

IMPLEMENTATION OF ACTIVITY AND MUSIC ON AGITATION MANAGEMENT IN  
HOSPITALIZED ADULTS ON A MEDICAL-SURGICAL UNIT

A DOCTOR OF NURSING PRACTICE PROJECT SUBMITTED TO THE OFFICE OF  
GRADUATE EDUCATION OF THE UNIVERSITY OF HAWAI'I AT MĀNOA IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF NURSING PRACTICE

MAY 2018

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Keywords: Agitation, Nonpharmacologic, Hospital

## Acknowledgement

This project was made possible through collaboration with Castle Medical Center's medical-surgical Pūlama unit. I would like to acknowledge Pūlama staff for their support of this project. Much gratitude to project chair Dr. Clementina Ceria-Ulep, content expert Dr. Therese Courtenay, and committee member Dr. Cheryl Albright for their expertise and encouragement throughout the planning and implementation of this project.

## Abstract

### **Introduction**

Agitation is characterized by extreme restlessness, tension, and irritability. Agitated behaviors pose a risk to patient safety. Nonpharmacologic intervention is regarded as a first-line intervention strategy for agitation. In collaboration with Castle Medical Center's (CMC) medical-surgical Pūlama unit, an evidence-based quality improvement project was undertaken to address patient agitation utilizing nonpharmacologic strategies. Following the Iowa Model for Evidence-Based Practice (EBP) as a framework, two nonpharmacologic interventions – music and activity – were selected from a review of literature and implemented into patient care. The purpose of this EBP project was to use these interventions to reduce the severity of agitated behaviors and enhance the overall quality of care.

### **Methods**

This project focused on two target populations: (1) Pūlama staff and (2) Pūlama agitated patients. Pūlama staff were trained to implement music and activity intervention. Following training, agitated patients were sampled as recipients of nonpharmacologic intervention. Methods to assess project outcomes include Pittsburg Agitation Scale (PAS) scores and CMC hospital records. PAS scores were obtained before and after implementation of intervention to determine if the addition of nonpharmacologic intervention reduced agitation severity. Additionally, CMC hospital records were evaluated to see if the addition of these interventions impacted (a) use of patient sitters and (b) use of “as needed” (PRN) medications for agitation.

### **Results**

Over the course of 3 months, 100 episodes of agitation were addressed using music and activity and evaluated using the PAS. Analysis showed an average decrease in agitation severity

for all behavioral groups scored by the PAS after intervention. Incidentally, during the intervention period, CMC hospital records showed patient sitter use increased. Also, during this period, there was a decrease in PRN lorazepam use and an increase in PRN haloperidol use for the indication of agitation.

## **Discussion**

The results suggested that agitated patients benefit from interventions of music and activity. The variety of intervention strategies utilized by staff support the need to individualize interventions to the preferences of each patient. Suggestions for sustainment of the project include modifying activity supplies to ease use, enhancing security of supplies, and considering various agitation assessment tools.

## Table of Contents

Acknowledgement.....	ii
Abstract.....	iii
List of Tables.....	xii
List of Figures.....	xiii
CHAPTER 1. EXECUTIVE SUMMARY.....	1
Introduction.....	1
Background and Problem.....	1
Conceptual Framework.....	1
Literature Review and Synthesis.....	1
Innovation and Objectives.....	1
Methods.....	1
Design.....	1
Practice Change Description.....	2
Setting and Sample.....	2
Data Collection.....	2
Results.....	2
Description of Participants.....	2
Data Analyses Findings.....	3
Discussion.....	3
Interpretation of Results.....	3
Implications.....	3
Limitations.....	3

CHAPTER 2. PROBLEM.....	4
Introduction.....	4
Background and Problem.....	4
Conceptual Framework.....	4
Triggers.....	5
Organizational Priority.....	6
Extent of the Problem.....	6
Baseline Data.....	7
Form a Team.....	8
Literature Review and Synthesis.....	9
Critique of Current Practice: Around-the-Clock Supervision.....	10
Nonpharmacologic Intervention as First-Line.....	10
Mechanism of Action of Nonpharmacologic Intervention.....	11
Types of Nonpharmacologic Intervention.....	11
Music.....	13
Recreational Activity.....	15
Evaluation of the Body of Evidence.....	16
Innovation and Objectives.....	17
Implementation of Music Listening.....	17
Implementation of Recreational Activities.....	17
Summary.....	18
CHAPTER 3. METHODS.....	19
Introduction.....	19

Purpose of Chapter.....	19
Conceptual Framework.....	19
PICO.....	19
Purpose Statement.....	19
Implementation Plan.....	20
Overview.....	20
Design.....	20
The Practice Change.....	20
Practice Change.....	20
Characteristics of Innovation.....	20
Relative Advantage.....	20
Compatibility.....	21
Complexity.....	21
Triability.....	22
Observability.....	22
Implementation Plan.....	22
Who, What, Where, When, Why, How.....	22
Implementation Timeline.....	23
Sampling Plan.....	23
Social Systems.....	23
Health Care Organization.....	23
Practice Setting.....	23
Sample .....	24

Sample Size.....	24
Inclusion and Exclusion Criteria.....	24
Application of Users of the Innovation.....	24
Change Agents.....	24
Change Champion.....	25
Opinion Leader.....	25
Adopter Categories.....	25
Innovators.....	25
Early Adopters.....	25
Early Majority.....	25
Late Majority.....	26
Laggards.....	26
Stakeholder Engagement Plan.....	26
Recruitment and Marketing Plan.....	26
Role of Stakeholders.....	27
Application of Communication Processes.....	28
Mass Media.....	28
Interpersonal.....	28
Evaluation Plan.....	28
Clinical Question.....	28
Integrity of the Design.....	29
Utility.....	29
Feasibility.....	31



Propriety.....	31
Accuracy.....	32
Program Description.....	32
Current Program.....	32
EBP Changes to Program.....	32
Definitions.....	33
Problem.....	33
Intervention.....	33
Staff Training.....	34
Recreational Activities.....	34
Music Listening.....	34
Baseline .....	35
Comparison.....	35
Outcome.....	35
Outcome Variable.....	35
Process Variable.....	36
Discussion.....	36
Data Management Plan.....	36
Data Sources.....	36
Data Collection Procedures.....	37
Chronological Order of Data Collection Procedures.....	37
Method of Data Collection.....	38
Storage.....	38

Data Analysis Plan.....	38
Data Presentation Plan.....	39
Fit with Clinical Question.....	39
Resources.....	39
Financial Resources.....	40
Human Resources.....	40
Physical Resources.....	40
Dissemination Plan.....	41
Marketing Plan to Disseminate Results.....	41
Role of Stakeholders.....	41
Plan for Sustainment of Practice Change.....	41
Role of Stakeholders.....	42
Human Subjects Considerations.....	42
Justification to Exclude IRB Process.....	42
Consenting Procedure.....	42
Limitations.....	42
Summary.....	43
CHAPTER 4. RESULTS.....	44
Objectives.....	44
Sample Description.....	44
Pūlama Staff.....	44
Pūlama Patients.....	44
Trend Analysis.....	46

Pittsburg Agitation Scale.....	46
Patient Sitter Use.....	48
“As Needed” Medication Use.....	48
Project Evolution.....	50
Expected Versus Actual Outcomes.....	50
Pittsburg Agitation Scale.....	50
Patient Sitter Use.....	51
“As Needed” Medication Use.....	52
Facilitators.....	52
Barriers.....	53
Summary.....	54
CHAPTER 5. DISCUSSION.....	55
Interpretation of Findings.....	55
Implications and Recommendations.....	55
DNP Essentials.....	56
Plans for Dissemination.....	57
Summary.....	57
Appendices.....	58
Appendix A. Pittsburg Agitation Scale.....	58
Appendix B. Staff Training PowerPoint.....	59
Appendix C. Staff Training Quiz.....	61
Appendix D. Data Collection Form.....	62
References.....	63

## List of Tables

Table 1. Diagnoses Predisposing to Agitation in CMC Inpatients.....	8
Table 2. Mosby Levels of Evidence of Articles Synthesized.....	9
Table 3. Categories of Patient-Level Nonpharmacologic Interventions for Agitated Behaviors..	12
Table 4. Stakeholder Roles.....	27
Table 5. Agitation Scales Reviewed.....	30
Table 6. Comparison of Agitation Scales.....	31
Table 7. How the EBP Changes the Current Program.....	33
Table 8. Data Source: Pittsburg Agitation Scale.....	36
Table 9. Data Source: Hospital Records.....	37
Table 10. Most Common Admitting Diagnoses of Pūlama Inpatients.....	45
Table 11. Pittsburg Agitation Scale Data Analysis.....	47
Table 12. Data Analysis of Patient Sitter Use.....	48
Table 13. Data Analysis of “As Needed” Medication Use.....	49
Table 14. Integration of DNP Essentials in EBP Project.....	56

## List of Figures

Figure 1. Iowa Model for Evidence-Based Practice.....	5
Figure 2. Nonpharmacologic Patient-Level Interventions Evaluated in the Body of Evidence....	13
Figure 3. Timeline for Project Tasks.....	23
Figure 4. Estimated Financial Resources Required Annually.....	40
Figure 5. Age Distribution of Pūlama Inpatients.....	45
Figure 6. Mean PAS Scores at T1 and T2.....	46
Figure 7. Interventions Utilized for Agitated Patients by Proportion.....	47
Figure 8. Sitter Hours Per Patient Care Day.....	48
Figure 9. “As Needed” Lorazepam Administration.....	49
Figure 10. “As Needed” Haloperidol Administration.....	50
Figure 11. Effect of Music and Activity on Episodes of Agitated Behavior.....	50

# **CHAPTER 1. EXECUTIVE SUMMARY**

## **Introduction**

### **Background and Problem**

Agitation is characterized as a state of restlessness, tension, and irritability. Agitated patients behave in ways that compromise their safety (Bradas & Mion, 2011; Brasure et al., 2016). Nonpharmacologic intervention is regarded as a first-line intervention strategy for agitation. The purpose of this EBP project was to incorporate nonpharmacologic interventions into patient care to decrease agitation severity on CMC's medical-surgical Pūlama unit.

### **Conceptual Framework**

The Iowa Model for EBP was used as a framework for this project. The Iowa Model identifies seven steps to integrate evidence into care (Titler et al., 2001).

### **Literature Review and Synthesis**

An electronic search was completed spanning five databases. This project included 21 systematic reviews, studies, and literature reviews. Through this critical literature review, several interventions for agitation management were identified.

### **Innovations and Objectives**

Given literature findings, innovations implemented on CMC's Pūlama unit included (a) use of an agitation scale to assess agitated patients and (b) integration of music and activity intervention into care. The objective of these innovations was to reduce agitation severity.

## **Methods**

### **Design**

An EBP, quality improvement approach was used to develop an agitation management program. The goal of this project was to enhance the quality of care for agitated patients.

## **Practice Change Description**

This project developed training for Pūlama staff to implement music and activity intervention for agitated patients and use an agitation scale to assess behaviors. When agitated behaviors are observed, staff introduced music and/or activity as an intervention strategy and assessed agitation before and after intervention.

## **Setting and Sample**

CMC serves as the primary healthcare facility for the Windward side of Oahu. CMC's medical-surgical Pūlama unit has 34 beds. Staff estimated that agitation is observed in 2 patients per 12-hour shift. Target populations identified include: (1) Pūlama staff and (2) Pūlama agitated patients. This project first targeted Pūlama nurses, nurse aides, and patient sitters for training. Following training, Pūlama agitated patients were targeted as recipients of the interventions.

## **Data Collection**

A T1-T2 evaluation approach was utilized to determine if the interventions reduced agitation severity. The PAS was used to obtain a baseline (T1) score and a post-intervention (T2) score. The difference in PAS scores at T1 and T2 was analyzed to determine effect of the intervention. Additionally, hospital records were collected to evaluate patient sitter use and "as needed" (PRN) medication use for agitation with the addition of these interventions.

## **Results**

### **Description of Participants**

Patients participating in the project were sampled from the Pūlama unit. The Pūlama inpatient population is 54% male and 46% female. The population is predominately 60 years and older. The most common admitting diagnoses are shortness of breath, fever, abdominal pain, and sepsis. The typical length of stay ranged from 1 to 4 days.

## **Data Analyses Findings**

During the 3-month implementation period, 100 episodes of agitation were addressed using music and activity and evaluated using the PAS. Data analysis showed an average decrease in agitation severity for all four behavioral groups after music and activity intervention was utilized. The most common intervention types utilized included music, word search, and coloring pages. During the implementation period, patient sitter utilization increased. Additionally, during this time, use of PRN lorazepam decreased while use of PRN haloperidol increased.

## **Discussion**

### **Interpretation of Results**

The results indicated that agitated patients benefit from interventions of music and activity. The results suggested that these interventions both reduced agitation severity and prevented the onset of agitated behaviors in patients prone to agitation. The variety of strategies utilized support the need to individualize interventions to the preferences of each patient.

### **Implications**

Suggestions for sustainment of the project include modifying activity supplies to ease use and enhancing security of supplies. If there is a need to further demonstrate project outcomes for the sustainment of the project, modified data collection methods can be considered.

### **Limitations**

As with any quality improvement project, there are limitations to the design. This project was implemented over a limited time span in a fluid environment with several variables. Furthermore, the project design relied on trend analysis to show impact on project outcomes.



## **CHAPTER 2. PROBLEM**

### **Introduction**

The purpose of this Doctor of Nursing Practice (DNP) project was to identify and implement a program that utilized nonpharmacologic intervention to reduce the severity of agitated behaviors in hospitalized adults using an EBP approach. This chapter reviews the background of the problem of agitated behaviors, reports and synthesizes the findings of the critical review of literature, and recommends a practice change based on the evidence.

### **Background and Problem**

Patient agitation is prevalent in acute care settings. Characterized as “an unpleasant state of extreme restlessness, increased tension, and irritability,” agitation poses a risk to patient safety (Bradas & Mion, 2011). Agitated patients may be verbally disruptive or physically hyperactive and are likely to behave in ways that increases the risk for falls, elopement, and injury (Bradas & Mion, 2011; Brasure et al. 2016). There are numerous causes of agitation. Agitation may be the result of acute illness that affects mentation, pre-existing conditions, or the unfamiliar hospital setting in which patients experience a variety of sensory alterations (Waszynski et al. 2013).

