

Removal of Codeine in Pediatric Oncology: A Qualitative Evaluation of Success and Attitudes

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Northern Alberta Children's Cancer Program



Northern Alberta Children's Cancer Program

- 80 – 90 new oncology diagnoses per year
- Multidisciplinary team care in both inpatient and outpatient settings
 - >50 team members
 - 8 physicians
 - 3 Nurse Practitioners
 - 3 Pharmacists
 - + supportive services

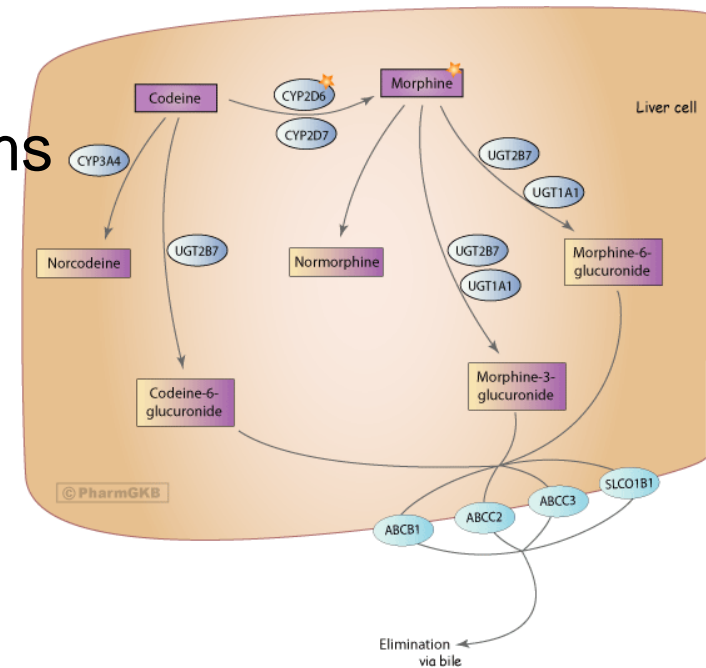


Northern Alberta Children's Cancer Program

- Heavy prescribers of codeine for analgesia
 - Acetaminophen and ibuprofen avoided due to masking of fever in potentially neutropenic patients
 - Ibuprofen also has anti-platelet effects

Codeine

- Prodrug: converted in the liver by CYP 2D6 to morphine for pain relief
- CYP 2D6 population polymorphisms lead to unpredictable morphine conversion



Thorn Caroline F, Klein Teri E, Altman Russ B. "Codeine and morphine pathway" *Pharmacogenet*

CYP 2D6

- Ultra-rapid metabolizers
 - 1 – 30% of population
 - Increased potential for serious adverse events

Abraham BK, Adithan C. Ind J Pharmacol 2001;33:147-169.

Cascorbi I. Eur J Clin Invest 2003;33(suppl. 2):17-22.

Bernard S, et al. Oncologist 2006;11;126-135.

- Poor metabolizers
 - 0.5 – 10% of population
 - Lack of efficacy

Madadi P, Koren G. Pharmacogenomics 2008;9:1267-84.

The NEW ENGLAND JOURNAL of MEDICINE

Codeine, Ultrarapid-Metabolism Genotype, and Postoperative Death

TO THE EDITOR: Obstructive sleep apnea is not rare in children with hypertrophic tonsils, and the common curative procedure is adenotonsillectomy. Codeine was not detected in the femoral blood by means of gas chromatography–mass spectrometry; there was no evidence of other drugs or metabolites. Cytochrome P450 2D6 genotype was not determined. Ciszkowski et al. NEJM. 2009;361:827– 828.

More Codeine Fatalities After Tonsillectomy in North American Children

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abstract

In 2009 we reported the fatal case of a toddler who had received codeine after adenotonsillectomy for obstructive sleep apnea syndrome.

Has the time come to phase out codeine?

MacDonald N, MacLeod SM. CMAJ 2010; 182:1825.

THE GLOBE AND MAIL

April 9, 2012

Post-surgery codeine still killing children, new study says

By ANDRÉ PICARD

From Monday's Globe and Mail

Children are overdosing on post-surgery painkillers because of a common gene that causes their bodies to process them ultra-rapidly, a Canadian-led study found

What we decided to do

- Volunteered to pilot codeine removal in our program
 - Patients were prescribed oral morphine
- Clinical Concerns Committee took on the initiative
 - Strong nursing membership

What is the ideal strategy for removal of codeine?

- No strategies have been published by centres who have removed codeine from their formulary
- Barriers to change have also not been reported

Perceived Barriers

- Triplicate Prescription Program
- Parent resistance
- Morphine misconceptions
- Some patients on codeine, others on morphine during transition

Objectives

- Assess attitudes of NACCP health professionals at different time points during practice change
- Evaluate whether prescription of codeine was reduced
- Determine if our implementation strategies were successful

Methods

- Planned education program
 - Information sheet for health professionals
 - Seminars for team members
 - Parent and patient information sheets
 - Posters in our outpatient clinic



	Form	Strength
Morphine (usual starting dose: 0.2-0.5mg/kg q4-6h PO)	Immediate-release tablet	10mg, 20mg, 25mg, 30mg, 40mg, 50mg, 60mg
	Syrup	1mg/mL, 5mg/mL, 20mg/mL
	Oral drops	50mg/mL
	Rectal suppository	5mg, 10mg, 20mg, 30mg
Hydromorphone (usual starting dose: 0.04-0.08mg/kg q3-4h PO)	Immediate-release tablet	1mg, 2mg, 4mg, 8mg
	Syrup	1mg/mL
	Rectal suppository	3mg
Oxycodone (usual starting dose: 0.05-0.15mg/kg q4-6h PO)	Immediate-release tablet	5mg, 10mg, 20mg
	Rectal suppository	10mg, 20mg

