Patterns

of Family Planning Services, Contraceptive Use, and Pregnancy Among 15-19 Year Olds Enrolled in

SC Medicaid

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SOUTH CAROLINA CAMPAIGN TO PREVENT TEEN PREGNANCY

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The mission of the South Carolina Campaign to Prevent Teen Pregnancy (SC Campaign) is to improve the health and economic well being of individuals, communities, and the state of South Carolina by preventing teen pregnancy. One goal in the organization's strategic plan is to increase contraceptive access among sexually active adolescents. To achieve this, the SC Campaign has partnered with health centers across the state to make services more responsive and comfortable for adolescents. In addition, the SC Campaign has tried to better understand how young people view contraception, pregnancy prevention, and health services. This study is part of the SC Campaign's effort to deepen its knowledge of the types of contraceptive methods currently used by adolescents, how often adolescents change methods, receive family planning medical services, and the relationship of these characteristics to pregnancy. This report lends insight into a particular group of almost 13,000 15-19 year olds in South Carolina who have received family planning services paid for by Medicaid. Findings will be used to continue helping sexually active adolescents receive the most reliable contraceptive methods in order to delay childbearing until they are ready.

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Executive Summary

In South Carolina, Blacks and low income youth bear a disproportionate burden of teen births—in a state that has the 11th highest teen birth rate in the country[1]. To explore contraceptive and pregnancy patterns among low income adolescents in South Carolina, the South Carolina Campaign to Prevent Teen Pregnancy partnered with the South Carolina Budget and Control Board, Office of Research and Statistics, to analyze a cohort of 12,882 15-19 year old females enrolled in Medicaid. Between one to five years of longitudinal data related to family planning were analyzed for each teen.

Key findings include: 58% were pregnant either before or during the study period. The proportion of Black and White teens who experienced pregnancy was similar; this is a striking contrast to the higher rate of Black teen pregnancies in the population as a whole. Of those who became pregnant, significant differences emerged in the last contraceptive method received compared to those who never became pregnant. Teens who used no method, or had a history of using less reliable methods were more likely to become pregnant. However, an average of eight months lapsed between pregnancy and the last method received. While most teens received at least one method paid by Medicaid, almost 8% of Whites and 10% of Blacks did not receive any method, despite receiving family planning services. Changes in contraceptive methods were common, mostly between various short acting hormonal methods. Only a small percentage received the most reliable methods of contraception (IUDs and implants). Recommendations based on these data include:

1. Recognizing the importance of low income status as a risk factor for adolescent pregnancy and offer opportunities for education, health care access, and evidence-based pregnancy prevention;
2. Integrating contraceptive counseling and pregnancy prevention efforts into all services provided to Medicaid enrolled adolescents;
3. Improving contraceptive counseling to identify optimal contraceptive methods;
4. Educating Medicaid enrolled adolescents and clinical providers about the benefits of long acting, reversible contraception.

The higher pregnancy rate among this cohort underscores the importance of identifying effective strategies to help these women delay childbearing. In addition, these data clearly highlight the missed opportunities to provide women enrolled in Medicaid with the most reliable methods of birth control, specifically IUDs and implants.

[1]Centers for Disease Control and Prevention, South Carolina Fact Sheet: South Carolina Birth Data 2010, retrieved from http://www.cdc.gov/nchs/pressroom/states/SC_2012.pdf September 12, 2010.

Introduction

Teen Pregnancy & Contraceptive Use

The 2011 teen birth rate of 39.1 per 1,000 is the lowest teen birth rate recorded in South Carolina[2]. From 2010 to 2011, the teen birth rate decreased 8%.[2] In the last ten years, the teen birth rate dropped by 28%. However, South Carolina still has the 11th highest teen birth rate in the nation.[1] Significant disparities among some populations remain. In 2011, the birth rate among White 15-19 year olds was 30.6, while Blacks and Hispanics have much higher rates (50.7 and 59.9, respectively).[2] Older teens drive the overall rate, with 18-19 year olds accounting for 72% of all teen births.[2]

Prevention of adolescent pregnancy requires decreasing sexual activity, increasing effective contraceptive use among sexually active youth, or a combination of both. Data from the South Carolina Youth Risk Behavior Survey indicates that among sexually active high school students, 22.4% used birth control pills or Depo Provera and 57.5% used a condom at last intercourse . However, it is not possible from these data to understand whether these students change birth control methods or if these students later become pregnant. According to the National Survey of Family Growth, 65% of sexually experienced adolescents (15 – 19 years old) have used hormonal or long acting methods of contraception at least once. Specifically, 55% have used the pill, 17% have used injectibles (such as Depo Provera), 10% have used the patch, and 3% have used an IUD/implant.[4] When examining contraceptive method use by race among 15-24 year old women, White women were significantly ($p < .05$) more likely to have used a hormonal or long acting method compared to Black or Hispanic women (84%, 73%, 70%, respectively).[4] During their first sexual intercourse, 79% of teens reported using some method of contraception.[4] Among adolescent females that reported having had sexual intercourse in the last month, only 52% reported using a condom every time they had sex during this time; 36% reported never using a condom during sexual intercourse during the past month.[4]

Limited information is available about patterns of contraceptive use among adult or adolescent women. An analysis of 1995 National Survey of Family Growth data revealed that 60.9% of unmarried women (of all ages) changed methods within two years, including 13.1% who discontinued using any method of birth

[2]South Carolina Department of Health and Environmental Control, Public Health Information and Statistics, 2012.
[3]South Carolina Department of Education, 2011 Youth Risk Behavior Survey data, retrieved from http://ed.sc.gov/agency/se/Teacher-Effectiveness/Healthy-Schools/SCYouthRiskBehaviorSurvey.cfm September 12, 2013.
[4]Welti, K., Wildsmith, E., Manlove, J. Trends and recent estimates: Contraceptive use among US teens and young adults. (2011). Child Trends Research Brief: Washington, DC.
[5]Grady. W., Billy, J., Klepinger, D.Contraceptive method switching in the United States, Perspectives on Sexual and Reproductive Health, 2002, 34(3):135-145.

