TREATMENT OF NICOTINE DEPENDENCE

Introduction

- Most commonly used substance the world over.
- Largest cause of preventable death worldwide.
- Leading causes of smoking related death
  - Cardiovascular diseases
  - COPD
  - Lung cancer
- Other diseases associated with smoking
  - Obstructive sleep apnea, low birth weight, perinatal mortality
- Active ingredient in all forms of tobacco: Nicotine
  - As addictive as cocaine or heroin

Tobacco products: Smoked Tobacco

Hookah

Cigar

Cigarette

Pipe

Bidi

Tobacco products: Smokeless Tobacco

Khaini

Chewed tobacco

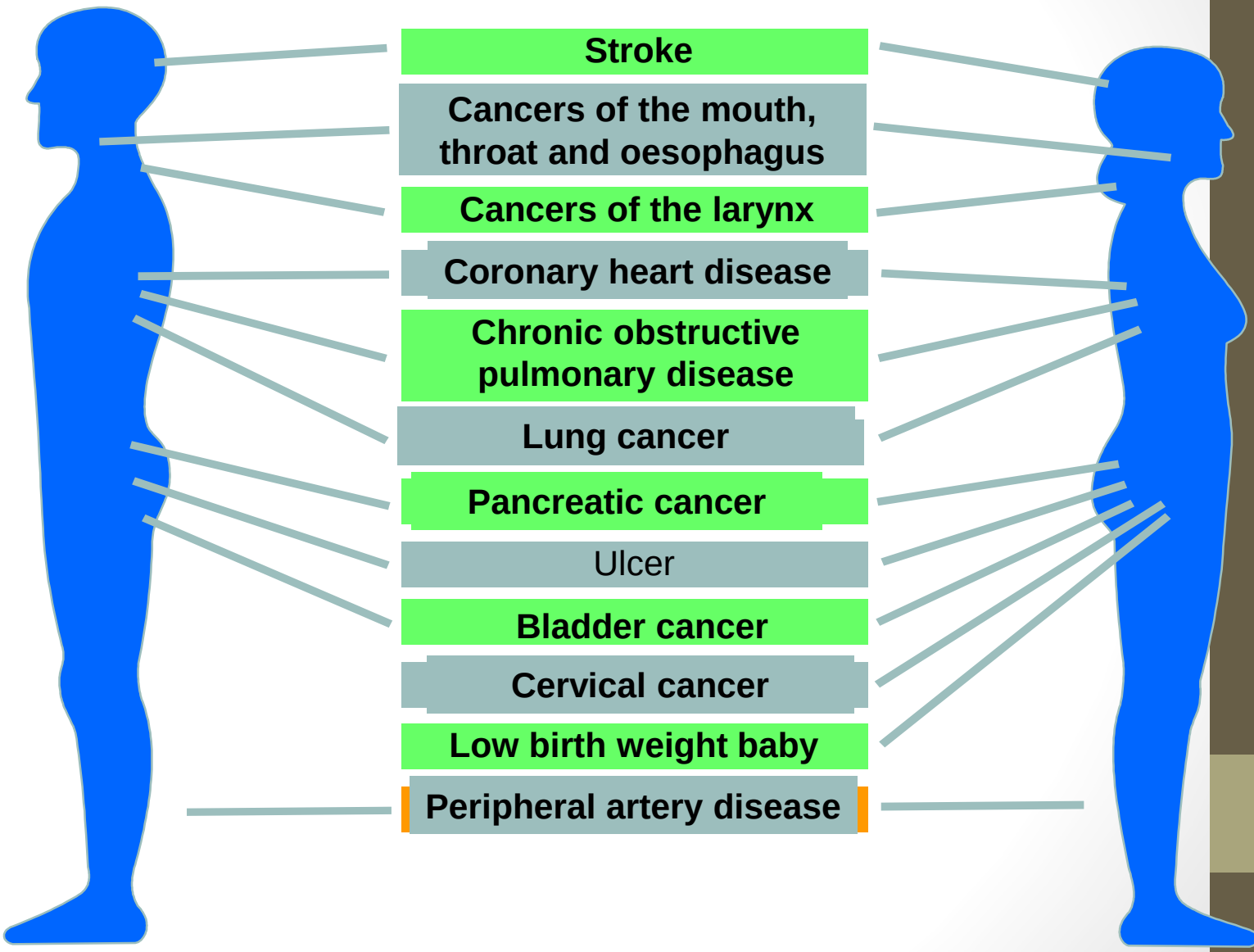
Zarda

Snuff

Gutkha

Paan

The health risks of Tobacco



Global scenario

- 120 crore people use tobacco worldwide
  - >80% from developing countries
- 40 lakh die every year due to tobacco.
- Globally, tobacco is responsible for the death of 1 in 10 adults.

Indian scenario

- India is the second largest consumer and third largest producer of tobacco .
- Tobacco use among men and women is widespread in all regions and sections of society.
- 55.8% of males in the age range of 12-60 years currently use tobacco.(Ray et al,2004)
- Among men the prevalence of smoking and the use of smokeless tobacco is roughly similar.

TOBACCO USE IN INDIA

Findings from National Family Health Survey – 3 (2005-06)

Prevalence of tobacco use	**Males (%)**	**Females (%)**
Tobacco users	57.0	10.8
Smokers	32.7	1.4
Chewers	36.5	8.4

Prevalence of Tobacco Use

- Tobacco use prevalence among males is higher compared to females
- Among older age groups compared to the younger age groups.
- The prevalence of tobacco use is higher in rural population compared to that in urban areas.
- India has a huge problem of widespread smokeless tobacco use among women, particularly among disadvantaged women.
- The prevalence of tobacco use in pregnant women is similar to that in non-pregnant women of the same age.

Global Tobacco Surveillance System

The World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and Canadian Public Health Association (CPHA) began development of the Global Tobacco Surveillance System (GTSS) in 1999. The GTSS includes the collection of data through four surveys:

