27th ANNUAL CFAR MEETING

JOHNS HOPKINS UNIVERSTY

BALTIMORE 2023

November 6 – 9, 2023

Four Seasons Hotel Baltimore

2nd & 4th Floor Conference Center

200 International Drive

Baltimore, MD 21202

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WELCOME

Dear Colleagues and Friends:

Welcome to Baltimore, home of legendary crabs, Orioles, Ravens, and the Johns Hopkins CFAR. We are delighted to host you on our historic waterfront and hope you will enjoy our hospitality while learning about cutting-edge science, community engagement, and public health impact.

Our Scientific and Community Symposium is intentionally multidisciplinary and cross-cutting, providing updates on the most recent developments in a variety of disciplines essential for Ending HIV. We are extremely pleased by the active and energetic participation of the National CFAR CAB Coalition (N3C) in planning the topics of the symposium and selecting speakers to provide community perspectives on our important work. We encourage you to reach out across traditional scientific and professional boundaries to meet, interact with, and engage with the many dedicated and talented individuals attending this conference.

For our CFAR Directors, Co-Directors, Coordinators, and NIH Colleagues, we look forward to a fruitful and productive day on Thursday reflecting on our current status and looking forward to plan the next few years of CFAR activities.

With warmest wishes,

Richard E. Chaisson, MD
Professor of Medicine, Epidemiology, and International Health

Shruti Mehta, PhD, MPH
Professor and Vice Chair of Epidemiology

SPONSORS

Support for this meeting was provided by the Johns Hopkins University Center for AIDS Research (P30AI094189). The national network of Centers for AIDS Research (CFAR) is co-funded by the following institutes, with scientific management from the NIH Office of AIDS Research and the Fogarty International Center:

- Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD)
- National Institute of Allergy and Infectious Diseases (NIAID)
- National Institute on Minority Health and Health Disparities (NIMHD)
- National Institute on Aging (NIA)
- National Institute of Dental and Craniofacial Research (NIDCR)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Institute of Nursing Research (NINR)
- National Institute on Drug Abuse (NIDA)
- National Cancer Institute (NCI)
- National Heart, Lung, And Blood Institute (NHLBI)

The Planning Committee would like to thank the Office of the Dean of Johns Hopkins University School of Medicine for its considerate institutional support for this meeting. The Deans of the Johns Hopkins Bloomberg School of Public Health and the School of Nursing are also very generous in their support of the JHU CFAR.

ABOUT JOHNS HOPKINS CFAR

Meet the Team!

Director
Richard Chaisson, MD

Co-Director
Shruti Mehta, PhD, MPH

Project Administrator
Anne Efron, MSN, MPH, RN

Program Coordinator
Eileen Martin

LEADERSHIP:

Developmental Core	Clinical Core	Prevention Core	Clinial Laboratory & Biomarkers Core
• Jacquelyn Campbell, PhD, RN, FAAN • Oluwaseun O Falade-Nwulia, M.B.B.S., M.P.H. • Wendy Post, MD, MS • Andrea Ruff, MD • Joel Blankson, MD, PhD	• Richard Moore, MD • Jason Farley, PhD, MPH, CRNP, FAAN • Eileen Scully, M.D., Ph.D. • David Thomas, MD, MPH • Leah Rubin, Ph.D., M.A., M.P.H.	• David Celentano, ScD, MHS • Carl Latkin, PhD • Nancy Reynolds, PHD, MS, BSN, RN • Erica Sibinga, MD, MHS	• Mark A. Marzinke, PhD • Homayoon Farzadegan, PhD • Joseph Margolick, MD • Deborah Persaud, MD • Yuka Manabe, MD

SCIENTIFIC WORKING GROUPS:

Biostatistics & Epidemiology Methodology Core	Implementation Science Core	Adolescent & Young Adult SWG	Vaccine Response & Immunotherapeutics SWG
• Bryan Lau, PhD, MHS, ScM • Aletta Nonyane, PhD, MSc • Gayane Yenokyan, PhD • Noya Galai, PhD • David Dowdy, MD, PhD • Eric Seaberg, PhD	• Sheree Schwartz, PhD, MPH • Laura Beres, PhD, MPH • Stefan Baral, MD, MPH, MBA • Christopher Hoffman, MD • Katherine Rucinski, PhD • Christopher Kemp, PhD	• Allison Agwu, M.D., ScM, FAAP, FIDSA • Kate Rucinski, PhD, MPH • Julie Denison, PhD	• Anna Durbin, MD • William Moss, MD, MPH • Andrea Cox, MD, PhD

INTEREST GROUPS:

PROGRAMS:

HIV Aging Mentored-Research Group (HAMR)	Mpox Interest Group	Baltimore HIV Collaboratory	AFRICURE
• Todd Brown, MD, PhD • Gregory D. Kirk, MD, PhD, MPH	• Kelly Gebo • Bhakti Hansoti	• Risha Irvin, MD, MPH • Kathleen Page, MD	• Richard Chaisson, MD • Haneefa Saleem, PhD • Joel Blankson, MD, PhD

GENERAL INFORMATION

MEETING LOCATION

Four Seasons Hotel Baltimore
200 International Drive, Baltimore, MD 21202
Phone: (410) 576-5800

REGISTRATION

Attendees will pick up their name badge and swag bags at the welcome table on the 2nd floor

PARKING & TRANSPORTATION

FOUR SEASONS HOTEL VALET PARKING
Self-parking is available for $25 per day and $50 overnight

CAROLINE STREET PARKING GARAGE
805 S. Caroline St, Baltimore MD 21231
Visit Parking.com for hours and rates
8-minute walk to Four Seasons Hotel

FLEET & EDEN PARKING GARAGE
501 S. Eden St, Baltimore MD 21230
Visit Parking.com for hours and rates
7-minute walk to Four Seasons Hotel

JHU EAST BALTIMORE CAMPUS SHUTTLE
View schedule & stops for Bond Street Shuttle (Route #10)

- JH East Baltimore Medical Campus stop is located on Jefferson Street next to the Wilmer Bendann Surgical Pavilion (Smith Building)
- You may request a stop at the corner of Lancaster St and S. Caroline St. This stop is a 7-minute walk to the Four Seasons Hotel

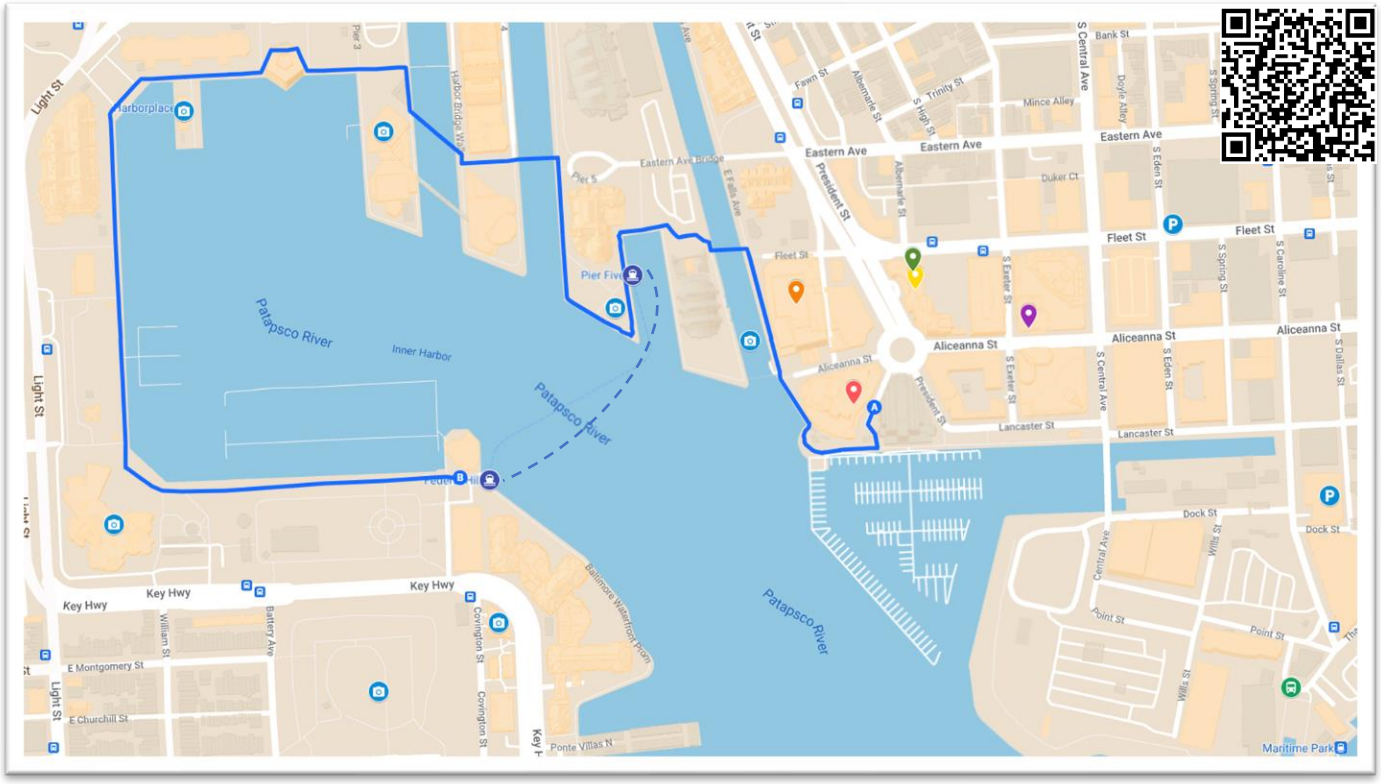
LYFT RIDESHARING
Please see the CFAR Registration Desk on the 2nd Floor for a Lyft Event Pass Code
To use the Code:

- Open the Lyft mobile app on your phone
- Tap the icon with three bars in the top left-hand corner of the screen
- Select 'Payments'
- Scroll down to 'Lyft Pass'
- In the '+Add Lyft Pass' field, enter in the code provided to you
- Once the code is accepted, it will appear in the 'Rewards' tab and you will be able to see the details of the code, such as time restrictions, location restrictions, how many times it can be used, and how much credit you have left

How to apply the code to your ride

- On the 'Get a ride' screen in the Lyft app, enter the pickup and drop-off locations for the ride
- In the bottom left-hand corner, you'll see an indication of which payment method will be applied. If the promo is being applied successfully, you should see 'Personal + Promo'
- Tap 'Select Lyft' to complete your ride request and you're all set!

BALTIMORE INNER HARBOR MAP



- Four Seasons Hotel
- Baltimore Marriot Waterfront
- Hilton Garden Inn Baltimore Inner Harbor
- Homewood Suites by Hilton Baltimore
- Courtyard by Marriott Baltimore Downtown/Inner Harbor

- Caroline Street Parking Garage
- Fleet & Eden Garage Parking
- JHU Bond Street Shuttle (Route #10) Stop
- Water Taxi Connector- Free *
- Water Taxi Connector- Free *

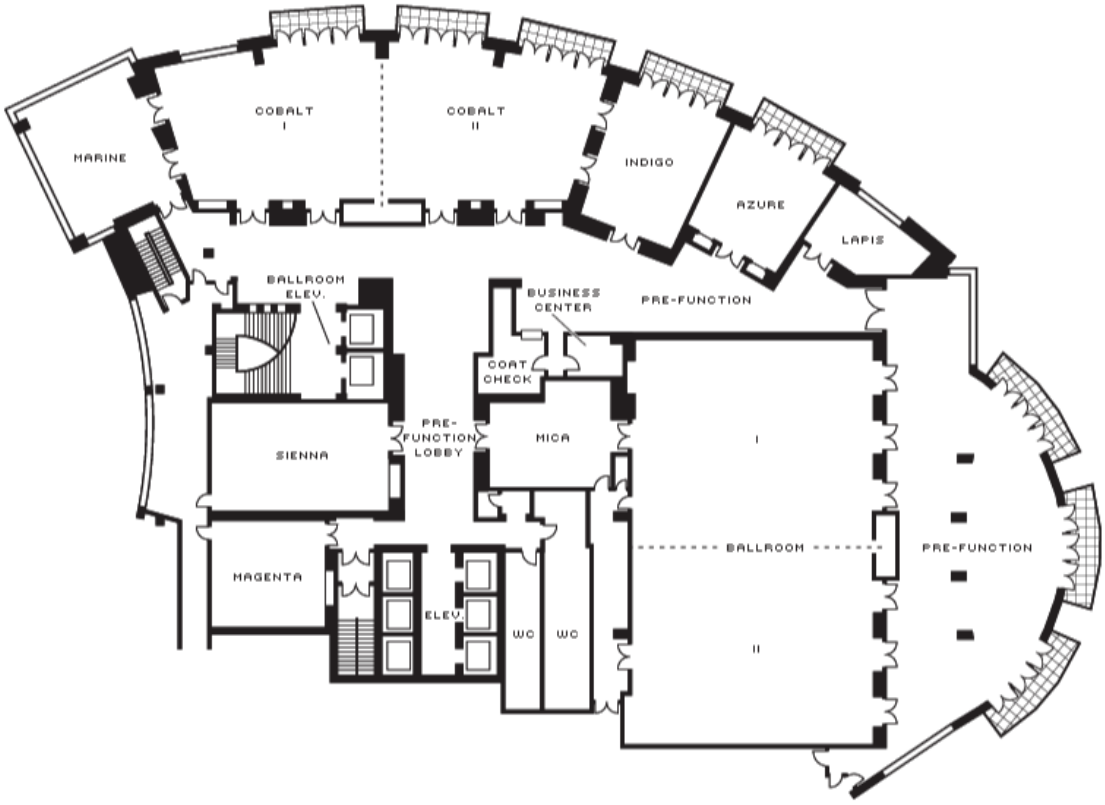
Scenic Walking Route Starting at the Four Seasons Hotel (1.4miles):

- 1. Mr. Trash Wheel
- 2. Seven Foot Knoll Lighthouse
- 3. National Aquarium
- 4. Historic Ships in Baltimore
- 5. Maryland Science Cemter
- 6. Federal Hill Park
- 7. American Visionary Art Museum
- - - Water Taxi Connector Route

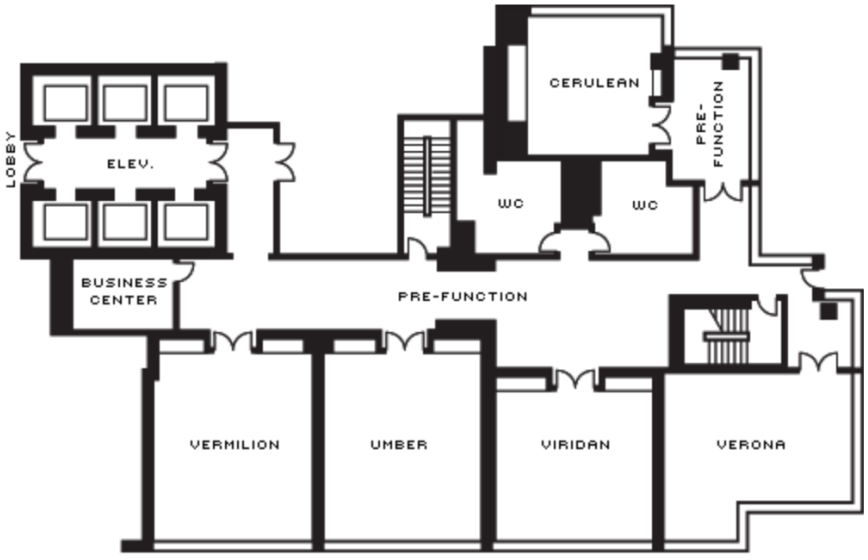
*The Baltimore Water Taxi Connector #3 runs every 15 minutes from the Pier Five Lighthouse stop to the Rusty Scupper stop, Monday through Friday from 6:00am – 7:45pm. You may board that water taxi at either location for a free 7-minute ride across the harbor. You must disembark at each stop.

FOUR SEASONS CONFERENCE CENTER

2nd Floor



4th Floor



ITINERARY AT-A-GLANCE

Monday **November 6**		**National CFAR CAB Coalition Executive Committee Networking Meeting** 5:00 – 6:00 PM Four Seasons Hotel Vermilion Room, 4th Fl	
Tuesday **November 7**	**Administrators' Meeting** 10:00 AM – 4:00 PM Four Seasons Hotel Sienna Room, 2nd Fl	**National CFAR CAB Coalition Executive Committee Meeting** 10:00 AM – 4:00 PM Four Seasons Hotel Umber Room, 4th Fl	
		National CFAR CAB Coalition Primer 4:30 – 5:30 PM Four Seasons Hotel Umber Room, 4th Fl	
	Directors' Tour 5:00 – 6:00 PM Johns Hopkins Hospital Campus		
Wednesday **November 8**	**Scientific Symposium** 8:30 AM – 4:00 PM Four Seasons Hotel Grand Ballroom, 2nd Fl		
	Dinner Reception & **Early-Stage Investigator Poster Session** 6:00 – 7:00 PM Four Seasons Hotel Grand Ballroom Foyer, 2nd Fl		
	Directors Dinner 7:00 – 9:00 PM Four Seasons Hotel Cobalt Ballroom, 2nd Fl		
Thursday **November 9**	**Directors Meeting** 9:00 AM – 3:00 PM Four Seasons Hotel Grand Ballroom I, 2nd Fl	**National CFAR CAB Coalition Business Meeting** 9:00 AM – 3:00 PM Four Seasons Hotel Marine Room, 2nd Fl	**Early-Stage Investigator Mentoring Workshop** 9:00 AM – 3:00 PM Four Seasons Hotel Indigo Room, 2nd Fl

MONDAY, NOVEMBER 6th

N3C EXECUTIVE COMMITTEE NETWORKING MEETING

5:00 – 6:00 pm | Vermillion Room, 4th Floor | Four Seasons Hotel

TUESDAY, NOVEMBER 7th

N3C EXECUTIVE COMMITTEE MEETING

10:00 am – 4:00 pm | Umber Room, 4th Floor, Four Seasons Hotel

Agenda:

10:00 – 11:00 am	Goals
11:00 – 12:00 pm	Committee Updates
12:00 – 1:00 pm	Lunch, *Cobalt Ballroom, 2nd Floor*
1:00 – 2:00 pm	Budget Review

TUESDAY, NOVEMBER 7th

N3C SCIENTIFIC & COMMUNITY SYMPOSIUM PRIMER

4:30 – 5:30 pm | Umber Room, 4th Floor | Four Seasons Hotel

Agenda:

TBA

TUESDAY, NOVEMBER 7th

ADMINISTRATORS' MEETING

10:00 am – 4:00 pm | Sienna Room, 2nd Floor | Four Seasons Hotel

Agenda:

10:00 – 10:30 am	Opening, introductions, Ice Breakers
10:30 -12:00 pm	Program Updates and Working Session • Please bring your specific questions and issues for both Program and Grants Management
12:00 – 1:00 pm	Lunch, *Cobalt Ballroom*
1:00 – 2:00 pm	Open session with Program (Or, if not needed, we will move the CFAR Best Practices and Debrief here and end early, after the Burnout session)
2:00 – 2:15 pm	Coffee Break
2:15 – 2:45 pm	Time management – Lauren Sterling, UCSF CFAR
2:45 – 3:30 pm	Addressing Workplace Burnout - Dr. Neda Gould, director of the Mindfulness Program at Johns Hopkins
3:30 – 4:00 pm	CFAR Best Practices and Debrief • Social Media presence • Return to in-person meetings/programs
4:00 – 4:30 pm	Conference planning debrief for past, current, and future CFARs

TUESDAY, NOVEMBER 7th

DIRECTORS' TOUR

5:00 – 6:00 pm | Four Seasons Hotel | Johns Hopkins East Baltimore Campus

Agenda:

4:45 pm	Shuttle pick up, Four Seasons Hotel Lobby, 200 International Drive
5:00 pm	Shuttle drop off, Billings Administration Building, 500 N Broadway
	Tour includes:

- Dome
- Dr. Osler's study
- historical timeline on the main loop
- Hurd Hall OR a look at the Zayed Lobby

6:10 pm	Shuttle pick up, Billings Administration Building, 500 N Broadway
6:20 pm	Shuttle drop off, Four Seasons Hotel Lobby, 200 International Drive

WEDNESDAY, NOVEMBER 8th

2023 National CFAR SCIENTIFIC & COMMUNITY SYMPOSIUM

8:30 am – 4:30 pm | Grand Ballroom, 2nd Floor | Four Seasons Hotel | Baltimore, MD

8:30 – 8:45 am **Introduction/Welcome**

- Stephen Gange, Ph.D., Executive Vice Provost for Academic Affairs, Interim Provost, JHU

8:45 – 10:00 **Aging with HIV across the Lifespan**

- Debbie Persaud, MD - moderator
- *Unique Aspects of Aging for Lifetime Survivors* – Allison Agwu, MD, ScM, FAAP, FIDSA
- *Forecasting comorbidities and multimorbidity through 2030 in people with HIV in the US: Subgroups matter* - Keri Althoff, Ph.D., MPH
- *Cardiovascular Disease Reduction in PWH: Implications of the REPRIEVE Trial* - Steve Grinspoon, MD

  Panel:
  - Larry Bryant, Senior Program Manager, The Reunion Project
  - Antoinette Jones, co-executive director, and co-founder of "The Dandelions Movement"
  - Dayna Waheedah, RN, Substance Abuse Counselor, Hospice Care Nurse

10:00 – 10:15 **Coffee Break**

10:20 – 11:30 **HIV and Drug User Health**

- Shruti Mehta, Ph.D., MPH – moderator
- Dayna Waheedah, RN, Substance Abuse Counselor, Hospice Care Nurse
- *A Roadmap for HIV prevention along PWID* – Sunil Solomon, M.B.B.S., Ph.D., M.P.H.
- *HIV and incarceration: Global and local perspectives* - Helen E. Jack, MD
- *Identifying the effects of contemporary opioids on HIV proviral transcription and neuronal functionality* - Lee Campbell, Ph.D.

