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# Smoking Cessation Treatment for Low-Income Rural Pregnant Women and Expectant Fathers

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Promising Practices: Achieving Health and Social Equity in Tobacco Control  
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# Collaborators

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- ❑ NIH R01: NR05313  
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- ❑ American Cancer Society  
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(PI: K. Everett)



# Objectives

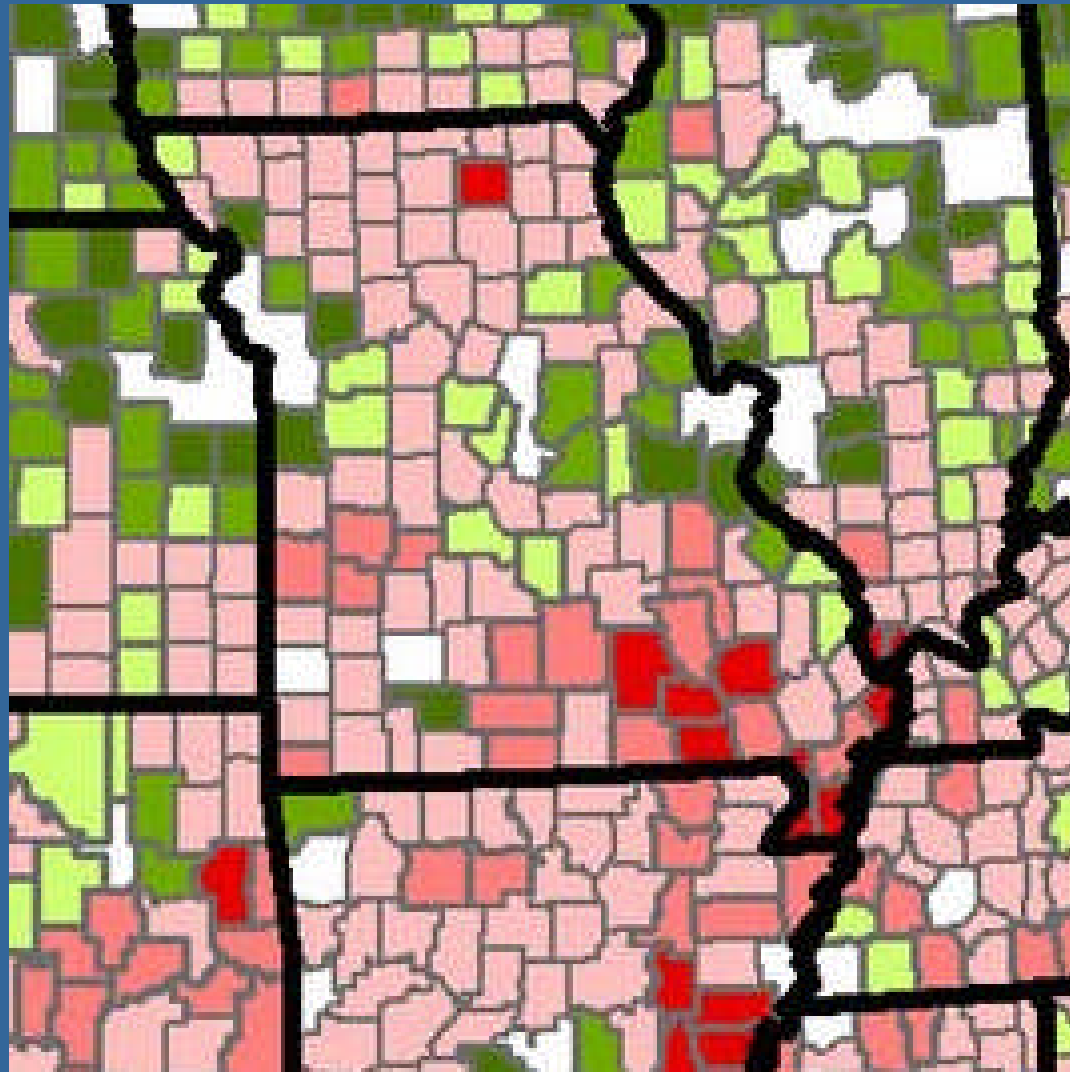
- Appreciate the unique challenges for conducting research with young adults in rural areas
- Discuss pregnancy as a teachable moment for behavior change and smoking cessation.
- Review summary data from a pilot clinical trial of smoking cessation targeting both pregnant women and expectant fathers.
- Discuss future research and program directions

