Multipurpose Prevention Technologies:

Aligning Investments in R&D, and The Critical Path to Introduction

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Society Arranged Session 7:
Multipurpose Prevention Technologies for sexual and reproductive health: meeting a critical need for women and their families
organized by the Association of Reproductive Health Professionals (ARHP)
& the Coalition Advancing Multipurpose Innovations (CAMI)

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European Society of Contraception and Reproductive Health
First Global Conference on Contraception, Reproduction and Sexual Health
May 22-25, 2013
Copenhagen, Denmark

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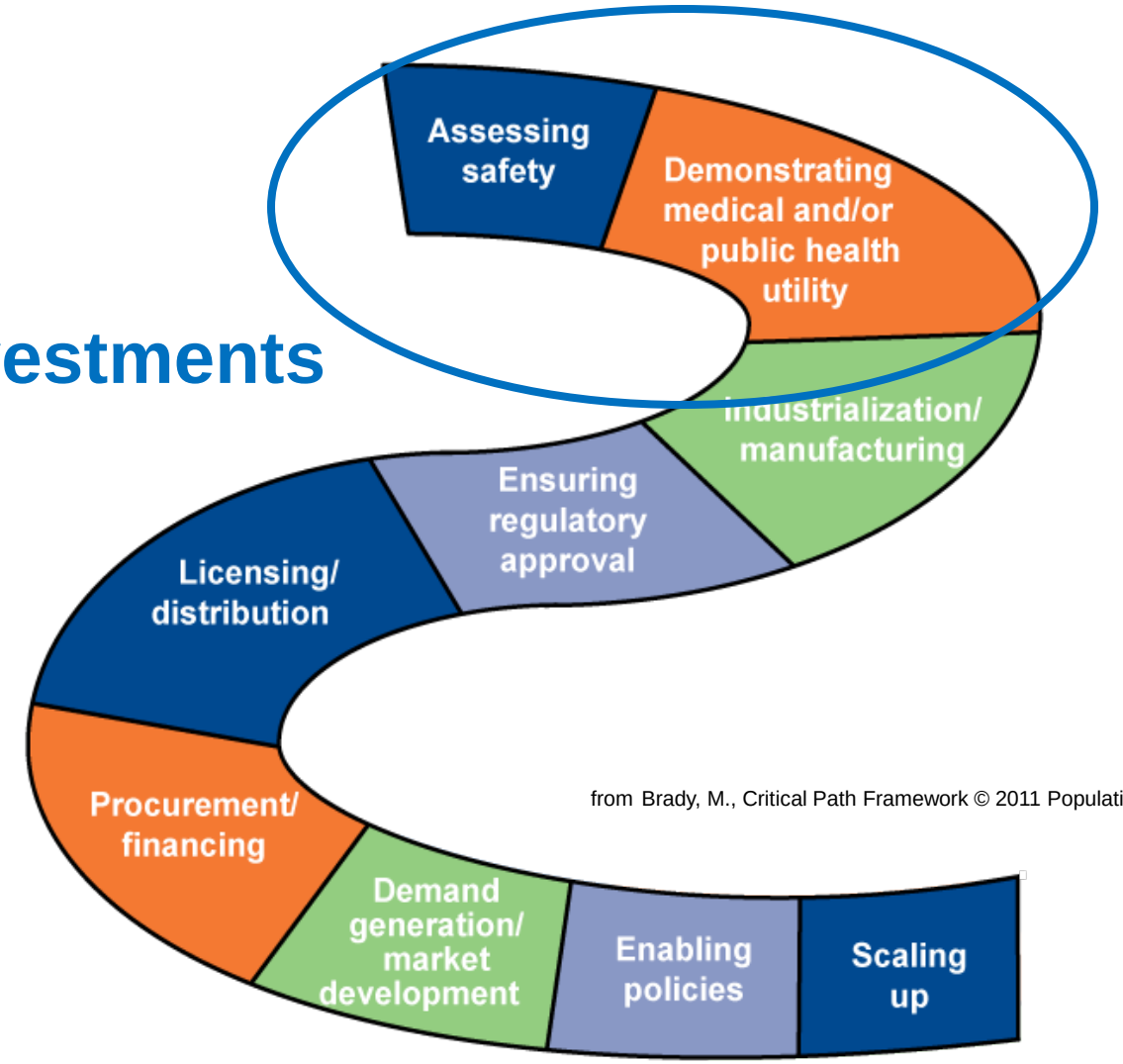
Constructing a Critical Path from Product Development to Introduction

