

## Overview and pipeline of MPTs relevant to the prevention of STIs

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**Multipurpose Prevention Technologies (MPTs): Developing interventions to simultaneously prevent STIs, HIV and pregnancy**

2015 World STI & HIV Congress & HIV/AIDS Conference  
16 September 2015 – Brisbane, Australia



## Healthy timing & spacing of intended pregnancies

Unmet family planning need



The annual unmet need of **225 million women** in low resource settings results in:

- 74 million unintended pregnancies
- 36 million abortions



Reducing unintended pregnancy will have a huge impact on maternal mortality

Sources: DHS Statcompiler, most recent surveys  
Singh et al. 2014. *Adding It Up*. Guttmacher Institute

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## Protection against HIV and other STIs

Number of women living with HIV, 2013



Number of STIs



- Each year, 1.8 million women die of AIDS
- And 2.7 million more become infected with HIV.

- More than 1 million people acquire an STI/day.
- The majority of STIs are asymptomatic
- Complications include MTCT, increased risk of HIV, chronic disease and cancers

Sources: WHO Global Health Observatory Data Repository;  
WHO. 2013. *Global prevalence and incidence of selected curable sexually transmitted infections – 2008: Overview and estimates*.

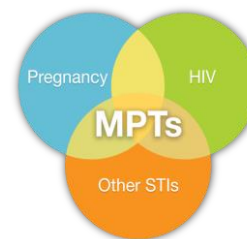
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## Multipurpose Prevention Technologies

**MPTs combine protection against:**

- Unintended pregnancy
- HIV
- Other STIs



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## MPTs: Historical Precedents

- H<sub>2</sub>O + fluoride
- The pill + iron
- Grains + folic acid



## Who should MPTs target

- Populations at risk for unintended pregnancies, HIV and STIs
  - Young women/ adolescents
  - Sex workers
  - Sexually active women
- Populations at risk for HIV and other STIs
  - MSM
  - Couples intending to conceive

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## Available MPTs: male and female condoms



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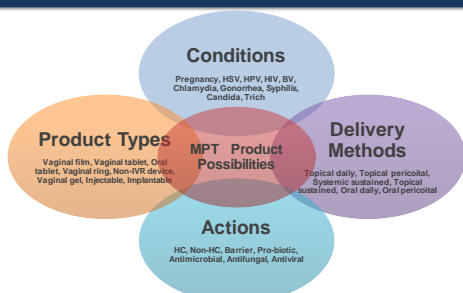
## Available MPTs: SILCS diaphragm



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## MPTs: Many Possibilities



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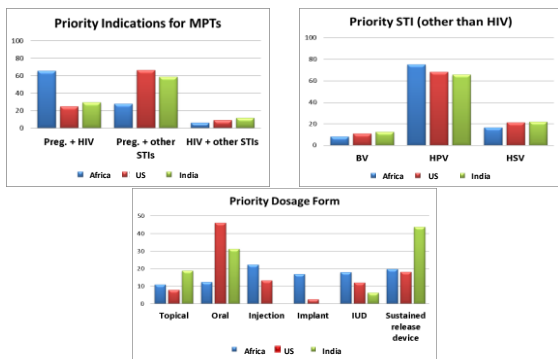
## What is needed for MPTs to work

- Device needs to be initiated by women rather than men
- Device needs to be acceptable to end users
  - Appearance,
  - ease of use/administration,
  - side effects
- Different populations may have different needs

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## Regional Providers' Priorities



## Potential MPT Delivery Methods

Drug combinations    Drug/device combinations    Multipurpose vaccines    Bacterial therapeutics    Nanoparticles



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## MPTs in the Pipeline

- Longer acting vaginal rings
- Fast dissolving films and tablets
- Innovative and effective gels
- Injectables that combine contraception and infection prevention
- Nanofiber delivery systems



