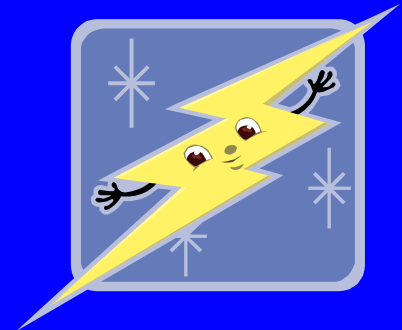


Teen Tobacco Use Cessation: 2007

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Daily Cigarette Smoking Prevalence By Age (2005, MTF)

- Age

- 12: 2% (9% of PEAK)
- 14: 4%
- 16: 8% (35% of PEAK)
- 18: 14% (61% of PEAK)
- 20: 18% (78% of PEAK)
- 22: 19%
- 24: 20%
- 26: 23% PEAK
- 28-45: 18%



- Same % trend for any 30-day smoking (7, 9, 15, 23, 28, 29, 29, 31, 21)
- Daily and monthly smoking “jumps” from around 14 to 20 years old and then levels off.

7 systematic reviews of the teen smoking cessation literature have been completed.

- Sussman, Lichtman, Ritt, and Pallonen (2001) evaluated 34 programs, 17 smoking cessation trials and 17 smoking prevention trials for their impact on cessation of cigarette smoking.
- Sussman (2002) provided an enlarged review of 66 cessation trials.
- McDonald et al. (2003) provided a re-review of the Sussman (2002) study.
- Garrison et al. (2003) reviewed 6 studies of relatively rigorous designs.
- Backinger et al. (2003) did a qualitative review of prevention and cessation programs.
- Sussman, Sun, & Dent meta-analysis of 48 studies [97 in appendix] (Health Psychology, 2006)
- Grimshaw & Stanton Cochrane meta-analysis of 15 studies (2006)
- TODAY IS #8☺



Results of pool of previous cessation studies (up through Sussman, 2002)

- Weak data:
 - 50% of studies lacked comparison conditions,
 - 30% failed to report follow-up data,
 - 40% failed to report retention rates,
 - and 60% missing ethnicity.
- On average program quit rates nearly doubled control quit rates.
- Contents: motivation (intrinsic or response-contingent) and cognitive-behavioral strategies effective.
- Modalities: Computer-based and classroom-based modalities effective.
- Quitting related to amount of programming provided (#sessions)



Sussman, Sun, & Dent (2006) Meta-analysis: Study Selection

- Searches of databases and unpublished manuscripts 1970 to 2003.
- Article or report in the English language
- Data about contents of a teen smoking cessation effort—needed at least 1 quit time point [50 contextual elements were coded from each manuscript]
- Through-study age range of 12 to 19 years old
- Only studies that included a control condition were selected.
- 48 “controlled” teen cigarette smoking cessation studies
 - Studies with <8 cigarette smokers at baseline were excluded
 - Tobacco related interventions for pregnant females not included
 - Comparison groups that are “active”, not like standard care controls, were excluded
 - No practitioner survey data included (“Helping Young Smokers Quit” project; [//ctcinfo.org/tool/blueprints.asp](http://ctcinfo.org/tool/blueprints.asp); Academy of Educational Development)

48 controlled studies in meta-

- Adelman et al., 2001
- Ary et al., 1990
- Aveyard et al., 1999
- Baskerville et al., 1993
- Bauman et al., 2000
- Beaglehole et al., 1978
- Brown et al., 2003
- Charleton, 1992
- Cinnomin & Sussman, 1992
- Colby et al., 2005
- Coleman-Wallace et al., 1999
- Diguisto, 1994
- Dino et al., 2001
- Dino et al., 2001
- Dino et al., 1998
- Etter et al., 1999
- Forster et al., 1998
- Glasgow et al., 1999
- Greenberg & Deputat, 1978
- Hollis et al., 2005
- Horn et al., 1999
- Horn et al., 2005
- Horn et al., 2005
- Hron et al., 2005
- Hron et al., 2005
- Horn et al., 2005
- Horn et al., 2005
- Horswell & Horton, 1997
- Hotte et al., 1997
- Hason et al., 1982
- Killen et al., 1988
- Lando et al., 2003
- Lazovich et al., 2001
- Lotecka & MacWhinney, 1983
- Moolchan et al., 2005
- Murray et al., 1994
- Myers & Brown, 2005
- Perry et al., 1980
- Peterson & Clark, 1098
- Quinlan & McCaul, 2000
- Rigotti et al., 1997
- Suedfeld et al., 1972
- Sussman, Dent, & Lichtman, 2001
- Sussman et al., 1995
- Sussman, Dent, & Stacy, 2002
- Sussman et al., 2004
- Winkleby et al., 2004
- Zavela, Harrison, & Owen, 1991
- Zheng et al., 2004



Main Outcome Measures

- The primary endpoint was %quit-rate (P) - %quit-rate (C)
- Data were entered as intent-to-treat (ITT) quit rates (not compliance sample rates).
- The estimated variance of P, (VP), was calculated as $P(100-P)/n$ per arm ($p*q/n$).
- The estimated variance of difference, (VD), was calculated as the sum of each VP; that is, $VD = VP_{program} + VP_{control}$. The combining weight was $1/VD$ (to get weighted average over the effects for all individual projects).

