

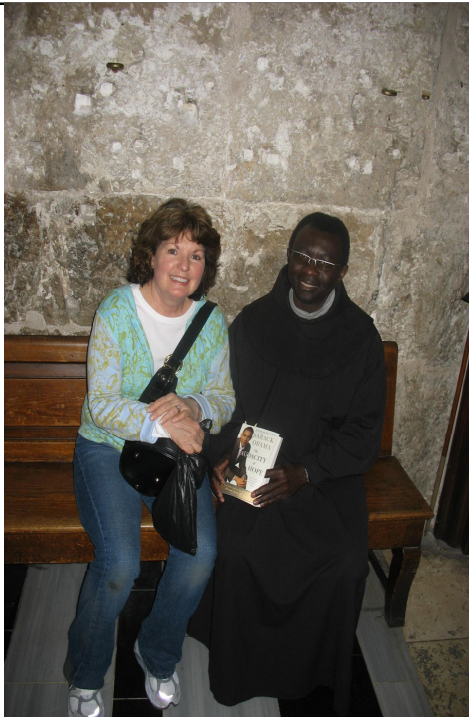
Mayo Model for Treating Tobacco Dependence

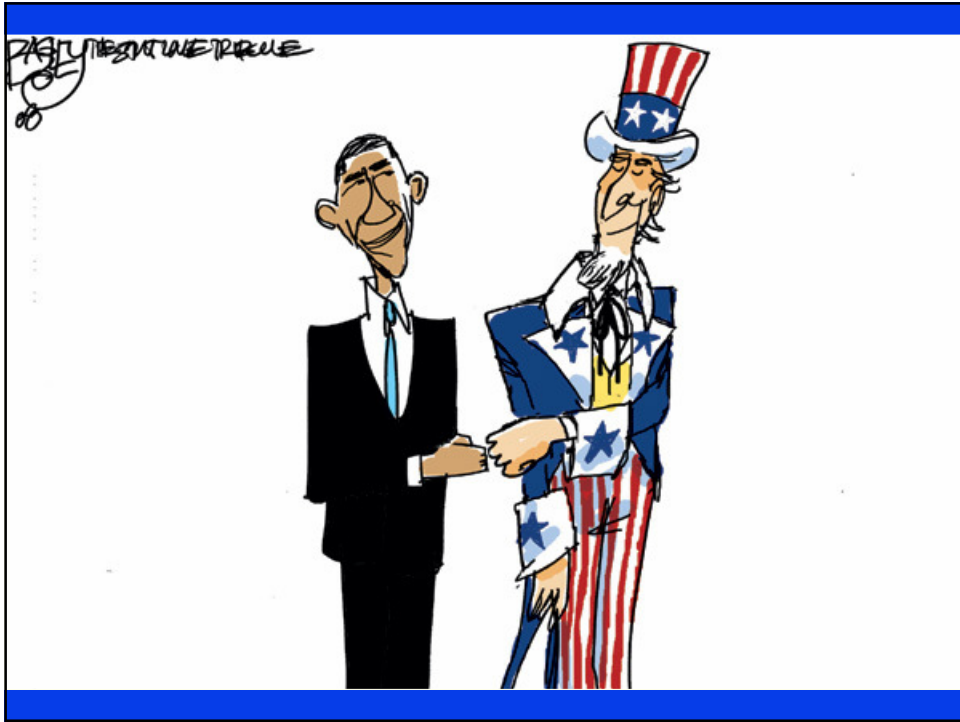
Richard D. Hurt, M.D.
Professor of Medicine
Director, Mayo Clinic Nicotine
Dependence Center

<http://ndc.mayo.edu>



Barack is everywhere
“The Audacity of Hope”







Treating Tobacco Dependence in a Medical Setting

Best Practices

- **USPHS Guideline**(www.ahrq.gov)
- **Behavioral, addictions, pharmacologic treatment, and relapse prevention**
- **Neurobiology of tobacco dependence**
- **“Teachable moment”**
- **Telephone quitlines**
- **Public policy-Taxes and smoke-free workplaces**

