

# Changing healthcare provider behaviour: how do psychological approaches help us understand barriers to deprescribing and develop de-implementation interventions?

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# Today's theme: implementation

- Gaps in quality of healthcare
  - 30-40%<sup>1</sup> of people do not receive care according to current scientific evidence
  - 20-25%<sup>2</sup> of the care provided is not required or is potentially harmful

Implementation of research findings is a fundamental challenge for healthcare systems

- Efforts to address this include development of evidence-based clinical practice guidelines
  - Necessary but not sufficient to change practice

*Evidence based practice should be complemented by evidence based implementation*

Richard Grol (1997, BMJ)

**We owe it to patients and the public to do better:  
Implementation Science**

<sup>1</sup> Schuster, McGlynn, & Brook (1998) *Milbank Quarterly*; <sup>2</sup> Grol (2001) *Med Care*



# Implementation Science

- The interdisciplinary **scientific study** of:
  - **Determinants, processes** and **outcomes** of implementation in healthcare
  - **Methods** for promoting the uptake of research evidence into routine practice in clinical, community and policy contexts<sup>1</sup>
  - Broad range of disciplines and forms of enquiry needed
- **Goal:** develop a **generalizable empirical** and **theoretical** basis to optimize implementation activities to improve the healthcare provided to patients and the public



IMPLEMENTATION SCIENCE



# Centre for Implementation Research (CIR)

- Formalisation of strong, highly collaborative interdisciplinary group of 14 implementation scientists
  - Biostatistics, clinical epidemiology, cognitive psychology, engineering, health economics, health psychology, health services research, human factors/user centred design, knowledge translation, medical education, medical sociology. medicine, nursing, shared decision making.
- 29 current trainees (MSc, PhD, Postdoc)



# Centre for Implementation Research (CIR)

- Knowledge synthesis
- Identification of implementation failures
- Development of methods to assess barriers and facilitators to implementation
- Development of the methods for optimising implementation programs
- Evaluations of the effectiveness and efficiency of implementation programs
- Sustainability and scalability of implementation programs
- Development of implementation research theory
- Development of implementation research methods

Behaviour change approaches underpin much of our work



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# Why apply behaviour change approaches to deprescribing guideline implementation?

- Successful deprescribing guideline implementation requires healthcare providers to change the way they do things
- Deprescribing guideline implementation can be broken down into the specific behaviours of those involved in the healthcare context to which the guideline applies
- This allows us to draw on insights from decades of research in behavioural science about determinants of behaviour and effective ways of changing behaviour

Healthcare provider behaviour change is centrally important for addressing gaps in quality of healthcare



# How to apply this to deprescribing?

*“For adults with BPSD treated for at least 3 mo (symptoms stabilized or no response to adequate trial), we recommend the following:*

*Taper and stop antipsychotics slowly in collaboration with the patient and caregivers: eg, 25%–50% dose reduction every 1–2 wk”*

## Who needs to do what, differently?



# Where to begin when applying behaviour change approaches?

1

## **Step 1: *Who needs to do what, differently?***

Whose behaviour need to change, and which behaviours? What is the evidence supporting this?

2

## **Step 2: What factors determine whether or not they do it?**

What are the barriers and enablers?

3

## **Step 3: Which strategies can be effectively used to target those factors?**

Which behaviour change techniques are best suited to specifically target the identified barriers and enablers

4

## **Step 4: How can we robustly measure the outcome?**



# Step 1: Identifying the target behaviour

- To understand a behaviour, you need to specifically clarify which behaviour you are interested in by describing the behaviour in terms of:
  - **TARGET** (who is on the receiving end of the Action; e.g. patient, self)
  - **ACTION** (what observable behaviour is being performed)
  - **CONTEXT** (where the Action is performed)
  - **TIME** (when the Action is performed)
- Known as the 'TACT' principle
- Addition proposed: TACT-A
  - **2nd A: ACTOR** (who is doing the Action)

Example deprescribing behaviour: “Long-term care physicians reducing the dosage of antipsychotics for the residents with BPSD in their long-term care facility every 2 weeks”

**Take a moment to circle the TARGET, ACTION, CONTEXT, TIME, and ACTOR in the description**


# Step 1: Identifying the target behaviour

Example deprescribing behaviour: “Long-term care physicians reducing the dosage of antipsychotics for the residents with BPSD in their long-term care facility every 2 weeks”

- **TARGET**
  - “residents with BPSD in the long-term care facility”
- **ACTION**
  - “reducing the dosage of antipsychotics”
- **CONTEXT**
  - “in the long-term care facility”
- **TIME**
  - “every two weeks”
- **ACTOR**
  - “long-term care physicians”



# Where to begin when applying behaviour change approaches?

 **Step 1: *Who needs to do what, differently?***  
Whose behaviour need to change, and which behaviours? What is the evidence supporting this?

**2** **Step 2: What factors determine whether or not they do it?**  
What are the barriers and enablers?

**3** **Step 3: Which strategies can be effectively used to target those factors?**  
Which behaviour change techniques are best suited to specifically target the identified barriers and enablers

**4** **Step 4: How can we robustly measure the outcome?**

# Step 2: Identifying barriers and enablers to deprescribing

- Barriers & enablers identified in previous studies:
  - Providers' knowledge, skills, attitudes, self-efficacy
  - Providers' insight into appropriateness of own prescribing
  - Providers not acting on awareness of potentially inappropriate prescribing
  - Patient goals for care
  - Complexity: polypharmacy, multimorbidity, multiple providers, poor communication
  - Health system structure
  - Time & resource constraints

# Step 2: Identifying barriers and enablers

- Value of using theory
  - **More efficient:** Helps us build on what we already know
  - **Shared understanding through shared language**
  - **Beyond intuitive/insufficient approaches** (e.g. beyond knowledge + awareness + attitudes as means for changing behaviour)
  - **Informs intervention design**
  - **Cumulative evidence:** Contributes to building a cumulative evidence base
- **BUT...**
- Numerous behavioural theories: no guidance on how to select a theory
- **Theoretical Domains Framework**
  - Developed to facilitate implementation scientists in using behavioural approaches to understand and address evidence-practice gaps
  - Attempts to make psychological theory more accessible & useful to those interested in applying psychological theory but who do not necessarily have a background in psychology



# Theoretical Domains Framework

- Synthesizes 33 theories containing 128 constructs into 12 domains covering the breadth of key factors related to behaviour change<sup>1</sup>
  - Topics to explore that are known to affect behaviour
- Validated in 2012: largely same domains (three split, one removed)<sup>2</sup>
- Used for understanding barriers and enablers to behaviour change
  - Topic guides available for informing interviews
  - Questionnaires available for conducting surveys

Cane et al. *Implementation Science* 2012, 7:37  
<http://www.implementationscience.com/content/7/1/37>



RESEARCH

Open Access

Validation of the theoretical domains framework for use in behaviour change and implementation research

James Cane<sup>1</sup>, Denise O'Connor<sup>2</sup> and Susan Michie<sup>3\*</sup>

