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# Integrating Quality Improvement and Implementation Science A Practical Introduction

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# Our unifying goal: Changing systems

- Every system is perfectly designed to achieve the outcomes it gets
- All improvement is change... but not all change is improvement



*How do we bring about sustainable improvements to the systems we work in ?*

# Achieving system change: Key ingredients



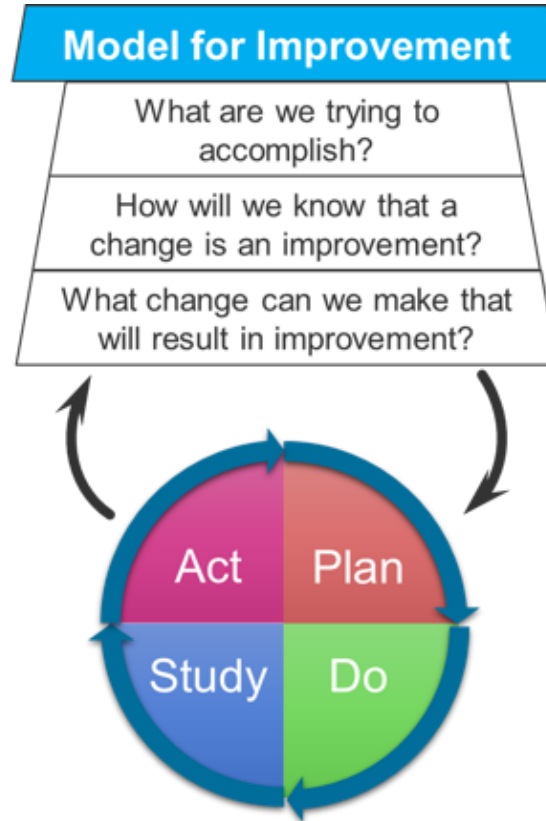
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# QI as a process for effective interventions



# Three QI Questions from the Model for Improvement

Question	Key Component
What are we trying to accomplish ?	Improvement goal
How will we know a change is an improvement ?	Improvement measures
What change can we make that will result in improvement ?	Improvement theory



# Improvement Measures

## OUTCOME MEASURES

Reflect the impact on a patient and demonstrate the end result of doing things. This measure should directly link to and “prove” if your overall aim has been achieved. Examples are mortality, hospital acquired infection or falls rates.

## PROCESS MEASURES

Reflect the things that you do (processes) and how systems are operating. They show how well you are delivering a change that you want to make. Examples are % of hand-

## BALANCING MEASURES

Measure whether unintended consequences have been introduced elsewhere in the system. E.g. A balancing measure is readmission rates when measuring length of stay as an outcome. Knowing potential risks as a consequence of change will help you determine what needs to be measured

