



*Outcomes Associated with the Development
of Strategies to
Optimize Peri-operative
Beta-blocker Use and Documentation*

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Background

- **Adverse cardiac events are complications of surgery, occurring in...**
 - 2 - 5 % of patients undergoing noncardiac surgery
 - 34 % of patients undergoing vascular surgery
- **Beta-blockers may reduce peri-operative ischemia**
 - especially in patients considered to be at risk.

Background

Optimization of peri-operative beta-blocker use

- Centers for Medicare and Medicaid Services (CMS) Surgical Care Improvement Project (SCIP) quality indicator
- Goal is to have 90% compliance with use AND documentation

American College of Cardiology/American Heart Association recommendations

- Beta-blockers should be continued in patients undergoing surgery who are currently receiving beta-blockers
- Class IC recommendation

<http://medqic.org/>

Circulation 2006;113:2662-74.

Slide 3

d1 Add references to this for CMS and ACC/AHA recs
djt, 4/10/2008

Purpose

- **Primary objective**
 - Develop, implement, and measure outcomes associated with a program to improve compliance with administering and documenting peri-operative beta-blockers
- **Secondary objective**
 - Compare the peri-operative cardiac event rates and mortality in patients documented to have received peri-operative beta-blockers to those without documentation

Methods

- Retrospective analysis
- Adult inpatient surgical patients at the Medical University of South Carolina
- Random sampling of patient charts taken every three months
 - 200 charts per quarter, excluding patients not on beta-blockers
 - Control group: April 2007 to Sept 2007
 - Education intervention group: Oct 2007 to Feb 2008
 - Documentation intervention group: Mar 2008 to Jun 2008
- Compliance rates before and after implementation of strategies to improve use and documentation were compared

Methods

- Cardiac event rates were determined and compared across patients who had documentation of receiving peri-operative beta-blockers to those who did not
- Strategies to improve use and documentation included
 - Educational inservices to physicians and nurses
 - Utilizing paper forms and new applications within computerized medical charting
- Statistical analysis
 - Fisher's Exact test for nominal data
 - Student's T-test for continuous data

Overview of Educational Inservices

Who:

- Nurses in the holding areas
- Anesthesiologists
- Anesthesia residents
- Nurse anesthetists

What:

- Explanation of SCIP and the goal to improve documentation and patient outcomes
- Provided lists of beta-blocker brand and generic names (nurses)
- Explained options for patients who have not taken their beta-blocker
- Well received and willing to help make improvements in documenting beta-blocker use

Guidelines for Beta-blocker Use

Guidelines for Beta Blocker Use in the Peri-operative Period

Purpose:

- To prevent adverse cardiac events due to beta blocker withdrawal
- To meet CMS – Surgical Care Improvement Project (SCIP) benchmarks

Procedure:

1. For patients that are on beta blockers *prior to* admission
 - a. There must be documentation stating whether or not patients are on these medications (medication history)
2. For patients taking beta blockers as home or current medications, beta blocker use should be documented in the peri-operative period
 - a. Peri-operative period is defined as the **24 hours prior to** surgical incision through discharge from the post anesthesia care/recovery area (PACU)
 - b. The date and time the patient last took the beta blocker should be recorded in the chart
3. For patients who have not taken their beta blocker
 - a. Consider administering at least 5 mg of IV metoprolol, unless a contraindication exists
 - b. May repeat every 15 minutes for a total of 4 doses if necessary
 - c. If contraindication exists, please document reason in patient's chart
4. Contraindications may include:
 - a. heart rate < 50 bpm
 - b. SBP < 100 mmHg
 - c. second or third degree heart block without pacemaker
 - d. sick sinus syndrome
 - e. severe or decompensated heart failure
 - f. cardiogenic shock
 - g. symptomatic hypotension
 - h. severe asthma
 - i. severe peripheral arterial disease
 - j. pregnancy (2nd and 3rd trimesters)
 - k. hypersensitivity

Overview of Changes in Documentation Strategies

- New forms
 - Med rec form?
 - New form Pat W. mentioned (if this exists??)
 - Can you put pictures of the forms in this presentation?
- New technology
 - PICIS
 - Can you put a screen shot in of the new PICIS field?



Overview of Changes in Documentation Strategies

New Medication Reconciliation Form



PHYSORDER
Procedure Medication Reconciliation Form
Page 1 of 1

Form Origination Date: 4/08
Version: 1

Version Date: 4/08

Patient Name _____
MRN _____

PATIENT INFORMATION LABEL

This form is to be completed by the physician or designee who is collecting medication history information prior to any outpatient procedure.

