Health Effects of Tobacco Secondhand Smoke [SHS]: focus on Children Health

A Review of the Evidence

Center for the Study of International Medical Policies and Practices [CSIMPP]

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- No Competing Conflicts of Interest or Financial Support for this Activity
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- The author is the Director of the WMA Collaborating Center on Microbial Resistance and Development of Public [Health] Policy.

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Learning Objectives

1. Understand the strength of the evidence supporting the health effects of tobacco second hand smoke (TSHS) in children, and

2. Review the efficacy of interventions, including policies and legislations, designed to minimize TSHS exposures of infants and children.

Overview

Tobacco Smoke Delivery Systems and Nicotine

Most Common Tobacco Implements

Major Nicotine Health Hazards

- Nicotine is the primary addicting drug in cigarettes. When combined with other combustion by-products it can result in:
  - Cardiovascular disease.
  - Pulmonary chronic disorders.
  - Multi-organ cancer, and
  - Premature births and low birth weight babies and is harmful to developing brains in women who smoke during pregnancy.
- There is no safe level of exposure to SHS.

Definitions

- SHS Exposure can result from
  - *Mainstream smoke* – the smoke that is exhaled from the smoker's lungs, and
  - *Sidestream smoke* – the smoke from the burning end of a tobacco product.
- Third Hand Smoke [TSH] exposure results from the deposition of nicotine on personal items and other surfaces.
- About 15% of SHS exposures is mainstream and 85% is sidestream though the composition of toxins in both sources is similar

WMA [2006] and WHO [2009]

World Medical Association

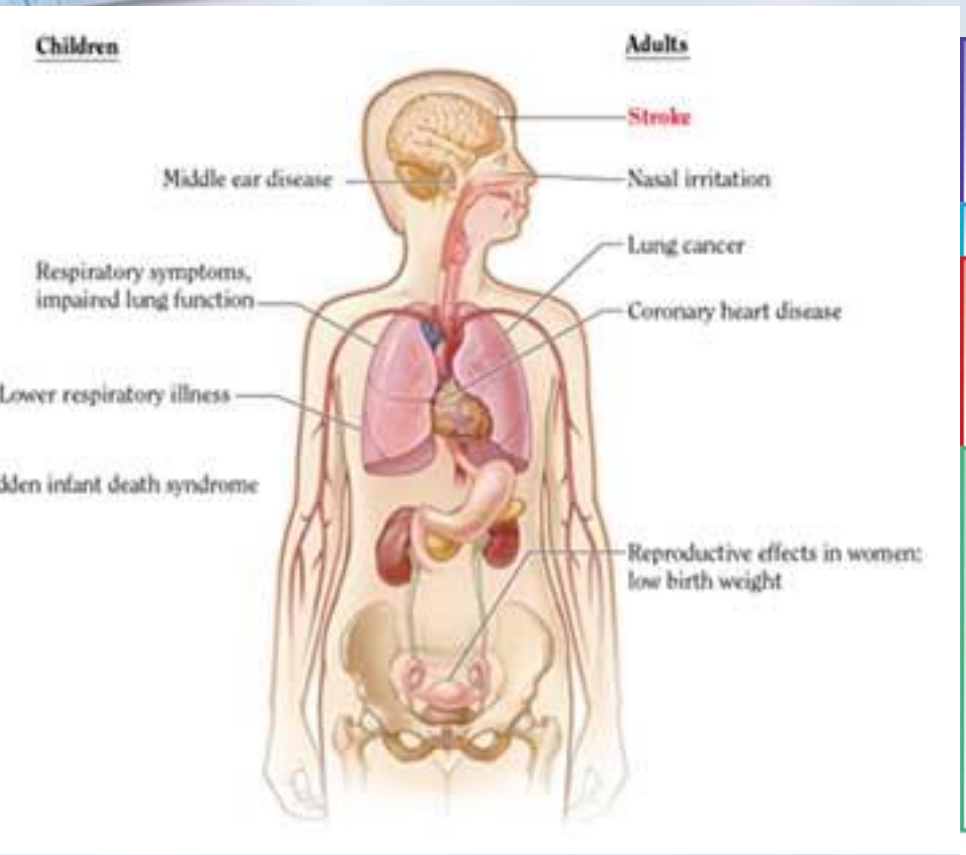
- Recognizing the abundant evidence linking adverse health outcomes and exposure to second-hand smoke; and
  Noting that despite this new evidence many countries still allow smoking in public areas;
- The World Medical Association:
- Congratulates the French government and French physicians for the introduction of legislation that would ban smoking in public areas; and
- Urges other National Medical Associations to advocate for similar legislative changes in their own countries if such legislation does not exist.