### **Conceptual Framework**

The Iowa Model for EBP is the conceptual framework that guided this DNP project. Summarized in Figure 1, the Iowa Model identifies seven main steps to integrate evidence into care. The steps can be summarized as follows: (1) identification of a topic from a trigger, (2) formation of team to carry out the EBP change, (3) assembly of relevant literature, (4) critique and synthesis of literature, (5) development and pilot of an EBP guideline, (6) adoption of the EBP guideline in practice, and (7) evaluation of the EBP guideline (Titler et al., 2001).

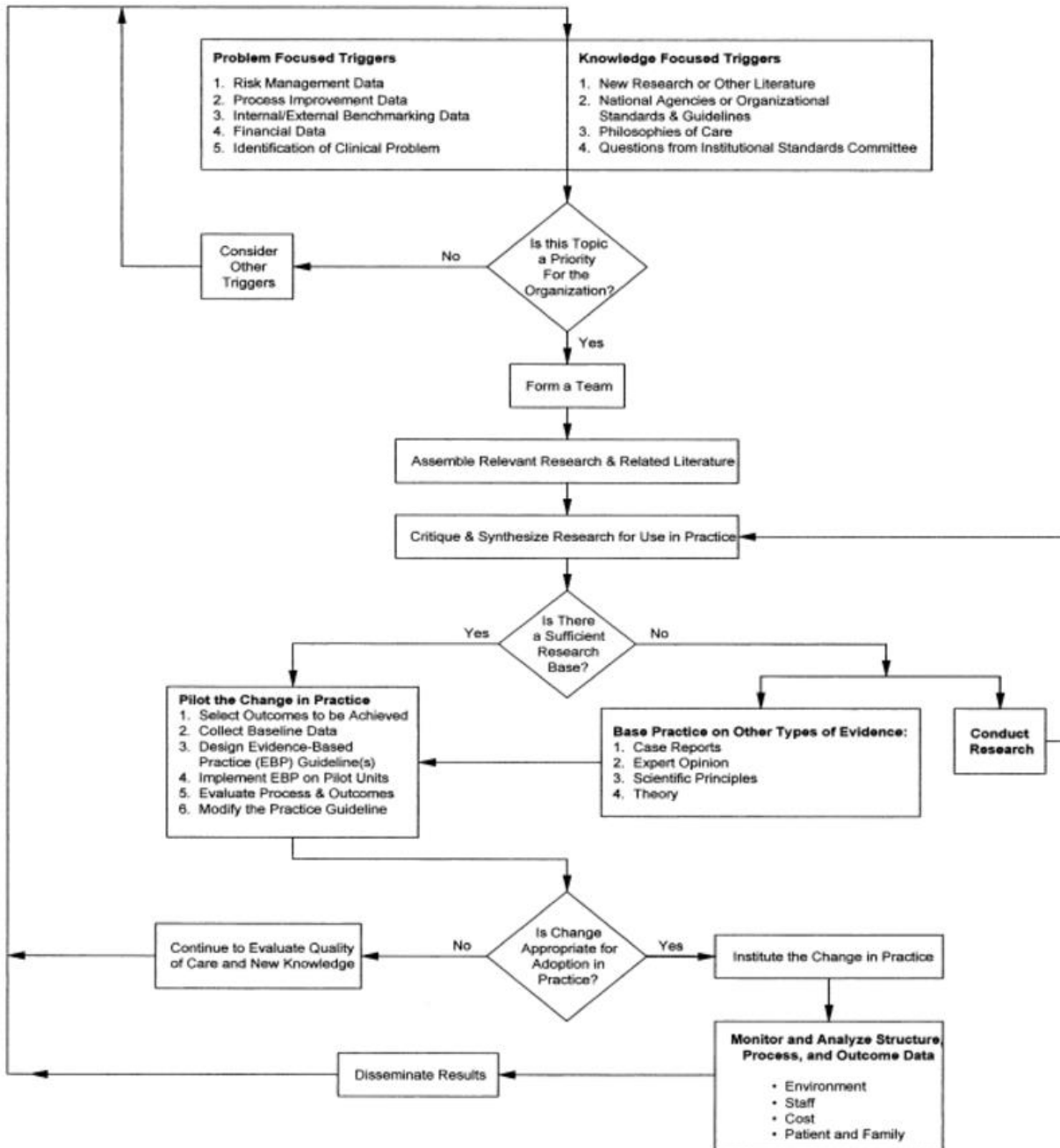


Figure 1. Iowa Model for Evidence-Based Practice (Titler et al. 2001)

## Triggers

In accordance with the Iowa Model, this DNP project was prompted by a “trigger.” A problem-focused trigger, as described by the Iowa Model, may be a clinical problem, a risk management concern, or a financial efficiency issue that is affecting the health care organization. (Titler et al., 2001). Problem focused triggers identified for this project include (a) agitated

behaviors observed in the inpatient setting that pose a risk to patient safety, (b) inadequate staffing to provide supervision for agitated patients, and (c) limited tools available to nursing staff to redirect agitated behaviors when they occur.

### **Organizational Priority**

This problem was raised by administrative staff that oversee inpatient care.

Administrative staff at CMC recognized that many patients on the medical-surgical Pūlama unit experienced agitation during their hospital stay. Prior to the initiation of this project, when patients on the unit presented with these types of behaviors, around-the-clock supervision was how these behaviors were typically managed. On the unit, supervision was provided either in the form of patient “sitters,” staff members whose dedicated role is to provide one-on-one supervision, or by seating patients within view of the nurses’ station.

The limitations of this practice were evident. First, patient sitters were not always available when needed; agitation can occur for numerous reasons and often presented at unpredictable times. Second, dedicating staff to the supervision of one patient on a busy unit increased hospital expenses. Third, substituting nurses for sitters and having them supervise patients from the nurses’ station detracted from other duties. Fourth, while supervision helped to maintain safety, it did not address the behavior itself. This project was undertaken to create additional solutions for addressing these behaviors.

**Extent of the problem.** The issue of agitated behavior in acute care settings is prevalent. Agitation may be present upon admission or occur during the hospital stay. Nationally, an estimated 1.7 million visits to the emergency department involve agitated patients (Allen & Currier, 2004). On critical care units, agitation rates are exceptionally high with a reported 59% of patients experiencing agitation during the first five days of their hospital stay (Burk, Grap,

Munro, Schubert, & Sessler, 2014). Among hospitalized patients with dementia, up to 98% will have at least one episode of agitation during their hospital stay (Sourial, McCusker, Cole, & Abrahamowicz, 2001).

Caring for an agitated patient presents many challenges to hospital staff. Focus groups conducted by Poole and Mott (2003) revealed that nurses often expressed feelings of frustration, concern, and apprehension when caring for agitated patients. Nurses expressed that they lack enough time to care for other patients and complete the rest of their job duties when charged with the care of an agitated patient. Furthermore, nurses expressed that they lack access to support resources to assist in the care of these challenging patients.

Additionally, agitation is associated with increases in healthcare expenditures and length of hospital stay. A retrospective chart review performed by Cots et al. (2016) of fourteen hospitals in Spain found that a diagnosis of agitation was associated with a 3-day increase in length of stay and an 8% increase in use of hospital resources. The prevalence of agitation in acute care highlights the need for specific interventions to appropriately address the behavior.

**Baseline data.** CMC is a 160-bed facility that serves as the primary health care facility for the Windward side of Oahu. In the year 2015, CMC cared for over 8,500 hospitalized patients (CMC, 2014). CMC's medical-surgical unit, the Pūlama unit, has 34 beds and cares for patients hospitalized with a variety of conditions.

To assess the degree of agitation observed on the Pūlama unit, records were obtained from CMC's Health Information Management department. Although there is a specific diagnosis for "restlessness and agitation," ICD-10 code R45.1, it is a diagnosis that is infrequently used as the behavior is often attributed to another condition or disease state. As patients with cognitive impairment, dementia, and disorientation are considered at high risk to experience agitation

(Waszynski et al., 2013), records were obtained regarding the prevalence of these types of diagnoses in CMC’s inpatient setting. Within a 6-month period from May 2016 to October 2016, 80 inpatients were discharged with one of the following diagnoses: (1) dementia with behavioral disturbance (4 inpatients), (2) disorientation (17 inpatients), (3) other amnesia (4 inpatients), (4) age-related cognitive decline (1 inpatient), (5) altered mental status unspecified (51 inpatients), and (6) other symptoms and signs involving cognitive functions and awareness (3 inpatients). Length of stay and cost of stay associated with each diagnosis is summarized in Table 1.

Table 1

*Diagnoses Predisposing to Agitation in CMC Inpatients*

ICD-10	Diagnosis	Percent of inpatients	Median length of stay	Median cost
F03.91	Unspecified dementia with behavioral disturbance	0.44%	3	\$39,223
R41.0	Disorientation	1.85%	6	\$53,396
R41.3	Other amnesia	0.44%	3	\$23,370
R41.81	Age-related cognitive decline	0.11%	2	\$25,273
R41.82	Altered mental status unspecified	5.56%	3	\$30,144
R41.89	Other s/sx involving cognitive functions and awareness	0.33%	11	\$62,086
-	All the above diagnoses	8.72%	4	\$36,777

**Form a Team**

In accordance with the Iowa Model framework, a team was developed at CMC to support the goals of the project. The Director of Inpatient Services and the Pūlama Unit Manager were key in project planning and development. To aid in the pilot and implementation phase of the project, nurses and nurse aides were recruited to promote support of the project among unit staff.

## Literature Review and Synthesis

An electronic search was performed using PubMed, CINAHL, Cochrane Library, National Guideline Clearinghouse, and PsychINFO. Search terms included “agitation,” “psychomotor agitation,” in combination with “prevention,” “control,” “manage,” “therapy” “intervention,” or “treat.” Additional searches were conducted with the following terms: “nonpharmacologic,” “recreation therapy,” “music therapy,” “milieu therapy,” “hospital,” and “inpatient.” The search limitations were English language articles.

Table 2

*Mosby Levels of Evidence of Articles Synthesized*

Level	Category	Articles
I	Meta-analysis, systematic review	11
II	Experimental design	0
III	Quasi-experimental design	1
IV	Case controlled, cohort, longitudinal study	1
V	Correlation studies	1
VI	Descriptive studies	3
VII	Authority opinion, expert committee report	0
Other	Literature review, performance improvement	4

The search generated a total of 462 articles. After reviewing titles and abstracts of the articles for relevance, 33 articles were selected for critique. Selected articles were limited to publications dates ranging from the year 2006 to 2017. Articles generated in the search but deemed irrelevant to the project included studies involving pediatric patients, mechanically ventilated patients, and caregiver-level interventions. Of those 33 selected articles, 21 have been synthesized for this review. Several low-level articles (i.e. literature reviews) were excluded

from the final synthesis as the information they provided was validated in more reputable sources. Additionally, individual studies that were critiqued and included in the discussion of higher level systematic reviews were not utilized in the final synthesis. Articles were critiqued using Mosby's Research Critique Tool and graded for level of evidence. Table 2 summarizes the levels of evidence of the 21 articles synthesized for the review.

### **Critique of Current Practice: Around-the-Clock Supervision**

While around-the-clock supervision and the use of one-to-one patient sitters is a common way of managing agitated patients, this practice has been questioned in the literature. Several studies have suggested that constant observation in the form of patient sitters is intrusive and countertherapeutic (Ray, Perkins, & Meijer, 2011). A quality improvement project led by Waszynski et al. (2013) revealed that patients were discontent with the sitter role and expressed that they felt "watched" and "intruded upon." The authors noted that these feelings could easily exacerbate agitation. Furthermore, a literature review by Bradas and Mion (2011) suggested that one-to-one staff presence may inadvertently increase agitation by inducing paranoia. As agitation in acute care settings is believed to originate, in part, from the unfamiliar environment and having to interface with numerous unfamiliar peoples in the process of receiving care, arguably, the continuous presence of an unfamiliar person in a patient's room can contribute to agitation.

### **Nonpharmacologic Intervention as First-Line**

Nonpharmacologic intervention is consistently regarded as a first-line intervention strategy for agitation in the literature (Brasure et al., 2016; Millan-Calenti et al., 2016). Historically, pharmacologic intervention and the use of physical restraint has been the mainstay of agitation management (Bradas & Mion, 2011; Millan-Calenti et al., 2016). Pharmacologic intervention, most frequently in the form of psychotropic medications, are associated with

numerous adverse effects including somnolence, decreased cognitive function, increased cerebrovascular side effects, extended length of hospital stays, and increased mortality (Kong, Evans, & Guevara, 2009; Milan-Calenti et al., 2016). Physical restraints are also associated with negative effects including decreased cognitive performance, decreased functionality, decreased physiological well-being, and increased risk of bodily injury (Waszynski et al., 2013). For these reasons, pharmacologic intervention and the use of physical restraints should be withheld until the use of nonpharmacologic intervention has been shown to be ineffective (Bradas & Mion, 2011). A critical review of literature was undertaken to assess the evidence for the use of various nonpharmacologic intervention strategies in the management of agitation.

**Mechanism of action of nonpharmacologic intervention.** Agitation is often considered to be a patient's way of communicating an unmet need (Ayalon et al. 2006; Cohen-Mansfield et al. 2007). As such, nonpharmacologic intervention is believed to relieve agitation by meeting a need. Manifestations of agitation vary. Symptoms may be distinguished as either verbal or physical and they may be classified as either aggressive or nonaggressive in nature (McGonigal-Kenney & Schutte, 2006). In accordance with the unmet needs model, verbal agitation in the form of repetitive questions or echolalia may be interpreted as the patient communicating a need for social interaction or auditory stimuli. Similarly, physical agitation in the form of restless movements may be understood as the patient expressing boredom and can suggest that activity or sensory stimulation is desired (Ayalon et al. 2006).

**Types of nonpharmacologic intervention.** There are a multitude of nonpharmacologic interventions used in the management of agitation. These interventions can be categorized into three broad areas: (1) Patient-level interventions, (2) Caregiver-level interventions, and (3) Care delivery-level interventions. Patient-level interventions describe interventions that directly



involve the patient such as exercise programs and therapeutic touch or massage. In contrast, caregiver-level interventions describe interventions that aim to change the behavior of those that care for patients. Caregiver-level interventions may include education on beneficial approaches to agitated patients such as being present in a calm manner and using a lower tone of voice. And finally, care delivery-level interventions refer to organizational changes that modify the way care is planned for these patients. Person-centered care, emotion-oriented care, and clinical protocols to reduce the use of antipsychotic medications are examples of care delivery-level interventions (Brasure et al. 2016).

