Smoking, weight and outcomes in quitline research
Terry Bush, Laura Beebe, Michele Levine, Clarissa Hsu
NAQC 2012 conference in Kansas
Purpose of Today's Presentation

- Summarize the literature on smoking, obesity, weight gain and cessation
- Present quitline based studies on weight and tobacco use
- Hear perspectives from a state partner
- Discuss challenges in researching the topic
- Invite questions and discussion
Part I: Results from 5 quitline studies

Terry Bush
What we know from the literature

- The average smoker gains 8-15 pounds after quitting
- Concern about weight gain after quitting is common

Fear of weight gain can:
- lead to smokers not attempting to quit
- hinder adherence to cessation programs
- lead to early relapse

Even higher among quitlines callers…

- 50% of women
- 26% of men
Co-occurring obesity & smoking is common
Obese smokers have:

- Reasons for these poor outcomes are unclear
- Virtually no information exists on the relationship between tobacco use, treatment, obesity and cessation related weight gain in quitlines
The Obesity Epidemic

Over 9 million adults are obese and smoke.

Each is costly; combined they are even more deadly.

Weight gain following cessation can increase incidence of diabetes and hypertension.
Combined Interventions: Tobacco and weight

Combined Treatments = Diet, exercise, medications, or CBT addressing unproductive thoughts about weight + Cessation treatment

Meta-analyses conclude that deprivation diets while quitting are not helpful but other treatments can limit weight gain without affecting quit rates
Study 1: Quit Coach survey about weight

Background:

✓ Media attention is on the obesity epidemic
✓ Research showing that quitting smoking increases the risk for diabetes

Study Questions:

✓ Could this information impact treatment delivery?
✓ Is there variability in QC awareness of the issue
✓ Is there uncertainty about how to help WC smokers
Methods (collaboration- Alere & ACS)
✓ Anonymous web surveys with 134 QC’s (providing phone counseling for 30 QLs)

Results
✓ QCs estimated they discuss weight in 40% of calls
✓ That about 50% will gain more than 5 pounds
✓ That exercise, education, preparing for weight gain & dieting will help smokers quit without gaining
✓ Believe they need training in weight management

Conclusions

- Weight issues are discussed in treatment
- QC s are following current treatment guidelines
- QC requested training in weight management – is this a good idea?

Funded by Alere Wellbeing (formerly Free & Clear); approved by IRB
Background

- Having diabetes and smoking triples risk of premature death
- Prevalence of smoking=similar (diabetes vs. not)
- High rates of obesity & low physical activity
- Providers recommend losing weight
- Smokers may attempt to do both (quit and lose wt)
Study 2: Smokers with diabetes vs. not

Don’t know:

✓ if smokers with diabetes call Quitlines
✓ If quit rates differ from smokers without diabetes
✓ if they gain excessive weight after quitting
Study 2: Smokers with diabetes vs. not

Methods (collaboration with WADOH)

- Study with adults calling WAQL (May-Oct 2008)
- Census of tobacco users with diabetes (n=260)
- Random sample of smokers without diabetes (n=340)
- Surveyed at registration and 7 months
- Added questions on weight to 7 month FU
Study 2: Smokers with diabetes vs. not

Results

✓ 8.3% of callers reported diabetes (state prevalence = 6.1%); reach = 1.36
  • 9.3% in another study with 16 quitines
✓ Groups differ in demographics and tobacco use (e.g. older, more likely depressed & obese, have comorbidities, etc)
✓ Survey response rate = 40%

Study 2: Prevalence of obesity (diabetes vs. not)
### Study 2: Diabetes vs. not FU results

<table>
<thead>
<tr>
<th></th>
<th>Diabetes N=111</th>
<th>No Diabetes N=131</th>
</tr>
</thead>
<tbody>
<tr>
<td>% with 1+ visit to doctors</td>
<td>88.3</td>
<td>90.1</td>
</tr>
<tr>
<td>Provider Advice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quit smoking</td>
<td>88.7</td>
<td>76.1</td>
</tr>
<tr>
<td>Referred to cessation tx</td>
<td>48.4</td>
<td>44.9</td>
</tr>
<tr>
<td>Lose weight</td>
<td>62.2</td>
<td>32.5</td>
</tr>
<tr>
<td>Follow special diet or exercise</td>
<td>51.1</td>
<td>13.6</td>
</tr>
</tbody>
</table>
Point prevalent abstinence (diabetes vs. not)