11:30 – 12:30 pm **Lunch***, Cobalt Ballroom*

12:30 – 12:45 **Keynote Speaker**: Jeanne Marrazzo, M.D., M.P.H., Director of NIAID

12:45 – 2:00 **TB/Hep B/Cancer**

- Moderator - David Thomas, MD
- *Understanding female resistance to active tuberculosis: insights from a novel mouse model* - William Bishai, MD, Ph.D.
- *Antibody responses after control of HBV infection in people living with HIV* - Justin Bailey, MD, Ph.D.
- *Brentuximab Vedotin in Combination with Chemotherapy for Newly Diagnosed Hodgkin Lymphoma in Persons Living with HIV* - Paul Rubinstein, MD
- *Hepatitis C Elimination in People Who Use Drugs: How to Get There* – Andrew Reynolds**,** Hepatitis C Wellness Manager at the San Francisco AIDS Foundation

2:00 – 3:15 **HIV Cure**

- Robert F. Siliciano M.D., Ph.D. and Janet Siliciano, Ph.D. – moderators
- *From the clinic to the bench and back: understanding HIV persistence from rare clinical scenarios* - Francesco R Simonetti, MD, Ph.D.
- *Sex, Gender and HIV Cure* - Eileen Scully, MD, Ph.D.
- *Distinct features of HIV persistence in children: Prospects for cure* - Katherine Luzuriaga, MD
- Jessica Salzwedel AIDS Vaccine Advocacy Coalition (AVAC)
- Danielle M. Campbell, MPH, Co-Chair, San Diego CFAR Community Advisory Board

3:15 – 4:30 **Ending the Epidemic/Implementation Science**

- Sheree Schwartz, Ph.D., MPH - moderator
- *Approaches to community engagement in HIV-related implementation science* - Laura Beres, Ph.D., MPH
- *Let's Stop Failing Black Women: Implementing Trauma-Informed* - Tiara Willie, Ph.D., MA
- *Community-based implementation research to expand the reach of culturally safe HIV services in US Native communities* - Christopher Kemp, MPH
- *Implementation science to address the HIV epidemic among Latino MSM in Miami* - Audrey Harkness, Ph.D. and Jairo Farinas.

KEYNOTE SPEAKER
Jeanne Marrazzo, MD, MPH, Director of NIAID

Dr. Marrazzo steps in as the sixth NIAID Director in the fall of 2023, where she oversees a $6.3 billion budget that supports research to advance the understanding, diagnosis, and treatment of infectious, immunologic, and allergic diseases. She is internationally recognized for her research and education efforts in the field of sexually transmitted infections, especially as they affect women's health. Dr. Marrazzo's research in discovery and implementation science has focused on the human microbiome, specifically as it relates to female reproductive tract infections and hormonal contraception; prevention of HIV infection using biomedical interventions, including preexposure prophylaxis (PrEP) and microbicides; and the pathogenesis and management of bacterial vaginosis (BV), sexually transmitted diseases in HIV-infected persons, and management of antibiotic resistance in gonorrhea.

Her investigative career has been characterized by leadership of progressively larger interdisciplinary teams working to advance translational science in two major areas: approaches to detect non-cultivatable or highly fastidious bacteria in BV and oral and vaginal PrEP for HIV infection in women. In early studies, Dr. Marrazzo and her collaborators described bacterial diversity in BV that was much greater than previously thought. They also identified previously undescribed anaerobes in the Clostridiales group that were highly specific for BV. This work redefined understanding of the complex nature of this enigmatic syndrome. Another signal contribution has been her work to advance oral and vaginal PrEP for HIV infection in women. Dr. Marrazzo led the NIH-funded VOICE Study in which over 12,000 women were screened to enroll 5,729 participants in sub-Saharan Africa. The intent-to-treat analysis showed no efficacy and demonstrated that this surprising result was largely due to low adherence, despite participants' self-reports of high adherence. Working with behavioral science colleagues to understand these responses, her team established the need for reliable biomarkers of adherence in intervention studies of healthy young people at risk for HIV.

Prior to her position at NIAID, Dr. Marrazzo was Director of the Division of Infectious Diseases at the University of Alabama at Birmingham. There she had the opportunity and resources to lead in the areas she cares deeply about: research in discovery and implementation science; the development and support of trainees; the advancement of underrepresented minorities in medicine and leadership; promoting meaningful dialogue with communities, and patient care.

Dr. Marrazzo has served as a mentor to trainees at all stages of professional development and was the recipient of the American Sexually Transmitted Diseases Association's Distinguished Career Award, the highest recognition of contributions to research and mentoring in the field. She is a Fellow of the American College of Physicians and of the Infectious Diseases Society of America and is board certified in infectious disease. Dr. Marrazzo also has chaired the American Board of Internal Medicine (ABIM) Council and the ABIM Infectious Disease Specialty Board. She earned her bachelor's degree in biology from Harvard University; her M.D. from Thomas Jefferson University, Philadelphia; and her M.P.H. in epidemiology from the University of Washington, Seattle. She completed residency and chief residency in internal medicine at Yale-New Haven Hospital.

SYMPOSIUM PRESENTERS
In order of appearance

Opening Remarks:

Stephen Gange, PhD

Dr. Gange is a professor of epidemiology at the Johns Hopkins Bloomberg School of Public Health and has been the university's executive vice provost for academic affairs since 2015. He also served as interim provost from May 2023 to October 2023. As executive vice provost, Dr. Gange provides leadership in academic affairs, enhancing the educational experience for Johns Hopkins students, and fostering innovations in teaching and learning.

Session 1: Aging with HIV across the Lifespan

Deborah Persaud, MD

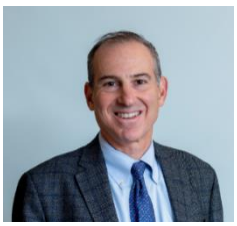
Dr. Persaud's research focuses on the immunopathogenesis of HIV latency in perinatal infections in infants, children, and adolescents towards improving HIV therapeutics for this population with the goal of eventual HIV remission and cure.

Allison Agwu, MD, ScM, FAAP, FIDSA

Dr. Agwu oversees a clinical research program that aims to coordinate care, treatment, and research for vulnerable populations through a multidisciplinary and socially responsible lens. Her independent research studies use multimodal approaches, including clinic and field-based/community-involved approaches and clinical trials. She is also involved with large national and international research groups (IMPAACT, ATN, PAVE) where she is actively involved in directing the research agenda and approaches.

Keri Althoff, PhD, MPH

Keri Althoff uses large-scale longitudinal data to answer otherwise unanswerable questions and improve health, particularly for populations underrepresented in research. She is an expert in the comorbidities and multimorbidity of people aging with HIV and monitors the quality of HIV care as one of two leaders of the largest cohort of people with HIV in the US and Canada.



Steven Grinspoon, MD

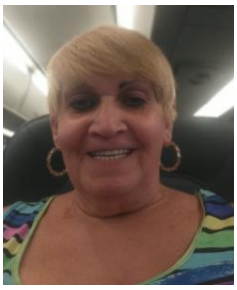
Dr. Steven Grinspoon is a Professor of Medicine, Harvard Medical School, Chief of the MGH Metabolism Unit, and Director of the Nutrition Obesity Research Center at Harvard. He led the 7700 participant, global NIH-funded REPRIEVE study to prevent cardiovascular disease in HIV. For his work, Dr. Grinspoon was awarded the Aurbach Laureate award in translational research from the Endocrine Society and is a member of the American Society of Clinical Investigation and the Association of American Physicians.

Larry Bryant

My name is Larry Bryant, Senior Program Coordinator with The Reunion Project (TRP), the national alliance of HIV long-term survivors. As the Senior Program Coordinator, I help provide administrative and programmatic oversight and technical expertise for TRP. And with our excellent TRP staff and community partners, we work together to create and develop interactive and inclusive activities and events - both in person and virtual - where we convene and connect individuals living and aging with HIV, along with community partners and allies, to share our experiences of survival and loss while honoring our past. We also assist with developing and sharing successful strategies for living and supporting one another, today and into the future. Previous positions include being a member of the National Alliance on Mental Illness (NAMI) National Education team, and Community Engagement Coordinator with the American Civil Liberties Union of the District of Columbia (ACLU-DC). Earlier, I had the responsibility and privilege to have a lead role in the creation and development of grassroots advocacy networks across the United States for the Campaign to End AIDS and DC Fights Back, two organizations primarily composed of individuals representing the HIV and AIDS epidemic in local communities. Personally, I am a long-term survivor of HIV, diagnosed nearly 38 years ago. I am an accomplished photographer, utilizing images as a means of social and creative expression, specializing in portraits, profiles, and social justice. I'm also a native Washingtonian, and currently call Brooklyn (NY) my home.

Antoinette N Jones

Antoinette Jones began her work in advocacy in her early 20s, as a Peer specialist facilitating access to preventative care and treatment for people living with and at risk for HIV. She identifies as a Dandelion Woman Living with HIV; meaning she has been living with HIV since Birth. Antoinette is the co-executive director and co-founder of "The Dandelions Movement" which centers the needs of people born with HIV through mentorship, healing, and peer to peer interventions. Antoinette specializes in reproductive healthcare, wholistic wellness, human rights, and dignity for black and indigenous womxn. She works in partnership with organizations and providers to improve treatments and services for Black Women. She has also contributed to the advancements in the federal guidelines around breast/chest feeding for women living with HIV. Antoinette uses her Artivist mind, voice, and power to bridge unique intersections amongst the creators of our time and black health.



Dayna Marie Waheedah

Dayna Marie Waheedah is an RN, Substance Abuse Counselor, and Hospice Care Nurse She had AIDS in 1981 at the age of 23. She was a nurse at the time and once her employer found out, she was terminated. She now facilitates groups for people who are HIV and AIDS defined. Dayna is also very active in a 12-step fellowship.

Session 2: HIV and Drug User Health:

Shruti Mehta, PhD, MPH

Primary research interests include working with hard-to reach populations to understand the epidemiology, natural and treated history of HIV, hepatitis C virus (HCV) and HIV/HCV co-infection; Populations of interest include injection drug users and men who have sex with men as well as their sexual partners in both Baltimore and international settings, particularly India; Special interest in identifying and overcoming barriers to care and treatment of HIV and hepatitis C virus among such populations.

Sunil Solomon, MBBS, PhD, MPH

Sunil Solomon completed his medical training in India and his Masters and a Doctorate in Epidemiology at the Johns Hopkins University. His research is focused primarily on improving health outcomes among vulnerable populations such as people who inject drugs. He has over a 150 peer reviewed original publications and was one of the first recipients of NIDA's Avenir award aimed at identifying individuals who show promise of being tomorrow's leaders in the field of HIV and substance use.

Helen E. Jack, MD

Helen Jack, MD is an Assistant Professor in the Division of General Internal Medicine at University of Washington and a primary care physician in a state prison in rural eastern Washington. Her research focuses on the implementation of mental health and substance use care in low-resource primary care settings. She is currently supported by a Research Career Development Award (K23) from the National Institute for Mental Health to study the implementation of depression guidelines in primary care in Zimbabwe and has two ongoing studies in the Washington prison system.

Lee Campbell PhD

Lee Campbell Received his Ph.D. from Georgetown University where he studied how morphine affects the neurotoxicity caused by the HIV protein gp120. He did his Postdoctoral Fellowship at the National Institute on Drugs Abuse IRP and created a way to model HIV transcriptional activity in microglia using CRISPR/Cas9. As an assistant professor, Lee used genetic sensors to determine how HIV affects neuronal functionality.

Session 3: TB/Hep B/Cancer

David Thomas MD

David Thomas is a Professor of Medicine and Epidemiology at the Johns Hopkins Schools of Medicine and Bloomberg School of Public Health. His research and clinical work are focused on hepatitis C virus and hepatitis B virus, and the interactions with HIV.

William Bishai, MD, PhD

William Bishai is a Professor of Medicine in the Division of Infectious Diseases at Johns Hopkins where he serves as Co-director of the Center for TB Research. Dr. Bishai's research focuses on mechanisms of pathogenesis in TB and translational research towards new interventions to improve patient care.

Justin R. Bailey MD, PhD

Dr. Bailey earned MD and PhD degrees from the Johns Hopkins University School of Medicine, completed Internal Medicine residency training at Massachusetts General Hospital, and then returned to Johns Hopkins for fellowship training in Infectious Diseases. He joined the faculty of the Johns Hopkins University School of Medicine in 2013. Dr. Bailey's research laboratory studies the role of antibodies and B cells in the control of human viral infections, including hepatitis B virus, hepatitis C virus, and SARS-CoV-2.

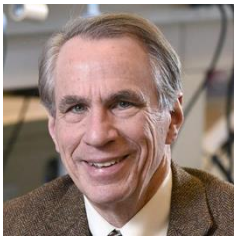
Paul Rubinstein, MD

Dr. Rubinstein's clinical focus is on treating hematological malignancies. His research interests focus on the mechanism of disease, treatment, and the development of new therapies for HIV-associated hematological malignancies and non-HIV associated lymphoma. He is a member of the AIDS Malignancy Consortium, a clinical trials consortium funded by the National Cancer Institute, where he has developed multicenter international trials for both Hodgkin and non-Hodgkin lymphoma for PLWH.

Andrew Reynolds

Andrew Reynolds is the Capacity Building Coordinator for HIV, HCV, STIs and Drug User Health for the Community Health Equity and Promotion branch of the San Francisco Department of Public Health and works for the Syringe Access Program of the San Francisco AIDS Foundation doing HCV education and linkage to care. He also serves as the Co-Chair of the UCSF Center for AIDS Prevention Studies and Prevention Research Center Community Advisory Board and is a faculty member of the Clinical Education Initiative's Drug User Health ECHO. Andrew has nearly 30 years of experience in the field of harm reduction, HIV prevention, testing and treatment advocacy, hepatitis C health education, STI prevention, testing and treatment and harm reduction in a variety of settings from medical clinics to streets-based locations.

Session 4: HIV Cure



Robert F. Siliciano M.D., PhD

Robert Siliciano is a Professor of Medicine at the Johns Hopkins University School of Medicine. He is an immunologist and virologist recognized for his work on the treatment of HIV infection. He is known particularly for identifying and characterizing the latent reservoir for HIV in resting CD4+ T cells.

Janet Siliciano, PhD

Dr. Janet Siliciano is a Professor of Medicine in the Division of Infectious Diseases in the Department of Medicine at the Johns Hopkins University School of Medicine. She did her undergraduate work at the University of New Hampshire and received a PhD in Biochemistry from the Johns Hopkins University School of Medicine. She then did postdoctoral work at Harvard Medical School and a second postdoctoral fellowship at Johns Hopkins during which she discovered the tyrosine kinase Itk. Janet then joined the HIV research laboratory of Robert Siliciano where she directed the longitudinal study that first demonstrated the long-term stability of the latent reservoir for HIV.

Francesco R Simonetti, MD, PhD

Francesco is an Assistant Professor in the Division of Infectious Diseases at Johns Hopkins School of Medicine. He completed his clinical training in Infectious Diseases at the University of Milan in Italy. During his fellowship, he worked at the HIV Dynamics and Replication Program, where he helped to uncover the role of viral integration and cell proliferation in HIV persistence. In 2021, he earned his Ph.D. at Johns Hopkins University, where he remained as faculty thanks to the NIH Director's Early Independence Award. Francesco's translational approach combines patient-centered observations and novel molecular assays to investigate HIV-host interactions.

Eileen Scully MD, PhD

Eileen Scully is an Immunologist and an HIV specialist. Clinically she cares for people living with HIV in both her clinic and on the inpatient service and her research focuses on innate immunity in HIV pathogenesis and cure with a focus on the impact of sex and gender.

Katherine Luzuriaga, MD

Dr. Luzuriaga is a physician-scientist whose research is devoted to understanding viral and host factors that contribute to the establishment and persistence of viral infections (EBV, HIV) in children, using insights gained to inform prevention and treatment strategies.

Jessica Salzwedel

Jessica joined AVAC in 2013 as Program Coordinator. She focuses on developing innovative tools for the AVAC/UNAIDS Good Participatory Practice Guidelines and supporting their implementation. Jessica also works closely with the research literacy database, both in its management and content development. Prior to joining the team Jessica worked at the NIH in the Division of AIDS as a bioethicist. At DAIDS she worked on community engagement ethics and became familiar with GPP. She enjoys distance running, spending time with her kids and finding great new restaurants.

Danielle M. Campbell, MPH

Danielle M. Campbell is a pre-doctoral student. Danielle's work examines the influence of structural systems, syndemics and paradigms of power on the production of health inequities among racial/ethnic and sex/gender minority populations living with and affected by HIV/ AIDS and other marginalized populations with an emphasis on women and girls. She is a community organizer for HIV/AIDS and sexual and reproductive health, rights, and justice awareness policies and campaigns.

Session 5: Ending the Epidemic/Implementation Science

Sheree Schwartz, PhD, MPH

Dr. Schwartz is an infectious disease epidemiologist whose work focuses on optimizing HIV prevention and treatment interventions for women, adolescents and marginalized populations. She is particularly interested in innovative study designs which explore tensions between tailoring and pragmatic implementation. Sheree also leads the inter-CFAR Fellowship for early-stage investigators and co-directs the MACC+ CFAR Implementation Science Consultation Hub.

Laura Beres, PhD MPH

Dr. Beres is an Assistant Scientist in the Department of International Health at the Johns Hopkins Bloomberg School of Public Health, faculty in the Implementation Science Core of the Hopkins CFAR, and a Visiting Scholar at the Centre for Infectious Disease Research in Zambia where she has collaborated for more than 10 years. She applies mixed methods and participatory approaches in implementation science to optimize engagement in HIV prevention, care, and treatment services globally, encouraging improved equity, patient-centeredness, and translation of evidence to action in public health across disease areas.

Tiara C. Willie, PhD, MA

Tiara C. Willie, PhD, MA, researches how gender-based violence, mental health, and sexual health together advance trauma-informed policies, programs, and interventions. One of Dr. Willie's most active areas of research examines gender-based violence and its interaction with HIV risk factors and prevention methods using novel epidemiological and implementation science approaches.

