

Mayo Model for Treating Tobacco Dependence

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<http://ndc.mayo.edu>

Mayo Clinic
Primary Value

*The needs of the patient
come first*

MAYO CLINIC



Research

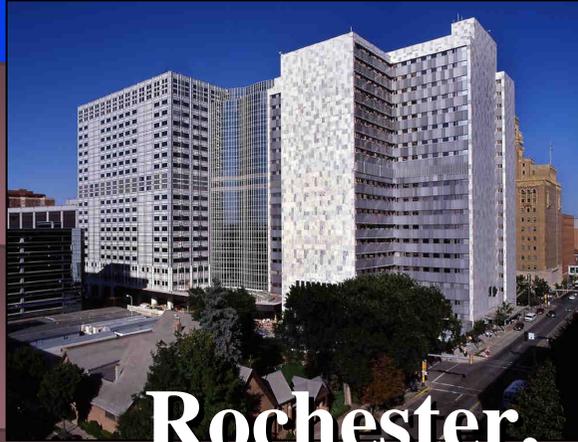


Education

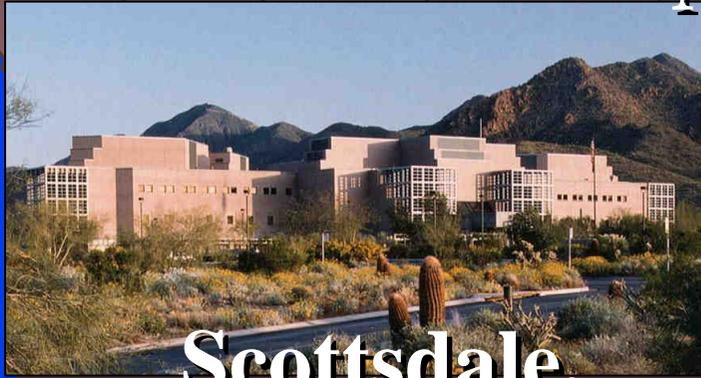


Clinical Practice

Mayo Clinic



**Rochester,
Minnesota**



**Scottsdale,
Arizona**



**Jacksonville,
Florida**



PRIMARY
MALIGNANT GROWTHS
OF THE
LUNGS AND BRONCHI

A PATHOLOGICAL
AND CLINICAL STUDY

BY

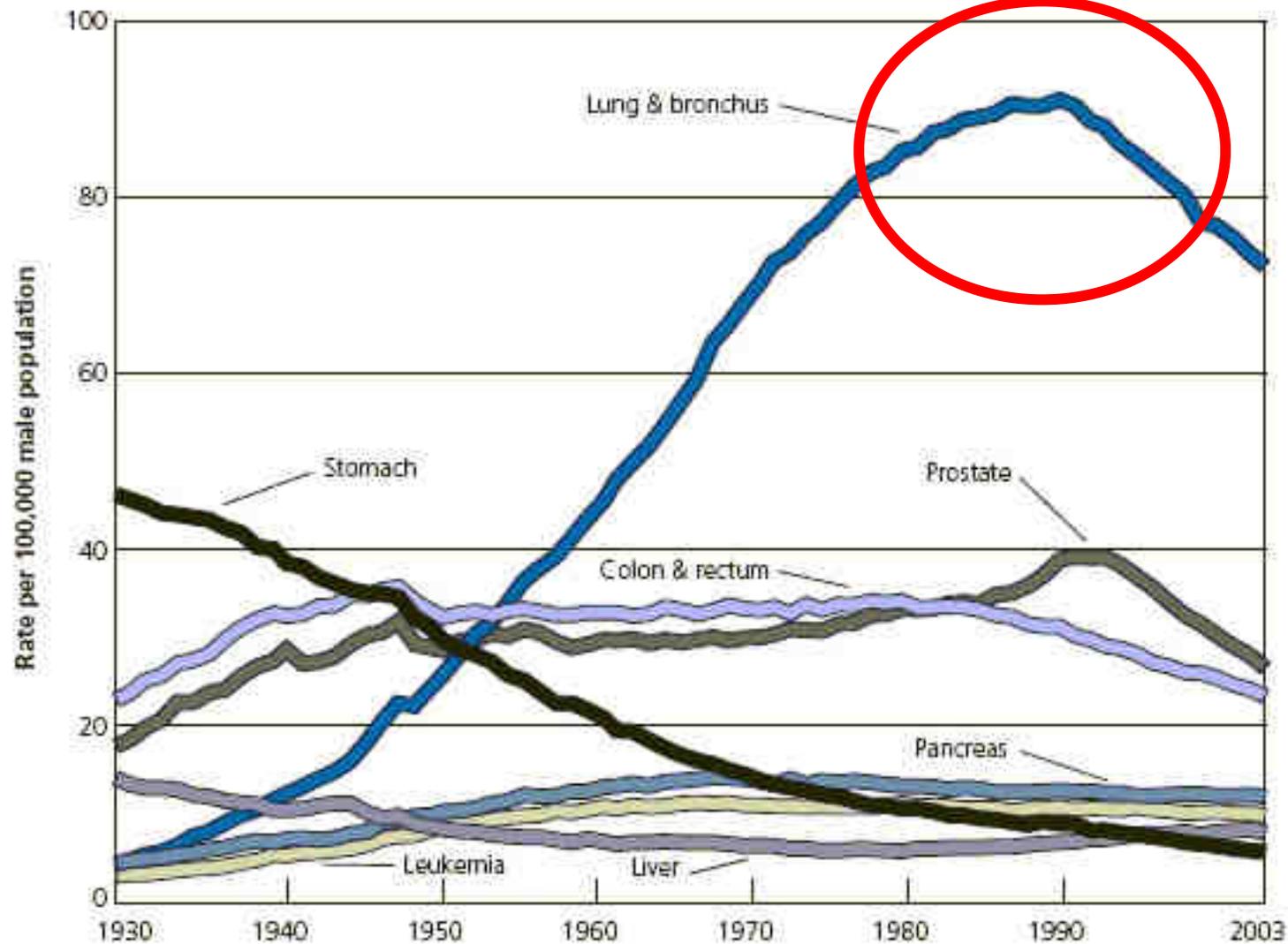
I. ADLER, A.M., M.D.,

*Professor Emeritus at the New York Polyclinic, Consulting
