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Do You hear, What I hear - Alarm fatigue

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Objectives



- To improve awareness on alarm fatigue as a patient safety issue.
- Define alarm fatigue & its causes.
- List strategies that clinicians can employ to address alarm fatigue.



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Do you hear what I hear



- Alarm originates from French “al arme” which means “to your weapons “
- Alarms are essential & necessary to monitor vital signs necessary for supporting life.
- Intended to prevent patient harm by providing rapid reactions to critical situations.

ALARM FATIGUE

Clinicians become desensitized, overwhelmed or immune to the sound of an alarm

What Is Alarm Fatigue?



Alarm fatigue is the direct result of the constant bells, blips and alarm signals emitted by medical devices.



Care givers may become “immune” to these sounds which increases the risk of these alarms being absorbed into the auditory landscape of hospital corridors and subsequently being ignored?

Fatigued Clinicians May:



Turn down
alarm volume



Turn off
alarm



Adjust alarm
settings

These actions can have serious or fatal consequences

Cacophony of alarm sound



Fable of crying wolf

The Joint Commission

Scope of the Problem

Medical Device Alarm Safety

100s

of alarm signals per
patient per day

1,000s

of alarm signals on
each unit

10,000s

of alarm signals
throughout a hospital
per day



85-99%

of alarm signals don't require
clinical intervention⁵



2019 Top 10 Health Technology Hazards Executive Brief

A Report from Health Devices

The List for 2019

1. Hackers Can Exploit Remote Access to Systems, Disrupting Healthcare Operations
2. “Clean” Mattresses Can Ooze Body Fluids onto Patients
3. Retained Sponges Persist as a Surgical Complication Despite Manual Counts
4. Improperly Set Ventilator Alarms Put Patients at Risk for Hypoxic Brain Injury or Death
5. Mishandling Flexible Endoscopes after Disinfection Can Lead to Patient Infections
6. Confusing Dose Rate with Flow Rate Can Lead to Infusion Pump Medication Errors
7. Improper Customization of Physiologic Monitor Alarm Settings May Result in Missed Alarms
8. Injury Risk from Overhead Patient Lift Systems
9. Cleaning Fluid Seeping into Electrical Components Can Lead to Equipment Damage and Fires
10. Flawed Battery Charging Systems and Practices Can Affect Device Operation


'Alarm fatigue' linked to patient's death

US agency says monitors at MGH unheeded

By Liz Kowalczyk

Globe Staff / April 3, 2010

Federal investigators concluded that “alarm fatigue” experienced by nurses working among constantly beeping monitors contributed to the death of a heart patient at Massachusetts General Hospital in January.






The Joint Commission
**Sentinel Event
Alert**

A complimentary publication of
The Joint Commission

Issue 50, April 8, 2013

- Medical device alarm safety in hospitals
 - 98 alarm related events – jan 2009 to June 2012.
 - 80 resulted in death, 13 in permanent loss of function.
 - Underreported

