

# An Innovative Approach to Patient Safety: The Development and Spread a "Postoperative Wellness Model"

Fraser Health Research Café

February 26, 2008

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**University of British Columbia**



Better health.  
Best in health care.

# 1995 Interprofessional Cardiac Surgery Team



- Needed to provide timely access to care
  - Potential increase in work load
- Needed to be fiscally responsible
  - Potential to decrease quality of care
- Needed to decrease length of stay
  - Potential to compromise patient safety and decrease quality of care

## Expected Outcomes of the Rapid Recovery Program

- Maintain or improve quality by:
  - Reducing variation in care & treatment
- Contain or reduce costs by:
  - Decreasing length of stay
    - admit-day-of-surgery
    - transfer out of CSICU within 24 hours
    - discharge home within 4 days for CABG surgery
    - discharge home within 6 days for valve surgery
  - Decreasing routine diagnostic testing

# Developing the “Postoperative Wellness Model”



“Necessity is  
the mother of  
invention”

Greek Philosopher Plato



## Developing the “Postoperative Wellness Model”

- Implemented by an interprofessional team composed primarily of direct care providers
- Used theory to change practice
- Used evidence to sustain or evolve practice changes
- Used a customer service approach

# Developing the “Postoperative Wellness Model”

## Customer Service in Healthcare

- Patients want:
  - Safe care
  - Timely access
  - Appropriate length of stay
  - High quality standards of care
  - Appropriate care & treatment plans
  - Uncomplicated hospital stay
  - Avoid needing re-admission

# Developing the “Postoperative Wellness Model”

## Customer Service in Healthcare

- Hospitals want

- Safe practices

CMAJ (2004); 170:1678-1686 The Canadian adverse events study

- Appropriate wait times
- Timely discharge
- High quality standards of care
- Appropriate care & treatment plans
- Uncomplicated hospital stay

JAMA (2003); 290:1868-1874. Hospital Complications Estimated at \$9 Billion

- Avoid needing re-admission

# Developing the “Postoperative Wellness Model”

## Customer Service in Healthcare

- Ensuring access means that hospitals have to be able to provide care so that they can:
  - Get patients out
  - Keep patients out
- To be able to:
  - Get patients in

# Developing the “Postoperative Wellness Model”

## Customer Service in Healthcare

- Why do patients want to remain in hospital?
  - Don't feel well
    - Pain
    - Nausea/vomiting
    - Constipation
    - Difficulty mobilizing
  - Afraid they will not manage and need re-admission
  - Aware they may be a burden to family

# Developing the “Postoperative Wellness Model”

## Customer Service in Healthcare

- Reduce variation in practitioner practice because non-standardized processes and highly individualized care paths are expensive.
- Seek to create innovative systems that support patient safety and quality care.
  - Like the “Postoperative Wellness Model”

Whitcomb, J. E. , & Shafa, M. (Sept/Oct 2001). Treating patients like customers: Just-in-time inventory control for patient-centered care. *The Physician Executive*, 16-21



# What is the “Postoperative Wellness Model”

Developed in 1995 by Jocelyn Reimer-Kent, RN, MN

Fraser Health Cardiac Surgery Program

Clinical Nurse Specialist

Royal Columbian Hospital

New Westminster, BC, Canada

- Optimize perioperative care by preventing or minimizing anticipated postoperative problems:
  - Pain
  - Nausea/vomiting
  - Constipation
  - Immobility
  - Respiratory compromise
- Supports rapid recovery and return to baseline functioning

# Reaction-Based Routine Postoperative Care

- Many health care providers and patients themselves consider that “normal” recover from surgery will entail:
  - Pain
  - Nausea
  - Constipation
  - Impaired mobility
  - Respiratory compromise
- Treatment tends to be reaction-based and only given when the problem arises.
  - Exception is prevention of surgical site infection with antibiotic prophylaxis



## Meeting the Needs of Patients: The Problem with Reaction-Based Care

The Institute of Medicine (2001) outlined ten rules for change to guide the transition to a safer health system and one that would better meet the needs of patients.

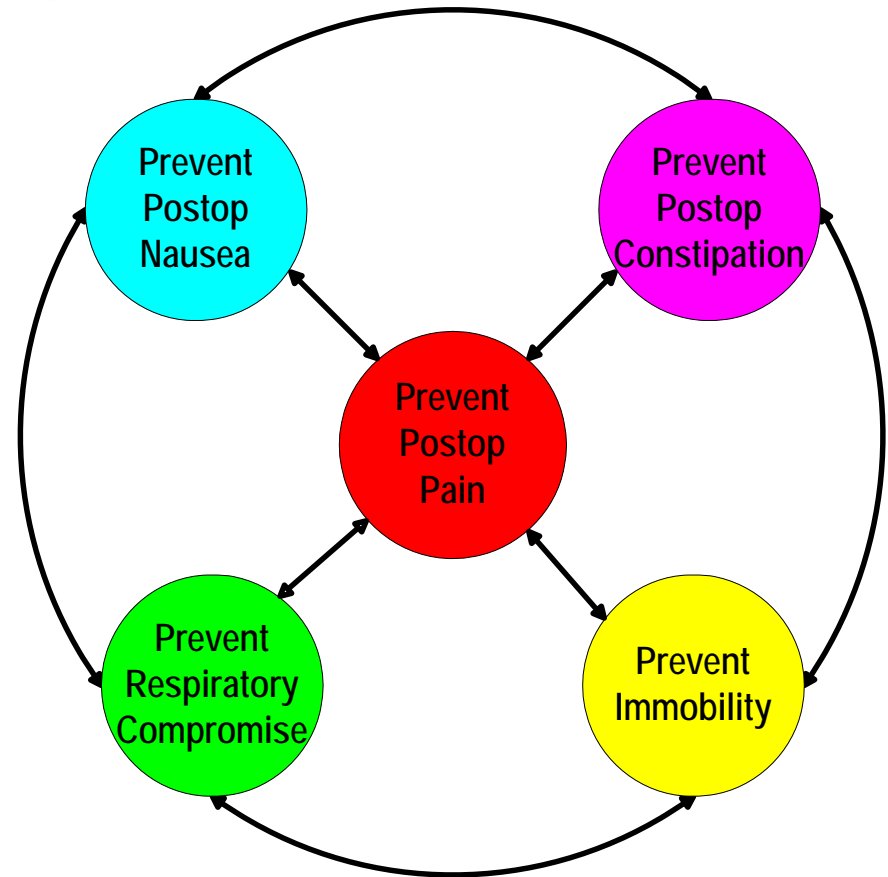
Rule 8 states

**“Patients’ needs should be, as much as possible, anticipated and not treated in a reactive manner”**

Institute of Medicine (2001). Crossing The Quality Chasm: A New Health System For The 21st Century, Washington, DC: National Academy Press

# Time to Re-think what is “Normal” Routine Postoperative Care

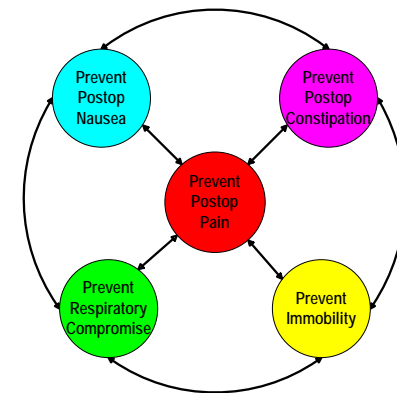
- To implement the model requires that a “bundle” of multimodal strategies be used and when implemented together, will result in better outcomes than when implemented individually
- The elements and recommendations in the bundle are supported with enough evidence that they have become the new standard of care



“Postoperative Wellness Model”  
Developed in 1995  
by Jocelyn Reimer-Kent, RN, MN

# “Postoperative Wellness Model”

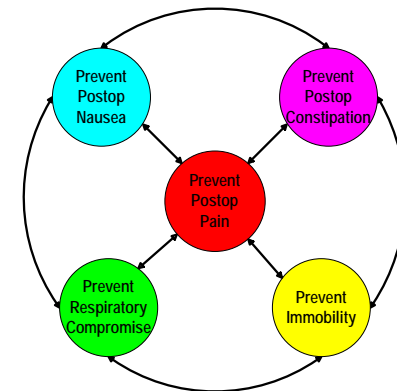
- Preventing pain in a manner that does not contribute to nausea and or constipation allows:
  - resumption of earlier feeding
  - ability to tolerate aggressive respiratory care
  - mobilization



Reimer-Kent, J. (2003). From theory to practice: Preventing pain after cardiac surgery. *American Journal of Critical Care*, 12 (2), 136-143

# “Postoperative Wellness Model”

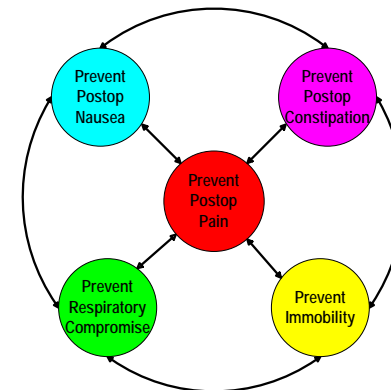
- Preventing nausea and constipation prevents pain associated with retching/straining and also allows:
  - resumption of earlier feeding
  - ability to tolerate aggressive respiratory care
  - mobilization



Reimer-Kent, J. (2003). From theory to practice: Preventing pain after cardiac surgery. *American Journal of Critical Care*, 12 (2), 136-143

# “Postoperative Wellness Model”

- Achieving and maintaining a state of wellbeing also has the potential to:
  - empower/engage patients/families to:
    - participate in self-care
    - achieve recovery goals
  - reduce hospital stay
  - reduce cost of care



Reimer-Kent, J. (2003). From theory to practice: Preventing pain after cardiac surgery. *American Journal of Critical Care*, 12 (2), 136-143

# Why Create a Model

- Provides practitioners with a framework to assess need, set goals, implement and evaluate care.

