

# De-implementation of ineffective & harmful clinical practices: unlearning & substitution

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# **QUERI Program: Improving safety and quality through evidence-based de-implementation of ineffective diagnostics and therapeutics**

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# Polling question

- What is your background?
  - VA researcher
  - Non-VA researcher
  - Clinician
  - Management/ policy maker
  - Other

# Background: Medical overuse

- Underuse: failure to provide necessary care (e.g., heart attack patient discharged w/out aspirin prescribed after myocardial infarction)
- Misuse: failure to provide correct care (e.g., incorrect medication dosing)
- Overuse: providing medical services to patients who derive no benefit, or where harms outweigh benefits.

# Medical overuse is common

- Medical overuse is common (Morgan, Brownlee et al. 2015; Niven, Mrklas et al. 2015).
  - Low end, rates range from 10% - 16% of care,
  - High end, from 30% - 46%
- Corroborated by PCPs reports of whether their own patients receive too much, too little (Sirovich, Woloshin et al. 2011).

# Some indication that underuse is improving but overuse isn't (Kale, Bishop et al. 2013)

- Quality indicators from National Hospital Ambulatory Medical Care Surveys
- 2 of 11 overuse metrics improved
- 6 of 9 underuse metrics improved

# Many different terms for efforts to understand and address overuse

- De-implementation
- De-adoption
- Undiffusion
- Exnovation
- Divestment
- Discontinuation
- Extinction/extinguishing
- Don't...just don't

# Essential distinction: de-implementation from implementation

- Adoption of new practices often entails abandonment of old practices
- De-implementation might be viewed as the mirror image of implementation.
- De-implementation: an established practice needs to be abandoned because it is ineffective or harmful; even in the absence of a specific superior alternative practice.

# De-implementation not the same as supplanting

## **De-implementation**

- Noninvasive preoperative screening for coronary disease in patients undergoing noncardiac surgery (Eagle et al 2015)

## **Supplanting**

- Trans-radial percutaneous coronary procedures instead of trans-femoral procedures (Feldman et al 2013)

Much (not all) of the de-implementation literature predicated on conscious behavior change

- Strategies to reduce overuse (Berenson et Docteur 2013):
  - Monitoring rates of inappropriate services
  - Physician education
- Unlearning (Becker 2010; Coombs, Hislop et al 2013)
- Choosing Wisely campaign

# Two types of cognition (Kahneman 2003, 2011; Evans 2008)

- Reflective cognition
  - conscious process of evaluating behavioral options based on some combination of utility, risk, capabilities or social influences
  - forming and acting on an intention; and
- Automatic cognition
  - largely unconscious
  - occurs in response to environmental or emotive cues
  - relies on ingrained heuristics

# Challenges of intentional behavior change

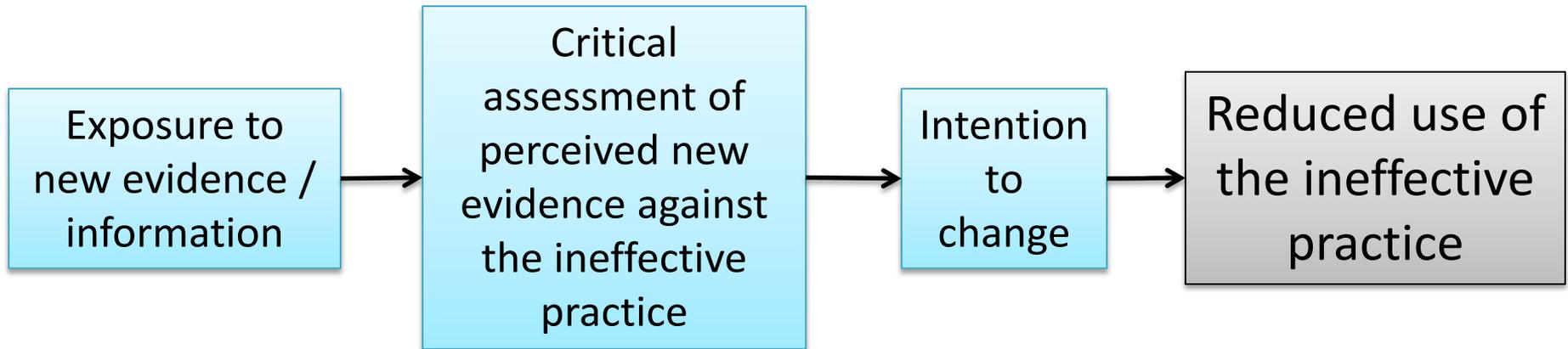
- Intentions only effective when retained in active memory, but intentions rapidly forgotten (Einstein, McDaniel et al. 2003).
  - Particularly when individuals multitask or are interrupted
- Reflective cognition is effortful; limited cognitive resource (Hagger, Wood et al 2010).
- Individuals might behave automatically but when asked provide a post-hoc rationale (Kahneman 2011)

