

# Designing Interventions using the Behaviour Change Wheel



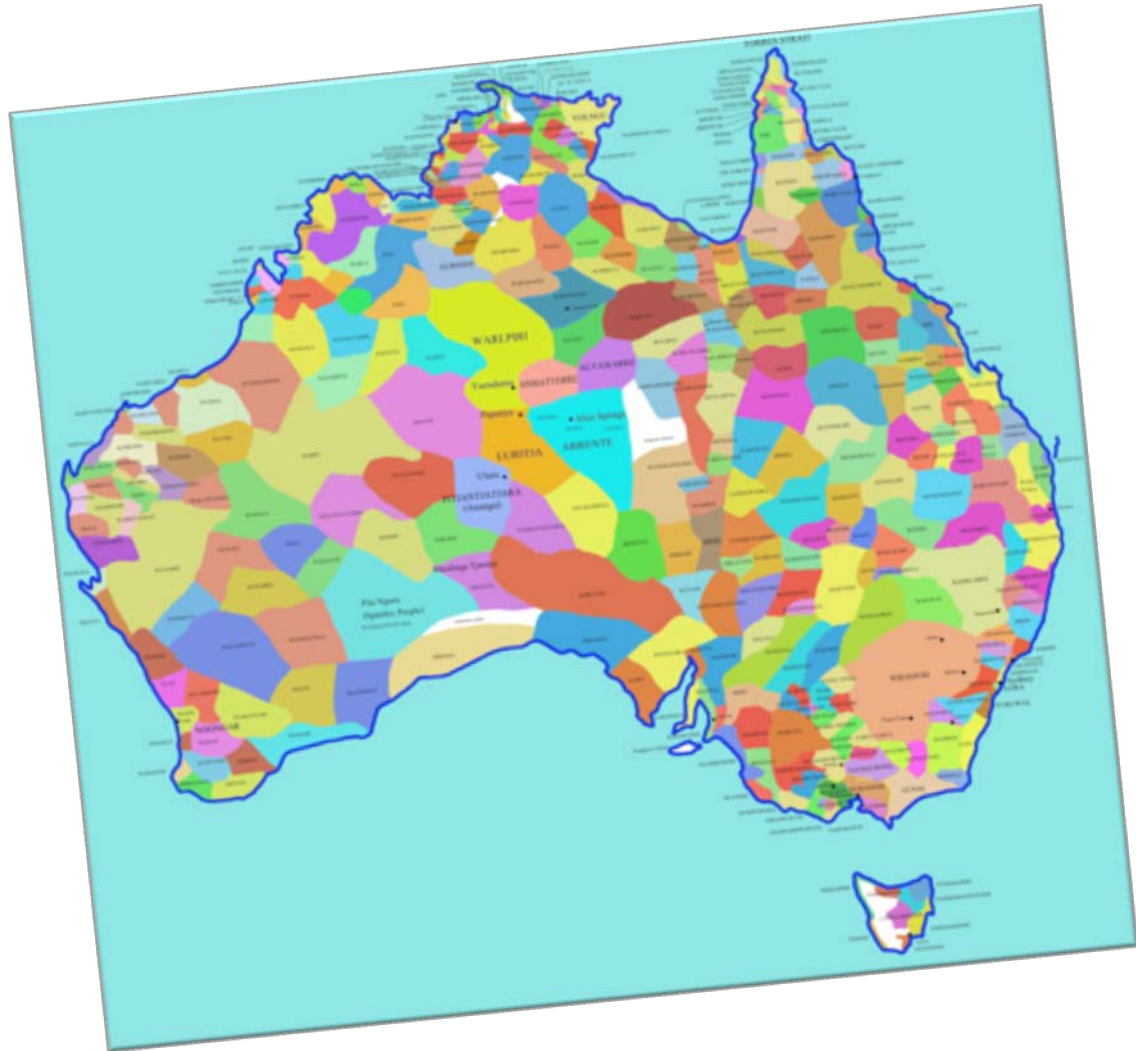
@GillianSGould

Associate Professor Gillian Gould  
NHMRC and CINSW Research Fellow  
University of Newcastle



# Acknowledgement of Country

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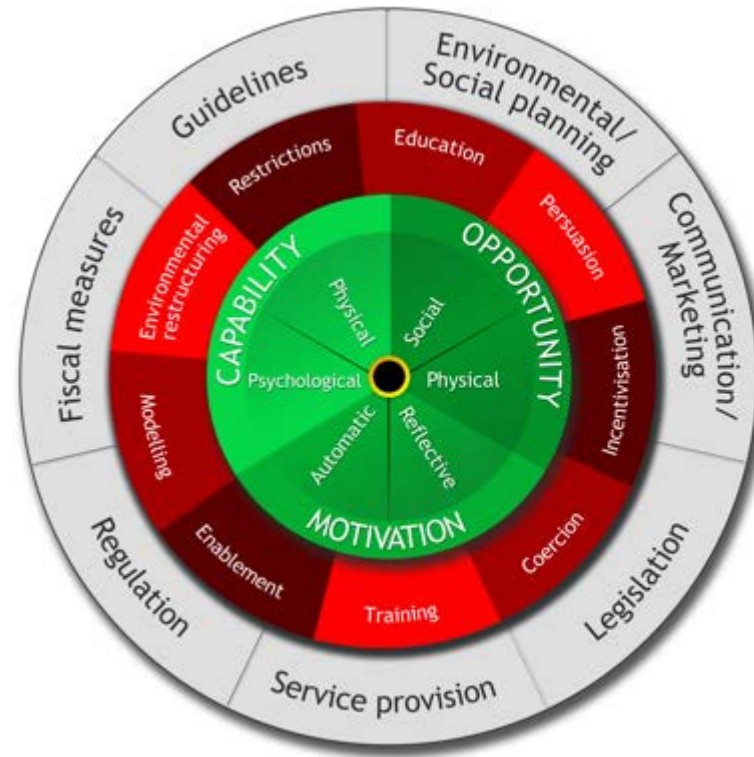


# What will today's session cover?

- What is the Behaviour Change Wheel
- Selecting a behaviour to change
- Using the COM-B model to understand the target behaviour in context
- Intervention design: Using the BCW
- Specifying Intervention content: Using the Behaviour Change Technique Taxonomy



# What is the Behaviour Change Wheel?



A parsimonious model  
synthesizing 19 behaviour change  
theories

Hub is the COM-B

Michie *et al* 2011. The Behaviour Change Wheel a new method for  
characterising and designing behaviour change interventions.  
*Implementation Science*



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# 1. How should we think about behaviour?