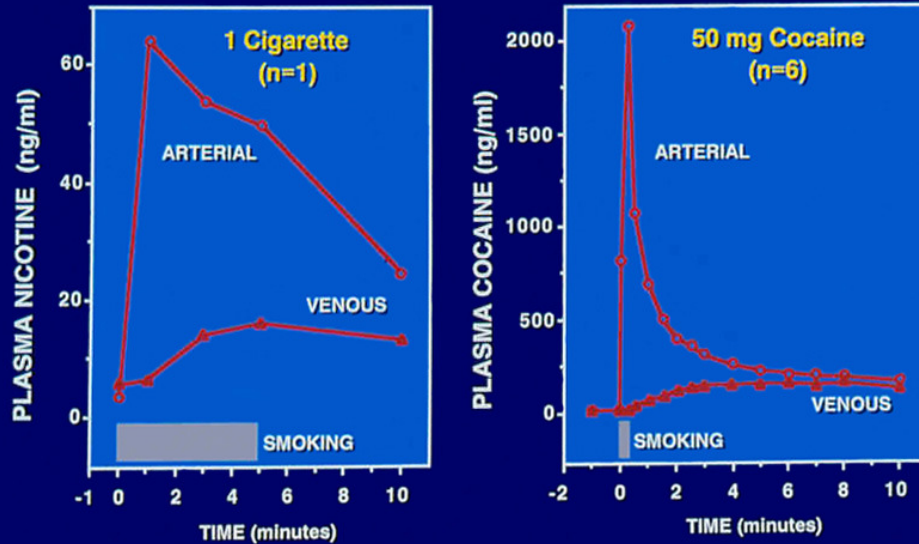
Hurt RD, VA in the Vanguard, 2005

Cigarettes and Tobacco Dependence

- **Cigarette smoke – complex mixture of 4,000 chemicals with over 60 known carcinogens**
- **Most efficient delivery device for nicotine that exists- better than intravenous**
- **Cigarette manufacturers have modified cigarettes over the past decades to maximize nicotine delivery to the brain**
- **High doses of arterial nicotine cause upregulation of the nicotinic acetylcholine receptors**
- **Genetic factors influence tobacco dependence**
- **Left untreated 60% of smokers die from a tobacco-caused disease**

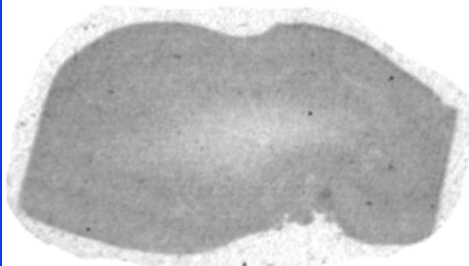
Hurt RD, Robertson CR JAMA 280:1173, 1998

