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**Adolescent Pregnancy Prevention:
The Physician's Office**

By

Sandy Duyen Hong

B.A. Pomona College, 1996

A thesis submitted in partial satisfaction of the requirements for the degree of

Master of Science

In

Health and Medical Sciences

In the

GRADUATE DIVISION

Of the

UNIVERSITY OF CALIFORNIA, BERKELEY

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Spring 1999

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University of California, Berkeley

Spring 1999

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AMENDED LETTER (expiration date)

October 5, 1998

Sandy Hong
1385 Shattuck Avenue, #214
Berkeley, CA 94709

RE: "Teenage Pregnancy Prevention: In the Physicians Office" – Graduate Research – Health and
Medical Sciences

Dear Ms. Hong:

Thank you for sending your revised materials relating to the protocol referred to above. They satisfy the conditions in our letter to you of June 5, 1998, and we are pleased to grant full approval. Your request for a waiver of documented consent is approved.

The number of this project remains 98-6-49. Please continue to refer to this number in all future correspondence about the project.

The expiration date of this approval is September 10, 1999. Approximately six weeks before the expiration date, we will send you a continuation/renewal request form. Please fill out the form and return it to the Committee according to the instructions.

Please note that even though the Committee has approved your project, you must bring promptly to our attention any changes in the design or conduct of your research that affect human subjects.

If you have any questions about this matter, please be in touch with the CPHS staff at 642-7461; FAX 643-6272; email: subjects@uclink.berkeley.edu.

Sincerely,

A handwritten signature in cursive script that reads "Henry E. Brady".

Henry E. Brady
Professor Political Science & Public Policy
Chair, CPHS

HEB:nan

cc: Professor Thomas Boyce
Graduate Assistant
Graduate Division (SID #13352253)

Adolescent Pregnancy Prevention:
The Physician's Office

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By

Sandy Duyen Hong

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Introduction

Traditionally, the occurrence of an adolescent pregnancy was a private family matter. However, in today's social environment, where the gap between sexual maturity and functional maturity has widened, adolescent pregnancy is now increasingly the focus of societal concern (Luker, 1997). Teenage pregnancy, especially that of an unwed young adolescent, is linked by either conventional wisdom or studies, with many adverse outcomes. For the teenage mother, her pregnancy and subsequent delivery links her to economic hardship and lowered life-goal expectations such as never finishing high school, attending college, or being married, and/or being a recipient of the social welfare system (Luker, 1997). Developmentally, there is also concern for the young mother who must adapt to being a caregiver at a time in her own life when her psychological and social development is at a crucial and often tumultuous stage. For the baby of a teenage mother, the effects of economic hardship, and having a mother that may be ill-prepared to deal with the needs of a young child are also of major concern (Hoffman, *et al.*, 1993). Studies which have linked teenage pregnancy with low birth weight outcomes have also elicited concern because low birth weights in infants is linked to increased risk for morbidity, developmental delay, and increased cost to the state. No matter what the outcome, unintended adolescent pregnancy is preventable. Organized responses to decrease adolescent pregnancy rate include teen outreach and education.

Physicians have a unique opportunity to help decrease unintended pregnancy by providing information and counseling to adolescents towards the prevention of unintended adolescent pregnancy. Studies have shown that physicians are cited by both parents and adolescents as sources of information about sexual health (Croft *et al.*, 1993).

This study aims to understand the relationship between physician knowledge and attitudes towards adolescent/teenage pregnancy prevention and physician practice. To do this we explore what physicians are doing to prevent pregnancy and how those who do act differ from those who do not. We hypothesize those physician characteristics such as training and attitude will be predictors of physician action. This study also aims to understand the cues and barriers to counseling the physicians encounter. To conduct this investigation, a self-administered mail survey was sent to practicing physicians living in the nine counties of the Bay Area who are members of the American Academy of Family Physicians (AAFP). To maximize the response rate we used Dillman's Total Design Method (TDM) of multiple mailing (Dillman, 1978).

Chapter 1

Back Ground: Significance and Epidemiology of Adolescent pregnancy and Child-bearing

In this section I will discuss both the significance and epidemiology of teenage pregnancy and/or child bearing because these two topics are intertwined. When a young woman becomes pregnant, her decision to carry the conceptus to term or have an abortion has an enormous effect on her future and role in which society will play in her life, both financially and socially. When we ask the question, "Is teenage pregnancy a problem?" a definite opinion will almost always follow. However, the determinants of whether a person answers yes or no depends on the following factors: 1) the person's social/moral/religious stance on marriage and sex 2) their concepts of child-bearing outside of marriage 3) their view on abortion 4) who they think a pregnant teenager is likely to be 5) her social/economic status 6) the effect of her pregnancy and subsequent child-bearing to her social/economic status 7) concerns about maternal and/or child health and

well being and 8) concerns about the financial and/moral costs to society. Thus, *who* is getting pregnant and *what* the *outcome* of the pregnancy is of major importance when we are discussing the significance of teenage pregnancy (Luker, 1997).

Pregnancy is intimately associated with issues of sexual activity, fertility, abortion, the transmission of venereal diseases, marriage, morality, and financial responsibility. In itself, the pregnancy of a physiologically mature teenage girl is not of tantamount concern. Until the 1960s most women began childbearing in or just after their adolescent years (Luker, 1997). However, since the 1960's our country has seen many social and economic changes that affect how people view teenage pregnancy and especially teenage childbearing. Since the 1960s our country has seen an increase in the sexual activity of unmarried adults, the advent of the Pill, the legalization of abortion, a decrease in the rates of marriage, an increase in divorce, an increased focus on untreatable sexually transmitted diseases like HIV, and to a shrinking national economy (Luker, 1997).

These changes did not occur and do not continue to exist with out much debate and anxiety. As these changes affect all people and classes of society and they also affect our teenage population. The adolescent population has shown an increase in sexual activity out-side of marriage, child-bearing out side of marriage, the use of contraceptives, and increased incidence of sexually transmitted diseases (STDs). Although their rates of change may be different, these changes in the adolescent population mirror changes in the adult population. The same social and economical forces that have shaped the sexual, childbearing, and marital aspects of adult life have also affected adolescents. However, because adolescents are now considered by most to be to young to be dealing with adult

problems there is much dismay that they are affected by issues that are considered to belong to the adult world. Indeed, in this way, teenagers, considered to be too young to be dealing with adult problems, have become the focus of adult anxiety about changes that have affected society as a whole (Luker, 1997).

Teenage pregnancy has become a focus of concern because it is a visible physiological marker of the realities of such issues as sexuality, abortion, marriage, and financial responsibility. Before a pregnancy occurs issues such as marriage, sexuality, and STDs are involved. With the occurrence of a pregnancy, issues of marriage, abortion, and STDs are involved. And following childbirth from a teenage pregnancy issues about child-care, marriage, STDs, and financial responsibility become important. It is readily apparent that teenage pregnancy is a complicated issue that involves much more than the pregnancy itself, especially when it results in abortion or a live-birth. The term “teenage pregnancy” has become a catch-all phrase that for many encompasses all of the above issues. For most people, teenage pregnancy is equivalent to teenage child-bearing. Teenage pregnancy is seen as symbolic of loss of control and promiscuity; coupled with childbearing it is seen as financial irresponsibility (Luker, 1997). In this introductory chapter I focus on teen pregnancy and the sequelae of teenage childbirth with its possible economic, emotional, and social long-term effects. I will use the terms teenager and adolescent interchangeable, with both terms referring to those aged 19 and younger.

Who are the adolescents who get pregnant?

To understand which teenagers get pregnant a framework of sexuality and fertility must be constructed. In this framework the following must occur: sexual intercourse, failure to use contraception or failure of contraception, conception, abortion or childbirth.

In the following section I will attempt to discuss the epidemiology of the factors which make up the framework of sexuality and fertility.

Sexual activity of Teens in America

A major factor in the increase in teenage pregnancy rates is the increase in the proportion of the teenage population who are sexually active. In 1994 there were 8,565,000 women aged 15-19 in the US population, approximately 57% of which were sexually experienced (Alan, 1994). According to data from the National Center for Health Statistics, 41% of teens aged 15-17 and 74% of teens 15-19 were sexually experienced in 1990 as compared to 32% and 64%, respectively, in 1982 (Ventura, 1994). Table I illustrates the percentage of Adolescent Females whom have had sexual intercourse per age sub-category (Spitz *et al.*, 1996).

Table I. Percentage of Adolescent Females who have had sexual intercourse.

Race	Age Group	1982	1988	1990
All	<15	8.5	8.4	8.4
	15-19	46.9	52.9	54.9
	15-17	32.2	38.3	41.0
	18-19	64.1	73.9	74.4
White	15-19	44.9	52.1	53.0
	15-17	30.1	35.8	38.8
	18-19	61.5	74.3	73.6
African-American	15-19	59.0	60.2	69.6
	15-17	44.1	50.4	56.5
	18-19	79.5	75.7	83.2

Data from National Surveys of Family Growth 1982,1988,1990 (Spitz *et al.* 1996).

The data in table I illustrates the increasing rates of sexual activity amongst adolescents in all age groups except for the under age 15 category. In the under 15 category rates of sexual experience remained fairly stable. In general, the percentage of female adolescents sexually experienced was almost twice as high for teens 18-19 as compared to teens 15-17. By race, the percent of sexually experienced African American

females was approximately 10% higher per age group as compared to the percent of sexually experienced White American females (Spitz *et al.*, 1996). New data for 1995 from the National Survey of Family Growth shows that the rates of sexual experience for teenagers is unchanged (Kaufman *et al.*, 1998).

The increase in sexual activity has occurred with a concomitant increase in sexually transmitted diseases. In 1991 males and females aged 15-19 had the highest rate of bacterial infections of *Neisseria gonorrhoeae* in the US population. This age group also had the highest rate of *Chlamydia trachomatis* infection. From 1981-1991, 10-12% of primary Syphilis infections were in adolescents. This was a 110% increase in 10-19 year old females and a 41% increase in 15-19 year old males (Ford *et al.*, 1995). This report does not focus on STD transmission. However, as sexually transmitted diseases are intrinsically related to sexuality and thus the issue of teenage pregnancy, it is necessary that an awareness of the issue is present, especially when considering contraceptive options. Contraceptives such as the Pill are highly effective in preventing pregnancy but do nothing to prevent transmission of a STD. Barrier methods such as the condom may require more skills to use but provide increased protection against sexually transmitted diseases. Briefly, venereal diseases that affect teenage mothers can also infect their children in-utero and during delivery causing congenital diseases and perinatal sickness, in addition to the morbidity they cause to the teenage mother and her partner.

Contraception and Teens

Contraceptive use among teens has shown to increase. However, it is not always used until several months after sexual activity has begun. This risky behavior has been linked to barriers in knowledge about contraception, access to contraception, and lack of

skills in negotiating the use of contraception (Spitz *et al.*, 1993). Studies done from 1983-1988 showed that Hispanic and African-American women were less likely than White-American women to use contraception during first intercourse, 32%, 58%, and 70% respectively (Spitz *et al.*, 1993). The measure of contraceptive use at first intercourse is important because studies indicate that those who use contraception at first intercourse are most likely to use contraception at subsequent encounters. Table Ib. illustrates the use of contraception in teens at last sexual intercourse from a study done in 1988. Percentages of contraceptive use at last intercourse are used as an indicator of contraceptive use in general.

Table Ib. Percent of Contraceptive use at Last Intercourse by Never Married Sexually

Experienced Adolescents, Ages 15-19, 1988*. (Newcomer *et al.*, 1992)

Age	All Groups		African-Americans		White-Americans	
	Female	Male	Female	Male	Female	Male
15	41.6	59.5	-	70.0	43.5	50.9
16	43.9	62.3	21.1	63.8	47.8	64.4
17	30.8	57.8	11.7	68.4	37.8	54.4
18	28.7	53.5	15.7	64.3	30.9	50.0
19	22.3	55.2	16.6	60.7	21.6	54.6

*Includes: condom alone or with other method.

Interestingly, according to the Newcomer study, the percentage of condom use decreased with increasing age across all categories. This may be due to the total increase in number of sexually active teens. By ethnicity, African-American females at all age groups were less likely to have used contraception at last intercourse as compared to White-American females. Conversely, African-American males were more likely to use contraception than White-American males.

Pregnancy and Abortion Rate of Teens

Table II illustrates the rates of pregnancy for all adolescent females and sexually experienced females by age sub-category (Spitz *et al.*, 1996). Teenage pregnancy is defined as a pregnancy occurring to a female at the age of 19 or below.

Table II. Pregnancy Rates per 1,000 among all Adolescent Females
And among Sexually Experienced Females.

Year	All adolescent Females				Sexually Experienced Only			
	<15	15-17	18-19	15-19	<15	15-17	18-19	15-19
1980	6.3	57.5	133.1	88.8	74.2	178.6	207.7	189.3
1985	6.9	57.0	131.9	87.7	82.1	161.7	191.3	175.8
1990	7.1	62.8	138.3	95.9	84.8	153.2	185.9	174.6
1995	/	54.3	129.2	83.6	/	142.9	182.6	164.6

Pregnancies calculated as sum of live birth and legal abortions. Miscarriages not included. Data for 1980-1990 from Spitz *et al.*, 1996. Data from 1995 from Kaufman *et al.*, 1998.

The data in Table II indicates that the Pregnancy rate of all adolescents increased from 1980-1990 in all age groups and then decreased from 1990-1995. Table II also indicates though, that among those who are sexually experienced the pregnancy rates has actually declined by approximately 17% from 189.3 to 164.5% per 1,000 (Kaufman *et al.*, 1998). The decrease in pregnancy rates was greater for adolescents age 15-17 than for adolescents 18-19. As the data in Table I illustrates that there was a steady increase in the percentage of teens sexually active, we would expect to see a concomitant increase in pregnancy. Although adolescents did see an overall increase in pregnancy rate from 1980-1990, the fact that pregnancy rates for the population of sexually experienced females dropped indicates that the use of contraceptives may be impacting the rate at which sexually active teenagers get pregnant.

Looking within the population of sexually experienced teens, the rates of pregnancy were 2 times as high for those aged 15-19, 12 times as high for those under aged 15, 3 times as high for those 15-17, and 1.5 times as high for those 18-19, as compared to rates among teens overall. It is evident that within the population of teens

that are sexually active, it is those less than 15 years old that have the highest risk of getting pregnant, as compared to the overall population. This may be because adolescents in this age group tend to have sex infrequently. Numerically it is those 18-19, followed by those 15-17 who, because of increased percentages of sexual experience have the highest rate of pregnancy.

Table III illustrates the abortion rate of all adolescents from 1980-1995. Abortion rates of all groups by all age categories show an increase from 1980 to 1985 and then declined from 1990-1995, to levels below that of 1980. By dividing the rate of abortion by the rate of pregnancy a calculation of the percentage of pregnancies that result in termination can be estimated. Abortion rates for all adolescents remained relatively stable from 1980 till 1990 at approximately 40% for teens 15-19. Like pregnancy rates, teens aged 18-19 had abortion rates that were twice that of teens aged 15-17. For those aged 15-17 approximately 43% of all pregnancies were terminated from 1980-1990. For those aged 18-19 38% of all pregnancies were terminated. The highest percentage of pregnancies that ended in termination per age category occurred for those under 15 with 50% of the pregnancies terminated. The percentages of termination among sexually active teenagers mirrored those of all adolescents.