Physician to the German, Beth-Israel, Har Moriah,
and Peoples Hospitals, and Montefiore
Home and Hospital*

On one point, however, there is nearly complete consensus of opinion, and that is that primary malignant neoplasms of the lungs are among the rarest forms of disease.

LONGMANS, GREEN, AND CO.
FOURTH AVENUE & 30TH STREET, NEW YORK
LONDON, BOMBAY, AND CALCUTTA
1912

Age-Adjusted Cancer Death Rates,* Males by Site, US, 1930-2003



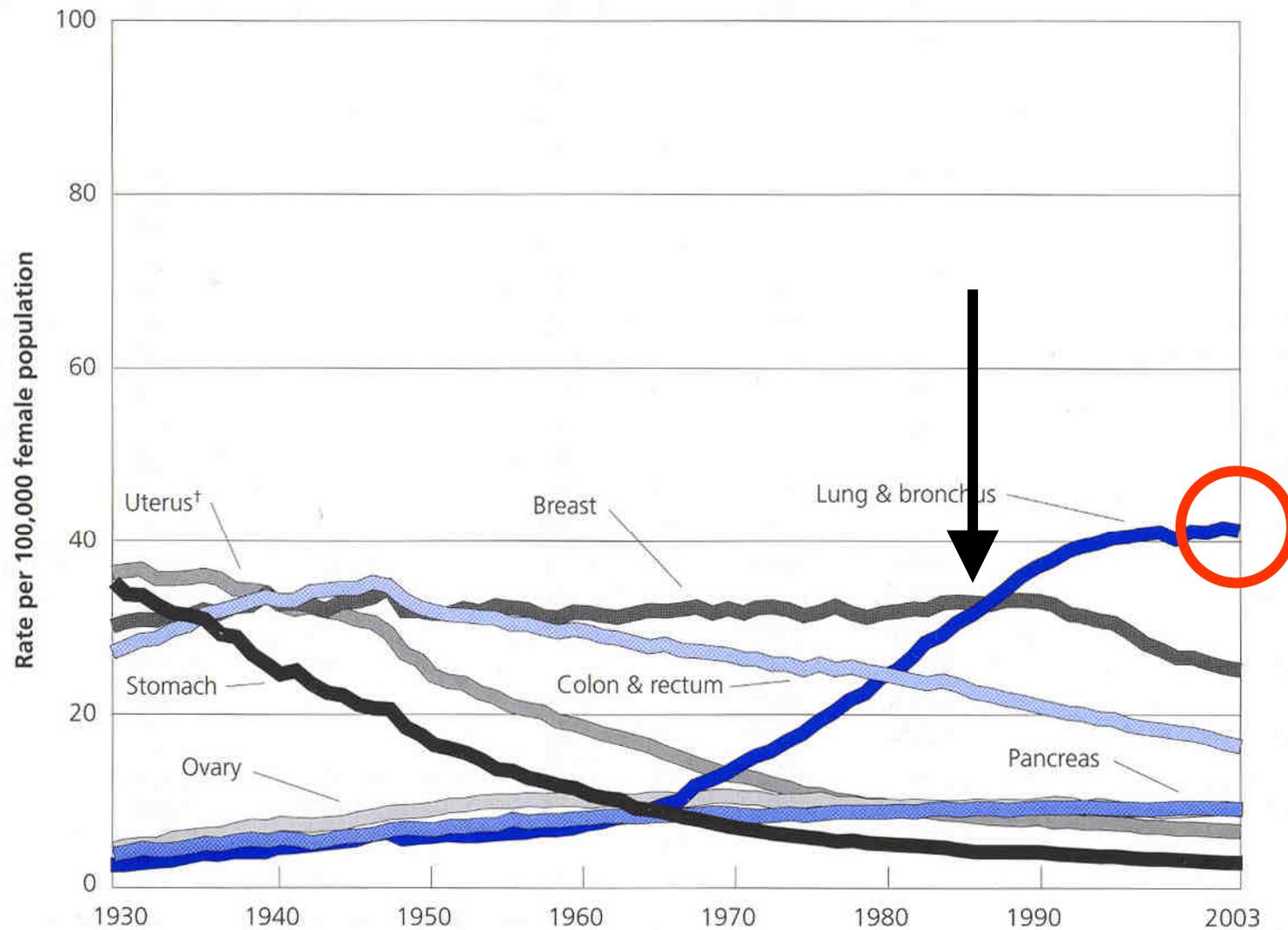
*Per 100,000, age-adjusted to the 2000 US standard population.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the liver, lung and bronchus, and colon and rectum are affected by these coding changes.

