

Smoking Cessation and / or Harm Reduction

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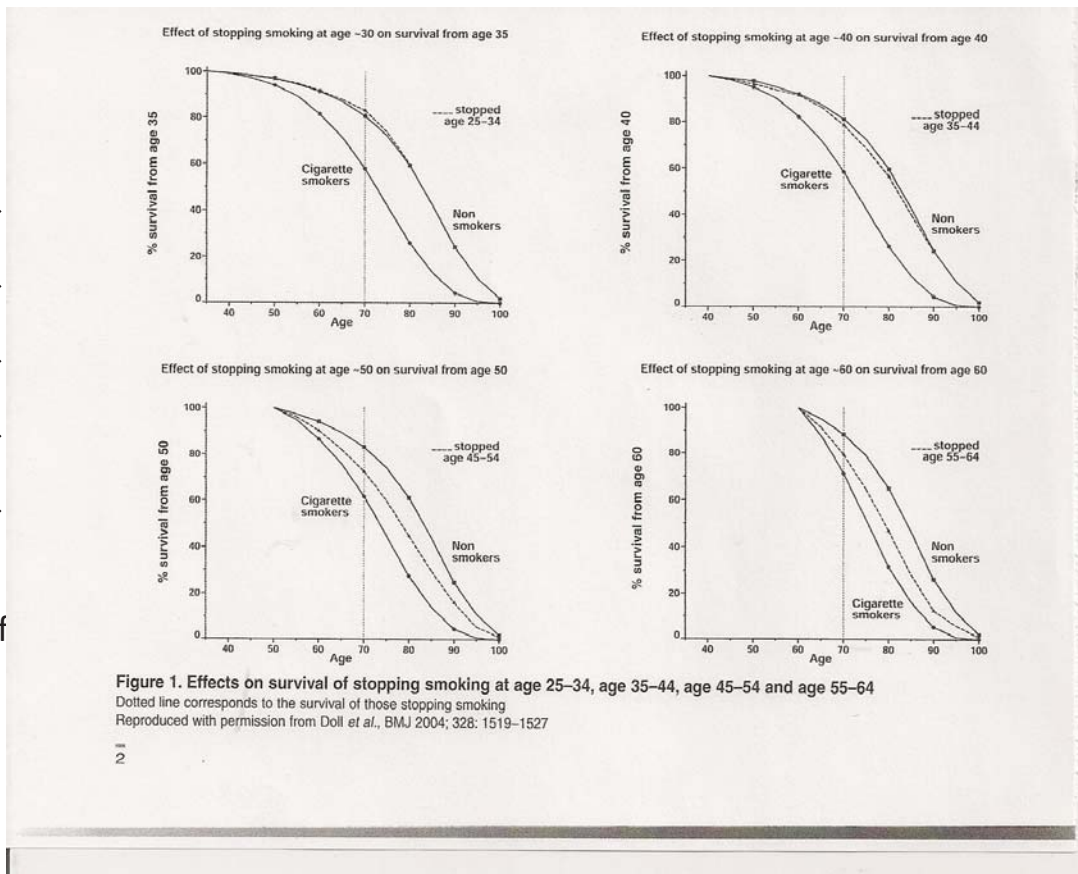
Conflict of interest

I received payment to produce an
expertise and testify at the trial opposing the
Quebec Association of Vape shops and the
Government of Quebec in December 2018.