# A planned-action model of clinician-level de-implementation

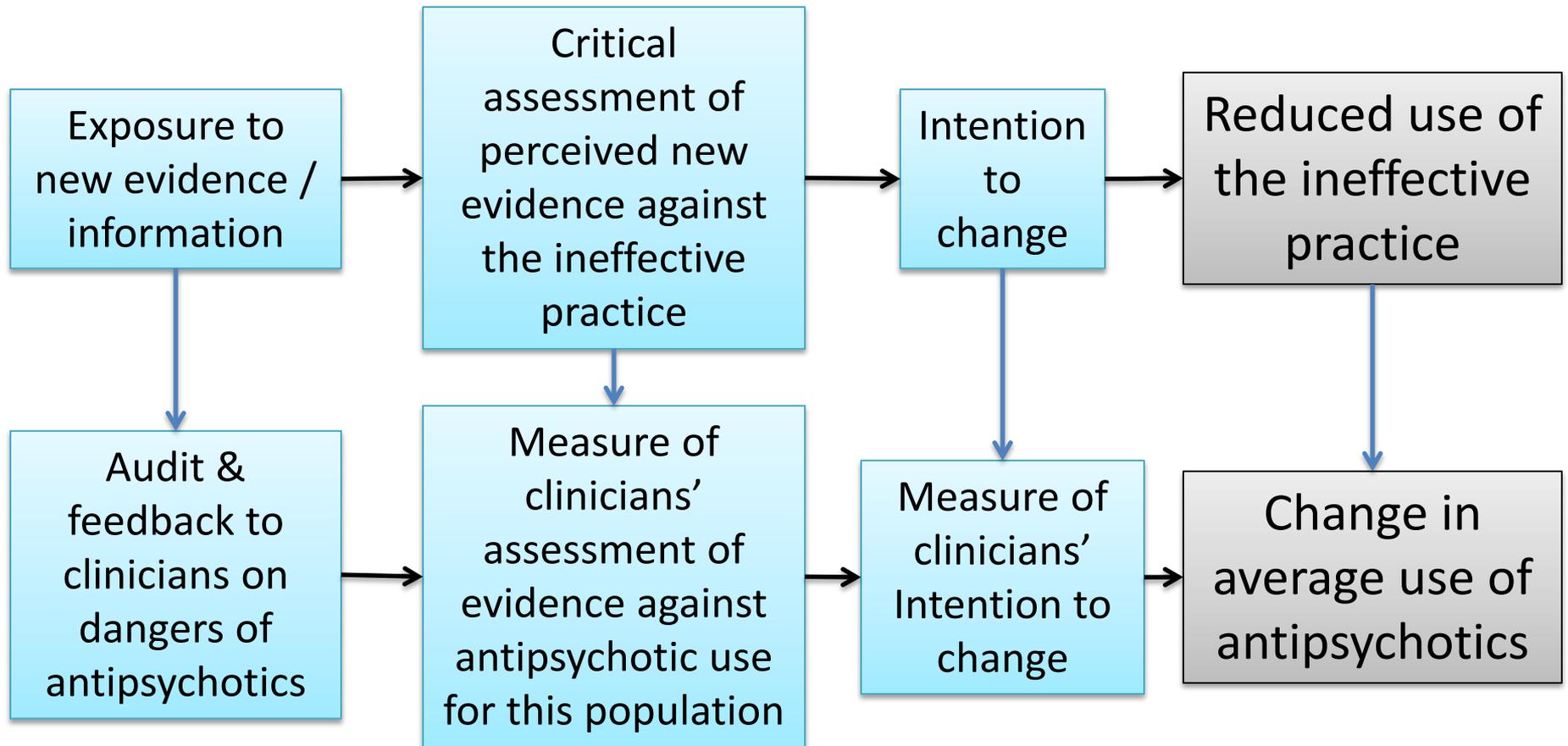
# A planned-action model of clinician-level de-implementation

