Systems Thinking and Policy Implications for Family Planning - A Global Perspective

By

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ABSTRACT

- Almost 50 percent of all pregnancies in the U.S. are unintended. In North Carolina, 56 percent of pregnancies in 2006 were unintended. The rate of unintended pregnancy is a key reproductive health indicator that shows the reproductive health of a population. Unplanned births are associated with many adverse outcomes such as increases in the rates of abortion, inadequate prenatal care, adverse birth outcomes such as low birth weight and premature birth, and decreased rates of breastfeeding.

- The presentation will look at how cultural factors influence access to and use of family planning methods and introduces the use of "systems thinking" as a way to address the UN's Millennium Development Goal 5 (MDG5), to reduce maternal mortality and achieve universal access to reproductive health. A basic conceptual model can demonstrate direct relationships between causes of and changing rates of unintended pregnancies. A systems perspective however looks at the health outcome from a dynamic perspective, and takes into account that the factors surrounding and influencing unintended pregnancy rates are constantly changing.

- We will look at ways that systems thinking can help to address this issue from a local and global perspective including how availability of family planning services i.e. sex education and reducing cultural barriers to contraceptive compliance, interact in a dynamic environment and how these factors can be better understood and accounted for in programs to reduce unintended pregnancy.
Hi there, my name is Pamela Shields and this presentation is being submitted in partial fulfillment of the requirements for the degree of Master of Public Health at The University of North Carolina at Chapel Hill in the Department of Maternal and Child Health in Chapel Hill, N.C.

The title of this presentation is: Systems Thinking and Policy Implications for Family Planning – A Global Perspective. Part 1 of 2.
This lecture is broken into two parts.

**Part one** will review the learning objectives. Second, we will define critical definitions in understanding family planning and maternal health. We will follow this with a detailed description of the scope of unintended pregnancy which entails the unmet need for contraception, (including spacing issues and unwanted pregnancy), unsafe abortion, Intimate Partner Violence (IPV), & contraceptive compliance.

In **Part 2** we will start by discussing the Millennium Development Goals (MDGs), and then describe the role that Family Planning (FP) can play in addressing these health concerns. Finally, a systems approach will be used to analyze case studies in a global setting.
After this lesson the student will be able to...

1) Understand the maternal health implications of unmet need for contraception
2) Describe MDG5 and how it impacts the global community
3) Identify Systems Archetypes for Family Planning
4) Pinpoint key areas to intervene to improve maternal health

After this lesson the student will be able to...

First, Understand the maternal health implications of unmet need for contraception
Second, Describe the MDG5 and how it impacts the global community
Third, Identify Systems Archetypes for Family Planning (FP)

And finally, you will be able to pinpoint key areas to intervene to improve maternal health using ‘Systems Thinking’ tools.
It may be helpful to understand some of the following terms:

**Maternal death** is defined as the death of a woman while pregnant or within 42 days of the termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management.¹

A **Maternal Mortality Ratio** is reported as the number of maternal deaths per 100,000 live births and can be used as an indicator for the quality of a health care system.¹

**Total Fertility Rate (TFR)** — “refers to the number of live births that a woman would have had if she were subject to the current Age Specific Fertility Rate (ASFR) throughout her reproductive years (15-49 years).” This number is used for population projections and is a useful indicator for policy makers.²,³

**Wanted fertility rate (WFR)** — is defined as the level of fertility if all unwanted births were prevented.⁴

**Unmet need for family planning** — is defined as the married women who say they do not want any more children or that they want to wait two or more years before having another child and are not using contraception.
Women’s and Children’s Health

Worldwide each year...

- There are 210 million pregnant women
- 8 million will experience life threatening complications due to pregnancy or birth complications
  - 536,000 women will die as a result

Worldwide, an estimated 210 million women every year become pregnant and of these, an estimated 8 million experience life-threatening complications. 536,000 women die during pregnancy and childbirth and 99% of these deaths occur in developing countries.\(^5,6\).

One of the reasons for this is that in developing countries, medical care is not always available, and when it is, it is often subpar. Interventions have shown that improving universal access to skilled health workers at childbirth, emergency obstetric care, postpartum care, prevention of unsafe abortion, and widening the available contraceptive choices have been shown to reduce maternal mortality and morbidity.
To give you an idea of the gravity of the situation, 536,000 maternal deaths would be as if all the women who gave birth in 2009 in PA, NY, and NC were to die.\textsuperscript{7}
In 2006 about 42 million unintended pregnancies were terminated and almost half of these were unsafe abortions. Each year an estimated 13% of maternal deaths are as a result of unsafe abortion. There is a disparity seen between developed and developing countries as nearly all of the abortions took place in low and middle income countries.

Transition:
In the United Nations report of the International conference on population and development, they declared that “reproductive health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when, and how often to do so.”

