A comparison of the flow rates of disposable and commercially available bottle teats used to feed infants in neonatal units across the UK

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ABSTRACT

Aims and Objectives: For preterm and medically fragile infants, learning to feed orally is challenging. There are many contributing factors that can support the development of oral feeding. The flow rate of a teat can influence feeding success in the bottle fed infant and, if not supportive, can cause physiological instability during feeding. The flow rate of teats used in a selection of neonatal units in the United Kingdom (UK) were tested to determine their flow rate, which was then compared to the flow rate of commercially available teats.

Design and Methods: Flow rate of teats used in several neonatal units across the UK were tested by attaching a teat to a breast pump and measuring the output of milk after 1 minute. These values were compared to the flow rates of commercially available teats. The hypothesis was that hospital disposable teats might have a considerably higher flow rate, and a higher rate of variability, than commercially available teats.

Results and Conclusions: The results identified that there were differing flow rates as well as wide variation of flow rates for both hospital disposable and commercial teats. Hospital disposable teats had flow rates ranging from 8.5 mL /minute to 23.3 mL/ minute, and commercial teats had a range of 4.2 mL /minute to 31.3 mL / minute. Measurement of variability in flow rate identified a moderate mean flow rate for hospital disposable teats (CoV = 0.1), with a low mean variability in flow rate for commercial teats (CoV = 0.07). Applicability of this data to a clinical context is discussed.

Keywords

Milk flow rate; suck, swallow breathe (SSB) coordination; preterm infants; medically fragile infants; neonatal care; bottle feeding

INTRODUCTION

Preterm infants are at risk of developing feeding difficulties which can persist after discharge from a neonatal unit (Hawdon et al, 2000). Establishing oral feeding, and then maintaining competent feeding skills over time is challenging for these infants (Harding et al, 2015). A variety of factors influence oral feeding success including post menstrual age, development of infant behavioural states, physiologic stability, developing an effective suck – swallow-breathe cycle and managing the flow rate of milk (Eichenwald et al. 2001; Jadcherla et al, 2010; Ludwig, 2007; Medoff-Cooper et al, 2009). Significant health needs due to prematurity can delay the introduction of oral feeding and prolong hospital stay, with possible longer term implications for motor and sensory development during a period of critical brain development (Browne & Ross, 2011; Gewolb & Vice, 2006; Jadcherla, 2016; Mizuno et al, 2007; Moore et al, 2012). Introducing the right approaches to support oral feeding such as breast and or bottle feeding can be difficult due to individual infant needs and preferences (Segami et al, 2013).

The development of preterm infant oral feeding

For successful oral feeding, a preterm infant is required to ingest a specific amount of milk via breast or bottle resulting in adequate growth, in the absence of any physiologic instability and with no aspiration (Browne & Ross, 2011; Lau et al, 2000). This requires a good suck with strong intra – oral pressure which extracts milk from the nipple, good oral control to move the bolus backwards inside the oral cavity and an intact swallow to safely transport the bolus to the oesophagus (Quereshi et al, 2002). Preterm infants with maturing sucking skills typically have intra-oral pressures of (– 110) to (– 160) mmHg (Lau & Kusnierczyk; 2001). In comparison, Mizuno & Ueda (2006) noted that the intra – oral

pressures of term infants varied between breast (-77.3 ± 27.0 mmHg) and bottle (- 87.5 ± 28.5 mmHg) feeders.

In typically developing infants, a swallow is usually followed by an episode of inhalation, and then exhalation. Preterm infants have to learn to coordinate their sucking and swallowing with respiration. Apnoeic episodes during swallowing decrease as the infant matures (Gewol & Vice, 2006).During the first twelve months of life, the frequency of expiration after swallowing increases (Gewolb & Vice, 2006; Kelly et al, 2007; Mizuno & Ueda, 2003). Synchronization of sucking, swallowing and breathing is an important part of successful feeding (Goldfield, et al. 2006). When learning to bottle feed using different flow teats, infants may display individual differences in the development of the frequency of breathing and sucking (Mathew et al, 1991; 1998). Variations may specifically occur with the swallow rate per minute, with the suck swallow ratio, and with swallowing in relation to the respiratory phase (Qureshi et al, 2002; Mizuno & Ueda, 2003).