Source: US Mortality Public Use Data Tapes 1960 to 2003, US Mortality Volumes 1930 to 1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006.

American Cancer Society, Surveillance Research, 2007

Age-Adjusted Cancer Death Rates,* Females by Site, US, 1930-2003



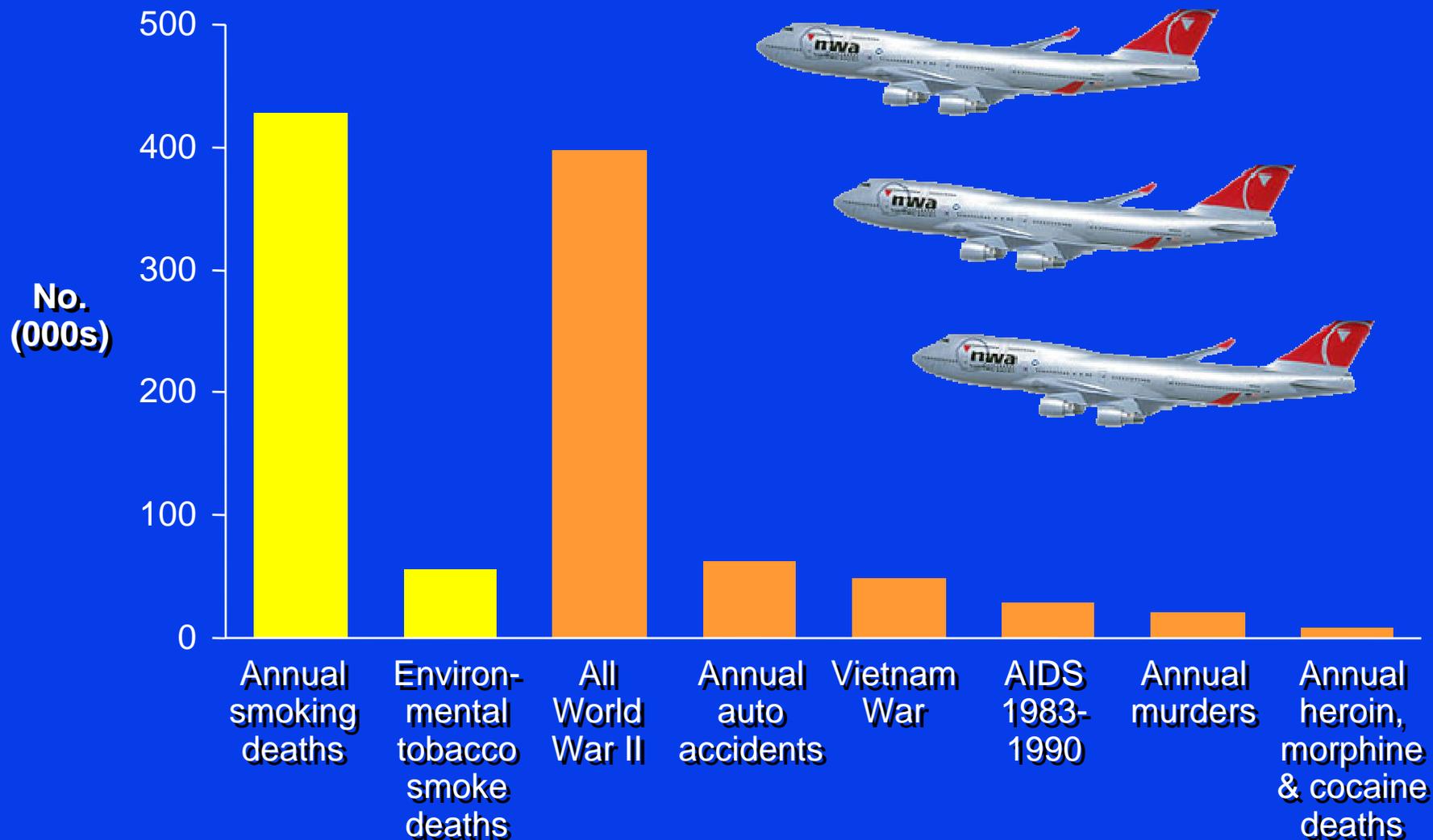
*Per 100,000, age-adjusted to the 2000 US standard population. †Uterus cancer death rates are for uterine cervix and uterine corpus combined.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the lung and bronchus, colon and rectum, and ovary are affected by these coding changes.

