Stopping smoking

Professor Paul Aveyard. 18 May 2015
Conflicts of interest

- I have done research and consultancy for the manufacturers of smoking cessation medication
Tobacco addiction

- Mechanisms
- Associative learning
- Pleasure
- Nicotine hunger
- Withdrawal
- Higher functions

Nucleus accumbens

Ventral tegmental area

Reward pathway
Systematic review

- 2 active ingredients
  - Advice to quit
  - Assistance in quitting

- Offering help is 30% more effective than offering advice in motivating quit attempts

Addiction 2012:107:1066–1073
For a short video training course
http://www.ncsct-training.co.uk/player/play/VBA
Despite GPs’ expressed views that a preferred way of topicalising smoking is to make links to a patients’ current medical problems… this commonly results in explicit resistance from patients of a kind that is rarely seen in other medical conditions.
The war in a smoker’s brain

I really want to stop smoking: it’s costing me money and it will probably kill me

I need a cigarette
The battle over time between resolve and urge to smoke

When the urge is stronger than resolve and cigarettes are available, a lapse will occur.

Graph:
- Y-axis: Urge to smoke
- X-axis: Time
- Green line: Resolve
- Brown line: Strength of urge

The graph shows the fluctuation in resolve and the strength of the urge over time, with a notable lapse indicated by a red circle.
Study Design

- Baseline
- Week 1
- Week 2
- Week 3
- TQD
- + 24 hrs
- + 1 week
- + 2 weeks
- + 3 weeks
- + 4 weeks
- + 12 weeks

Visit
Phone
Visit
Visit
Visit
Visit
Visit
Visit
Phone

- Varenilcine
- Placebo
Effect on cotinine prior to TQD

Salivary cotinine concentration (ng/ml)

Time

Baseline

Week 3

Quit Date

varenicline (n=47)  
placebo (n=41)
Pre-quit strength of urges to smoke

![Graph showing the decrease in urge strength over time for varenicline and placebo groups. The x-axis represents time (Baseline, Week 1, Week 2, Week 3, Quit Day), and the y-axis represents the strength of urges. The graph compares varenicline (n=39) and placebo (n=37) groups.]
Change in enjoyment of cigarettes

Less enjoyable

Baseline  Week 1  Week 2  Week 3  Quit Day

varenicline (n=35)  placebo (n=36)
Effect on quit rates

Varenicline
Placebo

4
12

You can tell if your strategy is likely to work by the degree of reduction.
NRT patches (might) work too

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Pre-quit NRT</th>
<th>Control</th>
<th>Weight</th>
<th>Risk Ratio M-H, Fixed, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events</td>
<td>Total</td>
<td>Events</td>
<td>Total</td>
</tr>
<tr>
<td>1.4.1 Patch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullen 2010</td>
<td>118</td>
<td>514</td>
<td>98</td>
<td>492</td>
</tr>
<tr>
<td>Rose 1994</td>
<td>6</td>
<td>24</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Rose 1998</td>
<td>12</td>
<td>40</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Rose 2006</td>
<td>10</td>
<td>48</td>
<td>5</td>
<td>48</td>
</tr>
<tr>
<td>Rose 2009</td>
<td>28</td>
<td>191</td>
<td>14</td>
<td>188</td>
</tr>
<tr>
<td>Schuurmans 2004</td>
<td>22</td>
<td>100</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>917</td>
<td>892</td>
<td>76.3%</td>
<td></td>
</tr>
<tr>
<td>Total events</td>
<td>196</td>
<td>139</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Chi² = 5.46, df = 5 (P = 0.36); I² = 8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 3.14 (P = 0.002)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4.2 Gum