1. Aligning investments in MPT R&D



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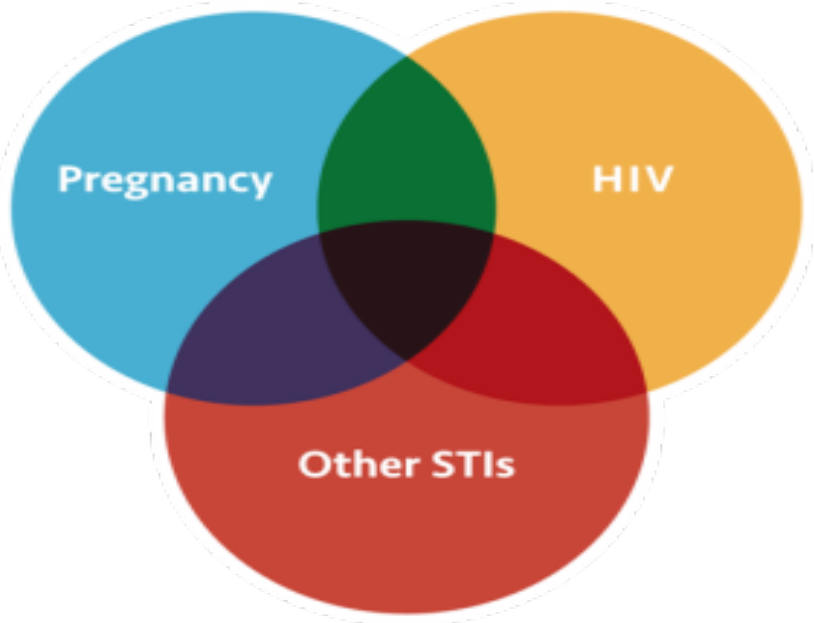
Why Develop MPTs?

1. *To meet women's multiple SRH needs in one product*
2. *To achieve efficiencies in cost of delivery of prevention products*



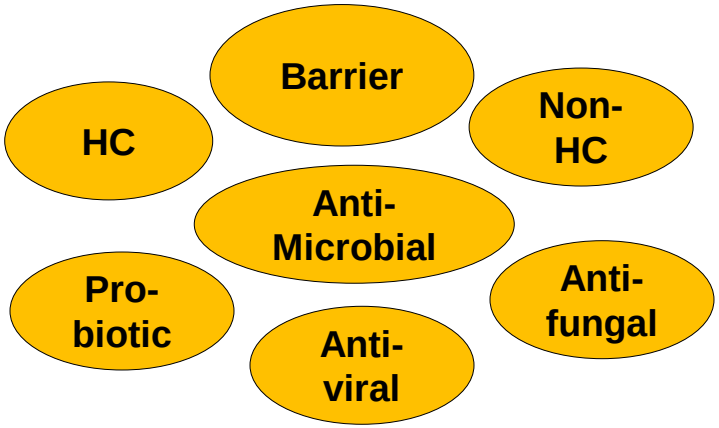
3. *To leverage existing delivery channels to achieve higher levels of prevention product uptake and demand*

Complexity of developing MPTs

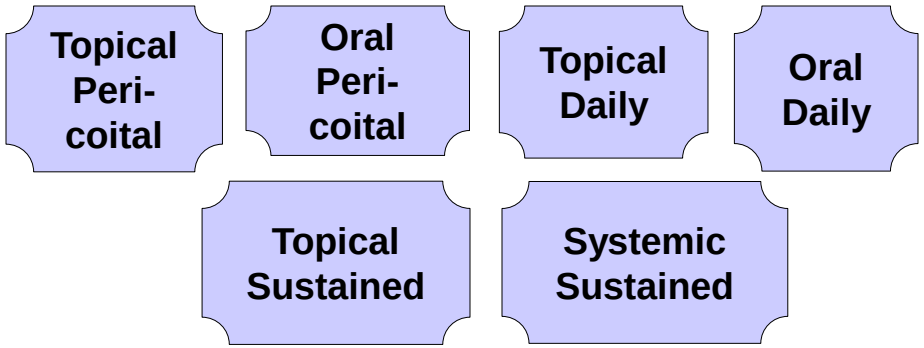
INDICATION

- Pregnancy
- HIV
- HSV
- HPV
- Gonorrhea
- Syphilis
- Chlamydia
- BV
- Candida
- Trichomonas