201020152020

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Réf



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Smoking Cessation

Approximately one in 3 smokers in the U.K.
currently attempts to quit each year, but only
about 1 in 6 of those who try to quit, remains
abstinent for more than a few weeks or months
(so it is about 5.5% altogether)

Ref: *Nicotine without smoke. Tobacco Harm Reduction*. Royal
College of Physicians; London, April 2016, p.106

NOTE: 66% in Canada will attempt to quit
in the next 6 months (PROPEL Data 2015)



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Early relapses

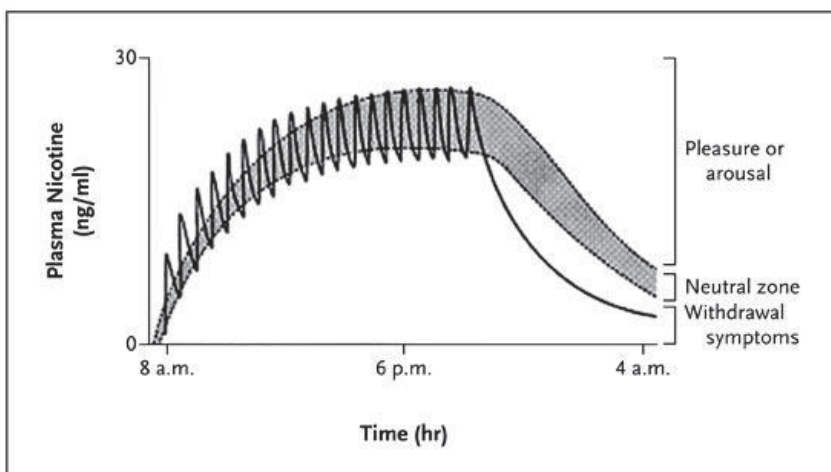
Mainly during the first 2 weeks
- 75 – 80 % relapse early
Relapse during the first 6 months

(U.S. Surgeon General 2000)

More than 50% during the first month of an attempt

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The Tobacco Dependence Cycle Balancing Reward and Withdrawal



Peak to trough oscillation of blood nicotine levels from cigarette to cigarette



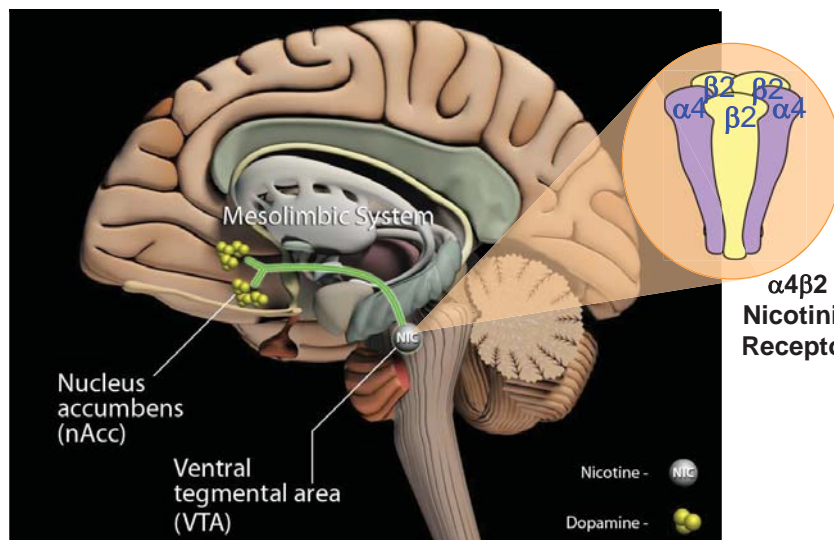
Cigarette smoking is and remains
the best MOOD CONTROLER
(so-called psychologic addiction)

Depressed – Down } smoker lights
Anxious – Nervous } a cigarette



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Mechanism of Action of Nicotine in the Central Nervous System



- Nicotine binds preferentially to nicotinic acetylcholine (nACh) receptors in the central nervous system; one of them is the $\alpha 4 \beta 2$ nACh receptor in the Ventral Tegmental Area (VTA)
- After nicotine binds to the $\alpha 4 \beta 2$ nACh receptor in the VTA, it results in a release of dopamine in the Nucleus Accumbens (nAcc), which is believed to be linked to reward

