Optimize Infant Oral Feeding Outcomes with Dr. Brown's® Zero-Resistance™ Bottle System

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Dr. Brown's® bottle system with internal vent eliminates all sub-atmospheric pressure in the bottle during feeding. – what does this mean exactly and how does it do this? Why is this bottle different than bottles without an internal vent system?

Dr. Brown's® bottle systems are the number one pediatrician-recommended bottle systems in the US, as well as used by over 1200 hospitals in the US and Canada. What makes these bottles so highly desirable with hospitalized infants? Many health care professionals advocate for Dr. Brown's® bottles due to their well-known consistent nipple flow rates and the wide variety of flow rates to meet infants' needs, but less is understood about the importance of the Zero-Resistance™ and vacuum-free characteristics of the bottle system.

When a typical bottle is assembled and the infant begins to suck, subatmospheric pressure is created. As liquid volume decreases, air volume increases. Due to Bernoulli's law, Volume and Pressure are inversely related. Therefore, if air volume increases, pressure decreases, or in this case becomes negative (subatmospheric). You now know the physics of bottle feeding which in fact, many feeders do not understand. The tightness of the collar also affects the pressure in the bottle. Feeders realize, if they untighten the collar a little there is a release of the pressure inside the bottle, eliminating all subatmospheric pressure and the flow is faster. If they tighten the collar, the flow slows. The internal venting system allows the atmospheric pressure within the bottle to consistently remain positive. In a testing project in 2018, the Dr. Brown's® Zero-Resistance™ bottle system consistently measured no sub- atmospheric pressure. Widely used bottle systems, such as the volufeed vessel and disposable nipples used in the hospital setting, were also tested. These results indicated a presence of sub-atmospheric pressure during a 60-cc formula extraction using a breast pump. For full results of this study, see the White paper here : Dr. Brown's® Zero Resistance™ Bottle System Report 7.24.18_

Don't miss this video depicting the Dr. Brown's Medical™ Zero-Resistance™ Bottle system in action. Click Here: Zero-Resistance™ Video Link

In addition, when other commercial 'vented' bottles ('vents' in the bottle bottom or nipple) there continued to be this development of negative pressure. Vented does not equal vacuum-free !