MECHANISM OF ACTION



DOSAGE & ADMINISTRATION



FORMULATION & DELIVERY

- Vaginal gel
- Vaginal film
- Vaginal tablet
- Vaginal ring
- Non-IVR device
- Oral pill
- Implant
- Injection

Developing Target Product Profiles (TPPs) for MPTs

- ***Why a TPP?***
  - To identify key attributes/parameters for MPT products that would lead to the highest potential public health impact (i.e., prioritization)
  - To guide product development and donor investment strategies

Initiative for MPTs (IMPT) TPP Working Group Process:

- Solicited expert review from domestic and international SRH researchers on ideal and minimally acceptable thresholds of product attributes / parameters
- Surveyed US, African and Indian providers as to priority attributes for MPTs:
  - -- **593 US providers** who are members of the Association of Reproductive Health Professionals (U.S.-based)
  - -- **289 African providers** attending the 2011 International Conference on Family Planning in Dakar, Senegal
  - -- **34 Indian providers** attending the Regional Conference on MPTs in New Delhi, India (Dec 2012)
- Consolidated consensus views

TPP Input from SRH Researchers

Critical Attributes Considered:	
Indications	Target Population
Efficacy	Adherence
Route of Administration	Dosage Form & Schedule
Side Effects	Storage Conditions
Reversibility	Other Health Benefits
Contra-indications & precautions	Use by preg./lactating women
Product Provision (Rx vs. OTC vs. ?)	Access Potential & Restrictions (testing?)
IP Status	R&D Costs
Time to Market	Product Cost
Product Presentation	Packaging
Shelf Life	Disposal/Waste

Key Attributes of MPTs:

- **Indications:**
  - HIV & Pregnancy
  - HIV & STI
    - HSV, HPV, BV
  - STI & Pregnancy
- **Dosage Forms:**
  - Sustained release
  - Topical over oral
  - On demand over daily
- **Product Related (egs.):**
  - 40°C storage
  - 36 month shelf life
  - Concealable presentation

