

INFORMATIONAL WEBINAR

PrEP Your Booty:

Investigating the safety and acceptability of a **tenofovir-based rectal douche** for HIV prevention in cisgender men and transgender women who have sex with men.

Thursday, August 29
9:00 a.m. – 10:30 a.m. ET

WELCOME



Rectal vs. Oral Use of
On-demand PrEP





HIV prevention research - a new forum
for advocacy on the latest

avac.org/project/choice-agenda



irma

international
rectal microbicide
advocates

2005 – 2020





Rectal Microbicides

WE NEED LESS SILENCE AND MORE SCIENCE

Men and Women Demand Rectal Microbicides.

The mission of IRMA (International Rectal Microbicide Advocates) is to advocate globally for accelerated research, development and access to safe, effective and acceptable rectal microbicides for the men and women who need them.

"Research ends up on dusty tables without advocacy"
 — Larene Oribiagbo, University College Hospital Ibadan (Nigeria) IRMA member

Click rectalmicrobicides.org, learn more, and join IRMA's efforts.



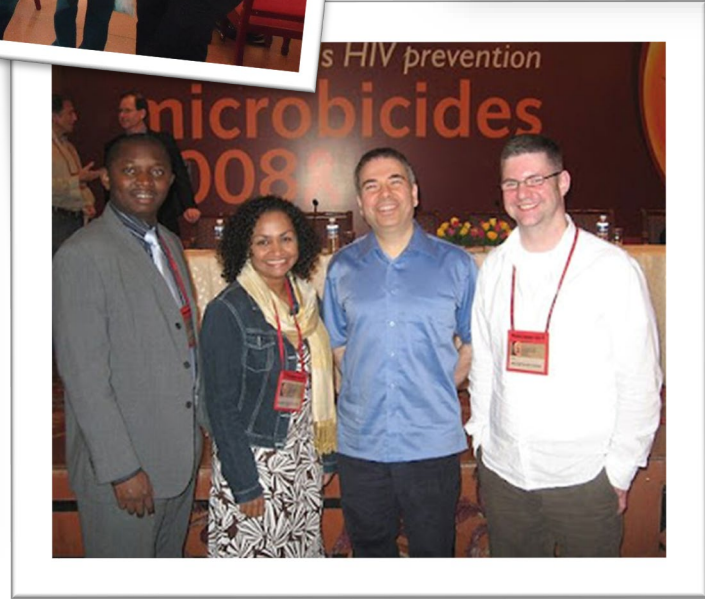
คำแนะนำสำหรับผู้ดำเนินการ

นำโครงการแห่งเจดทวารหนัก

ปฐมบทแห่งการวิจัยทางคลินิกเกี่ยวกับสารฆ่าเชื้อจุลินทรีย์ในทวารหนัก

นวัตกรรมแห่งเจดทวารหนัก ฉายาวันนี้

RECTAL DOUCHING AND ENEMA SURVEY



Manju Chatani
 IRMA Steering Committee
 African Microbicides Advocacy Group (Ghana)

"Rectal microbicides are an essential technology that could allow men and women to protect themselves, without fear, without shame, without taboo."

The Pleasure Principle:

AN EVOLUTION IN RECTAL MICROBICIDE RESEARCH



*Love me, hey yeah, love me yeah.
It's the pleasure principle.*
-From the Janet Jackson song,
[The Pleasure Principle](#)

Pop star Janet Jackson cooed about it in the 1980s. Sigmund Freud wrote about it much earlier as a driving force within our personalities. Pleasure, undeniably, has long played an essential role in our lives.

Yet, in the field of HIV prevention, there has been a reluctance to talk openly about pleasure and sex. For most of the past 40 years, our efforts focused on the prevention of HIV (a virus that is predominantly transmitted sexually) have largely dismissed the role of pleasure, or the act of sex itself. Especially in the context of anal sex.

Little to no consideration has been given to what people who engage in anal sex want or even desire in an HIV prevention product. It's been generally assumed that if a product is safe and protects against HIV, then surely people will use it.

Read the story of
rectal microbicide
research.



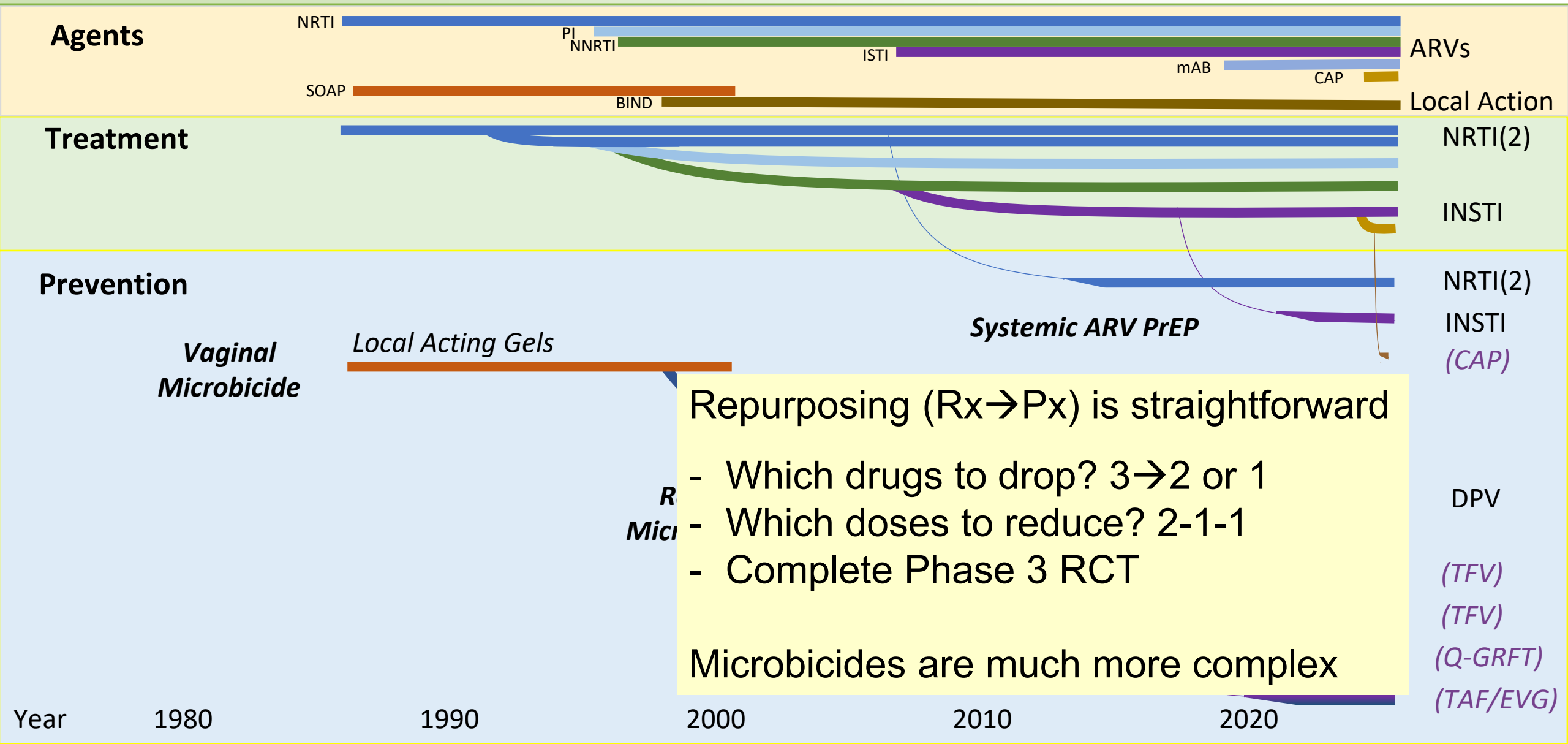
***Ready to REV UP?
... the road to HPTN 106!***

Craig Hendrix
Johns Hopkins University

Disclosures

- Research grants
 - Gilead, Merck
- US Patents
 - 10,092,509; 10,646,434; Hypotonic microbicides
- Prionde Biopharma, LLC
 - Rectal microbicide product development
 - Founder, manager, no fiduciary or financial role
 - Conflicts managed by Johns Hopkins University

PrEP Development History



Repurposing (Rx→Px) is straightforward

- Which drugs to drop? 3→2 or 1
- Which doses to reduce? 2-1-1
- Complete Phase 3 RCT

Microbicides are much more complex

DPV
(TFV)
(TFV)
(Q-GRFT)
(TAF/EVG)

Key Microbicide Questions?

- *Is candidate drug product protective (antiviral)?*
- *Where is the anatomical target for drug action?*
- *What is drug concentration & duration at target?*
- *Do any behaviors or products alter drug distribution or effect?*
- *Are any drugs, vehicles, sex, or sex products toxic?*
- *If we develop it, will folks use it?*

Vaginal Microbicide Lessons

Methods/Vehicle Development

"HIV" surrogate distribution?

Tissue pharmacology?

Luminal distribution?

Pre-clinical Challenge Models?

Vaginal product optimization?

End-User Product Experience?

Drug Product Development

Vaginal Formulation (VF)
3,111 mOsm/kg
TFV 1%

Phase I

HPTN 050
PK blood
AEs, culposcopy

Phase II

HPTN 059
PK blood
AEs

Phase III

No NDA

CAPRISA 004 BAT 24 - 39% RRR (73% post hoc)

VOICE QD - NS (88% post hoc)

FACTS 001 BAT 24 - NS

- Only DPV vaginal ring even partly successful at licensure (*with many more clinical studies in the development path*)
- Failed to bring many products to regulatory review
- Development without many necessary tools (left)
- In parallel - richer set of behavioral & biomedical tools developed
- Rectal microbicide development has been a driver & beneficiary

Key Microbicide Questions?

- ✓ *Is candidate drug product protective (antiviral)?*
- *Where is the anatomical target for drug action?*
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Rectal Microbicide Development



Methods/Vehicle Development

JHU
"HIV" surrogate distribution

JHU
Tissue pharmacology

CDC/NIH
Luminal PK-D imaging

NIH
PD Surrogates: Explant, BLT, NHP

MDP 2/2b
RF vehicle development

MDP 1
Enema vehicle development

JHU
Lube dosing feasibility

Drug Product Development

Phase I

Phase II

Phase III

Rectal Microbicide Development

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Lube dosing feasibility

Drug Product Development

Vaginal Formulation (VF)
3,111 mOsm/kg
TFV 1%

Phase I

RMP-02/MTN-006

Phase II

No Phase II
•Safety/AEs

Phase III

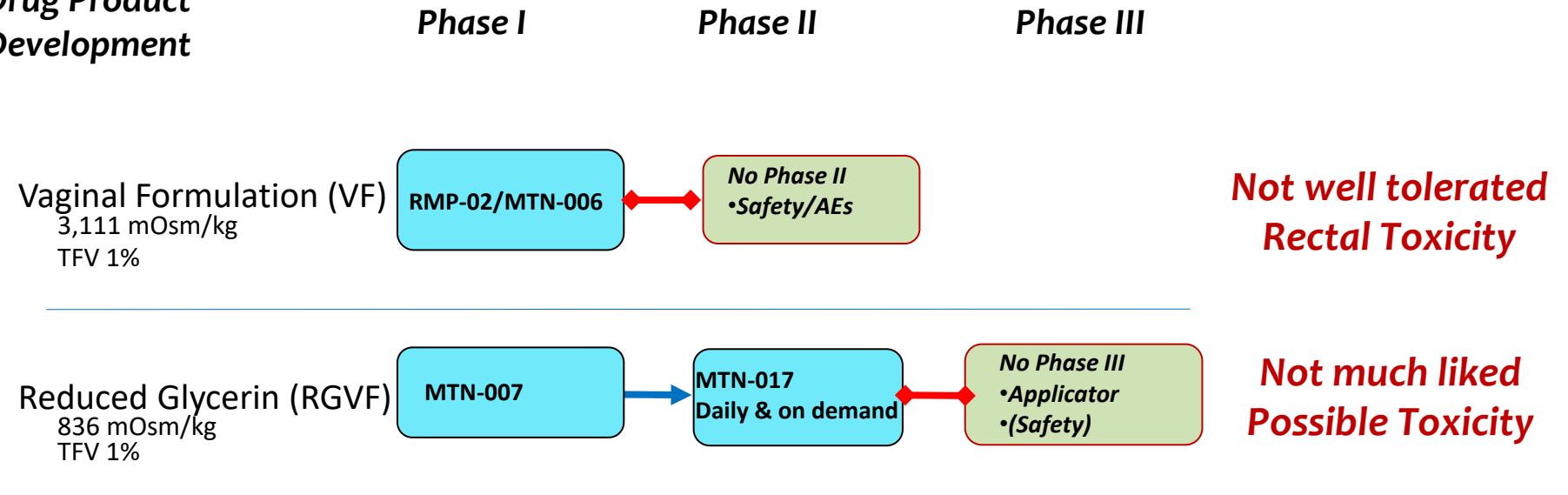
Not well tolerated
Rectal Toxicity

Rectal Microbicide Development

Methods/Vehicle Development

- JHU**
 "HIV" surrogate distribution
- JHU**
 Tissue pharmacology
- CDC/NIH**
 Luminal PK-D imaging
- NIH**
 PD Surrogates: Explant, BLT, NHP
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 RF vehicle development
- MDP 1**
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- JHU**
 Lube dosing feasibility

