CLERMONT-FERRAND
CENTRE HOSPITALIER UNIVERSITAIRE

DIPLOME INTER UNIVERSITAIRE
TABACOLOGIE ET AIDE AU SEVRAGE
TABAGIQUE

UNIVERSITÉ
Clermont
Auvergne

Tabagisme et Anesthésie

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Professeur Universitaire Associé

Praticien Hospitalier

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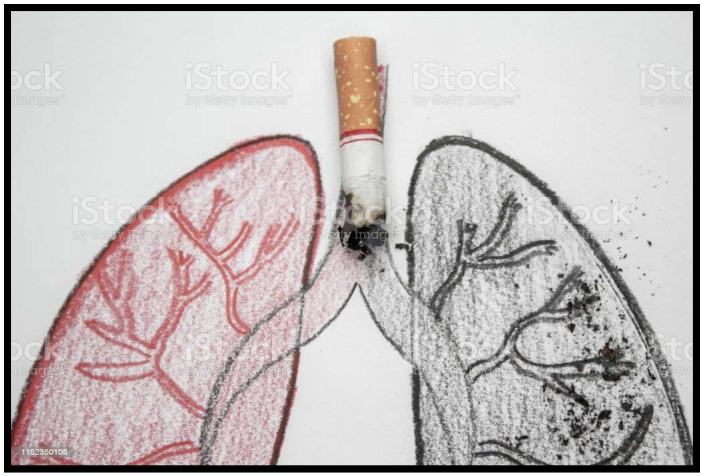
Pôle Anesthésie Réanimation

« L'OMS a décrit le tabac comme "la seule drogue légale qui tue un grand nombre de ses consommateurs lorsqu'elle est utilisée exactement comme prévu par les fabricants »

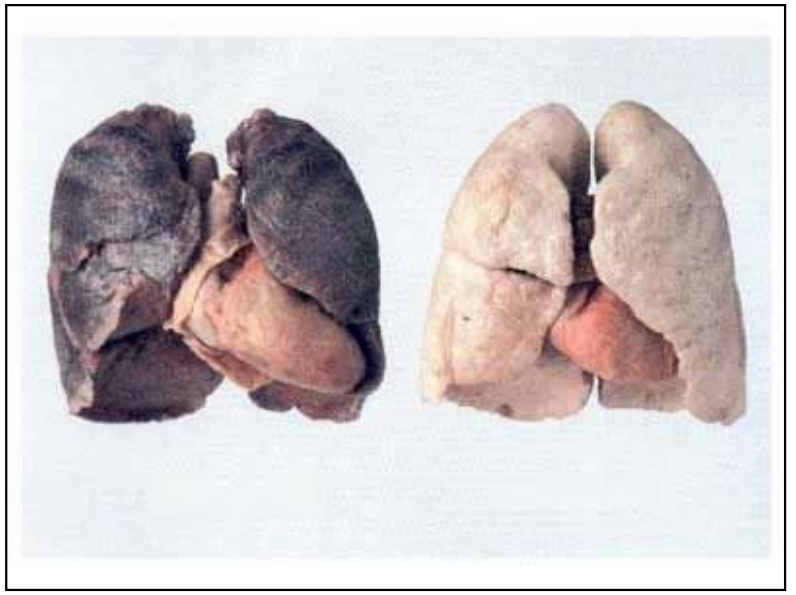


World Health Organisation. WHO global report of trends in prevalence of tobacco smoking. Geneva: WHO Press; 2015

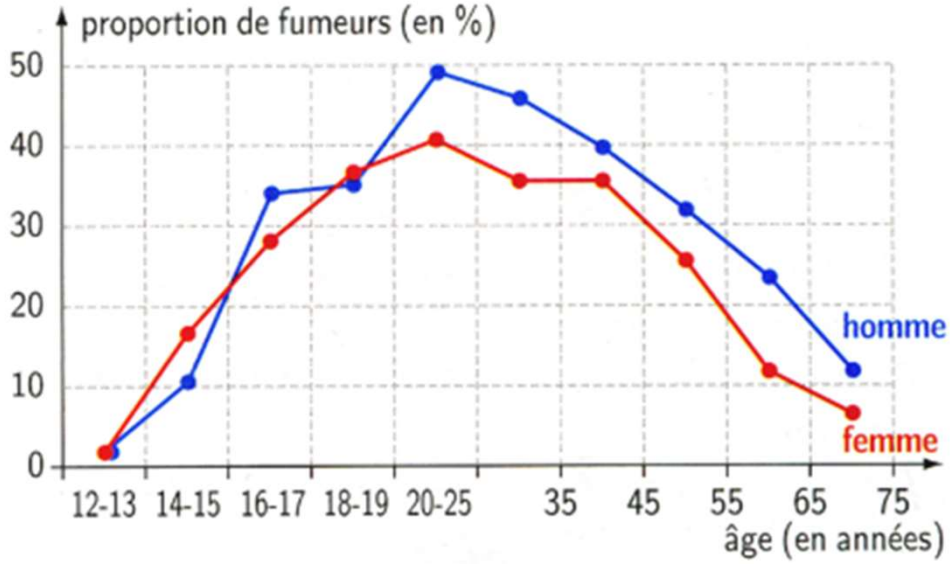
L'épidémiologie de tabagisme

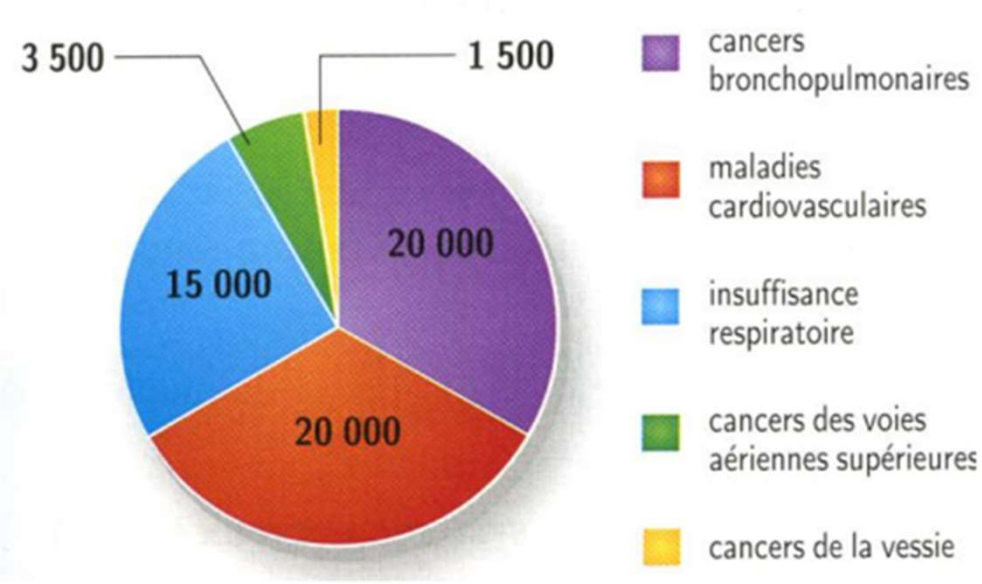
- ✓ 1 milliard de fumeur au monde, 1/3 en Chine
- ✓ Le tabac est aujourd'hui à l'origine d'environ 1 décès sur 10 chez les adultes
- ✓ 6 millions de décès par année dans le monde/ 60 000 en France
- ✓ D'ici 2025, il y aura 1,1 milliard de personnes qui fument
- ✓ Coût de 2 milliards de pounds chaque année
- ✓ La consommation de cigarettes peut être caractérisée comme une épidémie

Warner et al. J Anesth (2007) 21:200–211

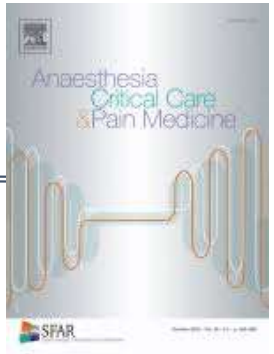


L'épidémiologie de tabagisme





L'épidémiologie de tabagisme



- ✓ Le tabagisme est un problème de santé publique
- ✓ 13,5 millions de fumeurs en France
- ✓ **30 %** des patients pris en charge en anesthésie sont des fumeurs
- ✓ 2 millions d'interventions chirurgicales concernent chaque année des fumeurs
- ✓ Le tabagisme actif augmente d'environ **20 % le risque de mortalité** hospitalière
- ✓ Augmente de **40 % le risque de complications** majeures postopératoires
- ✓ Le risque lié au tabagisme actif augmente avec la quantité fumée
- ✓ Il existe un consensus fort pour demander aux patients d'arrêter de fumer avant une intervention chirurgicale

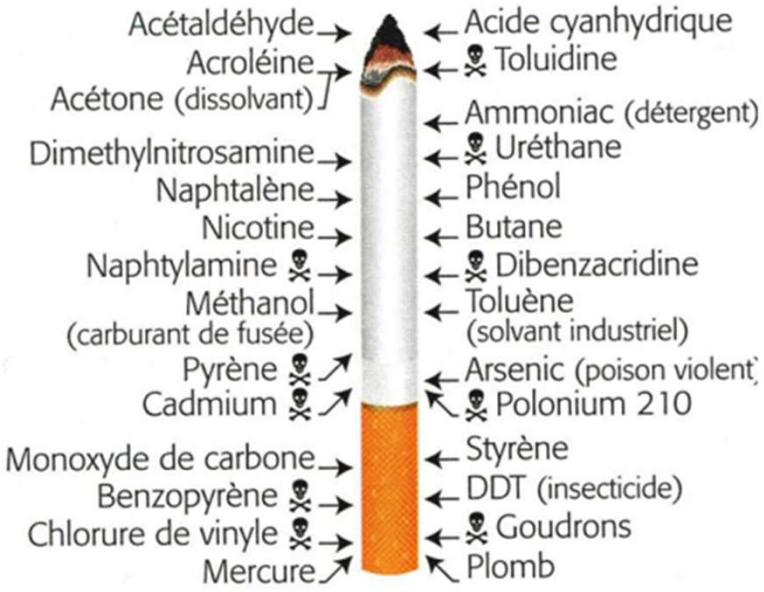
Mortalité + 20%

Complications + 40%

Pierre S. Anaesth Crit Care Pain Med 2017;36:195—200

La composition du tabac

- **monoxyde de carbone** → se fixe sur l'Hb à la place d'O_2 , formation de la carboxyhémoglobine (facteur d'hypoxie)
- **nicotine** →atteint en 7 secondes les récepteurs cérébraux, responsable de la dépendance au tabac
- **goudrons** → substances cancérigènes
- **substances irritantes**→ responsables des affections respiratoires