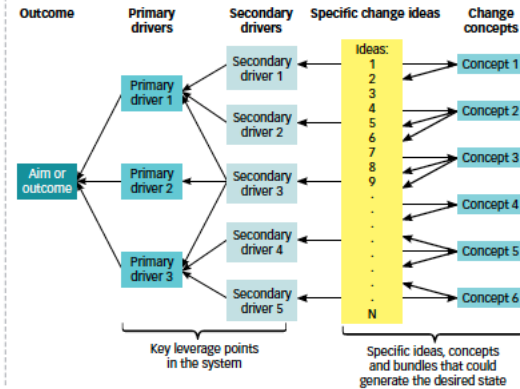
# Improvement Theory

## What's **YOUR** Theory?

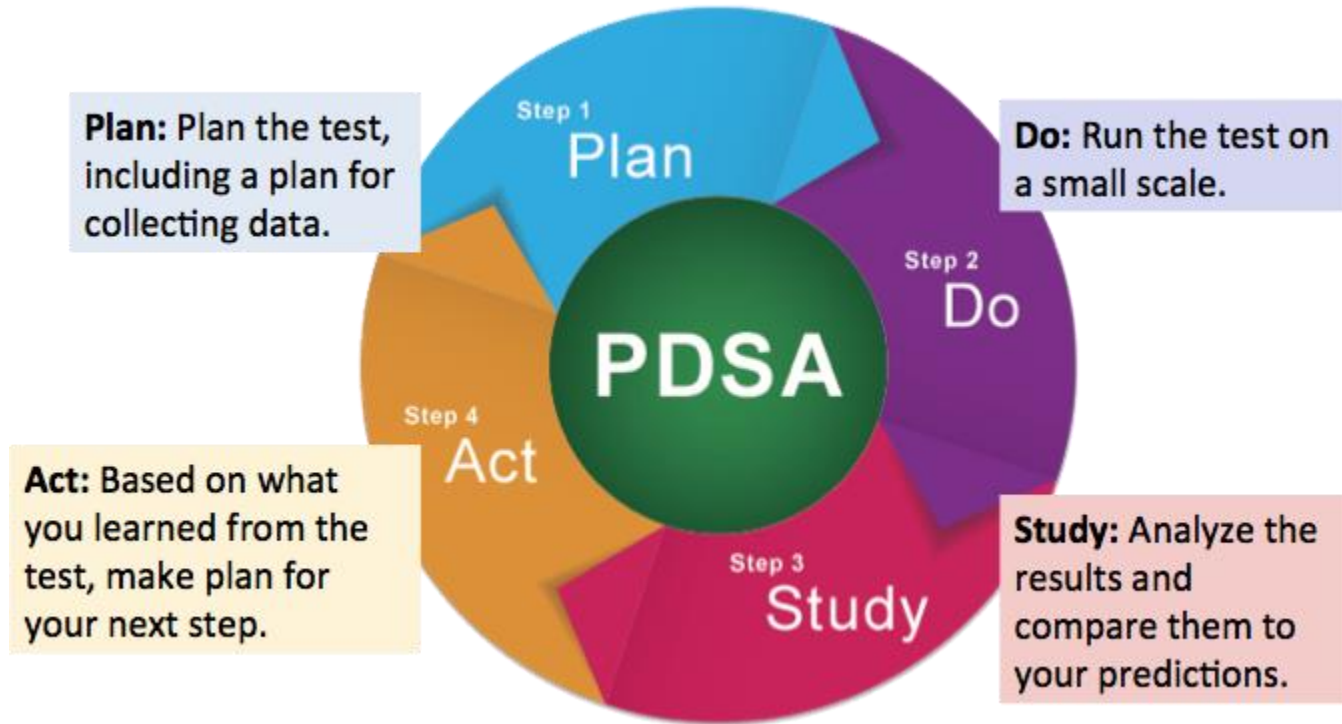
Driver diagram serves as tool for **building and testing** theories for improvement