Unlike typically developing infants, preterm infants, typically take time to develop a synchronous suck – swallow - breathe cycle when feeding which becomes more established around 37 weeks gestation (Gewolb & Vice, 2006). The learning required for breast or bottle feeding requires motor learning and is heavily dependent on many factors, including the infant's underlying medical condition, age or maturity, hunger, sucking and associated oral pressures, fatigue and satiation and the rate of the milk flow from the bottle teat or nipple (Moral et al, 2010; Pados, et al. 2015; Ross, 2015; Sheppard, 2008). With bottle feeding, milk flow is defined as the rate that the milk moves from the bottle into the infant's mouth (Pados, et al. 2015). When preterm infants are learning to develop feeding competence, they may swallow more frequently and therefore in more random and uncoordinated bursts in order to try and maintain airway protection as they learn to master the skills necessary

for sucking, swallowing and respiration (Goldfield, et al. 2006; Sakalidis, et al. 2012). Whilst developing early feeding skills, infants may experience oxygen saturations, increased respiratory rate and bradycardia during oral feeding trials when using a bottle (Sakalidis, et al. 2012). When the flow rate of milk is slower it can help some infants to pause between sucking bursts and allow milk to collect before triggering a swallow, with a subsequent pause in respiration (Pados et al, 2015). Ineffective coordination of sucking, swallowing and breathing when using a flow rate which cannot be managed is an increased risk for aspiration (Pados et al, 2015).

Bottle feeding

To support feeding development, the flow rate of the milk from the teat can be controlled during a feed by changing to a different teat which has a different flow rate, changing how the bottle is presented to the infant, altering the infant's position and by pacing the feed (Harding & Cockerill, 2015). Responsive bottle feeding supports the use of 'paced bottle feeds' to give the infant rest periods to breathe in between sucking bursts, allowing for maintenance of physiological stability whilst feeding (Kirk et al, 2007; Thoyre et al, 2013). Pacing alone may not be sufficient in some cases, and alternatively a slower flow teat could be required for feeding fragile and preterm infants. A healthy full term infant is robust enough to be able to manipulate flow rate by changing sucking between sucking bursts, allowing for adequate respiration during a bottle feed (Quereshi et al, 2002).

Historically it was believed that feeding preterm infants with a faster flow teat was beneficial as they would not fatigue as easily, and also would not need high sucking pressures to extract milk (Oommen, 1990). Physiologic stability of the infant at feeds is vital, both for avoiding possible aspiration and for fostering neurodevelopmentally positive feeding experiences, and can lead to better feeding outcomes and quicker discharge home

(Garber, 2013). This stability can partly be achieved by altering the flow rate of the milk during feeding. Given that preterm infants are not a homogenous group, have varying needs and are at different stages of maturation when they begin oral feeding, it is difficult to be specific in the identification of an appropriate flow rate for a bottle teat (Oommen et al, 1992; Segami et al, 2013).

Factors that influence flow rate, include the size of the nipple hole (Chang et al, 2007; Lau et al, 2000; Oommen, 1990), the number of holes in the teat (Oommen, 1990); the thickness and rigidity of the nipple material (Lau et al, 2000; Oommen, 1990); pressures created inside the bottle unit during a feed (Fucile et al, 2009; Lau et al, 2000; Segami et al, 2013); the sucking pressures creased by the infant (Oommen, 1990; Oommen, 1991; Oommen & Bhatia, 1989; Segami et al, 2013); sucking rate of the infant and finally, viscosity and shear rates of the fluid, which are highly dependent on temperature and composition of milk (de Almeida et al, 2011; Mathew ; 1991; 1988; Sunaric et al, 2018).