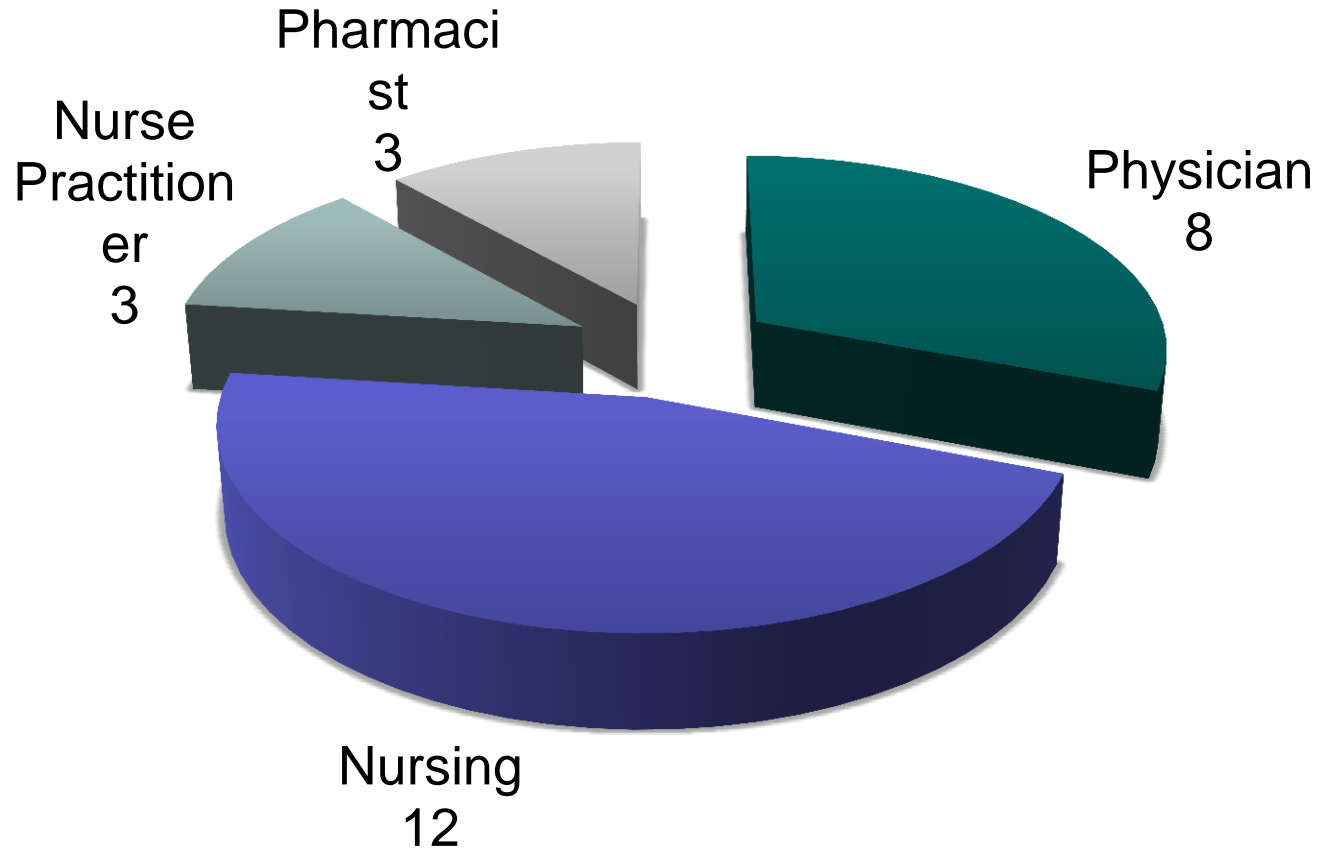
Methods

- Electronic survey:
 - prior to implementation
 - 3 months
 - 6 months
- Survey examined:
 - attitudes about codeine and other opioids
 - real and perceived barriers to codeine removal