ORIGINAL ARTICLE

Making psychological theory useful for implementing evidence based practice: a consensus approach

S Michie, M Johnston, C Abraham, R Lawton, D Parker, A Walker, on behalf of the "Psychological Theory" Group

.....  
*Qual Saf Health Care* 2005;14:26–33. doi: 10.1136/qshc.2004.011155



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# Theoretical Domains Framework

**Table 1** Domains from the TDF [30] and their descriptions adapted from Francis et al. [47]

|  |  |
|--|--|
| Knowledge                                | Existing procedural knowledge, knowledge about guidelines, knowledge about evidence and how that influences what the participants do   |
| Skills                                   | Competence and ability about the procedural techniques required to perform the behaviour   |
| Social/professional role and identity    | Is the behaviour something the participant is supposed to do or someone else's? (When discussing 'we'/the collective) Boundaries between professional groups   |
| Beliefs about capabilities               | Perceptions about competence and confidence in doing the behaviour   |
| Beliefs about consequences               | Perceptions about outcomes and advantages and disadvantages of performing the behaviour or previous experiences that have influenced whether the behaviour is performed or not   |
| Motivation and goals                     | Priorities, importance, commitment to a certain course of actions or behaviours Intentions   |
| Memory, attention and decision processes | Attention control, decision-making, memory, i.e. is the target behaviour problematic because people simply forget?   |
| Environmental context/resources          | How factors related to the setting in which the behaviour is performed (e.g. people, organisational, cultural, political, physical and financial factors) influence the behaviour  |
| Social influences                        | External influence from other people, views of other professions, patients and families, doing what you are told and how that influences what you do   |
| Emotion                                  | How feelings, affect (positive or negative) may influence behaviour  |
| Behavioural regulation                   | Ways of doing things that relate to pursuing and achieving desired goals, standards or targets<br>Strategies the participants have in place to help them perform the behaviour<br>Strategies the participants would like to have in place to help them |
| Nature of the behaviours                 | What is the participant's history of the behaviour, have they any experience (done it often or not at all in the past), is the behaviour routine or automatic?   |

# Theoretical Domains Framework: example

Example deprescribing behaviour: “Long-term care physicians reducing the dosage of antipsychotics for the residents with BPSD in their long-term care facility every 2 weeks”

- Review the list of 5 questions from a mock interview guide developed to investigate barriers and facilitators to enacting the above behaviour
- Review the list of domains with brief descriptions
- Identify which domain you think the question is targeting






# Theoretical Domains Framework: example


Example deprescribing behaviour: “Long-term care physicians reducing the dosage of antipsychotics for the residents with BPSD in their long-term care facility every 2 weeks”

- Do you see it as your job to reduce the dosage of antipsychotics for the residents with BPSD in your long-term care facility every 2 weeks?  
**Social/ Professional Role and Identity**
- How confident are you in your ability to reduce the dosage of antipsychotics for the residents with BPSD in your long-term care facility every 2 weeks?  
**Beliefs about Capabilities**
- What are the benefits or positive impacts of reducing the dosage of antipsychotics for the residents with BPSD in your long-term care facility every 2 weeks?  
**Beliefs about Consequences**
- How much of a priority is it for you to reduce the dosage of antipsychotics for the residents with BPSD in your long-term care facility every 2 weeks in the grand scheme of everything you do to care for residents?  
**Motivation and Goals**
- In what situations could you see yourself forgetting to reduce the dosage of antipsychotics for the residents with BPSD in their long-term care facility every 2 weeks?  
**Memory, attention and decision processes**



# Where to begin when applying behaviour change approaches?

 **Step 1: *Who needs to do what, differently?***  
Whose behaviour need to change, and which behaviours? What is the evidence supporting this?

 **Step 2: What factors determine whether or not they do it?**  
What are the barriers and enablers?

**3** **Step 3: Which strategies can be effectively used to target those factors?**  
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**4** **Step 4: How can we robustly measure the outcome?**

# Step 3: What strategies to use to change behaviour?

- Principle: **no magic bullets**
- Select strategies that work best for specific barriers/enablers
- Be explicit (using theories and taxonomies) to ensure clarity and replication
- Distinguish ‘what’ you deliver from ‘how’ it is delivered
  - Context: the mode of delivery (eg group meeting, DVD)
  - Content: how the technique will be operationalised



# What is the evidence for implementation interventions?

- Cochrane Effective Practice and Organisation of Care (EPOC) undertakes systematic reviews to improve healthcare systems and healthcare delivery
- Currently 200+ reviews/protocols
- We know quite a bit!
- Many reviews of randomised and cluster randomized trials



<http://epoc.cochrane.org/>

# What is the evidence for implementation interventions?

| Implementation intervention strategy                    | # of trials | Median improved performance             | Interquartile range |
|---|-------------|---|---------------------|
| Automatically-generated reminders on paper <sup>1</sup> | 32          | Reminders alone: 11%<br>Reminders +: 4% | 7-20%<br>3-6%       |
| Printed educational materials <sup>2</sup>              | 7           | 2%                                      | 0-11%               |
| On-screen point of care reminders <sup>3</sup>          | 28          | 4%                                      | 1-19%               |
| Audit and Feedback <sup>4</sup>                         | 140         | 4%                                      | 1-16%               |
| Meetings and workshops <sup>5</sup>                     | 81          | 6%                                      | 2-16%               |
| Educational outreach visits <sup>6</sup>                | 69          | 6%                                      | 3-9%                |

- Small effects at population level may be important... but no magic bullets
- Wide variability of effect; What explains variability?
- Strategies not necessarily most appropriate for given barriers/enablers
- Categories are largely methods of delivery rather than techniques; need to unpack



# Distinguishing content from method of delivery

**TIDieR**

Template for Intervention  
Description and Replication

## TIDieR items

**Brief name**

**Why**

**What materials**

**What procedures**

**Who provided**

**How provided**

**Where provided**

**When and how much**

**Tailoring**

**Modifications**

**How well (planned)**

**How well (actual)**

## Content

(techniques, strategies, active ingredients)  
E.g. Audit and Feedback; Goal Setting

## Method of delivery

E.g. Leaflets, Videos, Materials, Apps,  
CPD/Educational meeting, Outreach visits

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# Behaviour change techniques taxonomy (Michie et al 2013)

## Feedback and monitoring

- Monitoring of behaviour by others without feedback
- Feedback on behaviour/outcomes of behaviour
- Feedback on outcomes of behaviour
- Self-monitoring of behaviour
- Self-monitoring of outcomes of behaviour
- Monitoring of outcome(s) of behaviour without feedback
- Biofeedback

## Regulation

- Conserving mental resources
- Pharmacological support
- Reduce negative emotions
- Paradoxical instructions

## Goals and Planning

- Goal setting (behavior) OR Goal setting (outcome)
- Problem solving
- Action planning
- Review behavior goal(s) OR Review outcome goal(s)
- Discrepancy between current behavior and goal
- Behavioral contract
- Commitment

