

**Quiet Hospitals: A Rapid Review.**

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**Executive Summary**

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**Background**

Consideration is being given to reducing/stopping overhead loudspeaker Medical Emergency Team calls at any time of the day. Only code blues calls will be paged overhead in an attempt to reduce noise levels.

**Objective**

To review the current evidence to understand what impact does restricting overhead calling services (or Quiet hospitals) have on patient experience & staff wellbeing hospitals?

**Findings**

There were no studies found that investigated the impact of overhead paging system as a single intervention on patient or staff satisfaction.

Most studies bundle interventions together, rather than trial single interventions<sup>1,2,3</sup>. Examples of these intervention bundles are detailed in Table 3.

In the ICU, evidence is inconclusive as to whether there is a reduction in noise levels following behaviour interventions, quiet-time protocols, or clinical design (e.g. earplugs) designed to reduce noise<sup>1</sup>. Interventions included reducing conversation level, turning down alarms, footwear, etc.<sup>1</sup>

In adult ward settings, there are mixed results with studies indicating reduced sound levels, and others indicating no change in sound levels<sup>2</sup>. Interventions included staff education, equipment noise review, ear plugs, closing doors, turning down lights, etc<sup>2</sup>

In Critical Care Units<sup>3</sup>, patient satisfaction improved; nurse stress levels reduced; during the 6-hour night-time quiet time, patients perceived fewer sleep interruptions and had better sleep quality, noise levels were shown to be reduced following quiet time interventions from specific time slots (2pm-4pm, 11am-5pm, or 1:30am-3:30am). Interventions involved reducing light levels, closing doors, turning down alarms, phones and monitors, turning off televisions and radios<sup>3</sup>

There was one study that incorporated Institutional level, and unit level quiet paging but this was bundled with a number of other interventions such as, visitor and alarm policies.

Individual studies show that noise reduction interventions are feasible in ward settings and suggest they have potential to improve patients' in-hospital sleep experiences. However meta-analyses show insufficient evidence to support the use of such interventions at present<sup>2</sup>.

## Background

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Consideration is being given to reducing/stopping overhead loudspeaker Medical Emergency Team calls at any time of the day. Only code blues calls will be paged overhead in an attempt to reduce noise levels.

## Objectives

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To review the current evidence to understand what impact does restricting overhead calling services (or Quiet hospitals) have on patient experience & staff wellbeing hospitals?

## Search strategy & Study Selection

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### Search strategy Inclusion/Exclusion Criteria

The search strategy for this report can be found in Table 1 in the Appendix. Inclusion/exclusion criteria can also be found in Table 2 in the Appendix.

### Study Selection

Papers identified were screened using inclusion and exclusion criteria established *a priori*. Searches of Pubmed, and TRIP database were screened by one reviewer (CJ) in consultation with colleagues as necessary. Google search was screened by another reviewer (MG) also, in consultation with colleagues as necessary. Literature was included based on the above criteria.

## Results

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A total of 4 studies were considered for this rapid review. Three were systematic reviews<sup>1,2,3</sup>, and one is an intervention study<sup>4</sup>. With respect to setting, two were in the ICU<sup>1,4</sup>, on in the critical care unit<sup>3</sup>, one was set in general adult wards<sup>2</sup>.

### Summary of Findings

There were no studies that were found that investigated the impact of overhead paging as a single intervention on patient or staff satisfaction.

Most studies bundle interventions together, rather than trial single interventions<sup>1,2,3</sup>. Examples of these intervention bundles are detailed in Table 3.

Individual studies show that noise reduction interventions are feasible in ward settings and suggest they have potential to improve patients' in-hospital sleep experiences. However meta-analyses show insufficient evidence to support the use of such interventions at present<sup>2</sup>.

#### Patient satisfaction

There were increases in patient satisfaction<sup>3</sup>. Introducing a 'quiet time' between 2pm-4pm led to an 'always' rating for quiet hospital environment, equating to a 27% increase compared to pre-intervention satisfaction<sup>3</sup>.

#### Nurse stress levels

There were reports of nurses having lower levels of stress during 'quiet times' in the day shift period<sup>3</sup>. This was as a result of a 'quiet time' period from 2pm-4pm in the ICU (Halm).