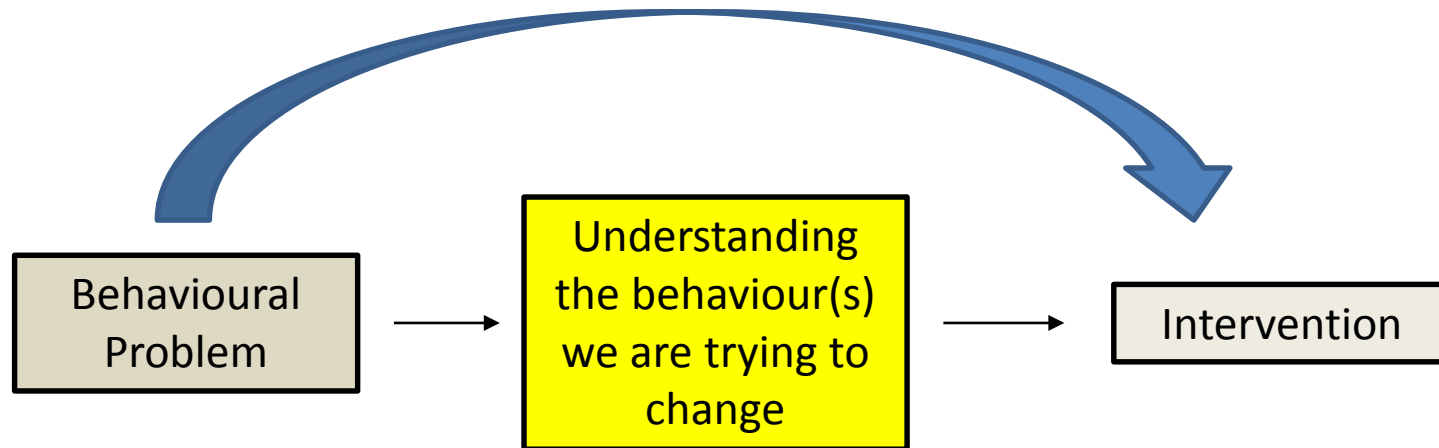
- Interventions contain behavioural components
- How do we get people to change their behaviour?
- Pet theories and methods can be wrong!

*There is a science of behaviour change but it is not always applied.....*



# 1. How should we think about behaviour?

Many Interventions are designed according to The **ISLAGIATT** principle of intervention design...



Martin Eccles, Emeritus Professor of Clinical Effectiveness, Newcastle University



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## *Is this a behaviour?*

- 1) Walking to the shops
- 2) Having the confidence to ride a bike
- 3) Taking a tablet
- 4) Losing weight
- 5) Speaking softly
- 6) Intending to exercise every day
- 7) Reducing cholesterol