This project focused on patient-level interventions. Patient-level interventions can be further divided into the following areas: (1) sensory enhancement, (2) structured activities, (3) social contact, and (4) environmental modification (Kong et al., 2009; McGonigal-Kenney & Schutte, 2006). Examples of interventions within each category are summarized in Table 3.

Table 3

*Categories of Patient-Level Nonpharmacologic Interventions for Agitated Behaviors*

Category	Interventions
Sensory enhancement	Massage, therapeutic touch Music Sensory/multisensory stimulation Aromatherapy
Structured activities	Recreational activities Physical activity
Social contact - real or simulated	1-on-1 social interaction Simulated interaction
Environmental modifications	Bright light therapy Home-like atmosphere

*Note.* Interventions categorized into higher orders according to classifications introduced by Kong et al. (2009) and McGonigal-Kenney and Schutte (2006).

Figure 2 summarizes the evidence for select nonpharmacologic patient-level interventions. While several nonpharmacologic patient-level interventions are discussed in the literature with varying degrees of support, only the evidence for music intervention and recreational activity intervention will be further discussed in detail as these interventions are the focus of this project.

Citation	Level of Evidence	SENSORY ENHANCEMENT				ACTIVITY		SOCIAL CONTACT		ENVIRON. MOD.	
		Massage	Music	Multisensory stimuli	Aromatherapy	Recreational	Physical	One-to-one	Simulated	Bright light therapy	Home-like
Abraha 2017a	I							?			
Abraha 2017b	I	?	+	?	?		-	-		-	
Ayalon 2006	I									?	
Brasure 2016	I		-		-	?	?			-	
Chung & Lai 2009	I			-							
De Oliveria 2015	I	+	+		-	+	+			+	
Kong 2009	I	+	+	+		-		-			
Livingston 2014	I	+	+	+	-	+	-	?		-	-
Millan-Calenti 2016	I	-	+		-					-	
Seitz 2012	I		+	+		+	+				
Staedtler & Nunez2016	I	-	-		-		+				
Holliday-Welsh 2009	IV	+									
Figueiro 2015	VI									+	
Van Der Ploeg 2010	VI					+					
Bradas & Mion 2011	O					+		?			
McGonigal-Kenney 2006	O	+	+	+	+	+	+	+	+	+	+
Ray 2010	O							-			
Waszynski 2013	O					+					

Figure 2. Nonpharmacologic patient-level interventions evaluated in the body of evidence. (+) indicates positive benefit of intervention. (-) indicates no benefit of intervention. (?) indicates insufficient or inconclusive evidence for the intervention.

**Music.** Music therapy is heavily studied as an intervention strategy for agitation management as well as other behavioral symptoms. Music is believed to improve agitation levels in multiple ways. As a form of auditory stimuli, music can relieve agitation caused by sensory

deprivation (Cohen-Mansfield et al., 2007). When used as a form of background noise, music can mask noise pollution contributing to patient unrest. When the music type selected is individualized and preferred by the patient, music is believed to evoke positive memories in the listener, bring comfort, and prevent or relieve agitation (De Oliveria et al., 2015; Millan-Calenti et al., 2016).

Although the literature on music intervention is inconsistent, the majority of the evidence supports its use. Six literature reviews critiqued support the use of music intervention for agitation management specifically in dementia patients (Abraha et al., 2017b; De Oliveria et al., 2015; Kong et al., 2009; Livingston et al., 2014; Millan-Calenti et al., 2016; Seitz et al., 2012). Music intervention is particularly effective when the music is individualized and accounts for the preferences and experiences of the listener (Millan-Calenti et al., 2016). Furthermore, music therapy is reported to be more effective when carried out by a trained therapist according to a structured protocol (Livingston et al., 2014). While effective, the effect is consistently regarded as modest and time-limited without lasting effects after the music intervention is withdrawn (Livingston et al., 2014; Seitz et al., 2012).

In contrast to these findings, two systematic reviews reported that music intervention does not result in a statistically significant reduction in agitation when compared to control groups (Brasure et al., 2016; Staedtler & Nunez, 2016). One reason for the inconsistent evidence may be due to variation in implementation and evaluation methods (Baird & Samson, 2015, Other). Numerous differences exist between studies that examined the effects of music. Music interventions ranged from passive methods, such as music listening, to interactive methods that include playing instruments, singing, and dancing. Additionally, interventions may be carried out individually or in groups as part of social interaction. Interventions may be led by music

therapists, designated activities personnel, or nursing staff. Conditions forming the comparison group, in addition to the duration and frequency of music therapy intervention studied, is highly variable (Abraha et al. 2017b; De Oliveria et al., 2015; Livingston et al., 2014; Millan-Calenti et al., 2016). Overall, Baird and Samson (2015) summarize that music has a statistically significant positive effect on agitation when compared to standard care but shows no effect when compared against other nonpharmacologic intervention types such as recreational activities.

***Recreational activity.*** Activity interventions are intended to be meaningful to the patient and relieve boredom that can precipitate agitation. Commonly utilized types of recreational activity include puzzles, board games, coloring, painting, sewing, sorting cards, building blocks, magazines, books, and plush toys (Cohen-Mansfield et al., 2007; Cohen-Mansfield et al., 2015). Some activities are intended to resemble work-related tasks such as folding towels or sorting objects (Cohen-Mansfield et al., 2015). A subset of studies evaluating the efficacy of activity intervention on agitation management focus on the application of Montessori principles (Brasure et al. 2016). As theorized by Maria Montessori and other educational theorists, Montessori-based activities use task demonstration, guided repetition, and progression from simple to complex tasks to engage individuals in activities (Van Der Ploeg & O'Connor, 2010).

Several systematic reviews support the use of recreational activities in agitation management specifically in dementia patients (De Oliveria et al. 2015; Kong et al. 2009; Livingston et al. 2014; Seitz et al. 2012). While positive, the benefit of activity intervention is judged to be modest and effective only when individuals are engaged in the intervention without long-term effects (Seitz et al. 2012).

Regarding the effectiveness of individual types of activities, two studies - one correlational and one descriptive - trialed different types of activities against one another and

found that no single type of activity was superior. The studies concluded that any type of activity intervention was beneficial for decreasing agitation (Cohen-Mansfield et al. 2010; Cohen-Mansfield et al., 2015). Similarly, the use of Montessori principles in activity intervention has not been shown to be superior to the effects of general recreational activity intervention (Brasure et al. 2016).

While the majority of the studies reviewed were conducted in long-term care facilities, a quality improvement project by Waszynski et al. (2013) showed that the use of activity intervention could effectively decrease agitation levels in the hospital setting as well. When patient sitters were used to initiate various activity types (cards, dolls, puzzles, arts and crafts, knitting, blocks) into care, 73% (54 of 74) patients showed a decrease in agitation levels.

### **Evaluation of Body of Evidence**

Overall, there is a large body of evidence on the topic of nonpharmacologic agitation management interventions. As revealed in the literature review, there are several interventions that have been studied and there is much variation in the implementation and evaluation methods used in individual studies. Conditions that comprised control groups, tools utilized to grade agitation, and time of evaluation (immediate versus long-term) contributed to the variation in study designs. This variation likely accounts for the why some of the systematic reviews concluded that the evidence was only “modestly” supportive.

Additionally, the majority of the studies were conducted in long-term care settings and focus on the dementia population. The body of evidence would benefit from additional studies evaluating the use of nonpharmacologic intervention in other populations prone to agitation and other settings besides long-term care.

## **Innovation and Objectives**

The literature review identified several nonpharmacologic patient-level interventions for the management of agitation. This project incorporated two nonpharmacologic interventions as follows into patient care with the primary objective of reducing the severity of behaviors:

- Implementation of music listening
- Implementation of recreational activities

The above interventions were utilized as they demonstrated the highest benefit from all nonpharmacologic interventions identified in the review of literature and were judged to be the most realistic for implementation in the CMC setting.

### **Implementation of Music Listening**

The use of preferred music in the management of agitation is well documented. In the literature, there are many different methods of incorporating music into care: listening to music, singing with music, playing musical instruments, and dancing to music. This project specifically implemented the use of music listening. The innovations of this project were intended to work within the current setting without the use of additional staff members to lead patients in interventions. Music listening was selected as it is a method of integrating music into care with limited disruption to current roles. To address the preferred aspect of music listening, staff members inquired as to patient preference.

### **Implementation of Recreational Activities**

There are multiple types of recreational activities that have been studied in the management of agitation. As with the music interventions, not all the evidence-based recreational activities were realistic for implementation in the hospital setting without the use of additional staff. Because additional staff members were not hired to implement recreational

activities, the activities selected for implementation were chosen to be simple for staff to set up and easy for patients to engage in a self-directed manner. Ideal activities that patients could engage in by themselves include jigsaw puzzles, playing cards, coloring pages, crossword puzzles, or blocks for stacking and sorting. Because patients varied with different interests, preferences, and abilities, activities were selected to appeal to a wide spread of patients. Relative durability and reusability of the intervention supplies were considered especially in regard to infection control.

### **Summary**

Multiple nonpharmacologic patient-level interventions to reduce agitation were identified in the body of evidence. The interventions implemented on CMC's Pūlama unit include incorporating music and recreational activity into patient care. The implementation of these selected interventions is addressed in detail in the following chapter.

## **CHAPTER 3. METHODS**

### **Introduction**

#### **Purpose of Chapter**

The literature synthesis identified several evidence-based interventions to address agitated behaviors. Based on the literature findings, this project incorporated music and recreational activity into the care of agitated patients on the Pūlama unit. This chapter describes the implementation of these interventions including the sample, methodology, data management, dissemination, ethical considerations for subjects, and limitations of the project design.

#### **Conceptual Framework**

As introduced in the previous chapter, the Iowa Model for EBP was used to guide this project. The implementation plan for this project corresponds with Iowa Model steps five through seven that address the development, pilot, and adoption of an evidence-based guideline and plans for evaluation (Titler et al., 2001).

#### **PICO**

PICO statements are frequently utilized in EBP to facilitate a literature search. The following PICO statement guided this DNP project: Adult patients on CMC's Pūlama medical-surgical unit experiencing agitation (P) who receive music and recreational activity intervention for the management of agitation (I) as compared to the current practice of supervision (C) will have decreased severity of agitated behaviors (O).

#### **Purpose Statement**

The purpose of this DNP project was to incorporate evidence-based nonpharmacologic interventions into the care of agitated patients on CMC's Pūlama unit to reduce the severity of agitated behaviors. This project ultimately aimed to enhance the quality of care provided.



## Implementation Plan

### Overview

**Design.** This project was designed as an evidence-based, quality improvement initiative. A critical review of literature was undertaken to select interventions that were supported by evidence. The goal of this project was to reduce the severity of agitated behaviors and enhance the quality of care provided for agitated patients.

### The Practice Change

**Practice change.** This project incorporated nonpharmacologic patient-level interventions of music and recreational activity into the care of agitated patients to reduce the severity of agitated behaviors on the Pūlama unit. Nursing staff and patient sitters were trained to implement music and recreational activity interventions for agitated patients. They were also trained to use an agitation scale to further assess agitated behaviors before and after intervention.

**Characteristics of innovation.** According to Rogers' (2003) Diffusion of Innovations Theory, five characteristics – relative advantage, compatibility, complexity, trialability, and observability – determine whether an innovation will be successfully adopted in practice. In Roger's thinking, an innovation is most likely to be adopted if it is highly advantageous, highly compatible, low in complexity, high in trialability, and high in observability.

**Relative advantage.** Relative advantage, as the name suggests, refers to the idea that the innovation is superior in some way to the current method (Rogers, 2003). The innovation of nonpharmacologic intervention had a relative advantage over the prior practice of maintaining around-the-clock supervision in multiple ways.

First, nonpharmacologic interventions aim to address the source of agitation while supervision serves to maintain safety. Agitation frequently results from an inappropriate level of

stimulation. As a form of stimuli, nonpharmacologic interventions of music listening and recreational activity can effectively address the source of agitation. Second, in addressing the source of agitation, nonpharmacologic interventions have the potential to reduce the need for around-the-clock supervision and patient sitters. In reducing the need of supervision, hospital expenses are reduced and nurses can focus on their duties without the additional burden of monitoring agitated patients from the nurse's station. Third, patients frequently express dissatisfaction with the one-on-one sitter role. Patients frequently perceive sitters as intrusive and report feeling as though they are being watched. When sitters take a more interactive role and incorporate nonpharmacologic interventions into their duties, patients report enhanced satisfaction and contentment (Waszynski et al., 2013).

***Compatibility.*** Compatibility refers to the extent to which the innovation aligns with the values, past experiences, and needs of the organization (Rogers, 2003). Among CMC's stated organizational values are (a) human dignity and individuality, (b) excellence in clinical and service quality, and (c) responsible resource management (CMC, 2016). The innovation was consistent with organizational values. As an EBP change, the innovation corresponded with CMC's value of providing excellent clinical care. As an intervention with the potential to reduce hospital expenditures, the innovation promoted responsible resource management and waste reduction. And finally, as an innovation that takes patient preference into account regarding music selection and activity selection, the innovation supported CMC's value of honoring human individuality.

***Complexity.*** Complexity describes the perceived difficulty of learning to use the innovation (Rogers, 2003). Practicality and clinical utility were strongly considered in designing

this practice change. The nonpharmacologic evidence-based interventions implemented were intended to be simple and easy to operationalize.

***Trialability.*** Trialability refers to the ease of trying the innovation first on a time-limited basis to see if the practice change results in an effective, positive change (Rogers, 2003). This innovation had high trialability. If one type of activity was ineffective at redirecting an agitated patient, another type of activity was easily trialed immediately after the first was shown to be ineffective. Additionally, in regard to resources and supplies, this innovation was relatively simple to implement. Supplies involved everyday items such as puzzles, word search, and coloring pages.

***Observability.*** Observability describes the extent to which the innovation's results are readily recognized by others (Rogers, 2003). This innovation has high observability as the results of the intervention were readily observed through a change in patient behavior. When an intervention was successful, the result was obvious – the patient was occupied and appeared comforted.

