What makes a smoker call it quits after a myocardial infarction

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Agenda

- Background
- Significance
- Hypothesis
- Methodology
- Results
- Conclusion
- Clinical Researcher vs. Public health professional
- Question & Answer
Background

Smoking is a risk factor for

- Acute myocardial infarction (MI)
- Coronary heart disease
- 90% of an initial acute MI
Background

- Smoking after myocardial infarction (MI) increases
  - Mortality
  - Myocardial oxygen demand
  - Risk of thrombosis
  - 50% increase in risk for re-infarction

- Smoking cessation after MI
  - Reduces the likelihood of readmission to hospital
  - Reduces mortality up to 50%
Significance

- Only one third to one half of smokers quit smoking after MI
- Smoking cessation after MI may be more effective in reducing mortality rates than therapy with aspirin, beta blockers, or angiotensin-converting enzyme inhibitors
Significance

- Smoking cessation counseling has been embraced as a performance measure of healthcare quality by
  - American Heart Association (AHA)
  - American College of Cardiology (ACC)
  - Joint Commission on the Accreditation of Hospital Organizations (JCAHO)

- JCAHO. Overview of the acute myocardial infarction (AMI) core measure set Joint Commission on Accreditation of Healthcare Organizations 2002:8-10.
Hypothesis

Smoking cessation programs and referral to cardiac rehabilitation may be associated with smoking cessation after MI.
Methods

Study Population

- Prospective multicenter study
  - Prospective Registry Evaluating outcomes after Myocardial Infarction: Events and Recovery (PREMIER)
  
- Admitted with acute MI to 19 US centers during Jan 2003-June 2004
Inclusion Criteria

- Patients > 18 years of age
- Elevated cardiac enzymes/biomarkers within 24 hours of arrival to hospital
- Other clinical evidence of MI (symptoms, ECG changes)
Exclusion Criteria

- Transferred from another facility >24 hrs after presentation
- Inability to provide informed consent
- Non-English/Spanish spoken language
- Already enrolled in PREMIER
- Prisoners
- Receiving hospice care
Patient Assessment

- Interview during MI hospitalization
- Medical Records after discharge
- Follow-up interview by phone at 6 months by a national follow-up center
Study Measures

- Information obtained during interview:
  - Smoking behavior
  - Economic burden
  - Social support was assessed by the ENRICHED (Enhancing Recovery in Coronary Heart Disease)
  - Depressive symptoms by means of the 9-question Primary Care Evaluation of Mental disorders Brief Patient Health Questionnaire (PHQ).
Study Measures

- Information obtained by chart abstraction:
  - medical history
  - clinical status
  - individual smoking cessation counseling
  - referral to cardiac rehabilitation
  - hospital treatments
  - discharge recommendations

- Information on availability of a smoking cessation program at the admitting hospital obtained through a site survey
Smoking Behavior

- Smoking behavior assessed by self report
- Smoking behavior questions recommended by
  - Behavioral risk factor surveillance system (BRFSS)
  - Society for research on nicotine and tobacco (SRNT)
  - Question inventory on tobacco (QIT)
- Have been validated in previous research
Study Measures-cont.

Outcome variable:
Smoking cessation after 6 months

- Patients classified as
  - having quit if not smoked even a puff within the past 30 days
  - continued to smoke if they had a puff in the past 30 days
Patient Population

PREMIER
n = 2498

\{ n = 834 \}

\{ n = 808 \}

Exclusions:
26 deaths

Smokers at baseline

Smokers at baseline

Smokers for analyses

169 missing 6 month follow-up smoking data
Analysis

- Baseline patient characteristics compared between patients who quit and continued to smoke using T-tests & Fisher exact tests

- Variables that had a statistically significant association in bivariate analysis, included in the final model

- Multivariable, hierarchical logistic regression modeling
Factors Controlled For

- Site
- Demographic factors (race, marital status, education)
- Alcohol/cocaine abuse
- Depression
- Medical history
  - HTN
  - Hypercholesterolemia
  - Angina, MI, CABG, PCI
  - Lung disease
- Clinical status on admission (CHF, renal failure)
- Quality performance measures
Results

- Thirty-four percent (n=836) were smokers at the time of hospitalization.