Christopher Kemp, MPH PhD

Christopher Kemp (Ngāi Tahu) is an Assistant Scientist at the Johns Hopkins Bloomberg School of Public Health, based with the Center for Indigenous Research and the Center for AIDS Research. He is an implementation scientist focused on bridging global treatment gaps for mental health, HIV, substance use, and non-communicable disease by building from community strength.

Audrey Harkness, PhD

Dr. Audrey Harkness is Assistant Professor in the School of Nursing and Health Studies at the University of Miami. She leads the REACH Equity team, a lab focused on using implementation and behavioral science to achieve HIV and behavioral health equity among communities that currently experience health and healthcare disparities, including sexual and gender minority communities, Latino MSM, and communities disproportionately affected by HIV.

Jairo Farinas

Jairo Farinas is a Supervisor for the Health Promotion and Prevention Department at Care Resource in Midtown Miami and has a BA in Psychology from Florida International University. Mr. Farinas has been working in the HIV field for over 7 years and during that time he has been on the ground doing outreach and education, HIV testing and counseling, condom distribution, was a part of the “Start Talking, Stop HIV” Spanish campaign, and helped start his agency’s HIV Home Self-Test program which, since the COVID-19 pandemic in early 2020, has helped over 1,800 Miami Dade and Broward County residents get a free HIV home test delivered to their home.

WEDNESDAY, NOVEMBER 8th

EARLY-STAGE INVESTIGATORS' POSTER SESSION, RECEPTION & DINNER

6:00 – 9:00 pm | Grand Ballroom Foyer, 2nd Floor & Cobalt Ballroom| Four Seasons Hotel | Baltimore, MD

Basic Science Posters:

Name	University	Title
Cassie Grimsley Ackerley, MD, MSc	Emory University	Sex-specific Differences in Rectal Mucosal HIV Transmission
Cordelia Manickam, PhD	Duke University	Lentivirus mediated perturbations of granulocytic effector cells
David Ezra Gordon, PhD	Emory University	Characterization of CD8 T cell populations associated with SIV control in non-human primates
Erica Larson, PhD	University of Pittsburgh	Exploring CD4+ T Cell Metabolism in SIV-infected Macaques
Jocelyn Tammy Kim, MD, PhD	University of California, Los Angeles	Barcoded HIV-1 reveals clonally expanded T cells do not harbor provirus with epigenetic features of deep latency
Juwon Park, PhD, MS	University of Hawaii at Manoa	Low-density granulocytes display immature cells with enhanced NET formation in people living with HIV
Lee Campbell, PhD	Georgetown University	Fentanyl and Methadone minimally activate HIV proviral transcription in microglia.
Muthukumar Balasubramaniam, PhD	Meharry Medical College	Understanding HIV-1 capsid-linked viral immune evasion mechanisms
Paul Ogongo, PhD	University of California San Francisco	M. tuberculosis antigen-responsive IL17+ CD4 T cells are disproportionately spared in ART-suppressed HIV
Rajesh Thippeshappa, PhD	Texas Biomedical Research Institute	In vivo serial passaging of human-simian immunodeficiency virus clones identifies viral characteristics for persistent viral replication
Sarvesh Chelvanambi, PhD	Harvard University, Brigam and Women's	HIV-Nef EV modulates macrophage heterogeneity to promote atherosclerosis

WEDNESDAY, NOVEMBER 8th

EARLY-STAGE INVESTIGATORS' POSTER SESSION, RECEPTION & DINNER

6:00 – 9:00 pm | Grand Ballroom Foyer, 2nd Floor & Cobalt Ballroom| Four Seasons Hotel | Baltimore, MD

Clinical Posters:

Name	University	Title
Donald Nyangahu, PhD, MS	University of Washington; Seattle Children's Research Institute	HIV-exposed uninfected infants have an altered gut microbiota in the first month of life which associates with systemic inflammation.
Joshua Schrock, PhD, MPH	Northwestern University	Absolute CD4 count predicts early alterations of longitudinal trajectories in the brain's central executive network among persons living with HIV
Matthew Durstenfeld, MD, MAS	University of California San Francisco	Association of SARS-CoV-2 Infection and Cardiopulmonary Long COVID with Exercise Capacity and Chronotropic Incompetence among People with HIV
Ray Jones, PhD	University of Alabama at Birmingham	Cardiometabolic Disease Among Frailty Phenotype Clusters in Adults Aging With HIV
Shital Patel, MD	Baylor	Implementing Rapid ART in Houston/Harris County: Baylor College of Medicine ECHO Facilitating Antiretroviral StART Earlier (BE FASTER) Community of Practice
Tiffany Breger, PhD	University of North Carolina	Differences in the incidence of statin initiation in the Multicenter AIDS Cohort Study and Women's Interagency HIV Study by sociodemographic, clinical, and behavioral characteristics, 2014-2018
Yan Guo, PhD	CUNY	PrEP uptake and methamphetamine use patterns in a U.S. national prospective cohort study of sexual and gender minority populations, 2017 - 2022

WEDNESDAY, NOVEMBER 8th

EARLY-STAGE INVESTIGATORS' POSTER SESSION, RECEPTION & DINNER

6:00 – 9:00 pm | Grand Ballroom Foyer, 2nd Floor & Cobalt Ballroom| Four Seasons Hotel | Baltimore, MD

Implementation Science Posters:

Name	University	Title
Aaron Richterman, MD MPH	University of Pennsylvania	B-OK Bead bottles: A Visual and Tactile Tool as an Implementation Strategy to Support HIV Treatment Adherence Support by Medical Case Managers in a US Urban Center
Cristian Chandler, PhD	Vanderbilt University	PrEP Navigator Perceptions of the Impact of the COVID-19 Pandemic and the Implementation of Injectable PrEP on HIV Prevention in Tennessee
Donaldson Conserve, MS, PhD	George Washington University	"The best community work is done not TO but FOR a community": Development of a Community-based HIV Pre-Exposure Prophylaxis Service Delivery Intervention for Black Adults in Washington, DC
Harita Shah, MD	University of Chicago	"PrEPárate: Evaluation of a Community-Driven PrEP Social Marketing Campaign Tailored to Latino/a/x Individuals"
Jana Jarolimova, MD	Harvard University, Mass General	Sexually transmitted infection testing integrated with HIV prevention and contraceptive services in hair salons in urban South Africa
Laura Beres, PhD	Johns Hopkins University	Understanding mechanisms of change in the implementation of a multi-component intervention to improve person-centeredness of HIV care in Zambia
Sarah Wilson, PhD	Duke University	Equity-Focused Implementation Mapping to Improve PrEP Uptake and Maintenance among Latines

WEDNESDAY, NOVEMBER 8th

EARLY-STAGE INVESTIGATORS' POSTER SESSION, RECEPTION & DINNER

6:00 – 9:00 pm | Grand Ballroom Foyer, 2nd Floor & Cobalt Ballroom| Four Seasons Hotel | Baltimore, MD

Social, Behavioral, & Prevention Posters:

Name	University	Title
Alexandra Collins, PhD, MSc	Brown University	Acceptability of long-acting injectable antiretroviral therapy among people living with HIV who use drugs and service providers
Bryan A. Kutner, PhD, MS	Einstein	How will we know what does and does not reduce HIV-related stigmas in healthcare settings? A systematic review linking potential effectiveness to theory-based intervention types, techniques, and mechanisms of action
Chadwick K. Campbell, PhD, MPH	University of California San Diego	Individual and Structural Level Barriers to Sustained Care Engagement and ART Adherence Among Black Sexual Minority Men Living with HIV in the US South
Chenglin Hong, MSW, MPH	University of California, Los Angeles	"I am scared that we are going down the same path as the HIV/AIDS crisis in the 90s" - a thematic analysis of online posts on Mpox on Reddit among key populations
Dovie L. Watson, MD, MSCE	University of Pennsylvania	HIV pre-exposure prophylaxis (PrEP) program preferences among sexually active HIV-negative transgender and gender diverse adults in the United States: A conjoint analysis
Javier Cepeda, PhD, MPH	Johns Hopkins University	Integrating community-collected research data with electronic medical records and mortality data in a cohort of people who inject drugs in Baltimore
Lydia Fein, MD, MPH	Miami	evaluate biobehavioral risk for HIV acquisition in TW following gender-affirming NVC
Tara Bouton, MD, MPH	Boston Medical Center and BU Chobanian & Avedisian SOM	HIV prevalence and factors associated with HIV infection among people who smoke drugs in South Africa

THURSDAY, NOVEMBER 9th

DIRECTORS MEETING

9:00 am – 3:00 pm | Grant Ballroom A, 2nd Floor | Four Seasons Hotel

8:00 am Breakfast – Cobalt Ballroom with Admins, N3C, & ESIs

Agenda:

9:00 – 9:10 **Welcome and Opening Remarks** – Dick Chaisson, MD, Director; Shruti Mehta, PhD, co-Director JHU CFAR

9:10 – 9:30 Carl Dieffenbach, PhD, Director of the Division of AIDS

9:30 **–** 10:15 **Program Updates**

- Unobligated Balance policy changes
- New pathogen Policy

10:15 – 10:45 **Coffee Break**

10:45 - 12:00 **K-Award pay line for NIAID applications**.

- **Framing the Issue –** Colleen Kelley, M.D., M.P.H. Emory CFAR co-director
- **Thoughts from a study section** - David Dowdy, MD, Executive Vice Dean for Academic Affairs, JHU Bloomberg School of Public health
- **Solutions/Assistance to Applicants**
  - Ingrid Bassett, MD, MPH – HU CFAR – Co-Director HU CFAR
  - Grace John Stewart, MD, PhD – Associate Director UW CFAR
  - Jonathan Golub, PhD, MPH – JHU CFAR, TRAC Developmental core Director
- **Program response –**Carl Dieffenbach and Eric Refsland, PhD

12:00 – 1:00 **Lunch,** *Cobalt Ballroom*

THURSDAY, NOVEMBER 9th

DIRECTORS MEETING

9:00 am – 3:00 pm | Grant Ballroom A, 2nd Floor | Four Seasons Hotel

Agenda Continued:

1:00 – 2:00 **CFAR "Add-on" Programs**

- **CDEIPI –**Risha Irvin, MD, MPH, JHU CFAR, Associate Vice Chair for Diversity and Inclusion, Department of Medicine
- **Adelante Program –** Carlos del Rio, MD, Co-Director, Emory CFAR
- **Africure –** Haneefa Saleem, PhD, JHU CFAR

2:00 – 3:00 **Panel discussion on the various ways CFARs are connecting with the community and engaging them in research.**

- George Kerr III, National CFAR CAB Coalition (N3C) chair
- Alan E. Greenberg, MD, MPH, Director, DC CFAR - Best practices on Community engagement
- Renee Heffron, PhD, Director, UAB CFAR
- Louis Shackelford – UW CFAR, Director, Office of Community Engagement
- Georgia Tomaras, PhD, Susanna Naggie, MD, MHS, Directors, Duke CFAR

THURSDAY, NOVEMBER 9th

N3C BUSINESS MEETING

9:00 am – 3:00 pm | Marine Room, 2nd Floor | Four Seasons Hotel

8:00 am Breakfast – Cobalt Ballroom with Directors Admins, & ESIs

Agenda:

9:00	Marcia Ellis Lightning Round
10:00	Committee Updates and Budget approval
11:00	Implementation Science - Sheree Schwartz
11:45	Award – Officers
12:00	Lunch, *Cobalt Ballroom*
1:00	Community Engagement - George
2:00	Language Justice – Pauly

THURSDAY, NOVEMBER 9th

EARLY-STAGE INVESTIGATORS' MENTORING WORKSHOP

9:00 am – 3:00 pm | Indigo Room, 2nd Floor | Four Seasons Hotel

8:00 am Breakfast – Cobalt Ballroom with Directors, Admins, & N3C

Agenda:

9:00 – 9:30 ***Disseminating your Findings: Turning Science into Action***

- Keri Altoff, Ph.D., Professor, Johns Hopkins Bloomberg School of Public Health (JHBSPH)

9:30 – 10:00 ***Bridging the Gap between Research and Decision Makers: Examples from Public Health***

- Erica Nybro, MPH, Senior Strategic Communication Advisor, Johns Hopkins Center for Communication Programs

10:00 – 11:30 **Focus groups with feedback on posters/science**

Basic Science

- Joel Blankson, M.D., Ph.D., Professor of Medicine, Johns Hopkins University School of Medicine (JHUSOM)
- Annie Antar, M.D., Ph.D., Assistant Professor of Medicine, JHUSOM

Clinical

- Oluwaseun Falade-Nwulia, M.B.B.S., M.P.H., Associate Professor of Medicine, JHUSOM
- David Lee Thomas, M.D., M.P.H., Professor of Medicine, Co-Director, Clinical Core, Johns Hopkins Center for AIDS Research, JHUSOM

Social, Behavior, Prevention

- Carl Latkin, Ph.D., Vice Chair, Department of Health, Behavior, And Society, JHBSPH
- Jill T. Owczarzak, Ph.D., Associate Professor, Health, Behavior and Society, JHBSPH

Implementation Science

- Stefan Baral, MD, Professor, Epidemiology, International Health, Health Policy and Management, JHBSPH
- Larry Chang, M.D., M.P.H., Professor of Medicine, JHUSOM, Co-Director, Center for Community and Global Health in Infectious Diseases

THURSDAY, NOVEMBER 9th

EARLY-STAGE INVESTIGATORS' MENTORING WORKSHOP

Agenda Continued:

11:30 – 12:30 **Pathway development**

- Elisabet Caler, M.Phil, Ph.D., Senior Scientific Advisor, NIH Office of AIDS Research
- Leia Novak, PhD, Program Officer, NIAID
- Rich Jenkins, Ph.D., Program Officer, NIDA
- Yan Zhou, Ph.D., Program Officer, NIAID
- Elizabeth Read-Connole, Ph.D., Program Director, NCI
- DaRel Barksdale, DrPH, MPH, Program Manager, NHLBI
- Emmanuel Mongodin, Ph.D., Program Director, NHLBI
- Christopher Gordon, Ph.D., Chief, HIV Treatment and Translational Science Branch, NIMH

12:30 – 1:30 **Lunch,** *Cobalt Ballroom;* **In groups with NIH officer**

1:30 – 2:15 **Community and Researchers Panel**

- Moderator - Sheree Schwartz, Ph.D., Associate Scientist, Epidemiology, JHBSPH
- Paul Goulet, Chair, Community Engaged Research Council (C-CERC), Community Engagement Consultant, Providence/Boston CFAR
- Kathleen Page, MD, Professor, JHUSOM
- Joyce Jones, MD, MS, Assistant Professor of Medicine, JHUSOM
- Laura Beres, Ph.D., Assistant Scientist, JHBSPH

2:15 – 3:00 **Promotion Panel**

- Todd Brown, MD, Ph.D., Professor of Medicine, JHUSOM – moderator
- Susan Sherman, Ph.D., Professor, Health, Behavior and Society, Population, Family and Reproductive Health, Epidemiology, Mental Health, JHBSPH
- Allison Agwu, M.D., Sc.M., Professor of Pediatrics, JHUSOM, Director JHU CFAR Adolescent and Young Adult Scientific Working Group
- Jason Farley, Ph.D., M.P.H, ANP-BC, Professor, Johns Hopkins University School of Nursing
- Mark Marzinke, Ph.D., Professor of Pathology JHUSOM, Director, General Chemistry, The Johns Hopkins Hospital, Director, JHU CFAR Clinical Laboratory Core

EARLY-STAGE INVESTIGATORS' ABSTRACTS

BASIC SCIENCE:

Sex-specific Differences in Rectal Mucosal HIV Transmission

Cassie G. Ackerley,1 S. Abigail Smith,1 Bonnie S. Albury,1 Madeline Lynam,2 Levi Daitch,1 and Colleen F. Kelley1

1The Hope Clinic of the Emory Vaccine Center, Division of Infectious Disease, Emory University School of Medicine, Decatur, GA 30030; and 2Rollins School of Public Health, Emory University, Atlanta, GA 30322

Background:
Sex chromosomes function as genetic mediators of immune activity. Therefore, differential sex-based effects on mucosal immune responses could have important implications for HIV transmission. Here, we sought to characterize the influence of biological sex on rectal tissue susceptibility and host mucosal immune responses to HIV infection.

Methods:
Rectal mucosal tissue explants from cisgender men (XY) and cisgender women (XX) were challenged ex vivo with HIV-1 BaL. p24 production (XX, n = 8 and XY, n=7) and cytokine concentrations (XX, n = 5 and XY, n=2; IL-6, CCL2, G-CSF, IFN-a2, IL-2, IFN-g, IL-7, IL-1RA, IL-8, TNF-a, IP-10, MIP-1a, and IL-10) were quantified in the supernatant longitudinally from Days 3 through 14 post-infection. The median area under the curve (AUC) values were compared between XX and XY groups using Mann-Whitney U.

Results:
In this preliminary analysis, production of p24 was greater in rectal tissues from XX compared XY individuals (Fig 1; median: 813.7 vs 320.8, P = 0.03). Among XX individuals, there was a trend toward higher production of IL-1RA, a monocyte activation marker, in rectal tissues (median: 971.8 vs 451.4, P = 0.08). There were no other significant sex-based differences in the concentrations of the remaining cytokine analytes.

Conclusions:
Sex-based differences in HIV transmission were observed in this study with XX individuals demonstrating a greater potential for viral propagation within rectal mucosal tissues. Higher IL-1RA production within rectal mucosa from XX individuals provides some evidence that IL-1 family cytokine responses may contribute significantly to sex-specific immunity. Additional analyses of the mucosal transcriptome could reveal other inflammatory mechanisms of enhanced susceptibility.

Lentivirus mediated perturbations of granulocytic effector cells

Ameera Afifi, Rhianna Jones, Sho Sugawara, R. Keith Reeves, **Cordelia Manickam**
Presenting Author: Cordelia Manickam
Affiliations: Duke University School of Medicine, Durham, NC, USA
Funding source: CFAR Pilot P30AI064518; NIAID/NIH R21 AI161010

Background:
Granulocytes including eosinophils and neutrophils, are critical innate effector cells bearing high Fc receptor expression and armed with a preformed pool of inflammatory and cytotoxic mediators, and are also highly enriched in the GI mucosae. However, their roles in lentiviral-mediated intestinal pathology and immunoprotection have been largely overlooked. To address this deficit, we studied granulocyte phenotypes, distribution, function and signaling using nonhuman primate models of HIV infection and as well as human blood samples.

Methods:
Samples from jejunum, colon, cervix, vagina, lymph nodes, spleen, liver, and whole blood of naïve, and chronic SHIVsf162p3-infected rhesus macaques (RM) were analyzed by imaging cytometry and advanced polychromatic flow cytometry. Peripheral granulocytes of naïve RM and humans were used for controls and for functional assays, including respiratory burst assay and intracellular cytokine staining assay (ICS) by flow cytometry, 'net'osis assay by confocal microscopy , multiplex signaling by Luminex and antibody-mediated neutrophil phagocytosis (ADNP) assay using HIV-gag opsonized fluorescent microbeads and HIV-specific antibodies.

Results:
Flow cytometric and imaging data confirmed granulocyte phenotypes as CD45+CD66abce+CD14+CD49d- neutrophils and CD45+CD66abce+CD14-CD49d+ eosinophils based on their receptor expression, nuclear morphology, and cytoplasmic granularity in blood and tissues. Upon in vitro FcR (CD32 and CD16) crosslinking of granulocytes, generation of ROS and NETs, and expression of important signaling adaptors including p-Syk, p-ZAP70, p-Lck and p-LAT were observed. Interestingly, VRC01-IgA elicited elevated phagocytosis than the VRC01-IgG subtype in human granulocytes, indicating HIV-specific mucosal activity. In SHIV-infected RM, depletion of jejunal eosinophils and vaginal neutrophils and eosinophils were observed, while neutrophils in circulation and colorectal biopsies were elevated indicating tissue-specific modulation of granulocytes in SHIV infection. Further, SHIV infected peripheral eosinophils secreted elevated IL-8 and reduced TNF-a upon LPS stimulation by ICS indicating modulated granulocyte functions.