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Pre-quit NRT</th>
<th>Control</th>
<th>Weight</th>
<th>Risk Ratio M-H, Fixed, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events</td>
<td>Total</td>
<td>Events</td>
<td>Total</td>
</tr>
<tr>
<td>Bullen 2010</td>
<td>7</td>
<td>35</td>
<td>18</td>
<td>59</td>
</tr>
<tr>
<td>Etter 2009</td>
<td>32</td>
<td>154</td>
<td>31</td>
<td>160</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>189</td>
<td>219</td>
<td>23.7%</td>
<td></td>
</tr>
<tr>
<td>Total events</td>
<td>39</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Chi² = 1.19, df = 1 (P = 0.28); I² = 16%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 0.29 (P = 0.77)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total (95% CI)

<table>
<thead>
<tr>
<th>Total events</th>
<th>235</th>
<th>188</th>
<th>100.0%</th>
<th>1.27 [1.07, 1.51]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterogeneity: Chi² = 9.20, df = 7 (P = 0.24); I² = 24%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 2.68 (P = 0.007)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for subgroup differences: Chi² = 2.87, df = 1 (P = 0.09), I² = 65.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quitting by reduction

- Smokers who have no immediate plans to quit but are prepared to try to reduce their smoking
- Double the rate of abstinence with NRT
- The costs of treating smokers to reduce or treating them to quit abruptly are roughly equal

BMJ 2009;338:b1024 doi: 10.1136/bmj.b1024
E-cigarettes: effect on cessation

RR 2.29 (1.05 to 4.96)
E-cigarettes: effect on reduction

RR 1.31 (1.02 to 1.68)
E-cigarettes: adverse events

Versus placebo e-cigarettes

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Experimental n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed,95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullen 2013</td>
<td>107/241</td>
<td>26/57</td>
<td>RR 0.97 (0.71 to 1.34)</td>
</tr>
</tbody>
</table>

---

Versus placebo NRT

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Experimental n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed,95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullen 2013</td>
<td>107/241</td>
<td>96/215</td>
<td>RR 0.99 (0.81 to 1.22)</td>
</tr>
</tbody>
</table>
Conclusions

- The easy way to motivate people is offer help to stop
  - Back this up by taking the arrangements out of the patient’s hands
  - Do not routinely link a person’s health condition to their smoking

- Using cessation medication prior to quitting smoking can reduce the need to smoke and assist quitting

- In people who do not want to quit you can encourage them to cut down with NRT or e-cigarettes
Treating obesity in primary care

Professor Susan Jebb. 18 May 2015
“as the nation’s waistline keeps piling on the pounds, we’re piling on billions of pounds in future taxes just to pay for preventable illnesses”
Patterns and trends in adult obesity

Adult BMI distribution
Health Survey for England 2011-2013

**Adult BMI distribution 2011-13**

- **Underweight** <18.5kg/m²
  - Men: 0.9%
  - Women: 1.7%

- **Healthy weight** 18.5 to <25kg/m²
  - Men 2011-13: 28.4%
  - Women 2011-13: 38.2%

- **Overweight** 25 to <30kg/m²
  - Men 2011-13: 44.3%
  - Women 2011-13: 33.4%

- **Obese** 30 to <40kg/m²
  - Men 2011-13: 24.8%
  - Women 2011-13: 22.9%

- **Severely obese** ≥40kg/m²
  - Men 2011-13: 1.7%
  - Women 2011-13: 3.8%

Adults aged 18+ years (population weighted)
BMI and risk of diabetes

Diabetes Prevention Program

Intensive ‘lifestyle’ (behavioural) intervention

Modest weight loss

58% reduction in incidence of diabetes over 4 years
Most patients who are overweight do not receive support to lose weight

The challenge:

• Sensitivities in raising the issue of obesity
• So many patients, so little time
• Perceived lack of training or specialist skills
• Paucity of treatment options
• Pessimism about long term success
Plenty of NICE guidance …

CG 189: Obesity: identification, assessment and management of overweight and obesity in children, young people and adults

NG7: Maintaining a healthy weight and preventing excess weight gain among adults and children

PH47: Managing overweight and obesity among children and young people: lifestyle weight management services

PH53: Managing overweight and obesity in adults: lifestyle weight management services