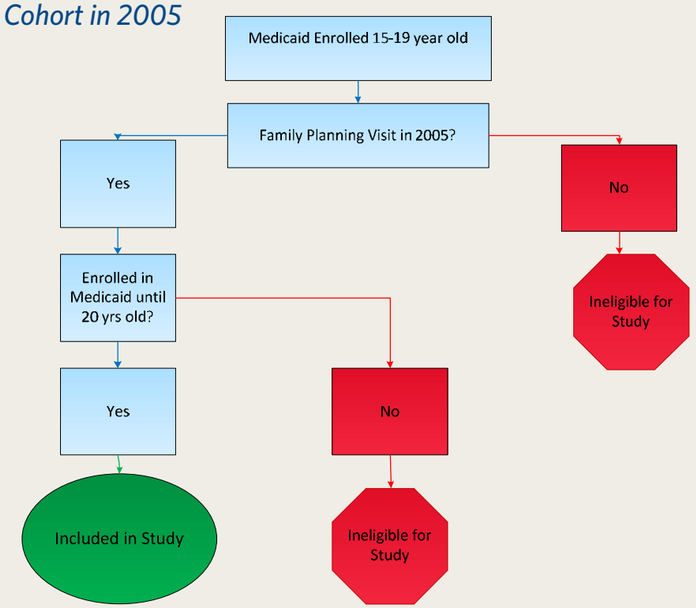
control.[5] While some of the method changing may be due to changes in circumstances, such as sexual relationships or pregnancy intention, it may indicate a lack of satisfaction with particular methods.[5]

To better understand contraceptive use by adolescents in South Carolina, the South Carolina Campaign to Prevent Teen Pregnancy partnered with the Office of Research and Statistics to analyze a cohort of 12,882 15-19 year olds enrolled in Medicaid. From 2004 – 2006, Medicaid paid for 94% of births to adolescents in South Carolina, suggesting that the Medicaid enrolled population may be of higher risk of pregnancy[6]. While this study excludes adolescents who were not enrolled in Medicaid, it provides an opportunity to look more closely at contraceptive methods dispensed, pregnancy occurrence, and for those who gave birth during the study period, the method of contraceptives dispensed following the delivery.

Methods:

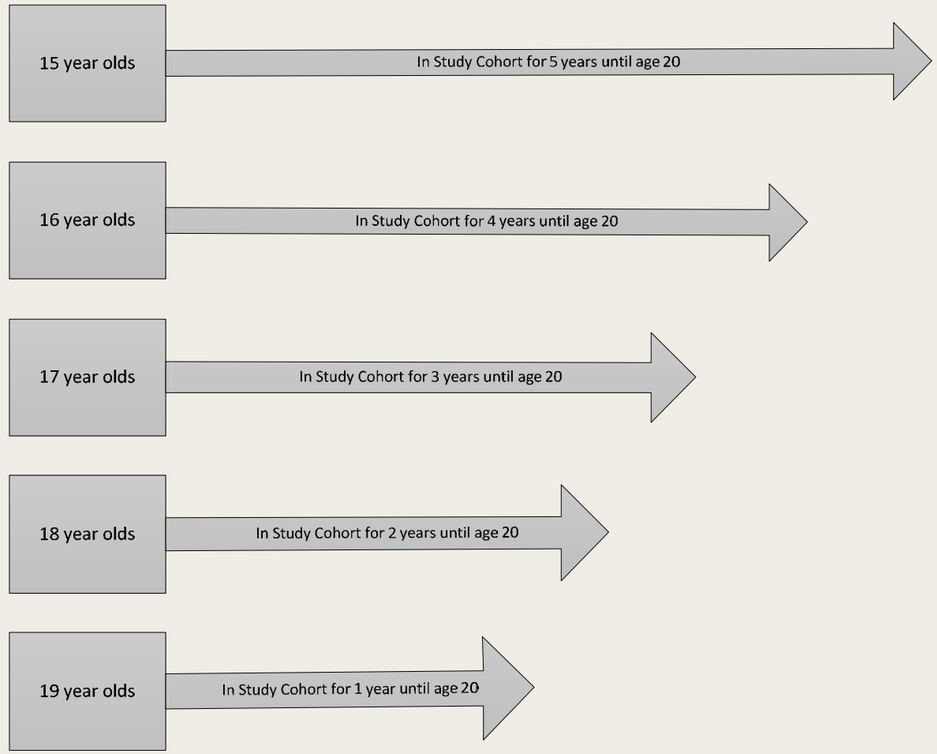
To be included in the analysis, the Medicaid enrollee had to be between 15-19 years old in 2005, have had at least one family planning visit in 2005, and at least nine months of enrollment until their 20th birthday. First, all 15-19 year olds enrolled in Medicaid in 2005 who had a family planning visit were selected. Family planning visits were identified by using Medicaid assigned fund codes, procedure code modifiers, ICD-9 diagnosis codes, and the aid category for the family planning waiver. If those with a family planning visit were enrolled in Medicaid until they turned 20, they were kept in the study cohort. **Figure 1** visually describes the selection process to include Medicaid enrolled 15-19 year olds in the study cohort. **Figure 2** visually describes the length of time spent in the study cohort based on age at entry.

Figure 1. Selection of Cohort in 2005



[5]Grady. W., Billy, J., Klepinger, D.Contraceptive method switching in the United States, Perspectives on Sexual and Reproductive Health, 2002, 34(3):135-145.
[6]South Carolina, Budget and Control Board, Office of Research and Statistics, 2012

Figure 2. Length of time in Study Cohort Based on Age in 2005

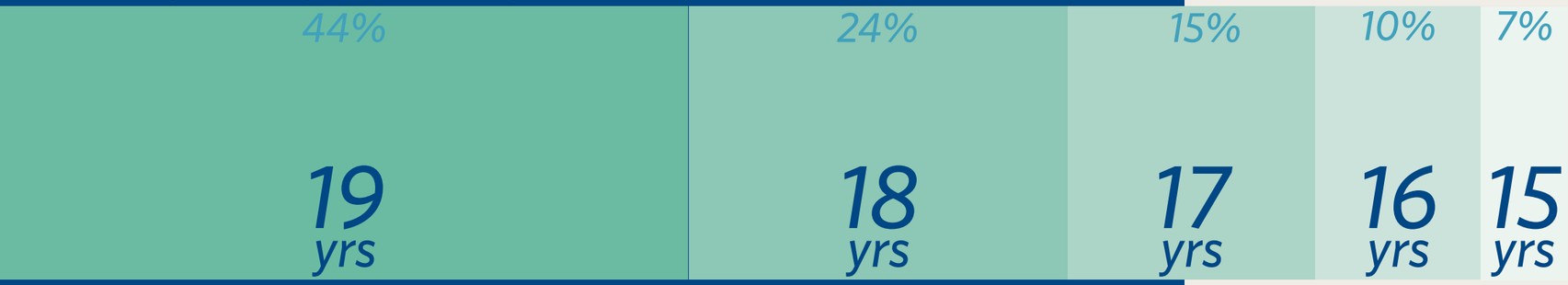


The cohort was then linked to all Medicaid paid claims from 2005-2009 to identify family planning services, birth control methods, STIs, and pregnancy. Birth control methods were identified through ICD-9 diagnosis codes, procedure codes (ICD-9, CPT, or HCPCS), and pharmacy claims. The birth control methods that were identified were short-acting hormonal methods (the pill, ring, or patch), longer-acting hormonal methods (depo, implant, or IUD[7]), and barrier methods (condom or diaphragm). Pregnancy was identified through ICD-9 diagnosis codes and/or Diagnosis Related Groups (DRG) indicating a delivery occurred. The cohort was also linked to older paid Medicaid claims to identify any prior pregnancy-related diagnoses, family planning service use, and STI diagnoses. Significance testing was conducted using Chi Square analysis.

