

Alarm Fatigue

Amanda Boutin BSN,RN

Alexis Clauss BSN, RN
Lehigh Valley Health Network, Alexis_S.Clauss@lvhn.org

Follow this and additional works at: <https://scholarlyworks.lvhn.org/patient-care-services-nursing>



Part of the [Nursing Commons](#)

Let us know how access to this document benefits you

Published In/Presented At

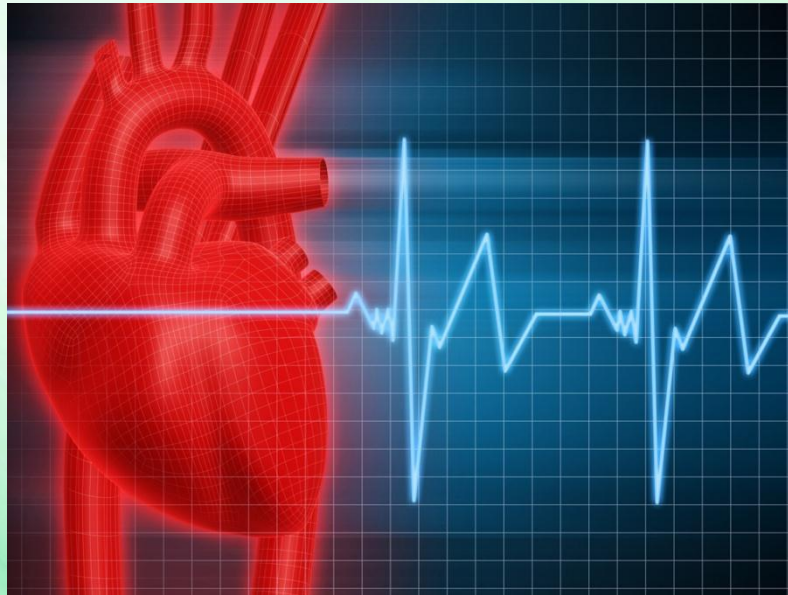
Boutin, A., Clauss, A. (2014, July 18). *Alarm Fatigue*. Poster presented at LVHN UHC/ ACCN Nurse Residency Program Graduation, Lehigh Valley Health Network, Allentown, PA.

Boutin, A. & Clauss, A. (2014, October 30) *Alarm Fatigue*. Presentation presented at: Research Day 2014, Lehigh Valley Health Network, Allentown, PA.

This Presentation is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

Alarm Fatigue

Amanda Boutin RN BSN
Alexsis Clauss RN BSN



A PASSION FOR BETTER MEDICINE.™



Background/Significance

- Alarm fatigue is an upcoming # 1 issue for the Joint Commission for 2014
- “There is a national problem of alarm fatigue related to sensory overload and desensitization of monitoring alarms. There is evidence that 566 patient deaths have been reported relating to monitoring device alarms” (Cvach, 2012, p. 269).
- The purpose of this project is to address the increasing risks of alarm fatigue in acute care nursing and, by educating staff, be able to reduce this risk by appropriately setting telemetry parameters.

PICO QUESTION

- Do nurses on 4K that have been educationally informed about alarm fatigue related to telemetry parameters have an increased awareness and ability to adjust telemetry parameters compared to nurses that have not had this education?
- **P-** Nurses on 4k
- **I-** Educational offering regarding alarm fatigue
- **C-** Nurses that do not have education on alarm fatigue
- **O-** Increased awareness and ability to adjust telemetry parameters

IOWA Model Trigger

■ Problem

- Identification of a clinical problem
- Clinical problem as evidenced by sentinel events reported and published by the Joint Commission; leading to alarm monitoring being a new patient safety goal for 2014.

