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

Professor Helen Rees

European Society of Contraception & Reproductive Health, Copenhagen, 2013

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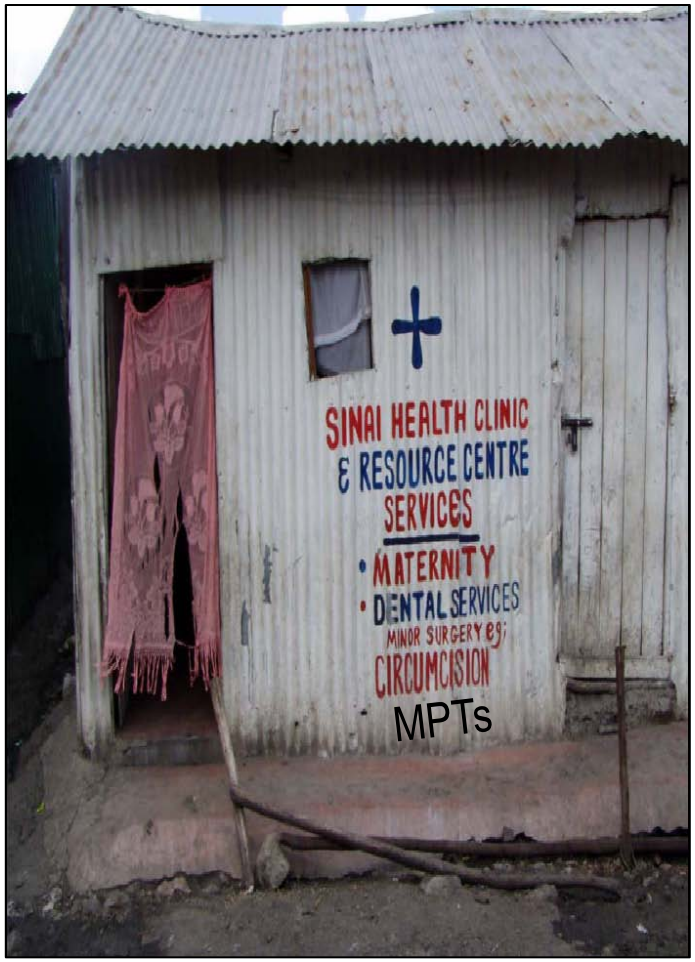
Honorary Professor, London School of Hygiene & Tropical Medicine



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.

Comments

Shared commitment to women's health abroad and at home
Kathleen Sebelius
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Maternal health in Malaysia: progress and potential
Raj Karim, Siti Hasmah Mohamad Ali
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Maternal health: a missed opportunity for development
Karen A Grepin, Jeni Klugman
Full Text | PDF

Participatory women's groups: ready for prime time?
Cesar G Victoria, Fernando C Barros
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Care assessment's difficult relation with maternal mortality
Alexandre Dumont, Marie-Hélène Bouvier-Colle
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Meeting the unmet need for family planning: now is the time
Herbert B Peterson, Gary L Darmstadt, John Bongaarts

Women Deliver 2013
The Lancet interviews Ana Langer, Director of the Women and Health Initiative at Harvard School of Public Health.

Related content published in The Lancet journals

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Sarah Hawkes, Kent Buse
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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)

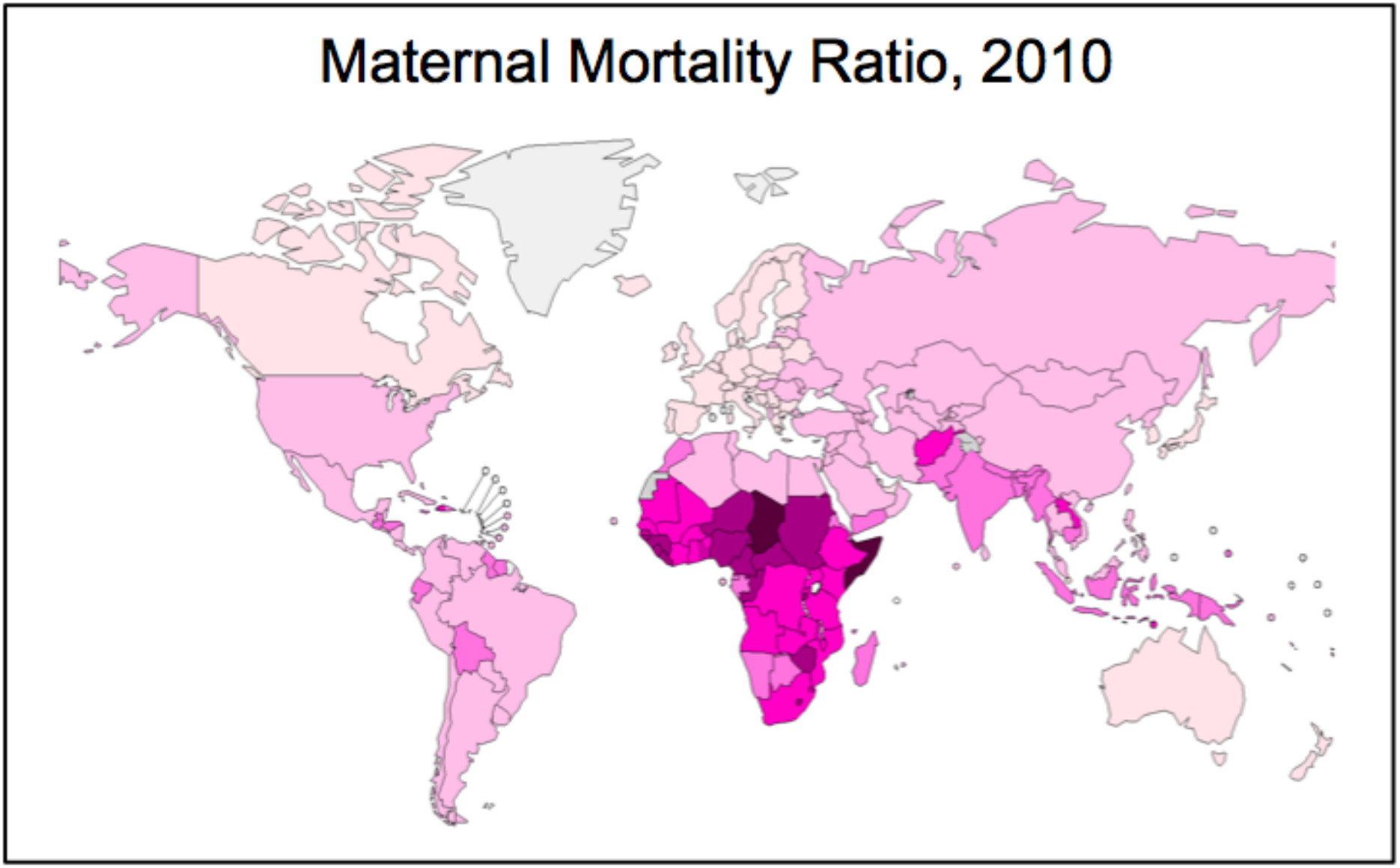
	1965	2000 Without fertility decline	2000 With fertility decline
Population size	2.1b	5.7b	4.1b
Dependency ratio	0.81	0.93	0.60
Per capita income	$1110	$1685	$2633

Number of women using modern methods, and % wanting to avoid pregnancy using modern methods

Lancet May 2013

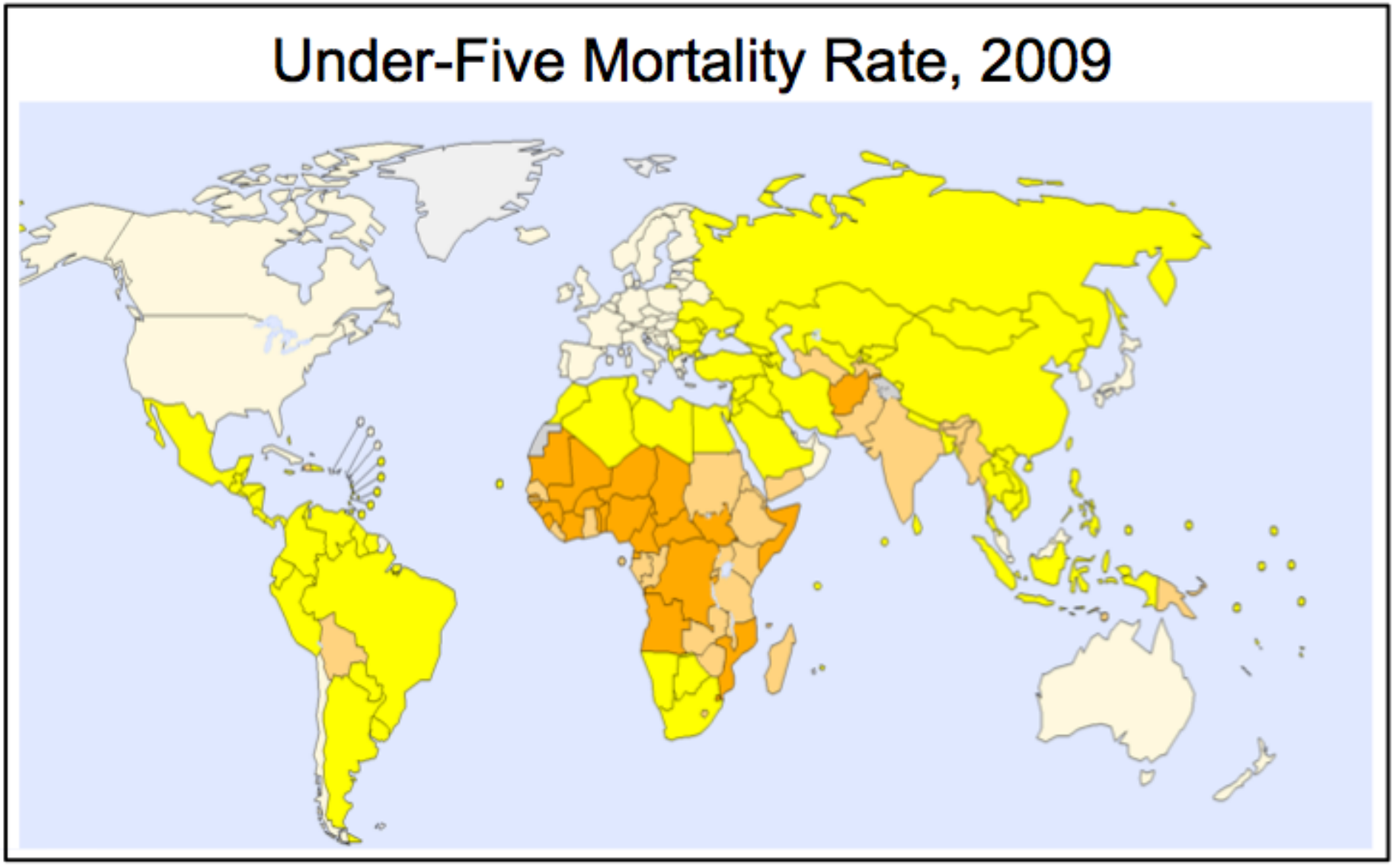
	Number (millions) using modern methods			Proportion of women wanting to avoid pregnancy using modern methods (%)		
	2003	2008	2012	2003	2008	2012
All developing countries	506	600	645	71%	73%	74%
Africa	33	43	51	40%	44%	47%
Sub-Saharan Africa*	20	28	36	32%	35%	40%
Eastern Africa	8	12	17	31%	37%	46%
Middle Africa	1	2	2	17%	18%	19%
Southern Africa	7	7	9	75%	75%	83%
Western Africa	4	6	7	22%	26%	26%
Northern Africa	13	16	16	64%	70%	68%
Asia†	411	485	514	75%	77%	79%
Eastern Asia	230	262	267	92%	92%	94%
Central Asia	6	6	6	70%	70%	72%
South Asia	114	153	163	61%	66%	66%
Southeast Asia	49	51	64	64%	67%	72%
Western Asia	12	13	14	45%	46%	50%
Latin America and the Caribbean	62	72	80	72%	75%	78%
Caribbean	4	5	5	67%	69%	70%
Central America	14	17	17	71%	77%	77%
South America	45	51	58	73%	75%	79%
69 poorest countries‡	168	226	252	55%	59%	61%
Higher-income countries§	338	374	393	82%	84%	87%

*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.[3] §All other developing countries with 2010 per head gross national income more than $2500.