Table III: The Abortion rate per/1000
of All Adolescents and Sexually Experienced Adolescents

Year	All Adolescents				Sexually Experienced Only			
	<15	15-17	18-19	15-19	<15	15-17	18-19	15-19
1980	3.5	25.0	51.0	35.8	41.2	77.7	79.6	76.3
1985	4.1	26.0	52.3	36.8	48.0	73.7	75.9	73.7
1990	3.5	25.3	49.7	36.0	41.7	61.7	66.8	65.5
1995	/	18.3	40.0	26.8	/	48.2	56.6	52.8

Data for 1980-1990 from Spitz *et al.*, 1996. Data for 1995 from Kaufman *et al.*, 1998)

Abortions calculated for only sexually experienced teens 15-19 decreased 15%

from 1980-1990 and 16% from 1990-1995. Within this population the abortion rates for those under age 15 increased 14% from 1980-1985 and then decreased 13% from 1985-1990. For those 15-17 the abortion rate decreased almost 38% from 1980-1995. For those 18-19 the abortion rates steadily decreased 16% from 1980-1990.

The decision to have an abortion is affected by race, culture, class, and socio-economic status. The more successful or goal oriented a young female is, no matter what her class, the more likely she is to obtain an abortion (Luker, 1997). Thus, women from affluent, white, two-parent families are more likely to chose abortion as compared to women from low income families who are already disadvantaged. Three-fourth of all teens that terminate their pregnancies are from well-to-do families whereas less than half of poorer teens seek abortions. The differential rates of abortion are also seen by race with 60% of White-American teens seeking abortion as compared to 50% for African-Americans and Hispanic-Americans (Luker, 1997).

The age and maturity of the pregnant teen's partner also influence abortion rates. The younger the male partner, the more likely a teen is to seek an abortion. This is correlated with the pregnant adolescent's perception of her partner as a potential source of support. The less support that a pregnant adolescent perceives that she will receive from the father of her child, the more likely she will seek to terminate her pregnancy (Luker, 1997).

Overall teenage birth rates in the US

Estimates indicated that in 1993 1,003,000 adolescents became pregnant. Of these pregnancies 517,000 resulted in live births (Alan, 1994). From 1970-1986 teenage birth rates steadily dropped from approximately 68/1,000 to a low of 50/1,000. In the

following five years, birth rates to teenagers 15-19 years old have steadily increased.

Teenage birth rates in the US remain higher than that of other developed nations. In 1990 the birth rates in 12 European and Asian nations ranged from 4 to 34/1,000 compared to 60/1,000 in the US (Ventura, 1994).

Table IV illustrates the child-bearing rates among adolescent females by ethnicity and age.

Table IV. Child-bearing among Adolescent Females by Race/Ethnicity and Age per 1,000. (Spitz *et al.*, 1996)

Race/Ethnicity	Age Group	1980	1985	1990
All adolescents	<15	2.8	2.9	3.6
	15-19	53.0	51.0	59.9
	15-17	32.5	31.0	37.5
	18-19	82.1	79.6	88.6
White-Americans	<15	1.4	1.4	1.9
	15-19	45.4	43.3	50.9
	15-17	25.5	24.4	29.5
	18-19	73.2	70.4	78.0
African-Americans	<15	10.4	10.7	12.7
	15-19	97.9	95.4	112.8
	15-17	72.5	69.4	82.3
	18-19	134.9	132.4	153.0
Hispanic-Americans	<15	-	-	6.2
	15-19	-	-	99.9
	15-17	-	-	65.7
	18-19	-	-	147.2

Data for Hispanics may include people of any race (Spitz *et al.*, 1996).

The overall child-bearing rates for all adolescents increased across all age groups from 1980-1990. Child-bearing rates per 1,000 have also increased from 1980-1990 for both White-Americans and Black-Americans across all age categories. For Hispanic-Americans a historical rate change could not be made because data was not available before 1990. For White, Hispanic, and African-American teens the lowest rate of teen aged childbearing occurred for those under aged 15. For all ethnicities the rate of childbearing increased with increasing age so that those aged 18-19 have more than double the birthrate of those aged 15-17. The rates of child-bearing were highest for

African-Americans in all age categories compared to White-Americans. The rates of child-bearing for Hispanic-Americans were lower, in each age category, compared to African-Americans and higher per category than White-Americans.

Childbearing rates of married versus unmarried teenagers

Table V illustrates the overall changes in birth rates in married and unmarried teens. From 1980-1991 there has also been an increase in the percentage teenage mothers who are unwed. For teens aged 15-19 the rate of child-birth outside of wedlock rose 62% from 26.7 in 1980 to 44.8/1,000 in 1991. In 1991 69% of total teenage births were to unmarried mothers. For White -Americans the increase in non-marital birth almost doubled from 16.5 to 32.8/1,000 while for African-Americans the non-marital births rose 23% from 87.9 to 108.5/1,000 (Ventura, 1994).

Table V. Teenage Birth Rates 1980 and 1991.(Ventura, 1994)

*per 1,000	1980	1991
Overall Unmarried Teens	26.7*	44.8*#
Unmarried White-Americans	16.5	32.8*##
Unmarried AfricanAmericans		

#This is 69.0% of total births to teenage women.

##97% of Hispanic mothers are reported as white on birth certificates (Ventura, 1994).

The marital status of a teen is connected with her likeliness to use contraceptives. In unmarried teens fewer than 70% may use contraceptives regularly while over 90% of married women are likely to consistently use contraceptives (Brindis, *et. al*, 1988). A teenage woman's marital status is also correlated to her likelihood of having an abortion. In 1979-81 31/1,000 unmarried teens aged 15-19 had abortions as compared to 18/1,000 married teens of the same age category. Thus, for those with anti-abortion views, reducing the rate of teenage pregnancy in unwed mothers is important in reducing abortion rates (Brindis *et al.*, 1988).

For many people, who may or may not have concerns about the effects of maternal age on childbearing, teenage pregnancy in an unwed teenager is a societal concern both financially and morally. Many view the occurrence of childbearing out of wed-lock as a strong indicator of social disruption. These people may view unmarried mothers as indicators of loss of moral/religious foundations important in maintaining a strong society (Luker, 1997). When a young mother is unmarried many conclude that the father of the child is not financially or emotionally a part of her support network. This support must then come from her surrounding family and/or society at large. Thus, many campaigns, which focus on teenage pregnancy, focus on the reduction of pregnancy outside of wed-lock. In 1996 California issued Community Challenge Grants to support the reduction of unwed pregnancies.

Unfortunately, the current economic and social state of the nation is such that the number of marriages has decreased. Presently, Americans at all ages are less likely to be married and 50% of marriages ends in divorce (Luker, 1997). Between 1980-1991 the number of never married men aged 35-39 doubled from 8% to 20%. Among African-American men the number of never married increased from 18% to 30% from 1980 to 1990. At all income levels African-American men are less likely to marry. This increase in unmarried men has occurred with a concomitant decrease in total salaries. Men have become less able to support families with one income. For poorer men without college educations, which can only find minimum wage work, their salaries are not enough to support a family. In addition to the economic reality that minimum wage is not enough to support a family, the marital status of a young mother can be detrimental to her likelihood

of receiving aid from her family and the state. Married families are less likely to receive AFDC in most states (Luker, 1997).

The majority of births to single mothers are not to teens. As single-parenting has become less stigmatized affluent women have increasingly chosen to raise children on their own. Women today are less likely to accept the 'double-shift' of marriage and child-bearing and careers (Luker, 1997). This trend has been mirrored by teenage women, although they have less resources to support their children. What they usually have though, are the sympathetic support of their family members. For African-American women from low income backgrounds, having a child at a younger age increases her likelihood to receive sympathetic help from family members while they are still healthy and can provide support.

The socioeconomic status of teenage mothers

Of the teens who did become pregnant , 73% were from low-income families (Alan, 1994). Considering that only 38% of total US female adolescents are from families with low-income, 23% or close to 1 out of every 4 low income adolescent women experience a teenage pregnancy. Of the 517,000 births, 83% were to low income teenagers. Thus, it is readily evident that the majority of teenage pregnancies and live births occur within the low-income population.

As the low-income population is one that seems to be more affected by the reality of teenage pregnancies many societal issues arise. Interestingly, there is much debate about the *financial* costs of teenage pregnancy to both society and the effects it has on the young mother. Issues that are often discussed are the financial costs of providing support to teenage mothers through programs such as Aid to Families with Dependent Children,

Medicaid, and food stamps. From 1985-1990 it is estimated that these costs totaled \$120.3 billion. It is estimated that \$48.1 billion could have been saved if each birth had been delayed until the mother was 20 years old (MMWR, 1993).

In the context of today's socio-economic realities, child-bearing early is no longer the "norm" for most middle and upper-class Americans. Today's economic market forces have changed so that ensuring a comfortable life-style necessitates that Americans delay child-bearing. Increasingly, it has become necessary for both partners to work. This has meant that child-bearing and marriage are delayed in order to secure financial success and stability by increasing their years of education and work (Luker, 1997). Today, the median age for first marriage is the highest in recorded US history at 24 for women and 26 for men. Thus, to many Americans child-bearing early seems like a sure way of ensuring financial failure. With this outlook, many Americans find the idea of financially supporting women and children whom they see as not making the necessary "sacrifices" that they do disagreeable.

The Consequences of early Child-Bearing

Currently there is much debate about how teenage child-bearing can affect the young mothers in terms attainment of life goals such as secondary education, economic mobility, and the likelihood of marriage. Geronimus and Korenman believe that the consequences of teenage child bearing does not have as disastrous an effect on young mothers as current wisdom holds true (Geronimus *et al.*, 1993). Some people believe that teenage childbearing may be an adaptive strategy for the socio-economically disadvantaged. That is, compared with their peers teenage mothers may actually do better, in terms of financial independence and may have an increase in the number of

years that they are productively working. Other people such as Furstenberg, Foster, and Hoffman believe that the effects on educational attainment and economic mobility are still large enough to warrant vigorous discouragement of teenage pregnancy (Hoffman *et al.*, 1993). In reading the papers of Furstenberg and Geronimus it seems that the debate rests on what data sets should be used and what calculations are considered significantly important.

Conventional wisdom believes that a teenage child-bearing to an unwed mother decreases a woman's chances of attaining education. Thus, ensuring her financial failure. However, conventional wisdom forgets that until 1975 pregnant school girls were not allowed to finish their educations. Today, new school policies and programs have increased the rate of pregnant or parenting teens close to that of non-pregnant teens (Luker, 1997).

Of the research that has been done about the effect of being an infant of a teen mother, there is also dispute about whether the increased incidence of low birth weight are due to physiological factors related to maternal age or the effects of maternal background which usually includes poverty (Geronimus *et al.*, 1993). A recent study of obstetric outcomes, gestational age and infant birthweight, indicated that teens aged 16-19 had better outcomes than adults whereas those age 12-15 showed the worse birth outcomes. The study outcome indicates that when discussing the impact of maternal age to infant birth rate, the age sub-category of the young mother should be taken into account (Amini *et al.*, 1996).

Causal explanations of Teenage pregnancy

It is estimated that 84-95% of all teenage pregnancies are unintended (Mmwr, 1993). Research has shown that teenage pregnancy is associated with the following risk/causal factors: the presence of a sibling who is a teen-mother, childhood victimization, lack of parental guidance, peer influence and/or low income.

Siblings of parenting or Pregnant teens

In a study comparing younger siblings of never-pregnant teens to the younger sisters of pregnant or parenting teens, the siblings of pregnant teenagers indicated that they were more accepting of adolescent childbearing, and felt that younger ages were appropriate for the initiation of first intercourse, marriage and childbearing. These teenagers also engaged in more problem behavior. The siblings of younger teens also expressed more definite intentions of child bearing at a younger age (East, 1996).

Theoretical explanations as to why the siblings of younger teens would be at a higher risk for teenage pregnancy include social modeling, shared parenting influences, and shared societal risk (East *et al.*, 1992).

The two-fold elevated risk of childbearing as a teenager to siblings who have pregnant or parenting sisters is explained by one theory that focuses on the social modeling which older siblings present. Their situations serve as the social "norm," which may have important influence towards the socialization of their younger siblings. The shared parenting theory focuses on the environmental and social economic influences which are included in the sister's shared background of parenting, ethnicity, socioeconomic status, and exposure to community norms. The societal risk is one that includes the older sister's socialization into early motherhood, diminished quality of

parenting to the siblings, increased family stress and increased economic hardship. It is the increased societal risk that may predispose a younger sibling to risky behaviors.

Childhood Victimization

Childhood victimization, abuse, and/or neglect are often cited as a risk factor for early childbearing. The causal explanation is that the trauma and neglect predispose the teens to act out their “psychopathology.” However, a 1996 study by Widom and Kuhns has shown that childhood abuse and neglect may not be associated with an increased risk for promiscuity or teenage pregnancy. The true source for increased risk of teenage pregnancy may lie in the environmental stresses associated with childhood abuse and neglect. These environmental stresses include family dysfunction, poverty, unemployment, parental alcoholism, and drug problems (Widom *et al.*, 1996).

Parental Influence

Studies have found that adolescents who view their parents as having lax rules about dating have the highest rates of sexual experience while those who consider their parents’ views on dating to be stricter have the lowest rates (Santelli *et al.*, 1992). The inverse relationship between perception of parental disapproval and the rate of sexual experience indicates that parents can have an impact on action of their children. With respect to teenage pregnancy the views of parents towards contraception may also impact its use. With this in mind, programs wishing to decrease sexual activity or increase the use of contraception should enroll parental support.

Peer Influences and Self-Esteem: Factors in initiation of Sexual activity and Contraceptive Use

Peer attitudes and social norms are associated with influencing a wide range of behaviors including sexual activity and condom use. In the US culture today adolescents are bombarded by images of sexuality in print advertising, television advertising, television shows, movies, and magazines. On the radio, song lyrics have become more sexually explicit. The message that most teens learn from this environment is that to be normal they should be sexy, and sexual activity is the equivalent of sophistication (Brindis *et al.*, 1988). These cultural messages are internalized by developing adolescents at time when their concepts of themselves are beginning to take shape. The creation of the “be sexy, be cool, have sex” social norm, fails to support young men and women who may wish to wait before initiating sex or those who wish to have sex using contraceptives. Cultural messages about sexuality and being sexy usually fail to include messages about the use of contraceptives.

The self-esteem of young women and young men plays a role in how they will respond to social and personal pressures from those around them. Young women who do not have strongly developed values and standards for themselves may have greater difficulty in opposing the expectations and pressures of friends. They can be pushed to either have sex before they are ready, or to have sex without the use of contraception. However, the expectations of friends can also influence adolescents to either delay sex or use contraception. Studies have shown that young women who are urged by their partners or friends to obtain contraception before initiation of sexual activity are more likely to use it effectively (Luker, 1997). This information indicates that changing social norms may have substantial effect in changing the behavior of teens with regards to sexual activity and contraceptive use.

An Adolescent's likeliness to use contraception is dependent on many variables. In addition to and with in the context of social norms, peer influence, and self-esteem, contraceptive use depends on how prepared a teen is to have sex before the event. His/her negotiation skills are also important. Not all sexual experiences are expected or consensual. In a national survey, 7% of teens reported that they were forced to have sex against their will. Thirteen percent of White-American women and 8% of African Americans reported having coercive sex before they were 20 (Luker, 1997). With decreasing age the percentage of reported coercive sex increased. For those who had had sex before the age of 14, 74% reported being coerced and for those having sex before the age of fifteen 60% reported being coerced (Luker, 1997).

With pre-meditated preparation before sex, many women face a double standard for readiness. Cultural expectations expect that a young woman be sexy, but that a "nice girl" should not be "loose," or too ready to have sex (Luker, 1997). With these counter expectations a young woman seems to lose both ways. Either she fulfills the nice girl expectations and does not have ready contraception, leaving her dependent on her partner's preparedness, or she is prepared and faces being considered "loose." In being considered loose, a woman may then lose negotiating power in her relationship with her partner, in which she may be trading sex for commitment and intimacy (Luker, 1997).