Conclusions:
Granulocytes are depleted in SIV/SHIV infection, notably in the gastrointestinal and reproductive mucosae where significant inflammation and disruption occurs in lentivirus-induced disease. The mucosal depletion of granulocytes could potentially lead to pathogenic co-morbidities and adversely affect the outcome of antibody-based therapies and mucosal vaccination, thus warranting further studies.

Characterization of CD8 T cell populations associated with SIV control in non-human primates

Zachary Strongin[1], Claire Deleage[2], Maria Betina Pampena[3], Maria Cardenas[1], Laurence Raymond Marchand[1], Perla M. del Rio Estrada[4], Steve Bosinger[1], **David E. Gordon[1]**, Michael R. Betts[3], Haydn T. Kissick[1], Mirko Paiardini[1]

[1]Emory University School of Medicine

[2]National Cancer Institute, Frederick National Laboratory

[3]University of Pennsylvania, Perelman School of Medicine

[4]Centro de Investigacion en Enfermedades Infecciosas, Mexico City, Mexico.

Background

HIV cure efforts are increasingly focused on harnessing CD8 T-cell antiviral functions to control and eliminate infected cells, and a better understanding of the profile of CD8 T-cells promoting HIV control can critically inform the design of novel therapeutic approaches. Recent studies in the setting of other chronic diseases revealed critical roles for the transcription factor TOX, a marker of exhausted and polyfunctional CD8 T cells, and TCF1, the main regulator of stem-like CD8 T-cells that feeds the effector pool of CD8 T-cells and provides responsiveness to immunotherapies. Hypothesizing that TOX and TCF1 expression are relevant markers of CD8 T cells which can control viral infection, we explored the dynamics of TOX and TCF1 expression in CD8 T cells after SIV infection of Rhesus macaques.

Methods

We performed a cross-sectional phenotypic analysis of LN from uninfected Rhesus Macaques (RMs) at early chronic infection (D42 post-infection) and at late chronic infection (all >6 months p.i.; average 17 months p.i.). Uniform Manifold Approximation and Projection (UMAP) analysis was applied to flow cytometry and single-cell RNAseq data. Relationships between the LN CD8 T cell populations identified by flow cytometry and viral burden (copies/mL) were also evaluated during early chronic infection.

Results

During early chronic SIV infection, CD8 T-cells upregulated TOX and differentiated into distinct subsets, including a unique TCF1+CD39+ subset that expressed high levels of TOX and inhibitory receptors, but lacked expression of canonical cytotoxic molecules despite functional responsiveness to antigen stimulation. Transcriptional analysis of SIV-specific CD8 T-cells revealed these TCF1+CD39+ cells to be an intermediate effector population that retains stem-like features. TOX+ and TCF1+CD39+ CD8 T cells express higher levels of CXCR5 than canonical effector cells and are found at higher frequency in the follicular micro-environment. Importantly, their levels were strongly associated with viral control, lower reservoir size on ART, and preservation of CD4 T-cells.

Conclusions

Collectively, these data describe a unique population of lymph node CD8 T-cells possessing both stem-like and effector properties that are strongly associated with better control of SIV infection and could serve as a target in future therapeutic interventions.

Exploring CD4+ T Cell Metabolism in SIV-infected Macaques

Jenn Sakal[1] and **Erica Larson**[1,2]*

[1]Department of Microbiology and Molecular Genetics, University of Pittsburgh School of Medicine, Pittsburgh, PA; [2]Center for Vaccine Research, University of Pittsburgh School of Medicine, Pittsburgh, PA.

CD4+ T cells are susceptible to HIV infection and critical to maintaining viral levels in the body. There is growing evidence that a cell's metabolic programming is not only important for survival but crucial for carrying out specialized functions, such as cytokine production, and may play a role in viral pathogenesis. Several *in vitro* studies have shown that HIV preferentially infects CD4+ T cells that are highly glycolytic and, upon infection, upregulates the cell's glycolytic machinery. However, metabolism is not limited to glycolysis, but rather is an interconnected network of pathways. The role of metabolism in CD4+ T cells in its entirety over the course of viral infection and across different tissue compartments is not well characterized. Inhibitors that modulate metabolism to de-emphasize glycolysis have been shown to reduce viral output, but it is not yet known whether this is achievable in a completely intact immune system *in vivo*. In our study, we infected adult Mauritian cynomolgus macaques (n = 4) intrarectally with SIVmac239. After 3 months, animals were given daily metformin (70 mg/kg, *p.o.*), an FDA-approved drug used to treat Type 2 diabetes mellitus. Metformin inhibits mitochondrial complex I, thereby modulating metabolism. Following SIV infection, there was a decline in fatty acid uptake in PBMC, but not in peripheral lymph nodes or airway cells. Glucose uptake and mitochondrial mass also declined across all compartments. These data indicate that CD4+ T cells may shift certain metabolic pathways depending on the tissue compartment in response to infection. Flow cytometric and single cell RNA-seq analyses of time points following metformin are underway.

Funding: Rustbelt CFAR Developmental Grant 2022; NIH K01 OD033539

Barcoded HIV-1 reveals clonally expanded T cells do not harbor provirus with epigenetic features of deep latency

Tian-hao Zhang1, Matthew Kostelny2, Yuan Shi3, Jerome Zack2,4, **Jocelyn T. Kim5**
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Background:
HIV persists in various cellular reservoirs, thus when anti-retroviral therapy (ART) is discontinued viral loads rapidly rebound. The most well-characterized "latent reservoir" forms within memory CD4+ T cells as they transition to memory cells and avert death by the virus. Because memory cells are by nature long-lived, the infected cells can persist for decades with silenced provirus cargo despite suppressive ART. In addition, recent studies showed despite effective ART infected cell clones with identical IS could persist for more than 11 years and proliferate over time. We hypothesized clonally expanding infected T cells would have a transcriptomic feature of viral latency. A direct and high-throughput quantification of HIV-1 transcription activity in these cells was needed.

Methods:
Our group introduced synthetic genetic barcodes on the HIV-1 genome to efficiently track viral lineages and measure latent reservoir diversity in humanized mice. Here, we present a new method that can simultaneously sequence the provirus integration site (IS) and the provirus barcoded lineage in vivo. Combining it with our previous sequencing method for barcode abundance in viral RNA, we can reconstruct the detailed population structure of the reservoir during acute infection, ART suppression, and rebound infection.

Results: We found ~7.1% of all integration sites were found multiple times, indicating only a fraction of infected cell clones proliferated. The UMI count for each IS was a measure of how many times an infected cell clone proliferated. Interestingly, infected cell clones could proliferate over 2 logs even during ART suppression. The highest proliferation rate of infected cell clones was during acute infection and ART suppression. Compared to non-proliferated infected cells, proliferating infected cells were more likely to have their provirus integrated in accessible DNA regions that were genic and marked with activating histone markers. In addition, despite being on suppressive ART, proviruses from expanded cell clones were integrated significantly closer to open and active chromatin compared to proviruses from non-expanded clones.

Conclusions:
Here we introduced a new sequencing technique to simultaneously measure virus integration site, virus transcription and host cell clonal expansion, enabling us to trace virus and host cell clonal dynamics in vivo. Interestingly, our study shows that proliferating infected cell clones do not appear to harbor epigenetic features of deep viral latency compared to non-proliferating cells. Proliferating and actively transcribing latent cells may pose another roadblock to developing a functional cure.

Low-density granulocytes display immature cells with enhanced NET formation in people living with HIV

Juwon Park[1,2*], Logan S. Dean[1,2], Jack Heckl[3], Louie Mar Gangcuangco[1,6], Te-Kie Pedro[1], Michelle D. Tallquist[4], Todd B. Seto[5,6], Bruce Shiramizu[1,2], Dominic C. Chow[1,6], Cecilia M. Shikuma[1,2,6]

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Funding Source

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Background

While the protective role of neutrophil extracellular traps (NETs) in limiting human immunodeficiency virus (HIV) spread to susceptible cells has been documented, there is comparatively little insight into whether NET formation is harmful in people living with HIV (PLWH).

Methods

To gain insight into neutrophil dysregulation and NET formation in PLWH, we examined expressions of NET markers (cell-free DNA [cfDNA] and citrullinated histone H3 [CitH3]) in the plasmas from the Hawaii Aging with HIV-Cardiovascular (HAHC) cohort. In a subset of participants, low-density granulocyte (LDG) levels and their maturation and activation status were analyzed via flow cytometry.

Results

HIV+ individuals observed higher plasma levels of CitH3 compared to HIV- individuals. LDGs with mature phenotype ($CD10^{+}$ and $CD16^{Hi}$ cells) were decreased in HIV+ individuals. Moreover, LDGs from HIV+ individuals exhibited increased CD66b expression and NET forming capacity. Among, HIV+ individuals, CitH3 and LDG levels were positively associated with markers for inflammation and coagulation.

Conclusions

Our study presents evidence that LDGs from PLWH display an immature and altered phenotype with enhanced NET formation. Plasma NET levels as well as LDG parameters correlated with markers for inflammation and coagulation, suggesting that neutrophil activation and NETs may exert proinflammatory and coagulation effects in PLWH.

Table 1. Spearman's correlations between NET markers and hematological parameters and soluble biomarkers in PLWH (N=88).

		CitH3 (r value)	cfDNA (r value)
Hematological parameters	Total Leukocyte Count	0.095	0.298**
	Absolute Neutrophil Count	0.031	0.278**
	Platelet Count	0.129	0.061
Soluble biomarkers	CRP	0.234*	0.144
	MMP-9	-0.002	0.168
	E-Selectin	0.278**	0.089
	VCAM	0.155	0.089
	ICAM	0.062	-0.082
	Fibrinogen	0.251*	-0.027
	D-Dimer	0.115	0.067
	PAI	0.307**	0.269*
	MCP-1	0.260*	0.092
	TSP-1	-0.100	0.157
	MPO	0.237*	0.075
	TGF-b	-0.003	0.077
	SAA	0.275**	0.195
	SAP	0.169	0.131
	IL-1b	0.250*	0.198
	IL-6	0.322**	0.146
	IL-8	0.200	0.160
	IL-10	0.397**	0.168
	TNF-a	0.205	0.123

*p-value<0.05
**p-value<0.01

Fentanyl and Methadone minimally activate HIV proviral transcription in microglia.

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Funding Source: DC CFAR Pilot Award: LA Campbell

Background:

Opioid drug use and HIV infection are often common comorbidities. Data has shown that the use of opioids such as heroin and morphine can alter the pathogenesis of HIV-associated neurocognitive disorders (HAND) by modifying the inflammatory state within the central nervous system (CNS) or by synergizing with HIV-associated proteins such as Tat. Recently, the potent semi-synthetic opioid Fentanyl has gained traction as a substance consumed by people who inject drugs (PWID). The purpose of this study was to determine how Fentanyl or Methadone would affect HIV proviral transcription in microglia, the resident macrophage of the brain. These cells are a key mediator for the inflammatory response, as well as productive viral infection, within the CNS. We hypothesized that these opioids would effectively enhance HIV provirus transcription in microglia.

Methods:

We utilized HIV-NanoLuc CHME-5 microglia as our model. This cell line has a modified, integrated provirus where the NanoLuciferase enzyme is under control of the HIV viral promoter- the long terminal repeat (LTR). Dose response curves for Fentanyl, Methadone, and Lipopolysaccharide were performed to determine HIV proviral transcription by a luciferase assay. Cell surface biotinylation and a cyclic AMP assay were performed to determine opioid activation and mechanism. Immunocytochemistry and Western Blot analysis was performed to assess opioid receptor expression and localization. Statistical analysis was performed by One-Way ANOVA with multiple comparisons by Dunnet's Test.

Results:

We confirmed by Western Blot and immunocytochemistry that HIV-NanoLuc CHME-5 microglia express mu, kappa, and delta opioid receptors. Dose response analysis (10-fold dilutions ranging from 0.1ng to 100µg) revealed that Fentanyl and Methadone only produce a maximal 20% increase in proviral transcription. In contrast, Lipopolysaccharide effectively increased HIV proviral transcription to a maximal 280% response. Due to this finding, receptor internalization was performed by cell surface biotinylation after Fentanyl and Methadone treatment. The delta-opioid receptor was internalized by Fentanyl. However, the mu-opioid receptor was not sequestered through surface biotinylation. Immunocytochemistry was performed, revealing a perinuclear localization of the mu-opioid receptor in microglia.

Conclusions:

Overall, these data suggest that Fentanyl and Methadone minimally activate HIV proviral transcription in microglia. Therefore, they may not accelerate the pathogenesis of HAND. This is especially important for individuals taking opioids as a harm reduction strategy. From a pharmacological perspective, this may be due to the unique intracellular localization of the mu-opioid receptor on microglia that prevents opioid mediated effects within this cell type.

Understanding HIV-1 capsid-linked viral immune evasion mechanisms

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*

BACKGROUND: The HIV/AIDS pandemic remains unabated due to the lack of a preventative vaccine and a cure. There are also significant barriers to effective antiretroviral therapy (ART)-mediated HIV control. Therefore, research advances leading to novel viral targets as well as effective curative strategies are urgently needed. One proposed strategy is "functional cure" that seeks durable HIV-1 control without the need for ongoing ART. In certain untreated HLA-B27-positive HIV-1-infected individuals, a superior cytotoxic CD8+ T-cell (CTL) response targeting the KK10 peptide epitope from the viral capsid protein (CA) has been linked to impaired virus replication and delayed disease progression. The selection of the CTL escape CA mutation R264K greatly diminishes KK10 binding to HLA-B27 but also concurrently diminishes virus infection. Notably, selection of the compensatory CA mutation S173A or knockdown of the CA-binding host cofactor cyclophilin A (CypA) restores the R264K virus replication. However, the underlying mechanisms remain unclear. A better understanding of the functional consequence(s) of perturbing capsid function by such host immunological control mechanisms and the mechanistic aspects of the ensuing virus response will greatly advance the efforts to develop CTL-based HIV curative strategies, rational immunogen design for T cell-based HIV vaccine, and successful capsid inhibitors.

METHODS: We comprehensively analyzed the biology of the KK10-linked CTL-escape CA mutant viruses by using a multi-pronged approach that included structure-guided molecular dynamics simulations; yeast two hybrid-based protein interaction studies; viral infectivity assays; quantitative analysis of the critical early replication events; and genetic analysis of unintegrated viral genomes.

RESULTS: Our results suggest that the R264K mutation has no significant effect on CA-CA and CA-binding host factor interactions. Strikingly, the R264K mutation primarily impairs viral DNA integration in a CypA-dependent manner but is relieved by the compensatory CA mutation S173A. Intriguingly, virus-derived aberrant sequences present at the ends of a higher proportion of unintegrated R264K viral DNAs suggests that the impaired viral integration may also reflect a qualitative glitch in viral reverse transcription.

CONCLUSIONS: Collectively, our results have uncovered that the CTL escape CA mutation R264K significantly impairs HIV-1 integration in a CypA-dependent manner.

GRANT SUPPORT:

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M. tuberculosis antigen-responsive IL17+ CD4 T cells are disproportionately spared in ART-suppressed HIV

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Funding Sources: This work was supported by a UCSF-Gladstone CFAR Mentored Scientist Award via NIH grant to the UCSF-Gladstone Center for AIDS Research (P30AI027763).

Background

Interleukin 17 producing CD4 T cells contribute to the control of Mycobacterium tuberculosis (Mtb) infection in humans but the phenotypes and whether infection with Human Immunodeficiency Virus (HIV) disproportionately affects the Th17 cell subsets that mediate Mtb control are incompletely defined.

Methods

We performed high-definition characterization of circulating Mtb-specific Th17 cells by spectral flow cytometry in people with latent TB and treated HIV (HIV-ART). We also measured kynurenine pathway activity in plasma by LC/MS to test whether tryptophan catabolism influences Th17 cell differentiation.

Results:

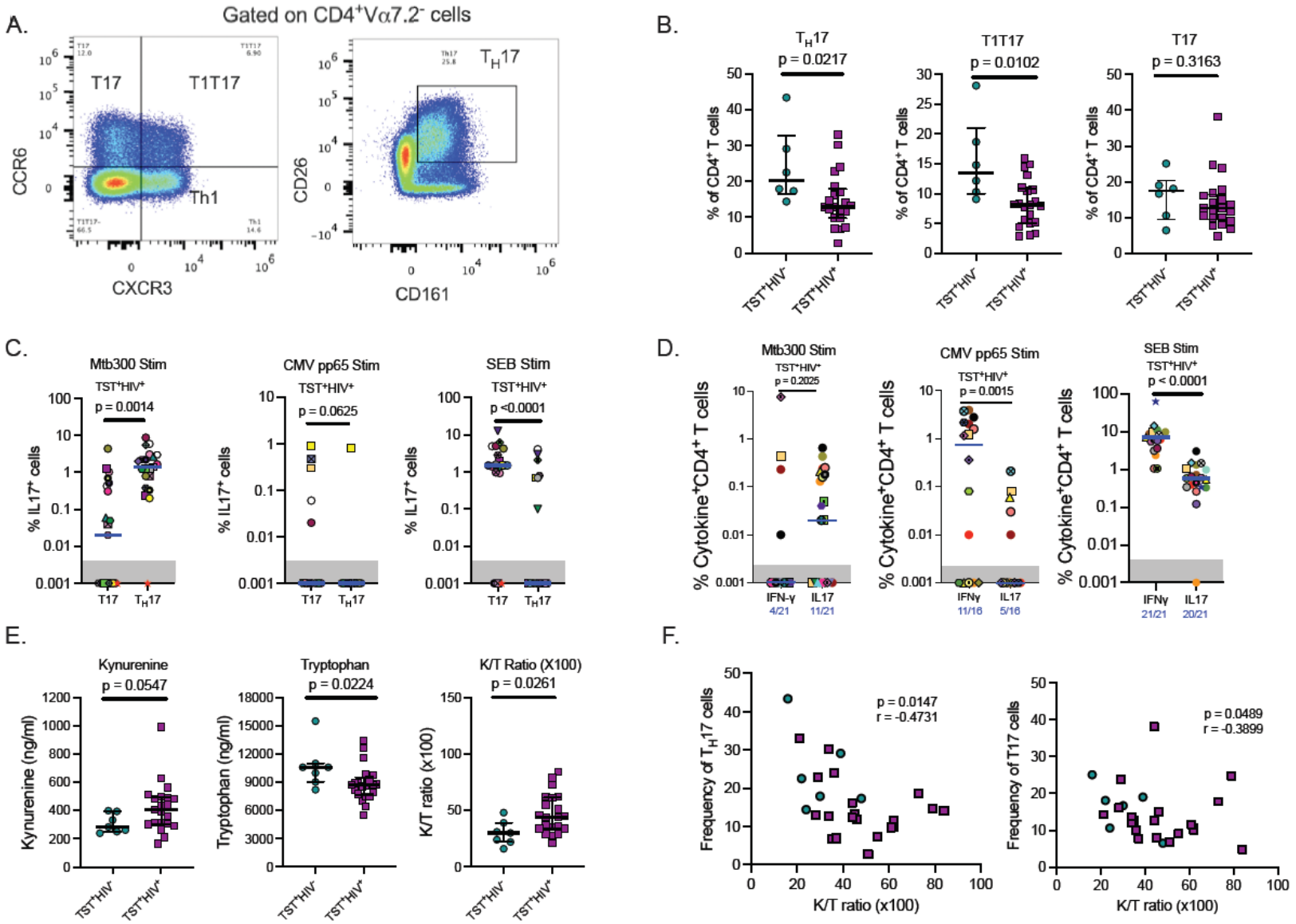
We identified two subsets of Th17 cells: TH17 (CD4+Vα7.2-CD161+CD26+) and T17 (CD4+Vα7.2-CCR6+CXCR3-) cells that were disproportionately reduced in LTBI with HIV-ART, yet Mtb-responsive IL17-producing CD4 T cells were preserved; found that IL17-producing CD4 T cells dominate the response to Mtb antigen but not CMV antigen or staphylococcal enterotoxin B (SEB); and tryptophan catabolism negatively correlates with TH17 and T17 cell frequencies.