Nazarko, L. (2007). Care planning and documentation. *Nursing and Residential Care*. 9(7): 333-36.

- Promotes evidence-informed practices by helping to infuse research into practice.

Thomson, P., Angus, N. & Scott, J. (2000). Building a framework for getting evidence into critical care education and practice. *Intensive and Critical Care Nursing*. 16:164-74.

- Brings understanding to the all encompassing rationale for developing a pathway, instead of just believing it is merely a tool that increases efficiency and consistency.

Chiu, W. (2008). Compare and Contrast of Cardiac Surgery Clinical Pathways. Unpublished Report

# 1996

## First Rapid Recovery Patients



Patients & families quickly engaged in the process and the team was proud of the innovative approach taken to managing routine postoperative care

Care based on the  
“Postoperative  
Wellness Model” has  
been hypothesized to:

- ↓ Hospital stay
- ↓ Morbidity
- ↓ Cost of Care
- ↑ Access to care
- ↑ Quality of care
- ↑ Patient safety
- ↑ Patient satisfaction



Multidisciplinary Daily Rounds

Seated is an 89 year old cardiac surgery  
patient prior to his discharge on  
Post-Op Day Five

# Action Research Methods

- Actively collaborate with the interprofessional team and concurrently study and change the system so that it supports the “Postoperative Wellness Model”
- Theory has informed practice and practice has refined theory

# Preventing Pain

A patient's view of cardiac surgery when care was NOT based on the "Postoperative Wellness Model"

Dr. David Smith's comments published in the Medical Post - April 2003

- Don't sneeze, cough, laugh, become constipated or suffer from gas
- Although pain rating scale used, unfortunately, no standard for what rating would warrant much needed pain relief
  - Dr. Smith feels he "didn't always say the right thing"
    - "Forget that number crap, I need an analgesic, I'm two days postop, of course, I need pain relief!"

# Preventing Pain

A patient's view of cardiac surgery when Care was based on the "Postoperative Wellness Model"

Syd Hadden's comments published in the NewsLeader, February 2003

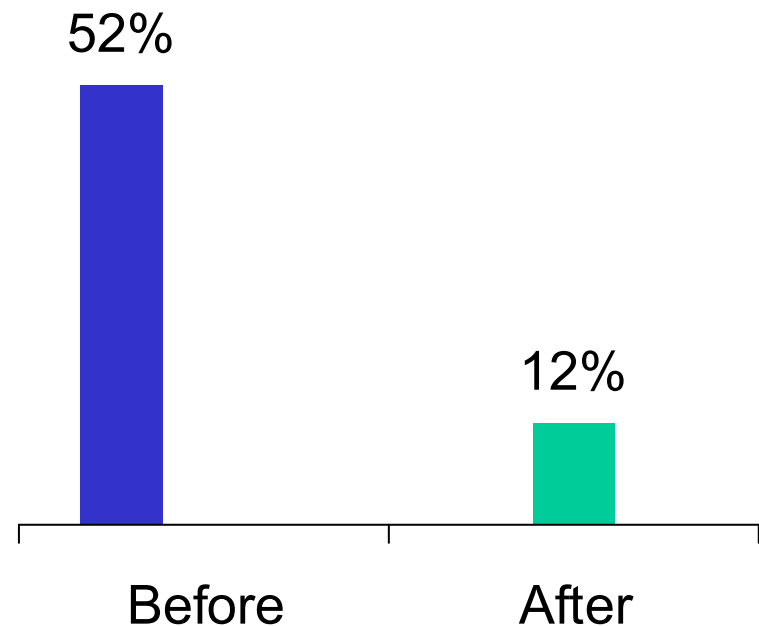


- "I thought I'd feel real lousy after the surgery, but I didn't,..."
- "Even though I have all this scarring here, I had no pain."
  - Despite a pre-existing lung condition that caused him to cough ++ after surgery

Weir, D. (Feb 28, 2003) Rapid road to recovery. New Westminster News Leader

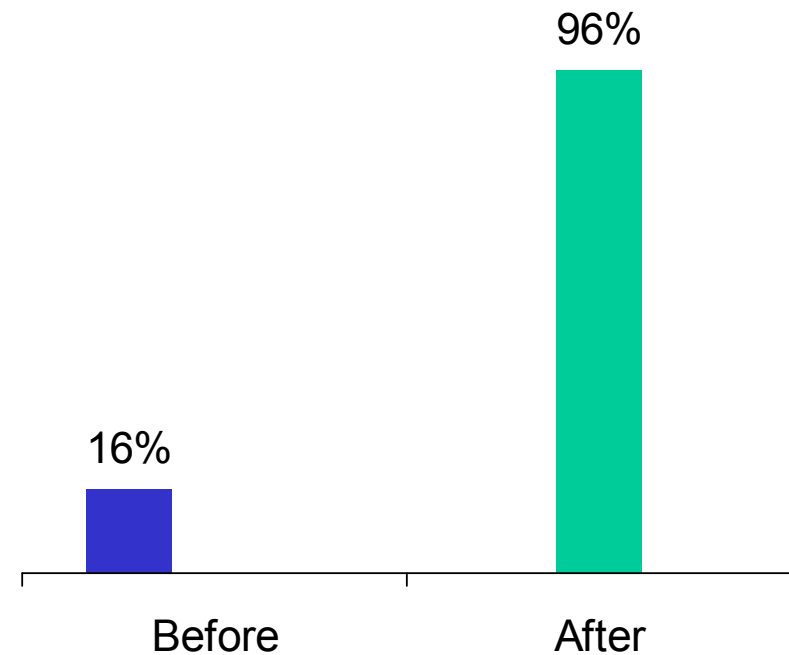
# Preventing Nausea

- % of patients experiencing nausea after cardiac surgery
  - Now the average time to ingesting a meal is 10 ½ hours



# Preventing Constipation

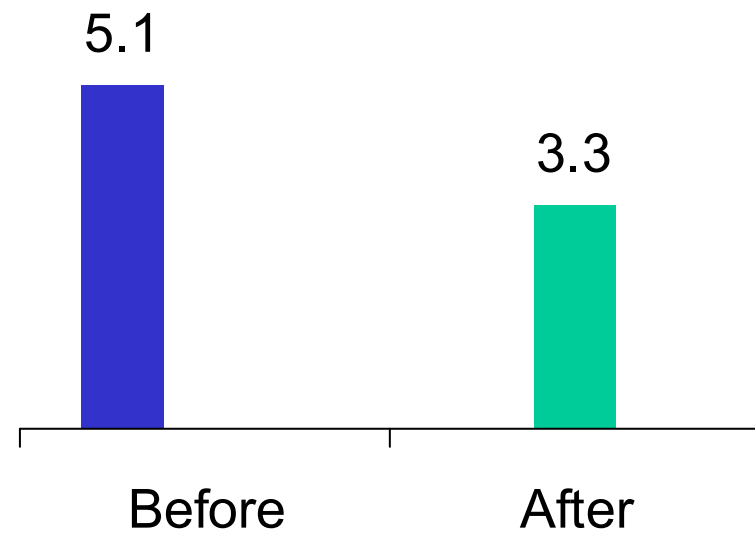
- % of patients having a BM within 3 days of cardiac surgery



# Preventing Immobility



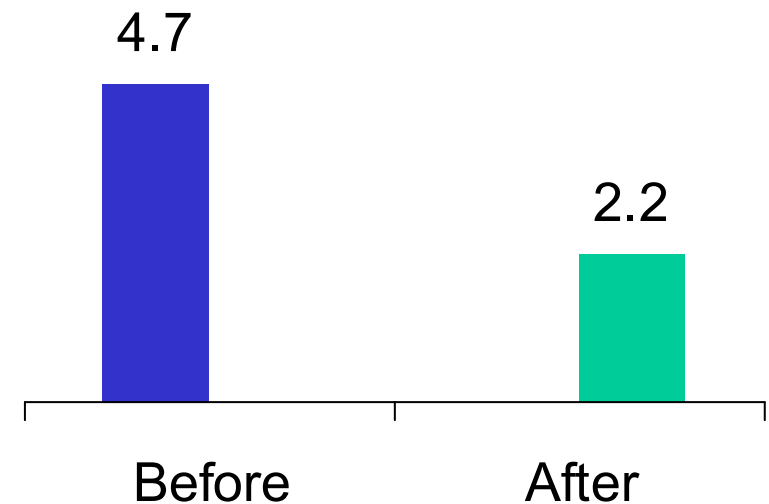
- Average time in days to climbing stairs after cardiac surgery