by Brandon Bennett and Lloyd Provost

**Conceptual view of a driver diagram** / FIGURE 2



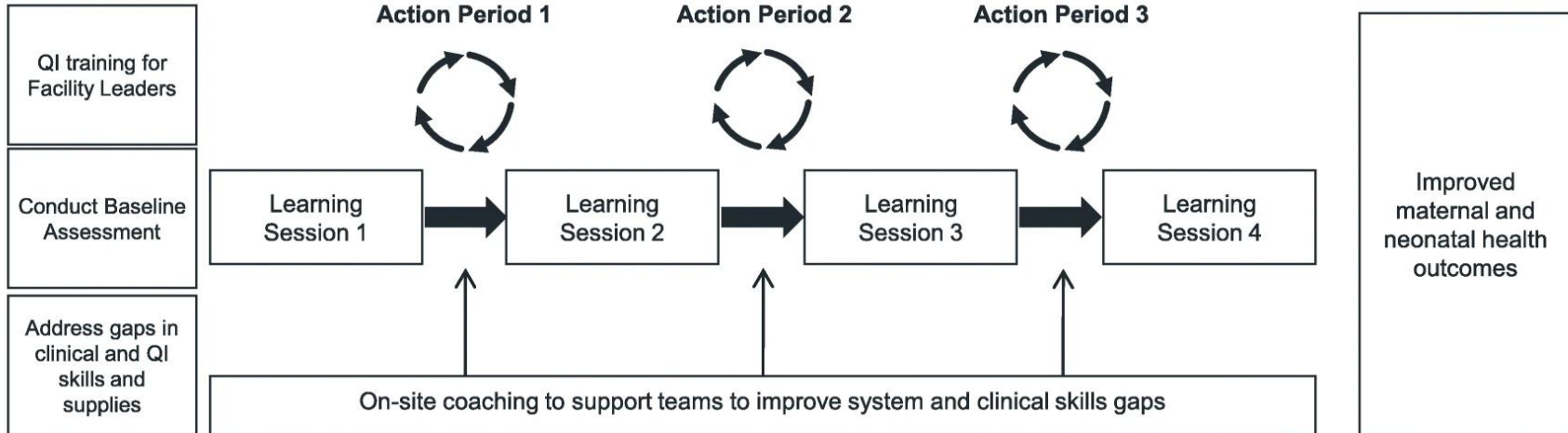
# Generating and testing solutions





# Using QI Methods in MCH: Ethiopia Example

**18-month Prototype Learning Collaboratives**  
Implementation in 4 woredas (districts)



Improved Processes

# Reflection Exercise – Part 1

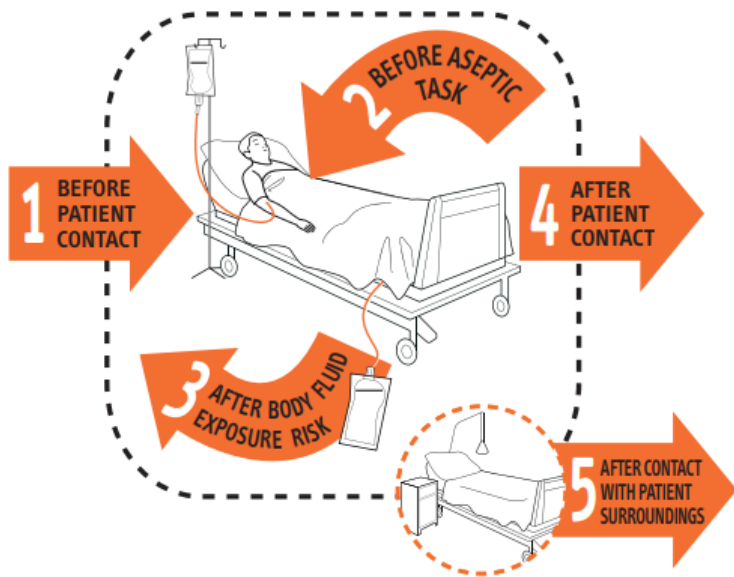
During the Covid-19 pandemic, you are working in a large chain store. There is a need to develop a **hand hygiene policy** for staff in the store to help prevent infection.

You are part of a QI team that has been tasked with using the Model for Improvement to ***develop a store hand hygiene using the theory of WHO's "5 Moments for Hand Hygiene" as a guide***



# 5 Moments for Hand Hygiene – Improvement Theory

## Your 5 moments for HAND HYGIENE



# Applying the MFI to Hand Hygiene

Question	Answer
What is the improvement goal ?	
What is an outcome and process measure?	
What is the improvement theory based on adapting the WHO guidelines for a grocery store?	



# Implementing change solutions: IS and the Model for Implementation

## Part 2

# Achieving system change: Key ingredients



What happens if  
we don't have  
implementation ?



# Surgical Safety Checklist: Ontario Study

## Introduction of Surgical Safety Checklists in Ontario, Canada

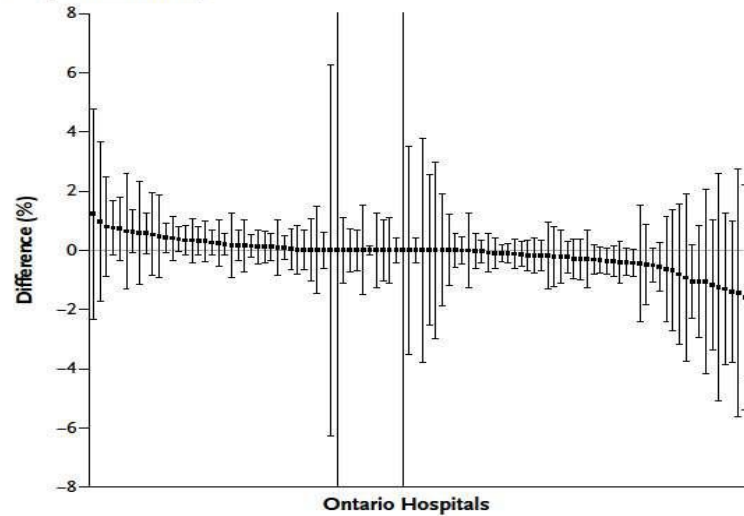
David R. Urbach, M.D., Anand Govindarajan, M.D., Refik Saskin, M.Sc.,  
Andrew S. Wilton, M.Sc., and Nancy N. Baxter, M.D., Ph.D.

