5-1-2016

ALARM FATIGUE: NURSES' PERSPECTIVE

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by

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Presented to the Faculty of the Honors College of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

HONORS BACHELOR OF SCIENCE IN NURSING

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2016

ACKNOWLEDGMENTS

I want to acknowledge Dr. Deborah Behan, Mercy Mumba and Bobbie Brown for all their help through the years it took me to get to this stage. I am especially thankful to Dr. Deborah Behan for all the time she spent helping me edit my work. Help in writing was one of the things I most wanted from the Honors College. She also has been very kind and patient with me through a difficult period of my life. Without her, I might have given up on the Honors degree when I was almost finished. I also want to thank my family for all their support and sacrifice throughout this endeavor.

March 15, 2016

ABSTRACT

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Alarm fatigue is the desensitization of healthcare providers to the sound of hospital alarms (Tanner, 2013). The problem is the frequency of alarms sounding in hospitals, causing the nurses to be desensitized to alarm sounds. The purpose of this mixed methods study was to explore alarm fatigue by first observing the types of alarms and recording how long alarms sounded before they were silenced, and to obtain nurses' feedback on their thought processes related to their decisions regarding the alarms.

A tool was devised to record observations of type of alarm and time the alarm sounded. The majority of alarms that sounded were cardiac monitor alarms (47%). No nurses participated in the focus group to discuss their thoughts about the prioritization of alarms sounding. The results of my study suggest that cardiac alarms can be controlled in a central monitoring area in an attempt to help nurses reduce their alarm fatigue.

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CHAPTER 1

INTRODUCTION

Alarm fatigue is the desensitization of healthcare providers to the sound of hospital alarms (Tanner, 2013). Alarms in hospitals are intended to notify health care providers of potential problems with patients (Carr, 2014). Several types of alarms exist, such as bed alarms, which alert staff when patients with ambulatory issues try to get out of bed (Daniels, 2014); cardiac alarms that notify staff of issues concerning heart arrhythmias (Whalen et al., 2014); O2 Saturation alarms that indicate oxygenation levels are too low (Tanner, 2013); and IV pump alarms that inform nurses of intravenous devices (IVs) needing attention (Huber & Augustine, 2009). The problem is the frequency of alarms being set off in hospitals may cause the nurses to be desensitized to alarm sounds (Tanner, 2013).

Researchers have conducted many studies that explore the phenomenon of alarm fatigue (Bonafide et al., 2014; Buist, Bernard, Nguyen, Moore, & Anderson, 2004; Burgess, Herdman, Berg, Feaster, & Hebsur, 2009; Cvach, 2012; Daniels, 2014; Funk et al., 2010; Gazarian, 2014; Graham & Cvach, 2010; Gross, Dahl, & Nielsen, 2011; Hu et al., 2012; Konkani, Oakley, & Bauld, 2012; Richardson, 2004), but no study was found that provides insight into the way nurses make decisions regarding their response to alarms. The purpose of this study is to explore alarm fatigue by observation of nurse response to the alarm, and to obtain nurses' feedback on their thought processes related to their decisions regarding the alarms.

1.1 Literature Review

Cvach (2012) wrote an integrative review on alarm fatigue. She reported the reviewed studies as falling into the following five categories: 1) effect of excessive alarms; 2) sounds and audibility of alarms; 3) types of alarm systems, 4) technology to reduce false alarms, and 5) nurses' reaction to alarms. Excessive alarms cause increased noise and increased workload for nurses and other hospital workers (Bayo, García, & García, 1995). Hospital noise was felt to be disruptive to workers and to have negative effects on patients' recovery and comfort. The frequency of alarms stressed nurses and patients, and was one aspect of the noise problem in hospitals (Bayo et al., 1995). Noise itself is a public health concern. The World Health Organization (WHO), the International Noise Council, and the Environmental Protection Agency (EPA) have set recommended maximum noise levels for patient care areas as 30 decibels at night and 35 decibels during the daytime hours (Konkani & Oakley, 2012). The problem of noise was also addressed by Florence Nightingale many years ago; she stated "Unnecessary noise, then, is the most cruel absence of care which can be inflicted either on the sick or the well" (Paparella, 2014, p.169).