The world has started to rally around these issues and that is why today we will explore how policy can utilize ‘systems thinking’ as a way to address issues related to maternal death, unplanned pregnancy, and its contributors.
To help us understand the factors associated with unintended pregnancy, I will first give a brief overview and then I will discuss the dangers of unmet need, followed by issues surrounding contraceptive compliance. We will then look at unsafe abortion and its impact on maternal health and finally we will talk about intimate partner violence and how it is related to unintended pregnancy.
UNINTENDED PREGNANCY OVERVIEW

Worldwide in 2008 there were 134 pregnancies per 1,000 women of reproductive age. 26 of every 1000 were unintended and ended in abortion and 29 of every 1000 were unintended and resulted in miscarriage, mistimed, or unwanted births. Locally we see that in the U.S., 50% of all pregnancies were unintended and North Carolina saw a slightly higher rate of 56%. The rate of unintended pregnancy is a key reproductive health indicator that shows the reproductive health of a population. Unplanned pregnancies are associated with many adverse outcomes such as increases in the rates of abortion. In 2008, almost 86% of all abortions took place in the developing world which is an increase from 78% in 1995. This is especially concerning because there is a greater risk of unsafe abortions in the developing world. Unintended pregnancies are also associated with inadequate prenatal care, adverse birth outcomes such as infant mortality, low birth weight and premature birth, and decreased rates of breastfeeding.

Unintended pregnancy is also known as unplanned pregnancy, and it is important to understand a distinction within the term and refers to both pregnancies that are unwanted and those that are mistimed. Unmet need is a way to measure this retrospectively by identifying those who wanted to stop or delay childbearing but were not using contraception. Unmet need is actually very difficult to measure and the demographic health survey currently has more than 15 survey questions that have been carefully constructed throughout the years to define this. (See http://www.measuredhs.com/topics/upload/Questions-and-Filters-for-Unmet-Need-Definition-Appendix-A.pdf for a chart of these questions.)
‘Unintended Pregnancy’ a Cultural Construct

- Unintended Pregnancy is retrospective
- Worldwide, women would NEVER say they did not intend to have their child

UNINTENDED PREGNANCY AS A CULTURAL CONSTRUCT
There are many reasons that the definition of unintended pregnancy is so complex. Unintended Pregnancy is retrospective, and so is subject to recall bias. It is also often unthinkable for women to say they did not intend to have their child, after they were already born. This poses a problem for reporting the rates of unintended pregnancies. Researchers account for this by using proven statistical methods to account for misreporting.
UNMET NEED
2008 estimates show that worldwide, 215 million women would like to avoid pregnancy but they or their partners are not using contraception. There are a variety of reasons why this happens: There are issues of availability, access, and quality of services as well as cultural reasons including problems with social approval from husbands or in-laws to get pregnant. These factors will be explored in more detail throughout the presentation.

Unwanted childbearing poses significant health risks beyond what can be attributed to the social economic status (SES) characteristics of the mother. For an unwanted pregnancy, the mother is less likely to seek prenatal care and is more likely to expose the fetus to harmful substances such as tobacco and alcohol. Children of unwanted pregnancies are more likely to be born with a low birth weight, more likely to die in the first year of life, and more likely to be abused or neglected. Similar risks are seen for mistimed pregnancies but not as severe; health risks also increase for women who experience short pregnancy intervals or have multiple pregnancies.

In stigmatized societies, a pregnancy outside of wedlock is a dire situation. It would be very difficult to marry, this leads to psychosocial and physical problems for women. They may be forced to hide themselves from the public eye and they are more likely to become ill during pregnancy. Globally, adolescents who become pregnant are less likely to continue with school thus making it more difficult to provide for their own children.
BIRTH SPACING
The World Health Organization (WHO), United Nations Children’s Fund (UNICEF) staff, and world experts convened to discuss the relationship between birth-spacing intervals and maternal and child health outcomes.25 The purpose of this meeting was to determine appropriate birth spacing recommendations. They determined that waiting at least 24 months and no more than 59 months from live birth-to-pregnancy (BTP) is the best interval to reduce health risks to both mother and child. For a miscarriage or induced abortion, the recommended minimum interval to next pregnancy is at least six months.

The health risks vary depending on the interval length. For example, maternal morbidity such as premature rupturing of membranes and possibly also maternal mortality is associated with Birth-to-Pregnancy (BTP) intervals of less than six months and women with BTP intervals over 59 months have an increased risk of morbidities such as pre-eclampsia. Risks to infant health were actually seen with BTP intervals of less than 18 months. Health risks included prematurity, fetal death, low birth weight and small size for gestational age. Other studies found that there were potential risks of neonatal mortality after 18 months of age and so the group agreed that BTP intervals of 27 months were best to prevent neonatal mortality. To promote the best health outcomes, the recommendation is that individuals and couples seriously consider a holistic approach to birth spacing including the health benefits and risks, age, fecundity, desired number of children and spacing, access to healthcare, support to raise their children, and social and economic circumstances.