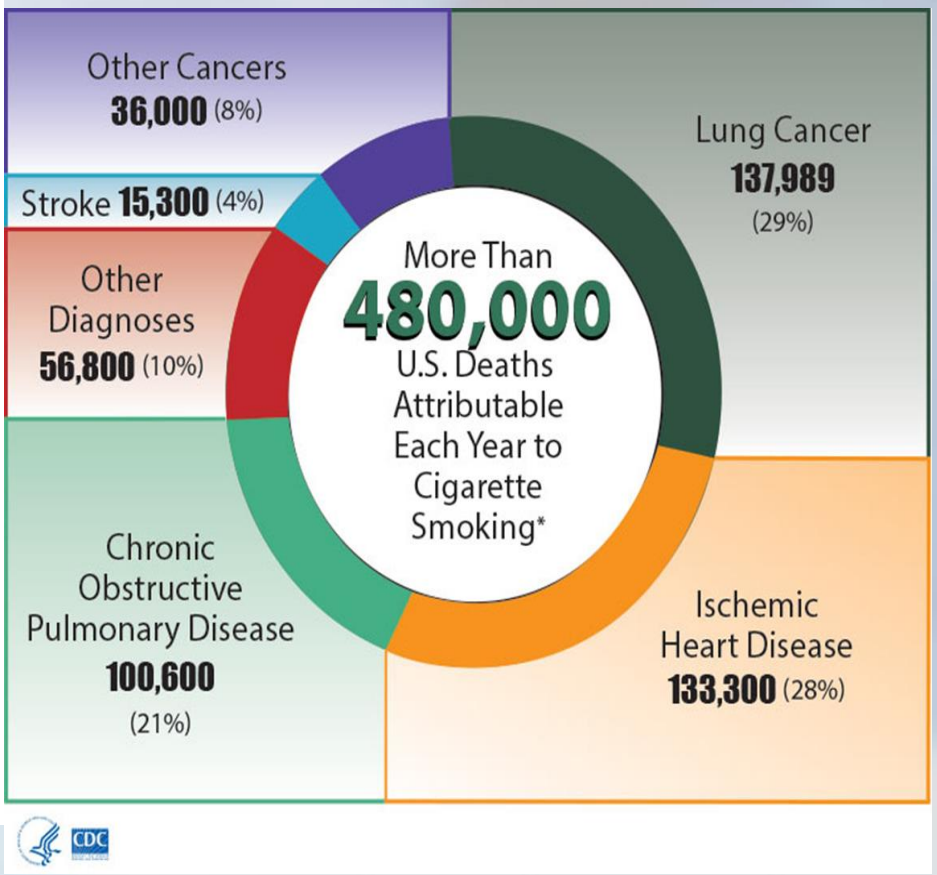
World Health Organization

- Second-hand smoke accounts for one in 10 tobacco-related deaths.
- Creating 100% smoke-free environments is the only way to protect people from the harmful effects of second-hand tobacco smoke.

