

Gravens by Design: Should Nurturing Stimuli be Limited to Times When a Preterm Baby is Awake?

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For many years, the NICU was an undesirable place for a baby’s brain to develop. Lights were bright, the noise was pervasive, painful procedures plentiful, sleep disturbed frequently, and parental access severely restricted. There has been a gradual awakening to the adverse effects this can have on a premature infant who is in the “synaptic explosion” stage of brain growth and development, which, coupled with technological changes that allow us to monitor babies better and less invasively, has enabled us to minimize these noxious stimuli. The importance of infant sleep to brain development has also gained greater recognition so that timing necessary interventions to protect sleep is happening more often.

Concurrently, there has also been a move to introduce nurturing stimuli into the baby’s experience. Skin-to-skin care (1), music (2), reading (3,4), and circadian lighting (5) are examples of such stimuli that are much more commonly offered today than they were in the earlier days of NICU care.

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Unfortunately, in many NICUs, the effort to reduce overstimulation and protect infant sleep has come into conflict with the desire to provide nurturing stimuli. It is hypothesized by some practitioners that there is danger in providing these stimuli when an infant is asleep on the grounds that it may cause overstimulation or interfere with the important sleep cycle itself. Thus, nurses and parents are often admonished to stop reading and providing music once their baby falls asleep and to keep the lights dim. Some also

prescribe a maximum amount of time these stimuli should be provided in the course of a day, suggesting again that there is a risk of overstimulation. In fact, there is no data to support these beliefs; it is more likely an overly enthusiastic acceptance of the desire to protect babies that has led to this practice – good intentions can have unintended consequences. William Fifer demonstrated that newborns, unlike any other age group, learn while they are asleep (6,7). In utero, we know that infants learn to recognize their mother’s voice (8) and smell; we also know that the fetus sleeps most of the time, so these stimuli are likely presented and learned for many hours every day, much of that time while the fetus is asleep.

Unless new data demonstrate that presenting these nurturing stimuli to babies is harmful or that limits are necessary, then we should no longer proscribe their use once an infant falls asleep. Babies are likely to benefit and, in all likelihood, will not be harmed by continuing to provide them with auditory, vestibular, and circadian stimuli throughout the sleep cycle. Of course, these stimuli should be removed if the baby appears to react adversely, but it is much more common to see that babies continue to sleep peacefully even when the nurturing stimuli are continued. Incubators and private rooms are important tools for protecting babies from overstimulation, but they can also become isolation chambers if parents are absent and we do not enrich their sensory environment or do so only in small doses. The best environment for neurosensory development in the NICU is in the arms of a caregiver or when that is not feasible in the presence of nurturing stimuli. Certainly, we need more data to determine what that should look like exactly, but our default should not limit sensory input altogether in a well-meaning effort to protect infant sleep.

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