Four Main Predictors of Outcomes

- Five types of contents: (1) social influence, (2) cognitive-behavioral, (3) motivation, (4) medical, and (5) other (i.e., supply reduction and affect clarification)
- Eight modalities: (1) classroom, (2) school-clinics, (3) medical clinics, (4) family, (5) system-wide, (6) computer, (7) sensory deprivation, and (8) court diversion
- #Sessions: 1-4, 5-8, 9+ (3 categories)
- Length of follow-up: 0-3, 4-12, and >12 months past immediate posttest (3 categories)



Statistical Modeling

- Weighted least squares random effects method of DerSimonian and Laird (1986) used to pool results from study net effect estimates.
- Multi-level random coefficients modeling was applied to control for intra-study variation (SAS PROC MIXED procedure).
- Heterogeneity explored with mixed effect model regressions using theory, modality, dosage of programming, and follow-up duration as predictors of effect size. Follow-up interval was adjusted for.
- Studies with multiple treatment arms and/or multiple follow-up intervals were addressed by including study as a random effect in all models (taking into account within study correlations among outcomes).
- Supplemented with use of forest plots.



Preliminary Analyses

- Failed to find bias in ES as a function of variability in sample size.
- Failed to reveal a systematic difference in ES as a function of year of publication of study.
- Youngest to oldest, baseline to last follow-up average 14 & 19 years.
- Baseline smoking mean 10.44 cigarettes per day (cpd) (sd=5.49), with a range of 0.11 cpd (i.e., 4 days per month) to 18.44 cpd.
- 19 of 48 studies used randomized designs.
- Average sample size = mean of 324 (range 22 to 2900; sd=451).
- Biochemical methods applied in 30 (62.5%) studies.
- Average 52% female.
- Average rate of reach to target recruitment was 47%
- Average retention rate was 72% for follow-up.



Recruitment Strategies

- Direct interpersonal contact of treatment agent with potential participants and recruitment in contexts that include most of its members as potential participants (e.g., classrooms) led to relatively high reach (over 35%).
 - word of mouth most popular recruitment strategy (n=19 studies)
 - public announcements (n=16)
 - screening (n=14)
 - class release time (n=11), use of posters (n=11)
 - money (n=9)
 - media campaigns/newspaper ads (n=7)
 - flyers (n=6), referrals (n=6), policies such as mandatory attendance (n=6)
 - part of a classroom program (n=5)
 - presentation to a group (n=4)
 - use of credit (n=3), use of contests (n=3)
 - gatekeepers support (n=2)
 - use of a display table (n=1), and social influence (n=1)



The Meta-analysis Results

- Program conditions compared to control conditions gives smokers a 2.90% (95% CI=1.47%-4.35%) absolute advantage in quitting, increasing probability of quitting by 46% (9.14% versus 6.24%).
- Relatively higher quit rates found in programs including a motivation enhancement component (15 studies), cognitive-behavioral techniques (17 studies), and social influence approaches (8 studies).
 - promising effects for medical programs (only 2 studies)
- Relatively higher quit rates in school-based clinic or classroom modalities.
- Relatively higher quit rates for programs having at least 5 sessions (<5 sessions ns. >4 sessions 5% increase compared to controls 5-8 sessions and 9+ sessions ns.)
- Effects maintained at short term (1 year or less) and longer-term (> than 1 year) follow-ups (net effect sizes 0-3 months: 3.91%±0.93% [37 studies], 4-12 months: 2.92%±1.12% [21 studies], >12 months: 6.62%±1.14% [5 studies]).

