

Practical aspects of pharmacotherapy for smoking cessation

Emma Dean
Project Officer- Smokefree
Lead Pharmacist



AlfredHealth



Nicotine

- **Short half-life (average 2 hours)**
 - In some individuals as short as 20-40minutes
- **What it does:**
 - Psychoactive effects: dependence, short term relief of anxiety and low mood, increased arousal and concentration
 - Minor haemodynamic effects: increased HR, transient increase in BP
 - Fetal neurotoxicity
- **What it doesn't do:**
 - Nicotine not classed as carcinogen by IARC
 - Does not cause cardiovascular disease
 - Does not cause lung damage
- **Plays a small role in human disease- 'people smoke for nicotine, but die from smoke'**

Nicotine Dependence

- **Chronic medical condition with multiple cycles of relapse and remission**
 - Relapsed smokers need to be re-engaged and assisted through repeated quit attempts
- **Under recognised by health professionals**
- **Assessment is important**
- **Time to first cigarette a reliable indicator**

Nicotine withdrawal syndrome

- **Symptoms begin within hours of quitting**
- **Duration and severity of symptoms are highly variable among individuals**
 - Generally worst in first 24-48 hours
- **Nicotine withdrawal symptoms are usually alleviated in 2-4 weeks**
 - Dizziness, insomnia, restlessness, difficulty concentrating, irritability, increase appetite, mood changes

Other mechanisms underlying smoking

- **Behavioural connections**
 - Behaviours closely linked to smoking
 - Connections tend to be strong and have built up over many years
 - E.g. drinking caffeinated or alcoholic beverages, taking a break at home or work, watching television, finishing a meal, talking on the phone
- **Psychological connections**
 - Smoking is related to how they feel, their moods and emotions
 - Commonly draw a connection between smoking and stress relief

Pharmacotherapy

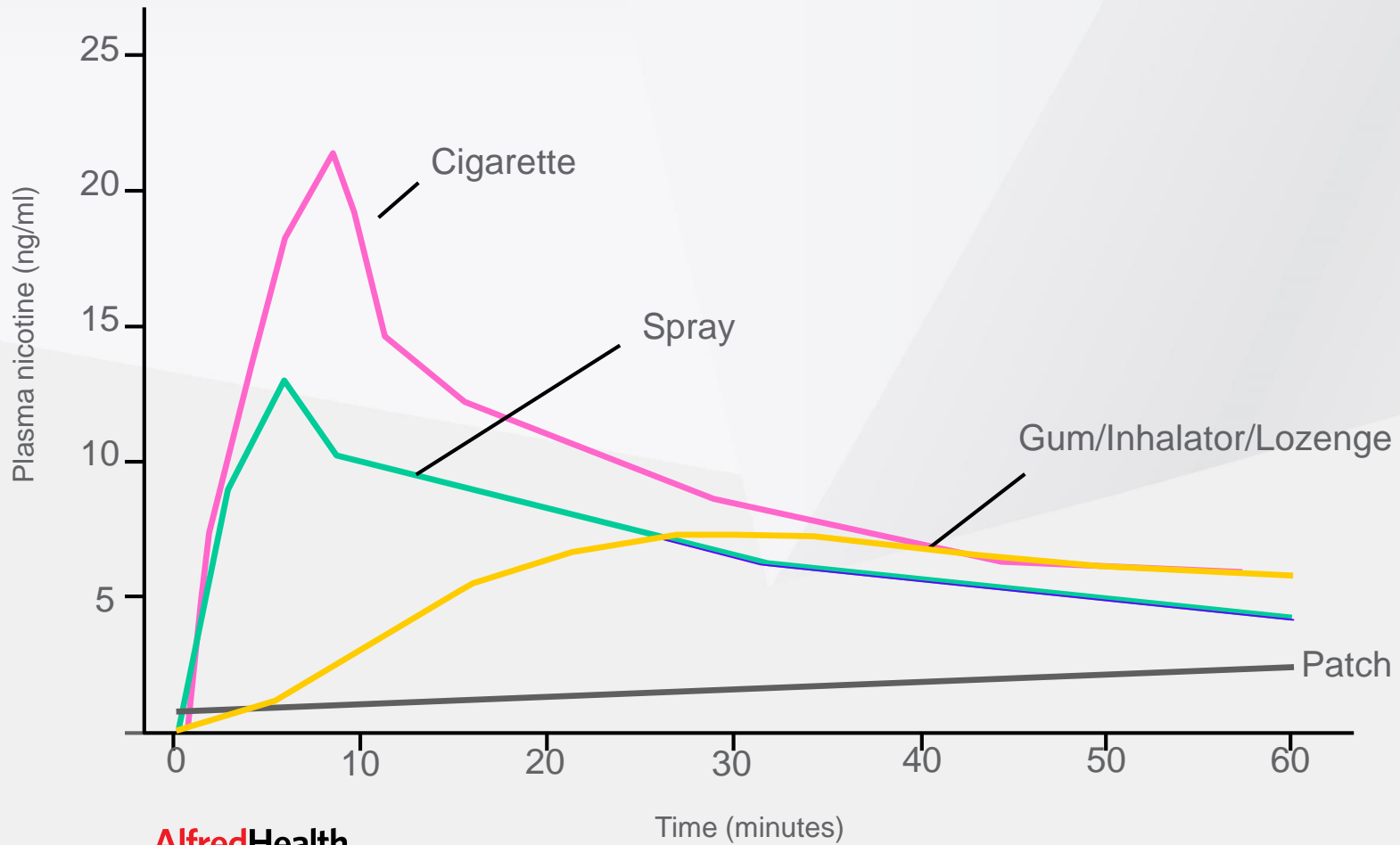
- **Nicotine replacement therapy (NRT)**
 - Transdermal- patches
 - Intermittent- lozenges, mouthspray, gum and inhalator
- **Bupropion (Zyban®)**
- **Varenicline (Champix®)**