Bilan tabagique d'un fumeur moyen (1 paquet = 20 cigarettes/jour)				
Nombre de cigarettes	20	600	7 200	360 000
1	Jour	Mois	Année	50 ans
Nicotine 1,25 mg	25 mg	750 mg	9 g	450 g
Goudrons 12 mg	240 mg	7,2 g	216 g	10,8 kg
Coût en euros	5 €	150 €	1 800 €	90 000 €

Arsenic benzène acroléine Nicotine benzopyrène acide cyanhydrique phénols CO_2 Goudrons etc...

figure 6 **Bilan de l'intoxication tabagique chronique**

La composition de tabac

Classification des constituants chimiques de la fumée de cigarette

Chemical group	Examples	Common biological effects
Polycyclic hydrocarbons	Naphthalene, fluorene, phenanthrene	Respiratory tract inflammation and liver dysfunction
Nitrosamines	Nicotine-derived nitrosamine ketone (NNK)	A procarcinogen and immunosuppressant via tumour necrosis factor-α and interleukin modulation
Aza-arenes	Quinolene	Hepatic carcinogen demonstrated in animal studies
Aromatic amines	Toluidine, anisidine	Bladder carcinogen
Ammonia		Corrosive to mucous membranes at high levels; respiratory tract inflammation
Pyridine		Headache; dizziness; amnesia; irritant to eyes, nose, throat, and skin
Other gases	Butadiene, acrolein, isoprene, benzene	Carcinogens

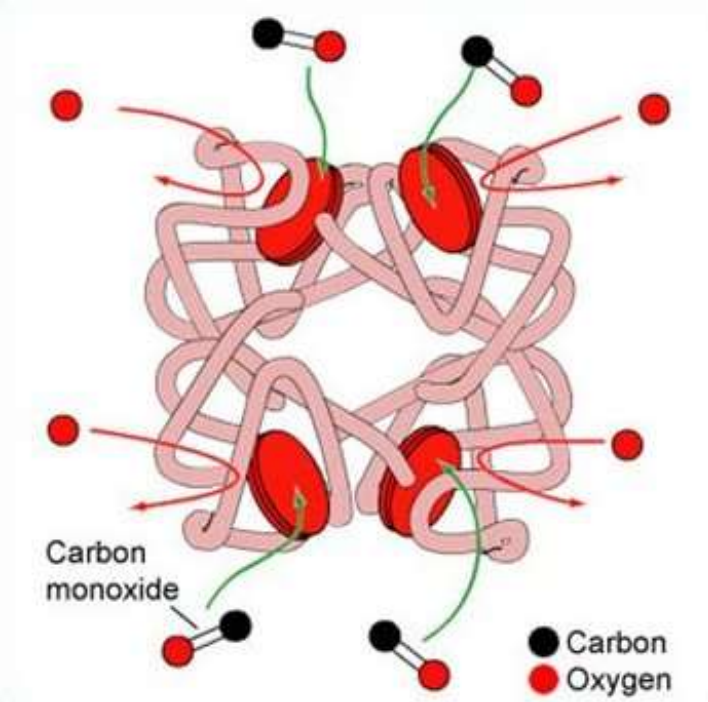
Carrick J.M. et al. BJA Education - Volume 19, Number 1, 2019

Les problèmes de prise en charge en anesthésie

- ✓ Plus de 4 500 substances chimiques sont présentes dans la fumée de cigarette
- ✓ Le principal composant de la phase gazeuse est le monoxyde de carbone, et de la phase particulaire la nicotine.

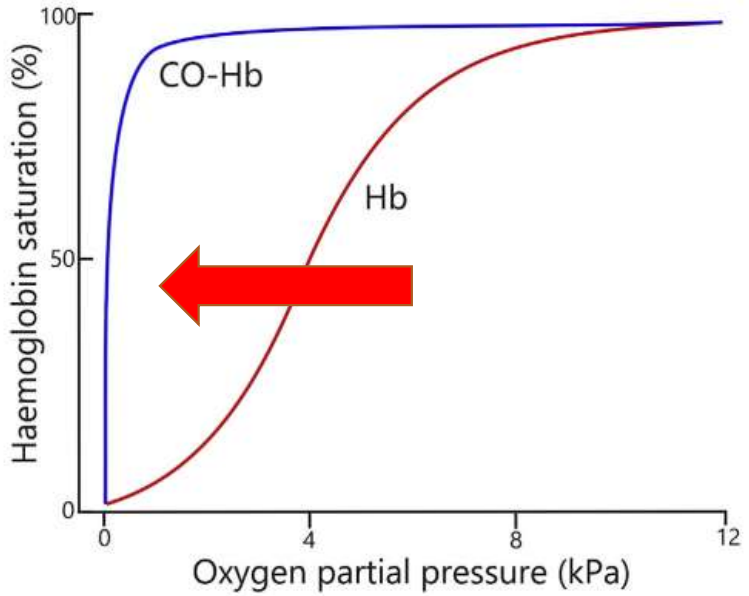
Dans la phase aiguë de la consommation de tabac deux substances posent problème:

- ➢ La nicotine
- ➢ Le monoxyde de carbone.



Le monoxyde de carbone (CO)

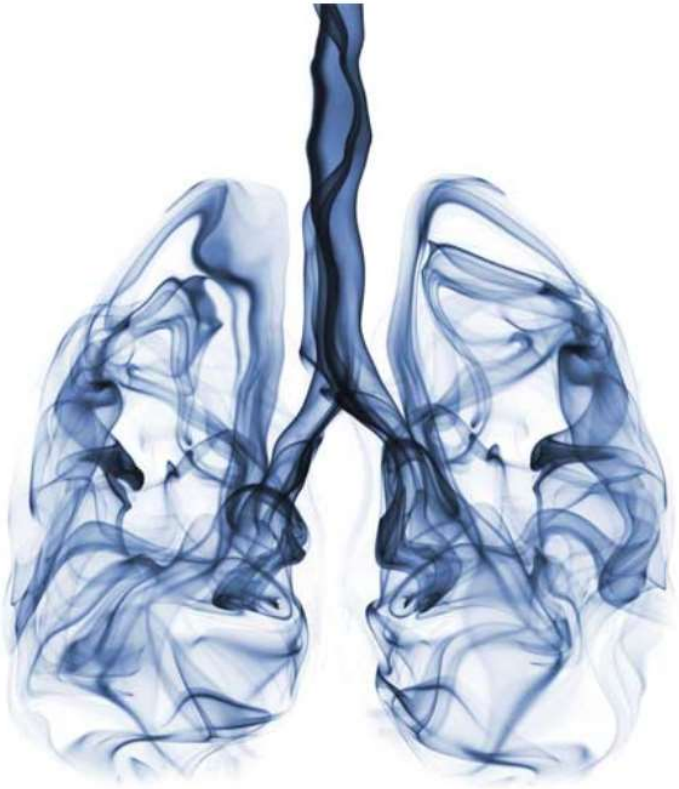
- ✓ Principal composant de la phase gazeuse
- ✓ L'affinité du CO pour l'Hb est environ 300 fois plus élevée
- ✓ Chez les personnes qui fument, le COHb dans le sang artériel est de **2-12%,** contre <1,5% chez les non-fumeurs.
- ✓ Le COHb provoque un décalage vers la gauche de la courbe de dissociation de l'oxyhémoglobine, en partie à cause d'une réduction des niveaux de 2,3-di-phosphoglycérate (2,3-DPG).
- ✓ Hypoxémie
- ✓ La plupart des appareils de mesure de la saturation en oxygène sont incapables de distinguer l'oxyhémoglobine du COHb



Réduction de la capacité à décharger l'oxygène dans les tissus = hypoxie tissulaire

Les conséquences sur le système respiratoire

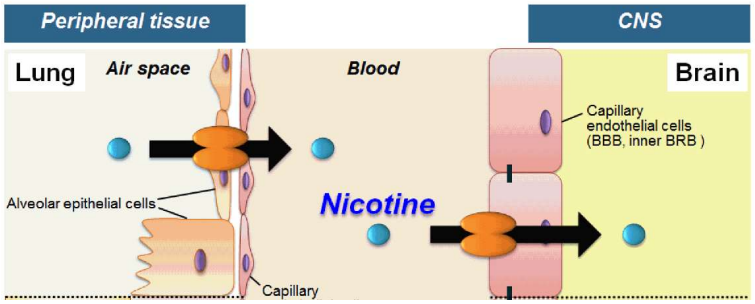
- ✓ Endommage les cils
- ✓ Enflamme et irrite les poumons
- ✓ Stimule la surproduction de mucus
- ✓ Augmente la réactivité des voies respiratoires bronchiques
- ✓ Diminue la fonction et l'immunité des macrophages
- ✓ Augmente le risque d'infection
- ✓ Augmente la probabilité de ventilation mécanique prolongée