## Repetition and substitution

- Behavioural practice/rehearsal
- Behaviour substitution
- Habit formation
- Habit reversal
- Overcorrection
- Generalisation of target behaviour
- Graded tasks

## Comparison of outcomes

- Credible source
- Pros and cons
- Comparative imagining of future outcomes

## Reward and threat

- Incentive (outcome)
- Material incentive (behaviour)
- Social incentive
- Non-specific incentive
- Self-incentive
- Self-reward
- Reward (outcome)
- Material reward (behaviour)
- Non-specific reward
- Social reward
- Future punishment

## Shaping Knowledge

- Instruction on how to perform behaviour
- Information about Antecedents
- Re-tribution
- Behavioural experiments

## Social Support

- Social support (unspecified)
- Social support (practical)
- Social support (emotional)

## Natural Consequences

- Info about health consequences
- Info about emotional consequences
- Info re social and environment consequences
- Salience of consequences
- Monitoring of emotional consequences
- Anticipated regret

## Identity

- Identification of self as role model
- Framing/reframing
- Incompatible beliefs
- Valued self-identify
- Identity linked with changed behaviour

## Scheduled consequences

- Behaviour cost
- Punishment
- Remove reward
- Reward approximation
- Rewarding completion
- Situation-specific reward
- Reward incompatible behaviour
- Reward alternative behaviour
- Reduce reward frequency
- Remove punishment

## Antecedents

- Adding objects to the environment
- Restructuring the physical environment
- Restructuring the social environment
- Avoidance/reducing exposure to cues
- Distraction
- Body changes

## Associations

- Prompts/cues
- Cue signalling reward
- Reduce prompts/cues
- Remove access to the reward
- Remove aversive stimulus
- Satiation
- Exposure
- Associative learning

## Comparison of behaviour

- Demonstration of the behaviour
- Social comparison
- Information about others' approval

## Covert learning

- Imaginary punishment
- Imaginary reward
- Vicarious consequences

# Step 3: What strategies to use to change behaviour?

| TDF-based barrier                                    | Behaviour Change Techniques   |
|--|---|
| Beliefs about Capabilities<br>(Interpersonal) Skills | <ul style="list-style-type: none"> <li>• Demonstration of the behaviour</li> <li>• Verbal persuasion of capability</li> <li>• Graded tasks</li> <li>• Behavioural practice/rehearsal</li> </ul> |
| Social/Professional Role & Identity                  | <ul style="list-style-type: none"> <li>• Feedback on behaviour</li> <li>• Behavioural contract</li> <li>• Action Planning</li> <li>• Behavioural practice/rehearsal</li> </ul>                  |
| Social influences                                    | <ul style="list-style-type: none"> <li>• Social support (practical)</li> <li>• Information about others' approval</li> <li>• Social comparison</li> <li>• Social reward</li> </ul>              |
| Beliefs about consequences                           | <ul style="list-style-type: none"> <li>• Information about health consequences</li> <li>• Salience of consequences</li> <li>• Credible source</li> </ul>  |
| Goals  | <ul style="list-style-type: none"> <li>• Goal setting (outcome)</li> </ul>  |
| Memory, attention, decision processes                | <ul style="list-style-type: none"> <li>• Prompts/cues</li> <li>• Action Planning</li> <li>• Problem solving</li> </ul>  |

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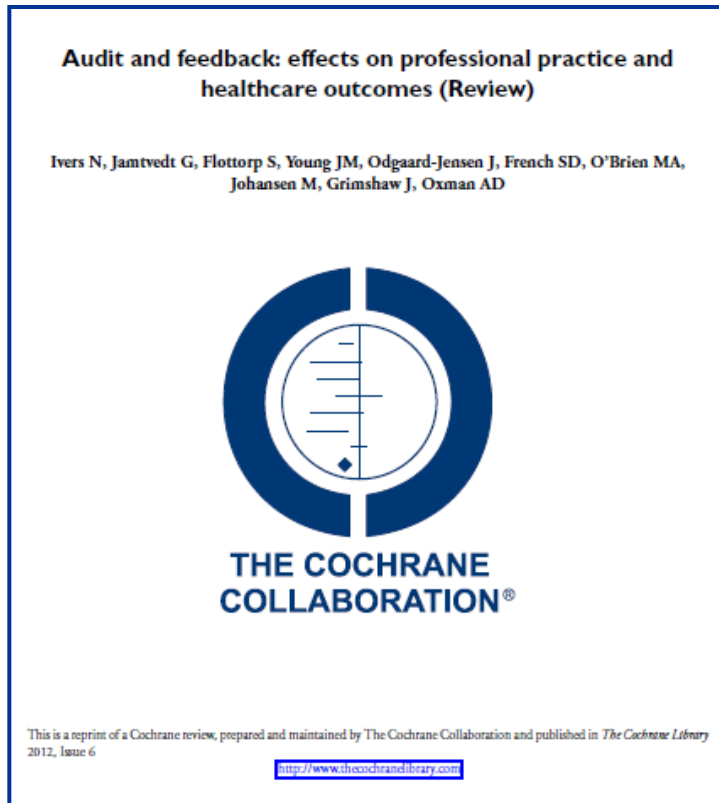




Example: Using Audit & Feedback to facilitate deprescribing

# Audit & feedback (A&F)

- Summary of clinical performance of health care over a specified period of time; may also have included recommendations for clinical action



- Generally effective
- Substantive variation in observed effects
- Some information about how to optimise A&F interventions
- Many current A&F initiatives do not use optimal design features
- **Opportunities to use existing theory, evidence base and design approaches to optimise A&F**

# Using audit & feedback to facilitate deprescribing

- Health Quality Ontario (HQO) provide feedback to long-term care (LTC) physicians on high-risk medication prescribing
- With HQO and Women's College Hospital (WCH), we are conducting a 2×2 factorial, cluster-randomized trial to assess effects of two aspects of A&F design on high-risk medication prescribing rates
  - Framing of performance (positive vs. negative)
  - Standard used for comparison (median vs. top quartile)