WHO recommendations

- 24 – 59 month birth-to-pregnancy (BTP) interval to prevent adverse maternal health outcomes
  - Risks include: pre-eclampsia, ruptured membranes, & maternal mortality
- At least 27 month BTP interval to prevent adverse neonatal outcomes
  - Risks include: prematurity, fetal death, low birth weight, small size for gestational age, and infant mortality
Contraceptive prevalence is the percentage of women who are currently using, or whose sexual partner is currently using, at least one method of contraception, regardless of the method used. It is usually reported for married or in-union women aged 15 to 49.26

World-wide, the contraceptive prevalence rate for any modern method of FP is 56.1%. It is 61.3% in more developed countries and 55.2% in less-developed countries. Use varies greatly within countries as individuals who live in urban areas, are more educated, and are wealthier have greater access to contraception.27

As this map shows, the countries with the lowest rates of coverage are seen in Central, Western, and sub-Saharan Africa.28

Even in countries with higher rates, coverage is still inadequate to significantly reduce the percent of unintended pregnancies. There are many reasons for this, including cultural barriers, beliefs about contraception, and acceptability of appropriate types of modern methods in different cultures. For example, one study conducted in India found that they did not take into consideration the high rates of anemia when implanting IUDs on a broad scale; this created side effects and led to the failure of the intervention.29
In this simple stock and flow diagram, we see that unmet need and contraceptive uptake is regulated by the contraception prevalence rate. This diagram explores the factors that affect this rate.

As we go through the descriptions of some of these factors, it is important to note that there are delays at every point that will affect the way policies react to adjust these rates. This exploration is just the first step to understanding this system and ideally, through further understanding, systems thinking will help us become preventive as opposed to reactive thus creating an environment in which the natural oscillations of the system, level out over the long-term.
The first instinct to address unmet need is to give people contraception but very quickly we learn that there are other factors that effect this dynamic relationship such as lack of knowledge about contraception, fear of their side effects and social and family pressures. Each of these inversely affects the contraceptive prevalence rate. Through analysis of DHS surveys, these three barriers in particular were identified by John Bongaarts and Judith Bruce\textsuperscript{31} as principle contributors to the non-use of contraceptives in developing countries.
Additionally, as the socioeconomic status and education rise and the physical environment improves, the contraception prevalence rate increases therefore decreasing the risk of unintended pregnancy.\textsuperscript{21}
Bongaarts and Bruce\textsuperscript{31} determined that an effective program is frequently one that goes far beyond the provision of family planning and contraceptive services. For example, Bangladesh has many social barriers to family planning and introducing contraceptives is not enough to increase the prevalence rate. To adapt to these barriers, they have implemented successful interventions that utilize female family planning health workers to address social obstacles to contraceptive use, such as fear of side effects and social or familial disapproval.\textsuperscript{31,32} These advocates go into the community to visit the women in their home environments. The health workers are seen as role models, referral sources for contraceptives, and also help with other things such as vital child health care. They may also intervene to speak with husbands in a negotiating capacity as many husbands do not want their wives utilizing contraceptives.\textsuperscript{31}
In the DHS surveys, women who are at risk of conceiving but are not practicing contraception were asked how they felt about becoming pregnant. Those who did not wish to become pregnant were then asked to identify their principal reason for not using contraception. The reasons for nonuse were lack of knowledge (25%), health concerns (20%), husband's disapproval (9%), infrequent sex (6%), religion (4%), and lack of access (4%). Additionally, availability of contraceptives has to do with distance to service points. In some areas of the developing world this is a large concern, however in this study, it was not as large of a deterrent as the other reasons mentioned.
Amy Tsui\textsuperscript{33} compares unmet need and contraceptive compliance in 5 countries in different regions of the world. Major barriers as identified in her article are that first, reproductive planning is largely non-existent: when referring to his partner, one interviewee stated: “I just spoke to her in bed one time it was like, want to have kids? She said yes, I said yes. And it just started happening from there, you know... so I guess it was a decision made.” (Tsui et al. 2011)

Second, in the U.S. and Peru, abortion is a means of last resort. In Pakistan, Nigeria, and Mexico, abortion is viewed as an ethical concern and survey respondents reported that getting an abortion is against religious beliefs however, there are still areas where abortion is used as a means of contraception. The third barrier is that contraception is viewed negatively including fears of side effect such as fear of infertility and weight gain. Also, condoms are seen as inconvenient and may be viewed as less intimate and distracting.\textsuperscript{31,33} Fourth, male partners perceptions about planning pregnancies affect the contraception prevalence rates. In Peru and Nigeria, the men took charge of these decisions whereas in the U.S., men were not as likely to exercise authority over these matters. Still, in every country there were multiple reports of sabotaging the contraceptives, by both men and by women. Overall men did play “a key role in managing pregnancy, fertility intentions, contraceptive protection, and determining the pregnancy outcome.”\textsuperscript{33}
Judith Bruce suggests a 6 part framework for assessing the quality of contraceptive use and services. Her goal is to focus the definition of quality because as it is, quality is largely subjective and therefore difficult to define, yet it has huge implications for the use of contraception services. The intention is to create a way to measure quality for cross-country comparisons. The 6 elements of quality are defined as: choice of methods that are available on a reliable basis, information given to patients by the medical care provider, technical competence of the provider during procedures such as IUD implantation, Interpersonal relations with the provider; nurses who take more time with patients cultivate relationships better than doctors who don’t take as much time to get to know their patients. Mechanisms to encourage continuity such as subsequent appointments or home visits by health workers. Appropriate constellation of services so that they are convenient and acceptable to clients and are safe for them.
PREVENTING UNSAFE ABORTION

Now we would like to talk about abortion. Abortion is a controversial topic and this presentation explores this as a way to illustrate the related health outcomes of unsafe abortion through the use of systems thinking principles. Unsafe abortion as defined by the WHO is “a procedure for termination of an unintended pregnancy done either by people lacking the necessary skills or in an environment that does not conform to minimum medical standards, or both.”