Ht (in): _____ Wt (kg): _____ Outside Home Pharmacy: _____ Pharmacy Phone: _____

PROHIBITED ABBREVIATIONS: qd, qod, U, IU, mcg, MS, MS04, MgSO4, µg, drug names.
Do not write a whole number with a trailing zero. Do not write a decimal point without a leading zero.

Patient is inpatient status –see the completed Inpatient Medication Reconciliation Form

ALLERGIES / REACTIONS NKDA Contrast Iodine Dyes / Latex Adhesive Tape
 Beta Blocker Penicillin Cephalosporin ACEI / ARB

Medication / Food / Product	Type of Reaction	Medication / Food / Product	Type of Reaction

	Medication Name	Dose	Route	Frequency	Indication (Diagnosis)	Last Dose	MD Order to Continue at Home	
							Yes	No
							<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>

Current

New Computerized Nursing Documentation

OR Manager - <Live Database> User ID: stewan

File Case Record Options Tools Maintenance Pref Card/Inventory SearTrack Other Applications Reports Window Help

Case: C_0884 4112000

Section: 01 PREOP SECTION E

02 INTRADP SECTION

03 BILLING SECTION

05 SHORT FORM

Page: 001 Preop Checklist

002 Pre-Op Sheet

003 Preop Medi_Fluid_Interv_Delays

Print Case Supplies

View Header Billing History

Save Edit & Views

Edit Milestones Done

Time	IV Fluids	Amount Mls (ml)	Condition/Site (ml)	Rate (ml)	Size # (ml)
0701	FLING_LACT	1000	good/right	lvo	22

Time	Medications	Dose (ml)	Route (ml)	Other Meds	Staff
	BETA_B				

Identifies psychosocial status: Elicits perceptions of surgery:

Identifies physiological status: Includes family/support persons in preop teaching:

1100	LAWRENCH	Setup
1110	C_43260	Setup

4/14/2008 11:14:49

Start OR Manager - <Live D... Paging - Microsoft Intern... Oacs Blank Roster 11:14 AM