### RESULTS

During 3-month periods before and after adoption of a surgical safety checklist, a total of 101 hospitals performed 109,341 and 106,370 procedures, respectively. The adjusted risk of death during a hospital stay or within 30 days after surgery was 0.71% (95% confidence interval [CI], 0.66 to 0.76) before implementation of a surgical checklist and 0.65% (95% CI, 0.60 to 0.70) afterward (odds ratio, 0.91; 95% CI, 0.80 to 1.03;  $P=0.13$ ). The adjusted risk of surgical complications was 3.86% (95% CI, 3.76 to 3.96) before implementation and 3.82% (95% CI, 3.71 to 3.92) afterward (odds ratio, 0.97; 95% CI, 0.90 to 1.03;  $P=0.29$ ).

# Results

## A Operative Mortality



Source: Urbach DR, Govindarajan A, Saskin R, Wilton AS, Baxter NN. Introduction of surgical safety checklists in Ontario, Canada. *N Engl J Med.* 2014 Mar 13;370(11):1029-38. doi: 10.1056/NEJMs1308261. PMID: 24620866.



# Reactions

*“We hope that these findings from Ontario will lead to greater attention not just to the intervention but also to the implementation process”*

*“The authors neither evaluated the validity of reported claims of checklist use nor collected process measures to assess trends in compliance with known standards of care, even though the difference between reported compliance and actual adherence can frequently be vastly divergent.”*

*“The diligence with which the checklist is developed and applied is critical to its effectiveness.”*

# From *Knowing* to *Doing*

*“When it comes to implementation, what is worth doing is worth doing well.”*

*Joseph Durlak*



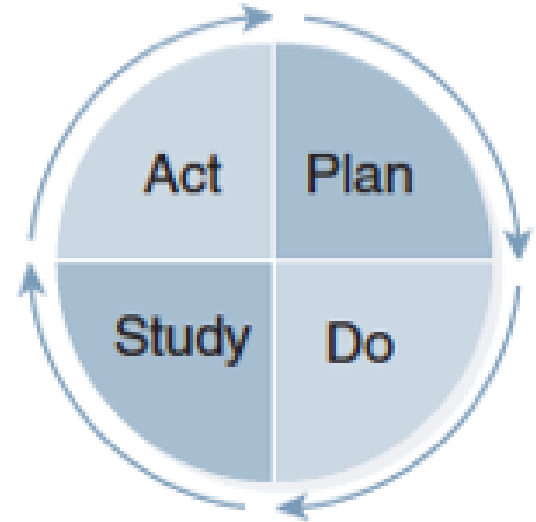
**Effective Implementation**

# Implementing solutions: The Model for Implementation

What implementation goals are we trying to accomplish ?

How do we know we have accomplished them ?

What strategies are needed to achieve the implementation goals ?



# Three Implementation Questions

Question	Key Component
What implementation goals are we trying to accomplish ?	Implementation goal
How do we know we have accomplished them ?	Implementation measures
What strategies are needed to achieve the implementation goals ?	Implementation theory



# Implementation goals (“outcomes”)

Implementation goals are the results of implementation activities

Implementation goals are pre-conditions for achieving the desired results from the solutions

# Common implementation goals

<b>Acceptability</b>	Do stakeholders find the change solution agreeable / satisfactory?
<b>Feasibility</b>	Is the solution feasible to implement given resources?
<b>Adoption</b>	Are the organization/recipients using the change solution?
<b>Fidelity</b>	Is the solution being implemented as intended?
<b>Penetration</b>	Is the solution reaching all those targeted?