Worldwide, unsafe abortion is attributed to 68,000 maternal deaths annually.

Unsafe abortion is defined as “a procedure for termination of an unintended pregnancy done either by people lacking the necessary skills or in an environment that does not conform to minimum medical standards, or both.”

For years, the percentage of unplanned pregnancies in the U.S. has been around 50% and about half of these ends in abortion and despite efforts to decrease these rates, they have remained the same since 1995. The proportion of unplanned pregnancies is higher among women in poverty, those who were never married, and those 18-24 years old. Many of the more than 800,000 adolescent pregnancies in the U.S. end in abortion. The consequences of these circumstances are serious and many women and children would benefit from more effective programs to prevent unplanned pregnancy.

World-wide, recent estimates show a decline in abortion rates most notably in central and eastern Europe where they have had an increase in contraceptive prevalence rates. However, the prevalence of unsafe abortion shows no improvement. Worldwide in 2003, 75 million women had unintended pregnancies, and 20 million of these women had unsafe abortions.

Estimates say that abortion rates contribute to 68,000 maternal deaths annually. In order to evade the negative health impacts as a result of unsafe abortion, the primary prevention strategies need to be strengthened. In an unintended pregnancy is not avoided then the public health focus would be on improving safety of abortions in their secondary prevention efforts.

Part of the care that should be offered to women who have just been treated for post abortion complications should be easy and offer immediate access to family planning services. Women are more likely to use contraception if these services are a part of post abortion care and are offered immediately post abortion. If good counseling and support is offered, this will help to create confidence in women and a rapport can develop where education can be provided to help her manage her own fertility. In some countries, this is not achieved and women may use abortion as a means of birth control.
Findings about world abortion trends reported by Sedgh et al.\textsuperscript{9} indicate that the global abortion rate was 35 abortions per 1000 women aged 15-44 years in 1995 and then there was a decline to 29 abortions per 1000 in 2003 and 28 per 1000 in 2008. In 2008 worldwide, we saw 1 in 5 pregnancies end in abortion with 49\% of them performed under unsafe conditions. The abortion rate was lower in sub regions where women lived under liberal abortion laws.
Looking at the breakdown of unsafe abortion, we can interpret that there is a disparity in the access to contraception across countries. Just 6% of 6 million abortions in developed countries were unsafe and 56% of 38 million abortions in developing countries were unsafe.⁹
This graph illustrates that almost all the rates of abortion in Africa are unsafe. This is by definition, because abortions are illegal. The study was unable to specify the reasons for the unsafe abortion. For example what was the training level of providers, abortion methods used, and the hygienic conditions of the abortions?

Additionally, because of laws that prohibit abortion in Central and South America, their unsafe abortion rates are 100% as well. The study shows that restrictive abortion laws are not associated with lower abortion rates; in fact in areas with restrictive laws, the abortion rate is high, at 29 and 32 abortions per 1,000 women of childbearing age in Africa and Latin America, respectively. In areas in Western Europe where abortion is generally permitted, there is an abortion rate of 12 per 1,000 women. Additionally, in countries where abortion is legal, rates of death are low. For example, in the United States, abortion results in 0.6 deaths per 100,000 procedures. But in Latin America and Sub-Saharan Africa, abortion results in 30 and 460 deaths per 100,000 procedures, respectively!

Worldwide, the decline in the abortion rate observed between 1995 and 2003 has stalled, and the proportion of all abortions that are unsafe has increased from 44% in 2005 to 49% in 2008.
Intimate Partner Violence (IPV)

- 7 out of 10 women report having experienced physical or sexual violence in their lifetimes
- In South Africa 55,000 rapes of women and girls were reported
  - Estimates say that 9 times that amount are committed each year

“Between one in two to one in six women report experiencing physical and/or sexual violence from an intimate partner.”

Women whose pregnancies are unintended are four times as likely as women with a planned pregnancy to be physically abused by their partner. In many countries violence against women is common. In some areas 7 out of 10 women report that they have experienced physical or sexual violence in their lifetimes and every family planning provider is likely to see women who have experienced violence. In South Africa, 55,000 rapes of women and girls are reported each year; estimates are that nine times as many are actually committed. Exposure to rape, intimate partner violence, and abuse and neglect in childhood are risk factors for the country’s most prevalent and serious health problems, including HIV and sexually transmitted infections, substance misuse, and common mental disorders, such as post-traumatic stress disorder, depression, and suicide. Prevention of such violence and injuries is a national public health priority in South Africa. Other rates of violent crimes have fallen except rape. In 2005–06, the rate was 117 per 100,000 population—which is not much of a decrease from 1996 rates of 124 rapes per 100,000 population.

Reasons for rape vary and is often perpetrated by partners and used as punishment for actions such as infidelity, attempts to end a relationship, refusal of sexual advances, or behavior that is deemed to show insufficient respect for men. Revictimization is a recognized occurrence in rape; girls exposed to sexual abuse as young children are at increased risk of being raped again in adulthood, and of experiencing intimate partner violence as adults.

