TOBACCO CESSATION

FACTS, FICTION, AND URBAN LEGENDS

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NO DISCLOSURES
MYTH #1

- Nicotine is the harmful substance in cigarettes.
MYTH #1

MEDICAL REALITY

• The thousands of toxins.

• Combustion products.
MYTH # 2

- Nicotine’s addictive potential is the same regardless of whether nicotine is obtained through NRT or cigarettes.
MYTH #2

MEDICAL REALITY

Cigarettes are far more addictive than nicotine replacement products, due to quantity and delivery of nicotine.
MYTH #3

NRT is hazardous
MYTH #3

MEDICAL REALITY

• Nicotine replacement therapy is safe for smokers.

• NRT provides nicotine to the smoker w/o the dangerous toxins.

• Toxins, are responsible for most of smoking-caused disease.

• NRT is considered a “clean” nicotine delivery

• Major adverse effects from using nicotine gum/patch are rare.

• Some addictive potential.
MYTH #4

Smoking while using NRT causes MIs
MYTH #4

MEDICAL REALITY

• This myth likely originated from six highly publicized case reports in the media in 1992 about individuals who had suffered heart attacks while smoking and using the patch.*

• A subsequent investigation found no evidence of increased toxicity among smokers using the patch.**

NRT AND THE HEART
CONCOMITANT SMOKING WITH PATCH.

- 5 wk placebo trial: 14-21mg/day.
- 156 pts. with cardiac disease
- Cardiac symptoms monitored, 24h ECG
- ECG monitoring: No differences in arrhythmias or ST segment depression.

NRT AND THE HEART

NRT plus smoking equivalent to smoking.

Benowitz NL, Gourlay SG J Am Coll Cardiol 1997;29:1422-31
Benowitz-Progress in Cardiovascular Diseases, Vol. 46, No. 1, (July/August) 2003: pp 91-111
TOBACCO AND ATHEROSCLEROSIS
SEVERAL MECHANISMS:

- Damages the endothelium lining increases atherosclerotic plaques.
- Lowers HDL.
- Promotes artery vasoconstriction.
- Increases blood pressure.
- Raises oxygen demand and decrease O2 delivery of the heart muscle (CO).
- Promotes thrombosis.
MYTH #5

Patients with heart disease should not use nicotine replacement products
MYTH #5

MEDICAL REALITY

• It is more dangerous for patients with heart disease to continue to smoke than to use NRT.

• Cardiac patients who cannot quit using non-pharmacologic methods should be among those first considered for NRT and other cessation medications.
NRT AND THE HEART

No increase in CV events in those who use NRT compared with those who continue to smoke.

Transdermal nicotine did not affect angina frequency, overall cardiac symptom status, nocturnal events, arrhythmias, or episodes of ischemic ST segment depression.

*Arch Intern Med. 1994;154(9):989-995.*
NRT AND THE HEART

NRT may even reduce c.v. risk if cigarette consumption is reduced but not eliminated.

• Benowitz NL, Gourlay SG J Am Coll Cardiol 1997;29:1422-31
HUBBARD ET AL IN: TOBACCO CONTROL 2005:

- Includes data from more than 30,000 NRT users.

- Findings demonstrate that overall there is no increased risk of myocardial infarction, stroke, or death in the 56 days after the first prescription for NRT.
MYTH #6

NRT SHOULDN’T BE GIVEN TO SURGICAL PTS.
MYTH #6

MEDICAL REALITY

• Available evidence does not support a detrimental effect of NRT in surgical patients, especially when compared with the consequences of continued smoking.

• Pre op cessation may be an excellent way to get a patient to stop.
TOBACCO CESSATION IMPROVES SURGICAL OUTCOMES

• Cardiovascular complications
• Respiratory complications
• Wound related complications

MYTH #7

Smokers do not require pneumovax
MYTH #7

Medical Reality

• The ACIP recommends that cigarette smoking should be added to the list of indications for PPSV23 in adults aged 19 through 64 years.

*Advisory Committee on Immunization Practices
MYTH #8

Smokers under 18 should not use cessation medications.
MYTH #8

MEDICAL REALITY

❖ 90% smokers begin smoking before age 18.

❖ Nicotine patch/gum are far safer than smoking.

❖ Cessation medications should be considered for all smokers, including those under 18 yrs. *


• Nicotine replacement therapy is the only pharm. intervention that has been extensively studied in children.