Source: US Mortality Public Use Data Tapes 1960 to 2003, US Mortality Volumes 1930 to 1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006.

American Cancer Society, Surveillance Research, 2007

The Cigarette Death Epidemic in Perspective



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**

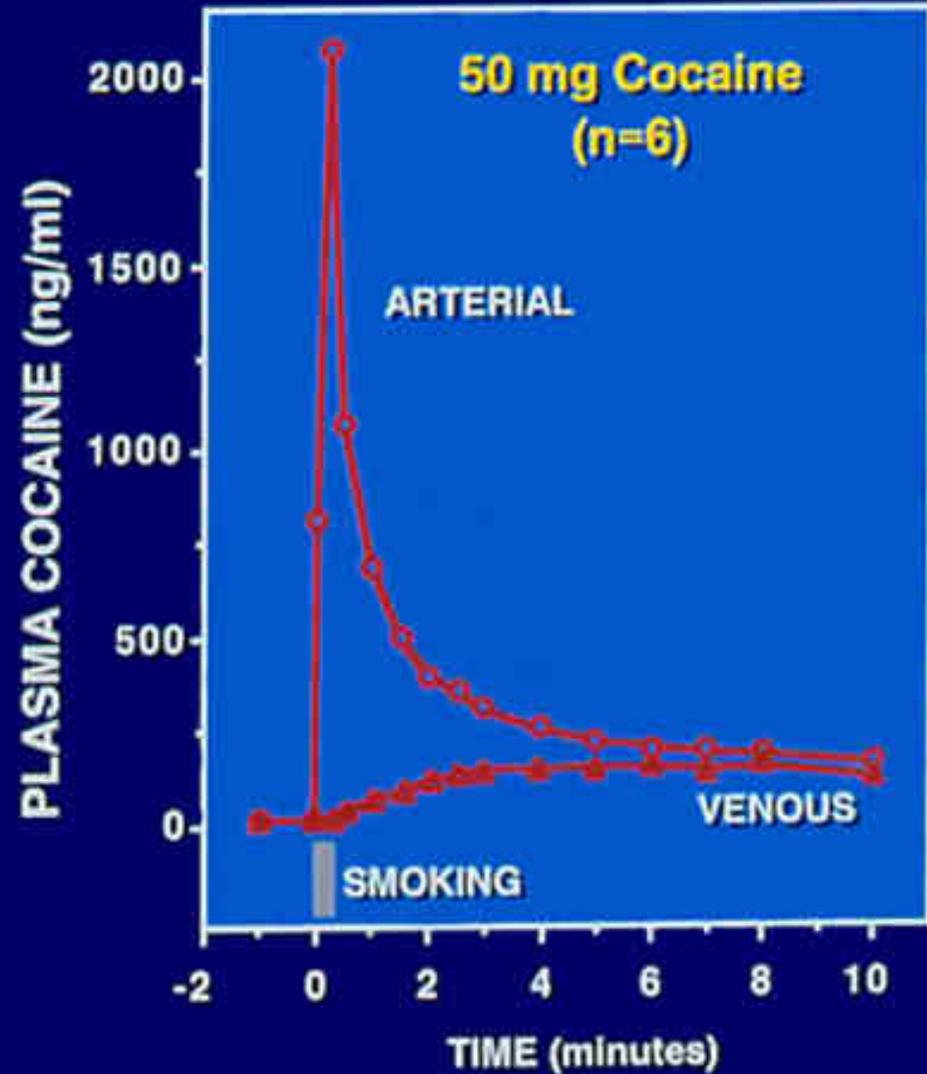
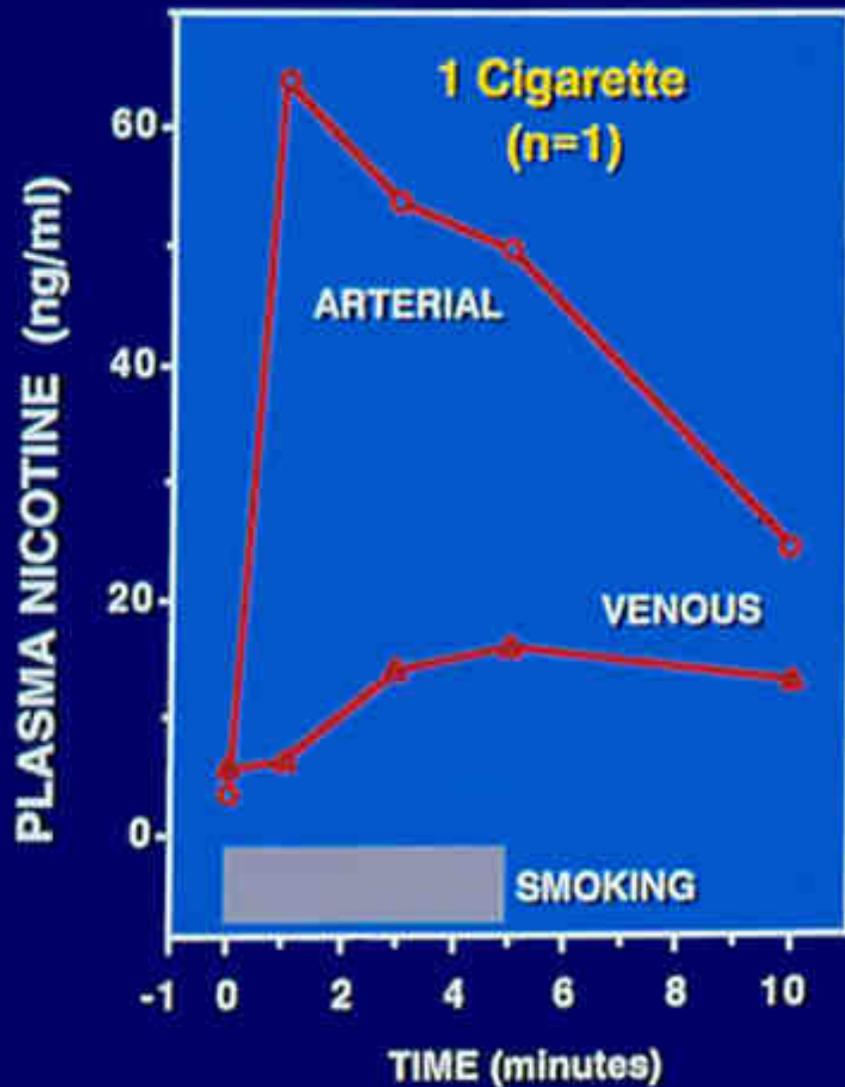
Hurt RD, VA in the Vanguard, 2005