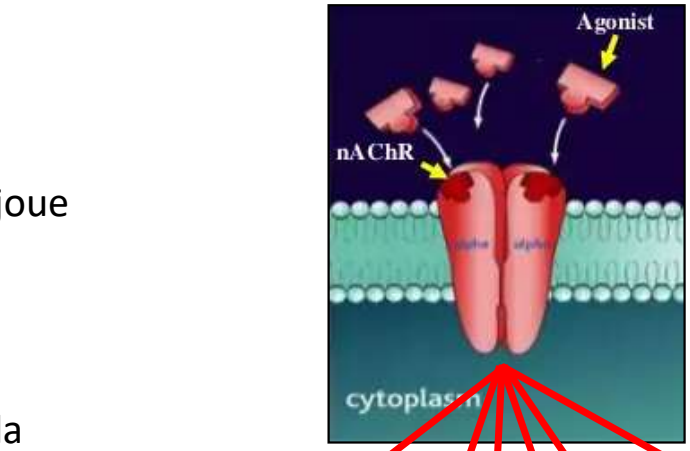
Warner et al. J Anesth (2007) 21:200–211

La nicotine

- ✓ De nombreux alcaloïdes différents, dont la nicotine qui est la plus répandue
- ✓ Crée une **dépendance** chez l'homme
- ✓ Structure chimique similaire à celle de l'acétylcholine et joue donc un rôle dans la **neurotransmission** cérébrale
- ✓ Une cigarette typique contient environ **2 mg** de nicotine
- ✓ Traverse la barrière hémato-encéphalique et entre dans la circulation cérébrale en moins de 20s
- ✓ A une demi-vie de 30 minutes



Tega et al. Biological & pharmaceutical bulletin 2018



noradrenaline

adrénaline

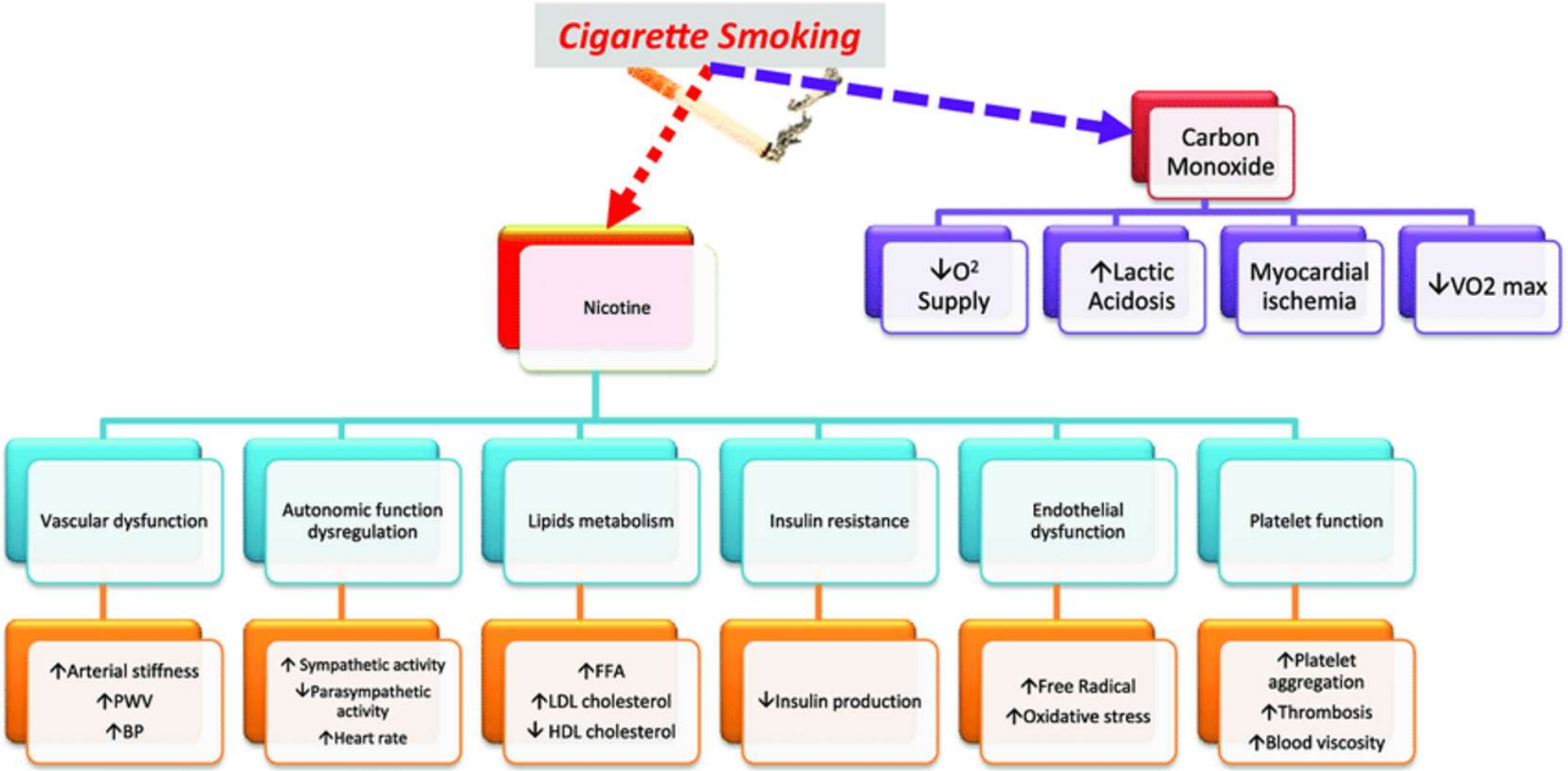
b-endorphine

dopamine

sérotonine

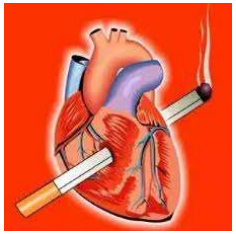
vasopressine

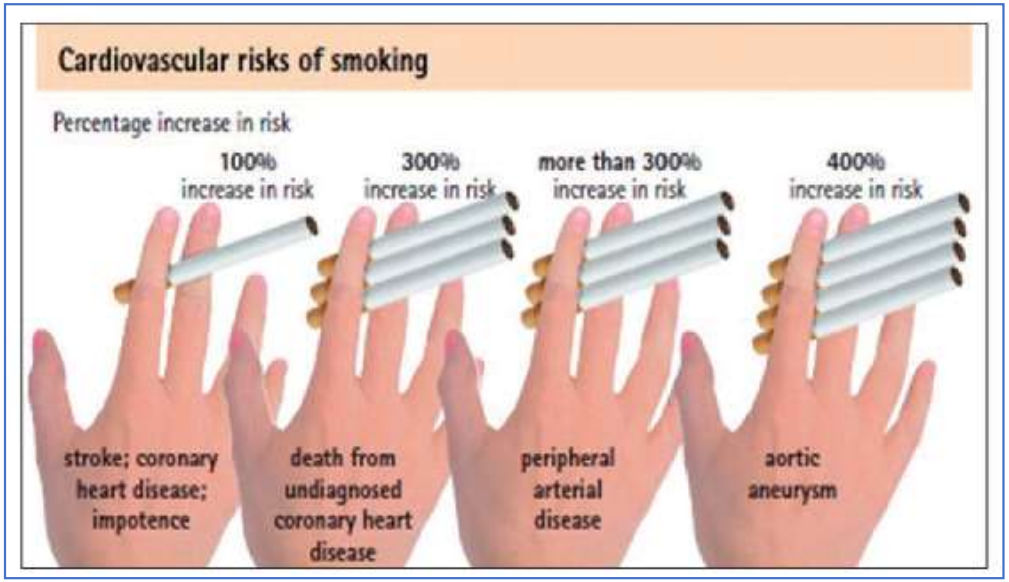
Les effets cardiovasculaires



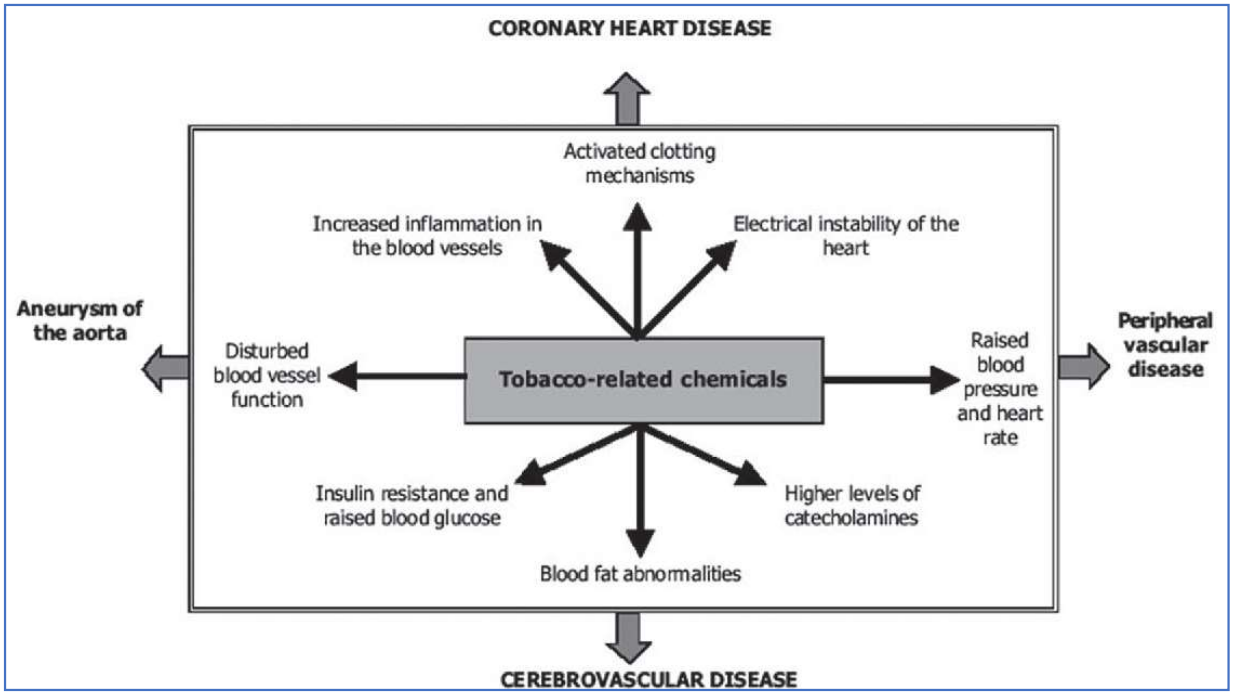
Tousoulis et al. Hellenic Journal of Cardiology 58 (2017) 253-255