# Factors (“determinants”) affecting implementation goals



<b>Environmental factors</b>	Policy factors, incentives, competing priorities
<b>Organizational factors</b>	Change tolerance, organizational culture, staffing and resources
<b>Provider factors</b>	Knowledge, confidence, motivation, timing
<b>Recipient factors</b>	Knowledge, belief, access, resources

# Implementation Measures

## OUTCOME MEASURES

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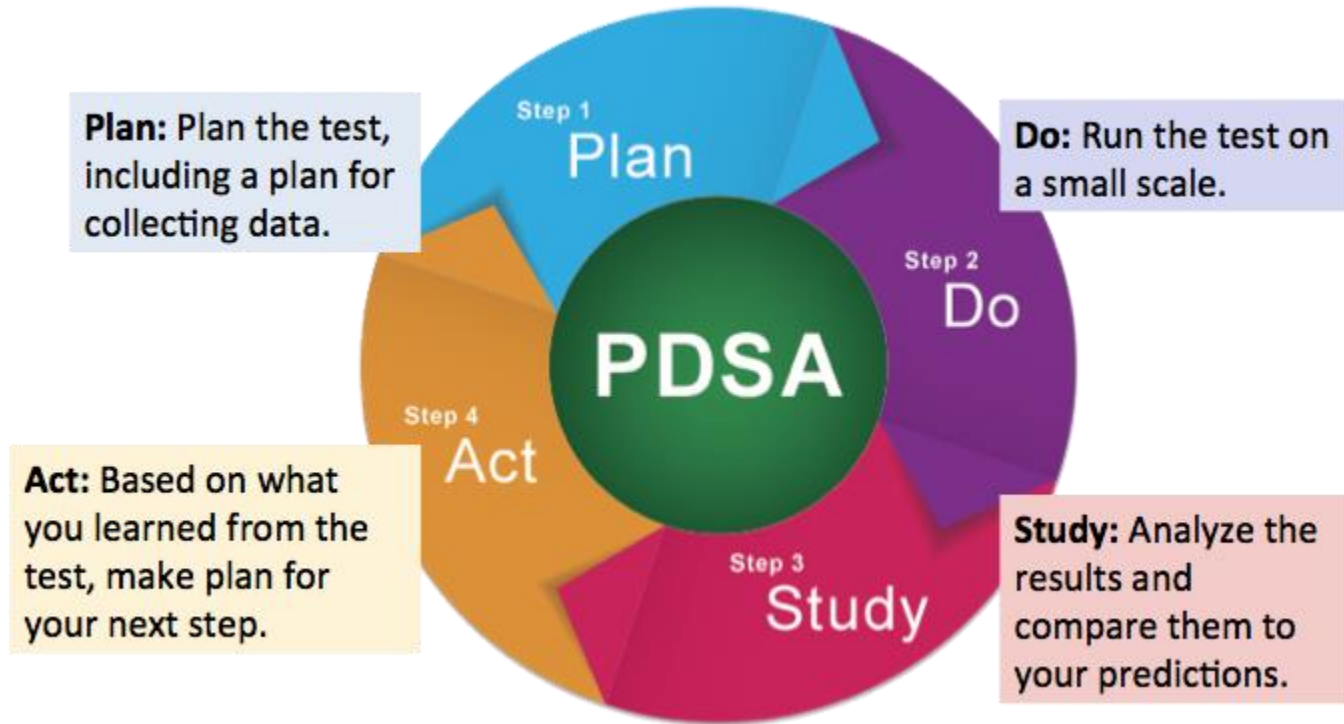
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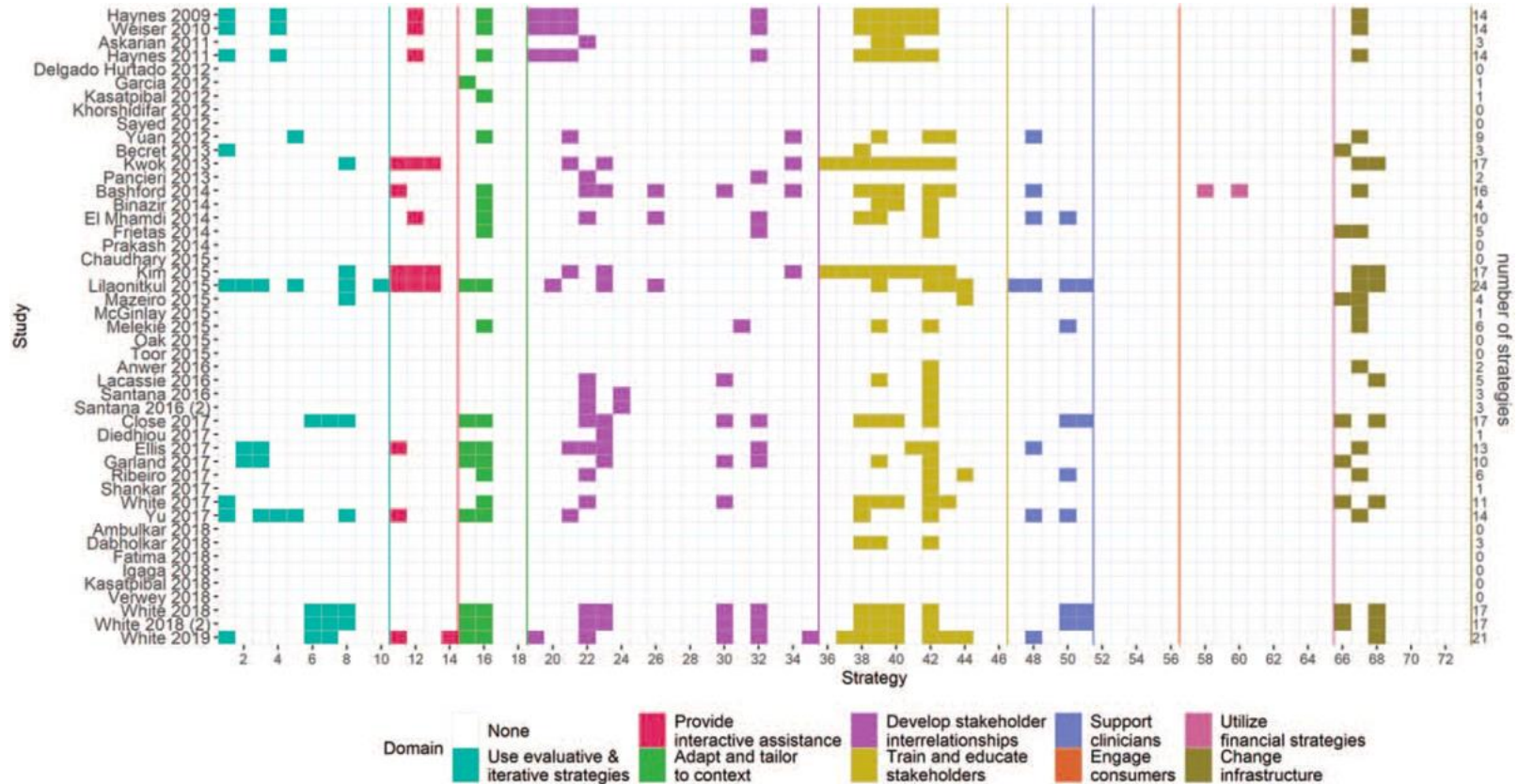
# Implementation strategies based on Implementation theories