PH27: Weight management before, during and after pregnancy
## Diagnosis

<table>
<thead>
<tr>
<th>BMI</th>
<th>Waist circumference</th>
<th>Low</th>
<th>High</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Men: &lt;94cm</td>
<td>Men: 94-102cm</td>
<td>Men: &gt;102cm</td>
</tr>
<tr>
<td>Underweight (&lt;18.5 kg/m²)</td>
<td>Underweight</td>
<td>Underweight</td>
<td>Underweight</td>
<td>Underweight</td>
</tr>
<tr>
<td></td>
<td>(Not Applicable)</td>
<td>(Not Applicable)</td>
<td>(Not Applicable)</td>
<td>(Not Applicable)</td>
</tr>
<tr>
<td>Healthy weight (18.5-24.9 kg/m²)</td>
<td>No increased risk</td>
<td>No increased risk</td>
<td>Increased risk</td>
<td></td>
</tr>
<tr>
<td>Overweight (25-29.9 kg/m²)</td>
<td>No increased risk</td>
<td>Increased risk</td>
<td>High risk</td>
<td></td>
</tr>
<tr>
<td>Obese (30-34.9 kg/m²)</td>
<td>Increased risk</td>
<td>High risk</td>
<td>Very high risk</td>
<td></td>
</tr>
<tr>
<td>Very obese (≥40 kg/m²)</td>
<td>Very high risk</td>
<td>Very high risk</td>
<td>Very high risk</td>
<td></td>
</tr>
</tbody>
</table>

Underweight (Not Applicable)

Healthy weight (Not Applicable)

Obese (Not Applicable)

Very obese (Not Applicable)

---

The BWeL trial: “How helpful was it for your doctor to discuss your weight?”
Systematic review of self-help interventions

3883 results retrieved

186 full text screened

23 studies met our criteria (43 references, 9,623 participants)

39 interventions:
• 18 tailored and interactive
• 6 interactive, not tailored
• 3 tailored, not interactive
• 12 fixed

18 studies included in quantitative synthesis (meta-analyses)

# Self-help interventions versus minimal controls (BOCF; 6 months)

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Total</td>
<td>Mean</td>
</tr>
<tr>
<td>1.1.1 Tailored and interactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byrne 2006</td>
<td>-4.8</td>
<td>3.9</td>
<td>41</td>
<td>-1.9</td>
</tr>
<tr>
<td>McConnon 2007</td>
<td>-0.6</td>
<td>3.0</td>
<td>111</td>
<td>-0.9</td>
</tr>
<tr>
<td>Morgan 2011</td>
<td>-5.3</td>
<td>5.8</td>
<td>34</td>
<td>-3.5</td>
</tr>
<tr>
<td>Morgan 2013</td>
<td>-5.1</td>
<td>5.4</td>
<td>53</td>
<td>-0.5</td>
</tr>
<tr>
<td>Shapiro 2012</td>
<td>-1.3</td>
<td>3.8</td>
<td>81</td>
<td>-0.6</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>320</td>
<td>288</td>
<td>59.9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.2 Interactive non-tailored</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greene 2013</td>
<td>-2.4</td>
<td>4.3</td>
<td>180</td>
<td>-0.7</td>
</tr>
<tr>
<td>Nakata 2011</td>
<td>-4.5</td>
<td>3.9</td>
<td>62</td>
<td>-2.9</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>242</td>
<td>232</td>
<td>28.8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.3 Static</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morgan 2013</td>
<td>-3.5</td>
<td>4.7</td>
<td>54</td>
<td>-0.5</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>54</td>
<td>26</td>
<td>11.3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>616</td>
<td></td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 2.94; Chi² = 24.96, df = 4 (P < 0.0001); I² = 84%
Test for overall effect: Z = 2.11 (P = 0.04)

Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.91); I² = 0%
Test for overall effect: Z = 4.39 (P < 0.0001)

Heterogeneity: Not applicable
Test for overall effect: Z = 3.25 (P = 0.001)