Power dynamics exist within relationships, and they come into play when partners negotiate both the initiation of sexual activity and the use of contraceptives. Cultural expectations and the self-esteem of a young woman are integral in her interaction with her partner. Women with lower self-esteem who lack reasons not to have sex or not to get pregnant are more likely to acquiesce to her partners demands or persuasion. One major

factor that must interact in the power dynamics of negotiating sex and contraception is the age of partners. Fathers of babies born to teenage mothers are often no longer teenagers themselves. To illustrate, 28% of fathers of teenage babies born in California during 1986 were still teenagers themselves; 73% of these fathers were 18-19. Almost 50% of the partners of teenage child-bearers were 20-24, and 15% were older than 24 (Brindis *et al.*, 1988). The older age of a woman's partner may negatively influence her ability to successfully determine and negotiate her wishes. An older man is more likely to have more developed negotiating skills. An older male is also, in our patriarchal society, someone who is perceived as being more powerful. A young woman with few personal and/or economic skills may find it harder to resist the persuasion and desires of an older male.

In addition to the dynamics of negotiating sex and contraception, one reason that the majority of babies born, are fathered by older males may also be that older males are viewed as potentially greater sources of support. In our discussion of abortion, we saw that a teen was more likely to seek an abortion if her partner was young and/or immature (Luker, 1997). By the same process, babies who are fathered by older males may be more common, because the older males are seen as a greater source of support, and so pregnant teens chose to have these children.

Affluence, age, and consistency of sexual activity are also variables which can predict whether or not an adolescent uses contraception (Luker, 1997). The higher an adolescent's economic status or aspirations, the more likely she is to use contraception. Hope for the future is a strong motivator for young men and women to take measures that will protect them from engaging in behaviors with consequences that could deter them

from their goals. Older women are better at using contraceptives because they are more careful than young women and they have more experience using contraception (Luker, 1997). Studies show that contraceptive use is relationship specific. With each new relationship/partner, the negotiation process must be navigated. This adds an important degree of unpredictability to contraceptive use that sometimes results in an unintended pregnancy.

High Risk Behaviors

High risk behaviors in teens associated with teen pregnancy include: sexual activity, impulsive behavior, depressive symptoms, disrupted family life, poor school performance and low self-esteem (Baille, 1996). The above risks and behaviors were compiled from studies of teens who became pregnant. Causal relationships link these high risk behaviors to a multitude of factors including environmental stress, psychological and developmental stage of the individual, and the socioeconomic status of the individual.

Impulsive behavior is causally associated with teenage pregnancy because impulsive behavior may lead to unplanned sexual intercourse without the use of contraception. Depressive symptoms, disrupted family life, and poor school performance, are all seen as factors which affect an adolescent's self-esteem or are markers of low self-esteem. Problems with self-esteem, as discussed above, can have detrimental effects on an adolescent's ability to make judgments and decisions about sex and contraceptive use. Alcohol and drug abuse are additional high risk behaviors that are thought to have causal connections to unintended teenage pregnancy. The use of alcohol or drugs is thought to decrease an adolescent's ability to make judgments and decisions (Brindis *et al.*, 1988).

Teenagers often feel invulnerable to risk, or they may be apathetic about the future, unable to comprehend how the risks they take affect the future. Studies have shown that this may be especially true of teens from low-income backgrounds who may not have role models to show them how they can advance both economically and personally (Geronimus *et al.*, 1993). Lack of hope for the future is something that decreases an adolescent's self-esteem and diminishes his/her reasons for *not* engaging in behaviors that could have serious consequences. Studies have shown that in low-income populations, it is the most discouraged and disadvantaged adolescents who become teen mothers (Luker, 1997). Correlating with this model, 1/4 to 1/3 of all teenage mothers drop out of school *before* they become pregnant. Thus, it is readily apparent that keeping young women in school and providing them with hope and aspirations for the future is important in the prevention of teenage pregnancy.

Low-income or Poverty

In the context of what is considered today's social norm: delay child-birth until education and career are attained, early child-birth is commonly believed to be the cause of poverty (Luker, 1997). Indeed, teenage pregnancy and teenage child-bearing are easy explanations of troubling social realities such as poverty, persistent racial inequality, increased child-bearing outside of marriage, sexual liberation, and new family structures (Luker, 1997). However, from our discussion of the epidemiology and causal factors associated with teenage pregnancy it is readily apparent that poverty is not so much a consequence but a major causal factor in creating an environment in which a teenage pregnancy and subsequent teenage child-bearing is more likely to occur. Poverty creates inequality, lack of hope, lack of access, lack of knowledge, stress, and apathy that affects

the conscious and unconscious decisions that people make. In hoping to reduce unintended teenage pregnancy, poverty and the environment that it creates, must be explicitly addressed.

Chapter 2

The Physician's role in Preventing Unintended Pregnancies in Adolescents

Physicians as Educators

As the numbers of adolescents that participate in sexual activity increases it is important that physicians learn to deal with the issues of adolescent pregnancy prevention and the prevention of STDs. Studies have shown that emphasis, in prevention programs, on abstinence or delay of sexual initiation, training in decision making and negotiation skills, and education about sexuality and contraceptive use all show desired behavioral modification in the targeted populations (Frost *et al.*, 1995). Physicians who provide primary care to adolescents have a unique opportunity to provide information about sexual health, counseling, and access to contraception that can assist adolescents in making informed and educated decisions.

Adolescent and Parental Expectations of Physicians

Studies have indicated that both parents and students expect their physicians to be knowledgeable and comfortable in dealing with issues related to teenage pregnancy and the transmission of STDs. In a study by Ford *et al.* 33% of virginal female adolescents spontaneously identified health care professionals as resources for discussions about sex related issues (Ford *et al.*, 1996). This information was corroborated by Schuster *et al.*, who surveyed 2026 California high school students. In Schuster's study 90% of the respondents indicated that they would find it at least a little helpful to very helpful to talk to a physician about sex (Schuster *et al.*, 1996). Factors affecting how students seek health care include 1) how well the physician cleanliness, such as handwashing or use of

clean tools, 2) provider competency, 3) physician respect towards patient, and 4) confidentiality (Ginsburg *et al*, 1995).

Schuster's study also explored the value of discussions with physicians and found that a past history of having talked to a physician increased a student's likeliness of believing that patient physician discussions were helpful. The study also showed that female students versus male students were more likely to find discussions with physicians very helpful. Interestingly, most adolescents of the study reported not having had discussions with their physicians about sexual health (Schuster *et al*, 1996). These students also wanted to know more about STD prevention, and pregnancy, as compared to knowledge about sexual function (Schuster *et al*, 1996). Other studies such as that by Joffe *et al* looked at the extent of health care received by adolescents suggest that adolescents and physicians may have different views of what are important topics for discussion. Joffe *et al* found that physicians tended to talk about exercise, nutrition, and breast self-exam. They were also by sex more likely to discuss contraception with females versus males. The college freshmen in Joffe's study rated exercise, depression, weight (women), and STD s (men) as the most important topics they wanted discussed (Joffe *et al*, 1987).

Barriers to health Care of Adolescents

Barriers to health care of adolescents include inadequate health insurance, transportation, and accessible service site. Time factors and opportunities to meet with adolescents are also seen as barriers to providing care (Langille *et al*, 1997). Lack of training is also cited as a barrier to care by physicians. (Figuroa *et al*. 1991) Studies of barriers from adolescent point of view include issues of confidentiality and physician

comfort (Croft *et al*, 1993) (Schuster *et al*, 1996). Schuster's study indicated that the degree of trust in confidentiality that students had was related to the type of confidence. Adolescent trust about physicians keeping their confidentiality was highest for questions regarding sex (75%) sexual activity (65%), contraception (68%), and lowest for an STD (44%) or pregnancy (44%) (Schuster *et al*, 1996). In focus group interviews conducted with parents and adolescents, both parents and adolescents believed that physicians were appropriate sources of information about sex information, but both groups noted as barriers that physicians appeared uncomfortable when discussing personal issues like sexuality. The parents in this focus group also noted that many physicians seem to lack communication skills, such as the use of open ended questions, necessary to foster dialogue with adolescents about issues related to sexuality (Croft *et al*, 1993). The question of confidentiality was also a barrier for the adolescents of this study (Croft *et al*, 1993).

The Physician's Role

The medical literature about adolescent sexuality and health also promotes the expectation that physicians should include sexual health care into routine adolescent care. Papers available for physician review pertinent to adolescent pregnancy prevention range in content from informational to directive with recommendations and guidelines.

In discussing the role of physicians in adolescent sexual health, the medical literature aimed at physicians, focuses on the practitioner's role in preventing the spread of sexually transmitted disease and often secondarily, the prevention of unintended pregnancy. Practitioner's are encouraged to provide confidential care that includes teen-based literature, a physical exam, contraception, STD screening, STD diagnosis, and

pelvic exam (Braverman *et al*, 1994) (Rauh, 1993) (Committee on adolescents, 1990). Physicians are also specifically encouraged to provide counseling to patients' families about how to deal with the social and decision making process of their adolescents (Kay, 1995).

To provide physicians with organized and standardized guidelines for preventive services specific to the adolescent population national organizations have developed protocols and recommendations. In 1989 the US Preventive Services Task Force recommended that physicians take a sexual history, discuss risk prevention, and provide legally confidential care for all adolescents (Schuster, 1996). Since then the American Medical Association, the American Academy of Pediatricians, the American Academy of Pediatricians, the Maternal and Child health Bureau, and the American Academy of Family Physicians have all developed protocols and guidelines for health care with recommendations specific to adolescent health. Briefly, all the guidelines encourage an increase in the quality and scope of adolescent preventive services (Elster, 1998). According to Elster, these guidelines also agree that physicians should help adolescents in coping with psychological, social, physical and sexual development. Further, all guidelines recommended STD and contraceptive services/counseling (Elster, 1998).

Assessing Physician Education and Action

In order to evaluate how physicians are meeting adolescent patient needs concerning sexual health, studies investigating predictors of physician action concerning STD risk assessment and the sexual history have been performed. These studies have looked at physician education, attitude, knowledge, age, sex, practice setting, and personal experience as determinants of physician behavior. Following is a review of the

major determinants studied and how these determinants have correlated to physician behavior with respect to the delivery of preventive health care.

Physician Demographics of Sex and Age

Before pregnancy prevention counseling can be provided most physicians take a sexual history from their patients. In a study by Lewis et al, 1000 Californian internist, family and general practitioners were surveyed about their sexual history taking and sexual health counseling. This study found that less than 4 % took complete sexual histories from their patients. The demographics of those who most often took adequate sexual histories were internists, female physicians, and younger physicians (Lewis *et al*, 1987). Women were also found by Maheux et al. to provide more STD prevention care. In 1997 Quebec family physicians were surveyed about the frequency and content of the sexual histories and frequencies of safer sex counseling. No differences were found regarding sexual history taking, but female family physicians were more inclined to counsel patients about condom use, which has beneficial STD and unintended pregnancy prevention (Maheux *et al.*, 1997).

Physician Education, Attitude, and Knowledge

Studies looking at how physician education effects physician behavior have shown that curriculums with sexual history taking improves the frequency with which residents collect information about sexual history (Ross et al., 1994). Langille et al. found that physician opinion about continuing medical education units (CME) was felt by some physicians to enhance their skills (Langille et al., 1997). The use of continuing medical education units regarding adolescents was also found to be helpful by Indiana physicians surveyed about their perceived competency in providing care to adolescents

and CME units (Orr et al., 1987). In a study reporting pediatrician's self-evaluations of their skill and training towards adolescent health care physicians noted that the areas of greatest need for training was in the pelvic examination and issues relating to sexually active adolescents (Ninstein et al., 1986).

The attitude of physicians about pregnancy prevention and sexual health has also been studied. In 1997 Langille et al studied physicians in Nova Scotia and found that all physicians believed adolescent pregnancy and STDs were important areas of prevention but only 62% believed that their efforts were effective (Langille *et al*, 1997). Langille's study did not attempt to correlate physician attitude with physician behavior, but found that the majority of physicians had high levels of comfort and skill towards teaching adolescents about pregnancy prevention.

Aims

The aims of this study are to understand the knowledge and attitudes of physicians towards teenage pregnancy prevention and how these relate to physician practice or actions. This study aims to gain an understanding of the cues that lead to physicians providing counseling and the barriers that prevent physicians from providing counseling.

In addition, this study aims to understand how the issue of teenage pregnancy is addressed in the offices of physicians. This information will allow us find out if there are deficits in how doctors deal with the issue of teenage pregnancy prevention. With information about what is being done or not being done, there is potential to formulate measures for positive change. For example, if we find that most physicians feel under trained to take sexual histories changes in school medical school curriculum or training may be suggested.

To fulfill our goals we ask two basic questions:

- What are physicians doing to prevent adolescent pregnancy?
- Who are the physicians who provide care towards pregnancy prevention?

Hypothesis

1. I hypothesize that physicians who have more training in sexual health will be more likely to address the issue of teenage pregnancy prevention compared to those that are not trained/ or have less training. Increased training should increase physician comfort level. With increasing comfort levels, physicians should be increasingly likely to provide counseling. Physician training will be determined by physician indication of course work and course content from high school up through medical school and to the present with continuing medical education units (CME). Physician knowledge of teenage pregnancy will be tested by physician response to facts about teenage pregnancy. Recent training may also play a role in whether or not pregnancy prevention is discussed. Thus, I expect that those who have more recently received their MD degrees and who have CME units in sexual health will be more likely to provide counseling versus referral of the patient to someone else.

2. I hypothesize that physicians who have guidelines/protocols to follow will be more likely to provide counseling as compared to than those who do not. Each physician will be asked whether or not he or she has guidelines to follow. Quantitative measurement of how likely physicians are to provide counseling will be measured by the amount of counseling self-reported by each physician.

3. I hypothesize that time restraints, physician discomfort with patients and/or parents, and lack of knowledge about adolescent pregnancy prevention will be factors that prevent physicians from addressing pregnancy prevention counseling. Physician

discomfort has been sighted as a barrier to counseling in studies of patients and parents (Croft *et al.*, 1993). Lack of knowledge/training on the part of the physician is also a barrier to counseling that has been discussed in numerous studies (Ross *et al.*, 1994). I hypothesize that physicians will indicate that insufficient time will be a barrier to counseling because a discussion which includes sexual issues requires the establishment of physician and patient rapport which may take more time to develop than is available in today's current practices.

4. I hypothesize that cues, evidence or putative STD, which elicit discussions about sexually transmitted diseases, will correlate most often with discussions about pregnancy prevention. The discussion of sexually transmitted diseases should cue in the physician to talk about birth control and pregnancy prevention, as the topics are intrinsically related.

Methods

The Sample

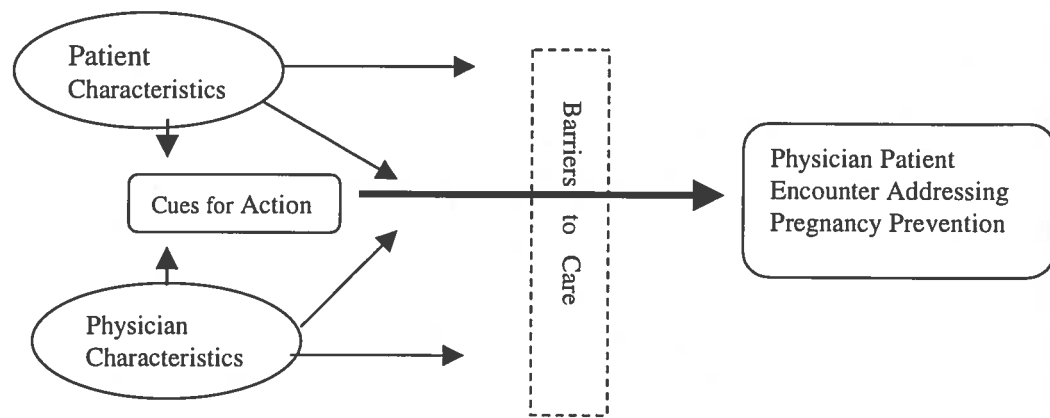
This study focuses on family physicians because these physicians are likely to provide general care to adolescents. To obtain the target population a list of practicing Bay area members from the American Academy of Family Practitioners (AAFP) was obtained. 195 physicians were sent surveys. Screening questions were included in the questionnaire. To be eligible for the study, a physician had to check "yes" that they were currently practicing and they had to check "yes" that they provide primary general care to patients aged 10-19. Physicians also had to check that they were either board certified or trained for family practice medicine.