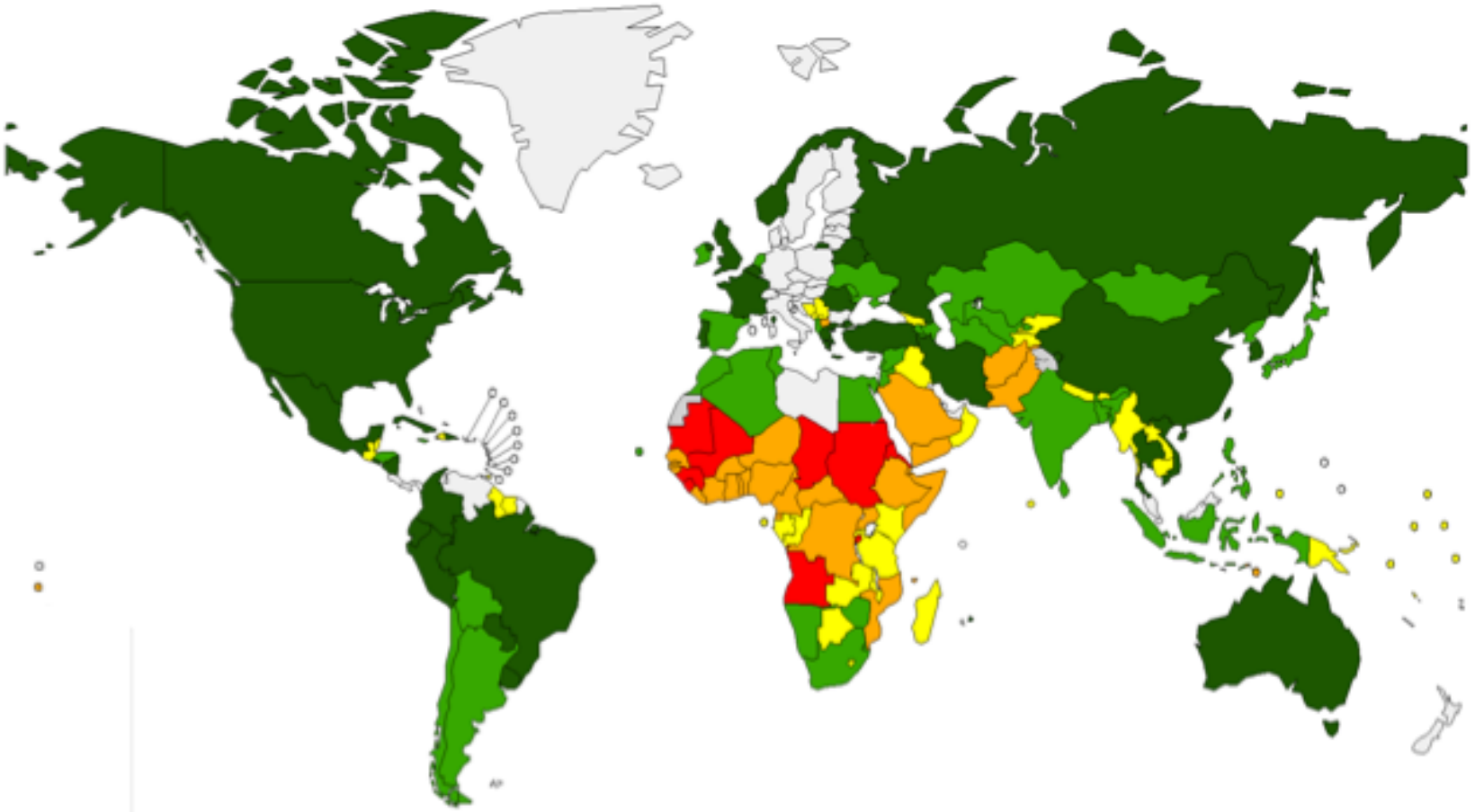
Each year, 450,000 women in developing countries die from complications related to pregnancy and childbirth

An additional 15 to 20 million women suffer debilitating consequences of pregnancy



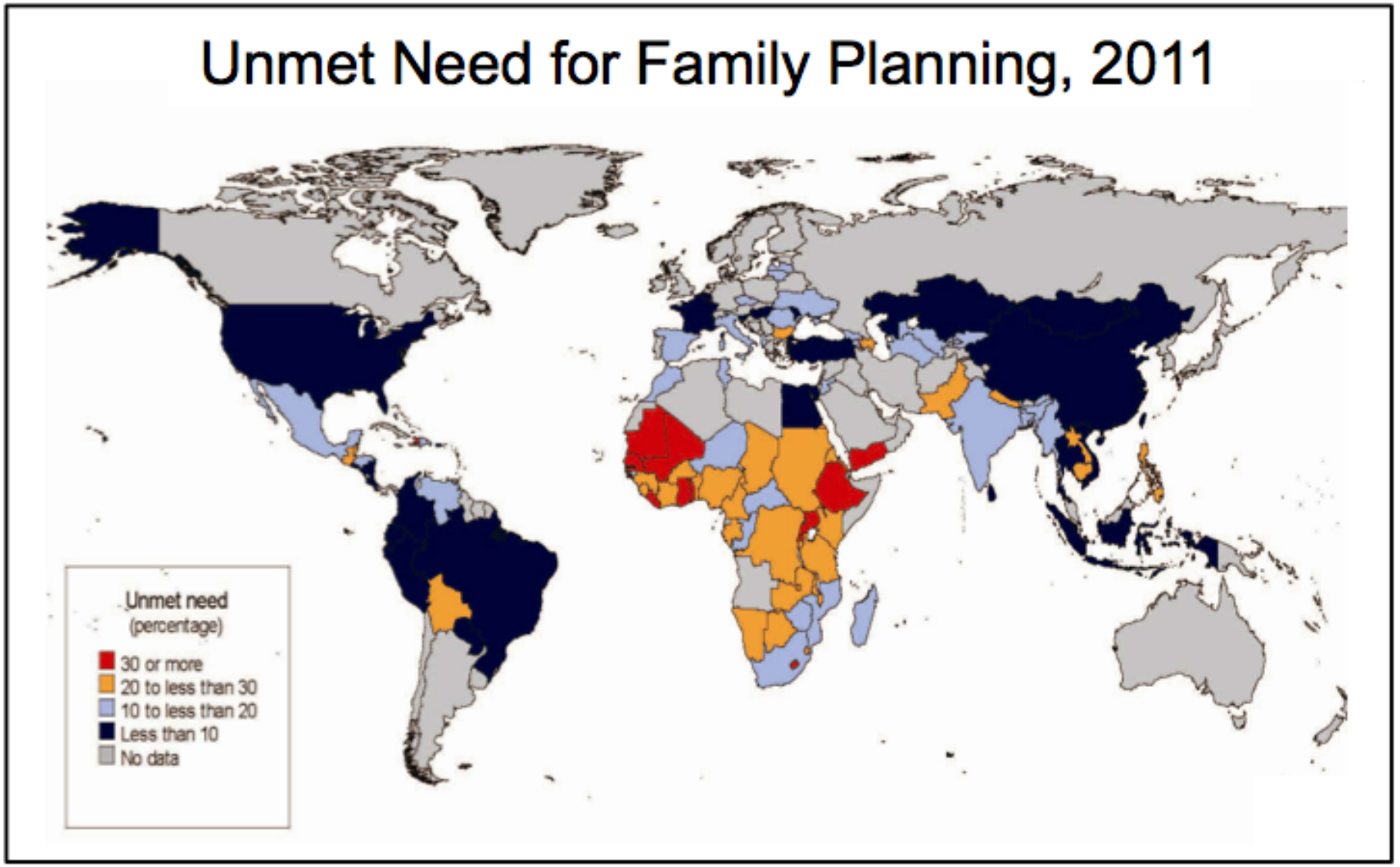
Annually, 4 million newborns die in the first four weeks of life, accounting for 40 percent of all deaths among children under the age of five

Contraceptive Prev. Rate, 2000-2010



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)

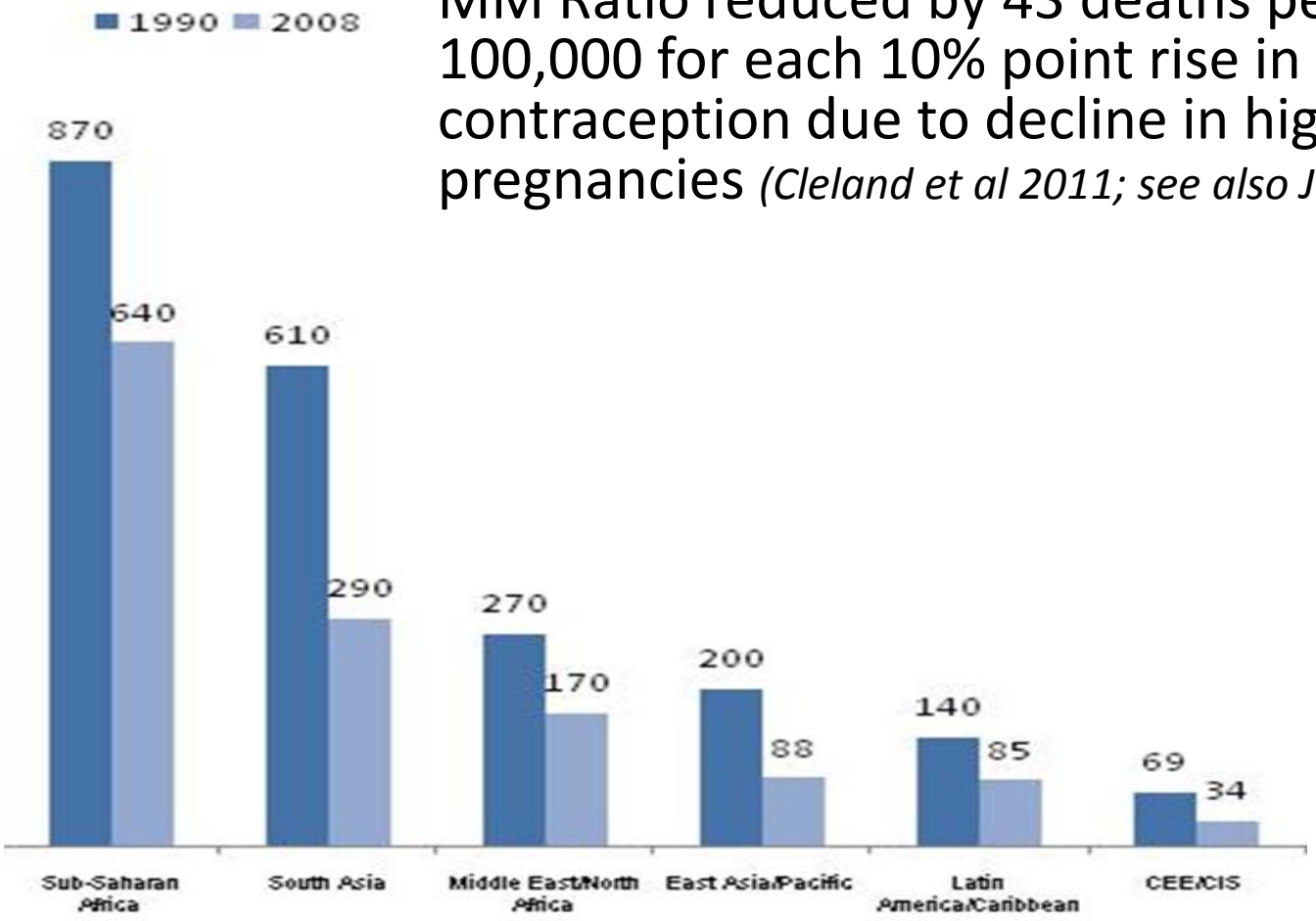
Source: AGI 2004; Guttmacher "Adding it Up" report, 2012



Unmet need of 222 million women means:

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

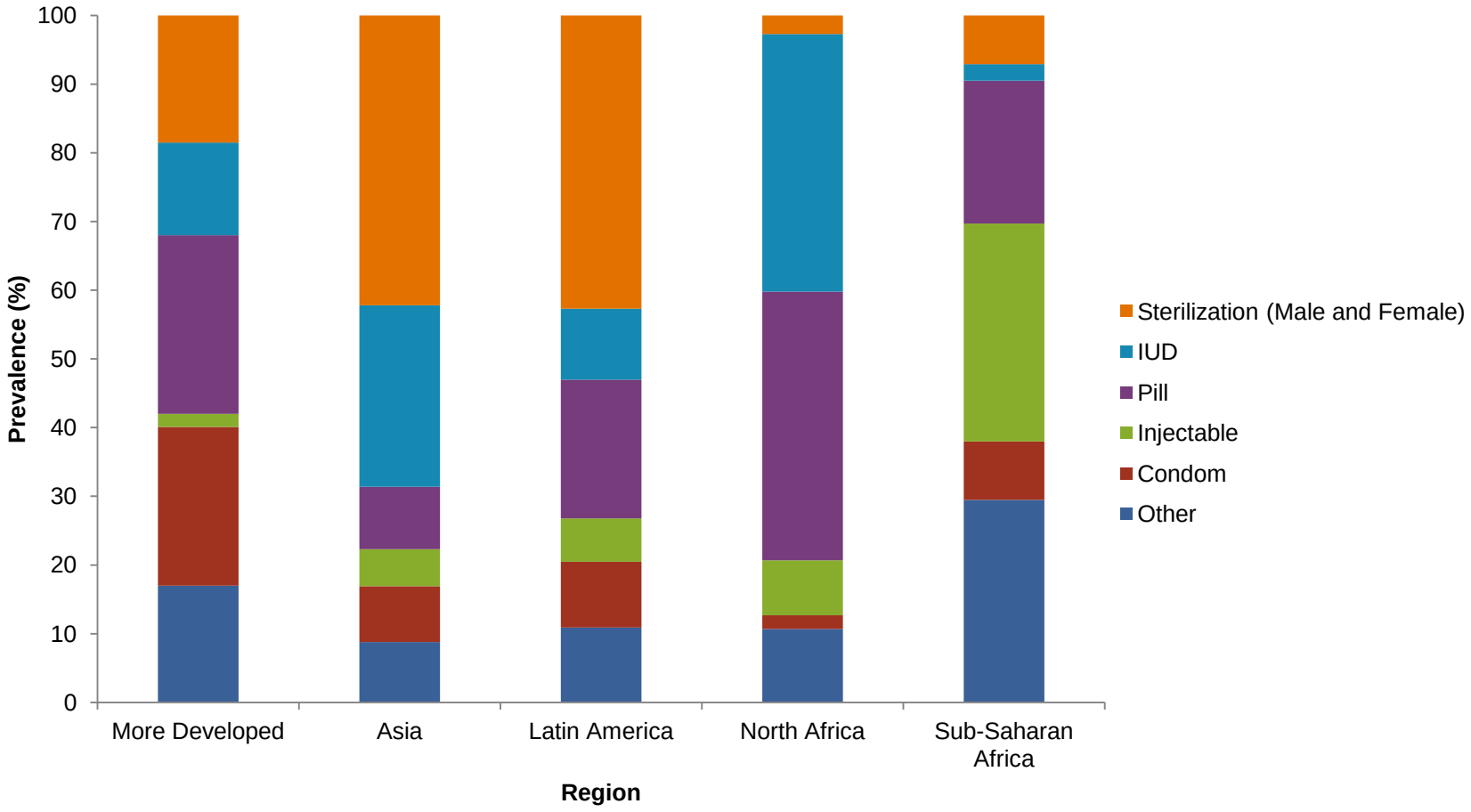
Trends in Maternal Mortality Ratios



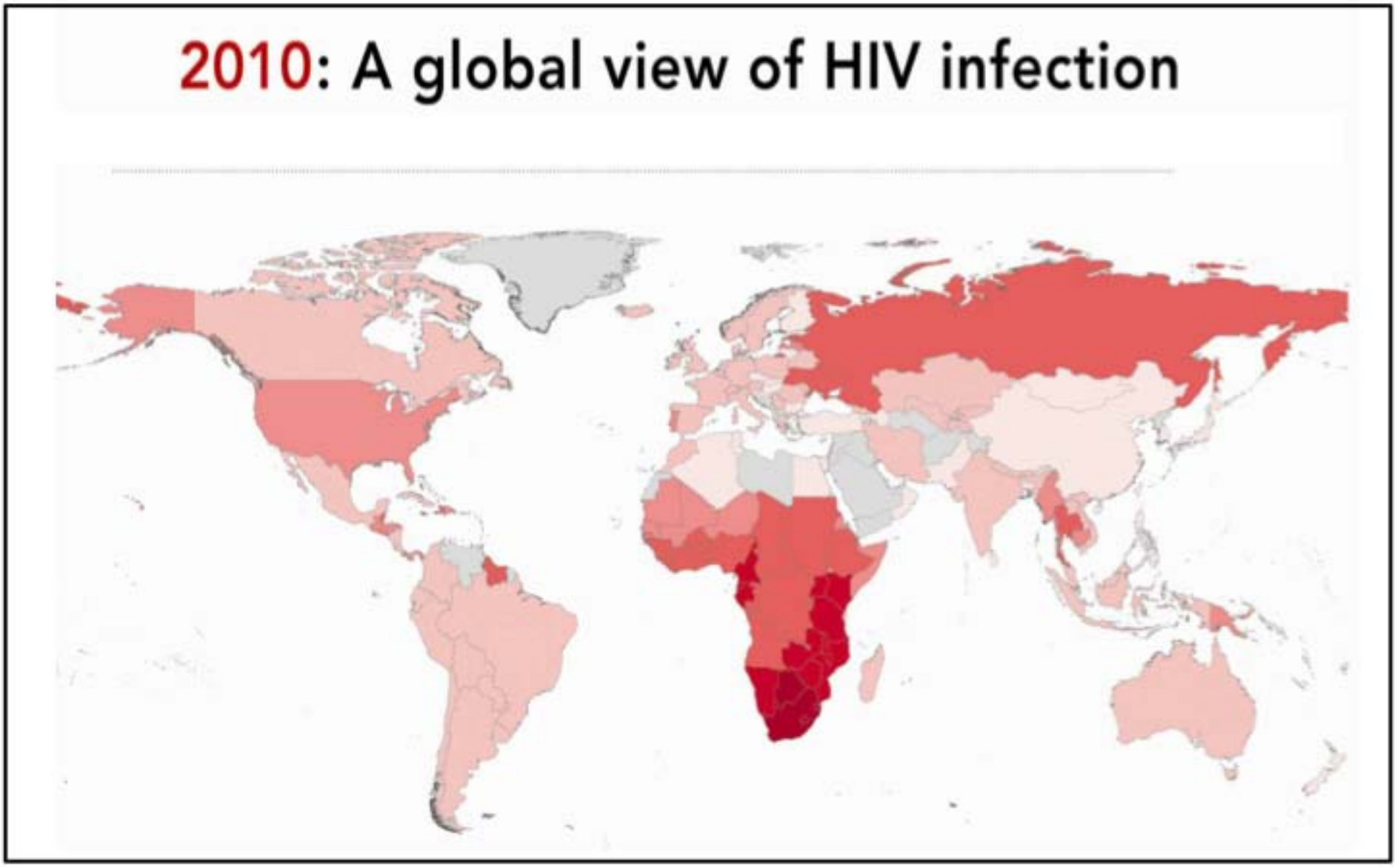
MM Ratio reduced by 43 deaths per 100,000 for each 10% point rise in contraception due to decline in high risk pregnancies *(Cleland et al 2011; see also Jain 2011)*

WHO 2010

Method mix: among all married users, % using specific method

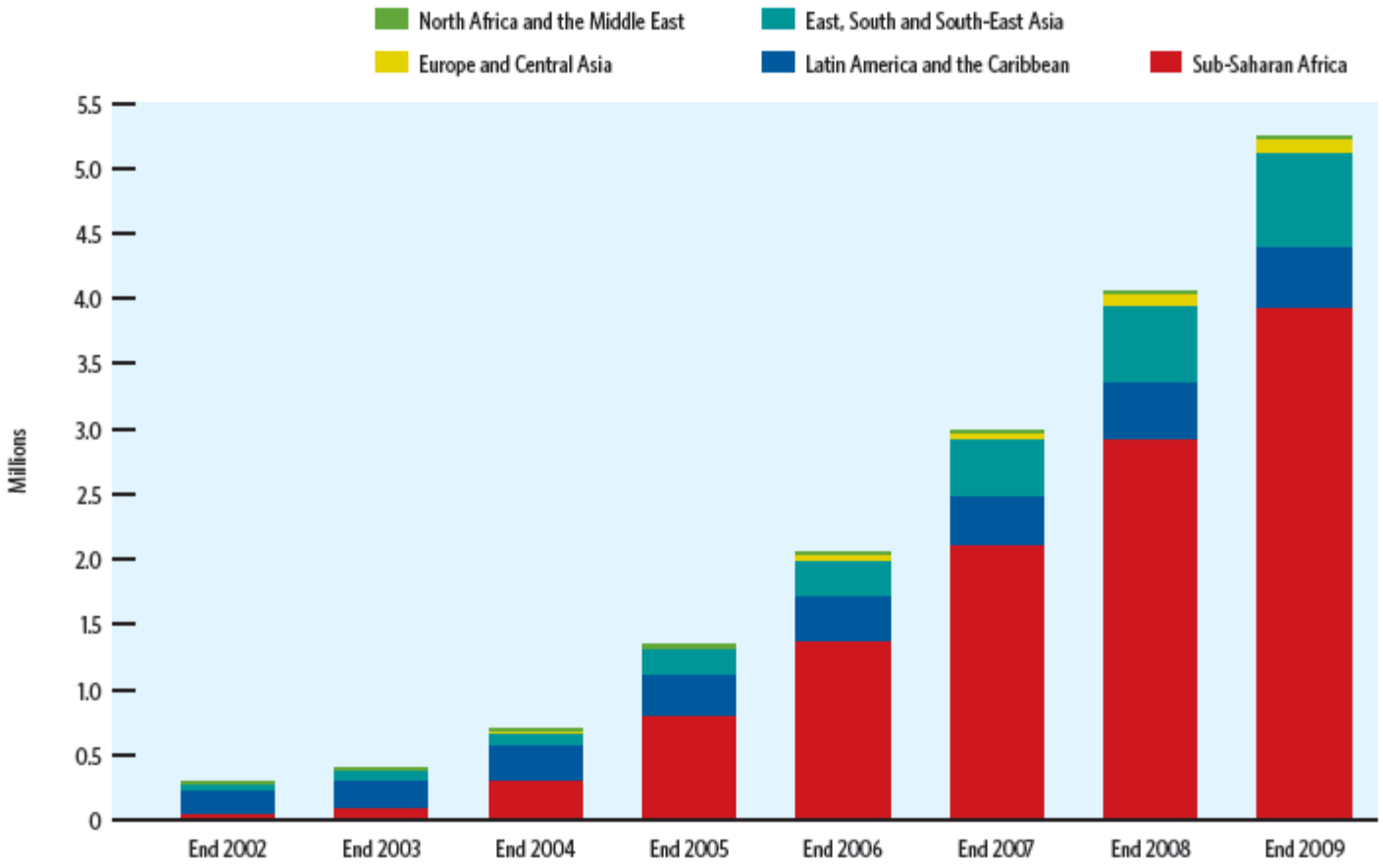


Source: UNPD 2011



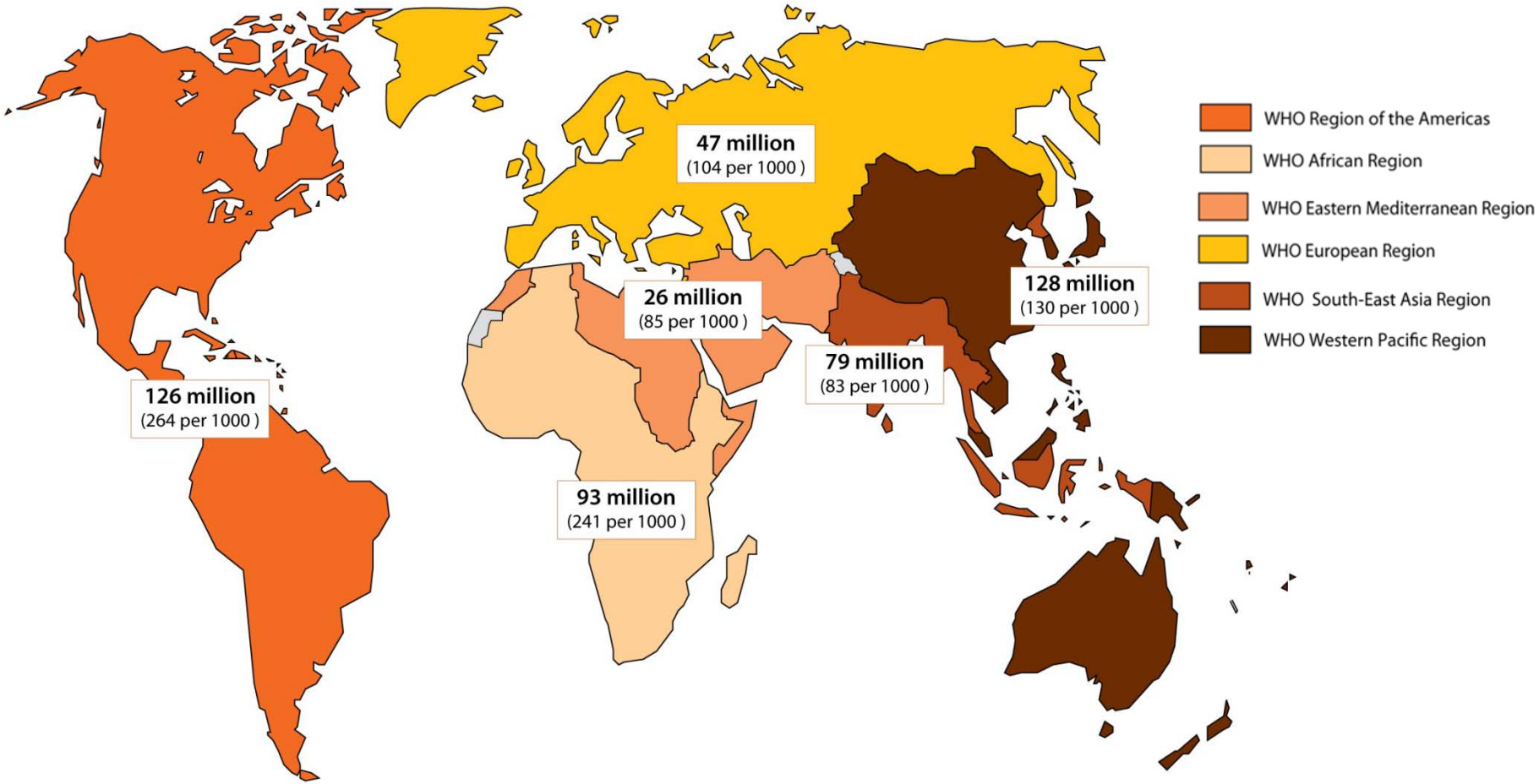
Each year, 1.8 million women die of AIDS…… and 2.7 million become infected