 - Solution needs leadership & multidisciplinary approach.
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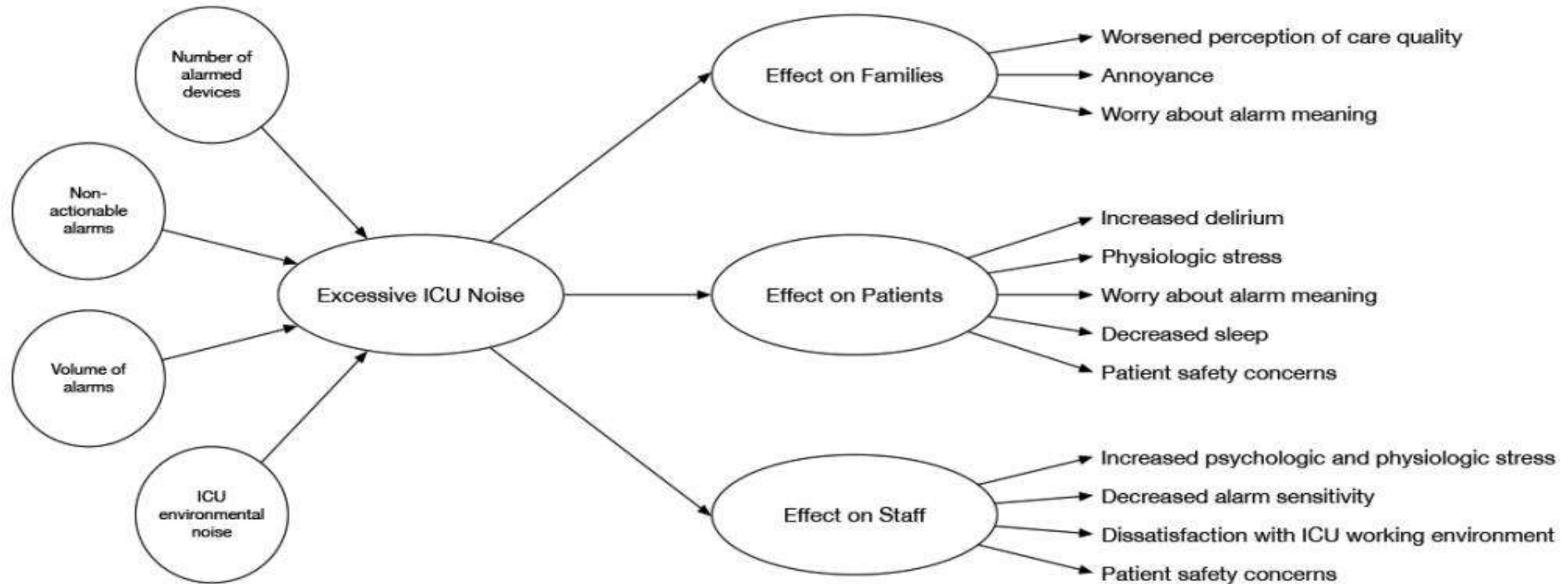
Sleeping Soundlessly in the Intensive Care Unit

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Received: 31 December 2019; Accepted: 27 February 2020; Published: 1 March 2020



The Hospital Is No Place for a Good Night's Rest

Andrew S. Parsons, MD, MPH, reviewing Jaiswal SJ et al. J Hosp Med 2017 Oct Kamdar BB et al. J Hosp Med 2017 Oct

- WHO recommends 35 -40 dB during day & 30-40 dB during evening.

Delirium in patients

Disractions, stress symptoms, Errors on staff.

Sound levels in our institute

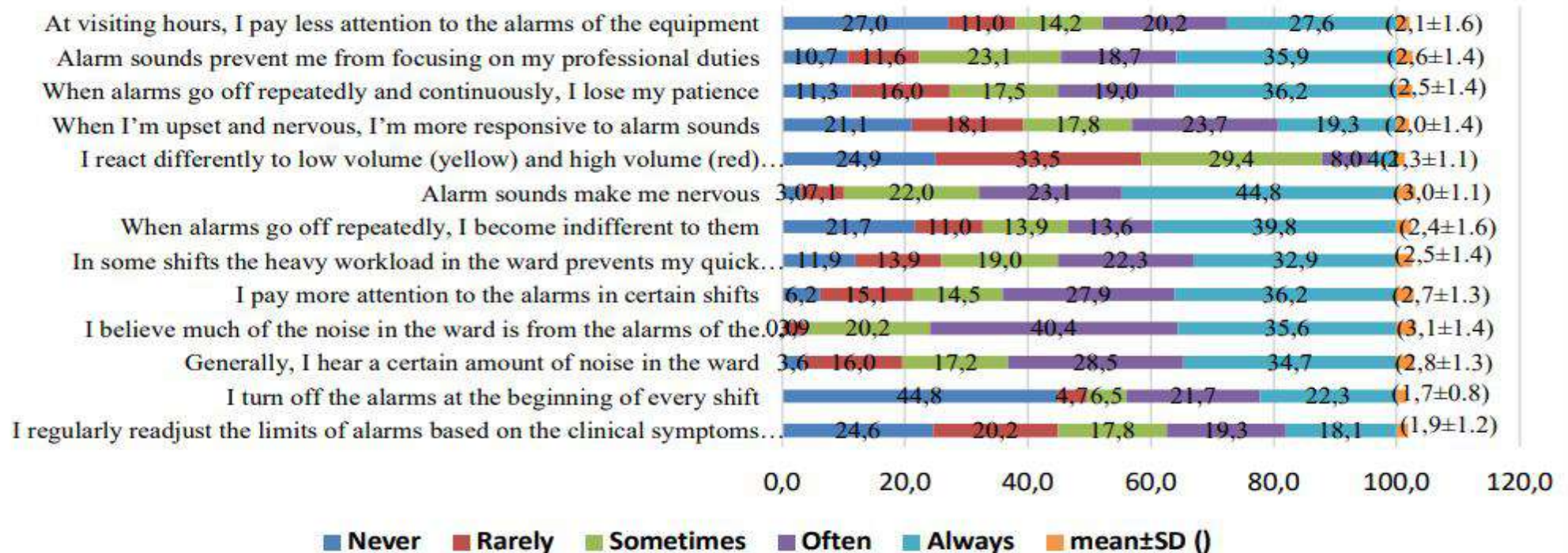
	9 .00 am	3.00pm	12.00am
MDICU	64.85 dB	65.71 dB	46.6 dB
ER	69.05 dB	71.49 dB	48.3dB
Reception	71.1	75	45.6