A limitation of this cohort is that it may not be representative of the larger population of 15-19 year olds in South Carolina. Only women who had a family planning visit paid for by Medicaid are included in this analysis. These data do not include women who may have used an over the counter pregnancy test and then had an abortion or miscarriage without ever receiving services paid for by Medicaid. These data also do not include condoms that were purchased over the counter at drug stores. However, these data offer unique insights into a particular group of Medicaid enrollees who received family planning services, the contraceptive methods used by those that became pregnant or did not become pregnant, and the contraceptive patterns.

[7]Implanon was not available until 2007. IUD's, while approved in 2005 for women who have never given birth, have not been widely accepted as a primary prevention method for adolescents.

Chart 1. Age at Entry to Cohort (age in 2005)



The Study

Demographics & Family Planning

All demographics are based on South Carolina Medicaid recipient record data from 2005. Age was calculated at the time of the first identified family-planning type visit in 2005. Since a requirement of inclusion in the cohort was remaining on Medicaid until age 20, age can be used to both identify age at entry into cohort and length of time in the cohort. For example, 44% of the cohort was 19 upon entry into the cohort and remained in the cohort for one year (until they turned 20); 24% of the cohort was 18 upon entry into the cohort and remained in the cohort for two years. Fifteen percent of the cohort entered at 17 years old, 10% at 16 years old and 7% at 15. All remained in the cohort until turning 20. The majority of the cohort was identified as Black (59%) with the remaining categorized as White (38%) or Other (3%). The majority of the cohort was female (98.3%, n = 12,882). Males (n=218) were excluded from all analysis.

Pregnancy Status

The cohort was divided into two groups: those who had a pregnancy and those who never had a pregnancy before or during the study period (2005 – 2009). There were 7,456 (58%) enrollees who were pregnant either before or during the study period. Those who were 18-19 years old at the start of the study period were more likely to have been pregnant before 2005. Of the 4,743 enrollees who were pregnant before the study period (i.e. prior to 2005), 81% were 18 and 19 year olds in 2005. Those who were 15-17 years old at the start of the study period were more likely to become pregnant for the first time during the study period. Of the 2,713 enrollees with a pregnancy-related diagnosis code for the first time during the study period of 2005-2009, 64% were 15-17 year olds in 2005.

Chart 2. Percent of Women Who Had a Pregnancy

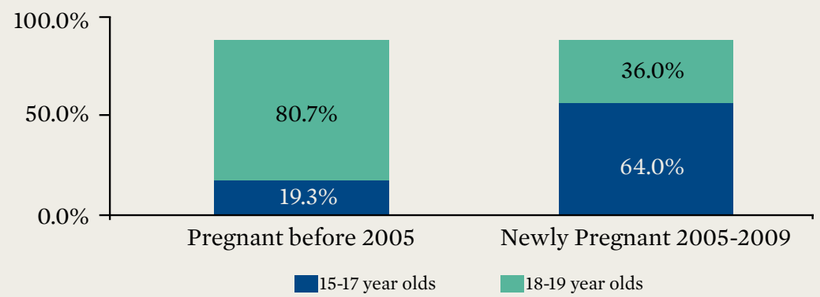


Chart 3 depicts the pregnancy status of the 12,882 15-19 year old female cohort members. Three mutually exclusive categories were identified: those that experienced a 'first pregnancy' during the study period (n=2,713 females, 21%), those that had a 'prior pregnancy' before the study period began in 2005 (n = 4,743 females, 37%) and those that were not pregnant prior to the study period and did not become pregnant during the study period, i.e. 'never pregnant' (n = 5,426 females, 42%).

Chart 3. Pregnancy Status of Cohort (n=12,882)

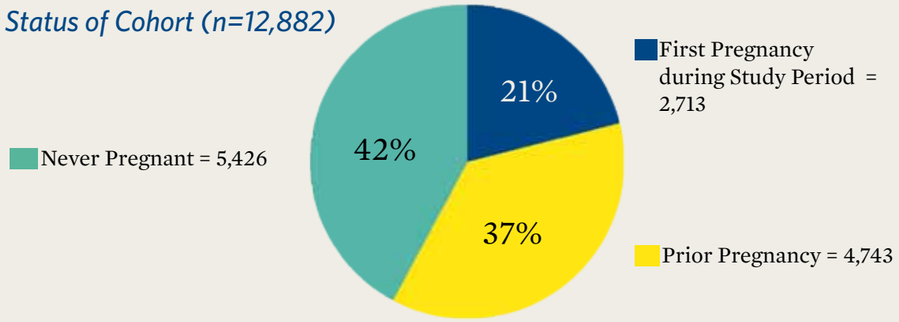


Table 1 shows the number and percentage of Medicaid 15-19 year olds who were categorized as "ever pregnant" (i.e. pregnant before or during the study period) or "not pregnant" (never pregnant before or during the study period). It is important to note that only those who were 15 years old in 2005 were followed for a full five years. Cohort members aged out of the study when they turned 20 years old. Consequently, those who were youngest at entry into the cohort were followed for a longer period.