Bay area physicians were chosen because of their proximity to the University of Berkeley. Due to proximity to the University, Bay area physicians may have knowledge of the UCB-UCSF Joint Medical Program (JMP), which is a respected organization. This may help to maximize response rate. However, the fact that Bay area physicians have been asked to participate in other JMP student surveys may also effect the response rate. To offset the negative effects of a physician previously being chosen to participate, the cover letter from the investigator included a personal appeal, a offer of a summary of the study, entry into a raffle, and an endorsement cover letter from the AAFP.

Design of the Self-Administered Mail Survey

This study used a self-administered mail survey. The following survey was mailed to all physicians of the target population (see Appendix A). The survey included Likert type scales, fill-in the blank questions, and check-box answers.

Figure 1. Conceptual Model of Physician, Patient Characteristics, Cues, and Barriers That Affect the Physician Patient Encounter.



The author created all the questions in the questionnaire using the conceptual model illustrated in Figure 1. We are interested in what physicians do to prevent adolescent pregnancy. To do this we measure physician action in terms of whether or not they have discussed pregnancy prevention in the past working month with an adolescent

and the number of times a physician performed actions such as provision of literature or contraception. However, physicians do not act without social and clinical influences. The model in Figure 1 illustrates the theory that what physicians do to prevent pregnancy is influenced by physician characteristics, patient characteristics, situational cues, and social or clinical barriers that all interact to induce or prevent a physician from acting. Measured in the questionnaire were physician and patient characteristics or barriers that may interact to produce or prevent a physician patient encounter. Table VIa lists examples of variables we studied in the questionnaire to understand how physician characteristics, patient characteristics, cues, and barriers affect physician practice.

Table VIa. Variables Tested in the Questionnaire.

Physician Characteristics	Patient Characteristics	Cues to Action	Barriers
Formal Sex Education	Ethnicity	Pt Initiated	Dr./Pt Comfort
Age of physician	Pt Family Income	Pt Parent Initiated	Parental presence
Physician Sex	Pt Funding / Coverage	Suspected STD	Confidentiality
Practice Type / Setting		Suspected Pregnancy	Lack of Training
Use of Protocol		Standard Screen	Lack of Time
Physician Opinions			

Table VIb lists physician actions measured by the survey. Each continuous variable was measured for female patients and male patients aged 11-19.

Table VIb. Physician Actions Measured by Questionnaire.

Physician Action	Type of Variable
Had discussion addressing pregnancy prevention.	Categorical
Provided literature with information about pregnancy prevention.	Continuous
Provided counseling about pregnancy prevention.	Continuous
Provided counseling about STDs.	Continuous
Provided contraception or prescription for contraception.	Continuous
Referral to in-house counselor.	Continuous
Referral to Family Planning Clinic.	Continuous
Administered pregnancy test.	Continuous
Performed pelvic exam.	Continuous

An example of how a physician characteristic can affect physician behavior is physician's opinion about the importance of pregnancy prevention. A physician who feels that pregnancy prevention is an important subject may be more active about watching for cues or may initiate action by asking questions about sex or STDs. However a physician characteristic may also contribute to being a barrier. For example, a physician who is uncomfortable with talking about sex to adolescents may not notice or disregard cues from a patient to talk about pregnancy prevention. Using this framework, the questionnaire looked at physician and patient characteristics and measured the number of times physicians performed preventive actions.

Before mailing the survey was tested on a convenience sample of physicians and medical students. The original survey was then modified for easier administration. The survey was shortened so that it could be completed in 8-15 minutes and formatted into a booklet.

Strategies to Maximize the Response Rate

The physician population is difficult to survey. To increase the response rate this study used Dillman's Total Design Method (TDM) of multiple mailings, handwritten addresses, and hand-signed letters (Dillman, 1978). The TDM is based on the theory that response rates are high when respondents perceive low costs and high benefits for participating. To maximize benefits and reduce participant costs the following steps, as taken and modified from the TDM were used.

Reward the respondent by:

1. Showing positive regard for the physician in the cover letter (see Appendix B).
2. Expressing appreciation in the cover letter and post-cards.
3. Use a consulting approach in formulating questions.
4. Offer the tangible reward of summarized data and a \$100.00 gift certificate to Borders Books Store. Physicians were directed to answer yes or no on the last survey question to receive a summary of the study results.
5. Make the questionnaire as interesting as possible.

Reduce perceived and actual cost to the respondent by:

1. Making the questionnaire as short and easy looking as possible. Booklet format was used.
2. Establish physician trust by
 - a. Thanking the physician in advance
 - b. Including a personal cover letter. A cover letter from the author explaining the confidentiality of the survey and its importance were included. Also included in this cover letter will be information about the study author and the JMP program (see Appendix B).
 - c. Including an endorsement letter from the American Academy of Family Physicians (see Appendix B).

Envelopes with first-class postage stamps and handwritten addresses were used to mail the questionnaires. Follow-up letters were also addressed individually. There were 3 mailings with the surveys mailed one month apart. The following mailing schedule illustrated in Table VIIa was used:

Table VIIa. Mailing Schedule

Time from first mailing	Mailing type
one week	A postcard reminder was sent to everyone. It thanked those who returned the survey and acted as a reminder to those who did not.
Three weeks	A letter and a replacement questionnaire were sent to non-respondents.

Code Book

Appendix A includes a copy of the final questionnaire with codes placed next to each answer. Briefly, all answers that can be answered yes, no, or not sure will be coded as shown in Table VIIIb.

Table VIIIb. Codes

Answer	Code
yes	1
not sure	2
no	0
No answer	9
Not Applicable	8

Variables such as Physician Sex will be treated as a dichotomous variable and age will be treated as a continuous variable.

For nominal or categorical variables, such as race, and training information, coding was numerical as seen above and in Appendix A.

Analysis

When the surveys were returned, the data analysis was as follows:

1. Data was cleaned by looking for missing answers and using legible answers. Only eligible surveys were included in the analysis. Blank questions were treated as missing variables and dropped during pertinent analysis. The computer program Stata was used to analyze the data.
2. Univariate analysis was performed to determine frequency, means, distributions, and skewing.
3. Bivariate analysis to determine relationships between independent and dependent variables was performed. X^2 test, fisher exact test, ranksum, signrank, and the student's t-test were used.
4. Multivariate logistic, linear, and ranked regression analysis to determine relationships between independent and dependent variables to construct a model of who is most likely to provide counseling was used.

Results

Of 195 surveys sent out, one was eliminated due to incomplete address. Of the remaining 194 surveys sent out, 133 people responded, with 125 eligible following screening. The response rate was thus 67%. All physicians included in the response pool were currently practicing at the time of the study and included general primary care for patients aged 10-19. Of the 125 eligible respondents, 77% of respondents returned the

survey following the first questionnaire mailing and 23% returned the survey following the second questionnaire mailing.

Analysis of non-response of individual questions showed that 77% of the questions had a 1-2% non-respondent rate. 17% of questions had a non-respondent rate of 3-5%. The highest non-respondent rate was for question 11c. 20% of the physicians left question 11c blank. Questions 11b-11f confused many physicians because answers to this series of questions should have added up to 100% (please see appendix A). Many physicians were unsure of what to do because there were 5 different questions that could add up to 100%.

Physician Characteristics: Physician Demographics and Practice Type

Physician Sex, Certification, Age, years MD received, and Ethnicity

By sex, 58% of the respondents were male and 42% were female. Name analysis of the non-respondents suggests that 70% may be male and 30% may be female. 98% of respondents were Board certified Family Practice physicians with 2% board eligible and 1% had additional board certification in pediatrics. The range of years that physicians received their MD degree ranged from 1954-1994. Thus the years since receiving their MDs ranged from 5-45 with a mean of 18 ± 9.8 . The age of physicians ranged from 31-76 with a mean of 45 ± 9.4 . T-test analysis show that male physicians are significantly more likely to be both older and have more years since receiving their MD degrees. Break down of physicians by age showed that 30% were aged 31-39, 41% were aged 40-49, 20% were aged 50-59, and 8% were 60-76. Break down of physician age and sex show that there are significant differences by sex in the age categories of 40-49 and 51-59.

Table VIII . Break down of physicians by Age and Sex

Age Category	Male Physicians		Female Physicians	
31-39	26%	n = 19	37%	n = 19
40-49	33%*	n = 24	52%	n = 27
50-59	29%**	n = 21	8%	n = 4
60-76	13%	n = 9	4%	n = 2

**p < .01 * p < .05 for significant difference between male and female physicians.

By ethnicity physicians were 2% African American, 4% Hispanic/Latin Americans, 8% Asian American, 81% Caucasian-American, and 5% other.

Practice type and Setting, Average Length of Patient visit, and Use of Protocol/Guidelines

- *Practice type:* 43% were in groups of 6 or more, 38% were in a practice group of five or less, and 17% were in solo practice.
- *Practice Setting:* 57% of physicians were in private setting, with 9% in HMOs, 9% in academic settings, 26% in a public community/county/private clinic, 2% in specialty clinics and 1% in other.
- *Average Length of Patient Visit:* The average patient visit for 61% of physicians lasted 15 minutes. For 22% the average visit is 20 minutes and for 15 % it is 10 minutes and for 4% it is 25 minutes.
- *Protocols:* 16% indicated that they use guidelines/protocols for dealing with adolescent pregnancy prevention. Of these 16%, 80% use the AAFP “Age Charts for Periodic Health Examination,” 5% use the AMA “GAPs” protocol, 10% use the AAP ”Recommendations for Pediatric Preventive Health Care”, 5% use the Maternal and Child Health Bureau ”Bright Futures,” and 10% indicated that they used other protocols. Use of protocol showed no significant difference by sex of physician.

The Patient Population: Demographics and Coverage

- *Percent of Patient Population that is Adolescent:* Female physicians are more likely to have more than 10% adolescents in their patient populations. Table IX illustrates the percentage of adolescents in physician's patient population base by physician sex.

Table IX. Percent population Adolescent by physician sex.

Percent Pt. Population Adolescent	Male Physicians	Female Physicians
<10	85%*	54%
10-20	14%**	31%
>20	1%*	15%

**p < .001 *p < .05 for significant difference between male and female physicians

- *Patient Ethnicity:* When asked to identify the largest ethnic group of their practice, regardless of patient age, 6 % indicated that their practice population was mainly African-American, 14% indicated Hispanic-American, 4% Asian-American, 66% Caucasian American, 4% Other, and 6% mixed populations.
- *Patient family incomes:* 19% described their adolescent patients as coming from poor income families, 22% from low-income families, 58% from middle income families and 1% from high income families.
- *Patient Coverage:* Patient family coverage overall, across the case-load of physicians surveyed was 19.3% Medi-Cal, 65.4% private or HMO insurance, 12.4% State funded family planning or family PACT, 19.6% other state or federal funds, 8.3% out-of pocket cash, 14.5% uncompensated, and 22.6% other.
- *Pact Participation:* When asked to indicate whether their practice participated in the Family Pact program 75% did not know what it was, 10% of physicians indicated that they did participate in Pact, 13% were sure that they are not

participants, and 2% did not answer the question. Logistic regression with independent variables of sex, age, CME units, total education, percent patient base that is adolescent, opinion, use of protocols, and patient population income levels showed that opinion and adolescent patient base > 20% were independent predictors of whether or not a physician would participate in PACT. Physicians who indicated that the rate of unintended pregnancy in their patient population was high were most likely to be members of the PACT program (Coef. = 2.0, $p < .05$). Physicians who had > 20% adolescents in their patient base were also most likely to be members of PACT (Coef. = 2.2, $p < .005$).

Physician Education and Training

Table Xa illustrates the different levels of sexual education which physicians have had.

Table Xa. Percent physicians who have had formal sexual education

Level of Sexual education	High School	College	Medical School	CME Units	Other	None
% physicians	51%	26%	90%	61%	14%	3%

Of those who had sex education in medical school, physicians indicated that the following topics were included in their curriculum.

Table Xb. Among physicians with Medical School Training:
Percentage of physicians per subject matter.

Type of Medical School Training	Percent of physicians with Medical School Training		
	n = 112	Female Physician n = 47	Male Physician n = 65
Adolescent pregnancy prevention	74%	n = 44**	n = 48
Including contraception	73%	n = 42*	n = 48
Including communication techniques	46%	n = 30*	n = 27
Adolescent and STDs	66%	n = 36	n = 36

• = $p < 0.05$ and ** = $p < .01$ for significance difference between male and female physicians, X^2 test.

Table Xc illustrates the type of subject that physicians of CME training in sexual health received.

Table Xc. Among physicians with Continuing Medical Education Units In Sexual Health: Percentage of physicians per subject matter.

Type of CME Unit (n =75)	% Physicians	Female Physicians	Male Physicians
Human sexuality	30%	n = 14	n = 23
Contraception	51%	n = 28	n = 35
For adults	47%	n = 27	n = 31
For Adolescents	45%	n = 22	n = 21
Adolescent pregnancy prevention	40%	n = 21	n = 28
Including contraception	40%	n = 20	n = 29
Including communication techniques	26%	n = 14	n = 18
Adolescents and Sexually Transmitted Diseases	46%	n = 27	n = 30

For physicians with continuing medical education units, 30% received training in human sexuality. Of these 30%, 51% studied contraception. Of these physicians, 47% studying adult contraception and 45% adolescent. Of those studying CME, 40% studied adolescent pregnancy prevention including contraception 40% and communication 26%. Those who studied STDs pertinent to adolescents were 46%.

- *Physician personal experience:* 10% of the physicians surveyed had their own physician's speak to them about STD, pregnancy prevention, or sexual orientation when they were adolescents. 2% were not sure. Of those who were spoken to, 90% talked about contraception, 20% STDs, 60% pregnancy prevention, and 25% sexual orientation. Of those spoken to, 77% were women and 33% were men.

Physician Education by Sex, Age, and Ethnicity

Student's t-test analysis of physician education and sex indicated that there was no significant difference in the amount of total education, as determined by the total number of responses in question 1a, that male and female physicians received.

X² analysis yielded significant difference (p < .01) between male and female physicians with 93.62% of female physicians compared to 73.8% of male physicians indicating that they studied adolescent pregnancy prevention in medical school. Women were more likely to have contraception (p < .05) and communication techniques (p < .05) than men. X² analysis did not show significant difference by sex for physicians who indicated that they had no formal sex education. X² analysis also did not show significant difference by sex for those physicians who had CME units and those who did not.

Linear regression analysis modeling total physician sex education by physician sex and age showed a negative correlation between increasing age and the total amount of education that a physician received (Coef. = - .02 p < .05). T-test analysis of the types of formal education by age showed that younger physicians, with a mean age of 43 were more likely to have had sex education in high school (p < .01). Younger physicians with a mean age of 44 were also more likely to have had sex education in medical school (p < .01). No significant difference in sex education during college or with CME units was found by physician age. T-test analysis showed that physicians who did not have any formal sex education were older with a mean age of 55 (p < .05). Differences in physician education by ethnicity were not statistically significant.