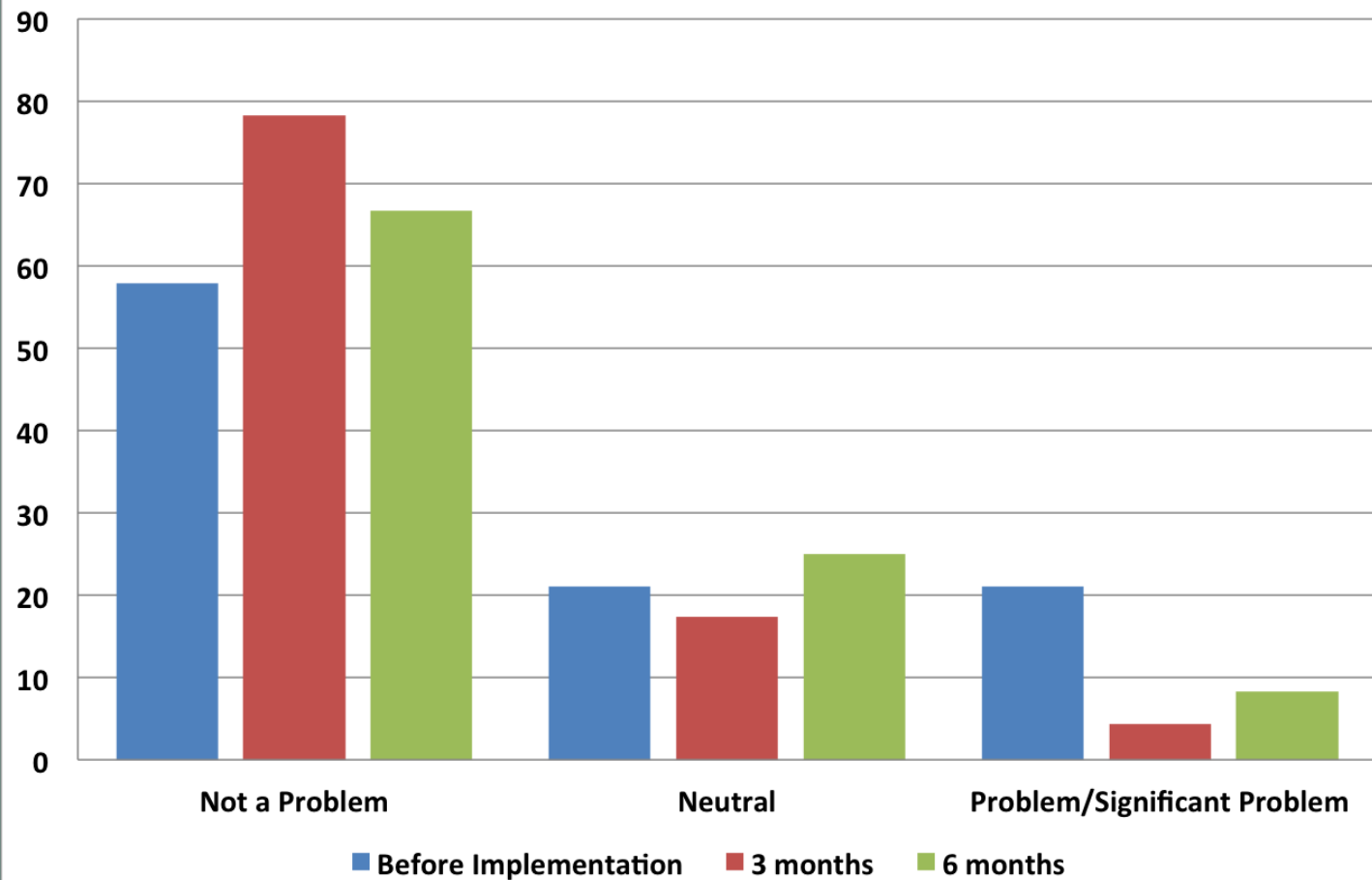
Methods

- Cerner pharmacy system at Stollery
 - Printed reports linking individual physicians to specific medications
 - Examined codeine dispensation by NACCP physicians:
 - 2 months prior to practice change
 - 2 months after
 - 12 months after time point #1