**Implementation plan.** The implementation plan followed the framework provided by the Iowa Model for EBP introduced in the previous chapter. Implementation corresponded with steps five through seven that addresses the pilot, adoption, and evaluation of an EBP change.

***Who, what, where, when, why, how.*** Online training was developed for Pūlama unit nursing staff and patient sitters on how to integrate music and recreational activity intervention into the care of agitated patients. This training was made available to staff 1 month prior to the pilot and implementation phase. After staff completed training, the music and recreational activities were piloted for 2 weeks on the unit. Adjustments were made to the interventions as needed based on patient response and staff feedback following the pilot period. The music and

activity interventions were then implemented for all agitated inpatients on the unit for a 3-month implementation period during which time, data was collected.

**Implementation timeline.** The timeline for project tasks is outlined in Figure 3. Timeline addresses timeframes for staff training, pilot, implementation, evaluation, presentation, and dissemination of results.

Task	2017							2018				
	J	J	A	S	O	N	D	J	F	M	A	M
Ch. 1-3 Submitted to Project Chair	X											
Ch. 1 -3 Submitted to Committee		X										
DNP Proposal Defense		X										
Develop Marketing, Education Products	X											
Educate Staff		X										
Pilot Practice Change			X									
Implement Practice Change				X	X	X						
Collect Data				X	X	X						
Analyze and Interpret Data							X					
Present Data to CMC Staff								X				
Final Paper Submitted to Project Chair								X				
Final Paper Submitted to Committee									X			
DNP Project Defense										X		
Final Paper Submitted to OGE											X	
Prepare, Submit Dissemination Products												X

Figure 3. Timeline for project tasks.

### Sampling Plan

**Social systems.** In accordance with Rogers’ (2003) theory, innovations are adopted within social systems. The social system refers to the population in which the practice change is being introduced.

**Health care organization.** CMC is a 160-bed facility that serves as the primary healthcare facility for the Windward side of Oahu. In the year 2015, CMC cared for over 8,500 hospitalized patients and employed the equivalent of 763 full-time employees (CMC, 2016).

**Practice setting.** CMC’s medical-surgical unit, the Pūlama unit, has 34 beds and cares for patients hospitalized with a variety of conditions. On this unit, nurses are typically charged with

the care of 5 to 6 patients on 12-hour shift. Staff estimated that agitation is observed in an average of 2 patients per shift.

**Sample.** The implementation of this DNP project focused on two target populations: (1) Pūlama staff and (2) Pūlama patients. Pūlama staff, namely nurses, nurse aides, and patient sitters, were targeted as they are the population that changed their practice and integrated the intervention into patient care. Pūlama patients, specifically agitated patients, were targeted as the recipients of the interventions.

**Sample size.** This project aimed to sample 100% of nurses, nurse aides, and patient sitters on the Pūlama unit for training on the use of the proposed agitation management interventions. During the 3-month implementation period, an effort was made to sample 100% of patients exhibiting agitated behaviors on the Pūlama unit.

**Inclusion and exclusion criteria.** Nurses, nurse aides, and patient sitters included in the sample were those that work on the Pūlama unit. Staff excluded from the sample were those on other inpatient units. Patients included in the sample as recipients of the agitation management interventions were identified as exhibiting agitated behaviors. Patients excluded from the sample were those that do not present with agitated behaviors. Other patients excluded included those with agitated behaviors on suicide precautions.

**Application of users of the innovation.** Following Rogers' (2003) Diffusion of Innovation theory, multiple players were involved in moving the innovation into practice. Players involved in the process included change agents, change champion, and opinion leader.

**Change agents.** A change agent is an individual that is among the first to act and adopt the innovation into practice (Rogers, 2003). Change agents in this DNP project included Pūlama staff that prioritize the need for more effective agitation management strategies.

*Change champion.* A change champion is a charismatic individual that helps the organization overcome feelings of resistance or indifference by throwing their weight behind an innovation (Rogers, 2003). The primary change champion in this DNP project was the Unit Manager of the Pūlama medical-surgical unit who supported the innovation and worked closely with the staff that implemented the innovation.

*Opinion leader.* An opinion leader is an influential individual that can sway the opinions of others in the community. When an opinion leader supports an innovation, and begins to tell others about the innovation, the rate of adoption increases dramatically (Rogers, 2003). The primary opinion leader in this DNP project was the Director of Inpatient Services who first expressed interest in the potential of nonpharmacologic intervention for agitated patients.

*Adopter categories.* According to Rogers (2003), in any social system, there are differing degrees of willingness to adopt an innovation. Rogers categorizes “adopters” of an innovation into five groups depending on their degree of “innovativeness.”

*Innovators.* Innovators have an appreciation for new evidence and help launch new ideas into the system (Rogers, 2003). The author of this DNP project served as the role of innovator.

*Early adopters.* Early adopters have a desire to revolutionize their practice and are very respected in the social system. When an early adopter approves of an innovation and adopts it into practice, others are likely to do the same (Rogers, 2003). Early adopters for this project included the Director of Inpatient Services and the Pūlama Unit Manager. These early adopters were interested in improving methods used to manage agitated patients prior to the planning of this DNP project and readily supported this practice change.

*Early majority.* The early majority is only slightly more innovative than the average member of the social system. Very deliberate, the early majority would like time to consider the

innovation before adopting it (Rogers, 2003). A subset of nurses, nurse aides, and patient sitters comprised the early majority for this project. Recruitment efforts during the pilot period were used to engage this group.

*Late majority.* The late majority is slightly slower than the average member of the social system at adopting an innovation. Skeptical and cautious, the late majority will hold out on adopting an innovation until most others in the system have adopted it (Rogers, 2003). Again, a subset of nurses, nurse aides, and patient sitters comprised the late majority for this project. Following Rogers model, this adopter group was engaged by demonstrating that the innovation was effective (Rogers, 2003).

*Laggards.* The last group to adopt an innovation, laggards, require a high degree of certainty that a new idea will not fail before they are ready to adopt (Rogers, 2003). Among the nursing staff and patient sitters, there was a handful of laggards that prefer the current standard of care. To reach this group, interpersonal communication techniques were used as described by Rogers (2003) in the form of informal one-on-one meetings on the unit to identify barriers to utilizing the intervention and encourage use.

### **Stakeholder Engagement Plan**

**Recruitment and marketing plan.** An organized effort was made to recruit support for the recommended practice change. As nursing staff and patient sitters are key for the day-to-day implementation of music and activity interventions, recruitment efforts focused heavily on these groups. Nursing staff and patients were made aware of the agitation management interventions through online training but recruitment of these groups occurred most heavily during the pilot period when music and activity supplies are readily available on the unit. During the pilot period, this author of this DNP project assisted staff in using music and activity interventions for

agitated patients to demonstrate the potential effect of these interventions and encourage continued use of the interventions.

Table 4  
*Stakeholder Roles*

Stakeholder Group	Category	Key Roles
Director of Inpatient Services	Evaluation Findings	Increase credibility of plan Fund/authorize actions to implement evaluation findings
Pūlama Unit Manager	Program Operations Evaluation Findings	Increase credibility of plan Fund/authorize actions to implement evaluation findings
Pūlama Nursing Staff	Program Operations	Implement intervention Collect data
Pūlama Patient Sitters	Program Operations	Implement intervention Collect data
Agitation-Prone Pūlama Inpatients	Program Recipients	Intervention subjects

**Role of stakeholders.** Stakeholders are individuals or groups of peoples that have a vested interest in the intervention or what will be done with the results of the project. According to the Centers for Disease Control and Prevention (CDC) (2005), stakeholders fall into three categories: (1) those involved in the program operations, (2) those who intend to use the evaluation findings, and (3) those affected by the program. Stakeholders can carry out the implementation of the program on a daily basis, increase the credibility of the evaluation, authorize changes based on evaluation results, and fund the continuation of the program. As such, it was crucial that their needs and interests were accounted for in the evaluation plan. Stakeholder roles for this DNP project are shown in Table 4.



**Application of communication processes.** According to Rogers (2003), there are two main types of communication channels: (1) mass media and (2) interpersonal. For the promotion of this project, both channels were utilized to reach CMC staff and encourage their support and participation in the project.

**Mass media.** Mass media channels are effective at conveying a message to wide audiences. Mass media has the ability to increase knowledge rapidly and efficiently but lacks persuasive power (Rogers, 2003). Mass media channels available included CMC email, CMC newsletter, postings in the Pūlama unit staff lounge, and training modules prepared for staff on CMC's online site. Mass media channels were used initially before the implementation period to raise awareness of the project and increase knowledge on interventions for agitation management.

**Interpersonal.** In contrast, interpersonal channels that require a face-to-face exchange between individuals are slow and less efficient as a communication method but have the power to persuade others and change attitudes that may hinder adoption of the intervention (Rogers, 2003). Interpersonal channels utilized include monthly staff meetings, staff "huddles" that occur daily on the unit at shift changes, and informal one-on-one meetings on the unit. These channels were used to gain feedback from staff, address questions and concerns, and gain valuable suggestions for modification and improvement to the project.

## **Evaluation Plan**

### **Clinical Question**

The clinical question for this DNP project was as follows: Will training nursing staff and patient sitters to implement an activity and music-based agitation management program reduce

agitation severity as measured by lowered Pittsburg Agitation Scale (PAS) scores in agitation-prone adult inpatients on CMC's Pūlama medical-surgical unit over a 3-month period?

The clinical question was answered using an impact evaluation design. Impact evaluations assess the effectiveness of an intervention by looking at the degree to which the intervention has achieved its ultimate goal (CDC, n.d. a). The goal of this project was reduced patient agitation. As such, the project design utilized a T1-T2 evaluation approach to describe how activity and music intervention affected agitated behaviors in inpatients on CMC's Pūlama medical-surgical unit. Agitation-prone patients were evaluated for agitated behaviors using the PAS before and after the implementation of the intervention to determine its impact on patient behavior.

### **Integrity of the Design**

The evaluation plan for this DNP project was guided by the CDC's (2005) *Framework for Program Evaluation in Public Health*. The CDC framework is based upon four main standards: utility, feasibility, propriety, and accuracy. Together these standards support the design of valid evaluation plans (Milstein & Wetterhall, 2000).

**Utility.** Regarding utility, stakeholders were consulted to ensure that evaluation methods would yield useful and meaningful results. From this consultation, it was decided that the evaluation plan would focus primarily on showing improvement in patient agitation levels through use of the PAS pre- and post-intervention.

The PAS was selected after reviewing available literature on agitation assessment tools. Systematic reviews by Gitlin, Marx, Stanley, Hansen, and Haitzma (2014) and Zeller and Rhoades (2010) identified several tools for agitation assessment. Scales were classified as either (a) general or (b) specific. General behavior scales assessed agitation amongst other behaviors

such as apathy and depression. Specific scales focused exclusively on manifestations of agitation. As this project focuses specifically on the management of agitation, only agitation-specific scales were considered for use.

Of the scales specific to agitation, several were not feasible for use in the hospital setting. Many scales required an extended observation period or relied on the subjective report of a proxy to complete. Scales reviewed but deemed inappropriate for this project are summarized in Table 5. Three scales judged to be feasible for the setting were compared and presented to stakeholders as shown in Table 6. From these choices, the PAS was selected to be most useful for the purposes of this project.

As an adjunct to patient agitation levels, hospital records were reviewed after implementation of the program to see if there was a change in the use of patient sitters and the use of PRN medications for agitation. Other outcomes including falls were considered, however, after consult with stakeholders this was excluded from the evaluation plan. Although agitated behaviors may contribute to physical restlessness on the unit, agitation is not considered to contribute to patient falls and was excluded from the evaluation plan.

Table 5

*Agitation Scales Reviewed*

Agitation Scale	Rationale for Exclusion
Agitated Behavior in Dementia (ABID)	Requires family/proxy member interview.
Brief Agitation Rating Scale (BARS)	Requires 2-week observation period.
Cohen-Mansfield Agitation Inventory (CAMI)	Requires 2-week observation period.
Disruptive Behavior Rating Scale (DBRS)	Requires 1-week observation period.

*Note.* Table includes information gathered from Gitlin et al. (2014) and Zeller and Rhoades (2010).

Table 6

*Comparison of Agitation Scales*

Scale	Items	User	Admin Time	Score	Patient Population	Setting	Reliability	Validity
Overt Agitation Severity Scale (OASS)	12	Trained observer	15 min	Total score.	Adult psychiatric patients	Hospital	Internal consistency 0.88-0.91. Inter-rater 0.90.	Convergent validity with PAS. Discriminant validity. Content validity via expert consensus.
Pittsburg Agitation Scale (PAS)	4	Nurse	1 min	Behavior groups rated. No total score.	Dementia patients	Hospital Nursing home	Inter-rater 0.82-0.93.	Validity confirmed via score difference with vs. without intervention
Agitated Behavior Scale (ABS)	14	Trained observer	Not specified.	Total score.	Traumatic brain injury patients	Hospital	Internal consistency 0.83-0.92. Inter-rater 0.91-0.92	Content validity. Concurrent validity of total score across multiple samples. Construct validity.

*Note.* Table includes information gathered from Gitlin et al. (2014), Rosen et al. (1994), Yudofsky, Kopecky, Kunik, Silver, and Endiott (1997), and Zeller and Rhoades (2010).

**Feasibility.** In regard to feasibility, data collection methods were selected to be realistic given resources and time constraints. The assessment tool selected, the PAS, has a limited administration time taking approximately 1 minute to complete. As such, the tool was intended to be practical and minimally disruptive to workflow procedures (Rosen et al., 1994).

**Proprietary.** Regarding propriety, the evaluation focused on patients directly impacted by the implementation of the agitation management program. The rights of participants were protected by ensuring that no identifying personal data was collected (Milstein & Wetterhall, 2000).

**Accuracy.** Regarding accuracy, the PAS helped to ensure that the results are accurate. The PAS has been psychometrically tested to ensure that the data are valid and reliable even when administered by different staff members under different conditions. Studies testing the validity of the tool did not give users any special training beyond the brief instructions that accompany the scale. As an agitation assessment tool, the PAS has been tested in both the inpatient setting and the nursing home setting and was shown to have high inter-rater reliability (+0.82) and validity. One limitation of the instrument, however, is that it was designed for assessment of dementia patients and the sample for this project was not limited exclusively to dementia patients (Rosen et al. 1994).