How Physicians ranked their Practices

Table XI shows physician opinion about the rate of adolescent pregnancy in their communities of practice.

Table XI. Physician Ranking of Adolescent Pregnancy Rate in Community of Practice

Physician Opinion	Lower than Avg	Average	Higher than Avg
Pregnancy Rate in Community of Practice	43%	36%	20%

Those who indicated that their practices had high rates of unintended pregnancies tended to be younger than those who did not ($p < .01$). No relationship by physician sex was found between physicians who believed that their practice populations had high rates vs those who did not. However, 97% of physicians who worked in private practice settings indicated that their patient population did not have high rates of unintended adolescent pregnancies compared to 55% of physicians who worked elsewhere ($p < .0001$, $n = 69$ and 28). 66% of physicians who worked in public/private/community clinics indicated that their populations had high rates of adolescent pregnancy compared to 4% who worked elsewhere ($p < .0001$). By patient population, 62% ($n = 5$) of those with $\geq 20\%$ adolescent patients indicated that their patients had high rates of pregnancy compared to 17% of physicians who had less than 20% adolescent patients ($p < .01$). 74% of those who rated their patients are poor income ($n = 17/23$) and 36% of those with low income patients indicated that their patient population had high rates of pregnancy compared to 1% of physicians with higher income families ($p < .05$).

Physicians in this study were asked to rank the teen birth rates in their areas compared to average US rates. Table XII shows physician opinion about the teen birth rates in their community of practice.

Table XII. Physician opinion about birth rates in community of practice

Birth rate of Community of Practice	Lower than Avg.	Average	Higher than Avg.
Physician Opinion	54%	24%	21%

1% missing data.

Physician Knowledge

44% of physicians indicated that they believed the highest number of pregnancies/1000 occurred in teens 15-17, while 55% indicated that the highest frequency

occurred in those 18-19. 1% did not answer the question. Of the 44% who wrongly indicated that the highest rate of pregnancies/100 occurred in teens 15-17, no significant difference by sex, age, education, or opinion could be found between these physicians and those who answered correctly 18-19.

Once an adolescent is sexually active, 38% believed correctly that the highest risk for an unintended pregnancy lies with those patients less than 14, 56% indicated that they believe that the highest risk is to those age 15-17, and 4% believes that it lies with those 18-19. 2% did not answer the question. Those that indicated correctly that sexually active patients less than 14 have the highest risk for pregnancy had significantly higher means for total sex education ($p < .01$). No significant difference by physician sex, age, amount of preventive care they provide or type of education was found between physicians who answered correctly and those who did not.

The following table indicates the approximate percent of time that physicians had discussion involving adolescent pregnancy prevention with the patient's parent/guardian in the same room. Only 25% of physicians indicate that parents are never in the room when they are discussing pregnancy prevention with their patients. 45% of physicians indicated that parents are not in the room 25% of the time.

Table XIII. Percent of Time Parents Present during Physician Patient Encounters.

Percent of time parents In room	100	75	50	25	0
Physicians approximation	6%	15%	6%	45%	25%

3% of respondents did not answer the question.

Religion and Pregnancy Prevention Care

When asked if religious beliefs influence their how they provide pregnancy prevention care, 56% indicated that their beliefs had no influence, 19% slight, 18%

moderate, and 6% strong and 2% very strong. 2% of respondents did not answer the question. 14% of physicians indicated that patients beliefs have never influenced how they provided care, 68% indicated that their patients' beliefs have sometimes influenced how they provided care for their patients. 8% indicated that how they provide patient care is influenced by their patient's religious beliefs half the time, 7% most times, and 1% all the time. 1% of respondents did not answer the question.

Barriers to Discussion about Pregnancy Prevention

The following are frequencies of the barriers that our physicians listed as the top three barriers to pregnancy prevention care indicated by physicians.

Table XIV. Percent of Time that Barrier was listed as one of Top Three to Discussion about Pregnancy Prevention

Lack of training	Personal discomfort	Parent won't leave	confidentiality	Patient discomfort	Time	Guardian discomfort	other
6%	22%	62%	21%	60%	63%	15%	12%

X² analysis of total education and the above barriers showed no significant correlation.

No relationship between physician sex or age and choice of barriers was found. No significant difference in action and choice of barriers was found.

When questioned about barriers physicians who indicated "other" wrote such comments as:

- The patient will communicate with the parents.*
- The patient has other pressing medical problems or is pregnant.*
- This age group does not come in for routine check up, only for acute symptoms.*
- Patients usually deny sexual activity or interest in sexual activity.*
- Male partner will not leave.*
- Other health issues take precedence.*

Physician Opinions

For the Likert-type questions referring to physician comfort and attitude, the following frequencies were obtained.

Table XV. Physician Opinion about Pregnancy Prevention

Physician response	Strongly agree	agree	No opinion	disagree	Strongly disagree
Teenage pregnancy is important problem in my community of practice	35%	42%	10%	10%	2%
Patients expect the physician to be comfortable when bringing up sexual matters.	54%	36%	6%	3%	1%
I do not know how to talk to patients about their sexual concerns.	0%	7%	6%	52%	34%
My value system does not influence how I counsel my patients about pregnancy prevention.	1%	25%	10%	37%	10%
There is not much that I can do to help my patients with contraceptive use for pregnancy prevention.	2%	1%	1%	24%	72%
I am comfortable with taking a sexual history from my patients.	34%	48%	5%	12%	0%
I have had adequate training taking a sexual history.	22%	48%	14%	16%	1%
I would like more training in providing pregnancy prevention counseling.	6	46	21	20	6

1% of respondents did not answer the above questions.

Analysis of physicians who did not indicate that they were had have adequate training showed these physicians to have lower total sex education in general (Coef. = -.76 $p = .012$). No relationship with age, sex, education, PACT participation, or use of protocol was found for physicians who indicated that they were not comfortable taking sexual histories and that those that indicated they would like more training in providing pregnancy prevention.

- *Physician Opinion by Sex and years since receiving MD:* 56% of female physicians compared to 39% of male physicians disagreed that their value system did not influence how they counseled their patients about pregnancy prevention ($p < .05$). There was no relationship found between physician opinions and age. By year of MD degree physicians who indicated that they did now know how to talk to patients about

their sexual concerned tended have an average of 28 years since receiving their MD degrees compared to 17 years for those who disagreed ($p < .05$).

Conversations Addressing Pregnancy Prevention

- *Patient Screening:* The majority of physicians began to screen patients when they were ages 12, 13, or 14. Female physicians were more likely to begin screening at a mean age 12.5 compared to male physicians at age 13.7 ($p < .001$). Table XVI shows the distribution of screening ages.

Table XVI. Age of Patient when physicians begin screening

Patient Age	Physicians	Percent
10	7	5.74
11	4	3.28
12	28	22.95
13	38	31.15
14	24	19.67
15	10	8.20
16	7	5.74
17	3	2.46
19	1	0.82
Total	122*	100.00

*3 physicians did not answer.

Table XVII shows the percent of physicians who had discussions addressing pregnancy prevention by age of patient screening.

Table XVII Percent Physicians with Conversations Addressing Pregnancy Prevention by Patient Age at Screening for Sexual Activity.

Patient Age at Screening	Percent Physicians Who Discussed Pregnancy Prevention
10-12	100%
13-19	78%
16-19	58%

All physicians who began screening patients aged 10-12 had discussions addressing pregnancy prevention while 78% who screen patients 13-19 had discussion involving pregnancy prevention ($p = .001$). Physicians who begin screening by patient age 12

were more likely to be female ($p < .01$). 58% of physicians who begin screening when patients are 16 or older had discussion addressing pregnancy prevention in the past month ($p < .01$). These physicians were all male ($p = .001$). These physicians also tended to be older (Coef. = .06 $p = .05$). No relationship with CME units in sexual health or medical school sex education was found.

- *Cues Initiating Conversations Addressing Pregnancy Prevention:* 85% of physicians surveyed had discussed pregnancy prevention with a patient aged 19 or younger within the past month. Of these discussions the following were breakdowns for who or what initiated conversations. 44% reported that the patient never initiated the conversations. 37% reported that their patient initiated the conversation 25% of the time. 17% reported that their patients initiated the conversation 50% of the time and 2% reported the their patients initiated the conversation 75% of the time. Most discussions addressing pregnancy prevention began following a standard screen.

Table XVIII. Cues Initiating Conversations Addressing Pregnancy Prevention.

Cues initiating Conversation addressing Pregnancy Prevention during the past working month.	0%	25%	50%	75%	100%
Patient initiated the conversation	44%	37%	17%	2%	/
The Patient's Parent initiated conversation	77%	23%	/	/	/
A pregnancy was suspected	63%	25%	7%	2%	3%
An STD was suspected or diagnosed	63%	25%	7%	2%	3%
The discussion was part of a standard screen	10%	12%	28%	22%	28%

Bivariate analysis and logistic regression of physician sex, age, use of CME units in sexual health, opinion about rate of pregnancy and adolescent population base showed that physician sex was the only independent predictor of whether or not a patient would initiate a conversation. Patients were most likely to initiate a conversation with female physicians (Coef. = 1.42, $p < 0.008$).

Bivariate Analysis of Physician and Practice Characteristics and How these Characteristics Affected Whether or not Pregnancy Prevention was Addressed

The following table is a summary of the bivariate analysis of who is most likely to have a discussion addressing pregnancy prevention.

Table XIX. Summary of Bivariate Analysis of Physicians Who Address Pregnancy Prevention.

	P Value	Rate/Avg.
Higher total of Sex education	0.002	2.5 ± .5 vs. 1.8 ± .1
CME Units in Sexual Education	0.02	65% vs. 35%
Female Physicians	0.01	94% vs. 78%
Younger Physician Age	0.001	51.6 ± 4.3 vs. 43.8 ± 1.8
Physicians with > 10% Adolescents in pt Base	0.02	97% vs. 80%
Physician use of Protocol	0.04	100% vs. 83%
Physician strongly agrees that adolescent pregnancy is an important problem in patient community.	0.003	41% vs. 5%

- *By Total Physician Education:* T-test analysis of the total amount of physician education and whether or not a physician discussed pregnancy prevention with a patient aged 19 or younger showed a significant difference. Physicians who had discussed pregnancy prevention with a patient 19 years of age or younger were more likely to have higher scores for total education ($p = 0.01$). No significant relationship was found between the total amount of physician education and individual initiators of conversations. No significant relationship between individual initiators of conversation and individual types of formal sex education was found.
- *By Physicians with CME Units in Sexual Education:* Physicians who had Continuing Medical Education were more likely to have discussed pregnancy prevention in the month before the survey ($p < 0.05$). 65% of those who discussed pregnancy prevention in the last month had CME units in sex education versus 35% who did not ($p < .05$). No significant relationship was found between specific types of CME units and whether or not a physician indicated that he/she had discussed teenage pregnancy prevention within the last month with a patient aged 19 or younger.
- *By Physician Sex:* 94% of female physicians compared to 78% of male physicians discussed pregnancy prevention in the last month ($p < .05$). X^2 analysis of the

individual initiators of conversations indicated that patients were more likely to initiate discussions with female physicians as compared to male physicians ($p < .05$).

- *By Physician Age:* Bivariate t-test analysis showed that younger physicians were more likely to have had discussions including pregnancy prevention with patients age 19 or younger ($p < .001$).
- *By Physician Patient Population:* Physicians with less than 10% of their overall patients in this age group were less likely to have had a discussion including adolescent pregnancy prevention. Only 80% of those with less than 10% adolescents in their population compared to 97% of those with more than 10% patients age 11-19 had discussions including pregnancy prevention ($p < .014$). No significant relationship between the proportion of physician's patients age 11-19 and individual initiators of conversations was found.
- *By Physician Practice Type and Setting and Patient Family Coverage:* Type of practice and practice place was not found to be significantly related to whether or not a discussion was held including pregnancy prevention in the past month. 100% of physicians who participated in PACT had discussions addressing pregnancy prevention in the past month.
- *By Physician Protocol:* Fisher exact test analysis showed that physicians who indicated that they used protocols were more likely to have a discussion involving adolescent pregnancy prevention ($p < .042$).
- *By Physician Opinion:* 98% of those who strongly agreed that teenage pregnancy is an important problem in their community of practice compared to 78% who just agreed, had no opinion, disagreed or strongly disagreed had discussion addressing pregnancy prevention ($p < .01$). X^2 analysis revealed no correlation between the barriers that physicians listed and whether or not they had discussed pregnancy prevention with a patient in the past month.

Multivariate Analysis of Physician and Practice Characteristics predicting Conversation Addressing Pregnancy Prevention.

A regression model looking for predictors of who is most likely to discuss pregnancy prevention looking at physician was performed. Predictors such as physician

sex, age, total amount of sex education, use of protocol, PACT participation and physician opinion about the importance of pregnancy prevention in their community were studied. However, PACT physician and physicians who use guidelines were dropped from the regression analysis because 100% of the physicians who were members of PACT and/or used protocols had discussions addressing pregnancy prevention. The following regression analysis in Table XX was done including physicians who used protocols and/or were members of PACT. PACT and protocol were not variables not included in the model. The analysis showed that female physician sex, increasing total sex education, and physician opinion that adolescent pregnancy is an important problem in the community of practice were all independent predictors of physicians most likely to have discussions addressing pregnancy prevention in the past month. Increasing physician age was a negative predictor of physician practice.

Table XX. Logistic Regression Determining Predictors of Discussion Addressing Pregnancy.

Logistic regression discussion sex opinion age totaled						
Iteration 0: Log Likelihood = -52.769141						
Iteration 1: Log Likelihood = -40.03712						
Iteration 2: Log Likelihood = -37.3488						
Iteration 3: Log Likelihood = -36.980398						
Iteration 4: Log Likelihood = -36.962359						
Iteration 5: Log Likelihood = -36.962267						
Logit Estimates					Number of obs = 122	
					chi2(4) = 31.61	
Log Likelihood = -36.962267					Prob > chi2 = 0.0000	
					Pseudo R2 = 0.2995	
disc	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
sex	1.405639	.7165434	1.962	0.050	.0012397	2.810038
opinion	2.870781	1.105472	2.597	0.009	.7040955	5.037467
age	-.0697476	.0319032	-2.186	0.029	-.1322766	-.0072185
totaled	.6760413	.3219388	2.100	0.036	.0450527	1.30703
_cons	2.567157	1.710205	1.501	0.133	-.7847829	5.919096

Bivariate and regression analyses were redone after removing physicians who used protocols and or PACT from the data set. The bivariate analysis showed that when physicians who either use protocols or PACT were dropped from the data set, CME training in sex education was no longer significantly related to whether or not a physician

had a discussion addressing pregnancy prevention. Higher total sex education, female physician sex, younger physician age, and physician opinion that teenage pregnancy is an important problem in their community of practice were still significant characteristics related to physician discussion about pregnancy prevention (p values all < .05). Physicians with adolescent base of less than 10% were still least likely to have discussed pregnancy prevention in the past month (p < .05).

Table XXI. Logistic regression of physicians who discuss pregnancy prevention: Physicians who use PACT and protocol excluded.