Drug Product Development

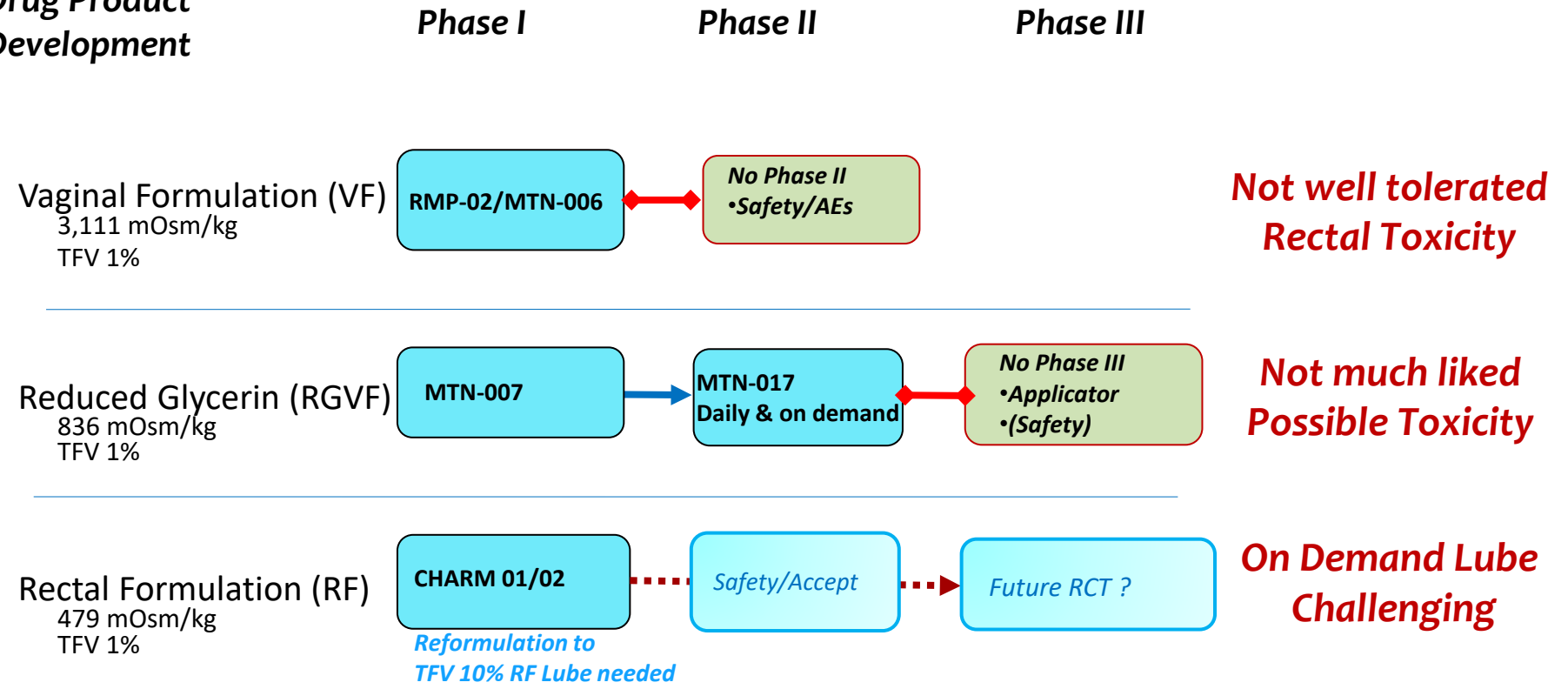


Rectal Microbicide Development

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Drug Product Development

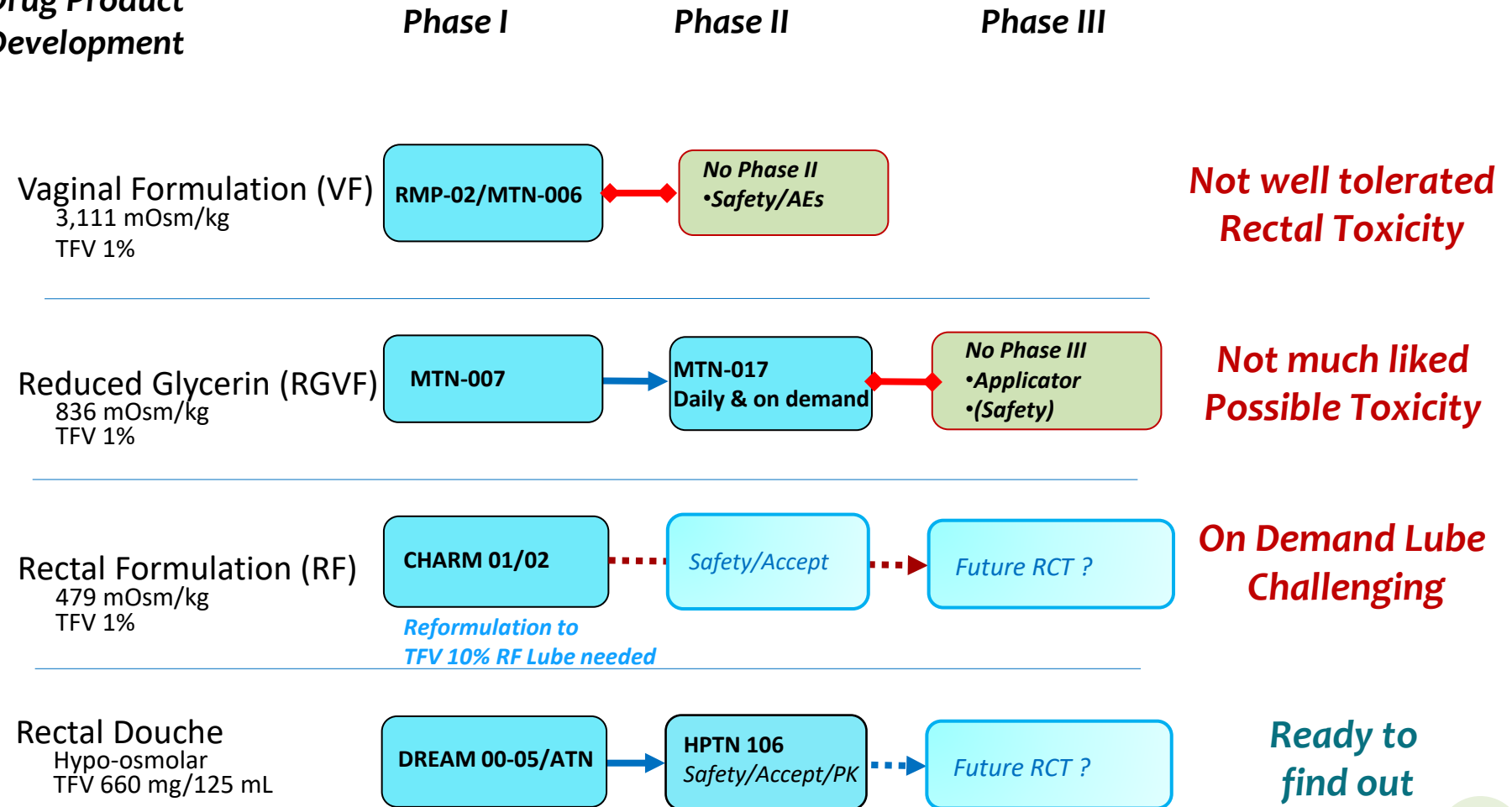


Rectal Microbicide Development

Methods/Vehicle Development

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Lube dosing feasibility

Drug Product Development



Rectal Microbicide Candidates?

Drug	Formulation	NHP SHIV Challenge	Clinical PK	Ex Vivo HIV Challenge	Toxicity	Acceptability	BHVR-CONG	Status
TFV	VF gel	Rect/Vag	Sustained	0.5 log ₁₀	AE's	Modest		End
TFV	RGVF gel	Rectal	Sustained	0.8 log ₁₀	none	Modest		End
→ TFV	RF gel	-	Sustained	1.0 log ₁₀	none	High	<i>lube</i>	Phase 1
→ TFV	liquid	Rectal	Sustained	1.6 log₁₀	none	High	douche	Phase 2
DPV	gel	-	Brief	1.0 log ₁₀	none	High		End
DPV	gel	-	Brief	0.3 log ₁₀	none	High	<i>lube</i>	End
PC-1005	gel	Rect/Vag	Brief	0.5 log ₁₀	none	High		End
IQP-0528	gel	-	Brief	1.6 log ₁₀	minor	High		End
MVC	gel	Rectal	Brief	NR	none	High		End
OB-002H	gel	Vaginal		ND	none	High		?
→ Q-GRFT	liquid	(Vaginal)	Moderate	0.4 log	none	High	douche	Phase 1
→ TAF/EVG	insert	Rect/Vag	Sustained	2.0 log₁₀	none	High		Phase 1

NR not relevant; ND not done

Vaginal Microbicide Douche?

- Optimal product protects on demand vaginal & rectal sex
- 40% of HIV infection is women due to anal sex¹
- Douching very common among FSW², not well studied
- Vaginal douching poses new product challenges
- Vaginal douche optimization under study

¹O'Leary et al., AIDS Behav 2017; Elmes et al., Am J Repro Immunol 2020

²Pines et al., Int J STD AIDS 2019; Pines, et al., BMC Public Health 2018

Next Steps?