Les effets cardiovasculaires





MacKay et al. The Atlas of Heart Disease and Stroke. World Health Organisation, Geneva 2004



Prasad et al. Indian journal of medical sciences 2009

Le tabagisme et les complications périopératoires

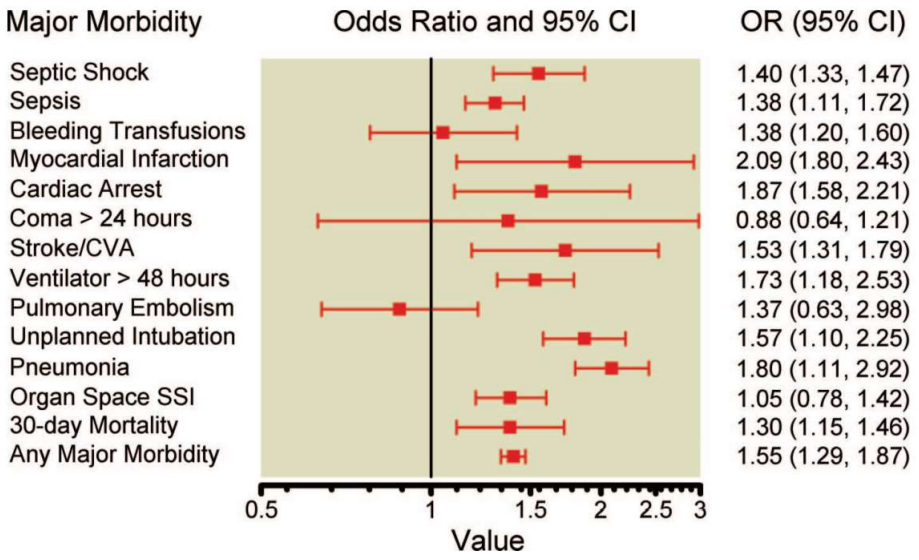
Morbidity	Odds ratio (95% confidence interval)
Pneumonia	2.09 (1.80–2.43)
Unplanned intubation	1.87 (1.58–2.21)
Mechanical ventilation	1.53 (1.31–1.79)
Cardiac arrest	1.57 (1.10–2.25)
Myocardial infarction	1.80 (1.11–2.92)
Stroke	1.73 (1.18–2.53)
Superficial wound infection	1.30 (1.20–1.42)
Deep wound infection	1.42 (1.21–1.68)
Organ space infection	1.38 (1.20–1.60)
Septic shock	1.55 (1.29–1.87)

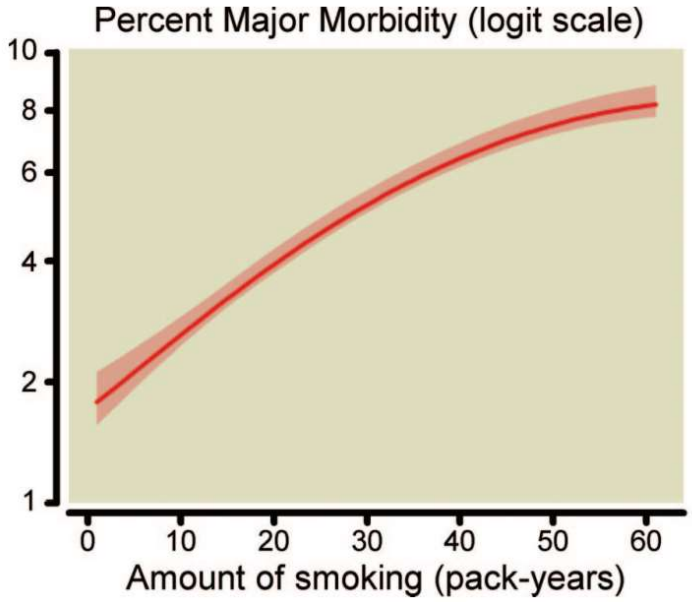
Effets indésirables du tabagisme sur la morbidité postopératoire à 30 jours

Carrick J.M. et al. BJA Education - Volume 19, Number 1, 2019

Le tabagisme et les complications périopératoires

- 635,265 patients analysés
- 82,304 smokers propensity matched with 82,304 never-smoker controls
- Current smokers were 1.38 (95% CI, 1.11–1.72) times more likely to die





Turan et al. Anesthesiology 2011; 114:837–46

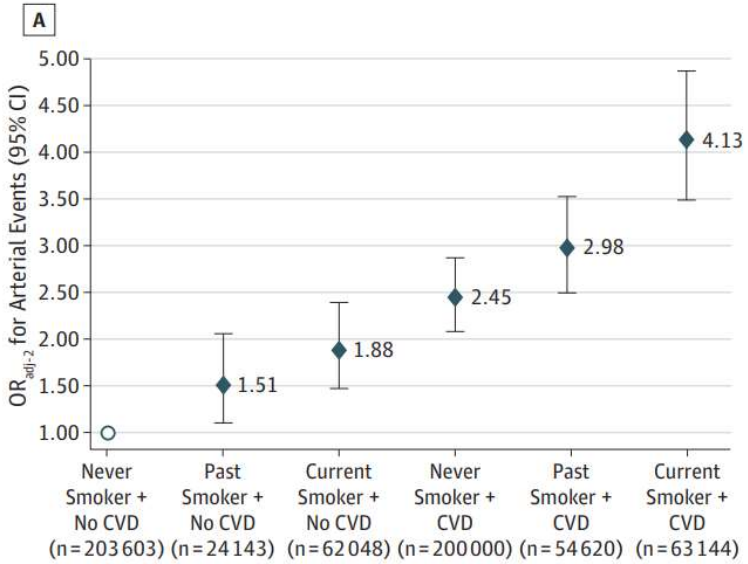
Original Investigation

Smoking and the Risk of Mortality and Vascular and Respiratory Events in Patients Undergoing Major Surgery

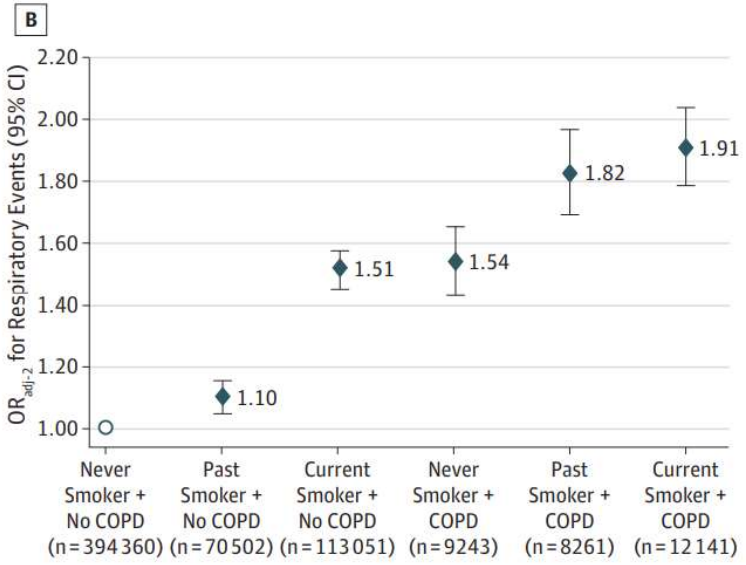
Khaled M. Musallam, MD, PhD; Frits R. Rosendaal, MD, PhD; Ghazi Zaatari, MD; Assaad Soweid, MD; Jamal J. Hoballah, MD; Pierre M. Sfeir, MD; Salah Zeineldine, MD; Hani M. Tamim, PhD; Toby Richards, MD; Donat R. Spahn, MD; Luca A. Lotta, MD, PhD; Flora Peyvandi, MD, PhD; Faek R. Jamali, MD

JAMA
The Journal of the American Medical Association

JAMA Surgery August 2013 Volume 148, Number 8



Les événements artériels postopératoires dépendent de différentes combinaisons de tabagisme et antécédents de maladies cardiovasculaires



Événements respiratoires postopératoires en fonction de différentes combinaisons de tabagisme et antécédents BPCO

La cicatrisation des plaies et des os

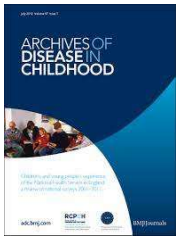
- ✓ Les fumeurs courent un plus grand risque de développer des complications liées à la cicatrisation des plaies, telles que la déhiscence et l'infection
- ✓ Peuvent retarder la guérison des fractures
- ✓ Les composants de la fumée tels que le monoxyde de carbone, qui nuit au transport et à l'acheminement de l'oxygène, et la nicotine, qui provoque une vasoconstriction périphérique, peuvent diminuer l'oxygénation des tissus
- ✓ Les composants de la fumée peuvent également affecter la fonction de cellules telles que les **fibroblastes** et les **ostéoblastes** qui sont importantes pour la guérison

Warner et al. J Anesth (2007) 21:200–211

Impact of environmental tobacco smoke exposure on anaesthetic and surgical outcomes in children: a systematic review and meta-analysis

Christopher Chiswell,[1] Yasmin Akram[2]

Arch Dis Child 2017;102:123–130.



What is already known on this topic?