- 7-day Resp
- 7-day ITT
- gained weight

Percent

Diabetes
no diabetes
Column1

© 2012 Alere, Inc.
## Weight gain related to quitting (diabetes vs. not)

<table>
<thead>
<tr>
<th></th>
<th>Diabetes</th>
<th>No Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;20 lb. In prior QA</td>
<td>34.2%</td>
<td>22.2%</td>
</tr>
<tr>
<td>% gained in current quitters</td>
<td>51.6%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Amount gained</td>
<td>23.2 (22)</td>
<td>14.7 (8)</td>
</tr>
</tbody>
</table>

© 2012 Alere, Inc.
Conclusions

- Tobacco users with diabetes call quitlines for help
- Having diabetes did not appear to affect cessation
- Those with diabetes were:
  - more likely obese
  - More likely to gain weight
  - Tended to gain more weight

Research needed to:
1) Increase provider discussion of tobacco use
2) Determine ways to prevent excessive weight gain

Funded by WADOH and Alere
Need to understand more about the relationship between baseline weight, weight concerns and treatment outcomes in quitline callers.
Study 3: Attitudes & experiences of obese smokers

Background

☑ Obesity and smoking are costly
☑ Obese smokers less successful quitting
☑ Gain more weight after quitting
☑ Reasons for poor outcomes are unclear
Study 3: Attitudes & experiences of obese smokers

Objectives

✓ Interview obese smokers to understand their thoughts & experiences about quitting and weight

Methods

✓ In-depth phone interviews with 29 obese smokers who called the South Carolina or Georgia Quit Lines
✓ Tape recorded and transcripts coded and analyzed for key concepts
✓ $25 gift card
Study 3: Attitudes & experiences of obese smokers

Results (n=29)

✓ 15 Male, 14 Female
✓ 9 African American
✓ BMI:
  • 16 (30-34.9)
  • 11 (35-39.9)
  • 2 (40-48)
✓ 14 uninsured
✓ 24 had weight concerns
Study 3: Common themes

- Conversations with health care providers:
  "Doctors are telling me I need to lose at least 50 pounds"

- Some were internally motivated to quit:
  "I don’t want to gain weight because it’s not good for my health and I want to look better for myself"

- Considered smoking as a means for weight control:
  "The only benefit of smoking is that it causes people to lose weight"
Study 3: Common Themes

✓ Body image, acceptance or intolerance for any weight gain
✓ Dissatisfied with current weight or shape
  “I just don’t want to be fat”
✓ Lack of weight concerns
  “I’m going to gain it or lose it, either way its not really concerning”
  “I don’t worry - I can’t gain much with the diabetes”
  “I’m tired of smoking, its $10/day, so I got to quit”
  “I would hate to gain weight but its not going to make me start smoking again”
Conclusions

- High levels of awareness of association between smoking and weight
- Realize body weight and weight gain may not be directly associated with smoking
- Variability in prior experience gaining weight
- Quitting more important
- Challenges = stress and chronic disease
- Would like adjunct call with a nutritionist

Funding by NIDA #R21DA026580
Study Aims to assess:

1) Engagement in quitline services among smokers by baseline weight,
2) The effectiveness of quitlines for normal weight, overweight, and obese smokers
3) The prevalence and amount of post cessation weight gain overall and by weight groups.