+ IMAO



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Smoking and Health

- « Smoking tobacco kills – Nicotine does not»
(Robert West)
- Nicotine **does not** cause
 - Cancer
 - Cardio-vascular diseases
 - Pulmonary diseases (COPD)
- But Nicotine creates dependence (addiction)



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Medical Management of Tobacco Dependence: Skin Patches

229

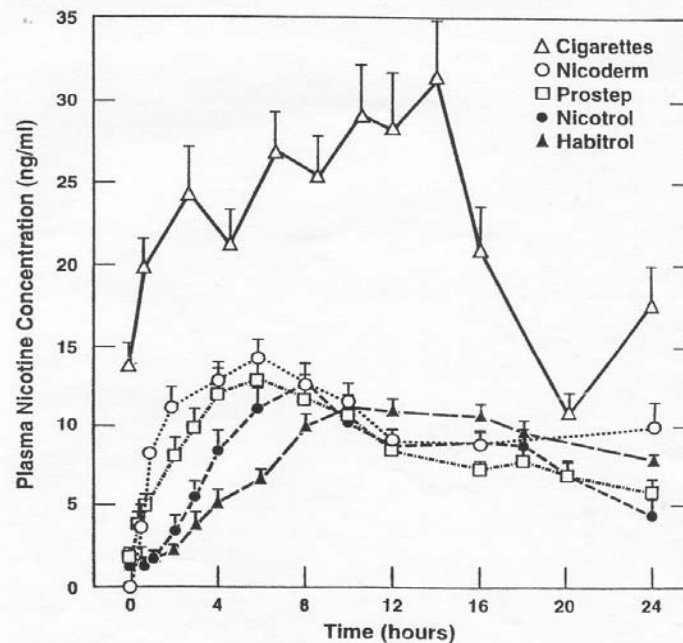
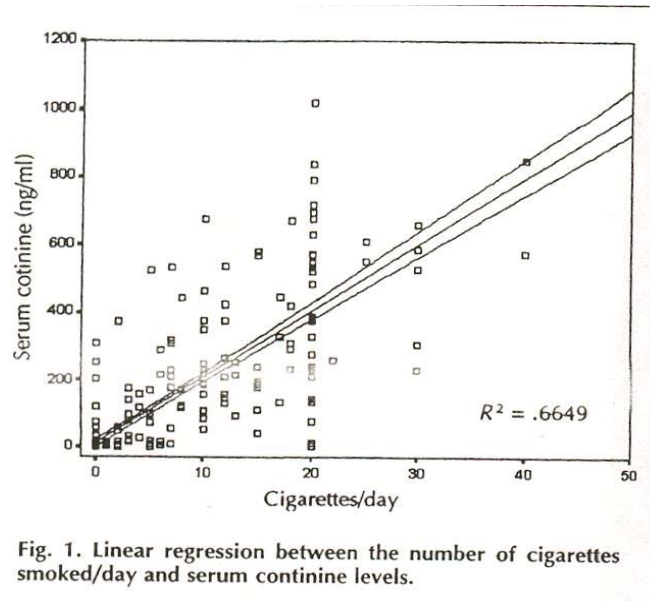


FIGURE 1.

The venous plasma nicotine concentrations provided by the four available nicotine patches compared with cigarette smoking. Note that the data presented in this figure is from completely different studies than the data in Table 3. (Adapted from Benowitz NL: *Drugs* 45: 157-170, 1993)

Serum Cotinine VS Nb of cigarettes per day



Olivieri M. et al.
ARCH Envir Health,
2002, 57 (4)

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Hard Core Smoker

Criteria

- Older
- Important co-morbidities (COPD – C.V.Diseases – Cancer etc)
- Was told by his doctor that “smoking cessation” was an essential part of the treatment of his or her disease
- Alcoholism and/or drug abuse (including marihuana)
- Mental Health Problems



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Hard Core Smoker

Criteria

- Has tried 3 or 4 times in the past to stop smoking, but was unsuccessful
- High score on addiction tests (HSI or Fagerström)
- Expecting severe withdrawal symptoms, from previous experiences
- High alveolar CO or high serum cotinine