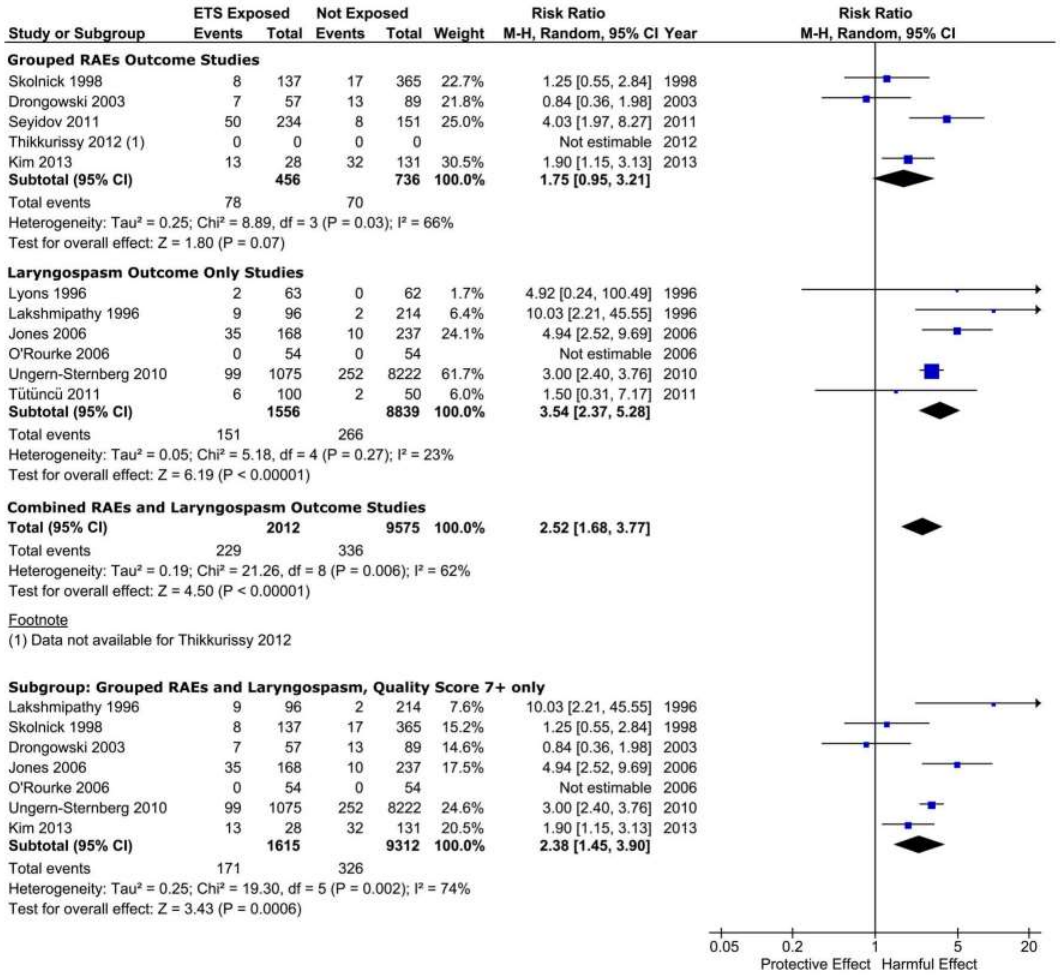
- Environmental tobacco smoke exposure has a significant impact on paediatric health, including frequency of respiratory illness, bacterial meningitis and ear infections.
- Smoking by adults increases their risk of anaesthetic and surgical complications, including delayed wound healing, increased respiratory complications and delayed discharge.
- Appropriate preoperative smoking cessation in adults reduces the risk of these complications.

What this study adds?

- This first review of the evidence identifies and summarises the effect of environmental tobacco smoke exposure on paediatric anaesthetic and surgical outcomes.
- A pooled estimate suggests that environmental tobacco smoke exposure significantly increases risk of paediatric respiratory adverse events during the perianaesthetic period.
- There is a need to establish whether household health promotion interventions and preoperative smoking cessation reduce the risk of harmful outcomes for children undergoing surgery.

Conclusions:

ETS exposure increases the risk of anaesthetic complications and some negative surgical outcomes in children, and this should be considered when planning surgery.



Anaesth Crit Care Pain Med 36 (2017) 192–197

Guidelines

Guidelines on smoking management during the perioperative period☆

Sébastien Pierre [a], Caroline Rivera [b], Béatrice Le Maître [c], Anne-Marie Ruppert [d], Hervé Bouaziz [e], Nathalie Wirth [f], Jacques Saboye [g], Alain Sautet [h], Alain Charles Masquelet [i], Jean-Jacques Tournier [j], Yves Martinet [k], Benoît Chaput [l], Bertrand Dureuil [m,*]

SFAR Société Française d'Anesthésie et de Réanimation

4.1.3. Recommendation

We recommend offering behavioral management and the prescription of a nicotine substitute product for smoking cessation before any scheduled surgical intervention (Grade 1+).

4.2.3. Recommendation

We recommend preoperative smoking cessation independently of the timing of the intervention, even though the benefits increase proportionally with the length of cessation (Grade 1+).

4.3.3. Recommendation

We recommend that all professionals involved in the care pathway (surgeons, anesthetist-intensivists, carers) inform smokers of the positive effects of quitting and offer them dedicated management and personalized follow-up (Grade 1+).

4.4.3. Recommendation

We recommend parental smoking cessation or removal of the child from environmental tobacco smoke as long as possible before the intervention (Grade 1+).

4.5. Recommendation 5: electronic cigarettes and preoperative smoking

4.5.3. Recommendation

None.

Intervention	Recommendations
Timing	Interventions should occur as soon as practicable. They should be performed at any time before or after surgery. Longer duration of preoperative abstinence are associated with lower rates of respiratory and wound healing complications.
Intensity	High-intensity interventions reduce the risk of complications. When this is not feasible, a low-intensity program also promotes smoking cessation. Primary care physicians should provide smoking cessation counseling as early as possible, preferably before or at the time of surgical referral.
Perioperative clinicians	Surgeons and preoperative clinic physicians should counsel patients to quit smoking and refer them to smoking cessation services.
Self-help products	While they may be used as adjuncts to educate patients, there is limited evidence to support the use of pamphlets and electronic educational tools alone.
Tobacco quitlines Text messaging	Provide accessible ways to counsel patients and follow up after hospital discharge.
Pharmacotherapy	Nicotine replacement therapies and varenicline are effective when combined with behavioral interventions. There is insufficient evidence that buproprion is effective for smoking cessation in the perioperative setting.
Electronic cigarettes	There is limited evidence to support the safety and efficacy of electronic cigarettes for perioperative smoking cessation.

Recommendations for perioperative smoking cessation interventions. Adapted from Wong J, et al. Society for Perioperative Assessment and Quality Improvement (SPAQI) consensus statement on perioperative smoking cessation. Wong J, An D, Urman RD, et al. Society for Perioperative Assessment and Quality Improvement (SPAQI) consensus statement on perioperative smoking cessation. Anesth Analg. 2020

A practical guide for perioperative smoking cessation

Hiroki Iida[1,2,10] · Tetsuya Kai[1,3] · Michioki Kuri[1,4] · Kumiko Tanabe[1,2] · Masashi Nakagawa[1,5] · Chizuru Yamashita[1,6] · Hiroshi Yonekura[1,7] · Mami Iida[1,8] · Ikuo Fukuda[1,9]

Japanese Society of Anesthesiologists 2022

Le tabagisme actif et passif réduit les niveaux d'oxygène dans le sang, affecte les voies métaboliques des anesthésiques et provoque d'autres effets indésirables.

Le tabagisme préopératoire est un facteur de risque fréquent de complications périopératoires, notamment l'infection des plaies, les maladies infectieuses, les complications pulmonaires, les complications cérébrales et neurologiques et la désunion osseuse.

Elle augmente l'incidence des reprises d'arthroplastie, diminue la perméabilité du greffon et augmente les taux de mortalité après pontage aorto-coronarien (PAC).

Le tabagisme passif, comme le tabagisme actif, est un risque périopératoire.

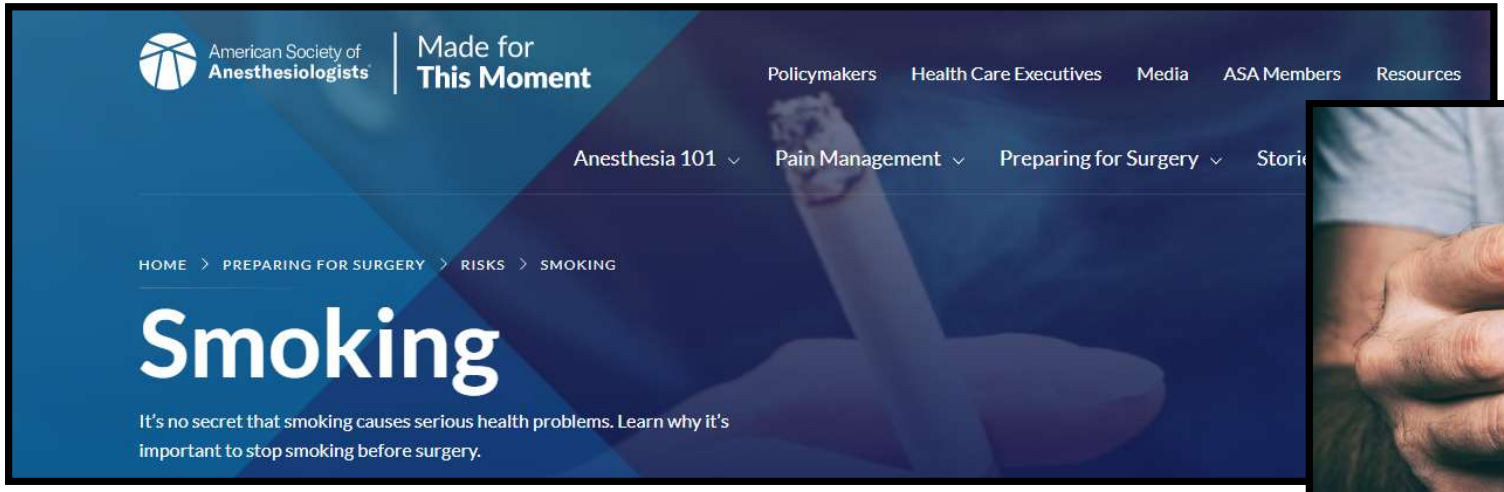
Les fumeurs ressentent une douleur postopératoire aiguë plus intense que les non-fumeurs. Le tabagisme est un facteur de risque de douleur postopératoire chronique.

