

# **Nuove prospettive nella lotta al tabagismo e gestione delle malattie correlate**



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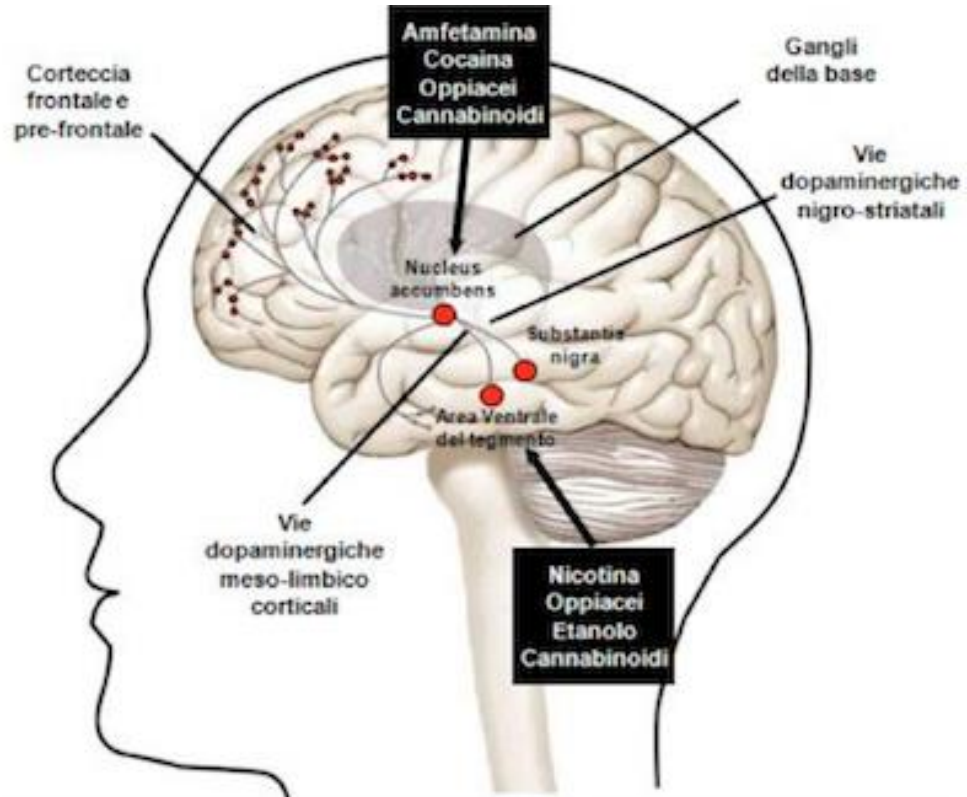
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**Cistica, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico di Milano**

# Perché è difficile smettere di fumare?

- **La nicotina stimola il sistema dopaminergico di gratificazione come altre sostanze d'abuso**
- **La dipendenza da nicotina è addirittura superiore alla dipendenza causata dal consumo di eroina e cocaina**