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

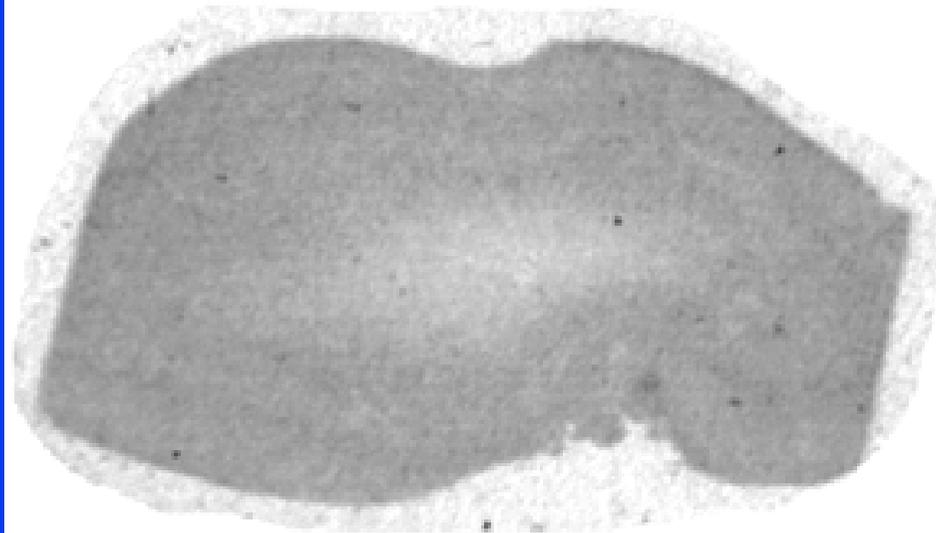
Hurt RD, Robertson CR JAMA 280:1173, 1998

