

BOTSWANA
HARVARD AIDS INSTITUTE
PARTNERSHIP
FOR HIV RESEARCH AND EDUCATION

2017/18
ANNUAL REPORT



Growing Research Capability for a Knowledge Based Economy



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1. STRATEGIC FOUNDATIONS

VISION

To be a world renowned public health institute.

MISSION

To fight HIV/AIDS and emerging public health challenges through innovative research, education, and capacity building that impacts policy and practice.

CORE VALUES

- **Beneficence**

All activities done at BHP shall be of relevance and benefit to those affected by HIV /AIDS and/or other public health challenges. The knowledge generated through our research shall be availed to advise public health policy and shall be shared with the general public and scientific community for the benefit of mankind. We shall be guided by the principle of "Do Not Harm" in our Research and related activities.

- **Innovation**

BHP staff is committed to finding solutions to the evolving HIV /AIDS pandemic and other public health challenges. We shall endeavor to be continuously innovative and resourceful in our quest to understand and address public health challenges.

- **Collaboration**

BHP recognizes that the fight against HIV /AIDS and other public health challenges will not be won by one individual or one institution. We commit and emphasize the importance of teamwork and collaborative research in our activities.

- **Excellence**

To achieve our vision of being a "world renowned public health institute" we at BHP commit to quality driven research and training programmes and processes. We will be second to none in our drive to attain quality in our research and training.

- **Botho**

An encompassing Setswana word which means amongst other, integrity, respect, honesty, and compassion. We are committed to adhering to moral and ethical principles treating all our customers, including research participants, with respect, dignity and compassion. All information about studies will be handled with utmost confidentiality

2. BHP AT A GLANCE

Establishment

Botswana Harvard Partnership (BHP) is a Not-for-Profit, limited liability organisation, established through a partnership between the Government of Botswana, represented by the Ministry of Health and Wellness (MoHW), and Harvard University (HU), represented by the Harvard T.H. Chan School of Public Health (HSPH). It was established in 1996 and registered as a limited liability company in 2009.

Business

Knowledge generation and dissemination, Advocacy, Health Policy Transformation and systems strengthening through research, education and capacity building.

Contact Details

Registered Office: Botswana Harvard HIV Reference Laboratory Plot 1836 (Princess Marina Hospital premises) North Ring Road, Gaborone, Botswana

Mailing Address

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Tel: (+267) 3902671

Fax: (+267) 3901284

Web: www.bhp.org.bw

Company Auditors: Price Waterhouse Coopers

Company Secretaries: DPS Consulting

Company Attorneys: Armstrongs Attorneys, Notaries & Conveyancers

Main Bankers: Standard Chartered Bank & Stanbic Bank



3. GOVERNANCE

a. BOARD OF MEMBERS

1. **Mark C. Elliot** - Vice Provost For International Affairs, Harvard University
2. **Past: Prof Karen M. Emmons** – Former Dean of Academic Affairs Harvard T.H. Chan School of Public Health 2017-2018,
3. **Current: Professor Michelle Williams** Dean of Academic Affairs Harvard T.H. Chan School of Public Health.
4. **Mrs. Joy Phumaphi** - Former Minister of Health, Botswana
5. **Dr Madisa Mine** - Consultant Virologist BHHRL & MoHW
6. **Prof Max Essex** - Professor Mary Woodard Lasker Professor Health Science HSPH
7. **Past: Prof Eric Tchetgen Tchetgen** - Professor of Biostatistics and Epidemiologic Methods Harvard T.H. Chan School of Public Health 2017-2018

b. BOARD OF DIRECTORS

1. **Prof. Max Essex** - Chair Professor Mary Woodard Lasker Professor Health Science HSPH
2. **Dr Roger Shapiro** - Associate Professor in Immunology and Infectious Diseases at the HSPH
3. **Past: Mr. Michael Kan** – Former Chief Financial & Administrative Officer HSPH 2017-2018
4. **Katie Hope** - Chief Financial and Administrative Officer (HSPH)
5. **Past: Prof Ric Marlink**- Former Executive Director of the Harvard T.H Chan School of Public Health AIDS Initiative (HAI), now Henry Rutgers Professor of Global Health Rutgers University,
6. **Past: Dr Khumo Seipone** – Director Health Services MoHW 2017-2018 now Managing Director ACHAP
7. **Dr. George Matlho** - General Manager Botswana Vaccine Institute
8. **Mr Modise Modise** - Former Permanent Secretary of Development Office of the President
9. **Dr Joseph Makhema** – Chief Executive Officer BHP
10. **Mrs. Ria Madison** - Ex Officio Member

GOVERNANCE



**Joseph Moeketsi Makhema MB.,
ChB, FRCP(UK)**



**Mompati Oganne Mmalane MD,
FRCS, MSc**



Ria Madison



Simani Gaseitsiwe BSc. PhD.



Tendani Gaolathe- MD



**Sikhulile Moyo (MSc,
MPH, PhD)**

c. EXECUTIVE MANAGEMENT

Dr Makhema is an Internal Medicine Physician by training and is the CEO of the Botswana Harvard AIDS Institute Partnership (BHP). He oversees the research and training activities conducted at the BHP, including numerous US Government grants and various PI initiated research projects. He oversees and provides clinical mentorship for all Clinical Trials Unit trials affiliated to the ACTG, IMPAACT, and is Site PI for HPTN. He advises on the selection of the BHP clinical research portfolio. He has published and been involved in over 50 publications. He is particularly interested in community HIV prevention initiatives, translational policy issues, and health systems strengthening.

Dr Mmalane obtained his MD degree from the University of Tuebingen then trained in surgery and became a Fellow of the Royal College of Surgeons of Edinburgh. In 2002 he obtained a M.Sc. degree in Orthopaedics from the University College London. He has worked for 22 years in the public health sector before joining BHP as Deputy Director in 2009. He is a co-investigator in several BHP studies. He has co-authored over 17 papers. Dr Mmalane's strength is in partnerships creation and management, community engagement, systems thinking, and strategic management and leads BHP's strategic planning activities. His main interest is in community-based research.

Ria Madison is Chief Operation's Officer of BHP, Providing overall oversight for Administration, Finance, Grants, Human Resources, and Operations. She is responsible for the oversight of all donor/grant funds, compliance of spending per donor requirements and meeting statutory and compliance audit. She also oversees the implementation and development of operating policies and strategic plan for Administration. Ms. Madison has been with BHP since its inception in 1999. She studied Accounts and Business Studies, Grants Management and Human Resource Management.

d. SENIOR MANAGEMENT

Simani Gaseitsiwe, is the Laboratory Director at Botswana Harvard AIDS Institute Partnership (BHP) and a Research Associate with the Harvard T. H. Chan School of Public Health. He is the Botswana Principal Investigator for the H3ABioNet and the SANTHE grants he also oversees the HIV genotyping component of the BCPP study. He has over 15 years of HIV research experience. He has broad interest in HIV research and associated co-infections, HBV, TB and HPV. He is responsible for overall supervision of the clinical laboratory, basic science research laboratory, and for guidance and mentorship of research fellows, scientists, and students. He has over 40 publications in peer-reviewed journals.

Graduated from St Georges U. School of Medicine in Grenada in 1996 and residency in Internal Medicine from Seton Hall University. Dr Gaolathe as a clinician has managed public health programs and conducted observational and clinical trials related to the HIV/AIDS epidemic in Botswana since 2001. She joined BHP in 2005 as Director for the Master Trainer Program, BHP's flagship training program which has been instrumental in securing success of the Botswana's Antiretroviral program clinic rollout, task shifting, laboratory decentralization, and national Monitoring and Evaluation efforts. She currently is Project Director for BCPP

Sikhulile oversees the design and implementation of the laboratory aspects of clinical trials conducted at BHP, as well as observational and surveillance studies. His interests include characterization of early HIV-1 infection, estimating HIV incidence, evolutionary bioinformatics, phylogenetics and molecular epidemiology. He has made a number of significant recent advances in the analysis of HIV recency of infection by incorporating HIV diversity refine cross-sectional incidence estimation and over 82 peer reviewed publications. He has worked on various projects including: evaluation of point-of-care viral load and CD4 devices, early infant treatment, community-based prevention studies, Hepatitis, CMV and HPV genotyping, HIV-1 drug resistance. In 2016, Sikhulile was nominated co-vice Chair of the ACTG/IMPAACT Laboratory Technologist Committee.

GOVERNANCE

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Cornelius Gaetsaloe

As Director of Finance and Grants, Gaetsaloe is responsible for BHP's strategic financial management, grant administration and sustainability planning, the implementation of BHP policies and procedures through the administrative stewardship of BHP's portfolio of grants and research projects. Cornelius is also responsible for risk management and compliance and has more than 12 years experience working in senior strategic positions in non-profit organizations.



Gaerolwe R. Masheto, MD

Dr. Masheto is a Site Leader for Botswana Harvard Partnership Clinical Trials Unit Gaborone site as well as the site Principal Investigator for IMPAACT Network Clinical Trials since 2015. He is a co-investigator for ACTG and HPTN Clinical trials. He joined Botswana Harvard AIDS Institute Partnership in 2011 as a Study Physician. Dr. Masheto graduated from Ross University School of Medicine with a medical degree (MD) in 2007. He graduated from Stellenbosch University in 2012 with post graduate diploma in Family Medicine.



Ayotunde Omoz-Oarhe MD

Dr Omoz-Oarhe has worked with Botswana Harvard AIDS Institute Partnership since 2010 where he has served in various capacities and gained a wealth of research experience. As a study physician/coordinator and now an ACTG principal investigator at BHP, he has been at the forefront in the conduct and oversight of over 10 NIAID sponsored protocols covering the following public health topics: Tuberculosis, Oncology, Oral candidiasis, Contraceptive use and PMTCT.



Rosemary Musonda PhD

Dr. Musonda is a BHP Research Associate and former Laboratory Director. She is also a Research Associate at the Harvard T.H. Chan School of Public Health. Her main interests are in understanding the molecular structure of HIV, its pathogenesis, and the nature of host immunity to the virus. She is involved with capacity building and training young researchers in Africa. Dr. Musonda holds several grants dedicated to postgraduate training of African scientists in southern Africa.



Coulson Kgathi, BSc

Coulson Thabo Kgathi is a Software Engineering & Data Management Centre Manager at Botswana Harvard Partnership where he leads a group of software engineers and data managers. His team build data collection systems and laboratory systems for the research lab. He holds a BSc Computer Science and is currently doing his MSc in Computer Science. He has aided in designing and implementing system that has contributed to the fundamental research data which contributes to policies in the ministry of health for the country. He has been able to assist robust systems that collect data across the country in multiple communities with poor connectivity, with a system designed for functioning offline and capable of transmitting data when there is low bandwidth. This system enforces research protocols to ensure quality data, data security and easy data sharing.



Dineo Tumagole, BAcc

Dineo Tumagole is the Finance and Grants Manager at the BHP. Her role is to ensure effective management of BHP's funds through monitoring of Grant Budgets and compliance with sponsor regulations. She keeps tab of the internal control environment to ensure smooth Statutory and Yellow Book Audits. Dineo is a self-driven individual whose 10 years of experience in the financial accounting and grants management environment has enabled her to build a robust Finance, Grants and Procurement Team, drive change whilst operating in an ever changing Grants space. She has been working for the partnership since July 2012.



Thuso Mokane

Thuso Mokane is a Computer Science graduate from the University of Botswana who is passionate about Linux. He began his career in IT in 2012 as an Associate Software Engineer at DCDM Consulting and joined BHP in 2014 as a Systems Administrator, where he gained a lot of experience working on IT Systems based on open source technologies. Throughout his career, he has gathered certifications in Linux System Administration, and is internationally recognised as an ISC2 System Security Certified Practitioner.

e. PRINCIPAL INVESTIGATORS**M. Essex, DVM, PhD**

M. Essex, DVM, PhD, is Chair of the Botswana Harvard AIDS Institute Partnership (BHIP), and, at Harvard University, Lasker Professor of Health Sciences and Chair of the Harvard T.H. Chan School of Public Health AIDS Initiative (HAI). He was one of the first to link animal and human retroviruses to immunosuppressive disease, sharing the Lasker Award with Gallo and Montagnier in 1986 for this research. With his student T. H. Lee, he was also the first to identify gp120, the surface protein of HIV-1 that is used for blood screening and diagnosis of AIDS. He has published over 650 papers and 12 books, the latest being *Saturday Is for Funerals*. His current research includes comprehensive "test-and-treat" approaches to controlling the HIV epidemic, molecular epidemiology, the role of host genetic factors, and chemoprophylaxis.

**Shahin Lockman MD, MPH**

Dr. Lockman is an infectious-disease trained clinician (Associate Professor at Harvard Medical School/Brigham and Women's Hospital and adjunct at HSPH). She has conducted epidemiologic and clinical trials investigation related to HIV-1 and tuberculosis in Botswana since 1996, including randomized trials of antiretroviral treatment among HIV-infected pregnant and postpartum women and of cotrimoxazole prophylaxis in HIV-exposed infants; observational studies of health and neurodevelopmental outcomes in HIV-exposed children, and community-based interventions to prevent HIV transmission. She helped establish and co-leads our BHP Clinical Trials Unit. She is also one of the co-PIs of BCPP. Dr. Lockman is quite involved in mentoring junior investigators in both Botswana and the US on a range of clinical research projects.

**Roger L. Shapiro, MD, MPH**

Dr. Shapiro is an Associate Professor of Immunology and Infectious Diseases at the Harvard TH Chan School of Public Health in Boston, and an Infectious Disease physician at the Beth Israel Deaconess Medical Center in Boston. He has been working with the Botswana-Harvard Partnership since 1999 on studies to prevent mother-to-child HIV transmission (PMTCT) and to improve pregnancy outcomes and childhood survival. In Botswana, he has led randomized clinical trials to evaluate optimal antiretroviral strategies for PMTCT at delivery and during breastfeeding; a randomized trial to study the efficacy of prophylactic cotrimoxazole among HIV exposed-uninfected infants; nationwide surveillance studies to evaluate the mechanisms by which antiretrovirals impact adverse birth outcomes; and an ongoing clinical trial of early antiretroviral treatment to improve clinical outcomes in HIV-infected infants.