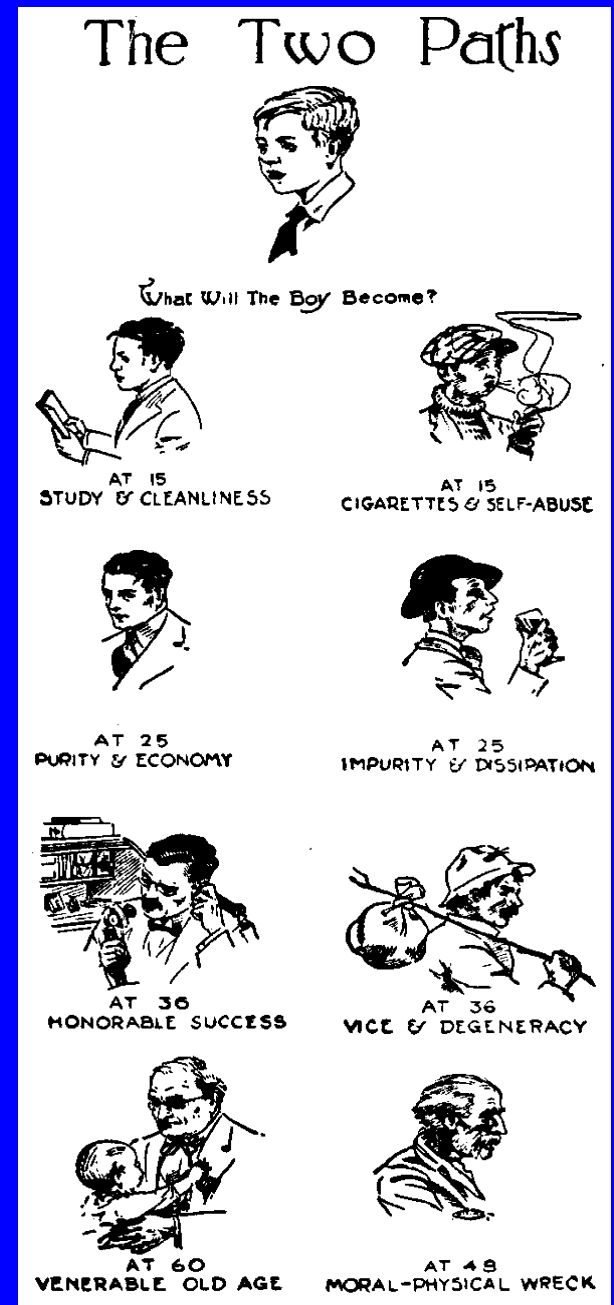


Other results

- Failed to find overall ES difference due to random assignment.
- Failed to find interaction of follow-up retention with ES.
- Failed to find ES difference due to average level of baseline smoking.
- Failed to find ES difference due to of county of study, gender, ethnicity (data missing in 20 studies), mean age, age range, program reach, and years data were collected.
- Limitation: theory and modality not orthogonal categorizations.
 - 6 of 7 classroom-based studies involve social-influence manipulations
 - 17 of 25 school-clinic studies cognitive-behavioral
 - All 6 medical clinic studies motivation-enhancement-based
 - 4 of 5 system-wide studies are in the “other” theory category
 - Both (2) computer-based studies are motivation-enhancement based.

We also conducted a supplementary meta-analysis of a total of 97 studies using synthetic control groups

THE SAME PATTERN OF RESULTS WAS OBTAINED



Grimshaw & Stanton (2006)

- Included the same types of studies: randomized control trials, cluster-randomized control trials, and controlled trials (non-randomized)
- Pregnant females excluded
- Comparison condition could be an “active” or “control” condition
- Smoking at 6-months follow-up was a standard for inclusion

Results and Discussion

- 15 trials met the criteria (41 other studies/trials were excluded)
 - 3 were stages of change (SOC)
 - 2 were pharmacological (PH)
 - 10 more complex psychosocial types (PSYCHO)
- Pooled odds ratios using the Mantel-Haenszel method
 - SOC OR=1.7
 - PH=ns
 - PSYCHO=2 Cognitive Behavioral, ns, 3 NOT=1.87, 3 MI=2.05, 1 education ns, 1 Health Risk Assessment, ns
- They consider their results as reaching the same general conclusions as the other reviews
 - It looks to me like they are finding that some combination of motivation and cognitive behavioral strategies is ideal.

Studies in Grimshaw & Stanton, not in Sussman, Sun, & Dent

- Chan & Witherspoon, 1988
 - C-RCT, Health Risk Assessment (HRA) and feedback vs. HRA only, n=40 17-18 y.o. college freshman students, 9 month follow-up, 26% vs. 6% (30-day), ns
 - Killen et al., 2004
 - n=211, NRT patch+BP vs. NRT patch+placebo—no real control, 3 months and 6 months, 8% vs. 7% (7-day), ns
 - Lipkus et al., 2004
 - Telephone counseling, self-help, video vs. self-help and video only—questionable control, n=402, 11 shopping malls and 1 amusement park, 4- and 8-months post-baseline (7-day quit rates), 16% vs. 11%, and 21% vs. 19%, respectively.
 - Robinson et al., 2003
 - 18 schools (really, n=283), RCT; 13-19 y.o. (mean=15 y.o.); 4 session MI+behavioral program vs. written material, “caught” smokers, 12 months, 6% vs 6%, ns
- 20%, 2%, 0% = 7.33%
 - There were 37 studies in Sussman, Sun, and Dent not in the other review; mostly due to less than 6 month follow-up

