

# Women's Cancer Screening Services Utilization Versus Their Insurance Source

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# Introduction(1)

- Cancer burden: \$1.3 billion in 1963; \$ 74 billions in 2005 ( CDC, 2006)
- Indirect cost: morbidity and mortality cost
- Breast cancer medical cost: \$7 billion per year ( CDC, 2005)
- Cervical cancer medical cost: \$2 billion per year (CDC, 2005)

# Introduction (2)

- Mammogram can reduce mortality by approximately 20% - 25% during a period of 10 years
- Pap test is effective in detecting cervical cancer
- Clinical breast examination: Additional benefit to mammogram

# Background (1)

- HealthyPeople 2010: (1) increase the proportion of women who receive a pap test to 97%, (2) increase the proportion of women aged 40 years and older who have received a mammogram within the preceding 2 years
- NBCCEDP: provides free or low charge services to women for breast and cervical screening

## Background (2)

- Breast cancer remained the top leading cause of cancer mortality among women ( CDC, 2003)
- Association between cancer mortality and SES (Augustson et al., 2003; O'Malley et al.; 2002)
- Appropriate screening improved early detection of breast cancer condition and treatment response rate ( Berry, 2005)
- Protective benefit of frequent pap testing ( Sawaya, 2003)
- Protective effects of combined mamogram and other breast cancer screening tests ( Walter et al., 2005)

# Shortcomings in previous studies

- No clear picture of the impact of health insurance categories on breast and cervical cancer screening

# Objectives of the study

- Investigate the variations in mammography, pap test and CBE utilization by insurance status among female population
- Further discuss multiple factors of cancer disparity among women

# Hypothesis

- (H1): the uninsured female have lowest utilization rate of pap test, mammography and clinical breast exam, as compare to other health insurance groups
- (H2): There is variation in utilization rate among publicly funded health insurance programs, which includes Medicaid, Medicare and others
- (H3): Those in private plans are more likely to use the screening services than any others



# Data source and analysis

- 2000 BRFSS
- N= 109,680
- IRB approval
- Multivariate logistic regression performed by SAS- callable SUDAAN ( Research Triangle Institute, NC)

# Study variables

- **Dependent variables**: receipt of pap test ( annually), Pap test (1-3 years interval), mammogram (1-2 years interval), CBE ( annually)
- **Independent variables**: private, Medicare, Medicaid, other public and uninsured
- **Control**: age, education, employment, income, & race/ethnicity

# Results(1)

## Exhibit 1: Characteristics of sampled adult women in the 2000BRFSS

Demographics	Unweighted sampled Women, n=109,680		Weighted U.S female Population estimate, n=107,592,572	
	n	%	n	
<b>Age</b>				
<b>18-24</b>	9,135	11.83	12,635,570	
25-44	43,176	38.44	41,070,910	
45	34,352	29.80	31,839,433	
≥65	22,174	19.94	21,306,045	
<b>Insurance status</b>				
Private	63,440	60.95	62,360,128	
Medicare	24,789	22.82	23,352,350	
Medicaid	4,906	4.22	4,316,493	
Other Public	1,395	1.23	1,263,066	
Uninsured	10,122	10.78	11,029,421	

# Results(2)

**Exhibit 2: Sociodemographic characteristics of sampled women, by insurance status, 2000BRFSS (n=109,680)**

<b>Characteristics</b>	<b>Private %</b>	<b>Medicare %</b>	<b>Medicaid %</b>	<b>Other public %</b>	<b>Uninsured %</b>
<b>Age*</b>					
<65	98.62	15.59	97.23	98.89	99.12
≥65	1.38	84.41	2.77	1.11	0.88
<b>Education*</b>					
< high school	5.41	22.31	33.92	6.91	12.83
High school	28.43	37.77	39.13	32.35	32.02
College education	31.42	23.74	22.80	33.63	24.46
College graduate	34.75	16.17	4.15	27.12	10.93

# Results(3)

**Exhibit 3: Receipt of Cancer Screening by Insurance Status, 200BRFSS**

<b>Insurance Status</b>	<b>Pap Test (annually) %</b>	<b>Pap Test (1-3 year interval) %</b>	<b>Mammography (1-2 year interval) %</b>	<b>Clinical Breast Exam (annually) %</b>
Private	77.15	92.76	86.11	80.27
Medicare	55.75	75.36	86.81	75.38
Medicaid	78.23	92.55	81.20	78.29
Other Public	78.95	95.07	87.07	84.58
Uninsured	57.55	58.74	65.24	58.15
<b>P-value</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>

# Results(4)

**Exhibit 6: Screening Variation by insurance, 2000 BRFSS**

Demographics	Pap Test (Annually)		Pap Test (1-3 year interval)		Mammography (1-2 year interval)		Clinical Breast Exam (Annually)	
	AOR	95% CI	AOR	95 % CI	AOR	95% CI	AOR	95% CI
	<b>Insurance status</b>							
Private	Ref		Ref		Ref		Ref	
Medicare	0.92	(0.79-1.07)	0.81	(0.65- 1.02)	0.82	(0.61- 1.10)	1.01	(0.79- 1.28)
Medicaid	1.20	(1.01- 1.42)	1.39	(1.09- 1.77)	0.71	(0.43- 1.16)	1.01	(0.71- 1.43)
Other Public	1.27	(0.98- 1.64)	1.54	(1.05- 2.26)	0.98	(0.43- 2.25)	1.85	(0.71- 121)
Uninsured	0.45	(0.41- 0.51)	0.47	(0.41- 0.55)	0.24	(0.19- 0.30)	0.39	(0.32- 0.47)

# Discussion (1)

- No significant difference of the receipt of screening between private and Medicare
- Medicaid beneficiaries are more likely to receive pap tests than the private and the uninsured
- Other public are more likely to report the receipt of pap test ( at least every 3 years) than the private, the Medicaid and the uninsured
- The uninsured are less likely to receive cancer screening as compare to private

## Discussion (2)

- College graduate and the employed are highly likely to receive cancer screening
- Income is significant determinant of cancer screening
- Interestingly, black (2000BRFSS) reported a higher cancer screening utilization than white



# Policy implications

- More concentration on preventive services, particularly cancer screening, in private health plan
- NBCCEDP needs to extend its services to cover more the uninsured and the underserved women

# Limitations

- Self-reported survey
- National telephone survey
- Age group
- Cross-sectional survey design

# Further research

- Adherence to cancer screening recommended by primary care physicians and specialists
- Variation in cancer screening by geographical differences

Questions/ comments?

Thank you!!!