Potential barrier	Strategy
Community knowledge	Community outreach, communication sessions
Beliefs and preconceptions	Community engagement, opinion leaders
Patient resources	Community volunteers, community collective funds
Provider confidence	Coaching, supportive supervision, team delivery
Provider motivation	Incentives, supportive supervision, audit and feedback
Leadership support	Communication plan, leadership roles, incentives
Change tolerance	Implementation plan, milestones, collaborative processes
Staffing and resources	Sustainability planning, advocacy
Competing priorities	Process simplification, advocacy

# Generating and testing implementation strategies



# Implementation Strategies for the Surgical Safety Checklist



White, Michelle C. MB, ChB<sup>\*,†</sup>; Peven, Kimberly MPH<sup>‡</sup>; Clancy, Olivia MB, ChB<sup>†</sup>; Okonkwo, Ijeoma BM, BS<sup>†</sup>; Bakolis, Ioannis PhD<sup>§,¶</sup>; Russ, Stephanie PhD<sup>§</sup>; Leather, Andrew J. M. MS<sup>‡</sup>; Sevdalis, Nick PhD<sup>§</sup> Implementation Strategies and the Uptake of the World Health Organization Surgical Safety Checklist in Low and Middle Income Countries, *Annals of Surgery*: June 2021 - Volume 273 - Issue 6 - p e196-e205 doi: 10.1097/SLA.0000000000003944

# Reflection Exercise – Part 2

**Change solution:** One of the change solutions has been to increase staff knowledge on how to wash or rub hands. Your team is using the Model for Implementation to **develop additional approaches to facilitate successful implementation.**



# Applying the Model for Implementation to Hand Hygiene

Question	Answer
What is an implementation goal ?	Acceptability, feasibility, adoption, fidelity
What is an implementation measure ?	
What is the implementation theory ?	
What are some implementation strategies?	