Newer Studies (Yet Another Search; n=30)

- Audrey, Holliday, & Campbeoll, 2006; UK ASSIST-(information, communication skills, decision making); 2% “quit” advantage among baseline regular (weekly) smokers; n=59 schools in Wales Grade 8, 12-13 y.o. (10,730 youth); peer nominated leaders as teachers
- Bluer et al., 1999; pupil advocates CT; 3-month quit-program 12%(7) vs. control 14%(5); 12-14 y.o. 1 cpw, ns
- Cai et al., 2000; laser acupuncture vs. placebo RCT; 4 week program; 3-month, 12-18 y.o. 5cpd, n=268; 25% quit both conditions, ns
- Dillenborg, 2001. 6-9th grade teens in Wisc., n=278; 86 program almost CT, control posttest only; smoking simulator messages and instruction, no quit data provided
- Egger et al., 1983; media+community vs media vs control, CT; subset 18-24 y.o.; 3-year 16% vs 11% vs 5%; Wilson & Bullock (1983) looked at another area of Australia with the same design, subset 15-24 year olds with relatively stronger effects for this group, but not known with means; effects on teens not clear
- Elvasser et al., 2002; 17 cases RCT; intervention; 3-12 months; n too small (from Grimshaw & Stanton)
- Hamilton et al., 2005; 14-15 y.o. school-based C-RCT; harm minimization 8 hours classroom over 2 years with some policy enactment vs. SC; 30 schools; only prevalence but if stable sample, 6% program vs. 1% control quit rate over 2 years (30-day)
- Hancock et al., 2001; 20 rural Australian community-wide multicomponent trial, with population prevalence reports over an average of 3 years but if stable sample, 8% program vs. 3% SC control (30-day), ns (p=.2)
- Hanson et al., 2003; 13-19 (mean=16) y.o. NRT RCT trial (patch) also with CM and CBT; 4-week and 10-week post quit day-active=22% and 20%, placebo=12% and 18%, all ns; reduced withdrawal symptoms was significant
- Helstrom, Hutchison, & Bryan, 2007; RCT; 8 adjudicated 16 y.o. offenders, MI vs. smoking education control, 1 session each; 1 and 6-month follow-ups, 3% and 10%, ns
- Horn et al., 2005-AI in 2003/04; 14-19 y.o. (n=74); NOT vs. BI; 3-months, ITT 18% vs 10% males (24 hour), no females, CT, ns
- Horn et al., 2007-MI vs. brief advice/standard care at ED, RCT, 14-19 y.o. (n=75), 6-months, 2 people “quit” (1 from each cond), ns
- Kentala et al., 1999; RCT Finland, dentist BI or SC; 2586 13 y.o. at baseline, only prevalence reports (smoker, yes or no) but if stable sample, 18% vs. 21% at 2-year follow-up (12.5% vs. 15.2% increase), ns
- Kohler et al., 2005; NOT in Alabama, 44 program and 27 control schools (n=492); 0% vs. 2% at 1 year, high attrition (79% vs. 66%), ITT, ns (22% vs 5% compliant sample)
- Mermelstein & Turner, 2006; 29 high schools (n=351), 14-19 y.o.; C-RCT NOT vs. NOT plus web/proactive phone calls; NOT plus better, 12% vs. 5% (7-day) end of treatment, 14% vs. 7% 3-month (30-day), marginally sign.
- Muramoto et al., 2005; RCT, bupropion (bp) 300, bp150, placebo, all with 6 weekly cessation sessions (7-day); 14-17 y.o. (n=245/312); 6 weeks (17%, 10%, and 7%) and 6 month (11%, 3%, 10%); 6 cpd; no SC (multiple by .79 for ITT)
- Niederhofer & Huber, 2004; 150 bupropion (bp) vs. placebo RCT; 3-month trial, n=22, 16-19 y.o., Austria outpatient clinic, approx. 15 cpd; 55% vs. 18% (90-day)
- O’Connell et al., 2004; SG, multiple modalities in 2-month program (bp, CB, Physician counseling, support for parental smoking cessation, stress management, school); n=23 at least contemplators, 17-18 y.o.; at 8 weeks 27% (n=6) quit, 11 of 16 cut down (mean of 22 to 9 cpd)
- Pak, No, & Kim, 2002; n=89 Korean middle and high school students, 3 sessions of LST, 13-18 y.o., 1 week follow-up 39% quit, SG
- Patten et al., 2006; 11-18 y.o. (mean=16) mean 10 cpd (n=139); RCT BOI clinic-based (MI and PS) 4-sessions vs. SOS internet home-based (access for 24 weeks, 66% out by 3rd week); 30-day ITT quit rates at 24 and 36 weeks, BOI vs SOS, 12% vs. 6% and 13% vs. 6%, respectively, ns, SOS greater reduction in days smoked (15% vs. 3% decrease).
- Pbert et al., 2006 school-based C-RCT; 71 high schools 4-session 1:1 school-nurse program (5-As, within 1 week) or SC; 16.9 mean age; 6 weeks and 3 months post-baseline, 16% vs. 3%, and 11% vs. 1% ITT 30-day quit rate, respectively.
- Rabiuss et al., 2004; RCT 18-25 y.o. (n=420 12% subsample), up to 5 session telephone counseling vs. self-help booklets; 20% vs. 9% at 3-months (ITT last 48 hours), at 6-months 10% vs. 3%, prolonged 9% vs. 2%.
- Roddy et al., 2006; NRT patch, 11-21 y.o. (mean=15 y.o.), n=98; RCT C-B/active vs. C-B/inactive patch for up to 6-weeks weekly, poor in Nottingham, GB; 10% vs. 8% at 4-weeks, 0% both groups at 13-weeks
- Rodgers et al., 2005; New Zealand, RCT; 1705 smokers, cell phone text messaging for 1 week before and 4 weeks after quit day and personalized (program) vs. at 6 months to prompt follow-up; 14% vs. 6% ITT at 6-weeks, 29% vs. 19% at 12 weeks, 25% vs. 24% at 6-months; 36% were 16-19 y.o., 15 cpd median (10-20), consistent effect across age
- Stephens, 2001; RCT; MET with MI (n=24) vs. TEG (n=15) vs. 30-day wait-list (n=17); 46 13-18 y.o. 30-day follow-up; MET best???
- Sussman et al., under review; net change=6% and 7% reduction in monthly smoking at 6 and 12 months postprogram (n=1097; 12 schools), all subjects, prevention to cessation.
- Tedeschi et al., 2005; telephone counseling; no outcome reported other than reporting it is effective 6 months post-program
- Wilborg, Hanewinkel, Isensee, & Horn, 2004; SG; 14-25 y.o. (n=1417); 51% younger than 18; printed material, internet, newsletters, telephone; 15 cpd overall; 1-2 year follow-up; 15% ITT quit rate, older more likely to quit
- Yiming et al., 2000; 330 Singapore 12-18 y.o. teens, min 5 cpd, RCT laser vs. sham acupuncture, 20% vs. 21% ITT quit rate (“quit”) at 3-month follow-up
- Zack et al., 2005; ASCENT 6-session CB program vs. SC (n=116); 30-day and 1 year follow-ups, 19% vs. 7% quit rate, 31% quit, CT?, ITT? ns