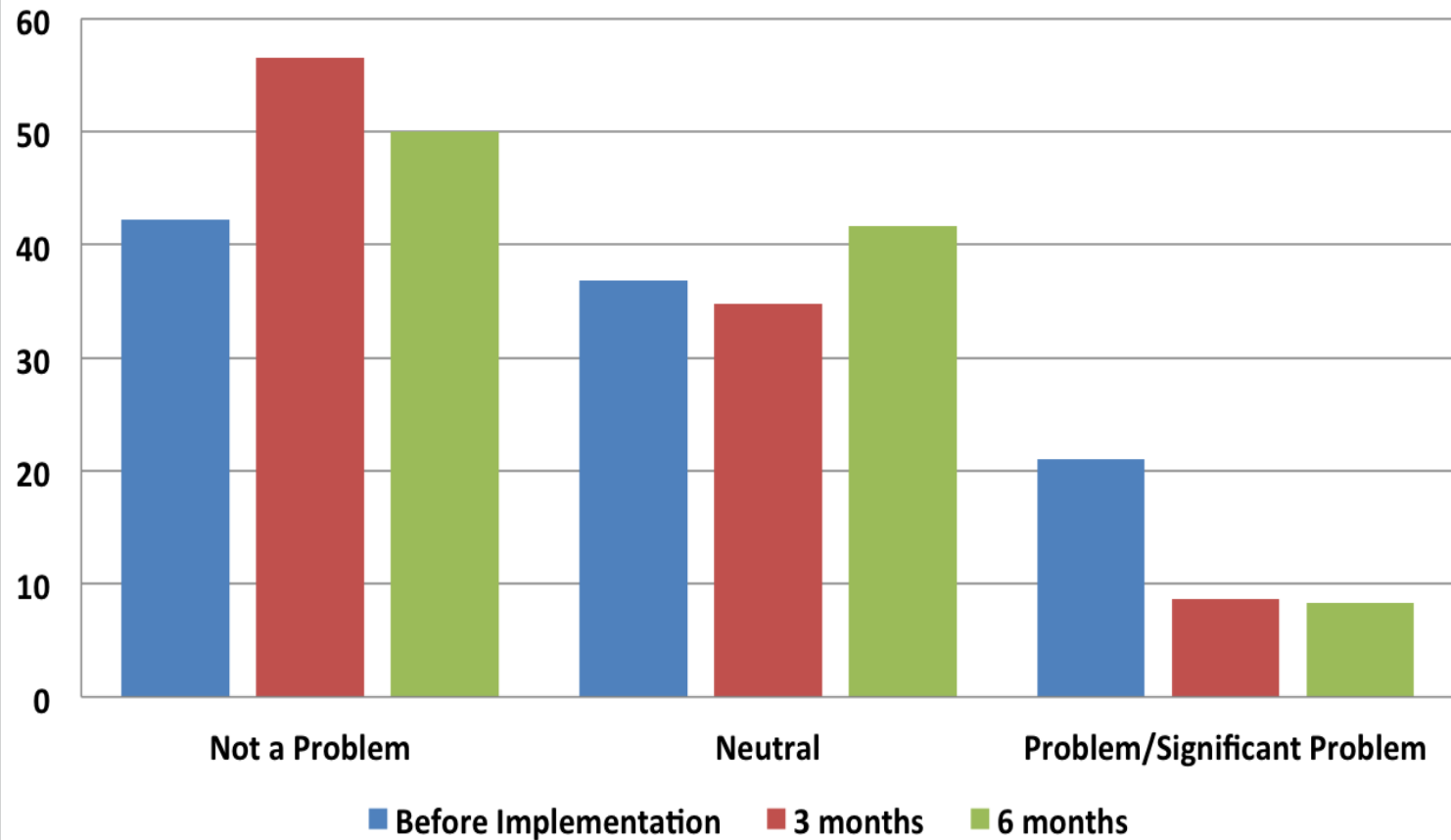
Participants



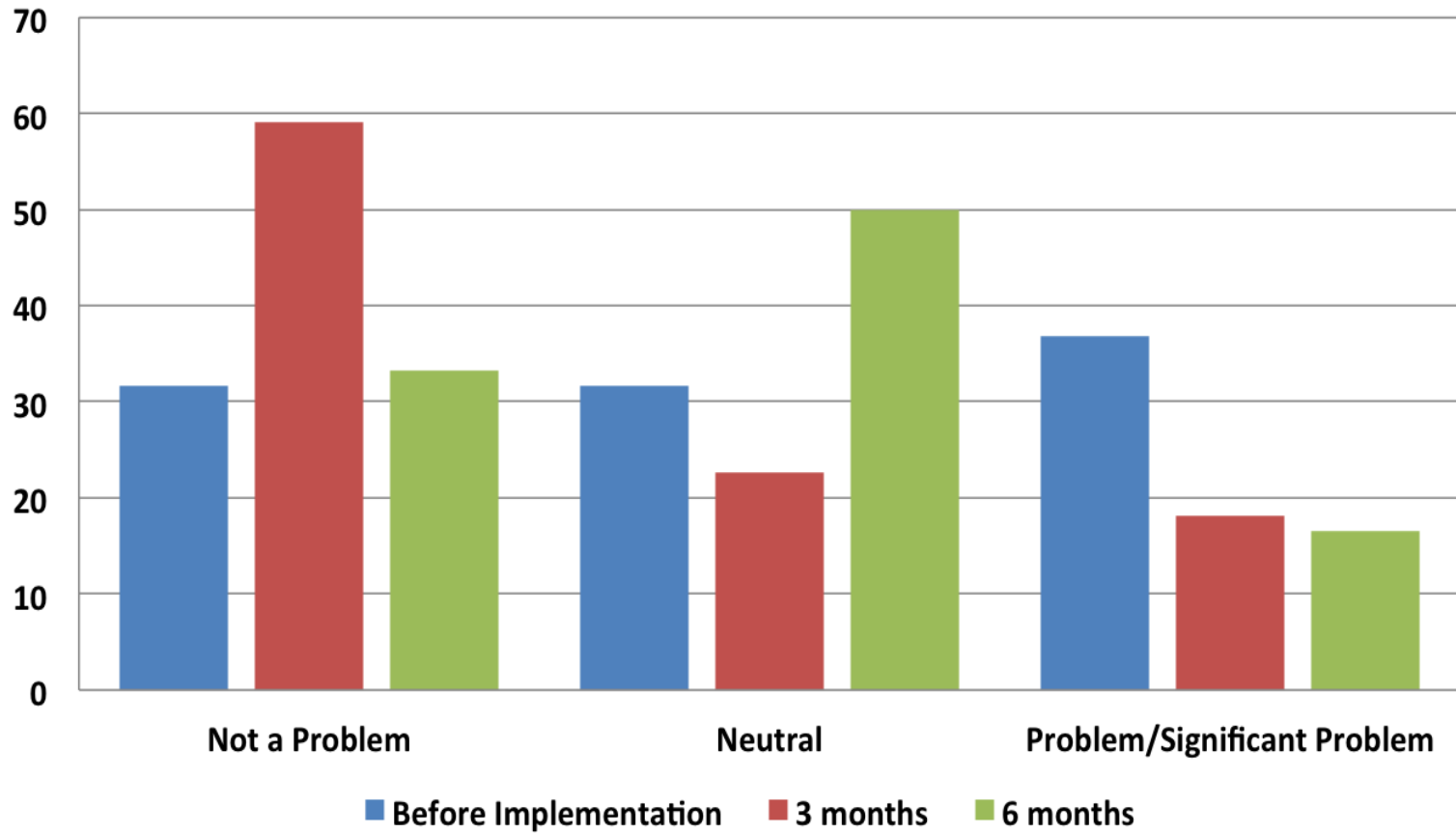
Need for Triplicate Prescription