Rectal vs. Oral Use of
On-demand PrEP

Responding to the Demand for Rectal Microbicides

Mark Marzinke, PhD

Johns Hopkins University
School of Medicine



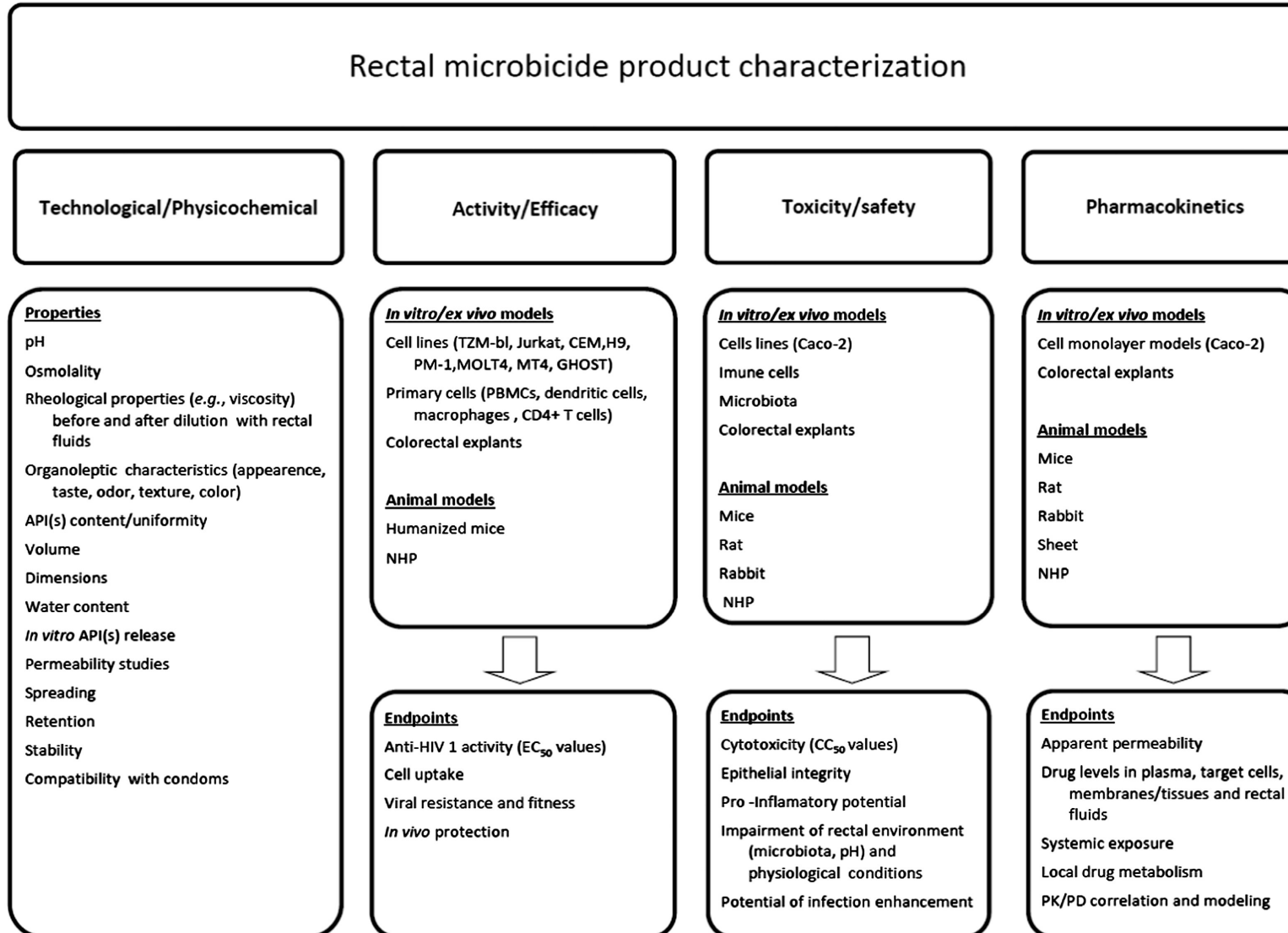
Disclosures

- I have no relevant conflicts to disclose

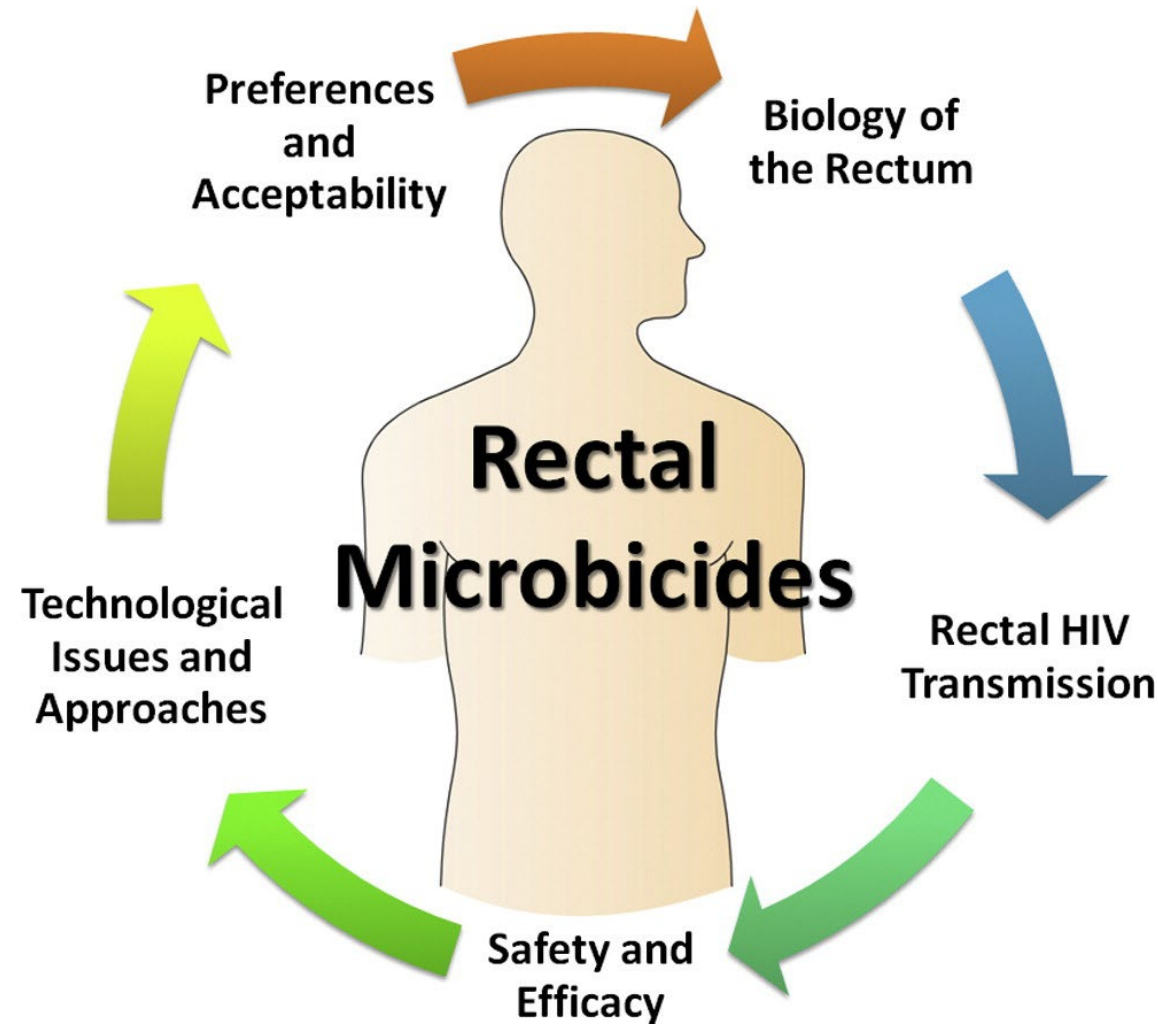
The Need for Rectal Microbicide Products

- Unprotected receptive anal intercourse (RAI) is the highest risk sexual activity of HIV transmission
- RAI is a very common human behavior. Humans of all genders and sexual identities practice RAI in both the developed and developing world.
- Most people use products in preparation for, or in conjunction with, RAI

What Is the Product Profile of a Rectal Microbicide?



What Is the Product Profile of a Rectal Microbicide?

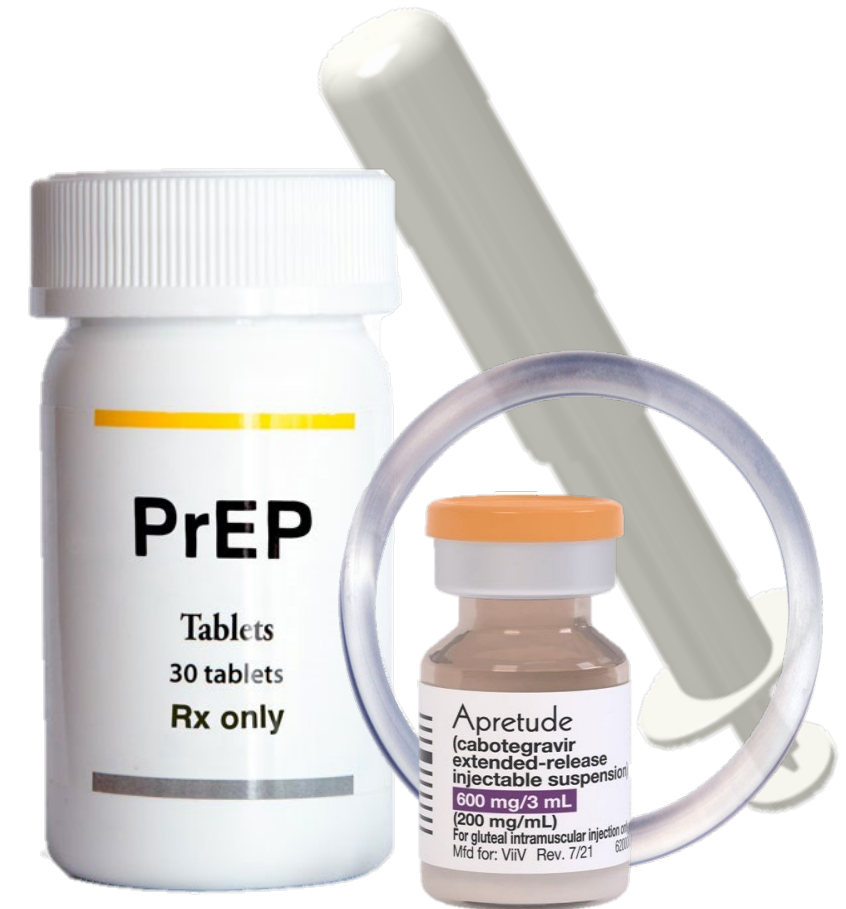


Considerations and Rationale for Rectal Microbicides

- Having a product that does not need a provider to administer (user-driven)
- Non-systemic exposure to drugs/microbicidal agents
- Not all people want to commit to a drug or modality continuously/long-term
- Efficacy is not the only product attribute that is important

Biological Rationale for Rectal Microbicides

- Single-agent drug administration has proven to be effective in the oral, topical, and long-acting spaces
 - Oral TDF
 - DPV IVR
 - Injectable CAB-LA and *LEN*
- On-Demand has proven efficacious
 - Oral F/TDF in persons assigned male sex at birth
 - TFV vaginal gel
- Topical products (DPV IVR, TFV vaginal gel) have proven efficacious with high adherence