In one study in the U.S. pregnancy coercion (AOR 1.83, 95% CI 1.36–2.46) and sabotage of birth control methods (AOR 1.58, 95% CI 1.14–2.20) were both associated with unintended pregnancy.

This is a global problem as we see this in all areas of the globe. In a cross-sectional, nationally representative study of the 2004 DHS in Bangladesh, IPV was extremely prevalent (40–70%) and relates to unwanted pregnancy and higher rates of pregnancy loss or termination and miscarriages among Bangladeshi women.

In a study in Lima, Peru, the prevalence of physical violence during pregnancy was greater among women with unintended pregnancies compared with women with planned pregnancies and among women who experienced IPV, the risk of unintended pregnancy was 3.13 times as high compared to women who did not experience IPV.
So, in Part 1 we have talked about the scope of unintended pregnancy. This is a very large scope and encompasses many factors that contribute to low contraceptive prevalence rates around the world. The includes the unmet need for contraception, including spacing issues and unwanted pregnancy, unsafe abortion whose rates shows disparities between countries with liberal laws and strict laws, and finally Intimate Partner Violence as it relates to unintended pregnancy & contraceptive compliance.

This completes part 1 of this 2 part lecture. Please listen to part 2 to learn about the global strategies and to apply a systems approach to case studies.
Part 1 References (1)

Part 1 References (2)


Part 1 References (4)

31. Bongaarts J, Bruce J. The causes of unmet need for contraception and the social content of services. Stud Fam Plann 1995;57-75.
Hi there, my name is Pamela Shields and this presentation is being submitted in partial fulfillment of the requirements for the degree of Master of Public Health at The University of North Carolina at Chapel Hill in the Department of Maternal and Child Health in Chapel Hill, N.C.

The title of this presentation is: Systems Thinking and Policy Implications for Family Planning – A Global Perspective. Part 1 of 2.
This is the second lecture in this 2 part series.

As you may recall, in part one we defined critical definitions in understanding family planning and maternal health. We followed this with a detailed description of the scope of unintended pregnancy which entails the unmet need for contraception, (including spacing issues and unwanted pregnancy), we also discussed unsafe abortion in a global context, and we finished with a discussion of Intimate Partner Violence (IPV) as it applies to contraceptive compliance and unintended pregnancy.

In part 2 we will start by discussing the Millennium Development Goal #5 (MDG5), and then describe the role that Family Planning (FP) can play in addressing these health concerns. Finally, a systems approach will be used to analyze case studies in a global setting.
MDG5 SLIDE

Millennium Development Goal #5 addresses the improvement of maternal health. Target 5.A is to reduce the MMR by three quarters, between 1990 and 2015. Target 5.B is to achieve universal access to reproductive health by 2015.

Please pay attention to the sign in the photo leading to the mortuary and the maternity and pediatric wards. This photo is from the Brong Ahafo Region of Ghana in a district hospital where Wendy J. Graham, Professor of Obstetric Epidemiology at the University of Aberdeen in the United Kingdom, was collaborating on a study to apply a criterion-based clinical audit to investigate severe obstetric morbidities.

MATERNAL DEATHS SLIDE
As we can see in this map\textsuperscript{4}, the areas with the highest MMRs are in sub-Saharan Africa, then in Southeast Asia and Indonesia and also some areas in Central and South America. Developing countries account for 99\% of all maternal deaths and Sub-Saharan Africa and Southern Asia combined account for 313,000 deaths of the over 500,000 annual deaths.\textsuperscript{5}
To put this into perspective, “in sub-Saharan Africa, a woman’s risk of dying from preventable or treatable complications of pregnancy and childbirth over the course of her life time is 1 in 31, compared to only 1 in 4300 in the developed regions.”\textsuperscript{4}

WHO GLOBAL REPRODUCTIVE HEALTH STRATEGY SLIDE

Achieving the MDG5 has proven to be a very slow progress. In sub-Saharan Africa there was only a decline in the MMR of 0.1% per year between 1990 and 2005, and in East Asia, North Africa, South-East Asia, Latin America and the Caribbean, declines in the MMR were under 5.5%. In these areas, the MDG5 to reduce the maternal mortality ratio by three quarters between 1990 and 2015 will not be easily met. The World Health Organization’s first global Reproductive Health Strategy to accelerate progress towards the attainment of international development goals and targets was adopted by the 57th World Health Assembly in May 2004. The strategy was developed through extensive consultations with WHO stakeholders across many regions. The strategy recognizes the important role of sexual and reproductive health in social and economic development in all communities and aims to improve sexual and reproductive health by various means including providing high-quality services for family planning, infertility services, eliminating unsafe abortion, and promoting sexual health. The goal is to “Prioritize sexual and reproductive health in essential service packages under health-sector reforms and sector-wide approaches.”

“What measures to reduce the incidence of unintended pregnancy and unsafe abortion, including investments in family planning services and safe abortion care, are crucial steps toward achieving the Millennium Development Goals.”

What would success in achieving the MDG5 mean?