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

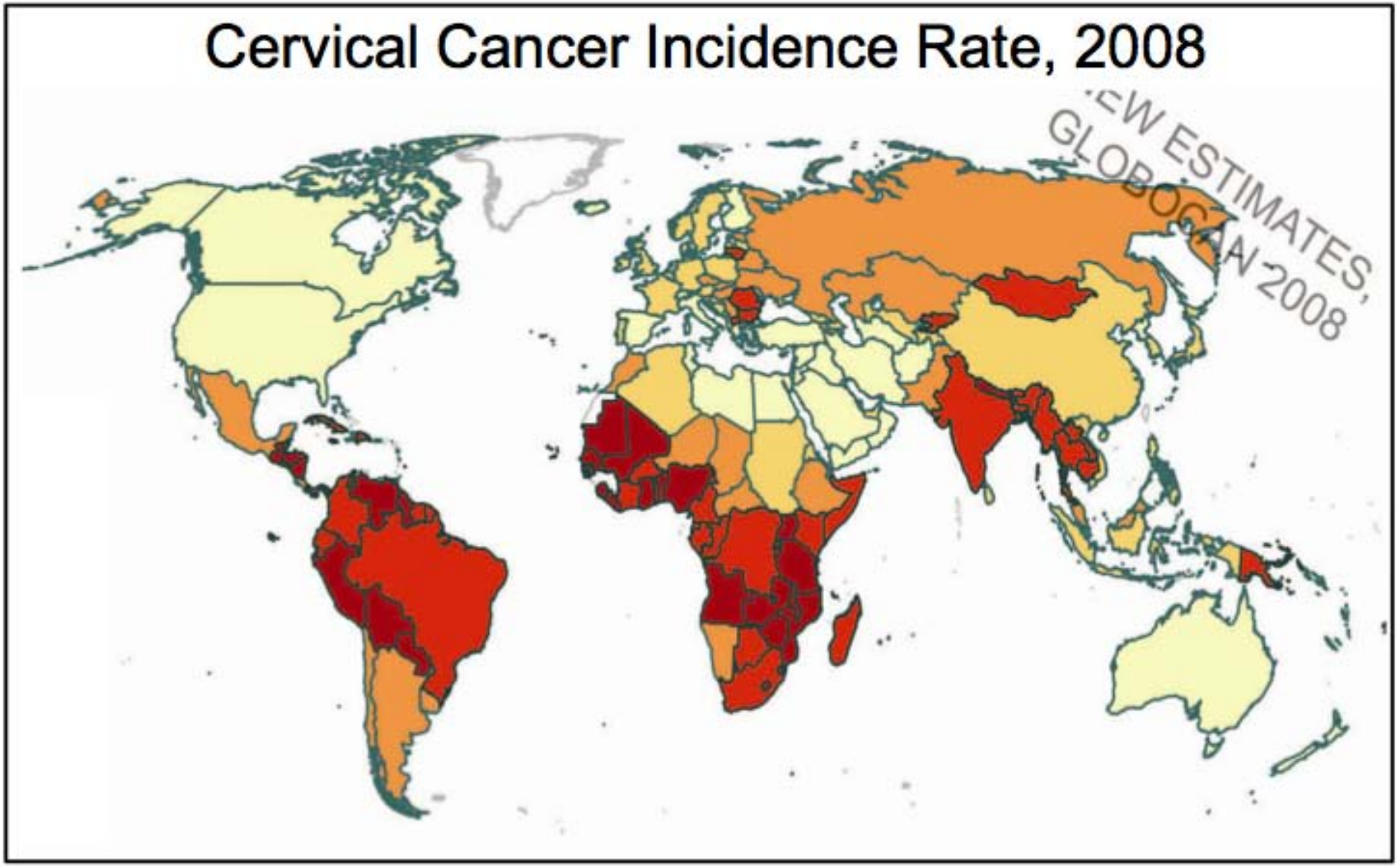


Curable STIs: chlamydia, gonorrhea, syphilis, trichomoniasis

Source: WHO. Global incidence and prevalence of selected curable sexually transmitted infections - 2008.

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

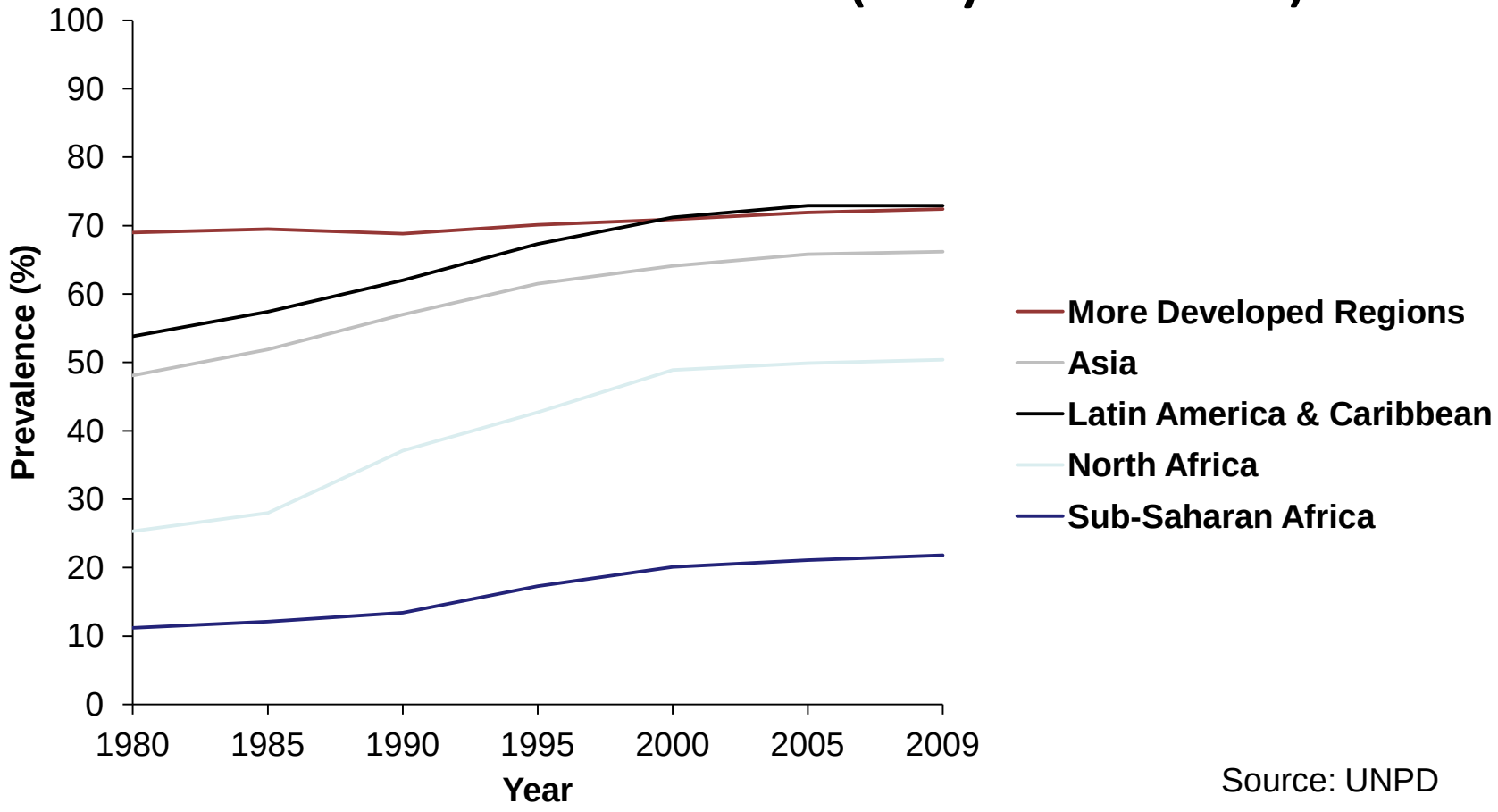
106 million	Chlamydia
106 million	Gonorrhea
11 million	Syphilis
276 million	Trichomoniasis

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

Source: WHO. Global incidence and prevalence of selected curable sexually transmitted infections - 2008.

