 21, 26, 27, 33, 34, 40, 53, 57, 58, 69, 77, 78, 86, 88, 90, 91, 92, 93, 94, 95, 96, 97, 98, 100, 101, 102, 103, 104, 105, 107, 108, 109, 110, 111, 112
ART Co-ops....21
Atwoli....48
Ayaya53, 58, 61, 79, 81, 82, 92, 95, 98, 108, 109, 110, 111, 112
Ayuku 5, 18, 27, 80
AZT 58
Basic Science Research Working Group..... *See* BSWG
bed nets 63, 80
Behavioral and Social Science Research Working Group ....*See* SSRN
Biobanking ii
blood pressure 50, 52, 64
Braitstein27, 30, 40, 42, 54, 56, 80, 81, 82, 91, 97, 103, 108, 111, 112
Broad Institute of MIT and Harvard....49
Brown..... 6, 11, 41, 55, 78, 79, 80, 85, 87, 95, 108
Brown University..... 6, 41, 55, 78, 79, 85, 87, 95
BSWG i
Burkitt Lymphoma 35, 36
Busakhala 7, 59, 67, 109
Canadian Institute of Health Research 27
cardiac dysfunction 29
Cardiovascular and Metabolic Disease Research Working Group ..... *See* CVMD
Care for Child Development Intervention (CCDI) 16
Chamas 72, 73
Childhood Leukemia 18
children2, 16, 18, 19, 25, 29, 34, 35, 36, 40, 44, 47, 48, 52, 53, 56, 58, 60, 61, 74, 76, 77, 80, 91, 92, 93, 94, 97, 99, 100, 101, 102, 108, 109, 110, 111
Chite....69
Christoffersen-Deb 15, 23, 28, 37, 72, 81
CHV 14, 20, 38, 72, 73
Community based research....13
community health volunteers (CHVs)....20
community health workers..... 16, 21, 42, 50, 81
CVMD....i, 13, 29, 36, 50, 57, 64, 68, 70
Decision Support Systems ii
dihydroartemisinin-piperaquine (DP)....25
Duke University..... 5, 12, 25, 29, 38, 62, 63
Eldoret 2, 5, 18, 19, 28, 48, 60, 63, 80, 82, 85
FLTR....30
Fluorescence in situ Hybridization (FISH) 36
Gakinya 6
Genberg 41, 42, 71, 81, 82
Grants 2
Grinter....2
HIV2, 5, 6, 7, 8, 9, 11, 12, 13, 19, 21, 22, 26, 27, 29, 30, 32, 33, 34, 40, 41, 42, 43, 44, 45, 46, 47, 48, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 67, 68, 69, 71, 72, 76, 77, 78, 80, 81, 82, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113
HIV/AIDS stigma....60
Homabay County Hospital....25
HPV 11, 12, 80, 82
Humphrey....32, 55, 76, 82, 88, 92, 97, 99, 109, 111
hypertension..... 24, 50, 64, 68, 70
immunohistochemistry....36
Implementation Research ii
Indiana CTSI 2, 17, 20, 56
Indiana University2, 11, 16, 18, 21, 23, 32, 33, 35, 41, 43, 44, 45, 46, 47, 52, 55, 60, 69, 71, 74, 76, 77, 84, 85, 87, 95, 97, 98, 99, 100
Indianapolis....2
infectious diseases..... 25, 112
Informatics..... ii, 31, 68, 110

Institutional Review and Ethics Committee.....*See* IREC
IRECi, 21, 22, 24, 27, 33, 41, 50, 66, 68, 75, 87, 95, 97, 104
Jakait 26, 54, 112
Kenya2, ii, 2, 5, 6, 11, 12, 16, 18, 19, 22, 23, 25, 26, 28, 29, 31, 32, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55, 57, 61, 62, 63, 64, 68, 69, 71, 74, 76, 79, 80, 81, 82, 85, 86, 87, 88, 96, 97, 105, 106, 107, 109, 111
Kiplagat-Kirui.....2
Kosgei.....28, 37
Kussin 12, 82
Kwobah 48, 80
Lagat.....10, 12, 82
leukemia.....18, 74
Loehrer.....11, 69, 80
lopinavir 9, 58
low- and middle-income countries51, 64, 80, 81, 82, 109, 110
malaria 18, 25, 26, 38, 39, 62, 63, 81, 82
Manji 15, 80
Maternal and Child Health.....32
McCrary.....29