- Only 297 (46%) patients quit smoking at 6 months after MI.
Baseline characteristics between patients who continued to smoke and those who quit at 6 months after myocardial infarction

<table>
<thead>
<tr>
<th>Baseline characteristic</th>
<th>Continued n = 342</th>
<th>Quit n = 297</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>163 (48.4%)</td>
<td>194 (65.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Economic burden</td>
<td>94 (27.9%)</td>
<td>64 (21.7%)</td>
<td>0.073</td>
</tr>
<tr>
<td>Income, &lt; $10,000</td>
<td>61 (23.8%)</td>
<td>29 (13.0%)</td>
<td>0.002</td>
</tr>
<tr>
<td>ENRICHD social support score</td>
<td>28.0 ± 6.3</td>
<td>29.4 ± 6.0</td>
<td>0.007</td>
</tr>
<tr>
<td>Depression present (PHQ&gt;= 10)</td>
<td>102 (30.9%)</td>
<td>51 (17.9%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>History of alcohol abuse</td>
<td>79 (23.1%)</td>
<td>40 (13.5%)</td>
<td>0.002</td>
</tr>
<tr>
<td>History of cocaine use</td>
<td>37 (10.8%)</td>
<td>6 (2.0%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Prior myocardial infarction</td>
<td>68 (19.9%)</td>
<td>35 (11.8%)</td>
<td>0.005</td>
</tr>
<tr>
<td>Prior percutaneous coronary intervention</td>
<td>56 (16.4%)</td>
<td>30 (10.1%)</td>
<td>0.02</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>33 (9.6%)</td>
<td>8 (2.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Availability of smoking cessation program at the admitting hospital</td>
<td>191 (55.8%)</td>
<td>204 (68.7%)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Baseline characteristics between patients who continued to smoke and those who quit at 6 months after myocardial infarction

<table>
<thead>
<tr>
<th>Quality performance measures</th>
<th>Continued n = 342</th>
<th>Quit n = 297</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt instructions: cardiac rehabilitation</td>
<td>161 (47.1%)</td>
<td>187 (63.0%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Pt instructions: diet counseling</td>
<td>268 (78.4%)</td>
<td>236 (79.5%)</td>
<td>0.734</td>
</tr>
<tr>
<td>Pt instructions: exercise counseling</td>
<td>164 (48.0%)</td>
<td>144 (48.5%)</td>
<td>0.893</td>
</tr>
<tr>
<td>Pt instructions: individual smoking cessation counseling</td>
<td>247 (72.2%)</td>
<td>224 (75.4%)</td>
<td>0.36</td>
</tr>
</tbody>
</table>

Smoking status at 6 month
Results

- Smoking cessation was not related to:
  - Age
  - Gender
  - Education
  - Average number of cigarettes smoked per day
  - Length of smoking history
  - Co morbidities (chronic lung disease, chronic renal failure, and diabetes)
Multivariable analysis for smoking cessation at 6 months after myocardial infarction

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (per 10 yr increment)</td>
<td>1.00 (0.83, 1.19)</td>
</tr>
<tr>
<td>Caucasian vs. not</td>
<td>0.78 (0.48, 1.26)</td>
</tr>
<tr>
<td>Male vs. Female</td>
<td>0.83 (0.55, 1.25)</td>
</tr>
<tr>
<td>Married vs. not</td>
<td>1.48 (0.96, 2.26)</td>
</tr>
<tr>
<td>Economic burden</td>
<td>1.02 (0.65, 1.60)</td>
</tr>
<tr>
<td>History of alcohol abuse</td>
<td>0.71 (0.42, 1.18)</td>
</tr>
<tr>
<td>History of cocaine abuse</td>
<td>0.26 (0.09, 0.75)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.92 (0.57, 1.49)</td>
</tr>
<tr>
<td>Lung disease</td>
<td>0.88 (0.47, 1.64)</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>0.51 (0.20, 1.31)</td>
</tr>
<tr>
<td>Prior myocardial infarction</td>
<td>0.77 (0.41, 1.44)</td>
</tr>
<tr>
<td>Prior percutaneous coronary intervention</td>
<td>0.88 (0.46, 1.68)</td>
</tr>
<tr>
<td>Prior coronary artery bypass graft</td>
<td>1.19 (0.57, 2.48)</td>
</tr>
<tr>
<td>ST elevation myocardial infarction</td>
<td>1.17 (0.80, 1.73)</td>
</tr>
<tr>
<td>PHQ depression score&gt;10</td>
<td>0.57 (0.36, 0.90)</td>
</tr>
<tr>
<td>Social support (per score increment)</td>
<td>1.01 (0.97, 1.04)</td>
</tr>
<tr>
<td>Referral to cardiac rehabilitation</td>
<td>1.80 (1.17, 2.75)</td>
</tr>
<tr>
<td>Individual smoking cessation counseling</td>
<td>0.80 (0.51, 1.25)</td>
</tr>
<tr>
<td>Smoking cessation program at hospital</td>
<td>1.71 (1.03, 2.83)</td>
</tr>
</tbody>
</table>