Summary of 13 New Controlled Trials

- LOOKING AT THE 13 NEW TRIALS P-C QUIT RATES AT LAST TIME POINT: mean quit rate=4.15% (consistent at 3-month, 1, 2, and 3 year time points; not 6-month [2 to 4 data points at each time point])
 - Modality-classroom, 3 (4.67%); alternative medicine, 2 (-0.5%); community-wide, 1 (5%); clinic, 5 (school, dentist, school nurse)(7%); ER, 1 (0%); txt phone/internet, 1 (1%)
 - Theory-MSD-4% (n=5); CB-11% (n=2), MI-1.5%(n=2), harm reduction-5% (n=1), alt med (-0.5%) (n=2), social influence (5%) (n=1)
- (Audrey, Holliday, & Campbell, 2006; Cai et al., 2000; Hamilton et al., 2005; Hancock et al., 2001; Horn et al., 2005; Horn et al., 2007; Kentala et al., 1999; Kohler et al., 2005; Pbert et al., 2006; Rodgers et al., 2005; Sussman et al., under review; Yiming et. al., 2000; Zack et al., 2005)

Overall Net Advantage of Programming Based On All 64 Controlled Trials

- 48 + 3 + 13 = 64 controlled trials now (with “standard care control” comparison)
- 3.36%
 - Approximately 50% relative advantage
 - Basically – still the same pattern of results

Pharmacologic Adjuncts (9 trials)

- Generally built on top of other programming such as CBT

- Gum little advantage, Dent, 1%; Moolchan, 4% (2 studies)
- Patch maybe 2% advantage, except Moolchan, 15% (6 studies)
- Bp , maybe 1% advantage, except Niederhofer, 37% (3 studies)

- (Dent/Sussman et al., 2004; Hanson et al., 2003, Hurt et al., 2000; Killen et al., 2004 (patch and Bp); Moolchan et al., 2005 (gum & patch); Muramoto et al., 2005; Niederhofer & Huber, 2004; Roddy et al., 2006; Smith et al., 1996)

- Note Shelley et al., 2005 Pediatrics study; Nationally in 2000 only 16% of physicians and 12% of dentists advised their teen smoker patients to quit smoking.