- Planned action model intended to help engineer change (Graham, Tetroe et al. 2007)
- In contrast w/ descriptive or classical model, e.g., Rogers' diffusion theory, which describes how change occurs
- Provider level, addressing way de-implementation could occur with the provider

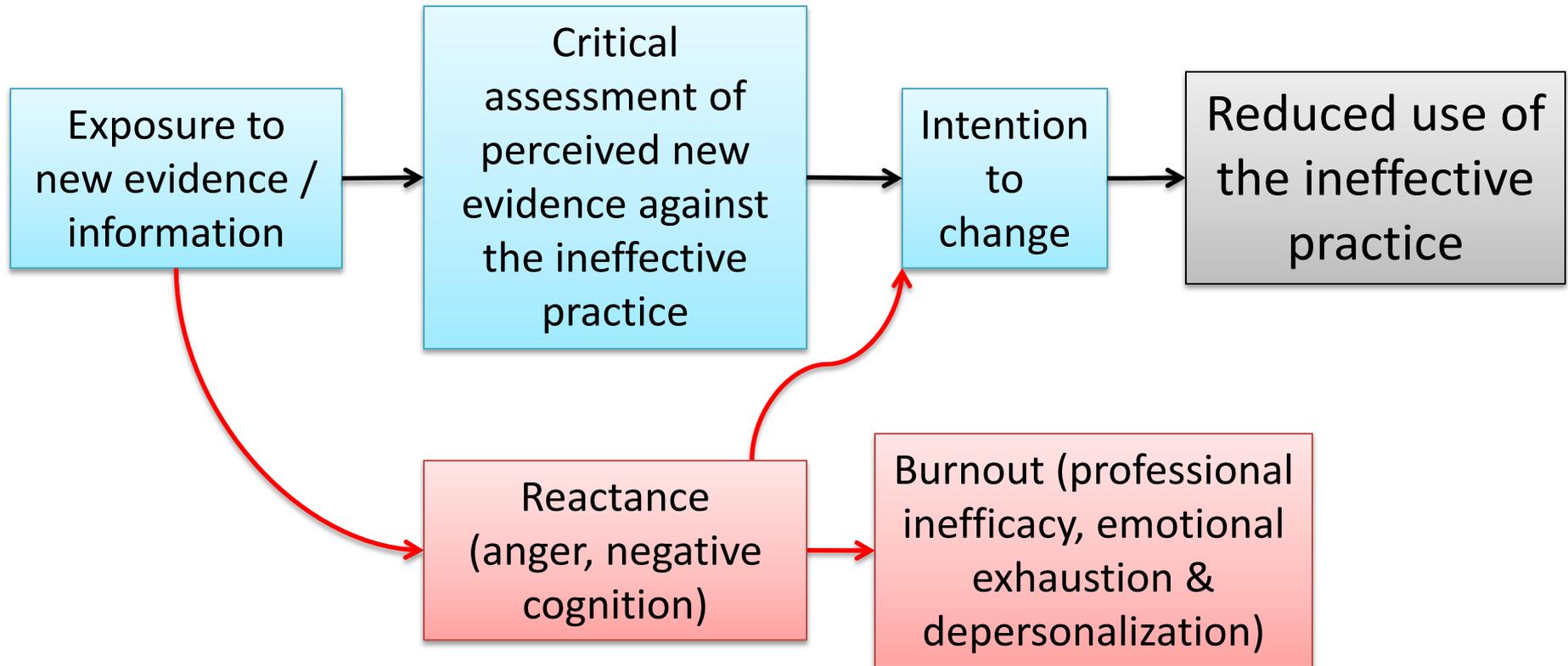
# Unlearning process based on reflective cognition