Cvach et al.'s (2012) second category of sounds and audibility of alarms includes research on the different sounds of alarms to determine conditions which make alarms more or less audible. Alarms must compete to be heard over conversations, activities, and other equipment in the hospital (Konkani et al., 2012). Patient surveys have found conversation to be rated as the main source of noise, so educating staff on techniques to reduce this part of the problem has been an important educational focus in recent years (Konkani & Oakley, 2012). Another condition that makes it difficult to differentiate among alarms is that there are many different companies with separate alarm sounds for the same condition.

Therefore, not being able to differentiate why the alarm is sounding can make accurate prioritizing of patient care difficult. In order to make alarms more easily heard they need to be individualized to the patient (Burgess et al., 2009). They also need to be individualized to the unit, meaning that they should not be too loud or too soft for the background noise level of the unit where they are used (Konkani & Oakley, 2012). Setting an alarm too loud can be just as problematic as setting it too low relative to the background noise on the unit (Sanderson, 2006). Sanderson (2006) also found that if alarms are too loud in comparison to background noise, they are more irritating than attention-getting.

The third category covered different kinds of alarm systems. This encompasses studies that have been done on various units within hospitals to see how alarm problems manifest differently in different settings (Atzema, Schull, Borgundvaag, Slaughter, & Lee, 2006; Biggs, Cvach, & Rothwell, 2012; Christensen, Dodds, Sauer, & Watts, 2014; Daniels, 2014; Gazarian, 2014; Hu et al., 2012; Siebig et al., 2009). The Johns Hopkins Alarm Management Committee (2012) analyzed 12 days of alarms at Johns Hopkins Hospital in Baltimore, Maryland (Biggs, Cvach, & Rothwell, 2012). Johns Hopkins Hospital is known as an industry leader among hospitals (Long, 1991). There were 58,764 alarms registered in the study, with an average of 350 alarms per patient per day. In one unit the average was about 700 alarms per patient per day. A high percentage of these alarms were considered false, in that there was no needed change in care. The alarms of the pediatric intensive care unit were monitoring for apnea, or a lapse in breathing. The pediatric intensive care unit had a 90% false positive alarm rate. An Australian study by Christensen, Dodds, Sauer, and Watts (2014) found that a single bed alarm in a critical care unit may sound up to 400 times a day. Ninety-nine percent of these alarms were reported

as false. A larger study by Gross et al. (2011) found that only a few patient beds, of the many that are occupied, generate the majority of alarms. This study was done throughout a 79-bed community hospital over 10 months. Regardless of the unit, a small number of critically ill patients can generate numerous alarms of various types. Such critically ill patients may need a bed alarm to prevent falls, as well as alarms related to monitoring oxygenation, heart rhythm and IV medication. In a study by Atzema, Schull, Borgundvaag, Slaughter, and Lee (2006) that involved monitoring 72 patients in the emergency room for chest pain over 371 hours, it was reported that 99.4% of the alarms were false. Further, Burgess et al. (2009) conducted a study on false alarms and found that the high false alarm rate is overwhelming for nurses with four or more patients.

The fourth category of studies is comprised of technology to reduce false alarms. Funk et al. (2010) looked for causes of false alarms, and found that too many patients were being monitored for arrhythmias when they were not experiencing them. Sometimes the alarms were used by doctors in an attempt to help their patients get more attention from already understaffed nurses. Other times, alarms were used simply because of the patients' locations at the far end of the hall or specialty unit in the hospital. For example, a telemetry unit may put every patient in the unit on telemetry rather than evaluating if there is truly a need for cardiac monitoring (Funk et al., 2010). Additionally, alarms may also be set at too sensitive a level, which causes false alarms (Burgess et al., 2009). Monitoring systems are often designed by a manufacturer to be better suited for critical care patients. The sensitivity settings are designed to pick up slight changes that could indicate that a critically ill patient is beginning to deteriorate. When these systems are used throughout hospitals in a less critical area, these slight changes are often not a cause for the nurse's attention.

Numerous alarms sounding off make prioritization of patient care and recognition of real emergencies more difficult for nurses.