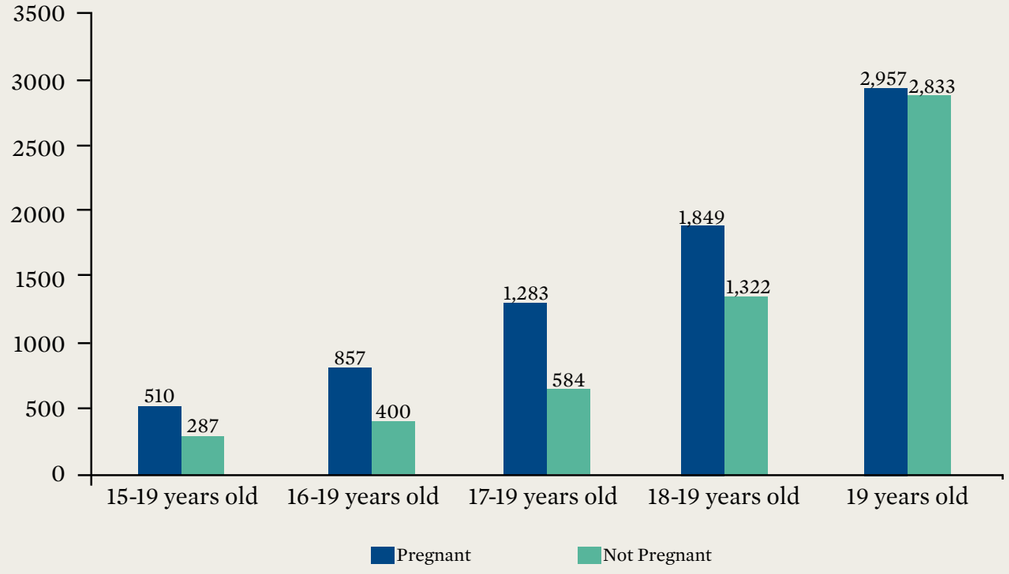
Overall, 58% of the entire cohort became pregnant at least once before or during the study period from 2005 – 2009 before they turned 20 years old. Among those who entered the cohort at younger ages, more data are available. There was no significant difference between the percent of Black and White enrollees who were ever pregnant. This is a striking contrast with the pregnancy rates among the population as a whole. In 2010, the Black teen birth rate was 1.7 times higher than the White rate in South Carolina 15-19 year olds.

Table 1. Pregnancy Status before and during the Study Period by Age and Race

Age during Study Period 2005-2009	Ever Pregnant N	Ever Pregnant % of Age	Not Pregnant N	Not Pregnant % of Age
15-19 years old	510	64.0%	287	36.0%
16-19 years old	857	68.2%	400	31.8%
17-19 years old	1,283	68.7%	584	31.3%
18-19 years old	1,849	58.3%	1,322	41.7%
19 years old	2,957	51.1%	2,833	48.9%
Race	**N**	**% of race**	**N**	**% of race**
Black	4,460	58.9%	3,108	41.1%
White	2,808	56.6%	2,153	43.4%
Other	188	53.3%	165	46.7%
Total	**7,456**	**57.9%**	**5,426**	**42.1%**

Chart 4 indicates that most of the cohort consists of older teens (18-19 year olds) and that those entering the cohort at younger ages were more likely to have been pregnant or become pregnant during the study period.

Chart 4. Number of Pregnant Females by Age (age in 2005)



2005: A Closer Examination of One Year

To better understand pregnancy among all cohort members, pregnancy in the first year of the study and pregnancy throughout the five years of the study were examined separately. The first year of the study cohort is given particular emphasis because all cohort members were included during this first year and it provides the most complete look at all 12,882 cohort members before some cohort members aged out of the sample. Pregnancy during the full study period is subsequently described, although it is important to note that only those who were 15 years old in 2005 were followed for the full five years.

Table 2 shows the age and race distribution of those who were pregnant (including new and repeat pregnancies) within the first year of the study and those that did not become pregnant during the first year of the study. The age group with the highest percentage of pregnancies in the first year was 18 year olds, closely followed by 19 year olds. Black enrollees and White enrollees were not significantly different in the percent of those who became pregnant in the first year. As noted earlier, the Black teen pregnancy rate is considerably higher than the White rate in the general population.

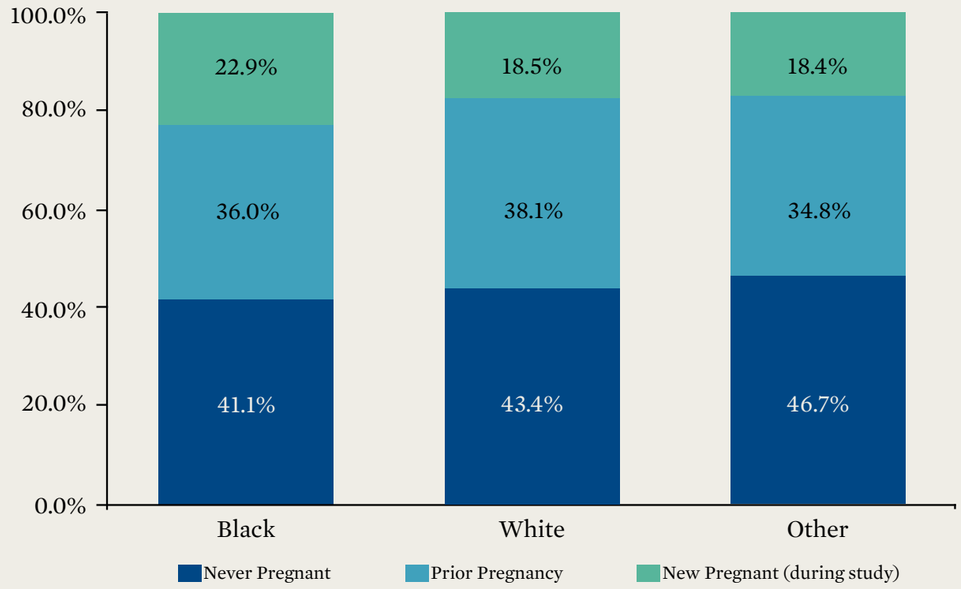
Table 2. Pregnancy during Year 1 of Study Period by Age and Race

Age Group in Year 1	Ever Pregnant (New & Repeat) N	Ever Pregnant (New & Repeat) % of age group	Not Pregnant N	Not Pregnant % of age group
15 years old	167	21.0%	630	79.0%
16 years old	412	32.8%	845	67.2%
17 years old	849	45.5%	1,018	54.5%
18 years old	1,689	53.3%	1,482	46.7%
19 years old	2,957	51.1%	2,833	48.9%
Total	6,074	47.2%	6,808	52.8%
Race	**N**	**% of race**	**N**	**% of race**
Black	3,579	47.3%	3,989	52.7%
White	2,344	47.2%	2,617	52.8%
Other	151	42.8%	202	57.2%
Total	6,074	47.2%	6,808	52.8%

Pregnancy During Study Period 2005-2009

Within each race category, there is a similar distribution of females who were never pregnant, had a pregnancy prior to the study period (before 2005) or had a pregnancy during the study period (2005 – 2009). A slightly higher percentage of Black cohort members had a new pregnancy during the study period (22.9%) compared to Whites (18.5%) or Other (18.4%).

