

# The Impact of Music on the PACU Patient's Perception of Discomfort

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## INTRODUCTION

Postoperative patients experience varying degrees of pain and generalized discomfort. Anxiety, loss of control, and sensitivity to unfamiliar noises may increase a patient's restlessness and perception of pain.<sup>1-2</sup> PACU nurses have a responsibility to promote the comfort and well-being of their patients by recognizing pain and therapeutically manipulating the environment in the care they provide. While traditional modalities of pain treatment continue to be utilized, side effects may increase PACU length of stay or necessitate hospital admission. Thus, alternatives to traditional pharmacological interventions should be explored and utilized.

Music intervention, which is inexpensive and requires minimal nursing time, is an alternative method of promoting patient comfort and satisfaction postoperatively. However, the evidence in the clinical literature regarding the physiological benefits of music intervention is inconclusive. PACU nurses at this Magnet community hospital established the facility's first unit-based research team to evaluate the effects of music intervention in their patient population.

## PURPOSE

This research study was designed to determine whether music impacted physiological indicators, perception of discomfort, need for narcotic intervention, length of stay and satisfaction of PACU patients. Specifically,

- Heart rate, respirations, blood pressure and SpO<sub>2</sub> measured
- Pain scores assessed using a descriptive ordinal scale (DOS)
- IV narcotics administered for pain control
- Time of PACU admission and time of discharge from unit recorded
- Environmental noise tracked by 'talk light' and patient report

## STUDY DESIGN and METHODS

- Design: Blind Randomized Controlled Trial
- Research study approved by CVMC IRB #2 - CRRB
- Informed consent obtained from all volunteers
- Inclusion criteria
  - Stable postoperative patients
  - Day surgery admission
  - Monday-Friday, 0730 - 2000 procedures
  - 18 years of age or older
  - Able to communicate and understand PACU practitioner
- Randomization occurred by patient visit number
  - **EXPERIMENTAL** subjects received **MUSIC**
  - **CONTROL** subjects received **NO MUSIC**
- Patient preference dictated music choice delivered by CD headset
  - CO=country, EL=easy listening, GS=gospel, RK=rock
- Standardized data collection on PACU admission, during stay, and at discharge
- Descriptive and inferential statistics performed

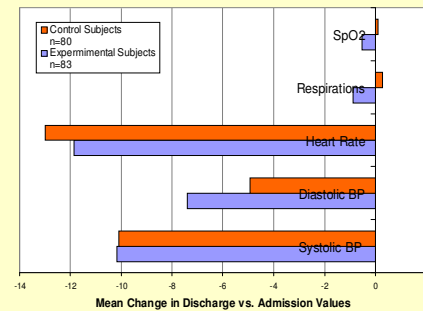
## DEMOGRAPHICS of TOTAL SUBJECT POPULATION

	Experimental Subjects (n=111)	Control Subjects (n=102)	p value
<b>Gender (no.)</b>			<b>&lt;.001<sup>†</sup></b>
<b>Females</b>	77	67	
<b>Males</b>	34	35	
<b>Age (years)</b>			<b>0.014<sup>†</sup></b>
<b>Mean (+/-SD)</b>	55.8 (13.9)	51.1 (14.0)	
<b>Range</b>	20 - 86	27 - 85	
<b>Surgical Specialty (no.)</b>			<b>0.187</b>
Gastroenterology - ENT	2	7	
EYE	4	2	
General - GEN	34	26	
Gynecology - GYN	13	21	
Neurology - NEU	9	4	
ORAL	1	1	
Orthopaedic - ORT	38	36	
Urology - URO	10	5	

<sup>†</sup>Significant difference at CI=95%

- Females volunteered twice as frequently as males, and experimental subjects were 4.7 years older on average than control subjects
- Chi square analysis revealed no significant difference in distribution of the 8 surgical specialties between groups; general and orthopedic procedures were most prevalent among subjects
- Mean LOS in the PACU was 64 vs. 57 minutes for experimental and control subjects, respectively ( $p=0.04$ ; data not shown)
- Self-reported pain scores varied widely in the population, while mean change in pain scores between groups was insignificant (data not shown)
- 50 subjects reported zero pain on admission and at discharge and did not receive narcotic intervention during their PACU stay
- **Remaining subjects experiencing post-operative pain (n=163) were evaluated further**