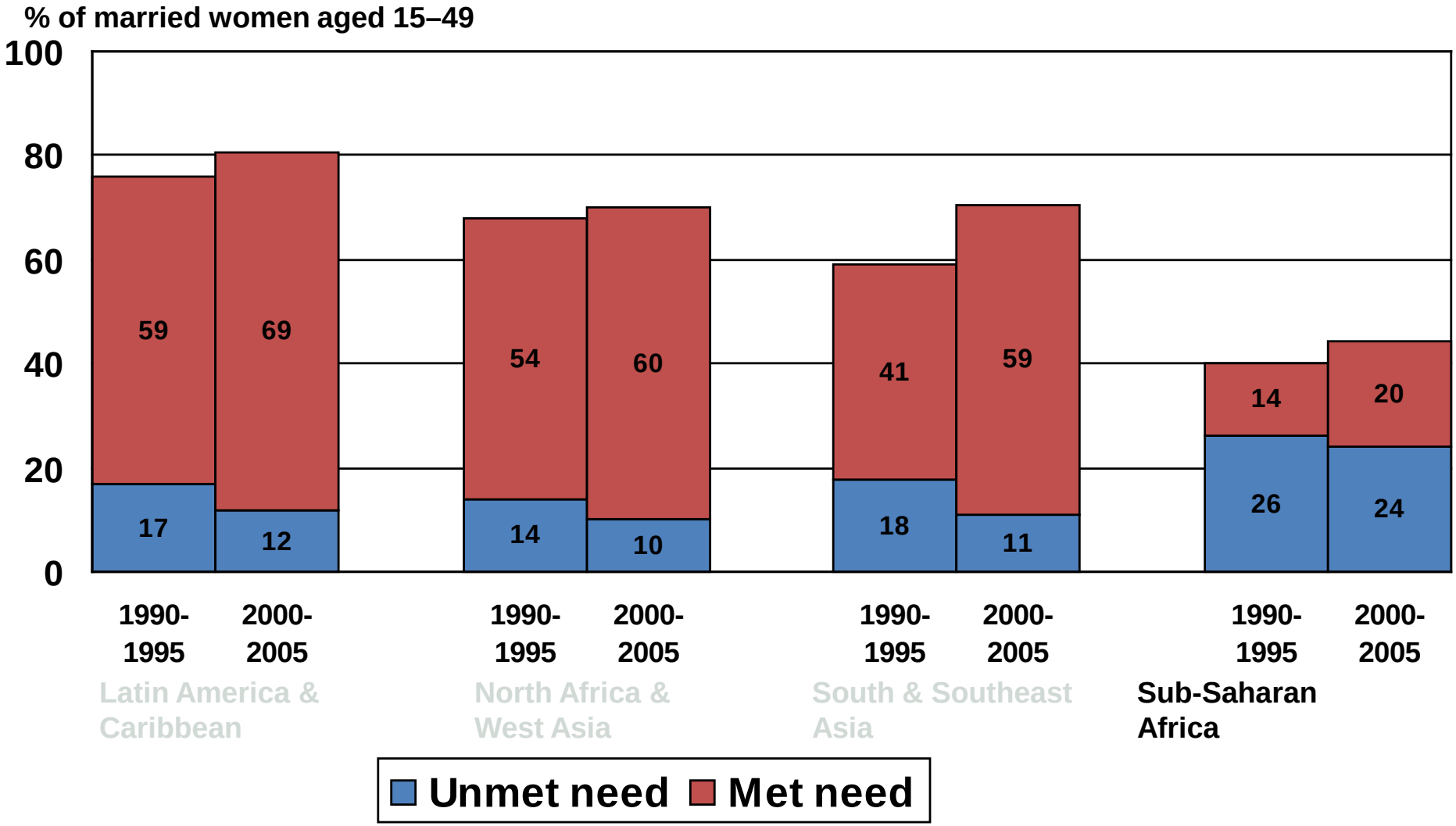
Sub Saharan Africa

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

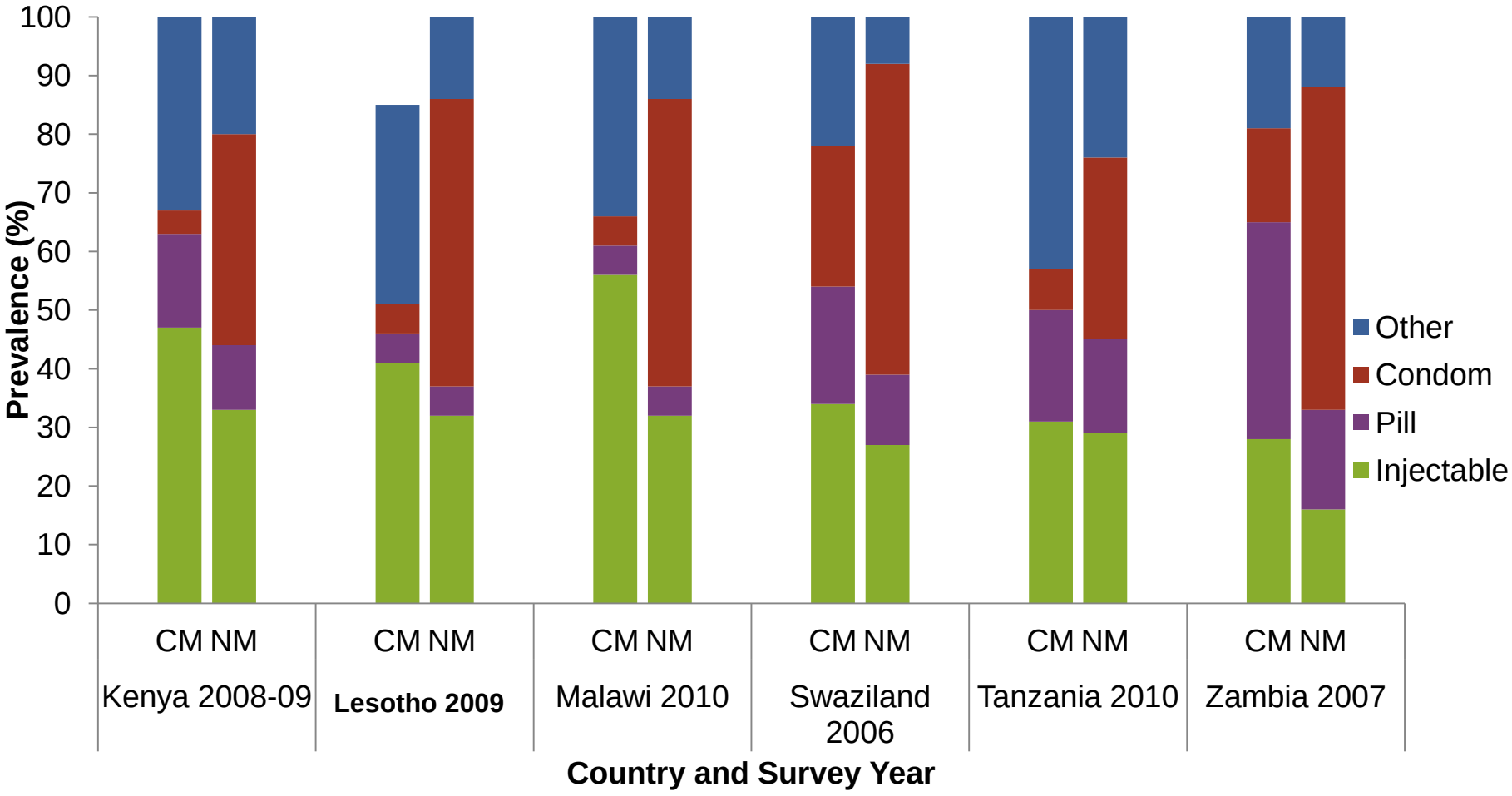


Source: UNPD

The overall demand for contraception is increasing

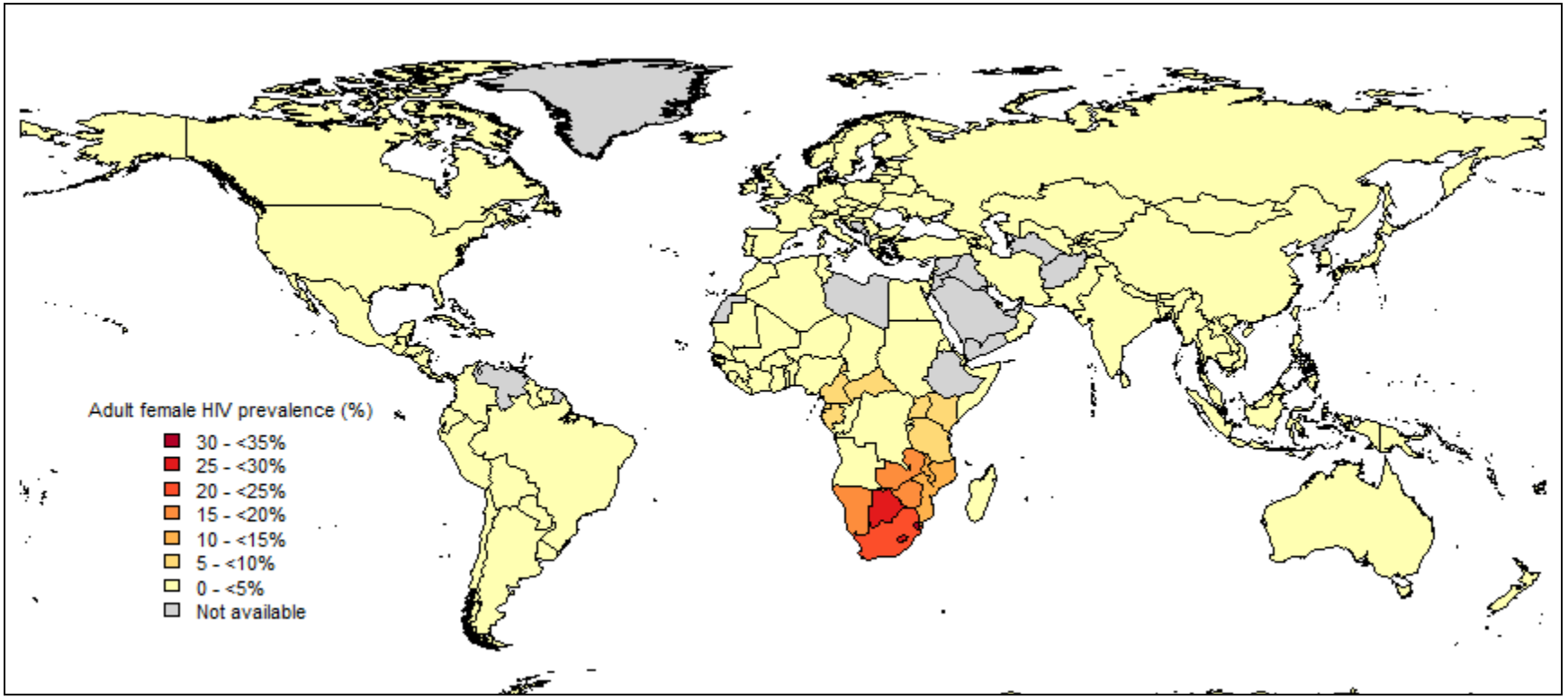


Method mix: among currently married (CM) and sexually active not married (NM) women , % using specific method