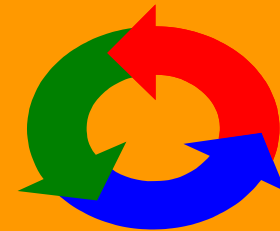


# LA NICOTINA COME DROGA

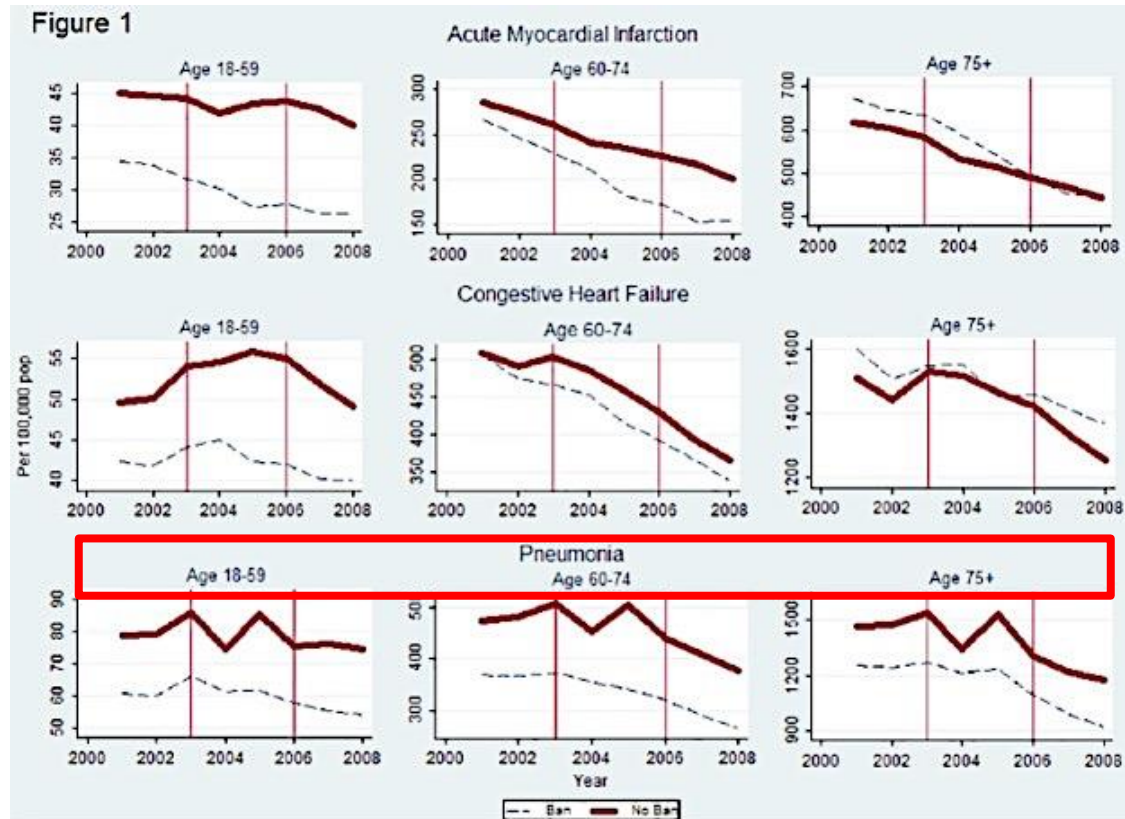
(BENOWITZ, 1996)

	ASTINENZA	RINFORZO	TOLLERANZA	<u>DIPENDENZA</u>	TOSSICITA'
NICOTINA	3 <sup>a</sup>	4 <sup>a</sup>	4 <sup>a</sup>	<u>1<sup>a</sup></u>	6 <sup>a</sup>
EROINA	2 <sup>a</sup>	2 <sup>a</sup>	2 <sup>a</sup>	2 <sup>a</sup>	2 <sup>a</sup>
COCAINA	3 <sup>a</sup>	1 <sup>a</sup>	1 <sup>a</sup>	3 <sup>a</sup>	3 <sup>a</sup>
ALCOL	1 <sup>o</sup>	3 <sup>o</sup>	4 <sup>o</sup>	4 <sup>o</sup>	1 <sup>o</sup>
CAFFEINA	4 <sup>a</sup>	5 <sup>a</sup>	3 <sup>a</sup>	5 <sup>a</sup>	5 <sup>a</sup>
MARIJUANA	5 <sup>a</sup>	6 <sup>a</sup>	5 <sup>a</sup>	6 <sup>a</sup>	4 <sup>a</sup>

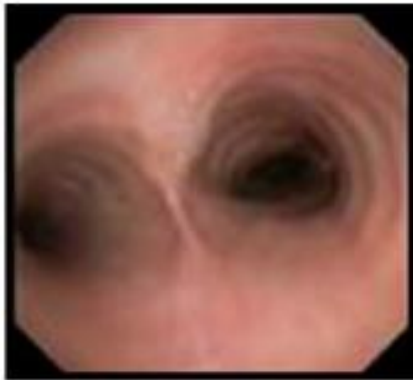
Pharmacology of nicotine addiction and therapeutics.  
*Annu Rev Pharmacol Toxicol.*



# Smoking Bans and Cigarette Taxes with Hospitalizations for Acute Myocardial Infarction, Heart Failure, and Pneumonia.



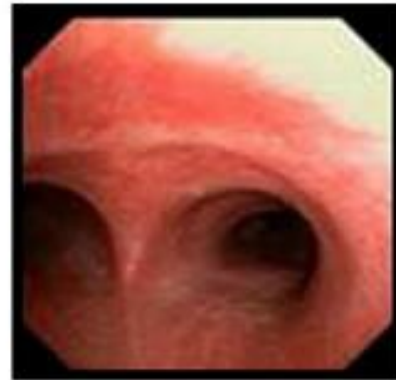
Non-smoker



Smoker



Vaper



**Supplementary Figure E1.**

Bronchoscopy reveals that vapers' airways are abnormal. Images are representative of the appearance of endobronchial mucosa in healthy non-smokers, smokers and vapers. Mucosa in non-smokers were uniformly pale pink. In contrast, mucosa in vapers and smokers, though variable among individual subjects, were generally more erythematous compared to that of non-smokers.