***Which are determinants and which are outcomes?***

Having the confidence to ride a bike

Losing weight

Intending to exercise everyday

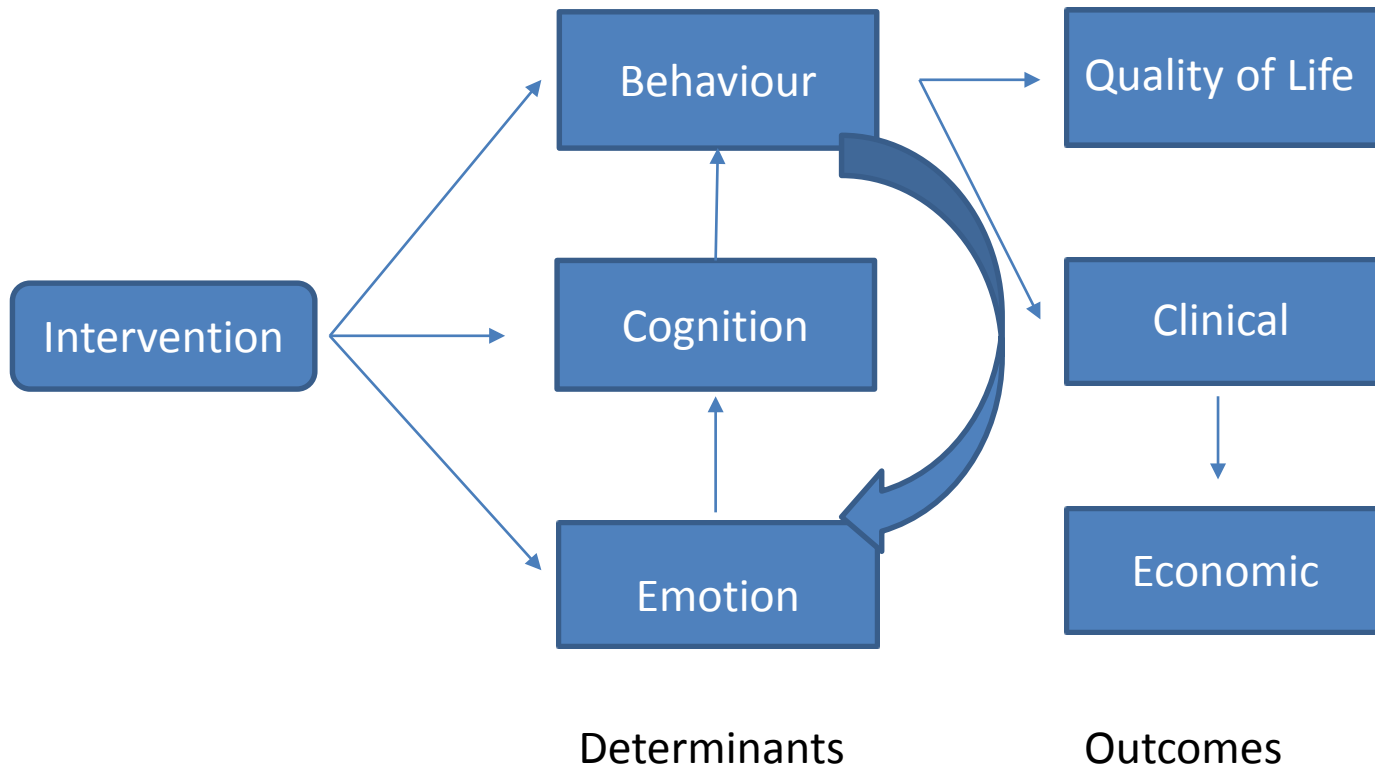
Reducing cholesterol



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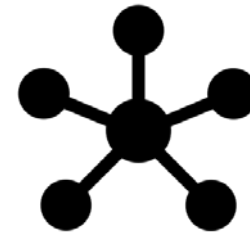


# Causal model of behaviour as applied to health



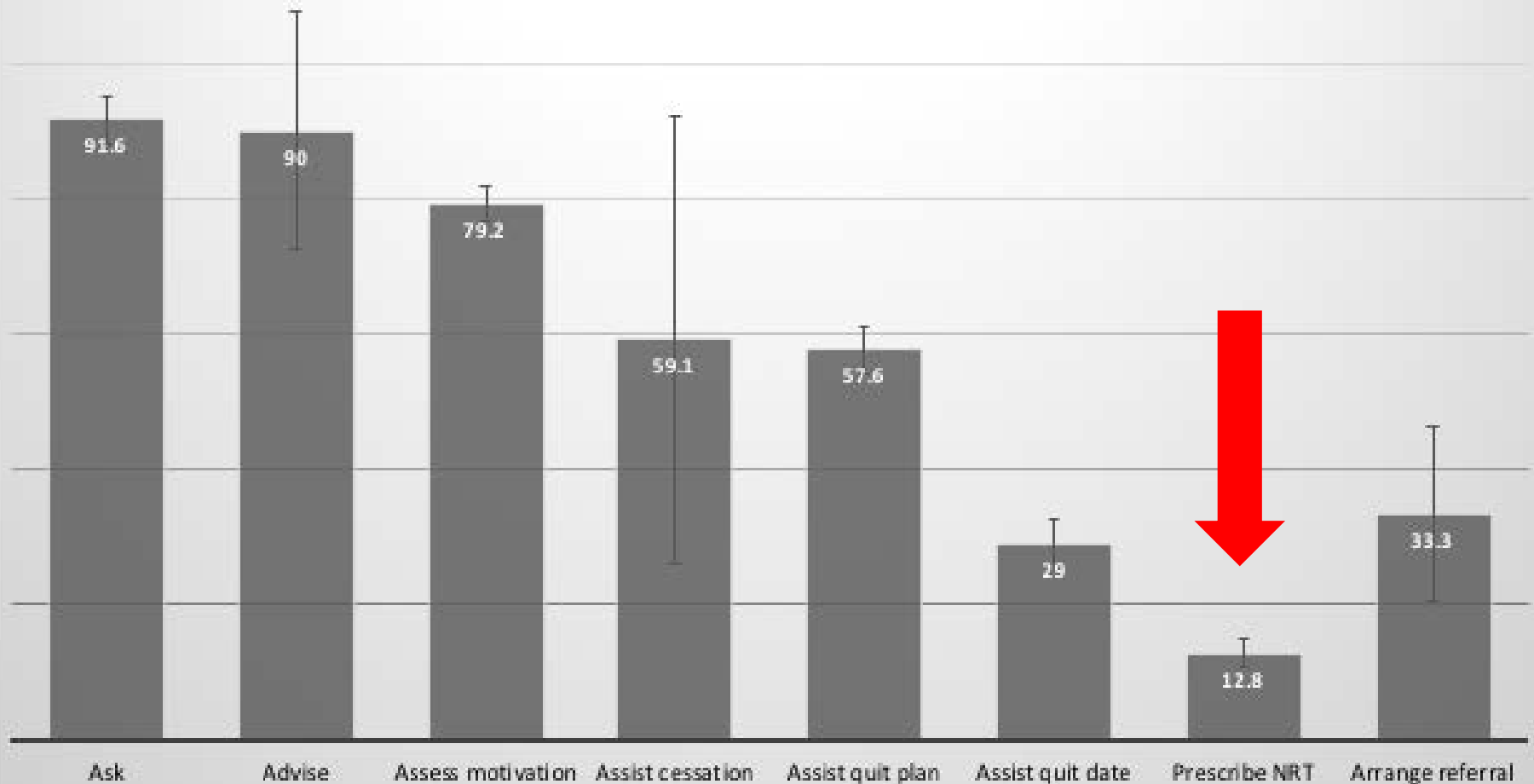
# Which Behaviour to target?