#### Sleep hours or number of awakenings

During the 6-hour nighttime quiet time, patients perceived fewer sleep interruptions and had better sleep quality<sup>3</sup>. However, meta-analysis revealed no change to total hours slept or total awakenings following noise-reducing interventions<sup>2</sup> (Table 3).

#### Sound levels

In adult ward settings, there are mixed results with studies indicating reduced sound levels, and others indicating no change in sound levels<sup>2</sup>. Interventions included staff education, equipment noise review, ear plugs, closing doors, turning down lights, etc<sup>2</sup> (Table 3).

In the ICU, evidence is inconclusive as to whether there is a reduction in noise levels following behaviour interventions, quiet-time protocols, or clinical design (e.g. earplugs) designed to reduce noise<sup>1</sup>. Interventions included reducing conversation level, turning down alarms, footwear, etc.<sup>1</sup> (Table 3).

In Critical Care Units, noise levels were shown to be reduced following quiet time interventions from 2pm-4pm, 11am-5pm, or 1:30am-3:30am<sup>3</sup>. These interventions involved reducing light levels, closing doors, turning down alarms, phones and monitors, turning off televisions and radios<sup>3</sup> (Table 3).

#### 'Naptime' intervention<sup>4</sup>

The number of protocol violations during the Naptime pilot suggests that an uninterrupted 4-hour period is not achievable for a significant proportion of patients. The protocol was adapted to emphasize alternate strategies to cluster care and minimize disturbance so that patients have at least 60 to 120 minutes at a time for rest. For the unit-wide protocol, the nurse remains the gatekeeper for preventing in-room activity during Naptime.

There is concern that day shift caregivers would be frustrated if certain tasks (e.g. bathing) did not occur overnight.

There were no adverse effects of the Naptime intervention.

## **Conclusions**

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There were no studies that were found that investigated the impact of overhead paging as a single intervention on patient or staff satisfaction.

## **References**

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1. Delaney, L., Litton, E., & Van Haren, F. (2019). The effectiveness of noise interventions in the ICU. *Current Opinion in Anesthesiology*, 32(2), 144-149.
2. Garside, J., Stephenson, J., Curtis, H., Morrell, M., Dearnley, C., & Astin, F. (2018). Are noise reduction interventions effective in adult ward settings? A systematic review and meta-analysis. *Applied Nursing Research*, 44, 6-17.
3. Halm, M. (2016). Making time for quiet. *American Journal of Critical Care*, 25(6), 552-555.
4. Knauert, M. P., Redeker, N. S., Yaggi, H. K., Bennick, M., & Pisani, M. A. (2018). Creating Naptime: an overnight, non-pharmacologic intensive care unit sleep promotion protocol. *Journal of Patient Experience*, 5(3), 180-187.

## Appendix

**Table 1.** Search strategy

Database/resource	Search keywords	Results
Pubmed	6. Search #5 Filters: published in the last 5 years 5. Search #3 AND #4 4. Search #1 OR #2 3. Search "Hospital Rapid Response Team"[Mesh] 2. Search ((noise) OR sound) OR quiet 1. Search "Sleep"[Mesh]	408
TRIP database	(hospital rapid response team)(quiet)	175
Google	"quiet hospital"	225

**Table 2.** Inclusion/Exclusion criteria

<b>Population</b>	<b>Include:</b> Adult <b>Exclude:</b> Paediatric
<b>Interventions</b>	<b>Include:</b> Interventions that have employed the reduction of overhead medical emergency team calls
<b>Outcomes</b>	Staff wellbeing, patient experience
<b>Context</b>	<b>Include:</b> Inpatients <b>Exclude:</b> Community, paediatric, outpatient
<b>Types of evidence</b>	<b>Include:</b> All
<b>Limits</b>	<b>Date:</b> 2014 <b>Language:</b> Publications in English.