Odds Ratio for 6 Month Smoking Cessation

<<< Less Likely to Quit >>>

More Likely to Quit >>>>
Conclusions

- Smoking cessation rates remain low after MI

- Individual smoking cessation counseling during the MI hospitalization, as documented in the chart, is not associated with smoking cessation post-MI

- Availability of hospital-based smoking cessation programs in the admitting facility and referral to cardiac rehabilitation is associated with increased smoking cessation rates
Conclusions

- Negative predictors of smoking cessation:
  - Depression
  - History of cocaine abuse
Limitations

- Limited insights about the types of inpatient smoking cessation programs available
- Loss to follow-up
  However, there was no difference in our findings when adjusting for patient characteristics associated with loss to follow-up
- Smoking status was self-reported using interviewer-administered questionnaires
Clinical Implications

- Hospital-based smoking cessation programs, as well as referral to cardiac rehabilitation, were strongly associated with increased smoking cessation rates.
- Such programs appear under-utilized in current clinical practice and may be a valuable structural measure of healthcare quality.
- Smoking cessation programs should incorporate screening for and treating depressive disorders.
Three buddies were talking about death and dying. One asked, "When you're in your casket and friends and family are mourning you, what would you like to hear them say about you?"

The first guy says, "I would like to hear them say that I was a great doctor of my time and a great family man."

The second man says, "I would like to hear that I was a wonderful husband and school teacher who made a huge difference in our children of tomorrow."

The last guy says, "I would like to hear them say ------------------------------- !!!!"
Wearing a public health hat
Restrict tobacco use in public places

- Georgia Smoke free Air Act of 2005
- Need for county and city ordinance
Mass Media Campaigns

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4,000 CHEMICALS AT WORK WEAR
THE SAME PROTECTIVE EQUIPMENT.

AN APRON.

SECONDHAND SMOKE KILLS.
New York State restaurants and bars are smoke-free beginning July 21, 2003.
For more information, please call 607-937-9922 or your local health department or visit www.smokefree.org.

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DON’T LET MINORS BUY TOBACCO. IT’S THE LAW.

Break the chain of tobacco addiction. Keep tobacco out of the hands of America’s youth. It’s the right thing to do.

For tools and tips: www.tdah.gov/BreakTheChain
Increase Excise Tax on all Tobacco Products

Support Increasing the Tobacco Tax

ALL FOR $1
It's a WIN-WIN-WIN
HEALTH STATE BUDGETS POLICY MAKERS
FOR GEORGIA
School-based Interventions

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TO OUR TOBACCO FREE SCHOOL

SCHOOL POLICY PROHIBITS THE USE OF ALL TOBACCO PRODUCTS EVERYWHERE, BY EVERYONE, 24 HOURS PER DAY, SEVEN DAYS PER WEEK

THANK YOU FOR YOUR COOPERATION!
How you can help?

• Receiving training on policy advocacy
• GET INVOLVED - Mobilize youth and adults to advocate for model policy
• Assist in the enforcement of the model policy
• Celebrate youth who are attempting to quit
• Celebrate youth and adults who are tobacco-free
• Educate your community by developing an earned and paid education campaign
My thoughts

Combine clinical and public health talents
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References:

Thank You

Questions/Suggestions

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