New Computerized Nursing Documentation

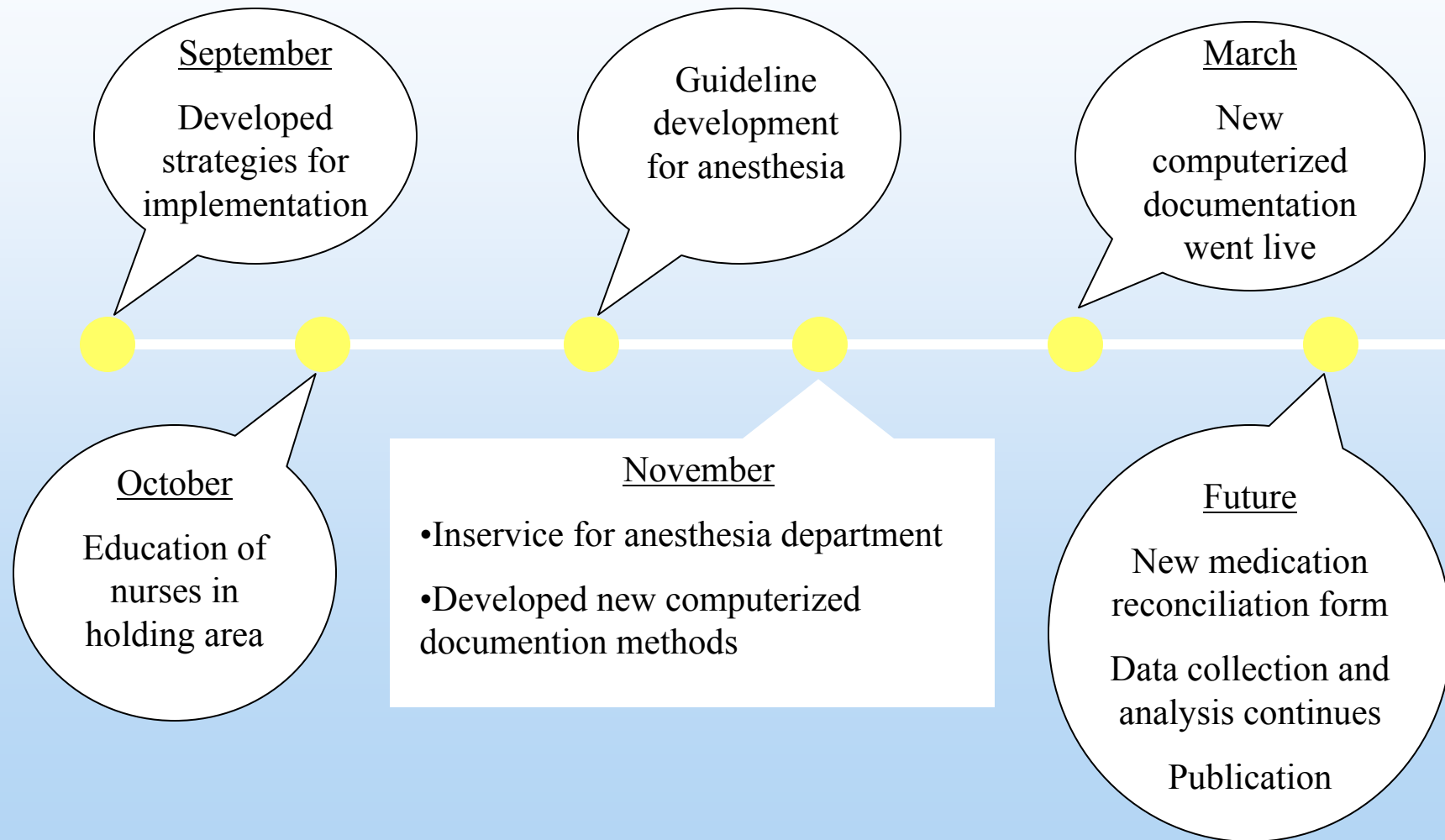
The screenshot displays the 'OR Manager - <Live Database> User ID: stewan' application. The main window is titled 'ER #:20679 Enter/Edit Case Record'. The patient's procedure is 'est R. Proc: REPAIR BOWEL OPENING W/RESECT & COLOREC...'. The interface includes a 'Section' list on the right with items like '01 PREOP SECTION', '02 INTRAP SECTION', '03 BILLING SECTION', and '05 SHORT FORM'. A 'Page' list below it includes '001 Preop Checklist', '002 Pre-Op Sheet', and '003 Preop Meds_Fluids_Interv_Delays'. A table at the bottom shows staff assignments for 'LAWRENCH' and 'C_43260' at 'Setup' time. A red box highlights a dropdown menu for selecting a medication type, with options: 'BETA_B', 'ANTIBIOTIC', 'BETA_BLOCK', 'Beta Blockers', and 'OTHER'. The 'Beta Blockers' option is currently selected.

Time	IV Fluids	Amount Mls (txt)	Condition/Site (txt)	Rate (txt)	Size # (txt)
0701	RING_LACT	1000	good/right	kvo	22

Type	Drug	Other	Time
BETA_B			
ANTIBIOTIC	Antibiotic		
BETA_BLOCK	Beta Blockers		
OTHER	Other		

Time	Staff	Activity
1100	LAWRENCH	Setup
1110	C_43260	Setup

Project Timeline



Results

418 charts reviewed
(April – November 2007)

292 charts excluded
(Patients not on beta-blockers pre-op or
beta-blockers contraindicated)

126 charts included in analysis

109 pre-intervention group

17 post-education group
(data collection ongoing)

Results

Baseline Characteristics

	Overall	Pre-intervention	Post-intervention
Total # patients	126	109	17
Male	56 %	55 %	59 %
Female	44 %	45 %	41%
Average age (years)	63	63	63
Caucasian	75 %	77 %	59 %
African American	25 %	22 %	41 %

