What are Multipurpose Technologies (MPTs) and why do we need them?
What is an MPT?

• An MPT is a single product intentionally designed to prevent a combination of unintended pregnancy, HIV, and/or other STIs.

• Male and female condoms are the only MPT products currently available
Why do women need MPTs?

• Healthy timing & spacing of intended pregnancies
• Protection against HIV
• Protection against other STIs
Women Deliver
Published May 17, 2013

Executive summary
In recent years, two important changes in maternal health have taken place worldwide: a reduction in global maternal mortality, and an increase in the proportion of childbirths occurring in health facilities. Although substantial progress has been made, the fifth Millennium Development Goal to reduce the maternal mortality ratio by three quarters before 2015 will be missed.

Against this backdrop, The Lancet publishes a special themed issue to coincide with the third Women Deliver conference in Kuala Lumpur, Malaysia on May 28-30, 2013. Women Deliver brings together voices from around the world to generate political commitment and resource investments to improve the health and well-being of girls and women and achieve universal access to reproductive health. The studies published in The Lancet’s themed issue use different methods to show the multidimensional nature of reproductive health and the influence of social determinants and health systems.

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Wairagala Wakabi
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Related links
Women Deliver conference
# Impact of Fertility Decline on income 1965-2000
(for E and SC Asia, L America, and SSA, combined)

<table>
<thead>
<tr>
<th></th>
<th>1965</th>
<th>2000 Without fertility decline</th>
<th>2000 With fertility decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population size</td>
<td>2.1b</td>
<td>5.7b</td>
<td>4.1b</td>
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<tr>
<td>Dependency ratio</td>
<td>0.81</td>
<td>0.93</td>
<td>0.60</td>
</tr>
<tr>
<td>Per capita income</td>
<td>$1110</td>
<td>$1685</td>
<td>$2633</td>
</tr>
<tr>
<td>Region</td>
<td>Number (millions) using modern methods</td>
<td>Proportion of women wanting to avoid pregnancy using modern methods (%)</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>All developing countries</td>
<td>506</td>
<td>600</td>
<td>645</td>
</tr>
<tr>
<td>Africa</td>
<td>33</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Sub-Saharan Africa*</td>
<td>20</td>
<td>28</td>
<td>36</td>
</tr>
<tr>
<td>Eastern Africa</td>
<td>8</td>
<td>12</td>
<td>17</td>
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<tr>
<td>Middle Africa</td>
<td>1</td>
<td>2</td>
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</tr>
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<td>Southern Africa</td>
<td>7</td>
<td>7</td>
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</tr>
<tr>
<td>Western Africa</td>
<td>4</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>13</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Asia†</td>
<td>411</td>
<td>485</td>
<td>514</td>
</tr>
<tr>
<td>Eastern Asia</td>
<td>230</td>
<td>262</td>
<td>267</td>
</tr>
<tr>
<td>Central Asia</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>South Asia</td>
<td>114</td>
<td>153</td>
<td>163</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>49</td>
<td>51</td>
<td>64</td>
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<tr>
<td>Western Asia</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>62</td>
<td>72</td>
<td>80</td>
</tr>
<tr>
<td>Caribbean</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Central America</td>
<td>14</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>South America</td>
<td>45</td>
<td>51</td>
<td>58</td>
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<tr>
<td>69 poorest countries‡</td>
<td>168</td>
<td>226</td>
<td>252</td>
</tr>
<tr>
<td>Higher-income countries§</td>
<td>338</td>
<td>374</td>
<td>393</td>
</tr>
</tbody>
</table>

*Includes eastern, middle, southern, and western Africa, and Sudan and south Sudan, which are in the northern Africa subregion. †Oceania is included in total for Asia, but not shown separately. ‡Per head gross national income in 2010 US$2500 or less; these countries are the focus of the London Summit on Family Planning. §All other developing countries with 2010 per head gross national income more than $2500.
Each year, 450,000 women in developing countries die from complications related to pregnancy and childbirth.