A small number of studies have investigated flow rates of various bottle teats currently available for feeding infants (Jackman, 2013; Pados et al 2015; 2016). These studies show wide variation in rates of flow of teats, although they have not measured the infants' sucking pressures and flow rates during feeding. Specifically, Pados et al (2015; 2016) identified different outcomes when testing the same teats. The average flow rates reported appear to be fast with many of the teats also showing a high level of fluctuation in flow. The variability of teat flow refers to the difference in flow rate of a teat between tests or uses. A high rate of variability indicates a large difference in the flow rates of the same teat when tested several times. A low rate of variability is favored in a teat as this relates to the teat flowing at the same or a very similar rate each time it is used. When learning to master a skill, such as oral feeding, it is preferable to have a set of stable variables to learn

with (Jadcherla et al, 2010). It is difficult to draw significant conclusions from these studies as there was variation in the teats assessed which may not necessarily be available for readers , and the methodologies for assessing flow rate differed in terms of preparation of the equipment. These differences included: positioning and number of times teats were tested; pump angle for testing - Pados et al (2015; 2016) prepared the pump at an angle of 30 degrees with a pump pressure of 180mmHg in contrast with Jackman (2013) who had the pump set at an angle of 20 degrees using a pump pressure of 150mmHg; fluids used for testing - Pados et al (2015; 2016) used milk formula unlike Jackman (2013) who used water.

Study objectives

The objective of this research was to measure the flow rate of the teats used in neonatal units across the UK and compare those to the flow rates of commercially available teats as there has been no UK evaluation to date. This may support discussion with providers of equipment in neonatal units as to what may be more suitable. At present, the rationale for why these particular disposable teats are purchased by hospitals is not clear. Preterm infants are not typically discharged home using the hospital disposable teats. The hospital disposable teats are only used for introducing bottle feeding which, once established, enables healthcare staff and parents to consider suitable commercial alternatives for home.Research into this area has noted that commercially available teats have slower and more consistent flow rates which could guide neonatal practitioners to make individualised and informed decisions to support safer and more pleasurable oral feeding experience for some infants learning bottle feeding skills (Jackman, 2013; Pados, et al. 2015; Pados, et al. 2016; Ross & Fuhrman, 2015). This study predicted that there would

be variation in bottle teat flow rates both for neonatal unit teats, as well as commercially available teats. The aims of the study were as follows:

- To determine the range of flow rates of neonatal unit disposable bottle teats used in the UK.
- To determine the range of flow rates of commercial teats typically used in the UK.
- To discuss the benefits of understanding the range of flow rates anticipated when identifying equipment to support early infant feeding.

MATERIALS AND METHODS

Design

This study sought to investigate the flow rates of both neonatal bottle teats and commercially available bottle teats. Neonatal units around the UK with Speech and Language Therapy (SLT) services were identified and a purposeful selection was made of hospital disposable teats available in each unit. A total of fourteen teats were identified for the investigation; Sterifeed latex free standard; Sterifeed latex free premature; Sterifeed latex free orthodontic; Sterifeed latex standard; Sterifeed latex premature; Sterifeed latex orthodontic; Cow & Gate sterilised and ready for use standard teat; Cow & Gate sterilised and ready for use preterm teat; NUK SMA nutrition hygienic teat; NUK disposable orthodontic teat, small feed hole, size 1 (0-6 months); Latex free NUK disposable orthodontic teat, small feed hole, size 1 (0-6 months); NUK disposable orthodontic teat, medium feed hole, size 1 (0-6 months); Latex free NUK disposable orthodontic teat, medium feed hole, size 1 (0-6 months); NUK disposable orthodontic teat, large feed hole, size 1 (0-6 months). One hundred SLTs were contacted via the Clinical Excellence Network set up by the Royal College of Speech and Language Therapists. Some of the SLTs worked in teams in

one hospital base. It was requested that one SLT responded per setting. SLTs were asked about the types of teats used on the neonatal unit they worked.

Commercially available teats were chosen based on the most commonly available teat/bottle sets suitable for neonates for purchase in the UK. These included nine teats; Dr. Brown Natural Flow narrow neck (ultra-preemie, preemie and level 1), Tommee Tippee Closer to Nature (level 1), MAM Easy Start Anti-Colic (size 1), NUK First Choice+ (latex, size 1, medium feed hole and silicone, size 1, medium feed hole) , AVENT Classic+ (newborn flow teat 0+m), NUBY natural touch slow flow. Medium flow - hole teats were used for NUK First Choice+ teat testing as formula milk was used in testing and NUK recommends using a medium feed hole for formula feeds. The first level of each teat was chosen for testing as these are marketed as appropriate for newborn infants. Dr. Brown is the only commercially available teat that offers a teat specifically marketed to premature infants. Their range includes an 'ultra prem teat' that can only be ordered by parents and health care practitioners through specialist medical suppliers.