Chart 5. Pregnancy Status 2005-2009, by Race



Family Planning Services and Birth Control Methods

Birth Control Methods

Birth control methods were identified through Medicaid paid claims with dates of service from 2005-2009. Only methods paid for by Medicaid are included in this analysis; it is possible some cohort members may have received condoms from non-Medicaid sources. Differences are evident between age and racial groups. **Table 3** shows the first contraceptive method dispensed or prescribed to cohort members during the study period. Ninety-one percent of all cohort members received a birth control method at some point during the study period. It is important to note that in **Table 3**, 'age at service' refers to the cohort members' age when the birth control method was prescribed. A cohort member is represented only one time in the table below if they received a contraceptive method and only the first contraceptive method dispensed or prescribed is included. For information on those with no contraceptive method paid for by Medicaid, please see **Table 5**.

Among those who received at least one birth control method during the study period, the pill was the most used method (44.0%), the Depo-Provera (depo) shot was the second most commonly used method (22.3%) and the contraceptive implant was the least used method. However, at the beginning of the study period, the contraceptive implant was not available. Younger cohort members were more likely to receive Depo Provera (27% of 15 year olds) compared to older cohort members (21.1% of 19 year olds). Similarly, younger cohort members were more likely to receive the patch (21.1% of 15 year olds) compared to older cohort members (15.9% of 19 year olds). Older cohort members were more likely to report using a barrier method such as condom, female condom, diaphragm or cervical cap (14.8% of 19 year olds) compared to younger cohort members (8.6% of 15 year olds).

Table 3. Among those with a Birth Control Method, First Method Paid by Medicaid (Age at Service)

	15 Years Old		16 Years Old		17 Years Old		18 Years Old		19 Years Old		Total	
Barrier	52	8.6%	118	10.8%	218	12.6%	412	14.0%	794	14.8%	1,594	13.6%
Depo	163	27.0%	269	24.7%	388	22.4%	664	22.6%	1,135	21.1%	2,619	22.3%
Implant	0	0.0%	0	0.0%	6	0.3%	*	*	0	0.0%	*	*
IUD	*	*	*	*	*	*	21	*	61	*	*	*
Patch	128	21.2%	217	19.9%	333	19.2%	483	16.4%	855	15.9%	2,016	17.2%
Pill	253	41.9%	472	43.3%	768	44.2%	1,287	43.8%	2,382	44.3%	5,162	44.0%
Ring	8	1.3%	13	1.2%	23	1.3%	72	2.4%	144	2.7%	260	2.2%
Total	604	100%	1,089	100%	1,736	100%	2,939	100%	5,371	100%	11,739	100%

An asterisks (*) indicates that fewer than five patients received this service.

In **Table 4**, first birth control methods are examined by race. While Black and White enrollees were both more likely to use the pill as a first method, the percentage of White enrollees who used the pill (52.7%) was significantly (p<.001) higher than Black enrollees (38.3%). Depo Provera was the second most commonly used method among all enrollees; Black enrollees (25.6%) were more likely than White enrollees (16.9%) to receive it.

Table 4. Among those with a Birth Control Method, First Method Paid for by Medicaid by Race

	Black		White		Black & White Combined	
Barrier	1,002	14.6%	548	12.0%	1,550	13.6%
Depo	1,761	25.7%	779	17.1%	2,540	22.2%
Implant	*	*	-	0.0%	*	*
IUD	28	0.4%	56	1.2%	84	0.7%
Patch	1,317	19.2%	640	14.0%	1,957	17.1%
Pill	2,625	38.3%	2,408	52.7%	5,033	44.1%
Ring	117	1.7%	137	3.0%	254	2.2%
Total	6,850	100%	4,568	100%	11,418	100%

An asterisks (*) indicates that fewer than five patients received this service.

Table 5 shows the number and percentage of enrollees who had no contraceptive method paid for by Medicaid during the study period. Nine percent of all cohort members did not have any contraceptive method dispensed or prescribed that was paid for by Medicaid. It is possible these patients purchased and used condoms or spermicide available over the counter. Females who were in the cohort for a shorter period of time (due to age at entry) had a significantly higher percent of not receiving any method during their time in the cohort. There was also a small, but significant difference (p < .001) between the percentage of Black enrollees and White enrollees who received no contraceptive method.

Table 5. No Birth Control Method Received By Age at Entry into Cohort and Race

Race	# With No Method	% of Race
Black	716	9.5%
White	393	7.9%
Age at Entry Into Cohort	**# With No Method**	**% of Age**
15 years old	27	3.4%
16 years old	37	2.9%
17 years old	83	4.4%
18 years old	195	6.1%
19 years old	794	13.7%
Total	**1136**	**8.8%**

Long acting methods as defined for this study include both the IUD and contraceptive implant. Among contraceptive methods listed in **Table 6** below, IUDs and Implants have the lowest failure rates (ranging from .1% to 1%) with typical use.[8] Other hormonal methods listed below have a typical use failure rate ranging from 7% to 9%.[5] Only a small percentage of cohort members switched to the most reliable methods (IUD and Implants).

Table 6 categorizes anyone with a hormonal contraceptive method during the study period into four main categories: 1) pill, 2) patch/ring, 3) depo, and 4) IUD/implant and shows the number and percentage of contraceptive method recipients who ever switched to another method in the pattern described below.[9] An enrollee can be included in more than one category if she used more than one type of hormonal method during the study period. The percentage of enrollees who received the pill and switched to another method in the pattern below was significantly higher (p<.001) than other patterns of contraceptive changes.

Table 6. Enrollees who used a contraceptive method and changed methods

Method	Total	# Who Switched to a longer acting method	% Who Switched*	Switched to: Patch/Ring	Switched to: Depo	Switched to: IUD/Implant
Pill	7,701	2,078	27.0%	1,104 (14.3%)	1,048 (13.6%)	264 (3.4%)
Patch/Ring	3,971	761	19.2%		634 (16.0%)	155 (3.9%)
Depo	3,976	120	3.0%			120 (3.0%)

*Note: enrollees may change method more than once; sum of "switched to..." may not equal the "% who switched".

Long Acting Reversible Contraceptives

Nearly 80% of the enrollees with an IUD had a pregnancy related diagnosis code prior to the IUD service. In 2007, the American Congress of Obstetricians and Gynecologists (ACOG) 2007 Committee Opinion recommended both the Cu-IUD and LNG-IUD for adolescents.[10] However, many medical providers are reluctant to provide IUDs to young women.[11]

[8] In Brief Fact Sheet: Facts on Contraceptive Use in the United States (2010). Guttmacher Institute, retrieved on May 17, 2012 from http://www.guttmacher.org/pubs/fb_contr_use.html

[9] Counts of changes in birth control method are based on billing or procedure codes indicating the initiation of a hormonal birth control method incompatible with a previously reported hormonal method. Switching to or from a barrier method, ceasing to use a method, or gaps in usage cannot be determined using the available data.