MYTH #9

Medications are not effective in quitting attempts
MYTH #9

MEDICAL REALITY

✓ Cessation medications are effective.

✓ NRT and Bupropion have each been found to approximately double quit rates.

✓ Varenicline doubles quit rates.
STOP-SMOKING MEDICATIONS ARE NOT EFFECTIVE IN HELPING PEOPLE QUIT?

• The benefit of NRT is of increasing the initial quit rates, not preventing relapse.

• Studying relapse rates in smokers several months after stopping NRT does not constitute the indictment of these aids that it might at first appear.

  • Alpert HR, Connolly GN, Biener L; Tobacco Control; January 10, 2012

  • Hughes et al, Nicotine & Tobacco Research, 13:512-522, 2011;
STOP-SMOKING MEDICATIONS ARE NOT EFFECTIVE IN HELPING PEOPLE QUIT.

ALPERT HR, CONNOLLY GN, BIENER L; TOBACCO CONTROL; JANUARY 2012

Omitted a number of critical previous studies in their review that had concluded OTC-NRTs are helpful in cessation.
MYTH #10

NRT should not be used the same time and/or in combination with Bupropion.
MYTH #10

MEDICAL REALITY

- The patch/gum/lozenge/inhaler may be used at the same time and/or in combination with Bupropion.

- Bupropion use with Varenicline® not studied.
MYTH #11

NRT should only be taken in doses recommended by the manufacturer.
MYTH #11

MEDICAL REALITY

• Smokers should be in control of how they use NRT.

• May vary the dose according to own needs.

• It takes time to learn how best to use NRT.

• Should use in a manner that maximizes benefits.
DOUBLE NICOTINE THERAPY

• CURRENT RECOMMENDED PRACTICE IS TO USE A NICOTINE PATCH AND A PRN NICOTINE.

- USPHS Preventive Taskforce, 2008
- Up To Date, 2012
DOUBLE NICOTINE THERAPY

- Long-acting formulation (patch)
  - Produces relatively constant levels of nicotine

PLUS

- Short-acting formulation (gum, lozenge, inhaler, nasal spray)
  - Allows for acute dose titration as needed for withdrawal symptoms
NICOTINE REPLACEMENT THERAPIES (NRT)
PDR/PACKAGE INSERTS

• Individualize treatment
  • Less than 10 cigarettes per day = 7 mg patch
  • 10 to 15 cigarettes per day = 14 or 21 mg patch
  • 15 to 20 cigarettes per day = 21 mg patch
  • If high use, = multiple patches
  • Always consider at least 2 different pharmacotherapies for better results
NICOTINE PATCH THERAPY
INITIAL DOSING GUIDELINES
(OFF LABEL)

Based on Baseline Cigarettes/Day

<table>
<thead>
<tr>
<th>Baseline Cigarettes/Day</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 CPD</td>
<td>7-14 mg/d</td>
</tr>
<tr>
<td>10-20 CPD</td>
<td>14-21 mg/d</td>
</tr>
<tr>
<td>21-40 CPD</td>
<td>21-42 mg/d</td>
</tr>
<tr>
<td>&gt;40 CPD</td>
<td>42+ mg/d</td>
</tr>
</tbody>
</table>

DOUBLE NICOTINE THERAPY

ALTHOUGH OFF LABEL:

- With each cigarette being 1 mg of nicotine, and thus a pack being 20 mg. A 7 or 14 mg patch is not sufficient to prevent withdrawal.

- Thus, if 2 packs or more are consumed it would be logical to require perhaps 40 mg as day as base line quantity of NRT.
MYTH #12

Cessation medications are only appropriate for short-term use.
MYTH #12

MEDICAL REALITY

• NRT should be used for as long as needed.
• May need this support for years.
• Varenicline’s effectiveness is enhanced over a second course of treatment.
EXTENDED USE OF MEDICATIONS

• The Lung Health Study, reported that approx. 1/3 of long-term quitters still were using nicotine gum at 12 months.

• Some for as long as 5 years.

• No serious side effects.


MYTH #13

**NRT** should only be used by those ready to quit not simply reduce tobacco use
MYTH #13

MEDICAL REALITY

• NRT can be used by people who are not yet ready or able to quit.

