Fostering global pharmacy research through international collaborations

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Global State of the HIV Epidemic

Adults and children estimated to be living with HIV | 2016

- 6th leading cause of death
- THE leading cause of death in women age 15-49

Total: 36.7 million
New infections: 1.8 million
Deaths: 1.1 million

UNAIDS.org
Improving HIV Prevention for Women

- Overlap of HIV protection and contraceptive needs
- Women in HIV prevention trials have high levels of inflammation in female genital tract
- Hormones and inflammation may modulate risk of HIV acquisition
- Is drug efficacy altered?
Sites for oral PrEP studies

- iPrEX (men who have sex with men)
- Partners PreP (couples)
- FemPrEP (women)
- VOICE (women)
- TDF2 (heterosexual men and women)
MUJHU (Makerere University- John Hopkins University)

- Started in 1988 with research collaboration between John Hopkins and Makerere University
- Focus on perinatal HIV transmission and Mother-Child HIV Care
“Modifiers of tenofovir exposure in the female genital tract”

Blood
- Quantify antiretroviral exposure
- Quantify hormones

Cervicovaginal Swabs
- Vaginal Microbiome
- Vaginal cytokines

Cervical Biopsies
- Quantify antiretroviral exposure
- Expression of enzymes and transporters

Women on TDF
- 50

Depo-user
- 25

Non-hormonal IUD
- 25

Amy Tran, PD4
Roadblocks in HIV Cure Research

• Current antiretrovirals can suppress but not eradicate virus.
• Poorly understand “viral reservoir.”
  – Plasma viral load is indirect measure of viral reservoir dynamics.
• Inadequate antiretroviral penetration into potential viral reservoirs.

Plasma ≠ Tissue
Infectious Disease Institute

- NGO, institute of Makerere University
- Mission to strengthen health systems in Africa, with strong emphasis on infectious disease, through research and capacity development
- Active research in many areas: drug interaction studies, HIV prevention studies
- Established relationship with University of Minnesota
Tissue Distribution in Ugandan Autopsy Cohort

- Tissues collected from subjects on ARVs at time of death

- HIV+ (n=100)
  - HIV alone (n=25)
  - CM + HIV (n=50)
  - TBM + HIV (n=25)

CM= cryptococcal meningitis
TBM=tuberculosis meningitis

Katelyn Pastick, M1 student

Prosperity Eneh, PharmD
Master’s student and Global Engagement Fellow
Makerere University Department of Pharmacy

- 4 year Bachelor’s program; 1 year of internship after graduation;
  Student centered curriculum : team based learning
- Research strengths- drugs of abuse, natural products, antiretroviral adherence
Planned Future Studies with Department of Pharmacy

- “Phenytoin Dosing Practices in the Absence of the Availability of Therapeutic Drug Monitoring”
- “Incidence, genetic susceptibility and immunological correlates of serious adverse drug reactions”
- “Advancing Pharmacy Practice in Uganda”
Opportunities for International Pharmacy Research

- Antibiotic Stewardship
- Pharmacometric Modeling
- Pharmacogenomics
- Medication Adherence

Precision Medicine
Take home points

• Leverage existing collaborations/piggyback on ongoing studies (MUJHU and IDI).
• Work towards feasibility and sustainability – Capacity building and local engagement
• Multiple stages in research process to get involved
• Be open to opportunities (get your foot in the door)
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