[10] ACOG Committee opinion number 392. *Obstet Gynecol* 2007;110:1493–5.

[11] Acceptance of long-acting reversible contraceptive methods by adolescent participants In the Contraceptive CHOICE Project. Renee Mestad, Gina Secura, Jenifer E. Allsworth, Tessa Madden, Qiuhong Zhao, Jeffrey F. Peipert. Contraception 84 (2011) 493–498

Twenty-two percent of those with an IUD had it removed; most of those with an IUD removal switched to a hormonal method. Of those who used an IUD and then changed methods, 58.4% of these switched to the pill and another 16.9% switched to depo. On average, the removal took place 237 days (about eight months) after the IUD was inserted. Twelve percent of those with an implant had it removed and most of those changed to another hormonal method. On average, the implant was removed 154 days (about five months) after it was inserted. Table 7 shows more details on IUD and implant removals.

Table 7. Among IUD and Implant Users, Days between Insertion and Removal

Method	# Removed Method	% of Method Users	Mean	S.D.	Median	Min	Max
IUD	91	22%	237 days	243 days	147 days	2 days	1,087 days
Implant	10	12%	154 days	178 days	62 days	15 days	481 days

The purpose of Table 8 is to understand the frequency of contraceptive method changes and to explore a few characteristics that relate to these changes. Table 8 shows the number and percentage of birth control users who ever changed methods in the study period of 2005-2009. Cohort members who did not ever receive a birth control method paid for by Medicaid are not included in the table below. Also, those who simply stopped using a method but did not switch to another method are not included in the table below. Barrier methods were excluded from the changes. The average number of method changes correlated with the amount of time in the study period. The percentage of enrollees with three to five years in the cohort who changed methods was significantly ($p<.001$) higher than the percentage of enrollees with one to two years in the cohort. Among those who did change methods, the average number of method changes was consistent between races. However, the percentage of White enrollees with a change in methods was significantly ($p<.001$) lower than Black enrollees. Even analyzing method changes occurring only in the first year of the study continued to show the percentage of White enrollees with a change in methods within the first year was significantly ($p<.05$) lower than Black enrollees.

Table 8. Those Who Ever Switched a Method by Years in Cohort and Race

	# With BC Method	# Who Changed	% Who Changed	Total Changes	Mean # of Changes	SD
Age during Study Period*						
15-19 yrs	773	494	63.9%	1,005	2.0	1.25
16-19 yrs	1,223	710	58.1%	1,337	1.9	1.14
17-19 yrs	1,795	883	49.2%	1,490	1.7	0.95
18-19 yrs	2,993	1,008	33.7%	1,380	1.4	0.70
19 yrs	5,156	786	15.2%	963	1.2	0.53
Race						
Black	6,964	2,406	34.5%	3,888	1.6	0.95
White	4,647	1,358	29.2%	2,105	1.5	0.97

*15 year olds were followed for five years, 16 year olds for four years, etc. See figures 1 and 2 for details.

Pregnancy and Birth Control Methods

Prior to Pregnancy

The purpose of Table 9 is to describe the differences in contraceptive methods used among those with a first (i.e. 'new') pregnancy during the study period and those that were not pregnant either before or during the study period (i.e. 'never'). To increase clarity and allow unduplication of contraceptive methods, only the 7,899 Black or White females ('other' races excluded) who either became pregnant for the first time during the study or never became pregnant before or during the study are included in the table below. Those with a pregnancy prior to the study period are not included, regardless of whether they had a subsequent pregnancy during the study period. The last contraception method prior to pregnancy (for New Pregnancies) and the last method used during the study period (for Never Pregnant) were identified.

It is important to note that cohort members may have ceased using the method of contraception long before becoming pregnant and the data below should not be interpreted as each method's failure rate. Instead, the data below describe the type of methods most recently dispensed prior to a pregnancy. Those whose most recent method was Depo Provera were least likely to become pregnant for the first time. In contrast, the percentages of those becoming pregnant for the first time after the patch or ring are comparable to the percentage for the pill. Most striking is that 72% of those with no method identified became pregnant for the first time, and 39% of those whose last prescribed method was a barrier became pregnant.

Table 9. Contraceptive Methods Used Prior to Newly Pregnant or Never Pregnant, by Race

	New Pregnancies		Never Pregnant		% of Users Who Got Pregnant		
	Black	White	Black	White	Total	Black	White
Barrier	139	48	208	84	39%	40%	36%
Depo	125	57	585	242	18%	18%	19%
Implant	*	*	*	*	*	*	*
IUD	*	*	*	*	*	*	*
Patch	272	98	505	211	34%	35%	32%
Pill	629	483	1,487	1,392	28%	30%	26%
Ring	53	44	119	134	28%	31%	25%
None	510	182	188	80	72%	73%	69%

An asterisks (*) indicates that fewer than five patients received this service.

As noted above, the most recent method dispensed or paid for by Medicaid does not indicate the cohort member was using this method when the pregnancy occurred. Among those who became pregnant, a significant amount of time lapsed between the average number of days between the last method received (prescription filled or method dispensed) and the first diagnosis of pregnancy (see **Table 10**). The lapse in time indicates that there may be a lack of maintenance of a birth control method in those with a first pregnancy in the study period. However, some patients may receive a year's supply of birth control pills and the lapse in last method dispensed may not accurately reflect usage.

Table 10. Mean Number of Days Between Last Birth Control Method and First Pregnancy Diagnosis (n=1,948)

	Mean	SD	Median
Black	253.8	210.0	197
White	239.6	199.6	181

Table 11 shows the mean and median length of time between the most recent family planning visit prior to pregnancy. The long lapse indicates that there is a lack of family planning service utilization, which is an aid to preventing pregnancy.

Table 11. Mean Number of Days Between Last Family Planning Visit and First Pregnancy Diagnosis (n=2,640)

	Mean	SD	Median
Black	392.2	246.5	359.5
White	419.3	254.3	385

Post Pregnancy Birth Control Methods

The data below represents only a small subset of the cohort: those who delivered during the study period (1,763). Table 12 shows the types of birth control methods received most recently after delivery in the newly pregnant subgroup and the mean number of days between delivery and receiving a birth control method. Of the 1,763 enrollees who delivered a baby during the study period, the percentage who received the pill following the delivery was highest followed by a barrier method. More Black women received a barrier method following delivery compared to Whites. On average, these methods were received approximately two months after delivery, with a median of 28 days. Nineteen percent of Black enrollees did not receive a method and 17% of White enrollees did not receive a method.