# Content of an e-cigarette

- Vapor producing agents (>90%)
  - Propylene glycol
  - Glycerin
- **Nicotine**
- **Flavours (>8000)**
- Water
- Alcohol
- Chemical additives...



# Studies on fluid/vapor

## Harmful substances identified

- **Fine/ultrafine particles**
- **Carcinogenic tobacco specific nitrosamines**
- **Carcinogenic carbonyls**
- **Harmful metals**
- **Volatile organic compounds**
- **Polycyclic aromatic hydrocarbons**

Mostly lower/much lower concentrations than in cigarettes

## Very conflicting results!

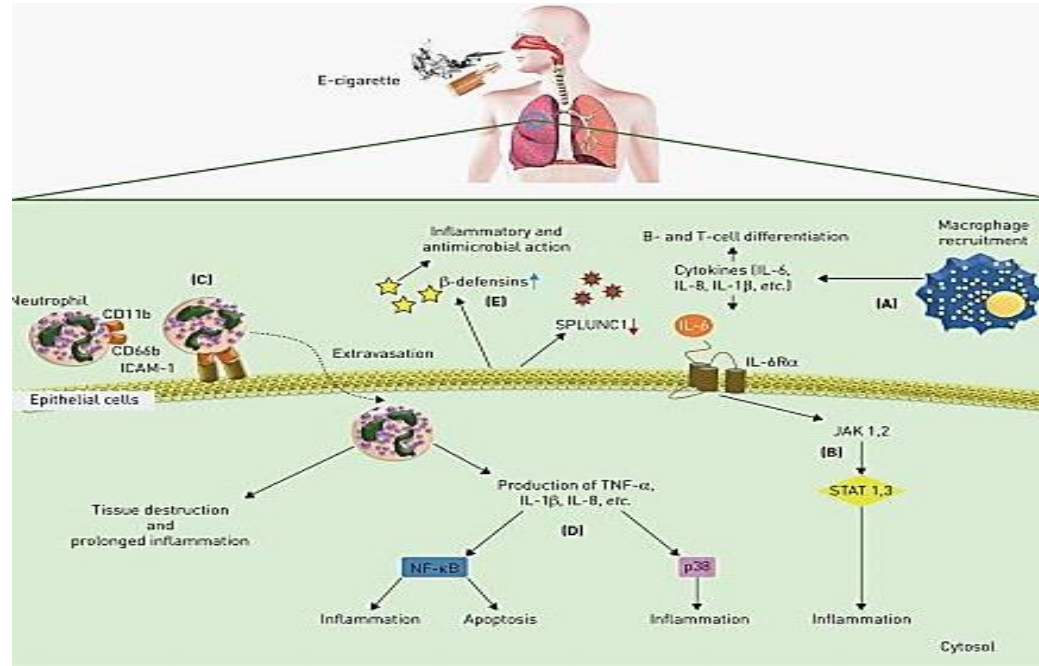
Most/few/no brands or samples

High concentrations /low or trace levels

In general: studies with severe conflicts of interest have findings indicating no or little harm on health