**Kathleen M. Powis, MD,
MPH, MBA**

Dr. Kate Powis is board certified in both Internal Medicine and Pediatrics and has held a medical license to practice in Botswana since 2008. Her primary research is focused on HIV and maternal-child health. She is currently the Principal Investigator of the "Gut microbiome evolution among HIV-exposed uninfected infants in Botswana" study, a study which explores how HIV and/or ART in-utero exposure of infants may compromise the development of the HIV exposed uninfected infant's immune system. Dr. Powis is also the Principal Investigator of the Bana Motswe study conducted in Molepolole, and a Co-Investigator of the Tshildio Dikotla study, investigating the longer-term metabolic impact of prophylactic exposure to either nevirapine or zidovudine.

**Bruce Chabner, MD**

For the past 48 years Prof. Chabner has devoted himself to a career in cancer research and drug development. He directed the Drug Development Program and the clinical trials efforts of the National Cancer Institute, as Director of the Division of Cancer Treatment, for 14 years (1981-1995), and have designed, participated in, and reported clinical and laboratory studies of new agents, including maytansine, folate analogues, paclitaxel, fludarabine, and Yondelis. He moved to Harvard Medical School and the Massachusetts General Hospital 20 years ago, where he was Chief of the Division of Hematology/Oncology from 1995-2006 and Clinical Director of the MGH Cancer Center from 1995-2010.

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Jennifer Jao, MD, MPH.

Jennifer Jao, MD, MPH is Assistant Professor in the Department of Medicine and Department of Obstetrics/Gynecology at the Icahn School of Medicine at Mount Sinai. She is an Infectious Disease specialist, dual certified in internal medicine and pediatrics. Dr. Jao is also the Principal Investigator of the Tshidilo Dikotla Study at BHP, an NIH-funded cohort study examining metabolic complications of HIV-infected pregnant women and their children in Botswana. Currently she serves on the U.S. Department of Health and Human Services Perinatal Guidelines Committee as well as the Maternal Exposures and Metabolic and Nutrition Working Groups for the Pediatric.



Scott Dryden-Peterson, MD, MSc (epi)

Dr. Dryden-Peterson's research centers on epidemiology and therapeutic approach for HIV-associated malignancies in Botswana and other resource-limited settings. He directs one of the largest prospective cohorts of HIV-associated cancer. Ongoing projects include evaluation the impact of HIV and ART on the cancer burden in sub-Saharan Africa, development of new diagnostics and diagnostic approaches to cancer in LMICs, role of HPV in the development of head and neck cancer in geographic regions heavily affected by HIV, and treatment outcomes of HIV-associated cancers in Botswana. He is co-founder of Botswana Oncology Global Outreach (BOTSOGO).



Vladimir Novitsky, M.D., Ph.D.

Vladimir Novitsky, M.D., Ph.D., is a Principal Research Scientist in the Department of Immunology and Infectious Diseases at the Harvard T.H. Chan School of Public Health. Dr. Novitsky has made a number of significant contributions to the virological and immunological study of HIV-1 infection. The main focus of Dr. Novitsky's research is molecular analysis of the HIV-1 subtype C epidemic, genotypic and phenotypic characterization of the HIV-1 subtype C genome, and potential associations between virological and immunological parameters in early and acute HIV-1 subtype C infection. He contributed significantly to the design, planning, capacity building, and supervision of the Botswana-Harvard AIDS Institute Laboratory in Botswana.



Laura Bogart, PhD

Laura Bogart, PhD, Senior Behavioral Scientist at RAND Corporation, is a social psychologist with expertise in behavioral factors in HIV prevention and treatment. In collaboration with BHP, she is conducting a study to examine individual- and social network-level factors associated with viral suppression among people living with HIV and their treatment partners in Botswana. In Uganda, she conducted a community-based HIV testing intervention, and is now conducting research to develop a program for people living with HIV to promote HIV prevention in their social networks. Her U.S. work includes interventions to reduce HIV-related health disparities.



Mosepele Mosepele, MD, MSc

Mosepele Mosepele MD, MSc, Senior Lecturer at the University of Botswana, Faculty of Medicine, is a Physician, Infectious Disease Consultant and Clinical Epidemiologist with experience in HIV clinical care and research focused on HIV-associated complications such as cardiovascular disease, immune dysregulation. Dr Mosepele is the Botswana site PI on Randomized Controlled Trial of Prevention of Vascular Events in HIV (REPRIEVE) at BHP and also Co- PI on another pilot study with Laura Bogart PhD focused on social network-level factors associated with viral suppression among HIV-infected patients at a Gaborone HIV Clinic also being conducted at BHP.



Neo M. Tapela, MD, MPH

Dr Neo Tapela is a physician and global health implementer with experience in health systems strengthening and effective service delivery for Non-Communicable Diseases (NCD). She trained at Harvard Medical School and Harvard T.H. Chan School of Public Health and has worked in various resource-constrained settings including Haiti, South Africa, Lesotho, Rwanda and Botswana. She currently serves as Public Health specialist and Head of the National NCD Program at Botswana's Ministry of Health and Wellness, where she oversees development of innovative strategies to prevent and control NCDs leveraging the primary care platform and the HIV experience. Dr Tapela maintains appointment as Research Associate at Botswana Harvard Partnership and Instructor at Harvard Medical School.



Rebecca Zash

As an assistant professor at Harvard medical school, Dr. Rebecca Zash is an infectious diseases physician and performs research focused on the impact of HIV and antiretroviral medications on pregnancy. Dr. Zash went to medical school at the University of North Carolina, and completed internal medicine residency and infectious disease fellowship at Beth Israel Deaconess Medical Center in Boston, USA. She has been working with BHP since 2013 and currently serves as PI for a study to understand why HIV-infected women on ART have an increased risk of adverse birth outcomes. She also helps to lead a large birth outcomes surveillance study, Tsepamo, which examines the comparative safety of antiretroviral treatments in pregnancy.

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Jason A. Efstathiou, MD, DPhil



Victor De Gruttola



Eric Tchetgen Tchetgen



Joseph Jarvis



**Tomer Barak MD, MSc TMIH,
DTM&H**



Ava Avalos, MD



Dr Chelsea Morrioni

Dr Efstathiou serves as Associate Professor of Radiation Oncology at Harvard Medical School and the Massachusetts General Hospital (MGH). He is the Director of the Genitourinary Division in Radiation Oncology and Clinical Co-Director of The Claire and John Bertucci Center for Genitourinary Cancers Multidisciplinary Clinic at MGH. He holds a B.S. from Yale University, M.D. from HMS, Ph.D. from University of Oxford, and completed his residency training in the Harvard Radiation Oncology Program. Dr. Efstathiou's clinical practice focuses on treatment of patients with prostate, bladder, testicular and other urologic cancers, as well as proton beam and brachytherapy. He co-founded and co-directs BOTSOGO (Botswana Oncology Global Outreach).

Dr. De Gruttola's research activities focus on developments of statistical methods required for appropriate public health response to the AIDS epidemic. The aspects of the epidemic on which he has worked include transmission of the Human Immunodeficiency Virus (HIV), natural history of infection with HIV, and clinical research on AIDS therapies. He is Co- Principal Investigator of the Botswana Combination Prevention Project.

Tchetgen Tchetgen is Professor of Biostatistics and Epidemiologic Methods with joint appointment in the departments of Biostatistics and Epidemiology at the Harvard T.H. Chan School of Public Health. His primary area of interest is in semi-parametric efficiency theory with application to causal inference, missing data problems, statistical genetics and mixed model theory. In general, he works on the development of statistical and epidemiologic methods that make efficient use of the information in data collected by scientific investigators. He is Co- PI in BCPP.

Joe Jarvis is a Research Associate at the Botswana Harvard AIDS Institute Partnership and a Professor at the London School of Hygiene and Tropical Medicine, based full time in Gaborone, Botswana. His main research interests are advanced HIV disease, opportunistic infections, cryptococcal meningitis, and strategies to rapidly and safely initiate ART in individuals with low CD4 counts. In addition to being the Chief Investigator for the AMBITION-cm trial examining new treatments for HIV-associated cryptococcal meningitis, he recently worked as Research Director for the CDC Implementation Protocol of the Botswana Combination Prevention Project (BCPP). He is also a member of the external review group for the WHO Guidelines for Managing Advanced HIV Disease and Rapid Initiation of Antiretroviral Therapy, and a guidelines development group member for WHO guidelines on preventing, diagnosing, and managing cryptococcal disease in HIV infected adults, adolescents and children.

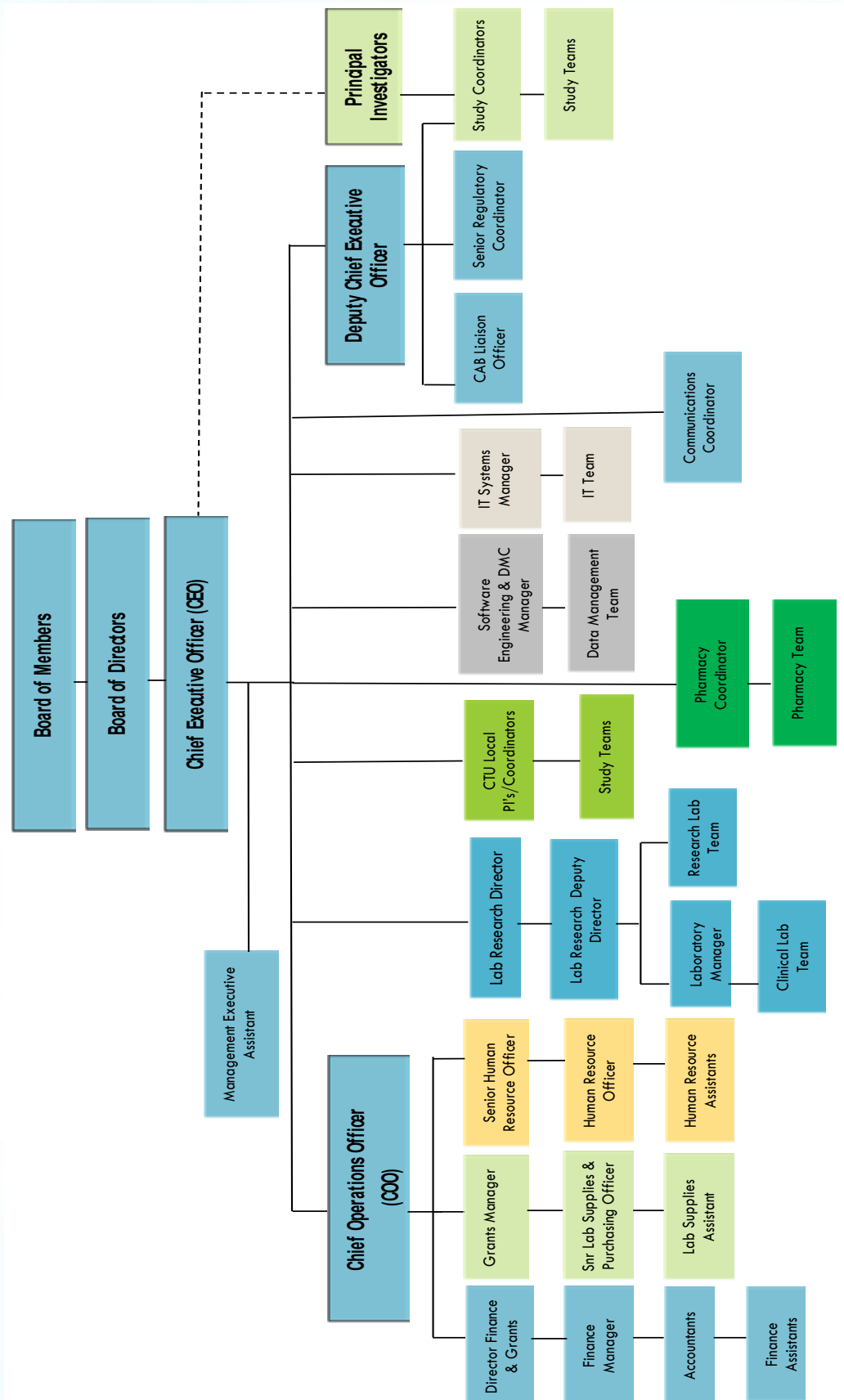
Dr. Tomer Barak graduated from Tel-Aviv University's Sackler Faculty of Medicine in Israel and holds a Masters in Tropical Medicine & International Health from the London School of Hygiene & Tropical Medicine, UK. He completed his internal medicine training at Beth Israel Deaconess Medicine Center (BIDMC), Boston, US. As head of the Botswana Harvard Partnership's Clinical Capacity Building Program at Scottish Livingstone Hospital (SLH) he helps lead clinical stewardship, medical education, quality improvement and research initiatives at SLH and the surrounding Kweneng East district. He also serves as head of the department of medicine at SLH, regional program director for Botswana's Medical Internship Training Program and a member of Botswana's HIV Guideline Committee.

Dr. Ava Avalos is an HIV/TB specialist physician who has been living and working in Botswana for the past 17 years. She has extensive clinical, research, policy, and programmatic experience, serving as a clinical advisor to the Department of HIV/AIDS Prevention and Care in the Botswana Ministry of Health and Wellness, since 2006. Her area of clinical research and technical expertise focus on ART treatment failure, HIV drug resistance, programmatic implementation and health economics. She is a member of the HIV & TB Clinical Care Guidelines Committee, a research associate of the Botswana Harvard AIDS Institute Initiative, and serves as vice-chair on the board of the International Treatment Preparedness Coalition (ITPC).