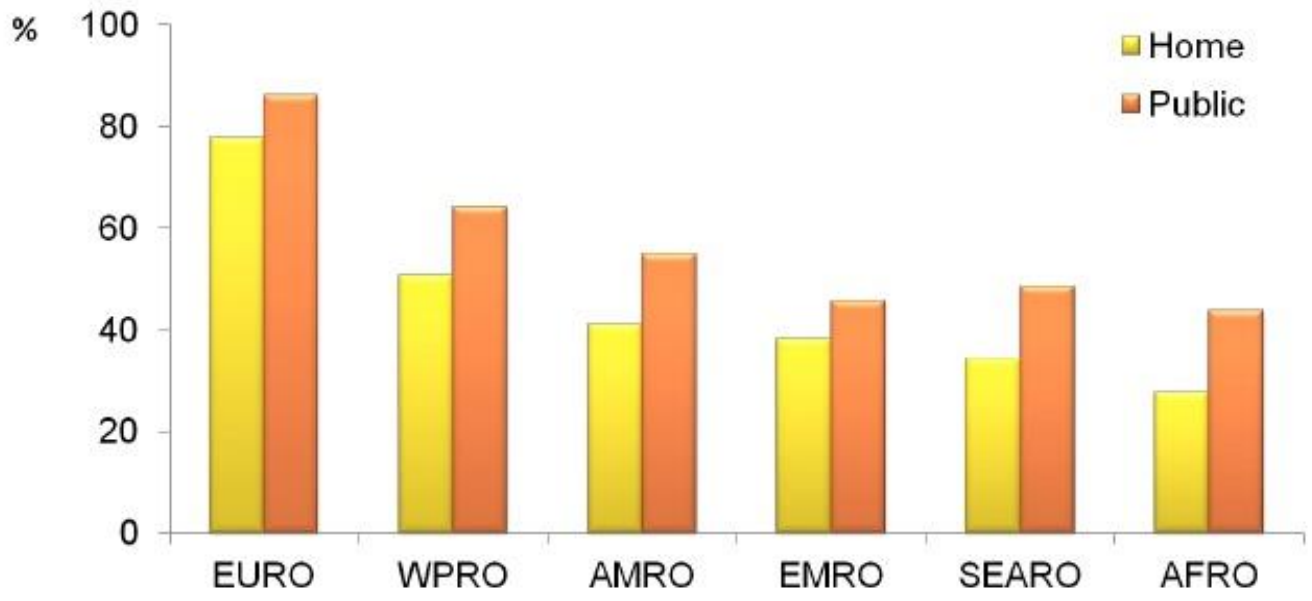
Epidemiology

Tobacco Smoke Affects Most Body Organs [CDC. US/Gov.]





Prevalence of SHS exposure at home and public places - 13-15 year olds



Source: Global Youth Tobacco Survey, 2000- 2007

World Health Organization

SHS Health Effects Sources and Strength of Evidence
[see Review Document]

In Adults [Good Evidence]

- Coronary heart disease (Japuntich et al. 2015)
- Stroke (Olasky et al. 2012)
- Dementia (Barnes et al. 2010).
- Breast cancer (WHO 2007)
- Chronic respiratory illnesses (WHO 2007)
- Decline in pulmonary function (WHO 2007)

In Children [Fair to Good Evidence]

1. Sudden Infant Death Syndrome [USSG 2006 Report].
2. Low Birth Weight [USSG 2006 Report].
3. Pulmonary and Cardiovascular developmental risks [Kabir et al. 2009, Tanski and Wilson 2012].
4. Otitis media [Muller 2007].
5. Neurological and mental disorders [Rao et al. 2009, Brooks et al. 2011, Evlampidou et al. 2015, Padron et al. 2015].
6. Lifelong risk of obesity [McConnell et al. 2015].

[*Evidence for detrimental effects from SHS exposure in children and infants is expanding*]

Health Effects fromThird Hand Smoke [THS] from Tobacco

- Growing evidence for health effects from the remaining tobacco residues deposited on surfaces, smokers' clothes and hair.
- Nonsmokers who are exposed to such environments are considered to be victims of third-hand tobacco smoking (THS) [Escoffery et al. 2013].
- Trace levels of nicotine remains in the air, dust, and surfaces of residential settings which can be harmful especially to children.
- Nonsmokers who reside in homes previously occupied by smokers have demonstrated elevated levels of nicotine on hands and in urine compared to those residing in homes where no one has smoked [Matt et al. 2011].
- The role of particulate in the smoke such as *polycyclic aromatic hydrocarbons* (PAHs), from incomplete combustion of carbon-containing materials, is suspected to be carcinogenic [Fleming et al. 2012].