• NRT may help some smokers take a “cigarette holiday,” or, in some cases, substantially reduce their smoking as an interim, achievable step toward tobacco abstinence.
MYTH #14

It is not cost-effective to cover stop-smoking medications under health insurance plans.
In 2006, Mass. began providing comprehensive smoking cessation benefits to the approx. 190,000 Mass. Health (Medicaid) members who smoked.
The study found that in just over 2 years, 26 percent of Mass. Health smokers (33,000 people) quit smoking.

There was a decline in the utilization of other health services:

- 38 percent decrease in hospitalizations for heart attacks;
- 17 percent drop in emergency room and clinic visits due to asthma;
- 17 percent drop in claims for adverse maternal birth complications, including pre-term labor.
Tobacco users consume about 25% more healthcare services than non-tobacco users.
CDC REPORT
HHS: MAKING YOUR WORKPLACE SMOKE FREE 2002

- ABSENTEEISM
- PRESENTEEISM
- LIFE INSURANCE
- WORKERS COMP COSTS
- HEALTH INSURANCE COSTS
- PROPERTY DAMAGE, CLEANING
- HEALTH ISSUES W NON SMOKERS
- LIABILITY
MYTH #15

The nicotine in cigarettes = nicotine (NRT) products: trading one addiction for another
MYTH #15

MEDICAL REALITY

The products are different.\textsuperscript{1,2} The amount of nicotine in NRT is less than in cigarettes and it is delivered more slowly.\textsuperscript{4-6} NRT products have a much lower risk of addiction than cigarettes.\textsuperscript{2}

MYTH: # 16

*NRT use means no withdrawal or craving symptoms*
MYTH: # 16

MEDICAL REALITY

✧ NRT reduces withdrawal symptoms

✧ May not completely eliminate the symptoms.

MYTH #17

NRT causes disease.
MYTH #17

MEDICAL REALITY

• The effect of NRT on the body is not fully known, but NRT products are safer than cigarettes. *

• Of the 6,000 chemicals found in tobacco smoke, over 60 are known to cause cancer. **

Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion. 2007
MYTH: #18

Only healthy people can use NRT.
MYTH: #18

MEDICAL REALITY

• Generally, NRT can be safely used by pts. with diabetes or high blood pressure.

• NRT does not increase the risk of heart attacks.

MYTH#19

HOOKAHS ARE SAFE
Hookah (waterpipe smoking)

- Also known as
  - Shisha
  - Narghile
  - Goza
  - Hubble bubble

- Tobacco flavored with fruit pulp, honey, and molasses increasingly popular among young smokers in coffee houses, bars, and lounges

- Image courtesy of Mr. Sami Romman www.hookah-shisha.com
Hookah smokers widely but mistakenly believe that the pipe is a harmless alternative to other forms of tobacco smoking.”

--Tracey Barnett, lead researcher UF College of Public Health
Using a waterpipe to smoke tobacco is not a safe alternative to cigarette smoking (4).

A typical 1-hour long waterpipe smoking session involves inhaling 100–200 times the volume of smoke inhaled with a single cigarette (6).

Even after it has been passed through water, the smoke produced by a waterpipe contains high levels of toxic compounds, including carbon monoxide, heavy metals and cancer-causing chemicals (8, 14).
MYTH #20

Electronic cigarettes are safe and effective in getting people to stop smoking.
Man Suffers Severe Injuries After E-Cigarette Explodes in His Mouth

By MIKAELA CONLEY | ABC News – 8 hrs ago
MYTH #21

THERE ARE NO DANGEROUS COMPOUNDS IN ELECTRONIC CIGARETTES!
• Glycerin (VG) and propylene glycol (PG) are the most common nicotine solvents used in e-cigarettes (ECs).
• It has been shown that at high temperatures both VG and PG undergo decomposition to low molecular carbonyl compounds, including the carcinogens formaldehyde and acetaldehyde.
• The aim of this study was to evaluate how various product characteristics, including nicotine solvent and battery output voltage, affect the levels of carbonyls in EC vapor.
E-CIGARETTES

DESIGN

Upon inhalation the heater known as the atomiser vaporises the nicotine solution turning it into vapour. The user in turn inhales this to get the similar nicotine hit as a normal cigarette, and a real smoking satisfaction.

3 COMPONENTS:

- **BATTERY**: LED lights up when the smoker draws on the cigarette
- **‘VAPORIZING’ UNIT**: Where heating occurs
- **CARTRIDGE**: Contains the liquid nicotine solution
Electronic cigarettes ("e-cigarettes") are devices, about the size of a regular cigarette.