Tobacco Use in Adult (>15 years)

- **Global Adult Tobacco Survey** The GATS, a household survey, will monitor tobacco use among adults.
- **Global School Personnel Survey** The GSPS surveys teachers and administrators from the same schools that participate in the GYTS.
- **Global Health Professions Students Survey**The GHPSS focuses on 3rd year students pursuing degrees in dentistry, medicine, nursing, and pharmacology.

Tobacco Use among Youth (13-15 years)

- **Global Youth Tobacco Survey** The GYTS focuses on youth aged 13-15 and collects information in schools.

GATS –India, 2010

- GATS India conducted interviews with 69,296 adults age 15 and above, including 33,767 men and 35,529 women.
- Current tobacco use in any form: 34.6% of adults; 47.9% of males and 20.3% of females
- Current tobacco smokers: 14.0% of adults: 24.3% of males and 2.9% of females
- Current users of smokeless tobacco: 25.9% of adults: 32.9% of males and 18.4% of females

GATS –India, 2010

- Average age at initiation of tobacco use was 17.8 with 25.8% of females starting tobacco use before the age of 15 years
- About five in ten adults (52.3%) were exposed to second-hand smoke at home and 29.0% at public places(mainly in public transport and restaurants)
- Among minors (age 15-17), 9.6% consumed tobacco in some form and most of them were able to purchase tobacco products
- Among daily tobacco users, 60.2% consumed tobacco within half an hour of waking up
- Five in ten current smokers (46.6%) and users of smokeless tobacco (45.2%) planned to quit or at lease thought of quitting

BURDEN OF TOBACCO USE

- Nearly 1 million persons die due to tobacco use every year in India.
- 50% of cancer deaths, majority of cardio-vascular and more than 80% of chronic lung disorders; other related diseases are attributed to tobacco consumption.
- Total economic cost of the 3 major diseases due to tobacco use in India was Rs. 30,833 crores (USD 7.2 billion) in 2002-03.