# A&F report version 1

## Summary

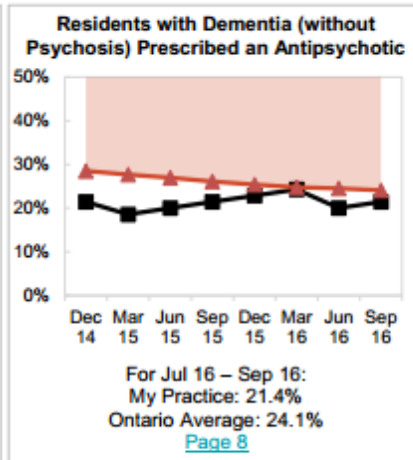
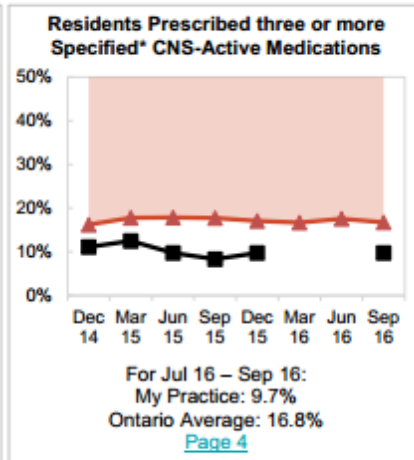
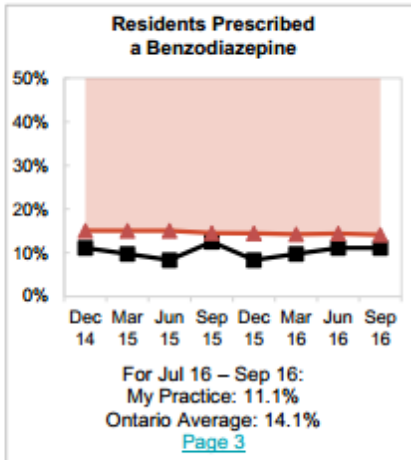
This practice report provides feedback on certain prescribing practices that may be associated with a risk of harm for your LTC residents when not appropriate.

### How do my prescribing practices compare?

Data reporting period: July 1, 2016 – September 30, 2016

Note: 'Sep-16' represents data from July 1 to September 30, 2016.

—■ My Practice —▲ Ontario Average



**2 fewer resident(s) in my practice are at increased risk associated with benzodiazepines (compared to the average prescribing rate among Ontario LTC physicians).**

**Who are all my residents?** Between July 1, 2016 and September 30, 2016, my LTC practice had 75 residents (26% male, 74% female), with a mean age of 84, and 15% were new residents (in LTC home for less than 100 days.)

Suppression denoted by N/R (Not Reported) or a gap in graph; N/A: Not Available.

\*Specified medications include: antipsychotics, opioids, benzodiazepines (oral), and antidepressants (including TCAs and trazodone). Refer to [page 17](#) for more details.

**Negative framing**  
No. patients for whom care generally not in line with guidelines (prescribed high-risk medication)

**Comparator**  
Ontario median



# A&F report version 2

## Summary

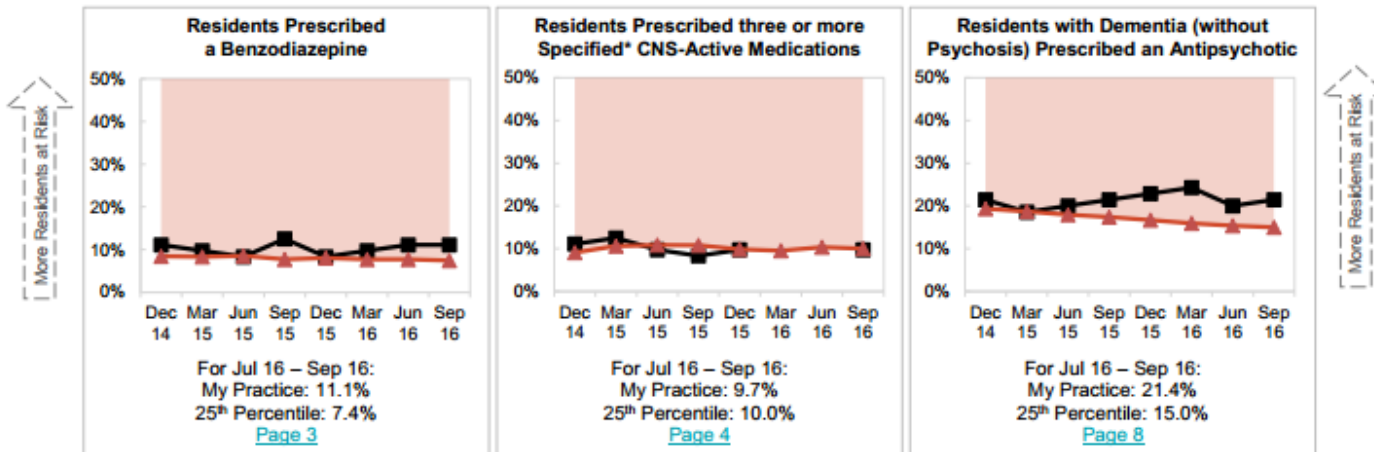
This practice report provides feedback on certain prescribing practices that may be associated with a risk of harm for your LTC residents when not appropriate.

### How do my prescribing practices compare?

Data reporting period: July 1, 2016 – September 30, 2016

Note: 'Sep-16' represents data from July 1 to September 30, 2016.

—■ My Practice —▲ 25<sup>th</sup> Percentile



**3 additional resident(s) in my practice may be at increased risk associated with benzodiazepines (compared to Ontario LTC physicians with lower prescribing rates<sup>†</sup>).**

**Who are all my residents?** Between July 1, 2016 and September 30, 2016, my LTC practice had 75 residents (26% male, 74% female), with a mean age of 84, and 15% were new residents (in LTC home for less than 100 days.)

<sup>†</sup>Lower prescribing rates reflect the 25<sup>th</sup> percentile. | Suppression denoted by N/R (Not Reported) or a gap in graph; N/A: Not Available.

\*Specified medications include: antipsychotics, opioids, benzodiazepines (oral), and antidepressants (including TCAs and trazodone). Refer to [page 17](#) for more details.

**Negative framing**  
No. patients for whom care generally not in line with guidelines (prescribed high-risk medication)

**Comparator**  
Top quartile



# A&F report version 3

## Summary

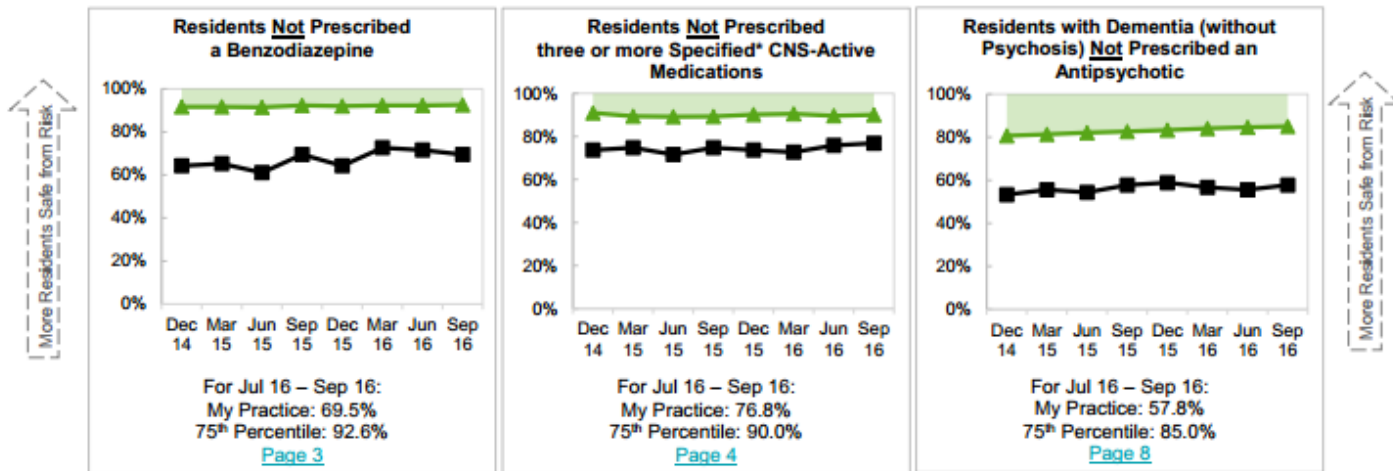
This practice report provides feedback on certain prescribing practices where you are ensuring safety for your LTC residents.