Prevention and Control of Tobacco Smoke Exposure

Control Measures

WHO *FCTC [Introduced 1993]*

- **Measures relating to reducing the demand for tobacco**
  - Price and tax measures
  - Protection from exposure to environmental tobacco smoke
  - Regulation and disclosure of the contents of tobacco products
  - Packaging and labelling
  - Education, communication, training, and public awareness
  - Comprehensive ban and restriction on tobacco advertising, promotion, and sponsorship
  - Tobacco dependence and cessation measures
- **Measures relating to reducing the supply of tobacco**
  - Elimination of the illicit trade of tobacco products
  - Restriction of sales to and by minors
  - Support for economically viable alternatives for growers

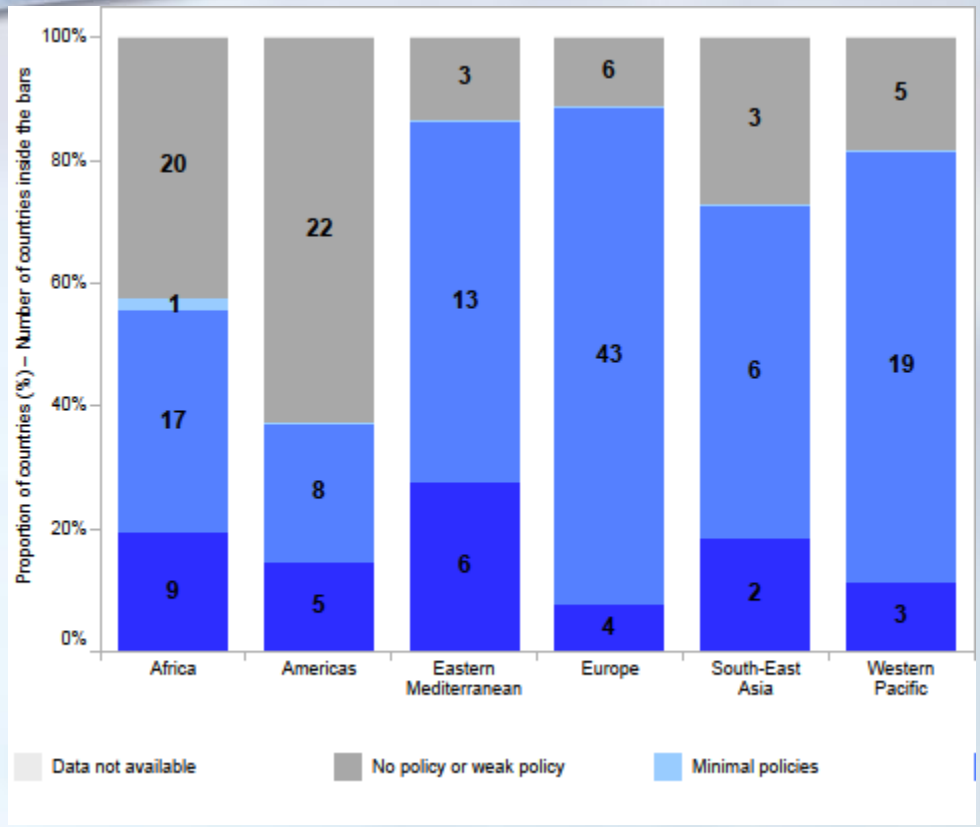
Source; Kenji Shibuya et al. BMJ. 2003 Jul 19; 327(7407): 154–157