EVIDENCE

■ SEARCH ENGINES:

- Ebsco Host
- Jointcommision.org
- CINAHL

■ KEY WORDS:

- Alarm fatigue and nursing
- Telemetry, alarm parameters, alarm fatigue



Literature Evidence

- “Studies have indicated that the presence of false and/or clinically insignificant alarms ranges from 80%-99%”.(Cvach, 2012, p. 268)
- Recommendations to reduce alarm fatigue are to have initial and continual alarm-based medical device training for staff, customization of alarm parameters to decrease false alarms, as well as documenting alarm parameters to improve compliance.(Cvach, 2012, p. 270-272)
- The Joint Commission sentinel event data base showed:
 - 98 alarm related events from Jan 2009- June 2012
 - 80 resulted in patient deaths
 - 13 resulted in serious injury
 - (The Joint Commission Sentinel Event Alert , 2013)

EVIDENCE

- Increased workload decreases alarm response and performance. Adjusting parameters to patient's actual needs can increase alarm compliance (Cvach, 2012).
- A study done on a medical progressive care unit used an alarm management task force to make changes in the monitoring protocols. Nurses were re-educated on adjusting monitor alarms parameters. The unit made default settings for the population on the floor so only significant alarms would sound to prompt a nursing intervention. Results: Critical alarms were reduced by 43% from baseline data (Cvach, 2010).
- By re-educating staff and changing alarm parameters of telemetry it can significantly reduce alarm fatigue for inpatient nurses (Purbaugh, 2014).

Current Practice at LVHN

- Critical Red alarms are set and turned on at ALL times
 - Asystole, extreme tachy, extreme brady, v-fib, v-tach
- Red and Yellow alarms may be adjusted to a patients specific condition/ rhythm
- Shift to shift SBAR communication will include telemetry class, rhythm, alarm settings, and significant alarms that have occurred

Current Practice at LVHN

- New batteries should be replaced within one hour of a low battery alarm
- You can adjust high and low HR limits
 - High rate limit should be set 10-20 beats above patients current HR
 - Low rate limit should not be set lower than 40 except in unusual circumstances, when pt condition warrants it
- Tele pagers must be carried by nurse at all times
 - Must be audible
 - Can NOT be on vibrate

IMPLEMENTATION

1. Process Indicators and Outcomes

1. Number of staff members who responded to survey and number of patients monitored on telemetry.
2. Percentage of people who recognized what alarm fatigue was and percentage of patients with alarm parameters changed.

2. Baseline Data

- *Pre-education survey and telemetry monitoring.

3. Design (EBP) Guideline(s)/Process

- *Conducted research on topic to conduct our own EBP research and educated staff on issue/ research to inform them on current issues and ways to improve on issue

4. Implemented EBP on Pilot Units

- *Re-education on telemetry monitoring on 4k
- *Re-evaluate patient data collection and post educational surveys

IMPLEMENTATION

5. Evaluation (Post data) of Process & Outcomes

- *The amount of respondents to the survey was a barrier to the study, there were less respondents post education than pre education.

- * It is evident that not all nurses understand the definition of alarm fatigue despite education. There was an increase in alarm parameter changing post telemetry education.

6. Modifications to the Practice Guideline

- *There are no modifications at this time. Reinforcing education was the goal to evaluate implementation outcomes.

7. Network Implementation

- *More frequent education on telemetry can be done for staff members. With the new safety goal for 2014, committees may need to be created to help evaluate unnecessary alarms or ways to reduce nuisance alarms. These committees would need to evaluate the patient population per unit to best adjust alarm parameters.

Practice Change Suggestions

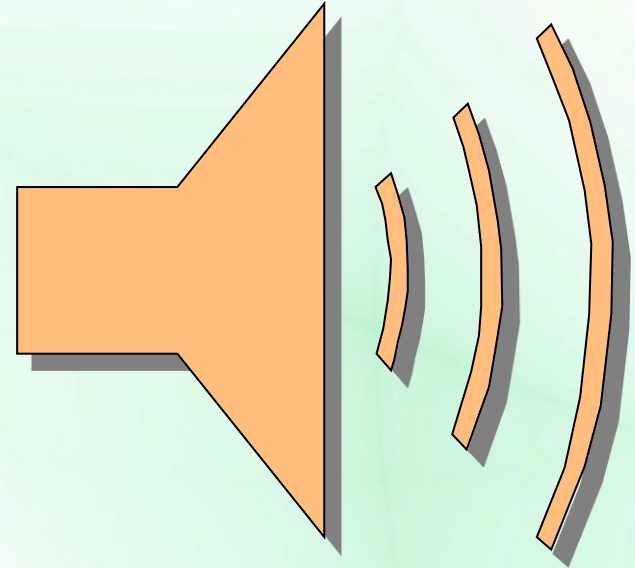
- Check parameters at beginning of shift
- Inspect alarm review at the central monitoring station to identify trigger of alarms.
 - Can you change settings depending on what you found?
 - Review alarm parameters and telemetry settings with on coming staff.
 - If you are receiving many false alarms and do not agree with the beat labeling you can select RELEARN for the system to recognize the pt's rhythm more accurately. If this still does not help, changing the ECG leads may help detection of accurate beats.
 - Remember: Policy states a strip must be interpreted and place in chart Q8hrs and rhythm in Centricity Q4hrs. This is the minimum and charting can be done more frequently if changes occur