1-Levine, Bush et al. (gender and weight concerns) 2012 under review
2-Bush, Levine et al. (manuscript to be submitted in 2012)
Study 4: Use and effectiveness across BMI spectrum

Methods

✓ Male and female smokers from five state quitlines: Georgia, Louisiana, Maryland, South Carolina, Texas
✓ Recruitment (n=595)
✓ Data from registration/baseline, 3 and 6 months.
✓ 34.6% normal weight, 30.6% overweight, 34.8% obese)
Study 4 Results

30-day quit rates 3 months and 6 months after enrolling

Intent-to-treat quit rates; 55% response rate
Study 4 Results

Percieved weight change post-quit

*Among those quit 30+ days at 3 months (N=99)
Study 4 Results

Amount of weight lost or gained (lbs)

Among those quit 30+ days at 3 months (N=99)
Calculated change in weight (baseline to 3 months)

*Among those quit 30+ days at 3 months (n=99)
Study 4 Results

Calculated change in weight (baseline to 6 months)

*Among those quit 30+ days at 6 months (n=113)
Study 4: Results

✓ Overweight smokers reported 7-8% higher quit rates (at 3 months; \( p = .06 \) and 6 months; \( p = .07 \)).

✓ Overweight quitters were more likely to gain weight 
33.3% of obese, 42.5% of overweight, 32.1% of normal weight participants (\( p = 0.05 \)).

✓ Mean change in weight (lb) among abstinent smokers was:
- 0.93 ±12.6 at 3 months
- 2.4 ± 15.7 pounds at 6 months
- did not differ by weight group

✓ The proportion who gained more than 10 pounds did not differ by weight group.
Conclusions

✓ First quitline study to document the prevalence and amount of weight gained after quitting and to compare quit rates and cessation-related weight gain across weight groups.

✓ Quitlines offer a service that is effective and robust regardless of baseline weight and that weight gain is minimal.

✓ Overweight participants reported higher quit rates but also reported the largest variation in weight gain post quit.

✓ Additional research is needed.

Funding by NIDA #R21 DA026580
Part II. Partnering in Research

Presentation of a collaborative research project:
Dr. Laura Beebe, University of Oklahoma
A solution to a common reason for relapse

Weight Concerns
Research Purpose

To determine the effectiveness of a weight concern intervention in improving tobacco cessation & limiting cessation-related weight gain.
Weigh2Quit Study

Randomized Control Trial with the Oklahoma Helpline

2-Cell Trial

Baseline Measures & Randomization

Usual Care

5 Calls Quit Coach Only

6-month Follow-up

Intervention

8 Calls Weight Concerns Quit + Weight Coach

© 2012 Alere, Inc.
Smokers calling the Oklahoma Helpline (OKHL) ➔ Assess weight/height, weight concerns, eligibility and interest in the study ➔ Transfer to Coach to obtain consent and administer baseline survey ➔ Randomization and delivery of intervention call #1
Study Hypotheses

1. ↑ Cessation
2. ↑ Satisfaction with the helpline
3. ↓ Post quit weight gain
4. ↓ Weight concerns
Weigh2Quit Intervention

ASSESSMENT & PLANNING CALL

WEIGHT CONCERNS CALL #1

QUIT DATE CALL

QUIT DATE FOLLOW-UP CALL

WEIGHT CONCERNS CALL #2

FOLLOW-UP CALL

WEIGHT CONCERNS CALL #3

FOLLOW-UP CALL

© 2012 Alere, Inc.
Intervention Content

Body Image & Maladaptive beliefs about weight

Motivation and Confidence in Quitting smoking

Acceptance of post quit weight gain

Discourage dietary restriction while quitting

Encourage healthy snacks

Increase physical activity
Prevalence of weight concerns and obesity in a quitline

OKHL registration data + new questions: n=3972
✓ 33.3% obese (15% morbidly obese)
✓ 30.2% overweight
✓ 33.3% normal weight
✓ 3.2% underweight

60.6% concerned about weight gain after quitting

Obese (vs. not) more likely female, weight concerned, Hispanic, non-white, heavier smokers

Useful information to guide treatment approaches
Bush, Levine, Deprey et al; 2009
Weight-Related Characteristics of Randomized Participants

- 100% Weight Concerns
- 76% believe they are overweight
- 76% reported weight gain in prior quit attempts (avg. 17lbs)
- 40% reported dieting while quitting tobacco
- Expect to gain 19 lbs
- 57% only willing to gain 10 lbs
Hypothesis 1 & 2 - Increase satisfaction and cessation