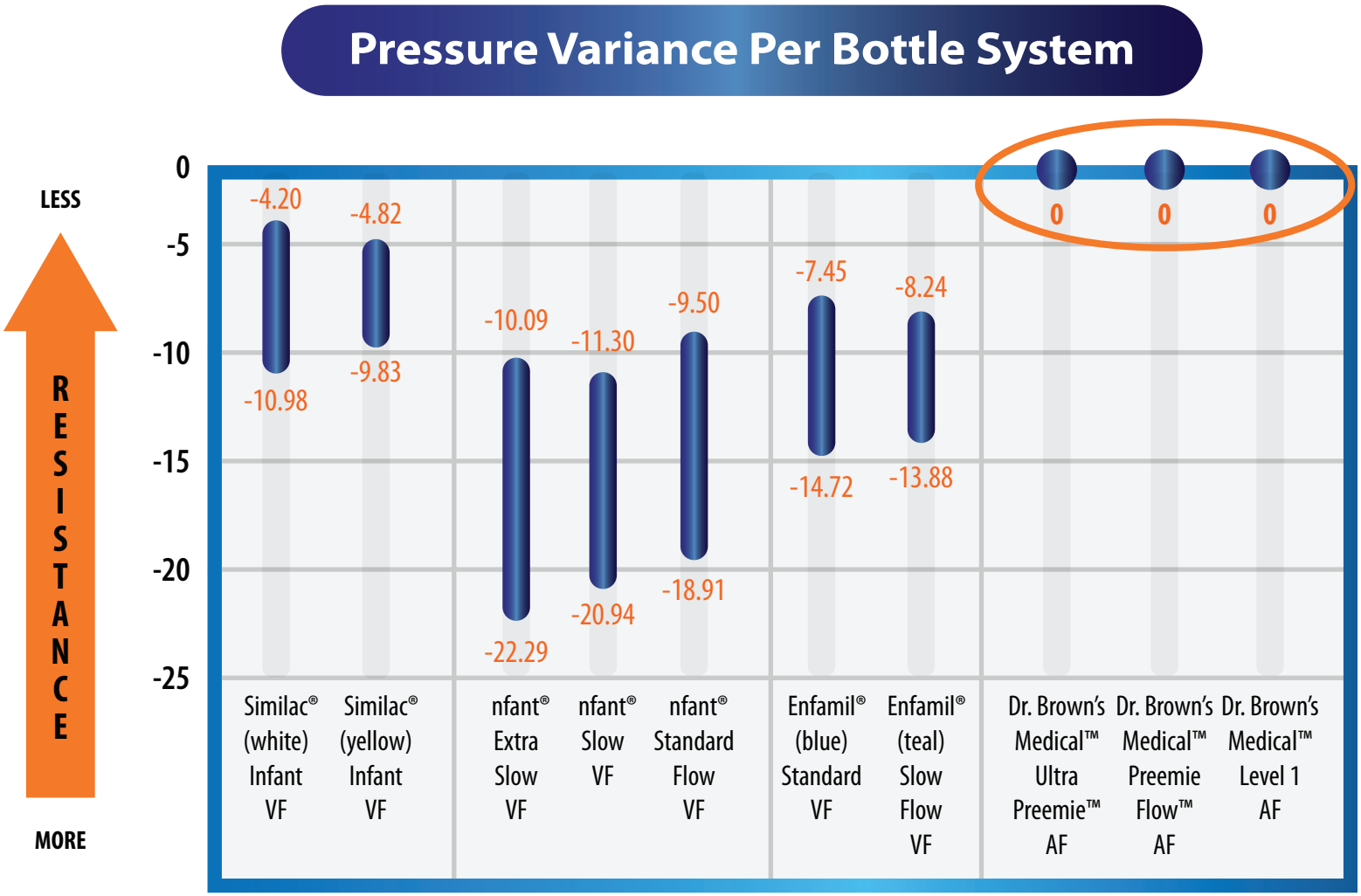

Figure 1. The chart above illustrates the average mmHg pressure (sub-atmospheric) within the bottle type /nipple by brand.

Presence of sub-atmospheric pressure in a bottle system may have negative effects on an infant's feeding, which according to research, may validate that an infant will expend more energy making the feeding experience less efficient. How exactly does an infant expend more energy with the volufeeders?

This effect of vacuum- free is significant due to research from Fucile (2009) and Lau (2000). Their research found that with standard bottles, in order for the infants to overcome the resistance caused by negative pressures, the infants were required to suck harder/ work harder. Findings demonstrated that these infants with a vacuum-free bottle demonstrated greater overall transfer and rate of milk transfer, and more mature sucking stages. They speculated that oral feeding performance improves without significant change in sucking effort with vacuum free.

NICU staff are reporting this benefit. In a recent survey regarding the use of Dr. Brown's® bottles and their use, 65% of the survey respondents stated they notice improved feeding efficiency when using the bottles compared to a traditional volufeed system.

It is important for healthcare professionals and parents to understand the physics of bottle feeding, especially in the fragile feeder population. As their caretakers, we want to create an environment where premature and hospitalized infants are not required to work harder, tire more easily and possibly delay their discharge home, by using standard bottles. Our profession facilitates standards of care practices to support infant feedings as an enjoyable experience and promotes the use of the **best** possible tools for success.

For questions or to contact a Dr. Brown's Medical™ Clinical Liaison, please go to medinfo@drbrownsmedical.com.

References

Fucile S, Gisel E, Schanler RJ, Lau C. A controlled-flow vacuum-free bottle system enhances preterm infants' nutritive sucking skills. Dysphagia 2009; 24:145-151.

Lau C, Schanler RJ. Oral feeding in premature infants: advantage of a self-paced milk flow. Acta Paediatrica 2000; 89: 453-9.