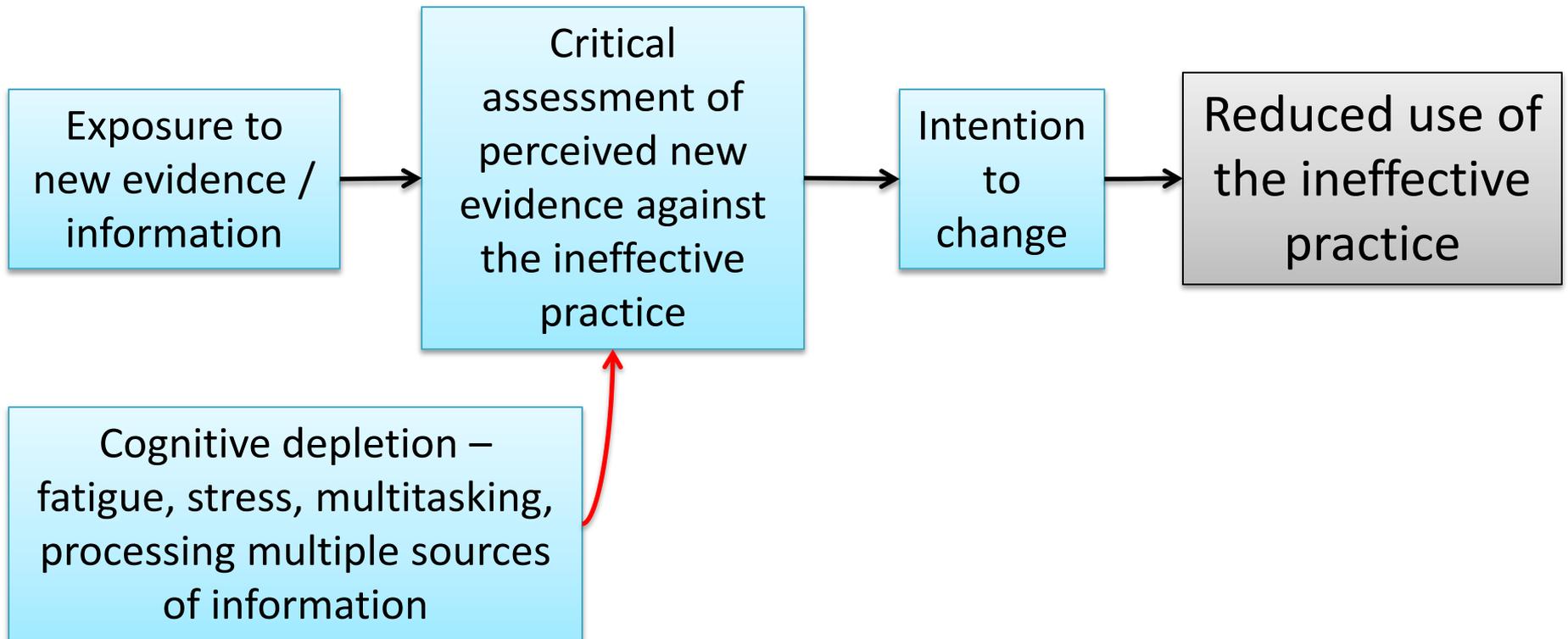
# Example of audit and feedback to reduce use of antipsychotics in nursing homes