MCH 17, 33, 44
MCH clinic 33
McHenry.....2, 16, 44, 47
Menya 38, 80, 81
Moi Teaching and Referral Hospitali, 5, 6, 7, 8, 9, 11, 13, 15, 16, 17, 20, 22, 24, 26, 27, 28, 29, 30, 32, 33, 36, 43, 48, 49, 52, 54, 57, 58, 59, 60, 63, 64, 68, 70, 71, 87
Moi Universityi, 5, 6, 7, 8, 10, 12, 18, 20, 21, 22, 23, 25, 27, 30, 31, 32, 33, 35, 37, 38, 40, 41, 44, 45, 47, 48, 49, 50, 52, 55, 56, 57, 58, 59, 60, 61, 64, 67, 68, 71, 72, 74, 76, 77, 87, 95, 97
Moi University College of Health Sciences.....i
Mount Sinai School of Medicine 13, 50
moxifloxacin 10
MTRH i
NACOSTI 21, 41, 66
NCDs.....ii
NCI.....7, 8, 11, 36, 69, 75
Ndege 40, 56
NHLBI.....26, 65
NIAID 8, 34, 42
NIH3, 7, 8, 9, 11, 13, 25, 27, 34, 36, 39, 41, 42, 51, 52, 56, 59, 60, 62, 65, 66, 67, 68, 69, 70, 75, 77, 102
Njuguna.....18, 25, 35, 74, 80, 82
non-communicable chronic diseases (NCDs).....64
Norwegian Agency for Development Cooperation.....32
Nyandiko20, 29, 33, 45, 52, 53, 55, 57, 60, 61, 71, 77, 78, 111
Oncology.....i, ii, 11, 80
Oncology Research Working Group.....*See* ORWG
Opportunistic Infections 9, 107, 110
ORWG .....i, 7, 11, 18, 36, 59, 67, 69, 74
Oyungu..... 2, 16, 44, 47
Papas..... 6
participatory research process 5
Patel..... 26, 27, 80, 81, 82, 103, 108, 112
PCWG..... i
Pediatrici, 72, 77, 79, 90, 91, 92, 98, 99, 100, 101, 102, 108, 110
Pediatric Research Working Group ..... *See* PRWG
PHARMCRWG 38
PHPCWG i
Plasmodium falciparum 61
Plater..... 2
population health ii
Prudhomme..... 38, 81
PRWGi, 5, 12, 16, 18, 19, 27, 29, 33, 36, 40, 43, 44, 45, 47, 49, 52, 55, 58, 60, 71, 74, 76, 77
Public Health and Primary Care Research Working Group .....*See* PHPCWG
publications 80
Puffer 5
Qualitative Research Core 1
REDCap 14, 37, 46, 71, 78, 79, 99, 106
Reproductive Health Research Working Group ..... *See* RHWG
Research and Sponsored Projects Office.....*See* RSPO
Research Program Office .....2, *See* RPO
Retroviruses..... 9, 107, 110
RHWG .....i, 11, 15, 20, 23, 26, 28, 33, 63, 72
rifampin 10
rifapentine 10
ritonavir 9, 58
RPO i
RSPO ..... i, 1, 2, 31, 41, 66
Ruff 68
Siika..... 7, 8, 10, 21, 31, 81, 107
Songok 32, 49, 72, 81
SSRN ..... i, 5, 6, 19, 41, 48
stigma 19, 60, 61, 71, 72, 113
street-connected children 18, 19, 27, 80
Taylor 25, 63
TB 13, 28, 54, 81, 92, 103, 105, 111
TBWG..... i
tele-counseling 46

Translational Sciences Research ii
treatment interruptions 35, 78, 82, 108
Tuberculosis Research Working Group ..... *See* TBWG
UCSF 53, 69, 87, 106
University of Toronto 15, 18, 23, 27, 28, 30, 37, 40, 54, 56, 63, 72, 85, 87
University of Washington 26
Vanderbilt University 31, 68
variable cumulative dose-dependent peripheral neuropathy 74
VCR 74, 75
Vendanthan 50
Vik 18, 35, 80
Vincristine (VCR) 74
Viral Failure 8, 9
Vision, Mission, & Values ii
Vreeman 33, 45, 52, 53, 60, 61, 71, 77, 78, 80, 81, 82, 88, 91, 92, 94, 102, 108, 109, 110, 111
Wachira 41, 42, 82
Wagner 2
Walumbe 2
Were 22, 31, 68, 112
Wools-Kaloustian 21, 80, 81, 82, 84, 85, 90, 91, 93, 98, 100, 105, 107, 108, 109, 110, 111, 112
World Health Organization (WHO) 12, 40, 54