### **Program Description**

This EBP change was implemented within an existing program. In accordance with the CDC (2005) framework, a “program” is defined as the practice setting impacted by the practice change.

**Current program.** In the existing program, patients were admitted to the unit and assessed by nursing staff routinely on every shift. Through the nursing assessment, agitated behaviors were identified and noted in the patient chart. Agitated patients identified as needing around-the-clock supervision were provided patient sitters or supervised from the nurse’s station for their safety.

**EBP changes to program.** This EBP change changed the flow of patient care and its accompanying procedures in two main ways. First, this practice change incorporated the PAS into patient assessments to quantify the severity of agitation and qualify the types of agitated behaviors observed in patients. Second, this practice change integrated the use of music and activity intervention into patient care to lessen the severity of agitated behaviors. A comparison

of existing program procedures and program procedures integrating the EBP change is represented in Table 7.

Table 7  
*How the EBP Changes the Current Program*

Current Program	Proposed Program with EBP Change
1. Nurse assessment of patient	1. Nurse assessment of patient
2. Patient’s agitated behavior identified	2. Patient’s agitated behavior identified
3. Around-the-clock supervision provided for patient as necessary	3. Need for nonpharmacologic agitation management strategy identified
	4. Patient’s agitated behavior assessed via Pittsburg Agitation Scale
	5. Nonpharmacologic agitation management strategies implemented (with around-the-clock supervision provided for patient as necessary)
	6. Patient’s agitated behavior re-assessed via Pittsburg Agitation Scale
	7. Agitation management strategies continued or adjusted as necessary

## Definitions

This section defines the problem, intervention, baseline, comparison, and outcome. These terms were given operational definitions to define procedures and quantify outcomes.

**Problem.** The identified problem for this project was agitation. Conceptually, agitation was defined as “an unpleasant state of extreme restlessness, increased tension, and irritability” (Bradas & Mion, 2011). Operationally, agitation was defined as a numeric score of 1 to 4 in any one or more of the four behavioral domains – aberrant vocalizations, motor agitation, aggressiveness, resisting care – identified by the PAS. The PAS is shown in Appendix A.

**Intervention.** The intervention consisted of training CMC nursing staff and patient sitters to implement nonpharmacologic agitation management interventions. Intervention strategies consisted of recreational activities and music listening.

**Staff training.** Conceptually, training was defined as an organized activity undertaken to impart information or improve performance. Operationally, training was provided to staff as a module offered through CMC's online training site. This training was developed by applying Adult Learning Theory. Adult Learning Theory as described by Knowles is based upon five main assumptions: (1) adult learners can direct their own learning, (2) adult learners have a reservoir of life experiences that can be used for learning, (3) adult learners learning needs are closely related to the tasks of their social role, (4) adult learners are problem-centered and interested in immediate application of knowledge, and (5) adult learners are internally motivated (Merriam, 2001).

Given these principles of adult learning, the training addressed the following topics: (1) introduction to agitation, (2) manifestations of agitation, (3) staff concerns related to agitation, (4) how to implement music/activity interventions for patients, and (5) orientation to the PAS tool. The module focused on how music and activity was going to be made available on the unit and concluded with a brief quiz to check for completion of the training. PowerPoint and quiz used in the training module is shown in Appendix B and C respectively.

**Recreational activities.** Conceptually, recreational activity describes actions performed for enjoyment, leisure, or amusement. For this project, recreational activity was operationally defined as playing cards, crossword puzzles, word search, sudoku, coloring pages, jigsaw puzzles, tangram puzzles, building blocks, and lacing cards. When offering activities to agitated patients, staff inquired as to patient preference. If patients were not able to make their preferences known, a process of trial and error occurred.

**Music listening.** Conceptually, music listening describes the act of attending to vocal or instrumental sound. For this project, music listening was operationally defined as playing music

through a music-streaming application on an electronic device. This electronic device was a handheld Kindle tablet and iPad. A variety of different genres and time-period specific music channels were made available through the music-streaming application. Individual patients used a personal account on the music-streaming application to play the music genre that they preferred. Staff offered assistance to individual patients in creating a personal account on the music-streaming application as needed. When offering music listening to agitated patients, staff inquired as to patient preference. If patients were not able to make their preferences known, a process of trial and error occurred.

**Baseline.** The identified baseline for this project was pre-intervention (T1) agitation levels. Pre-intervention agitation was conceptually defined as the starting level of agitation without intervention. Operationally, the baseline was defined as the numeric PAS score documented immediately before each patient received music or recreational activity intervention.

**Comparison.** The identified comparison for this project was post-intervention (T2) agitation levels. Post-intervention agitation was conceptually defined as the resulting degree of agitation after intervention. Operationally, the comparison was the numeric PAS score documented while each patient received music or recreational activity intervention.

**Outcome.** As discussed, this evaluation plan was designed as an impact evaluation. As an impact evaluation, this plan identified an outcome variable (CDC, n.d. a).

**Outcome variable.** The identified outcome of interest for this project was reduced severity of agitated behaviors. Conceptually, patients with reduced agitated behaviors may be described as being less restless or more content. Operationally, the outcome was defined as the numeric difference in the baseline/pre-intervention (T1) score and the comparison/post-intervention (T2) score.



**Process variable.** No process variables were identified for this project. Process variables are applicable only to an evaluation plan designed as a process evaluation (CDC, n.d. a).

**Discussion.** The overall operationalization of this evaluation plan was challenging due to the lack of agitation assessment tools in place at the project site. There was no standardized method of assessing and documenting agitated behaviors in the electronic medical record (EMR) template used during nursing care. This evaluation plan required the integration of a new tool, the PAS, to quantify the severity of agitated behaviors.

### **Data Management Plan**

For the evaluation of this project, a data management plan was needed. Data management plans help to ensure that evaluation processes answer the clinical question and produce valid results that are accepted as legitimate.

**Data sources.** The primary data source for this evaluation was the PAS discussed previously, shown in Appendix A. The PAS has four data elements. The four data elements are categorized in the scale as behavioral groups that correspond to typical manifestations of agitation. These data elements are described in Table 8.

Table 8

*Data Source: Pittsburg Agitation Scale*

Data Element	Description
Behavioral group: Aberrant vocalizations	Degree of severity for each behavioral group is scaled from 0 to 4, where 4 is severe and 0 is not present.
Behavioral group: Motor agitation	
Behavioral group: Aggressiveness	
Behavioral group: Resisting care	

The second data source was hospital records. Data was aggregated from hospital records to collect information on (a) the use of sitters on the unit and (b) use of PRN medications for agitation. Data on sitter use was collected as the number of hours patient sitters were utilized on the unit per patient care days. Data collection on the use of PRN medications for agitation was

limited to the top two most frequently prescribed medications on the unit for the indication of agitation. The use of PRN medications was collected as the number of dosages administered per patient care day. Data elements collected from hospital records are summarized in Table 9.

Table 9

*Data Source: Hospital Records*

Data Element	Description
Patient Sitter Use	Number of sitter hours per patient care day
“As Needed” (PRN) Medication Use	Number of dosages administered per patient care day

**Data collection procedures.** Data collection from both data sources – (a) PAS and (b) hospital records – are detailed below. Collection procedures and analysis methods are addressed.

***Chronological order of data collection procedures.*** Data collection procedures from the PAS were identical at T1 and T2. When agitation is observed, a baseline agitation score was obtained at T1 by completing the PAS. This T1 score was documented by either a nurse, nurse aide, or patient sitter. After T1, an agitation management intervention was administered. After engaging in an agitation management intervention, a T2 score was obtained by completing the PAS a second time. This T2 score was obtained by the same nurse, nurse aide, or patient sitter that performed the baseline T1 assessment.

Data collection procedures were intended to be simple, efficient, and easy to integrate into existing procedures for all data collectors, both nursing staff and patient sitters. Nursing staff perform routine assessments on their assigned patients. As such, this tool was promoted as an adjunct to that assessment for agitation-prone patients. Alternatively, these data collection procedures were also promoted during slow periods in the nursing shift. As the main duty of patient sitters with agitated patients is to provide supervision, these data collection procedures were not expected to interfere with patient sitter routines.

Limited procedures were necessary to collect data from hospital records on the use of sitters and the use of PRN medications for agitation. This data was requested for the 3-month implementation period (from September 2017 to November 2017) and the 9-month period preceding the implementation period.

***Method of data collection.*** In preparation for data collection from the PAS, printed forms with copies of the scale were prepared as shown in Appendix D. Each form had two copies of the scale to allow for assessment at T1 and T2.

Limited preparation was necessary to collect data from hospital records. This data was organized on an excel sheet to allow for data analysis. Records on patient sitter use were aggregated from hospital administration. Records on PRN medication use for agitation were aggregated from the pharmacy department.

***Storage.*** Completed copies of the PAS were stored at the nurse's station for later data analysis. To protect subjects involved, no identifying patient or staff information was collected. Additionally, to protect patient confidentiality, hospital records on sitter use and PRN medication use was aggregated without patient identifiers.

***Data analysis plan.*** As this evaluation plan utilized a T1-T2 approach and a reduction in patient agitation was the main outcome being evaluated, data was analyzed by subtracting post-intervention (T2) scores from baseline (T1) scores. As the primary data source, the PAS, has four elements (known as behavioral groups) scored numerically, this calculation was performed for each element to determine the impact of the intervention on each. Scores for each behavioral group served as the focus of analysis rather than a total score of all behavioral groups as the PAS tool does not offer interpretation of total scores. Additionally, T1 and T2 scores were analyzed

separately. The mean, median, maximum, and minimum pre-intervention (T1) scores and post-intervention (T2) scores were calculated for each behavioral group as well.

Hospital records were analyzed for a change in the use of sitters and the use of PRN medications. To see if there was change in the use of sitters after implementation of the agitation management program, the median and mean number of patient sitter hours per patient care day was calculated for each month in the 3-month implementation period and compared to the values calculated for each month in 9-months prior to implementation.

To see if there was a change in the use of PRN medication for agitation after implementation, the median and mean number of dosages per patient care day were calculated for each month in the 3-month implementation period and compared to the values calculated for each month in the 9-months prior to implementation. This calculation was repeated for the top two most frequently prescribed medications on the unit for the indication of agitation.

**Data presentation plan.** Results will be presented to CMC Pūlama nursing staff and patient sitters through an online PowerPoint format. The data presentation plan will address whether a reduction in agitation severity was observed in patients after receiving music or activity intervention. The presentation will further address if a reduction in patient sitter use or PRN medication use for agitation was found during the implementation period.

**Fit with clinical question.** The data management plan was consistent with the clinical question. As planned, the data management plan appropriately revealed if a reduction in agitation severity was observed in patients after receiving music or activity intervention.

### **Resources**

To implement and evaluate this EBP project, resources were required. Resources needed for implementation included financial needs, human resource needs and physical space needs.

## Financial Resources

Non-Reusable Items			
Item	Single-Item Cost	Quantity Per Day	Annual Cost
Crossword, word search, sudoku	\$0.05 per page	10 pages	\$90
Coloring pages	\$0.05 per page	10 pages	\$90
Crayons	\$1 per pack	2 packs	\$730
Music Items			
Item	Single-Item Cost	Quantity Per Year	Annual Cost
Headphones	\$12	3	\$36
Electronic device (e.g. Kindle)	\$50	3	\$150
Reusable Items			
Item			Annual Cost
Playing cards, laminated/waterproof (2 set)			\$16
Wooden puzzles (4 set)			\$10
Tangram puzzles (5 set)			\$20
Building blocks			\$10
Lacing cards (5 set)			\$10
<b>TOTAL ANNUAL COST</b>			<b>\$1162</b>

Figure 4. Estimated financial resources required annually

The CMC Pūlama unit has a designated operational budget. To implement this project, stakeholders were consulted and provided with a spreadsheet of suggested supplies. Estimated annual costs were approved. Projected costs represented in Figure 4 are based off the use of nonpharmacologic interventions for 2 agitated patients per day and 3 sets of music listening supplies per year. To further cut down on costs, donations were requested from staff as suggested by stakeholders.

## Human Resources

To implement this EBP project, the Pūlama staff was directly involved in carrying out the practice change. Staff involved in carrying out the practice change included nurses, nurse aides, and patient sitters.

## Physical Resources

Limited physical resources were required. The implementation of this project required only a small designated area at the nurse's station to hold activity and music supplies. The

activity or music intervention did not require additional space to implement. The interventions were carried out in the patient's rooms using overbed tables for supplies or around the nurse's station where agitated patients were frequently seated.

## **Dissemination Plan**

### **Marketing Plan to Disseminate Results**

Initial results will be presented to Pūlama unit staff as discussed in the data presentation plan. To further disseminate results and promote adoption beyond the Pūlama unit, a poster with main findings of the project will be prepared for display at CMC. Additionally, through the preparation of an abstract submission to an annual nursing conference, the results of this project may reach a larger healthcare community to support the adoption of similar evidence-based initiatives in settings outside of the CMC organization.

**Role of stakeholders.** Key stakeholders assisting with the dissemination of results include the Pūlama Unit Manager and the Director of Inpatient Services. Having knowledge of the larger CMC organization, these stakeholders can identify other hospital units with an interest in adopting similar intervention strategies.

### **Plan for Sustainment of Practice Change**

To support sustainment of the practice change, several recommendations can be considered. First, financial resources need to be authorized to allow for continued purchase of supplies needed for implementation of the interventions. Second, the online training module must be made available to new incoming staff members to ensure that these new staff members are aware of the available nonpharmacologic intervention. Third, if the use of the PAS is deemed to be informative and useful to staff in assessing agitated patients, integrating the scale into the EMR template used for routine nursing assessments would be helpful for sustainment.

**Role of stakeholders.** Stakeholders play a large role in the sustainment of the practice change on the Pūlama unit. Collaboration with the Pūlama Unit Manager would be needed to allow for the continued purchase of supplies. The online training module could be made available to new staff in collaboration with administrators. Ultimately, continued implementation of music and activity intervention is reliant upon the efforts of nurses, nurse aides, and patient sitters continuing to integrate these strategies into the care of agitated patients.

### **Human Subjects Considerations**

The protection of the rights of human subjects involved in this project were considered in the project design. In preparation for this project, this author has taken the University of Hawaii required Collaborative Institutional Training Initiative course in Human Subjects Protection. Furthermore, a committee of faculty and clinical experts reviewed this project proposal to ensure adequate protection for human subjects.