Le sevrage tabagique préopératoire réduit la fréquence des des complications pulmonaires, des complications liées à la cicatrisation des plaies, des ISO et de nombreux autres types de complications.

Nous recommandons vivement aux patients devant subir une intervention chirurgicale non urgente de s'abstenir de fumer pendant au moins 4 semaines avant l'opération. (1B)

Nous recommandons vivement des interventions préopératoires de sevrage tabagique pour aider les patients à arrêter de fumer. (1A)

Les systèmes électroniques commercialisés au Japon libèrent de nombreuses substances nocives.
Compte tenu du risque de lésions pulmonaires liées à l'utilisation d'une e-cigarette ou d'un produit de vapotage (EVALI), les patients devraient être conseillés d'arrêter de les utiliser



Arrêter de fumer, même la veille de l'opération, peut réduire le risque de complications.

Les anesthésistes sont des spécialistes ils voient de leurs propres yeux le lourd bilan du tabagisme sur l'organisme.

Arrêter de fumer améliore votre état de santé général et peut :

- Ajoutez au moins 6-8 ans à votre vie.
- Réduire le risque de cancer du poumon et de maladies cardiaques.
- Vous faire économiser en moyenne 1 400 dollars par an.
- Réduire l'exposition de vos proches au tabagisme passif
- Vous rendre en meilleure santé pour toute intervention chirurgicale ou anesthésie générale dont vous pourriez avoir besoin à l'avenir..

Avantages du sevrage tabagique

Duration of abstinence	**Benefits**
12-24 hours	Decreased COHgb concentration, increased P50 of oxyhemoglobin (shifts the dissociation curve rightward, increasing tissue O_2 availability).
1-2 weeks	Improved mucociliary clearance, reduction in sputum volume
3-4 weeks	Reduction in wound healing complications
More than 4-8 weeks	Reduction in postoperative respiratory complications
More than 12 months	Decreased risk of postoperative morbidity and mortality

Chart IV - Time Needed for Organic Functions Normalization after Smoking Abstinence

- Nicotine excretion: 12 hours
- COHb excretion: 3 days
- Return to normal ciliary activity: 4-6 days
- Secretion production decrease: 2-6 weeks
- Pulmonary morbidity decrease: > 8 weeks
- Return to normal immune function (6-8 weeks)

Adapted from Becker and Camu [1]

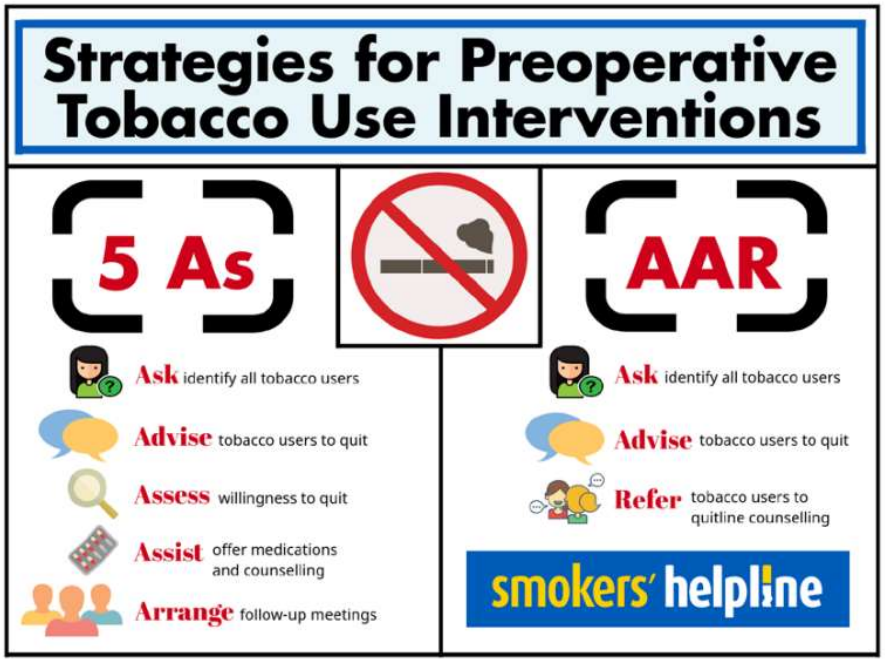
Perioperative Medicine

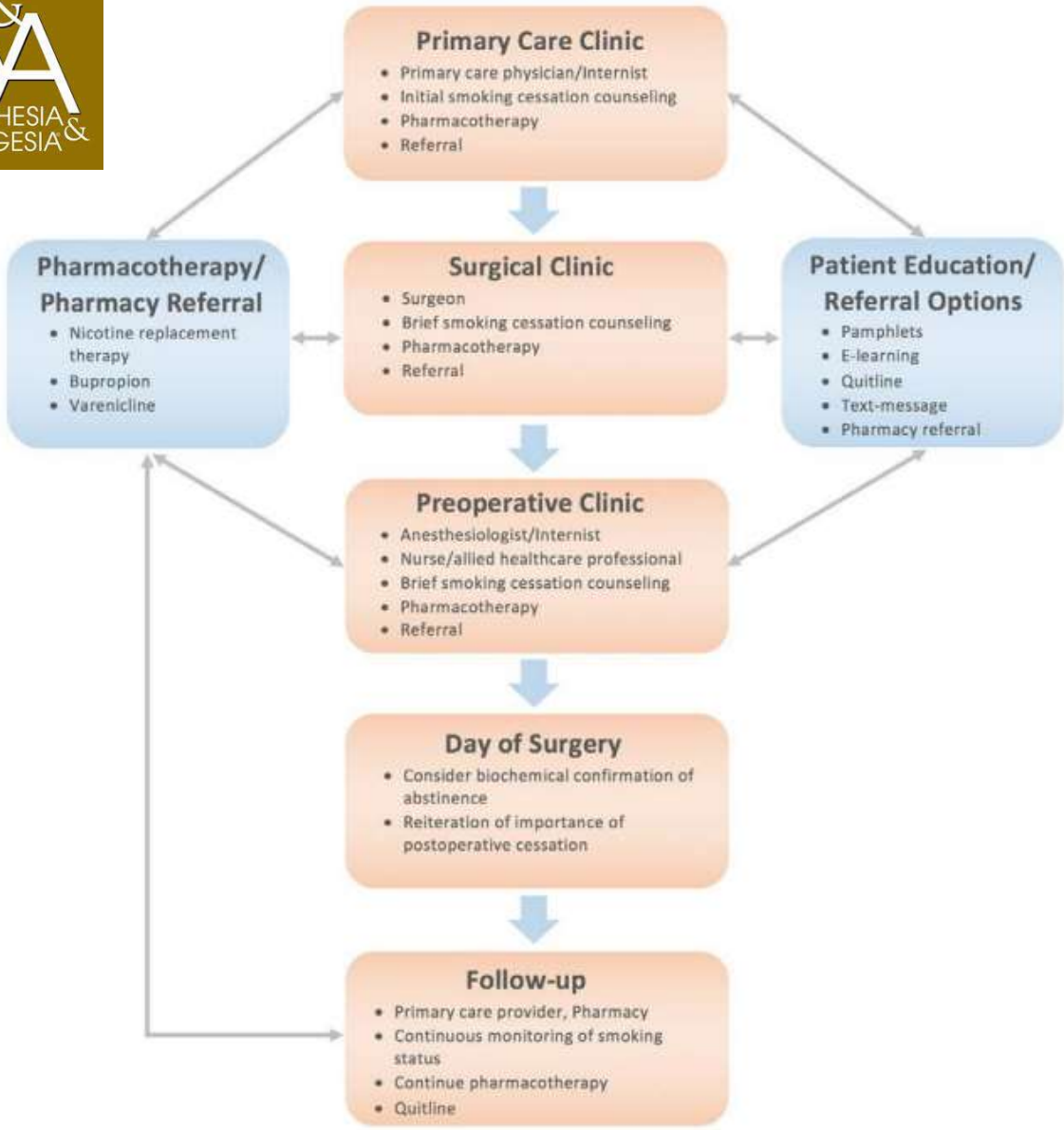
SPECIAL ARTICLE

Society for Perioperative Assessment and Quality Improvement (SPAQI) Consensus Statement on Perioperative Smoking Cessation

Jean Wong, MD,*† Dong An, BMSc,* Richard D. Urman, MD, MBA,‡ David O. Warner, MD,§ Hanne Tønnesen, MD, PhD,‖¶ Raviraj Raveendran, MBBS,# Hairil R. Abdullah, MBBS,** Kurt Pfeifer, MD, FACP, SFHM,††‡‡ John Maa, MD,§§‖‖ Barry Finegan, MD,¶¶ Emily Li, BScPharm, PharmD,## Ashley Webb, MBBS, MPH,***††† Angela F. Edwards, MD,‡‡‡ Paul Preston, MD,§§§ Nathalie Bentov, MD, MA,‖‖‖¶¶¶ Deborah C. Richman, MBChB,†††### and Frances Chung, MBBS*

Anesthesia Analgesia September 2020 • Volume 131





Smoking Cessation Reduces Postoperative Complications: A Systematic Review and Meta-analysis