- Consider
  - likely impact if undertaken
  - likelihood behaviour will be implemented
  - ease, cost
  - preference, acceptability
  - spill over to other behaviours & people
- Every behaviour within a network of behaviours
- Each person is a network of other people



# ***Specify the target Behaviour***

Pooled % of HPs Smoking Cessation Care in Pregnancy



Gould et al, 2017. Health Professionals Performing the "5AS" for Smoking Cessation and Prescribing Nicotine Replacement Therapy During Pregnancy: Meta-Analysis of a Systematic Review

## ***Specify the target Behaviour***

- **Specify who needs to do what, where do they need to do it, when, how often and for how long?**

Behaviour	What	Who	Where/When?
Assist pregnant smokers to quit	<ul style="list-style-type: none"><li>• NRT</li><li>• Counselling</li><li>• Resources</li></ul>	<ul style="list-style-type: none"><li>• All Health Providers seeing pregnant women</li></ul>	At Aboriginal Medical Services

- Being more specific about which behaviour(s) we are trying to change allows us to be more focussed when it comes to *understanding these behaviours....*



## 2. Behavioural Analysis and Diagnosis:

Using the COM-B model to understand the target  
behaviour in context.

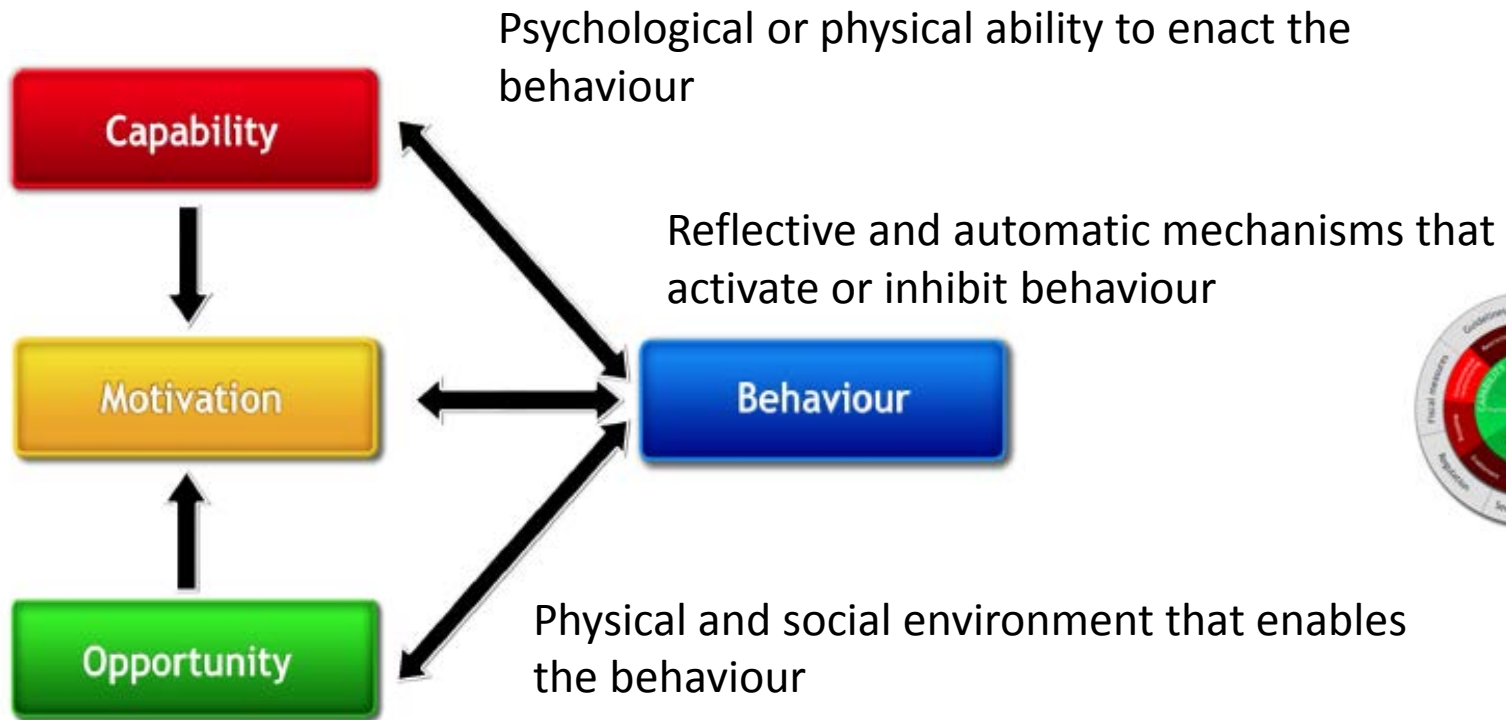


# Understand the behaviour **in context**

- To change behaviour we need to understand it
- Why are behaviours as they are?
- What needs to change for the desired behaviour/s to occur?



# COM-B: A simple model to understand behaviour...



# Using COM-B to understand a behaviour – a review

Exploring the barriers and enablers to smoking cessation in pregnant Aboriginal and Torres Strait Islander women with the behaviour change wheel

Gillian Sandra Gould

School of Public Health, Tropical Medicine and Rehabilitation Science, James Cook University, Australia

School of Health and Human Sciences, Southern Cross University, Australia

## Capability

*Psychological – lack of knowledge, stressors*

*Physical – nicotine dependence, increased nicotine metabolism*

## Opportunity

*Physical – smoking in the home, lack of services, NRT not subsidised*

*Social – social norms of smoking, lack of social support for quitting*

## Motivation

*Automatic – smoking triggers, cravings, change in role*

*Reflective – guilt about smoking, being a good role model*



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# COM-B in **interviews** to evaluate feasibility/acceptability of a training intervention



## Capability

*"I have a much better understanding of the benefits of NRT and I'm much more likely to promote the use of it..."*

*"...it's built in the capacity of the service to actually be able to [help women quit]..."*

## Opportunity

*"We even had people come – coming in and asking for [NRT]."*

*"giving me an opportunity to connect with the pregnant women through that role was really good"*

## Motivation

*"I think it was great that a couple of women gave up smoking. That was fabulous."*

*"I have shifted to, 'How do you feel about trying NRT now?'"*



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### 3. Using the BCW for Intervention design



# A gritty gruelling hypothetical



It's the year 2030 and University Researchers discovered 2 years ago that eating oats is bad for you – but a few remote communities haven't heard about it!!!!