The focus of this study is to observe the type of alarms that sound and to determine how nurses make decisions regarding the alarms going off on a cardiac step-down unit. Nurses' desensitization to the high number of false alarms in the hospital has come to be known as the alarm fatigue issue. The Food and Drug Administration (FDA) found that alarm fatigue caused health care professionals to change audible alarms to visual alarms, silence alarms, or disable the alarms altogether (FDA, 2011). In a study done by Gazarian (2014) nurses' reactions to alarm categories were explored and it was found that alarms were sounding frequently, and did not require any change in care. However, the alarm sounding did disrupt the nurses' work flow. A mixed-method study was done on nurse practices and opinions regarding alarm settings in Australia (Christensen, Dodds, Sauer, & Watts, 2014). Two themes emerged from the open-ended questions: 1) alarm settings were believed to be inappropriate, which caused too many alarms; and 2) when the primary nurse had a delayed response time to her patients' alarms the noise from the alarm was an annoyance to other nurses on the unit. They felt that nurses not being at the bedside was the reason more than 50% of the alarms went off. Forty-eight percent of nurses would not change another nurse's alarm limits, even when they thought the settings were inappropriate. This was because they believed the primary nurse would have a negative reaction if his or her alarm settings were changed. Ninety-three percent agreed that desensitization can decrease reaction time to alarms as well as silencing or disabling alarms altogether.

1.2 Significance of Research

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) is a nongovernmental agency that sets guidelines for the operation of hospitals and other health care facilities and promotes high standards of institutional medical care in the United States. The Joint Commission first issued a warning about alarm fatigue in hospitals in 2002 after 23 patients died when their ventilators malfunctioned and their alarms elicited no response (FDA, 2011; Mosby, 2009). There was no reaction because the alarms were not heard, were ignored, or were not properly calibrated. This resulted in the Joint Commission making it a safety goal in 2004 (Kowalczyk & Schyve, 2011).

Problems related to alarms have persisted since 2002 and became a priority again for JCAHO in 2014 (Carr, 2014). New patient safety goals pertaining to alarms were made for 2014. Approximately 566 patient deaths attributed to the problem of alarm fatigue were reported to the FDA between 2005 and 2008 (FDA, 2011). Patients died when alarms were changed from audio to visual, or are silenced or disabled. Nurses have been reported to change these settings when they no longer view alarms as credible. Another reason this might occur is when nurses becomes desensitized to them.

Solutions to the alarm fatigue problem should incorporate the nurse perspective on what to do with the alarms in order to optimize the nursing work environment and patients' healing environment. All aspects of the alarm fatigue problem need to be studied to ensure the most comprehensive solutions are found. More specifically, the nurses' thoughts on prioritizing how to deal with alarm fatigue must be explored.

CHAPTER 2

METHODS

In order to ascertain the types, frequency and an average duration of audibility of alarms, as well as the nurses' thoughts on prioritizing and dealing with alarm fatigue we conducted a mixed methods study in a south central U.S. hospital. An observation tool was used (see Appendix A) on the cardiac step down unit (CSU) to record the time the alarm sounded, the type of alarm, the time the alarm was silenced and if the patient called with a request to silence the alarm. The incidences were equally divided over four shifts on the CSU. A nightshift and the following dayshift during the week were observed as well as a night shift and following dayshift on the weekend. Once the observations were tallied and reported to the nurses working on the unit, a focus group was planned to ask the nurses how they made priority decisions about alarms.

Approval from the institutional review board (IRB) of the hospital system was obtained before the study began to ensure that our human subjects would be treated in an ethical manner. No demographics were recorded because we were only observing alarms. Our convenience sample included observation of any alarm that was heard while on the unit. If multiple alarms sounded from one room at one time they were considered a single alarm incidence for purposes of how many observations were recorded. Once the observations were tallied, they were shared with the nurses who work on the unit. Additionally, nurses who work on the unit were invited to participate in a focus group.

Nurses who attended the focus group were classified according to the following demographics (Appendix C): 1) educational level; 2) years working as a nurse; and 3) how long working on their current unit. In the focus group nurses would have been asked the following questions: 1) What thought process do you go through to make decisions regarding alarms that sound? 2) What recommendations do you have for decreasing false alarms and improving work conditions for nurses in relation to this issue? Consent was obtained by informing nurses of our intent with the focus group with a cover letter that explained that their participation was strictly voluntary (Appendix D). They could withdraw from the study at any time and did not have to answer any question that made them uncomfortable. The data from the focus group would have been recorded on paper and transferred to SPSS in the Nurse Scientist's office computer. The computer was password protected. No one but the Nurse Scientist and Honors student had access to any data. The Nurse Scientist shared the information regarding data with the PI.