Logistic regress discussion sex opinion age totaled						
Iteration 0: Log Likelihood = -45.477041						
Iteration 1: Log Likelihood = -33.842665						
Iteration 2: Log Likelihood = -31.813682						
Iteration 3: Log Likelihood = -31.5488						
Iteration 4: Log Likelihood = -31.538968						
Iteration 5: Log Likelihood = -31.538945						
Logit Estimates						
					Number of obs =	92
					chi2(4) =	27.88
					Prob > chi2 =	0.0000
					Pseudo R2 =	0.3065
Log Likelihood = -31.538945						
Disc	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Sex	1.357679	.7566836	1.794	0.073	-.1253937	2.840752
Opinion	2.908501	1.206833	2.410	0.016	.5431515	5.273851
Age	-.0997126	.0384794	-2.591	0.010	-.1751308	-.0242944
totaled	.727871	.3448066	2.111	0.035	.0520626	1.40368
_cons	3.658452	1.887819	1.938	0.053	-.0416054	7.358509

Table XXI illustrates the logist regression without physicians who use protocols and PACT participants. The above logistic regression shows that for non-PACT and non-protocol using physicians, increasing total education and physician opinion which strongly agreed that teenage pregnancy is an important problem in their community of practice were independent predictors of physician discussion addressing pregnancy prevention. Increasing physician age was a negative predictor of physician practice and physician sex was not an independent predictor of physician action.

Physician Action During the Past Month

- *Physician Actions by Physician Sex and Patient Sex:* T-test analysis showed that Female physicians were more likely than male physicians to perform more of the actions found in table XXII for female patients ($p < .0001$). There were no predictors of who was most likely to provide care overall to male patients. The only individual predictor of providing care to male patients in general was whether or not a physician had a conversation addressing pregnancy prevention. There were no predictors for individual types of care to male patients.

Table XXII illustrates t-test analysis of individual physician actions by physician sex and patient sex. Table XXII shows that the action performed most often in the past month was direct physician counseling. The least performed action was referral to a family planning clinic. Female physicians were more likely to provide literature, counseling about pregnancy and STDs, administer a pregnancy test, and perform a pelvic exam.

Table XXII. Physician Actions for Patients during the Past Working Month.

Mean Physician Actions for patients aged 11-19	Female Pt		Male Pt	
	Female Physician	Male Physician	Female Physician	Male Physician
Provided counseling that included information about pregnancy prevention.	9.6 ± 3.4 ^{##}	3.3 ± 1.0	1.9 ± 0.9	2.1 ± 0.9
Counseled about sexually transmitted diseases.	7.4 ± 2.4 [#]	3.5 ± 1.1	2.1 ± 1.1	3.0 ± 0.9
Provided a pt with contraception or a prescription for contraception.	5.3 ± 1.9 ^{##}	1.9 ± 0.5	0.4 ± 0.3	0.7 ± 0.5
Performed a pelvic exam for suspected sexually transmitted disease.	5.3 ± 2.5 [#]	1.4 ± 0.4	/	/
Administered a pregnancy test.	5.0 ± 2.4 [%]	2.6 ± 0.9	/	/
Provided pamphlet/literature that had info. about pregnancy prevention.	3.8 ± 2.2 [#]	1.0 ± 2.0	0.5 ± 0.4	0.2 ± 0.1
Referred pt to in-house RN/NP/counselor for pregnancy prevention counseling.	0.9 ± 1.1	0.5 ± 0.5	Non positive	Non positive
Referred patient to a family planning clinic.	0.3 ± 0.2	0.2 ± 0.1	.02 ± .04	.03 ± .06

Pt = patient

T-test analysis of Physician action by physician sex for female patients and male patients: % $p < .05$, # $p < .01$, ## $p < .001$

Signrank and ranksum tests were performed to verify the data because of questions about the assumptions of normality. Signrank testing showed that female patients were more likely to receive literature and counseling about pregnancy prevention, counseling about STDs, a prescription for/contraception, and referral to

family planning all with p values ≤ 0.0001 . Ranksum testing of physician action by sex confirmed that female physicians were more likely to provide literature to patients, $p < 0.005$, provide counseling to patients, $p < 0.000$, provide STD counseling, $p < 0.0000$, provide contraception and, $p < 0.000$, administer a pregnancy test, $p < 0.05$, and perform pelvic exams, $p < 0.0001$.

- *Physician education and Individual Actions:* T-test analysis of physician action by education showed that those who did not have human sexuality in medical school $n = 11$ were more likely than those who had had human sexuality in medical school, $n = 108$ to provide literature/pamphlets that had information about pregnancy prevention to female patients ($p < .05$). T-test analysis also showed that physicians with CME units were more likely to counsel female patients about STDs ($p < .05$). T-test analysis also showed that those without medical school training, $n=10$, were more likely to refer female patients to an in-house RN/NP/Counselor for pregnancy prevention counseling ($p < .05$). T-test analysis also showed that those with no formal sexual education, $n=4$, were most likely to refer male patients to family planning clinics. Those physicians who had their doctors speak to them about sexually related experiences were more likely to send male patients to an in-house referral for pregnancy prevention discussions.
- *Physician Age and years since receiving MD:* No significant relationship was found between physician action and physician age or the year a physician received his or her MD degree.
- *By Type of Practice, and Practice Setting* Those physicians in solo practice, $n=20$, were more likely to provide literature or pamphlet information to female patients

about pregnancy prevention. By practice settings, physicians who described their primary practice site as HMO provided the most care on average to male patients ($p < .05$). Looking at individual activities, male patients were most likely to receive pamphlet or literature information from public/county/private clinics ($p < .01$). Male patients were also more likely to receive counseling about pregnancy prevention, information about STDs, receive contraception or a prescription for contraception, and in-house referral from physicians who worked in HMO sites ($p < .05$).

- *Patient Coverage and PACT Participation:* No relationship between the type of patient coverage and physician action was found. However, physicians who were members of the PACT program had a significantly higher average of overall preventive care, as measured by total actions, compared to physicians who did not know what PACT was or who were not members ($p < .01$). Physicians who were PACT participants were also more likely to provide literature and prescriptions for contraception or contraception ($p < .05$). These physicians were also more likely to refer patients to in-house RN/NP/counselor, administer pregnancy tests, and perform pelvic exams ($p < .01$).
- *Physician Action and Protocols:* Physicians with protocols were more likely to refer patients to family planning groups ($p < .05$). There was no significant difference between the number of male physicians who used protocols and the number of female physicians who used protocols.
- *Physician Action and Patient Population Size:* Analysis of overall number of activities showed that physicians with patient populations less than 10% adolescents

were the least likely to provide care to female patients related to pregnancy prevention, while those physicians with greater than 20% adolescents in their patient population were most likely to provide care overall to female patients ($p < .001$). Those with populations less than 10% adolescent were least likely to provide contraception, STD information, pelvic exams, and pregnancy tests to female patients ($p < .05$). While physicians with population $> 20\%$ were most likely to provide STD information, counseling to male patients, contraception to female patients, in-house referrals and pelvic exams (p values all $< .05$).

- *By Patient Family Income and Ethnicity:* Physicians who described their populations as low income were more likely to have provided pregnancy prevention counseling, in house referrals, pregnancy tests and pelvic exams (p values $< .05$). The ethnicity of the populations served by physicians were 11% African-American, 23% Hispanic American, 12% Asian-American, and 75% Caucasian-American 9% distributed. In describing their patient populations, 19% place the majority of their patient population as coming from poor-income backgrounds. 22% described their patients as low-income, 59% as middle income, and 6% as upper-income.

Actions by ethnicity showed no significant difference.

- *Physician Action and Percent Time of Parental Presence:* T-test analysis show that those physicians who always had the patients parent or guardian in the room were more likely to perform actions for male patients overall ($p < .05$). These physicians were most likely to provide direct patient counseling about pregnancy prevention to male patients ($p < .01$).

- *Physician Action and Opinion About Rate of Adolescent Pregnancy:* Those who felt that the rate of unintended adolescent pregnancies in their patient population was high compared to national averages, provided more pregnancy prevention care to female patients than those who did not ($p < .0001$). Care to male patients showed no significant relationship between opinion and physician actions. 73% of physicians who indicated that their patients were from poor income family indicated that the rate of pregnancy in their communities was high compared to 8% of physicians who indicated that their patients came from families with low, middle, or upper income levels ($p = 0.000$).
- *Physician Opinion About Importance of Problem, Comfort, and Action:* Analysis of physician opinion and action showed that those who felt that teenage pregnancy was a problem in their community were more likely to counsel about STDs to female and male patients ($p < .05$). Those who felt that they had adequate training in taking a sexual history were also more likely to provide STD information to female patients ($p < .05$). No other relationship between physician action and opinion was found.

Physician Action and Beliefs about Barriers: Physicians who indicated that a barrier to their providing pregnancy prevention to minors was that they lack training, were more likely to refer patients to a family planning clinic ($p < .01$). Physicians who did not indicate that time was a barrier to counseling were also more likely to send patients to family planning clinics ($p < .05$). Physicians who indicated that they felt there were other barriers to providing counseling were most likely to administer a pregnancy test ($p < .05$).

Multivariate analysis of physician action

Table XXIII is an example of the multiple regression for predictors of who is most likely to provide care to female patients overall. Independent predictors of who is most likely to provide care to female patients overall, are physicians who are female and physicians who indicate that the rate of adolescent pregnancy in their practice is higher than average. A negative predictor of who is most likely to provide care is physicians who have less than 10% adolescents in their population base.

Table XXIII. Linear Regression analysis of Overall Physician Actions for Female Patients

Regress Female Actions: Sex of Dr, Ethnicity, Physician Age, practice type, PACT, Protocol, % Adolescent pop, Pop income, Opinion-rate, Opinion-time, Total edu.						
Source	SS	df	MS			
Model	18046.1584	11	1640.55985	Number of obs = 96		
Residual	31916.4666	84	379.957936	F(11, 84) = 4.32		
				Prob > F = 0.0000		
				R-squared = 0.3612		
				Adj R-squared = 0.2775		
				Root MSE = 19.493		
Female Actions	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Sex of Dr	9.571463	4.791928	1.997	0.049	.0421882	19.10074
Ethnicity	(dropped)					
Discussion	4.815526	6.110919	0.788	0.433	-7.336706	16.96776
Age of Dr	-.1052829	.2558493	-0.412	0.682	-.6140672	.4035015
Pract. Type	-3.540063	6.054507	-0.585	0.560	-15.58011	8.499988
PACT	-.3702508	7.984288	-0.046	0.963	-16.24788	15.50738
Protocol	5.456266	5.938831	0.919	0.361	-6.35375	17.26628
% Adolescent	-12.37526	4.790624	-2.583	0.012	-21.90194	-2.848575
Income	7.353626	6.945282	1.059	0.293	-6.457828	21.16508
Opinion, Rate	16.59955	6.706699	2.475	0.015	3.262549	29.93656
Opinion, time	-2.487076	4.50195	-0.552	0.582	-11.4397	6.465545
Total educ.	-.6061582	2.13853	-0.283	0.778	-4.858859	3.646542
cons	23.79925	15.73127	1.513	0.134	-7.484111	55.08261

Table XXIV shows regression results of predictors for individual types of care for female patients when controlling for physician sex, PACT participation, use of protocols, medical school education, the proportion of the patient population that is adolescent, CME units, total education, practice type, and opinion about rates of pregnancy in community of practice. The most common predictor for individual types of action is female physician sex. Female physician sex is an independent predictor of physicians who provide counseling, give literature, contraception or prescriptions for contraception, perform pelvic exams, and administer pregnancy tests to female patients.

Table XXIV. Predictors of Individual Types of Care to Female Patients

Individual Action	Predictor	Coef.	p value
Physicians who give literature	Female Physician	2.9	0.009
	Opinion that rate of Pregnancy is High in community of Practice.	3.2	0.026
Physicians who provide counseling	Female Physician	6.0	0.002
	Solo practice	7.3	0.007
Physicians who give STD information	Female Physician	3.5	0.009
Physicians who give/prescribe contraception	Female Physician	3.4	0.001
Refer to in-house associate	CME units in Sexual Health	1.5	0.048
Refer to Family Planning	Use of Guidelines/Protocol	0.4	0.016
Pelvic Exam	Female Physician	2.4	0.049
	Opinion that rate of Pregnancy is High in community of Practice.	5.4	0.001

Discussion

In order to increase the amount of preventive care that physicians are providing to adolescents, we must look at the physician characteristics, patient characteristics, and barriers that increase or decrease the likelihood that an encounter addressing pregnancy prevention will occur. To do this an understanding of what is being done and who is providing preventive care, is important. In the following sections we discuss the characteristics of physicians and patients that appear to affect whether or not pregnancy prevention is addressed in the physician's office.

Discussing Pregnancy Prevention

From our bivariate results it is apparent that physician characteristics such sex education, age, sex, use of guidelines, PACT participation, patient age at screening, and opinion about the rate of pregnancy in their community are important factors in whether or not a physician is likely to address pregnancy prevention. Excluding PACT and Protocol, all of these factors, except patient age at screening, were also independent

predictors of physician action in the multivariate logistic regression. Patient age at screening was not included in the regression model because screening of patients at younger ages is highly colinear with decreasing physician age and female physician sex. Interestingly, sex is not an independent predictor of discussion when looking at physicians who are not members of PACT and who do not use protocols. Bivariate analysis of pact and protocol showed that neither is related to physician sex.

Analysis of physician education showed significant differences by sex and age. Female physicians were more likely to have studied adolescent pregnancy prevention in medical school compared to male physicians. Younger physicians were more likely than older physicians to have had sex education during medical school and are more likely to have had discussions addressing pregnancy prevention. As our data shows that female physicians were more likely to have had discussion addressing sex education it appears that sex education during medical school may be an important factor in influencing physician behavior. However, because sex education is not an independent predictor of physician action, the difference in rates of adolescent pregnancy education in medical school may reflect broader societal differences in male and female interest or awareness of the importance of pregnancy prevention. Historically, women have had the responsibility for the consequences of pre-marital sex. This is because it is women who become pregnant and because social standards censure women for non-marital sex while men are excused. This historic difference in social expectation for men and women has been slow to change. Even with the 'sexual revolution' of the 1960s and 1970s the use of contraception is still a feminine responsibility (Luker, 1996). The awareness of how

pregnancy socially and economically can affect women may be one reason that female physicians elect to learn about preventing pregnancy.

The differences in medical school education between young and older physicians may also be indicative of changes in medical school sexual health curriculums over the past twenty years. During the past twenty years sexual activity in the US has changed. Younger women are becoming sexually active at earlier ages (Alan, 1994). Older physicians were more likely to be male and to not have medical school education with sexual health. It is reasonable to assume that because these physicians may not have been trained to deal with adolescent sexuality in medical school they may be socially uncomfortable talking to adolescents about sex. However, the data looking at physician comfort with sex education did not show that older physicians felt less comfortable taking sexual histories nor were there age differences for physicians who wanted more training. This may be due to physician response bias of giving expected answers when answering the survey. However, other factors such as patient comfort with older physicians may be affecting the physician patient encounter. This study is limited by the fact that it is only physicians who were asked to describe physician and patient characteristics. A study of adolescents may reveal barriers to physician patient interaction that can not be measured in a survey of physicians.

With the increase in sexual activity for younger adolescents and decreasing age at menarche, it is important that physicians begin to screen and initiate conversations with adolescent patients about sexual health at earlier ages (Luker, 1996). This is especially important because approximately 50% of adolescent pregnancies occur within the first six months of sexual activity (Middleman, 1995). Adolescents and young women face the

challenge of dealing with early sexual maturity and late social acceptance of sexual activity in the young. Thus, adolescents may find it difficult to express their interest in learning about contraception. Physician initiation of conversation through screening could help adolescents deal with the changes in themselves and accustom them to having discussions about sexual matters with their physicians in the future, when they do become active or are ready to tell their physicians that they are.