# General Background: Smoking & Smoking During Pregnancy

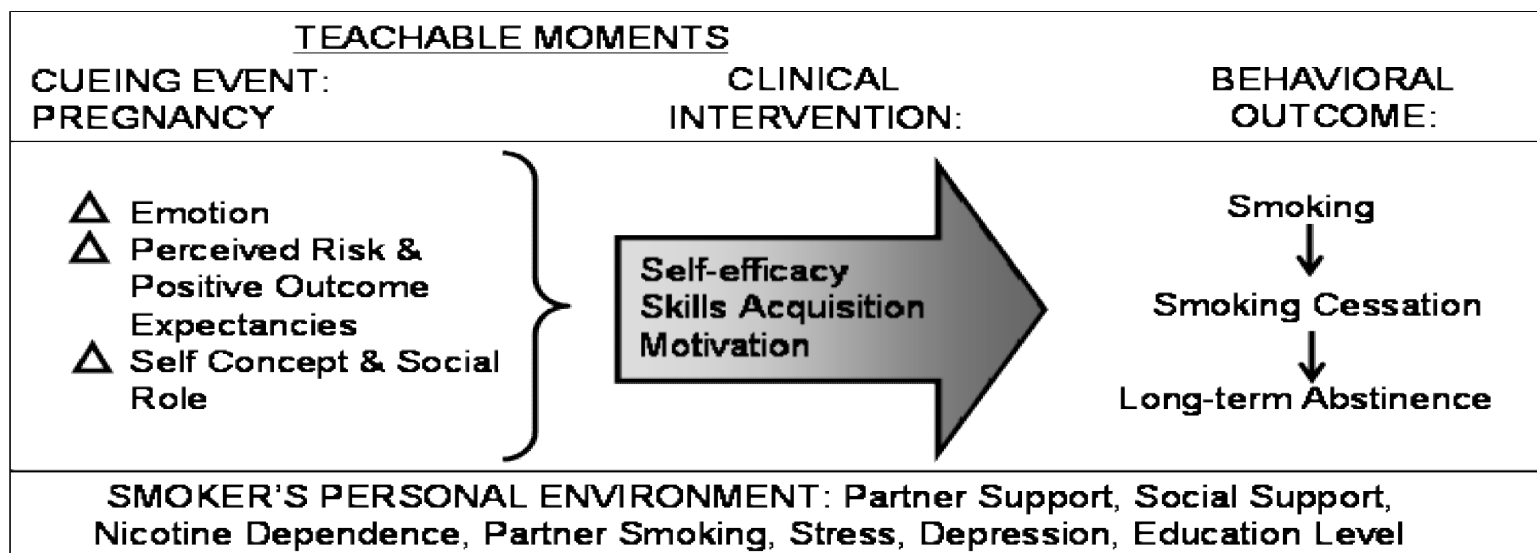
- Higher smoking rates for rural vs other populations
- Higher smoking rates in young adults (18-35) vs other adult age groups
- Primary risk factors for women smoking during pregnancy include a lower level of education and income, white race, unemployment, psychological co-morbidity (depression), high nicotine dependence, and having a partner who smokes.

# General Background: Smoking & Smoking During Pregnancy (cont'd)

- Pharmacotherapy (medication or NRT) has not been FDA approved to aid cessation for women who are pregnant.
- Research consistently demonstrates male partner's smoking status and level of support for pregnant partner cessation are highly predictive of a her willingness to try to quit, sustain abstinence, or relapse after initial cessation.
- Expectant fathers are rarely a focus of any intervention during prenatal care or pregnancy research.