Practice Change Suggestions

- Our study was to identify alarm fatigue issues surrounding patient safety, there is not enough evidence to implement a practice change.
- Re-education of current policy may help to implement better control of alarm parameter changing.
- Addressing alarm settings at bedside or kardex is an option that could help nurses be aware of the patients baseline and changes needed to be done for alarm adjustments
- As other studies have shown, alarm committees could be beneficial to adjust alarms based on a unit's patient population.

Pre education Data

- Total patients Monitored: 11
- Days monitored: 3
- Hours monitored: 10 hrs 25min
- Total number of yellow alarms: 21
 - True: 17
 - False: 4
- Total number of red alarms: 4
 - True: 3
 - False: 1
- Other Alarms: 3
- Total of 28 alarms: # of pt with alarm parameters changed: 2 out of 11 patients.
- All pair of PVCs and PVCS > 10 alarms had no alarm parameters changed.



Pre education Survey

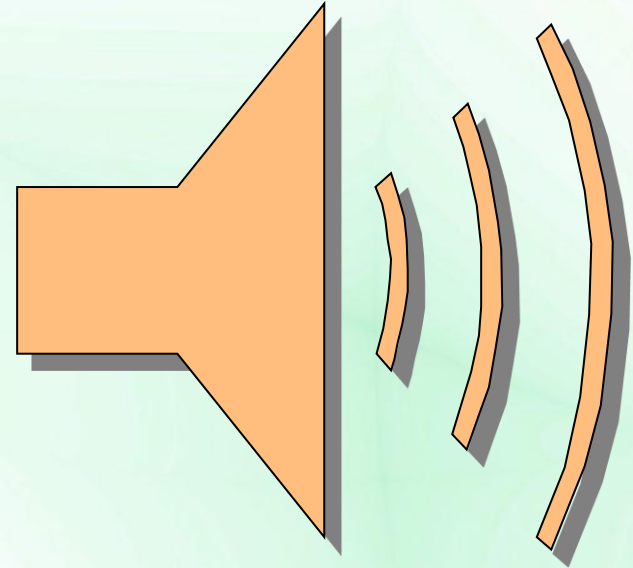
- Total respondents:13
- **54% knew the definition of alarm fatigue**
- **92% felt that they experienced alarm fatigue either sometimes or always**
- 69% stated they sometimes experience nuisance/false alarms
- 31% stated they rarely or never check alarm parameters
- 69% said that it would sometimes or always help if telemetry parameters were addressed at the bedside.
- **92% stated there are sometimes or always nuisance alarms related to telemetry that do not require action by the nurse**

Alarm Data Pre-Education

Alarm	Number of alarms	Alarm	Number of Alarms
Pair PVC's	3	Non Sus- VTACH	4
PVCs > 10	3	HR >120	1
Multiform PCVs	5	HR <50	2
Irregular Heart rate	2	Lead Off	3
Pause	1		
Tachycardia >150	1	Bradycardia <40	2 (24 and 39 bpm)
Vtach	1		

Post Education Data

- Total patients Monitored: 4
- Days monitored: 3
- Hours monitored: 28
- Total number of yellow alarms: 11
 - True: 10
 - False: 1
- Total number of red alarms: 1
 - True: 0
 - False: 1
- Other alarms: 12
- Total of 24 alarms: # of pt with alarm parameters changed: 3 out of 4 patients.
- Alarms turned off: AFIB, Pair PVCs, and multiform pvcs



Post Education Survey

- Total of 6 Respondants
- **50% knew the definition of alarm fatigue**
- **100% stated they either sometimes or always experienced alarm fatigue on 4k**
- **100% stated they either sometimes or always experienced nuisance tele alarms**
- 67% states they either sometimes or always assess alarm parameters
- **100% felt they either sometimes or always had nuisance alarms that did not require action by the nurse related to telemetry**
- 50% stated they felt addressing alarm parameters at the bedside would help to manage alarms