### How do my prescribing practices compare?

Data reporting period: July 1, 2016 – September 30, 2016

Note: 'Sep-16' represents data from July 1 to September 30, 2016.

■ My Practice ▲ 75<sup>th</sup> Percentile



**22 fewer resident(s) in my practice may be safe from risks associated with benzodiazepines (compared to Ontario LTC physicians with lower prescribing rates<sup>†</sup>).**

**Who are all my residents?** Between July 1, 2016 and September 30, 2016, my LTC practice had 100 residents (30% male, 70% female), with a mean age of 85, and 12% were new residents (in LTC home for less than 100 days.)

<sup>†</sup>Lower prescribing rates reflect the 75<sup>th</sup> percentile. | Suppression denoted by N/R (Not Reported) or a gap in graph; N/A: Not Available.

\*Specified medications include: antipsychotics, opioids, benzodiazepines (oral), and antidepressants (including TCAs and trazodone). Refer to [page 17](#) for more details.

**Positive framing**  
No. patients for whom care generally in line with guidelines (high-risk medication avoided)

**Comparator**  
Top quartile



# A&F report version 4

## Summary

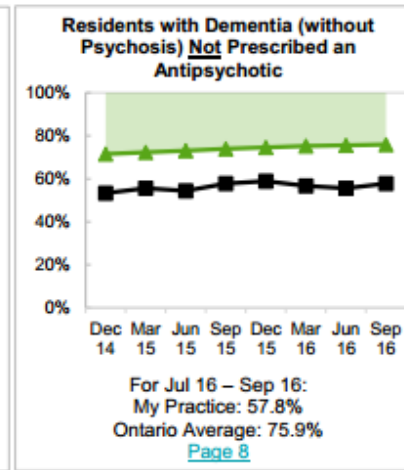
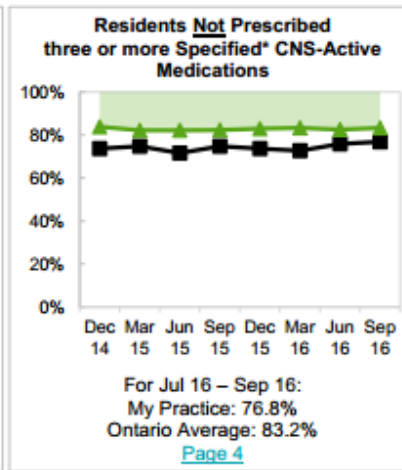
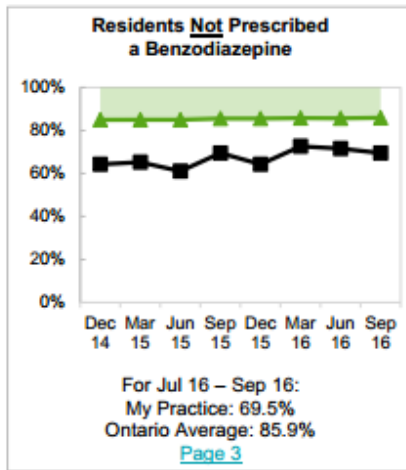
This practice report provides feedback on certain prescribing practices where you are ensuring safety for your LTC residents.

### How do my prescribing practices compare?

Data reporting period: July 1, 2016 – September 30, 2016

Note: 'Sep-16' represents data from July 1 to September 30, 2016.

■ My Practice ▲ Ontario Average



↑ More Residents Safe from Risk

↑ More Residents Safe from Risk

**Positive framing**  
No. patients for whom care generally in line with guidelines (high-risk medication avoided)

**Comparator**  
Ontario median

**16 fewer resident(s) in my practice may be safe from risks associated with benzodiazepines (compared to the average prescribing rate among Ontario LTC physicians).**

**Who are all my residents?** Between July 1, 2016 and September 30, 2016, my LTC practice had 100 residents (30% male, 70% female), with a mean age of 85, and 12% were new residents (in LTC home for less than 100 days.)

Suppression denoted by N/R (Not Reported) or a gap in graph; N/A: Not Available.  
\*Specified medications include: antipsychotics, opioids, benzodiazepines (oral), and antidepressants (including TCAs and trazodone). Refer to [page 17](#) for more details.



# 4 versions of A&F report



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# Using audit & feedback to facilitate deprescribing

- 2×2 factorial, cluster-randomized trial to assess two aspects of A&F design
  - Standard used for comparison (median vs. top quartile)
  - Framing of performance (positive vs. negative)

BEHAVIOUR: “Long-term care physicians appropriately adjusting prescribing for antipsychotics for the residents in their long-term care facility over the next month”

- Hypotheses
  - Top quartile comparator provides a social comparison and sets a self-standard for a difficult but achievable goal which will lead to reduced high-risk medication prescribing relative to the median comparator (Goal Setting Theory & Social Cognitive Theory)
  - Negative framing will enhance belief that adjusting prescribing will avoid unnecessary risks to residents’ health, thereby increasing priority and motivation to reduce prescribing relative to positive framing



# Using audit & feedback to facilitate deprescribing

**Table 1** Behaviour change techniques included in re-designed reports across all trial arms

| Behaviour change technique                                   | Definition  | Example of operationalization  |
|--|---|--|
| Feedback on behaviour  | Monitor and provide informative or evaluative feedback on performance of the behaviour (e.g. form, frequency, duration, intensity)  | <i>7/72 of my residents were prescribed a benzodiazepine</i>   |
| Social comparison AND Discrepancy between goal and behaviour | Draw attention to others' performance to allow comparison with own performance AND Draw attention to discrepancies between a person's current behaviour (in terms of the form, frequency, duration, or intensity of that behaviour) and the person's previously set outcome goals, behavioural goals or action plans (goes beyond self-monitoring of behaviour) | <i>7 additional residents in my practice may be at increased risk associated with benzodiazepines (compared to Ontario long-term care physicians with lower prescribing rates)</i> |
| Information about health consequences                        | Provide information (e.g. written, verbal, visual) about health consequences of performing the behaviour  | <i>How many of my residents are exposed to risks (e.g. falls) related to benzodiazepines?</i>  |
| Problem solving  | Analyse, or prompt the person to analyse, factors influencing the behaviour and generate or select strategies that include overcoming barriers and/or increasing facilitators   | <i>Change ideas, worksheets and resources regarding how to implement best practices for prescribing</i>  |