Table 12. First Birth Control Method Received Post Delivery by Race

	Delivered			
Method	**Black**		**White**	
Barrier	311	26.7%	119	19.9%
Depo	176	15.1%	49	8.2%
Implant	8	0.7%	*	0.5%
IUD	17	1.5%	26	4.3%
Patch	78	6.7%	32	5.3%
Pill	313	26.9%	238	39.7%
Ring	36	3.1%	28	4.7%
No Method	225	19.3%	104	17.4%
Total	**1,164**	**100%**	**596**	**100%**

An asterisks (*) indicates that fewer than five patients received this service.

Seventy percent (n=1,278) of those who delivered during the study period had a family planning visit after their delivery. Table 13 shows the mean and median length of time between family planning visits following the pregnancy. Those who delivered and had a family planning visit had an average of three months between delivery and visit.

Table 13. Mean Number of Days Between Delivery and First Family Planning Visit (n=1,278)

	Post Pregnancy		
	Mean	**SD**	**Median**
Days	91.0	146.8	43

Limitations

As noted throughout this report, these data apply only to 15-19 year old females enrolled in Medicaid until they turned 20 years old. Only services paid by Medicaid are included. Consequently, these data may not apply to the population as a whole.

Discussion

Reflections on the study

This analysis describes 12,882 female Medicaid enrollees' patterns of contraceptive use and experience with pregnancy in South Carolina. While these data reflect only services paid for by Medicaid, it adds insight into the prevalence of pregnancy among a cohort of Medicaid enrolled adolescents. The high proportion of the cohort who was pregnant prior to or during the study period supports the importance of understanding their experience with contraceptive methods.

More than half of the cohort members (58%) were pregnant as adolescents, either before or during the study period. This percentage is considerably higher than the population as a whole. Among all teens in the country, one in three becomes pregnant before the age 20 . An explanation for the higher proportion of pregnancies among cohort members may be that teens who were enrolled in Medicaid to receive family planning services were sexually active. In South Carolina during the time of this study, the Family Planning Waiver allowed females of reproductive age whose income was below 185% of the federal poverty level access to contraceptive services. It is also possible that a pregnancy precipitated Medicaid enrollment.

The higher rate of pregnancy may also be related to socioeconomic status. Qualifying for Medicaid is an indicator of poverty, and poverty may be associated with 'community disorganization' (i.e. hunger, violence, substance abuse). Community disorganization is a risk factor for sexual behaviors in teens . There was not a significant difference in the percentage of Blacks who were pregnant (46.3%) compared to Whites (47.0%). This is in stark contrast to the incidence of pregnancy by race in the population. In 2011, the SC teen birth rate was 50.7 per 1,000 for Blacks and 30.6 per 1,000 for Whites. In an analysis of data from the National Longitudinal Study of Adolescent Health, income and sexual experience among adolescents was found to have an inverse relationship. As incomes rose, adolescents were less likely to have had sexual intercourse. When examining this cohort of low income adolescents, the racial disparity in pregnancy rates is minimized. This finding suggests that being low income (a requirement for Medicaid enrollment) is an important risk factor for adolescent pregnancy.

Twenty-one percent of the cohort became pregnant for the first time during the study period; most of these women entered the cohort as

[12]The National Campaign to Prevent Teen and Unplanned Pregnancy. Fast Facts: How is the 3 in 10 statistic calculated?. February 2011. Retrieved on August 17, 2012 http://www.thenationalcampaign.org/resources/pdf/FastFacts_3in10.pdf
[13]Kirby, D. (2007). Emerging Answers 2007: Research Findings on Programs to Reduce Teen Pregnancy and Sexually Transmitted Diseases. Washington, DC: National Campaign to Prevent Teen and Unplanned Pregnancy.
[14]Blum, R. et al. The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. American Journal of Public Health. 2000; 90:1879-1884.

younger teens. Since cohort members were followed for varying lengths of time depending on their age at the start of the study period (2005), the first year of the study period was examined separately. During the first year of the study period, 46.4% were pregnant. A larger percentage of older youth became pregnant during the first year of the study compared to younger youth, which is typical of the population as a whole. In 2011, 18-19 year olds accounted for 72% of all births to 15-19 year olds in South Carolina.

During the course of the study period, which included at least one year of data on all cohort members and up to five years on members who entered the cohort at age 15, 91% received at least one method of birth control (including barrier methods) paid by Medicaid. In the national population of teens as a whole, 96% reported using a condom at least once and 55% reported they had used the pill at least once.[15]

When examining only those who never became pregnant (before or during the study period) compared to those who became pregnant for the first time during the study period (those with a pregnancy prior to the study period excluded), differences in contraceptive methods were apparent. Seventy-two percent of those without a method became pregnant for the first time during the study period. Among those who used a barrier method, 39% became pregnant for the first time during the study period. Among those whose most recently used Depo-Provera, 18% became pregnant for the first time. It is important to note that these figures do not represent a failure rate. These are simply the methods most recently received prior to a pregnancy diagnosis. Among those with a first pregnancy, the median length of time from last receiving the method and pregnancy was about eight months. Even this data raises more questions because it is unknown if some cohort members receiving the pill may have received a several month supply of pills. However, these data may indicate a lapse in receiving (and possibly using) a reliable method paid by Medicaid in the months prior to becoming pregnant. The length of time between a pregnancy diagnosis and the most recent family planning visit was even longer; the median time for Blacks was 359.5 days and 385.0 days for Whites. Given the small number of women who either became pregnant for the first time or were never pregnant who used IUDs and implants, the data on pregnancy is not reliable. Most of those who used IUDs and implants had a pregnancy prior to entering the study period. While there are clear differences in the most recent method used among those with a first pregnancy, it is important to note that information is not available about the use of these methods.

Judging by the first method of contraception received during the study period, the pill was the most common method received; 44% of those who received any contraceptive method were given the pill as their first method during the study period. The next most common method received was Depo-Provera – 22.3% - among those who received any method. Some differences emerged by race. Black cohort members were significantly ($p<.01$) more likely to have received Depo-Provera as their first method (25.6%) compared to Whites (16.9%). Whites were significantly more likely to have received the pill (52.7%) compared to Blacks (38.3%). A slightly higher percentage of Black cohort members did not receive any method (8.0%) compared to Whites (6.3%). In the population of teens and young adults (15-24 years old) as a whole, White women are more likely to report using the pill.