Unintended pregnancies would drop by more than two thirds, from 75 million in 2008 to 22 million per year. Unsafe abortions would be reduced by 73%, and there would be 2 million women who need medical care associated with complications from unsafe abortion as opposed to 8.5 million women. This will prevent an estimated 390,000 maternal deaths. The total cost of this in U.S. dollars (2008 estimate) annually would be $6.7 billion which would be recuperated in the better health, leading to greater productivity, and reallocation of resources.

Transition: Another challenge to improving the rates of unmet need and contraceptive prevalence is that countries have focused on population control instead of health and well-being of the population. When this happens, strict government policies are usually implemented that create adverse health outcomes such as unsafe abortion as previously mentioned. Let’s take a moment to look at what population growth looks like from a systems lens.
POPULATION GROWTH SLIDE
This diagram illustrates the relationship between births and deaths as it applies to population growth. As fertility rates rise, the population increases. As the population increases, the number of people who can have children rises exponentially. If people lived forever, there would be a never-ending growth of population. But like most things in life, there is a balance to this. We don’t live forever, the stock or in this case, population has a natural balancing loop that keeps this from happening. That is, humans will eventually die thus draining the stock with each death. If the reinforcing loop is dominant, the population will grow. If the balancing loop is dominant, the population will decline. If they are in balance, the population will remain constant. This rarely happens, as population projections change for a variety of reasons. One of the challenges governments have faced is how to manage these rates. For many years governments focused on controlling population growth. One of the problems with this is that a policy change today may take years to translate into the desired results. At that point, other factors within the system could shift to either reinforce the intention of the policy or negate it.
The World Health Organization states that “Family planning allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of infertility. A woman’s ability to space and limit her pregnancies has a direct impact on her health and well-being as well as on the outcome of each pregnancy.”

FP programs improve both maternal and child health and mortality rates and could prevent 32% of all maternal deaths and almost 10% of childhood deaths. Some family planning methods help prevent the transmission of HIV and other sexually transmitted infections. FP also reduces the need for unsafe abortion; it empowers people and reinforces the human right to determine the number and spacing of children.

“Apart from ill-health consequences, poor sexual and reproductive health contributes significantly to poverty, inhibiting affected individuals’ full participation in socio-economic development.” The preference for sons is a phenomenon seen regularly in areas with low education and other impoverished areas. In these areas, women and female children are often seen malnourished.

The promotion of family planning could potentially reduce poverty and hunger, empower women, and in many instances allow them to continue schooling. FP opens up family resources to take better care of children and provide them with a higher level of education. There are an estimated 200 million couples in developing countries who would like to delay or stop childbearing but are not using any method of contraception. Worldwide we see multiple reasons for this such as lack of knowledge of ways to prevent pregnancy, lack of availability, access, and quality of family planning services, cultural and religious beliefs, as well as political, and environmental factors. Yet many programs focus on just one or two of these barriers without truly understanding the implications of the system as a whole. The following examples will show both successes and failures of government interventions as they apply to issues related to family planning.

Transition: Later in the lecture we will revisit this model but for now, let’s take a look at an example of how not being aware of the whole system and it’s dynamic relationships was detrimental to a population.
POLICY RESISTANCE IN FP 1

Here we will look at the archetype, “policy resistance – fixes that fail”, 12 to illustrate the relationship between population as regulated by the Romanian government in the 1960s. As a reminder, the characteristic patterns of behavior seen in policy resistance is that various actors try to pull a system stock toward their own goals thus creating resistance to the system.

In this example, the population size or “actual level” as seen at the top of the diagram was lower than what the Romanian Government would have liked. As the actual level became more discordant with their goals of increased birth rates, the gap increased. When the gap between the governments desired level and the actual level of the population grew, the government reacted by making abortions illegal for women of reproductive age. This corrective action caused the actual population size to change and birth rates tripled rapidly.

But what the government didn’t realize was that the citizens would resist this and a competing loop eventually corrected for this increase and brought the birth rates down again through an underground system of illegal abortions.
POLICY RESISTANCE IN FP 2
We see this illustrated in the competing loop, added to the right. The gap between the citizens desired population size and the new actual level of the population was too large, in other words there were too many children. So this new loop works to decrease the number of children again because of factors that the government wasn’t paying attention to, such as economic stresses that families were experiencing. So we see that as the gap changes as a result of government action, this causes corrective actions to be taken by citizens that the government did not originally anticipate, such as illegal abortions and also abandoning children at orphanages, which in turn put additional strain on the government.
POLICY RESISTANCE IN FP 3
So we see a figure 8 movement. As the government makes corrective actions to increase the birth rates, the citizens take actions to make sure this doesn’t happen thus decreasing the birth rates, the government in turn tightens restrictions even more and this vicious cycle perpetuates. Women will keep having illegal abortions which in turn puts more women at risk of health and reproductive complications and death, as well as putting children’s health and life at risk. This creates an animosity in the government as we saw in the execution of the Romanian president and his family when the government overturned\(^{12}\) – The way to address these characteristic problems is to refocus those involved on a mutually beneficial goal.