Internet/txt/phone Adjuncts (n=5)

- Internet plus another program vs. other program only (1 study)-favors use of internet; 14% vs. 7% 3-months (30-day)
- Internet vs. other program (brief office intervention; 1 study)-maybe favors BOI; 13% vs. 6%-9 months (30-day); % reduction favored SOS internet.
- Internet SG study (1 study)-1 month post-quit day 22% 7-day
- Txt messaging (1 study)-10% 3-months, 1% 6-months 7-day
- Telephone counseling vs. self-help booklets (1 study); 20% vs. 9% at 3-months (last 48 hours), at 6-months 10% vs. 3%, prolonged 9% vs. 2%
 - (Mermelstein & Turner, 2006; Patten et al., 2006; Rabias et al., 2004; Rodgers et al., 2005; Peter Tossman et al., 2006)
- Note. “Teen quit cessation” no longer connected to porn sites (Elliott and colleagues, 2001; Sussman, 2007, unpublished)
- Telephone modality right now looks very promising.

Pure MI Study (1 recent study)

- Helstrom, Hutchison, & Bryan, 2007; RCT; 81 adjudicated 16 y.o. offenders, MI vs. smoking education “control”, 1 session each; 1 and 6-month follow-ups, 3% both and 10% vs 11% at 6-months, ns

Other Modalities

- Sorenson et al, 2004 consider worksites as locations for teen cessation, but find prevalence of smoking (at grocery stores) is not higher than elsewhere
- Also: nurses, dentists, physicians treatment locations (e.g., clinics, emergency rooms); shopping malls “hangout” location; emergency rooms; American Indian reservations

Tauras & Chaloupka (1999); MTF H.S. seniors data

- The price elasticity of male cessation ranges from 1.07 to 1.17 and has an average elasticity of 1.12. The price elasticity of female smoking cessation ranges from 1.17 to 1.21 and has an average elasticity of 1.19. These estimates imply that a 10% increase in the real price of cigarettes will increase the probability of smoking cessation by approximately 11% and 12% for young men and women respectively.
 - Maybe for teens reduces prevalence 6-7% (Chaloupka, personal communication, 2007)
- State-level policies restricting smoking in private workplaces have a positive impact on the probability of cessation among employed young adult females. Other restrictions on smoking in public places seem to have little impact on female smoking cessation decisions. In general, laws restricting smoking in private worksites and public places have no significant impact on young adult male smoking cessation decisions.

Intent to treat analysis

- N=200
 - 100 program, 100 control--6 months, 15 found to quit in program condition, 3 found to quit in control condition, in compliant sample
 - 20% attrit both conditions = 15% vs. 3% (19% vs. 4% compliant)
 - 60% attrit both conditions = 15% vs. 3% (38% vs. 8% compliant)
 - 20% attrit, 60% attrit = 15% vs. 3% (19% vs 8% compliant)
 - 60% attrit, 20% attrit = 15% vs. 3% (38% vs. 4% compliant)
 - Let's say that 3 of the dropouts quit in each condition
 - 18% vs. 6% “true cessation by condition”
 - Let's say that 3 and 6 of the dropouts quit by P and C condition, respectively
 - 18% vs 9% “true cessation by condition”
 - Let's say that 6 and 3 of the dropouts quit by P and C condition, respectively
 - 21% vs 6% “true cessation by condition”

Conclusions

- Use of cognitive-behavioral and motivation-enhancement components may maximize cessation rates for teens.
- Programs most effective if implemented in school settings.
- Programs should be at least 5 sessions long.
- In 2004, the U.S. DHHS published the first guide for making informed decisions regarding teen cigarette smoking cessation (Milton et al., 2004). Report is in sync the findings of this meta-analysis.
- Only two SAMHSA model teen cigarette smoking cessation programs, Projects NOT and EX.
 - Both programs contain motivation enhancement and cognitive-behavioral strategies, and are at least 8 sessions in length, consistent with this meta-analysis.