Chelsea Morrioni is an epidemiologist and medical doctor with over 20 years of experience in Southern Africa. She has a undergraduate degree from Harvard, an MPH and medical degree from University of Cape Town, and a PhD from Columbia University. She has lived with her family in Botswana for 6 years. She conducts mixed-methods research and provides clinical care relating to women's and girl's sexual and reproductive health (SRH), particularly prevention of unintended pregnancy and HIV/STIs. Chelsea is an honorary research associate at the Botswana-Harvard Aids Institute Partnership, the lead consultant for SRH at the Botswana UPenn Partnership, a Reader in International SRH at the Liverpool School of Tropical Medicine, and an honorary Professor in Women's Health at University of Cape Town.

GOVERNANCE

F. ORGANISATIONAL STRUCTURE





4. ACRONYMS

ACC-	American College of Cardiology
ACHAP-African	Comprehensive HIV/AIDS Partnership
ACTG -	AIDS Clinical Trials Group
AHA –	American Heart Association
AIDS -	Acquired Immuno-Deficiency Syndrome
AMNET -	Ambition Meningitis Network
ART -	Antiretroviral Therapy
ASCVD -	Atherosclerotic Cardiovascular Disease
BCPP -	Botswana Combination Prevention Project
BHHRL -	Botswana Harvard HIV Reference Laboratory
BHP -	Botswana Harvard AIDS Institute Partnership
BIDMC -	Beth Israel Deaconess Medical Center
BMC –	BioMed Central (Journal)
BMHSC -	Botswana Media Health Science Café
BUP -	Botswana University of Pennsylvania Partnership
bNAbs -	Broadly Neutralizing HIV-1 Antibodies
BOTSOGO -	Botswana Oncology Global Outreach
BPCC -	Botswana Prospective Cancer Cohort
CAB LA –	Cabotegravir Long Acting
CDC -	Centers for Disease Control and Prevention (Botswana-USA)
CE-	Community Engagement
CFAR -	Centers for AIDS Research
CITI -	Collaborative Institutional Training Initiative
CMS –	Central Medical Stores
CMV –	Cytomegalovirus
CPC –	Combination Prevention Communities
CROI -	Conference on Retroviruses and Opportunistic Infections
CTU -	Clinical Trials Unit
DHMT -	District Health Management Team
DNA -	Deoxyribonucleic Acid
DTG -	Dolutegravir
ECC -	Enhanced Care Communities
EDC-	Electronic Data Capture
EDCTP -	European and Developing Countries Clinical Trials Partnership
EFV -	Efavirenz
EIT -	Early Infant Treatment
GAGAS -	Generally Accepted Government (USA) Auditing Standards
GCLP -	Good Clinical Laboratory Practice
GYN -	Gynaecology
GYN-ONC –	Gynaecological Oncology

Acronyms

Acronyms

Acronyms

ACRONYMS

HAART	-	Highly Active Anti-Retroviral Treatment
HU	-	Harvard University
HAI	-	Harvard AIDS Initiative
HBV	-	Hepatitis B Virus
HIV	-	Human Immunodeficiency Virus
HIV/AIDS	-	Human Immunodeficiency Virus/ Acquired Immuno-Deficiency Syndrome
HPTN	-	HIV Prevention Trials Network
HPV	-	Human Papilloma Virus
HRM	-	Human Resource Management System
HRU	-	Health Research Unit
HSPH	-	Harvard TH Chan School of Public Health
HTC	-	HIV Testing and Counselling.
HVTN	-	HIV Vaccine Trials Networks
HU CFAR	-	Harvard University Center for AIDS Research
IAS	-	International AIDS Society
ICU	-	Intensive Care Unit
IFRS	-	International Financial Reporting Standards
IMPAACT	-	International Maternal, Pediatrics, and Adolescents AIDS Clinical Trials
IRB	-	Institutional Review Board
JAIDS	-	Journal of Acquired Immune Deficiency Syndromes
LMICs	-	Low and Middle Income Countries
MBA	-	Master of Business Administration
MBBS	-	Bachelor of Medicine, Bachelor of Surgery
MD	-	Doctor of Medicine
MoHW	-	Ministry of Health and Wellness
MOU	-	Memorandum of Understanding
MPH	-	Master of Public Health
MRCP	-	Membership of the Royal Colleges of Physicians of the United Kingdom
MSc	-	Master of Science
MTCT	-	Mother to Child Transmission
NCD	-	Non-Communicable Diseases
NCI	-	National Cancer Institute
NIH	-	National Institutes of Health
NTDs	-	Neural Tube Defects
OBGYN	-	Obstetrics and Gynaecology
OHSU	-	Oregon Health and Science University
PCR	-	Polymerase Chain Reaction
PhD	-	Doctor of Philosophy
PI	-	Principal Investigator
PLWHIV	-	People Living with HIV/AIDS

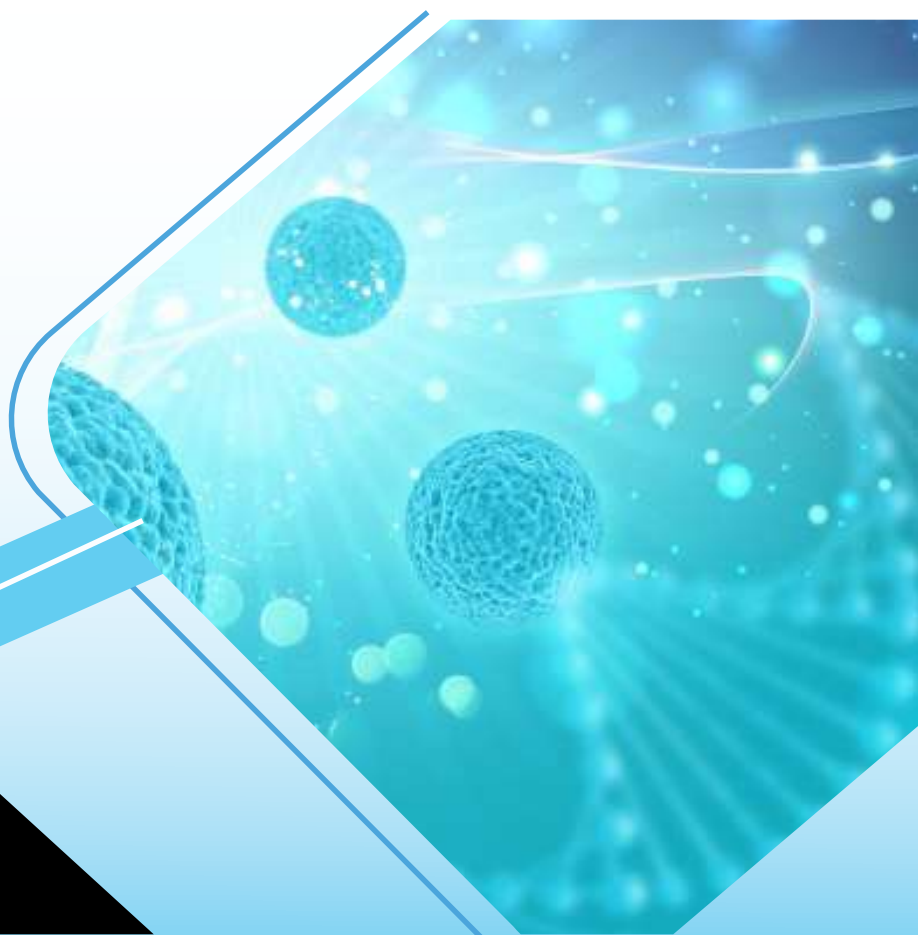
Acronyms

Acronyms

Acronyms

ACRONYMS

PMTCT -	Prevention of Mother to Child Transmission
PrEP -	Pre-Exposure Prophylaxis
RCR -	Responsible Conduct of Research
REPRIEVE -	Randomized Trial to Prevent Vascular Events
RNA -	Ribonucleic Acid
SANTHE -	Sub-Saharan Network for TB/HIV Research Excellence
SLH -	Scottish Livingstone Hospital
SMS -	Short Media Message
SOPs -	Standard Operating Procedures
TB -	Tuberculosis
TDF /FTC -	Tenofovir Disoproxil Fumarate/Emtricitabine
TESA -	Trials of Excellence in Southern Africa
UB -	University of Botswana
UBFOM -	University of Botswana Faculty of Medicine
UNAIDS -	The Joint United Nations Programme on HIV and AIDS
UPenn -	University of Pennsylvania
USA -	United States of America
USD -	United States Dollar
USG -	United States Government
WHO -	World Health Organisation



Foreword by board chairman

5. FOREWORD BY BOARD CHAIRMAN



Professor Max Essex
BHP CHAIRMAN

There is evidence of success and positive direction in key strategic areas including expanding the research portfolio, space acquisition, improvement in IT & Data systems and submission of new grant applications, abstracts/manuscripts and publications.

In the midst of increased competitiveness for available research funding opportunities it is reassuring that the BHP has continued to deliver on its mandate to fight against HIV/AIDS and emerging public health challenges. The portfolio for research has remained vibrant and relevant to the changing landscape of the HIV/AIDS epidemic and now encompasses the interphase of HIV/AIDS with non-communicable diseases, including malignancies. The breadth of the research portfolio has also grown to include hepatitis, TB, and Cryptococcal meningitis. I also note with satisfaction that the capacity building initiatives continue to thrive with the largest contingent of trainees for Masters and PhD 's ever to be enrolled during a particular period at BHP having been enrolled through the SANTHE, and TESA capacity building grants.

The scientific agenda has been prolific resulting in a successful period under review and at least 50 publications. The conclusion of the Botswana Combination Prevention Project has been a major achievement in defining new community intervention strategies and approaches to reducing community HIV incidence, while the TSEPAMO study impacted policy on the use of Dolutegravir amongst women with pregnancy intentions. Thus BHP research continues to significantly contribute in advising public health interventions and systems strengthening.

Aligned to the BHP strategic plan 2017-2022, There is evidence of success and positive direction in key strategic areas including expanding the research portfolio, space acquisition, improvement in IT & Data systems and submission of new grant applications, abstracts/manuscripts and publications.

The threat to continued BHP scientific success and its sustainability however remains retention of its skilled scientific and operational staff, its citizen scientists capability to be independent investigators, and the ability to compete for not only traditional funding opportunities but seeking new research opportunities and attracting new sponsors. This depends on successful skills transfer for grantsmanship and continued collaborations with motivated experienced scientists.

Sustainability shall also be secured by new models of business as envisaged in the strategic plan, continued prudent management of resources, and new collaborations and partnerships.

While entities such as BHP execute their mandate for the benefit of public health in Botswana it is imperative that they align their objectives with the MoHW public health strategy and the envisaged Health Research Council which is expected to coordinate health research in Botswana. This report is testimony to BHP's commitment towards continued public health systems strengthening in Botswana and the region.

Chief Executive Officer's Remarks



Dr Joseph Makhema
BHP Chief Executive Officer

The BHP strives to attract and retain qualified and competent personnel through competitive remuneration and conditions of service to meet its obligation of growing innovative research capability that impacts policy and practice of a knowledge based economy

Despite significant decline in CDC funding largely through the Botswana Combination Prevention which contributed 30% of the BHP annualized funding coming to an end, through cost containment strategies including rationalizing the organizational structure and consolidation of certain positions, and a more positive success at new grant awards BHP annualized funding has remained relatively stable as compared to previous years when it ranged between \$10M - \$14M. Annualized funding for 2017/18 was \$10,836,660 with a resultant surplus administrative budget of \$13,939.

The robustness of the BHP administrative and financial systems have once more yielded unqualified financial and GAGAS audits with evidence of continued strengthening of the internal controls and compliances. Most of the previous demonstrated weakness

have been addressed and no major discrepancy has been identified.

BHP staff compliment was 350 at the beginning of the year and has since declined to 244 with the completion of the BCPP. 94% are citizens with 66% of the staff being female. 52% of the staff are professional directly involved with the research and training mandates. Overall labour costs are 62% of the BHP budget. The BHP strives to attract and retain qualified and competent personnel through competitive remuneration and conditions of service to meet its obligation of growing innovative research capability that impacts policy and practice of a knowledge based economy

A fund development plan which provides the framework to support all the strategic projects and to mobilize financial resources required to support the current strategic plan is being developed. The is to be accompanied by a case statement that will serve as a resource mobilization tool for sourcing funds from both local and international donors. The plan encompasses the establishment of Sesikalla Investments registered as a Limited Liability Company as a fee for service vehicle to increase the BHP revenue base.

The BHP Finance and Administration team have relocated to plot 2873 Chuma Drive, a purchased building as part of cost saving on rental space and to address space deficit.

During the period under review there were 2 active IMPAACT protocols P1093 and P1026s, One active ACTG study A5332/ Reprieve, two HPTN protocols HPTN 081 and HPTN 084, while there were 9 Principal Investigator studies.

Much valued collaborations and partnerships have continued with BHP staff involved in the NACA partnership forum, technical working group on the BAIS, National ART Treatment guideline committee, and bilateral collaborations with local research and development institutions such as the Baylor, U-PENN, ACHAP, and CDC while there is joint supervision of research activities for MSc and PhD students registered at UB under SANTHE between UB faculty of Science staff and BHP staff. A new Chief Research Officer and Permanent Secretary Ministry of Health were also deployed as well as a new Minister of Health and Wellness.

7. EXECUTIVE SUMMARY

BHP is the leading health research institute in Botswana and is one of the world-renowned health research institutions in Sub-Saharan Africa especially on HIV/AIDS. The BHP is in its 3rd decade since inception and is a Clinical Trials Unit affiliated to the IMPAACT (International Maternal Paediatric Adolescent AIDS Clinical Trials) network, ACTG (AIDS Clinical Trials Group) network, HPTN (HIV Prevention Trials Network), and HVTN (HIV Vaccine Trials Network) undertaking network trials relevant to the HIV/AIDS epidemic in Botswana and SSA. Other Clinical trials are undertaken under the auspices of individual Principal Investigators.

