Smoking cessation strategies for hospitalized patients

- Updated 2010 Dec 10 01:41:00 PM: consumer booklet on how tobacco smoke causes disease from surgeon general (CDC 2010 Dec) view update
- inpatient postpartum intervention with physician and phone follow-up may increase attempts to quit smoking but not abstinence in new parents (Pediatrics 2010 Mar) view update
- synthesis of 3 guidelines on tobacco cessation (National Guideline Clearinghouse 2010 Jan 4) view update

Related Summaries:

- Tobacco use disorder

Overview:

- counseling interventions that include hospital contact and at least 1 month of follow-up contact are effective in promoting smoking cessation in hospitalized patients (level 1 [likely reliable] evidence)
- behavior modification counseling plus pharmacotherapy for 12 weeks may increase smoking cessation rates and reduce mortality in hospitalized smokers (level 2 [mid-level] evidence)
- psychosocial interventions may be effective for smoking cessation in patients with coronary artery disease (level 2 [mid-level] evidence)
- single session interventions lasting 20-30 minutes delivered within routine care during hospitalization NOT likely to influence highly dependent smokers
- insufficient evidence to evaluate benefit of adding nicotine replacement therapy or bupropion to counseling interventions in hospitalized smokers

▼Counseling Interventions

Counseling with follow-up > 1 month:

Effect on quit rates:

- **counseling interventions that include hospital contact and at least 1 month of follow-up contact are effective in promoting smoking cessation in hospitalized patients (level 1 [likely reliable] evidence)**
    - based on Cochrane review
    - systematic review of 33 randomized and quasi-randomized trials evaluating interventions to help hospitalized patients stop smoking
    - 18 trials had inadequate reporting of randomization and allocation concealment, but results appear consistent in sensitivity analyses for high-quality trials
    - patients were current smokers or recent quitters (defined as having quit more than one month before hospital admission)
    - intensive counseling interventions beginning during hospital stay and continued with supportive contacts for at least 1 month after discharge increased smoking cessation rates after discharge (27.4% vs. 18.8%, $p < 0.00001$, NNT 12) in 17 trials with 5,608 patients, possible heterogeneity ($p = 0.08$)
    - similar results in subgroup of patients admitted to hospital with cardiovascular disease
    - reduced all-cause mortality and hospital readmission rates at 2 years reported in 1 trial
    - interventions of lower intensity or shorter duration have not been shown to be effective in hospital setting
    - insufficient direct evidence to evaluate benefit of adding nicotine replacement therapy or bupropion to intensive counseling vs. intensive counseling alone
    - Reference – systematic review last updated 2007 May 20 (Cochrane Library 2007 Issue 3:CD001837), also published in Arch Intern Med 2008 Oct 13;168(18):1950, editorial can be found in Arch Intern Med 2008 Oct 13;168(18):1946
- **inpatient counseling plus 4 post-discharge telephone calls effective for relapse prevention in hospitalized smokers (level 1 [likely reliable] evidence)**
    - based on randomized trial
    - 2,024 current tobacco users admitted to hospital were randomized to minimal behavioral intervention (inpatient counseling with 1