Physicians who screen patients at earlier ages are more likely to have discussions addressing pregnancy prevention. On average, male physicians tend to screen at age 13.7 compared to 12.5 for female physicians. Also, all physicians who waited till patients were 16 or older to screen patients were male. The difference in screening behavior of male and female physicians suggests differences in physician awareness about adolescent sexual activity or the risks of pregnancy. However, no significant difference by sex was found in physician knowledge about the rate or risk of pregnancy among different adolescent age groups. Further investigation about physician knowledge about menarche is warranted. Although there was no significant difference indicated by male physicians about comfort with the sexual history, this difference in screening ages may again be due to social barriers that may make male physicians uncomfortable screening young female patients. Or female patients may be choosing to see mainly female physicians.

The use of guidelines or protocols by physicians increased the likelihood that a discussion addressing pregnancy prevention had occurred in the past month. However, use of a did not as expected, increase the overall rate of counselling or actions that a physician performed towards pregnancy prevention. Only 16% of our physicians indicated that they use guidelines. This may be because most of our physicians (81%)

feel comfortable taking a sexual history from their patients and 87% feel capable of talking with teens about their sexual health matters. Use of protocols by physicians however, would affect the age at which physicians screen patients. Most protocols call for early screening and parental preparation for confidential physician patient visits. It would be interesting to study physician use of guidelines asking physicians about what part of guidelines they use, and how their use of guidelines affects the content of their discussions. Our study did find that physicians who use guidelines were more likely to refer patients to family planning clinics. Why this is so, would be a future topic for investigation.

An independent predictor of PACT participation is physician opinion about the rate of unintended pregnancy in their community of practice. In our multivariate analysis of physician action, physician perception of the rate of adolescent pregnancy in their community of practice was also important. This suggests, since most physicians did not know what PACT was, that physicians who perceive the need for preventive care in their community may be more likely to seek ways of providing this care that includes finding funding for it. Thus, increasing physician awareness about pregnancy rates in their community is important. Adolescent pregnancy is not always visible, but adolescent birth is. Studies have shown that the majority of adolescent pregnancies that end in abortion are from patients whose families are middle or upper income levels. Thus, since most of our physicians work with patients from middle income families, they may not be as aware of the rate of pregnancy in their community as physicians who work in low income communities where an adolescent pregnancy is more likely to result in a birth.

Investigation about physician opinion of pregnancy rates in their community of practice

and actual rates would clarify whether or not physicians are able to correctly gauge the rate of pregnancy in their practice communities.

Although 58% of our physicians work with families of middle income PACT participation should be higher than 10%. 56% of physicians in our study indicated that the rate of teen pregnancy in their community of practice was average or higher than average and 77% believed that teenage pregnancy was an important problem in their community of practice. This suggests that PACT participation may be low because of lack of knowledge about PACT.

Physician Actions

From our analysis of physician actions it is obvious that female physicians are doing more to prevent unintended adolescent pregnancy than male physicians, and that the majority of this care is being provided to female patients. Female physicians are providing more counseling about pregnancy and STDs, giving contraception or prescriptions for contraception, administering pregnancy tests, performing pelvic exams, and providing literature that discusses pregnancy prevention, to female patients.

According to our data, the difference in behavior between male and female physicians is not due to lack of comfort or lack of training. Thus, this difference in action may be due to broader social differences between male and female physicians and patients that were not studied by our survey.

Historically, women have carried the majority of responsibility for contraception. This is especially true if a women's partner does not want to use barrier methods (Luker, 1996). The social reality that adolescents who decide to become mothers are often abandoned by the fathers of their babies may influence female physicians and female

patients towards discussion and action to prevent pregnancy (Brindis, 1988). Other studies such as that by Maheux et al. have also found that women family physicians are more inclined to counsel patients about condom use to prevent pregnancies and STDs (Maheux *et al.*, 1997). Maheux speculates that the reason female physicians do more is because adolescents seek out women for discussions about sex and most adolescent patients are female. Our results support this, as patients were most likely to initiate discussions about pregnancy prevention with physicians who were female.

The action performed most often by our male and female physicians was personal counseling. Independent predictors of who was most likely to provide counseling were female physicians and physicians in solo practice. Interestingly, our physicians indicated that they counseled female patients about pregnancy more than STD prevention while counseling male patients more about STD prevention than pregnancy prevention. This difference in focus again suggests that male and female physicians both consciously or unconsciously focus on female patients as targets for pregnancy prevention.

The focus of both male and female physicians on female patients for preventive care is practical, because it is female patients who become pregnant. Although this treatment trend is a reflection of larger societal views, it continues to further reinforce the beliefs of both male and female adolescents that the consequences of sex are 'her' responsibility. The responsibility for sex and its consequences should be shared equally by both partners. We can surmise that an unintended pregnancy is much less likely to occur if there are two people informed and responsible for the use of contraception as compared to one person. This can only occur if physicians and parents of patients are willing to make a point of teaching both male and female patients about pregnancy

prevention. Currently, appointments for teens are not funded for general sexual health. However, if the US wishes to decrease its adolescent pregnancy and birth rates, it is necessary that funds are made available for “wellness” type visits where pregnancy and STD counseling can be addressed.

Independent of physician sex, the size of the adolescent proportion of the patient population, physician education and use of protocols, physician opinion that the rate of pregnancy is high in their community of practice was a predictor of physician action. These physicians were most likely to give literature about pregnancy prevention and to perform pelvic exams. Their opinion about the rate of pregnancy in their communities as high are probably correct, since 68% of these physicians are working with poor income communities, or it may be that these physicians are more aware of what is happening in their communities. Further study would be to determine the rate of pregnancy in physician’s practices and compare these rates to physician opinion.

Barriers to Action

The only independent negative predictor of whether or not a physician provided care to female patients was if a physician had a population base with less than 10 % adolescents. Having a small adolescent patient base suggests that these physicians have less opportunity to see patients and perhaps less opportunity to establish trust or begin dialogues about sexual health. However, physicians who have less than 10 % adolescents in their population base may do so because they are not interested in working with adolescents or there are few adolescents in their communities of practice. In our study there was not significant difference between the percent of male and female physicians who had less than 10% adolescents in their population base. However, female physicians

were more likely to have population bases with greater than 10% adolescents. This may be because female physicians attract adolescent patients who are likely to be female or vice versa.

Our physicians indicated that the top three barriers to discussions about pregnancy prevention were lack of time, parental presence, and patient discomfort. Although 62% of our physicians indicated that parental presence was a barrier to discussion, no relationships were found between physician action and the percent of time that parents were present during physician patient encounters. Indeed, parental presence was linked to increased likelihood that a physician would provide direct counseling to male patients about pregnancy prevention. Physicians may feel that parental presence is a barrier because they sense that it causes their patients or themselves discomfort. It may also be that physicians will discuss pregnancy prevention if they feel that it is truly needed and are only deterred in parental presence if discussion is not absolutely necessary. This may mean that parental presence may be perceived as a barrier by physicians when in actuality, it is not. Or the effect of parental presence may not have been measured adequately by the questionnaire or the sample size. To truly elucidate the effect of parental presence on physician action, a questionnaire comparing the number of times a physician discussed pregnancy prevention with patients who were alone and with patients accompanied by parents/guardians should be used.

No significant relationship was found between physician choice of barriers and physician sex or age. Thus, a physician's choice of barriers seems to be independent of factors, such as physician sex and age, which affect physician action. The implication is

that physicians with characteristics that predispose them to providing preventive care will do so, even in with perceived barriers present.

80% of the physicians in our study concur with parental focus group studies which indicate that parents expect physicians to be comfortable talking about sex (Croft *et al.*, 1996). Interestingly, most studies of parental and adolescent focus groups indicate that parents and adolescents feel that physician discomfort and issues about confidentiality are barriers to care (Croft *et al.*, 1996). Only 22% of our physicians indicated that personal discomfort was a barrier while 21% indicated that confidentiality was a barrier. This disparity in physician and patient views may be another barrier to care. It is possible that because of response bias the majority of our physicians did not indicate that they were uncomfortable, or it may be the case that patients and parents are unable to assess physician comfort, especially if they themselves are uncomfortable. Physicians should attempt to decrease patient anxiety by educating patients and families about patient rights to confidentiality. Protocols and guidelines suggest that physicians prepare parents for confidential physician patient visits. This action would also decrease the barrier of parental presence. Parents could be prepared to have their adolescents seeing physicians without them in the room or scheduling independent visits. The scheduling of separate visits with the purpose of sexual health education would not only increase the chances that physicians have to see adolescent patients, it would also eliminate the barrier of lack of time that physicians are currently facing. With the average patient visit lasting only 15-20 minutes physicians lack time to establish trust and open a dialogue about sexual health. Separate visits for sexual health would allow physicians to have the time necessary for patient education. They would also establish the social norm that it is

accepted and expected that adolescents should ask and discuss sexual health matters with their physicians.

Although 17% of our physicians indicated that they felt that they did not have adequate training, only 6% indicated that lack of training was a barrier to discussion. Interestingly 52% of the physicians in our study indicated that they wanted more training in how to provide pregnancy prevention counseling, indicating a desire to work with this issue.

Conclusion and Future Directions

This study found that physician characteristics such as physician sex, patient sex, CME education, use of protocols, PACT funding, and physician opinion were factors that increased the likelihood of a physician patient encounter that involved pregnancy prevention. We did not find that the number of years since receiving their MD, and physician characteristics such as lack of comfort were major factors affect physician behavior as expected.

Response bias on the part of physicians may be a major limitation of this study. Also important is the fact that our physicians were asked to indicate patient characteristics such as comfort, and these measurements are affected by physician perception and response bias. This study focused on family physicians, the majority of whom have less than 10% adolescents aged 10-19 in their patient population base. We may find different predictors of care if we to study a population of pediatricians who may or may not have more adolescents in their population base. It may be that both family physician and pediatricians do not see many adolescents, since they are among the healthiest segment of our population.

Unintended adolescent pregnancy is preventable. To do so, commitment from physicians, parents, and those who fund health care must come in the form of action and not rhetoric. To increase the likelihood of whether or not a physician addresses pregnancy prevention, targeting of physicians to increase awareness about the rate of pregnancy in their communities and promotion of physician use of CME units in sexual health, practice guidelines, and participation in PACT should be done. Targeting of male physicians, especially in medical school curriculums to increase the awareness about the importance of adolescent pregnancy prevention may increase male physician action. Targeting of both male and female physicians to provide preventive care to both male and female patients should be done. Finally, changes in policy, providing funding of patient visits for education about sexual health would decrease the barriers of lack of time and lack of funding.

Memorandum for survey users

From: Sandy D. Hong-Study investigator

TO: Future survey users

Test questions are not ordered in any specific way, other than to maximize the response rate by having an interesting first question and leaving the questions which pertain to demographics in the middle of the survey. This survey was designed specifically for a target sample of primary care providers. To maximize response rates use Dillman's Total Design Method (TDM) of multiple mailings and questionnaire design. I found that the use of a post-card reminder was not helpful in increasing the response rate. Try just sending out another survey.

For questions call Sandy Hong at (510) 642-5479 or email:

SDHong@socrates.berkeley.edu

Appendix A
The Questionnaire

Adolescent Pregnancy Prevention
The Physician's Office

Sandy D. Hong
Third year medical student
University of California Berkeley-University of California San Francisco Joint Medical Program

Thank you for taking the time to complete this survey.*

***In this survey adolescent pregnancy refers to a pregnancy occurring to an unmarried adolescent 19 years of age or younger.**

Q1. What type of formal sex education do you have? Please check **all** that apply.

- Sex education in high school.
- Human sexuality in college.
- Human sexuality in medical school
- Continuing medical education units
- Other (training/course/programs) _____
- None

Q1a. If you studied human sexuality in medical school, please indicate the topics included:

- Adolescent pregnancy prevention *including* _____
- Contraception _____
- Communication techniques _____
- Adolescents and sexually transmitted diseases _____

Q1b. If you have continuing medical education units, please indicate the topics included:

- Human sexuality _____
- Contraception *specific to* _____ Adult patients _____ Adolescent patients _____
- Adolescent pregnancy prevention *including* _____
- Contraception _____
- Communication techniques _____
- Adolescents and sexually transmitted diseases _____

Q2. When you were a teenager did a physician ever speak to you about sexually related issues such as STDs, pregnancy prevention, or sexual orientation?

- No
- I am not sure.
- Yes: If yes, please indicate all that apply:

- Contraception
- Sexually Transmitted Diseases
- Pregnancy Prevention
- Sexual Orientation

Q3. Are you currently a practicing physician?

- Yes
- No; If not, please return the survey within the enclosed envelope; you will still be eligible for the gift certificate drawing. Please answer the last two items of the questionnaire.

Q4. Does your practice **include** general primary care for patients aged 10-19?

- Yes
- No; please return the survey within the enclosed envelope; you will still be eligible for our drawing.

Q5. How much of your work week do you spend with direct patient care? *Please circle the closest approximation.*

25% 50% 75% 100%

Q6. In which of the following are you board certified?

- Pediatrics _____
- Adolescent medicine _____
- Internal Medicine _____
- Family Practice _____
- Other _____

Q7. In what year did you receive your M.D. degree? _____

Q8. What is your age? _____

Q9. What is your ethnicity? Check all that apply

African-American

Caucasian-American

Hispanic-American/Latino

Other _____

Asian-American

Q10. Are you:

Male

Female

Physician Practice

Q11. In the last **month** did you discuss pregnancy prevention with a patient aged 19 or younger?

No

Yes; If yes, how often in the last **month** did a **discussion including pregnancy prevention** occur for the following reasons:

◆ The patient initiated the conversation.

0% 25% 50% 75% 100%

◆ The patient's parent initiated a conversation.

0% 25% 50% 75% 100%

◆ I suspected a pregnancy.

0% 25% 50% 75% 100%

◆ I suspected or diagnosed a sexually transmitted disease.

0% 25% 50% 75% 100%

◆ The discussion was a part of a standard health screen.

0% 25% 50% 75% 100%

Q12. Approximately what percent of the patients seen by you in the last **month** were:

≤ 10 yrs old _____

11-19 yrs old _____

≥20 yrs old _____

Q13. How many minutes is your average patient visit?

5 10 15 20 25 30 or more

Q14a. Please circle the ages that you would usually **screen** for a positive sexual history:

All patients aged: 10 11 12 13 14 15 16 17 18 19

Q14b. Please circle the ages that you would usually take a sexual history from.

Sexually active patients aged: 10 11 12 13 14 15 16 17 18 19

Q15. Please indicate the number of times in the last **month** you performed each activity for adolescent female or male patients aged 11-19. Write **0** if you did not perform an action.

	Female / Male
Provided pamphlet/literature that had information about pregnancy prevention.	_____ / _____
Provided counseling that included information about pregnancy prevention.	_____ / _____
Counseled about sexually transmitted diseases to a patient aged 11-19.	_____ / _____
Provided a patient 11-19 with contraception or a prescription for contraception.	_____ / _____
Referred patient to in-house RN/NP or counselor for pregnancy prevention counseling.	_____ / _____
Referred patient to a family planning clinic.	_____ / _____
Administered a pregnancy test.	_____ / <u> 0 </u>
Performed a pelvic exam for suspected sexually transmitted disease.	_____ / <u> 0 </u>

Physician Practice

Q16. What ZIP code is your main **practice** currently located in? _____

Q17. What type of practice do you work for/with? Please circle all that apply.

Solo Group of 5 or less Group of 6 or more

Q18. How would you describe your primary practice setting? Please choose the best answer.

- ___ Private practice/ multi-specialty medical group
- ___ HMO managed care practice setting
- ___ Academic/ faculty practice
- ___ Public community clinic/county clinic/private clinic
- ___ Specialty family planning/woman's health clinic
- ___ Other: _____

Q19. Is your practice a participant of the Family PACT?

- No
- I do not know what the Family PACT program is.
- Yes

Q20. Do you use a protocol/practice guideline for dealing with adolescent pregnancy prevention counseling?