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Higher Nicotine Concentration

Heaviest smokers belong to a group with great

- Social inequality
- Less education
- Psychiatric problems

Hard core smokers

PERSONALIZE – PERSONALIZE - PERSONALIZE



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Nicotine concentration

❖ The European Union Tobacco Product Directive

TPD 2014

upper limit: 20 mg/ml

❖ Royal College of Physicians: London 2016

“ The cap on nicotine concentration may limit the effectiveness of *e*-cigarettes as a smoking substitute, particularly for heavy smokers”



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NRT

Choice of the nicotine dose

• This is where you have to listen and ask the right questions. Number of cigarettes smoked per day (including evenings with friends) is a good indicator. **Remember that nicotine yield means nothing! and that a RYO cigarette = 2 industrial cigarettes.**

• A starting point is:

6 mg/ml = 4-5 cigarettes a day

12 mg/ml = 1/2 pack a day

16 mg/ml = 15 cigarettes a day

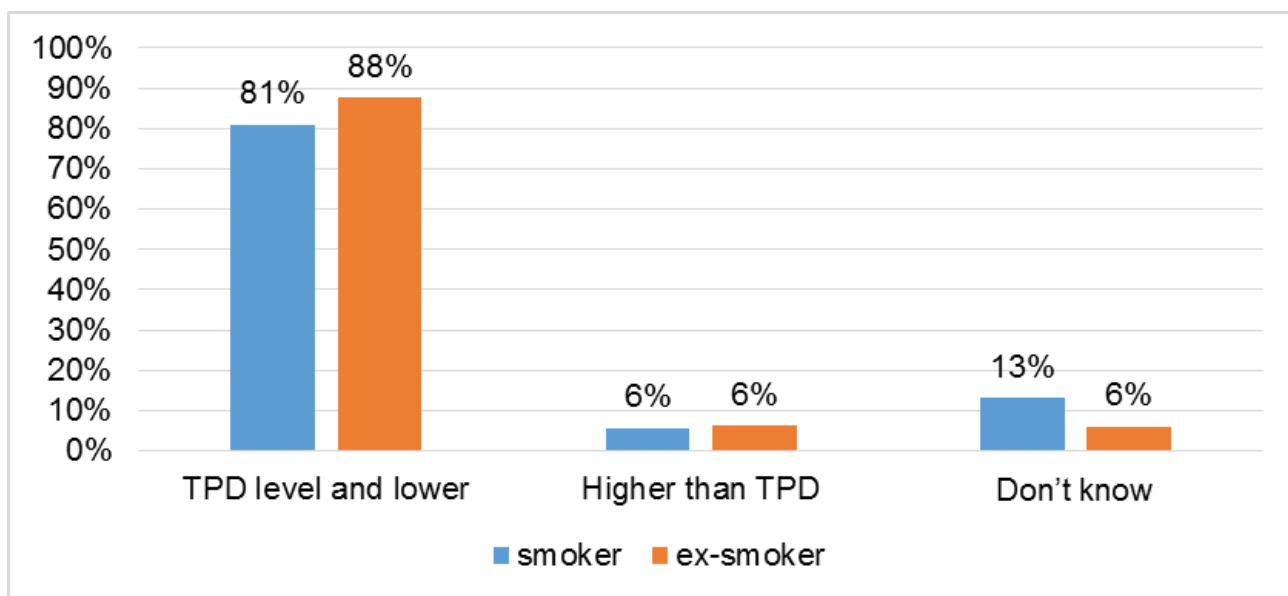
18-20 mg/ml = a pack a day

Above a pack a day, (limitation to 20 mg/ml max) we recommend to add a patch at maximum strength.

However, **be aware!** Some “light” smokers may need higher nicotine dose than you may thought.