Conclusions:

We demonstrate differential effects of HIV-ART on distinct subsets of Th17 cells, that IL17 response dominates responses to Mtb but not CMV antigen or SEB, and that kynurenine pathway activity is associated with decreases of circulating Th17 cells that may contribute to tuberculosis susceptibility.

Figure:

Treated HIV infection is associated with disproportionate depletion of distinct subsets of Th17 cells that differ in IL17 production in response to Mycobacterium tuberculosis (Mtb) infection. (A) Phenotypic characterization of circulating Th17 cells: TH17=CD4+Vα7.2-CD26+CD161+; T1T17: CD4+Vα7.2-CCR6+CXCR3+; T17: CD4+Vα7.2-CCR6+CXCR3-. (B) Impact of HIV infection on Th17 subsets. (C) Th17 subsets differ in ability to produce IL17 with TH17 only enriched for Mtb-specific CD4+IL17+ cells. (D) Bulk Mtb-specific CD4+ T cells appear to be preserved in people with treated HIV (as a fraction of responders (in blue)). (E - F) Tryptophan catabolism (K/T ratio) is increased in Mtb infected people with treated HIV and is inversely associated with frequency of circulating Th17 cells. Statistical analysis; Mann-Whitney test and Spearman correlation.


A.
Gated on CD4+Vα7.2- cells
T17
T1T17
Th1
CCR6
CXCR3
CD26
CD161
TH17
B.
TH17
p = 0.0217
T1T17
p = 0.0102
T17
p = 0.3163
% of CD4+ T cells
TST+HIV-
TST+HIV+
C.
Mtb300 Stim
CMV pp65 Stim
SEB Stim
TST+HIV+
p = 0.0014
p = 0.0625
p <0.0001
% IL17+ cells
T17
TH17
D.
Mtb300 Stim
CMV pp65 Stim
SEB Stim
TST+HIV+
p = 0.2025
p = 0.0015
p < 0.0001
% Cytokine+CD4+ T cells
IFN-γ
IL17
4/21
11/21
IFNγ
11/16
5/16
21/21
20/21
E.
Kynurenine
p = 0.0547
Tryptophan
p = 0.0224
K/T Ratio (X100)
p = 0.0261
Kynurenine (ng/ml)
Tryptophan (ng/ml)
K/T ratio (x100)
F.
p = 0.0147
r = -0.4731
p = 0.0489
r = -0.3899
Frequency of TH17 cells
Frequency of T17 cells
K/T ratio (x100)

In vivo serial passaging of human-simian immunodeficiency virus clones identifies viral characteristics for persistent viral replication

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Background: Currently, we do not have a true nonhuman primate (NHP) model of HIV-1 infection/AIDS. This is because of the inability of HIV-1 to replicate efficiently in macaque cells due to the presence of restriction factors such as APOBEC3 family of proteins, TRIM5α, tetherin, and SAMHD1. Among NHPs, pigtailed macaques (PTMs) are uniquely susceptible to HIV-1 infection due to the absence of the restriction factor TRIM5α. Since APOBEC3 family of proteins can be counteracted by SIV encoded Vif protein we constructed Human-Simian Immunodeficiency virus (HSIV) clones by substituting HIV-1 *vif* with SIVmne027 *vif*. We constructed both CXCR-4 tropic *(*HSIV-vif$_{NL4-3}$ based on pNL4-3) and CCR5-tropic (HSIV-vif$_{AD8}$ and HSIV-vif$_{YU2}$ based on pNL-AD8 and Bru-Yu2 respectively) HSIV clones that replicated efficiently in PTM PBMCs. In vivo, HSIV-vif$_{NL4-3}$ replicated persistently for nearly 4 years, suggesting that counteracting APOBEC3 family of proteins enables HIV-1 replication in PTMs. However, infection did not result in high peak viremia and setpoint viral loads as observed during SIV infection of macaques. Therefore, we hypothesized that serial in vivo passaging will generate pathogenic variants with enhanced replication capacity.

Methods: To further adapt HSIV, we conducted three rounds of serial in vivo passaging in immunocompetent PTMs starting with an initial inoculum containing a mixture of both CXCR4- and CCR5-tropic HSIV clones. Plasma viral RNA loads, Antibody response, and CD4 T-cell counts were measured at various weeks post-inoculation to determine the replication potential.

Results: Interestingly, all the macaques showed peak plasma viremia close to or above 10^5 copies/ml and persistent viral replication for at least 20 weeks. Importantly, passage 3 PTM showed viral loads greater than 10^5 viral RNA copies/ml. We have standardized a protocol to generate infectious molecular clones (IMCs) from proviral DNA, and using this approach recovered three IMCs from passage 3 macaque (HSIV-P3 IMCs). Sequencing of HSIV-P3 IMCs showed several nonsynonymous mutations throughout the genome, suggesting adaptation to PTMs.

Conclusions: Our data suggests that three rounds of in vivo passaging slightly improves HSIV replication. However, further in vivo passaging of recovered IMCs is required to pathogenic variants, which will be valuable as challenge viruses for preclinical evaluation of novel vaccines and therapeutics.

Title	HIV-Nef EV modulates macrophage heterogeneity to promote atherosclerosis	
Authors	S Chelvanambi, JL Decano, AR Sonawane, S A Singh, E Aikawa & M Aikawa	Affiliations: • Brigham and Women's Hospital • Harvard Medical School
Background	People living with HIV (PLWH) on anti-retroviral therapy remain at risk for cardiovascular diseases, including atherosclerosis. We hypothesized that persistent viral protein (Nef) in extracellular vesicles (EVs) promotes inflammation by altering macrophage heterogeneity, contributing to cardiovascular disease.	Methods Macrophage heterogeneity was characterized by multiplexed sc-RNA-seq and sc-ATACseq in human primary macrophages stimulated with EVs engineered to contain Nef. Data analysis involved Seurat V4 (Harmony, WNN, Metacore, Slingshot, DoRothEA, pyScenic and ChromVar). Compartmentalized proteomics was quantified using mass spectrometry (Lumos). Validation assays for efferocytosis (Incucyte), chemotaxis and metabolism (Seahorse) were supported by FACS and qPCR. Male and female Ldlr-/- mice on high fat diet were injected once monthly with Nef EV for 3 months. Thickness of aortic wall was quantified using 3D ultrasonography (Vevo3100).
Results	Comprehensive single cell multiomics analysis (pseudotime, gene regulatory network, pathway enrichment, and motif accessibility) characterized 16 subpopulations of human primary macrophages (50,931 cells; 4 donors). Nef increased 2 inflammatory subpopulations characterized by differentially active and accessible transcription factors. Whole cell (427 proteins) and sub-cellular compartmentalized proteomics identified differentially abundant proteins associated with nucleus (662 proteins), cytosol (461), DNA (261), EVs (132), and cell surface (72). Pathway enrichment and network analysis predicted changes in immune response	pathways such as phagocytosis, chemotaxis, and oxidative phosphorylation. Phenotypic validation revealed that Nef EV suppressed atheroprotective efferocytosis, promoted chemotaxis to pro-inflammatory stimuli and altered metabolic state. Furthermore, in vivo injection of Nef EVs into atherosclerotic mice impaired efferocytosis of peritoneal macrophages, increased the plasma inflammatory cytokines IL-1β, RANTES and CCL17, enhanced atherogenesis and increased macrophage accumulation in atherosclerotic lesions.
Conclusions	Nef compromised macrophage functions required for plaque stability and inflammation resolution. Persistence of HIV-Nef EV in PLWH may modulate macrophage heterogeneity to promote chronic inflammation and increase risk for cardiovascular disease. These findings may help identify at-risk HIV patients and develop novel atheroprotective therapies.	

EARLY-STAGE INVESTIGATORS' ABSTRACTS

CLINICAL:

HIV-exposed uninfected infants have an altered gut microbiota in the first month of life which associates with systemic inflammation.

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Funding source: CFAR AI027757, NIH R21HD106574

Background

HIV-exposed uninfected infants (iHEU) exhibit high infectious morbidity and are at higher risk of mortality compared to HIV unexposed controls (iHU). Moreover, iHEU have altered immune profiles which include heightened systemic inflammation. The mechanism of these phenomena is unknown. Here, we investigated (1) whether mothers with HIV (MWHIV) or their infants have altered total antibody and subclass concentrations in plasma and stool respectively, (2) whether IgA-microbiota coating is altered in iHEU stool and (3) whether iHEU have altered early life microbiota and whether these gut microbiota associate with systemic inflammation.

Methods

We measured total antibody and subclass concentrations in breast milk of mothers with or without HIV at week 4 postpartum by ELISA. We assessed proportions of IgA coated bacteria in infant gut by flow cytometry of fecal samples. We sorted the IgA bound and unbound fractions and DNA extracted from whole stool or IgA bound and unbound fractions was subjected to shotgun metagenomic sequencing. Sequence reads were annotated using Kraken and Bracken. To assess systemic inflammation, we measured inflammatory markers in plasma at week 4 of life using SomaScan.

Results

Total IgG1 and IgG3 concentrations were significantly elevated in the breast milk of MWHIV compared to uninfected controls (median conc 39.5 and 28.9mg/mL, p= 0.017 and 2.7 and 1.2mg/mL, p=0.001 respectively) but there were no differences in immunoglobulin concentrations in infant stool. Gut microbiota analysis revealed profound differences in the stool microbiota with 43 taxa differentially abundant between iHEU and iHU. Prediction of microbial function by eggNOG demonstrated altered metabolic pathways in iHEU infants. Although there were significant alterations in resident gut microbiota in iHEU, there was no difference in IgA microbiota coating. Inflammatory biomarkers, including C-reactive protein and complement factor H related 5, were significantly elevated in the plasma of iHEU compared to iHU (adj p = 0.021 and 0.001 respectively). Moreover, the concentration of CRP was positively correlated with the relative abundance of *Blautia pseudococcoides.*

Conclusion

Our data shows that MWHIV have altered concentrations of antibody subclasses in breast milk, but no difference in total immunoglobulin concentrations or IgA microbiota coating in their infants' stool 4 weeks after birth. Importantly, iHEU display an altered gut microbiota early in life which associates with systemic inflammation.

Absolute CD4 count predicts early alterations of longitudinal trajectories in the brain's central executive network among persons living with HIV

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Funding: R01MH080636; 1K01DA057143; Third Coast CFAR (P30AI117943)

Background

The brain's central executive network (CEN) plays a key role in the pathogenesis of depression, problematic substance use, and cognitive impairment, all of which are common comorbidities of HIV. Previous cross-sectional research has reported that resting-state functional connectivity (rsFC) in the CEN is lower in PLWH compared to healthy controls suggesting reduced integrity of the CEN. But it is unclear when these alterations emerge and what clinical markers predict their emergence.

Methods

Resting state functional magnetic resonance imaging scans were conducted at baseline and two-year follow-up in a cohort (median age=29) of PLWH in early HIV infection (n=49) and healthy controls (n=20). A sub-sample (n=50) completed scans at both timepoints. Blood samples were collected to measure clinical immune markers and plasma HIV RNA. Regression models adjusting for age and sex were used to predict longitudinal change scores for CEN rsFC.

Results

We detected no differences in CEN rsFC in PLWH compared to controls at baseline or at follow-up. In the overall sample, CEN rsFC tended to increase from baseline to follow-up (mean change=+13.4% ; 95% confidence interval [CI]: +2.2%, +25.1%). We detected no differences in CEN rsFC change scores by HIV status. Among PLWH, those infected longer at baseline (i.e., with detectable HIV antibodies and no longer in acute HIV) exhibited more negative CEN rsFC change scores (β=-0.78; 95% CI:-1.50, -0.06). Higher absolute CD4 counts at baseline predicted more positive CEN rsFC change scores (β=0.5; 95% CI:0.17, 0.83) **(Figure 1)**.

Conclusions

We found that CEN rsFC became more robust over time in a sample of PLWH and healthy controls in early to middle adulthood. Among PLWH, these gains in CEN rsFC were weaker among those infected longer at baseline, as indicated by the presence of detectable HIV antibodies. Gains in CEN rsFC were substantially weaker among PLWH with evidence of greater immunopathology at baseline, as indexed by lower CD4 count. These findings suggest that CD4 nadir is an important prognostic marker for reduced robustness of the CEN later in life in PLWH. Alterations in CEN rsFC may help explain why PLWH experience disproportionately high burdens of depression, problematic substance use, and cognitive impairment. Therapies that preserve CEN rsFC (e.g., non-invasive neuromodulation of the left dorsolateral prefrontal cortex) may protect against emergence of psychiatric and neurocognitive comorbidities in PLWH.

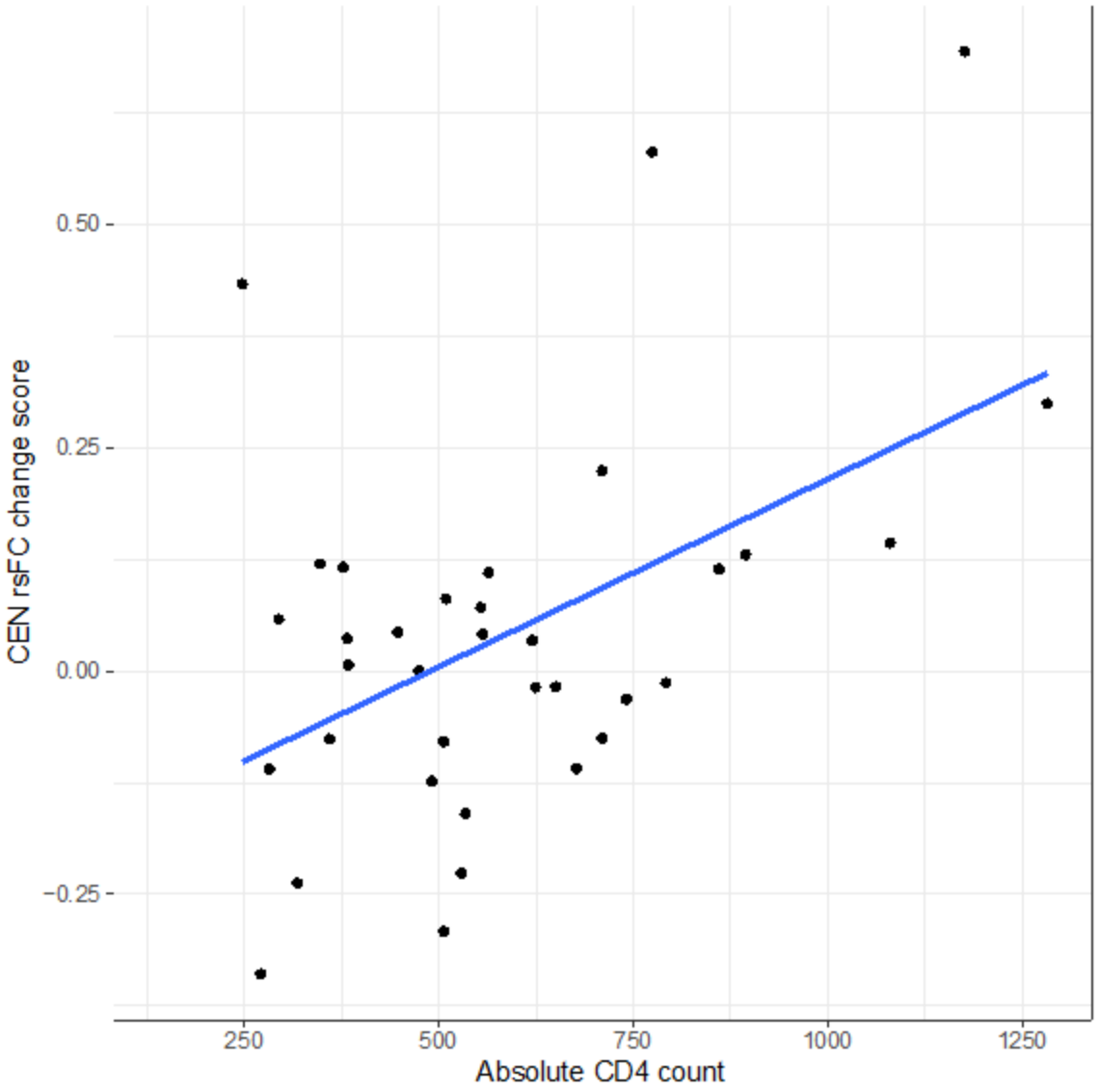

Figure 1. Absolute CD4 count at baseline predicts longitudinal changes in resting state functional connectivity of the brain's central executive network among PLWH (n=35).

Association of SARS-CoV-2 Infection and Cardiopulmonary Long COVID with Exercise Capacity and Chronotropic Incompetence among People with HIV

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Funding Sources: This work was supported by a UCSF-Gladstone CFAR Mentored Scientist Award via NIH grant to the UCSF-Gladstone Center for AIDS Research (P30AI027763). Dr. Durstenfeld is supported by a grant from the NIH/NLBI (K12 HL143961). This study was also funded by philanthropic gifts from Charles W. Swanson, internal funds from the Division of Cardiology at Zuckerberg San Francisco General, and a grant from the National Institutes of Health/NIAID (R01 AI158013). This publication was supported by the National Center for Advancing Translational Sciences, National Institutes of Health, through UCSF-CTSI Grant Number UL1TR001872.

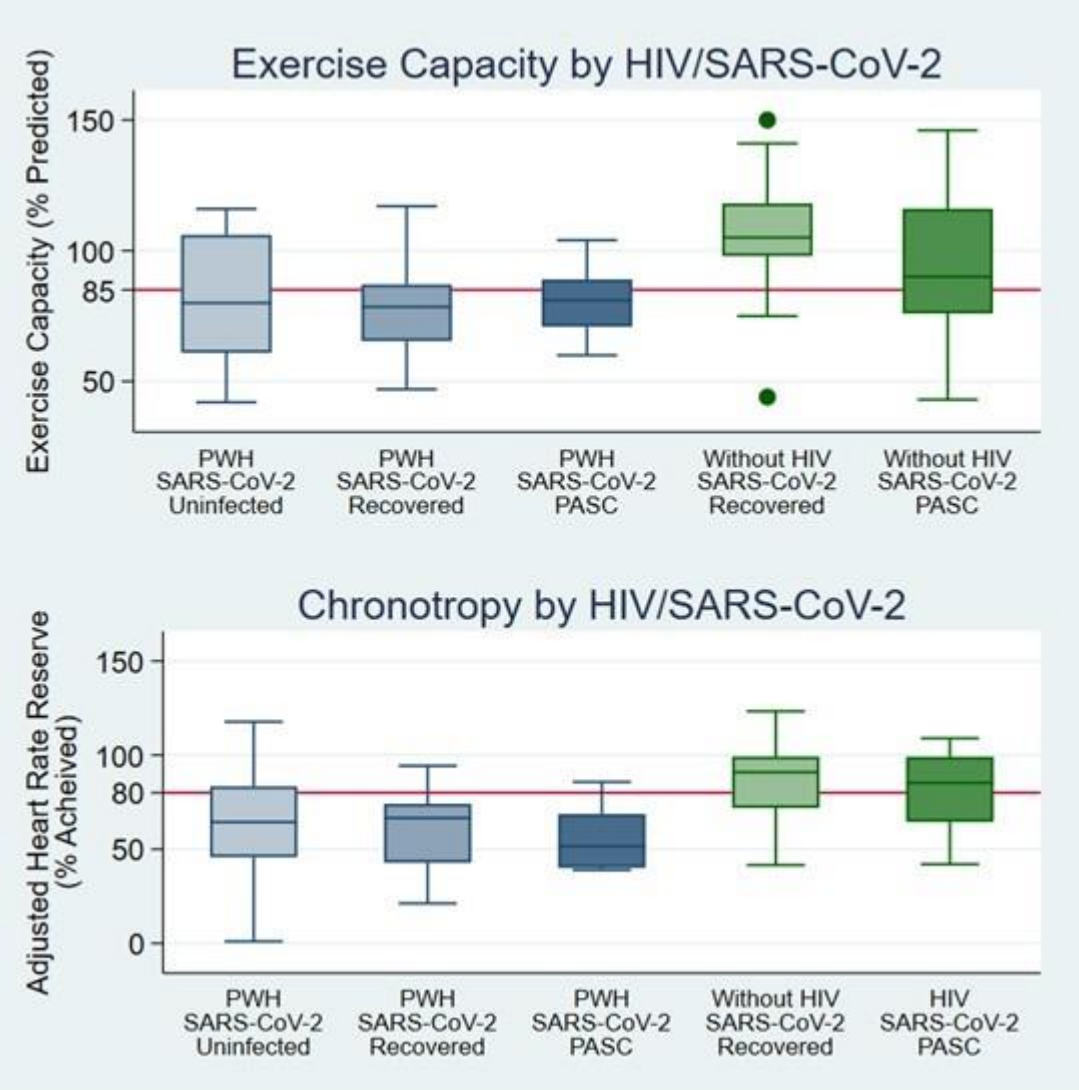
Background: Post-acute sequelae of COVID-19 (PASC) and HIV are both associated with reduced exercise capacity, but whether SARS-CoV-2 or PASC are associated with exercise capacity among people with HIV (PWH) is unknown. We hypothesized that PWH with PASC would have reduced exercise capacity from chronotropic incompetence, which is the inability to increase heart rate during exertion.