# Pregnancy as a teachable moment for smoking cessation



McBride CM, Emmons KM, Lipkus IM. Understanding the potential of teachable moments: the case of smoking cessation. *Health Educ Res.* 2003;18(2):156-170.

# Background: Addressing Smoking of Rural Women and Men During Pregnancy

## PREGNANCY SMOKING CESSATION WITH LOW INCOME RURAL WOMEN

- Bullock, L, Everett, KD, Geden, E, Longo, DR, Dolan-Mullen, P, Madsen, R. (2009). Baby BEEP: A Randomized Controlled Trial of Nurses' Individualized Social Support for Poor Rural Pregnant Smokers. Maternal & Child Health. 13(3):395-406

## HEALTH-RISK BEHAVIORS OF EXPECTANT FATHERS

- Everett, KD, Gage, JD, Bullock, L, Geden, E, Longo, D, Madsen, R. (2005). Smoking and associated behaviors of low-income expectant fathers. Nicotine and Tobacco Research, 7, 269-276
- Everett, KD, Gage, JD, Bullock, L, Longo, D, Geden, E, Madsen, R (2006). Health risk behavior of rural low-income expectant fathers. Public Health Nursing, 23, 297-307.
- Everett, KD, Bullock L, Gage, J, Longo, DR, Madsen, R. (2007). Men's tobacco and alcohol use during and after pregnancy. American Journal of Men's Health, 1, 317-325.
- Gage, J, Everett, KD, Bullock, L. (2007) A review of research literature addressing male partners and smoking during pregnancy. Journal of Obstetrics, Gynecologic, and Neonatal Nursing, 36, 574-580.

# Baby BEEP: A Randomized Controlled Trial of Nurses' Individualized Social Support for Poor Rural Pregnant Smokers

- Enrolled 695 pregnant women who smoked
- Randomized to 4 treatment conditions
- Cessation rates at 6 weeks post partum:
  - Social support + Booklets = 12.4%
  - Social support = 11.4%
  - Booklets = 13.5%
  - Usual care = 13.3%
- Saliva cotinine collected monthly
- 93.5% retention
- Bullock, L, Everett, KD, Geden, E, Longo, DR, Dolan-Mullen, P, Madsen, R. (2009). Baby BEEP: A Randomized Controlled Trial of Nurses' Individualized Social Support for Poor Rural Pregnant Smokers. Maternal & Child Health. 13(3):395-406

# Baby BEEP: A Randomized Controlled Trial of Nurses' Individualized Social Support for Poor Rural Pregnant Smokers

**Table 6** For women with a partner at T3: the influence of the male partner's smoking behavior on her behavior after delivery (n = 396)

	Quitter	Intervention								All	
		Social support plus booklets		Social support alone		Control group		Booklets alone		N	%
		N	%	N	%	N	%	N	%		
Partner doesn't smoke	No	14	77.78	23	79.31	10	58.82	17	68.00	64	71.91
	Yes	4	22.22	6	20.69	7	41.18	8	32.00	25	<u>28.09</u>
	Total	18	100	29	100	17	100	25	100	89	100
Partner smokes	No	69	87.34	64	90.14	68	89.47	72	88.89	273	88.93
	Yes	10	12.66	7	9.86	8	10.53	9	11.11	34	<u>11.07</u>
	Total	79	100	71	100	76	100	81	100	307	100

Odds ratio 3.2 (95% CI 1.8, 5.9)  $P = 0.0001$

# Health-risk Behaviors of Expectant Fathers

Telephone interview (N=138) during pregnancy and postpartum (N=96).