An additional 15 to 20 million women suffer debilitating consequences of pregnancy.
Annually, 4 million newborns die in the first four weeks of life, accounting for 40 percent of all deaths among children under the age of five.
Percent of unmet need is highest in sSA (64%) but S/W Asia has the highest absolute number of women with unmet need (88 million)

Source: AGI 2004; Guttmacher “Adding it Up” report, 2012
Unmet need of 222 million women means:

- 4 million newborns die in first 4 weeks of life, 40% of all deaths among children <5 years
- 54 million unintended pregnancies
- 26 million abortions
Trends in Maternal Mortality Ratios

MM Ratio reduced by 43 deaths per 100,000 for each 10% point rise in contraception due to decline in high risk pregnancies (Cleland et al 2011; see also Jain 2011)
Method mix: among all married users, % using specific method

Source: UNPD 2011
Each year, 1.8 million women die of AIDS...... and 2.7 million become infected.
Number of people receiving antiretroviral therapy in low- and middle-income countries, by region, 2002–2009

UNAIDS 2010
WHO estimates 499 million new cases of curable STIs in 2008

Curable STIs: chlamydia, gonorrhea, syphilis, trichomoniasis

Viral STIs: large proportion of prevalent STIs

• HSV-2 infection affects an estimated 536 million people globally

• Approximately 360 million people suffer chronic HBV infections
  – Most acquired perinatally

• An estimated 291 million women have HPV infection at any point in time
  – Numbers of men likely similar
275,000 women die of cervical cancer annually
Curable STIs: a global snapshot

• Individual curable STIs, 2008

<table>
<thead>
<tr>
<th>Number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>106 million</td>
<td>Chlamydia</td>
</tr>
<tr>
<td>106 million</td>
<td>Gonorrhea</td>
</tr>
<tr>
<td>11 million</td>
<td>Syphilis</td>
</tr>
<tr>
<td>276 million</td>
<td>Trichomoniasis</td>
</tr>
</tbody>
</table>

• Overall, numbers not decreasing compared with 2005 estimate of 448 million

Sub Saharan Africa
Sub-Saharan Africa lags behind:
Trends in Contraceptive Prevalence
in married women (any method)

Source: UNPD
The overall demand for contraception is increasing.

% of married women aged 15–49

- Latin America & Caribbean
  - 1990-1995: 59%, 17% Unmet need
  - 2000-2005: 69%, 12% Unmet need

- North Africa & West Asia
  - 1990-1995: 54%, 14% Unmet need
  - 2000-2005: 60%, 10% Unmet need

- South & Southeast Asia
  - 1990-1995: 41%, 18% Unmet need
  - 2000-2005: 59%, 11% Unmet need

- Sub-Saharan Africa
  - 1990-1995: 14%, 26% Unmet need
  - 2000-2005: 20%, 24% Unmet need
Method mix: among currently married (CM) and sexually active not married (NM) women, % using specific method

Kenya 2008-09
Lesotho 2009
Malawi 2010
Swaziland 2006
Tanzania 2010
Zambia 2007

Country and Survey Year

Source: Demographic and Health Surveys 2006-1010
HIV prevalence among 15-49 year-old women
STIs in Swaziland: Comparison between 1980 and 2004

<table>
<thead>
<tr>
<th></th>
<th>Chancroid</th>
<th>Syphilis</th>
<th>LGV</th>
<th>Genital herpes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1980</strong></td>
<td>44%</td>
<td>17%</td>
<td>13%</td>
<td>12%</td>
</tr>
<tr>
<td><strong>2004</strong></td>
<td>1%</td>
<td>9%</td>
<td>12%</td>
<td>61%</td>
</tr>
</tbody>
</table>
Age-standardised prevalence of cervical HPV DNA in sexually active women
IARC Multi-centre HPV Prevalence Survey, 1995-2002

- Nigeria: 933
- Argentina: 908
- India: 1940
- Colombia: 1981
- China, Yangcheng: 671
- Chile: 971
- Mexico: 1340
- Vietnam, Ho Chi Minh: 918
- Korea: 870
- Italy, Turin: 1013
- Thailand, Lampang: 1024
- Netherlands: 3299
- Thailand, Songkla: 716
- Spain: 908
- Vietnam, Hanoi: 1007
China
Contraception in China is dominated by IUD and sterilization

- IUD gaining in popularity – low cost and difficult to remove after installation
- Condom usage increased with urbanization and increased income
- OC/Inj. usage decreased due to SE and decreased Govt. purchased
- Implant – local Govt. replaced Implant with IUD
- Limited R&D investment

McKinsey and Co
HIV-1 epidemic in China

Heterosexual Transmission: increased from 40.3% in 2008 to 47.1% in 2009.

MSM: increased from 5.9% in 2008 to 8.6% in 2009.
Changing STI Epidemic Profiles

Characteristics
• Before middle of 1990s: Gonorrhea (red) and Genital warts (green) were the major STDs
• Late 1990s to 2005: NSU (pink) was the major STD, with Gonorrhea (red), Genital warts (green) and syphilis (yellow) also widely spread;
• After 2006: syphilis became the major STD, with Chlamydia, Gonorrhea (red), and Genital warts (green) widely spread
India
Contraceptive uptake and population concerns

At the current pace, India will double its population in 50 years making sustainable development unattainable.