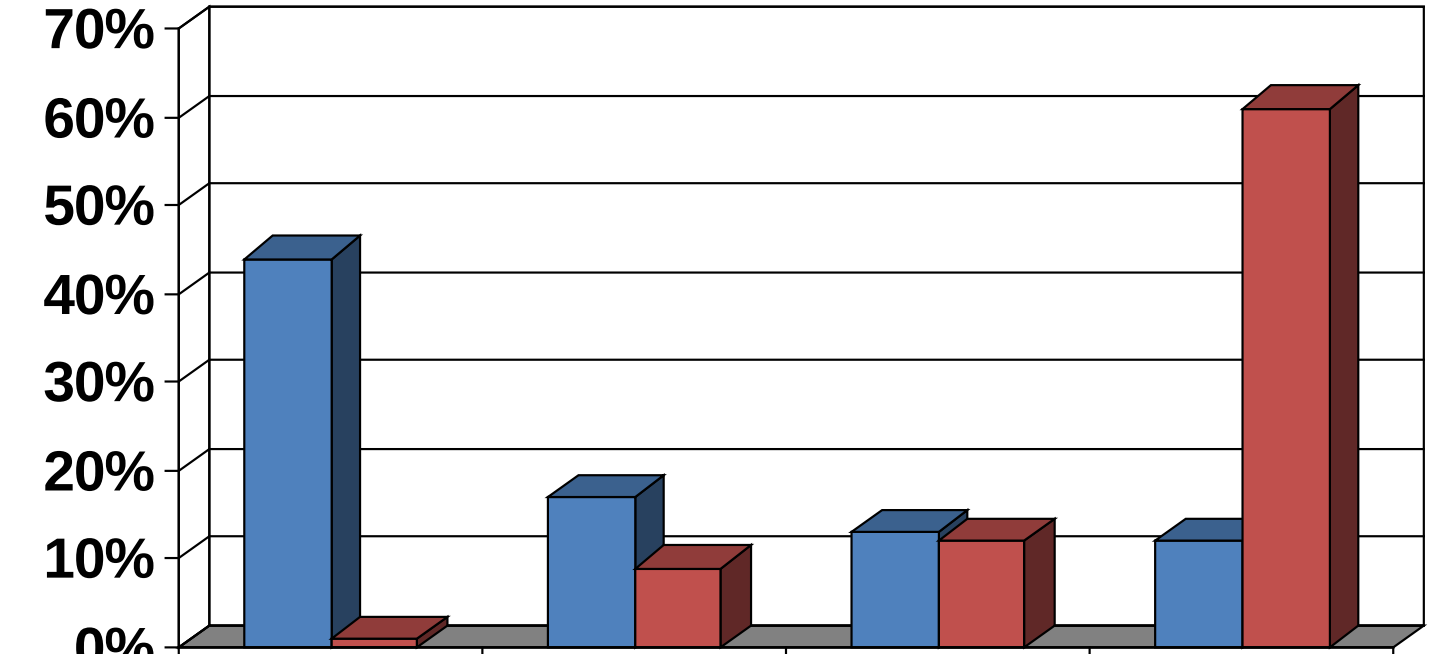


Source: Demographic and Health Surveys 2006-1010

HIV prevalence among 15-49 year-old women



STIs in Swaziland: Comparison between 1980 and 2004

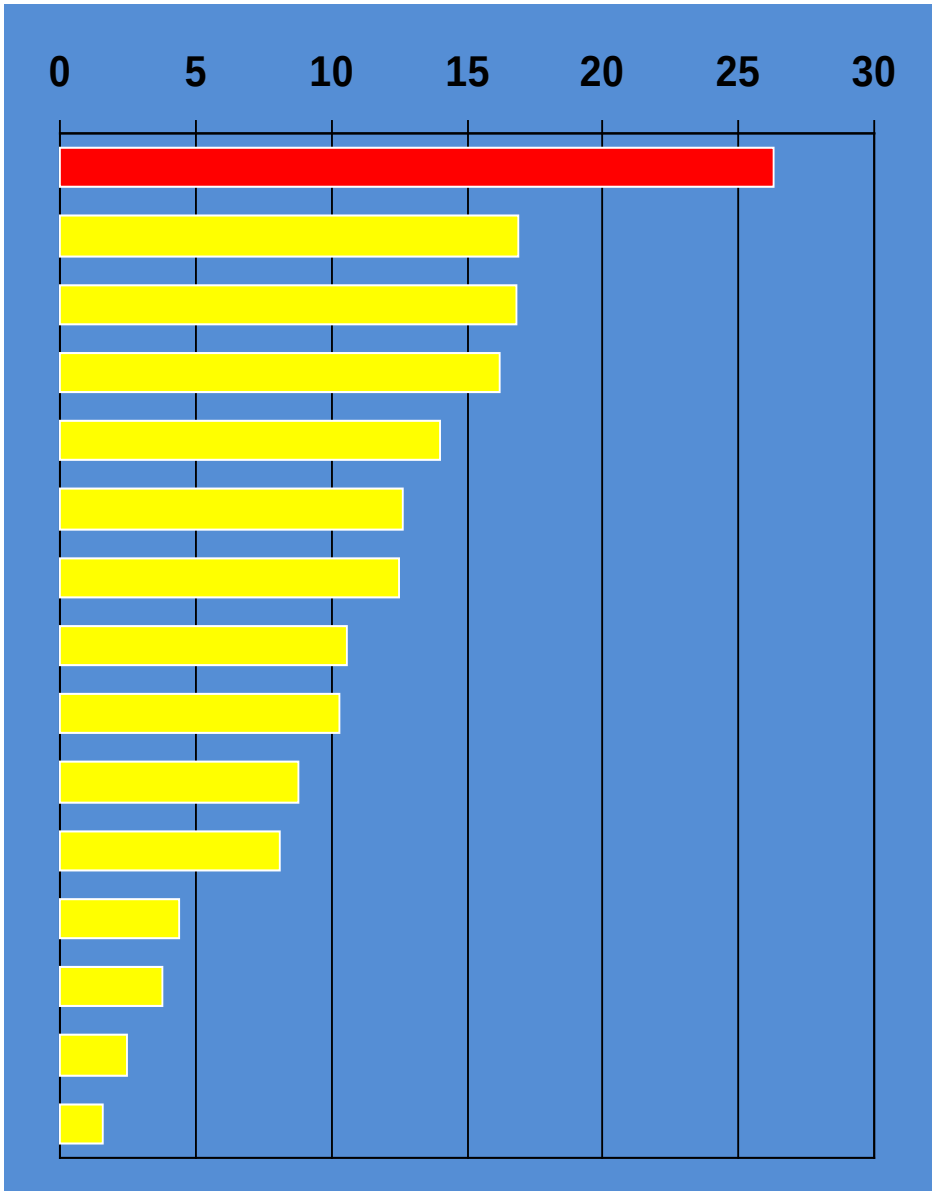


	Chancroid	Syphilis	LGV	Genital herpes
1980	44%	17%	13%	12%
2004	1%	9%	12%	61%

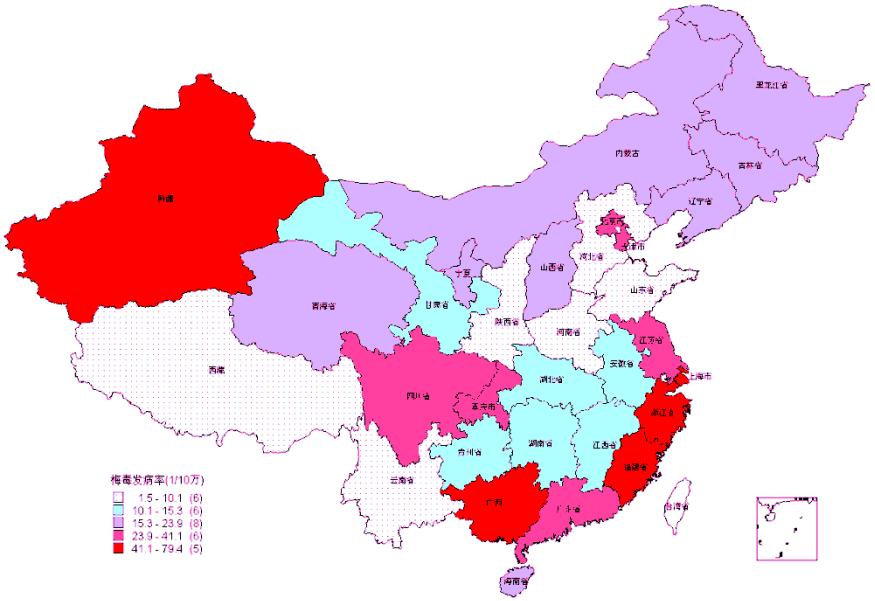
Age-standardised prevalence of cervical HPV DNA in sexually active women

IARC Multi-centre HPV Prevalence Survey, 1995-2002

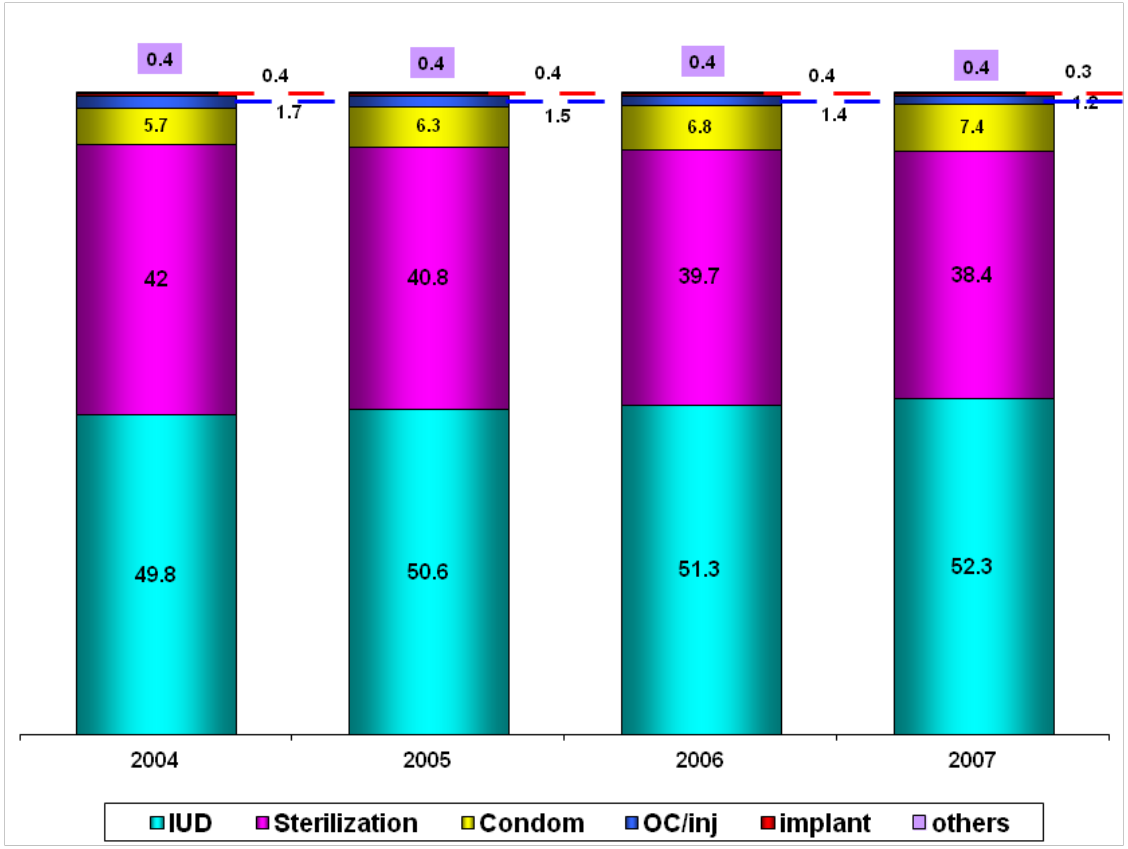
Nigeria	933
Argentina	908
India	1940
Colombia	1981
China, Yangcheng	671
Chile	971
Mexico	1340
Vietnam, Ho Chi Minh	918
Korea	870
Italy, Turin	1013
Thailand, Lampang	1024
Netherlands	3299
Thailand, Songkla	716
Spain	908
Vietnam, Hanoi	1007



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

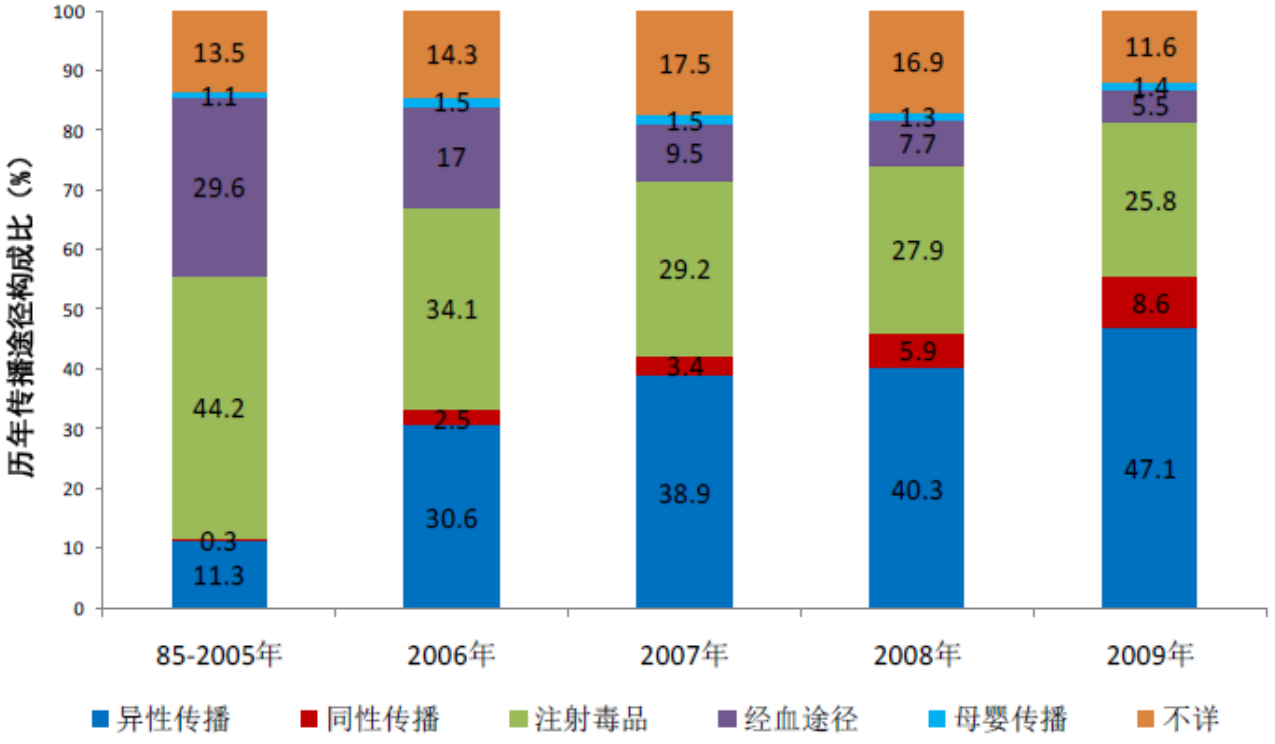
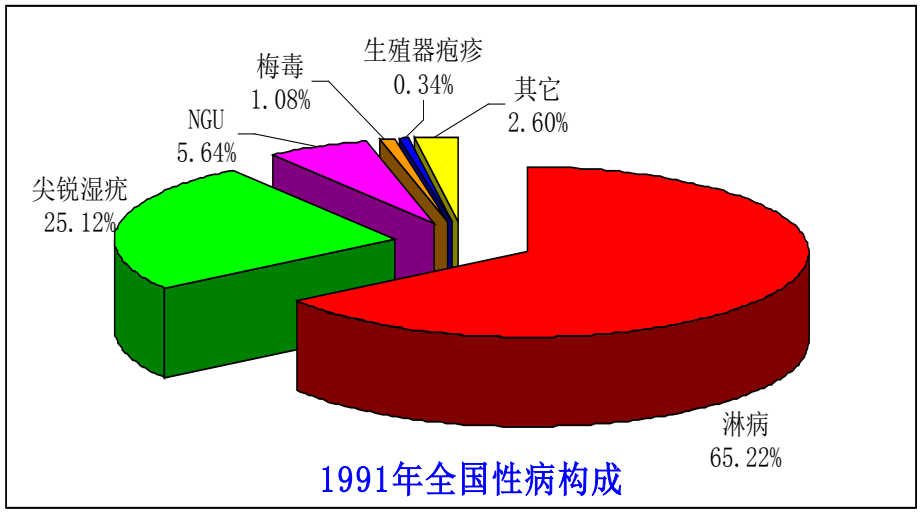