Assessment of tobacco

- Majority of the users would be dependent on tobacco
- Screening instrument available: Fagerstrom's Test for Nicotine Dependence (FTND)
  - Easy to apply in outpatient setting
  - Takes short time to administer
- Assessment – issues / areas
  - Establish dependence
  - Focus on health hazards due to tobacco use
  - Enquire about past abstinence attempt
  - Assess motivation of the patient to quit tobacco
  - Advise and offer help to quit tobacco

Quitting Tobacco

- 70% of all current smokers desire to quit smoking
  - 30% try each year
- Smokers attempting to quit on their own: 1-3% abstinent for one year
- After intensive treatment, the abstinence rate is 20% or less for a one year duration.
- Most smokers make 5-10 attempts and 50% become successfully abstinent

Steps for Tobacco Cessation – 5 "A"s

Brief counselling procedure – evidence based

- **Ask**
  - Ask every patient about tobacco use at every visit
- **Advise** (clear, strong, personalized message)
  - Advise all users to quit
    - not to wait till complications develop;
    - It is possible to quit
    - Personalised: relate to individual's own health, social, economic costs

Steps for Tobacco Cessation – 5 “A”s

- **Assess**
  - Willingness to make a quit attempt
  - Motivational level of the patient
- **Assist:** Assist the patient to quit
- **Arrange** for follow up regularly

Assistance to quit

- Set a quit date
- Involve family, friends
- Anticipate challenges
- Remove tobacco products from environment
- Provide practical counselling
- Provide support
- Recommend the use of pharmacotherapy except in special circumstances
- Provide supplementary education materials

Pharmacological Intervention

- All smokers should be offered medications to aid in smoking cessation.
- ***Double the Quit Rate*** and have few side effects
- No methods to match smokers to a medication
- Smokers choose the medication they believe will be most helpful
- Medications helpful for initial withdrawal and prevention of relapse
  - *Nicotine Replacement Therapy (NRT)*
  - *Bupropion*
  - *Others*

Nicotine Replacement Therapy(NRT)

- Replaces nicotine without harmful impurities of cigarette smoke, safe in CVS and cancer
- Minimal abuse liability, minimize WDS, prevent relapse
- Venous blood concentrations are between 1/3rd to 1/2 that of cigarette levels
- Nicotine undergoes first pass metabolism by liver, hence non GI routes have to be used
- Short period of maintenance (6-12 weeks), often followed by a gradual reduction (6-12 weeks)

NRT

- Various modalities available
  - Nicotine Gum (most commonly used and easily available in India)
  - Nicotine Patch
  - Nicotine nasal spray
  - Nicotine inhaler
  - Nicotine lozenge
  - Sublingual nicotine tablet

Nicotine Polacrilex Gum

- Available as 1mg, 2mg and 4mg.
- Dosage
  - <25 cigarettes: 2mg gum – 9-16 gums/
  - >25 cigarettes: 4mg – 9-16 gums/day
- Chew and park method
- Side effects-local irritation, hiccups, jaw ache, GI symptoms, anorexia, palpitations
- Ability to provide relief in high risk situations
- Avoid acidic beverages during chewing of gum

Nicotine Polacrilex Gum

- Precautions:
  - Not to be used by children and non-tobacco users
  - Pregnancy
  - Unstable Angina Pectoris, arrhythmias,
  - Recovery Phase Following Myocardial Infarct
  - Hypertension (severe)
  - Acid peptic disease

- Brands: Nicorette, Nicotex, Nulife

Nicotine Patch

- Trans-dermal delivery system
- Major side effects are rashes and with 24 hour wear preparation, insomnia
- No self titration, craving, withdrawals like other NRT routes
- Can be used on dental problems
- Combining patch plus gum, lozenge, inhaler in high risk situations increase quit rates by another 5-10%

Nicotine patch

- 24 hours taper preparation
  - 21mg/24 hours 4weeks
  - 14mg/24 hours 2weeks
  - 7mg/24 hours 2 weeks
- 16 hour non-taper preparation
  - 15mg/16 hours 8 weeks

Nicotine Nasal Spray

- Prescription product
- Rapid absorption-produces blood concentration more similar to a cigarette
- Especially helpful for heavily dependent smokers
- Effective daily dose-15-20 sprays/day
- Side effect- cough, rhinorrhea, lacrimation, nasal irritation in more than 70% patients. The product is rarely used.