# E-cigarettes and infection

E-cigarettes increase *S pneumoniae* adherence to epithelium

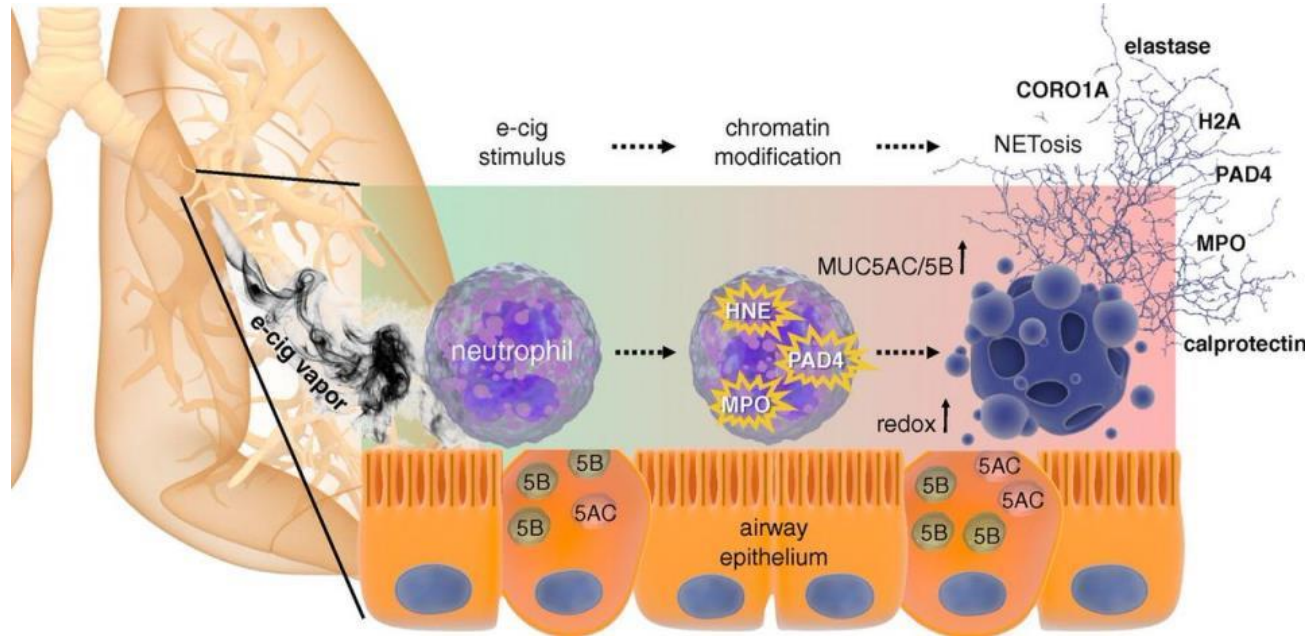


Kaur G et al. Eur Respir Rev 2018;  
27: 170119

Miyashita L et al. ERJ 2018;51(2)



# E-Cigarette Causes an Innate Immune Response that Increased Neutrophilic Activation and Alter Mucin Secretion



Induced sputum samples from cigarette smokers, e-cigarette users, and nonsmokers were analyzed by quantitative proteomics, and the total and individual concentrations of mucins MUC5AC and MUC5B