Nicotine replacement therapy

- **Increases quit rates by 50-70% compared to placebo**
- **Reduces craving and minimises withdrawal symptoms**
- **Safety and efficacy profile**
- **Variation in metabolism, fast metabolisers need larger doses**
- **Best result = NRT (minimum 8/52) + behavioural advice + follow up**
- **No evidence for weaning the patch**



Plasma nicotine levels- single dose



Combination Therapy

Patch + Intermittent

Patch: Steady protection (long acting and slow onset) to control baseline cravings

Intermittent: Quicker and more flexible relief
If possible use in anticipation of smoking trigger

- Differences in bioavailability of formulations provide rationale
- Adverse effect profile similar to mono-therapy



Nicotine patch



- **24 hour & 16 hour patches- cessation rates are similar** Daughton 1999
- **Slow skin absorption – takes several hours to reach steady state (depends on brand)**
 - If removed overnight, substantial nicotine levels are reached within 3 hours after a new patch is applied Fant 2000
- **Produces relatively constant withdrawal relief over 24 hours**
- **Can be started 2 weeks before setting ‘quit date’ - increases quit rates by 35% (compared to traditional quit day application)**
- **Continue to use patch after a lapse- 4-5 times more likely to be abstinent at end of treatment period** Mendelsohn 2013
- **Longer durations (up to 24 weeks) may lead to improved smoking cessation rates** Schnoll 2010, Schnoll 2015

Nicotine patch

- **Apply to clean, hairless skin**
- **Hold firmly in place for 20 seconds after application to assist adhesion**
- **Swimming & showering ok after an hour**
- **Tape around edges if lifting**
- **Rotate patch around body**
- **Sleep disturbance (vivid dreaming) common → if disrupting daily activities, put patch on in AM and remove PM, could try lower dose patch; does decrease over time**
- **< 10% have skin irritation (usually due to adhesive) → cortisone cream may be helpful**
- **Different brands have different properties and deliver blood nicotine levels about half as those from smoking**

Nicotine gum

- **Nicotine is readily absorbed from oral mucosa membranes**
- **Two strengths- 2mg & 4mg gum**
- **Best to start immediately upon waking**
- **Use liberally (no greater than 1 piece/hour)**
- **'Chew and park' method – chew every 2 seconds for approximately 30minutes**
- **Adverse effects- nausea, hiccups, bloating**



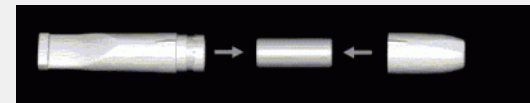
Nicotine lozenge



- **Nicotine is readily absorbed from oral mucosa membranes**
- **Strengths**
 - 2mg & 4mg lozenge (Nicorette Cooldrops®)
 - 1.5mg & 4mg mini lozenge (Nicabate mini lozenges®)
- **Use liberally to suppress cravings/urges to smoke**
- **Lozenge should be placed in the mouth and moved from one side to the other until completely dissolved**
 - should not be chewed or swallowed whole
- **Adverse effects- hiccups, nausea, flatulence & sensitive mouth**