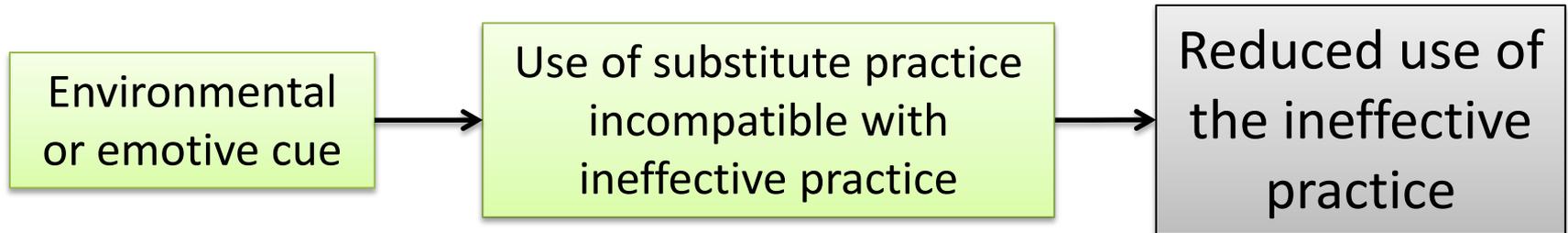
# Potential unintended consequences



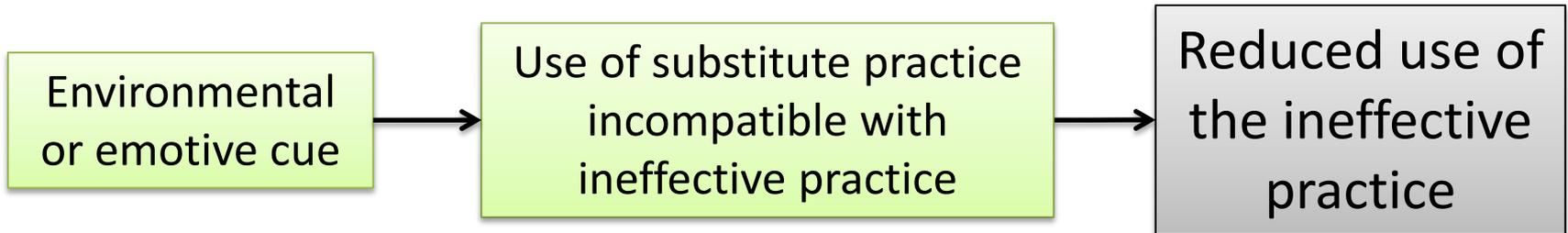
# Unlearning is difficult under some conditions