Research Recommendations

- Collect ethnicity data
- Collect multiple smoking measures: last 24 hour, 7 days and 30 days
- Collect measures of nicotine dependence
- Collect data on use of all types of tobacco products
- Conduct longer follow ups (12 months and perhaps even longer)
- Do more studies with larger sample sizes (calculate power)
- Make use of appropriate controls (e.g., naturally-occurring quit rates, wait-list controls, standard care)
- Cost- effectiveness of treatment should be examined
- Gather information on provider characteristics
- Only one study on mediation of program effects
- Examine individual-level moderators of program effects
- Consider alternatives to ITT analysis
- Don't throw the baby out with the bath water and get another baby

**A
REAL
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NEVER TRIES
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THUNDER.**

**HERE'S
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**HAPPY
BIRTHDAY
from MARLBORO**

**YOUR
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THAT'S A
DIFFERENT
STORY.**



Additional Slides

- The primary endpoint was %quit-rate (P).
- Data were entered as intent-to-treat (ITT) quit rates (not compliance sample rates).
- The net effect definition: risk difference (RD); also called “absolute risk reduction.” $RD = \% \text{quit in a program condition} - \% \text{quit in a control condition}$. A positive value = program effective.
- The estimated variance of P, (VP), was calculated as $P(100-P)/n$ per arm.
- The estimated variance of difference, (VD), was calculated as the sum of each VP; that is, $VD = VP_{\text{program}} + VP_{\text{control}}$. The combining weight was $1/VD$.

Overall Effect 2007-Calculation

- TOTAL= $(.25)(.0475) + (.75)(.029)=3.36\%$
overall net advantage of programming
based on all 64 controlled trials (around a
50% relative advantage)
 - Sussman, Sun, Dent = 2.9% advantage (n=48 studies)
 - $76/16=4.75\%$ advantage (n=16 studies)
 - Adding the 13 new trials (4.15%)
 - Adding the 3 studies from the Cochrane study: (9 month-20%, 8 month-2%, 1 year-0%; 7.33%)

13 New Studies Quit rates by Length of Follow-up

- LOOKING AT THE 13 NEW TRIALS (P-C QUIT RATES AT LAST TIME POINT)= mean quit rate=4.15% (consistent at 3-month, 1, 2, and 3 year time points)
 - 2%, 0%, 5%, 5%, 8%, 0%, 3%, 2%, 10%, 1%, 7%, -1%, 12% (mean=54/13=4.15%)
 - 3-month: 0%, 8%, 10%, -1% (17/4=4.25%)
 - 6-month: 0% , 1% (6/2=0.5%)
 - 1 year: 2%, about 7%, maybe 12%, 2% (23/4=5.75%)
 - 2 year: maybe 5%, maybe 3% (8/2=4%)
 - 3 year: maybe 5%

13 New Controlled Trials: Description

- Audrey, Holliday, & Campbell, 2006; UK ASSIST-(information, communication skills, decision making); 2% “quit” advantage among baseline regular (weekly) smokers 1-yr ; n=59 Wales Grade 8, 12-13 y.o. (10,730 youth) ; peer nominated leaders as teachers
- Cai et al., 2000; laser acupuncture vs. placebo RCT; 4 week program; 3-month, 12-18 y.o. 5cpd, n=268; 25% quit both conditions, ns
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- Hancock et al., 2001; 20 rural Australian community-wide multicomponent trial, with population prevalence reports over an average of 3 years but if stable sample, 8% program vs. 3% SC control (30-day), ns (p=.2)
- Horn et al., 2005-AI in 2003/04;14-19 y.o. (n=74); NOT vs. BI; 3-months, ITT 18% vs 10% (24 hour), only males quit, CT, ns
- Horn et al., 2007-MI vs. brief advice/standard care at ED, RCT, 14-19 y.o. (n=75), 6-months, 2 people “quit” (1 from each cond), ns
- Kentala et al., 1999; RCT Finland, dentist BI or SC; 2586 13 y.o. at baseline, only prevalence reports (smoker, yes or no) but if stable sample, , 18% vs. 21% at 2-year follow-up (12.5% vs. 15.2% increase), ns
- Kohler et al., 2005; NOT in Alabama, 44 program and 27 control schools (n=492); 5 % vs. 3% at 1 year ITT (30-day), high attrition (79% vs. 66% at 1 year), ns (22% vs 5% compliant sample)
- Pbert et al., 2006 school-based C-RCT; 71 high schools 4-session 1:1 school-nurse program (5-As, within 1 week) or SC; 16.9 mean age; 6 weeks and 3 months post-baseline, 16% vs. 3%, and 11% vs. 1% ITT 30-day quit rate, respectively.
- Rodgers et al., 2005;New Zealand, RCT; 1705 smokers, cell phone text messaging for 1 week before and 4 weeks after quit day and personalized (program) vs. at 6 only months to prompt follow-up data collection; 14% vs. 6% ITT at 6-weeks, 29% vs. 19% at 12 weeks, 25% vs. 24% at 6-months; 36% were 16-19 y.o., 15 cpd median (10-20), consistent effect across age
- Sussman et al., under review; program advantage=6% and 7% reduction in monthly smoking at 6 and 12 months postprogram (n=1097; 12 schools), all subjects, prevention to cessation.
- Yiming et. al., 2000; 330 Singapore 12-18 y.o. teens, min 5 cpd, RCT laser vs. sham acupuncture, 20% vs. 21% ITT quit rate (“quit”) at 3-month follow-up
- Zack et al., 2005; ASCENT 6-session CB program vs. SC (n=116); 30-day and 1 year follow-ups, 19% vs. 7% quit rate, 31% quit, CT?, ITT? ns