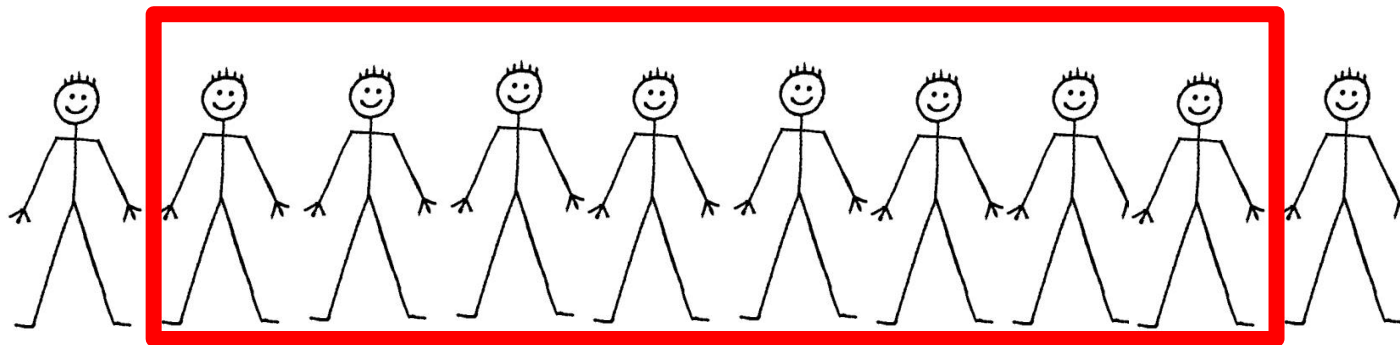
Reidel B et al. AJRCCM 2018; 197:492

**My patient is a reluctant smoker, unwilling/unable to quit.  
Isn't it better for him to **Switch** to e-cigarettes?**

# The rationale for “harm reduction”

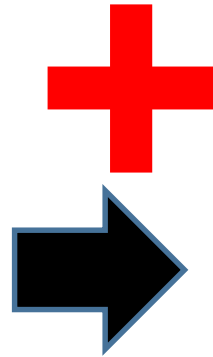


# Real-life: 8 out of 10 vapers also smoke

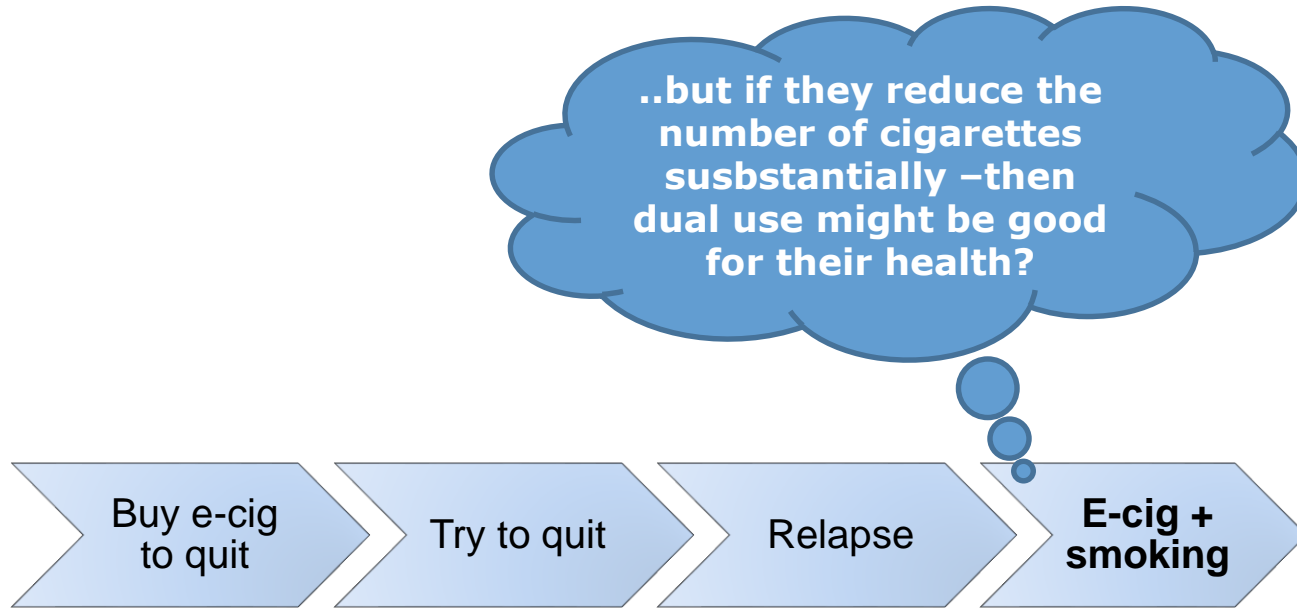


- **>80%** UK, nationally representative sample *English Smoking Toolkit Aug 2015*
- **74 %** Poland. Youth. *Goniewicz 2015*
- **76%** USA. Youth. *CDC, MMWR, 62(35), Sept 6, 2013*
- **77%** Georgia. Youth. *King 2014.*
- **77%** Kansas US (2012-2013). Adults *Christensen 2014*
- **>80%** Korea. Youth. *Lee 2014*
- **78%** Canada, nationally representative sample *Reid 2015*

# The reality



# Dual use (e-cig vaping + smoking)



1. Reduction of number of cigarettes has significant effect on health
2. Vapers significantly reduce number of cigarettes

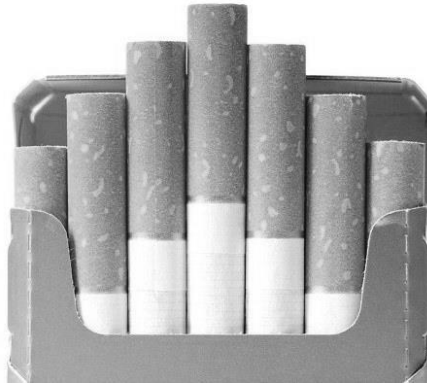
# Health benefits of reduced smoking intensity?