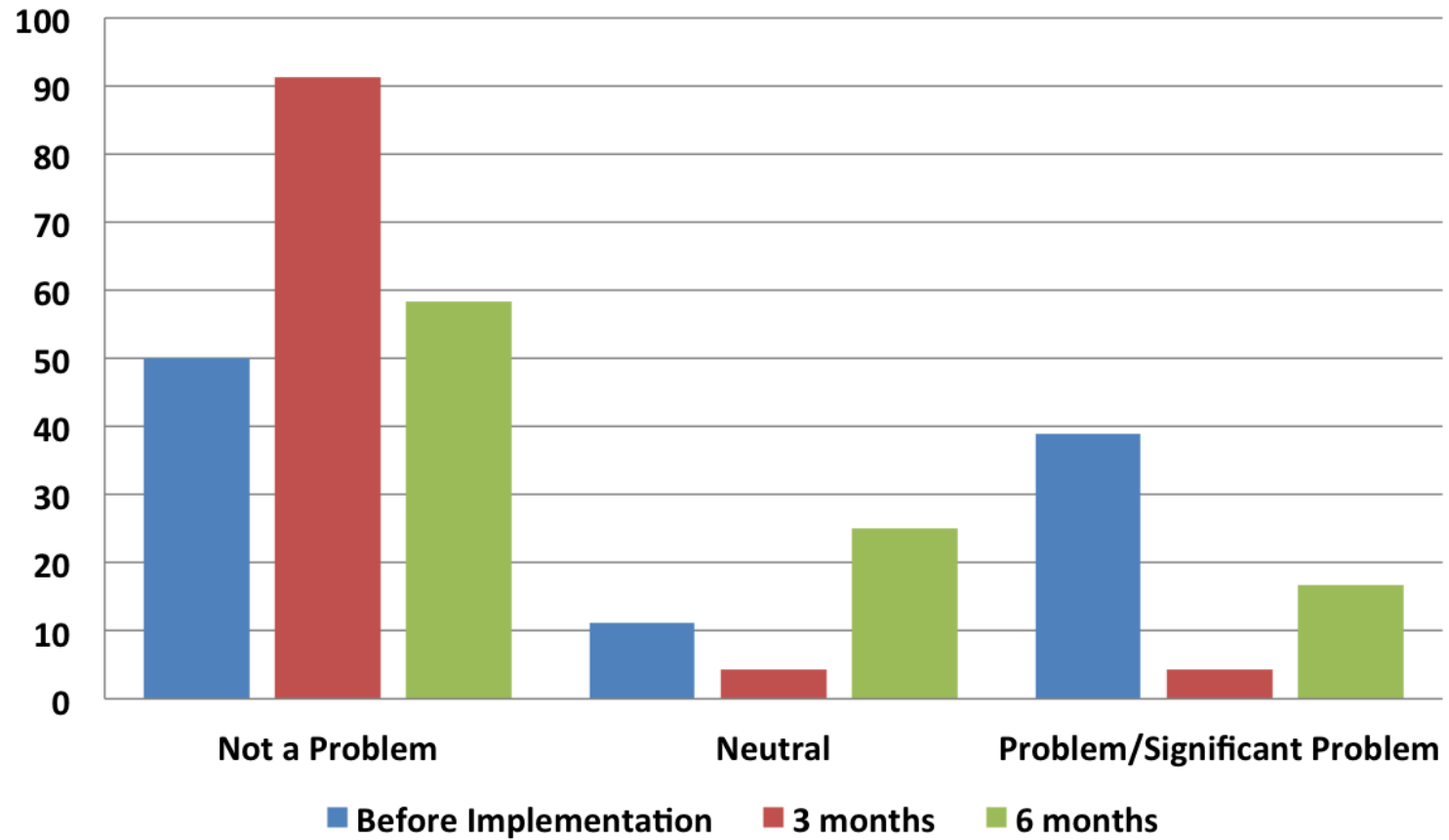
Own Beliefs - Use of Other Opioids



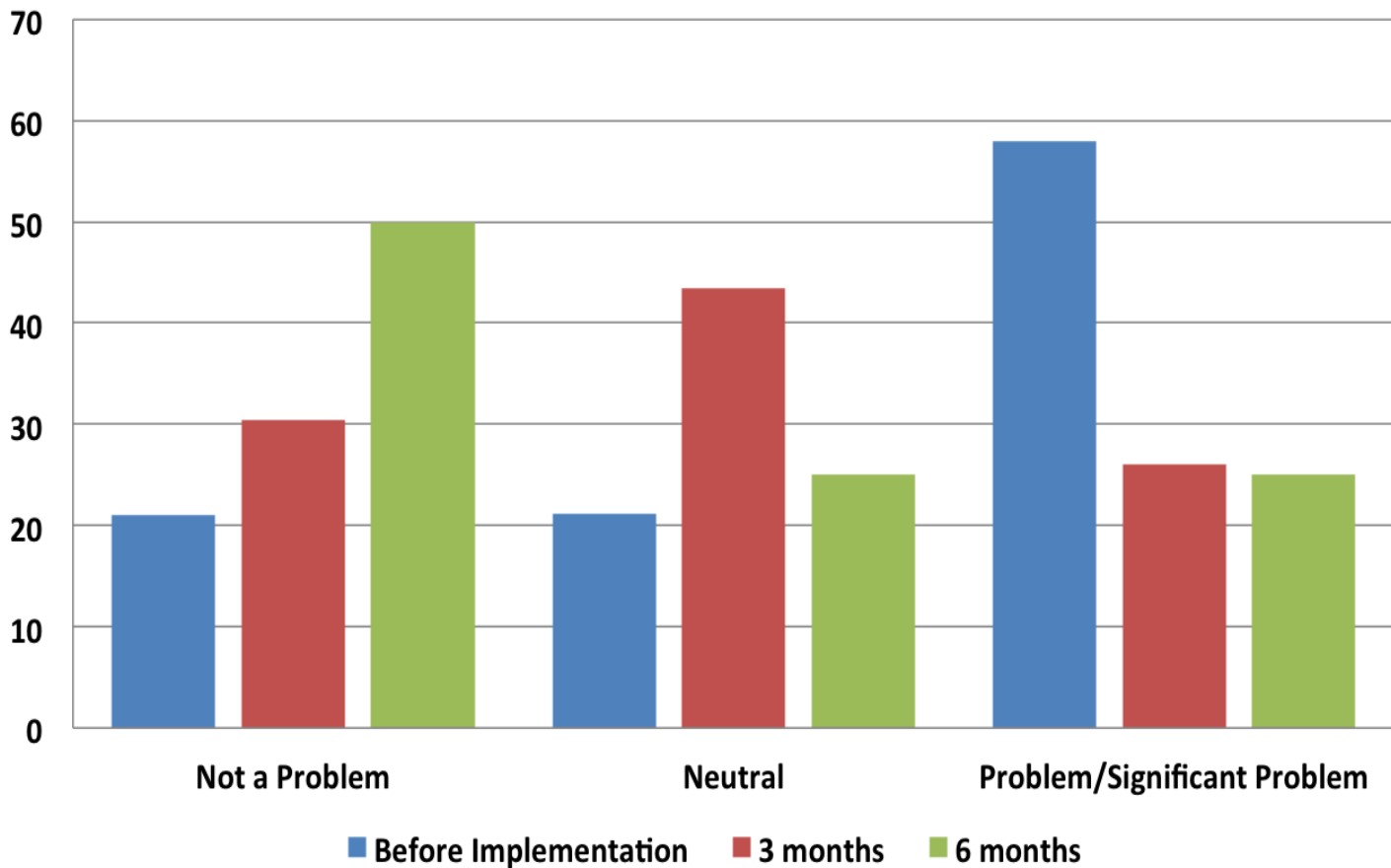
Beliefs of Others - Use of Other Opioids



