ENVIRONMENT AND NOISE ON NEONATAL UNIT
(including quiet time)

BACKGROUND
- What we hear is sound. Noise is unwanted sound. The difference between noise and sound depends upon the listener and the circumstances.
- The neonatal unit can be a very stressful place for babies and their families. Babies experiencing good quality sleep are more stable, grow more quickly and efficiently and have a shorter recovery period.
- Babies sleep better when handled less and in a quieter environment.
- Noise exposure in neonatal units is suspected of being a cause of hearing loss.
- Premature infants are not able to shut out external stimuli such as noise or light.
- Create a time of rest when the environment is quieter and less bright – see Quiet time section.
- Noise intensity, to which the neonate is exposed, varies with the type of ventilatory support required.

Noise can be hazardous to hearing if the sound is loud and the infant is exposed often enough and long enough.

Perceptions of increase in decibel (db) level
- Imperceptible change: 1 db
- Barely perceptible change: 3 db
- Clearly noticeable change: 5 db
- Approximately twice as loud: 10 db
- Approximately four times as loud: 20 db

Sound levels and potential effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Sound level (decibels)</th>
<th>Potential effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airplane engine</td>
<td>130</td>
<td>Pain</td>
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<tr>
<td>Rock music</td>
<td>120</td>
<td>Potential for hearing damage in adults</td>
</tr>
<tr>
<td>Heavy traffic</td>
<td>80–90</td>
<td>Annoying</td>
</tr>
<tr>
<td>Placing bottle in incubator</td>
<td>84</td>
<td></td>
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<tr>
<td>Closing incubator portholes</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Neonatal unit (general)</td>
<td>60–70</td>
<td></td>
</tr>
<tr>
<td>Adult ICU</td>
<td>50–68</td>
<td></td>
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<tr>
<td>Incubator alarm</td>
<td>65–70</td>
<td>Ambient background noise</td>
</tr>
<tr>
<td>Neonatal unit radio</td>
<td>60–62</td>
<td></td>
</tr>
<tr>
<td>Bubbling water in ventilator circuits</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Normal conversion</td>
<td>45–50</td>
<td></td>
</tr>
<tr>
<td>Light traffic</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Whisper</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Actions
- Speak softly
- Close portholes quietly
- Use incubator shelf for bottles
- Turn off alarms promptly
- Avoid banging doors/drawers
- Do not put charts on incubator
Environment and noise 2011-13

**Rationale**
- Exposure to inappropriate noise levels may cause:
  - physiological instability, agitation and crying
  - disrupted sleep patterns, disrupted transition between states and growth
  - disruption in development of listening and language skills
  - damage to immature structures of the ear (if loud and prolonged)
  - disruption in development of appropriate feeding skills

**Objective**
- Mimic uterine environment
- Promote physical stability and avoid hypoxia
- Support organised sleep patterns and circadian rhythms
- Avoid damage to inner ear

**Method**
- Maintain noise levels within safe and comfortable limits (ideally 50 db)
- If baby’s behaviour and physiological cues indicate stress, reduce noise levels
- Avoid sudden loud noises
- Cover incubators of preterm, sick or neurologically compromised babies to muffle sound
- Do not place objects on top of an uncovered incubator or tap blood bottles on incubator
- Avoid loud conversations in close proximity to sick babies
- Switch off alarms as quickly as possible
- Keep monitor alarms and telephone ring tones at quiet but safe audible levels
- Promote appropriate auditory interactions with parents/carers
- Maintain quiet environment to promote development of appropriate feeding
- Maintain incubators and monitoring equipment as per manufacturer’s instructions

**QUIET TIME**

**Aim**
- Promote optimal growth and development of infants on neonatal unit

**Before quiet time**
- Ensure infants are well prepared and positioned comfortably
- To achieve the best possible effect for babies, parents and staff must work together to maintain this period of rest

**Protocol**
- Time appropriate to unit but usually 1730–1930
- Adhere to the following criteria as much as possible:
  - reduce talking and laughter to a whisper
  - avoid banging doors or lids, dragging chairs etc
  - rearrange care-giving activities around quiet time hours
  - carry out stabilisation procedures only
  - respond rapidly to alarms
  - switch off main lights, side-lights on low or off and blinds/curtains closed
  - incubator covers in place
  - no cleaning to be carried out
  - during quiet time hours, parents only to visit
  - display quiet time posters in unit
  - provide parents with written information on admission