To achieve its mandate, BHP continues to strengthen human capital by training up-coming young scientists on research methodology and design, protocol development, undertaking clinical and basic science research, manuscript and grant writing. The Institute generates and disseminates knowledge through research, education and capacity building with areas of current research covering clinical, basic science, epidemiology, socio-behavioural science and community based bio-clinical research relevant to the HIV/AIDS epidemic and emerging Public Health challenges in Botswana, Sub-Saharan Africa and globally.

The current reporting period is from January 2017 until end of June 2018, in alignment with the financial year.

Consistent with strategic plans 2017-2022 focus areas for management have been enhancing efficiencies and cost effective administrative and operational systems to support research and functions of the institution. These include the following:

- a) Development of a BHP Business plan as part of a new model for sustainability. This has included registration of an entity Sesikalla Investments on the 17th June 2017. A license to operate a fee for service, Clinic, Laboratory and Pharmacy has since been approved with ongoing planning to operationalize the project.
- b) Support for and identification of new grant opportunities to address the challenge of declining traditional BHP funding which has largely been from the USG institutions. This has seen applications and award of new funding from the Wellcome Trust, and EDCTP
- c) Space needs: Acquisition of a purchased finance and grants building has resulted in savings on lease rentals while PMH and the MoHW allocated BHP a plot MH 1-2 along Hospital way with potential for future development to address space

needs and consolidate space for BHP operations.

- d) Strengthening the IT and data management capabilities: All BHP research activities has been transitioned to Electronic Data Capture (EDC) systems. Commensurate investments in increased bandwidth, IT security and opportunities to host and support other non proprietary platforms such as REDCAP have since been undertaken.
- e) Grants and Finance management systems have remained robust and both Financial and Compliance audits have remained unqualified for 2017/18. There were a total of 35 grants with total value of USD 10,836,660 hosted during the period.
- f) The Human resource climate remains calm with continued support for core training initiatives for research capacity in clinical trials with 126 staff benefiting at a total cost of P3,084 185.54. The average total staff compliment for the year was 350 but is expected to reduce to 244 with the completion of the BCPP.

The CTU grant continues to anchor BHP network related research. During this period there were 10 active CTU protocols, 5 of which have subsequently been closed. The current grant is in year twelve and is due for recompetition for another seven year cycle in 2020. The CTU offers a constant pipeline of research study opportunities from which BHP identifies relevant protocols for our context and region thus also enabling continued funding for BHP research activities.

Principal Investigators have continued to actively lead the drive for independent non network research that affords greater autonomy and independence on study conduct, publication, and provides greater opportunity for mentorship and capacity building. During the period in review there were at least 10 such active studies with average study periods of 3-5 years.

An important phenomenon has been increased BHP research output and publications increasing from 24 during 2017 to 29 in the first 6 months of 2018 making a total of 53 peer reviewed publications during the reporting period.

As the largest research organization in Botswana, enhancing research capabilities and building a cohort of future researchers and informed health care providers is one of the major goals of BHP. The following capacity building grants were active during the period: BIDMC, SANTHE, H3ABioNet, TESA II, FORGATY and BOTSOGO.



EXECUTIVE SUMMARY

BHP continues to produce research results that impact policies and treatment guidelines in Botswana. Thirty abstracts were presented during the reporting period. The most influential during this period was the Infant Birth Outcomes “TSEPAMO” study on the initial possible signal for DTG related NTD’s resulting in new guidance use of DTG

BHP research staff are active members of several MoHW technical teams where they advise on issues including breast and infant feeding, HIV treatment guidelines, TB management and care, BAIS V design and implementation.

A key emergent challenge recognized in this planning period is declining BHP budget through traditional grant support and sponsorship for research. This has heightened the need to address diversification of revenue streams and sustainability of BHP. Hence the need for a new business model. While BHP’s core research has been on HIV/AIDS, the portfolio has since been increased to Tuberculosis, Hepatitis, Malignancies, Non Communicable diseases, and other emergent public health challenges. BHP has also intensified grant applications and identification of new funding opportunities.

8. INTRODUCTION

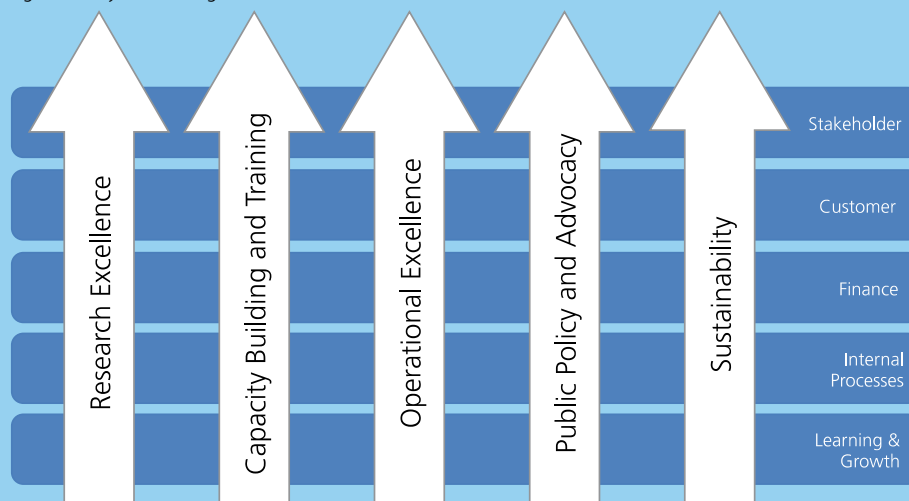
BHP operates under a two-tiered governance structure, consisting of a Board of Members and a Board of Directors providing strategic planning and policy guidance while overseeing fiduciary oversight and sustainability.

The BHP functions under jurisdiction of Memoranda of Agreements (MoA’s) undertaken between the HSPH and MoHW which are renewable every 5 years. To ensure focus on it’s mandate to generate knowledge through research, enhance capacity building and systems strengthening that positively impacts policies and health practice

in Botswana and the World, BHP has ensured development of 5 year strategic plans congruent with MoA’s to guide it’s operations.

The BHP strategic plan for 2017-2022 followed an intensive consultation both internally and externally as part of BHP’s strategic analysis process. Emergent issues were identified from which 5 strategic themes were developed (Figure 1). These themes form the pillars of the current strategic direction and objectives of the organization (Figure 2).

Fig. 1. Five-year Strategic Themes



RESEARCH EXCELLENCE

BHP aims to provide Botswana and the rest of the international community with knowledge to combat HIV/AIDS and emerging public health challenges through provision of quality research. Research is core to the BHP mission and is the primary source of its funding and outcome contributions. The ability and capacity of BHP to deliver relevant and quality research will continue to be a key success factor for the institution.

Introduction Introduction Introduction

INTRODUCTION

CAPACITY BUILDING AND TRAINING

Capacity development is a key priority for the Government of Botswana, and as an extension, for the Ministry of Health and Wellness. The Ministry is continuously seeking to increase the capacity of Ministry employees and other players in the public health sector to strengthen the country's ability to respond to local public health issues and contribute more meaningfully to regional and global public health concerns.

BHP develops research skills of health professionals locally and regionally through various training and capacity building events for various participants in the public health sector and community as a whole.

OPERATIONAL EXCELLENCE

Continued focus on operational excellence will be essential during this strategic period for BHP. BHP's continued relevance and retained principal stakeholder interest will be dependent upon the institution's cost effectiveness against an increasingly pressured budget. In

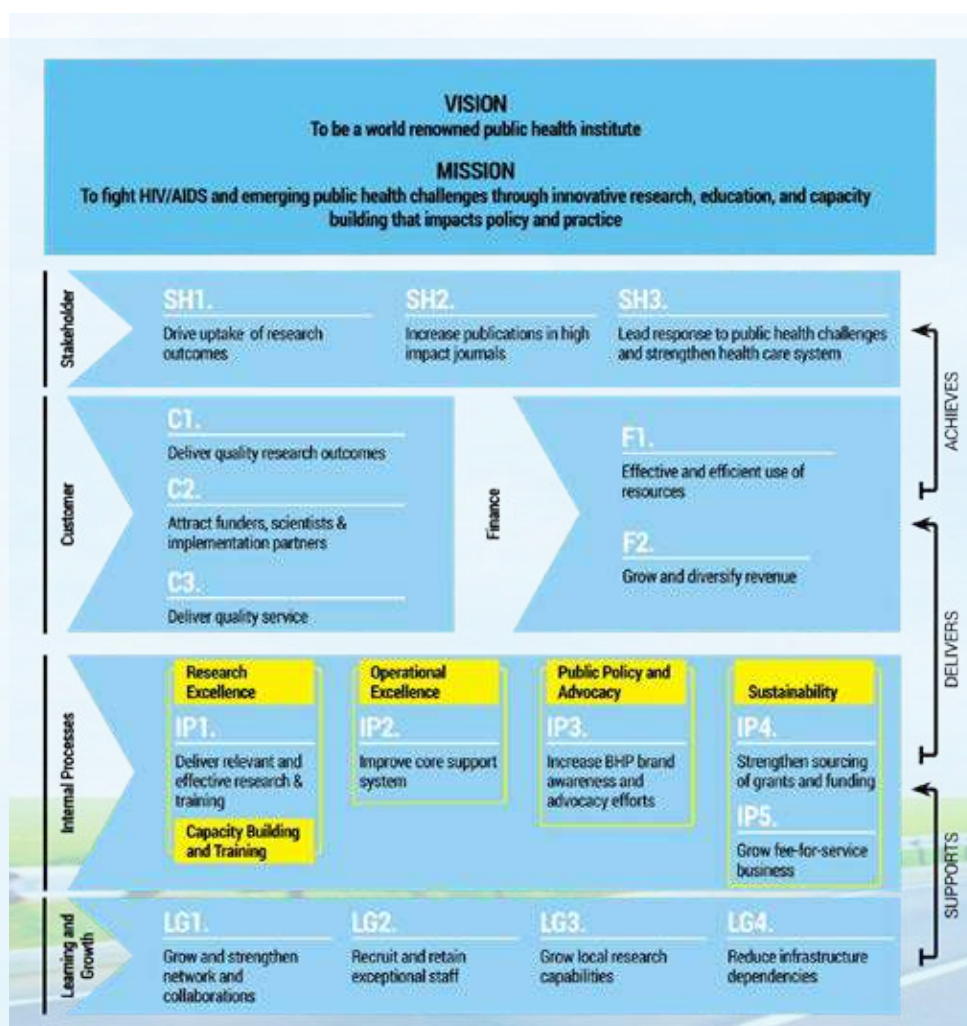
addition, the quality of support services directly influences the quality of the research as well as the quality of the training services delivered by BHP.

PUBLIC POLICY AND ADVOCACY

BHP aims to drive meaningful change in the lives of people impacted by HIV/AIDS and other public health challenges. This change is largely effected through public policy based on globally recognized research findings. BHP's ability to advocate for and realise improvements in policy and protocols will determine, in part, the institutions success.

SUSTAINABILITY

BHP's long-term sustainability requires diversified revenue streams that reduce dependency on grants with strict funding utilization requirements. BHP's annual performance is guided by the 18 strategic objectives in the 2017 -2022 strategic plan. These objectives, arranged according to respective 5 strategic perspective, are shown in Fig. 2 below.





INTRODUCTION

This is the first annual report produced under the current strategic plan. The reporting period is from January 2017 to June 2018. The period is extended to 18 months to allow alignment with BHP’s financial year which runs from July to June. Previous reports had otherwise been on calendar years. The report focuses on the five strategic themes and their 18 strategic objectives.

There were 5 prioritized objectives as selected by the different departments for the current reporting period are as follows;

1. To drive uptake of research outcomes,
2. To increase publications in high impact journals,
3. To deliver relevant and effective research and training,
4. To increase BHP brand awareness and advocacy efforts,
5. To grow local research capacity.

9. RESEARCH EXCELLENCE

RESEARCH

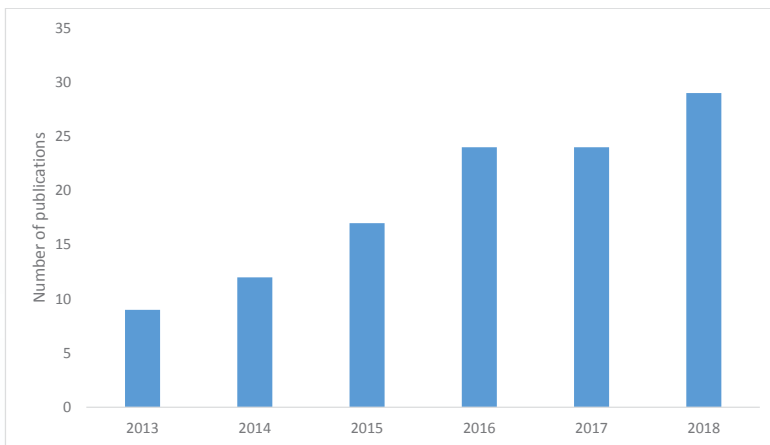
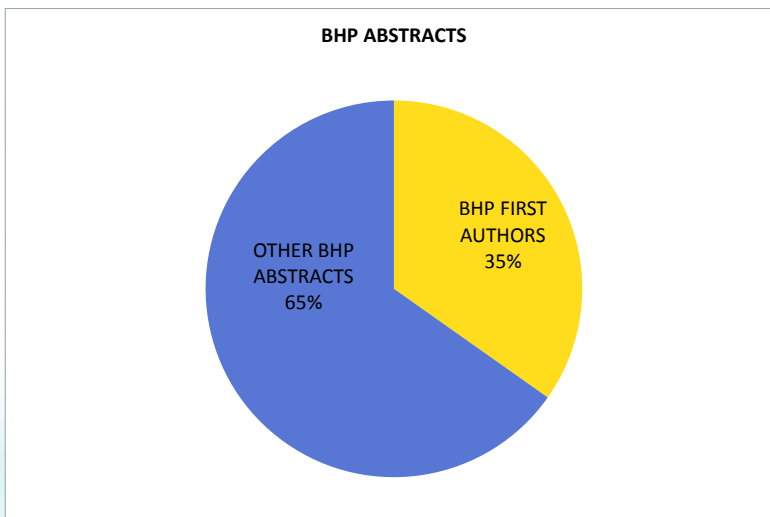


Fig. 3: Number of Publications in 2017/18

BHP has seen some impressive results in abstracts and manuscripts writing over the past 18 months with recorded 53 peer reviewed publications resultant from different projects conducted at the institute.