Total (95% CI) 616
Heterogeneity: Tau² = 1.52; Chi² = 29.53, df = 7 (P = 0.0001); I² = 76%
Test for overall effect: Z = 3.57 (P = 0.0004)
Test for subgroup differences: Chi² = 1.77, df = 2 (P = 0.41), I² = 0%

\[ -1.85 \ [-2.86 \text{ to } -0.83] \]
\[ p = 0.0004 \]
Counterweight: Nurse-led support

- 1 hour training for GPs, 8 hour training for practice nurses
- On-going monitoring: 1 – 2 sessions with per month for 6 months
- 65 practices recruited, 56 participated
- 1906 eligible participants (mean age = 49y ; BMI = 37, 77% female)
- 1419 attended baseline assessment, 642 (45%) completed 12 months
- Mean weight loss among completers: -2.96 kg at 12 months, equivalent to approximately -1.33 kg BOCF
Effectiveness of primary care treatment

<table>
<thead>
<tr>
<th>Study</th>
<th>Weight</th>
<th>Effect Size</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jolly 2011 (GP)</td>
<td>1.00</td>
<td>-0.8</td>
<td>-1.55, 2.15</td>
<td>0.32</td>
</tr>
<tr>
<td>Jolly 2011 (pharmacist)</td>
<td>1.00</td>
<td>-0.7</td>
<td>-1.36, 2.16</td>
<td>1.00</td>
</tr>
<tr>
<td>Munsch 2003 (GP)</td>
<td>1.00</td>
<td>-3.6</td>
<td>-6.16, -0.64</td>
<td>0.32</td>
</tr>
<tr>
<td>Nanchahal 2011</td>
<td>1.00</td>
<td>-1.3</td>
<td>-1.18, 0.58</td>
<td>1.00</td>
</tr>
<tr>
<td>Wadden 2011</td>
<td>1.00</td>
<td>-2.8</td>
<td>-2.35, 0.75</td>
<td>1.00</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>515</td>
<td>-0.36</td>
<td>-1.34, 0.43</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Heterogeneity: \( \tau^2 = 0.35; \) Chi² = 6.17, df = 4 (\( P = 0.19 \)); \( I^2 = 35\%

Test for overall effect: \( Z = 1.00 \) (\( P = 0.32 \))

Test for subgroup differences: Chi² = 59.27, df = 3 (\( P < 0.00001 \)); \( I^2 = 94.9\%

Primary care vs control: -0.45 kg (95% CI: -1.34, 0.43); \( p = 0.32 \)

Standard care vs. commercial programmes in routine obesity service in Birmingham (BOCF, 12 months)

**Lighten Up Trial**

<table>
<thead>
<tr>
<th></th>
<th>Mean weight loss (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Care Services</td>
<td>0.8</td>
</tr>
<tr>
<td>Commercial Programmes</td>
<td>2.5</td>
</tr>
<tr>
<td>Control Group using BOCF</td>
<td>1.08</td>
</tr>
</tbody>
</table>

Jolly et al. (2011) *BMJ* 343: d6500

[Image of graph showing mean weight loss comparison]
Referral to a commercial provider significantly increases weight loss (BOCF, 12 months)


\[ p < 0.001 \]

\[ -1.77 \text{ kg} \]

\[ -4.06 \text{ kg} \]
Effectiveness of group-based commercial weight management providers