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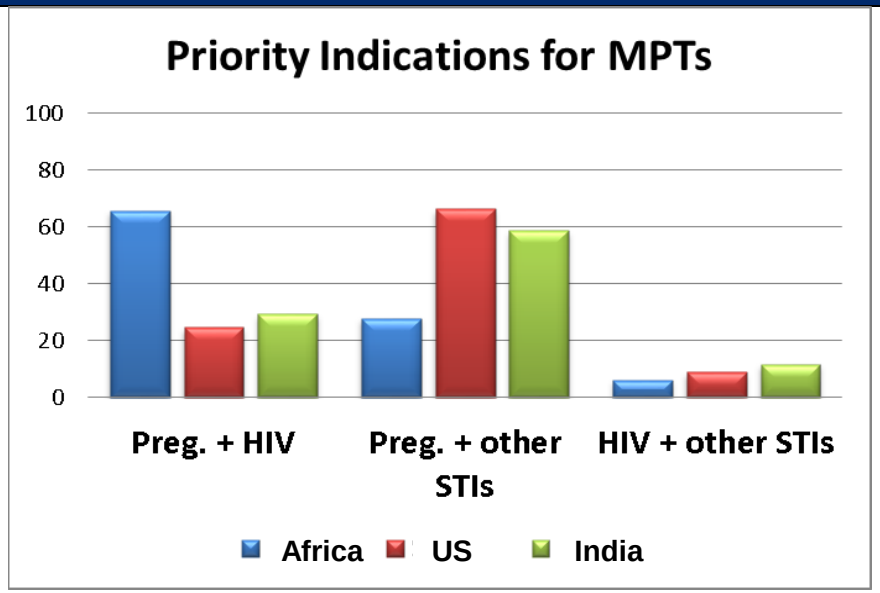
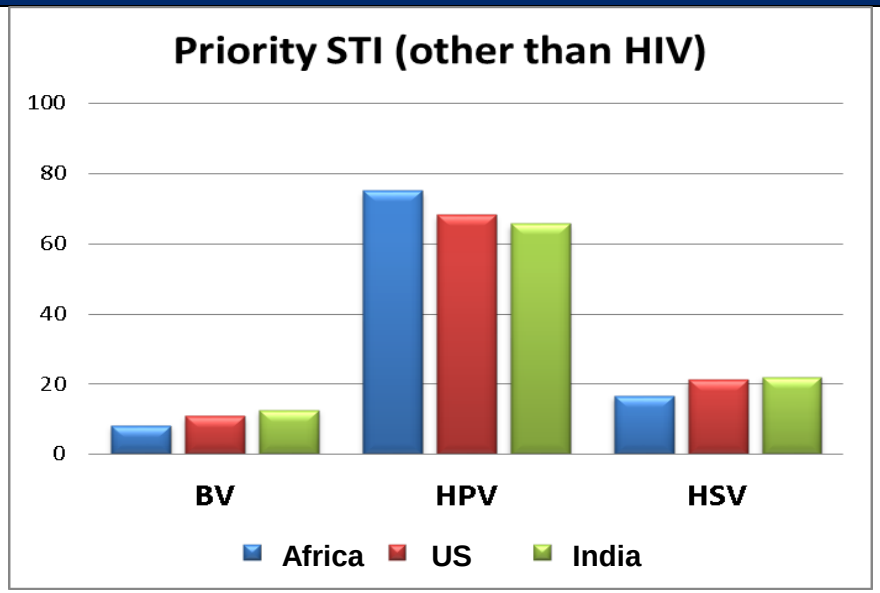
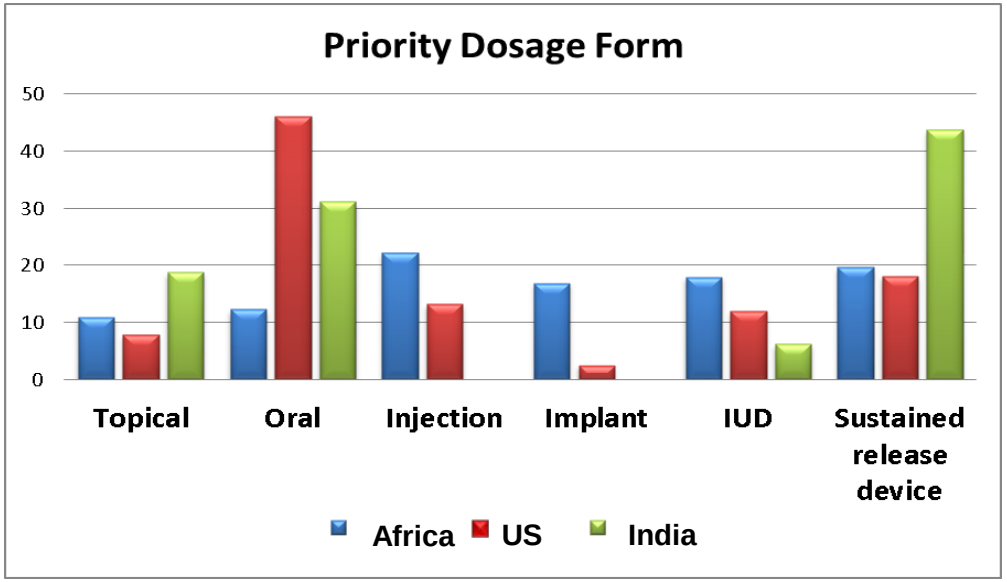
TPP Input from Regional Providers







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Summary of TPP Priorities

SRH Researchers:

- ✓ Priority Indications:
  - Pregnancy + HIV
  - HIV + HSV
- ✓ Dosage Forms:
  Major determining factor is PRODUCT ADHERENCE, so highest development priority is Sustained Release

US, Indian and African Providers:

- ✓ Priority Indications:
  - Pregnancy + HIV
  - Pregnancy + HPV
- ✓ Dosage Forms:
  US preference for oral; Indian preference for sustained release; African preference across several dosage forms (which may help to foster greater acceptance / use)

Conclusions from the MPT TPP process:

Although challenging, it is possible to identify general development priorities and product design targets for MPTs

Why prioritize product design targets for MPTs?

