Best Feeding Practices for Premature Infants in the Neonatal Intensive Care Unit

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Introduction

Each year, more than 500,000 infants are born prematurely (less than 37 weeks gestational age) and are at a high risk for future medical problems (White-Traut et al., 2017). Premature infants often lack the oral-motor development and oral skills to breast or bottle feed after birth, thus causing implications for receiving the nutrients needed (Salas et al., 2019). If premature infants are not receiving proper nutrients at the beginning of their lives, we may see implications in their growth and complications may develop. Thus, there is a great need for understanding what feeding practices are best for this population.

Oral Motor Development

Human development is a complex process that begins early in utero. The different anatomy, processes, and primitive reflexes for feeding are well established around 25 weeks gestation and can be described as automatic movements descending from the brainstem (Hendrik H. D., 2013). These specific movements are vital to neonatal feeding, respiration, vocalization, and ingestion (Miller et al., 2006). Specifically, the sucking reflex plays a critical role in effective oral feeding for infants and coordinates the complex process of simultaneous breathing and swallowing (Hendrik, 2013). The presence of sucking pads at birth are indicative of an effective sucking reflex, therefore assuming the infant will be ready for breast or bottle feeding (Hendrik, 2013). If a baby is born prematurely (before 25 weeks' gestation), their sucking reflex and sucking pads may not be developed, likely causing feeding complications and requiring a need for safe feeding practices.

Volume Driven Feeding versus Infant Driven Feeding

For several reasons, feeding is an extremely important, yet high-risk skill for infants to achieve in the NICU. One reason is that oral feeding is a major factor that is considered for infant discharge (Settle & Francis, 2019). Many hospitals measure oral feeding advancement relative to volume driven feeding. This method of feeding is developed from a medical model in which a healthcare professional determines the time of day and amount of oral feeding an infant must consume (Settle & Francis, 2019). However, there is an overwhelming amount of evidence that suggests this method of feeding has caused a delayed discharge as well as oral aversions to feeding (Settle & Francis, 2019). Similarly, Lubbe (2018) found that "traditional" feeding regimes use criteria, such as the infant's weight, gestational age, freedom from illness, and even caregiver intuition to initiate or delay the process of oral feeding. Oftentimes, an infant will expend more energy attempting to feed rather than acquiring the nutrients needed to be fed properly (Lubbe, 2018). Hospitals and healthcare professionals have seen a push for protecting premature infants during feedings in order to reduce the stressful experiences feeding may elicit. These stressful experiences caused by volume driven feeding may harm the development of the premature infant and impact the neural pathways relative to feeding (Settle & Francis, 2019).

Consequently, infant driven feeding (IDF) has become increasingly popular and studied. Infant driven feeding focuses on infants' hunger cues. Clinicians may see enhanced infants' and parents' satisfaction, assistance in the establishment of independent oral feeding, an increase in nutrient intake and growth rates, and possible earlier hospital discharge following infant driven feeding practices (Watson & McGuire, 2015). Dalgleish, Kostecky, and Blachly (2016) state that the primary goal of infant driven feeding is safety. Infant driven feeding can assist in avoiding aspiration, avoiding passive manipulation of the nipple, and utilizing a flow that is controllable and enjoyable for the infant (Dalgleish et al., 2016). The researchers defined a successful feeding experience as an infant being engaged in the feeding with no signs of distress. Even if the feeding lasts for only a few sucking bursts, it is important that the feeding experience is enjoyable and engaging for the infant (Dalgleish et al., 2016).

Benefits of Non-Nutritive Sucking

Non-nutritive sucking is a technique that is typically used with premature infants who present with feeding difficulty. Infants must have a coordinated suck, swallow, and breath pattern in order to successfully feed (Foster et al., 2016). The ability to suck and swallow is present around 28 weeks' gestation, but infants do not gain full coordination until 32 to 34 weeks gestation. A non-nutritive sucks consists of characteristics that include a series of bursts and pauses. Each one of these bursts should contain 6 to 12 sucking cycles. Pacifiers elicit the non-nutritive sucking patterns which encourages the development of a successful sucking pattern. Non-nutritive sucking increases the development of successful sucking patterns and improves digestion of the feeding that the infant is receiving (Foster et al., 2016). Researchers Dur and Gözen (2021) stated that the use of a pacifier is recommended to support the sucking reflex during transition from gavage to oral feeding. They also stated that non-nutritive sucking ensures readiness for feeding. Pacifiers also provide calming effects on infants which allows them to engage in a learning process that is not strenuous.

Conclusion

The findings indicated that infant driven feeding has shown far more success than volume driven feeding. Infant driven feeding gives the child a more pleasurable feeding experience and promotes a healthy relationship with nutrient acquisition (Settle & Francis, 2019). We also know that positive experiences in feeding have a positive impact on brain structure and development in relation to feeding, therefore strengthening the neural pathways relative to feeding (Settle & Francis, 2019). Research also suggests that non-nutritive sucking stimulates and regulates the skills needed for oral feeding (Foster et al., 2016). Therefore, infant driven feeding based on infant feeding cues with the support of non-nutritive sucking, as needed, can be implemented to support positive oral feeding experiences within the NICU.