# Preventing Respiratory Compromise



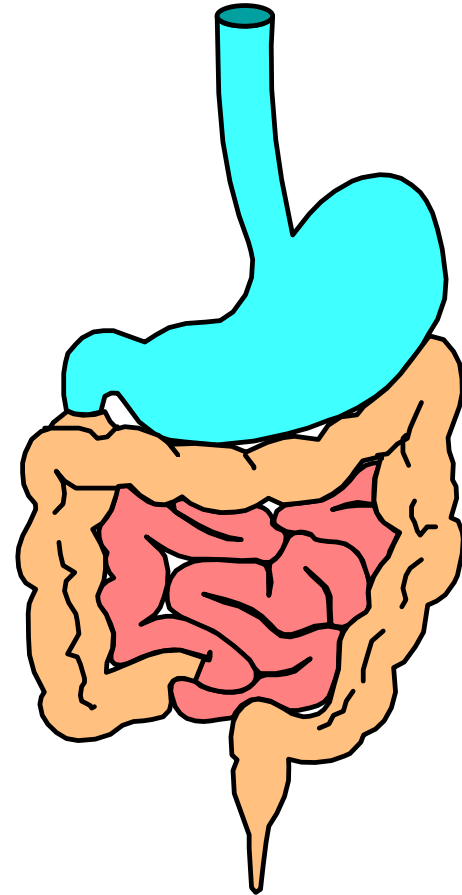
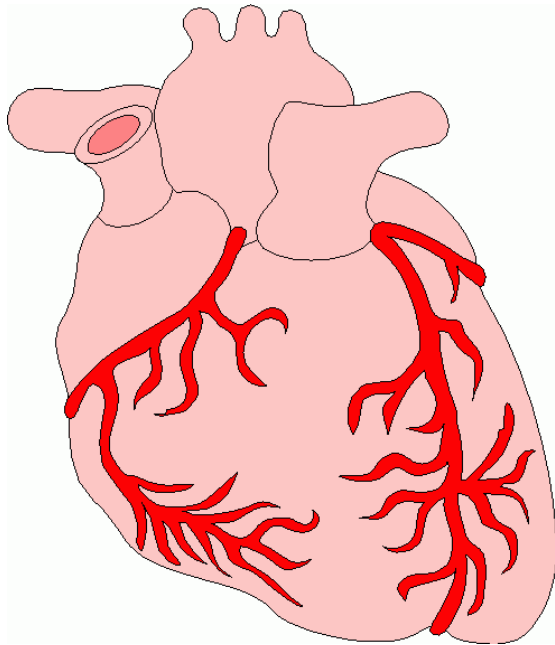
- Average time in days to being off O2 after cardiac surgery



# At Home Recovery After Cardiac Surgery

	1 week	6 weeks
Confident at discharge	80%	
Pleased with recovery		100%
Pain with coughing (0-10 scale)	2.8	1.3
Free of GI upset	85%	100%
Normal bowel function	90%	100%
Sleeping well	90%	94%
Exercising	84%	88%

# Spreading the “Postoperative Wellness Model” From Cardiac Surgery to General Surgery



When the Heart of the Matter meets the Guts of the Case

“Congruency and connectivity between the “Postoperative Wellness Model” and what Dr. Henrik Kehlet calls “Multimodal Strategies to Improve Surgical Outcome”

Dr. H Kehlet, Professor of surgery,  
Department of Surgical  
Gastroenterology, Hvidovre University  
Hospital, Denmark

# What is “Fast Track Surgery”

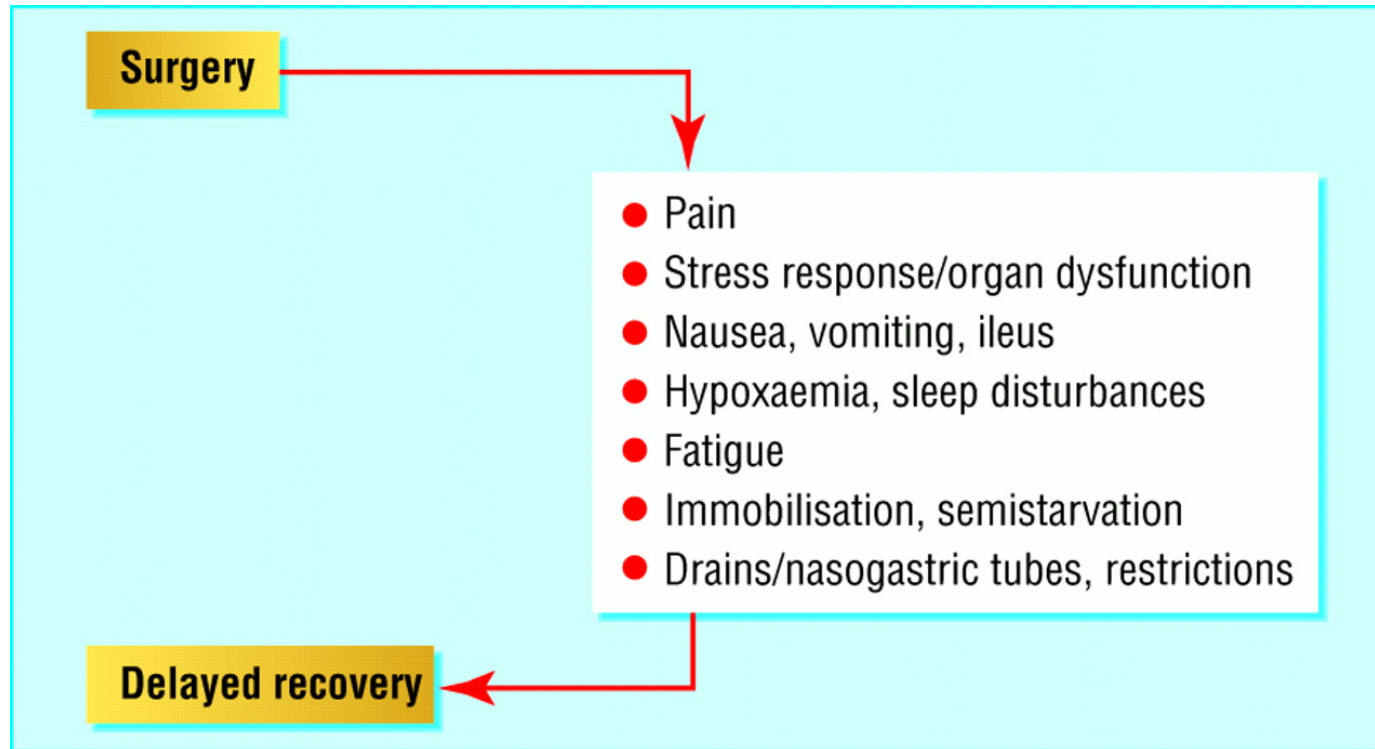
AKA Modern Concepts in Surgical Care or Multimodal Rehabilitation

Developed in 1997 by Dr. Henrik Kehlet

Department of Surgical Gastroenterology,  
Hvidovre University Hospital  
Copenhagen, Denmark

- Optimize perioperative care by reducing the expected stress response & known organ dysfunction associated with surgery
  - Shortens recovery time