- Halving (or more) of daily intake of number of cigarettes :
  - **No reduction in all-cause mortality**, incidence of cardiovascular disease or smoking related cancer/cancer mortality *Song 2008; Hart 2013; Tverdal 2006; Godtfredsen 2002; Godtfredsen 2003*
  - Reductions in lung cancer risk *Godtfredsen 2005; Song 2008*



# Reduction in number of conventional cigarettes?

- **Substantial reductions are not reported** in dual users
  - no change in consumption after one year *Etter 2014; Huh 2015*
  - 9 of 10 did not cut back substantially *Brose 2015*
  - reduction of only approx. 5 cig/day *Manzoli 2015*













## E-cigarette use and subsequent smoking in adolescents and young adults: a perspective

Faraz Siddiqui , Masuma Mishu , Anna-Marie Marshall  and Kamran Siddiqi 

Department of Health Sciences, University of York, Heslington, York, USA

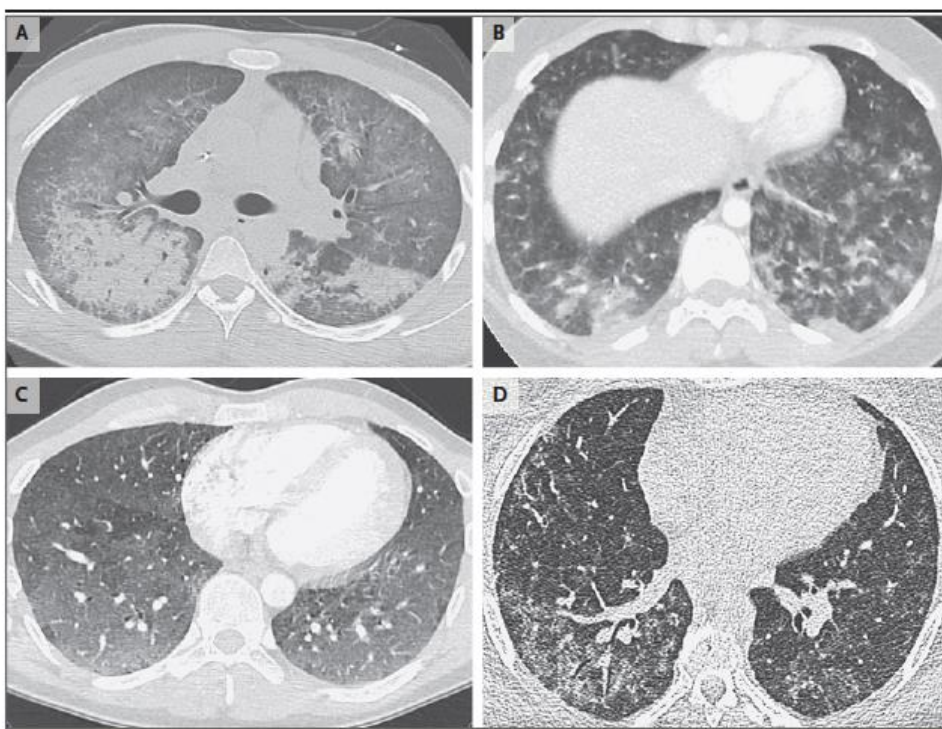
**ARTICLE HISTORY** Received 3 September 2018; Accepted 27 February 2019

## 2. E-cigarette use and subsequent smoking: evidence from longitudinal studies

We conducted a literature search on PubMed and Google scholar using search terms for e-cigarettes, cigarette smoking and adolescents/young adults in order to identify relevant cohort studies that reported on an association between e-cigarette use and subsequent smoking in this age group. Among these, we found a systematic review and meta-analysis, summarizing nine prospective cohort studies, that demonstrated significantly higher odds of smoking initiation (OR 3.50, 95% CI: 2.38–5.16) and past 30-day cigarette use (OR: 4.28, 95%CI: 2.52–7.27) among e-cigarette users [19]. A number of additional studies, conducted in North American [20–24] and European [25–27] settings, also suggested a similar association between e-cigarette use and subsequent smoking, while adjusting for demographic, psychosocial and behavioral risk factors that predict smoking. Evidence also suggests that in addition to cigarettes, e-cigarette users are also likely to experiment with other combustible tobacco