# Substitution process based on automatic cognition



# Example of DICE program to reduce use of antipsychotics in nursing homes



# The DICE Approach

Describe

Investigate

Create

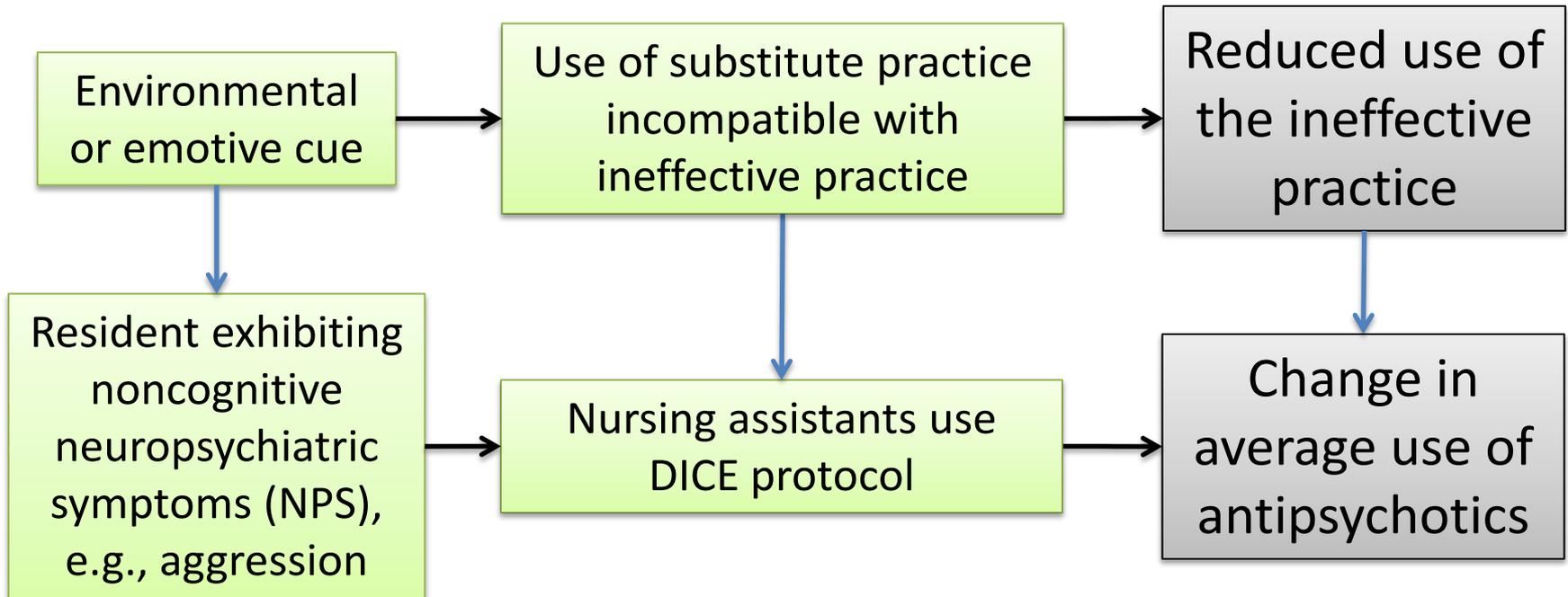
Evaluate

- Caregiver **describes** problematic behavior
  - Context (who, what, when and where)
  - Social and physical environment
  - Patient perspective
  - Degree of distress to patient and caregiver
- Provider **investigates** possible causes of problem behavior
  - Patient
    - Medication side effects
    - Pain
    - Functional limitations
    - Medical conditions
    - Psychiatric comorbidity
    - Severity of cognitive impairment, executive dysfunction
    - Poor sleep hygiene
    - Sensory changes
    - Fear, sense of loss of control, boredom
  - Caregiver effects/expectations
  - Social and physical environment
  - Cultural factors
- Provider, caregiver and team **collaborate to create** and implement treatment plan
  - Respond to physical problems
  - Strategize behavioral interventions
    - Providing caregiver education and support
    - Enhancing communication with the patient
    - Creating meaningful activities for the patient
    - Simplifying tasks
    - Ensuring the environment is safe
    - Increasing or decreasing stimulation in the environment
- Provider **evaluates** whether “CREATE” interventions have been implemented by caregiver and are safe and effective