**Transition:** Policy makers can prevent this by changing their corrective actions. – The instinct is to fight, but systems thinking teaches us that these issues are not just linear in nature, we need to look at the dynamic relationship at play in any situation and this may mean that policies will need to relax when resistance is encountered.
SWEDEN’S FP PROGRAM
“Systems Thinking” encourages us to align common goals. Sweden’s current Family Planning program does just that. 100 years ago, Sweden had strict laws against abortion but despite these laws the fertility rate of the nation drop dramatically from the early 1900’s to the 1930’s. Sweden reanalyzed their plan and starting in the 1930s, social reforms were implemented to lift the ban on contraception and to make universal access to antenatal care and childcare available to all citizens. Over the years, the government has instituted more programs such as sex education curriculum in the schools and the ban on abortion was also lifted for special circumstances. By the 1970s they created a plan that included comprehensive sex education that focused on sex life as a source of “happiness and togetherness”, expanded availability of contraceptive services, and access to safe, legal abortions. They were particularly concerned with eliminating unsafe abortion as a way to improve maternal health outcomes. Overtime, Sweden successfully reacted to counteract this vicious cycle and come up with a policy that would cultivate the most important aspects having to do with raising a child: ensuring that each child was wanted and well taken care of. Since the 1930’s, the birth rates have risen and fallen but the focus has remained on every child being wanted.12,13

Transition: Sweden recognized in their programming that it was important to have comprehensive education as well as reliable contraception. There has been some support in the U.S. and other countries for abstinence only but the data shows that it is not adequate for most populations.
ABSTINENCE ONLY
“For many decades the Catholic Church has been the strongest force in opposition” to modern methods of contraception. They promote natural contraception which overall are of the most ineffectual methods of birth control. In the United States, Catholic women have higher rates of abortion than Protestant women. We see the controversy between modern methods of contraception and abstinence runs deep in many cultures. For example, until recently in NC schools, abstinence-only education was promoted. This changed in 2009 when the North Carolina Generally Assembly passed and the Governor signed into law the Healthy Youth Act, a legislation regarding the instruction of reproductive health and safety with mandatory implementation beginning with the 2010-2011 school year.14

As a part of this revision, teachers are required to educate students about the effectiveness and safety of all FDA-approved contraceptive methods in preventing pregnancy. Parents can choose to remove their children from this education. “Since fiscal year 1998, the Title V, Section 510 Abstinence Education Program has allocated $50 million annually for programs that teach abstinence from sexual activity outside of marriage as the expected standard for school-age children.”15

This required schools to teach abstinence-only education or else they would lose their federal funding. Although some abstinence-only programs show better results than others,15 other studies show that comprehensive sex education programs also successfully promote abstinence and delayed sexual debut.16 Two recent systematic reviews demonstrated that comprehensive sex education effectively promoted abstinence as well as other protective behaviors. One of these reviews “found no scientific evidence that abstinence only programs demonstrate efficacy in delaying initiation of sexual intercourse.”16 “Abstinence is not 100% effective in preventing pregnancy or STIs as many teens fail in remaining abstinent” (thus putting teens at risk of not only pregnancy, but STIs as well).16
REDUCING PREGNANCY RISK

As a reminder, the characteristic patterns of behavior seen in policy resistance is that various actors try to pull a system stock toward their own goals thus creating resistance to the system.

This balancing loop illustrates that condom promotion leads to safer sex, safer sex leads to a decreased risk for pregnancy and STIs. Successful reduced risk for pregnancy and STIs in turn leads to a decrease in condom promotion which in turn leads to a decrease in safe sex, which leads to an increase in pregnancies, etc. This balances over time because there is a delayed response to an increase or decrease in the problem creating a classic oscillation in policy. We think that we solved the problem and realize that we didn’t and so rush to put funding back into the programs.
“RULE BEATING” UGANDA

However, a study of HIV prevention in Uganda showed that people felt more protected when using condoms and so their risk tolerance increased which in turn led to an increased number of partners thus increasing their exposure to the HIV antibodies due to condom failure rates. The characteristic behavior pattern this second archetype is called “rule beating”, is that a rule is created and then the system tries to beat this rule. Here the system gave a way to reduce risk and the system “beaters” to this a step further to increase their number of partners. This perverse behavior appears to be staying within the rules, but it really is causing problems.

We see an illustration of this in the outer balancing loop. As condom promotion increases, risk tolerance increases eventually leading to an increase in the risk for pregnancy and STIs.
LEVERAGE POINTS 1

So how does policy intervene to avoid this archetype name? We see here that a way intervene to correct this archetype of ‘Rule Beating’ is to refocus attention on what the real intent of the intervention was. The now country-wide campaign of Uganda Prevention Politics called Abstinence-Be Faithful-Condom or “ABC” is based on Primary Behavior Change (PBC) and has shown success in decreasing the rates of HIV transmission. This model looks at behavior change with abstinence quoted as the first step, and then be faithful to your partner and then the promotion of condom use. This policy has shown promise in the areas of HIV and has potential for benefits for prevention of pregnancy as well.\textsuperscript{17,18} We see that choosing the right place to intervene can aid in achieving the desired health outcome of decreasing the risk of pregnancy and STIs.