Sound levels averaged over 24 hours^a

Location and day	Central station	Adjacent to patient
John Radcliffe Hospital Adult ICU weekday	58.4 dB	59.7 dB
John Radcliffe Hospital Adult ICU weekend	59.1 dB	59.5 dB
Royal Berkshire Hospital ICU weekday	58.7 dB	59.9 dB
Royal Berkshire Hospital ICU weekend	57.7 dB	58.5 dB
Wycombe General Hospital ICU weekday	52.4 dB	55.4 dB
Wycombe General Hospital ICU weekend	51.3 dB	54.1 dB
John Radcliffe Neurosciences ICU weekday	58.0 dB	58.8 dB
Churchill Hospital Adult ICU weekend	55.7 dB	55.4 dB

Evaluating the Alarm Fatigue and its Associated Factors among Clinicians in Critical Care Units

Description of the items in %



Purpose of Clinical alarms

- Enhance patient safety
 - Patient deteriorating.
 - Device not functioning
- Perfect alarm system
 - Never miss an event (100 % sensitivity)
 - Never alarm when theres no event (100% specificity)

Causes of nuisance alarms

- Improper lead placement.
- Alarms not customized.
- Many parameters set to always sound an alarm.
- Duplicate alarms.
- Lack of patient education

National Patient Safety Goals on Alarms

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The Joint Commission Announces 2014 National Patient Safety Goals in June 2013

PHASE 1

(2014 to January 1, 2016)

Establish alarm system safety as hospital priority

Identify the most important alarm systems to manage (EC.02.04.01)

PHASE 2

(began January 1, 2016)

Establish policies and procedures for managing the alarms identified

Educate staff and communicate changes



Official Publication of Joint Commission Requirements

National Patient Safety Goal on Alarm Management

NPSG on alarm management Phase 1

- Establish alarm management as organizational priority.
- Identify most important alarms to manage .
- Identify risk to patients due to lack of response/malfunction.
- Identify actionable vs nuisance alarms.
- Publish best practices & guidelines

NPSG alarm management Phase 2

- Clinically appropriate settings
- Who can set, change or turn off parameters.
- Checking individual alarm signals for accurate settings, proper operation & detectability.
- Educate those in organization about alarm policies.
- Clinical leadership responsible for ensuring safety, accuracy, education & communication.

Evidence ??

TA Bach et al ,BMJ open Qual 2018

- Clinical
 - Decrease in total number of alarms (54%)
 - Overall reduction in noise level

Behavioural

- 27% reduction in alarm fatigue(Alsaad etal)
- 64% nurses found noise acceptable(Graham et)
- Nurses became more confident in alarm mgmt.

Economic

42% cost reduction by reducing unindicated monitors (AlSaad)

Summary



- Alarm hazards are a growing patient safety issue.
- Hospitals & safety professionals should be proactive in addressing alarm fatigue.
- Training users allows medical devices to be optimized for patient safety.



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Thank you

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