



# Smoking and Smoking Cessation

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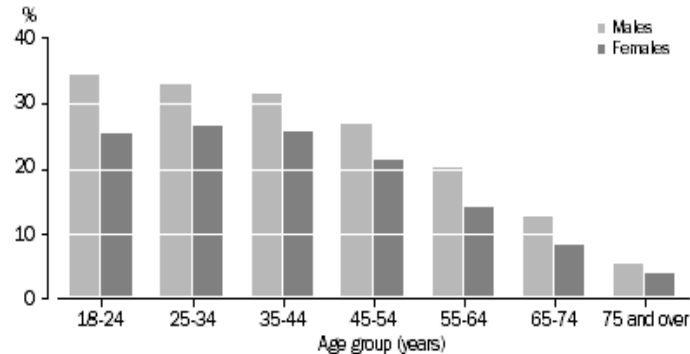
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# TRANSLATING THE SCIENCE INTO CLINICAL PRACTICE

# Prevalence of Smoking in Australia



(a) Includes current daily smokers and other current smokers

Source: National Health Survey: Summary of Results 2004-05 (ABS cat no 4364.0)

**17.8% of Australians smoke. Note the age and gender differences**



# Why are we doing this?

- Smoking kills 20,000 people/annum in Australia today
- 1 in every 2 smokers dies from it
- If they smoke it is **The** most likely problem to kill any of your clients (irrespective of why they present)



# Background to Quitting

- Most Australian smokers want to quit
- Very few do not (about 6% in Australia)
- Many/most fail at quit attempts with or without pharmacotherapies
- The average age of quitting is 42
- 66% > 40 years of age
- 60% have secondary education
- Slightly more males than females
- People with children in the home



# Is it worth stopping?

- Stop at 30 = never smoker
- Every decade thereafter = higher death risk
- Every smoker's health improves when they quit.
- At the very least - O<sub>2</sub> carrying capacity improves



# Is the target getting harder to treat?

- *Poorer Trial Outcomes*  
Irvin, Nicotin Tob Research, 2000
- *Higher Dependency Scores*  
Fagerstrom, Tob Control, 1996
- *Concomitant Mental Illness (Depression)*  
Lasser, JAMA, 2000
- *Concomitant Drug Use*  
Degenhardt, Nicotin Tob Research, 2001
- *Reduced impact of OTC NRT*  
Pierce et al JAMA 2002  
*Better outcomes in Asia ( higher prevalence-dilution effect, 2008)*

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*Most smokers in Australia want to quit--those who could have quit-have.*

# What has been learnt?

## Nicotine Dependence:-

- Varies in intensity (e.g. like Alcohol Dependence) (Benowitz, 2007)
- Is highly heritable >50% (Ho,2007)
- Is lifelong (Tyndale,2009)

## Nicotine blood levels:-

- Range (10-80ng/ml) (Russell, Fagerstrom 1980s)
- Schizophrenic patients have higher blood levels (Olinicy, 1997)

## Treatment (Rx):-

- Responses to Rx vary (Hajek,Tyndale 2009)
- Response to Rx may be heritable (David, 2007)



## Tobacco Smoking and/or Nicotine Addiction

### A voluntary or involuntary act?

- Initiation is voluntary
- Continuation may be involuntary
- Lacking autonomy in some
- Levels or scales of dependence vary
- Motivation – self discipline increasingly irrelevant
- Highly dependent less likely to quit



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# Basics of Nicotine

- Nicotine is odourless and *Colourless*
  - Most nicotine from smoking a cigarette is blown into the air
  - Nicotine enters and is absorbed by the respiratory tract (nose, mouth )and lungs and then directly to arterial blood and brain very quickly
  - Nicotine is not eaten and swallowed but can be chewed (buccal absorption)
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# What has been learnt about metabolizing Nicotine?

- Genetic (racial) variations of the liver enzyme P450 CYP2A6 \* ranging from fast to slow:  
fast metabolizers smoke more/slow smoke less
- Fast are more addicted
- Slow are less addicted
- Fast at risk of Ca of the Lung
- Fast do not do well on NRT  
(Benowitz, Tyndale, et al 2000s)
- Fast inhale deeper → higher CO readings  
(Bittoun, 2008)



# How do we take advantage of this?

*Ask:*

Do you have family members who smoke?

Have some quit/had difficulty/used  
pharmacotherapies?

*Explain:*

Why individuals differ in numbers  
cigarettes/day

Why individuals respond differently to Rx

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# What has been learnt?