Ugandan prevention politics shows that with an evidence-based plan, abstinence can be a valuable part of education.
LEVERAGE POINTS 2
Here we see the population model again as it applies to growth, decline, or balance. However as we have seen, there are many more factors to consider in this dynamic system.¹²

To understand where the best places to intervene are, we need to expand our systems lens to identify appropriate leverage points that affect the birth and the death rates.
WHERE TO INTERVENE
For the purposes of simplification, since our interest in this lecture is reducing Maternal Mortality through addressing Unplanned Pregnancy, we will just look at part of this system.

We have already seen the ramifications of anti-abortion laws in Romania, the successes of child-centered policies in Sweden, and the success of ABC policies in Uganda. Laws and policies are not transferrable to every situation. The system dynamics and feedback loops will be interpreted differently at each point in time because the system is dynamic.

In the middle of this diagram we have unplanned pregnancy, and there are multiple factors that affect this. We have touched on all of these points throughout the presentation and now we see how they interact through this diagram. Each factor is critically important to the outcome of unplanned pregnancy.

From previous lectures in this Systems Thinking class, we know that the clouds show the boundaries of our system view indicating that there are more relationships and variables beyond the scope of the example. In this diagram, we can also imagine arrows leading to clouds from all the other boxes. For example, there are many factors that influence contraceptive effectiveness. Imagine that the demand for more cost-effective contraceptives could cause manufacturers to produce lower quality products thus leading to either a real or perceived change in the effectiveness of contraception which would then lead to reduced compliance and increased failure rates, in turn increasing the rates of unplanned pregnancy. In this case, instead of letting the market’s own dynamics interact, a government policy to subsidize the cost of contraceptives could avoid the archetype pattern of a ‘drift to low performance’.12
HUMAN RIGHTS
There was an international consensus that human rights “rests on the recognition of the basic right of all couples and individuals to decide freely and responsibly the number and spacing and timing of their children and to have the information and means to do so, and the right to attain the highest standard of sexual and reproductive health.”

To support this, the World Health Organization recognizes the intricate balance of creating policy in varied cultural settings. Because of this they recommend guidelines to be used by policy-makers, program managers, and other health professionals about contraceptive use, medical eligibility, decision-making tools for FP clients and providers as well as a global handbook. They do not recommend a rigid structure for how policy should be implemented, giving flexibility to each country to decide on the best way to implement practices. They stress six overarching principles for effective adaptation and implementation of sexual and reproductive health programs including: building consensus; building on what exists; identifying possible barriers and facilitating factors; ensuring that adaptations are evidence based; planning scale-up from the beginning; and implementing a range of interventions to change provider practices.

“Gender norms and inequalities, as well as laws and policies affecting women’s and men’s access to information and services, can all have an important impact on people’s sexual and reproductive health and their related human rights.”

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6 Guidelines

1. Build consensus
2. Build on what exists
3. Identify possible barriers and facilitate factors
4. Ensure that adaptations are evidence based; planning scale-up from the beginning
5. Implement a range of interventions to change provider practices
GLOBAL POLICY IMPLICATIONS
Over time, the relationship between population, sustainability, and human rights has evolved. At the International Conference on Population and Development (ICPD) in Cairo in 1994 (Cairo, 1994) an international consensus was made that placed individuals and human rights at the center of population and development concerns.19

The rights-based consensus was a milestone in the history of population and development, as well as in the history of women's rights. “At the conference, the world agreed that population is not about numbers, but about people. Implicit in this rights-based approach is the idea that every person counts.”21 Reproductive health and rights are cornerstones of women's empowerment but this is only a stepping stone.20 179 countries adopted a 20-year Program of Action, which focused on individuals' needs and rights, rather than on achieving demographic targets and included concrete goals such as providing universal education; reducing infant, child and maternal mortality; and ensuring universal access by 2015 to reproductive health care, including family planning, assisted childbirth and prevention of sexually transmitted infections including HIV.21
CONCLUSIONS
Just like any personal relationship changes, so do the relationships having to do with health outcomes. We do not live in a vacuum where one intervention or one policy will “fix” everything. Be prepared to network resources and be willing to adapt. The rates of unplanned pregnancy in the U.S. have not changed in decades, yet we keep trying to do the same things. A Systems thinking approach to this issue both in the U.S. and globally will help to identify leverage points that will be successful in making substantial change. Additionally, a rights based perspective as opposed to a population control perspective can help to guide decisions in a way that values health. This in combination with a systems view of how relationships interact dynamically will help policies evolve over time and be preventive in nature instead of reactionary.

It is true that not every intervention works in every area of the globe however we would be remiss to try to reinvent the wheel when we have access to evidence-based practices in other countries. Lessons learned from successes and failures can be applied to other areas with consideration to the differences in culture and other factors. They also can help to understand cultural differences related to FP in immigrant populations. For example, a health care provider in the U.S. would benefit from the knowledge that certain cultures may be more apprehensive about utilizing contraceptives, especially if they come from a highly religious background. This can help them change their approach when counseling patients.

I will be interested to see where ‘systems thinking’ leads us in the future of family planning to help improve maternal and child health outcomes worldwide.
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Part 2 References (1)


Part 2 References (3)


Additional Source