图3　病例报告艾滋病病毒感染者和病人传播途径构成

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

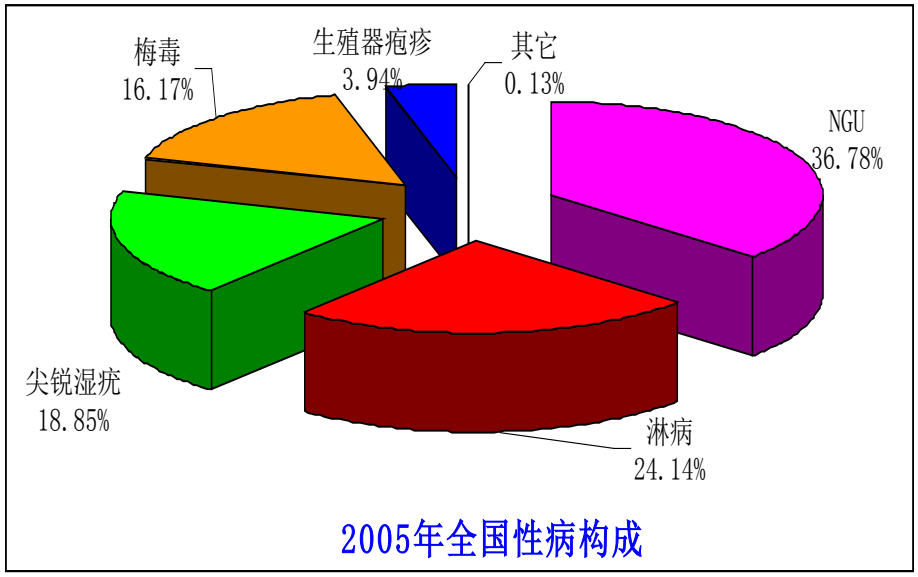
Changing STI Epidemic Profiles



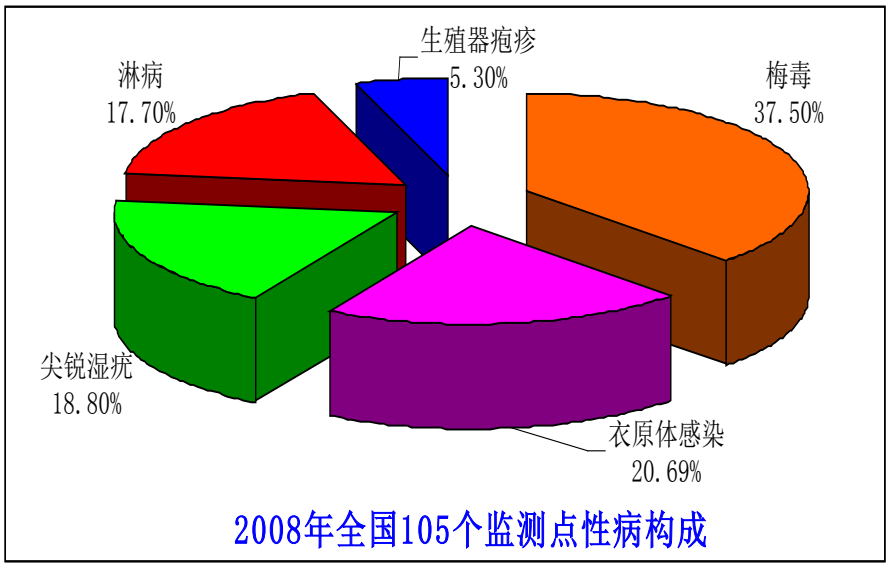
1991年全国性病构成

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

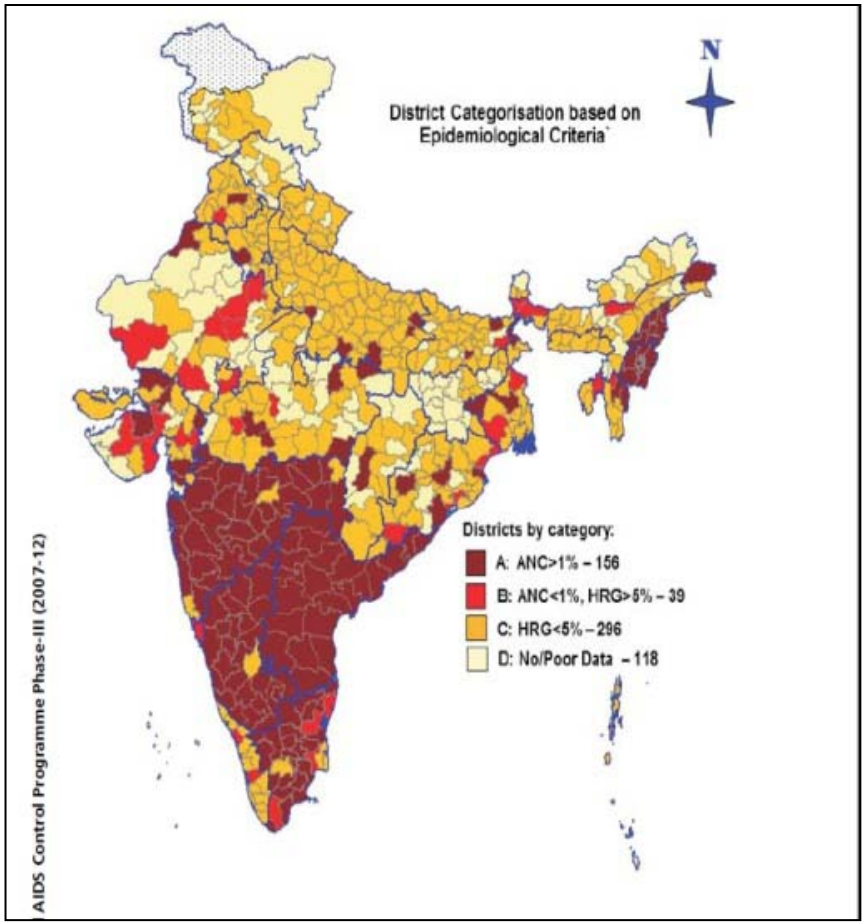


2005年全国性病构成



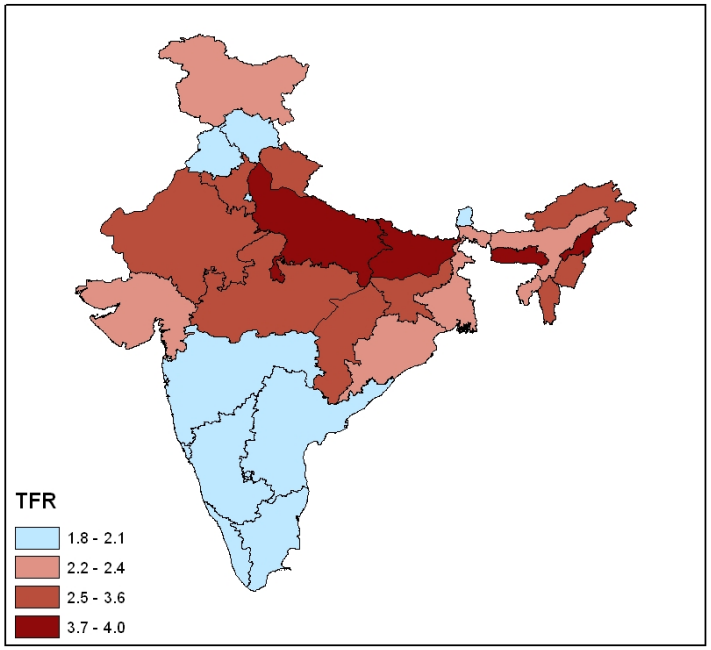
2008年全国105个监测点性病构成

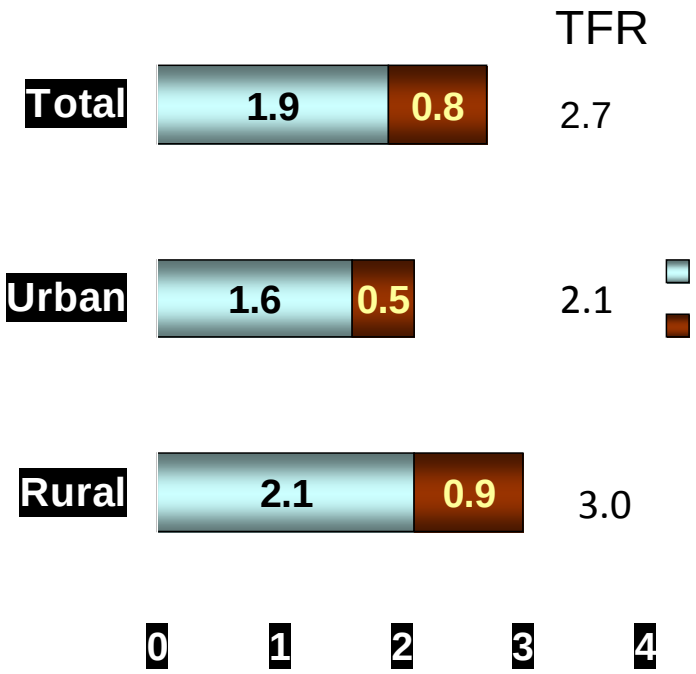
India


District Categorisation based on
Epidemiological Criteria
N
Districts by category:
A: ANC>1% – 156
B: ANC<1%, HRG>5% – 39
C: HRG<5% – 296
D: No/Poor Data – 118
AIDS Control Programme Phase-III (2007-12)

Contraceptive uptake and population concerns

1.2 Billion





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

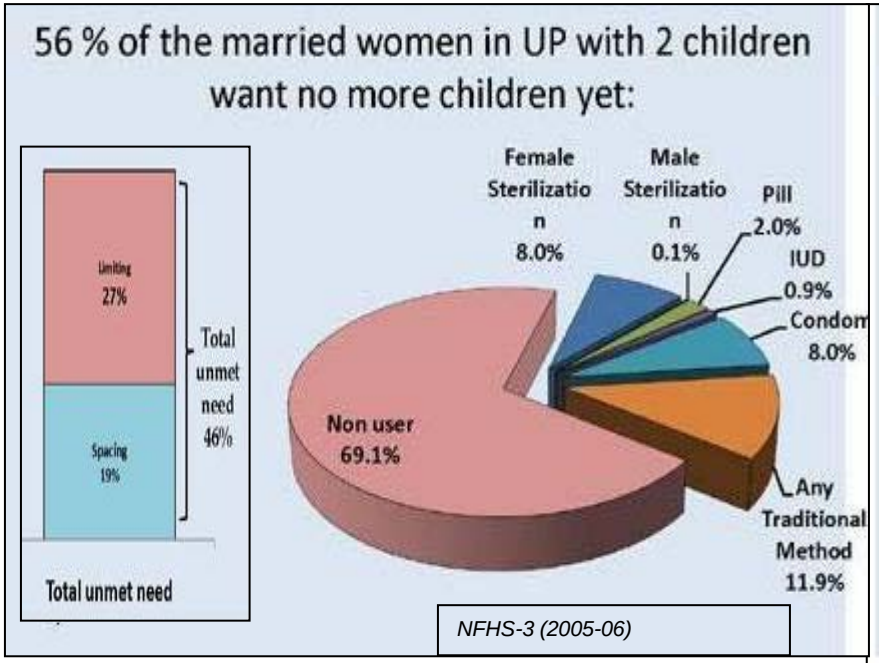
Unmet need for contraception

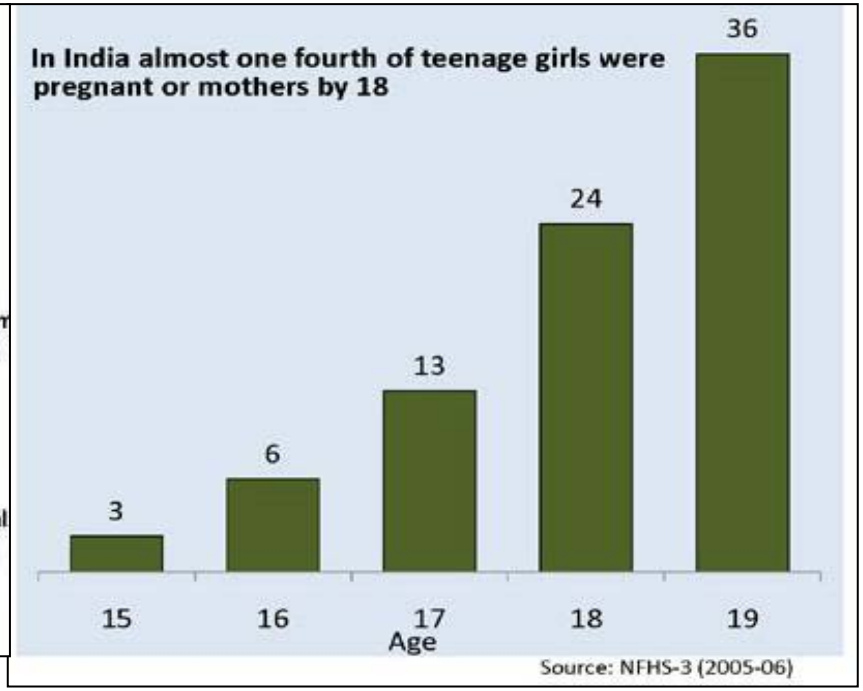
Unplanned pregnancy in India: 78%

Unwanted pregnancy : 21%

Induced abortions: 4 million (approx)