Research projects undertaken during the reporting period include:

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i. **Botswana Combination Prevention Project (Ya Tsie): Principal Investigator, Max Essex**

The BCPP (Botswana Combination Prevention Project) or Ya Tsie study is a randomized community trial that was conducted as a partnership between the MOHW, CDC, HSPH and BHP. Conducted between October 2013 and June 2018, the BCPP is by far the largest study ever conducted by the BHP. Ya Tsie was a Pair-matched community-randomized trial in 30 communities in Botswana (15 intervention and 15 standard of care) that was designed to evaluate the impact of a package of HIV prevention and treatment interventions on population-level HIV incidence.

The main hypothesis of the study was to demonstrate the efficacy of proven combination prevention package of HIV prevention strategies in reducing HIV incidence at community level. The study involved scaling up combination prevention interventions that are known to work (HTC, SMC, PMTCT and ART) and comparing HIV incidence in 15 randomized communities that received the interventions versus 15 randomized communities that received the national standard of care. Baseline and annual surveys were conducted in adult residents of a random sample of ~20% of households in all 30 communities to evaluate difference in HIV incidence.

Results of main analyses indicates a ~30% reduction in HIV incidence associated with the intervention



Baseline and annual surveys were conducted in adult residents of a random sample of ~20% of households in all 30 communities to evaluate difference in HIV incidence.

BCPP partners donated 60 chairs to 'Kgotla' of each of the 30 study communities, after study end, as token of appreciation (Handing over chairs at Oodi Kgotla)

The study produced 19 abstracts submitted to international scientific gatherings (CROI and IAS) and 13 of them were accepted for presentations (2 oral presentations and 11 posters presentations). Six manuscripts have since been submitted to High Impact Journals and 5 have been accepted for publication.

ii. **Tsepamo (Birth Outcomes Surveillance) Study: Principal Investigator, Rebecca Zash and Roger Shapiro**

Tsepamo is a birth outcomes surveillance study started in 2014 and conducted in 8 delivery health facilities, which at the time represented about 45% of all deliveries in Botswana. The main

objectives of the study were to evaluate adverse birth outcomes by HIV status and by ART regimen, as well as to determine if there is an increased risk of neural tube defects (NTDs) among infants exposed to efavirenz (EFV) from conception. However, since the introduction of Dolutegravir (DTG) as first line drug for all HIV infected people, the effect of DTG on birth outcomes, and also of other ARTs used during pregnancy, is also being studied. As at May 1, 2018 the study had enrolled 89,064 births, only about 5,000 short of reaching the study target of 94,000 by the end of 2018. One of the significant preliminary findings of the study was that children born to HIV infected mothers, who started EFV containing ART during pregnancy, were not at increased risk of having adverse birth outcome when compared to those who were on non EFV



RESEARCH EXCELLENCE

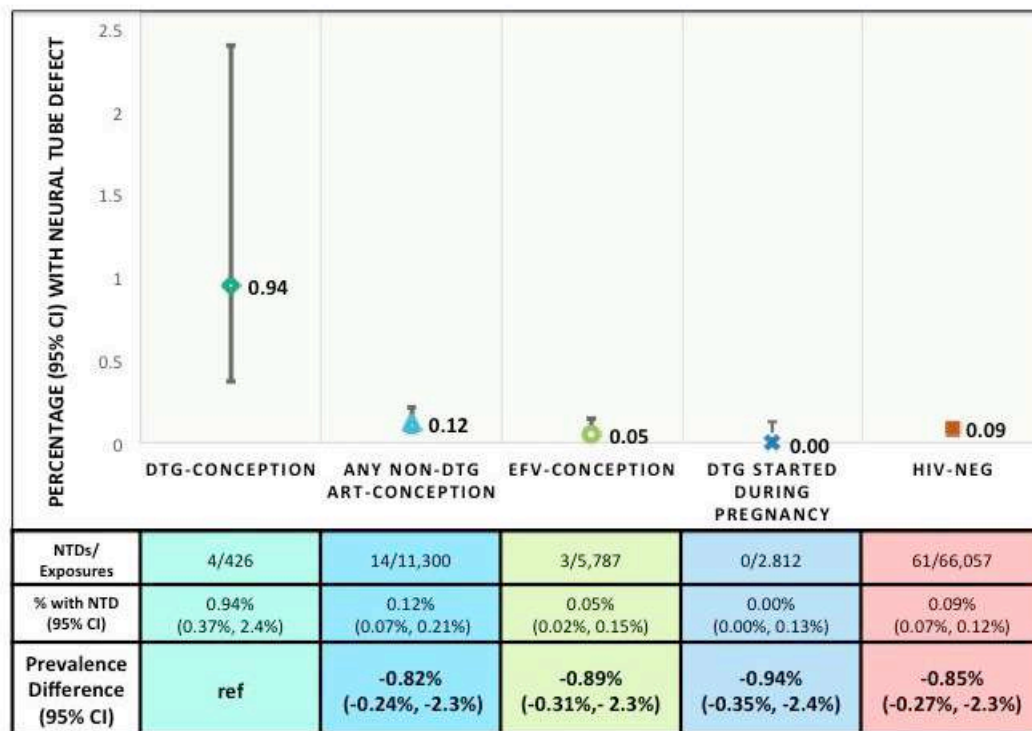
containing regimen. However, among the mothers who were on DTG at conception (426), the risk of infant being born with an NTD seemed to be higher (0.94%) as compared to those on non-DTG containing regimen (0.12%). These findings however were only from 426 women who started DTG before conception, which is a very small denominator with a wide confidence interval. Hence it was reported as only being a 'signal' that needed further data to be collected in order to confirm or refute the findings.

To this end Tsepamo study has since been extended to 10 more sites with the total expected number of deliveries captured to be 72% of total deliveries taking place in Botswana health facilities.

World Health Organisation (WHO) has since issued new guidelines on the use of DTG in the childbearing age based on the preliminary findings. WHO advised that HIV infected women with pregnancy intention who are not on effective contraceptive, and those who are not on ART and are less than 8 weeks pregnant, should not be started on DTG. Botswana national treatment guidelines have since also been amended as above.

The Tsepamo team has produced 3 manuscripts, and had a total of 12 abstracts presented at international (8) and local (4) conferences.

NTD Prevalence Difference by Exposure



Increase in NTDs prevalence difference between DTG at conception and all other exposure groups, of about 0.8%. A signal that DTG may cause increased NTDs if taken from conception

iii. Early Infant Treatment: Principal Investigator, Roger Shapiro

Early Infant Treatment Study (EIT) is a single arm non-randomized clinical trial of early ART in antepartum and peripartum infection which started in 2015. As part of this study, HIV-exposed infants are tested at birth and, if HIV positive, offered antiretroviral therapy within 72 hours of birth. The overall objective of this study is to determine whether very early antiretroviral treatment (ART) initiation in HIV-infected infants limits the seeding of viral reservoirs

and maintains immune responses. This study is being conducted at Gaborone and the Francistown sites.

As of June 2018 EIT, had accrued 37 out of a target of 40 which is 93% of the study sample. Although it is difficult to find HIV infected newborns, which is a result of a very successful PMTCT program in Botswana (MTCT rate of 0.5% in our cohort), it was expected to reach accrual before the end of 2018. There was need to apply for supplementary funding to achieve full accrual. The study has published two manuscripts, as well as presented at CROI.

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iv. **AMBITION: Principal Investigator, Joe Jarvis**

Cryptococcal Infections of the brain and its membranes is one of the most severe complications of HIV infection resulting in meningitis and encephalitis. Prompt and efficacious treatment of the infection is very important. The Ambition study aims to determine whether a single, high-dose of liposomal amphotericin B is as effective as 7-day amphotericin B based treatment courses in averting all-cause mortality in 850 HIV patients presenting with a first episode of cryptococcal meningitis. The study is being conducted at hospitals in South Africa, Zimbabwe, Uganda and Malawi. Botswana aims to recruit 90 patients by 2020. There are currently 56 participants enrolled across all sites and 14 enrolled in Botswana.

The study is sponsored by the London School of Hygiene and Tropical Medicine and hosted in Botswana by BHP with Dr Mosepele as the local PI. This study, and the collaborators working on Ambition Meningitis Network (AMNET), aims to facilitate future trials in sub-Saharan Africa. AMBITION sponsored one study physician to pursue an MSc Clinical Epidemiology with the London School of Hygiene and Tropical Medicine. They conducted regional trainings in clinical trials and good clinical practice.

The study experienced some delays due to challenges, mainly with the data capture system development. The study hopes to report on abstracts and publications in the next reporting period.

v. **Thabatshe : Principal Investigator, Scott Peterson**

Thabatshe (Sotho word meaning tap root) is a prospective cohort study established in 2010 to enroll biopsy-confirmed cancer cases who present for specialized oncology care at the four referral level oncology centres in Botswana (2 public and 2 private hospitals). The primary aims are to evaluate the important risk factors for cancer in

Botswana including HIV and to describe the response to treatment for patients without HIV, and those with HIV on HAART. To date, a total of 3641 participants have been enrolled. Six abstracts were presented at local and international conferences (Botswana non-communicable disease conference, Botswana nurses conference, CROI, and UNESCO MERCK Foundation in Mauritius).

vi. **Potlako Study: Principle Investigator, Neo Tapela**

Potlako ("hurry" in Setswana) is an NIH-funded prospective pilot study initiated in 2016, which aims to evaluate a complex health system intervention in improving earlier diagnosis of major cancers among residents in rural Kweneng-East district. The intervention includes a) training primary care nurses and doctors on symptoms associated with major cancers and prompt referral of patients, b) supporting patients in navigating the health system by providing transport support and clinic appointment reminders, and c) supporting health system through better coordinated and algorithm-based referrals, bookings and follow up of pathology results. Between 2016 and 2018, a total of 815 participants have been enrolled with more than 180 cancers confirmed, more than 1,840 SMS reminders on appointment sent, more than 3,900 patient calls made and 53 participants received transport support (vast majority for multiple appointments).

A second round of primary healthcare provider training was held in February 2017, with 100% participants of all 37 public facilities in the Kweneng East district, and demonstrated improvement in cancer early diagnosis knowledge and confidence of trainees (outcomes of this training have been published in a peer-reviewed journal). Five (5) abstracts have been presented or accepted to international conferences, and several manuscripts are in development.

vii. **Peo: Principal Investigator, Neo Tapela**



Capacity building on oncology: Kweneng East District healthcare providers

Potlako ("hurry" in Setswana) is an NIH-funded prospective pilot study initiated in 2016, which aims to evaluate a complex health system intervention in improving earlier diagnosis of major cancers among residents in rural Kweneng-East district.

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Peo (“seed” in Setswana) is an NIH/NCI-funded collaborative multidisciplinary partnership spanning six (6) institutions and three countries with the overarching goal to assess needs and build capacity for regionally-relevant policy-impacting NCD research in Southern Africa. Specific aims of the project are to a) improve availability and utilization of epidemiologic and clinical data, leveraging electronic linkage of health information and program data, b) increase local human resources skilled in NCD research, c) strengthen institutional capacity for multidisciplinary NCD research and broad information dissemination, d) complete demonstration projects, initially focusing on the high burden unaddressed NCDs-cardiovascular diseases, cancers, road traffic related injuries.

Achievements include: Operationalizing core resources shared across partner institutions – Coordination unit (BHP), Data acquisition (UPenn), Biostatistics and research enhancement (University of Botswana); Training six Botswana through a 12-month non-resident fellowship (two Fellows presented their work at local and international conferences, two Fellows now enrolled in PhD programs, and one to an international position in public health); Supporting and catalyzing Botswana’s first international NCD symposium which was held in October 2017 and attended by broad stakeholders relevant to research agenda setting and policy translation; Developing an electronic health information system platform that supports longitudinal data review and clinical management of breast cancer patients, and generates handout to support patient education (University of the Witwatersrand, South Africa). Three pilot studies were initiated, generating additional data of over 3000 participants, and producing eight abstracts presented at conference (6 international).

viii. Mopati: Principle Investigator, Mosepele Mosepele

MOPATI study, which was an NIH funded pilot study to better understand the role of treatment partners (Mopati) for PLWHIV was completed. The team presented the results at an international

conference in Cape Town, South Africa and subsequently published the results in a high impact journal (JAIDS). In this study, we reported that treatment partners who provided all rounded support (not adherence to ART only), were perceived to be the most effective treatment partners by PLWHIV. Participants (especially treatment partners) expressed a desire to be capacitated to assist PLWHIV. We have since submitted a proposal to the NIH to conduct a pilot study to test the observations we made in the original Mopati study.

ix. Clinical Trials Unit (CTU): Principal Investigator, Max Essex and Shahin Lockman

The Clinical Trials Unit, which conducts studies under four (4) research networks (ACTG, IMPAACT, HPTN and HVTN) continues to play a pivotal role as anchor of BHP research activities. In this reporting period, the following protocols were active under respective networks:

a) HPTN: Local Principal Investigator, Joseph Makhema

1. **HPTN 081** (A phase 2b study to evaluate the safety and efficacy of VRC01 broadly neutralizing monoclonal antibody in reducing acquisition of HIV-1 infection in women in Sub Saharan Africa(SSA). This is a a multisite global study targeting 1900 HIV uninfected women in SSA and is fully enrolled with 150 enrolled in Botswana site.