Nicotine inhalator

- Nicotine is readily absorbed from oral mucosa membranes
- Strength- 15mg/cartridge
- When used as a cigarette, taking 8 times as many puffs as when smoking, delivers about 1 mg of nicotine
- A cartridge will deliver the same amount of nicotine (1 mg), at a uniform release rate, for the first seven consecutive uses
- Designed to combine pharmacological and behavioural substitution (hand to mouth ritual)
- Patients can self-titrate to the level of nicotine they require to relieve cravings
- Adverse effects- hiccups, sore throat, heartburn



Nicotine spray

- **Nicotine is absorbed through oral mucosa membranes**
- **Oral spray form means that nicotine is administered instantaneously**
- **Strength- 1mg/dose (150 doses per device)**
- **Use liberally to suppress cravings/urges to smoke**
- **Priming is needed for first time use and if not used greater than 2 days**
- **Adverse effects- nausea, mouth irritation, taste disturbances, hiccups, indigestion**



How to boost patient compliance...

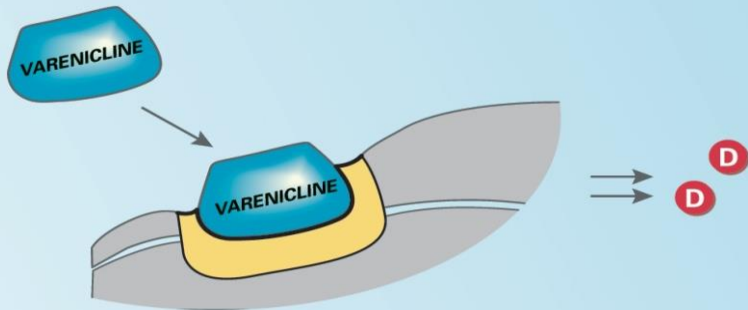
- **Concerns about safety**
 - NRT is always safer than smoking
- **Concerns about the addictiveness of NRT**
 - Minimal addictive potential
- **Lack of confidence in efficacy**
 - Proven effective (significant increases chances of quitting); minimises nicotine withdrawal symptoms
- **Not using enough**
 - More effective when dose titrated according to response
- **Stopping NRT too early**
 - Needs to be taken for long enough to start to address other drivers of smoking
 - Best not to cease until patient can resist cravings in situations

How to boost patient compliance....

- **NRT is not working**
 - May require increased dose (combination therapy, more doses of intermittent, second patch)
 - Are the products being used correctly?
 - Consider change to other smoking cessation medications
- **Side effects**
 - Decrease over time
 - Are the products being used correctly?
- **Cost**
 - NRT cost vs. cigarettes (and ongoing smoking- financial & health)

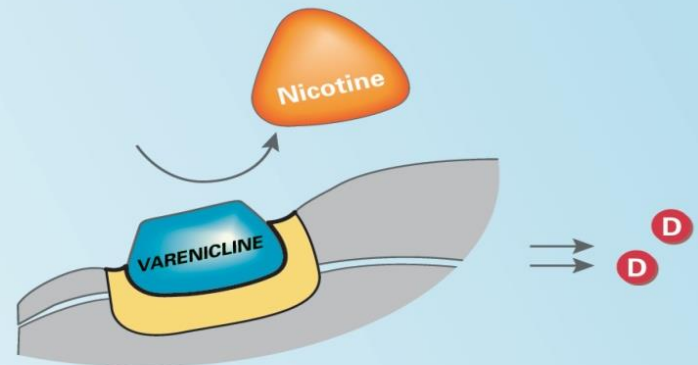
Varenicline (Champix)

Varenicline mode of action



$\alpha 4 \beta 2$ receptor in the brain

Varenicline with nicotine



$\alpha 4 \beta 2$ receptor in the brain

Varenicline- Troubleshooting

- **Nausea**
 - Always take with food
 - Increase fluid intake, 10 glasses water /day if clinically appropriate
- **Insomnia – bring evening dose forward**
- **Renal impairment – reduced dose 1mg per day**
- **If not tolerating for any reason consider reduced dose**

Drug Interactions

Many interactions identified; varying clinical significance

Chemicals in tobacco smoke can interact by two mechanisms

- *Pharmacokinetic*- usually poly-carbons not nicotine stimulation of hepatic enzymes
antipsychotics, warfarin & caffeine
- *Pharmacodynamic*- largely due to nicotine alter the expected response or actions of other drugs
beta-blockers, insulin

Dose adjustments may be required and based on clinical presentation and according to medical review

Emma Dean
Project Officer- Smokefree
Lead Pharmacist
e.dean@alfred.org.au

www.starttheconversation.org.au