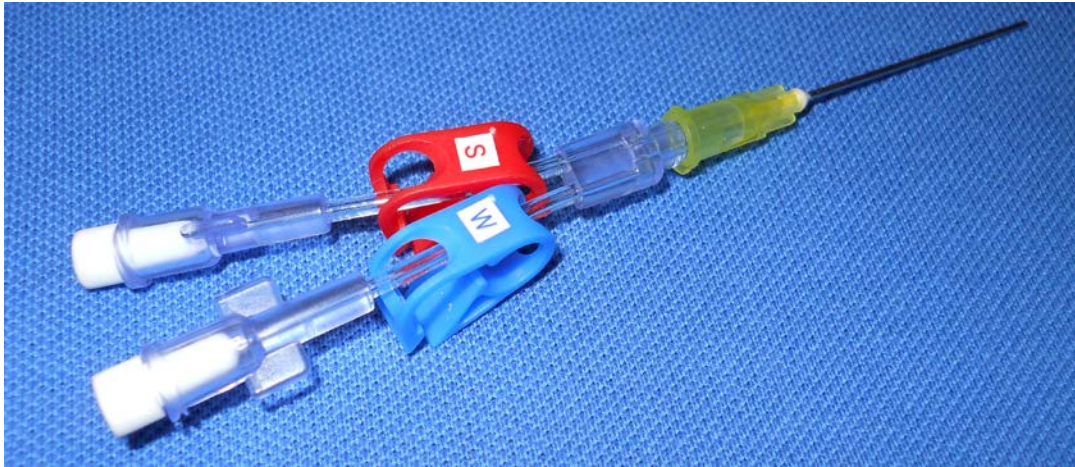


# Introducing ..... the Hummi Micro-Draw Blood Transfer Device

Hummingbird Med Devices, Inc. would like to take this opportunity to introduce our innovative new product for obtaining umbilical catheter blood samples from premature infants, the **Hummi Micro-Draw Closed Method Blood Transfer Device.**



## Hummi Micro-Draw Closed Method Blood Transfer Device

### Filling Unmet Needs for the Premature Infant

The Hummi Micro-Draw Blood Transfer Device is the first device of any type to address the emerging need to maintain a very stable hemodynamic balance in the cerebral and systemic circulatory system of the very low gram weight baby in the first days and weeks of life when using umbilical catheters.

### Complications of Prematurity

The goal of maintaining hemodynamic balance in the neonate is paramount in reducing the risks for the development of IVH (Intraventricular Hemorrhage) and PVL (Periventricular Leukomalacia), which are the primary causative factors in the development of Mental Retardation and Cerebral Palsy in the premature infant.

IVH, along with RDS (Respiratory Distress Syndrome), BPD (Broncho Pulmonary Dysplasia), and NEC (Necrotizing Enterocolitis), represent a \$3.1 billion dollar hospital cost annually. A single case of severe IVH/PVL has an annual hospital cost averaging \$76,000 dollars.

### Current Methods for Blood Drawing Contribute to Complications

In the last 10 years, several scientifically controlled studies have been released that investigate the causative factors for IVH/PVL. These studies all point directly to changes in cerebral hemodynamics, cerebral oxygenation, and alteration in cerebral blood flow as factors that should be avoided or eliminated during the first several weeks of life in the premature infant.

One of the strongest risk factors that showed an increased risk for IVH/PVL was the use of umbilical catheters, and the withdrawal and infusion of blood and fluid that goes along with current methods of using the umbilical catheters for blood sampling in the premature infant.

The key to the complications related to the use of umbilical catheters is not the catheter itself, but the current methods used for drawing the blood sample and clearing the line.

The current methods for drawing a blood sample from an umbilical catheter require the overall movement of 4mL to 6mL of blood and fluid for every blood draw. This is true for any closed inline system currently in use, regardless of manufacturer, and is also true for the simple open method of drawing from a stopcock in the arterial line.

Unfortunately, recent studies indicate that movement of 4mL to 6mL of blood and fluid during an umbilical blood draw definitely alters cerebral hemodynamics, including alteration of cerebral blood flow and decreased oxygenation of cerebral blood. "These findings suggest that hemodynamic changes of systemic and cerebral circulation are important for the development of PV-IVH in preterm newborns".

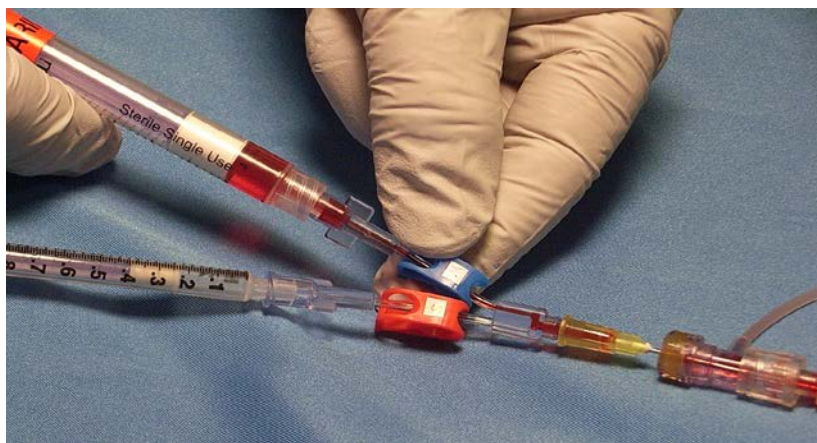
Lee et. al 2010 The Korean Academy of Medical Science

"As the survival rate of extremely preterm infants has remarkably increased recently, more delicate hemodynamic balancing has come to be more essential than any other perinatal factors that have been proposed in previous studies for the prevention of PV-IVH". Lee et. al 2010, The Korean Academy of Medical Science

### **Reducing the Risk Factors for IVH/PVL Associated with Umbilical Catheter Use**

The Hummi Micro-Draw represents a new closed method for doing umbilical catheter sampling that reduces the total movement of blood and fluid during the draw procedure by 70% for every blood draw vs current methods. This reduction in blood and fluid movement significantly reduces the risk for alteration in cerebral hemodynamics, including cerebral blood flow alterations and cerebral de-oxygenation which can lead to the development of IVH/PVL.

The total movement in and out of the infant for umbilical sampling is reduced to 1.30mL, with only 0.50mL needed for clearance of the umbilical catheter and 0.30mL needed for flush of the umbilical catheter after drawing blood. This is accomplished with the Hummi Micro-Draw by taking the clearance and sample directly from inside the catheter hub, bypassing the dead space in the line that normally needs to be cleared and flushed when taking an umbilical sample.



### **Umbilical Catheter Clearance of 0.50mL**

The Hummi Micro-Draw ..... a simple, closed yet effective solution to reducing the risk factors for the development of IVH/PVL in the premature infant when using umbilical catheters.

Sincerely.....The Hummingbird Team