# Conventional Postoperative Care with the Usual Anticipated Problems



BMJ

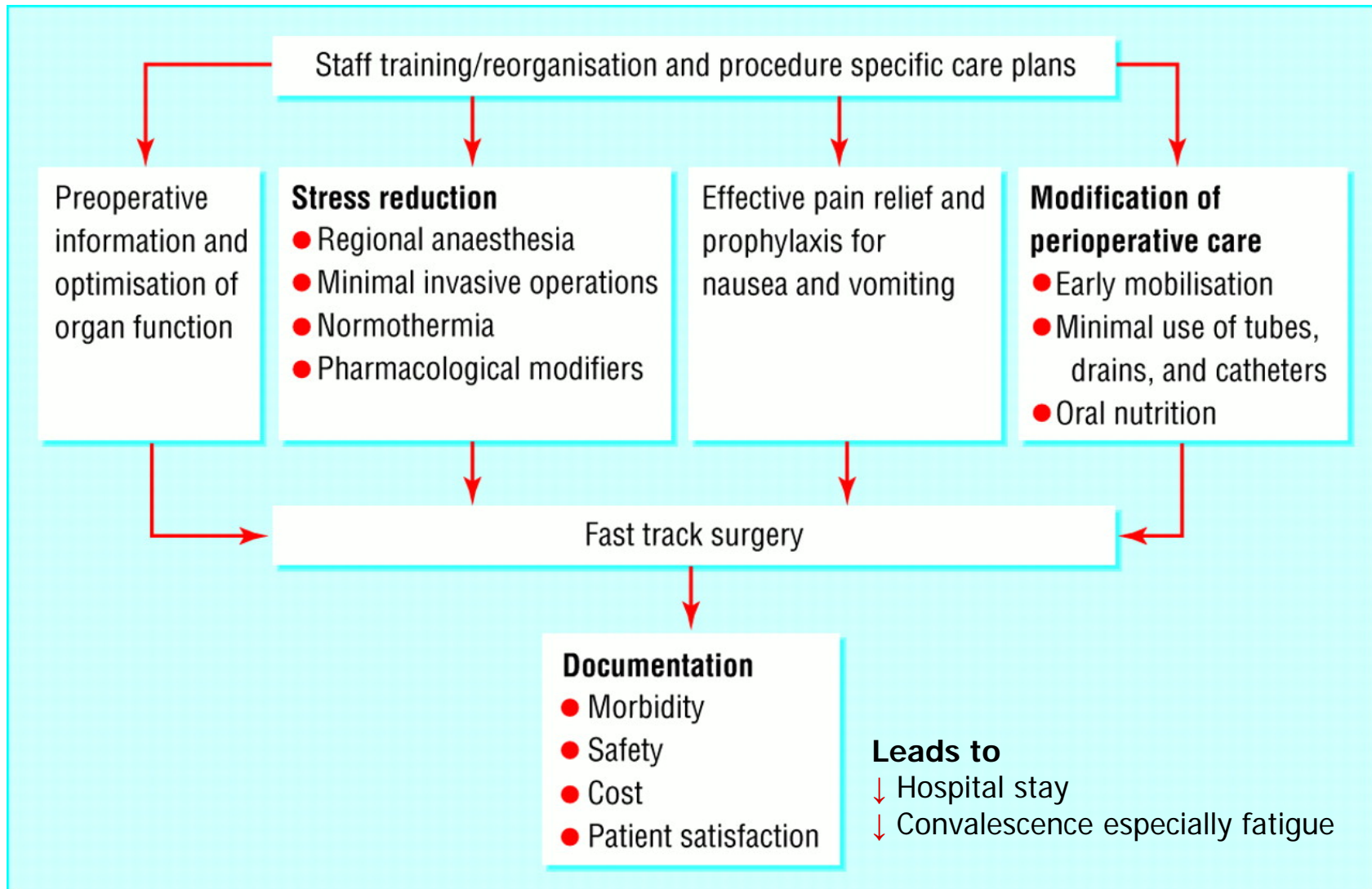
BMJ 2001;322:473-476

## Cascade to Dependency -- achieved by POD#3

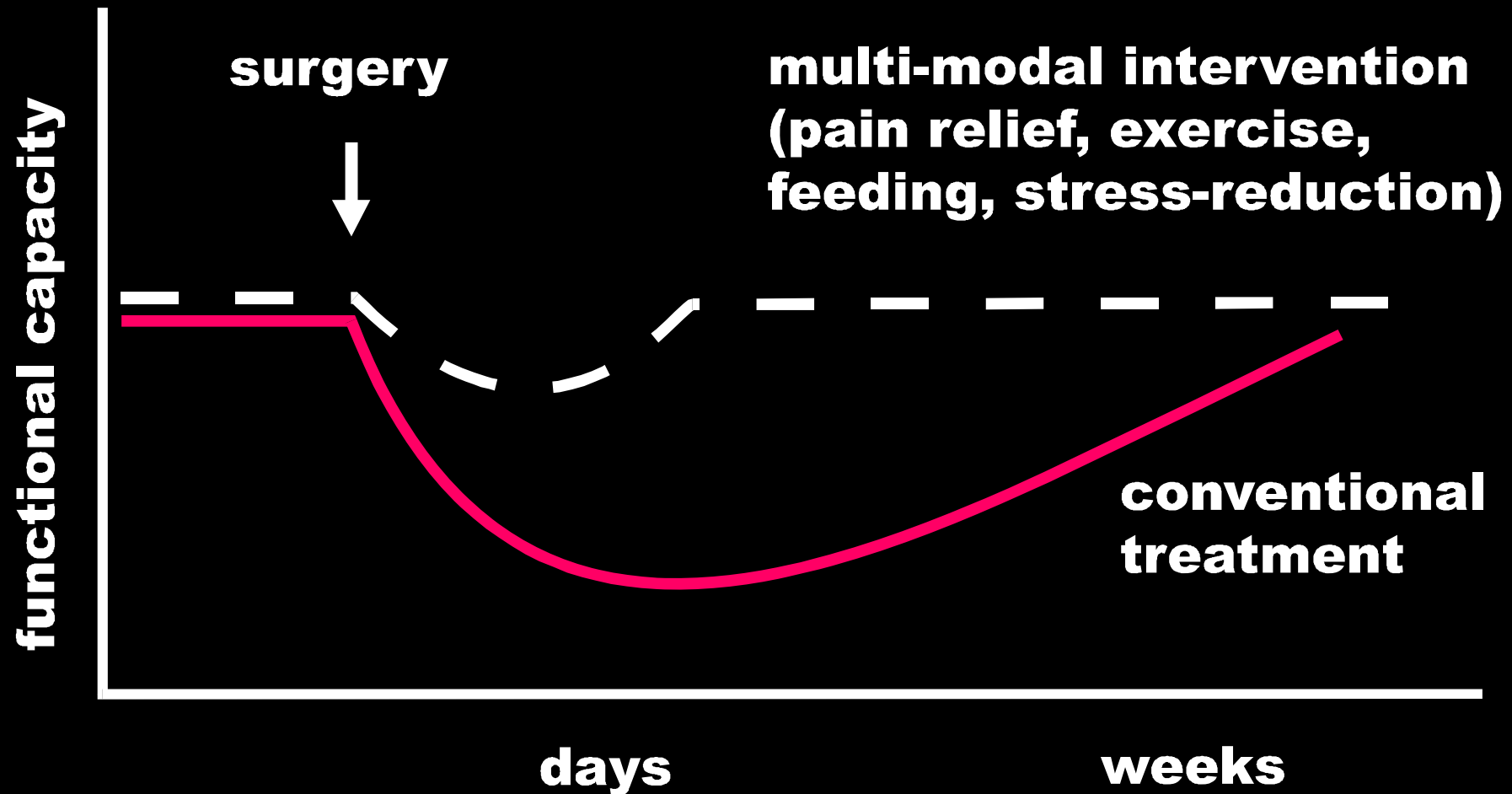
Kehlet, et al. (September, 2007). "Fast Track Surgery" Workshop Hvidovre University Hospital, Copenhagen, Denmark

# Kehlet's "Fast Track Surgery" Principles

Single modal treatment for a multimodal problem is futile

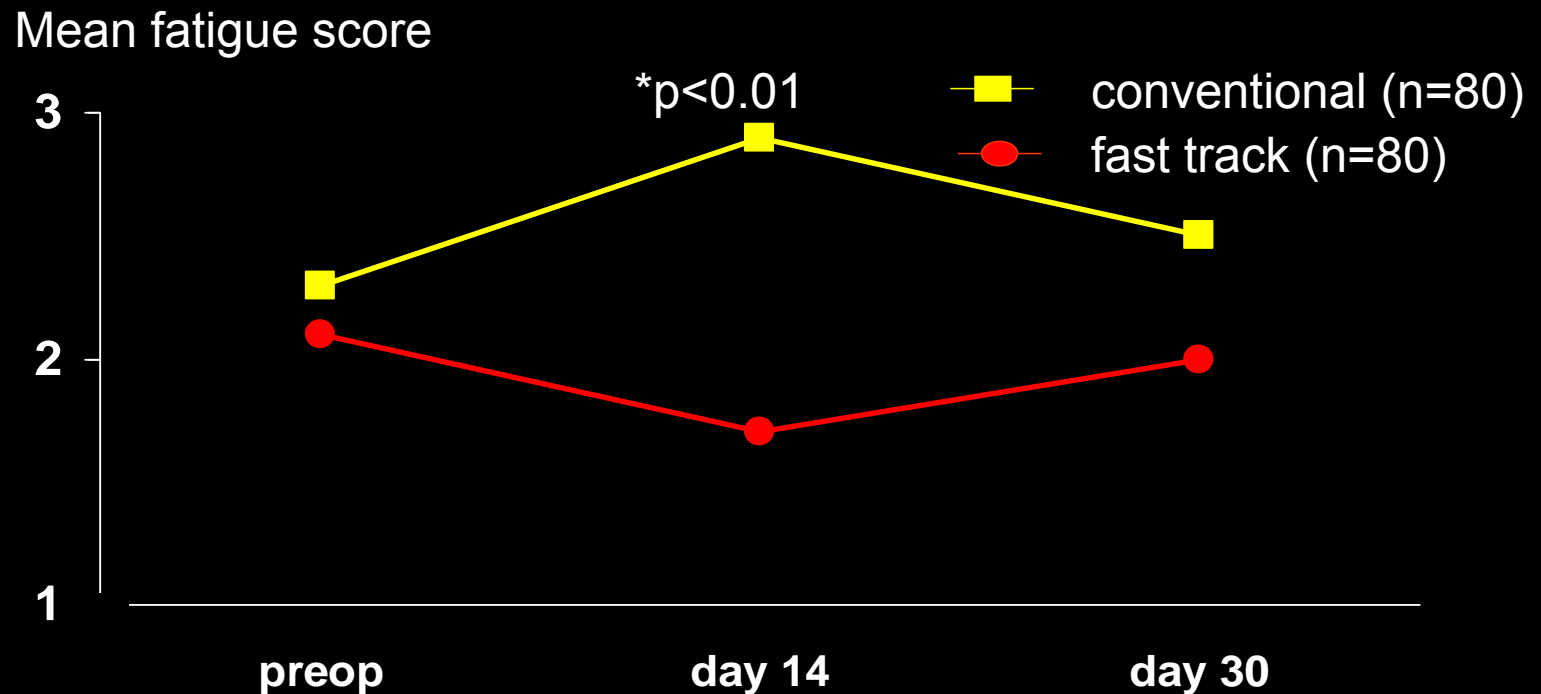


# perioperative changes in functional capacity



# Mean Fatigue Scores

(0=none, 1=slight, 2=moderate, 3=severe)