post-discharge telephone contact) vs. intensive behavioral intervention (inpatient counseling with 4 post-discharge telephone contacts) vs. usual care
    - inpatient intervention consisted of 16-minute video and 30-minute counseling session at bedside by nurse, focused on relapse prevention
    - confirmed smoking cessation rates at 1 year were 27% with intensive intervention vs. 22% with minimal intervention vs. 20% with usual care (p = 0.009 for intensive vs. usual care, NNT 15)
    - Reference – Arch Intern Med 1997 Feb 24;157(4):409
- **inpatient postpartum intervention with physician and phone follow-up may increase attempts to quit smoking but not abstinence in new parents (level 2 [mid-level] evidence)**
    - based on randomized trial with high loss to follow-up
    - 101 new parents currently smoking or recently quit (≤ 1 month before conception) randomized to in-hospital motivational talk for 15 minutes with phone and physician-involved follow-up vs. usual care (brochure given during postpartum hospital stay with quit-line number)
    - 72% completed follow-up at 3 months
    - intervention participation over 3 months
        - 93% consented to fax of tobacco status and readiness to quit to relevant physician
        - 75% accepted telephone counseling over 3 months (67% of fathers vs. 41% of mothers)
    - no significant difference in abstinence rates at 7 days or 3 months
    - intervention associated with significantly higher number of reported 24-hour quit attempts
    - Reference – Pediatrics 2010 Mar;125(3):518 PDF
- **psychosocial interventions may be effective for smoking cessation in patients with coronary artery disease (level 2 [mid-level] evidence)**
    - based on Cochrane review limited by heterogeneity
    - systematic review of 16 randomized trials evaluating psychosocial interventions for smoking cessation in patients with coronary heart disease with minimum follow-up 6 months
    - interventions consisted of behavioral therapeutic approaches, telephone support and self-help material focused on smoking cessation alone or addressed several risk factors

- most trials evaluated older male patients with coronary heart disease, primarily myocardial infarction
- most trials began in inpatient setting
- only 4 trials had adequate allocation concealment
- abstinence rates at 6–12 months comparing intervention vs. control
  - for any psychosocial intervention 49% vs. 39% in analysis of 16 trials with 2,677 patients (p = 0.0005, NNT 10)
    - results limited by heterogeneity (p = 0.0002)
    - borderline significance in sensitivity analysis limited to 7 trials with validated assessment of smoking status at follow-up (p = 0.06)
  - for behavioral therapeutic approach 50% vs. 37% in analysis of 10 trials with 1,610 patients (p = 0.00002, NNT 8)
  - for telephone support 51% vs. 40% in analysis of 11 trials with 1,635 patients (p = 0.00003, NNT 9)
  - for self-help materials 47% vs. 40% in analysis of 11 trials with 2,166 patients (p = 0.007, NNT 15), but results may be limited by heterogeneity (p = 0.01)
  - more intense interventions showed increased quit rates (51% vs. 35% in 11 trials with 1,844 patients)
  - no significant differences comparing brief interventions vs. control
- no significant differences in abstinence at 5 years in 2 trials with 348 patients
- Reference – systematic review last updated 2007 Oct 3 (Cochrane Library 2008 Issue 1:CD006886)

- **smoking cessation intervention by cardiac nurses during hospitalization for coronary heart disease and follow-up for 5 months improves quit rates at 1 year (level 1 [likely reliable] evidence)**
  - based on randomized trial
  - 240 smokers < 76 years old admitted for acute myocardial infarction (MI), unstable angina, or coronary bypass surgery (CABG) were randomized to intervention (delivered by cardiac nurses, based on booklet, focused on fear arousal and prevention of relapses) vs. usual care

    - intervention group participants were contacted regularly for at least 5 months
    - comparing intervention vs. usual care
        - 1-year confirmed quit rates were 57% vs. 37% (NNT 5, 95% CI 3-16)
        - if assuming all dropouts relapsed, 1-year confirmed quit rates were 50% vs. 37% (NNT 8, 95% CI 4-250)
    - Reference – BMJ 2003 Nov 29;327(7426):1254 full-text, summary can be found in Am Fam Physician 2004 Jun 1;69(11):2705