# Tailoring our approach

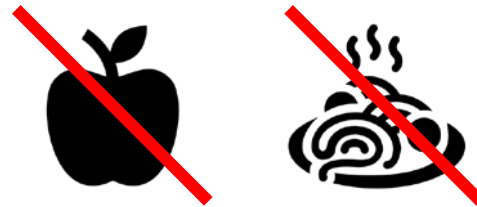
## Community A

- Traditional community
- ‘Cultural use’ of porridge
- Oats several times a day
- Denial ..“It’s a government conspiracy”



## Community B

- Taking the news seriously
- Motivated to change diet
- Local shop refuses to stock other breakfast food



# Behavioural analysis - applying COM-B

## Community A

- **Capability?**
- **Opportunity?**
- **Motivation?**

## Community B

- **Capability?**
- **Opportunity?**
- **Motivation?**



# Intervening: Consider the full range of options

Need a framework that is:

**-Comprehensive**

- So don't miss options that might be effective

**-Coherent**

- So can have a systematic method for intervention design

**-Linked to a model of behaviour**

- So that draw on behavioural science



# Intervention Functions

**Restrictions:** Using rules to reduce the opportunity to engage in the target behaviour

**Education:** Increasing knowledge or understanding

**Environmental restructuring:** Changing the physical or social context

**Modelling:** Providing an example for people to aspire to or imitate

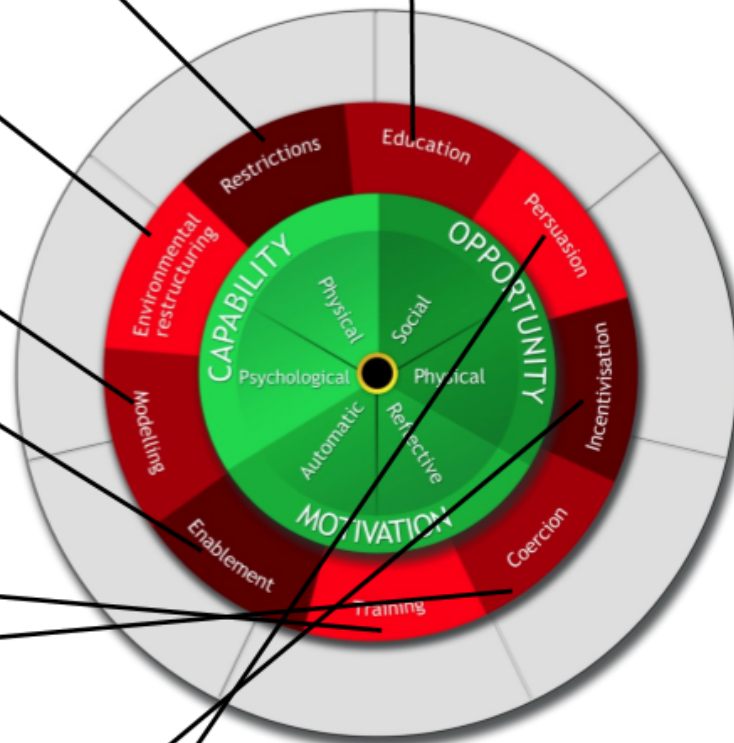
**Enablement:** Increasing means/reducing barriers to increase capability (*beyond education and training*) or opportunity (*beyond environmental restructuring*)

**Training:** Imparting skills

**Coercion:** Creating an expectation of punishment or cost

**Incentivisation:** Creating an expectation of reward

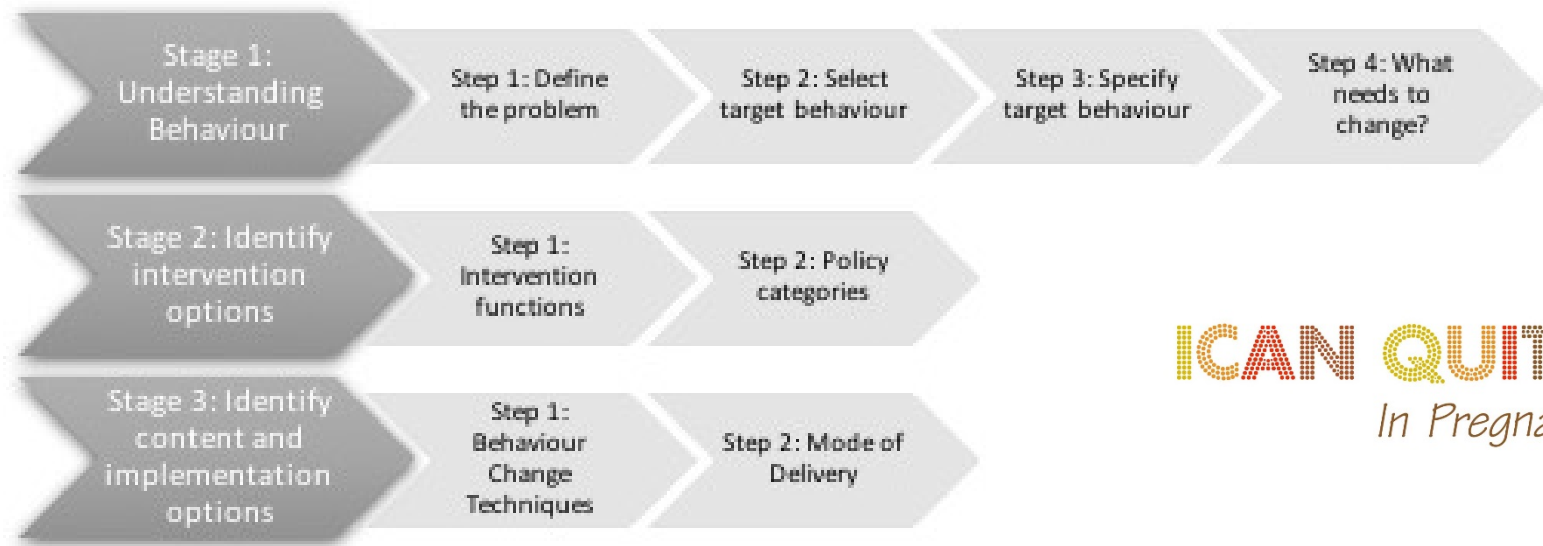
**Persuasion:** Using communication to induce positive or negative feelings or stimulate action