- No
- Not sure
- Yes. If yes, is the protocol from:

- ___ AMA "GAPS"
- ___ AAFP "Age Charts for Periodic Health Examinations"
- ___ AAP "Recommendations for Pediatric Preventive Health Care"
- ___ Maternal & Child Health Bureau "Bright Futures"
- ___ Other _____

Patient Demographics

Q21. What is the largest ethnic group in your practice?

- ___ African-American
- ___ Hispanic-American/Latino
- ___ Asian-American
- ___ Caucasian-American
- ___ Other _____
- ___ Equally distributed among groups indicated above.

Q22. In which group are the families of the majority of your adolescent patients from? Please circle.

Poor-income low-income middle-income upper-income

Q23. Approximately what percent of your patients are covered through:

- _____ %Medi-Cal
- _____ %Private or HMO health insurance
- _____ %State-funded family planning program or Family PACT
- _____ %Other state, county, or federal funds
- _____ %Un-insured out-of-pocket cash/out-of -pocket/cash
- _____ %Uncompensated
- _____ %Other _____

Total = 100%

Q24. In your opinion, do you think the rate of unintended adolescent pregnancies in your patient population is high, average, or low compared to general patient populations in the United States?

High Average Low

Q25. How would you characterize the rate of adolescent births in your patient population?

High Average Low

Physician Knowledge, Attitudes, and Beliefs

Q26. Which age group do you feel has the highest **number** of pregnancies/1000 in the United States?

<14yrs. Old 15-17 18-19

Q27. Of sexually active adolescents, which age group do you think has the highest **risk** of having an unintended pregnancy in the United States?

<14yrs. Old 15-17 18-19

Q28. What proportion of discussions about teenage pregnancy prevention occur with out the patient's parent/guardian in the room? *Please circle the closest approximation.*

0% 25% 50% 75% 100%

Q29. What role do you feel your religious beliefs have in influencing how you provide adolescent pregnancy prevention services?

None Slight Moderate Strong Very Strong

Q30. How often do your patient's religious beliefs influence how you provide adolescent pregnancy prevention services?

Never Sometimes Half the time Most times Always

Physician Information, Education, and Training

Please rate how strongly you agree with the following statements.

1=strongly agree 2=agree 3=no opinion 4=disagree 5=strongly disagree

Q31. Teenage pregnancy is an important problem in the community of my practice.

1 2 3 4 5

Q32. Patients expect the physician to be comfortable when bringing up sexual matters.

1 2 3 4 5

Q33. I do not know how to talk to patients about their sexual concerns.

1 2 3 4 5

Q34. My value system does not influence how I counsel my patients about pregnancy prevention.

1 2 3 4 5

Q35. There is not much that I can do to help my patients with contraceptive use for pregnancy prevention.

1 2 3 4 5

Q36. I am comfortable with taking a sexual history from my patients.

1 2 3 4 5

Q37. I have had adequate training in taking a sexual history.

1 2 3 4 5

Q38. I would like more training in providing pregnancy prevention counseling.

1 2 3 4 5

Q39. The following are barriers considered important reasons physicians do not always discuss pregnancy prevention with minors. Including discussions not charted, please check the **three** that you feel are most important to you.

- | | |
|---|---|
| <input type="checkbox"/> I lack specific training. | <input type="checkbox"/> The patient exhibits discomfort. |
| <input type="checkbox"/> I feel personal discomfort. | <input type="checkbox"/> I do not have enough time. |
| <input type="checkbox"/> The parent/guardian is present or will not leave. | <input type="checkbox"/> The parent/ guardian shows discomfort. |
| <input type="checkbox"/> There are issues concerning patient confidentiality. | <input type="checkbox"/> I do not consider this part of general pediatric or family practice care |
| | <input type="checkbox"/> Other:_____ |

Q40. If you indicated in the above question that issues concerning confidentiality are important to you please check the specific ones that concern you:

- | | |
|---|---|
| <input type="checkbox"/> I am unable to provide contraception with protection of patient confidentiality. | <input type="checkbox"/> I am uncertain about laws governing confidentiality of minors. |
| <input type="checkbox"/> I am unable to provide counseling with protection of patient confidentiality. | <input type="checkbox"/> My patients may not be certain about confidentiality. |
| | <input type="checkbox"/> Other_____ |

Thank you for taking this survey. Would you like to be sent a summary of the results?

- Yes
- No

Would you like to participate in the drawing for the \$100.00 gift certificate? The winner will be selected randomly from returned surveys and mailed the gift certificate.

- Yes
- No

Appendix B Cover Letter

Dear Dr. :

I am a third year medical student with the University of California Berkeley - University of California San Francisco Joint Medical Program. Before I tell you about the enclosed survey, let me tell you a little bit about myself and the Joint Medical Program (JMP). I grew up in a working class neighborhood in Southern California. When I was about thirteen I started noticing that girls I knew did not continue to go to school because they were pregnant. It bothered me that my friends did not stay in school. I was raised with the belief that education is the main tool with which opportunities and freedom are obtained, especially if you are poor. I promised myself that in the future I would find a way to be involved with the prevention of unwanted teenage pregnancies.



The JMP is dedicated to fostering compassion and social awareness in its students. My Master's thesis is researching the knowledge, attitudes, and practices of physicians towards teenage pregnancy prevention. I would also like to learn about the cues and barriers to counseling that exist.

As a physician living in the Bay area you were randomly selected and are now invited to participate in this study. It should take you 8-15 minutes to complete this questionnaire. Your participation will be completely confidential. The numbers that you see at the top of the survey are for tracking and mailing purposes only. At the end of the study, any information linking participants to responses will be destroyed.

Your participation is important! By filling out the questionnaire your opinions and experience will help to shape what is known about physicians and current practice. I also need as many responses as possible for significant data analysis.

Please fill out the enclosed questionnaire and return it in the prepared, pre-addressed envelope. Return of the survey implies your consent for participation and for your data to be used and analyzed. You are not required to fill out the survey if you do not wish to participate.

Please check the last item of the questionnaire if you wish to receive a summary of the study results. Your participation in this study will also make you eligible to enter a drawing for a **\$100.00 gift certificate** to Borders bookstore.

Thank You,

Sandy D. Hong, MSIII

This study is being conducted by Sandy D. Hong a JMP medical student. If you have any questions about the questionnaire or study please call Sandy at (510) 642-5479 or e-mail SDHong@socrates.berkeley.edu.

Appendix C Endorsement Letter

October 22, 1998



CALIFORNIA
ACADEMY OF
FAMILY
PHYSICIANS

Dear Family Physician:

Please take the time from your busy schedule to complete the following survey. The CAFP feels that the pursuit of new knowledge by our future physicians is an important endeavor worthy of our support.

The information gained from this study will improve our understanding of how adolescent pregnancy prevention is addressed, and certainly complements the CAFP's 1998 Public Outreach program on adolescent health.

Thank you for your assistance.

Sincerely,

Susan Hogeland, CAE
Executive Director



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Paper

References

- Allen, Joseph, G. Kuperminc, S. Philliber, and K. Herre. 1994. Programmatic Prevention of Adolescent Problem Behaviors: The Role of Autonomy, Relatedness, and Volunteer Service in the Teen Outreach Program. *American Journal of Community Psychology*, Vol 22 No. 5.
- Amini, Saeid, P. Catalano, L. Dierker and L. Mann. Births to Teenagers: Trends and Obstetric Outcomes. 1996. *Obstetrics and Gynecology*. Vol 87. No. 5. Part 1 May.
- Baille, Bob. 1996. Coordinator in the Alameda County Interagency Children's Policy Council collaboration project. personal communication
- Braverman, Paula K. and V. C. Strasburger. 1994. The Practitioners Role. *Clinical Pediatrics*. February.
- Brindis, C. and r. J. Jeremy. 1988. *Adolescent Pregnancy and Parenting In California: A Strategic Plan for Action*. UCSF publications.
- Card, J, S. Niego, A. Mallari, and W. Farrell. 1996. The Program Archive on Sexuality, Health and Adolescence: Promising "Prevention Programs in a Box." *Family Planning Perspectives*. Vol. 28.
- Committee on Adolescence. Contraception and Adolescents. 1990. *American Academy of Pediatrics*.
- Croft, Candace A. L. Asmussen. 1993. A Developmental Approach to Sexuality Education: Implications for Medical Practice. *Journal of Adolescent Health*. Vol. 14: 109-114.
- Creatas, George K. 1993. Sexuality: sexual activity and contraception during adolescence. *Adolescent and pediatric gynecology*. Vol. 5: 774-783.
- East, Patricia. 1996. Do Adolescent Pregnancy and Childbearing Affect Younger Siblings? *Family Planning Perspectives*. Vol 28.
- East, Patricia and M. Felice. 1992. Pregnancy Risk among the Younger Sisters of Pregnant and Childbearing Adolescents. *Developmental and Behavioral Pediatrics*. Vol. 13. No. 2. April.

- Elster, Arthur B. 1998. Comparison of Recommendations for Adolescent Clinical Preventive Services Developed by National Organizations. *Archives of Pediatric and Adolescent Medicine*. Vol. 152. February.
- Figueroa, Elizabeth, K.M. Kolasa, R.E. Horner, M. Murphy, M.F. Dent, J.A. Ausherman, and T. G. Irons. 1991. *Journal of Adolescent Health*. Vol. 12: 443-449.
- Ford, Carol A. and Anna-Barbara Moscicki. 1995. Control of Sexually Transmitted Diseases in Adolescents: The Clinician's Role. *Advances in Pediatric Infectious Diseases*. Vol. 10.
- Ford, Carol A. S. Millstein. S. L. Eyre, and C. E. Irwin, Jr. 1996. Anticipatory Guidance Regarding Sex: Views of Virginal Female Adolescents. *Journal of Adolescent Health*. Vol. 19: 179-183.
- Frost, Jennifer, and J. Forrest. 1995. Understanding the Impact of Effective Teenage Pregnancy Prevention Programs. *Family Planning Perspectives*. Vol. 27.
- Geronimus, Arline T. and Sanders Korenman. 1993. Maternal Youth or Family Background? On the Health Disadvantages of Infants with Teenage Mothers. *American Journal of Epidemiology*. Vol. 137, No. 2.
- Geronimus, A. T. and S. Korenman. 1993. The Socioeconomic Costs of Teenage Childbearing: Evidence and Interpretation. *Demography*. Vol 30 No.2 May.
- Ginsburg, Kenneth R. G. B. Slap. A.C. Cnnan, C.M. Forke, C.M. Balsley, and D.M. Rouselle. 1995. *JAMA*. Vol. 273. No. 24.
- Hoffman, Saul, M. Foster, and F. Furstenberg. 1993. Reevaluating the Costs of Teenage Childbearing. *Demography*. Vol 30 No. 1, February.
- Hoffman, Saul, M. Foster, and F. Furstenberg. 1993. Reevaluating the Costs of Teenage Childbearing: Response to Geronimus and Korenmean. *Demography*. Vol 30 No. 2 May.
- Joffe, Alain, S.R. Radius, and M. Gall. 1988. Health Counseling for Adolescents: What They Want, What They Get, and Who Gives It. *Pediatrics*. Vol. 82. No. 3. Pt 2. Sept.
- Kaufmann, Rachel B, A. M. Spitz, L.T. Strauss, L. Morris, J.S. Santelli, L.M. Koonin, and J.S. Marks. 1998. The Decline in US Teen Pregnancy Rates, 1990-1995. *Pediatrics*. Vol. 102. No. 5.

- Kay, Lawrence E. 1995. Adolescent sexual intercourse: Strategies for promoting abstinence in teens. *Postgraduate Medicine*. Cme credit article. Vol. 97. No. 6. June.
- Langille, Donald, K.V. Mann, and P.N. Gailunas. 1997. Primary Care Physicians' Perceptions of Adolescent Pregnancy and STD Prevention Practices in Nova Scotia County. *American Journal of Preventive Medicine*. Vol. 13. No. 4.
- Lewis, Charles E. and H.E. Freeman. 1987. The Sexual History-Taking and Counseling Practices of Primary Care Physicians. *The Western Journal of Medicine*. Vol. 147. No. 2.
- Luker, Kristin. 1997. *Dubious Conceptions: The Politics Of teenage Pregnancy*. First Harvard University Press: Cambridge.
- Maheux, Brigitte, N. Haley, M. Rivard, and A. Gervais. 1997. Do women physicians do more STD prevention than men? *Canadian Family Physician*. Vol. 42: 1089-1095.
- Maheux, Brigitte, N. Haley, M. Rivard, and A. Gervais. 1995. STD Risk Assessment and Risk-reduction Counseling by Recently Trained Family Physicians. *Academic Medicine*. Vol. 70. No. 8. August.
- Middleman, Amy B. 1995. Adolescent Sexuality and Reproductive Health. *Comprehensive Therapy*. Vol. 21. No. 3.
- Mmwr. Morbidity and Mortality Weekly Report*. 1993. Teenage Pregnancy and Birth Rates-United States, 1990. Vol. 42. No. 38.
- Newcomer, Susan and Wendy Baldwin. 1992. Demographics of Adolescent Sexual Behavior, Contraception, Pregnancy, and STDs. *Journal of School Health*. Vol. 62. No. 7.
- Neinstein, Lawrence S. and J.R. Shapiro. 1986. Pediatrician's Self-Evaluation of Adolescent Health Care Training, Skills, and Interest. *Journal of Adolescent Health Care*. Vol 7: 18-21.
- Orr, Donald P., S.P. Weiser, D.A. Dian, and C.A. Maurana. 1987. Adolescent Health Care: Perceptions and Needs of the Practicing Physician. *Journal of Adolescent Health Care*. Vol. 8: 239-245.
- Rauh, Joseph L. 1993. The Pediatrician's Role in Assisting Teenagers to Avoid the Consequences of Adolescent Pregnancy. *Pediatric Annals*. Vol. 22. No. 2. February.

- Ross, Polly E, and SE. Landis. 1994. Development and Evaluation of a Sexual History-taking Curriculum for First- and Second-year Family Practice Residents. *Family Medicine*. Vol. 25: 293-8.
- Santelli, J. and P. Beilenson. 1992. Risk Factors for Adolescent Sexual Behavior, Fertility, and Sexually Transmitted Diseases. *Journal of School Health*.. Vol. 62. Sept. No. 7.
- Schuster, Mark A. R. M. Bell. L.P. Peterson. D.I. Kanouse. 1996. Communication Between Adolescents and Physicians About Sexual Behaviors and Risk Prevention. *Archives of Pediatric and Adolescent Medicine*. Vol: 150. Sept.
- Spitz, A.M., S. Ventura, L. Koonin, L. Strauss, A. Frye, R. Heuser, J. Smith, L. Morris, S. Smith, P. Wingo, and J. Marks. 1993. Surveillance for Pregnancy and Birth Rates Among Teenagers, by State--United States, 1980-1990. *MMWR CDC Surveillance Summaries*. Vol. 42. No. SS-6.
- Spitz, A.M., P. Velebil, L. Koonin, L. Strauss, K. Goodman, P. Wingo, J. Willson, L. Morris, J. Marks. 1996. Pregnancy, Abortion, and Birth Rates Among US Adolescents-1980, 1985, and 1990. *JAMA*. Vol. 275. No. 13. April.
- The Alan Guttmacher Institute's *Sex and America's Teenagers*. 1994.
- Ventura, S. 1994. Recent trends in teenage childbearing in the United States. *Statistical Bulletin/ Metropolitan Insurance Companies*. Vol. 75. No. 4. Oct-Dec.
- Widom, Cathy Spatz, and J. Kuhns. 1996. Childhood Victimization and Subsequent Risk for Promiscuity, Prostitution, and Teenage Pregnancy: A Prospective study. *American Journal of Public Health*. Vol. 86. No. 11. November.