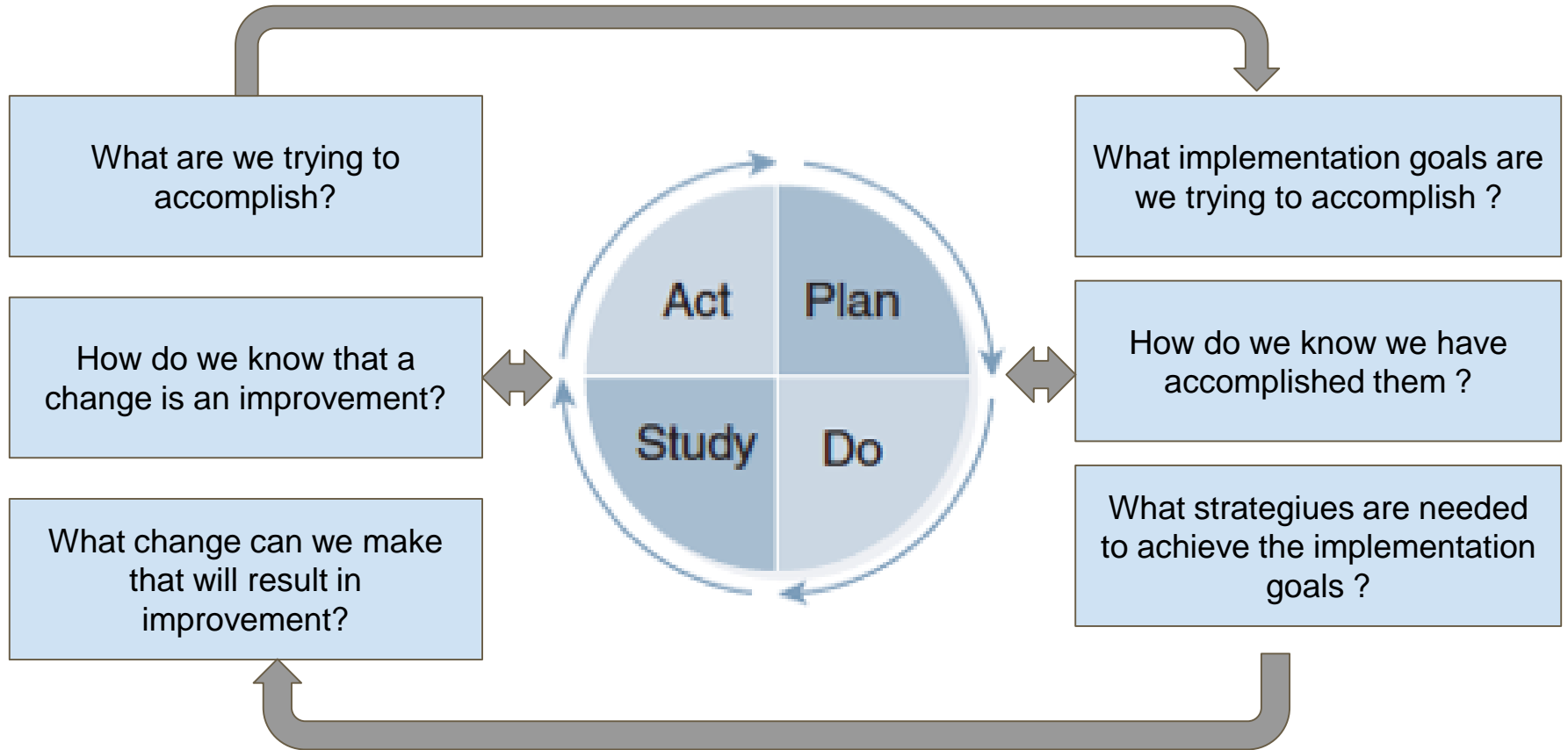
# Integrating improvement and implementation

*“An integration of systematic implementation with quality improvement approaches is likely to enhance the quality of healthcare delivery by increasing the ability of practitioners to improve as well as to implement well.”*

*Wandersman, Alia, Cook & Ramaswamy, 2017*



# The Model for Improvement and Implementation



**Questions?**