# BCW to **develop** an implementation intervention

## Designing an implementation intervention with the Behaviour Change Wheel for health provider smoking cessation care for Australian Indigenous pregnant women

Gillian S. Gould<sup>1\*</sup>, Yael Bar-Zeev<sup>1</sup>, Michelle Bovill<sup>1</sup>, Lou Atkins<sup>2</sup>, Maree Gruppetta<sup>1</sup>, Marilyn J Clarke<sup>3</sup> and Billie Bonevski<sup>1</sup>



**ICAN QUIT**  
*In Pregnancy*



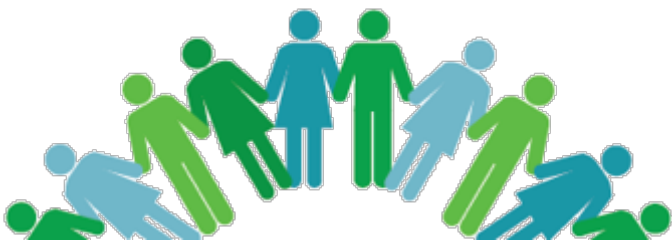
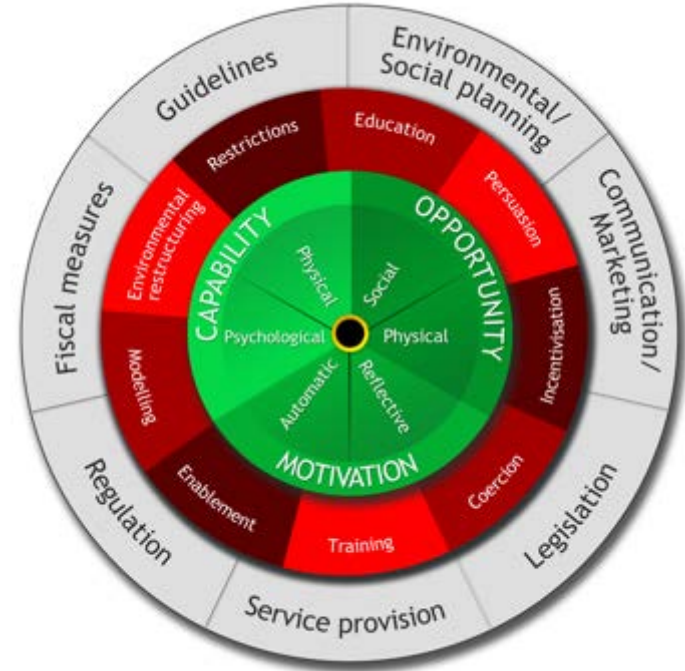
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# From Behaviour to Intervention

## HP Prescribing NRT

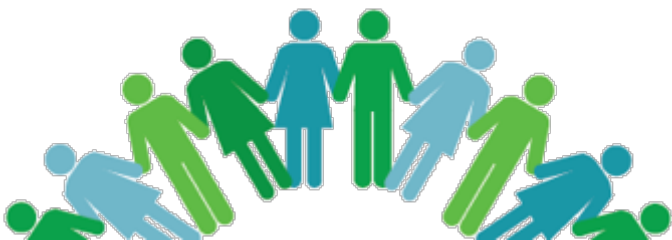
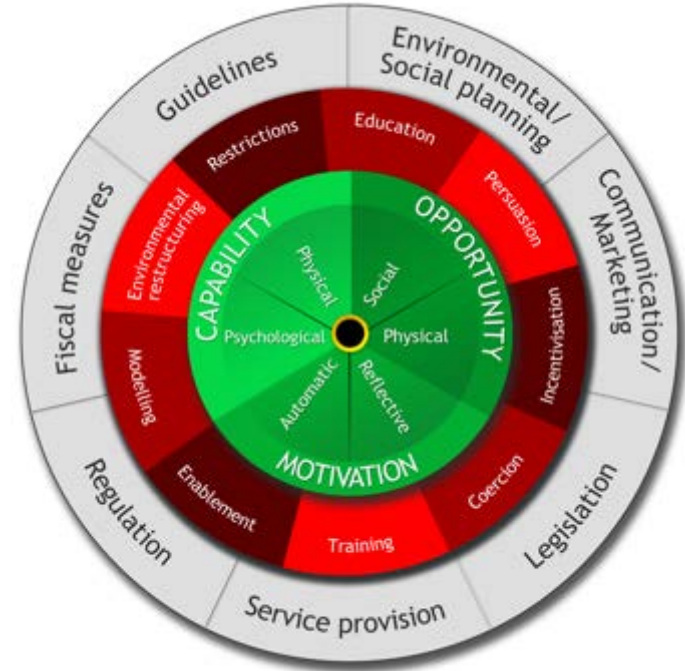
Possible interventions – training, education, modelling, environmental restructuring, enablement, persuasion, coercion, incentivisation, restrictions