*6-month results; responder quit rates

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>86.5%</td>
<td>89.5%</td>
</tr>
<tr>
<td>Quit 7 days</td>
<td>39.8%</td>
<td>43.4%</td>
</tr>
<tr>
<td>Quit 30 days</td>
<td>33.3%</td>
<td>36.8%</td>
</tr>
</tbody>
</table>

© 2012 Alere, Inc.
Results

Post-quit weight change

*Among those quit 30+ days at follow-up (N=350)
P= 0.0004
Among those quit 30+ days at follow-up (N=350)

*P = 0.011

**P = 0.09
Results

Change in weight concerns

*Among those quit 30+ days at follow-up (N=350)
P= 0.0004

*Control
*Intervention

Stayed same
Increased
Decreased

57.2% 17.9% 24.3%
46.6% 15.2%
Other Results

- Significant reduction in weight concerns and negative attitudes about weight gain.
- Intervention effects did not vary as a function of age, gender or tobacco status at baseline.
- Intervention stronger for:
  - Whites/ Caucasians
  - Smokers with higher baseline self-efficacy
  - Smokers with diabetes
Productive Collaboration

Successful Implementation & Recruitment
- Launched on time
- Recruited all participants in < 9 months

Sharing the Findings
- 2 papers published
- Multiple presentations at state/national/international conferences
- More papers underway

Potential avenue to increase reach of quitlines
- If successful, pgm can be used to attract more callers

Provides a model for funding innovative research at state level; answer an important question relatively quickly
Weight2Quit Collaborators

Terry Bush, PhD
- Lead Investigator, Alere Wellbeing

Susan Zbikowski, PhD
- Co Investigator, Alere Wellbeing

Mona Deprey, MS
- Research Staff, Alere Wellbeing

Barbara Cerutti, MS
- Research Staff, Alere Wellbeing

Michele D. Levine, PhD
- Co Investigator, University of Pittsburgh

Laura Beebe, PhD
- Co Investigator, University of Oklahoma

Tim McAfee, MD
- Co Investigator, CDC, previously at Alere Wellbeing
Summary of what we have learned
Quit coaches want guidance on how to help smokers with weight concerns.

Obesity, weight gain and weight concerns are common among quitline users.

Highest weight concerns and weight gain: women, obese.

Smokers with diabetes call quitlines, have weight concerns but have similar quit rates/weight gain.
Obese smokers want help managing their weight but their priority is to quit smoking.

Obese may benefit if focus on stress reduction, chronic disease and weight concerns.

Baseline weight is not associated with adherence, cessation or weight gain post quit.

CBT for weight concerns (WC) can limit weight gain without affecting cessation.

CBT WC most effective for people with diabetes.
Methodology
✓ Sample (treatment seeking? Male and female?)
✓ Timing of follow-up (e.g. 6, 12 months)

Measurement
✓ PPA, CA, PA
✓ Weight gain (perceived or measured)
✓ Timed from BQ or Quit date?

Variability in data

Meaning (some relapse because they gained)
Future Directions

**Obesity**
- Develop and test interventions to prevent weight gain and improve cessation

**Weight Concerns**
- Weight Concerns RCT with smokers with diabetes

**Diabetes**
- Enhanced intervention for smokers with diabetes vs STD and UC
  - Cessation counseling plus lifestyle concepts

**Multiple Behaviors**
- Tobacco cessation and weight loss
  - Simultaneous vs. sequential
Thank you.

www.alerewellbeing.com
Terry Bush is employed by Alere Wellbeing, the vendor for quitlines participating in these studies.

I have no significant financial conflicts of interest.

Contact information:
Terry.bush@alere.com
Measures

✓ On a scale of 0 to 100 where 0 = Not at all concerned and 100 = Very concerned, how concerned are you about gaining weight after quitting? (WC1)

✓ On a scale of 0 to 100 where 0 = Not at all concerned and 100 = Very concerned, how concerned would you be if quitting smoking caused you to permanently gain 10 pounds? (WC2)