Plasma Concentration after Smoking



Temporal Cortex

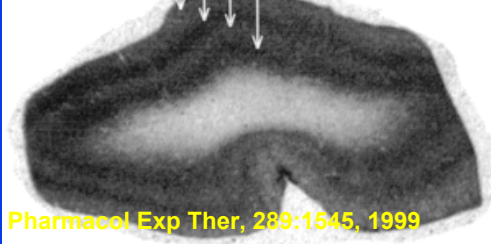
A. Nonsmoker



Cortical Layers

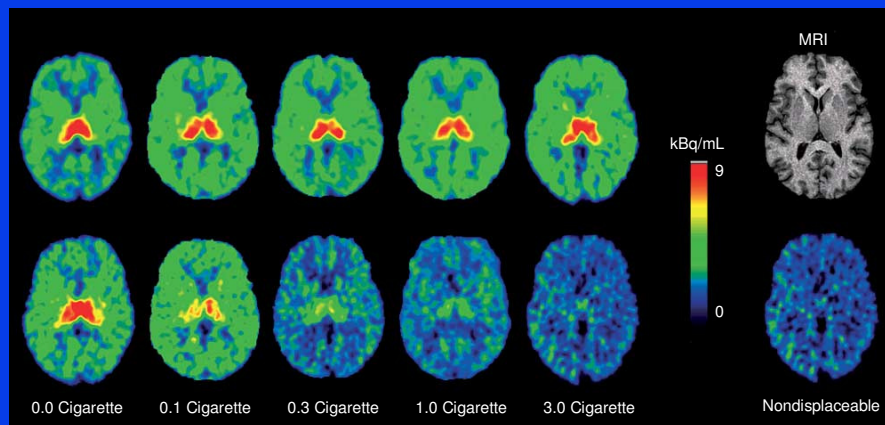
I-III IV V VI

B. Smoker



Perry, DC, et al. J Pharmacol Exp Ther, 289:1545, 1999

Smoking Saturates Nicotinic Receptors



Brody, A.L. Arch Gen Psychiatry. 63;907-915, 2006

Mayo Clinic Nicotine Dependence Center Treatment Program

- Established April 1988
- Integrated approach – behavioral, addictions, pharmacotherapy, relapse prevention and motivational interviewing.
- Outpatients- Individual counseling by TTS.
- Inpatients- Hospital nurse Tobacco Use Intervention Protocol and Nurse Practitioner TTS
- Residential treatment program

General Principles of Motivational Interviewing

- Expressing Empathy
- Developing Discrepancy
- Supporting Self-Efficacy
- Rolling with Resistance



The “Spirit” of Motivational Interviewing “The Dance”



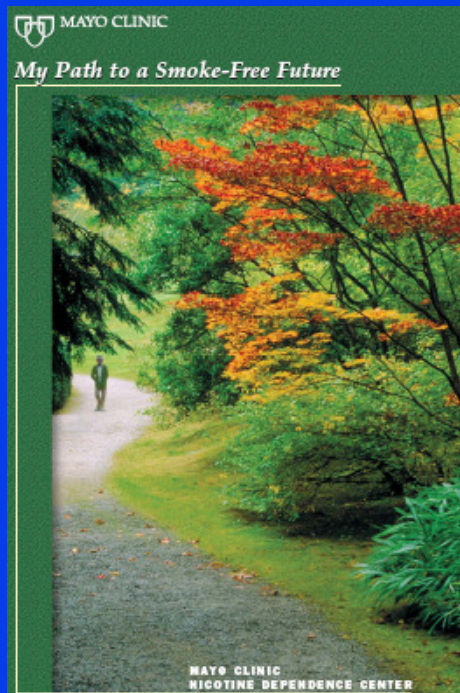
- **COLLABORATION**
Not Confrontation
- **EVOCAATION**
Not Education/Advice
- **AUTONOMY**
Not Authority

Eliciting values, hopes, assumptions, fears, expectations and challenges



Individualized Plan

<http://ndc.mayo.edu>



Treating Tobacco Dependence in a Medical Setting

Pharmacotherapy

- Clinical decision-making using clinician skills and knowledge of pharmacology to decide on medication selection and doses
- Patient involvement: past experience and/or preference
- Nicotine patch, varenicline and/or bupropion viewed as “floor” medications
- Short acting NRT products for withdrawal symptom control
- Combination pharmacotherapy frequently used

Hurt RD, VA in the Vanguard, 2005

USPHS Clinical Practice Guideline

Pharmacotherapy

- First line
 - nicotine gum
 - nicotine patches
 - nicotine nasal spray
 - nicotine inhaler
 - nicotine lozenge
 - bupropion
 - varenicline
- Second line
 - clonidine
 - nortriptyline

High Dose Patch Therapy

Conclusions

- High dose patch therapy safe for heavy smokers
- Smoking rate or blood cotinine to estimate initial patch dose
- Assess adequacy of nicotine replacement by patient response or percent replacement
- More complete nicotine replacement improves withdrawal symptom relief
- Higher percent replacement may increase efficacy of nicotine patch therapy