- ✓ **Useful to funders in determining investment potential**
- ✓ **Useful to developers in focusing R&D efforts**

The IMPT Scientific Agenda Working Group (SAWG) conducted a ***Product Development Prioritization and Gap Analysis***

April – October, 2012

SAWG Members	
Donor Representatives	
BMGF	DFID
NIH/NIAID	NIH/NICHD
NIH/OAR	USAID
Regional Representatives	
Africa	China
India	
IMPT Coord. Committee	

SAWG MPT Pipeline Prioritization Process

- **Assembled comprehensive list of MPT-related products/components**

10 MPT IVR	10 Single Indication IVR	31 HIV Entry Inhibitors
3 On-Demand MPT	12 On-Demand HIV Only	11 Enzyme Inhibitors
2 Barrier MPT	2 Injectable HIV Only	7 Other HIV Inhibitors
23 HC products	2 Lacto-based Products	29 non-HC products

- **Evaluated based on development feasibility, and number per product type (e.g., MOA, chemical class, dosage form)**
- **Compared to general TPP findings**
- **Evaluated based on per other criteria**
- **Accessed expertise from SRH field**

Outside the SAWG Scope:

- Study-section type review of specific MPT products or component products and technologies
- Recommendations on funding for specific products or technologies

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SAWG MPT Prioritization and Gap Analysis:
General Summary

Top Priorities

- **Suite of product types**:
  - ✓ On-demand formulations
  - ✓ Vaginal rings
  - ✓ Long-acting injectables
- **Active Pharma. Ingredients** (APIs):
  - ✓ ARVs for HIV
  - ✓ Hormonal contraceptives
  - ✓ STI-specific APIs

Long term R&D needs

- STI-specific APIs
- Non-ARV based HIV prevention
- Lactobacillus-based products
- Non-hormonal contraceptives
- Novel on-demand product configurations

Process Priorities

- ✓ Consensus on development objectives across donors and developers
- ✓ ID single leads through common R&D pathways using TPPs specific to product types
- ✓ Coordinated investment and collaborative development
- ✓ Pooling of capacity, expertise, and other resources between MPT R&D partners
- ✓ Early and proactive engagement of regulatory authorities

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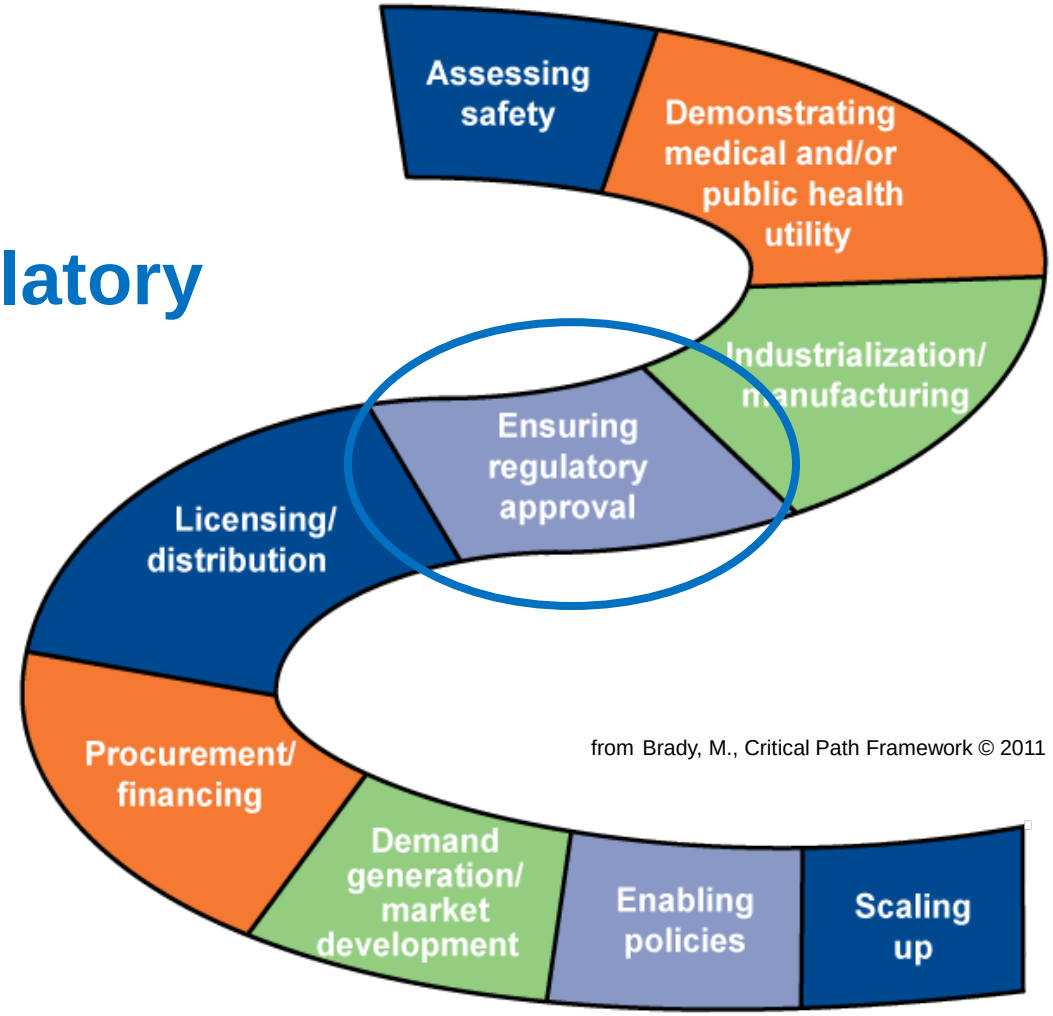
Constructing a Critical Path from Product Development to Introduction