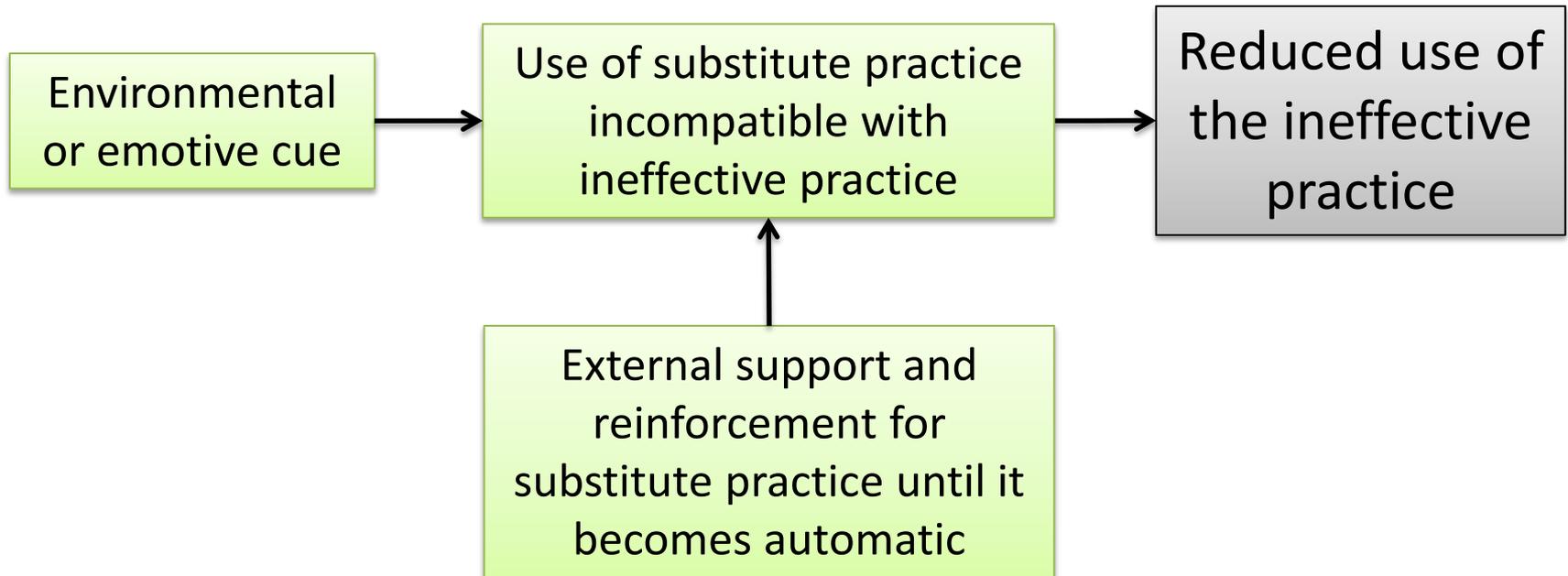


Consideration of Psychotropic Use (Acuity/Safety)

# Example of DICE program to reduce use of antipsychotics in nursing homes



# Challenge with substitution process



# A de-implementation strategy could incorporate both unlearning & substitution

- Reducing use of inhaled corticosteroids (ICS) for treating exacerbations among patients with chronic obstructive pulmonary disease (COPD)
- Pulmonologist enters unsigned order into the electronic medical record to transition patient off of ICS
  - The primary care provider only has to sign the order to initiate de-implementation (substitution)
  - The unsigned order includes information on the rationale (unlearning)

# Implications of the model

- Designing de-implementation strategies taking into account what kind of cognitive process they assume
  - For unlearning: Are clinicians in a setting where they can engage reflective cognition? How can unlearning be structured to minimize reactance?
  - For substitution: How will clinicians learn a substitute practice? What are the environmental or emotive cues that will trigger a substitute practice?
- Anticipating and assessing potential for unintended consequences

# Limitations: Everything that's not in the model (Morgan et al 2015)

Extrinsic	Intrinsic
Provider driven	
Belief more care is better Poor knowledge of patient preference Use of therapeutics off label	Financial—provider and hospital Defensive medicine Medical culture
Patient driven	
Lack of knowledge of harm from overuse Belief more care is better Discomfort with uncertainty	Financial—3 <sup>rd</sup> party payment shields costs Media misrepresentation of research Advocacy groups

# Limitations: Wide range of other relevant literature we haven't covered

- Observational work by Ian Graham and colleagues on the natural history of de-implementation of practices, such as episiotomies
- Conceptual work by Michael Parchman and colleagues on systematic de-implementation
- Experimental work
  - Leti van Bodegom-Vos and colleagues to de-implement expensive blood saving measures in hip and knee arthroplasties
  - David Aron and colleagues to reduce inappropriately tight glycemic control in patients with diabetes

# Next steps

- Conducting 3 de-implementation projects and collecting data to assess the model
- Mixed methods evaluation to test and add to the model
- Work with colleagues to refine and add to the model