Method of testing flow rate

The method of testing was based on that used by Pados, et al. (2015). The flow rate of both disposable hospital disposable teats and commercially available teats were tested using a Carum hospital breast pump by Ardo (Product code 63.00.72). The expression mode setting was used with a vacuum pressure of 180mbar and an average sucking rate of 60 sucks per minute. The bottle and teat were secured to the breast shield of a breast pump using putty to maintain a seal with no air leakage. Disposable teats were put onto 70ml bottles of Cow & Gate Nutriprem 1 low birth weight (80kcal/100ml) ready to feed formula (Nutricia Ltd, White Horse Business Park, Wiltshire). Bottles were held at a 30 degree angle throughout testing. To maintain equal pressure throughout tests, amounts varied to ensure

maintenance of a height of 2.5cm from the level of the liquid surface to the tip of the nipple (Pados, et al. 2015). Each disposable hospital teat and commercial teat type were tested three times using a new teat each time, and the formula was changed at the end of every three tests to ensure that it did not change in viscosity throughout testing. The temperature of the formula used for all teats was room temperature.

Statistical analysis

Mean and standard deviation were calculated for the milk flow rate of each teat type. Variability between the flow rates of each test of a single teat type was calculated using the coefficient of variation (CV: SD/M). The levels of variability were based on those used by Pados, et al. (2015); low (<0.1), moderate (0.1-0.2), and high (>0.2).

The study protocol was confirmed as being a Clinical Audit as no infants or carer participants were involved in data collection, nor were any comments or opinions sought from SLTs. Therefore, an application to the local NHS Research Ethics Committee was not required.

RESULTS

Response rate

From the one hundred SLTs contacted via the Clinical Excellence Network, data were received from 34 SLTs who worked in neonatal units across the UK (Table 1). There was a wide variety of teats used in neonatal units with a choice of Sterifeed, Cow & Gate and NUK teats. Only two units (Hospital H and Hospital BB) had a choice of three different brands of teats (Sterifeed, NUK and Cow & Gate). A preterm option was available in 19 (55.8%) units.

In those units without a specific premature teat option, a slower flow or 'small feed hole' teat was available. It was noted that the teat with the slowest flow rate (Sterifeed latex free premature at 8.5mL/min) was only available in 41.2% (n=34) of units (see table 1).

- **Put Table 1 about here -**

Mean flow rates

Flow rates varied between teats, both in the range of hospital disposable teats as well as the commercially available teats. Overall, hospital teats had higher flow rates than commercially available teats. The teat with the slowest flow rate amongst the hospital disposable teats was the Sterifeed latex free premature teat with a mean flow rate of 8.5mL/min. The fastest flowing teats in this group were the Sterifeed latex standard teat and the Sterifeed latex orthodontic teat with a mean flow rate of 23.3mL/min.

Of the commercially available teats tested, the one with the slowest flow rate was the Dr. Brown ultra-preemie teat at 4.2mL/min. The slowest flowing commercially available teat not specially marketed for premature infants was the NUBY natural touch slow flow with a mean flow rate of 5.7mL/min. The fastest flowing teat in this group was the NUK First Choice+ silicone size 1 medium feed hole teat at 31.3mL/min (see figure 1).

Variability of flow rates

Variation in flow rate between different tests of the same teat was found in both hospital disposable teats and commercially available teats. There was a low mean variation noted in the flow rate of the entire group of commercially available teats (CoV=0.07). MAM level 1 teats measured a high variability at 0.2. Dr. Brown level 1 teats measured a medium variability at 0.1. All other teats in this group had a low rate of variability, in particular, the Dr. Brown's Preemie teat (CoV=0.0) and the Dr. Brown's Ultra Preemie teat (CoV=0.02).