Hjort Jakobsen (2006). *Colorectal Disease*, 8, 683-687

# Goal Directed Therapy

- Difficult to implement
  - Lack of administrative support
  - Lack of resources
  - Lack of understanding
  - Lack of willingness to change “traditions”

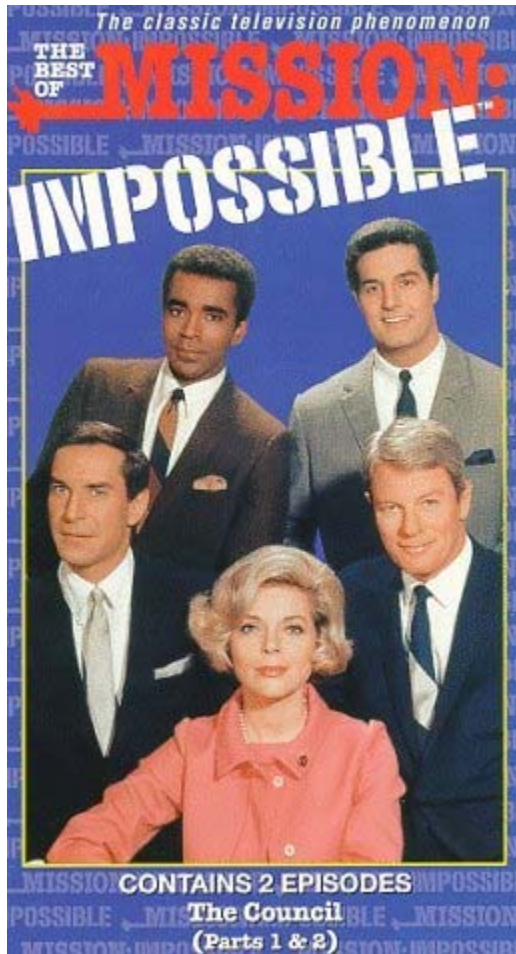
\*\*\*Patient is NOT the barrier\*\*\*

Kehlet, et al. (September, 2007). “Fast Track Surgery” Workshop Hvidovre University Hospital, Copenhagen, Denmark

## Aim Statement

- The Department of General Surgery at the Royal Columbian Hospital (RCH) will form an inter-professional team and work on optimizing surgical outcome and rapidly returning patients to their baseline functional status after colon resection surgery by:
  - Implementing multimodal strategies or “bundles” based on Reimer-Kent’s “Postoperative Wellness Model” and Kehlet’s “Fast Track Surgery” principles and designed to address the following perioperative issues:
    - Minimizing pain and suffering
    - Normalizing GI Function
    - Minimizing inactivity
    - Avoiding fatigue
    - Promoting self-care
    - Optimizing cognitive function
    - Optimizing respiratory function
    - Increasing access to care

To achieve these outcomes, practice needed to change



# Mission *Not* Impossible



fraserhealth

Better health.  
Best in health care.

# Results

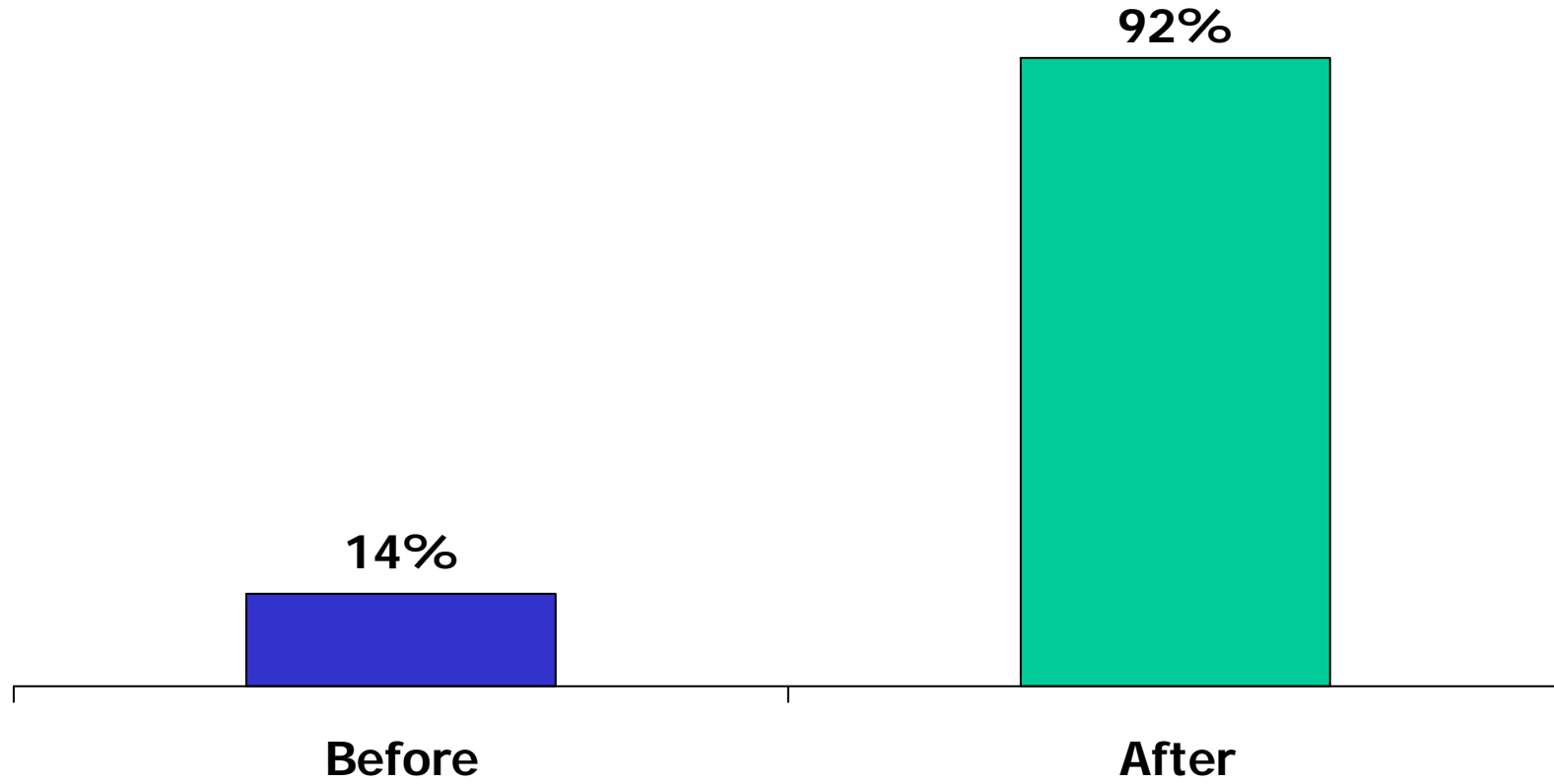
- 42 patients undergoing elective colonic resection were compared with 111 historical controls
- Both groups were similar for:
  - Age
  - Gender
  - ASA classification
  - Morbidity