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Strength of nicotine in e-liquid used by current vapers (2017)



ASH 2017 Fact Sheet

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E-cig

«Despite controversies, it is clear that e-cigarettes are far less hazardous than is tobacco. 95 % less

Smokers smoke primarily for the NICOTINE but die primarily from the TAR (combustion of tobacco)».

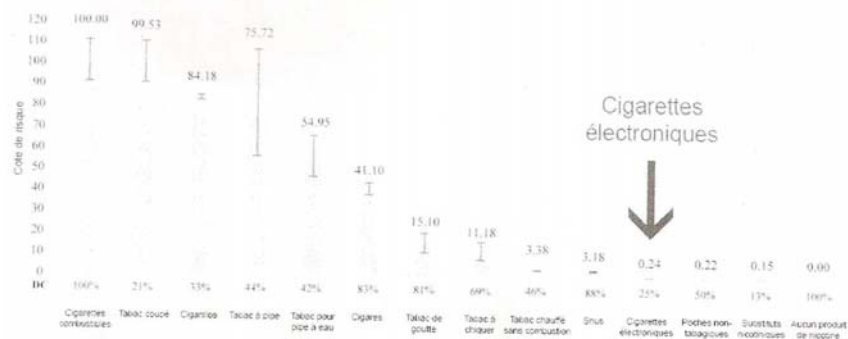
J. Britton et al. *Royal College of Physician*, London , England, 20 March, 2014.



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Relative Harms of nic products

Figure 4. La hiérarchie des risques relatifs des 13 produits contenant de la nicotine



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E-cig MCI Experience (cont.) CO-MORBIDITIES

- COPD – Asthma 59%
- Coronary Heart Disease 45%
- Cancer 6%
- Diabetes 13%
- Mental Health Problems 31%
- on Psychoactive drugs 35%



Serum Cotinine Levels

Experience at the MCI

(January 7 – May 27 - 2010)

- Mean: 302
- Médian: 280
- Extremes: 120 - 800



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E-cig MCI Experience

75

- E-cig only: 45/75
Abstinents: 20 (45%)
- E-cig + Champix or NRT: 30/75
Abstinents: 12 (40%)
- Total of abstinents:
32/75 (43%)



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E-cig MCI Experience

N=179

	∅ e-cig N=104	e-cig N=75	daily use 49 (65%)
• Abstinents > 30 days	32 (31%)	32 (43%)	
• Smokers	72 (69%)	43 (57%)	
• Reduction > 80%	6 (5.8%)	16 (21%)	
50-79%	5 (4.8%)	7 (9%)	
• Lost to F/U	8	1	



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E-cig vs NRT for smoking cessation

	E-cig second generation flavor ad lib	NRT 1 or more nicotinic products
Nb of subjects at the beginning	439	447
at 1 year	356	342
Feco confirmed abstinence	18%	9.9%
Cough + phlegm	RR 1.83 (I.C. 1.3 – 2.58)	R.R 0.8

Réf: Hajek P et al. A Randomized Trial of E-Cigarettes versus Nicotine-Replacement Therapy. *NEJM*, Jan 30, 2019



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Clinical Studies

Too few unfortunately

Essentially from Farsalinos, KE and R. Polosa
on Asthma

COPD

High Blood Pressure



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Etudes cliniques

Peu nombreuses

- ❖ Polosa, R. – 2016
 - Asthmatiques suivis X 24 mois
 - Amélioration des symptômes
 - Meilleur contrôle
 - Diminution de l'hyperexcitabilité bronchique
 - mais fréquence des exacerbations inchangée

- ❖ Confirmation d'une étude rétrospective antérieure 2014



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Clinical Studies - COPD

Polosa, R. – 2016

- Case-control study
- 48 pts in each group
- Length: 24 months
- Results: no more cough
Less exacerbation
Improvement walking distance (60 m)



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MCI Experience October 2013 – October 2014