The variability in flow rate in the group of hospital disposable teats was moderate on average (CoV=0.1). One of the teats measured high variability (Cow & Gate sterilized and ready for use standard teat at 0.21), 7 of the teats measured medium variability (NUK disposable orthodontic teat, small feed hole, size 1 (0-6 months) at 0.11; Latex free NUK disposable orthodontic teat, small feed hole, size 1 (0-6 months) at 0.11; NUK disposable orthodontic teat, medium feed hole, size 1 (0-6 months) at 0.11; Latex free NUK disposable orthodontic teat, medium feed hole, size 1 (0-6 months) at 0.12; NUK disposable orthodontic teat, large feed hole, size 1 (0-6 months) at 0.12; Sterifeed latex free standard at 0.11 and Sterifeed latex free orthodontic 0.17) with the remainder measuring low variability (see figure 2).

Hospital disposable teats marketed for preterm infants

Teats specifically marketed for feeding preterm infants are done so on the premise that they have a slower flow rate than standard teats. Two of the hospital disposable teats had faster flow rates when compared to their standard alternative; the Cow & Gate preterm disposable teat was 3.8mL/min faster than the standard alternative, and the Sterifeed latex preterm teat was 7.1mL/min faster than the standard alternative. Only the Sterifeed latex free preterm teat had a slower flow rate than the standard alternative with a 14.5mL/min slower rate.

Commercially available teats marketed for preterm infants

Of the commercially available teats tested only the Dr. Brown range offers a teat specifically for preterm infants. Other brands market their teats as ‘slow flow’, ‘level 1’ (which suggests use from birth) or by specifying a feed hole size of ‘small’, ‘medium’ or ‘large’. The NUBY natural touch slow flow was the most comparable in flow rate to the Dr. Browns premature teat (5.7mL/min versus 5mL/min).

Standard hospital disposable teats compared to standard commercially available teats

The NUK First Choice+ latex free and latex teats were excluded from comparisons of standard teats because they had 'medium feed hole size'. This size was tested in line with NUKs suggestion to use medium feed hole when feeding with formula, and a small feed hole teat for breastmilk. When considering what feed hole size to use for a hospitalized infant in a real life situation, a small feed hole teat would be the best choice.

The flow rates of hospital disposable standard teats was higher than commercially available standard teats. In the most extreme case the flow rate of the fastest flowing disposable teat was 14.1mL/min faster than the fastest flowing commercially available teat. The slowest flowing disposable teat was 5.9mL/min faster than the slowest flowing commercially available teat.

Although the commercially available teats tested were marketed as being slower and ideal for use from birth, and were indeed slower than disposable hospital disposable teats, their flow rates are not all consistently slow.

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DISCUSSION

This investigation found that hospital disposable teats had flow rates with a range from 8.5mL / min to 23.3 mL / min, and commercial teats had a range from 4.2 mL / min to 31.3 mL / min. Measurement of variability in flow rate identified a moderate mean flow rate for hospital disposable teats (CoV = 0.1), with a low mean variability in flow rate for commercial teats (CoV = 0.07). Overall, it was found that there was variation in all the teats

tested. It is known that a flow rate that is too fast can potentially overwhelm an infant, forcing it into more frequent and longer apnoeic periods when swallowing, causing instability during feeds (Pados et al, 2015). This poses the immediate risk of aspiration at feeds and risk of longer term negative associations with feeding (Jadcherla et al, 2010). Some of the flow rates of hospital disposable teats that were tested in this study were higher than flow rates of commercially available bottles that are marketed for use for infants from birth as suggested by the study hypotheses.

Infants admitted to a neonatal unit after birth all require some form of medical intervention for an underlying condition, which may affect their ability to be a successful oral feeder (Browne & Ross, 2011). Data from Pados, et al. (2016) indicate that a Dr. Brown's level 2 teat (which is marketed for use in 3+ months old infants) has a slower flow rate (14.96mL/min) when compared to the range of teats available for feeding preterm and medically fragile infants in neonatal units within this study. From this sample, it was found that 64.3% (n=14) of the teats tested had a faster flow rate than that of a commercially available teat marketed for feeding a 3+ month old. However, it is noted that in this study, the lowest flow rate for the commercial teats was slower (4.2mL) compared with the lowest flow rate for the hospital disposable teats (8.5mL), although the range of the flow rates for the hospital disposable teats was not as wide as the commercial teats.