**Justification to exclude IRB process.** As a quality improvement project initiative, approval by CMC's Institutional Review Board (IRB) was not required. There were no plans to randomize subjects to different treatments or collect personal identifiable data.

**Consenting procedure.** Furthermore, as a quality improvement project initiative, consenting procedures were not required. The proposed interventions did not pose additional risk beyond standard practice.

### **Limitations**

As a quality improvement project, there were limitations to the design. The practice change was implemented in a fluid environment where conditions fluctuated. In this environment, mediating factors were present and not all variables were controlled for. While the instrument used for rating agitated behaviors had established reliability and validity, multiple

staff members were collecting the data at different times of the day across various shifts and this had the potential to limit the accuracy of results. Furthermore, the staff members collecting the data before and after implementation of the intervention were aware of the project outcomes, thus introducing the risk for bias. This project design relied on trend analysis to show impact on project outcomes. No directionality or causality could be determined from this type of design.

### **Summary**

The purpose of this DNP project was to implement evidence-based nonpharmacologic interventions for adult patients on CMC's Pūlama medical-surgical unit to reduce the severity of agitated behaviors. This chapter addressed the Iowa Model for EBP steps five through seven which covered the pilot and adoption of an evidence-based guideline and plans for evaluation. The results of the implementation period are discussed in detail in the following chapter.



## **CHAPTER 4. RESULTS**

In accordance with plans outlined in the previous chapter, an agitation management program utilizing music and activity intervention was piloted and implemented on the CMC Pūlama unit over a 3-month period. Data collection and analysis occurred during this period. This chapter corresponds with the seventh and final step of the Iowa Model for EBP that calls for the evaluation of an EBP guideline. This chapter describes project objectives, sample characteristics, trend analysis of identified variables, and discusses the evolution of the project.

### **Objectives**

The primary objective of this EBP initiative was to reduce the severity of agitated behaviors on CMC's Pūlama unit by incorporating nonpharmacologic intervention into patient care. In doing so, this project aimed to enhance the quality of care provided.

### **Sample Description**

#### **Pūlama Staff**

Staff members trained on agitation management interventions were sampled from Pūlama's nurse, nurse aide, and patient sitter pool. In total, 74 staff members were targeted for training. Of these 74 staff members, 65 staff members successfully completed training prior to the start of the implementation period.

#### **Pūlama Patients**

Patients that served as recipients of agitation management interventions were sampled from the Pūlama unit. As a medical-surgical unit, the Pūlama unit serves a wide variety of adult inpatients. Over the previous year, the Pūlama inpatient population was 54% male and 46% female. The predominate age group in this population was 60 years and older. Age distribution of Pūlama inpatients is shown in Figure 5. The most common admitting diagnoses were

shortness of breath, fever, abdominal pain, and sepsis. The top 10 most common admitting diagnoses are shown in Table 10. The majority of patients' length of stay ranged from 1 to 4 days.

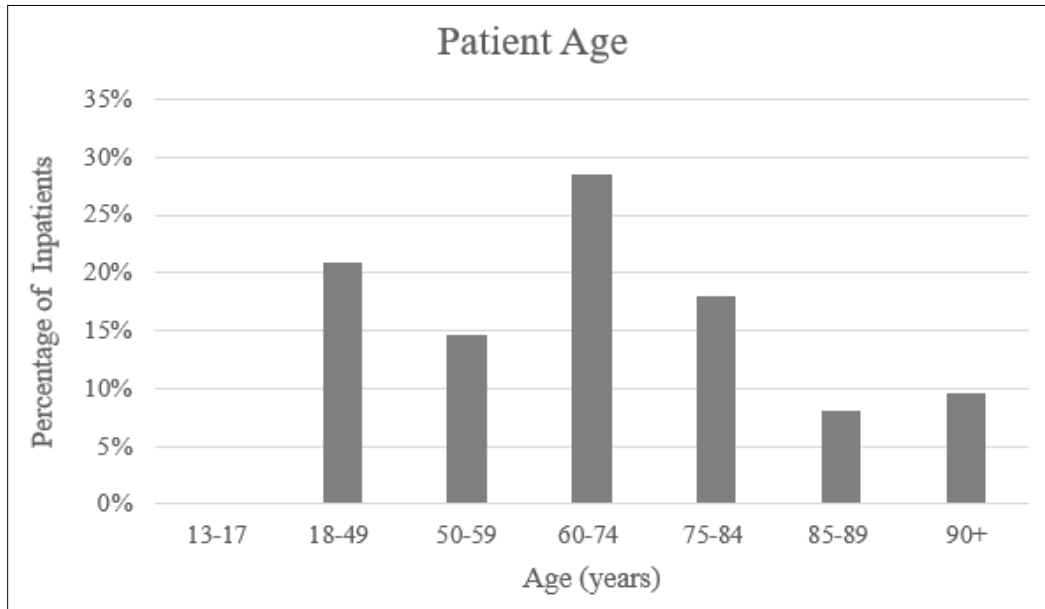


Figure 5. Age distribution of Pūlama inpatients

Table 10

*Most Common Admitting Diagnoses of Pūlama Inpatients*

Admitting Diagnosis	ICD 10	Percentage of Inpatients
Shortness of breath	R06.02	8.5%
Fever, unspecified	R50.9	7.4%
Abdominal pain, unspecified	R10.9	6.1%
Sepsis, unspecified	A41.9	5.8%
Weakness	R53.1	4.8%
Altered mental status	R41.82	3.0%
Nausea with vomiting, unspecified	R11.2	2.5%
Right upper quadrant pain	R10.11	2.2%
Cellulitis of left lower extremity	L03.116	1.7%
Right lower quadrant pain	R10.31	1.5%

## Trend Analysis

### Pittsburg Agitation Scale

As previously discussed, the evaluation of this project was designed as an impact evaluation that identified an outcome variable. The primary outcome of interest was reduced severity of agitated behaviors as measured by the difference in baseline/pre-intervention (T1) PAS scores and comparison/post-intervention (T2) PAS scores. As previously discussed, the PAS rated agitation on a scale of 0 to 4 for four behavioral groups – aberrant vocalizations, motor agitation, aggressiveness, and resisting care – where 4 is severe and 0 is not present.

During the 3-month implementation period, 100 episodes of agitation were addressed using music and activity and evaluated using the PAS. On average, data analysis showed a decrease in agitation severity for all four behavioral groups after music and activity intervention was utilized as shown in Figure 6. These 100 episodes of agitation does not equate to 100 patients; patients with a longer length of stay and persistent agitated behaviors throughout their stay may have served as recipients of music and activity intervention on more than one occasion.

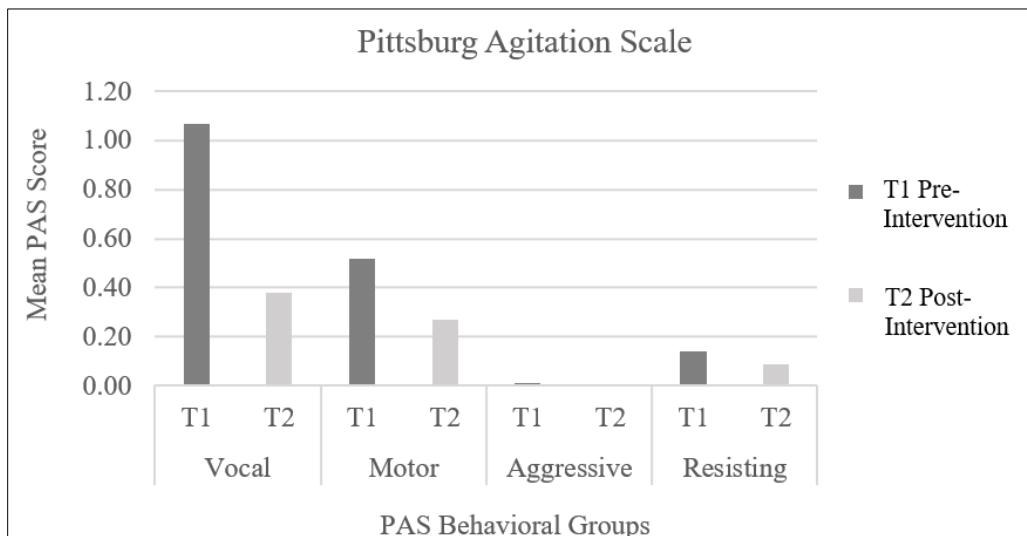


Figure 6. Mean PAS Scores at T1 and T2

Agitated behaviors on the Pūlama unit presented primarily as aberrant vocalizations and motor agitation. Music and activity intervention had the greatest effect on aberrant vocalizations and the weakest effect on aggressiveness. The mean, median, mode, minimum, and maximum of pre-intervention, post-intervention, and calculated difference in pre- and post-intervention agitation scores are summarized as shown in Table 11.

Table 11  
*Pittsburgh Agitation Scale Data Analysis*

		Mean	Median	Mode	Min.	Max.
T1 Pre-Intervention	Aberrant Vocalizations	1.07	1	1	0	4
	Motor Agitation	0.52	0	0	0	4
	Aggressiveness	0.01	0	0	0	1
	Resisting Care	0.14	0	0	0	3
T2 Post-Intervention	Aberrant Vocalizations	0.38	0	0	0	4
	Motor Agitation	0.27	0	0	0	4
	Aggressiveness	0.00	0	0	0	0
	Resisting Care	0.09	0	0	0	2
T1-T2	Aberrant Vocalizations	0.69	1	0	-1	3
	Motor Agitation	0.25	0	0	0	2
	Aggressiveness	0.01	0	0	0	1
	Resisting Care	0.13	0	0	0	3

The interventions utilized for episodes of agitation varied as shown in Figure 7. The most common intervention types utilized included (1) music, (2) word search, and (3) coloring pages. The least common intervention types include (1) sewing cards, (2) Jenga, (3) tangram puzzles. In 21 of the 100 episodes, more than one type of intervention was utilized.

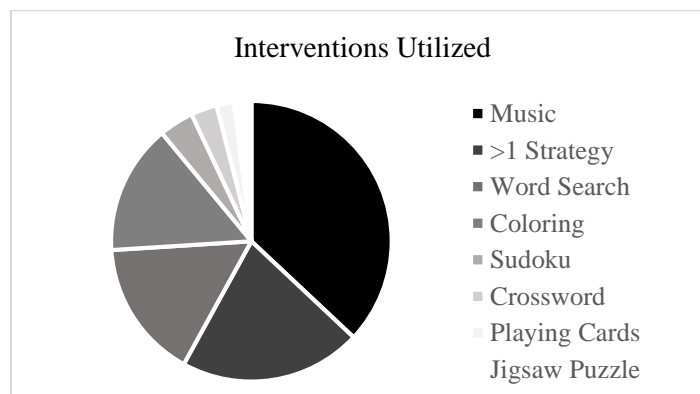


Figure 7. Interventions utilized for agitated patients by proportion

**Patient Sitter Use**

The use of patient sitters prior to the implementation period and during the implementation period were compared. Incidentally, there was an increase in patient sitter hours provided per patient care day during the implementation period. The mean and median patient sitter hours provided per patient care day during the implementation period and the 9 months preceding implementation are summarized as shown in Table 12. Sitter hours provided per patient care day during the 3-month implementation period and the 9 months prior to implementation are shown in Figure 8.

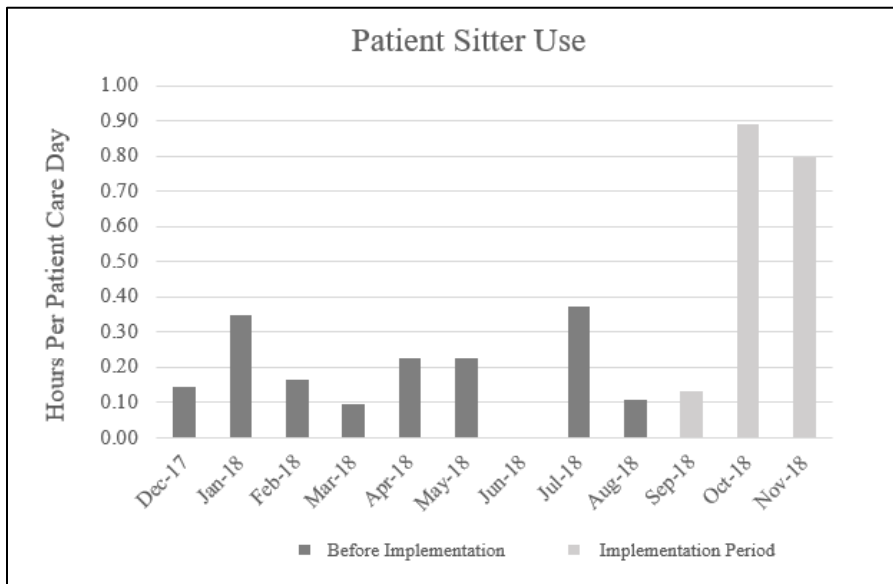


Figure 8. Sitter hours per patient care day

Table 12

*Data Analysis of Patient Sitter Use*

	Before Implementation	Implementation
Mean	0.19	0.61
Median	0.17	0.80

**“As Needed” Medication Use**

Additionally, the use of PRN medication for agitation prior to the implementation period and during the implementation period were compared. Two medications – lorazepam (Ativan)

and haloperidol (Haldol) – were most frequently prescribed on the unit for the indication of agitation. Lorazepam is by far the most commonly utilized PRN medication administered for agitation on the unit.

Incidentally, PRN lorazepam was utilized less frequently during the implementation period and PRN haloperidol was utilized more frequently during the implementation period when compared to the months preceding the implementation period. The mean and median dosages administered per patient care day during the implementation period and the 9 months preceding implementation are summarized as shown in Table 13. Number of dosages administered per patient care day during the 3-month implementation period and the 9 months prior are represented in Figure 9 and Figure 10 for lorazepam and haloperidol respectively.