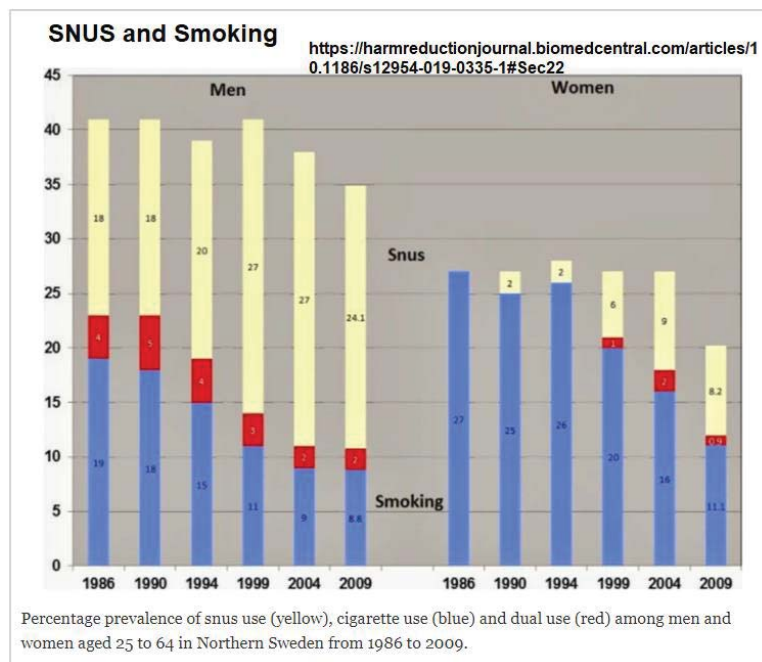
- E-cig users → 75
- Sub-group
 - abstinent > 30 days 32 (43%)
- Length of abstinence
 - 1 à 3 months 15 (46%)
 - > 3 months 7 (22%)
 - 6 – 9 months 5 (16%)
 - 9 - 12 months 5 (16%)
- Daily uses 49 (65%)



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Arguments in favour of FLAVOURS

- Increased satisfaction and enjoyment
- Variety and customization
- Better feel and taste than cigarettes
- Food craving suppression

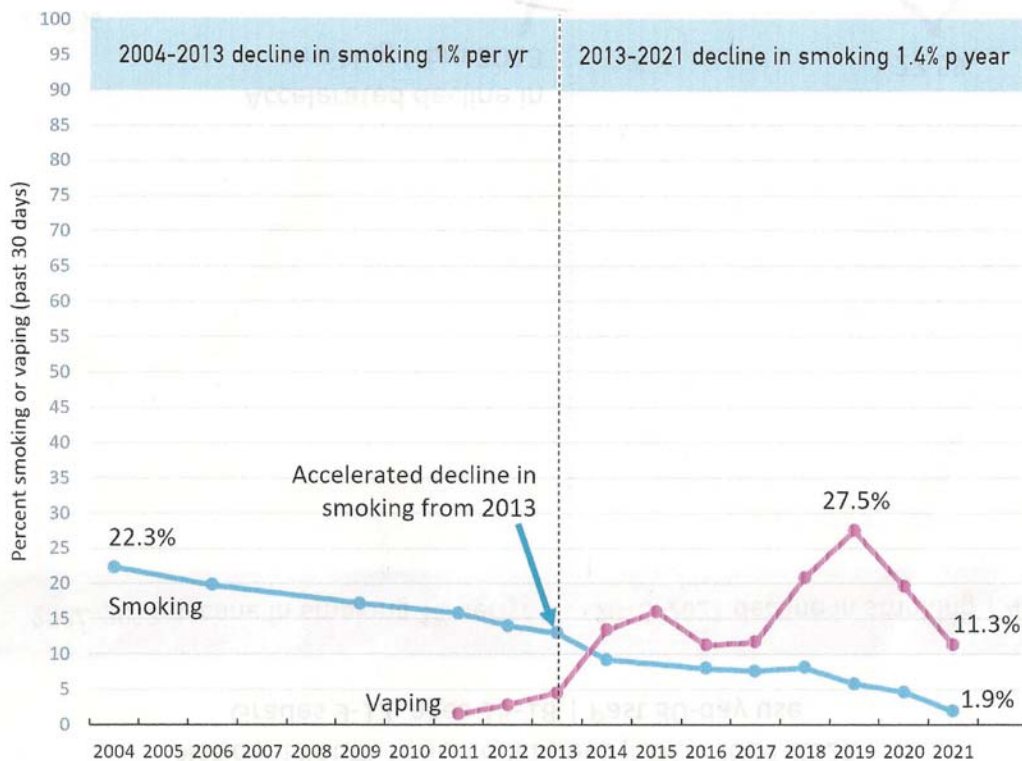
Ref: National Academies of Sciences. Engineering. Medicine. *Public Health Consequences of E-cigarettes.*, 2018.