Respiratory ability will influence success in oral feeding, as an infant learns to master the suck –swallow -breathe synchrony within the confines of a compromised respiratory system (Quereshi et al, 2002). Although a preterm option was available in some neonatal units, it was found that in some cases these teats had a faster flow rate than their standard alternative (Cow & Gate and Sterifeed latex teats). The lack of availability, on all neonatal

units, of teats with a slow flow rate comparable to a commercially available preterm teat was notable.

For a preterm infant the process of successful oral feeding can take many weeks to master depending on their gestational birth age and medical stability (Browne & Ross, 2011; Lau et al, 2000). Communication between an infant and caregiver takes time to develop and responsive feeding is a learnt skill (Harding et al, 2019). A hospitalized infant who is fed by different people does not have the stability of a consistent familiar person feeding them. Variability in the flow rate between tests of the same teat type was found to be low in commercially available teats tested in this study. A moderate rate of variability was found in the group of hospital disposable teats in this study. This means that each time an infant is fed using a hospital disposable teat they will receive milk at a different flow rate. In learning a new skill, consistent repetition of a task is necessary for successful acquisition. Added to the pressure of multiple feeders, a different flow rate of milk each time an infant feeds will not create a consistent, supportive learning environment.

On some of the neonatal units, with SLT services that were included in this study, there have been successful unpublished trials of commercially available teats. All these trials have been led by the SLT with bottles either funded by the unit or purchased by caregivers and brought onto the unit. Initially, a change to commercially available teats would cost more than the use of disposable teats, as they are perceived to cost more per unit, but in the longer term a cost saving would result. Other considerations needed before a change to commercially available bottles in neonatal units would include ensuring that a method of bottle sterilization was available for mass use on the unit, and staff that were trained on the new bottle choices available and their benefits. Establishing bottle feeding using a teat that could still be used at home post discharge from the neonatal unit may ensure a more stable

developmental trajectory of progress when infants are learning the essential skills necessary for bottle feeding competence.

Limitations and future directions

It is acknowledged that it is hard to draw conclusions from this evaluation that can be applied to clinical practice as the pressures achieved by the equipment used for the data collection are not the same as infant oral pressures. Given that variation in flow speeds has been reported for the same products, further studies which gain more data on flow rates and variations in larger samples would be useful (Pados et al, 2015; 2016). It is recommended, therefore, that a descriptive case series which investigates both preterm and term infant bottle feeding development would be an important compliment to the teat flow studies. This would enable a better understanding of the relationship between intra-oral pressure and bottle feeding skill acquisition and maturation by infants which would improve our understanding of the relationship of milk flow and infant development. It could potentially lead to a greater consideration for the types of teats suitable for preterm infants beginning to learn how to bottle feed. In addition, it may be useful to vary the temperature of fluids used, including expressed breast milk so that clearer qualitative conclusions can be considered.

CONCLUSIONS

Preterm and medically fragile infants who are hospitalized require support when learning to feed orally, whether breastfed or bottle fed (Harding et al, 2018). For these infants there are many barriers to successful oral feeding whilst hospitalized; their ability to suck and safely swallow in the constraints of their underlying medical condition, multiple feeders with different skill and ability and (for bottle fed infants) the flow of the milk entering their mouth when sucking (Jadcherla et al, 2010). As early feeding experiences in the NICU can influence skill development in feeding long after discharge home (Browne & Ross, 2011) it is important to maximize positive early oral feeding experiences in this period (Browne & Ross, 2011). This study has highlighted that there are wide variations in flow rates when hospital disposable and commercial teats are tested. Whereas it is important to understand that there is variation in flow rates, further research needs to be undertaken that focuses on the study of actual infant bottle feeding skill acquisition so that practitioners on neonatal units can make better decisions about identifying the most appropriate teat and bottle to help development.

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Figure 1. Mean flow rate of all teats tested (mL/min). Code: Blue (disposable hospital teats), Green (commercially available teats)