- **intensive smoking cessation program initiated during hospitalization for coronary artery disease and 2 month follow-up associated with higher 1 year abstinence rates (level 2 [mid-level] evidence)**
    - based on randomized trial with allocation concealment not stated
    - 276 patients >18 years old with acute MI or CABG randomized to 1 of 2 smoking cessation intervention programs and followed for 12 months
        - minimal (counselling plus written material)
        - intensive (minimal program plus 1 hour individual counselling session, take home materials and 7 counselling calls over 2 months after discharge)
    - comparing 12 month abstinence rate for intensive group vs. minimal group
        - self report of abstinence in 62% vs. 46% ($p < 0.05$, NNT 7)
        - confirmed abstinence in 54% vs. 35% ($p < 0.002$, NNT 6)
    - abstinence was lower among those who used pharmacotherapy ($p < 0.001$)
    - abstinence was higher among those admitted for CABG than acute MI ($p < 0.05$)
    - Reference – CMAJ 2009 Jun 23;180(13):1297 full-text, editorial can be found in CMAJ 2009 Jun 23;180(13):1283 full-text
- **in-hospital smoking cessation programs and referral to cardiac rehabilitation associated with continued smoking cessation in patients with myocardial infarction**
    - based on survey of 639 patients who reported smoking habits 6 months after hospitalization for myocardial infarction

    - patients more likely to have sustained smoking cessation after treatment in hospital with smoking cessation program (odds ratio 1.71, 95% CI 1.03–2.83) and referral to cardiac rehabilitation (odds ratio 1.8, 95% CI 1.17–2.75)
    - individual counseling did not support smoking cessation at 6 months (odds ratio 0.8 95% CI 0.51–1.25)
    - depressive symptoms and history of cocaine abuse associated with continued smoking after myocardial infarction
    - Reference – Arch Intern Med 2008 Oct 13;168(18):1961, editorial can be found in Arch Intern Med 2008 Oct 13;168(18):1946, commentary can be found in Arch Intern Med 2009 May 11;169(9):902
- **nursing advice and counseling can be effective (level 2 [mid-level] evidence)**
    - based on Cochrane review limited by heterogeneity
    - systematic review of 42 randomized trials evaluating smoking cessation interventions by nurses or health visitors with minimum follow-up of 6 months
    - comparing nursing intervention vs. control or usual care
        - smoking cessation rates (at longest follow-up) 13.8% vs. 12% in analysis of 31 trials with 15,205 patients ($p < 0.00001$, NNT 56)
        - results limited by heterogeneity ($p = 0.0002$)
    - lower intensity interventions not as effective as high intensity inverventions in subgroup analysis
    - limited indirect evidence that interventions are more effective for hospital inpatients with cardiovascular disease than for inpatients with other conditions
    - Reference – systematic review last updated 2007 Oct 21 (Cochrane Library 2008 Issue 1:CD001188)
    - earlier version (meta-analysis of 34 trials) can be found in Heart Lung 2006 May-Jun;35(3):147

Effect on mortality:

- **behavior modification counseling plus pharmacotherapy for 12 weeks may increase smoking cessation rates and reduce mortality in hospitalized smokers (level 2 [mid-level] evidence)**
    - based on randomized trial without attention control

- 209 hospitalized smokers randomized to intensive intervention (behavior modification counseling and individualized pharmacotherapy for at least 12 weeks at no cost to patient) vs. usual care (counseling and printed educational material provided prior to hospital discharge)
- smoking status confirmed by measuring expired carbon monoxide at 3, 6, 12, and 24 months
- comparing intensive intervention vs. control
  - 33% vs. 9% continuous abstinence at 24 months ($p < 0.0001$, NNT 5)
  - 23% vs. 41% hospitalized during 2-year follow-up ($p = 0.007$, NNT 6)
  - 2.8% vs. 12% all-cause mortality ($p = 0.014$, NNT 11)
- Reference – Chest 2007 Feb;131(2):446 full-text, commentary can be found in ACP J Club 2007 Jul-Aug;147(1):3

Brief counseling interventions:

- **single session interventions lasting 20-30 minutes delivered within routine care during hospitalization NOT likely to influence highly dependent smokers**
  - based on randomized trial with 540 smokers admitted for myocardial infarction (MI) or CABG
  - Reference – BMJ 2002 Jan 12;324(7329):87 full-text, editorial can be found in BMJ 2002 Jan 12;324(7329):64 full-text
- **motivational interviewing appears no more effective than brief advice in improving cessation rates among adolescents hospitalized for psychiatric disorders (level 2 [mid-level] evidence)**
  - based on randomized trial with allocation concealment not stated
  - 191 patients aged 13-17 years hospitalized for psychiatric or substance abuse disorder who smoked at least 1 cigarette per week were randomized to motivational interviewing (2 sessions lasting 45 minutes each) vs. brief advice (5-10 minutes)
  - comparing motivational interviewing vs. brief advice
    - mean number of quit attempts per patient 1.1 vs. 1.3 over 12 month period (not significant)
    - 7 day abstinence rate at 12 months in 14% vs. 9.9% (not significant)

- subgroup analysis suggests that motivational interviewing may have been more effective in adolescents with little or no intention to change smoking but less effective in adolescents with pre-existing intention to cut down or quit smoking
- Reference – Tob Control 2003 Dec;12 Suppl 4:IV3 PDF

▼Pharmacotherapy

- **insufficient evidence to evaluate benefit of adding nicotine replacement therapy or bupropion to counseling interventions in hospitalized smokers**
  - based on Cochrane review
  - systematic review of 33 randomized and quasi-randomized trials evaluating interventions to help hospitalized patients stop smoking
  - no trial evaluated pharmacotherapy in absence of counseling
  - 5 trials evaluated addition of nicotine replacement therapy to counseling intervention, meta-analysis suggested increase in smoking cessation rates but did not reach statistical significance
  - 1 trial evaluated addition of bupropion to counseling intervention, results suggested increase in smoking cessation rates but did not reach statistical significance
  - Reference – systematic review last updated 2007 May 20 (Cochrane Library 2007 Issue 3:CD001837)

▼References Including Reviews and Guidelines

Reviews:

- TobaccoFreeNurses provides free guide for nurses and students nurses to help smokers quit (AHRQ Research Activities 2005 May;297:27)

Guidelines:

- synthesis of 3 guidelines (PHS 2008, UMHS 2006, USPSTF 2009) on tobacco cessation can be found at National Guideline Clearinghouse 2010 Jan 4:TOBACCO10
- American College of Emergency Physicians Task Force on Smoking Cessation joint statement for tobacco control interventions in the emergency

department can be found in Ann Emerg Med 2006 Oct;48(4):e417 and in J Emerg Nurs 2006 Oct;32(5):370

- Health Education Authority (HEA) of the United Kingdom updated on smoking cessation guidelines for health professionals can be found in Thorax 2000 Dec;55(12):987 PDF
- National Naval Medical Center guidelines for conducting a hospital-based smoker's consult service can be found in Mil Med 1991 Nov;156(11):585

▼Patient Information

Patient information:

- support from Smokefree.gov
- consumer booklet on how tobacco smoke causes disease from surgeon general can be found at CDC 2010 Dec
- online support for smoking cessation in United Kingdom can be found at Smokefree from NHS
- handout on "Do I want to quit?" can be found in Am Fam Physician 2002 Nov 1;66(9):1747
- handout on quitting smoking can be found in Am Fam Physician 2002 Mar 15;65(6):1117
- handout on tobacco use in adolescents can be found in Am Fam Physician 2008 Feb 15;77(4):491
- handout that provides assessment of readiness to quit and identification of smoking triggers can be found in Am Fam Physician 2000 Aug 1;62(3):591
- handout on cessation of smokeless tobacco can be found in Am Fam Physician 2000 Sep 15;62(6):1427
- handout on smoking cessation in recovering alcoholics from American Academy of Family Physicians or in Am Fam Physician 2000 Mar 15;61(6):1895
- comprehensive Web site which offers free services of reminder E-mails and other interactive methods to assist smoking cessation can be found at QuitNet
- handout on tips to help you quit smoking can be found in Am Fam Physician 2006 Jul 15;74(2):276
- support materials for tobacco prevention and cessation from American Academy of Family Physicians