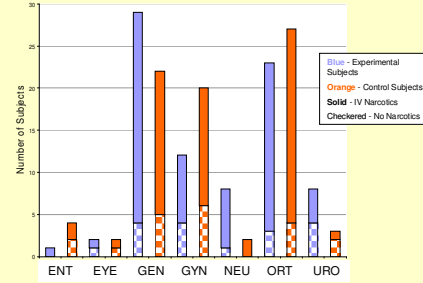
## PHYSIOLOGICAL CHANGES in POST-OP PAIN SUBJECTS



t-Tests revealed:

- Mean change between admission and discharge respirations in experimental and control subjects differed significantly,  $p=0.034$
- SpO<sub>2</sub>, heart rate, diastolic and systolic blood pressure mean changes over PACU stay were not significantly different between control and experimental groups

## PROCEDURE DISTRIBUTION of POST-OP PAIN SUBJECTS



- Most post-operative pain subjects required IV narcotic intervention
- 79.5% of experimental subjects, 75.0% of control subjects
- 100% of ENT experimental and neurology control subjects

## LENGTH of PACU STAY & TIME to FIRST IV NARCOTIC

t-Test Assuming Unequal Variance	Experimental Subjects	Control Subjects	p value <sup>†</sup>
<b>All Post-Operative Pain Subjects</b>	n=83	n=80	
<b>Mean Length of PACU Stay (min)</b>	66.3	59.6	<b>0.100</b>
<b>Subjects Receiving IV Narcotics</b>	n=66	n=60	
<b>Mean Time to First IV Narcotic (min)</b>	21.0	17.6	<b>0.079</b>
<b>Mean Length of PACU Stay (min)</b>	69.8	61.8	<b>0.060</b>

<sup>†</sup>CI=95%

- PACU LOS for subjects with post-operative pain was 7 min shorter on average in the control group, but this difference was not significant
- In post-op pain subjects requiring narcotics, mean time to administration was 4 min earlier for control subjects than for experimental subjects, who consequently had an increased LOS; neither time differential was significant at 95% confidence.

## POST-OP PAIN EXPERIMENTAL SUBJECT DATA

Single Factor ANOVA	CO	EL	GS	RK	p value <sup>†</sup>
<b>All Experimental Post-Op Pain Subjects</b>	n=14	n=36	n=25	n=8	
<b>Mean Length of PACU Stay (min)</b>	63.9	69.3	67.2	54.5	<b>0.605</b>
<b>Experimental Subjects Receiving IV Narcotics</b>	n=13	n=26	n=23	n=5	
<b>Mean Time to First IV Narcotic (min)</b>	18.2	25.1	18.9	17.4	<b>0.219</b>
<b>Mean Length of PACU Stay (min)</b>	66.6	74.8	69.5	55.0	<b>0.555</b>

<sup>†</sup>CI=95%

- ANOVA showed mean LOS was not influenced by the music preferences of the experimental subjects with post-operative pain
- Easy listening subjects requested pain medication ~6-8 minutes later than subjects listening to country, gospel or rock music, but time to first pain medication and PACU LOS did not vary significantly between groups

## CONCLUSIONS & IMPLICATIONS

### CONCLUSIONS

- Though gender imbalance was unexpected, it is not unprecedented.<sup>3</sup>
- Experimental subjects in the post-operative pain group had a lower mean respiratory rate than their control counterparts, a finding not seen in the total population. Listening to music may have distracted or relaxed subjects with pain contributing to the decrease in respirations.

- Music did not significantly impact LOS, time to narcotic intervention nor pain scores. The mean time to narcotic intervention was longer for experimental subjects than for controls, though the differential was not mathematically significant. The increase influenced their PACU LOS.

- Experimental subject self-selected music also did not affect length of PACU stay, need for narcotic intervention, or time to IV narcotic administration. This finding supports previous research supporting music preference as a key factor in mediating the benefits of music.<sup>4</sup>

- Limitations of the study include the diversity of procedures and anesthesia practitioners among the subject cases as well as certain patient co-morbidities.

### IMPLICATIONS

- Music improved patient satisfaction in the PACU environment as per
  - patient comments, e.g., "music was wonderful"
  - requests to keep headsets at discharge to another hospital unit
  - only 2 of 141 subjects rated environmental noise as "irritating"

- Music is an inexpensive way to provide non-pharmacological care in the PACU

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