[15]Guttmacher Institute. In Brief Fact Sheet: Facts on American Teens' Sexual and Reproductive Health. February 2012. Accessed on August 17, 2012. http://www.guttmacher.org/pubs/FB-ATSRH.html
[16]Welti, K. Wildsmith, E., and Manlove, J. Trends and recent estimates: Contraceptive use among US teens and young adults.(2011) Child Trends. Retrieved on August 17, 2012 http://www.childtrends.org/Files/Child_Trends-2011_08_01_RB_ContraceptiveUse.pdf

Cohort members changed contraceptive methods, with increased changes among those in the cohort for longer periods of time. Among those who were only followed in the study period for one year, 15.2% changed methods an average of 1.2 times. It is important to note that these changes only include those who switch from one method paid by Medicaid to another method paid by Medicaid. There are likely many more who simply discontinued a method and did not initiate another method. Those who were followed for longer (due to the age at which they entered the study period) experienced more method changes. Sixty-three percent of those followed for the full five years of the study changed methods an average of 2 times. A higher percentage of Black cohort members changed methods (34.5%) compared to Whites (29.2%). Those who changed from one method to another method tended to move between similarly effective methods; only a small percentage of pill, patch, ring, and depo users switched to the most reliable methods, IUDs and implants. While there is limited information available in the population as a whole related to switching methods of contraception, data from the 1995 National Survey on Family Growth indicated that 61% of unmarried women of all ages changed birth control methods within two years . These method changes may indicate that cohort members are dissatisfied with their method and depending on the timing of the changes, may leave some cohort members unprotected against pregnancy. Increased counseling and education about contraceptive methods, including each one's relative benefits may help more women choose an appropriate method.

An important area to note is that among the small number of cohort members who used the IUDs, 22% discontinued use after an average of 237 days, about eight months. Most of those who had an IUD removed switched to another hormonal method, the most common being the pill. Twelve percent of those with an implant had it removed an average of 154 days, about five months after it was inserted and most switched to a shorter acting hormonal method.

A small proportion of the sample delivered a baby during the study period (n = 1,763). Contraceptive and family planning visits were examined for this subgroup. Seventy percent of those who delivered received a postnatal family planning visit an average of 91 days following the delivery. Nineteen percent of Blacks who delivered and 17.4% of Whites who delivered did not receive a birth control method paid by Medicaid during the study period. Among those who did receive a method, only a fraction received the most reliable methods (IUDs and implants). While it is not a direct comparison, the Pregnancy Risk Assessment Monitoring System (PRAMS) gives some context to these data. PRAMS is a survey self administered by a representative sample of South Carolina residents who gave birth. In 2010 PRAMS reported that 87% of 15-17 year olds and 89% of 18-19 year olds surveyed reported using a method of contraception following delivery.

[15]Guttmacher Institute. In Brief Fact Sheet: Facts on American Teens' Sexual and Reproductive Health. February 2012. Accessed on August 17, 2012. http://www.guttmacher.org/pubs/FB-ATSRH.html
[16]Welti, K. Wildsmith, E., and Manlove, J. Trends and recent estimates: Contraceptive use among US teens and young adults.(2011) Child Trends. Retrieved on August 17, 2012 http://www.childtrends.org/Files/Child_Trends-2011_08_01_RB_ContraceptiveUse.pdf

Recommendations

4 Ideas for the Future

1 **Target Medicaid Enrolled Adolescents for Pregnancy Prevention**: The data highlight several missed opportunities for intervention. The most striking is the higher level of pregnancy risk among adolescents enrolled in Medicaid. Medicaid enrolled adolescents are more likely than adolescents in the population as a whole to become pregnant. All providers who interact with Medicaid enrolled adolescents should note the importance of addressing pregnancy prevention, regardless of the primary reason for seeing a patient. In other words, contraceptive counseling and pregnancy prevention could be integrated into all medical services.

2 **Low Socioeconomic Status is an Important Risk Factor:** The comparable rates of pregnancy among Whites and Blacks highlight the role that socioeconomic status may play in adolescent pregnancy. Offering opportunities for health care access, education, evidence-based pregnancy prevention programs, and other youth development activities could be of particular benefit to low income adolescents.

3 **Encourage the use of IUDs and Implants:** Very few of the adolescents in this study used the most effective methods of contraception – IUDs and implants. While this may be due to recent changes in medical best practices, it is clear that Medicaid enrolled adolescents could benefit from reliable, long acting contraception. Even among those who delivered during the study period, IUDs were only given to 1.5% of Blacks and 4.3% of Whites. A surprisingly large percentage of women did not receive any method paid by Medicaid following delivery. Providers who work with Medicaid enrolled adolescents should be educated about the benefits of IUD and Implants for adolescents. Anecdotally, some providers appear to be reluctant to administer these methods to adolescents because of a perception that the adolescents will change their mind and request to have the method removed. Based on this report, only a small percentage of adolescents request removal and the average time from insertion to removal was 237 days for IUDs and 154 days for Implants.

4 **Better Contraceptive Counseling:** Method changes may indicate that adolescents are not satisfied with their contraceptive method. In addition to changing methods, it is likely adolescents are discontinuing a method altogether and/or allowing time to lapse between method changes. Many of the women who became pregnant had not received (through Medicaid) a contraception method for a long period of time, suggesting they were not using the method consistently. With increased contraceptive counseling, adolescents may be able to identify the best method for them and be more prepared to handle side effects. Increased counseling may also diminish the group who did not receive any method of contraception during the study period.

About the SC Campaign

SOUTH CAROLINA CAMPAIGN to PREVENT TEEN PREGNANCY

The South Carolina Campaign to Prevent Teen Pregnancy (SC Campaign) was founded in 1994 to combat increasingly high rates of teen pregnancy in our state. Today, we are nationally recognized as a thought leader and innovator among teen pregnancy prevention organizations.

The mission of the SC Campaign is to improve the health and economic well being of individuals, communities, and the state of South Carolina by preventing teen pregnancy. To achieve its mission, the SC Campaign reaches a variety of audiences - public, private, school and community-based - in each of the state's 46 counties.

Our objective is to build the capacity of local communities to address teen pregnancy within their own neighborhoods. Our dedicated staff instructs and assists community leaders who are helping teens make smarter decisions about reproductive health. We are transforming South Carolina by training youth serving professionals, initiating communication within families and advocating for grassroots programs that will educate and empower teens.

Because teen pregnancy is connected to other societal problems like poverty and education, prevention efforts have never been more crucial. Helping teens avoid pregnancy will increase available economic resources while giving South Carolina teens the bright future they deserve.

Contact Us...

A 1331 Elmwood Avenue, Suite 140, Columbia, SC 29201

T 803.771.7700 **E** campaign@teenpregnancysc.org

teenpregnancysc.org

/sccampaign

@SCCampaign