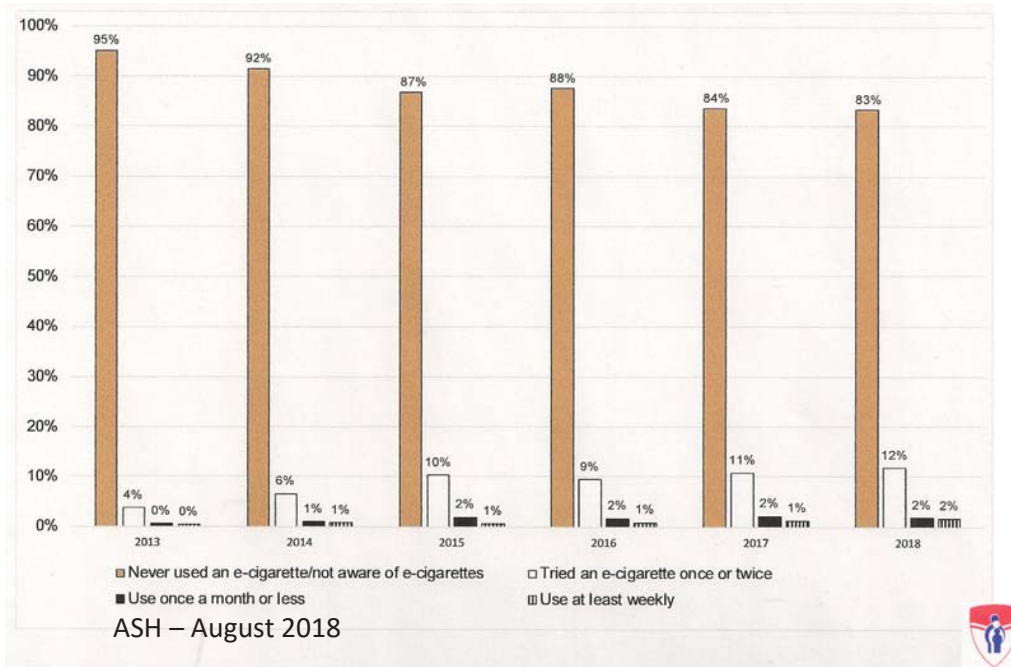
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Smoking and Vaping, US High schoolers

National Youth Tobacco Surveys (CDC) 2004-2021
Grades 9-12, ages 15-18 | Past 30-day use



Kids 11-18 Years-old Use of E-cig in G-B 2013-2018



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Arguments in favour of FLAVOURS

(2)

- Web site Study - Farsalinos et al.

Participants : 4618 (91,2% - Former smokers)

Duration of EC use : 12 months (6 to 23)

Nicotine levels: 12 mg/ml (6-18)

Years of smoking: 22 (15-30)

Ref: Farsalinos, E.K. et al. *Int J Environ Res Public Health*,
2013,10:7272-7282.