Edward Mills, PhD, MSc,[a,b] Oghenowede Eyawo, MPH,[b] Ian Lockhart, DLitt et Phil,[c] Steven Kelly, MSc,[c]
Ping Wu, MBBS, MSc,[a] Jon O. Ebbert, MD, MSc[d]

THE AMERICAN JOURNAL of MEDICINE®

- Review randomized trials and observational evidence
- Relative risk reduction of **41%** for prevention of postoperative complications
- Each week of cessation increases the magnitude of effect by **19%**
- Trials of at least 4 weeks' smoking cessation had a significantly larger treatment effect than shorter trials

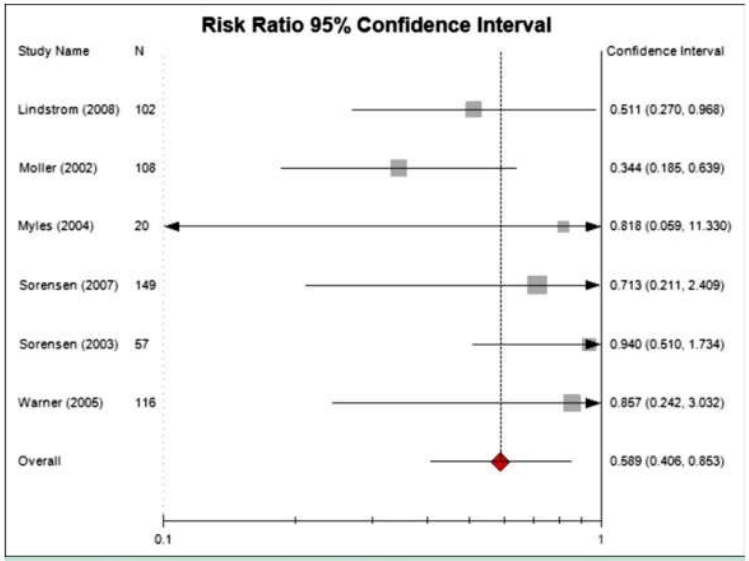


Figure 2 Forst plot of randomized clinical trials on total complications.

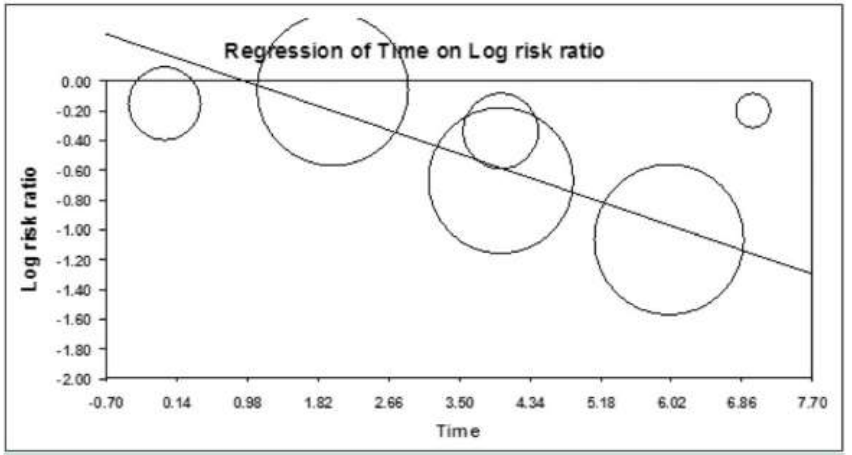


Figure 3 Meta-regression plot, effect of time of cessation on complications.

Mills et al. Smoking Cessation Reduces Perioperative Complications; The American Journal of Medicine, Vol 124, No 2, February 2011

The Association of Nicotine Replacement Therapy With Outcomes Among Smokers Hospitalized for a Major Surgical Procedure

Mihaela S. Stefan, MD, PhD; Quinn Pack, MD; Meng-Shiou Shieh, PhD; Penelope S. Pekow, PhD; Steven L. Bernstein, MD; Karthik Raghunathan, MD, MPH; Katie S. Nason, MD, MPH; and Peter K. Lindenauer, MD

CHEST JOURNAL

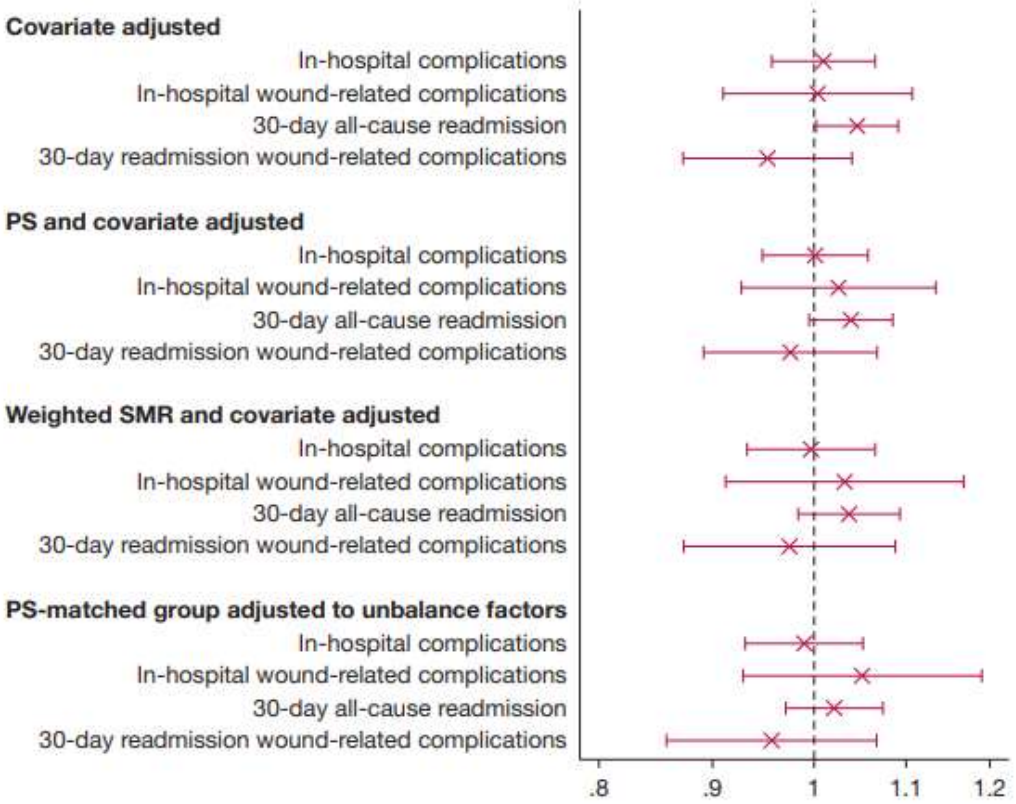
- Retrospective study in 552 hospitals
- Active smokers hospitalized for a major surgical procedure
- 147,506 active smokers
- 25,651 (17.4%) were prescribed NRT within 2 days of admission

In the propensity-matched analysis :

- no association between receipt of NRT and
- in-hospital complications (OR, 0.99; 95% CI, 0.93-1.05)
- mortality (OR, 0.84; 95% CI, 0.68-1.04)
- all-cause 30-day readmissions (OR, 1.02; 95% CI, 0.97-1.07)
- 30-day readmission for wound complications (OR, 0.96; 95% CI, 0.86-1.07).

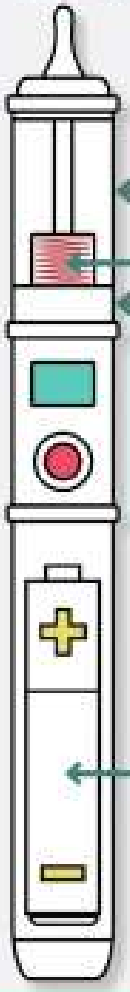
CONCLUSIONS:

- NRT is not associated with adverse outcomes after surgery. These results strengthen the evidence that NRT should be prescribed routinely in the perioperative period.



Anatomy of an E-Cigarette

THE E-CIGARETTE



THE CARTRIDGE

This holds the e-liquid (substance). It comes prefilled or refillable. It is usually combined with an atomizer as one unit.

THE ATOMIZER

It is a coil that is a heating element which helps convert e-liquid to tiny airborne droplets (aerosol).

THE SENSORS

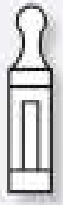
E-cigarettes without a power button will turn on when the user inhales through it. E-cigarettes with or without a power button require sensors to turn on.

THE BATTERY

It is a rechargeable lithium ion battery, which provides enough current to heat the atomizer to 400 degrees Fahrenheit in seconds.

Mod Box
It is a 3rd generation device that is modifiable ("Mod") allowing users to change the voltage, coils and wicks.

Sub-Ohm Tank
It is made of plastic or metal with transparent casing so liquid levels can be seen. It contains a lower resistance coil that allows the liquid to heat up faster.



Cartridge
It is made of plastic or metal with transparent casing so liquid levels can be seen. It contains an atomizer that heats up the e-liquid.

E-Liquid
E-liquid is contained in a pod, cartridge or tank. It is made up of a mixture of substances that includes nicotine, cannabis, and/or flavoring.

Category of constituents	Liquid	Aerosol
Listed ingredients	Glycerol	Glycerol
	Propylene glycol	Propylene glycol
	Nicotine	Nicotine
Other detectable compounds	Acetone	Acetaldehyde
	Acrolein	Acetone
	1,3-Butadiene	Acrolein
	Cyclohexane	Formaldehyde
	Diethylene glycol	*N'*-nitrosonornicotine (NNN)
	Ethylene glycol	Metals (cadmium, lead, nickel tin, copper)
	Ethanol	Toluene
	Formaldehyde	
	Tobacco alkaloids	

Table 1. Constituents of Liquids and Aerosols in E-Cigarettes
(Modified from Dinakar and O'Connor [3])

E-cigarette, or vaping, associated lung injury (EVALI)

E-cigarettes ont été présentées prometteuses pour l'arrêt du tabagisme

Augmentation rapide de l'utilisation, vives inquiétudes, propriétés addictives

"e-liquide", qui se compose d'un solvant, d'arômes et du médicament actif.

e-cigarette, or vaping, product use-associated lung injury (EVALI)

EVALI a été initialement reconnu à l'été 2019.