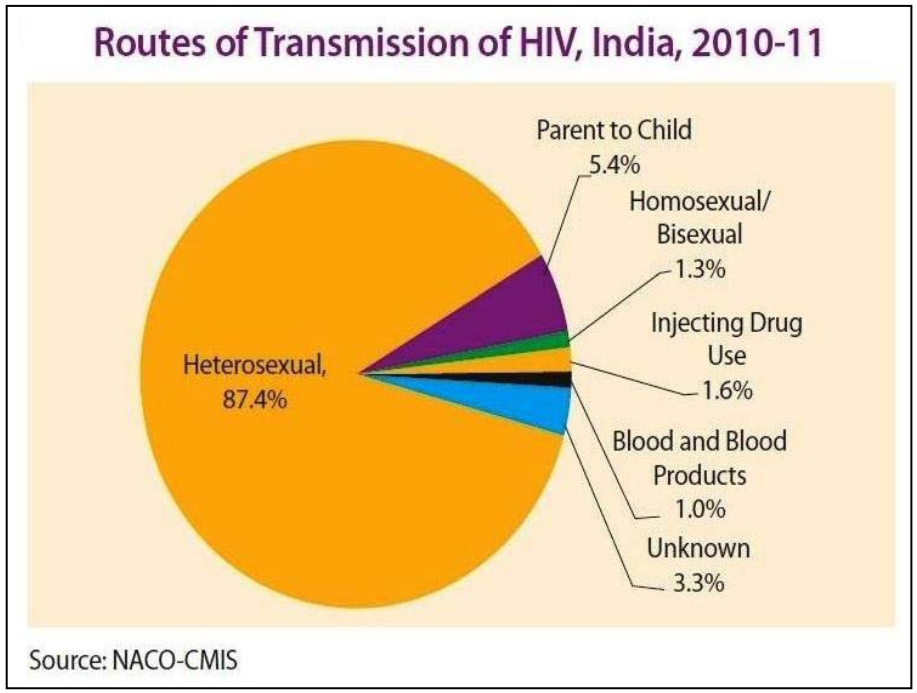
Ratio of illegal to legal abortion: 10:1

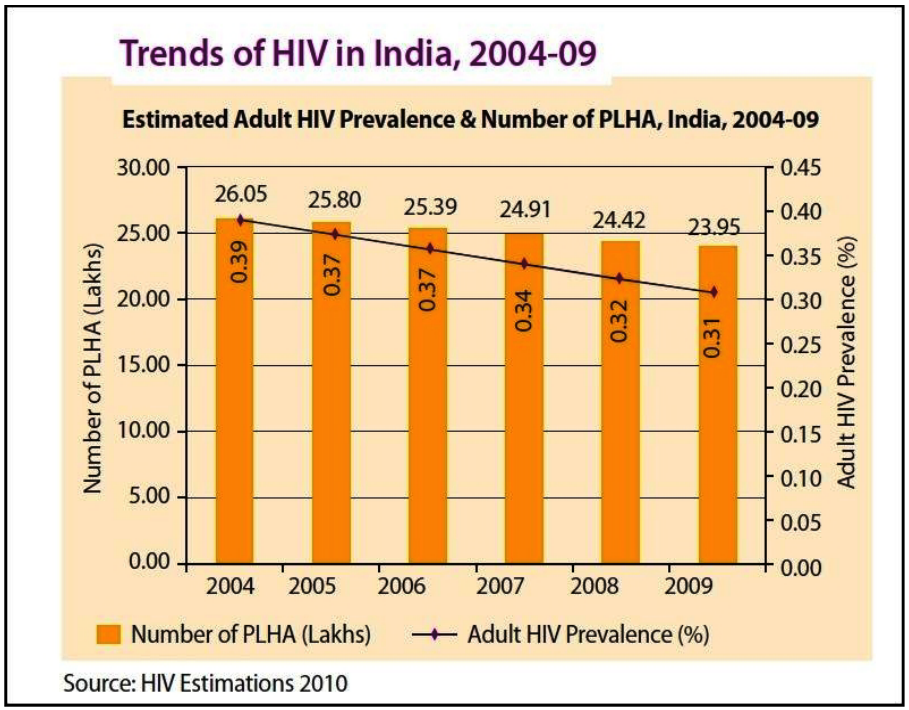




HIV in India

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%





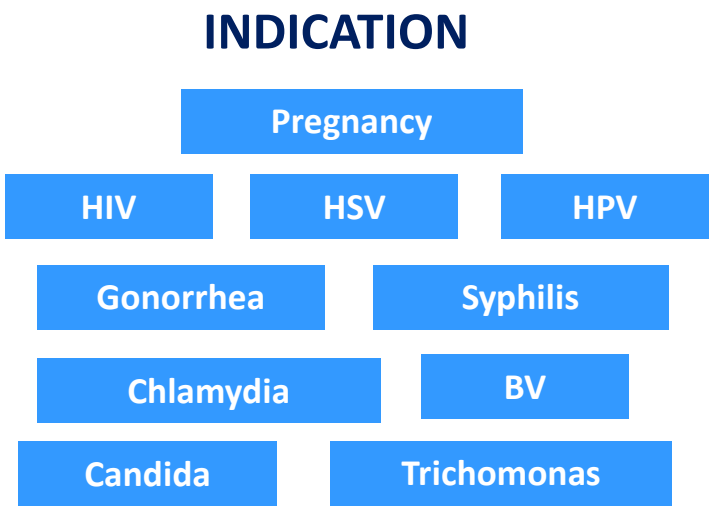
General Population: STI/RTI Prevalence (%)

	Females	**Males**
Syphilis	0-4.7	1-10.1
Gonorrhoea	0-1.9	0-3.9
Chlamydia	0-1.3	0.1.1
Trichomonas	1.2-8	1.5-3.6
Candidiasis	7.2-23.9	-
Bacterial Vaginosis	17.8-63.7	-
HSV2 serology (IgG)	8.6-17.9	7-10.6
HIV	0-0.95	0-1.4

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

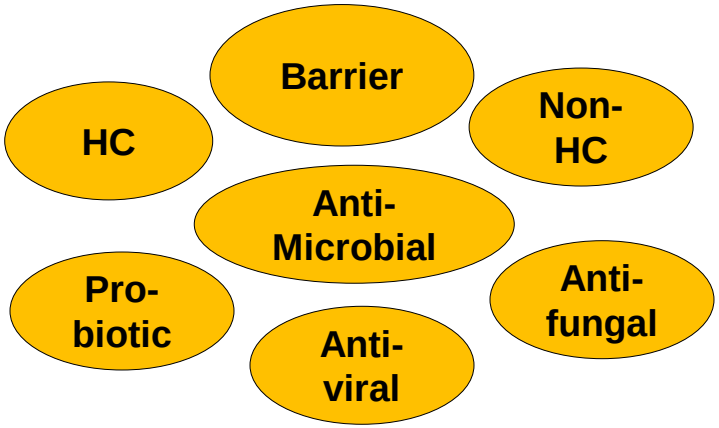


Complexity of developing MPTs

INDICATION

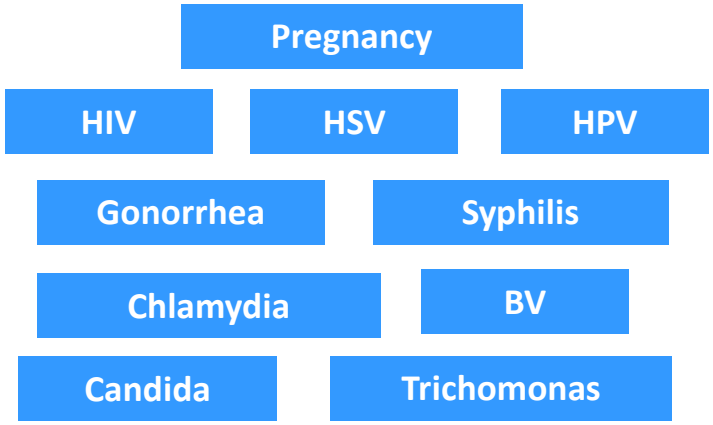
- Pregnancy
- HIV
- HSV
- HPV
- Gonorrhea
- Syphilis
- Chlamydia
- BV
- Candida
- Trichomonas

MECHANISM OF ACTION

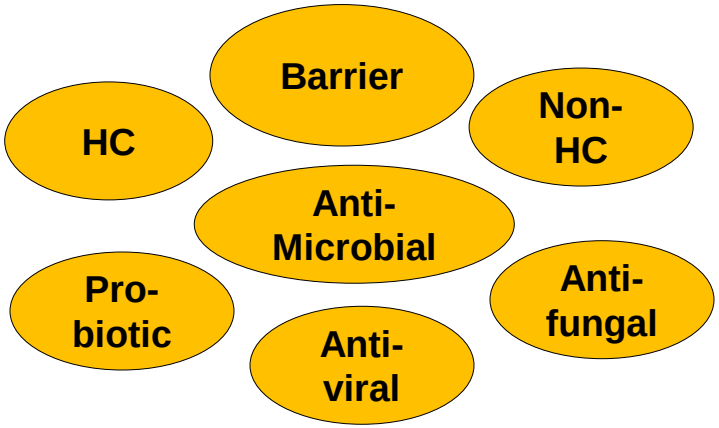


Complexity of developing MPTs

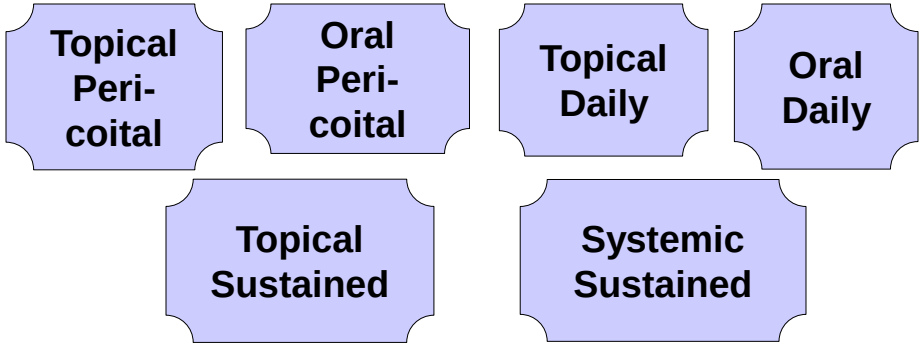
INDICATION



MECHANISM OF ACTION



DOSAGE & ADMINISTRATION



Complexity of developing MPTs

INDICATION

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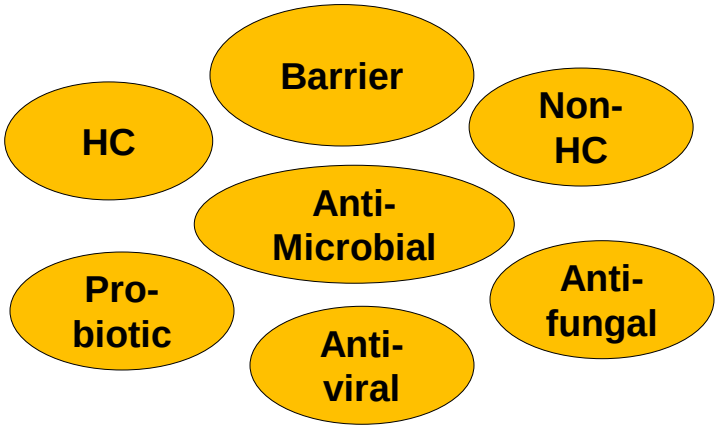
- Trichomonas

MECHANISM OF ACTION



DOSAGE & ADMINISTRATION

- Topical Peri-coital
- Oral Peri-coital
- Topical Daily
- Oral Daily
- Topical Sustained
- Systemic Sustained

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

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- Charlotte Watts
- Thes Palanee
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