2. MPT Regulatory Approval



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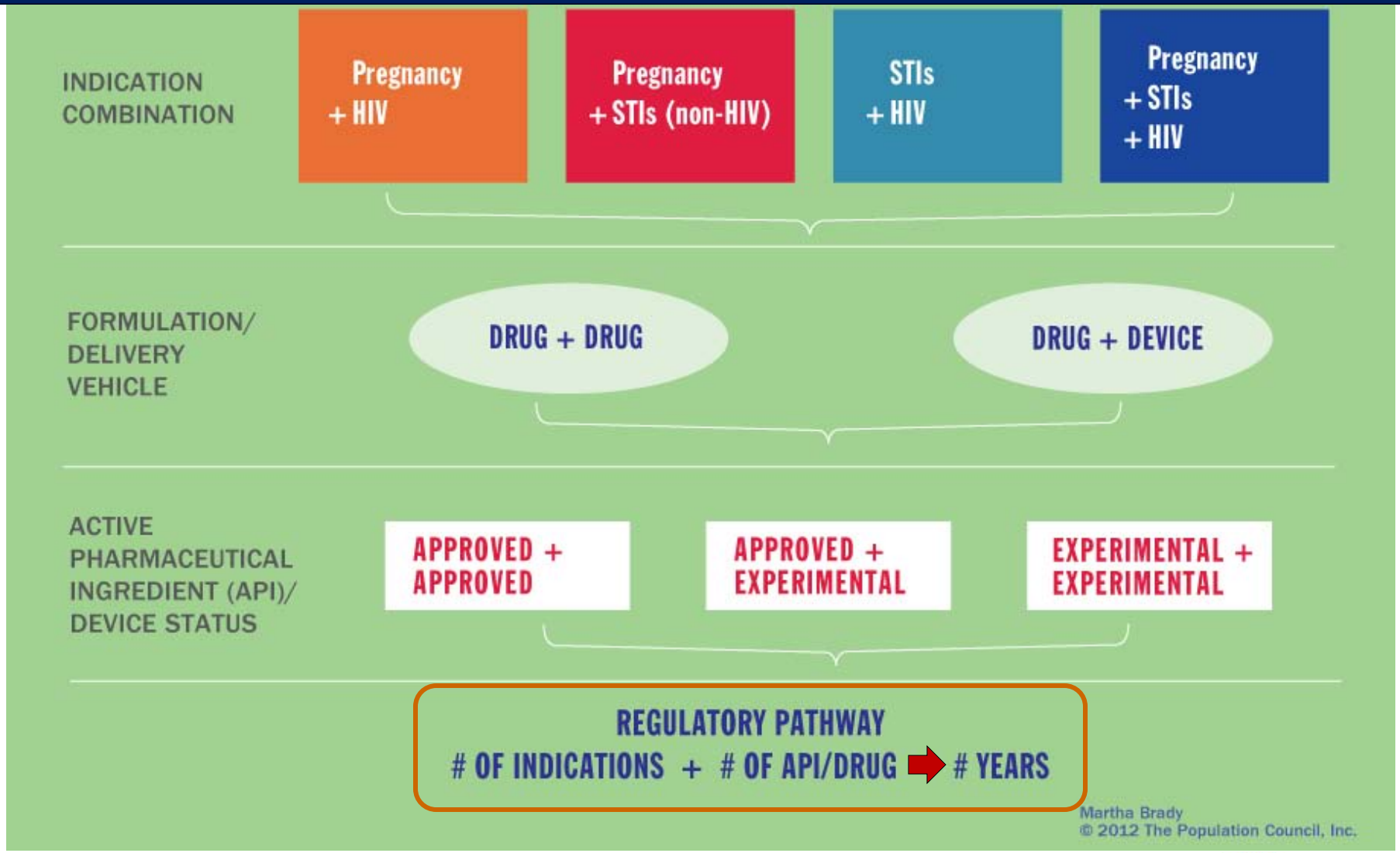
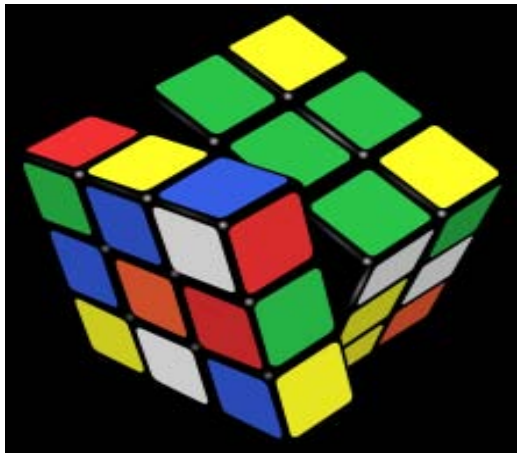
MPT Types from a Regulatory Perspective