Rectal Microbicide Development: PrEP Douche

PrEP Rectal Douche

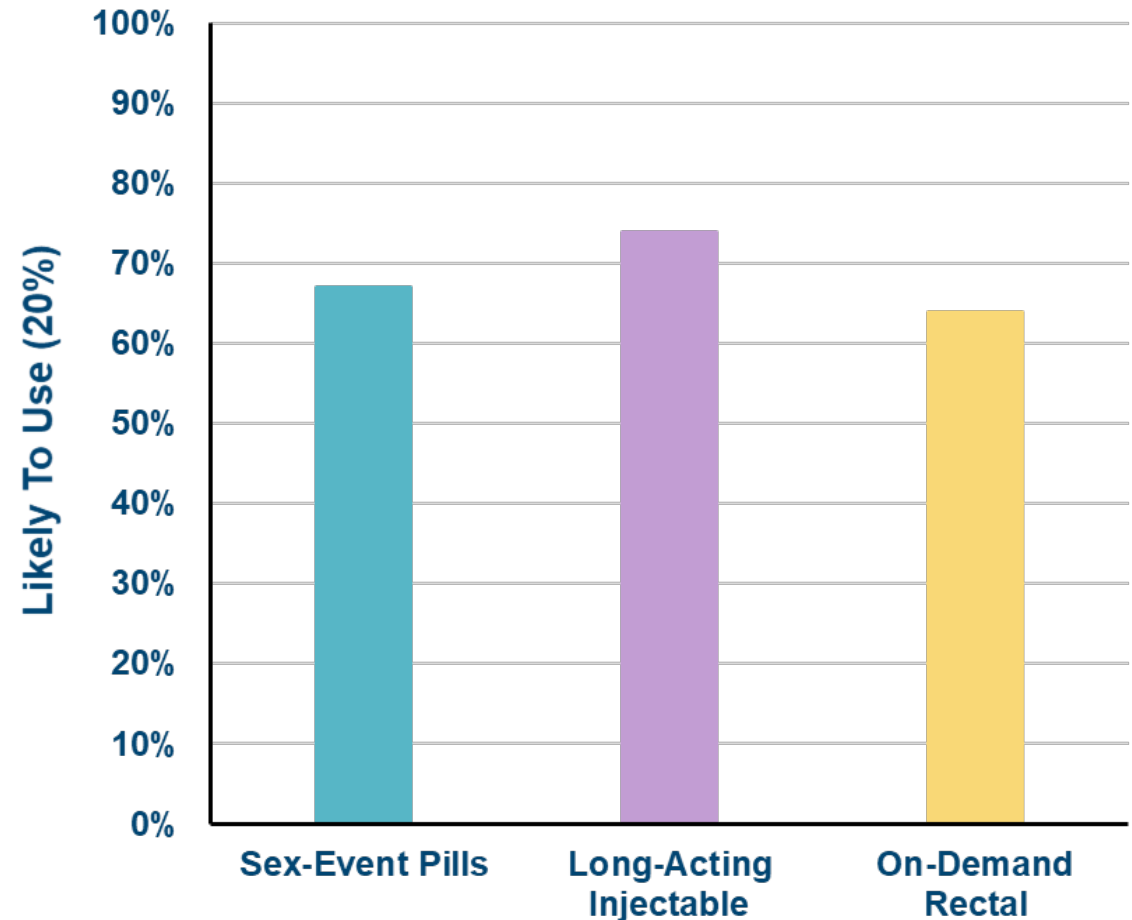
- On-demand, use only when needed
- Topical (locally active), not systemic
- Behaviorally Congruent



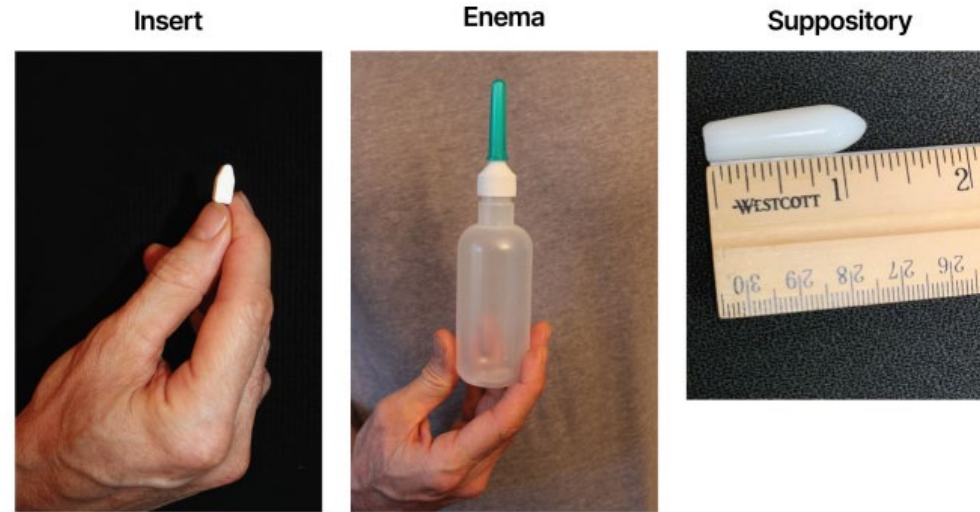
- Leverages an existing behavior that can be used as a dosing strategy to reduce the new behaviors needed for use
 - May lead to greater uptake and consistent product use
 - Relies on existing behaviors
 - Aligns with existing behaviors

Opportunity for Rectal Microbicides: More Choice

- Survey among MSM (n=782) from three US cities (Atlanta, Detroit, New York City)
 - Most participants stated they were likely to use each formulation when available
 - Based on likelihood and preference assessments, two groups of potential product users were identified:
 - Sexual event-based products
 - More likely to be preferred by non-PrEP users
 - Non-sexual event-based products (daily pill, long-acting injectable)
 - More likely to be preferred by current PrEP users



Rectal Microbicide Product Options: MTN-035 (DESIRE Study)

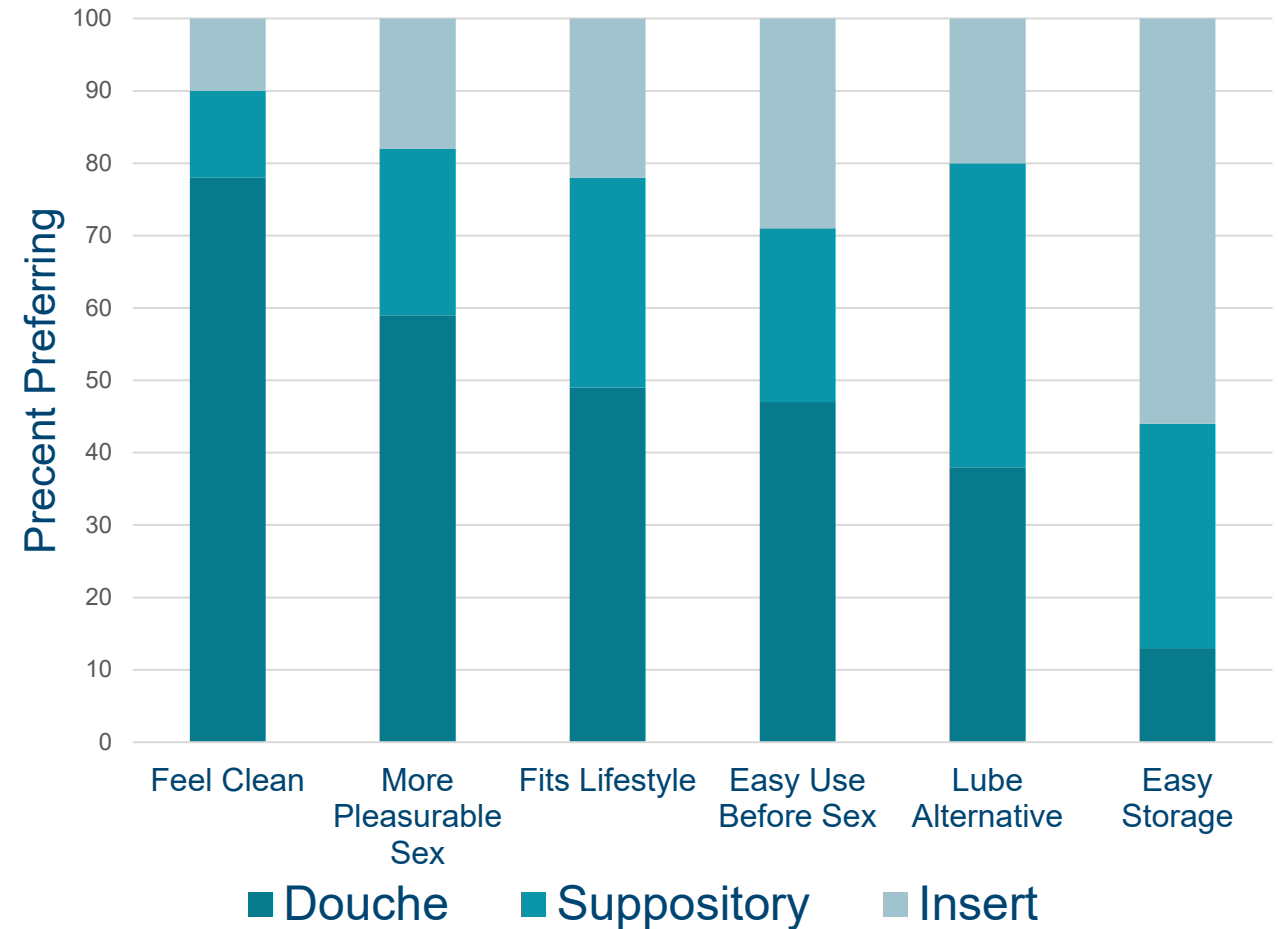


- Evaluated safety, acceptability, and adherence of three rectal microbicide placebo formulations
 - 217 Transgender men, transgender women, and cisgender men who have sex with men, aged 18-35 enrolled in study
 - Products used for 4 weeks, within 30 min-3 h prior to RAI, following usual RAI practices
 - United States, Malawi, Peru, Thailand, South Africa

Rectal Microbicide Adherence and Acceptability: MTN-035

Product	Acceptability	Adherence
Douche	73%	83%
Insert	72%	75%
Suppository	66%	74%

Preference After Product Use



Rectal Microbicide Adherence and Acceptability: MTN-035

- Based on computer-assisted self-interview (CASI) questionnaire completed by all participants:
 - Rectal douche most preferred product in the United States, Peru, and South Africa
 - Suppository most preferred by participants from Malawi
 - Inserts most preferred by participants from Thailand
- Qualitative interviews revealed following douche preferences attributed to:
 - Familiar
 - Easy to use
 - Best to use in conjunction with sex (behavioral congruence)
 - Dual function (cleanliness + protection)

Road to REV UP (HPTN 106)

A Phase 2 Crossover Study of On-Demand Prep Formulations Comparing Rectal and Oral Tenofovir-Based Prep Evaluating Extended Safety, Acceptability, and Pharmacokinetics-Pharmacodynamics