# **Outbreak of Lung Injury Associated with E-Cigarette Use, or Vaping**

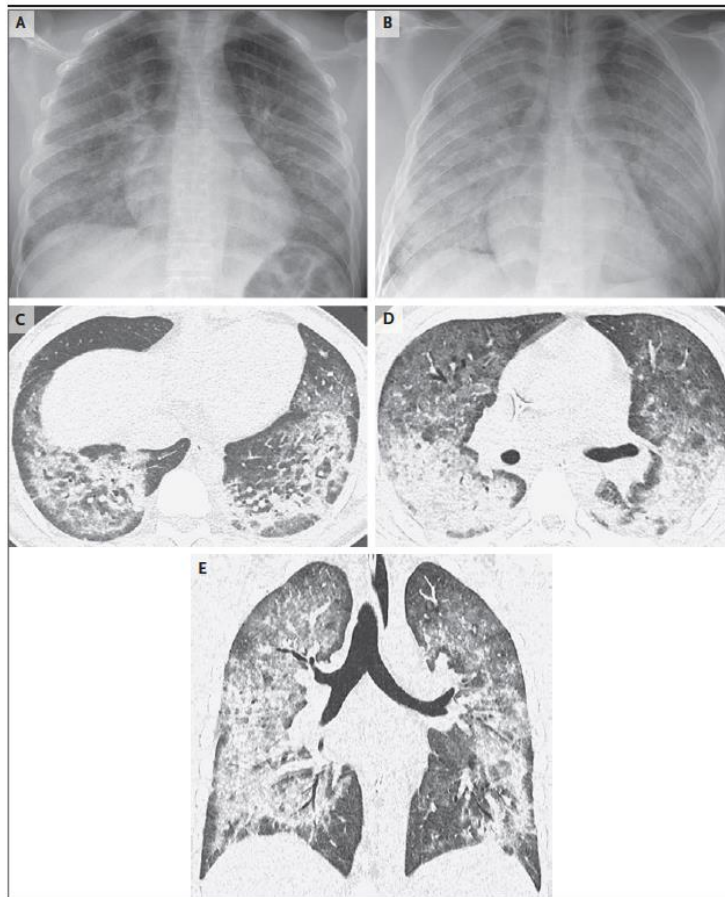
- **There are 805\* lung injury cases reported from 46 states and 1 U.S. territory.**
- **Twelve deaths have been confirmed in 10 states.**
- **CDC has received sex and age data on 771 patients.**
  - **About 69% of patients are male.**
  - **Nearly two thirds (62%) of patients are 18 to 34 years old; with 22% of patients between 18-21.**
  - **16% of patients are under 18 years.**
- **All reported patients have a history of e-cigarette product use or vaping.**



**Figure 1. Computed Tomographic Scans of the Chest Obtained from Patients with Vaping-Associated Lung Injury.**

An image obtained from a 20-year-old man with diffuse alveolar damage (Panel A) shows dependent consolidation and diffuse ground-glass opacity, with some areas of bronchial dilatation typical of diffuse alveolar damage. The patient underwent intubation on hospital day 2 but eventually recovered after receiving glucocorticoid therapy. An image obtained from a 19-year-old woman with acute eosinophilic pneumonia (Panel B) shows diffuse nodular areas of consolidation and ground-glass opacity, with mild septal thickening and a small right pleural effusion. The findings cleared within days after the administration of glucocorticoids. An image obtained from a 35-year-old man with a pattern of hypersensitivity pneumonitis (Panel C) shows extensive centrilobular ground-glass attenuation nodules, especially in the anterior region, and more confluent ground-glass opacity in the dependent lungs, with lobules of mosaic attenuation. The patient's symptoms improved after cessation of vaping. An image obtained from a 49-year-old woman with giant-cell interstitial pneumonia (Panel D), which was diagnosed on the basis of findings on surgical biopsy of the lung and was attributed to cobalt in her vape pen, shows fibrosis characterized by peripheral reticulation, ground-glass opacity, and mild traction bronchiectasis. The patient's symptoms improved after cessation of vaping.





**Figure 2.** Chest Radiographs and High-Resolution Computed Tomographic Imaging in a 17-Year-Old Male Patient with Diffuse Lung Disease.

In the initial radiograph of the chest at admission (Panel A), the anterior–posterior image shows hazy opacities that are predominant in the mid and lower lungs. An anterior–posterior radiograph of the chest that was obtained approximately 12 hours after presentation (Panel B) shows rapid worsening of diffuse lung opacities with developing consolidation and air bronchograms. Axial (Panels C and D, showing different segments of the lung in order to visualize the extent of the opacities) and coronal reformatted (Panel E) high-resolution CT images of the chest show ground-glass opacities in both lungs and dense consolidation in a peribronchovascular distribution, with relative subpleural sparing — findings consistent with an organizing pneumonia pattern of lung injury.