- They operate by electronically vaporizing a solution that often contains nicotine, creating a mist which is then inhaled.

- E-cigarettes are available in various flavors and claimed strengths of nicotine cartridges.
When a user inhales on the mouthpiece, the vaporizer is turned on and converts the liquid in the cartridge into a vapor.

A rechargeable battery powers the vaporizer and has an indicator light to show when the device is in use.
ELECTRONIC CIGARETTES (E-CIGARETTES) RESEMBLE TOBACCO CIGARETTES AND ARE COMPRISED OF THREE COMPONENTS:

• A **cartridge** that resembles a cigarette **filter**.

• **Atomizing device** or **heating element** which ‘aerosolizes the flavor solution’ and turns the liquid solution into the inhaled substance.

• **Battery** activates the heating element.

• Commonly contain nicotine, do not actually contain tobacco.

• Although some classes of e-cigarettes are marketed as nicotine-free products, even “nicotine-free e-cigarettes” actually do contain at least trace amounts of nicotine.
ELECTRONIC CIGARETTES

• **Aerosol** generated from an e-cig is commonly but inaccurately referred to as ‘vapor.’

• **Vapor:** gaseous state of a substance.

• An aerosol *is a suspension of fine particles* of liquid, solid or both in a gas.
ELECTRONIC CIGARETTES

• Both the particulate and gas phases are mixtures of chemical substances in e-cigarette aerosols.

• The e-cig aerosol simulates cigarette smoke.

• Following a puff, the aerosol is delivered into the user’s mouth and lungs by inhalation.

ELECTRONIC CIGARETTES

- Aerosol is exhaled into the environment.

- Generate different physical and chemical characteristics during operation.

ELECTRONIC NICOTINE DELIVERY SYSTEMS (ENDS)

- Varying nicotine concentrations in the solution generating the nicotine aerosol (also called e-liquid),
- Varying volumes of solution in the product,
- Different carrier compounds (most commonly propylene glycol with or without glycerol [glycerin]),
- Wide range of additives and flavors, and battery voltage.
- Quality control is variable, Design flaws, lack of adequate labeling
- Engineering differences result in variability in how e-cigarettes heat and convert the nicotine solution to an aerosol and consequently the levels of nicotine and other chemicals delivered to users and the air pollution generated by the exhaled aerosol.

• Quality control inconsistent or non-existent.

• Three different e-cigarette cartridges with the same label were tested and each cartridge emitted a markedly different amount of nicotine with each puff.
ELECTRONIC CIGARETTES

- No combustion
- No good data re effective delivery of nicotine
- No data on the blood nicotine levels.
- Small-scale studies by FDA scientists show that e-cigarettes contain toxins including known carcinogens (albeit at much lower levels than traditional cigarettes).
- E-cigarettes are inconsistent in the amount of nicotine they contain.
Clinicians should advise patients wishing to use nicotine to stick to the FDA-regulated forms, such as patches, gum, lozenges, nasal spray — or even, perhaps, the existing FDA-approved inhaler.”
Teens have no interest in E Cigs
E-cigarette use was associated with increased intentions to smoke cigarettes.

- 2011-2013, the number of never-smoking youth who used e-cigarettes increased three-fold, from 79,000 to over 263,000.

- Intention to smoke conventional cigarettes was 43.9% among ever e-cigarette users and 21.5% among never users.

- Nicotine Tob Res (2014) First published online: August 20, 2014
• **LIPOID PNEUMONIA**

• An Unexpected Consequence of E Cig Use.
  • McCauley I, Markin, C and Hosmer, D
  • Chest: 2012;141;1110-1113
A 42-year-old woman was admitted to the hospital with a 7-month history of dyspnea, productive cough, and subjective fevers.

She had been seen multiple times in the ED with similar complaints and had received several courses of antibiotics.

The patient had recently started using electronic cigarettes (e-cigarettes), about 7 months prior, which coincided with the onset of her respiratory symptoms.
A DIAGNOSTIC PROCEDURE WAS DONE
BAL sample shows lipid-laden macrophages (Oil-Red-O stain): Chest: 2012
LIPOID PNEUMONIA

- Lipoid pneumonia is a rare, primarily chronic inflammatory reaction secondary to the presence of lipid substances in the lungs, with subsequent uptake by alveolar macrophages and accumulation in the interstitium.