Clarifying the MPT Regulatory Puzzle

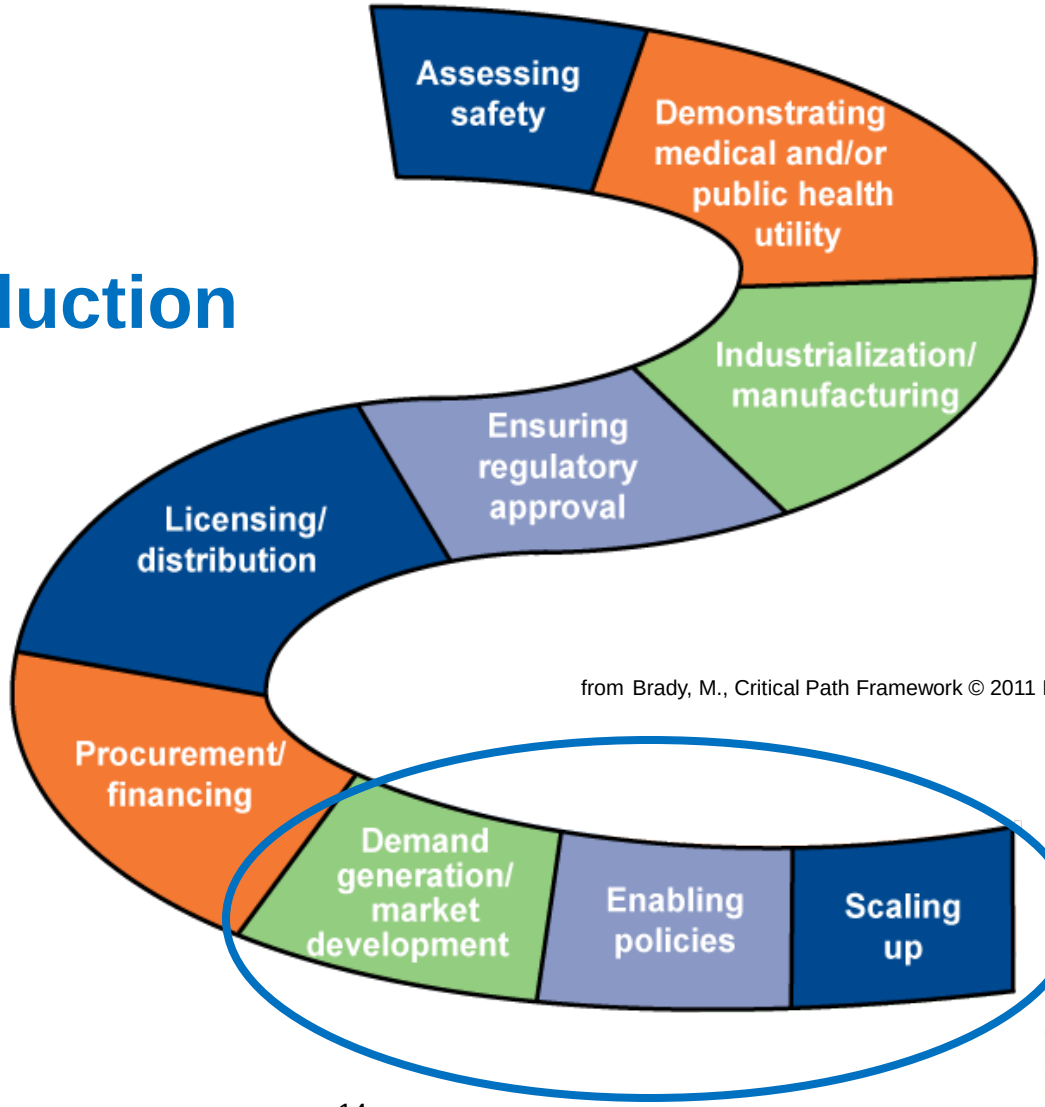
Although specific regulations will vary with each MPT type, these four basic questions will guide the regulatory approval process:



1. *Which of the combined indications is the primary?*
2. *Is the product drug+drug or drug+device?*
3. *Are the product components already approved, or experimental?*
4. *Is the product delivery mode topical or systemic?*

Constructing a Critical Path from Product Development to Introduction

3. MPT Introduction & Scale up



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Lessons Learned from Family Planning & Reproductive Health (FP/RH) products

Across Products, Geographies and Time, Women Want to Know…

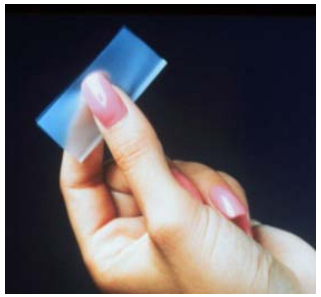
- ***Will the product be effective?***
  (and some sense of how well in an understandable format)
- ***Will it cause harm?***
  (to me, my partner, my baby if I'm breastfeeding)
- ***Will it jeopardize my future fertility?***
  (will I be able to get pregnant in the future, if I want to?)
- ***Will it disrupt my relationship with my partner?***
  (issues of trust, pleasure, secrecy, social cost)

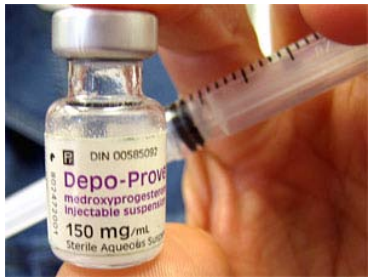
Source: M. Brady 2012; *Shaping the Operations Research Agenda for Women-centered ARV-based Prevention: Gel and Rings Consultation.* June 2012, Population Council, New York

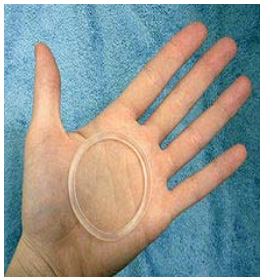
FP/RH Product Considerations for MPTs:

General Characteristics:

- ✓ Over-the-counter (OTC) vs. by prescription (Rx)
- ✓ Skilled clinician involvement vs. limited or none
- ✓ User-controlled vs. user-independent
- ✓ Coitally-dependent vs. coitally-independent
- ✓ Local vs. systemic effects
- ✓ Different durations of action / effectiveness
- ✓ Discreet vs. known use (by partner, family, etc)







In Conclusion: *Key Aspects to Consider for MPT Introduction*

Source: M. Brady and E. McGrory. 2007. *Day of dialogue. Insights and evidence from product introduction: Lessons for microbicides.* New York: Population Council.

- ✓ Medical monitoring
- ✓ Rx only (at least initially)
- ✓ Provider / service delivery type
  - Capacity for periodic HIV testing
  - Scalability
- ✓ HIV testing as gateway for use
- ✓ Adherence, and counseling about partial effectiveness
- ✓ Effects of different formulations and delivery modes on the potential for ARV drug resistance
- ✓ ***User and partner knowledge, attitudes, perceptions and practices will ultimately drive success – or failure***

Thank you!

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