Methods: We conducted cross-sectional cardiopulmonary exercise testing within a COVID recovery cohort that included PWH with and without prior SARS-CoV-2 infection and people without HIV with prior SARS-CoV-2 infection ("controls"). We evaluated associations of HIV, SARS-CoV-2, and PASC with exercise capacity (peak oxygen consumption, Peak VO2) and chronotropy (adjusted heart rate reserve, AHRR) using linear regression adjusted for age, sex, and body mass index, with exploratory analyses examining associations with biomarkers, HIV-related characteristics, and cardiometabolic risk factors.

Results: We included 83 participants (median age 54, 35% female, 37 PWH): 23/37 (62%) PWH and all 46 controls had prior SARS-CoV-2 infection; 11/23 (48%) PWH and 28/46 (61%) without HIV had PASC. Peak VO2 was reduced among PWH versus controls (80% predicted vs 99%; p=0.005), a difference of 5.5 ml/kg/min (95%CI 2.7-8.2, p<0.001). Chronotropic incompetence was more prevalent among PWH (38% vs 11%; p=0.002), with lower AHRR (60% vs 83%, p<0.0001) versus controls. Among PWH, SARS-CoV-2 coinfection and PASC were not associated with exercise capacity. Chronotropic incompetence was more common among PWH with PASC: 7/11 (64%) with PASC versus 7/26 (27%) without PASC (p=0.04). Higher IL-6 levels were associated with worse exercise capacity and chronotropy, but other HIV-disease markers (duration with diagnosed HIV, nadir CD4 count, current CD4 count, CD8 count, and CD4/CD8 ratio) were not.

Conclusions: Exercise capacity and chronotropy are lower among PWH compared to SARS-CoV-2 infected individuals without HIV. Among PWH, SARS-CoV-2 infection and PASC were not strongly associated with reduced exercise capacity. Chronotropic incompetence may be a common under-recognized mechanism of exercise intolerance among PWH especially those with cardiopulmonary PASC, and may be related to higher levels of chronic inflammation.

Figure:


Exercise Capacity by HIV/SARS-CoV-2
Exercise Capacity (% Predicted)
150
100
85
50
PWH SARS-CoV-2 Uninfected
PWH SARS-CoV-2 Recovered
PWH SARS-CoV-2 PASC
Without HIV SARS-CoV-2 Recovered
Without HIV SARS-CoV-2 PASC
Chronotropy by HIV/SARS-CoV-2
Adjusted Heart Rate Reserve (% Acheived)
150
100
80
50
0
PWH SARS-CoV-2 Uninfected
PWH SARS-CoV-2 Recovered
PWH SARS-CoV-2 PASC
Without HIV SARS-CoV-2 Recovered
HIV SARS-CoV-2 PASC

Cardiometabolic Disease Among Frailty Phenotype Clusters in Adults Aging With HIV

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Background: People living with HIV (PLWH) are at increased risk of frailty due to the intersection of accelerated physiologic aging and high comorbidity burden. Frailty states (pre-frail and frail) are defined by adding the total number of pathognomonic characteristics of physical decline among geriatric populations. Among PLWH, frailty presents at earlier ages via different pathways. To address frailty in PLWH requires an understanding of the clustering of frailty characteristics and their relationships to health outcomes. We sought to evaluate the prevalence of unique frailty clusters and their association with cardiometabolic diseases in the Center for AIDS Research (CFAR) Network of Integrated Clinical Systems (CNICS).

Methods: This study includes all CNICS participants over age 50 with complete clinical assessment data between January 2011 and December 2021. Frailty was assessed using a self-reported modified phenotype that includes unintentional weight loss, fatigue, low physical activity, and low mobility. Individuals were categorized as frail, pre-frail, and robust/non-frail based on the presence of ≥3, 1-2, and 0 characteristics, respectively. Within the frailty and pre-frailty categories, the number of reported frailty characteristics were grouped into 0-, 1-, 2-, 3-, and 4-characteristic clusters, resulting in 16 total clusters. The prevalence of clusters and their association with cardiometabolic diseases (cerebrovascular disease, cardiovascular disease, diabetes mellitus, chronic kidney disease (CKD), hypertension, and dyslipidemia) were examined using an age- and sex-adjusted logistic regression.

Results: CNICS participants were included in this study (N=4,856). The median age of the participants was 60 years; 785 (16.1%) were female, and 1489 (30.7%) were Black/African American. Amongst frail participants (n=762, 15.7%), the most prevalent frailty cluster was the combination of fatigue, low mobility, and low physical activity (37.8%). Among pre-frail participants (n=2,163, 44.5%), the most prevalent cluster was low mobility (19.1%). Participants in the fatigue-low mobility-low physical activity cluster had greater odds of cardiovascular disease (aOR: 1.95 [95% CI: 1.23 – 3.10]), diabetes (2.16 [1.64 – 2.84]), CKD (1.63 [1.21 – 2.19]), hypertension (1.97 [1.43 – 2.72]), and obesity (1.72 [1.31 – 2.27]) compared with robust participants. Participants in the 4-characteristics cluster (fatigue, weight loss, low mobility, low physical activity) had greater odds off cardiovascular disease (2.87 [1.77 – 4.67]), diabetes (1.93 [1.38 – 2.70]), CKD (2.16 [1.54 – 3.04]), and hypertension (2.08 [1.40 – 3.09]) compared with robust participants. Pre-frail participants with only low mobility had greater odds of diabetes (1.51 [1.19 – 1.95]), CKD (1.40 [1.08 – 1.81]), hypertension (1.38 [1.07 – 1.80]), and obesity (1.57 [1.24 – 2.00]) compared with robust participants. Pre-frail participants in the low mobility-low physical activity cluster had greater odds of cerebrovascular disease (3.13 [1.75 – 5.60]), cardiovascular disease (2.90 [1.95 – 4.30]), diabetes (2.66 [2.05 – 3.45]), CKD (1.81 [1.37 – 2.40]), hypertension (2.66 [1.86 – 3.80]), dyslipidemia (1.47 [1.11 – 1.94]), and obesity (1.83 [1.40 – 2.39]) compared with robust participants.

Conclusion: In this cohort, associations between frailty characteristic clusters and cardiometabolic outcomes varied greatly among older adults with HIV. Implementing regular assessments of frailty into the HIV clinic and understanding frailty clusters and associated conditions may enable providers to prioritize co-morbidity management to prevent the progression of frailty in older adults with HIV.

Implementing Rapid ART in Houston/Harris County: Baylor College of Medicine ECHO Facilitating Antiretroviral StART Earlier (BE FASTER) Community of Practice

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Background: Rapid initiation of antiretroviral therapy (Rapid ART) is a key strategy of the *Ending the HIV Epidemic* (EHE) initiative. The BE FASTER program was developed in 2021 to address this call-to-action. The program uses the Project ECHO tele-mentoring model as an implementation tool for increasing Rapid ART in Harris County, a priority EHE jurisdiction. In this study, we present interim results on the acceptability and feasibility of the BE FASTER program.

Methods: Multidisciplinary health professionals (providers, social workers, pharmacists, administrators) from five Ryan White Part A funded agencies formed the community of practice. The BE FASTER program included 12 monthly one-hour virtual sessions from January 27, 2022, to January 12, 2023. The sessions consisted of a brief didactic presentation followed by case-based discussions focused on Rapid ART implementation challenges and best practices. We administered surveys to participants at baseline, 3 months, and 9 months. Surveys included 4 items on cross-agency collaboration, 3 items on sense of professional support, 3 items on organization efficacy and 3 items on self-knowledge and skills.

Results: Overall, 64 unique participants attended the first 9 ECHO sessions, with an average attendance of 26 participants per session. Self-knowledge and skills significantly increased at 9 months (3.63 vs. 3.96, $P < 0.01$). Cross-agency collaboration and sense of professional support also increased, but were not statistically significant (2.88 vs 3.03, $P = 0.49$; 3.19 vs. 3.39, $P = 0.30$, respectively). Satisfaction scores were high; 80% of participants were “mostly" or “completely” satisfied with the program, and 97% of participants would “probably” or “definitely” recommend the program.

Conclusions: The ECHO model is an acceptable and feasible intervention to bring organizations together as a community of practice to develop, disseminate, and adopt vital initiatives for EHE.

Differences in the incidence of statin initiation in the Multicenter AIDS Cohort Study and Women's Interagency HIV Study by sociodemographic, clinical, and behavioral characteristics, 2014-2018

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Abstract Content Areas: Co-morbidities (Cardiovascular disease); Aging with HIV Across the Lifespan

Background: To improve cardiovascular disease (CVD) prevention and management among aging people with HIV (PWH) in the US, it is critical to examine gaps in timely initiation of statin therapy.

Methods: We followed 1694 Multicenter AIDS Cohort Study (MACS – men) and Women's Interagency HIV Study (WIHS – women) participants with or at risk for HIV from their first indication for statin therapy between 2014-2018 until statin initiation, death, or administrative censoring at 2 years. Using the Aalen-Johansen estimator and accounting for the competing risk of death, we estimated 2-year cumulative incidence of statin initiation stratified by demographic, clinical, and behavioral characteristics. We compared stratum-specific estimates using incidence differences and obtained 95% confidence intervals (CIs) using the delta method to estimate standard errors.

Results: Within 2 years of treatment indication, only 20% of participants initiated statins and 45 deaths occurred among non-initiators (2-year mortality risk: 1.4% in MACS & 3.8% in WIHS). Incidence of statin initiation was markedly lower among Black vs non-Black participants, especially in the MACS (Black: 14% vs non-Black: 22%; difference: -8.3%; 95% CI: -13.8, -2.8). The incidence of statin initiation was also substantially lower among those whose treatment indication was a 10-year estimated atherosclerotic CVD risk ≥7.5 (MACS: 14% & WIHS: 15%) compared to those whose treatment indication was a history of clinical CVD (MACS: 33% & WIHS: 22%) or diabetes (MACS: 26% & WIHS: 24%). See table for incidence differences and 95% CIs. Statin initiation was higher among those with clinical risk factors for CVD including obesity (e.g., in WIHS, obese: 24% vs non-obese: 16%) or hypertension (in MACS: 23% vs no hypertension: 15%). Yet initiation was lower among those with CVD risk-enhancing behaviors such as smoking (MACS: 16% vs no current smoking: 22%) or illicit drug use (MACS: 11% vs no illicit drug use: 20%).

Conclusions: Statin therapy remains an extremely underutilized intervention in the MACS and WIHS with greater inequities by race and differences by clinical and behavioral risk factors. Better understanding and addressing barriers to timely statin initiation is necessary to reduce CVD morbidity and mortality. As even more PWH are expected to be indicated for statin use based on findings of the REPRIEVE trial, continued assessment is crucial to informing best practices for guideline implementation.

Cumulative incidence (95% confidence interval) of statin initiation among 842 Multicenter AIDS Cohort Study and 852 Women's Interagency HIV Study participants two years after statin treatment indication, 2014-2018 [a]

Characteristic	Multicenter AIDS Cohort Study		Women's Interagency HIV Study	
	Two-Year Incidence (%)	Incidence Difference (%)	Two-Year Incidence (%)	Incidence Difference (%)
Overall	19.6 (17.1, 22.5)		20.6 (17.7, 24.0)	
HIV status				
HIV-seronegative	17.8 (14.9, 20.8)	0.0	24.1 (19.4, 28.8)	0.0
HIV-seropositive	21.4 (17.9, 24.9)	3.6 (-0.9, 8.2)	19.1 (15.7, 22.5)	-5.0 (-10.8, 0.8)
Race				
Non-Black	22.3 (18.9, 25.7)	0.0	23.7 (17.9, 29.5)	0.0
Black	14.0 (9.7, 18.2)	-8.3 (-13.8, -2.8)	19.8 (16.8, 22.8)	-3.8 (-10.4, 2.7)
Body mass index [b]				
<30 kg/m^2	17.2 (13.9, 20.4)	0.0	16.0 (12.5, 19.5)	0.0
≥ 30 kg/m^2	27.1 (21.0, 33.1)	9.9 (3.0, 16.7)	24.4 (20.1, 28.8)	8.4 (2.8, 14.0)
Hypertension				
No hypertension	15.1 (11.4, 18.9)	0.0	17.2 (12.4, 21.9)	0.0
Hypertension	22.8 (19.0, 26.6)	7.7 (2.3, 13.0)	22.0 (18.6, 25.3)	4.8 (-1.0, 10.6)
Smoking status				
No current smoking	21.5 (18.5, 24.6)	0.0	22.6 (18.1, 27.2)	0.0
Current smoking	15.6 (11.1, 20.2)	-5.9 (-11.3, -0.4)	18.8 (14.9, 22.6)	-3.9 (-9.8, 2.1)
Illicit drug use [c]				
No	19.8 (17.4, 22.2)	0.0	21.1 (17.9, 24.2)	0.0
Yes	11.2 (5.0, 17.5)	-8.6 (-15.3, -1.8)	16.4 (8.7, 24.2)	-4.6 (-12.9, 3.7)
Alcohol consumption				
No binge drinking	19.3 (16.5, 22.0)	0.0	21.5 (18.6, 24.3)	0.0
Binge drinking	13.9 (5.4, 22.3)	-5.4 (-14.3, 3.5)	13.7 (7.0, 20.5)	-7.7 (-15.1, -0.4)
Statin treatment indication [d]				
ASCVD risk $\geq 7.5\%$	14.2 (11.6, 16.9)	0.0	15.2 (11.1, 19.4)	0.0
Diabetes	26.4 (20.0, 32.7)	12.1 (5.2, 19.0)	24.5 (20.1, 28.8)	9.2 (3.2, 15.2)
History of clinical CVD	32.9 (24.5, 41.4)	18.7 (9.8, 27.5)	22.0 (17.3, 26.8)	6.8 (0.5, 13.1)

[a] Treatment indication is based on the 2013 American College of Cardiology (ACC) and American Heart Association (AHA) Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults where statin treatment is recommended for secondary prevention in those who have clinical atherosclerotic cardiovascular disease and statin treatment is recommended for primary prevention in those who 1) have elevated low-density lipoprotein-C ≥ 190 mg/dL, 2) are between 40-75 years and have diabetes, or 3) are between 40-75 years and have an estimated 10-year atherosclerotic risk $\geq 7.5\%$. Statin-eligible participants include those who had one of the above indications at the time guidelines were released and were not already on a statin as well as participants who developed an indication between 2014 and 2018.

[b] Body mass index ≥ 30 kg/m^2 is defined as obese.

[c] Illicit drug use is defined as current use of cocaine, heroin, opiates, or injection drugs.

[d] Those indicated for statins based on elevated low-density lipoprotein-C ≥ 190 mg/dL are excluded due to small sample size (MACS: n=30; WIHS: n=38).

PrEP uptake and methamphetamine use patterns in a U.S. national prospective cohort study of sexual and gender minority populations, 2017 - 2022

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Background: Methamphetamine (meth) use is increasing in sexual and gender minority (SGM) communities, leading to increased HIV risk. While pre-exposure prophylaxis (PrEP) is an effective biomedical HIV prevention tool, no studies have investigated the link between meth use patterns and PrEP uptake in SGM populations.

Methods: From 2017-2022, a U.S. national cohort of 6,253 HIV-negative cismen and transgender people who had sex with men, clinically indicated for PrEP but *not* using PrEP, were enrolled, and followed annually for four years. Meth use patterns were categorized as no use, quitting, initiation, or persistent use in past two years. We examined PrEP usage and its longitudinal association using generalized estimating equation (GEE) models, weighted by inverse-probability-of-censoring to account for attrition.

Results: Baseline demographics showed a median age of 29.0 (IQR: 25.0-36.0) years, with 51.9% being white, 11.1% Black, 24.5% Latino/x, and 12.5% other race/ethnicity. The annual rates of PrEP uptake at 12, 24, 36, and 48 months were 16.3%, 19.6%, 23.3%, and 27.2%, respectively. Multivariable GEE models analyzed 16,949 person-years and identified time-varying risk factors of PrEP usage, including past-year housing instability (adjusted odds ratio [aOR] 0.80, 95% CI 0.68-0.95) and food insecurity (0.84, 0.77-0.92). Conversely, factors associated with PrEP usage were older age (1.02, 1.02-1.03), health insurance (2.03, 1.81-2.28), clinical indication for PrEP (1.79, 1.63-1.97), and a history of prior PrEP usage (1.91, 1.66-2.21). Latino/x (1.22, 1.06-1.41) participants were more likely to use PrEP than whites. Meth use patterns also influenced PrEP usage, with those who quit meth being less likely to use PrEP (0.77, 0.66-0.89), those who initiated meth more likely to use PrEP (1.40, 1.10-1.79), and those who persistently used meth equal likely to use PrEP (0.86, 0.71-1.04).

Conclusions: Despite increased PrEP uptake over time, usage remained low among SGM individuals clinically indicated for PrEP at enrollment. Meth use patterns significantly affected PrEP usage. Healthcare providers working with SGM individuals for HIV testing or providing PrEP care should assess meth use and make appropriate referrals for harm reduction in sexual behavior and drug use. Interventions addressing basic needs (e.g., food, housing) and targeting young, uninsured SGM individuals, and PrEP naïve individuals may enhance PrEP usage and reduce HIV infections.

Table 1. Multivariable, observation-weighted GEE model results for PrEP use among sexual and gender minority individuals in a U.S.-based longitudinal cohort, *Together 5,000*, 2017-2022.

Predictors	Adjusted Odds Ratios	95% CI	*P* value
bs(age)1	23.93	9.17-62.45	**<0.001**
bs(age)2	2.06	1.32-3.21	**0.001**
bs(age)3	8.48	4.71-15.26	**<0.001**
Racial/ethnic minority vs. non-Hispanic White			
Non-Hispanic Black	1.08	0.88-1.33	0.444
Hispanic/Latino	1.22	1.06-1.41	**0.004**
Other	1.15	0.96-1.37	0.122
Food insecure vs. food secure	0.84	0.77-0.92	**<0.001**
Instable vs. stable housing	0.80	0.68-0.95	**0.010**
Clinically indicated vs. not indicated for PrEP	1.79	1.63-1.97	**<0.001**
Had health insurance vs. no health insurance	2.03	1.81-2.28	**<0.001**
Had vs. no PrEP use history	1.91	1.66-2.21	**<0.001**
Methamphetamine use vs. non-methamphetamine use in past two years			
Quit methamphetamine	0.77	0.66-0.89	**<0.001**
Initiated methamphetamine	1.40	1.10-1.79	**0.007**
Persistently used methamphetamine	0.86	0.71-1.04	0.131

Note: "GEE" refers to generalized estimating equation; CI refers to confidence interval. 4,942 participants were included in the analysis with 16,949 person-years. The results are weighted with inverse probability of censoring weighting. GEE model assumes an exchangeable working correlation structure. We modeled age using restricted cubic splines with three knots to allow for a non-linear relationship.