- For this patient, the suspected source of her exogenous lipoid pneumonia was recurrent exposure to glycerin-based oils found in e-cigarette nicotine vapor.

- Many of these compounds are carcinogenic and harmful to humans. Vegetable glycerin is often added to the nicotine solutions used in e-cigarettes to make the visual smoke when the solution is vaporized. Glycerin is produced by heating palm or coconut oil; however, it can also be produced from animal fat and soap through a fatty acid splitting operation.
LIPOID PNEUMONIA

Most cases of exogenous lipoid pneumonia are associated with aspiration of mineral oil or lipid-based preparations.
BRIEF PREOPERATIVE SMOKING ABSTINENCE: IS THERE A DILEMMA?

- Source Department of Anesthesiology, Mayo Clinic, 200 First Street Southwest, Rochester, MN 55905, USA.
BRIEF PREOPERATIVE SMOKING ABSTINENCE: IS THERE A DILEMMA?

• Recent Smoking Cessation: No Increase Pulmonary Complics. (1)

• Smoking status does not affect changes in perceived stress. ---perceived stress measured from before surgery up to one week postoperatively (2)

1.. Barrera et al, Chest 127:1977, 2005
2.. Warner et al, Anesthesiology 199:1125, 2004
STOPPING SMOKING SHORTLY BEFORE SURGERY AND POSTOPERATIVE COMPLICATIONS

• ARCH INTERN MED: ONLINE MARCH 14, 2011

• Katie Myers, MSc, CPsychol; Peter Hajek, PhD; Charles Hinds, FRCP, FRCA; Hayden McRobbie, MBChB, PhD
CONCLUSION

• Patients should be advised to stop smoking as early as possible, but there is no evidence to suggest that health professionals should not be advising smokers to quit at any time prior to surgery.
FACT

Menthol makes it easier for young or new/inexperienced smokers to start smoking cigarettes
Menthol cigarettes and smoking initiation: a tobacco industry perspective

*Tob Control* 2011;20:ii12-ii19
FACT

- Legacy Tobacco Documents Library (http://legacy.library.ucsf.edu) show that menthol is added to cigarettes in part because it is known to be an attractive feature to inexperienced smokers who perceive menthol cigarettes as less harsh and easier to smoke and because of their availability from friends and family.

Also the tobacco industry found that some youths smoke menthols because they perceive them to be less harmful than non-menthol cigarettes.
LITTLE OR NO EFFICACY

- Hypnosis
- Acupuncture
- Nicotine water/lollipops/lip balm/hand gel
- Cigarette-like devices
- Unassisted tapering/nicotine fading
- Laser
- Herbal remedies
- Injection
WHICH DOES NOT HAVE A CAUSAL RELATIONSHIP TO SMOKING?

• DIABETES
• RHEUMATOID ARTHRITIS
• COLORECTAL CANCER
• HEPATOCELLULAR CANCER
• NONE OF THE ABOVE.
Diabetes

• The evidence is sufficient to infer that cigarette smoking is a cause of diabetes.

• The risk of developing diabetes is 30–40% higher for active smokers than nonsmokers.

• There is a positive dose-response relationship between the number of cigarettes smoked and the risk of developing diabetes.
Rheumatoid Arthritis

- The evidence is **sufficient to infer** a causal relationship between cigarette smoking and rheumatoid arthritis.

- The evidence is **sufficient to infer** that cigarette smoking reduces the effectiveness of the tumor necrosis factor-alpha (TNF-α) inhibitors.
In type 2 diabetes, smoking cessation is associated with deterioration in glycemic control that lasts for 3 years and is unrelated to weight gain.

At a population level, this temporary rise could increase microvascular complications.
SUMMARY

• NICOTINE (NRT) IS NOT THE HARMFUL SUBSTANCE.
• NRT IS NOT AS ADDICTIVE AS TOBACCO NICOTINE
• NRT IS NOT HAZARDOUS
• NRT CAN BE USED IN STABLE HEART DISEASE.
• IS NOT CONTRAINDICATED BEFORE SURGERY.
• CAN USE IN UNDER 18 YR OLD PTS.
• CAN USE COMBINATIONS.
• CAN USE NRT FOR LONG TERM IF NECESSARY
• HOOKAHS ARE DANGEROUS
• ASSOCIATION WITH OTHER ILLNESSES
The persistence of unsubstantiated concepts is not uncommon and can have a significant impact on medical practice.
QUESTIONS???