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3-2017

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Richard A. Crosby

University of Kentucky, [richard.crosby@uky.edu](mailto:richard.crosby@uky.edu)

Tom Collins

University of Kentucky, [tom.collins@uky.edu](mailto:tom.collins@uky.edu)

Lindsay R. Stradtman

University of Kentucky, [lindsay.stradtman@uky.edu](mailto:lindsay.stradtman@uky.edu)

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## Repository Citation

Crosby, Richard A.; Collins, Tom; and Stradtman, Lindsay R., "Promoting Teen Contraceptive Use by Intervention with Their Mothers" (2017). *Health, Behavior & Society Faculty Publications*. 12.

[https://uknowledge.uky.edu/healthbehavior\\_facpub/12](https://uknowledge.uky.edu/healthbehavior_facpub/12)

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**Notes/Citation Information**

Published in *American Journal of Preventive Medicine*, v. 52, issue 3, suppl. 3, p. S271-S274.

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**Digital Object Identifier (DOI)**

<https://doi.org/10.1016/j.amepre.2016.09.027>



## Promoting Teen Contraceptive Use by Intervention With Their Mothers

Richard A. Crosby, PhD,<sup>1,2,3</sup> Tom Collins, BS,<sup>4</sup> Lindsay R. Stradtman, MPH<sup>4</sup>

**Introduction:** The purpose of this pilot study was to test a community outreach model designed to help mothers in a rural, medically underserved area navigate their teen daughters to health department services for long-acting reversible contraception (LARC) or alternative contraception.

**Methods:** The pilot study used a single-group, post-test only design. Mothers of teen daughters (N=142) received a 1-hour, one-to-one intervention session (in outreach settings) from Community Liaisons. Mothers received training on how to communicate with their daughters about LARC and other contraceptive methods. Data were collected from June through October 2014, and analyzed in September 2015.

**Results:** The authors re-contacted 104 of 142 mothers enrolled in the study, achieving a 73.2% retention rate. Of these, 12.5% had daughters receiving LARC. An additional 11.0% had daughters with health department-verified initiation of birth control pills. Only one correlate—whether a mother believed her daughter was having sex—was associated with receiving either LARC or birth control pills. Among those indicating they knew their daughters were having sex, 31.7% of the daughters received LARC/birth control pills. By contrast, among mothers not indicating they knew their daughters were having sex, only 2.9% had daughters receiving LARC or birth control pills.

**Conclusions:** Findings suggest that an outreach-based program delivered directly to mothers of teen daughters may be a highly effective method for enhancing service utilization of LARC and the initiation of birth control pill use in a rural, medically underserved area.

*Am J Prev Med 2017;52(3S3):S271–S274. © 2016 American Journal of Preventive Medicine. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).*

### INTRODUCTION

Teen pregnancy in the U.S. is a long-standing public health crisis.<sup>1</sup> Because navigating sex and the corresponding social/emotional relationships is likely to overwhelm teens, the added challenge of using contraception is frequently neglected.

When teens give birth, they become less likely to attend college.<sup>2,3</sup> Nearly 20% of teen births are repeat births, and many receive no financial support from the child's father.<sup>2–5</sup> Their children have less supportive and stimulating environments, lower cognitive development, worse educational outcomes, higher rates of behavior problems, higher rates of incarceration, and higher rates of teen childbearing themselves.<sup>2,5</sup> In 2010, the cumulative cost of teen childbearing was \$9.4 billion.<sup>6</sup> Teen pregnancy rates are higher in impoverished areas.<sup>7</sup>

An evaluation of 28 teen pregnancy prevention programs found that only three reduced pregnancy.<sup>8</sup>

Past research suggests that improved intervention models should focus on three tenets: service delivery, a strong parental component, and the promotion of long-acting reversible contraception (LARC).<sup>8</sup> This pilot study tested a model addressing these tenets, with LARC being the most vital,<sup>9,10</sup> in a rural and medically underserved population.

From the <sup>1</sup>College of Public Health, University of Kentucky, Lexington, Kentucky; <sup>2</sup>Kinsey Institute for Research in Sex, Gender, and Reproduction, Bloomington, Indiana; <sup>3</sup>University of Mississippi Medical Center, Jackson, Mississippi; and <sup>4</sup>Rural Cancer Prevention Center, College of Public Health, University of Kentucky, Lexington, Kentucky

Address correspondence to: Richard A. Crosby, PhD, College of Public Health, 151 Washington Ave., Lexington, KY 40506-0003. E-mail: [crosbyr3@gmail.com](mailto:crosbyr3@gmail.com).