# AIM – Remove Epidural by POD#2

If pain well controlled with oral analgesics

- Average 4 days (Range 0-9 days)
- Median 4 days
- Mode 4 days

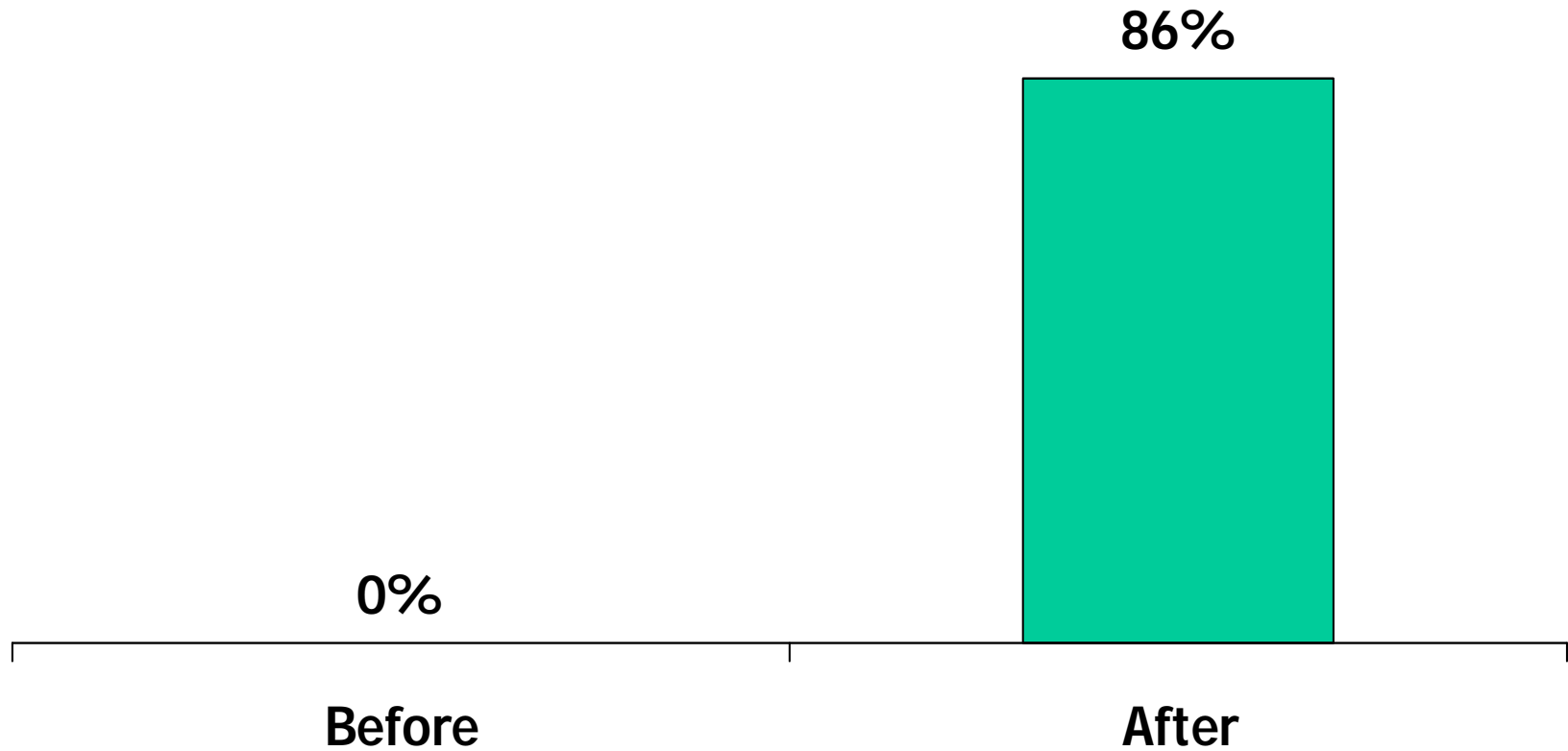
- Average 3 days (Range 1-3 days)
- Median 2 days
- Mode 2 days



# AIM – Start Full Fluid Diet by POD#1 Breakfast

- Average 4 days (Range 1-16 days)
- Median 4 days
- Mode 4 days

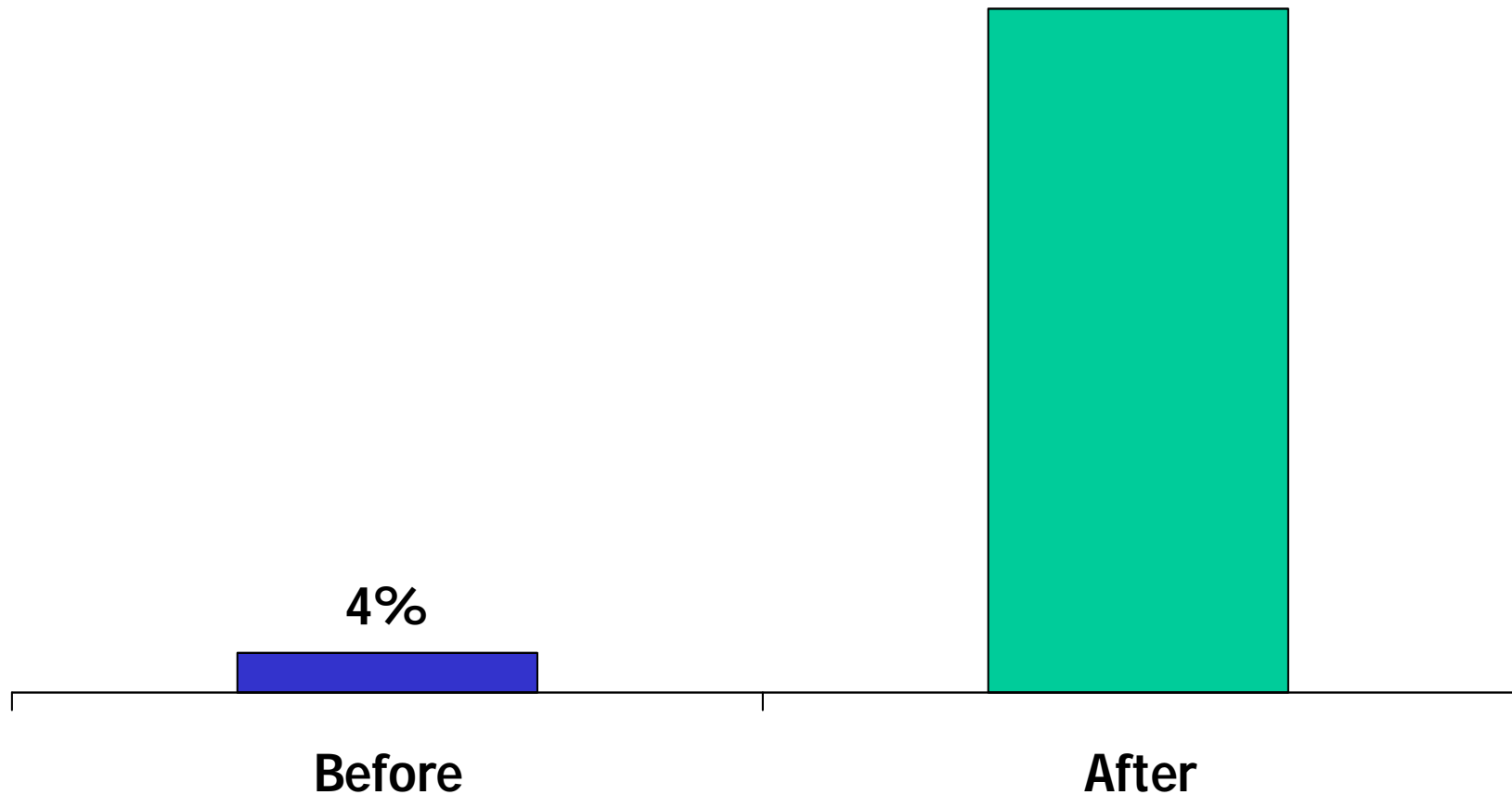
- Average 2 days (Range 0-3 days)
- Median 1 days
- Mode 0 days



## AIM – Start Regular Diet by POD#2

- Average 6 days (Range 2-20 days)
- Median 5 days
- Mode 4 days

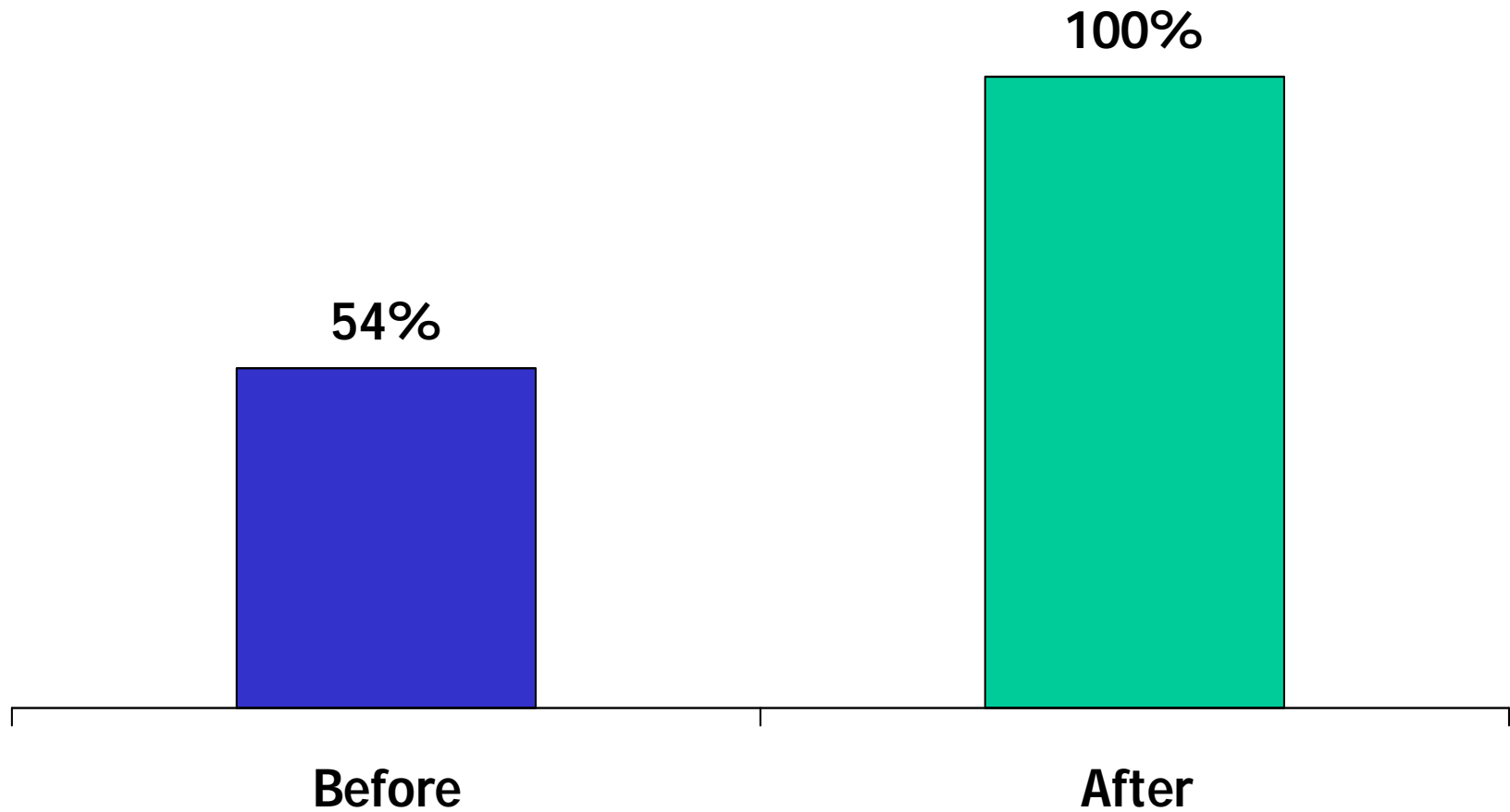
- Average 3 days (Range 1-4 days)
- Median 2 days
- Mode 2 days