EARLY-STAGE INVESTIGATORS' ABSTRACTS

IMPLEMENTATION SCIENCE:

B-OK Bead bottles: A Visual and Tactile Tool as an Implementation Strategy to Support HIV Treatment Adherence Support by Medical Case Managers in a US Urban Center

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Background:
Treatment adherence support (TAS) by medical case managers (MCMs) is an evidence-based practice, but effectiveness may be constrained by limited understanding the benefits of ART among people living with HIV (PLWH), particularly the concepts of treatment as prevention and Undetectable=Untransmittable (U=U).

Methods:
We conducted a Hybrid Type 3 effectiveness-implementation study to evaluate a visual and tactile tool, the B-OK Bead Bottles ("B-OK"), as an implementation strategy for TAS by MCMs in Philadelphia. B-OK is designed to correct mental models about HIV disease progression and transmission. We assessed implementation outcomes of acceptability, feasibility, and appropriateness among MCMs and PLWH; and effectiveness outcomes of changes in awareness, knowledge, attitudes, intentions, and perspectives about HIV treatment and prevention among PLWH after B-OK exposure. We conducted MCM focus groups and enrolled PLWH who were clients of MCMs at four agencies. All PLWH participants completed the B-OK intervention and pre- and post-intervention surveys. A subset of PLWH also completed individual interviews. The study was approved by the UPenn IRB.

Results:
During focus groups, MCMs found B-OK to be highly acceptable and feasible, and that it would be appropriate as a conversation starter, especially for PLWH who were newly diagnosed, not virally suppressed, or spoke English as a second language. We enrolled 118 PLWH with a median age of 55 years (IQR 47-60). About 2/3 of participants were male sex (N=77, 65%), nearly 3/4 identified as non-Hispanic Black (N=85, 72%), and almost all reported receiving ART (N=116, 98%). For effectiveness outcomes, B-OK was associated with improved awareness and understanding of HIV, changes in attitudes about HIV treatment, and increased intention to rely on HIV treatment for transmission prevention (Table). Qualitative results aligned with the quantitative findings as respondents expressed a better understanding of U=U and felt that B-OK clearly explained concepts of HIV treatment and prevention. Individual PLWH interviews (N=52) demonstrated high degrees of B-OK acceptability and feasibility, and appropriateness for use by MCMs during TAS — these matched exceptionally high scores on quantitative implementation scales.

Conclusions:
These findings provide a strong justification to further evaluate the effectiveness of B-OK bottles in improving TAS and clinical outcomes among PLWH.

PrEP Navigator Perceptions of the Impact of the COVID-19 Pandemic and the Implementation of Injectable PrEP on HIV Prevention in Tennessee

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Funding: This work was funded by the NIH-funded Tennessee Center for AIDS Research (P30 AI110527)

Background: Tennessee is in the southern region of the United States, accounting for more than half of annual HIV incidence and significant unmet need for HIV pre-exposure prophylaxis (PrEP). While research has focused on PrEP provision by clinicians and potential PrEP clients, relatively little research has focused on the essential bridge between these two groups: PrEP navigators. This study examined how PrEP navigators adapted their approaches to navigation during the COVID-19 pandemic and perceptions of implementation of long-acting injectable (LAI) PrEP in Tennessee.

Methods: PrEP navigators, dedicated to supporting and connecting with potential PrEP clients, completed a semi-structured interview. Interviews were audio-recorded and professionally transcribed. A hierarchical coding system was developed using the interview guide, and preliminary review of transcripts. Coded transcripts were aggregated, sorted, and analyzed using an iterative inductive/deductive qualitative approach.

Results: Seven navigators participated in the interviews. The pandemic had a major effect on navigators' approaches to promoting PrEP. Telemedicine was a helpful alternative to in-person visits and continued post pandemic. As outreach shifted to a virtual platform during the pandemic, outreach efficacy was dramatically impaired, reducing PrEP support and interest. Most navigators initially had limited training, knowledge, and experience with LAI PrEP, yet identified the positive impact it could have for marginalized populations such as individuals injecting substances and/or experiencing unstable housing. Navigators reported systemic barriers associated with accessibility to LAI PrEP such as health insurance, pharmaceutical, and cost policies. Current navigation approaches need to be further adapted for LAI PrEP to address systemic barriers and to enhance navigators' confidence. While navigators noted the continued support of the Tennessee Department of Health, strategies about circumventing structural barriers are needed for universal implementation of LAI PrEP.

Conclusions: HIV PrEP navigators see value in integrating some changes such as telemedicine made during the COVID-19 pandemic into their current approach. Navigators see potential value in injectable PrEP, especially for communities experiencing increased HIV risk, but navigators are uncertain of the feasibility of universally implementing injectable PrEP until multi-level barriers can be addressed.

"The best community work is done not TO but FOR a community": Development of a Community-based HIV Pre-Exposure Prophylaxis Service Delivery Intervention for Black Adults in Washington, DC

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Background: HIV incidence is high, but PrEP initiation is extremely low among Black adults in DC. We conducted a formative assessment to guide the development of a community-based PrEP (cbPrEP) service delivery intervention for Black adults in DC,.

Methods: We conducted in-depth interviews (IDIs) with PrEP program managers from community-based organizations (CBOs) (n=8), DC and Prince George's County (an adjacent suburban county) health departments (n=2), PrEP clinical and non-clinical providers (n=4), Black current PrEP users (n=5) and Black potential PrEP users (i.e., those who recently HIV tested but not taking PrEP; n=4). Interview guides were based on the Consolidated Framework for Implementation Research to inform the development and implementation of cbPrEP. Interviews were transcribed and analyzed manually following a thematic content analysis.

Results: Across all participant types, participants were enthusiastic about cbPrEP. Key barriers to address that were specific to a cbPrEP program can be categorized into issues related to accessibility, staff cultural competency, services offered, informational needs, and physical features. Accessibility: Participants indicated the importance of having services available during non-traditional hours and days (i.e., evenings and weekends). Cultural competency: cbPrEP intervention must be operated by people who look and talk like the people it is serving. Especially given that PrEP is meant for very diverse groups of people, staff must be look like them, and if not, must be able to relate as if they are part of the community they are serving. Services offered: Several participants mentioned the importance of providing other services besides HIV services (e.g., primary care services, STI testing). Informational needs: It will be important to provide information on costs and insurance (and help with insurance navigation) and how to receive PrEP as an ongoing service in the community. Physical features: Service provision through mobile vans/tents was acceptable to community members and providers as many of the potential beneficiaries are used to pop-up/mobile services. Participants also mentioned the importance of addressing stigma around PrEP and the misconception that PrEP is only for gay men.

Conclusions: cbPrEP can be acceptable to stakeholders and Black adults in the DC area. The community-based PrEP intervention will need to consider specific design issues in order to ensure acceptance of the intervention.

PrEPárate: Evaluation of a Community-Driven PrEP Social Marketing Campaign Tailored to Latino/a/x Individuals

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Funding Source: EHE Administrative Supplement Award; 5P30AI117943-08

Background: Latino/a/x men who have sex with men (MSM) and transgender women (TW) remain disproportionately impacted by HIV, with significantly higher rates of HIV infection and lower uptake of pre-exposure prophylaxis (PrEP) than their non-Hispanic white peers. Disparities in PrEP uptake among Latino/a/x populations have been found to be driven by structural, social, and personal barriers. Social marketing interventions have been shown to effectively address barriers to PrEP and increase PrEP uptake in other populations, and thus offer potential as a tool to increase PrEP uptake for Latino/a/x populations.

Methods: We adapted the PrEPárate campaign from the PrEP4Love campaign (which was largely for black Chicagoans) and tailored it for Latino/a/x populations through community based participatory research. Key community engagement strategies to identify best practices for a Latino/a/x-centered campaign included: partnership with the Chicago Queer Latinx (CQL) Collaborative, focus groups, and crowdsourcing over social media. The PrEPárate campaign ran from April to September 2022 in Cook County, Illinois. We evaluated this pilot intervention using a mixed methods approach of cross-sectional surveys (N=376) and semi-structured interviews with community partners, MSM, and TW (N=16). We tested for associations of campaign exposure with PrEP awareness and PrEP uptake in covariate-adjusted multivariable regression models. We used rapid qualitative methods to analyze interview transcripts and assess implementation outcomes using the RE-AIM framework.

Results: The campaign reached over 118,000 people on social media, with additional reach over public transit. PrEPárate exposure was associated with increased PrEP awareness (aOR= 5.27; 95% CI = (2.14, 12.98) and PrEP uptake (aOR= 2.07; 95% CI = (1.29, 3.31). Qualitative analysis found the campaign to be acceptable, appropriate, and implemented with fidelity; future directions for PrEPárate include expanding adoption and focusing on stigma reduction.

Conclusions: Social marketing campaigns can be an effective strategy to increase PrEP awareness and PrEP uptake among underserved Latino/a/x MSM and TW. Community engagement is essential to the development of tailored, acceptable and appropriate interventions.

Title	Sexually transmitted infection testing integrated with HIV prevention and contraceptive services in hair salons in urban South Africa	
Authors	Jana Jarolimova*1, Joyce Yan1, Sabina Govere2, Sthabile Shezi2, Lungile M. Ngcobo2, Shruti Sagar1, Dani Zionts1, Nduduzo Dube2, Robert A. Parker1, Ingrid V. Bassett1	Affiliations: 1 Massachusetts General Hospital, Boston, MA 2 AIDS Healthcare Foundation, Durban, South Africa
Background	Curable sexually transmitted infections (STIs) increase HIV transmission and acquisition and cause morbidity for women, yet access to STI testing is limited for women at risk for HIV and STIs in sub-Saharan Africa. Offering STI care in novel community-based venues may address barriers to access. We are evaluating the implementation of STI testing integrated with HIV prevention and contraceptive services in hair salons in urban KwaZulu-Natal, South Africa.	Methods Women accessing oral HIV pre-exposure prophylaxis (PrEP) or hormonal contraception in hair salons in an ongoing study are offered testing for four curable STIs. Self-collected vaginal swabs are tested by polymerase chain reaction for gonorrhea, chlamydia, and trichomoniasis. Fingerstick blood is tested by non-treponemal and treponemal assays for syphilis. Participants with positive results are offered treatment at the salon or local clinic. Demographics, STI history, symptoms, risk factors, and risk perception are collected using structured questionnaires.
Results	Currently, we have enrolled 112 women taking either PrEP or contraceptives (or both) in the hair salons, with median age 26 years [IQR 23-29]. Fifty of 102 participants (49%) reported a primary partner ≥5y older and 52/81 (64%) reported never using condoms in the preceding month. Nineteen participants (17%) reported current STI symptoms, and 21/104 (20%) reported being treated for an STI in the past year. Twenty-nine	participants (26%) perceived having a 'moderate' or 'great' chance of acquiring an STI within the next year, and 21/89 (24%) felt they had a 'moderate' or 'great' chance of acquiring HIV within the next year. Among the 112 eligible participants, 108 (96%) accepted STI testing: 104 (93%) provided vaginal swabs and fingerstick blood and four (4%) provided blood only. Among 103 participants with complete results, 37 (36%) had at least one STI: 9/103 (9%) gonorrhea, 24/103 (23%) chlamydia, 2/103 (2%) trichomoniasis, and 9/103 (9%) syphilis. The majority (30/37, 81%) with an STI were asymptomatic. Of the 37 participants with STIs, 34 (92%) elected to receive treatment in the salons.
Conclusions	STI testing in hair salons in urban South Africa is acceptable, reaches women with risk factors for STIs and HIV, and reveals a high prevalence of mostly asymptomatic STIs. Hair salons may serve as novel venues to increase the reach of STI testing to women at risk for HIV and STIs.	

Understanding mechanisms of change in the implementation of a multi-component intervention to improve person-centeredness of HIV care in Zambia

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Introduction

Improving the person-centeredness of HIV care (PCC) is critical to long-term success in HIV; however, how to successfully implement PCC is an area of ongoing scientific investigation. How strategies (e.g., facilitation) work has direct implications for generalizing and adapting such strategies to improve practice. We trialed a theory-driven, multicomponent intervention including training, mentorship, patient experience data, and clinic incentives to improve PCC in HIV care in 24 public health facilities in Lusaka, Zambia. We conducted a concurrent, longitudinal mixed-methods assessment of the mechanisms through which the intervention influenced PCC behaviors and outcomes.

Methods

Conducted from February 2020-November 2021, our concurrent evaluation included twelve focus group discussions with healthcare workers (n=58), twenty-five repeat in-depth interviews with intervention mentors (n=6), 480 recordings of patient-provider consultations, ethnographic field notes collected from 24 training synthesis meetings and 120 data review meetings. We applied thematic content analysis to transcripts and notes to identify mechanisms of change. We triangulated findings with quantitative implementation data from mentorship logs and healthcare worker surveys, and results of the pilot study human-centered design workshop. Using a realist framework of sense-making, we then utilized dialogue-based systematic comparison of findings to the study theory of change to represent key contexts and mechanisms that advanced PCC.

Results

Trainings and mentorship provided a normative basis for implementing PCC, offering healthcare workers (HCWs) shared concepts and language promoting and supporting PCC behaviors. They also enabled the HCW teamwork necessary to act on PCC principles. HCWs expressed feeling valued, motivated, and encouraged by mentors. Enactment of PCC catalyzed positive patient-to-provider feedback cycles, where providers felt supported by positive patient engagement and voiced appreciation for HCW work. Data review, facility-based prioritization of change priorities and incentives led to service delivery changes (e.g., reduce labs lost). Providers leveraged discretionary choices (e.g., appointment scheduling) and improved communication within clinical encounters to improve PCC. Critically, facility leadership buy-in was a key contextual factor for success.

Conclusions

Organizational-level factors meaningfully contributed to implementing PCC practices. Future interventions should address organizational culture and teamwork, normalization of PCC, and support provider-led identification of system flexibility and priorities for sustainable PCC improvements.

Equity-Focused Implementation Mapping to Improve PrEP Uptake and Maintenance among Latines

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Funding Source: National Institute of Allergy and Infectious Disease, EHE Supplement to 5P30-AI064518-18 (Duke CFAR)

Background: Despite the benefits of pre-exposure prophylaxis (PrEP) for HIV, Latine (a gender-neutral term for individuals with Latin American heritage) individuals are less likely than the general population to be prescribed PrEP due to structural, community-level, and individual barriers. Community-generated, health equity-focused PrEP implementation strategies designed for Latines are underutilized.

Methods: The central goal was to create an implementation blueprint to enhance the uptake and maintenance of PrEP among Latines in Mecklenburg County, NC. The research team included Duke faculty, staff, students, and experts from the Latino Commission on AIDS' Latinos in the South Program. The team formed a community workgroup, entitled ACCIÓN PrEP (Action Coalition to Champion ImplementatiON of PrEP for HIV Workgroup), consisting of constituents from key groups with expertise and lived experience. The 6-month process used the following principles: equity and power-sharing, implementation mapping methodology, and active workshop techniques.

Results: The ACCIÓN PrEP workgroup included individuals aged 18 to 64 from Black, Latinx, and Native American backgrounds, with diverse sexual orientations such as same-gender loving, heterosexual, bisexual, and pansexual. Over 6 months, the workgroup successfully met monthly and followed specific steps for implementation mapping. First, the workgroup identified PrEP implementation adopters and implementers. Next, they collaboratively pinpointed PrEP implementation determinants at the individual, community, and healthcare system levels and prioritized the most impactful determinants and assessed their feasibility for change. Subsequently, the workgroup brainstormed actionable implementation strategies to address these key determinants. The research/community team further refined and developed these strategies, which were eventually approved by consensus and detailed using best practice implementation science.

Conclusions: This study holds the potential to advance the scientific study of the intersection of health equity and implementation science. The main innovations revolve around the community-directed, equity-focused approach to implementation development, which combines rigorous implementation science methodology with community-engaged research best practices. Prospective steps will include a pilot test of the implementation blueprint, to be initiated in Fall 2023 in Mecklenburg County, NC.

EARLY-STAGE INVESTIGATORS' ABSTRACTS

SOCIAL, BEHAVIORAL, & PREVENTION:

Acceptability of long-acting injectable antiretroviral therapy among people living with HIV who use drugs and service providers

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Funding and disclosure of interest: This study was funded by the Boston/Providence Center for AIDS Research (P30AI042853) and the funding agency had no role in the project activities or interpretation of results. ABC is also partially supported by NIGMS (P20GM125507).

Background: Long-acting injectable antiretroviral therapy (LAI-ART) is a novel method to deliver HIV treatment and the first regimen was approved in the United States (US) in 2021. LAI-ART may mitigate barriers to oral ART adherence, but little is known about LAI-ART perceptions among structurally vulnerable people living with HIV (PLWH), including people who use drugs. PLWH who use drugs experience greater barriers to long-term treatment retention and ART adherence and therefore may benefit from LAI-ART. We assessed perceptions of LAI-ART among PLWH who use drugs and service providers.

Methods: Qualitative data were collected from November 2021 to September 2022 in Rhode Island. Data include in-depth interviews with 15 PLWH who use drugs recruited from an HIV clinic and community-based organizations. Additionally, two focus groups were conducted with HIV healthcare providers (n=8) and ancillary service providers (e.g., harm reduction and housing outreach workers) (n=5) who work with PLWH who use drugs. Data were analyzed thematically, with attention paid to how levels of structural vulnerability and social-structural environments of participants' daily lives shaped their perceptions of LAI-ART and HIV care.

Results: LAI-ART perceptions were framed by participants' levels of structural vulnerability and experiences with ART. Willingness to consider LAI-ART was shaped by HIV outcomes (e.g., viral suppression) and previous experiences with oral regimens, with those on stable regimens reluctant to consider alternative treatments. However, LAI-ART was perceived as a treatment that could improve HIV outcomes for PWH who use drugs, and enhance people's quality of life by reducing stress related to daily pill-taking. Recommendations for optimal implementation of LAI-ART varied across participants and included decentralized approaches to delivery to mitigate barriers.

Conclusion: HIV care delivery must consider the needs of people who use drugs. Developing patient-oriented and community-based delivery approaches to LAI-ART may address adherence challenges specific to PLWH who use drugs.

How will we know what does and does not reduce HIV-related stigmas in healthcare settings? A systematic review linking potential effectiveness to theory-based intervention types, techniques, and mechanisms of action

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Funding source: National Institute of Mental Health (P30 MH43520 31S1 and K23 MH124569)

Background: HIV stigma interventions vary widely and often lack an articulation of theory, making it hard to synthesize their effects across studies. A coherent understanding requires an explicit characterization of the constructs being evaluated in each study and how these constructs relate to one another across studies. Such an ontological characterization would advance our ability to discern effectiveness based on the theoretical underpinnings of interventions, accelerating stigma reduction.

Methods: This community-driven systematic review involved consumers, HIV organizations, health departments, and researchers to explicate the intervention components of 28 studies published by April 2021 that evaluated stigma interventions in United States healthcare settings. We used a transtheoretical ontology from the Human Behaviour Change Project to code the intervention components of each study based on 9 intervention types, 93 behavior change techniques, and 26 mechanisms of action. We then calculated potential effectiveness, defined as the number of articles reporting significant effects out of all articles coded as having studied each intervention type, technique and mechanism. We evaluated study quality with a 10-item measure.