Table 13  
*Data Analysis of “As Needed” Medication Use*

		Before Implementation	Implementation
Lorazepam	Mean	0.085	0.074
	Median	0.084	0.069
Haloperidol	Mean	0.005	0.014
	Median	0.008	0.008

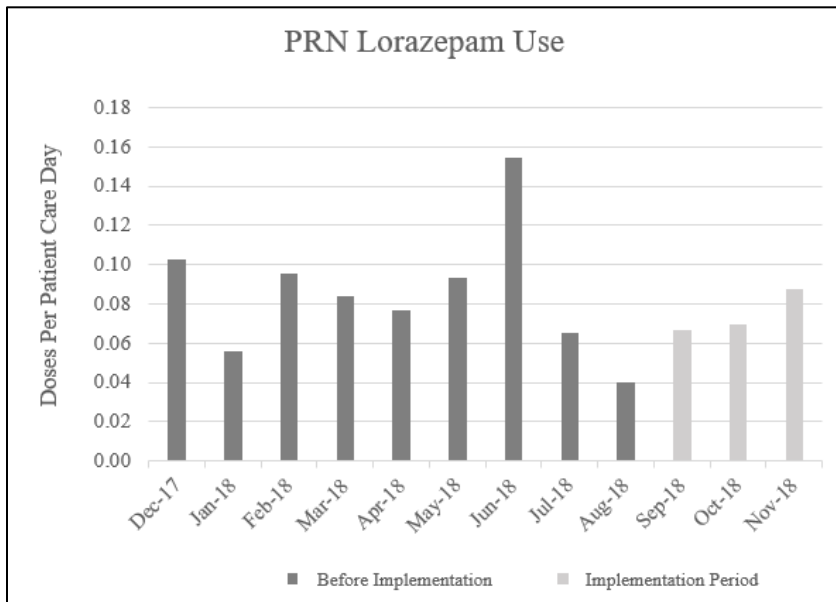


Figure 9. “As needed” lorazepam administration

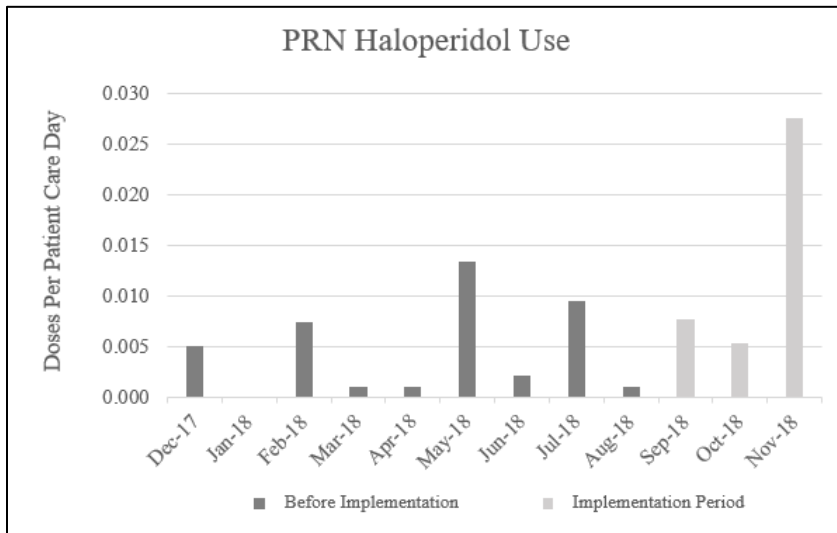


Figure 10. “As needed” haloperidol administration

## Project Evolution

### Expected Versus Actual Outcomes

**Pittsburg Agitation Scale.** Data analysis from the PAS suggested that music and activity intervention successfully reduced agitation severity in all four behavioral groups as was expected. A decrease in agitation severity was observed for the majority of episodes, 62 of 100, documented. No change in agitation severity was observed for 36 of the 100 episodes documented. An increase in agitation severity was observed for 2 out of the 100 episodes. An additional 4 episodes of agitation could not be included in data analysis due to incomplete PAS form completion. A summary of the effect of music and activity on agitated behavior episodes is shown in Figure 11.

Of the 36 of 100 episodes that showed no change in agitation severity, 18 episodes started off with agitation scores of 0 in all behavioral groups. It was presumed that these were for patients observed to have agitated behaviors on prior shifts; staff was encouraged to offer intervention preventatively in patients known to have difficult behaviors who had received intervention on prior shifts with positive effect. The inclusion of these cases in the data analysis

may help to explain why the average reduction in agitation severity was modest. If there is a need to further demonstrate project outcomes, the organization may consider linking patients to identification codes to maintain patient anonymity while collecting data. If this were done with data collection in the future, it could be better determined if music and activity effectively prevented the onset of agitated behaviors in addition to reducing agitation severity.

For the 2 of 100 episodes that showed a worsening in agitation severity after intervention was applied, data collectors noted that the interventions trialed did not match the patient's preference. In the first episode, music was trialed and the patient became more agitated stating that it was too noisy. In the second episode, coloring pages were trialed and the patient expressed that the activity was childish.

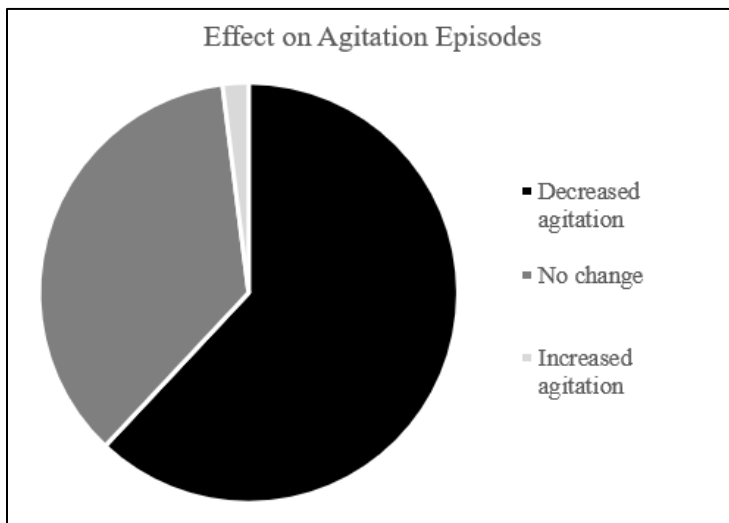


Figure 11. Effect of music and activity on episodes of agitated behavior

**Patient sitter use.** Patient sitter use was higher during the implementation period than during the months preceding implementation in contrast to expectations. Sitter use was expected to decrease when patients prone to agitation had alternative forms of intervention to distract and occupy themselves. From the aggregated hospital records used to obtain data on sitter use, the indication for sitter use is not specified. On the Pūlama unit, sitters are utilized for other



indications than agitated behavior, including suicidal ideation. As such, it cannot be determined whether the increase in patient sitter use during the implementation period was for agitated behaviors or for other indications. If there is a need to further demonstrate project outcomes, in the future, the organization may consider gathering data on the indication for sitter use so the effect of the music and activity intervention on reducing sitter use for agitated patients can be better evaluated.

**“As needed” medication use.** The results on PRN medication usage were mixed with PRN lorazepam being utilized less frequently during implementation and PRN haloperidol being utilized more frequently during implementation than in the previous months. The possible reasons for reduced lorazepam use and increased haloperidol use during implementation are numerous and may reflect the specific needs of the patient population at the time. Generally, PRN lorazepam is considered more appropriate for agitation caused by substance withdrawal or acute episodes of anxiety whereas PRN haloperidol may be more appropriate for agitation caused by psychotic illness or terminal delirium.

### **Facilitators**

Pūlama staff were essential to facilitating successful implementation. Pūlama staff were receptive of training on nonpharmacologic agitation management techniques. Additionally, unit staff – charge nurses, unit secretaries, and nurse aides – were essential to identifying patients that would benefit from agitation management interventions. Nurses assisted in identifying times of the day where agitation and behaviors seemed to worsen for particular patients. Nurse aides and patient sitters, when utilized, played an important role in trialing intervention strategies with patients.

Another facilitator to successful implementation was the ease of data collection through the PAS tool. Selected in partnership with stakeholders, the PAS tool allowed for quick assessment of agitation, taking less than 1 minute to complete. As such, the PAS tool appeared to be rather easily accommodated into the existing workflow for staff.

## **Barriers**

Barriers to implementation and sustainment include time limitations and competing priorities. Staff identified time as being a barrier to utilizing intervention techniques for patients. Although intervention strategies were specifically chosen to be utilized by patients with limited assistance from staff, some staff members remarked that patients had a better response to the interventions when staff was able to take extra time to participate in the activity interventions with them.

Another potential barrier to sustainment may include having the PAS tool outside of the EMR. It is possible that more patients would be identified as having agitated behaviors and more thorough data collection would have been possible if the tool were made a part of the EMR. However, one benefit of the PAS tool being separate from the EMR as a hard copy at the nurses' station is that it serves as a visual reminder to complete the PAS whenever obtaining music or activity supplies to provide to patients.

For sustainment of the project, continued costs of providing music and activity supplies may become a barrier. Given infection control considerations, certain supplies must be limited to single patient use. Additionally, reusable supplies may have to be replaced more frequently if not returned to the unit or if they become damaged and require replacement sooner than anticipated.

## **Summary**

In conclusion, this chapter addressed the seventh and final step in the Iowa Model for EBP which calls for the evaluation of the EBP guideline. This chapter reviewed project objectives, further described the sample, provided trend analysis for identified outcome variables, and described the evolution of the project.

## **CHAPTER 5. DISCUSSION**

### **Interpretation of Findings**

The project results indicated that agitated patients benefit from nonpharmacologic interventions of music and activity. The results suggested that music and activity intervention was successful at reducing the severity of agitated behaviors and preventing the onset of agitated behaviors in patients that have presented with difficult behaviors in prior shifts. The array of intervention strategies utilized to address behavioral episodes support the need to individualize interventions to the abilities and preferences of each patient.

### **Implications and Recommendations**

Recommendations from this EBP project include revising procedures to reduce barriers to implementing agitation management interventions. Suggestions include designating one staff member (e.g. unit secretary) to disinfect used activity supplies so that staff can try various interventions for behavioral episodes without taking the time to clean and return supplies after use. This same staff member may also be responsible for checking that the electronic devices used for playing music are charged regularly so they are ready for use whenever behaviors present on the unit. If more devices are needed in the future to play music for patients, additional measures would need to be considered to ensure the security of supplies. Supplies may be signed out by staff to patient rooms and electronic devices may be secured to prevent theft.

If there is a need to further demonstrate project outcomes for the sustainment of the project, other data collection methods can be considered. As the agitation management interventions were frequently utilized for patients agitated due to pain or terminal illness, alternative scales can be considered for data collection in the future. To further facilitate data collection, it may be beneficial to consider integrating these scales into the EMR format.

## DNP Essentials

The American Association of College of Nursing (AACN) developed *The Essentials of Doctoral Education for Advanced Nursing Practice* (2006) that identifies eight competencies that are central to the work of advanced practice nurses. Table 14 identifies these DNP essentials and describes how the competencies were integrated into this evidence-based project.

Table 14  
*Integration of DNP Essentials in EBP Project*

Essential	Description	Relation to EBP Project
I	Scientific Underpinnings for Practice	<ul style="list-style-type: none"><li>Utilized scientific principles to enhance health care delivery and evaluate outcomes</li><li>Developed and evaluated new practice approaches</li></ul>
II	Organizational and Systems Leadership for QI & Economics	<ul style="list-style-type: none"><li>Developed care delivery approach that meet needs of a patient populations</li><li>Considered budget for a practice initiative</li><li>Utilized communication processes for QI initiatives</li></ul>
III	Evidence-Based Practice/Translation Science	<ul style="list-style-type: none"><li>Utilized analytic methods to critically appraise literature to determine best evidence for practice</li><li>Designed and evaluated quality improvement methods to promote safe and effective care</li><li>Disseminated findings from EBP to improve healthcare outcomes</li></ul>
IV	Information Systems/Technology	<ul style="list-style-type: none"><li>Executed an evaluation plan requiring extraction of data from practice information systems and databases</li></ul>
V	Health Care Policy & Ethics	<ul style="list-style-type: none"><li>Proposed guideline for use of alternative interventions strategies in behavior management in a specific unit that can be implemented hospital wide</li></ul>
VI	Inter-professional Collaboration	<ul style="list-style-type: none"><li>Utilized communication and collaboration skills to develop and implement practice initiatives</li><li>Participated in teams to create change in healthcare delivery systems</li></ul>
VII	Prevention and Population Health	<ul style="list-style-type: none"><li>Developed, implemented, and evaluated interventions to address needs in care of agitated patient population</li></ul>
VIII	Advanced Nursing Practice & Education	<ul style="list-style-type: none"><li>Designed, implemented, and evaluated therapeutic interventions based on nursing science</li><li>Promoted excellence in nursing practice</li></ul>

## **Plans for Dissemination**

Results will be reported through several methods including written reports, PowerPoint format, and poster presentations. These methods will help to disseminate project findings to a variety of audiences. Within the CMC Pūlama unit, findings will be disseminated through an online PowerPoint format. This online format will additionally ask for staff feedback on the implementation period to identify project areas that may be improved to facilitate the project's sustainment. Within the CMC organization, findings will be disseminated through the preparation of a poster to be displayed on the unit. Within the larger healthcare community, an abstract will be prepared for submission to an annual nursing conference held in the Fall.

## **Summary**

In summary, the agitation management project demonstrated that music and activity intervention successfully reduce agitation severity. Several recommendations were proposed to facilitate sustainment of the project. Plans for the dissemination of project findings were addressed. Additionally, this chapter described how *The Essentials of Doctoral Education for Advanced Nursing Practice* were integrated into the development and implementation of this project.

Appendix A  
Pittsburg Agitation Scale  
**Pittsburgh Agitation Scale**

Patient's Name: \_\_\_\_\_ Rater's Name: \_\_\_\_\_

Patient #: \_\_\_\_ Date: \_\_\_\_ Time: \_\_\_\_ AM/PM TO \_\_\_\_ AM/PM

Hours of sleep this rating period \_\_\_\_\_

Circle only the highest intensity score for each behavior group that you observed during this rating period. Use the anchor points as a guide to choose a suitable level of severity. (Not all anchor points need be present. Choose the more severe level when in doubt.)