## Aim – 1<sup>st</sup> Bowel Movement by POD#3

- Average 3 days (Range 0-10 days)
- Median 3 days
- Mode 3 days

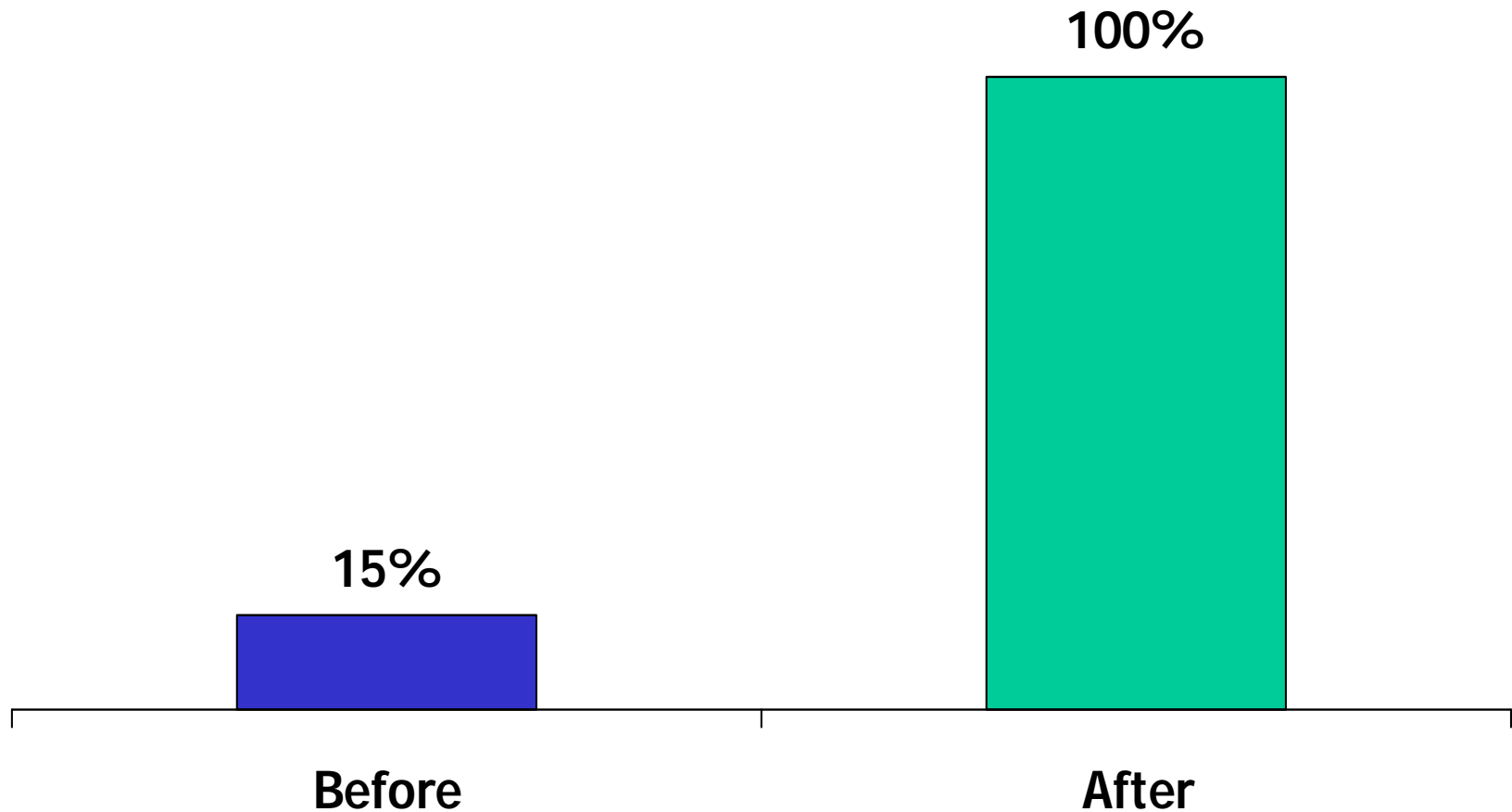
- Average 3 days (Range 1-3 days)
- Median 2 days
- Mode 1 days



# AIM – Remove Urinary Catheter by POD#2

- Average 5 days (Range 1-20 days)
- Median 4 days
- Mode 3 days

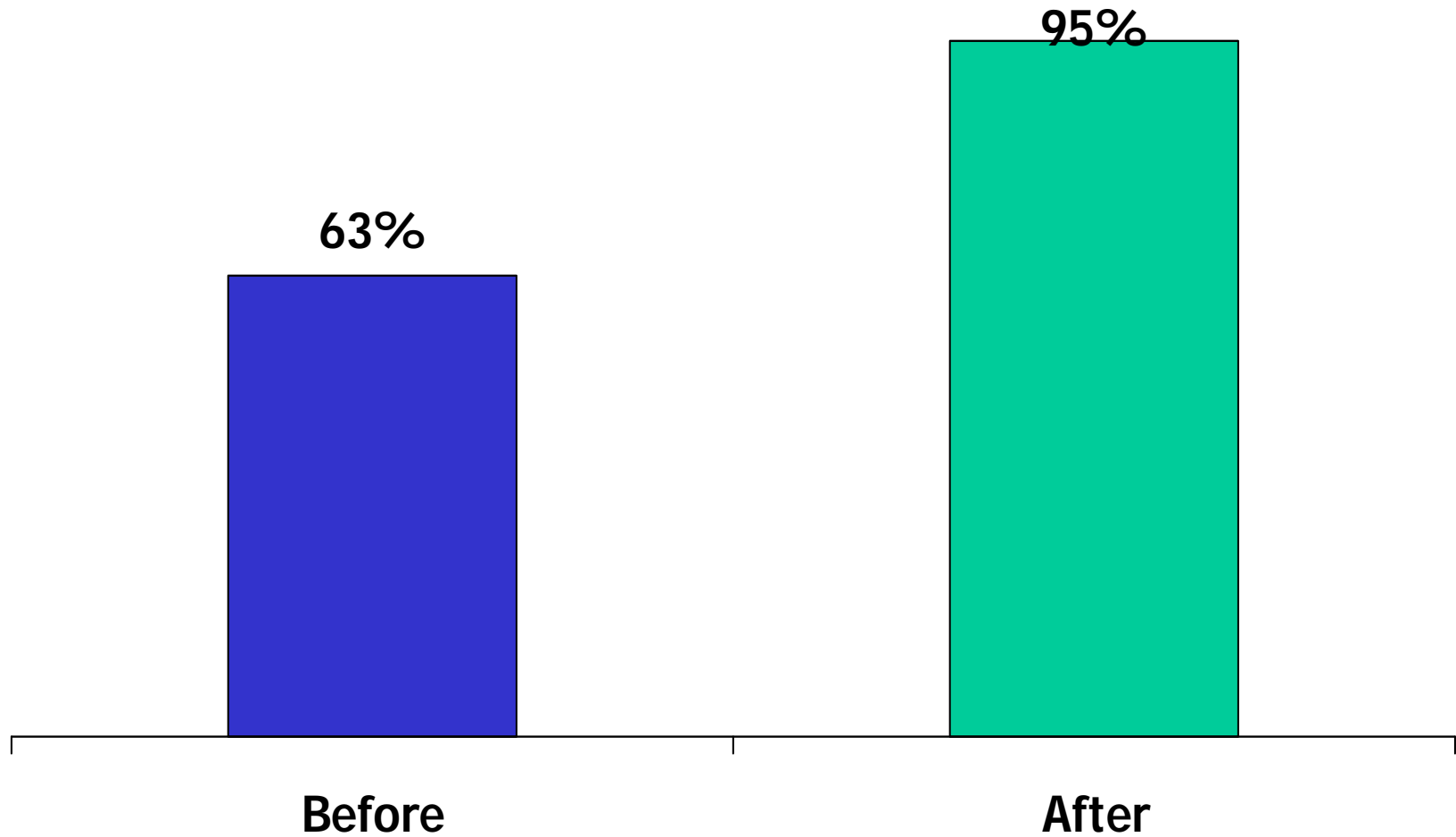
- Average 2 days (Range 1-3 days)
- Median 2 days
- Mode 2 days