Dale LC, et al. JAMA 274:1353, 1995

High Dose Patch Therapy

Dosing Based on Smoking Rate

<10 cpd	7-14 mg/d
10-20 cpd	14-21 mg/d
21-40 cpd	21-42 mg/d
>40 cpd	42+ mg/d

Dale LC, et al. Mayo Clin Proc 75:1311, 1316, 2000

Treating Tobacco Dependence in a Medical Setting

Pharmacotherapy

- Clinical decision-making using clinician skills and knowledge of pharmacology to decide on medication selection and doses
- Patient involvement: past experience and/or preference
- Nicotine patch, varenicline and/or bupropion viewed as “floor” medications
- Short acting NRT products for withdrawal symptom control
- Combination pharmacotherapy frequently used

Hurt RD, VA in the Vanguard, 2005

Mayo Nicotine Dependence Center

Residential Treatment Program

- 8 day multicomponent treatment in a residential unit
- Tobacco-free protected milieu
- Daily physician and counselor rounds
- Group and individual therapy and education sessions
- Tailored pharmacotherapy
- Proactive follow-up for relapse prevention

Hays JT, et al. Mayo Clin Proc 76:124, 2001

Mayo Clinic Nicotine Dependence Center

April 1988 through April 2008

• Initial Counseling	38,774
• Follow-up Counseling	17,531
• Residential	1,099

Mayo Nicotine Dependence Center

Treatment Outcomes

Individual outpatient counseling	23-27%
Individual bedside counseling	32%
Residential treatment	52%