Protocol Chair: Craig Hendrix, MD

Protocol Co-Chair: Mark Marzinke, PhD



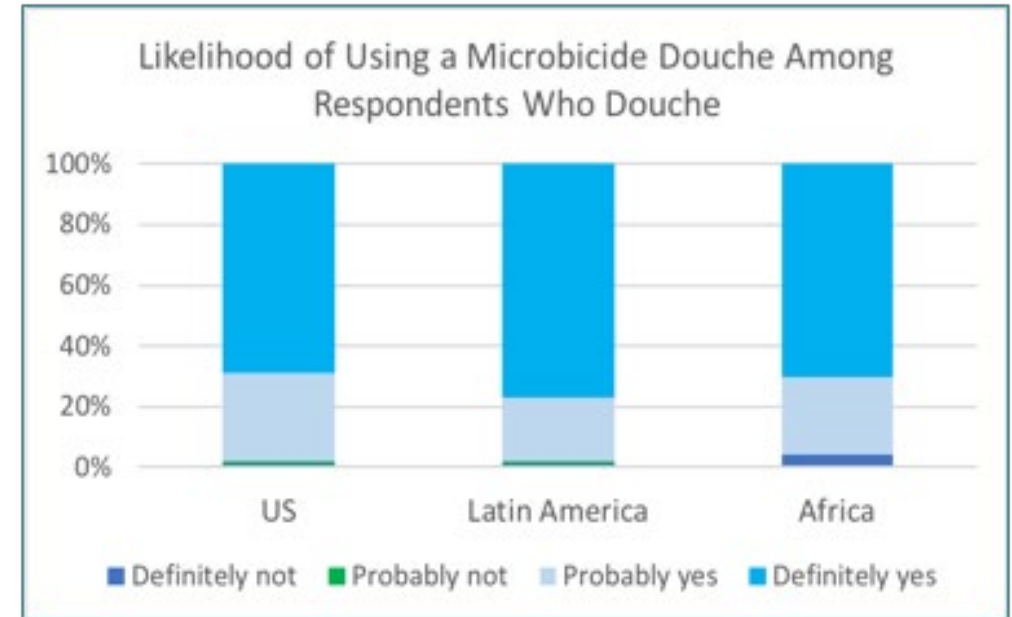
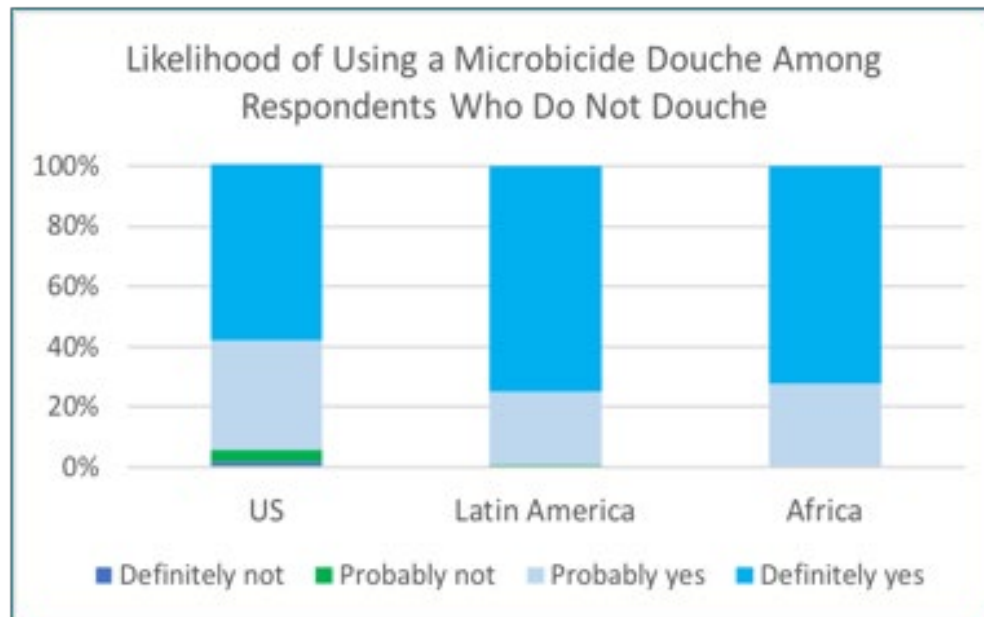
Rectal vs. Oral Use of
On-demand PrEP

Road to REV UP: Development of a Rectal Enema as a Microbicide (DREAM) Program

- The DREAM Program Project Grant facilitated foundational work that evaluated multiple aspects of a medicated TFV douche
 - Behavioral
 - Safety
 - Pharmacological

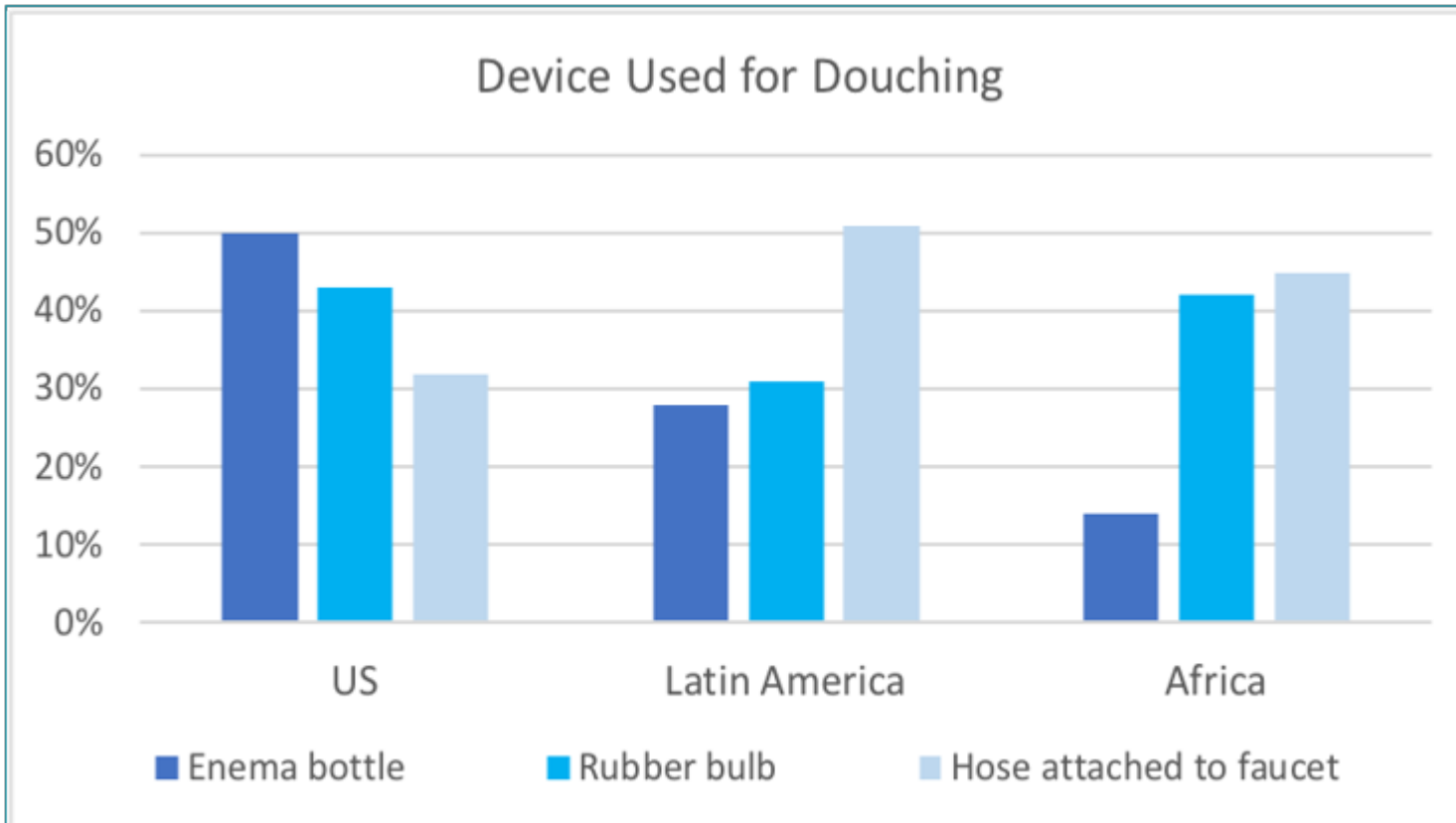
Behavioral Survey of Potential User Preferences (DREAM-00)

- 5,127 respondents from 52 countries
 - 80% US, 63% Latin America, 73% Africa douche before RAI
 - >80% who douche, do so <1 hour before sex
 - >95% respondents likely to use medicated douche
 - 96% insertive partners support RAI partners using medicated douche

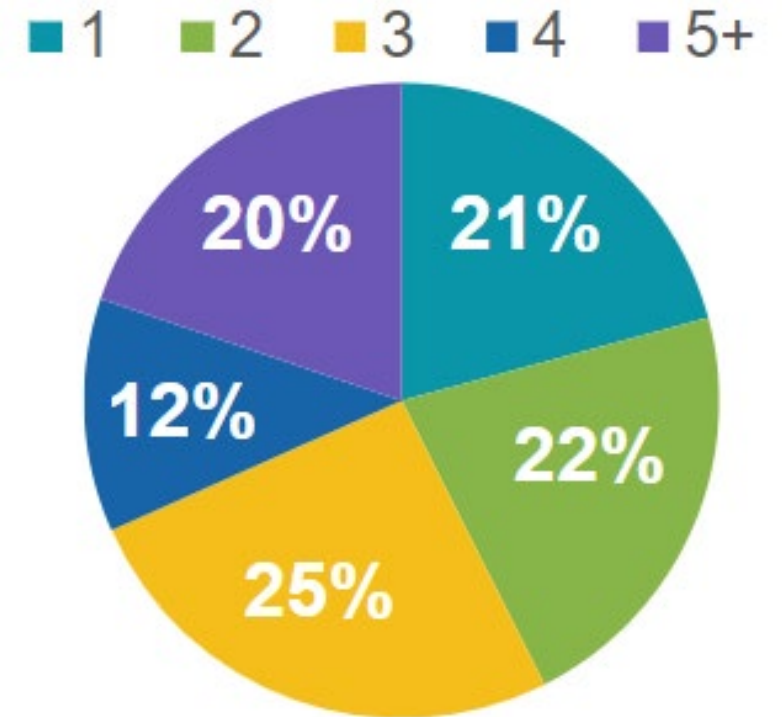


Variability in Douche Delivery Options

Douche Device



Number of Douches



Variability in Douche Delivery Options

Douche Device

Number of Douches

HPTN 106 (REV UP) will evaluate the addition of a TFV sachet to an enema bottle



Safety of TFV Rectal Douche (DREAM Program)

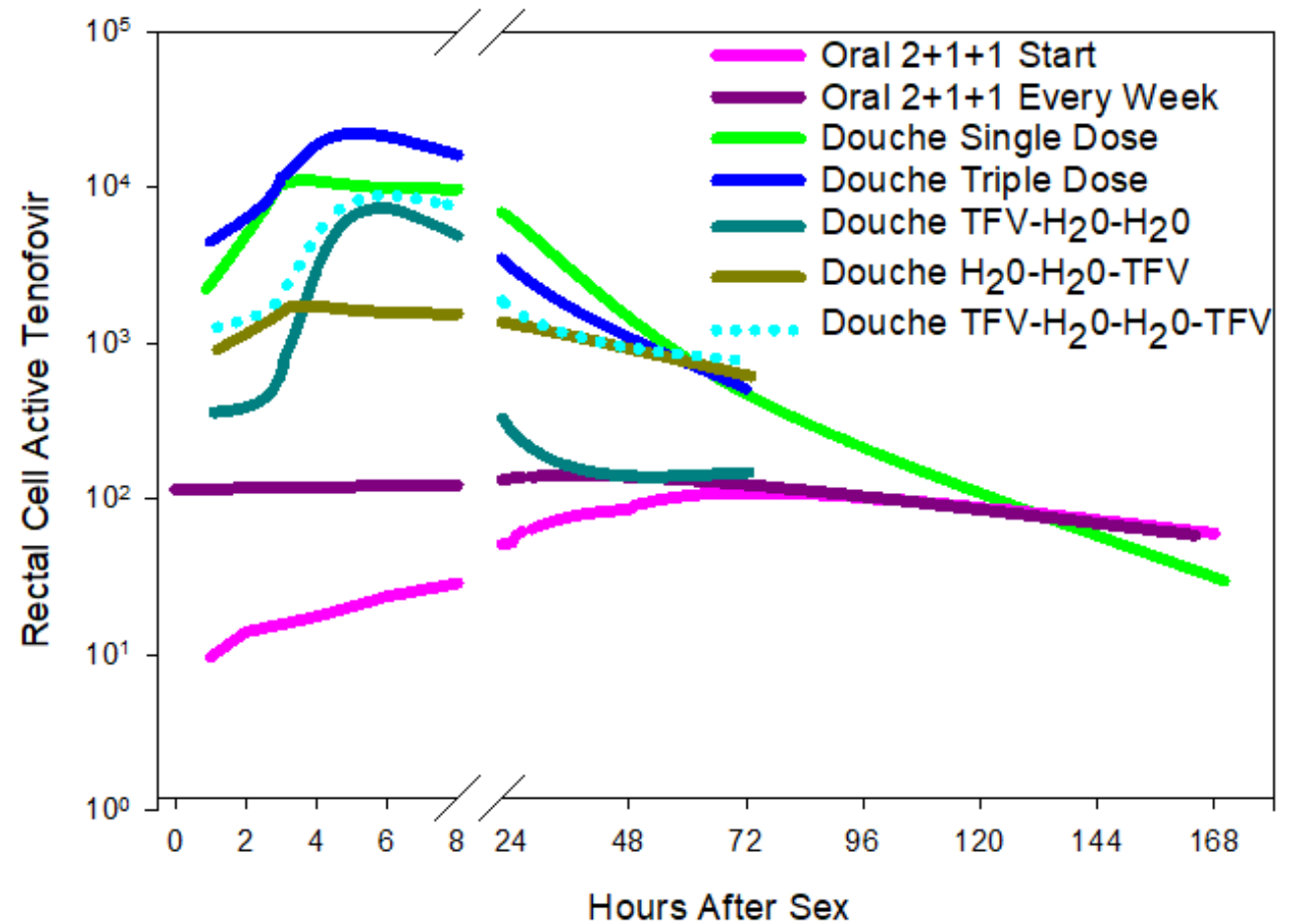
- Phase 1 Studies
 - 4 Studies, 42 Participants, 110 total doses
- Histology
 - No change from baseline: IBD scale, epithelial denudation, lamina propria hemorrhage