Smoking (PAHs) greatly effects other liver enzyme activity:

**Smokers need more** Insulin, Pain relievers, Anti-psychotics, Anti-coagulants etc etc

- Caffeine intake is double in smokers
- Caffeine toxicity is common in withdrawals
- Alcohol intake is double in smokers
- Tolerance to alcohol drops in withdrawal

**Quitters need less** Insulin, Pain relievers, Anti-psychotics, Anti-coagulants *and must be monitored*

(Benowitz, Zevin, et al 1990s)



# How do we take advantage of this?

## Ask

- Do you use caffeinated drinks?  
*advise* ½ the amount (Swanson, 1994)
- Do you drink alcohol?  
*advise* Reduce (Garvey, 1992)
- Post prandial hypoglycaemia → need for a cigarette after a meal (West 2000, studies on glucose → sweets help with withdrawal)



## What has been learnt about context?

- Cues trigger urges to smoke (Dols, 2000)
- Regular cue exposure reduce urges (Thewissen, 2008)
- Extinguishment can be established by regular exposure (Thewissen, 2008)
- Close proximal smoking by family and friends is a risk factor for relapse (Garvey, 1992)



# How do we take advantage of this?

*Ask:*

About where smoking takes place-in the home/car/workplace

Do you live with a smoker?

Are >50% of friends smokers?

*Advise:*

- Smoke outside → gateway to quitting (Gilpin, 1999)
- Smoke outside car → gateway to quitting (Gilpin, 1999)
- Don't avoid cues (Thewissen, 2008)
- Everyone smoke outside (Gilpin, 1999)
- Avoid proximal smoking (Garvey, 1992)



# What has been learnt about NRT?

- Patches may take hours to peak
- No evidence that weaning off is required (Garvey, 1998)
- No evidence to start on lower doses
- Evidence that combination is better (Bittoun, 2007, Shiffman, 2008 etc)
- Smoking while using NRT is safe and is a gateway to quitting (Fagerstrom,2000)



# How do we take advantage of this?

- Increase and combine nicotine replacement therapies where required (Bittoun, 2006)
  - Apply 24hr 21mg patches last thing at night to peak in the morning (Bittoun, 2006)
  - Assess “*Topography*” of smoking: Use Carbon Monoxide (CO) meter to titrate NRT (Bittoun, 2008)
  - Alternate pulsatile NRT and Smoking
  - Use patches to start with and continue to smoke
- (Fagerstrom, Shiffman, 2000s)



# What have we learnt?

- Do not confuse nicotine withdrawals with nicotine toxicity OR medication (eg NRT or Varenicline) OR caffeine toxicity
- Nicotine toxicity and overdose are **EXTREMELY** rare
- TTFC (Time To First Cigarette) most important feature of tobacco dependence (Fagerstrom,2003)
- Withdrawals are more severe pre-menstrually (O'Hara, 1989)



# What have we learnt?

- There are more than one type of nACh receptor subtype ( $\alpha 4\beta 2$ ) responding to nicotine—eg  $\alpha 7$  increasingly more important (Rose, 2009)
- Not *all* patients do well on Varenicline
- Not *all* patients do well on Varenicline alone



# How do we take advantage of this?

- Combining Varenicline and NRT is valid (Ebbert, 2009)
- Combining Varenicline and NRT is effective (Bittoun, 2009)
- Combining Varenicline and bupropion is valid and effective ( Ebbert, 2009)



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## When you give “evidence-based” advice factor in:-

- Gender (women slower nicotine metabolisers)
  - Ethnicity (faster or slower nicotine metabolisers)
  - Co-morbidities (especially mental health and pregnancy)
  - Concomitant Medications (caffeine, alcohol, insulin, antipsychotics etc, etc)
  - Environmental Cues
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## Some Evidence-based Behavioural Tips

- Smoke outside (Gilpin, 1999) *Cue Extinguishment!*
- Smoke outside car (Gilpin, 1999)
- Reduce caffeine intake by half (Swanson, 1994)
- Reduce Alcohol (Garvey, 1992)
- For weight control, urges to smoke and sweet tooth- Glucose (West, 2001)
- Urges to smoke - short exercises (Taylor, 2007)
- Do not quit with PMT –Premenstrual tension (O’Hara, 1989)
- Buddying might not help (May, 2006)
- Separate activities-smoke outside/coffee inside (Femia, 2009 unpublished)



# What we still need evidence for – but take for granted:

- Motivation

Is it king when most want to quit? All trials use “strongly motivated” participants-but most fail (Akrasia: struggle between will and need)

- Throwing away cigarettes/props

Is contrary to what we know about cue extinguishment

- Hand-to-mouth/busy hands theories

Oral stimulus seems irrelevant on Varenicline



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## In Summary : Assessment of a Smoker

- **Daily smoking** (number and type irrelevant)
  - **Medical History** (psychiatric in particular)
  - **Quitting History** (previous short-lived attempts, pharmacological failures)
  - **Family History** (heritability)
  - **Environmental Contexts** (others smoke at home and/or at work)
  - **Expired CO** (deep vs shallow inhalations)
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# 6 QUICK TIPS for Healthworkers

- Use a “medical model” for cessation to diagnose and treat tobacco dependence
- Ask: How soon after waking do you smoke?
- Ask: Have you had trouble quitting in the past?
- Say: New medications are very effective
- Advise: Always smoke outside (car included)
- Reduce caffeine and alcohol intake



# Conclusions

Treatment advice is no longer a “one-size-fits-all” regimen, eg clinical practice guidelines

- Use a medical model of individual treatments
- Consider harm-reduction
- Base “tips” on evidence
- Incorporate environmental cues
- Consider drug interactions
- Enforce policies