Slide 16

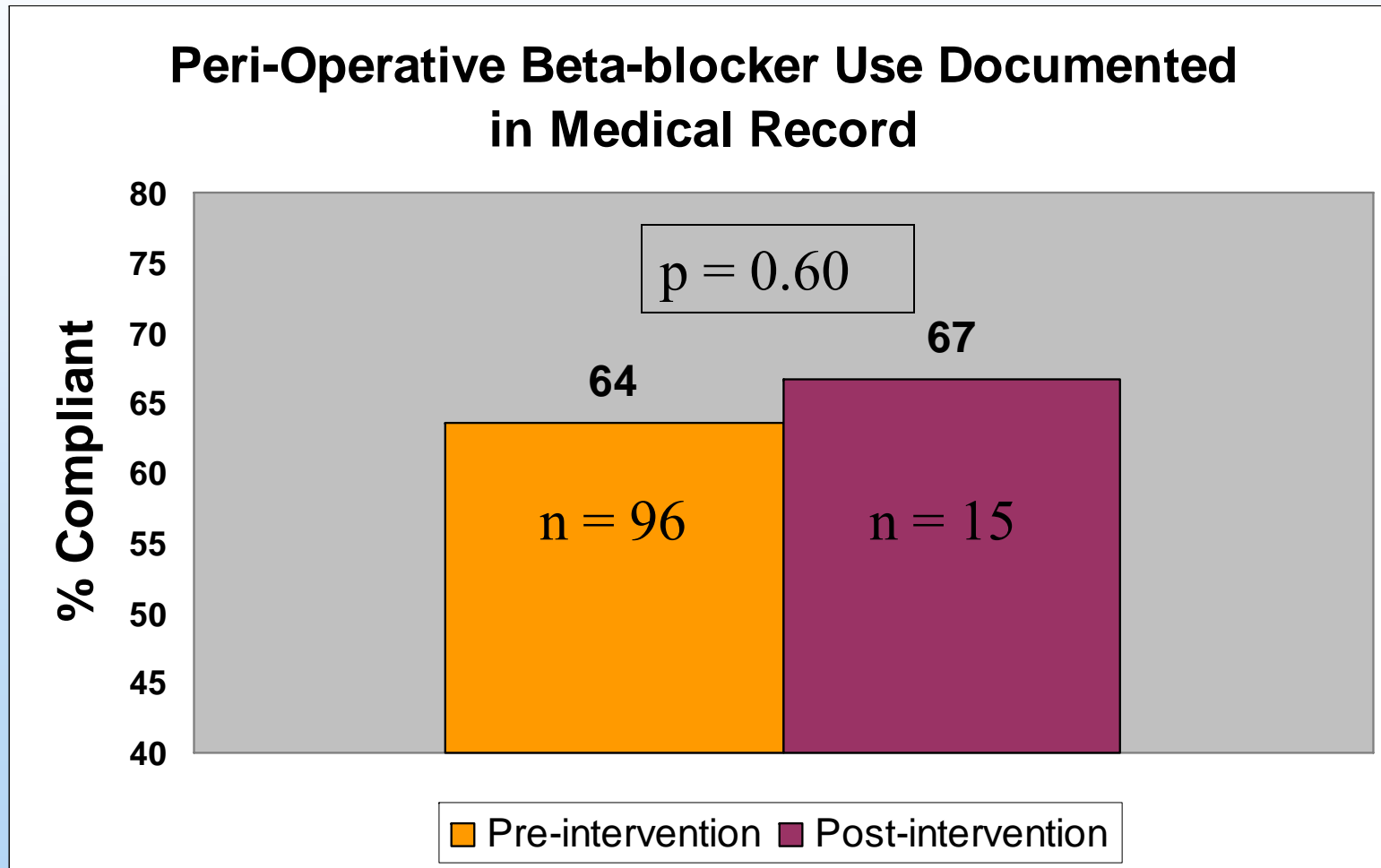
d2 Break into three columns - one for pre and one for post intervention

shouldn't it be 17 patients in the post - intervention group

djt, 4/10/2008

Results

Compliance Rates



Results

Cardiac Outcomes

Cardiac Event	Peri-Operative Beta-Blocker N=71*	Peri-Operative Beta- Blocker Not Documented N=40*	P-value
Arrhythmia	16 (23%)	9 (23%)	NS
Acute Heart Failure	17 (24%)	4 (10%)	0.05
Acute Myocardial Infarction	1 (1%)	0 (0%)	NS
Intra-Operative Death	0	0	NS
Hospital Death	0	0	NS

*15 patients excluded

Conclusions

- Compliance rates with beta-blocker use did not significantly improve after educational interventions
 - Educational sessions alone, without computer prompting, etc, are not enough to elicit a significant change in documentation practices
- Lack of documentation of beta-blocker use \neq actual use
- Overall, rates of cardiac events were not different between groups

Limitations

- Reliance on ICD-9 codes for cardiac outcomes
- Effect of documentation on outcome rates
- Data collection still in progress
- Retrospective collection of data
- Education alone in a large health system did not provide a significant change in compliance rates
- Delay in implementation of computerized documentation strategies

Future Analysis

- Increase in numbers of patients being compared in the post education intervention group
 - Dec 2007 to Feb 2008
- Analyze data in the post computerized documentation intervention group
 - Mar 2008 to Jun 2008
- Develop final conclusions based on complete data analysis
- Publish results

Acknowledgements

- Dave J. Taber, PharmD, BCPS
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- Zina Pompey



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