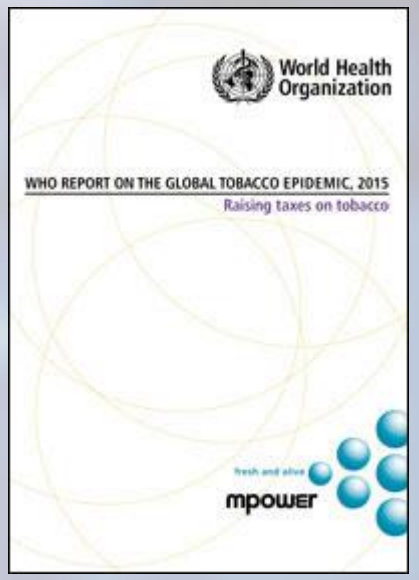
Implementing FCTC [WHO 2011]

- Smoking bans in bars and restaurants have been enacted in
  - Norway,
  - New Zealand,
  - England, Scotland, Wales, Northern Ireland,
  - Italy,
  - Spain,
  - Malta,
  - USA, and
  - France.
- By 2010, 31 countries have taken steps to provide the highest level of protection against SHS for their citizens.
- Has been signed by168 countries and is legally binding in 180 ratifying countries, and countries meet the best practice for pictorial warnings [2015].

Control and Interventions

[ADVERTISING, PROMOTION AND SPONSRSHIP POLICIES, BY **WHO** REGION, 2014]





As at December 2014, only 29 WHO Member States had comprehensive bans on tobacco advertising, promotion and sponsorship

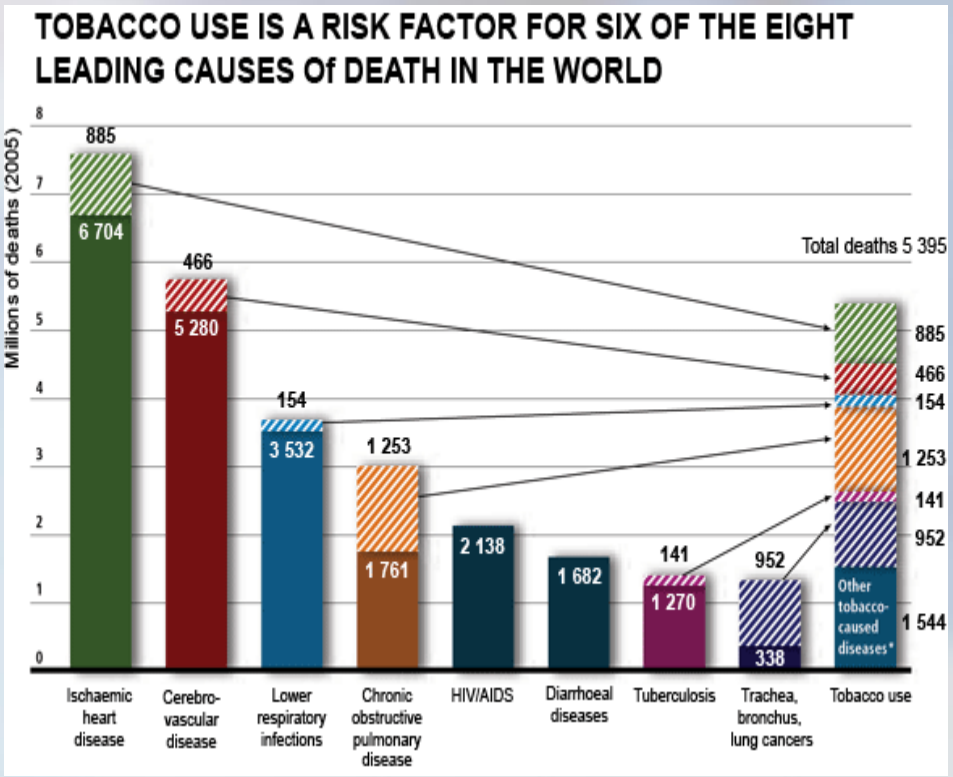
(% of Countries categorized by WHO Regions 2014)

Interventions/Policies

WHO 2006

- *MPOWER* Principles

1. Monitoring tobacco use and prevention policies.
2. Protecting people from tobacco smoke.
3. Offering help to quit tobacco use.
4. Warning about the dangers of tobacco
5. Enforcing bans on tobacco advertising, promotion and sponsorship, and
6. Raising taxes on tobacco.