Summary of PH Trials

- Hanson et al., 2003; 13-19 (mean=16) y.o. NRT RCT trial (patch) also with CM and CBT; 4-week and 10-week post quit day-active=22% and 20%, placebo=12% and 18%, all ns; reduced withdrawal symptoms was significant
- Hurt-5%, patch; SG
- Moolchan et al., 2005; 18% active patch, 6.5% active gum, 2.5% placebo group, all with CBT, n=120, 6-months
- Killen et al., 2004; n=211, NRT patch+BP vs. NRT patch+placebo—no real control, 3 months and 6 months, 8% vs. 7% (7-day), ns
- Muramoto et al., 2005; RCT, bupropion (bp) 300, bp150, placebo, all with 6 weekly cessation sessions (7-day); 14-17 y.o. (n=245/312); 6 weeks (17%, 10%, and 7%) and 6 month (11%, 3%, 10%); 6 cpd; no SC (multiply by .79 for ITT)
- Niederhofer & Huber, 2004; 150 bupropion (bp) vs. placebo RCT; 3-month trial, n=22, 16-19 y.o., Austria outpatient clinic, approx. 15 cpd; 55% vs. 18% (90-day); all received psychosocial or behavioral treatment.
- Roddy et al., 2006; NRT patch, 11-21 y.o. (mean=15 y.o.), n=98; RCT C-B/active vs. C-B/inactive patch for up to 6-weeks weekly, poor in Nottingham, GB; 10% vs. 8% at 4-weeks, 0% both groups at 13-weeks
- Dent et al., 2004; EX plus gum vs. EX plus herb (16 schools (41% alternative high schools), n=117; 16% vs. 15% gum vs. CigArrest (30-day) conditions 6-months
- Smith-5% patch (n=22), SG
 - Gum maybe no advantage, Dent, 1%; Moolchan, 4%
 - Patch maybe 2% advantage, except Moolchan, 15%
 - Bp , maybe 1% advantage, except Niederhofer, 37%

Effects of Internet/txt Messaging

- Mermelstein & Turner, 2006; 29 high schools (n=351), 14-19 y.o.; C-RCT NOT vs. NOT plus web/proactive phone calls; NOT plus better, 12% vs. 5% (7-day) end of treatment, 14% vs. 7% 3-month (30-day), marginally sign.
- Patten et al., 2006; 11-18 y.o. (mean=16) mean 10 cpd (n=139); RCT BOI (Brief Office Intervention) clinic-based (MI and problem solving) 4-sessions vs. SOS (Stamp Out Smokes) internet home-based (access for 24 weeks, 66% out by 3rd week); 30-day ITT quit rates at 24 and 36 weeks, BOI vs SOS, 12% vs. 6% and 13% vs. 6%, respectively, ns, SOS greater reduction in days smoked (15% vs. 3% decrease).
- Rabius et al., 2004; RCT 18-25 y.o. (n=420 12% subsample), up to 5 session telephone counseling vs. self-help booklets; 20% vs. 9% at 3-months (ITT last 48 hours), at 6-months 10% vs. 3%, prolonged 9% vs. 2%.
- Rodgers from earlier found a 10% difference at 3-months and 1% at 6-months (7-day), using txt messaging.
- Peter Tossman and colleagues in Germany; SG; (mean age=21; n=184), 11 cpd; at end of program 1 month after quit day <16 y.o. 22% quit (7-day), 16-18 y.o. 48% quit, “rauchfrei”(smoke-free” tailored)
 - Note. “Teen quit cessation” no longer connected to porn sites (Elliott and colleagues, 2001; Sussman, 2007, unpublished)

Justification For Smoking Cessation Programming for Teens

16% have tried a cigarette, 2% smoke daily by 12 y.o.

82% have tried a cigarette, **53%** smoke daily by 18 y.o.

98% have tried a cigarette, 95% smoke daily by 25 y.o.