CHAPTER 3

RESULTS

The purpose of this study was to explore alarm fatigue by first observing the types of alarms and recording how long alarms sounded before they were silenced. In order to understand the results of the research, it is necessary to understand the process of the observations as well as the layout of the CSU. The unit where these observations were obtained is a cardiac step down unit, so the patients are on cardiac telemetry monitors, infusion pumps (IV pumps), oxygen saturation monitors, and bed monitors, and there are patient call lights in each room to call the nurse if a patient needs assistance. A patient might even use the patient call light if an alarm sounded in their room that needed silencing.

The CSU where observations were recorded is a long straight hallway with a large reception desk midway down the hall. This reception desk is the Central Nursing Station (CNS) on the unit with a telemetry monitoring station behind the desk on the back wall. Down the hall in each direction from the CNS there are small satellite monitors for nurses to view the cardiac rhythm of patients, but no alarms sound at these satellite areas. This is not the only unit in the hospital where cardiac telemetry is monitored. All areas in the hospital that have cardiac telemetry alarms are overseen by Monitor Techs who continually monitor all cardiac rhythms and cardiac telemetry alarms in the hospital from the Central Monitoring Unit (CMU). The CMU is a room where Monitor Techs-are part of an overall strategy this hospital uses to prevent the problem of alarm fatigue. Konkani and Oakley

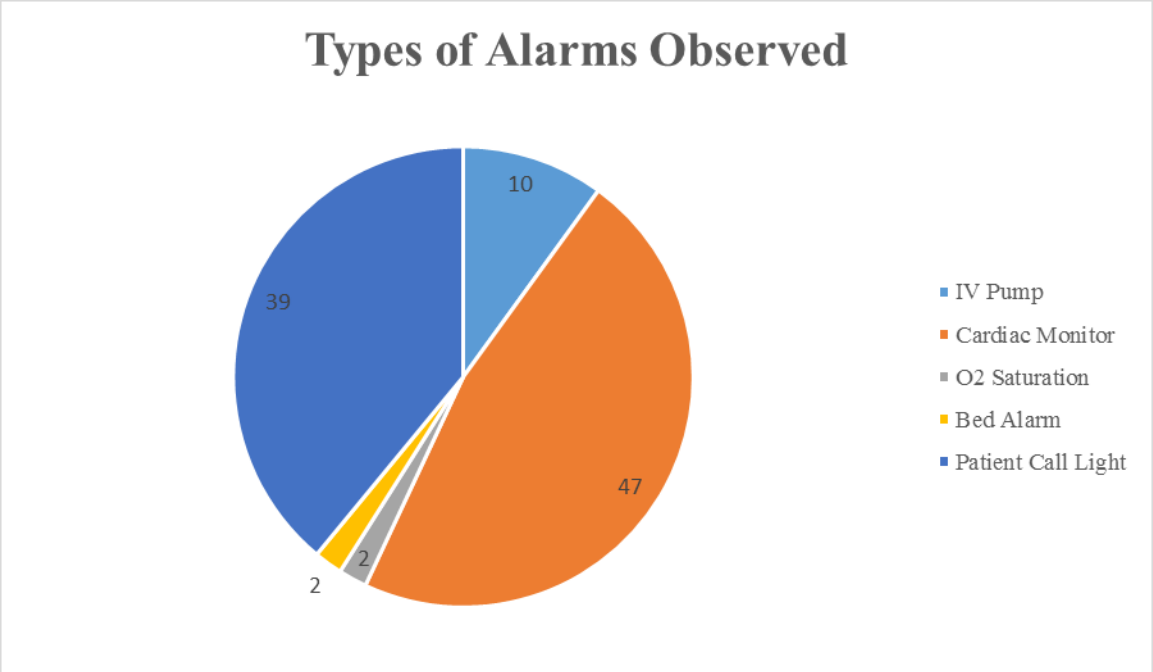
(2012) suggest the practice of managing alarms as individualized to the patient and the unit. The CSU uses this technique. The main cardiac telemetry monitoring station on CNS displays a cardiac telemetry rhythm of real time results on all patients in the cardiac step down unit. Any time a change in rhythm is sensed in a patient a visual alert with a color corresponding to the type of rhythm pops up at the top border of the screens. The Monitor Tech will notify the nurse by Vocera, a wearable hands-free communication device often used in hospitals that allows health care providers to communicate with each other regardless of location (Vocera, 2016), if the rhythm has changed indicating a need for the nurse to be notified. A guide to managing cardiac telemetry alarms for the Monitor Techs in the CMU is included in Appendix B. The CMU is meant to prevent cardiac telemetry alarms from sounding continuously, which could be a noise problem and possibly lead to nurses being desensitized to alarm sounds (Carr, 2014).