If unwanted fertility is averted, TFR will reach replacement level.
Unmet need for contraception

Unplanned pregnancy in India: 78%
Unwanted pregnancy: 21%
Induced abortions: 4 million (approx)
Ratio of illegal to legal abortion: 10:1
HIV in India

Estimated HIV infections: 2.39 million
Prevalence rate: 0.31 %
Women infected: 39%
Concentrated & heterogeneous in distribution, with some districts showing high prevalence
Heterosexual transmission - >85%

Source: NACO-CMIS

Source: HIV Estimations 2010
## General Population: STI/RTI Prevalence (%)

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syphilis</td>
<td>0-4.7</td>
<td>1-10.1</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>0-1.9</td>
<td>0-3.9</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>0-1.3</td>
<td>0.1.1</td>
</tr>
<tr>
<td>Trichomonas</td>
<td>1.2-8</td>
<td>1.5-3.6</td>
</tr>
<tr>
<td>Candidiasis</td>
<td>7.2-23.9</td>
<td>-</td>
</tr>
<tr>
<td>Bacterial Vaginosis</td>
<td>17.8-63.7</td>
<td>-</td>
</tr>
<tr>
<td>HSV2 serology (IgG)</td>
<td>8.6-17.9</td>
<td>7-10.6</td>
</tr>
<tr>
<td>HIV</td>
<td>0-0.95</td>
<td>0-1.4</td>
</tr>
</tbody>
</table>

25 studies for female and 15 studies for male general population reviewed
NACP III: report on mid-term review of STI services
So Many Choices, So Little Time!!!
Complexity of developing MPTs

INDICATION

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

MECHANISM OF ACTION

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

FORMULATION & DELIVERY

- Topical
- Oral
- Daily
- Peri-coital
- Sustained
- Systemic
Complexity of developing MPTs

**INDICATION**

- Pregnancy
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- Syphilis
- Chlamydia
- BV
- Candida
- Trichomonas

**MECHANISM OF ACTION**

- Barrier
- Non-HC
- Anti-Microbial
- Probiotic
- Anti-viral
- Anti-fungal

**FORMULATION & DELIVERY**

- Topical
- Daily
- Peri-coital
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- Systemic
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MECHANISM OF ACTION
- Barrier
- HC
- Non-HC
- Anti-Microbial
- Probiotic
- Anti-viral
- Anti-fungal

DOSAGE & ADMINISTRATION
- Oral Daily
- Oral Peri-coital
- Oral Sustained
- Topical Daily
- Topical Peri-coital
- Topical Sustained
- Systemic Sustained

Complexity of developing MPTs
Complexity of developing MPTs

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

MECHANISM OF ACTION
- Barrier
- Non-HC
- Anti-Microbial
- Anti-viral
- Anti-fungal
- HC
- Probiotic

DOSAGE & ADMINISTRATION
- Topical
  - Per-coital
  - Sustained
- Oral
  - Per-coital
  - Daily
  - Sustained
- Topical Daily
- Oral Daily

FORMULATION & DELIVERY
- Vaginal gel
- Vaginal film
- Vaginal tablet
- Vaginal ring
- Non-IVR device
- Oral pill
- Implant
- Injection
From the field: Target Product Profile for MPTs

- Different needs for different countries, and for married and unmarried women
- Different products for women wanting pregnancy and women wanting contraception
  - Contraception and HIV prevention
  - Contraception and STI prevention: HSV2, BV, TV, HPV, GC, CT
  - STI and HIV prevention
- Indication that combination barrier method/vaginal product may be acceptable
- Injectables and pills very acceptable
Programmatic action that could set the scene

• Increase contraceptive uptake by:
  – Expand method mix
  – Increase contraception uptake by giving greater attention to populations where gap between fertility desires and contraceptive practice is greatest
  – Include counseling and education to clarify health concerns and side effects of methods

• Integrate contraceptive and HIV services:
  – PMTCT for +ve and −ve women
  – ARV services
  – HCT in family planning

• Expand introduction of female condoms

• Demand creation
Thank You

- John Cleland
- Nomita Chandhiok
- Allen Wu
- Martha Brady
- Melanie Pleaner
- Elizabeth Bukusi
- Charlotte Watts
- Thes Palanee
- WHO and UNAIDS