## **Tobacco Control: Piano Complessivo EBM**

**Aumentare il prezzo delle sigarette**

**Stop al fumo involontario / passivo**

**Campagne stampa adeguate**

**Servizi di supporto alla cessazione**

**Prevenzione efficace nelle scuole**

## **Terapie validate per aiutare il fumatore**

- **La terapia nicotinic sostitutiva**
- **Le terapie farmacologiche non nicotinic**
- **Il sostegno psicologico: il counseling individuale**

## ***NON VALIDATE***

- **Le sigarette elettroniche**

# Smettere di fumare: i benefici

**Smettere di fumare migliora la qualità e la durata della tua vita.**

Subito dopo la tua ultima sigaretta, il tuo corpo inizierà ad avvertire i benefici.



## Scegli una maggiore fertilità

L'impatto negativo del fumo sulla fertilità maschile e femminile verrà invertito.<sup>5</sup>

1  
anno

24  
ore



## Scegli polmoni sani

I tuoi polmoni lavoreranno meglio.<sup>1</sup>

9  
mesi

2-12  
settimane



## Scegli di sentirti giovane

La tua pelle ringiovanirà – potresti dimostrare 13 anni di meno.<sup>4</sup>

1-2  
mesi



## Scegli di avere più energie

La tua circolazione sanguigna migliorerà, rendendo più facile fare attività fisica... questo ti darà anche più energia.<sup>2</sup>



## Scegli di tossire meno

Riduzione di tosse, espettorato e respiro sibilante.<sup>3</sup>

Smettere di  
fumare

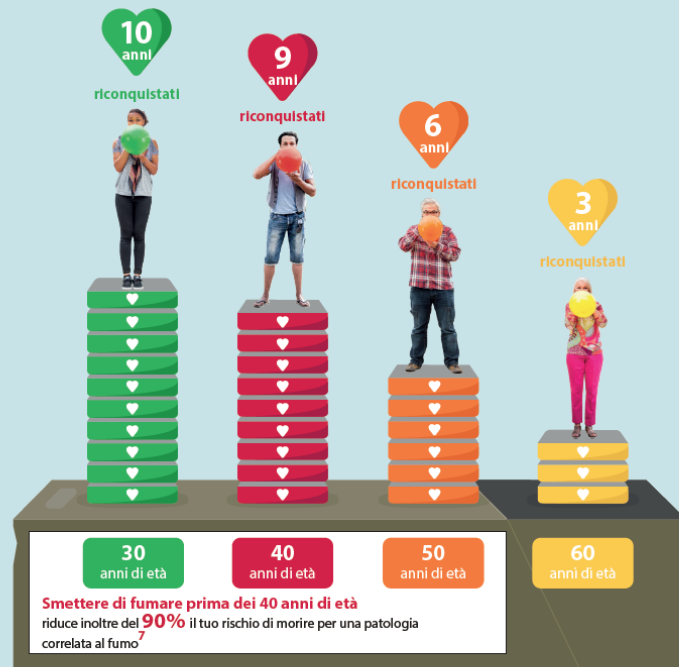




# Scegli una vita più lunga

## Quanti anni di vita è possibile riconquistare?

Anni di vita in più che si aggiungono alla tua aspettativa di vita se smetti di fumare a queste età.<sup>6</sup>



### Fonti

1. Dipartimento della Sanità e dei Servizi umani degli Stati Uniti. *Le conseguenze del fumo sulla salute: Un rapporto del responsabile della salute pubblica.* 2. Dipartimento della Sanità e dei Servizi umani degli Stati Uniti. 3. *European Respiratory Journal* 2004, 4. *Stamper* 2016; 5. *Ferrelly and Davoli* 2004. <http://www.factstat.org/eticle=5001540282/0400883-0400883>; 6. *BMJ* 2004. 7. *New England Journal of Medicine*. <http://www.nejm.org/doi/full/10.1056/NEJMoa1211128?NewType=Print&ViewClass=Print&print>



Scopri di più su:  
[www.healthylungsforslife.org](http://www.healthylungsforslife.org)

Questo documento è stato redatto con lo scopo di aiutare i professionisti sanitari a spiegare i benefici che derivano dallo smettere di fumare ai loro pazienti. È stato redatto dal Comitato per il controllo del tabacco della European Respiratory Society (ERS) e della European Lung Foundation (ELF) nell'ambito della campagna Healthy Lungs for Life.