The process the Monitor Techs follow categorizes telemetry alarms as messages, advisories, warnings, or crisis. All telemetry alarms except crises are supposed to be silenced by the CMU and the Monitor Techs notify the nurses by Vocera if it is deemed necessary.

This particular hospital unit (CSU) asked for this study to be completed so that they would have some data on alarms sounding and allow nurses a voice in how they prioritize and what is important to them in order to prevent alarm fatigue. The types of alarm categories recorded were infusion pump alarms, cardiac monitor alarms, oxygen saturation alarms, bed alarms and patient call lights. There were 50 incidences of alarms recorded over the four shifts. If more than one alarm sounded at the same time in the same room that was considered one subject in the study, but all alarms that sounded were

recorded. There was only one incidence where more than one alarm sounded for the one subject. The majority of alarms that sounded were cardiac monitor alarms (47%). This was followed by patient call lights (39%), infusion pumps (10%), oxygen saturation monitors (2%) and bed alarms (2%) respectively. There was one infusion alarm that sounded for approximately 28 minutes. This alarm was an outlier in the data that was not calculated into response times because the time the alarm was actually stopped was not recorded. This alarm was not calculated into the mean or average alarm response.

Figure 3.1: Types of Alarms



The average response time for all alarms was 24 seconds. Averages of approximately 15 alarms per hour were observed on this unit, and approximately 1.98 alarms per patient per hour. The mode response time was less than a minute, which was recorded as 0 minutes. Times were recorded in minutes. Attempting to record in seconds would not have been accurate because of varying travel time necessary to reach an adequate

observation point to assess what type of alarm was involved. The median and mode would both be 0 minutes in this instance.

CHAPTER 4

DISCUSSION

The purpose of this study was to explore alarm fatigue by first observing the types of alarms and recording how long alarms sounded before they were silenced. The majority of alarms sounding were cardiac telemetry alarms (47%). The response time to stop the alarms from sounding was 24 seconds. This unit does not appear to have an alarm fatigue problem since there was such a short response time to alarms averaging 24 seconds. Christensen, Dodds, Sauer, and Watts, (2014) support this finding in the current study because they report delayed response time to be a symptom of alarm fatigue. The unit observed (CSU) utilizes a team approach to alarm response by use of the central monitoring strategy identified in previous research studies (Gross, Dahl, & Nielsen, 2011; Burgess, Herdman, Berg, Feaster, & Hebsur, 2009).

Patient call bell lights were the second highest number of alarms (39%) that sounded. The remaining alarms sounding were IV (10%), oxygen saturation monitors (2%), and bed alarms (2%). These alarms had short response times most likely because the nurses charted outside the rooms in the satellite nurse stations. Besides having CMU helping to oversee cardiac alarms, the unit secretary answers call bell lights immediately by phone at the CNS, which is the main desk. She then notifies the tech, nurse or appropriate personnel needed for patient assistance by Vocera, which explains why the average, median and mode of time to answer lights are so low. The reduction of noise and audibility of alarms by quickly silencing them is supported by previous studies (Dyell, 2011).

Having a unit secretary who watches the patient call bell light easily reduces alarm fatigue by not only silencing the alarm as soon as it sounds, but appropriately provides the staff information regarding patient needs.

Gazarian (2014) conducted a study that was searching for appropriate sensitivity of alarms. This study supports the sensitivity settings and guidelines recommended by Gazarian (2014) because this unit has lowered the number of alarms per patient per hour to 1.98 from Gazarian's (2014) initial higher findings. This unit has already put guidelines and policies into practice; thus, alarms are not distracting nurses. Instead, they are only receiving a call on their Vocera if there is a crisis they need to attend to or a trend with the patient that the nurse should be aware of.