Definitions taken directly from Michie et. al. [15]



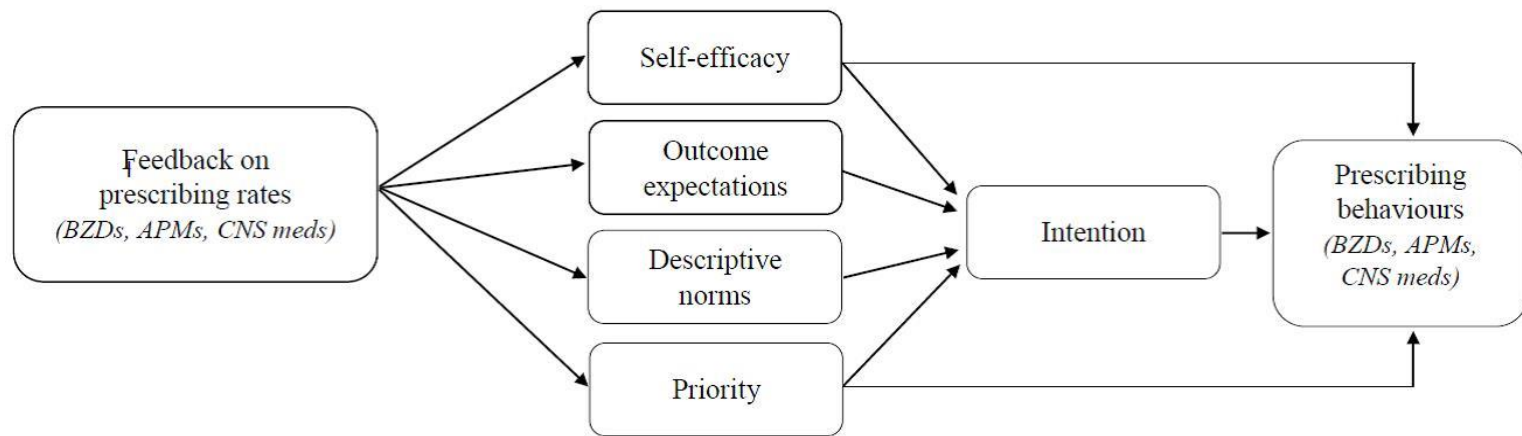
# Process evaluation alongside the A&F trial

- While the trial will evaluate whether these versions of A&F improve performance, it will not be able to tell us **how** this occurred
- Process evaluations are used to help understand how complex interventions work
- We conducted a mixed-methods process evaluation alongside the trial
- Process evaluation aims
  - Investigate mechanisms of action of the A&F reports (how the reports contribute to physician behaviour change): **questionnaire**
  - Explore the contextual factors shaping how LTC physicians use (or don't use) the report as part of their practice: **interviews**



# Process evaluation: questionnaire

- All Ontario LTC physicians who accessed their report invited to complete a questionnaire assessing (one item for each, response scale 1-5 (strongly disagree-strongly agree))
  - **Intention** to appropriately adjust prescribing
  - **Self-efficacy** → confidence in ability to appropriately adjust prescribing
  - **Outcome expectations** → belief that appropriately adjusting prescribing will avoid unnecessary risks to residents' health
  - **Descriptive norms** → belief that colleagues in other facilities in Ontario are appropriately adjusting their prescribing
  - **Goal prioritization** → priority for the physician to appropriately adjust prescribing)



# Process evaluation: questionnaire

- We compared scores across groups (t-tests)
- Report generated for 267 physicians
- 89 accessed their report; 33 (37%) completed the questionnaire



# Process evaluation: questionnaire

| Mean (SD)   |                     | “I intend to...” | “I am confident that I can...” | “I will avoid risks to my residents’ health if I...” | “My colleagues in other LTC homes in Ontario are...” | “It is a priority for me to...” |
|---|---------------------|------------------|--------------------------------|--|--|---------------------------------|
| <b>... appropriately adjust prescribing of antipsychotics</b> |                     |                  |                                |  |  |                                 |
| <b>Framing</b>  | Negative (N=17)     | 4.4 (0.5)        | 4.2 (0.8)                      | 4.4 (0.5)  | 3.4 (0.8)  | 4.3 (0.6)                       |
|   | Positive (N=16)     | 4.3 (0.7)        | 4.3 (0.9)                      | 4.5 (0.6)  | 3.3 (0.7)  | 4.4 (0.7)                       |
| <b>Comparator</b>   | Top quartile (N=18) | 4.3 (0.6)        | 4.4 (0.8)                      | 4.5 (0.5)  | <b>3.0 (0.7)**</b>                                   | 4.4 (0.6)                       |
|   | Median (N=15)       | 4.3 (0.6)        | 4.0 (0.8)                      | 4.4 (0.6)  | <b>3.7 (0.6)</b>                                     | 4.3 (0.7)                       |
| <b>...appropriately adjust prescribing of benzodiazepines</b> |                     |                  |                                |  |  |                                 |
| <b>Framing</b>  | Negative (N=17)     | 4.1 (1.0)        | 4.4 (0.7)                      | 4.5 (0.5)  | 3.4 (0.5)  | 4.2 (0.7)                       |
|   | Positive (N=16)     | 3.8 (0.7)        | 4.3 (0.8)                      | 4.3 (0.8)  | 3.3 (0.4)  | 3.9 (0.6)                       |
| <b>Comparator</b>   | Top quartile (N=18) | 3.9 (0.7)        | 4.3 (0.7)                      | 4.3 (0.8)  | <b>3.1 (0.3)*</b>                                    | 3.9 (0.7)                       |
|   | Median (N=15)       | 3.9 (1.0)        | 4.3 (0.8)                      | 4.5 (0.5)  | <b>3.5 (0.5)</b>                                     | 4.2 (0.7)                       |

*\*(t(22.653)=2.749, p=0.012) \*\* (t(31)=3.248, p=0.003) between groups (top quartile comparator vs. median comparator)*

- Few clear differences between groups
- **Strong intention & high self-efficacy** in deprescribing; strong agreement **deprescribing avoids risks**
- **High priority** to deprescribe
- **Indecisive** on whether **colleagues adjusting prescribing**

# Process evaluation: interviews

- LTC physicians who completed the questionnaire & indicated further interest were invited to take part in a semi-structured interview
- Questions focused on:
  - A&F report use and ideas for improvement
  - Prioritization of prescribing behaviour change, with specific reference to the three prescribing indicators summarized in the report
  - Understanding the possible mechanism(s) of action of the report
- Interviews coded by two independent researchers & key themes identified
- 5 physicians interviewed
  - 3 received positive-frame report with top quartile comparator
  - 2 received negative-frame report with median comparator



# Aspects of LTC culture increase complexity of behaviour change related to deprescribing

- Residents are often already prescribed the medications focused on in the report on admission, without accompanying detailed clinical history