This article is part of a supplement issue titled Prevention Research Centers Program – 30th Anniversary: Translating Applied Public Health Research into Policy and Practice.

0749-3797/\$36.00

<http://dx.doi.org/10.1016/j.amepre.2016.09.027>

## METHODS

### Study Sample

Mothers (N=142) of teenage daughters aged 15–19 years residing in an eight-county catchment area were recruited. The intervention focused on enabling mothers to initiate conversations regarding contraception with their daughters. Community liaisons (CLs) were employed to teach mothers the requisite skills and motivate mothers to discuss LARC with their daughters. CLs provided navigation assistance.

The CLs were recruited from the catchment area and were also mothers/grandmothers of teenage daughters. Local health departments entered into a cooperative agreement to provide device implementation and aftercare for teens accepting LARC. Mothers were provided coupons for redemption of daughters' LARC. Costs of alternative methods were covered by the coupon. CLs conducted 1-month follow-ups with mothers to assess communication with daughters and uptake of LARC or other methods.

The CLs were identified by the authors' advisory board and included members of the Centers for Disease Control and Prevention-funded Prevention Research Center. Although CLs already have advanced knowledge of contraceptive use, additional training was provided by the second author. Each of seven CLs recruited two mothers from their social networks through word of mouth and phone calls. In turn, each of the initially recruited mothers were asked to further recruit two mothers using word of mouth, phone calls, or any method of contact. When a volunteer located another mother for study enrollment, the cell phone number of the CL was provided. The intervention period was May 2014 through September 2014. Inclusion criteria were (1) being a mother or female legal guardian of a female adolescent aged 15–19 years; (2) residing in the catchment area; and (3) English speaking. Women provided written informed consent and engaged in a structured interview with the CL. Subsequently, CLs delivered the intervention. Study procedures were approved by the Office of Research Integrity at the University of Kentucky.

Mothers received a 1-hour, face-to-face intervention from CLs. The essence of the intervention work performed by the CLs is embodied by the following operational guidance:

Lead mothers to understand the value of long-acting contraceptives for teens.

Engage mothers in discussions about protecting the “future” of their daughters.

Act as a resource of information about contraception.

Provide logistic support, including transportation and help completing paperwork, for mothers and daughters choosing to use LARC.

The CLs also served as “patient navigators” by helping mothers navigate the paperwork once arriving at the health department. Given the extreme poverty of the area, teens aged < 18 years were all eligible for free services (including LARC) and most of those aged ≥ 18 years were Medicaid eligible for LARC.

### Measures

Brief face-to-face interviews (Table 1 lists measures) were conducted with mothers to assess baseline and post-intervention level of various outcomes. At baseline, mothers were asked whether their daughters were having sex with male partners, if they had conversations with them about pregnancy prevention, and

whether their daughters were using birth control. Reasons for not talking to daughters about sex/pregnancy were also assessed.

When mothers were re-contacted (within 30–60 days), they were asked whether they had engaged in post-intervention sex-related discussions with daughters and whether daughters had subsequently received LARC or an alternate method. Mothers who reported not talking with daughters were offered additional “coaching.” Navigation services were offered to all mothers indicating daughters had not received LARC or an alternate method.

### Statistical Analysis

Associations between the measures shown in Table 1 and chart-recorded receipt of new contraceptive services were tested using contingency table analyses. Owing to the exploratory nature of this study, significance was set at  $p < 0.10$ . Data were collected from June through October 2014, and analyzed in September 2015.

## RESULTS

One hundred seventy-eight mothers screened eligible. Of these, 142 provided written informed consent, yielding 80% participation. Mean age was 41.9 (SD=7.3) years; the range was 31–68 years. All identified as white, except two identifying as black and one as “other race.” Most (51.9%) were currently married. Most (56.7%) had greater than high school education, and most (59.6%) were employed.

One hundred four mothers were successfully re-contacted, yielding a 73.2% retention rate. Of these, 12.5% had daughters receiving LARC. An additional 11.0% had daughters with health department-verified initiation of birth control pill use. Given the exploratory nature of this pilot study, these two groups were combined ( $n=23$ , 23.5%) for the analyses.