Croghan IT et al, Addict Behav 34:61, 2009
Hays JT Mayo Clin Proc 76:124, 2001

Center for Tobacco-Free Living



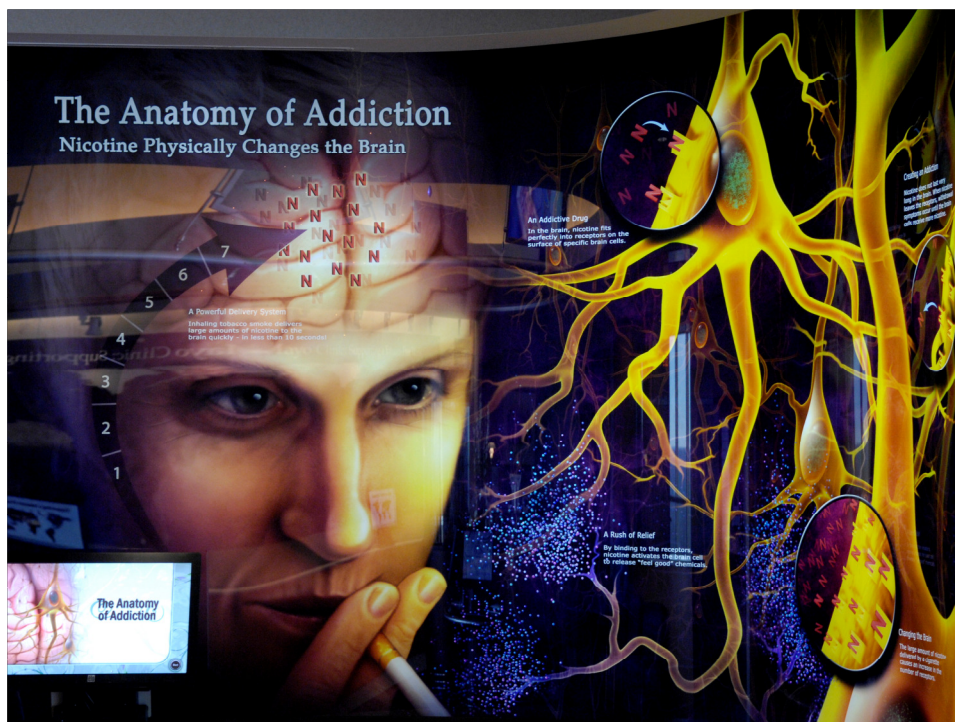
Rationale and justification

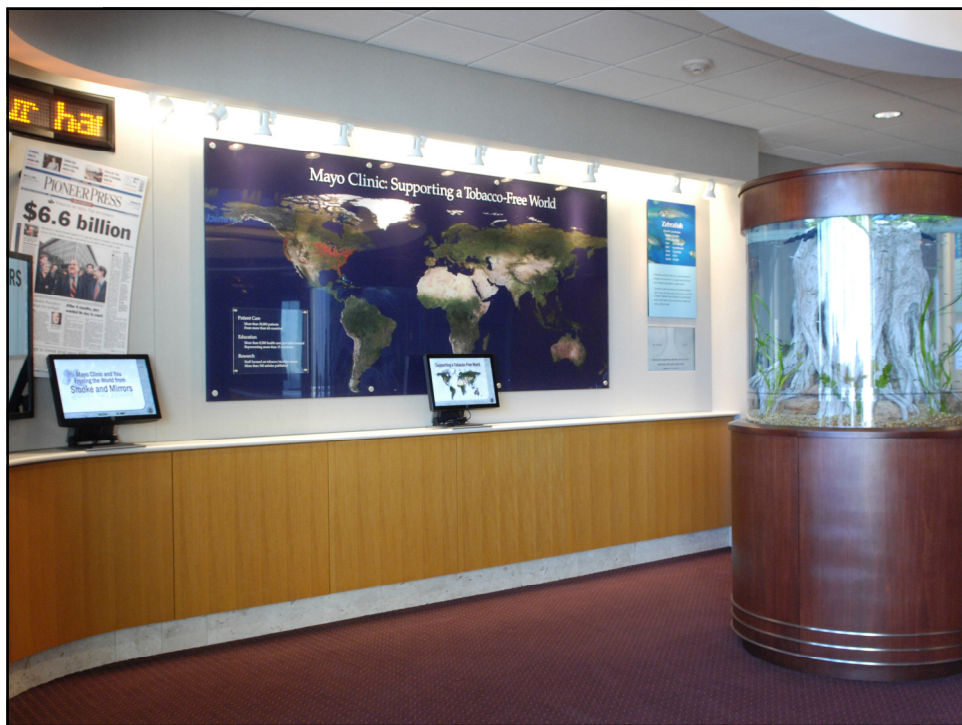
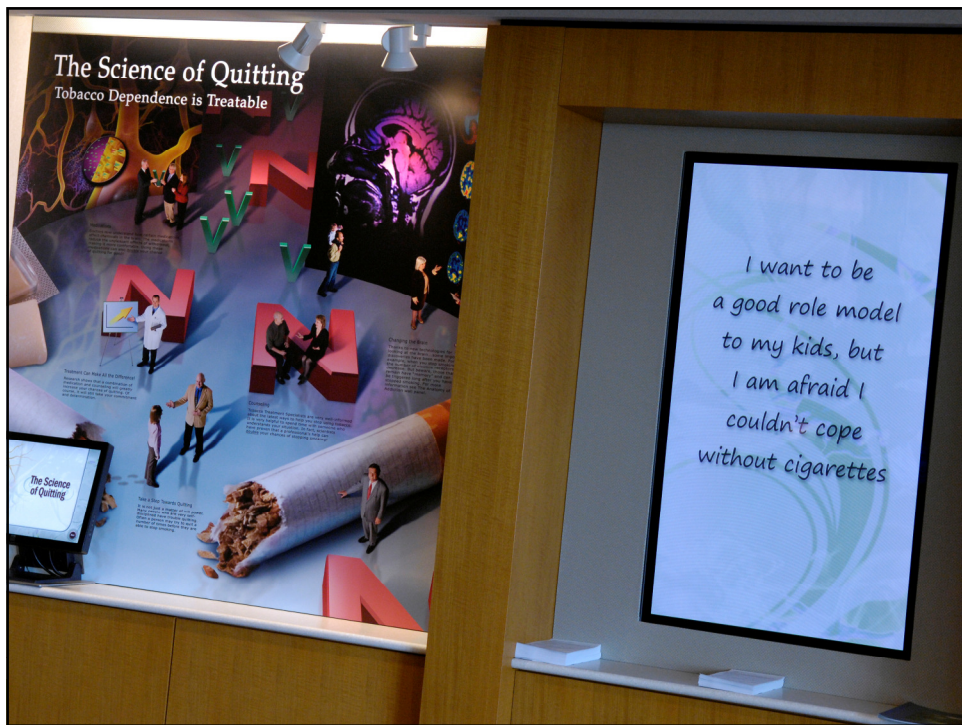
- Tobacco dependence is an important health issue
- The NDC Staff provides state of the art treatment
- Presently only a small fraction of tobacco users who come to Mayo Clinic receive information or treatment
- Integrating a state-of-the-art education and tobacco treatment center into Pulmonary Care will reach out to and send an important message to our patients