Plasma Concentration after Smoking



Temporal Cortex

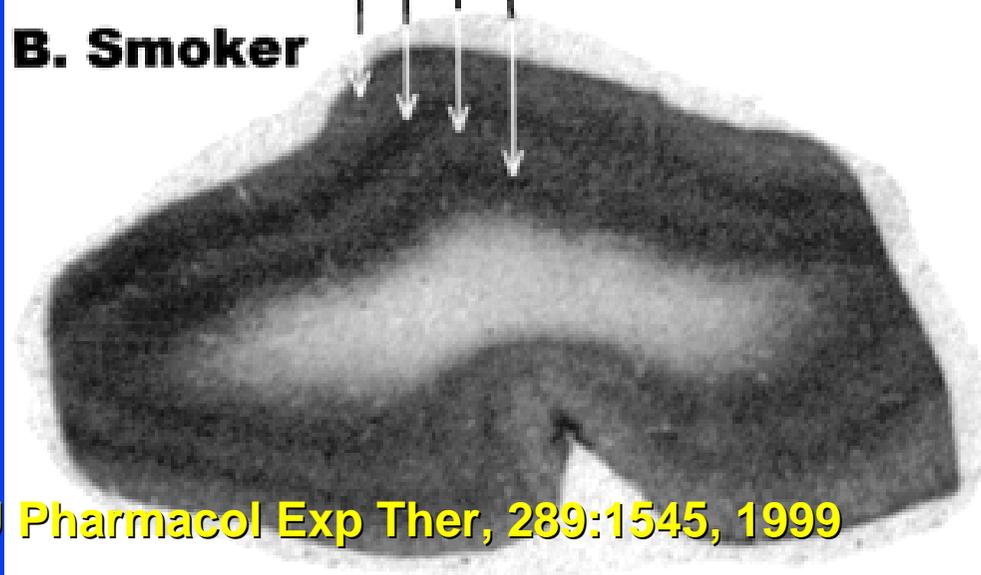
A. Nonsmoker



Cortical Layers

I-III IV V VI

B. Smoker



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**

Treating Tobacco Dependence

Principles of Treatment

- Behavioral
- Addictive disorders
- Pharmacologic
- Relapse prevention

General Principles of Motivational Interviewing

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



The “Spirit” of Motivational Interviewing “The Dance”



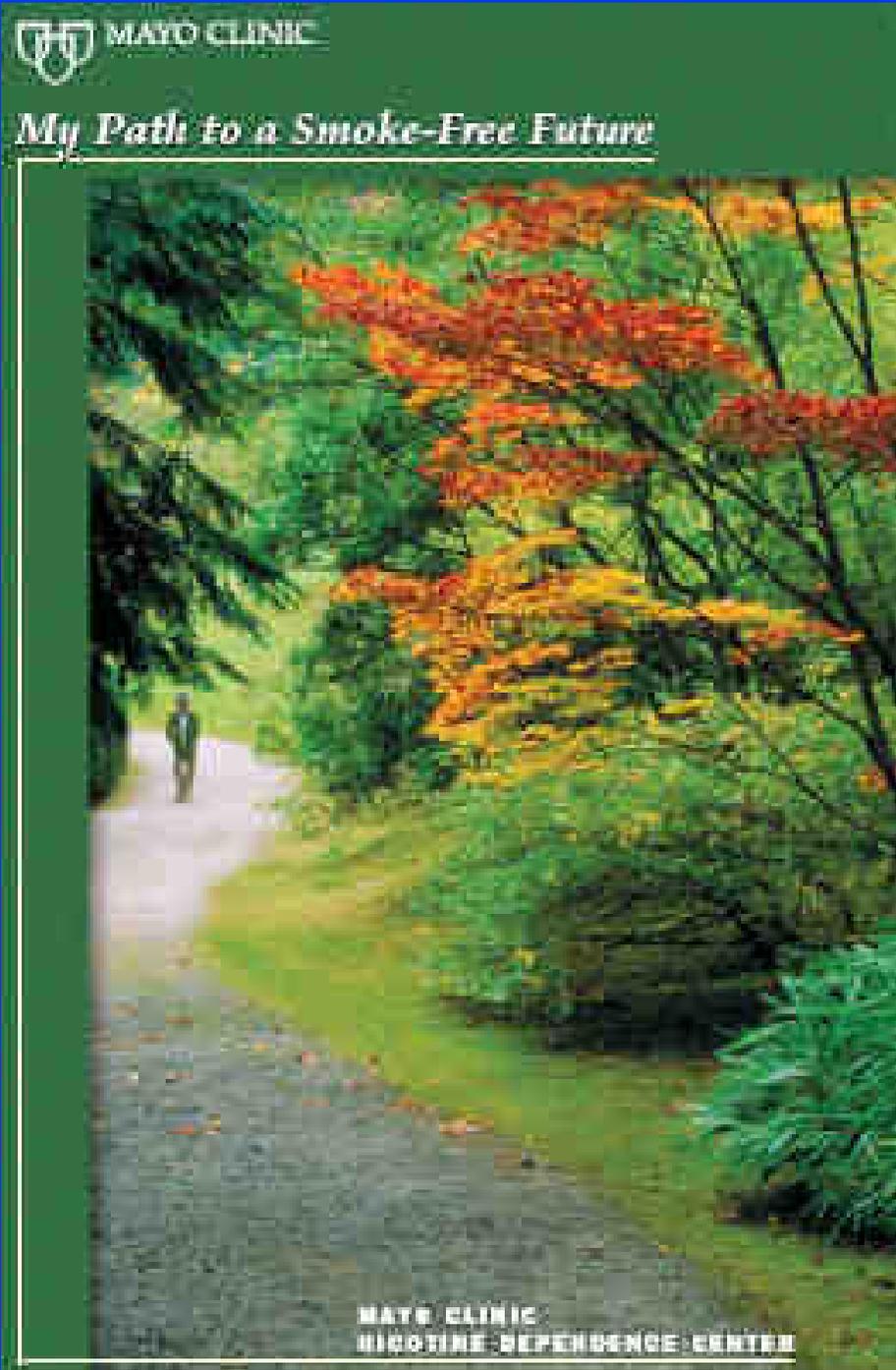
- **COLLABORATION**
Not Confrontation
- **EVOICATION**
Not Education/Advice
- **AUTONOMY**
Not Authority