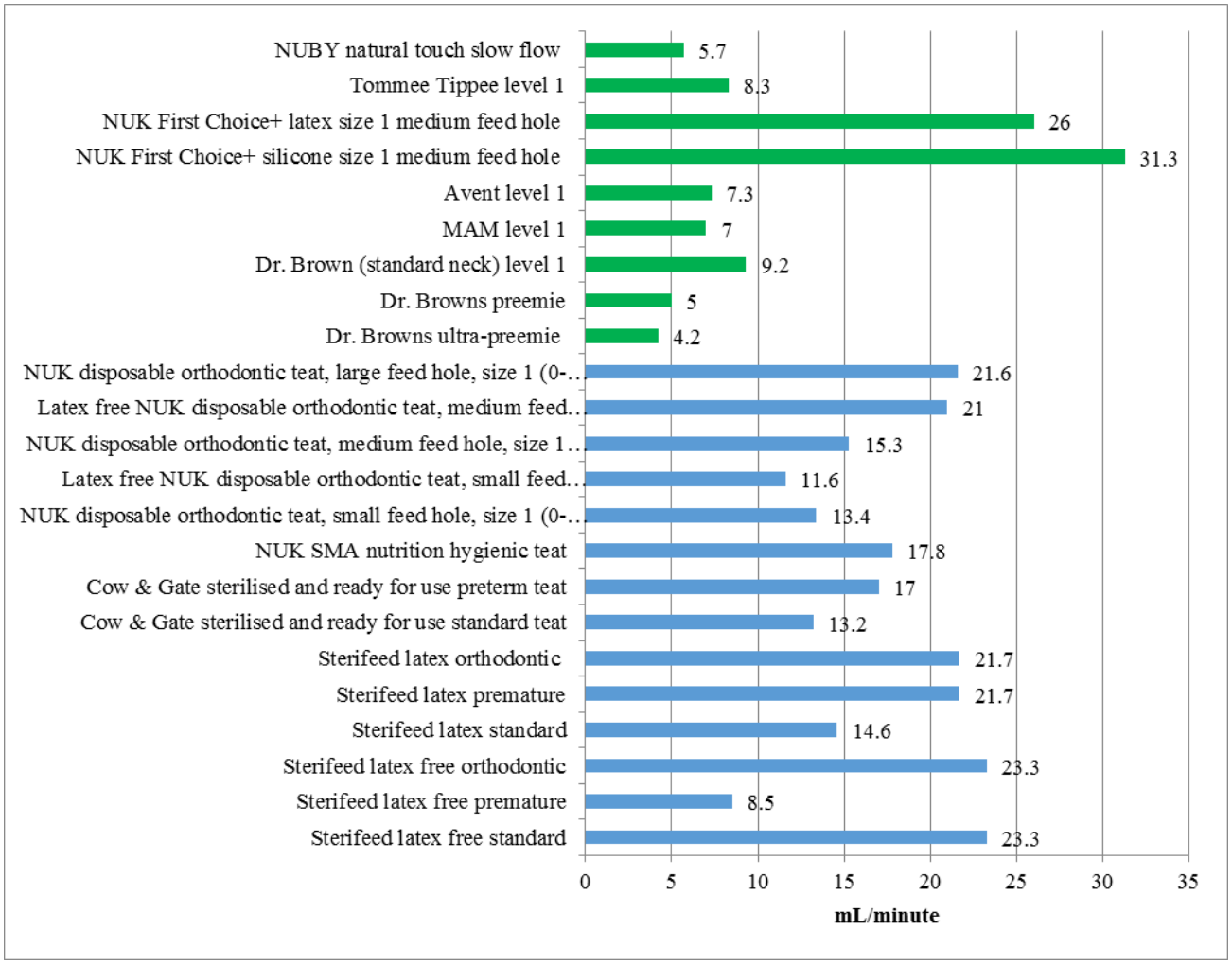

Figure 2. Coefficient variable (CV) of flow rate of teats. Categories are coded as low CV (<0.1) light grey, moderate CV (0.1-0.2) dark grey, and high CV (>0.2) black.