SPARC research findings

- Patients' negative expectations are very different from their actual positive experience at NDC
- Telling their story is meaningful and motivating for patients
- Patient-centered motivational interviewing helps patients engage in treatment
- Disease model encourages patients to enter treatment

Center for Tobacco-Free Living must support the messages of NDC counseling





Center for Tobacco-Free Living Experience

Audiences include patients, family members, friends, health care providers

- 600 people per day will pass the Center
- Easy access for others in Mayo/Gonda complex
- Transform understanding of tobacco dependence
- Empower patients and provide hope, assurance, understanding,
- Easy access to treatment, education, and accurate health information

Mayo Clinic NDC Education Program

- Patient intervention material
- Tobacco Treatment Specialist Certification
- Annual conference
- Motivational interviewing courses
- Distance education
- Customized workshops
- Self-study DVD

<http://ndc.mayo.edu> or 1-800-344-5984



We owe it to our grandchildren.

52 Y/O Married Man With Back Pain

- Smoker since age 14 now smoking 20-30 cpd.
- Wife is an ex-smoker but very supportive.
- Smokes first cigarette within 5 minutes of arising in the morning.
- Longest period of smoking abstinence 1 month- nicotine patch.
- Nicotine gum and bupropion did not relieve cravings. Varenicline no help in stopping smoking.

52 Y/O Married Man With Back Pain

Telephone call f/u at 2 weeks

- Started 2-21 mg nicotine patches + nicotine inhaler for ad lib use.
- Good initial response with w/d relief most of the day. Stopped smoking for 10 days.
- Frequency of inhaler use increased toward early evening as cravings seemed to increase and continue until he goes to bed.
- Next steps?

52 Y/O Married Man With Back Pain

- Added 14 mg nicotine patch at 4 PM
- Evening W/D symptoms abated
- Continue AM 2-21 mg nicotine patches and ad lib use of inhaler
- Phone call 4 weeks later he is feeling comfortable
- Continue present regimen for at least another month or 6 weeks

62 Y/O Woman with COPD

- COPD
- Smokes 20-25 cpd CO 43 ppm
- Stopped smoking one time for 2 years W/D symptoms when she tries to stop
- Using nicotine gum in past few weeks to decrease smoking rate
- All friends smoke
- Would like to try varenicline

62 Y/O Woman with COPD

Telephone F/U at 2 Weeks

- Started varenicline but use nicotine gum if she had w/d during the run up to her stop date
- Initially using 10-12 pieces nicotine gum per day to control withdrawal
- Decreased nicotine gum use as varenicline dose is increased to 1 mg BID
- After 2 weeks she has reduced to 5 cpd and w/d symptoms are less.
- Next steps?

62 Y/O Woman with COPD

Next Steps?

- **A. D/C varenicline and start nicotine patch therapy.**
- **B. Increase dose of varenicline.**
- **C. Add bupropion**
- **D. Continue varenicline provide support through telephone counseling or an office visit.**

62 Y/O Woman with COPD

- **Added 0.5mg varenicline dose at noon**
- **Continue ad lib nicotine gum**
- **Phone call 2 weeks later. Still smoking 3 cpd**
- **Increase varenicline to 1mg TID**
- **Phone call 2 weeks later. Stopped smoking a week ago**
- **Continue varenicline and nicotine gum and call back In a month**

52 Y/O Married Man With Back Pain

- Smoker since age 14 now smoking 20-30 cpd.
- Wife is an ex-smoker but very supportive.
- Smokes first cigarette within 5 minutes of arising in the morning.
- Longest period of smoking abstinence 1 month- nicotine patch.
- Nicotine gum and bupropion did not relieve cravings. Varenicline no help in stopping smoking.