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Arguments in favour of FLAVOURS (3)

- Web site Study - Farsalinos et al.

Flavour used at EC initiation: tobacco 69%

Flavour used during the study

- tobacco 43%
- fruits 68%
- sweet 61%
- mint-menthol 32%

Use of multiple flavours (often within the same day)

Like variety of choices 73%

Importance in quitting smoking : 4 over 5

Limiting flavours variability

less likely to reduce or quit smoking

craving for cigarettes



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Experience à ITM Octobre 2013 – Octobre 2014

179 Nouveaux Patients

104 (58%)

∅ *e-cig*

75 (42%)

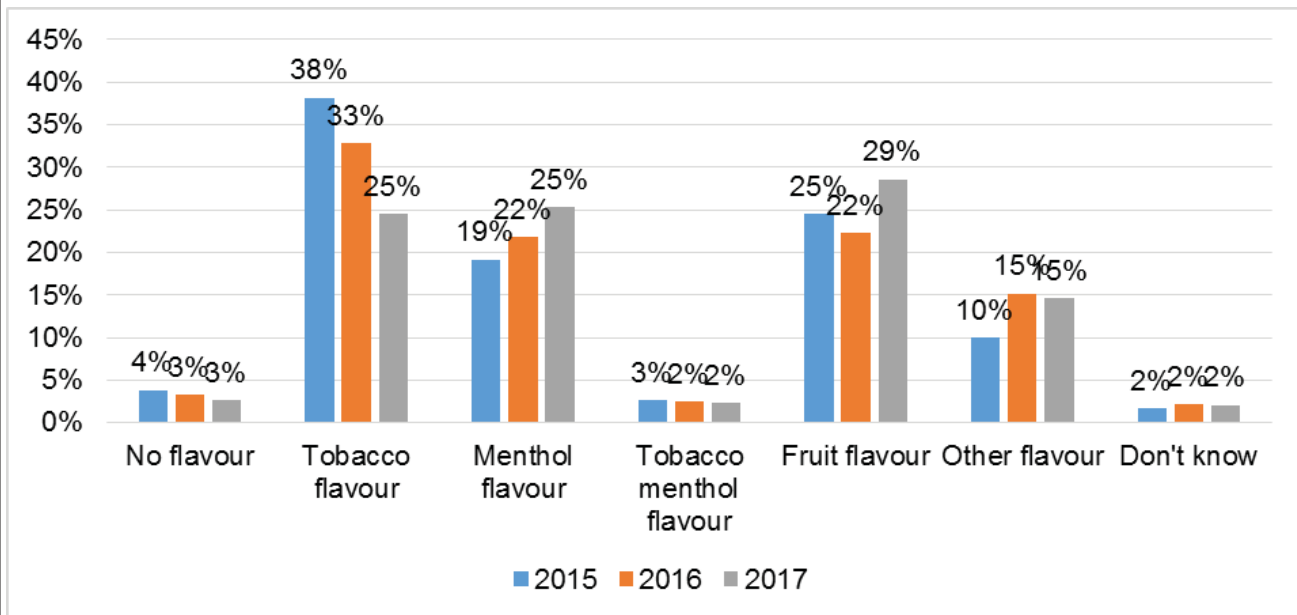
e-cig

	∅ <i>e-cig</i>	<i>e-cig</i>
Sexe	56% F	63% F
Âge moyen	53	57
#Cig/jour	23	25
#Années tabagisme	35.4	39
Cotinine (ng/ml)	265	286
FA _{CO} (ppm)	23	23
Fagerström	6 (+/-2)	6 (+/-2)
Tentatives antérieures	4.6	4.12



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Flavours used by current vapers



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CONCLUSIONS

- There are benefits in providing a great variety of flavours to encourage vaping by smokers
- Some hardcore smokers need nicotine levels greater than 20 mg/ml
- E-cigarettes should be sold only in specialized shops - quality control
 - teaching
 - adjustment



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