Une forme de lésion pulmonaire aiguë dont l'examen pathologique révèle une **pneumonie aiguë fibrineuse**, des **lésions alvéolaires diffuses** ou une pneumonie organisée, généralement bronchiolocentrique et accompagnée d'une bronchiolite.

Lynn et al. Curr Opin Anesthesiol 2020, 33:318–326

Chemical	Description	Physiologic impact
Nicotine	Common nicotine Concentrations are 0-24 mg	Sympathomimetic, cardiac, vascular, endocrine, and immunologic toxicity Drug-to-drug interactions
Propylene glycol	Artificial flavoring	Carcinogenic
Glycerol	Artificial flavoring	Cardiotoxic, carcinogenic
Diacetyl	Artificial flavoring	Pulmonary toxicity
Acrolein, formaldehyde, and acetaldehyde	Toxic compound generated in aerosol	Pulmonary and vascular toxicity, carcinogenic
Heavy metals	Contained in e-liquid and aerosol	Pulmonary, vascular, and nephrotoxicity
Toluene	Volatile compound generated in aerosol	CNS depressant

Table 3. Constituents of Liquids and Aerosols in E-Cigarettes

Abbreviation: CNS, central nervous system.

Potential harm	Warning
Addiction	• Most e-cigarettes contain nicotine: the addictive drug in regular cigarettes, cigars, and other tobacco products. • Use of nicotine in adolescence may increase the risk of future addiction to other drugs.
Brain injury	• Nicotine can harm the developing adolescent brain. The brain keeps developing until about age 25 years. Use of nicotine in adolescence can harm the parts of the brain that control attention, learning, mood, and impulse control. • Nicotine also changes the way that *synapses* form, which are the learned, stronger connections built between brain cells each time a person creates a new memory or learns a new skill. Young people's brains build synapses faster than do adult brains.
Unintended bodily injury	• Defective batteries in e-cigarettes have caused explosions and fires, some resulting in serious injuries. • Children and adults have been poisoned by swallowing, breathing, or absorbing e-cigarette liquid through their eyes or skin.
Long-term health effects	• Scientists are still learning about the long-term health effects of e-cigarettes. • Some ingredients in e-cigarettes could be harmful to the lungs in the long term. For example, some e-cigarette flavorings may be safe to eat but not to inhale because the gut can process more substances than the lungs.

Table 2. Warnings About E-Cigarettes From Centers for Disease Control and Prevention[6]

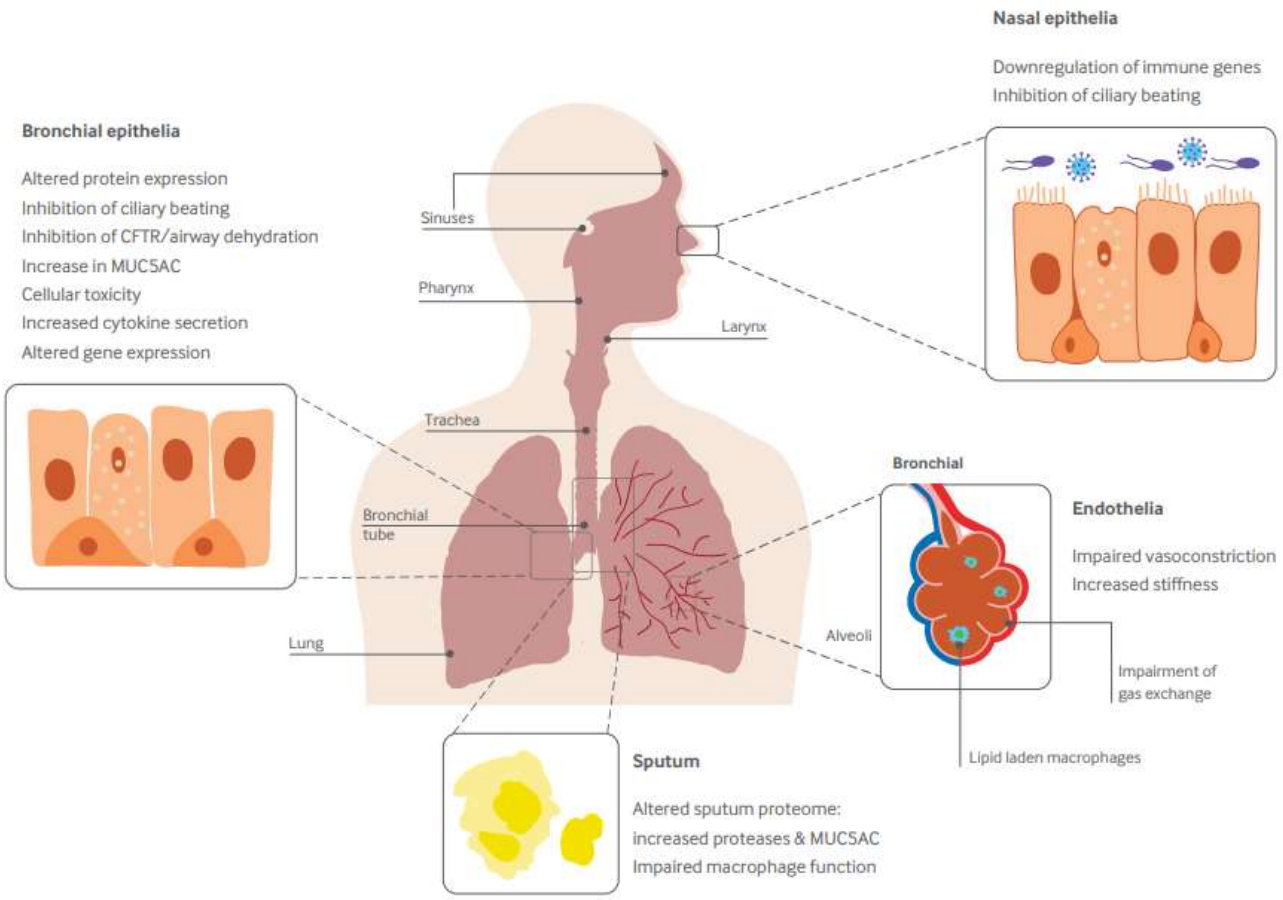
System	Change
Pulmonary	• Increased airway hyperreactivity • Increased airway resistance • Increased mucus production • Parenchymal/alveolar inflammation • Increased closing capacity • Interference with lung development • Impaired defense against bacterial and viral pathogens • Nasal airway irritation • Bronchiolitis obliterans
Cardiac	• Hemodynamic instability under GA • Hypertension • Tachycardia • Increased myocardial oxygen consumption • Impaired coronary blood flow • Hyperlipidemia • Atherosclerosis • Impaired cardiac development in pediatric patients • Insulin resistance
Central nervous system	• Impaired brain development in pediatric patients • CNS depression
Immunology	• Antiproliferation of cells • Impaired fibroblast activity • Impaired tissue oxygenation • Decreased collagen
Response to anesthetic agents	• Increased opioid requirement • Decreased sensitivity to NMBDs • Decreased MAC secondary to CNS depression

Table 4. Pathophysiologic Changes With Electronic Cigarette Use

STATE OF THE ART REVIEW

What are the respiratory effects of e-cigarettes?

Jeffrey E Gotts,[1] Sven-Eric Jordt,[2,3] Rob McConnell,[4] Robert Tarran[5,6]



Gotts JE, Jordt SE, McConnell R, Tarran R. What are the respiratory effects of e-cigarettes? BMJ 2019; 366:l5275.

Une intervention chirurgicale : une occasion d'arrêt du tabac à ne pas gâcher !!

- Données de l'enquête longitudinale (1992-2004)
- 20% d'arrêt par année de suivi en cas de chirurgie majeure,
- 10% en cas de chirurgie ambulatoire,
- 5% si pas de chirurgie

What We Already Know about This Topic

- Millions of smokers undergo surgery each year, which may provide a good opportunity for them to quit smoking

What This Article Tells Us That Is New

- In this analysis of a large nationally representative longitudinal study, undergoing major surgery approximately doubled the chances that a smoker would quit
- Approximately 1 in 10 of all successful quit attempts in older U.S. citizens is associated with surgery

Table 2. Multivariate Analysis of Relative Incidence by the Three Types of Major Surgery*

Variables	No. Person-Years	No. Quitters	Incidence per 100 Person-Years	Adjusted Relative Incidence (95% CI)	*P*
Heart surgery					
No	38,493	2,310	6.00	1.00	
Yes	468	134	28.63	2.58 (2.06–3.24)	< 0.001
Cancer surgery					
No	38,656	2,389	6.18	1.00	
Yes	305	55	18.03	1.57 (1.16–2.12)	0.004
Joint replacement					
No	38,538	2,386	6.19	1.00	
Yes	423	58	13.71	1.59 (1.20–2.12)	0.001

* Each relative incidence was adjusted for age, race, sex, new outpatient surgery, and new medical diagnosis.

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Conclusions

- Le tabagisme est un problème de santé publique
- Le tabagisme actif augmente d'environ 20 % le risque de mortalité hospitalière
- Augmente de 40 % le risque de complications majeures postopératoires
- Arrêt de tabac indépendamment de timing de l'intervention chirurgicale
- L'intervention chirurgicale est une occasion d'arrêt de tabac à ne pas rater
- Un travail d'équipe

Diapositive 37

VE1 Vedat Eljezi; 17/03/2022