2. **HPTN 084:** A Phase 3 Double Blind Safety and Efficacy Study of Long-Acting Injectable Cabotegravir Compared to Daily Oral TDF/FTC for Pre-Exposure Prophylaxis in HIV-Uninfected Women. Its main objective is to evaluate the safety and efficacy of the injectable agent, cabotegravir (CAB LA) compared to daily oral tenofovir disoproxil fumarate/emtricitabine (TDF/FTC), for pre-exposure prophylaxis (PrEP) in HIV-uninfected women. The study has a global target of 3200 participants and a target of 200 approved locally. It was activated to enroll in December 2017 and enrolled 12 participants by end of June 2018.



Daily oral vs long-acting injectable PrEP



HPTN 084: Study of Long-Acting Injectable Cabotegravir Compared to Daily Oral TDF/FTC for Pre-Exposure Prophylaxis in HIV-Uninfected Women

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b) IMPAACT: Site Principal Investigator, Gaerolwe Masheto

1.IMPAACT P1093 (Phase I/II, Multi-Center, Open-Label Pharmacokinetic, Safety, Tolerability and Antiviral Activity of dolutegravir, a Novel Integrase Inhibitor, in Combination Regimens in HIV-1 Infected Infants, Children and Adolescents), continued to enroll .

2.IMPAACT 2010 - This is a Phase III, three-arm, randomized, open-label study to compare the virologic efficacy and safety of three antiretroviral regimens for HIV-1-infected pregnant women and their infants. The study will enroll a total of 549 mother-infant pairs globally (and up to 150 in Botswana). The Botswana sites (Molepolole and Gaborone) were activated for enrollment in January 2018 and had enrolled 34 participants by the end of the current reporting period.

c) ACTG Site Principle Investigator, Ayotunde Omoz-Oarhe

1.REPRIEVE (A5332): A randomized trial to prevent vascular events in HIV. This is an ongoing study on the use of a cholesterol lowering medicine that may reduce the risk of heart attack or stroke in HIV infected individuals.

With a global sample size of 7500, the study is close to reaching its target with 7222 participants already enrolled by end of June 2018. Botswana has enrolled 273 participants since the site was activated to enroll only in February 2017. BHP received three awards for excellence in recruitment on REPRIEVE at the annual AIDS clinical trial meeting in Washington DC, USA, in June 2018. Further, the local PI, Dr Mosepele was approved by the REPRIEVE study leadership to lead a grant application to study whether bacteria in the gut (intestines) affects the effects of cholesterol lowering drugs among PLWHIV, and serve as Protocol Chair on this new international project.

During the reporting period, BHP investigators co-authored three manuscripts and two abstracts presented at CROI 2018 for CTU network studies (HPTN 058, 1077HS PROMISE, A5279 Rifapentine TB prevention study, A5282 HPV test-and-treat study and IMPAACT P1093).

CTU made significant progress in addressing the objective of growing local research capacity with three successful applications by early career investigators;

- Gaerolwe Masheto's Developmental Award application entitled

"Biomarkers of vascular endothelial dysfunction and pregnancy outcomes in HIV-infected vs. HIV-uninfected pregnant women" was selected for funding by the Harvard University Center for AIDS Research (HU CFAR) Developmental Core Review Committee. A total of \$35,574 in funding, consisting of direct and indirect funds, for a period of twelve months was awarded. The award is issued by the HU CFAR's parent NIH/ NIAID 5P30AI060354-14 grant entitled "Harvard University Center for AIDS Research."

- Dr Emily Shava, the study coordinator for **HPTN studies in Botswana was selected for the HPTN international scholar grant award Cohort 2** from June 2016-Nov 2017. From this award she did data analysis on the HPTN 058 study: A Phase III randomized controlled trial to evaluate the efficacy of drug treatment in prevention of HIV infection and death among opiate dependent injectors and produced one of the CTU manuscripts as first author.
- Dr Emily Shava also received a Harvard University **Center for AIDS Research (CFAR), Developmental Award** to conduct a study on Acceptability and uptake of HIV self-testing among female sex workers in Botswana, a study locally known as "Ikitse Study".

PHARMACY

The BHP pharmacy is an integral part of all the drug-related studies being conducted within the organization. It is mandated with ensuring adequate and safe receipt, handling, storage and dispensing of pharmaceutical products in compliance with applicable regulatory requirements. Other services offered by the department include but are not limited to provision of medication adherence counseling to study participants. BHP pharmacies are located in Gaborone and Molepolole with an additional satellite dispensary in Francistown.

The main objectives of the Pharmacy over the period 2017/2018 was to grow and strengthen network/collaborations with stakeholders, deliver quality services, increase BHP advocacy awareness and to increase publications in high impact journals. To date, stakeholder engagement meetings have been undertaken with Princess Marina Referral Hospital, Scottish Livingstone Hospital, Nyangabgwe Referral Hospital dispensaries, Drug Regulatory Unit/Medicines Regulatory Authority and the Central Medical Stores (CMS).

COMMUNITY ENGAGEMENT

Community Engagement Unit is responsible for identifying, initiating and deepening Collaborative relationships with various community

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stakeholders at national, local and community level. Community Engagement is also responsible for Community education in areas of health and clinical/biomedical research. The education component is general but is often tight to a specific research study conducted at BHP with aim to get potential study participants interested in joining. All these activities are aimed at building transparent, meaningful collaborations and mutually beneficial relationships with the ultimate goal of shaping research collectively. CE helps in achieving the strategic objectives;

- Increase BHP brand awareness and advocacy efforts.
- Increase research literacy and importance of research among various stakeholders including communities to enable them to participate fully in research and in identification and sharing of their specific research priorities.

Through the various studies that are conducted in BHP, various stakeholder meetings have been held to update communities and other stakeholders on progress of these studies. These studies included Ya Tsie/BCPP, Tsepamo, HPTN081, IMPAACT 2010, Early Infant Treatment. These meetings included meetings held at BHP, meetings at various health facilities and kgotla meetings where these studies are conducted and/or where studies recruit. Some stakeholder engagement activities were conducted to introduce new studies such as the extension of the Early Infant Treatment study known as the Tatelo study where bNABs, the expansion of sites for the Tsepamo study and the HPTN084, a BIV prevention study which compares Truvada with Long Acting Injectable Cabotagravir for PrEP in HIV negative women has had a number of stakeholder meetings and numerous presentations at various fora.



HPTN 084 Stakeholder Engagement session

Community Engagement has had extensive meetings with all BCPP/Ya Tsie study communities to share information learned from the study and to give these communities a token of appreciation for having worked cordially with the study team. The result dissemination activity is still on-going and will be completed in due course. Community Engagement was instrumental in the

establishment of the Botswana Media Health Café (BMHSC) which had its first meeting here at BHP. BMHSC is a forum that brings Journalists, Advocates and Scientists/Researchers together to discuss health research and assist journalists to accurately report these in the various media. BMHSC started in Gaborone but will include Journalist, Advocates and Scientists/Researchers from

RESEARCH EXCELLENCE

other parts of Botswana. It was started because there was not enough reporting of health research in local media.

REGULATORY OFFICE

Tasked with inter-departmental support for all the studies conducted at BHP, the Regulatory office submits research documents to both, local and international IRBs for review and approval – a mandatory requirement for all the organization's studies. The department maintains current IRB approvals for the duration of all studies conducted at BHP.

In the current reporting period, there were about 20 ongoing studies and five have been completed. The number of new protocols that

opened for enrolment stood at seven (7). Compliance to ethical conduct and good data quality is an essential facet of research. In the past reporting period, quality of work at BHP has been excellent with few critical events that needed to be reported to overseeing regulatory bodies.

Furthermore, the department facilitates Research Ethics and Good Clinical Practice trainings for all incoming human resources involved in research facilitated through CITI. This training together with face to face Responsible Conduct of Research (RCR) trainings is intended to equip upcoming researchers with principles of "good citizenship." As of June 30, 2018, a total of 100 people (93 BHP and 7 non-BHP) have been trained in Responsible Conduct of Research.



Compliance to ethical conduct and good data quality is an essential facet of research.

Responsible Conduct of Research training of internal and external delegates by BHP trainers.

One of the department's aims for the year 2017/2018 was to have BHP representation in various relevant health sector committees. This was promptly fulfilled with BHP being represented in two activities hosted by Ministry of Tertiary Education, Research, Science and Technology through the Department of Research, Science and Technology as well as the Ministry of Health and Wellness through the HRU.

In addition, the department was tasked with writing a first author article for local/international conferences to which it responded by submitting an abstract for the 2018 EDCTP conference which was unfortunately not accepted. This objective will be pursued again in 2018/19 period. It is the intention of BHP to establish, in future, its own, internal audit team which will further strengthen quality of research work being done at the organization.

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 Research Excellence

RESEARCH EXCELLENCE

THE LABORATORY



BHP researchers busy at the Research Lab



Despite heavy laboratory work, Gorata and her partner still find time to unwind with Latin American Dance.

Research Laboratory

The Research Lab is a vibrant team of Research Associates, Research Fellows, Interns and Graduate and Undergraduate students each working on individual research projects.

2017-2018 was yet another successful year in the research lab. There were 4 PhD candidates, 7 Masters/MPhil and 9 Research Fellows and Interns. The research lab hosted 3 undergraduate students from Harvard University. Collaborations with other academic institutions continued to grow locally and internationally. These included collaborations with University of Botswana, University of Cincinnati (USA), and Botswana International University of Science and Technology (BIUST), University of KwaZulu Natal (RSA) (with Masters and PhD projects underway) and Stellenbosch University (Masters Planned).

One of the major highlights of 2017-8 was the presentation of our research in regional and international scientific conferences, young investigator scholarship awards and prizes in international forums (best presenters/abstracts and papers) and more than 20 resulting in publications.

Clinical Laboratory

The Botswana Harvard HIV Reference Laboratory (BHHRL) continues to provide support for the clinical trials conducted by the BHP.

BHHRL has maintained its approved status in conducting clinical trials supported by the US National Institutes of Health through the Division of AIDS (DAIDS). BHHRL successfully transitioned to ISO 15189 and was recommended for ISO accreditation by the Southern African Development Community Accreditation Service (SADCAS). A total of 75 staff members were trained on the quality management system new ISO 15189 standard (25 candidates), Good Clinical Laboratory Practice (GCLP, 25 Candidates) and First Aid by Rescue-One (25 candidates including clinical sites safety officer)

During the period 2017 – 2018 BHHRL acquired additional equipment for specialized testing and freezers to increase biobanking capacity. New equipment included Abbott Architect for automated testing for serological assays (including Hepatitis profiles, HIV, Syphilis and some hormones), and Biorad Genius reader for automated HIV-1/HIV-2 confirmation and differentiation..



PBMC samples stored at -180C in liquid nitrogen containers



BHP repository Freezers where approximately 1.5 million biological samples are stored

RESEARCH EXCELLENCE

No.	Department Objective	Mother (Organisational) Objective	Dept Target	Initiatives undertaken	Performance achievement
1	Maintain ISO accreditation of Laboratory Quality Management Systems	C3: Delivery Quality Services	<ul style="list-style-type: none"> Accreditation maintained Implement Quality Policy and 2018 Quality Objectives and Indicators 	<ul style="list-style-type: none"> Training of ISO 15189 Internal Audits for all depts Accreditation body applications GCLP and regulatory compliance & audits External Quality Assurance activities Monitoring Quality indicators (TAT, Statistics, rejection rates, customer satisfaction) 	<ul style="list-style-type: none"> 20 staff members Trained of ISO 15189 Internal Audits for all depts Accreditation body applications completed and sent; waiting onsite assessment GCLP audits successful & compliant with DAIDS requirements for Clinical Trials conduct EQA for all tests satisfactory Quality indicators within targeted expectations (TAT challenges due to LIS)
2	Laboratory Management Information Systems	IP2: Improve Core Support Systems	Transition/Migrate to new Laboratory Information System by June 2018	<ul style="list-style-type: none"> Identified a LIMS system by June 2018 Training and seeking funding Adapting LIS to BHP needs/requirements 	<ul style="list-style-type: none"> LIS identified Training continuing
3	Expand key equipment/assays	LG4: Reduce infrastructure dependency	<ul style="list-style-type: none"> Obtain automated 4th/5th Gen assays with multiplexing; Xpert Assays; TaqMan panels 	<ul style="list-style-type: none"> Conducted a survey/review of Assays/equipment that can meet the needs of clinical trials Submitted request for funding. 	<ul style="list-style-type: none"> Recommendations made Request for funding ; pending responses

10. CAPACITY BUILDING & TRAINING

BHP endeavours to train future research scientists and health workers in general in Botswana. Several initiatives to address this have been on going during the reporting period. Several grants supporting capacity building were applied for by different PIs. Some capacity building projects include the Clinical Capacity Building Initiative at Scottish Livingstone, BOTSOGO project in Gaborone and Francistown, and the SANTHE project in Gaborone.

The BHP Clinical Capacity Building Initiative at Scottish Livingstone Hospital (BIDMC)

Launched in 2011, the initiative is a collaboration between the BHP, Beth Israel Deaconess Medical Center (BIDMC), Boston and Oregon Health & Science University (OHSU), Portland. The initiative was created to support healthcare capacity building at Scottish Livingstone Hospital (SLH) and the Kweneng East district of Botswana through clinical stewardship, medical education, quality improvement and research.

The initiative is supported by three permanent Harvard clinical faculty who work closely with hospital and District Health Management Team (DHMT) leadership and manage respective programs in Internal



CAPACITY BUILDING AND TRAINING

Medicine, Obstetrics & Gynaecology, Anaesthesia & Critical Care. In collaboration with local partners, the program at SLH provides clinical training to University of Botswana medical students, interns and residents as well as local medical officers, nurses and other healthcare staff.

The program also promotes systems/process improvement through

quality improvement and research within the hospital and surrounding district. In addition, the program regularly provides opportunities for rotating U.S. residents and fellows to participate in clinical, educational, quality improvement and research efforts.