Our original purpose was to gather input on prioritization of alarms by nurses to provide opportunity for continuing improvements on the unit related to possible alarm fatigue. In order to inform the unit's nurses about our finding and invite them to our focus group (see Appendix D) was distributed. One side contained an invitation to the focus group, and the other side gave a brief summary of the study results. These were given to the nursing staff on the cardiac step down unit where the alarm observations were made. Each nurse received a copy in his or her mailbox, and the extra copies were placed on the table in the nurses' lounge. A week before the focus group the Nurse Scientist sent the nurse manager, charge nurse, and director over the unit electronic copies of the letter. Because no nurses signed up for the focus group, guidance was requested from the charge nurse, the manager, and the director. When no means for incentivizing attendance was received, we petitioned for directions for how nurses could clock in for the focus group as a final effort to stimulate interest and participation in the focus group. In hindsight, lack of

nurses' response could have been due to the fact that there was a four-hour mandatory educational class that took place not long before the focus group was planned. An offer to reschedule was made at a better time, but as of the time this was written, there were no other times for the focus group suggested.

4.1 Limitations

Unfortunately, no nurses attended the focus group, which didn't allow gathering the qualitative data for our mixed methods study. Also, there were times when the alarms were very difficult to hear because the audibility was set so low.

CHAPTER 5

CONCLUSION

In conclusion, it is important for hospitals to have guidelines for all alarms that sound. Guidelines should include cardiac monitors, patient call bell lights, and any other equipment that sounds in order to reduce alarm fatigue. This will provide the best care for patients. It may be necessary to provide administrative support in the form of incentives to be involved in research activities, especially when the results could affect nurses. Nurses who do not participate in research when they are being asked for their opinions and perspectives will not have influence over future practices in healthcare. In academia it is important for students to clearly understand the importance of research and the role of nurses in research activities. The hospitals that intend to attain Magnet® status must show that the bedside nurses are involved in research.

APPENDIX A

OBSERVATION TOOL FOR ALARMS

Subject number	Time alarm started	Types of Alarms Alaris (infusion) Pump=1 Cardiac Monitor=2 O_2 Saturation=3 Bed Alarm=4 Call Light=5	Did patient use call light to call for silence? Yes=1 or No=0	Time Alarm Stopped	Notes or comments-made by nurse or patient.
001					
002					

APPENDIX B

NURSES AND CENTRAL MONITOR UNIT (CMU) TECH PROCESS

FLOW SHEET 2015 WITH COLOR OF VISUAL ALARM ADDED

PRIORITY	Color of Visual Pop-up on Telemetry Monitor	Alarm	Alarm Definition	Central Monitoring Unit (CMU) Required Response	RN Required response to Complete Event	CMU Complete Event Documentation	If No Response within 30 Seconds to Crisis/ Warning Alarms
Crisis	Red	Asystole	Asystole >3 seconds	Immediate 1 Call RN, escalate if necessary. 2 Remain on line. 3 Disconnect when patient is attended by RN.	1 Stay on line. 2 Check patient (Assess CAB). 3 Take appropriate action. 4 Call Physician.	1 Log alarm including who you spoke to during alarm. 2 Print event, label fax to the unit immediately. 3Consider suggesting parameter changes, and report changes to RN.	1 If no response from primary RN, call Charge RN. 2 If no response, initiate broadcast to all staff (see note). Terminate call when unit staff responds to patient. 3 Log calls, include all levels of escalation. 4 Report no response to CMU manager and/or nights and weekends. 5 Enter a SALT for all "broadcast to unit" escalations. NOTE: DO NOT USE BROADCAST FOR ALL SINGLE LEAD FAILURES.
		V-Fib	Ventricular Fibrillation				
		Ventricular Tachycardia	(V-Tach) Ventricular Tachycardia > 10 beats				
WARNING AND SYSTEM ALARMS	Yellow	VT>2	Ventricular Tachycardia >2 bets but < 10 beats	Immediate 1 Call RN, escalate if necessary. 2 Remain on line. 3 Disconnect when patient is attended by RN.	1 Stay on line. 2 Check patient (Assess CAB). 3 Take appropriate action. 4 PCU/CSU consider changes to the CMU tech.	1 Log alarm including who you spoke to during alarm. 2 Print event, label fax to the unit. 3Consider suggesting parameter changes, and report changes to RN.	
		Lead(s) off (RA, LA, RL, LL, V)	One lead tracing is visible amd patient is being monitored. One or more leads are off.				
		No Signal	PATIENT NOT MONITORED ECG rhythms cannot be seen..				
		No Telemetry-No Communication from Monitor	PATIENT NOT MONITORED Artifact is present or signal is lost.				
		Arrhythmia suspended	PATIENT NOT MONITOREDECG signal is not able to be interpreted by the computers arrhythmia software. This is due to excessive artifact or a grossly abnormal ECG rhythm such as extremely wide QRS complexes.				
		Battery change needed.	Battery must be changed within 20-30 minutes or patient is NOT monitored.				
ADVISORY	Yellow	Pause		1 No call required. 2 See note below*			
		Tachycardia					
		Bradycardia					
		Afibrilation					
Message	Yellow	Couplets	Premature ventricular	1 No call required.			