Article 11 of FCTC

- Article 11 of the WHO FCTC requires that health warning labels on tobacco packaging (to):
  - Be approved by the competent national authority;
  - Should cover 50% or more of the principal pack display areas, but should be no less than 30%;
  - Be large, clear, visible and legible;
  - Not use misleading terms like “light” and “mild”;
  - Be rotated periodically to remain fresh and novel to consumers;
  - Display information on relevant constituents and emissions of tobacco products as defined by national authorities;
  - Appear in the principle language(s)

US FDA proposed graphic warning labels on tobacco products packages. On august 24, 2012 the US Court of Appeals for the District of Columbia issued a ruling to block the use of graphic warning labels on all cigarette packages, upholding a ruling by the US District Court on November 7, 2011. Further court rulings is expected in 2016.

On November 12, 2015, the U.S. Department of Housing and Urban Development (HUD) issued its proposed rule that will require 3,100 public housing agencies across the country to go smoke free. Public housing agencies will need to implement smoke free policies in their developments within 18 months of the final rule. This equates to over 1 million people protected from secondhand smoke in their homes, including 760,000 children

Use of Mass Media Campaigns
Strength of Evidence

1. Mass media campaigns and financial support have also been explored as ways to encourage smoking cessation. Such campaigns can be effective when combined with other interventions but their effects on smoke cessation alone are difficult to determine. In April 2013, the Community Preventive Services Task Force, established by the US Department of Health and Human Services (USDHHS), an equivalent of a ministry of health, issued a statement recommending mass-reach health interventions. Their systematic review of over 90 studies showed strong evidence of effectiveness in

    Decreasing the prevalence,
    Increasing quit rates, and
    Decreasing smoking uptakes (Community Preventive Services Task Force 2013).

2. A review of eleven trials involving financial interventions suggests that provision of full financial coverage for cessation treatments significantly increased the intention to and success rates of quitting compared to interventions without financial support (Reda et al. 2012).

3. Antismoking legislation is effective based on the systematic review of 50 studies in 5 countries showed consistent evidence of reduction of SHS exposure in workplaces, restaurants, bars and in public places (Callinan et al. 2010).

4. Interventions to encourage smoking cessation and reduce exposure to SHS vary widely and involve many stakeholders and components. Due to the lack of standard definitions of components such as smoking, smokers, and quit attempts as well as the lack of sufficient number of similar interventions, there is, to date, little evidence of effectiveness of one type of intervention over others.

Conclusions

1. Robust evidence links tobacco use to respiratory and cardiovascular diseases, including cancer.
2. Good evidence links SHS tobacco exposures to medical problems in infants, children and adults.
3. SHS tobacco exposures in private place continues to be a major health threat to pregnant women, infants and children, and in several US litigation case were labeled as child neglect [rarely as abuse].
4. Developing market economy countries continue to have higher tobacco use and SHS exposure levels.
5. According to the American Cancer Society (ACS 2015) the estimated health care costs for tobacco use between 2000 and 2012 in billions of dollars, in several countries, amounted to:
    a. USA 133
    b. France 16.6
    c. United Kingdom 9.5
    d. China 6.2 (conservative estimates)
    e. Canada 2.8
6. There is no single effective preventive intervention, but rather a combination of measures such as smoking bans, taxations, education, systematic and sustained outreach campaigns, package labeling, and improved health literacy.
7. Several countries including US are considering legislations to prohibit smoking in private spaces

Points To Remember

[ABCE²]

1. **Avoid** Exposure with focus on maternal and child health

2. **Best p**ractices supported by evidence

3. **Consistent** administrative policies and legislations

4. **Enforcing** policies based on the International Conventions

5. **Education**

- Schools of Public Policy
- Professional Schools
- Academic Health Centers
- Consumers
- Food Producers
- Policy Makers
- Advocates
- Societies