Results: Among the 9 highest-quality studies, indicated by the use of an experimental design, the intervention type with the highest potential effectiveness was “Persuasion” (i.e., using communication to induce emotions and/or stimulate action; 66.7%, 4/6 studies). The highest potentially effective behavior change techniques were “Behavioral practice/rehearsal” (i.e., to increase habit and skill) and “Salience of consequences” (i.e., to make consequences of behavior more memorable; each 100%, 3/3 studies). The highest potentially effective mechanisms of action were “Knowledge” (i.e., awareness) and “Beliefs about capabilities” (i.e., self-efficacy; each 67%, 2/3 studies).

Conclusions: Applying a transtheoretical ontology to peer-reviewed studies allowed us to see which components of interventions have more or less potential to mitigate HIV-related stigma. Further assessment of how studies combined different intervention types and techniques within their overall strategies would advance our ability to distinguish more precisely what does and does not work to shift specific mechanisms of action. Our findings can be used to select and evaluate theory-based components of interventions, including for existing community-driven approaches.

Individual and Structural Level Barriers to Sustained Care Engagement and ART Adherence Among Black Sexual Minority Men Living with HIV in the US South

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This research reported was supported by a Developmental Grant (PI: Campbell) from the San Diego Center for AIDS Research (NIAID P30 AI036214).

Background: Young Black sexual minority men (YBSMM) continue to bear a disproportionate burden of HIV infections nationally, and also specifically in the Deep South, a region with the highest incidence of HIV and AIDS in the United States. HIV transmissibility in communities and networks is heightened by suboptimal viral suppression, which hinges on ART adherence and sustained retention in HIV care. We sought to elucidate individual and structural challenges to sustained care engagement among YBSMM+ in the Deep South.

Methods: We conducted in-depth qualitative interviews with 25 YBSMM+, each lasting 60 minutes on average. Participants with varying levels of HIV care engagement were purposively recruited from an ongoing cohort study focused on syndemic conditions (e.g., substance use, mental health burdens, intimate partner violence, financial hardship, stigma, etc.), care engagement, and ART adherence. Interviews were audio recorded, transcribed, and analyzed using a thematic analysis approach.

Results: At the individual level, some participants described how depression or grief made it more challenging to manage their HIV care. Others described how heavy substance use led to missed doses of ART. Structural factors included a lack of healthcare services in more rural areas and lack of reliable transportation. HIV stigma led some to forego medications to conceal their HIV status from friends and family. Lastly, some described medical system-specific barriers, including struggling to navigate the healthcare system, long and burdensome intake processes to initiate or reinitiate HIV care, and running out of medication because of inconsistent insurance coverage or unstable housing. Importantly, several participants described facing multiple barriers simultaneously at the individual and structural levels.

Conclusions: These findings highlight that YBSMM+ experience multilevel simultaneous and overlapping barriers to sustained HIV care engagement. Interventions addressing individual and structural challenges could improve overall well-being and HIV care engagement for YBSMM+ in the US South.

"I am scared that we are going down the same path as the HIV/AIDS crisis in the 90s" - a thematic analysis of online posts on mpox on Reddit among key populations

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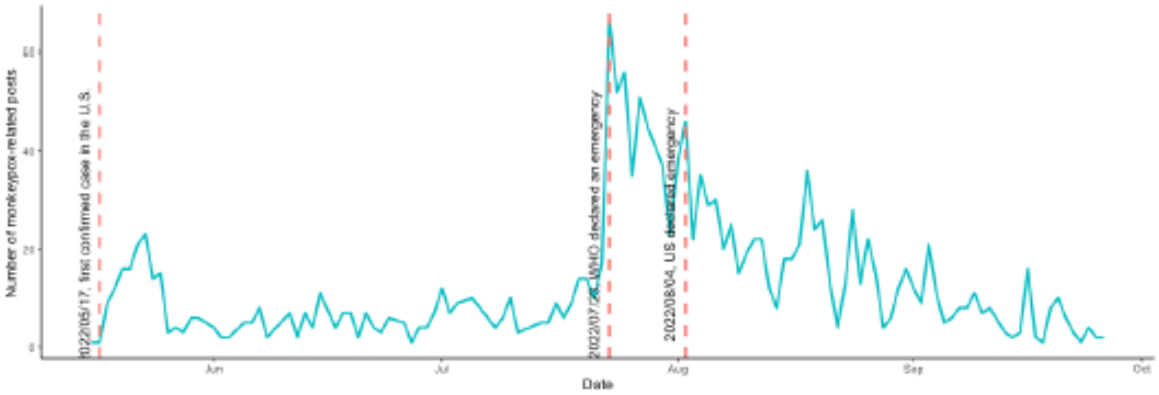
Background
The recent mpox outbreak has disproportionately impacted sexual minority men (SMM). Yet, little is known about how the community has responded and their attitude toward the outbreak. This analysis aimed to analyze social media data related to mpox on Reddit since the global mpox outbreak and identify themes associated with the impact of the outbreak on social behaviors and social processes among targeted population including SMM on this popular social media platform.

Methods
Publicly available data were collected from the social media forum Reddit using Reddit and Pushchift.io's application program interfaces (API). We extracted the summarized mpox-related posts since the beginning of May 2022 from six subreddits that were popular among SMM. We described the trend of daily mpox-related posts on these subreddits since May and thematically analyzed the content to identify the overall themes related to the SMM responses to the recent mpox outbreak.

Results
A total of 809 posts were identified through an initial search, and n=705 were related to the recent mpox outbreak and therefore were included in the final analysis. There is an overall increase in the number of daily mpox-related posts, with three upticks in late May, late July, and early August, which may correspond to the dates that the first mpox case was identified in the U.S., the World Health Organization declared a global public health emergency, and the U.S. Department of Health and Human Services declared a public health emergency. Four themes were identified: (1) changes in sexual behaviors and social activities, (2) mpox vaccine attitude, uptake, and hesitancy, (3) perceived and experienced stigma and homophobia, and mental distress associated with the HIV/AIDS epidemic, (4) online information-seeking and mutual aid & support.

Conclusion
During the recent global mpox outbreak, SMM changed their sexual behaviors and social activities to mitigate their exposure to the virus, including reducing the number of sexual partners and encounters and avoiding attending social venues. SMM actively sought and shared information about mpox vaccination in their respective settings, while some others were hesitant due to concerns about side effects and potential effectiveness. Perceived and experienced stigma and discrimination on gay- and same sex-identify has impacted SMM's mental health. During this unprecedented time, SMM engaged in mutual aid, provided social support, and shared resources on an anonymous social media forum, suggesting the potential to deliver public health intervention and disseminate health education through online platforms. Interventions to promote the mpox vaccine must address the historical medical mistrust and vaccine hesitancy among SMM

Table 1. Trend of daily mpox-related posts on several subreddits since May 2022 and example posts



Code description	n^1	Example post[2]
Changes in sexual behaviors and social activities	*n=151*	*"I have kept myself from hooking up because of mpox. I haven't been sleeping around in a while..."* *"I wanted to be safe, so I am not into dating someone or hooking up right now, given the COVID and monkeypox situation..."* *"No, I won't be attending the bathhouse. Being potentially exposed the pox? No thanks..."*
mpox vaccine attitude, uptake, and hesitancy	*n=179*	*"I think I am at high risk than a lot of people. I want to be vaccinated..."* *"Got mine last week. Felt totally fine Friday but started to have some side effect on Saturday, I was sore all over and had a splitting headache that lasted all weekend."* *"I am so grateful for the opportunity to get vaccinated. Thanks for the public health staff at the city of XXX..."* *"Does anyone know if there are several side efforts of the vaccine and any potential risks?"*
Online information-seeking and mutual aid & support	*n=219*	*"I have a bf and we are open. Both of us are on PrEP. Are we eligible for the vaccine?"* *"How do you find your sexual partners? Are you still going to the bars and clubs?"* *"It seems like the Public Health is offering sexually active gay men to get vaccinated against mpox. And given the case numbers are rising. Will you have the vaccine if it was available in your area?*
Perceived and experienced stigma and homophobia, and mental distress associated with the HIV/AIDS epidemic	*n=158*	*"Anyone else getting tired of being blamed for HIV and Monkeypox for being gay?"* *"For God's sake, monkeypox is not a gay disease. Learn more!"* *"I am so depressed right now. I know I shouldn't, but these are the times that I wish I was not gay"* *"I am very concerned that we are going down the same pathway as the HIV/AIDS crisis of the 80s and 90s."*

[1] Total n does not add to 100% given that some posts contain more than one theme, and some were general mentions of mpox.
[2] posts were rephrased and altered.

HIV pre-exposure prophylaxis (PrEP) program preferences among sexually active HIV-negative transgender and gender diverse adults in the United States: A conjoint analysis

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Funding source: This research was supported by a grant from the Penn Center for AIDS Research (CFAR), which is funded by the National Institute of Allergy and Infectious Diseases under award number P30-AI-045008.

Background: Current implementation efforts have failed to achieve equitable HIV pre-exposure prophylaxis (PrEP) delivery for transgender and gender-diverse (trans) populations. We examined PrEP program preferences among trans adults in the U.S.

Methods: Between April and June 2022, an online conjoint analysis experiment was conducted among 304 trans adults to assess the following PrEP program attributes: out-of-pocket cost; dispensing venue; frequency of visits for PrEP-related care; travel time to PrEP provider; and ability to bundle with gender-affirming hormone therapy (GAHT) services. Hierarchical Bayes estimation and multinomial logistic regression were used to measure part-worth utility scores (regression coefficients) and characterize attribute importance, utility scores, and optimal program attributes by respondents' PrEP status.

Results: The median age was 24 years; 75% were assigned female sex at birth; 58% identified as White; 15% as Latinx/e; and 11% as Black. Half (54%) identified as transmasculine; 14% as transfeminine; and 32% as nonbinary. Cost had the highest *attribute importance score* (44.3%), and minimal cost-sharing ($0 out-of-pocket cost) most positively influenced the attribute importance of cost (*average conjoint part-worth utility coefficient* of 2.5 [95% CI 2.4 to 2.6]). In terms of *relative utility scores*, PrEP-experienced respondents preferred PrEP delivery within primary care settings (4.7), and PrEP-naïve respondents preferred dispensation from pharmacies (5.1). The *optimal PrEP program* had the following attributes: $0 out-of-pocket cost; bundled with GAHT services; 25 minutes of travel time; and visits every six months. However, the optimal PrEP program when stratified by PrEP status was located within primary care settings for PrEP-experienced respondents, while PrEP-naïve respondents preferred pharmacies.

Conclusions: Participants overwhelmingly preferred programs that offered PrEP services without cost sharing. Bolstering federal regulations to cover PrEP services and prioritizing state and national programs and policies to expand low-barrier PrEP provision is critical to achieving equitable PrEP care continuum outcomes. Community-engaged implementation and qualitative research studies conducted by and in close collaboration with trans community stakeholders and scientists are needed to develop implementation strategies that meet the needs and preferences related to PrEP service delivery for this diverse priority population.

Title: Integrating community-collected research data with electronic medical records and mortality data in a cohort of people who inject drugs in Baltimore.

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Background: People Who Inject Drugs (PWID) experience numerous drug-related harms, including HIV and HCV acquisition and overdose. Indeed, overdose risk is a major public threat especially in the era of widespread fentanyl availability. PWID frequently utilize the emergency department (ED) to receive care making the ED a potential point of intervention to reduce overdose morbidity and mortality. However, little is known about co-occurring behavioral, social, or clinical factors not routinely collected in the ED, which could better inform ED discharge planning to prevent overdose death. The objective of this analysis was to describe the behavioral, social, and clinical factors that immediately preceded overdose death in a cohort of PWID in Baltimore seeking care in the ED.

Methods: We linked behavioral, mental health, HIV and HCV serological data collected from a community-based cohort of PWID participating in the AIDS Linked to the IntraVenous Experience (ALIVE) study with ICD-10 clinical data from the Chesapeake Regional Information System for our Patients (CRISP) health information exchange, and cause of death data from the National Death Index. We abstracted claims data from CRISP among ALIVE participants occurring within one year from drug overdose death. The outcome of interest was number of days from last ED discharge to overdose death. Descriptive statistics and Wilcoxon-rank sum tests were used to examine which factors were associated with shorter time to overdose death after ED discharge.

Results: From 2010-2020, 204 ALIVE participants died from overdose. Out of 185 participants who had available HIV serological data, 29% were living with HIV. There were 116 participants who had 535 ED encounters in the year prior to drug overdose death. Nearly one-fifth (17%) of all ED encounters were drug-related (e.g., opioid dependence, overdose), 15% were related to musculoskeletal pain, 11% were mental/behavioral health related, and 8% were related to trauma or injury. Among participants linked in CRISP with available ALIVE data, 77% were male and 65% identified as Black, and 27% were living with HIV. The median time to overdose death after last ED discharge was 68 days (interquartile range [IQR]: 14-141 days). We observed significantly reduced time from ED discharge to overdose death among those with major depression (CESD-10 >23) (median: 22 days, IQR: 4 – 83 days) compared to those without major depression (median: 86 days (IQR: 32 – 174 days), $p<0.01$) and participants reporting homelessness in the past year (median: 38 days (IQR: 13 – 113 days)) compared to not reporting recent homelessness (median 100 days (IQR: 43-174), $p<0.05$). No significant differences were found among participants living with and without HIV.

Conclusion: Data commonly collected in the community can be potentially useful in ED settings to better inform discharge planning and linkage to community-based services. Referral to mental health and social services, especially patients presenting with major depression and reporting homelessness, should be prioritized given the short median time to overdose death.

Gender Identity Stigma, the Neovaginal Microbiome, and HIV Risk in Transgender Women After Vaginoplasty

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Introduction

Gender-affirming vaginoplasty (GAV) is an important surgery for many transgender women (TW), yet it has not been studied with regard to HIV risk. Gender affirmation may reduce stigma and gender-based discrimination that drive increased HIV risk behaviors. However, the microbiome of the TW neovagina, typically made of penile skin, may introduce biological risk factors for HIV infection. This study aimed to evaluate the influence of gender-affirming vaginoplasty on stigma and the drivers of HIV-associated risk as well as to characterize the neovaginal microbiome after GAV.

Methods

Adult TW without HIV infection were recruited. Interviewer-administered surveys were used to assess demographics, gender identity stigma, psychosocial factors, importance of and satisfaction with gender affirmation, and HIV risk behaviors in TW who had either undergone gender-affirming vaginoplasty (TWV+) or who had not (TWV-). TWV+ underwent neovaginal and blood sample collection. Nugent scoring of >7 was used to determine the presence of bacterial vaginosis (BV). The neovaginal microbiome was assessed with 16S rRNA gene sequencing. Descriptive statistics, Fisher's exact tests and Wilcoxon rank-sum tests were used.

Results

Thirty TW (19-83 years old) participated (TWV+=10; TWV- =20). The majority were racial and ethnic minorities (n=25, 83%) and on gender-affirming hormone therapy (n=25, 83%). Gender identity stigma (38.0; 32.15, p=0.03), and social oppression (53.6; 39.4, p=0.05), were higher among TWV+ compared to TWV-. Present (n=8, 27%) and past (n=16,53%) survival sex work, multiple sex partners (n=16, 53%), and receptive condomless anal sex (n=10,33%) were reported but did not vary significantly between groups.

Among TWV+, mean serum estradiol level was 198 pmol/L. BV was detected in 9 (90%) . All neovaginal samples were comprised of predominantly anaerobic bacterial species. The relative abundance of *Lactobacillus* was very low (0.004%).

Conclusion

HIV risk behaviors and their underlying drivers, including gender identity stigma, are present after gender-affirming vaginoplasty and interventions to mitigate HIV risk are needed given the persistence of HIV risk behaviors even after GAV. The TW neovaginal microbiome is primarily composed of anaerobic species and lacked the ideal vaginal bacteria species *Lactobacillus*. Further study is critical to characterize the microenvironment of the neovagina and its implications for HIV risk in TW.

HIV prevalence and factors associated with HIV infection among people who smoke drugs in South Africa

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Background:
To fulfill the UNAIDS HIV 95-95-95 and the End TB 90-(90)-90 targets, it is critical to identify key populations who are most vulnerable, underserved, and at risk of both HIV and tuberculosis (TB). As we strive towards elimination, the last 5-10% are proving the most difficult to reach. People who smoke illicit drugs (PWSD) are highly marginalized and stigmatized complicating access to clinical care, delaying diagnosis, and increasing transmission. We assessed overall and newly diagnosed HIV prevalence, factors associated with HIV infection among PWSD, and TB incidence among PWSD with HIV.

Methods:
We analyzed data from the TOTAL (Transmission of tuberculosis among illicit drug use linkages) study, a respondent driven sampling (RDS) cohort in rural Worcester, South Africa. Participants had positive urine drug screens for methamphetamines and/or methaqualone, the most commonly smoked drugs in this community. TOTAL is designed to assess TB disease burden and evaluate physiologic characteristics of infectiousness in PWSD. RDS seeds were chosen from a TB cohort. All participants undergo HIV infection and TB disease testing, along with social network surveys and biobehavioral assessments. For subjects reporting no prior knowledge of their HIV positivity, confirmation was obtained via medical record review. Cohort characteristics were compared using chi-square or Kruskal-Wallis rank-based tests and RDS-adjusted HIV prevalence was calculated.

Results:
Among our cohort of PWSD, unadjusted and RDS-adjusted HIV prevalence was 18% (124/695) and 17.5% (95% CI 12.9-22.1) respectively. Of people living with HIV (PLWH), 32% (40/124) received this as a new diagnosis, with an RDS-adjusted undiagnosed HIV prevalence of 4.4% (95% CI 1.8-7.0). PLWH were less likely to be born male (54.8% vs 75.7%, $p<0.001$) and more likely to have a history of TB (45.2% vs 26.4%, $p<0.001$). 19.4% of PLWH were found to be co-infected with active TB at enrollment compared to 7.0% of those without HIV ($p<0.001$).

Conclusions:
While the modeling suggests that the Western Cape province is close to reaching its first 95-95-95 target with 94% of HIV cases diagnosed, over 30% of the HIV we identified was previously undiagnosed. Additionally, active TB was found in nearly 1 in 5 PLWH who smoke drugs. Community-based screening approaches similar to RDS provide a critical opportunity for transmission interruption for both HIV and TB in hard to reach groups such as PWSD.

Table: Characteristics of people living with and without HIV who smoke drugs (methamphetamines and/or methaqualone).

	Total (N=695)	PLWH (N=124)	No HIV (N=571)	p value
Median age, years (IQR)	33 (28, 39)	35 (30, 41)	33 (28, 39)	0.018
Born Male	500 (71.9%)	68 (54.8%)	432 (75.7%)	<0.001
High depression risk[A]	442 (63.6%)	72 (58.1%)	370 (64.8%)	0.158
Moderate to severe household hunger[B]	355 (51.1%)	67 (54.0%)	288 (50.4%)	0.468
Imprisoned, ever	448 (64.5%)	75 (60.5%)	373 (65.3%)	0.307
Median Network Size (IQR)[C]	20 (10, 50)	20 (10, 45)	20 (9, 50)	0.909
Injection drug use	4 (0.6%)	0 (0.0%)	4 (0.7%)	0.350
Median HIV Risk Total Score (IQR)[D]	5 (0, 6)	3 (0, 6)	5 (0, 6)	0.180
Sexually active	451 (64.9%)	79 (63.7%)	372 (65.1%)	0.761
History of TB	207 (29.8%)	56 (45.2%)	151 (26.4%)	< 0.001
Prevalent TB disease[E]	64 (9.2%)	24 (19.4%)	40 (7.0%)	< 0.001

Acronyms: PLWH people living with HIV; IQR interquartile range; TB tuberculosis.

[A] The Center for Epidemiologic Studies Depression Scale (CES-D)

[B] The Household Hunger Scale

[C] Number of people seen in the last month who use meth/Mandrax and are >15 years

[D] The HIV Risk-taking Behaviour Scale (HRBS)

[E] TB disease defined as culturable TB, currently on TB treatment, Xpert Ultra detected and no prior TB history, or Xpert trace and living with HIV