*“A lot of people come in on antipsychotics... You don’t know why they’re on [it]... but I’m reluctant just to take them off... until I get a chance to observe them, you know, for probably 4-6 weeks at least before I start to touch their medications because it’s a time of, of flux for them... so then I will start to gradually, gradually, gradually decrease their antipsychotics and see how that goes.”*  
(LTC5, positive, top quartile)

- Family members may be relied upon to ‘fill in the gaps’ where detailed clinical history is lacking, and may be reluctant to pursue deprescribing

*“Families don’t like seeing, you know, certain behaviours in their family members and things like that can, can influence what gets done. We often treat families not just patients.”*  
(LTC1, positive, top quartile)



# A comparator representing a higher target has the potential to influence deprescribing

- Those who received median and those that received top quartile (higher target) aimed to achieve similar prescribing rates to the comparator
- Deprescribing efforts reduced when the comparator was reached/close

*“Well I just feel that, you know, when I’m at the 75th percentile or better, you know, I maybe don’t put as much emphasis on it... Because often there’s a certain amount that you will never be able to remove.” (LTC1, positive, top quartile)*

*“The useful information for me is that either I am using less or I’m using the same as others... in Ontario... that’s good enough.” (LTC4, negative, median)*

# Tailoring of feedback and targets to specific patient populations is key

- Prescribing rates (and deprescribing targets) considered in context of the behavioural profile of their residents

*“You go to the aggressive behaviour scale which is on page 14. You know, my ratio of aggressive behaviours double everybody else’s.... So my antipsychotic use is a little higher, which isn’t surprising. And then... the comments are how, how do you de-prescribe? Well you know what I have a different unit is what my answer is... it’s just, you know, you can’t rate a percentage of antipsychotic use unless you’re looking at the population I’m dealing with.” (LTC2, positive, top quartile)*

- Tension between target-setting and patient-centred care

*“Each one of my patients in long-term care is an individual... and in my opinion every person deserves an individual attention and individual consideration and... I didn’t want to get into the habit of changing my prescribing habits because I want to lower my overall numbers.” (LTC3, negative, median)*



# Feedback provided in a positive frame is not immediately actionable

- Those receiving positively-framed report found it difficult and time-consuming to interpret; negatively-framed report matches others and is more practical

*“...almost a little bit confusing because CIHI reports it one way and [the report does] it another... so how many of my residents are safe from the risks of falls, you know, associated with benzos?.. you have to think about it a little bit more... this way you’re kind of saying “Okay like if my rate, if my percentage is lower that’s not good.”... I almost prefer the other way.... just because that’s the way it’s reported, you know, in our PAC meetings and it’s reported in CIHI that way so it’s almost like it would be better to be, you know, kind of universal... I had to sort of figure it out.... I think the negative has more impact... it’s a little bit easier to visualize.” (LTC5, positive, top quartile)*

*“In all honesty I felt like I was in kindergarten and they were gonna give me a gold star on my report... I felt like I was in elementary school.” (LTC1, positive, top quartile)*



# Indicator selection impacts engagement with the A&F

- Overall priorities included improving quality of life, reducing risk of falls: all 3 indicators reflect this

*“I think well they’re all important [THE INDICATORS] because of what I said before. We’re trying to keep people safe and improve their quality of life... And if they’re over medicated they will have, they will have a lesser quality of life than if they’re medicated properly.” (LTC3, negative, median)*

- Responding to antipsychotic medication indicator highest priority due to external influences
- Participants did not prioritize benzodiazepine (de)prescribing as they perceived their benzodiazepine use to be low in general

*“Antipsychotics is highest on my list. If I can get, we work hardest on antipsychotics. Well benzos I don’t use and antipsychotics we work hard at.” (LTC2, positive, top quartile)*

- ‘+3 CNS active medications’ indicator was rarely discussed due to interpretation challenges and the perception that included medications were less harmful (or beneficial)

*“The 3 or more specified I have to admit I didn’t I don’t know where it’s specified. I don’t know which drugs they’re talking about.” (LTC2, positive, top quartile)*

*“That one [+3 CNS ACTIVE MEDICATIONS INDICATOR] I don’t look so much at because I use a lot of antidepressants. And like they’re not, to me they are not as much of a danger as antipsychotics. I mean studies have shown that up to 80% of people in long-term care do have some form of depression.” (LTC1, positive, top quartile)*

# Physicians value & use the A&F, but it is not the main driver of change

- Report provides data not otherwise available

*“It’s nice to... have an actual number not case by case... And it’s because it’s hard for me to do trends. I have to really go back to every to see what happened every 3 months whereas this is really nice. It’s graphic it’s easy to see.” (LTC1, positive, top quartile)*

- Report not main driver of change: used to monitor results of other initiatives

*“They was this big push to try and cut back even before this report came out... and then this sort of confirmed everything... and then just adds onto the whole intervention that we’re trying to do.” (LTC4, negative, median)*

- Report informs discussions with team members by ‘armouring’ them with information: if report included data for facilities separately: could tailor deprescribing efforts, enhance ability to monitor progress, and enable learning across facilities

*“It gives me some ammunition... sometimes pharmacists come up with ideas that are based on statistics... I like to have my own statistics... it’s, you know, a way to stimulate discussion.” (LTC3, negative, median)*

*“We have a protocol at (PRACTICE 2) where we are actually trying to discontinue or decrease the use of antipsychotic drugs in dementia patients... I would love to know what my practice is there like what are the data for there... But I don’t have that information” (LTC4, negative, median)*



# External factors (not the A&F) drive prioritisation of deprescribing goals

- Ministry influence drives participants' prioritisation (antipsychotic deprescribing) generally and in relation to the three indicators in the report

*"Yeah I probably prioritized the antipsychotics first... because the Ministry is looking at the antipsychotics... And, you know, sort of making a judgment about what kind of home you run depending on that report." (LTC5, positive, top quartile)*

- Negative media coverage of antipsychotic prescribing puts pressure on physicians which influences behaviour change

*"I personally get very upset when I see those articles because we spend a lot of time trying to do the right thing... However the other side of the coin is that articles like that do stimulate us to, to take a look and make sure we're, and make sure that we are doing appropriate prescribing." (LTC3, negative, median)*

*"So as my antipsychotics have gone down by almost half ever since the, I'd say ever since that article in the Toronto Sun." (LTC1, positive, top quartile)*

# Existing quality improvement initiatives and routines had a strong influence on deprescribing

- Deprescribing initiatives or best practice routines are already in place in LTC facilities, which often took precedence over report

*“We have what we call grand rounds where we meet regularly... with the nursing staff, nurse practitioner, the pharmacist... and the physicians. We sit down together and we look at all the different, so we develop best practices for our place... so we look at medication... we come up with best practices and then we try to implement that for our home.” (LTC4, negative, median)*



# Key lessons

- ▶ Selection of comparator is a key opportunity to influence behaviour
  - Use top quartile comparator, pursue case mix adjustment to improve credibility
- ▶ Feedback provided in a positive frame is not immediately actionable
  - Use negative framing
- ▶ Indicator selection impacts engagement with the A&F
  - Indicators should be automatically interpretable without further description
- ▶ Physicians value & use the feedback, but report is not the main driver of change
  - Provide feedback to support ongoing initiatives; reduce detail to focus more clearly on prescribing trends, with change ideas available as optional appendices/an additional support service
  - Provide data split by facility and encourage discussion with team members within/across facilities
- ▶ External factors (not the A&F) drive prioritisation of deprescribing goals
  - Can indicator alignment with Ministry targets be more explicit?
- ▶ Existing initiatives/routines had a strong influence on deprescribing
  - Add facility-level report, and encourage discussion of individual data with team?