- **49.3% smoked cigarettes**; 30% engaged in past month hazardous drinking; 27.5% had very low physical activity levels; 94.9% had at-risk fruit/vegetable intake; 42% had weight-related health risk (25.4% met Body Mass Index (BMI) criteria for obesity).
- Current daily smokers: 19.8 cigarettes per day on average (*Std Dev* = 11.03).
  - Smoking associated with: lower level of education ( $p < .0001$ ), pregnant partner being a current smoker ( $p = .0002$ ), drinking a higher quantity of alcohol ( $p = .0003$ ), and absence of smoking prohibitions inside the home ( $p < .0001$ ).
- **Of women reported to continue smoking during pregnancy, 78% had partners who smoked.**
- Expectant fathers' readiness to quit smoking:
  - 24% were not considering quitting,
  - 57% were considering quitting in the next six months (during the pregnancy),
  - 19% were considering quitting within the next month.
- **Only 39% reported receiving advice in the past year from a health professional to quit smoking**

# Health Risk Behaviors of Expectant Fathers (cont'd)

- Men's smoking did not change significantly from pregnancy (46.9%) to postpartum (45.8%).
- Non-smoking status of men was significantly related to their pregnant partners having quit smoking during pregnancy and remaining abstinent at postpartum ( $p = .019$ ).
- Household prohibition from indoor smoking increased from 62.5% at pregnancy to 76% postpartum ( $p = .009$ ).
- **76% of men attended at least three prenatal appointments**, and all men were present for the birth of their child.

# American Cancer Society: Project HOPE

- A randomized clinical trial providing cessation treatment during pregnancy to women and men who smoke.
- Participants: low-income adults from primarily rural areas in Mid-Missouri referred from a Medicaid managed care health plan and 16 area WIC clinics.
- Treatment conditions:
  - Motivational Support: Telephone counseling + Self-help education materials + Clinical care
  - Usual Care: Self-help education materials + clinical care

# Methods

- Recruitment: (1) Potential participants are referred to the project by a Medicaid managed care health plan in mid-Missouri after routine screening determines smoking status; (2) Project staff screen individuals for eligibility by telephone; (3) Appointments are made to enroll potential participants, obtain informed consent and collect baseline data; (4) Participants are randomly assigned to treatment condition
- Eligibility criteria: (1) 18 years old or older; (2) Living together with partner; (3) Access to a telephone; (4) English speaking; (5) No current alcohol or drug dependence.

# Demographic Variables of Sample

	Expectant Fathers (n=100)	Pregnant Women (n=122)
Age in years	26.6 (18 - 43)	23.8 (18 - 39)
Married	54%	41.8%
First child	42%	34.4%
Race: Caucasian	86%	91.8%
African American	8%	3.3%
Other	6%	4.9%
Education: < HS	27%	31.1%
HS grad or GED	44%	38.5%
Some college	28%	28.7%
College grad	1%	1.6%
Employed	83%	50.0%

# Smoking Cessation Outcome

- No differences found between treatment groups (Motivational Support vs Usual Care/Self Help) on the primary outcome of smoking cessation in either men or women.
- Combining treatment groups, we found women quit at 14.8% and men at 5.0% by the end of pregnancy; 11.5% vs. 4.0% at 6-weeks post-partum, and 6.6% and 5.0% at 6-months postpartum.

# Readiness to Quit Smoking

	Expectant Fathers (n=96)	Pregnant Women (N=110)
Within next 2 weeks	11.5%	16.4%
Within next month	13.5%	18.2%
During the pregnancy	32.3%	47.3%
During Next 6 Months	24.0%	12.7%
Not thinking about quitting	18.7%	5.4%

# Smoking Behavior Variables

	Expectant Fathers	Pregnant Women	<i>p</i> value
Avg # Cigarettes/Day	17.1 (2 - 40)	11.5 (1 - 40)	<.0001
Length of time smoking	11.3 yrs (2 -30)	8.8 yrs (1 -20)	.002
Age become regular smoker	15.5 yrs (7 -33)	15.2 (10 -35)	ns
Quit attempts past year % making quit attempt	1.9 (0 – 35) 55.0%	1.7 (0 -15) 58.2%	ns
Past year quit advice from nurse/doctor	46.4	81.4%	<.0001