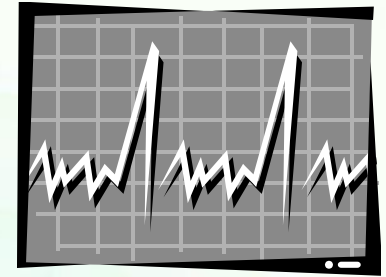
Post Education Data

Alarm	Number of alarms	Alarm	Number of Alarms
Pair PVC's	0	Non Sus- VTACH	1
PVCs > 10	0	HR >120	1
Multiform PCVs	1	HR <50	0
Irregular Heart rate	0	Lead Off	10
Cannot analyze	2	Missed beat	8
Tachycardia >150	0	Bradycardia <40	0
Vtach	1		

RESULTS

- Based on Percentage of staff that answered education surveys, there was an increase in nurses realizing that they experience alarm fatigue / nuisance alarms
- Only 6 staff members answered post survey compared to 13 staff members for the pre survey
- Based on the data collected pre and post education, there were less nuisance alarms that went off during observation hours.
- There were also more parameters changed in post education data.
- There were more alarms that sounded for leads to be changed post education that could have been avoided.
 - Total alarms: 28 pre education vs. 12 post education

Implications for LVHN



- Studies would need to be done on a higher level of care that has more telemetry to address the issue closer.
- The joint commission will begin its new safety goal of alarm monitoring; LVHN will need to begin to create committees to address ways to decrease unnecessary alarms.

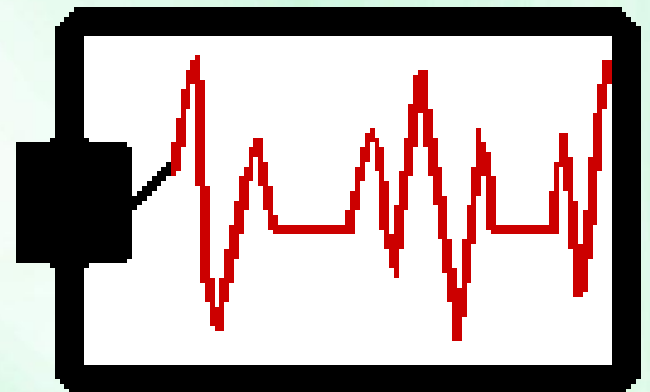
Strategic Dissemination of Results

- To continue educating staff throughout hospital we suggest:
 - Tailoring EBP to higher level of care units (more telemetry/ monitoring)
 - Creating committees to run and control data hospital wide
 - Continue educating staff on how to change alarm parameters and when it is safe/ acceptable to change parameters

Lessons Learned

Barriers:

There is a lack in randomized controlled trials for this up and coming safety issue. There is currently “no standards for setting default alarm parameter thresholds or graduation of alarms related to degree of urgency” (Cvach, 2012, p. 268)



Lessons Learned

- Reducing nuisance alarms can increase awareness to alarms that need to be acted upon by a nurse.
- Alarm fatigue is a real issue that not all nurses are aware of.
- Telemetry alarms are only one of many alarms that sound while on the unit, but it is one that can be adjusted to the patients needs.

References

- Cvach, M. (2012). Monitor alarm fatigue: an integrative review. *Biomedical Instrumentation & Technology*, 46(4), 268-277
- Graham, K., & Cvach, M. (2010). Monitor alarm fatigue: standardizing use of physiological monitors and decreasing nuisance alarms. *American Journal Of Critical Care*, 19(1), 28-35. doi:10.4037/ajcc2010651
- Purbaugh, T. (2014). Alarm Fatigue A Roadmap for Mitigating the Cacophony of Beeps. *Dimensions Of Critical Care Nursing*, 33(1), 4-7. doi:10.1097/DCC.0000000000000014
- The Joint Commission Sentinel Event Alert . (2013, April). *The Joint Commission* .

Make It Happen

- Questions/Comments?

Contact Information:
Alexsisclauss@gmail.com
aboutin08@aol.com



Cedar Crest



17th Street



Muhlenberg



Health Centers