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## MPTs in Clinical Trials

| HIV + Other STIs                                 |           |
|--|-----------|
| 1.0% Tenofovir Vaginal Gel                       | Phase III |
| mapp66 (mAb) Vaginal Film                        | Phase I   |
| MIV-150 + Zinc acetate + Carrageenan Vaginal Gel | Phase I   |
| Tenofovir + Acyclovir Intravaginal Ring          | Phase I   |
| Tenofovir Disoproxil Fumerate Intravaginal Ring  | Phase I   |
| Tenofovir Vaginal Film                           | Phase I   |
| Tenofovir Intravaginal                           | Phase I   |
| Tenofovir Vaginal Tablet                         | Phase I   |
| TFV/FTC Vaginal Tablet                           | Phase I   |
| Pregnancy, HIV & Other STIs                      |           |
| Origami Female Condom                            | Phase III |
| Tenofovir + Levonorgestrel Intravaginal Ring     | Phase I   |

Plus products in preclinical development for:

- HIV + Pregnancy
- HIV + Other STIs
- Pregnancy, HIV & Other STIs
- Pregnancy + Non-HIV STIs

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## Sustained Release Devices: Combination Intravaginal Rings

30-day MZL Combo  
(Pop Council)



- MIV-150 + Zinc Acetate + LNG
- Demonstrated single-API success
- Pregnancy, HIV, HSV2

60-day Dapivirine + LNG  
(IPM)



- DPV + LNG
- Testing underway, clinical studies 2013
- Pregnancy, HIV

90-day TFV + LNG  
(CONRAD)



- TFV + LNG
- Testing underway, clinical studies 2013
- Pregnancy, HIV, HSV-2

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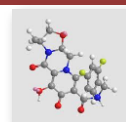
## Long Acting Injectables:

TMC278LA (rilpivirine; PATH;  
HPTN)



- Injectable nano-suspension of approved NNRTI
- Long acting: 2-3 mos (?)
- Multiple trials:
  - P1 dose ranging PK; SD/MD PK/PD
  - P2 planning

GSK '744 (Ii; ViiV)



- Experimental integrase inhibitor
- Dose ranging human safety P1
- NHP model efficacy studies complete

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## Single & Multipurpose Vaccines

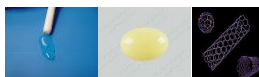
- Today:** Single purpose vaccines (HPV & HBV)
- 20 years:** Multivalent vaccines (HSV, HIV, Gonorrhea, Chlamydia, Trichomonas, other STIs)
- Contraceptive vaccines are not likely



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## Priorities for 1<sup>st</sup> Generation MPTs

On demand"



- Used around time of intercourse
- For women who have intermittent sex or want more direct control over their protection

Sustained release

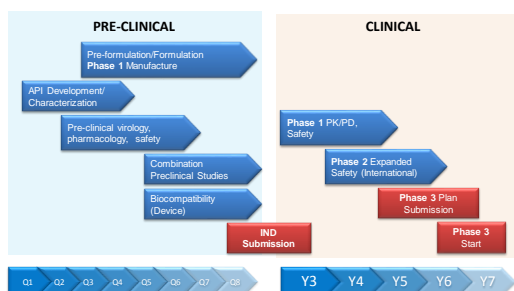


- User-initiated, does not require daily action
- Should increase adherence and effectiveness

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## MPT Product Development Timeline



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## Conclusion

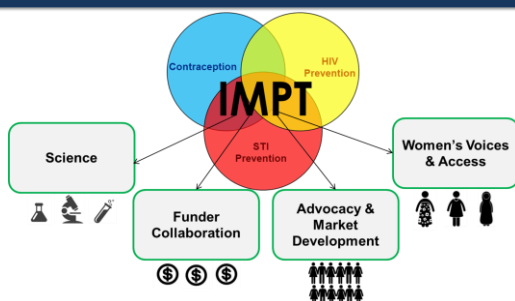


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## Thanks

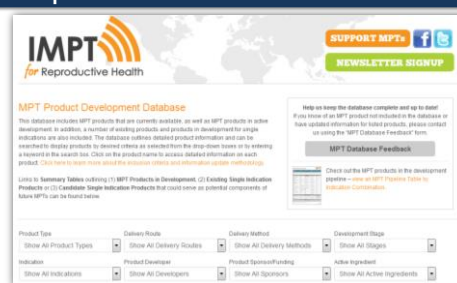
Anke Hemmerling  
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## The Initiative for MPTs



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## What else is happening in MPT Research & Development?



<http://mpt101.org/mpt-database>

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