**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

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

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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**

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



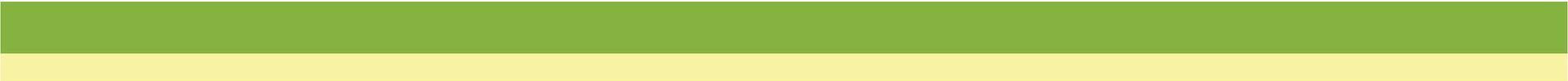
Rationale and justification

- 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

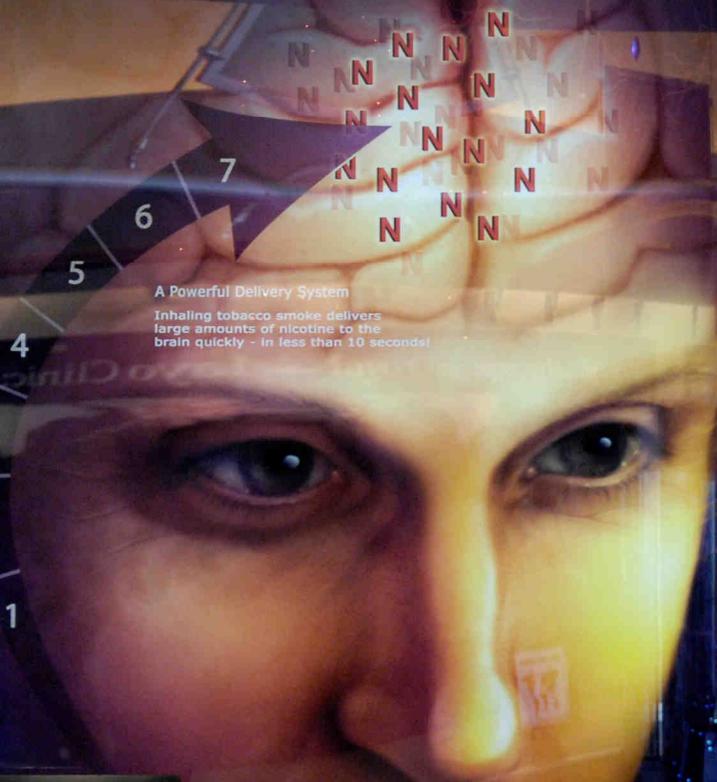
- Patients' negative expectations are very different from their actual positive experience at NDC
- Telling their story is meaningful and motivating for patients
- Patient-centered motivational interviewing helps patients engage in treatment
- Disease model encourages patients to enter treatment