			contractions (PVCs) that occur in pairs	2 See note below.*			
		Bigeminy	PVCs that occur every other beat.				
		Acce vent					
		Trigeminy	Arun of 3 PVCs				
		PVC					
*NOTE: Responsible to report any changes in rhythms that occur.							

APPENDIX C

FOCUS GROUP QUESTIONS AND DEMOGRAPHICS

1) What thought process do you go through to make decisions regarding alarms that sound?

2) What is the best solution to decrease false alarms?

Demographic Questions	Participant #	
	1	2
What is your educational level?		
How many years have you worked as a nurse?		
How long working on their current unit?		

APPENDIX D

COVER LETTER

Dear Nurses,

My name is April Martinez and I am conducting this study along with Jennifer Scott and Dr. Deborah Behan to determine what alarms are sounding and how nurses go about deciding prioritization of taking care of alarms. This is part of my project to complete my honors thesis. The purpose of the project is to understand what alarms are sounding to better understand the equipment and settings that sounds an alarm. Once we know that information we will share it with the nurses and ask you to participate in a focus group. I am inviting you to participate in this research study because we want to understand how nurses go about prioritizing what to do with alarms. We intend to take information back to management for discussion regarding needs that will help to decrease alarms from sounding. If you decide to participate, your participation will involve being involved in a focus group. A focus group is where 6-10 participants gather and expound on a few questions we will ask. Your participation is completely voluntary and your decision to participate, or to decline to participate, will not negatively impact or affect your current or future employment status or relationship with Texas Health Resources (THR). By completing the focus group you are implicitly consenting to participate in this study. This focus group will take about an hour to complete. If you choose to participate, we will ask you a few questions and you can talk to us about the issue of alarms and how you prioritize what you do with them. Participation is strictly voluntary and you can stop at any time. You do not have to answer any question that makes you feel uncomfortable. Responding to the questions gives the research team permission to use your answers. However, no one will be identified with their response. The responses will only be used to clarify the theme of discussion. If you decide not to participate you can always stop at any time. There is a risk for loss of confidentiality and privacy; however, these risks will be minimized because the researchers will record data/responses in a manner that will not directly identify you. We are not collecting names or other private information and there will be no way to connect you to your responses. Results will be presented to management just as the data for types of alarms were presented to you. Management may then have discussion on how they might decrease alarms from sounding. We hope to use the results of this survey to change alarms parameters if needed, or whatever else we might find that will help to decrease alarms from sounding. You may not receive direct benefit by participating in this research; however, you may see alarm parameters change to help decrease the alarms from sounding. Management has asked for your input regarding alarms that sound in hopes to decrease them from sounding. If you have questions, concerns, or comments about your rights as a research subject or regarding research-related injuries, please contact the party listed below:

Jennifer Scott,
RN, BSN Office: (817) 848-3199
Deborah Behan PhD, RN-BC
Nurse Scientist at
THHEB Cell: 940-367-4758
Institutional Review Board (IRB)
Texas Health Resources
Phone: (682) 236-6746
Email: irb@texashealth.org
Thank you for taking the time to assist me.

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BIOGRAPHICAL INFORMATION

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