Study	Design	N	Grade 1	Grade 2	Grade 3	Attrib.	SAE
DREAM-01	hypo & iso, 3 doses	21	56	2	3	2	1
DREAM-02	hypo, + sex, 2 doses	9	5	6	0	1	0
DREAM-03	hypo, + H2O douches, 3 doses	6	27	12	0	2	0
DREAM-ATN	hypo, younger (18-24), 1 dose	8	2	4	0	0	0
Total		42	90	24	3	5	1

Attributable: all grade 1, reversible (2 pelvic discomfort; 1 rectal dryness, 1 blood tinged mucus h/o IBD; 1 bloating)

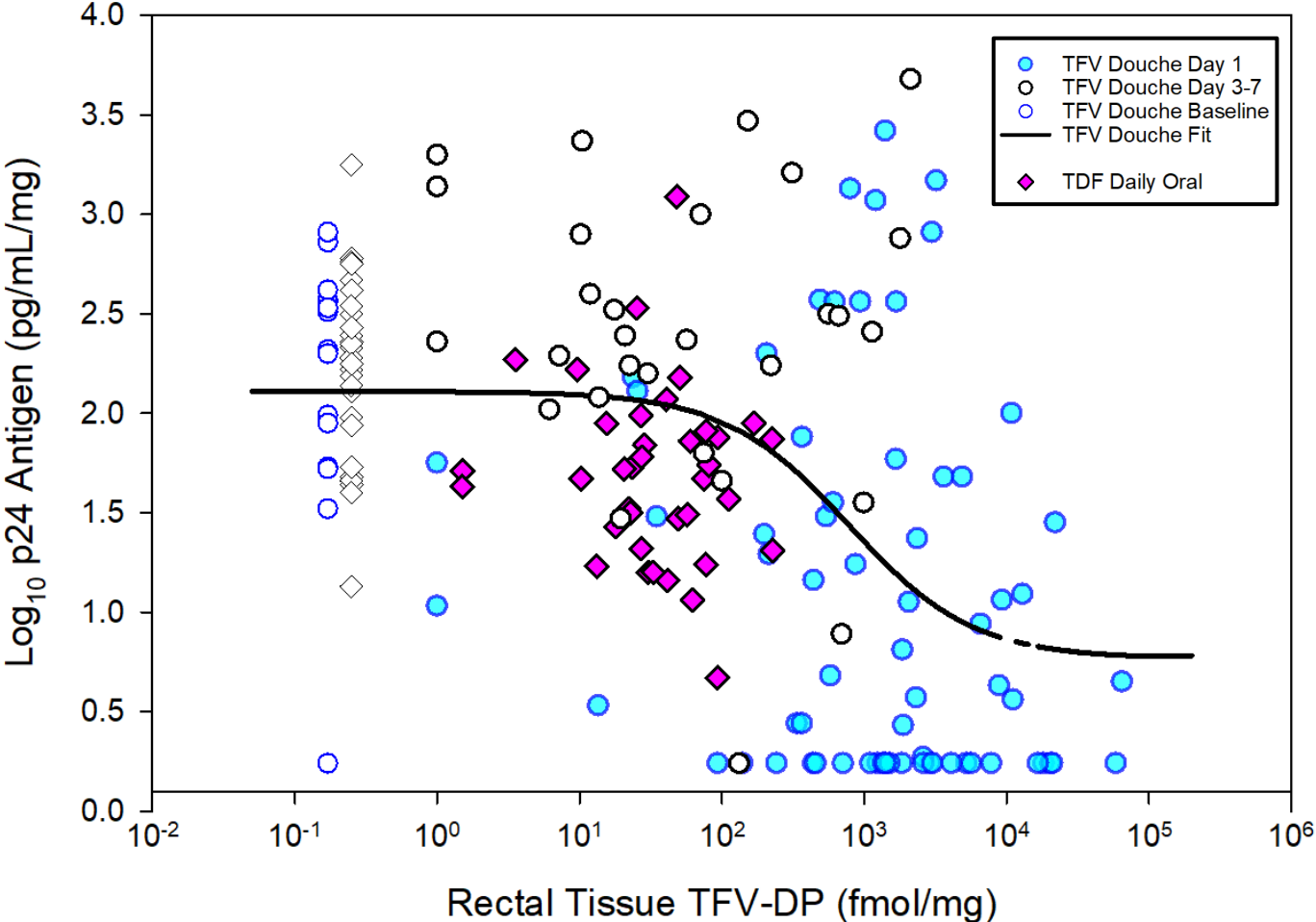
Pharmacokinetics of TFV Rectal Douche Exceeds Oral TFV in Target Rectal Cells

- Rectal mucosal mononuclear cell (MMC) tenofovir diphosphate (TFV-DP) concentrations were evaluated following different TFV douche sequences
 - TFV-TFV-TFV
 - TFV-H₂O-H₂O
 - H₂O-H₂O-TFV
- Water douches before or after a TFV douche lower TFV exposure
- Rectal MMC TFV-DP concentrations exceed rectal concentrations with on-demand oral F/TDF
- To maximize TFV exposure, TFV douches should be given at the beginning and end of a douche sequence (using simulations based upon these data)



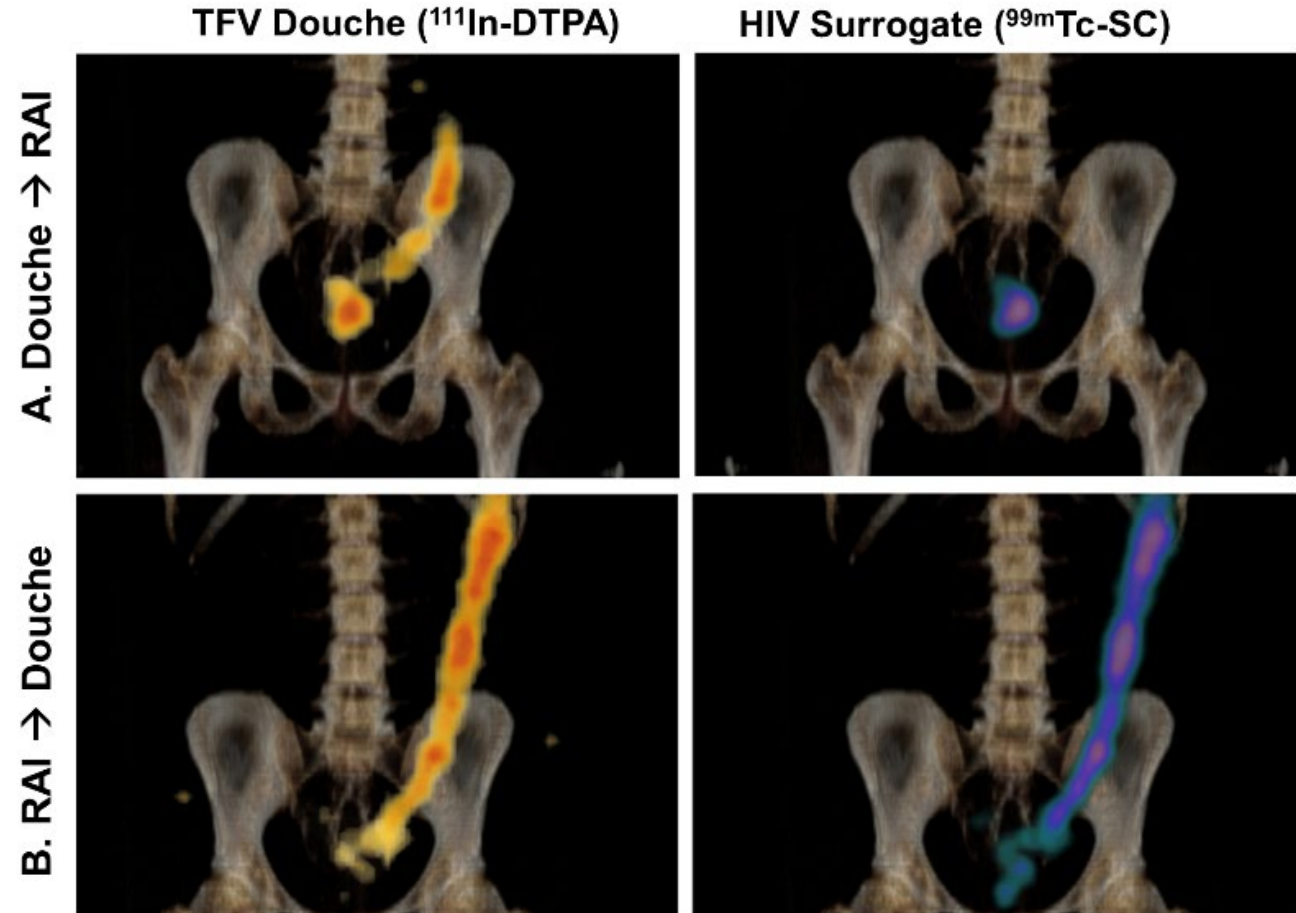
Rectal Tissue TFV-DP PK-PD Concentration-Effect Relationship

- Increased reduction in p24 viral antigen production post-TFV douche as compared to daily oral F/TDF



Additional Rationale for Douche Sequencing: DREAM-02

- Goal
 - Impact of douche-sex sequence
- Method
 - 5 healthy volunteers
 - Imaging surrogates
 - ^{99m}Tc -sulfur colloid “HIV” in autologous semen (sRAI)
 - ^{111}In -DTPA “TFV Douche”
 - SPECT/CT dual isotope imaging @ 1h after dosing
 - Two sequences
 - TFV Douche → sRAI
 - sRAI → TFV Douche
- Results
 - Douching before sRAI
 - 5/5 “douche” \geq “HIV”
 - Douching after sRAI
 - 1/5 “HIV” > “douche”
 - 5/5 \uparrow “HIV” (vs. douching first)
- Impact
 - Counseling - TFV douche before RAI



SPECT/CT Images 1 hr after TFV douche (J205). A (TOP). TFV douche preceded simulated RAI. B (BOTTOM). Simulated RAI preceded TFV douche. LEFT TFV douche ^{111}In -DTPA; RIGHT HIV surrogate ^{99m}Tc -SC. Amber scale CT (spine, pelvis); color scale indicates isotope signal intensity.