The programme has achieved several milestones summarized in the table below.

BHP Strategic Objective	Program strategic Objective	Program Target	Performance Achievement	Issues & Challenges	Future Action
Capacity Building & Training	Strengthening of National Internship Training Program	Complete development of internship educational curriculum materials	- More than 50 hours of educational sessions developed.	Delay in editing and finalizing materials as only one editor available to work on this.	Plan to complete first batch of materials and launch website in August 2018.
	Strengthening of Anesthesia & Critical Care at SLH	Strengthen departmental staff and clinical capacity	- Worked with SLH management and MOH to appointed 4 permanent medical officers to the ICU. - Trained newly appointed MO's in ICU care - Implemented 24h hour medical officer coverage in the ICU	ICU has been underutilized for many years. Requires culture and attitude change among staff to get used to working at full ICU capacity.	Development of ICU protocols and SOP's Development of theater pathways and protocols Establishment of regular ongoing training for ICU medical officers and nurses.
	Strengthening care for GYN cancers	Piloting of GYN-ONC surgical campaign Improvement of care coordination for advanced cancers	GYN-ONC surgical campaign piloted in August 2017.	Difficulty in coordinating participation of other providers in Botswana	Expand GYN-ONC surgery campaign Provide surgical training for providers in Botswana Recruit additional GYN oncologists to participate in campaign Work with PMH oncology and SLH hospital admin to improve logistics
	Strengthening outpatient care in Kweneng East District	Improve guideline-driven management of communicable and non-communicable disease	- Established regular global health fellow outreach to district healthcare facilities - Started needs assessment survey for continuing medical education - Obtained IRB approval for CME project study	Challenge with obtaining means and funding for transportation to outreach visits.	Development and implementation of district-wide CME project aimed at providing primary care providers (nurses & doctors) with training and clinical mentorship on management of common outpatient conditions with emphasis on NCD's
Research Excellence	Implement new quality improvement-focused research	Cervical cancer 2-stage screening study	Study rolled out and ongoing	All of these projects are logistically complicated and underfunded but are going forward. Initial abstracts from all three studies have been accepted for presentation at international scientific conferences.	Complete patient enrolment, data collection, analysis and dissemination. Several new research projects planned.
	Complete ongoing research projects	Medication reconciliation and HTN management study SLH clinical care and outcomes study	Study rolled out and ongoing -Completed data collection on medical wards and started analysing -Developed data collection tool for surgical wards		
Sustainability	Develop logistical capacity and partnerships to continue current work and expand program's capacity building contribution.	Develop formal relationship with UB to expand contribution to training of UB medical students, interns and residents	Partnered with BIDMC department of anaesthesia and critical care and started anaesthesia and critical care program under Dr. Ed Clune as the programs third full-time faculty in Botswana. Initiated discussions with UBFOM regarding partnering to develop residency program in OBGYN. Started UBFOM family medicine resident rotation at SLH and continuing ongoing discussions with department of medicine regarding renewing student rotations in internal medicine.	Ongoing struggle to ensure sustainable funding for the program. The program does not have any grant support. Current funding is from contributions by participating departments at BIDMC and OHSU and from payments by visiting US residents to support their housing and logistics	Pursue MOH cost sharing to support faculty salaries and enable expansion to additional speciality fields Pursue further BIDMC administration support Continue discussions with UBFOM to establish formal collaborations in internal medicine, OBGYN and Anaesthesia & Critical Care

CAPACITY BUILDING & TRAINING

BOTSOGO PROJECT- Principal Investigator, Bruce Shabner

BOTSOGO (means “health” and acronym stands for Botswana Global Oncology Outreach) is a capacity -building initiative that has continued to support monthly oncology tumor board. This is a continued medical education forum where healthcare providers at public referral hospitals in Botswana and oncology centers in Boston participate in bi-directional discussion of complicated oncology cases, employing tele/video-conferencing. The meetings attract a wide range of health workers from both private and public institutions that include, medical and radiological oncologists, surgeons, pathologists, nurses, allied health professionals and medical students. Currently the monthly meetings attract about 100 participants per session.

Through Botsogo, four local researchers have produced a first author abstracts and 4 manuscripts are in development. Two Botsogo investigators have initiated Research Mentorship Meetings at the Princess Marina Oncology ward for clinicians. Additionally, Botsogo has distributed vaginal dilators to more than 100 cervical cancer patients post radiation therapy and produced a patient education treatment booklet. Over 200 booklets have been distributed to both public and private institutions.

SANTHE: Principal Investigator, Dr Simani Gaseitsiwe

SANTHE is an acronym for “SUB-SAHARAN AFRICAN NETWORK FOR TB/HIV RESEARCH EXCELLENCE” - a Sub-Saharan African network of African-led research in HIV (particularly acute HIV (AHI)) and Tuberculosis (TB) infection. SANTHE is part of the Wellcome Trust funded DELTAs networks which involves four institutions.

SANTHE aims to strengthen South-South partnerships, create enabling environments for excellence in research in Africa and train

Awards Received in 2018



Dr Simani Gaseitsiwe

Festus Mogae Award

A prestigious award by the Botswana Clinicians Society was scooped by our Laboratory Director, Dr. Simani Gaseitsiwe at the 7th Botswana International HIV Conference. This award was in recognition of the commitment and meaningful contribution towards the control of HIV/AIDS in Botswana. Dr Simani is the second recipient of this prestigious award after Dr Tendani Gaolathe.

Research Excellence Research Excellence Research Excellence

the next-generation leaders of African science. This consortium is specifically focused on HIV and TB as this ‘syndemic’ is a public health crisis in Africa that requires the full weight of basic science, translational/clinical research, and political and social mobilisation. At BHP, SANTHE supports 4 graduate research interns, 8 MPhil fellows, 4 PhD fellows and 2 postdoctoral fellows.

H3ABioNet: Principal Investigator, Dr Simami Gaseitsiwe

H3A (Human, Health and Heredity in Africa) is a Wellcome Trust and NIH funded initiative to support building capacity in genetics research in Africa. The H3ABioNet is a Bioinformatics network funded through the H3A initiative that targets to develop bioinformatics capacity in Africa. At BHP, the H3ABioNet has supported one PhD fellow and one bioinformatician/biostatistician.

EDCTP TESAI: Principal Investigator, Dr Rosemary Musonda

EDCTP TESA II grant made it possible for BHP to host a 2-week Fundamentals of Biostatistics course in Gaborone from 4th-15th June 2018. The course was organised and designed through assistance from the Harvard TH Chan School of Public Health & University of Zimbabwe College of Health Sciences. The course examined the principles and application of Biostatistics in the context of real-world public health issues. The aim of the course was to provide those involved in clinical trials and public health research but lack a technical background with the skills to read and interpret biostatistical content and to do basic statistical analysis.

Through the EDCTP TESAI initiative BHP was able to sponsor 5 members of staff to attend various workshop/trainings at the other TESAI partner sites. The trainings were: TESA II (EDCTP) Good Clinical Laboratory Practice, Windhoek, Namibia, TESA II (EDCTP) Good Clinical Practice, Windhoek, Namibia, TESA II (EDCTP) Bioinformatics Training Course, Blantyre, Malawi.

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CAPACITY BUILDING & TRAINING

Awards Received in 2018



Dr Kaelo Seatla

Best Oral Presentation

An award for best presentation was awarded to Dr Kaelo Seatla at the SANTS Annual meeting in Kigali, Rwanda. This was the second consecutive time that a student from BHP has won this award.



Leabaneng Tawe

Best Oral Presentation

This award was given in recognition of the student's hard work throughout their studentship and it was awarded to Leabaneng Tawe.

11. PUBLIC POLICY & ADVOCACY 12. ORGANISATIONAL EXCELLENCE

BHP continues to produce research results that impact policies and treatment guidelines in Botswana. 30 abstracts were presented during the reporting period. The most Influential during this period was the Infant Birth Outcomes "TSEPAMO" study on the initial possible signal for DTG related NTD's resulting in new guidance use of DTG.

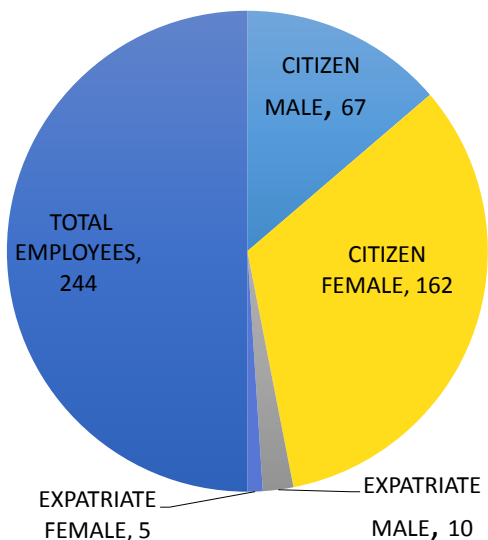
BHP researchers are active members of several MoHW technical teams where they advise on issues like breastfeeding of infants, HIV treatment guidelines, TB management and care, BAIS IV design and implementation. BHP continues to raise awareness on HIV related issues and showcase its work through various community activities such as World AIDS Day commemorations.

One of the major policy impact findings from BHP was the interim results from TSEPAMO study which showed a possible link between Neural Tube Defects in newborns and the use of DTG at conception. This has led to the MoHW and WHO issuing statements of caution as well as issuing new guidelines on the use of DTG in childbearing women.

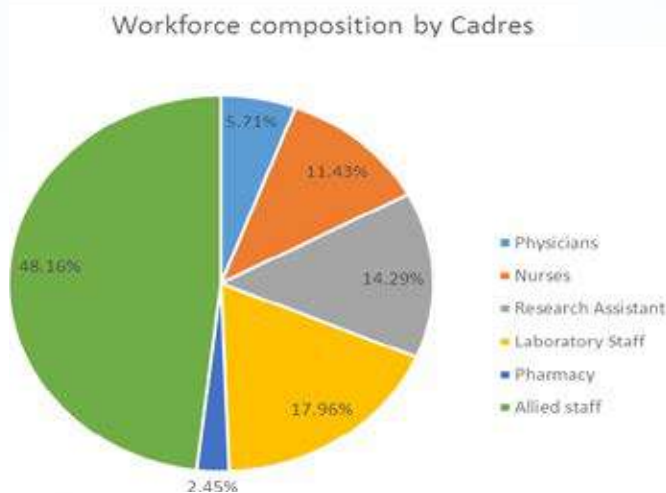
HUMAN RESOURCE

Botswana Harvard Partnership aims at attracting and retaining qualified and competent personnel through competitive remuneration and conditions of service. The workforce is diverse consistent with competencies for the support of the research mandate and skills for clinical, community based, laboratory, technology, ethics, and pharmacy research endeavour. At the beginning of the reporting period BHP had a total of 350 employees. However due to the completion of the BCPP study, the number has significantly reduced to 244 since the BCPP contributed 30% of the workforce. 90% of the staff are citizens. 6% are Physicians, 18% Laboratory Staff of whom three have PhD's, 11% nurses, 14% Research Assistants, 2% Pharmacy, 48% are allied staff including grants, finance, Human Resource management and administrative staff.

ORGANISATIONAL EXCELLENCE



BHP Staff compliment

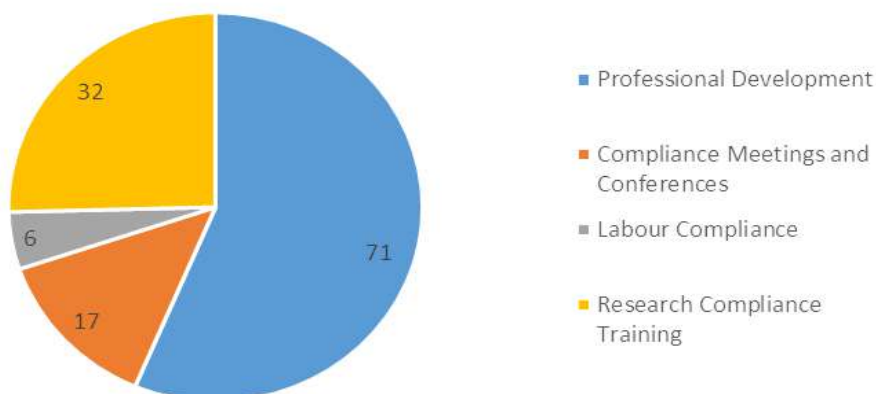


BHP workforce composition by cadre

Conferences, Workshops & Meeting Attendance

BHP provides a variety of training and development opportunities aimed at building employees' capacity to deliver services, meet strategic needs aligned with the institution's values, strategic plan and overall mission. BHP continues to strengthen the collaboration with stakeholders. For the period FY18, a total of 126 employees attended different mandatory conferences, workshops, meetings, upskilling trainings, and compliance training both locally, regionally and internationally. Of the 126 attendees, 27 attended locally, 51 regionally and 48 internationally. These very important capacity building initiatives came at a total cost of **P3,084,185.54**.