Nicotine inhaler

- Nicotine delivery through cartridge/puffed
- Prescription product
- 6-16 cartridges/day
- Designed to deliver nicotine to lungs, but actually absorbed in the upper throat
- Blood nicotine level similar to those for gum
- Major asset – provides behavioural substitute for smoking.
- Requires frequent puffing

Bupropion

- Heterocyclic , atypical antidepressant
- Blocks reuptake of dopamine, norepinephrine
- Start 1-3 wks prior to cessation
- Dosage-300mg/day reliably double quit rates in those with/without history of depression
- 150 mg every morning for 3 days then 150 mg BD
- Side effects include insomnia and nausea
- Risk of seizures less than 1 in 1000.

Varenicline

- Varenicline is a selective α4β2 neuronal nicotinic acetylcholine receptor (nAChR) partial agonist.
- By partially activating Acetylcholine receptors, varenicline produces a moderate amount of dopamine release, replacing some of nicotine's effects.
- Varenicline's agonist function is thought to minimize nicotine craving and withdrawal, while its antagonist properties are expected to attenuate the reinforcing effects of nicotine, thereby reducing pleasure from a "slip" cigarette and the likelihood of relapse .

Varenicline

- Standard dos recommendations of varenicline:
  - Day 1-Day 3 (0.5mg once daily)
  - Day 4-Day 7 (0.5mg twice daily)
  - Day 8-Day 84 (1.0mg twice daily)

- Side effects
  - Common- nausea, insomnia, headache
  - Irritability
  - Mood changes
  - Suicidal ideas- uncommon but have been reported (Varenicline may need to be stopped)

Psychosocial treatment

- Intervention for cessation
  - Self help materials
  - Brief advice from the physician
- Intervention to improve motivation
  - Motivational enhancement therapy (MET)
- Intervention to prevent relapse
  - Cognitive behaviour therapy

Self Help Material

- Include self help material (written manuals, computer, video) and self help groups
- Major goal-increase motivation and help cessation
- 1-2% additional success (in absence of formal treatment) but not as efficacious as medication
- Advantage-low expense/time commitment/large numbers
- 80% smokers-precipitous cessation, some limit intake, taper dose
- Should be appropriate in language and cultural approach
- Nicotine anonymous groups – 12 step model

Brief Advice

- Brief advise is effective in increasing the number of smokers stopping for at least 6 months.
- May trigger a quit attempt in 40% of cases
- Reduced effect with repeated exposure
- Minimally effective in heavy smokers in absence of NRT/Bupropion or behavioural support

Whereas the absolute effect of brief advice is relatively small, this intervention can have a considerable global impact because of the large number of people who visit their physicians

Behavioural support

- Behavioural support with multiple sessions of individual or group counseling aids smoking cessation.The following components assist quitting
  - Problem solving – how to avoid high risk situations
  - Skills training – how to handle craving, say ‘no’
  - Support by doctor
- Dose response relationship between the amount of therapist-patient contact (minutes of interaction)

  and successful cessation
- Can be delivered through nurses

Motivational Enhancement Therapy (MET)

- Helpful to those ambivalent about quitting
- Encouragement, non confrontation and patient involvement in laying down goals
- *Realistic goals for poorly motivated*

F	**Feedback**
R	**Responsibility**
A	**Advice**
M	**Menu of options**
E	**Empathy**
S	**Self-Efficacy**

HEALTH CARE PROFESSIONALS SHOULD ADVISE ALL PATIENTS TO QUIT SMOKING