**Rectal vs. Oral Use of
On-demand PrEP**

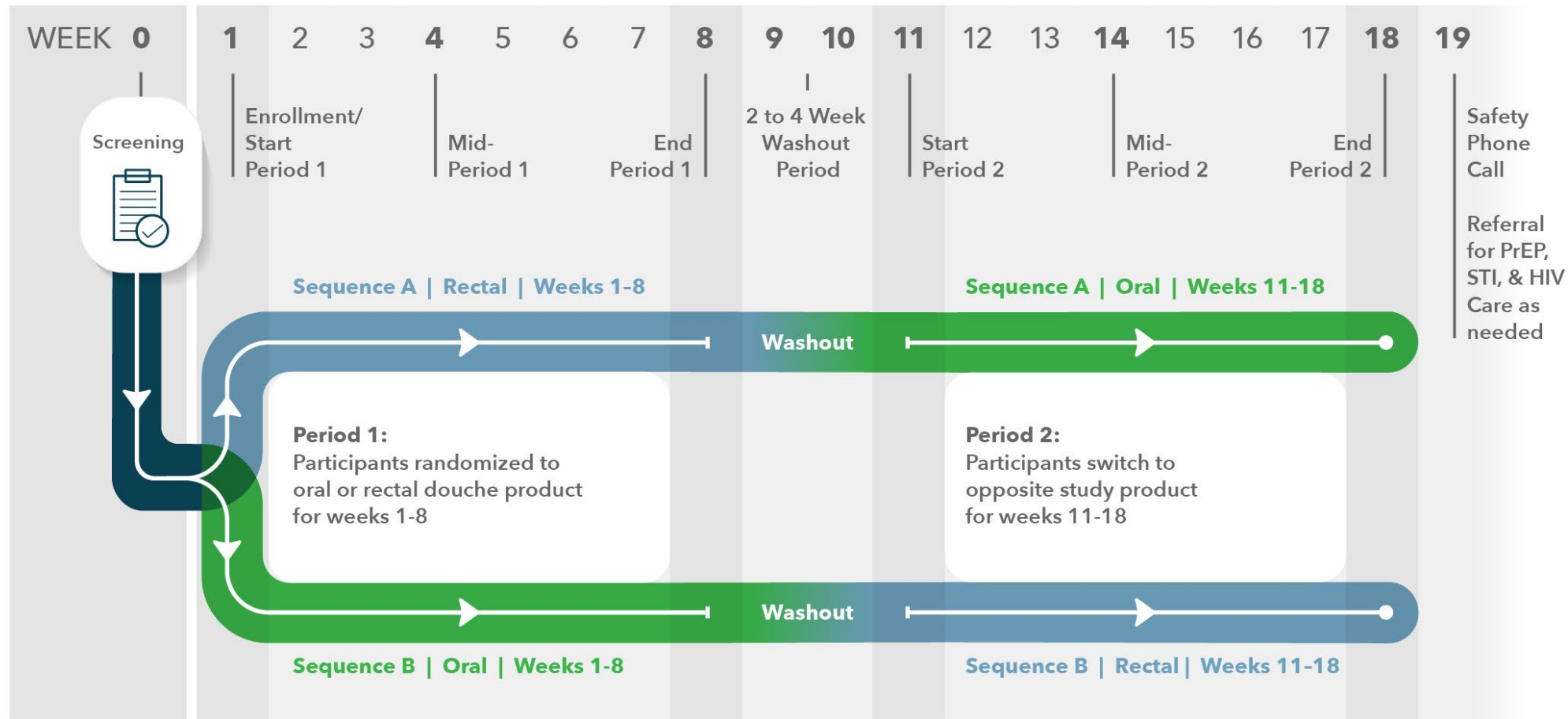
HPTN 106 Study Objectives

- Primary
 - To describe the safety of the on-demand rectal TFV douche and compare it to the safety of the on-demand oral F/TDF tablet
 - To describe the acceptability of the on-demand rectal TFV douche and compare it to the acceptability of the on-demand oral F/TDF tablet
- Secondary
 - To compare participant preference between the on-demand oral F/TDF tablet and on-demand rectal TFV douche after Period 2
 - To describe the adherence of the on-demand rectal TFV douche and compare it to the adherence of the on-demand oral F/TDF tablet
 - To describe the systemic and local pharmacokinetics (PK) of the on-demand rectal douche and compare it to the on-demand oral F/TDF tablet

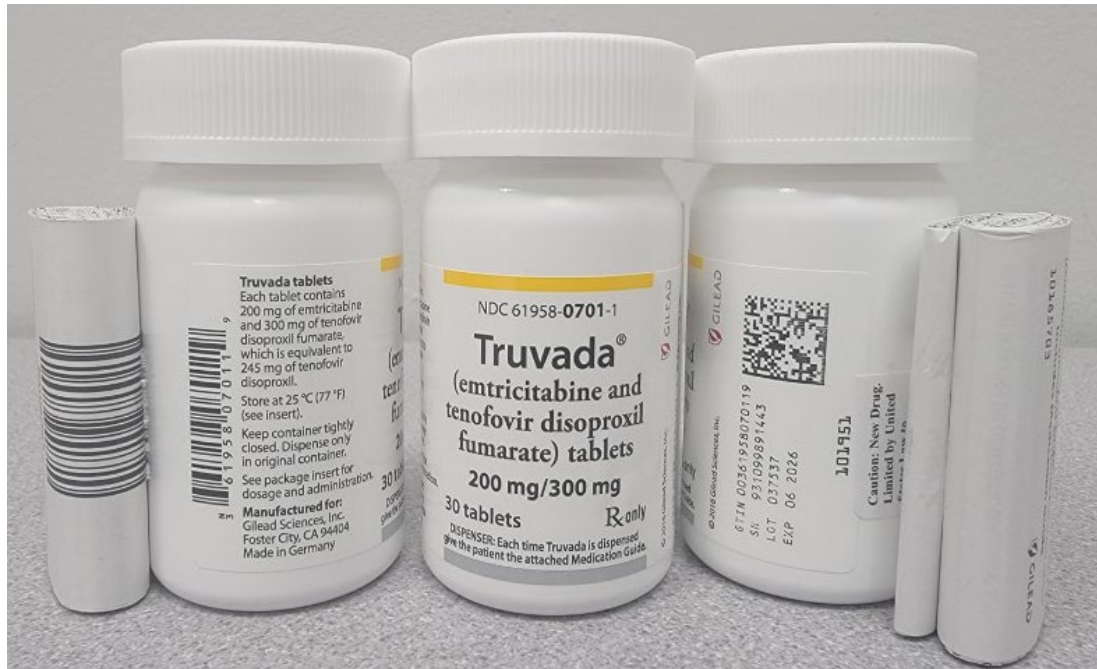
HPTN 106 (REV UP) Study Characteristics

Purpose	To establish the extended safety and acceptability of tenofovir (TFV) rectal microbicide douche to advance the product along the critical pathway for on-demand HIV pre-exposure prophylaxis (PrEP).
Design	Open label comparative randomized crossover
Population	Assigned male at birth, 18 years of age or older, not living with HIV, have receptive anal intercourse (RAI) at least five times in lifetime and at least once in the prior 3 months, and douche regularly (at least half the time) before RAI
Study Size	150 participants
Study Duration	Approximately 19 weeks per participant
Study Location	8 sites within the United States (US)
Study Regimen	Participants will be randomized 1:1 to either of two on-demand open label product sequences – TFV rectal microbicide douche(s) then oral emtricitabine/TFV disoproxil fumarate (F/TDF) or oral F/TDF then TFV rectal microbicide douche(s). Each product will be administered for 8 weeks with a 2 to 4-week washout period in between.

HPTN 106 (REV UP) Study Design



HPTN 106 Study Products



TFV Sachet

- Perforated sachet closure to facilitate easy tear-off
- Smaller opening to control transfer of materials to enema bottle
- Granule size increased for easier pouring
- Sachet dimensions for increased portability/discretion



HPTN 106 PK-PD Sub-Study Objectives

- Secondary:
 - Pharmacokinetics: To describe the systemic and local PK of the on-demand rectal TFV douche and compare it to the on-demand oral F/TDF tablet
- Exploratory:
 - Antiviral: To characterize ex vivo pharmacodynamic (PD) responses following oral and rectal study product dosing
 - PK/PD Modeling: To describe intercompartmental drug PK and the concentration-antiviral response relationship for each study drug
 - Histology: To characterize any changes in rectal tissue histology compared to baseline and up to one week after a single sequence of each study product
 - Microbiome: To characterize the rectal microbiome over the course of each oral and rectal study product dosing

Summary

- Development of rectal microbicides can facilitate expanded choice in PrEP options, may be used in a way that is acceptable to end-users, and provide protection when it is needed
- HPTN 106 (REV UP) will evaluate the safety, acceptability, user preferences, and pharmacology of a TFV douche as compared to on-demand oral F/TDF
 - This study is critical in the product development pipeline for an on-demand rectal product.



HPTN 106

Operations & Logistics

Marianne Gildea, RN, BSN, MS
Clinical Research Operations Manager



Leadership and Operations Center (LOC)

Located at FHI 360 in Durham, N.C.

- Clinical Research and Operations
- Communications
- Community Engagement
- Finance & Contracting
- Network Governance



HPTN 106 (REV UP) Sites

Alabama CRS

Chapel Hill CRS

Fenway Health CRS

Hope Clinic CRS

Johns Hopkins University CRS

UCLA CARE Center CRS

University of Pittsburgh CRS

Weill Cornell Chelsea CRS



HPTN
HIV Prevention
Trials Network



HIV Prevention
Trials Network

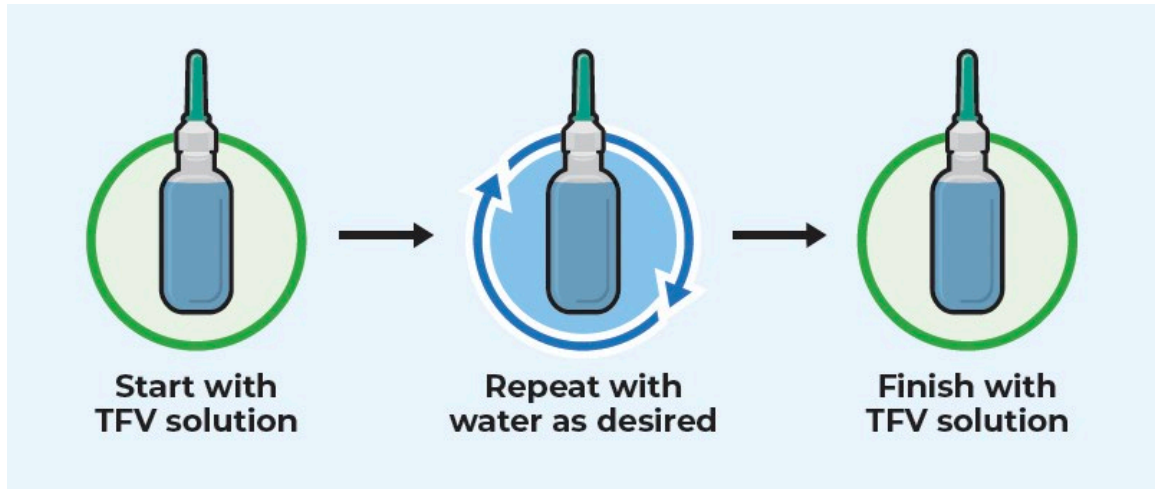
HPTN 106 (REV UP) Sites

Site/Academic Institution	Principal Investigator
Univ. of Alabama (Birmingham)	Craig Hoesley
University of North Carolina (Chapel Hill)	Christopher Hurt
The Fenway Institute (Boston)	Ken Mayer
The Hope Clinic (Emory)	Colleen Kelley
Johns Hopkins University (Baltimore)	Santiago Alvarez-Arango
UCLA Care Center	Raphael Landovitz
University of Pittsburgh	Ken Ho
Weill Cornell Chelsea (New York City)	Grant Ellsworth