# Smoking Behavior Variables

	Expectant Fathers (n=100)	Pregnant Women (N=122)	<i>p</i> value
Average Fagerstrom Score	6.3	4.8	
% scoring 7 or >	44.8%	20.7%	.0003
Rating importance to quit	7.9 (1 -10)	8.8 (4 -10)	ns
Rating confidence to quit	6.0 (1 -10)	5.2 (1 -10)	.004
Partner Interaction Questionnaire – Negative	16.7 (0 – 38)	13.7 (0 – 40)	.03
Partner Interaction Questionnaire – Positive	21.5 (0 -40)	23.0 (0 – 40)	ns
Partner current smoker	64%	79%	.0006

# Psychosocial Variables

	Expectant Fathers	Pregnant Women	p value
PPP – Stress Score	20.8 (12–33)	20.8 (12- 34)	ns
PPP - Soc Support (Partner) Score	51.8 (19–66)	52.9 (11- 66)	ns
PPP - Soc Support (Others) Score	41.9 (11- 66)	44.9 (11- 66)	.03
PPP – Esteem Score	34.6 (11- 44)	34.4 (15- 44)	ns
CESD – Depression Score	14.6 (2 – 49)	18.2 (2 - 50)	.004

# Prenatal Psychosocial Profile (PPP)

## STRESS

- Financial worries (e.g., food, shelter, health care, transportation)
- Other money worries (e.g., bills, etc...)
- Problems related to family (e.g., partner, children, etc.)
- Having to move, either recently or in the future
- Recent loss of loved one (e.g., death, divorce, long distance)
- Current pregnancy
- Current abuse (e.g., sexual, emotional or physical)
- Problems with alcohol and/or drugs
- Work problems (e.g., being laid off, etc...)
- Problems related to friends
- Feeling generally "overloaded"

## SUPPORT (Partner; Others)

- Shares similar experience with me
- Helps keep up my morale
- Helps me out when I'm in a pinch
- Shows interest in my daily activities and problems
- Goes out of the way to do special or thoughtful things for me
- Allows me to talk about things that are very personal and private
- Lets me know I am appreciated for the things I do for him
- Tolerates my ups and downs and unusual behaviors
- Takes me seriously when I have concerns
- Says things that make my situation clear and easier to understand
- Lets me know that he/she will be around if I need assistance

# Unique Perspectives of Pregnancy

- Factor Analyses of the PPP of 66 couples
- Stress: Financial stressors; Emotional stressors
- Support: Tangible support; Emotional support
- Self-Esteem: Self-criticism; Self-worth
- For the PPP-stress subscale, “problems related to family,” “the current pregnancy” and “feeling generally overloaded” loaded as financial stressors for men but as emotional stressors for women.
- For the PPP-partner support subscale, women perceived they were receiving more tangible support from their partners whereas men perceived receiving more emotional support. The PPP-support from others subscale was similar for both partners.
- The self-worth factor more explained the variance in self-esteem among pregnant women, while the self-criticism factor more explained the variance among men.

# Discussion of Findings

- This sample of low income rural men and women have challenging tobacco use profiles for smoking cessation.
- With regard to the men, they smoke more, have less readiness to quit and greater nicotine dependence compared to women.
- The PIQ measuring support for quitting smoking found no gender differences in perceived positive interactions, but men perceived significantly higher negative interactions than women.
- Both women and men rate their stress levels similarly and relatively high. Women report higher levels of depression symptoms compared to men.
- In couples – pregnancy stressors and support type of support are likely viewed differently

# Future Directions

- Monitoring of behavior appears to improve retention in research studies and may serve as an important treatment intervention treatment.
- Men may benefit from NRT or medication to increase success of their quit attempts.
- A better understanding of how young couples, who live in a shared world and environment, address behavior change is needed.
- Strategies to reduce negative interactions will be important.

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# Questions/Correspondence

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