Mean ages of mothers did not differ between those girls who did (40.2 years) and did not (42.3 years) receive LARC or initiate pill use ( $t=1.29$ ,  $df=101$ ,  $p=0.20$ ). Table 1 displays the observed associations. Only one measure was significantly associated with the outcome of contraceptive use: whether women “knew” their daughters were having sex. Among those indicating *yes* to this question, 31.7% had daughters receiving LARC or initiating pill use. Among mothers not indicating they knew their daughters were having sex, only 2.9% had daughters receiving LARC/birth control pills.

## DISCUSSION

Findings support an outreach-based intervention program delivered to mothers of teen daughters. That 23.5% of the mothers had daughters with record-verified LARC implants or pill initiation is important. The cost savings for preventing pregnancy among these 23 young women could be as much as \$5,635,000 given the latest U.S.

**Table 1.** Bivariate Associations Between Dichotomous Correlates and Receipt of Contraception

Correlate	Percent receiving contraception	p-value
Mother is employed		
No (n=42)	21.0	
Yes (n=62)	23.8	0.73
Mother is married		
No (n=54)	24.1	
Yes (n=50)	20.0	0.62
Household income below \$25,000 annually		
No (n=46)	21.7	
Yes (n=57)	21.1	0.93
Mother had education beyond high school		
No (n=45)	15.6	
Yes (n=59)	27.1	0.16
Mother “knows” daughter is having sex		
No (n=35)	2.9	
Yes (n=63)	31.7	0.01
Mother educated daughter about sex and pregnancy prevention		
No (n=79)	22.8	
Yes (n=16)	25.0	0.85
Mother educated daughter about preventing STDs		
No (n=59)	25.4	
Yes (n=36)	19.4	0.50
Mother educated daughter about morality and sex		
No (n=88)	25.0	
Yes (n=7)	0.0	NA <sup>a</sup>
Daughter is currently dating a boyfriend		
No (n=88)	22.7	
Yes (n=7)	28.6	0.72

<sup>a</sup>As a result of empty cells in the contingency table, significance testing was not possible. STDs, sexually transmitted diseases.

Department of Agriculture estimates of \$245,000 for raising a child through age 18 years.<sup>11</sup> LARC is highly effective in preventing rapid repeat pregnancies.<sup>12</sup> Because multiple pregnancies are averted with LARC,<sup>13</sup> the potential for additional cost savings could be substantial. Because the intervention used to achieve these results is relatively simple and thus lends itself to high-quality dissemination in other rural areas, the cost savings could potentially be amplified throughout much of rural America. Also, the low resource requirements of the intervention enable its use in rural areas that may be experiencing a lack of funds dedicated to prevention services.

A key attribute of this intervention was absence of interaction with female teens. All elements of this project were achieved through interactions between CLs and mothers of teen daughters. This model has an inherent level of efficiency in that the mother–daughter relationship may create ample opportunity for future interactions that effectively allow mothers to become “intervention agents.” Findings suggest that one

important factor is having mothers become aware that their daughters are probably engaging in sexual intercourse. Findings suggest that intervention effects are robust with respect to the demographics of the mothers.

### Limitations

Findings are limited by the convenience sample. Generalization to other populations of underserved women is not possible given this rural Appalachian sample. Also, the loss of 27% to follow-up creates the possibility of attrition bias. The single largest limitation is the lack of an experimental design, as the absence of a comparison community precludes knowing whether the observed uptake of LARC and hormonal contraception would have occurred in the absence of intervention. This limitation is somewhat attenuated, however, by the point that intervening with mother’s as the intermediaries probably reached a population of female teens who may have otherwise delayed obtaining LARC/hormonal birth control or never obtained these forms of contraception. Finally, the small sample size created the

possibility of Type II errors. This is particularly applicable to the null association between the variable representing whether the mothers had more than a high school education and the uptake of their daughters' LARC or hormonal contraception use, as this null association nonetheless yielded a fairly substantial effect size difference of 11.5%.

## CONCLUSIONS

Findings suggest that a relatively simple model of outreach to mothers of teen daughters at risk of pregnancy may be highly effective.

## ACKNOWLEDGMENTS

This publication is a product of the Prevention Research Centers Program at the Centers for Disease Control and Prevention. The findings and conclusions in this publication are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention. Further, the views expressed do not necessarily reflect the official policies of DHHS, nor does the mention of trade names, commercial practices, or organizations imply endorsement by the U.S. government.

Funding for this research and the ensuing journal article is from the Centers for Disease Control and Prevention (Cooperative Agreement Number 1U48 DP005014).

No financial disclosures were reported by the authors of this paper.

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