# AIM – Discontinue Oxygen Therapy by POD#2

- Average 3 days (Range 0-41 days)
- Median 2 days
- Mode 1 day

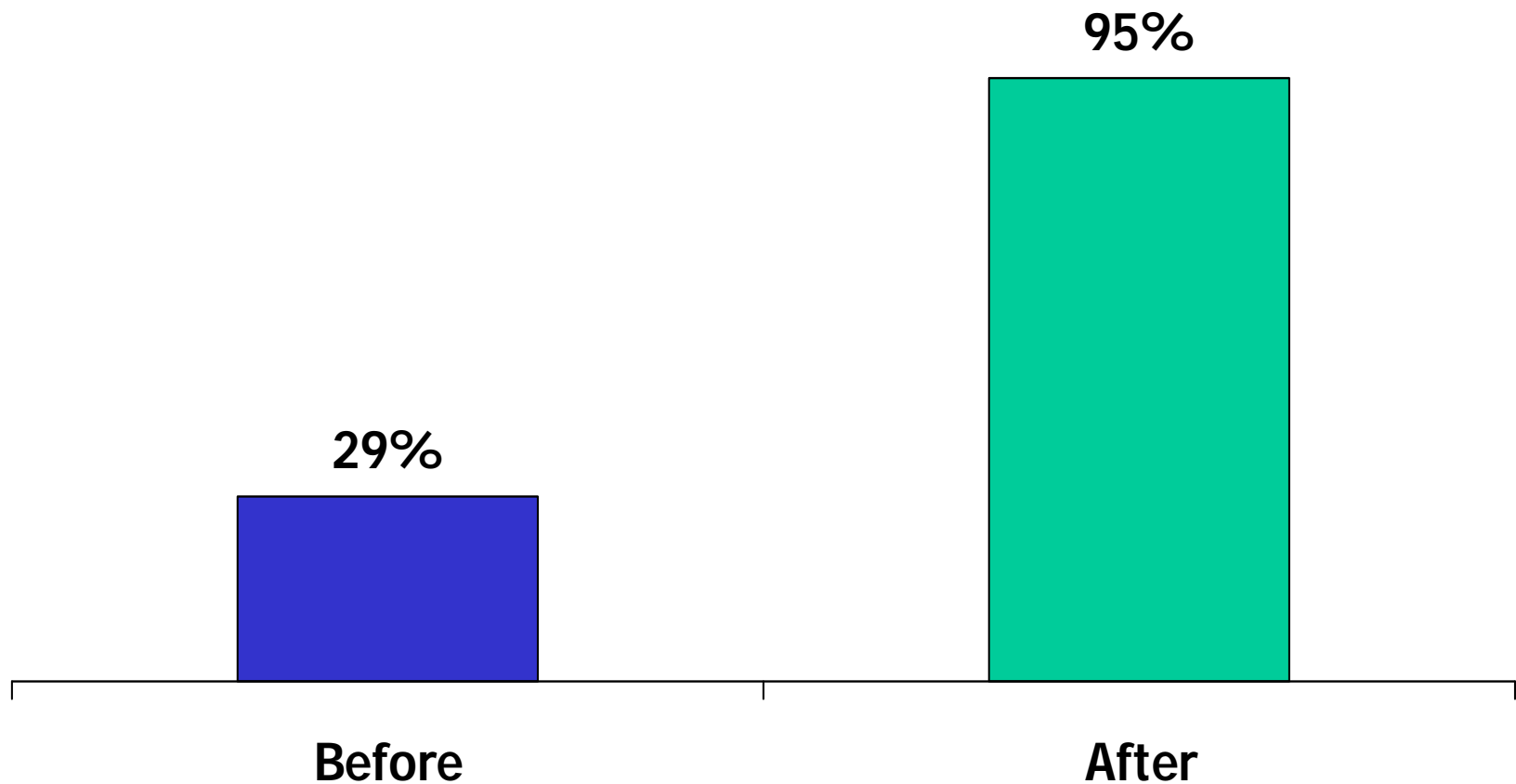
- Average 2 days (Range 0-3 days)
- Median 0 days
- Mode 0 days



## AIM – Walk Unassisted by POD#2

- Average 5 days (Range 1-25 days)
- Median 3 days
- Mode 3 day

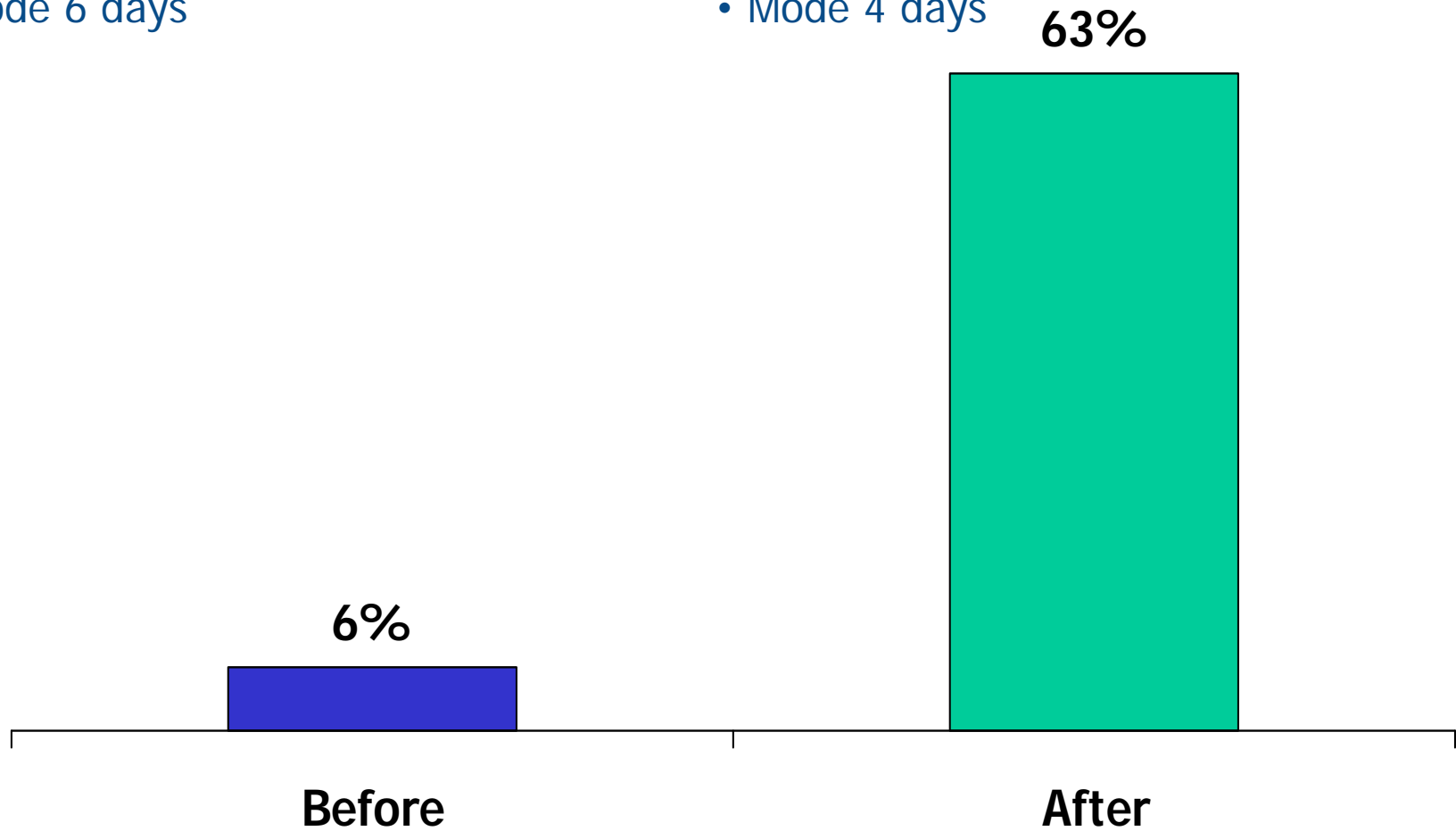
- Average 2 days (Range 0-3 days)
- Median 1 days
- Mode 1 days





# AIM – Discharge by POD#4

If all discharge criteria has been met

- Average 13 days (Range 3-76 days)
- Median 8 days
- Mode 6 days
- Average 4 days (Range 3-7 days)
- Median 4 days
- Mode 4 days



- 
- These preliminary results in the RCH colon resection population support similar findings found in the RCH cardiac surgery population and are promising in showing that optimizing perioperative care through the use of multimodal strategies has the potential to enhance and shorten postoperative recovery.

- 
- Holding fast to “the way we have always done it” is a prescription for mediocrity
  - Not uncommon for clinicians to be unaware of why their performance is superior or inferior
  - Innovation tends to threaten the status quo and is often accompanied by fear and resistance

Plsek, P.E. (1999). Quality Improvement Methods in Clinical Medicine, Pediatrics, 103 (1), 203-214.



"Only those who provide care can in the end change care"

Don Berwick, Institute for Healthcare Improvement