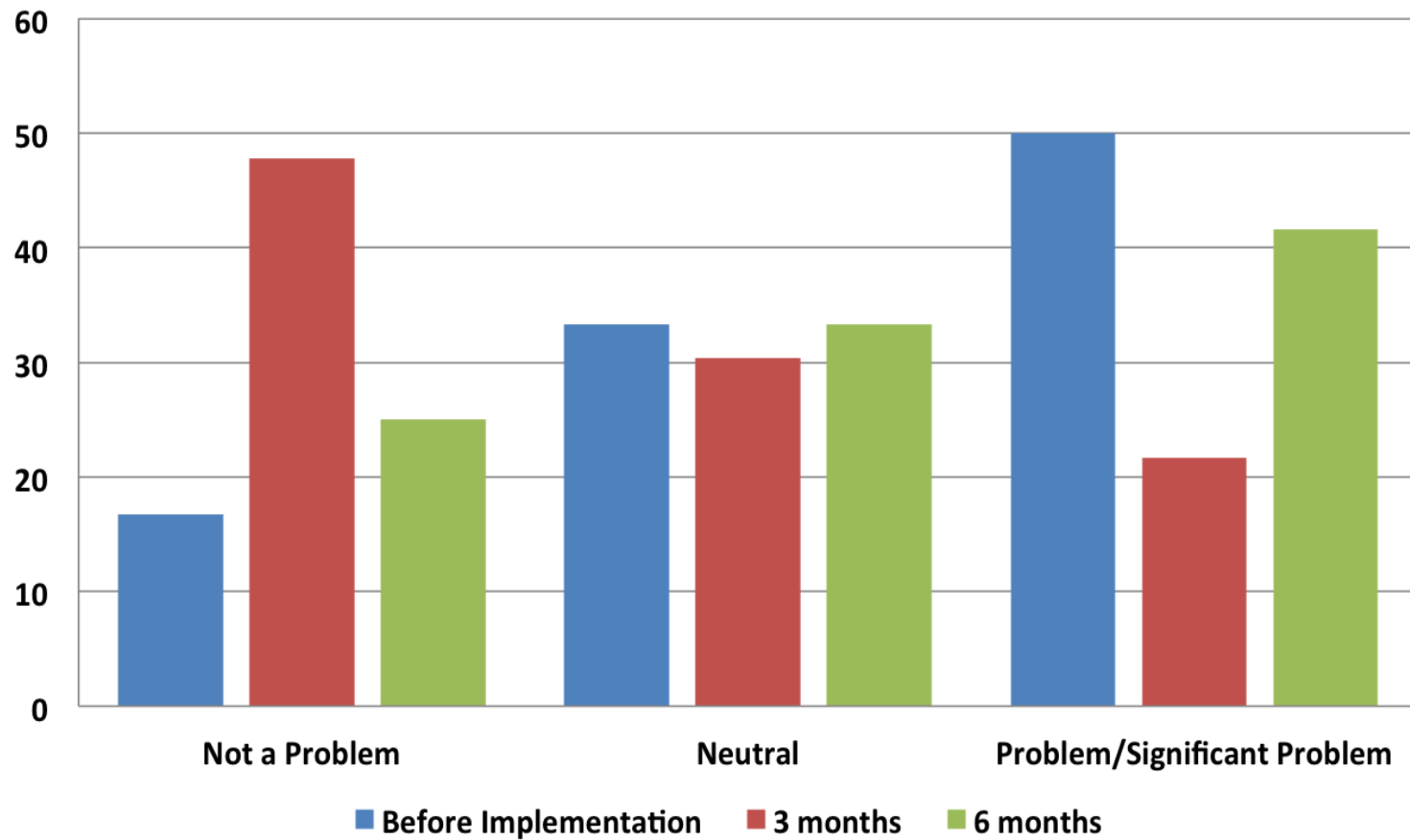
Family - Use of Other Opioids



Family - More Potent Opioid



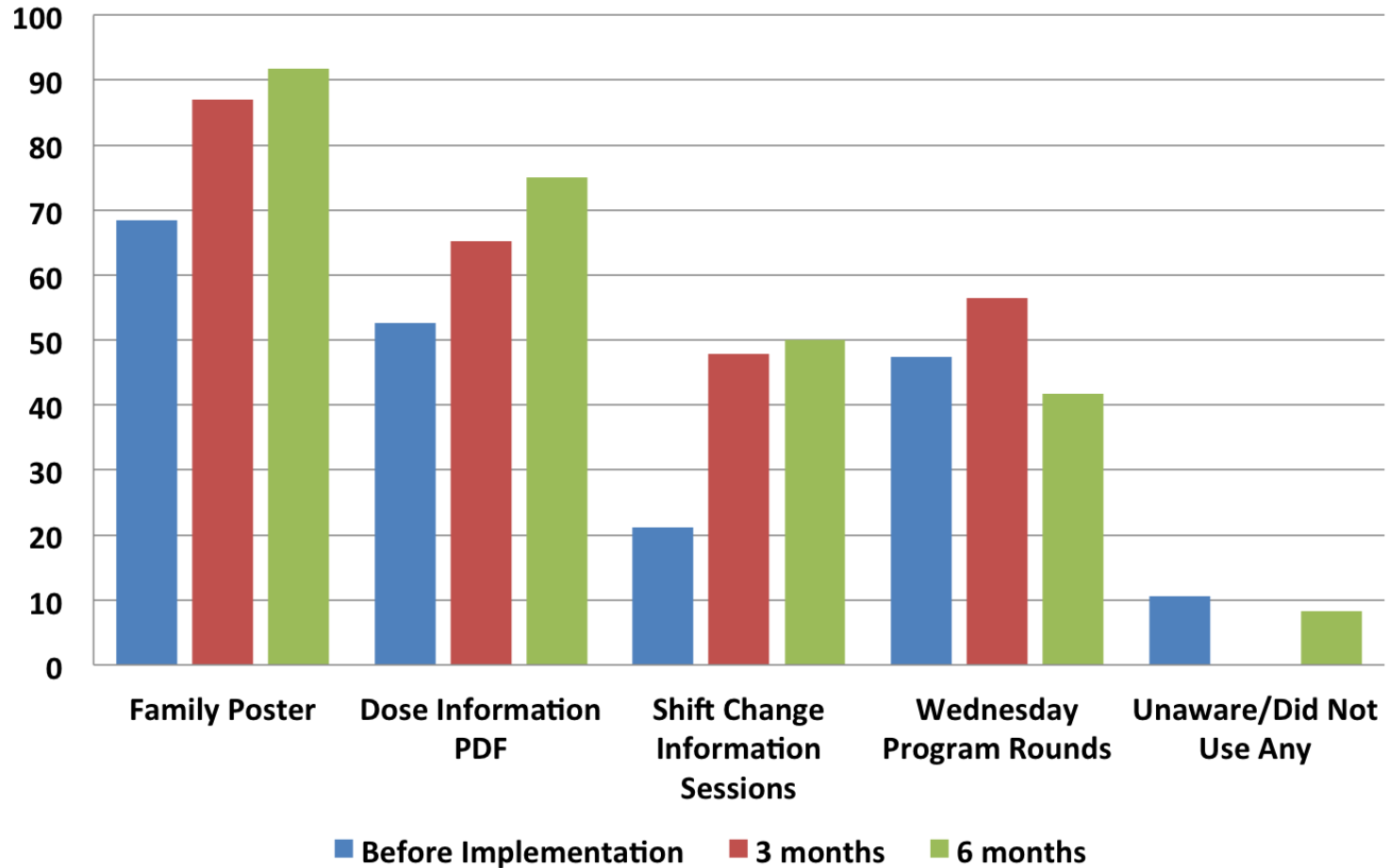
Family - Less Familiar with Morphine



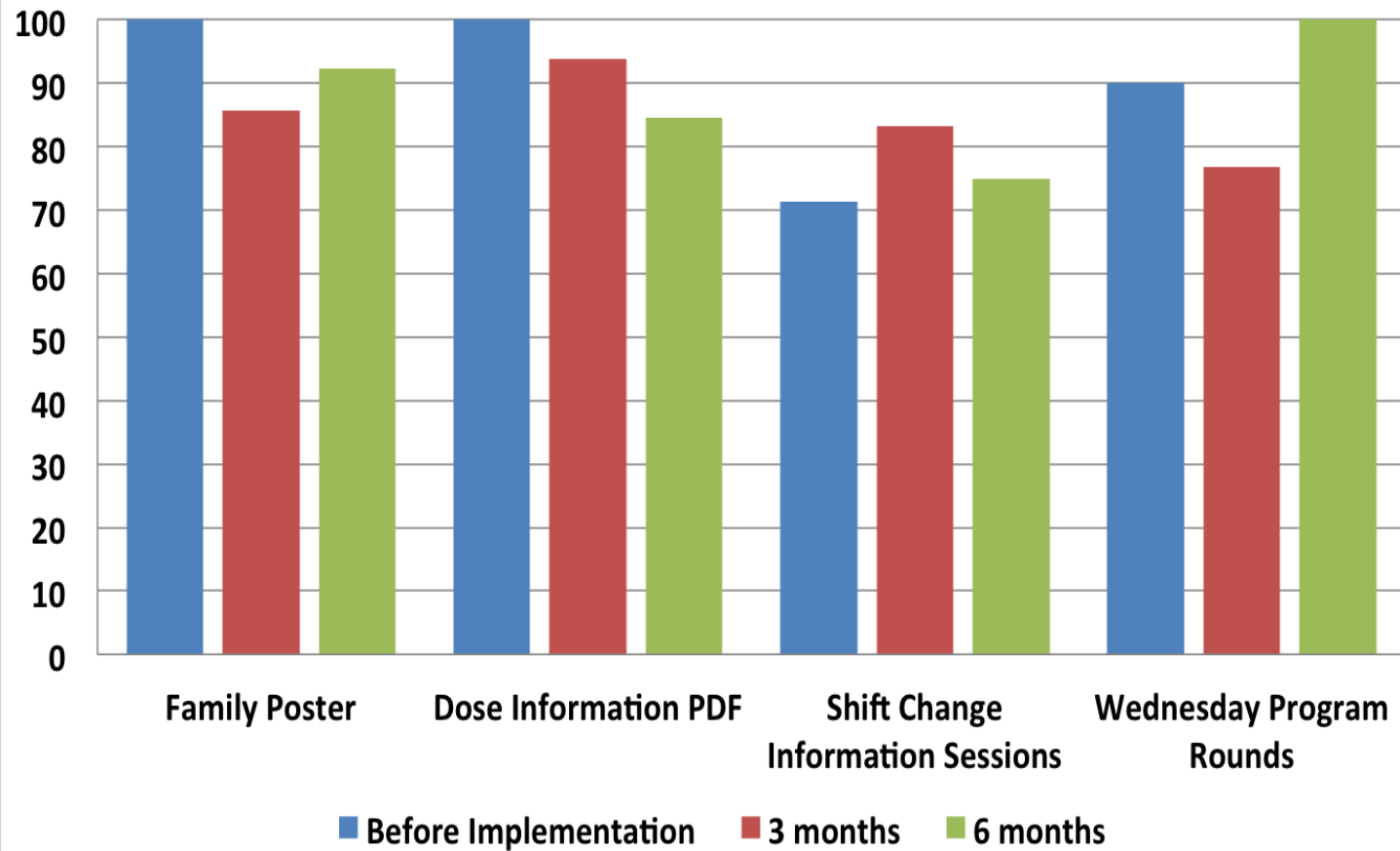
Codeine Prescriptions

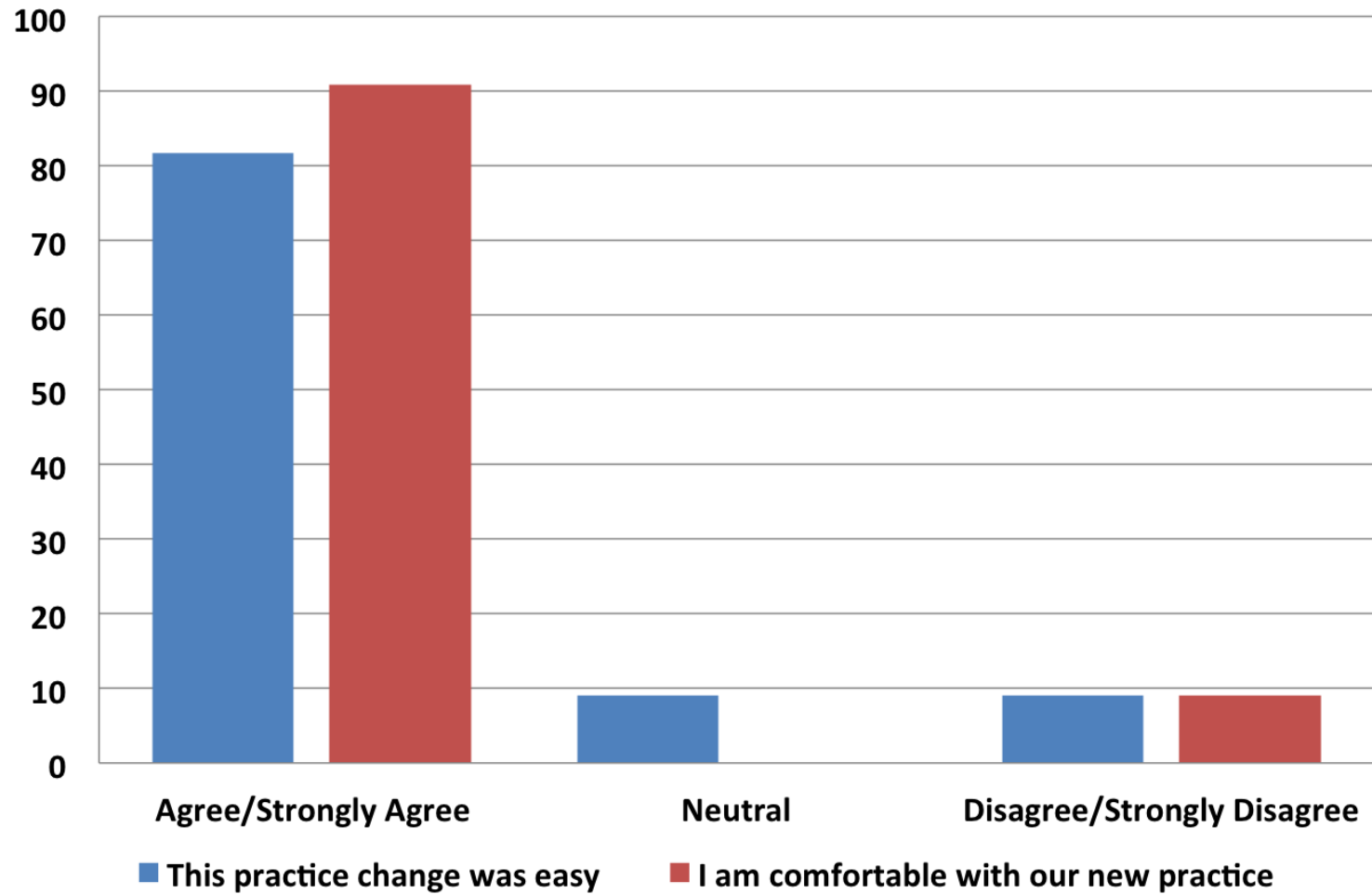
	March 2011	May 2011	March 2012
Patients	35	3	0
Doses Dispensed	249	7	0

Uptake of Education Methods



Were These Strategies Useful? - Agree/Strongly Agree





Conclusions

- Practice change was successful overall
- Initial perceived barriers diminished over time and did not hinder change
- A well-planned, multi-faceted education and implementation strategy was key to successful change

Why we were successful

- Engaged frontline staff and prescribers early in planning
- Had information available in multiple forms to explain issues to families
- Presence of early adopters, innovators, agents of change within our program