Community Engagement During Protocol Development

- Feedback on study protocol during protocol development
- Feedback on participant materials and behavioral questionnaires
- Dissemination of educational materials/webinars to engage community
- Assembled HPTN 106 (REV UP) Community Working Group

Tips and Tricks on How to Use Study Products



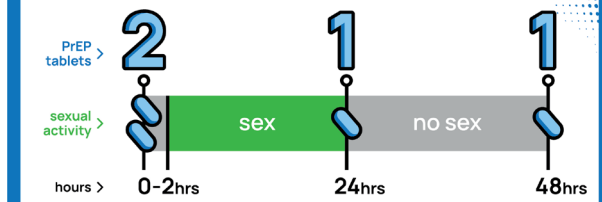
• Materials for Participants

- 2-1-1 Oral Scenarios
- Rectal Douche Scenarios
- Short Video Instruction on Rectal douche prep

PrEP 2-1-1 Method for Preventing HIV from Anal Sex

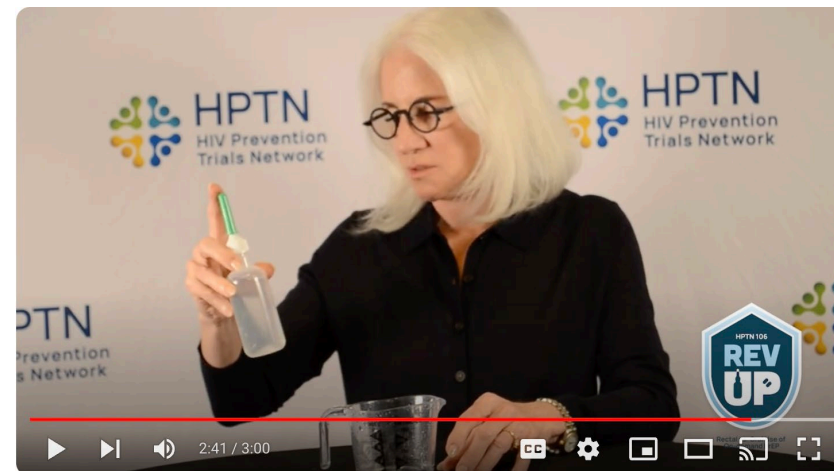
Before Sex: Take 2 PrEP tablets 2-24 hours before sex.

After Sex: Take 1 PrEP tablet 24 hours and 1 PrEP tablet 48 hours after the 1st 2 tablets.



The diagram shows a timeline with 'PrEP tablets' and 'sexual activity' on the y-axis and 'hours' on the x-axis. At 0-2hrs, 2 tablets are taken. A green bar labeled 'sex' spans from 0-2hrs to 24hrs. At 24hrs, 1 tablet is taken. From 24hrs to 48hrs, the bar is grey and labeled 'no sex'. At 48hrs, 1 tablet is taken.

For Sex Beyond 24 hrs: Continue taking 1 PrEP tablet every 24 hours until you've had 2 doses after the last time you had sex.



Supplies



Supplies



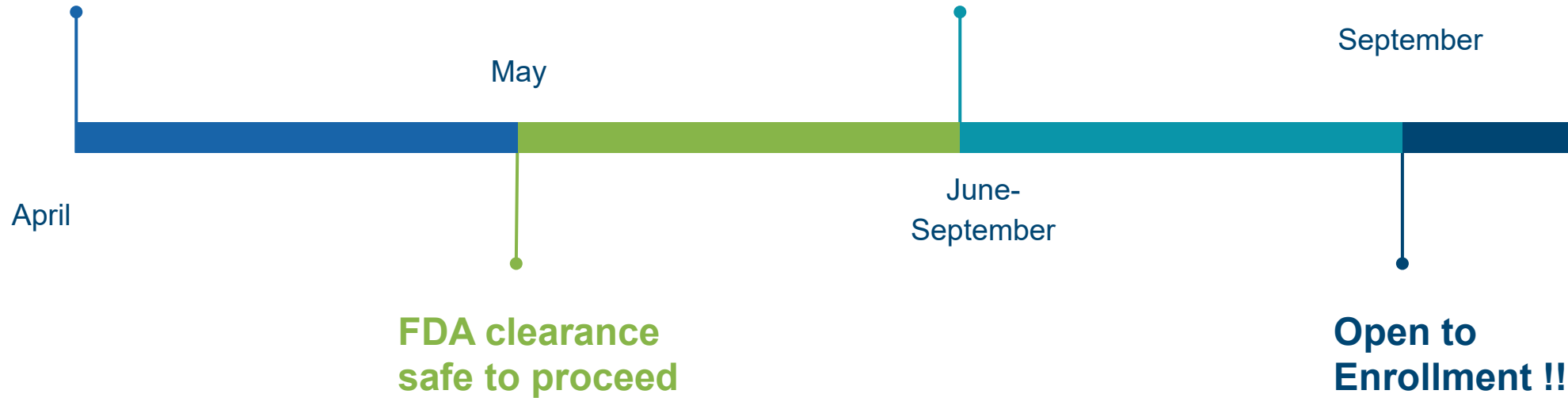
Starting Timelines



2024 Timelines

**DAIDS approved
protocol v 1.0 &
funding received**

**Site Training &
Regulatory Approvals**



Where to find out more?



HPTN 106 is Registered on ClinicalTrials.gov



The National Clinical Trial Number (NCT) is: **06560684**

NOT YET RECRUITING ⓘ

CROSSOVER STUDY OF ON-DEMAND PREP FORMULATIONS COMPARING RECTAL AND ORAL TENOFOVIR

ClinicalTrials.gov ID ⓘ **NCT06560684**

Sponsor ⓘ National Institute of Allergy and Infectious Diseases (NIAID)

Information provided by ⓘ National Institute of Allergy and Infectious Diseases (NIAID) (Responsible Party)

Last Update Posted ⓘ 2024-08-19

<https://clinicaltrials.gov/search?intr=NCT06560684>

Get Connected

Scan:



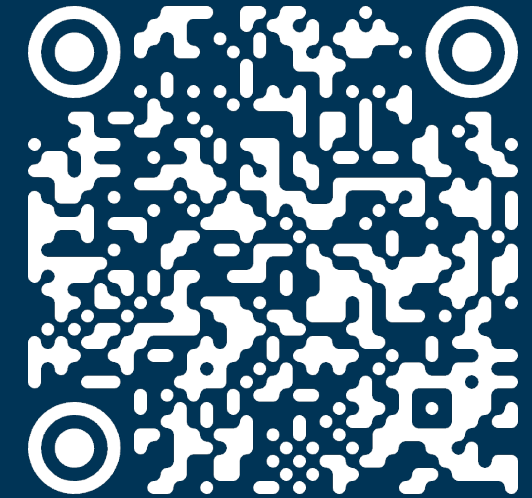
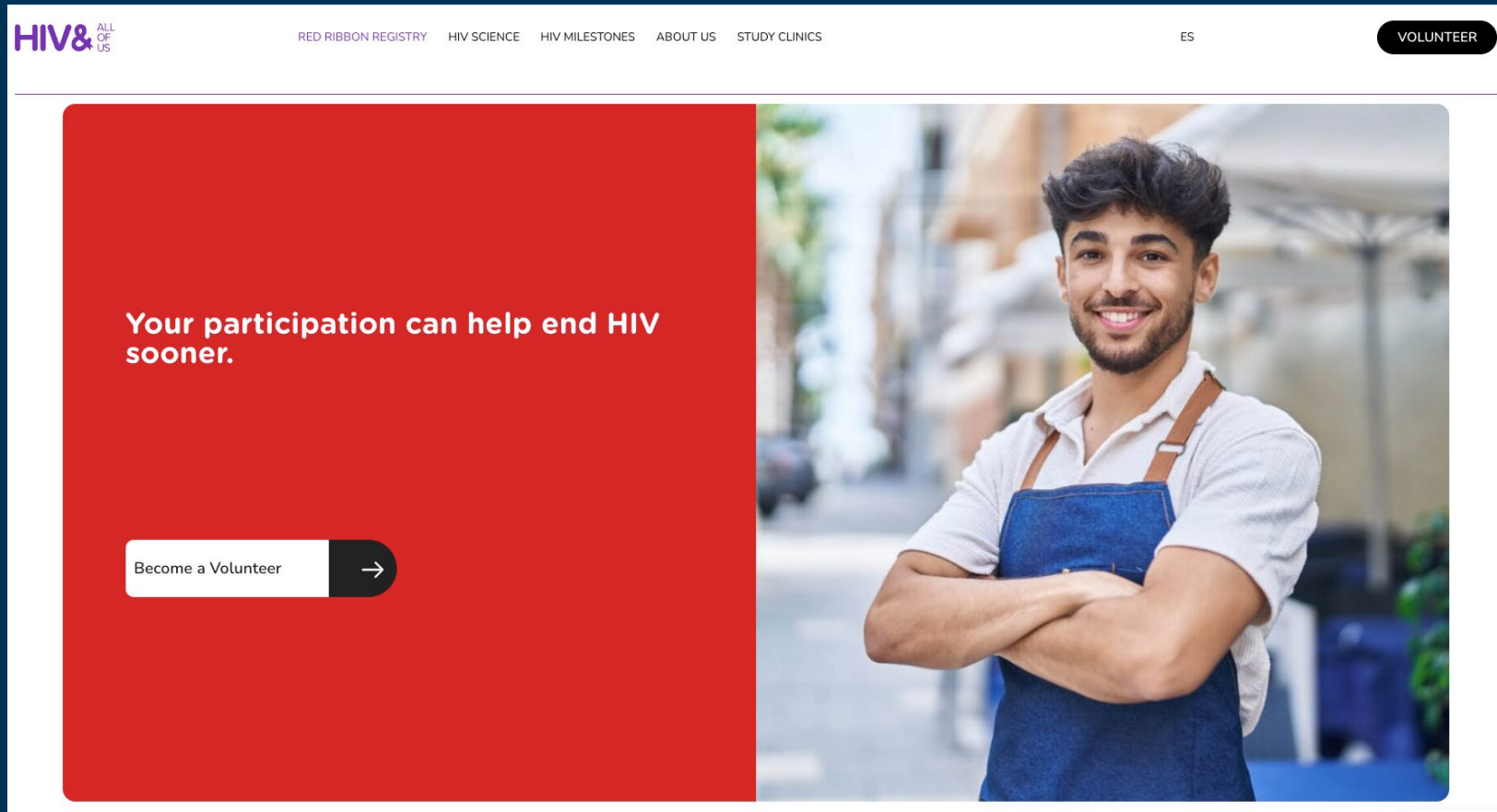
www.hptn.org/research/studies/hptn-106

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Red Ribbon Registry



<https://www.helpendhiv.org/red-ribbon-registry/>

Note: Not all research sites participating in HPTN 106 "REV UP" use the Red Ribbon Registry.

Acknowledgments



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