ATTENDEES OF DIFFERENT COMPLIANCE CLASSES

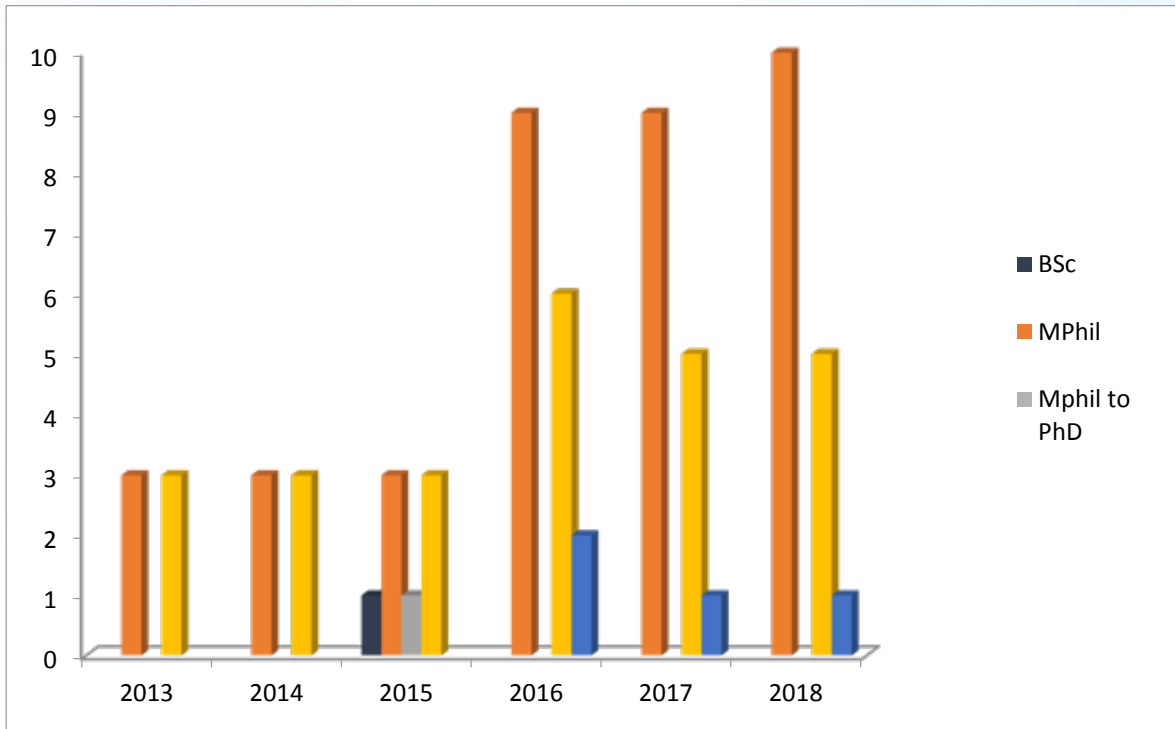


Training and Capacity Building

BHP, through triangular (south-south and north-south) collaborations, applied for several capacity building grants such as SANTHE, TESA II, EDCTP, Fogarty grants and H3Bionet to strengthen clinical research capacity at different levels (BSc, MSc, MPhil and PhD).



ORGANISATIONAL EXCELLENCE



Under- and post-graduate training up to PhD level enrolments at BHP on the increase

Staff Welfare

Staff welfare continues to be one of the most highly valued and practiced initiatives in each and every organization. This is done to ensure the wellness and comfort of employees in the workplace. Just like any other organization, BHP HR has taken an initiative over the years to ensure a well-practiced staff welfare policy. Some initiatives that will attest to the statement are as listed below;

Insurance

- **Group Personal Accident;** covers accidental bodily injury or death following violent, visible and external means 24 hours/365 days. It pays out minimum of 4 times annual salary and maximum of 5 times annual salary depending on type of injury.



BHP Football team during the BHP 20th Anniversary celebrations

ORGANISATIONAL EXCELLENCE

- **Financial schemes;** Stanbic Bank; A scheme tailor made to suit the Partnership employment conditions. Through this, employees can attain financial assistance such as unsecured personal loans, car loans and mortgage. BHP has negotiated favorable loan interest rates with the bank.
- **Gym;** BHP through its initiative to provide as a service health provider has taken a mandate in ensuring a better health of its employees. On behalf of its employees BHP has engaged with several gym service providers to all the employees to utilize their services. BHP pays 1/3 of the total amount towards these gym memberships while employees pay the remaining 2/3.
- **The Grand Palm Business Club;** This is a business club that allows for easy accommodation for employees when travelling or in vacation. The club offers a wide variety of services such as discounted accommodation rates, discounted shopping rates at selected outlets, and discounted meals. BHP pays a total amount and retracts its monies from employees pay within a period of three months.
- **BOMAID;** A medical aid scheme attained for BHP employees and offered at 100% cover. The scheme provides services such as BOMBABY, Funeral covers and medical checkups at reasonable prices.

In addition to the above, BHP holds a staff retreat once a year the objective of which is to facilitate team bonding across the entire organization. Activities of the day include sports, music and dancing, poetry and networking.



BHP staff enthralled in song and dance during staff retreat

FINANCE AND GRANTS

With over 35+ grants awarded to BHP, the Finance and Grants Department plays an essential role in supporting the effective management of BHP's funds. The system employed is PASTEL Evolution ERP and all Financial systems are robust and compliant

with International Financial Reporting Standards (IFRS).

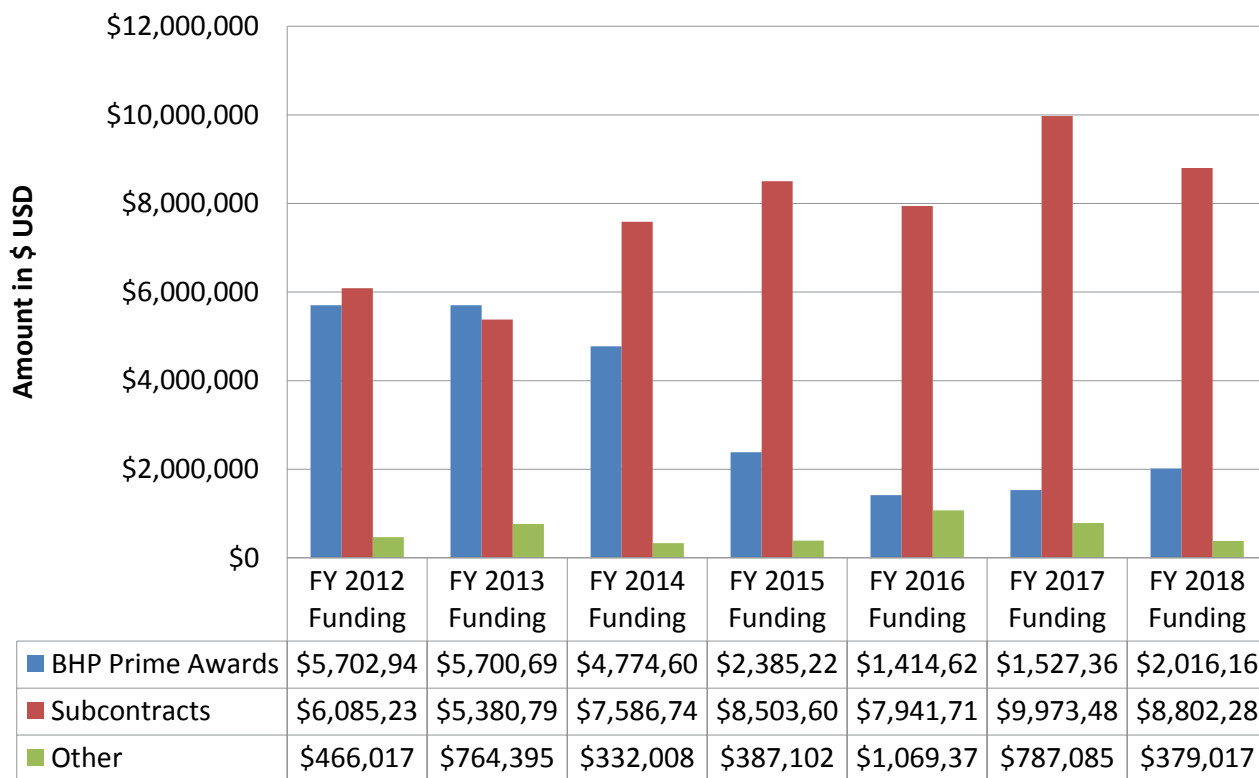
The Department has over 15 years of experience managing grant funding in a multi donor funded environment.

The BHP receive grants (see table below) from different sources to execute its mandate.



ORGANISATIONAL EXCELLENCE

Funding segregated by type of agreement



Amongst the department's objectives for 2017/2018, was to increase the number of grants applications and diversify revenue streams through improved grant writing skills. As at June 2018, five (5) new grant was funded, with ten (10) applications pending review by various sponsors.

The department achieved its aim of minimizing significant AFS and GAGAS audit findings with the 2017 Audit being concluded with no significant findings. Furthermore, the Grants, Finance, Human Resources and Procurement departments meet regularly to strengthen compliance and ensure effective and efficient use of resources.

ORGANISATIONAL EXCELLENCE

SOFTWARE ENGINEERING AND DATA MANAGEMENT CENTER

BHP's Software Engineering and Data Management Center (SE & DMC) serves multiple research studies. By combining the efforts of well-trained software engineers and data management staff and comprehensive scalable data management software system, the organisation ensures a complete, accurate, compliant, auditable, confidential, secure and available research protocol data record.

During the reporting period, SE & DMC developed and deployed an electronic data capture system that is used in six African countries conducting the Ambition study.

The SE & DMC also embarked on a bench-marking exercise in Mozambique for the Laboratory Information System as well as attended a PyCon Conference in Namibia to increase the team's skills on new technologies that are used today.

Information Technology



BHP has servers with total storage capacity of 56 Terabytes (IT team in the foreground.)

The IT department is responsible for hardware support, managing BHP systems, network management and computer support for end users across the entire organisation. The overall goal is to provide a stable and secure computing environment that is aligned with industry best practices. The department strives to provide the best solutions at minimal cost to the organisation. The majority of the systems are free and open source, even though that comes at a cost of needing skilled system administrators and support technicians. The department has built a data centre that runs on virtualised infrastructure and it aims to keep up with emerging technologies that are aligned with keeping the computing environment of BHP secure.

In the 2017 - 2018 year, the IT department set out to bring about stability to BHP systems, and to take a proactive stance on data security in light of an increasing number of cyber security threat. This has been partially achieved, but the process is ongoing, with the ultimate goal being having a seamlessly connected and safe work environment, where technology is not an inconvenience to any work being carried out. The objectives of the department were to:

- **Upgrade the Server Infrastructure**

The target was to have all BHP systems running on stable infrastructure with solid backup and failovers in place in order to reduce the time



Organisational Excellence

Organisational excellence

ORGANISATIONAL EXCELLENCE

it takes to recover from disasters, and the completeness of the data recover from backup systems. Internal risk assessment of infrastructure was done to determine the amount of risk each server has of having a hardware failure, the recoverability of the system and how critical the affected system is to BHP.

The challenges faced is the high cost of server infrastructure against tight budget, and so only two servers were procured and the migration of systems from old hardware commenced. During the migration, another challenge faced was the inability to rebuild old systems which had no deployment manuals and any sort of documentation, and the hardware being in a fragile state, thus migration could not be completed.

As a long-term solution to addressing hardware and server migration challenges, IT resolved to working with BHP management to put together policies that address hardware management, such as when to replace ageing hardware and requirements for systems to go into production, which speaks to having fully documented systems and failover for critical systems.

- **Secure IT Environment**

BHP data is of great value, and the goal is to raise awareness on security within BHP and implement security controls that would minimise risk of data breach and data loss.

Emails are periodically sent out and SOPs on Security published on the internal wiki shared with the staff to inform them on best practices to staying secure on the web. Internally staff members have been encouraged to undertake some data security training, with one staff member now recognised internationally as a System Security Certified Practitioner by ISC2. In order to benchmark and further security knowledge within the department, BHP sent out one

System Administrator to Austin, Texas for an annual Security Congress.

Challenges with securing systems is the inconvenience brought about by controls put in place to protect data. False positive alerts leading to blacklisting of legitimate traffic, an extra step taken to authenticate when using two factor authentication, access control policies like least privileged and long alphanumeric passwords, all bring about an unwelcome delay in user's normal workflow. This in turn results in users not adhering to recommended/best practices and its then hard to have every one act in a way that would not compromise data.

As a proposed future action, a dedicated FTE needs to focus on security of systems, the network and users that interact with the data, with much more frequent internal audit and vulnerability assessments.

- **Improve Network Infrastructure**

The target of the department was to improve the overall experience of users on the network and internet, as well as to provide those users with support when need arises. Internet bandwidth was upgraded from 15Mbps to 60Mbps, thus enabling users to use more online services, and for IT to migrate some of its services to the cloud.

Due to limited funds, the upgrade to 60Mbps was not coupled with a switch to fibre connection which costs more than the wireless connection we opted for. Due to the nature of wireless connections, BHP internet connection is bound to encounter some problems especially during a stormy weather.

As a proposed future action, a different network layout is to be considered, in order to move all BHP sites to fibre and centrally connect to the internet in order to have a better cost sharing model.

IT department is responsible for hardware support, managing BHP systems, network management and computer support for end users across the entire organisation. The overall goal is to provide a stable and secure computing environment that is aligned with industry best practices.

13. SUSTAINABILITY

BHP continues to be conscious of the fact that research funding is becoming more competitive and difficult to get. A number of initiatives aimed at diversifying income streams, reducing cost to BHP, and acquiring own office space, were instituted during 2017 -18 period. The organization bought office space for Finance and Grants department, thereby saving almost half a million pula on office rental. BHP requested and was given permission to use plots adjacent to Princess Marina Hospital (PMH) to construct a multi-storey building that will house all the BHP functions.

Furthermore, Sesikalla Investments (Pty) Ltd's was incorporated as a limited liability company in 2017 with a core business mandate of generating additional and alternative revenue streams for Botswana Harvard AIDS Institute (BHP).

Sesikalla Investments (Pty) Ltd has four key business areas that will offer the following services on a revenue generating basis:

- Clinical services
- Laboratory services
- Pharmacy services
- Health Informatics services

In May 2018, Sesikalla Investments (Pty) Ltd was granted a five-year renewable 'Permission to Establish a Group Practice in Gaborone' for the following services, as a major milestone:

- Internal medicine service
- Laboratory services
- Pharmacy services

A business plan is being developed in support of Sesikalla Investment's core mandate of generating additional and alternative revenue streams for BHP, to ensure the long-term viability and sustainability of BHP and its research and capacity building objectives.



14. PUBLICATIONS & ABSTRACTS

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