# From Behaviour to Intervention

## HP Prescribing NRT

Possible interventions – **training, education,**  
**modelling, environmental restructuring, enablement,**  
**persuasion, coercion, incentivisation, restrictions**

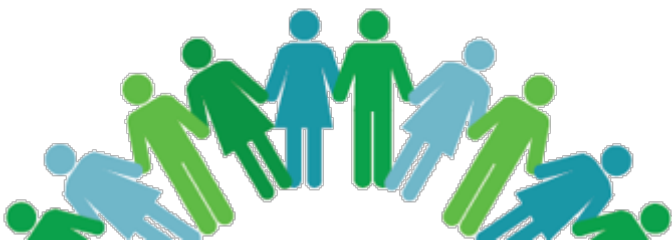
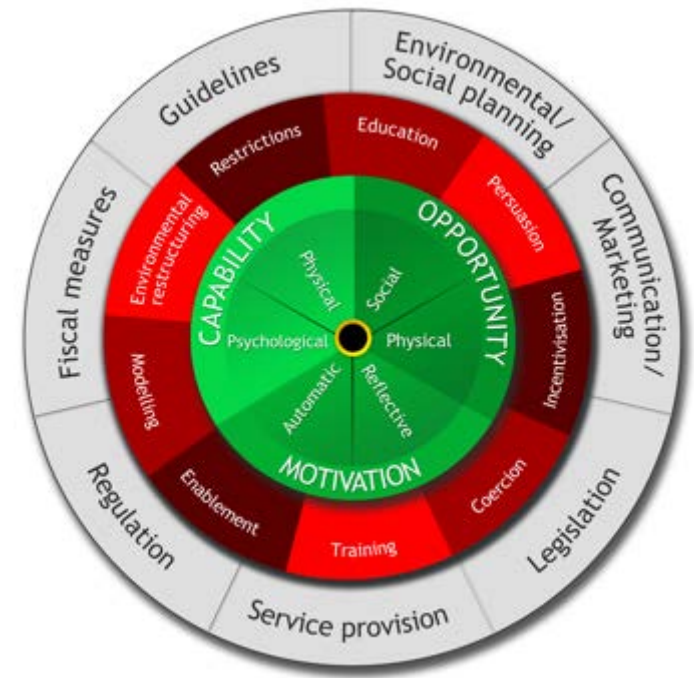


# Intervention to Policy

Decisions made by authorities concerning interventions

## HP Prescribing NRT

- Guideline
- Service provision
- Communication/marketing
- Regulation



# The APEASE criteria

**A**ffordability

**P**rac ticability

**E**ffectiveness/cost?

**A**cceptability

**S**ide-effects/safety

**E**quity

Can it be delivered within an acceptable budget?

Can it be delivered as designed and to scale

How well does it work and is it worth the cost?

Is it judged appropriate to relevant stakeholders (policy makers, practitioners, the public) and engaging for potential users.

Does it have unwanted side-effects or unintended consequences?

Will it reduce or increase disparities in health/wellbeing/standard of living?



# In research using the BCW to.....

## 1. **Design** interventions and policies

-COM-B links to intervention functions link to techniques

## 2. “Retrofit”- **identify** what is in current interventions and policies

## 3. Provide a framework for **evaluation**

-How are interventions working?

## 4. Structure **systematic reviews** of evidence



# Section 4. Specifying Intervention content: Using the Behaviour Change Technique Taxonomy (v1)



# Defining Characteristics of Behaviour change techniques (BCTs)

“Active ingredients” within the intervention designed to change behaviour

They are

- irreducible components of an intervention
- observable/measurable
- replicable

Can be used alone or in combination with other BCTs

# BCT Taxonomy v1- Michie, Richardson et al (2013)

ann. behav. med. (2013) 46:31–35  
DOI 10.1007/s12160-013-9486-6

ORIGINAL ARTICLE

## The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Johnston, PhD, CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

Published online: 20 March 2013  
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### Abstract

**Background** CONSORT guidelines call for precise reporting of behavior change interventions: we need rigorous methods of characterizing active content of interventions with precision and specificity.

**Objectives** The objective of this study is to develop an extensive, consensually agreed hierarchically structured taxonomy of techniques [behavior change techniques (BCTs)] used in behavior change interventions.

**Methods** In a Delphi-type exercise, 14 experts rated labels and definitions of 124 BCTs from six published classification systems. Another 18 experts grouped BCTs