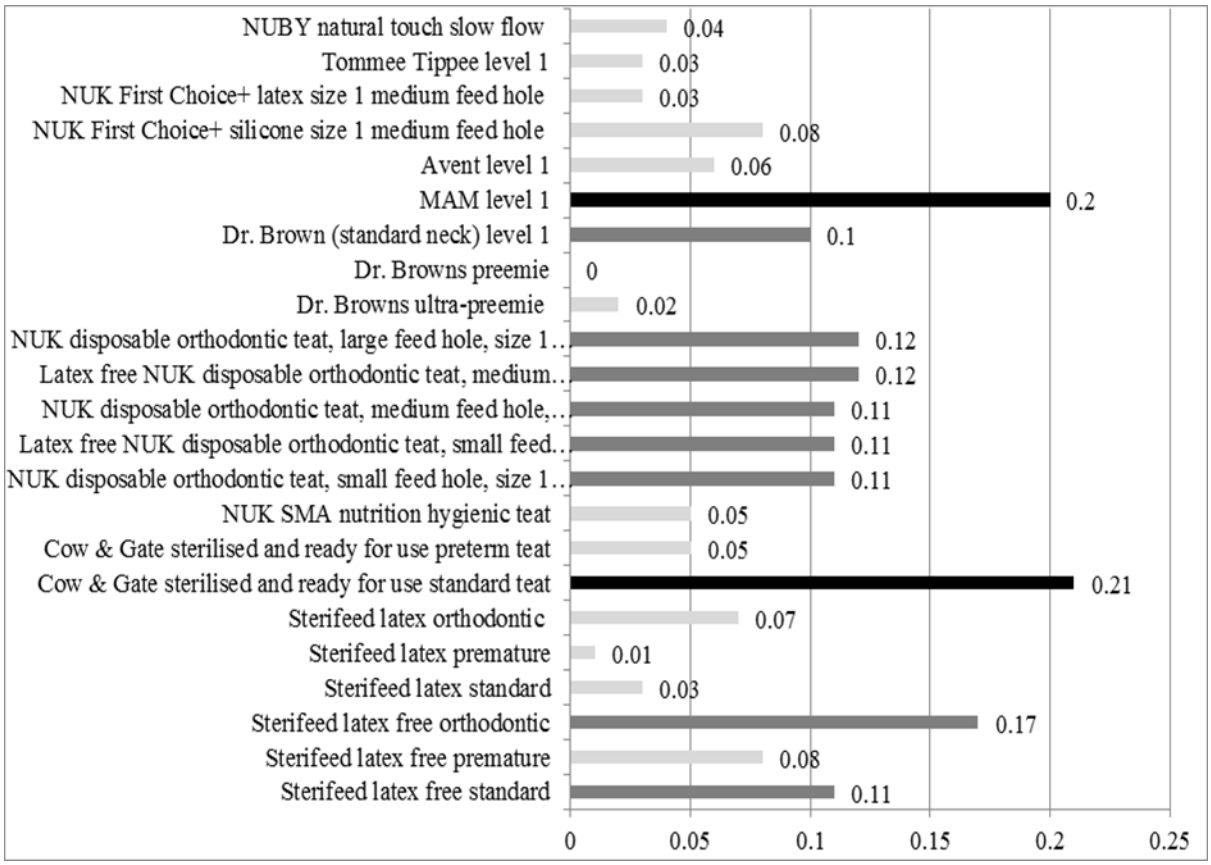

Table 1. Types of teats currently used in neonatal units throughout the UK.

Hospital	Teat type												
	Sterifeed silicone			**Sterifeed latex**			**Cow and Gate silicone**		**NUK silicone, medium flow**	**NUK silicone, slow flow**	**NUK latex standard flow *(SMA nutrition hygienic teat)***	**NUK latex, size 1, small hole *(yellow cuff)***	**NUK latex, size 1, medium hole *(clear cuff)***	**NUK latex, size 1, large hole *(green cuff)***
	P	**S**	**O**	**P**	**S**	**O**	**P**	**S**						
A	√	√										√	√	
B												√	√	
C	√	√	√						√					
D				√	√	√						√	√	
E												√		
F	√											√		
G	√		√									√		
H		√	√				√	√				√	√	√
I	√	√	√											
J							√	√			√	√		
K	√	√										√		
L		√	√											√
M	√											√	√	√
N	√	√	√											
O							√	√						
P												√		

Q	√	√										√
R			√			√	√					
S	√						√		√	√		
T	√	√										
U		√	√									√
V	√	√	√									
W											√	√
X										√	√	
Y										√	√	
Z											√	√
AA												√
BB	√	√	√			√	√				√	
CC	√									√	√	
DD								√	√			
EE								√	√			
FF								√	√			
GG								√	√			
HH								√	√			

Key:

P = Premature Teat

S = Standard Teat

O = Orthodontic Teat