# Summary so far: using psychological approaches

- Specifying behaviour/s to target for change in deprescribing context
- Assessing barriers and enablers to deprescribing behaviour change
- Developing interventions to specifically target barriers and enablers
- Example of the use of A&F to facilitate deprescribing behaviour change

## HOWEVER...


- Most approaches discussed so far focuses on engaging providers to consciously reflect on practice and modify where appropriate
- Not all of our behaviour is consciously reflected on: we develop automatic routines: don't need to analytically think about everything
- Approaches from psychology recognize this: 'fast and slow thinking': could inform deprescribing guideline implementation efforts



# What is 'fast' and 'slow' thinking?

**'FAST'**  
automatic,  
experiential,  
intuitive  
**'System one'**



THINKING,  
FAST AND SLOW  
  
DANIEL  
KAHNEMAN  
WINNER OF THE NOBEL PRIZE IN ECONOMICS

**'SLOW'**  
effortful,  
analytical,  
intentional  
**'System two'**

- ▶ **Cognitive psychology:** scientific discipline aiming to understand mental processes such as attention, memory, decision-making
- ▶ **Dual process approach:** two cognitive processes operate to guide thinking and behaviour

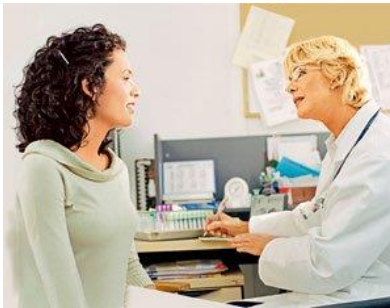
# An everyday example...



- ▶ Learning: new information, overwhelmed, 'slow' thinking
- ▶ Now: highly experienced: same tasks, 'fast thinking'
- ▶ Automatic routine: expertise & environment
- ▶ Routines good, but may need updating: difficult to do

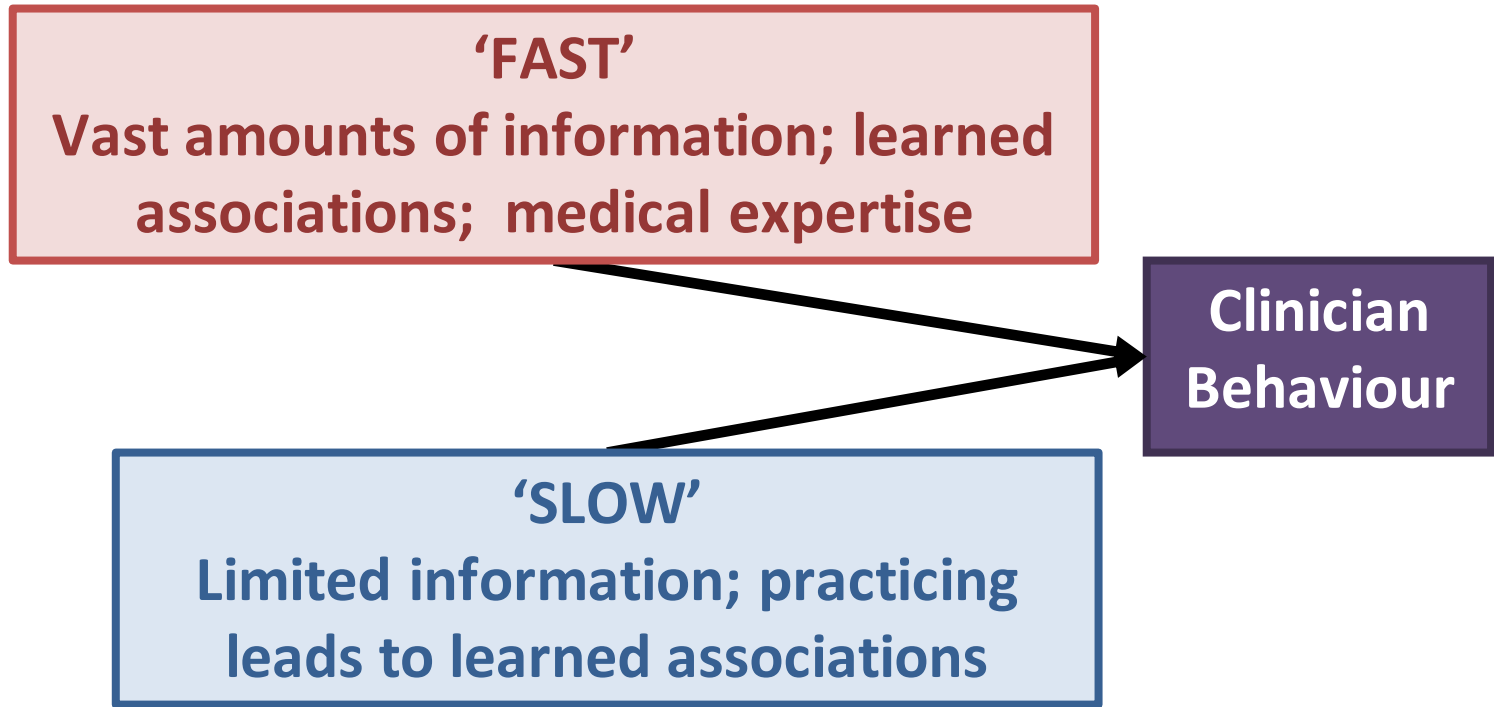
# Routines in clinical practice

- ▶ Two systems guiding thoughts and behaviour



- ▶ Actions performed repeatedly; same locations and colleagues; time pressure, resource constraints, competing demands
- ▶ Develop automatic routines: don't need to analytically think about everything
- ▶ Good: conserves cognitive resources for when they are especially needed
- ▶ However, routines are hard to change: implications

# Can dual process approaches help?



- ▶ Neither superior, both important
- ▶ Help us think about how we build on traditional approaches targeting analytical thinking, by also designing interventions to target routines

# CIR research agenda

- ▶ Better understand the role of routines ('fast' process) in clinical practice
- ▶ Design interventions to improve care by replacing outdated routines
- ▶ Improve intervention sustainability by ensuring new routines maintained



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- ▶ Behaviour substitution
- ▶ Modifying features of the environment ('choice architectures'/'nudging')