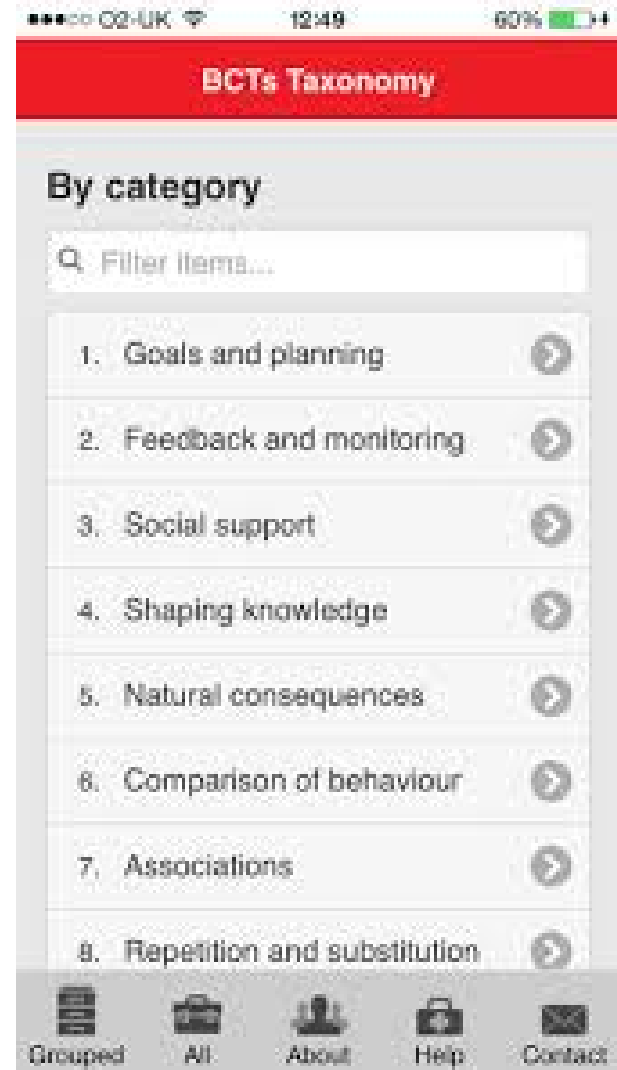
according to similarity of active ingredients in an open-sort task. Inter-rater agreement amongst six researchers coding 85 intervention descriptions by BCTs was assessed.

**Results** This resulted in 93 BCTs clustered into 16 groups. Of the 26 BCTs occurring at least five times, 23 had adjusted kappas of 0.60 or above.

**Conclusions** “BCT taxonomy v1,” an extensive taxonomy of 93 consensually agreed, distinct BCTs, offers a step change as a method for specifying interventions, but we anticipate further development and evaluation based on international, interdisciplinary consensus.



# BCT Taxonomy App



*Example:*

## 10. Reward and Threat

### 10.2 Material Reward (behaviour)

Arrange for the delivery of money, vouchers or other valued objects if and only if there ***has been*** effort and/or progress in performing the behaviour.



1. Look up BCT category – Feedback and Monitoring
2. Consider carbon monoxide breath testing of a smoker who's trying to quit

## 2. Feedback and Monitoring

### 2.6 Biofeedback

Provide feedback about the body (*e.g. physiological or biochemical state*) using an external monitoring device as part of a behaviour change strategy

**Any other categories that could be covered?**



COppm	%FCHb
>20	5.66
19	5.38
18	5.09
17	4.81
16	4.53
15	4.25
14	3.96
13	3.68
12	3.40
11	3.11
10	2.83
9	2.55
8	2.26
7	1.98
6	1.70
5	1.42
4	1.13
3	0.85
2	0.57
1	0.28
0	0.00




# Capability



- Health Providers have the **physical capability** to prescribe NRT
- But not the psychological capability to
  - pay **attention** to this behaviour over other competing behaviours (other issues in pregnancy)
  - develop **routines** for noticing when the behaviour does not occur (missing cues)
  - develop **plans** for acting in the future (prioritising)

# Selecting relevant Intervention functions



	Intervention functions								
	Education	Persuasion	Incentiv- isation	Coercion	Training	Restriction	Environmental restructuring	Modelling	Enablement
Physical capability									
Psychological capability									
Physical opportunity									
Social opportunity									
Automatic motivation									
Reflective motivation									



- **Capability**
  - Psych – low knowledge, skills - training, reminders, CPD points
- **Opportunity**
  - Physical - restructure environment – prompts, resources
  - Social - Role, Norms
- **Motivation**
  - Automatic – emotive msgs
  - Reflective - increase optimism, NNT



- **Capability**
  - Physical – dependence – NRT
  - Psych – low self-efficacy – build confidence
- **Opportunity**
  - Physical – provide resources/NRT
  - Social – modelling, smoke-free home
- **Motivation**
  - Automatic – new role, self-reward, coping
  - Reflective – persuasion, education, enablement

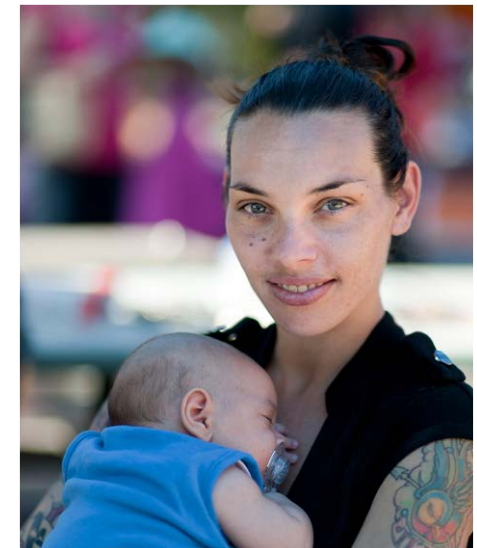
# SISTAQUIT™

Supporting Indigenous Smokers To Assist Quitting



**SISTAQUIT™**  
Supporting Indigenous Smokers To Assist Quitting

**Patient FlipChart**



**ICAN QUIT**  
In Pregnancy

**Patient Booklet**







# Your toolbox

1. Understand the behaviour.  
Behavioural analysis and diagnosis using COM-B
2. Systematically select appropriate intervention functions & policy categories to bring about change
3. Specify active ingredients in the intervention





# Questions?

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# Further Reading

- Michie S, van Stralen MM, West R. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implement Sci.* 2011;6(42).
- Michie S, Atkins L, West R. *The Behaviour Change Wheel - A guide to designing interventions*. Great Britain: Silverback Publishing; 2014.
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- McSharry J, Murphy PJ, Byrne M. Implementing international sexual counselling guidelines in hospital cardiac rehabilitation: development of the CHARMS intervention using the Behaviour Change Wheel. *Implement Sci*. 2016;11(1):134.
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