<table>
<thead>
<tr>
<th></th>
<th>Heshka 2003</th>
<th>2011 (RC)</th>
<th>Jolly 2011 (SW)</th>
<th>Jolly 2011 (WW)</th>
<th>Subtotal (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss (kg)</td>
<td>-4.1</td>
<td>-2.1</td>
<td>-1.9</td>
<td>-3.5</td>
<td>888</td>
</tr>
<tr>
<td></td>
<td>6.5</td>
<td>6.4</td>
<td>5.1</td>
<td>6.9</td>
<td>707</td>
</tr>
<tr>
<td></td>
<td>211</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>212</td>
<td>-1.1</td>
<td>-1.1</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25.8%</td>
<td>9.0%</td>
<td>10.2%</td>
<td>8.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-3.00</td>
<td>-1.00</td>
<td>-0.80</td>
<td>-2.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-4.14, -1.86)</td>
<td>(-3.15, 1.15)</td>
<td>(-2.81, 1.21)</td>
<td>(-4.58, -0.22)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5% Cl)</td>
<td>(95% Cl)</td>
<td>(95% Cl)</td>
<td>(95% Cl)</td>
<td>(95% Cl)</td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.13; Chi² = 5.00, df = 4 (P = 0.29); P = 20%
Test for overall effect: Z = 6.40 (P < 0.00001)

Commercial providers vs control:
-2.21 kg (95% CI: -2.89, -1.54); p<0.00001

Participants perceive the commercial provider is better tailored to their needs

Participants felt they needed **support** and **motivation** rather than education, and valued the **ease of access** and **frequent contact** the commercial provider offered

*It isn’t that I need educating, it’s more that I need motivating*  [P1]

*For me...what works is the fact that I know...I’ve got to go and see somebody...and I’ve got to explain why I haven’t lost any weight*  [P6]

*Weight Watchers was a structured plan and the GP was more trial and error yourself*  [P5]

*there’s so many [meetings] around...you don’t have to make an appointment with your GP...flexibility and ease*  [P9]

Very low energy diets enhance weight loss at 1 year

VLED vs BWMP: -4.27 kg
(95% CI: -7.41, -1.14); p < 0.00003

Parretti, Jebb, Johns, Lewis, Christian & Aveyard, in preparation
Centrally acting drugs for obesity have been withdrawn, but Orlistat remains …

Orlistat vs placebo: -2.98 kg [-3.92, -2.06], p < 0.0001
The challenge of weight regain
Oxford weight management pathway

Tier 1
Population-Based Intervention & Prevention

Tier 2
Specialist Weight Management

Tier 4

Bariatric surgery BMI 40 after completing programme or BMI 50 for direct access

MORELife programme

SW/WW

GP and PN referrals

Discussions ongoing about referrals for patients at risk of diabetes

Note: Oxford obesity services commissioned differently than in NICE
**More Life Tier 2 service**

Psychologically-led programme: Includes elements of CBT but draws heavily on Acceptance Commitment Theory (ACT) and Mindfulness

**Sessions 1-14**

- **Modality:** face-to-face, group sessions
- **Frequency:** weekly
- **Duration:** 90 minutes

**Content:** Values, expectations, motivations, mindfulness, problem solving, planning, self-monitoring, diet and physical activity

- **Staffing:** Weight Management Practitioner and Dietitian (x2 sessions)

→

**‘Maintenance’ sessions**

6x monthly 90 minute group sessions with WMP consolidating implementation of tools and skills learnt

→

**Extra support**

If indicated 1:1 sessions can be arranged with the Clinical Psychologist or Dietitian or GP
TIER 2: YEAR 1 OUTCOMES

- KPI n= 500 patients per year
- Year 1 end n=783 referrals
- Approximately 20% removed from service e.g. moved from area, unable to contact
- Of those remaining in service 96% commenced in Tier 2
- 62% retention rate for intensive phase
- 47% of new referral ‘completers’ (10/14) achieved 5% wt loss at 6 mths
- 97% losing weight
Summary

- People value support from their doctor to lose weight
- Most people who seek to lose weight do so, at least initially
- Little or no evidence to date that interventions led by primary care staff are effective
- Referral to weight-loss groups run by commercial providers leads to modest weight loss, it is acceptable to patients and cost-effective
- Treatment with Orlistat leads to similar weight loss
- Very low calorie diets lead to greater weight loss but, as yet, rarely used in primary care settings
- Weight regain is common but does not invalidate the benefits of initial losses
Treating obesity can prevent or mitigate substantial ill-health

susan.jebb@phc.ox.ac.uk
Lifestyle Q&A