

## Guideline for Gustatory and Olfactory Environment on the Neonatal Unit

### Introduction

The gustatory and olfactory systems (relating to the sense of taste and smell) develop together from around 7 weeks gestation. Stimulation of any of the senses can favourably or adversely affect the development of the other senses, hence the importance of maintaining an environment free from negative sensory stimuli [2, 4, 8].

Normal gustatory development begins with the formation of taste buds by 12-13 weeks gestation, and presence of taste receptors by 16 weeks gestation [4]. The ingestion of flavours by the foetus through the amniotic fluid in the antenatal period helps to develop a multisensory relationship postnatally between mother and infant [5]. Taste receptors are thought to be functional between 24 and 27 weeks, and from 28 weeks are fully functional. Between 26 and 28 weeks, sensitivity to bitterness and intensity of stimuli begins to develop, and by 30 weeks a preference will be displayed towards particular tastes, especially sweet tastes [1, 2, 3]. When nutrition is provided parenterally on the neonatal unit, the neonate's exposure to taste stimuli can be minimal or non-existent. This, alongside invasive perioral and perinasal interventions may adversely affect future perceptions of oral experiences [2, 8].

Olfactory development begins slightly earlier with the smell receptors forming from 7 weeks gestation. Similarly to the taste receptors, the odorants in the amniotic fluid from the mother's diet prime these smell receptors [2, 7, 8]. Likewise, between 24 and 27 weeks the smell receptors are thought to be functional, and fully function from 28 weeks onwards, at which point physiological responses to unpleasant olfactory stimuli have been documented by research. A newborn term baby can recognise the smell of their mother's amniotic fluid and will turn their head towards the smell of breast milk, and by one week old can identify by smell their own mother's breast milk from a stranger's [2, 6, 8].

### **Regulating gustatory stimuli**

Educate staff and parents regarding development of gustatory system and baby cues

Promote positive taste experiences in babies that have had intrusive oral experiences (including prolonged intubation)

Administer medication via feeding tube if present

If medication is to be administered orally, avoid contaminating entire milk feed

Offer EBM on lips or via non-nutritive sucking device (NNSD) if tube feeding

Dip NNSD and bottle teats in milk after sterilisation and prior to use

Use of sucrose/EBM during invasive procedures as per sucrose guidelines

### **Regulating olfactory stimuli**

Educate staff and parents regarding development of olfactory system and baby cues

Protect babies from noxious smells

Open alcohol wipes/antiseptic preparations away from incubator and infant

Use "Apeel" (plaster remover wipes) sparingly and with discretion

Avoid wearing strong perfumes

Discourage use of other contaminants by parents that could mask their unique smell/smell of breast milk e.g. smoking, strong washing detergents

Promote close contact with parents through cuddles and kangaroo care

Promote use of "comfort cloths" (cloths worn close to mother and then left in baby's cot/incubator) to familiarise baby with mother's smell

## References

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For review in ?

### Grades of recommendations:

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| <b>A</b> | Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation (Evidence levels Ia, Ib)                                    |
| <b>B</b> | Requires the availability of well controlled clinical studies but no randomised clinical trials on the topic of recommendations (Evidence levels IIa, IIb, III)  |
| <b>C</b> | Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level IV) |

### Good practice point:

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|--------------------------|--|
| <input type="checkbox"/> | Recommended best practice based on the clinical experience of the guidelines development group |
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