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



The Anatomy of Addiction

Nicotine Physically Changes the Brain



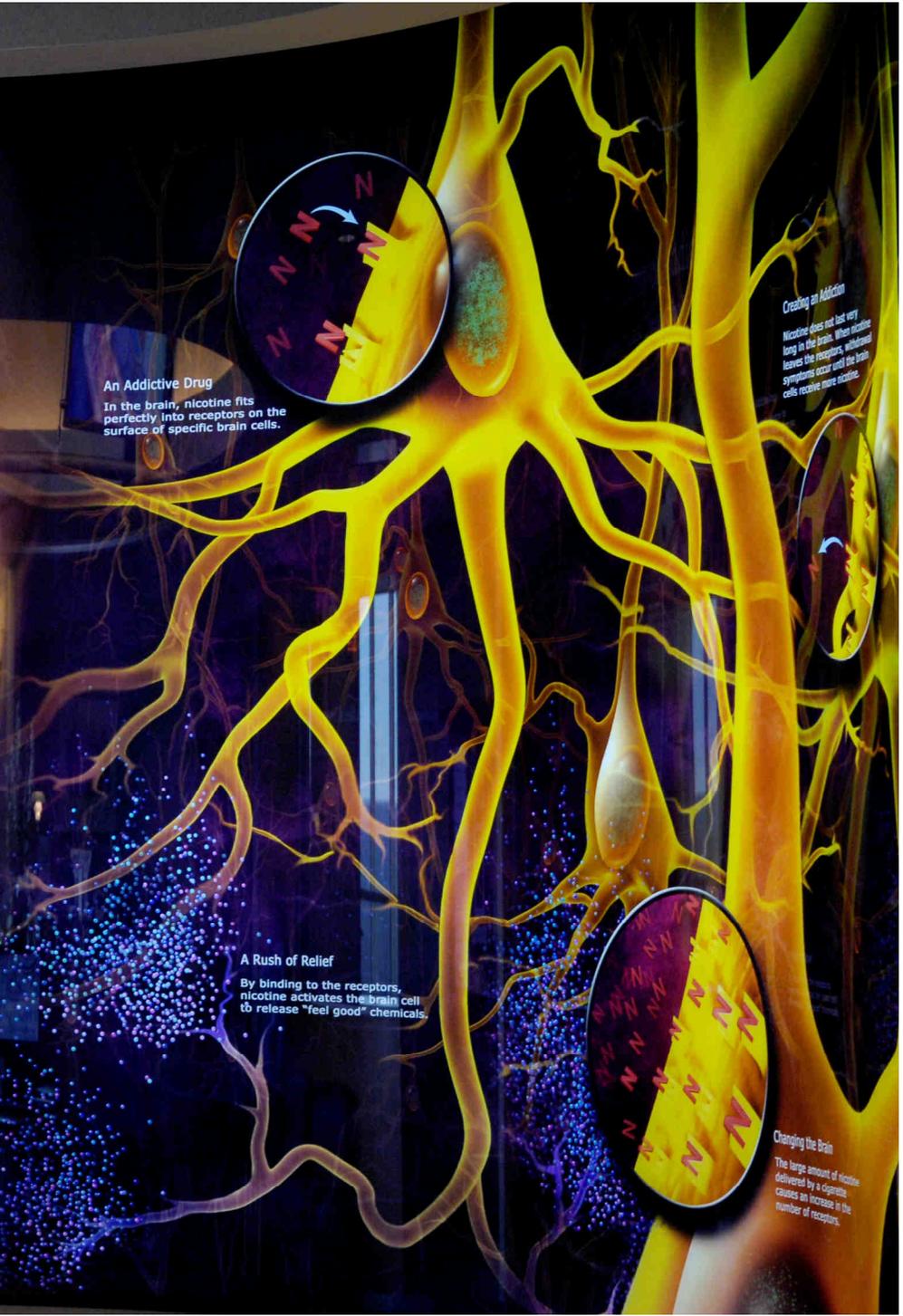
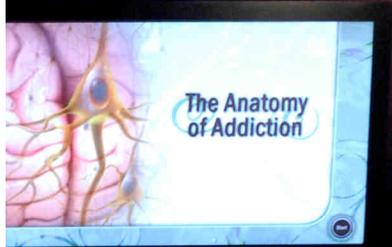
A Powerful Delivery System
Inhaling tobacco smoke delivers large amounts of nicotine to the brain quickly - in less than 10 seconds!

An Addictive Drug
In the brain, nicotine fits perfectly into receptors on the surface of specific brain cells.

A Rush of Relief
By binding to the receptors, nicotine activates the brain cell to release "feel good" chemicals.

Creating an Addiction
Nicotine does not last very long in the brain. When nicotine leaves the receptors, withdrawal symptoms occur until the brain cells receive more nicotine.

Changing the Brain
The large amount of nicotine delivered by a cigarette causes an increase in the number of receptors.



The Science of Quitting

Tobacco Dependence is Treatable

Medication

Current over-the-counter and certain prescription medications can help ease withdrawal symptoms and reduce the craving for nicotine. The medications make it more comfortable to stop smoking. Some people may also find that these medications help them stay motivated to quit for good.

Treatment Can Make All the Difference
Research shows that a combination of medication and counseling will greatly increase your chances of quitting. Of course, it will still take your commitment and determination.

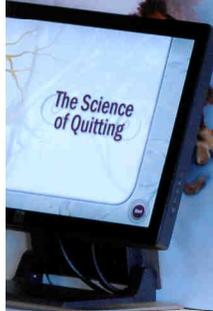
Counseling

Tobacco Treatment Specialists are very well-informed about the latest ways to help you stop using tobacco. It is very helpful to spend time with someone who understands your situation. In fact, scientists have proven that a professional's help can double your chances of stopping smoking!

Take a Step Towards Quitting
It is not just a matter of will power. Many people who are very self-disciplined have trouble quitting. Other people may try to quit a number of times before they are able to stop smoking.

Changing the Brain

Thanks to new technologies for looking at the brain, some important discoveries have been made. For example, when you stop smoking, the number of nicotine receptors increase. But beware, those receptors have "memory" and can be triggered long after you have stopped smoking. For more information see The Anatomy of Addiction wall panel.



I want to be
a good role model
to my kids, but
I am afraid I
couldn't cope
without cigarettes





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PIONEER PRESS
\$6.6 billion
After 2 months, they
wanted to see it done!

Mayo Clinic: Supporting a Tobacco-Free World

Patient Care
More than 30,000 patients
From more than 60 countries

Education
More than 500 health care professionals
Representing more than 15 countries

Research
You'll see more on Mayo's website soon
More than 50 study publications

Zebrafish

• Zebrafish are used in research because they are easy to breed and maintain in a laboratory setting.

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Mayo Clinic and You
Keeping the World from
Smoke and Mirrors

Supporting a Tobacco-Free World



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.