**Table 3.** Summary of study characteristics

Author	Study type	Setting	Interventions
Delaney 2019 <sup>1</sup>	Systematic review	Intensive Care Unit	<p><u>Behaviour modifications</u></p> <ul style="list-style-type: none"> <li>• Reducing conversational noise</li> <li>• Minimising nonclinical discussions at the bedside</li> <li>• Limiting clinical interactions</li> <li>• Emphasis on care clustering</li> <li>• Titrating alarm volumes</li> <li>• Monitoring alarm settings to reduce nuisance alarms</li> <li>• Closing patient room doors</li> <li>• Modifying workflow</li> <li>• Promoting timely response to alarms</li> <li>• Equipment maintenance</li> <li>• Footwear</li> </ul> <p><u>Quiet time protocols</u></p> <ul style="list-style-type: none"> <li>• No ward rounds</li> <li>• No non-urgent procedures</li> <li>• Alarm disturbance reduction</li> </ul>
Garside 2018 <sup>2</sup>	Systematic review	All adult wards	<ul style="list-style-type: none"> <li>• Ear plugs</li> <li>• Noise warning systems</li> <li>• Noise awareness and education</li> <li>• Environmental review</li> <li>• Leadership</li> <li>• Checklists/guidelines</li> </ul>
Halm 2016 <sup>3</sup>	Systematic review	Critical Care Unit	<ul style="list-style-type: none"> <li>• Posting quiet-time signage</li> <li>• Lights dimmed</li> <li>• Patient doors closed</li> </ul>

			<ul style="list-style-type: none"> <li>• Phone ringers off</li> <li>• Bedside monitor alarms off</li> <li>• Televisions off</li> <li>• Radios off</li> <li>• Personal devices off</li> <li>• Wall suction only unless essential</li> <li>• Checking volume of intravenous fluids and tube feedings and replacing before alarming</li> <li>• Charting at the central nursing station “people” components emphasized enforcing expectations for staff to lower conversation level and reinforce quiet time guidelines</li> <li>• Discouraging families from visiting during quiet time in order to promote rest and sleep</li> <li>• Assessments and physical examinations, as well as routine diagnostic and therapeutic procedures such as laboratory tests and chest radiographs limited unless the patient’s condition required it.</li> <li>• Nursing routines and other care activities rearranged to honor the quiet time as much as clinically</li> </ul>
Knauert 2018 <sup>4</sup>	Pilot intervention “Naptime”	Intensive Care Unit	<p><u>Institution Level</u></p> <ul style="list-style-type: none"> <li>• Hospital-wide quiet time protocol and quiet pack</li> <li>• <b>Overhead pages only for life-threatening emergencies</b></li> <li>• Coordination of pharmacy, laboratory medicine, information technology, and facilities services</li> <li>• Leadership Support</li> </ul> <p><u>Unit level</u></p> <ul style="list-style-type: none"> <li>• Visitor policies and encouragement of family members to rest at home</li> <li>• Provider meetings in closed work spaces</li> <li>• <b>No unit level overhead paging</b></li> <li>• Alarm policies and work groups</li> <li>• Restriction of main ICU door use</li> <li>• Leadership support</li> </ul> <p><u>Bedside</u></p> <ul style="list-style-type: none"> <li>• Closed door and curtains</li> </ul>

			<ul style="list-style-type: none"> <li>• Dimmed lights</li> <li>• Signal to sleep</li> <li>• Daytime wake protocol</li> </ul> <p><u>Direct care</u></p> <ul style="list-style-type: none"> <li>• Care clustered and disturbance minimised during room entrances</li> <li>• Medications scheduled outside of Naptime</li> <li>• Continuous infusions use higher volumes or higher concentrations</li> <li>• Routine labs or diagnostic testing at 04:00 or later</li> <li>• Ventilator checks and suctioning before and after Naptime</li> <li>• Skin care, wound care, and line checks before Naptime</li> <li>• Positioning disturbance minimized with “pillow pull”</li> <li>• Facilities and supplies outside of Naptime</li> </ul> <p><u>Challenging cases</u></p> <ul style="list-style-type: none"> <li>• Minimise collateral disturbance for medical emergencies</li> <li>• Cluster care for high-intensity patients to achieve rest blocks of 60 to 120 minutes</li> <li>• Cluster and prioritize in-room care for overnight admissions.</li> <li>• Encourage patients in challenging rooms to utilize ear plugs or eye masks</li> </ul>
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