52 Y/O Married Man With Back Pain

Telephone call f/u at 2 weeks

- Started 2-21 mg nicotine patches + nicotine inhaler for ad lib use.
- Good initial response with w/d relief most of the day. Stopped smoking for 10 days.
- Frequency of inhaler use increased toward early evening as cravings seemed to increase and continue until he goes to bed.
- Next steps?

52 Y/O Married Man With Back Pain

- Added 14 mg nicotine patch at 4 PM
- Evening W/D symptoms abated
- Continue AM 2-21 mg nicotine patches and ad lib use of inhaler
- Phone call 4 weeks later he is feeling comfortable
- Continue present regimen for at least another month or 6 weeks

50 y/o man with Buerger's Disease

- Started smoking as a teenager
- 1987 Non-healing toe ulcerations
30 CPD
Dx Buerger's Disease
- 1988 Thoracic Sympathectomy
- 1989 Amputation, right 5th toe
Auto amputation, right thumb
Stopped smoking (5 years)
- 2000 Hazelden Alcohol/drug Dependence Treatment

50 y/o man with Buerger's Disease cont.

- **2002 Residential Treatment at NDC
(20 CPD)**

**Ulcerations right heel & right lateral
malleolus**

**“Like someone pounding nails in my leg
and foot”**

Bupropion started before admission

Nicotine patch therapy at 35 mg/d

50 y/o man with Buerger's Disease cont.

Reluctant to use two patches

Baseline serum cotinine 300 ng/mL

**Steady state cotinine 188 ng/mL or 21
mg/d patch**

**Eventually ↑ patch dose to 35 mg and
then to 42 mg/d → much improved
– less withdrawal**

50 y/o man with Buerger's Disease cont.

- **Post Residential Treatment**

**Continued 42 mg/d nicotine patch dose
for 6 weeks then slowly tapered**

Continued bupropion for 2 years

Panelist at our Conference May 2008

Still abstinent from smoking

35 y/o Man from Texas

- **Heavy smoker (up to 30CPD) since starting at age 15**
- **Average 20-40 CPD over past year**
- **Stopped smoking 1x for 8 months – non-smoking girlfriend**
- **Efforts to cut down → nicotine withdrawal despite nicotine gum or nicotine patches.**
- **Bupropion → ↓ libido**

35 y/o Man from Texas (cont.)

- Resisted idea of nicotine patch therapy. Wanted to consider no pharmacotherapy
- Varenicline 1mg on day 1 with rapid ↑ + nicotine inhaler
- Day 2-Severe nicotine withdrawal – disheveled, tremulous, no sleep, cut himself shaving.
- Considered checking out of program
- Baseline serum cotinine 396 ng/mL

35 y/o Man from Texas (cont.)

- Declined nicotine patch dose of 56 mg/d. Agreed to 42 mg/d dose → improved w/d relief by afternoon of Day 2. ↑ varenicline to 1 mg BID
- Day 3-Markedly improved. Tremor gone, less irritable, but not sleeping well.
- Day 4-Slept better. Less w/d
- Day 5-Steady state serum cotinine 323 ng/mL Discussed safety margin if more NRT needed
- Day 7-“Best night sleep I’ve had in many years”

35 y/o Man from Texas

Dismissal Meds.

- A. Continue varenicline 1 mg BID, nicotine inhaler but D/C nicotine patches**
- B. D/C varenicline and continue patches & inhaler**
- C. Continue varenicline and ad lib inhaler. Continue 42 mg nicotine patch dose for 2 weeks then taper**
- D. Continue varenicline and ad lib nicotine inhaler. ↓ patch dose to 21 mg/d.**