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**THANK YOU**

# References

- Berenson, R.A. and Docteur, E., 2013. Doing better by doing less: approaches to tackle overuse of services. *Timely Analysis of Immediate Policy Issues* (RWJF/Urban Institute).
- Davidoff, F., 2015. On the undiffusion of established practices. *JAMA internal medicine*, 175(5), pp.809-811.
- Eccles, M.P., Foy, R., Sales, A., Wensing, M. and Mittman, B., 2012. Implementation Science six years on—our evolving scope and common reasons for rejection without review. *Implementation Science*, 7(1), p.1.
- Einstein, G.O., McDaniel, M.A., Williford, C.L., Pagan, J.L. and Dismukes, R., 2003. Forgetting of intentions in demanding situations is rapid. *Journal of Experimental Psychology: Applied*, 9(3), p.147.
- Evans, J.S.B., 2008. Dual-processing accounts of reasoning, judgment, and social cognition. *Annu. Rev. Psychol.*, 59, pp.255-278.
- Feldman, D.N., Swaminathan, R.V., Kaltenbach, L.A., Baklanov, D.V., Kim, L.K., Wong, S.C., Minutello, R.M., Messenger, J.C., Moussa, I., Garratt, K.N. and Piana, R.N., 2013. Adoption of radial access and comparison of outcomes to femoral access in percutaneous coronary intervention an updated report from the National Cardiovascular Data Registry (2007–2012). *Circulation*, 127(23), pp.2295-2306.
- Graham, I.D. and Tetroe, J., 2007. Some theoretical underpinnings of knowledge translation. *Academic Emergency Medicine*, 14(11), pp.936-941.
- Hagger, M.S., Wood, C., Stiff, C. and Chatzisarantis, N.L., 2010. Ego depletion and the strength model of self-control: a meta-analysis. *Psychological bulletin*, 136(4), p.495.
- Kahneman, D., 2003. Maps of bounded rationality: Psychology for behavioral economics. *The American economic review*, 93(5), pp.1449-1475.

# References

- Kahneman, D., 2011. Thinking, fast and slow.
- Kale, M.S., Bishop, T.F., Federman, A.D. and Keyhani, S., 2013. Trends in the overuse of ambulatory health care services in the United States. *JAMA internal medicine*, 173(2), pp.142-148.
- Kales HC, Gitlin LN, Lyketsos CG. Management of neuropsychiatric symptoms of dementia in clinical settings: recommendations from a multidisciplinary expert panel. *Journal of the American Geriatrics Society*. 2014 Apr 1;62(4):762-9.
- Massatti RR: The de-adoption of innovative mental health practices (IMHP): why organizations choose not to sustain an IMHP. *Adm Policy Ment Health*. 2008, 35 (1-2): 50-65. 10.1007/s10488-007-0141-z.
- Morgan, D.J., Brownlee, S., Leppin, A.L., Kressin, N., Dhruva, S.S., Levin, L., Landon, B.E., Zezza, M.A., Schmidt, H., Saini, V. and Elshaug, A.G., 2015. Setting a research agenda for medical overuse. *BMJ: British Medical Journal*, 351.
- Niven, D.J., Mrklas, K.J., Holodinsky, J.K., Straus, S.E., Hemmelgarn, B.R., Jeffs, L.P. and Stelfox, H.T., 2015. Towards understanding the de-adoption of low-value clinical practices: a scoping review. *BMC medicine*, 13(1), p.1.
- Prasad, V. and Ioannidis, J.P., 2014. Evidence-based de-implementation for contradicted, unproven, and aspiring healthcare practices. *Implementation Science*, 9(1), p.1.
- Presseau, J., Johnston, M., Heponiemi, T., Elovainio, M., Francis, J.J., Eccles, M.P., Steen, N., Hrisos, S., Stamp, E., Grimshaw, J.M. and Hawthorne, G., 2014. Reflective and automatic processes in health care professional behaviour: a dual process model tested across multiple behaviours. *Annals of Behavioral Medicine*, 48(3), pp.347-358.
- Sirovich, B.E., Woloshin, S. and Schwartz, L.M., 2011. Too little? too much? primary care physicians' views on US health care: a brief report. *Archives of internal medicine*, 171(17), pp.1582-1585.
- Van Achterberg, T., Schoonhoven, L. and Grol, R., 2008. Nursing implementation science: how evidence-based nursing requires evidence-based implementation. *Journal of nursing scholarship*, 40(4), pp.302-310.

# Some evidence that both cognition types involved in provider behavior

- Reflective and automatic cognitions characterize clinicians' management of type 2 diabetes: blood pressure prescribing; prescribing for glycemic control; providing diabetes-related education; providing self-management advice; and examining patients' feet (Presseau, Johnston et al. 2014)