<b><i>Behavior Groups</i></b>	<b><i>Intensity During Rating Period</i></b>
<b>Aberrant Vocalization</b> (repetitive requests or complaints, nonverbal vocalizations, e.g., moaning, screaming)	0. Not present 1. Low volume, not disruptive in milieu, including crying 2. Louder than conversational, mildly disruptive, redirectable 3. Loud, disruptive, difficult to redirect 4. Extremely loud screaming or yelling, highly disruptive, unable to redirect
<b>Motor Agitation</b> (pacing, wandering, moving in chair, picking at objects, disrobing, banging on chair, taking others' possessions. Rate "intrusiveness" by normal social standards, not by effect on other patients in milieu. If "intrusive" or "disruptive" due to noise, rate under "Vocalization.")	0. Not present 1. Pacing or moving about in chair at normal rate (appears to be seeking comfort, looking for spouse, purposeless movements) 2. Increased rate of movements, mildly intrusive, easily redirectable 3. Rapid movements, moderately intrusive or disruptive, difficult to redirect 4. Intense movements extremely intrusive or disruptive, not redirectable verbally
<b>Aggressiveness</b> (score "0" if aggressive <i>only</i> when resisting care)	0. Not present 1. Verbal threats 2. Threatening gestures; no attempt to strike 3. Physical toward property 4. Physical toward self or others
<b>Resisting Care</b> (circle associated activity) Washing Dressing Eating Meds Other _____	0. Not present 1. Procrastination or avoidance 2. Verbal/gesture of refusal 3. Pushing away to avoid task 4. Striking out at caregiver

Were any of the following used during this rating period because of behavior problems? (Circle interventions used.)

Seclusion

PRN Meds (specify)

Restraint

Other interventions \_\_\_\_\_

# Appendix B

## Staff Training PowerPoint

### Strategies to Manage Patient Agitation

A QUALITY IMPROVEMENT INITIATIVE

### The Agitated Patient

**Agitation** is characterized by a cluster of related symptoms that include extreme **anxiety, restlessness, tension, and irritability.**

- Behaviors may include physical hyperactivity (e.g. repeated getting out of bed), pacing, wandering, disruptive vocalizations (e.g. shouting, calling out), aggression, and resistance to care.
- Causes of agitation include acute illness, pre-existing conditions, and environmental stressors.

### Challenges to Patient Care

Agitated patients pose additional challenges to patient care.

- May require close **around-the-clock supervision** and additional support from staff
- May add to **“time pressure”** for staff (i.e. feeling that there is a lack of time to complete all necessary tasks)

### Strategies for Agitated Patients

Studies show that simple **nonpharmacologic strategies** can **occupy, distract, and calm** agitated patients.

Starting in August, evidence-based strategies – **music and activity** – will be made available to use for agitated patients on the Pulama unit as part of a quality improvement project.

### Project Overview

- WHO?** Nurses, Nursing Assistants, Patient Sitters
- WHAT?** Offer music or activity for agitated patients. Rate agitation before and after music/activity using a new tool, the Pittsburgh Agitation Scale.
- WHERE?** Find supplies in designated drawer at the main station. Find Pittsburgh Agitation Scale forms at the front desk.
- WHEN?** August through November.
- WHY?** To incorporate evidence-based strategies into patient care to reduce patient agitation and thereby improve safety, enhance patient satisfaction, and promote smooth workflow for staff.
- HOW?** When patients begin to appear restless, anxious, or irritable:  
(1) Rate agitation at baseline with Pittsburgh Agitation Scale  
(2) Offer music or activity based on patient preference and ability  
(3) Rate agitation after music/activity with Pittsburgh Agitation Scale

### Music

How does music work to relieve agitation?

- Relieves sensory deprivation.
- Masks noise pollution.
- Evokes fond memories and brings comfort when the music is recognizable and preferred by the patient.

How to bring music to Pulama patients?

- Stream music on an electronic device to play aloud to patients.
  - Help patients (1) login or create a personal account on Pandora and (2) select a music channel to their personal preference.
- Considerations:
  - Genre – No specific music genre reduces agitation. It is most important that the music is preferred by the patient.
  - Volume – Music that is too loud may worsen agitation.
  - Other patients – Music enjoyed by one patient may be disruptive to others.



# Activity

How does activity work to relieve agitation?

- Occupies patients. Relieves boredom.
- Provides meaning and purpose.

How to bring activity to Pulama patients?

The following supplies will be made available:

- Crossword
- Coloring pages
- Jigsaw puzzles
- Word search
- Color-by-number
- Tangram puzzles
- Sudoku
- Crayons
- Stacking blocks

Considerations:

- Offer activities appropriate to patient abilities and preferences.
- Infection control – Wipe down supplies used between patients.

# Pittsburg Agitation Scale

**Pittsburg Agitation Scale** is a quick (<1 min.) method of rating agitation.

- 4 types of behaviors are rated based on a intensity on a scale from 0 to 4.

Circle the highest intensity score for each behavior group that you observed during this period. Use the anchor points as a guide to choose a suitable level of severity. Not all anchor points need to be present. Choose the more severe level when in doubt.

Behavior	Intensity (Circle Number)
<b>Aberrant vocalizations</b> (repetitive requests or complaints, nonverbal vocalizations e.g. moaning, screaming)	0 Not present 1 Low volume. Not disruptive to environment. Including crying. 2 Louder than conversational. Mildly disruptive. Redirectable. 3 Loud. Disruptive. Difficult to redirect. 4 Extremely loud screaming, yelling. Highly disruptive. Unable to redirect.
<b>Motor agitation</b> (pacing, wandering, moving in chair, picking at objects, drooling, banging on chair, taking other's possessions)	0 Not present 1 Pacing or moving about at normal rate. Appears to be seeking comfort. Purposeless movements. 2 Increased rate of movements. Mildly intrusive. Easily redirectable. 3 Rapid movements. Moderately intrusive or disruptive. Difficult to redirect. 4 Intense movements. Extremely intrusive or disruptive. Not redirectable verbally.
Note "intrusiveness" by normal social standards not by effect on other patients.	
<b>Aggressiveness</b>	0 Not present. 1 Verbal threats. 2 Threatening gestures. No attempt to strike. 3 Physical towards property. 4 Physical toward self or others.
Score "0" if aggressive only when resting state.	
<b>Resisting Care</b>	0 Not present. 1 Procrastination or avoidance. 2 Verbal/gesture of refusal. 3 Pushing away to avoid task. 4 Striking out at staff.

## MUSIC & ACTIVITY for AGITATION MANAGEMENT

**STEP #1:** Complete scale based on observations during music/activity.

Circle the highest intensity score for each behavior group that you observed during this period. Use the anchor points as a guide to choose a suitable level of severity. Not all anchor points need to be present. Choose the more severe level when in doubt.

Behavior	Intensity (Circle Number)
<b>Aberrant vocalizations</b> (repetitive requests or complaints, nonverbal vocalizations e.g. moaning, screaming)	0 Not present 1 Low volume. Not disruptive to environment including crying. 2 Louder than conversational. Mildly disruptive. Redirectable. 3 Loud. Disruptive. Difficult to redirect. 4 Extremely loud screaming, yelling. Highly disruptive. Unable to redirect.
<b>Motor agitation</b> (pacing, wandering, moving in chair, picking at objects, drooling, banging on chair, taking other's possessions)	0 Not present 1 Pacing or moving about at normal rate. Appears to be seeking comfort. Purposeless movements. 2 Increased rate of movements. Mildly intrusive. Easily redirectable. 3 Rapid movements. Moderately intrusive or disruptive. Difficult to redirect. 4 Intense movements. Extremely intrusive or disruptive. Not redirectable verbally.
Note "intrusiveness" by normal social standards not by effect on other patients.	
<b>Aggressiveness</b>	0 Not present. 1 Verbal threats. 2 Threatening gestures. No attempt to strike. 3 Physical toward self or others. 4 Physical toward staff or others.
Score "0" if aggressive only when resting state.	
<b>Resisting Care</b>	0 Not present. 1 Procrastination or avoidance. 2 Verbal/gesture of refusal. 3 Pushing away to avoid task. 4 Striking out at staff.

**STEP #2:** Provide music or activity. Supplies found at nurse's station. Consider patient preference.

**STEP #3:** Complete scale based on observations after providing music/activity.

Behavior	Intensity (Circle Number)
<b>Aberrant vocalizations</b> (repetitive requests or complaints, nonverbal vocalizations e.g. moaning, screaming)	0 Not present 1 Low volume. Not disruptive to environment including crying. 2 Louder than conversational. Mildly disruptive. Redirectable. 3 Loud. Disruptive. Difficult to redirect. 4 Extremely loud screaming, yelling. Highly disruptive. Unable to redirect.
<b>Motor agitation</b> (pacing, wandering, moving in chair, picking at objects, drooling, banging on chair, taking other's possessions)	0 Not present 1 Pacing or moving about at normal rate. Appears to be seeking comfort. Purposeless movements. 2 Increased rate of movements. Mildly intrusive. Easily redirectable. 3 Rapid movements. Moderately intrusive or disruptive. Difficult to redirect. 4 Intense movements. Extremely intrusive or disruptive. Not redirectable verbally.
Note "intrusiveness" by normal social standards not by effect on other patients.	
<b>Aggressiveness</b>	0 Not present. 1 Verbal threats. 2 Threatening gestures. No attempt to strike. 3 Physical toward self or others. 4 Physical toward staff or others.
Score "0" if aggressive only when resting state.	
<b>Resisting Care</b>	0 Not present. 1 Procrastination or avoidance. 2 Verbal/gesture of refusal. 3 Pushing away to avoid task. 4 Striking out at staff.

(Optional) Comments/Factors affecting patient's level of agitation (e.g. Noise level? Environmental factors?) \_\_\_\_\_

Printed copies of the Pittsburg Agitation Scale can be found at the front desk.

The scale is to be completed twice - once before music/activity and once after music/activity was provided.

Completed forms can be kept in designated folder at the front desk.

Donation of supplies are greatly appreciated.

\*\*\*High need for used electronic devices to play music for patients.\*\*\*  
Supplies may be brought to the main station.

Questions, comments, and suggestions can be directed to Lexi Kaneshiro (LexiKK@hawaii.edu), University of Hawaii NP student.

**Appendix C**  
**Staff Training Quiz**

1. Who on staff is encouraged to initiate music/activity for patients and rate agitation using the Pittsburg Agitation Scale?
  - A. Nurses
  - B. Nursing assistants
  - C. Patient sitters
  - D. All of the above

ANSWER: (D) All of the above

2. Where can you find copies of the Pittsburg Agitation Scale rating tool?
  - A. EMR
  - B. Front desk
  - C. Staff lounge

ANSWER: (B) Front desk

3. Where can you bring in donated music/activity supplies for patients?
  - A. Main station
  - B. Staff lounge
  - C. Hallway

ANSWER: (A) Main station

4. Where can you direct questions regarding the music/activity strategies or the Pittsburg Agitation Scale rating tool?
  - A. Email UH student
  - B. Comments/suggestions box
  - C. Charge nurse

ANSWER: (A) Email UH student

## Appendix D Data Collection Form

### MUSIC & ACTIVITY for AGITATION MANAGEMENT

**STEP #1:** Complete scale based on observations before music/activity.

Circle the highest intensity score for each behavior group that you observed during this period. Use the anchor points as a guide to choose a suitable level of severity. Not all anchor points need to be present. Choose the more severe level when in doubt.

Behavior	Intensity (Circle Number)
<b>Aberrant vocalizations</b> (repetitive requests or complaints, nonverbal vocalizations e.g. moaning, screaming)	0 Not present
	1 Low volume. Not disruptive to environment, including crying.
	2 Louder than conversational. Mildly disruptive. Redirectable.
	3 Loud. Disruptive. Difficult to redirect.
	4 Extremely loud screaming, yelling. Highly disruptive. Unable to redirect.
<b>Motor agitation</b> (pacing, wandering, moving in chair, picking at objects, disrobing, banging on chair, taking other's possessions)  Rate "intrusiveness" by normal social standards not by effect on other patients.	0 Not present
	1 Pacing or moving about at normal rate. Appears to be seeking comfort. Purposeless movements.
	2 Increased rate of movements. Mildly intrusive. Easily redirectable.
	3 Rapid movements. Moderately intrusive or disruptive. Difficult to redirect.
	4 Intense movements. Extremely intrusive or disruptive. Not redirectable verbally.
<b>Aggressiveness</b>  Score "0" if aggressive <u>only</u> when resisting care.	0 Not present.
	1 Verbal threats.
	2 Threatening gestures. No attempt to strike.
	3 Physical towards property.
	4 Physical toward self or others.
<b>Resisting Care</b>	0 Not present.
	1 Procrastination or avoidance.
	2 Verbal/gesture of refusal.
	3 Pushing away to avoid task.
	4 Striking out at staff.

**STEP #2:** Provide music or activity. Supplies found at nurse's station. Consider patient preference.

- Music       Coloring Pages       Crossword       Jigsaw Puzzle       Jenga  
 Playing Cards       Sudoku       Word Search       Tangram Puzzle       Sewing Cards

**STEP #3:** Complete scale based on observations after providing music/activity:

Behavior	Intensity (Circle Number)
<b>Aberrant vocalizations</b> (repetitive requests or complaints, nonverbal vocalizations e.g. moaning, screaming)	0 Not present
	1 Low volume. Not disruptive to environment, including crying.
	2 Louder than conversational. Mildly disruptive. Redirectable.
	3 Loud. Disruptive. Difficult to redirect.
	4 Extremely loud screaming, yelling. Highly disruptive. Unable to redirect.
<b>Motor agitation</b> (pacing, wandering, moving in chair, picking at objects, disrobing, banging on chair, taking other's possessions)  Rate "intrusiveness" by normal social standards not by effect on other patients.	0 Not present
	1 Pacing or moving about at normal rate. Appears to be seeking comfort. Purposeless movements.
	2 Increased rate of movements. Mildly intrusive. Easily redirectable.
	3 Rapid movements. Moderately intrusive or disruptive. Difficult to redirect.
	4 Intense movements. Extremely intrusive or disruptive. Not redirectable verbally.
<b>Aggressiveness</b>  Score "0" if aggressive <u>only</u> when resisting care.	0 Not present.
	1 Verbal threats.
	2 Threatening gestures. No attempt to strike.
	3 Physical towards property.
	4 Physical toward self or others.
<b>Resisting Care</b>	0 Not present.
	1 Procrastination or avoidance.
	2 Verbal/gesture of refusal.
	3 Pushing away to avoid task.
	4 Striking out at staff.

Completed forms can be returned to designated envelope at nursing station.

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