



### *Daily Progress*

The nursing staff will give you information about your baby's daily progress each time you call or come to Holden. The doctors are in the nursery 24 hours a day. Feel free to speak with them about your baby and the plans for treatment. The best time to talk with them is during the day.

The length of time your baby needs to stay in Holden depends most on what kind of illness he/she has. Often, but not always, healthy premature babies will be able to go home close to their due date.

### *Equipment and Procedures*

Following is a list of some of the special equipment and procedures that most babies in the NICU will have. There are photos and descriptions on this page: <http://www.med.umich.edu/nicu/aboutnicu/equipment.shtml>.

### *Your Baby's Bed*

The Giraffe Omnibed is a combination of an open bed with a warming device above the baby and an incubator (closed bed) that heats up the air and surfaces around the baby to keep him/her warm. Most babies are admitted to this type of bed and remain on it until they are stable. There are portholes in the sides of the bed to provide access for you and NICU personnel to care for your baby. The top of the Omnibed can be raised automatically to make your baby more accessible. The bed has a probe that attaches to your baby's skin to help monitor temperature. The bed will be kept in the closed position most of the time to provide optimal temperature regulation for your baby.

### *Monitors*

Babies in the Holden NICU are monitored by attaching leads which are taped to their chest to keep track of their vital signs (heart rate, breathing rate, blood pressure, oxygen saturation). These monitors are set to alarm if any of the baby's vital signs are outside of the normal range. Sometimes the baby's normal movement or other factors can cause a false alarm. Your baby's nurses are prepared to look at the baby as well as the monitor to determine if something is truly wrong.

### *Intravenous Lines (IV)*

Premature and sick babies, who are not able to take regular feedings for a period of time, will need to receive fluids and nutrition by IV. This may be done using the following:

- *Umbilical Artery Catheter (UAC)*

A small line put into one of the two arteries in the baby's umbilicus or "belly button". Blood samples can be taken from the line and tested to check the oxygen in the baby's blood. This helps to tell the doctors and nurses how well the baby's lungs are working to supply oxygen to the baby. Fluid and medicine are also given to the baby through the UAC.

- *Umbilical Venous Catheter (UVC)*

A small line put into the umbilical vein through the umbilicus or "belly button". This tube is also sometimes used for blood samples, but is mainly used to give IV fluid and medicine to the baby. Umbilical catheters are not painful to the baby. The main complications that can occur involve infection and bleeding. These occur rarely and your baby's doctor or nurse can answer questions you may have about them.

- ***Percutaneous Intravenous Central Catheter (PICC)***

A long thin line passed into the baby's skin, usually in an arm or leg. And is passed through a blood vessel that goes deep into the baby's body. They are used to give IV fluids, nutrition and medications. They usually last longer than a regular peripheral IV.

Peripheral IV - A short, thin line that is placed into one of the baby's veins. It can be used to give IV fluids, nutrition and medications.

### ***Breathing Aids***

Many premature and sick full-term babies need help with breathing. This is provided by the following:

Ventilator or Respirator - A machine that gives air and/or oxygen under pressure to the baby. The machine breathes for a baby who can't breathe on his/her own or who is very sick and working hard to breathe. The ventilator is set to give a certain number of breaths to the baby each minute. Even when the baby can breathe a little on his/her own, the ventilator can give extra breaths to the baby.

The ventilator is attached to a plastic tube (endotracheal or ET tube). The ET tube is put into the baby's nose or mouth. It goes through the voice box and into the baby's windpipe. Air entering the windpipe then travels into the baby's lungs. The tube is taped in place. Then the ventilator begins the work of pushing air in and out of the baby's lungs. Extra oxygen is also given through the ventilator.

Since the ET tube goes through the voice box, you will not hear your baby cry or make sounds. Once the tube is removed, the baby will be able to make sounds again.

Most ventilators give babies breaths at the rate they would normally breathe (40-60 times a minute). Some babies have conditions that require a much faster respiratory rate. This is accomplished by using a high frequency ventilator or oscillator. It will give the baby oxygen without using a lot of pressure. In order to do this, it gives hundreds of short little

"breaths" every minute. The baby's chest will look like it is shaking very fast instead of rising and falling slowly. Some babies only need the high frequency ventilator for a few days. Other babies may need it for weeks. As your baby gets better, it will slowly be removed and the regular ventilator will take over again.

### ***Oxygen Hood***

A plastic tent that is placed over the baby's head through which air with an increased oxygen percentage is administered.

### ***Nasal Cannula***

Small prongs that go into the baby's nose through which air mixed with oxygen is administered.

### ***Nasal CPAP (Continuous Positive Airway Pressure)***

A mixture of air and oxygen is given through a special nasal device to maintain pressure and keep the lungs from collapsing when the baby exhales.

### ***Therapeutic Hypothermia***

Therapeutic hypothermia, or cooling, is a new treatment for babies who are born at or near their due date that we think might have had a brain injury before birth. Many people have heard of icing a joint that is hurt. Even though the brain is more complicated than a joint, cooling can still help reduce the effects of brain injury in some babies. There are two ways to administer therapeutic cooling; selective head cooling or whole body cooling, both of which we use. Selective Head Cooling: The "Cool Cap" or "Brain Cooling" With this treatment, cold water, about the temperature of cold tap water, is piped through a soft plastic cap over the baby's scalp. We do this for 72 hours, from a cooling machine at the bedside. The baby's body temperature is slightly cool, between 93.2° and 95°F (34° 35°C), but the head is cooler than that. Body Cooling is another way to administer therapeutic hypothermia. With this treatment, the baby is placed on a mattress with

circulating water for 72 hours. The water is cool to begin with, and then the machine pumping the water automatically controls the water temperature to keep the baby's temperature within the body slightly cool, between 33° and 34° C (91.4° 93.2°F). Body cooling works on the same principal as head cooling.

### *ECMO*

The ECMO program provides extracorporeal life support for newborns who are experiencing life threatening heart or lung illness. ECMO, which stands for Extracorporeal Membrane Oxygenation, is basically heart/lung bypass outside of the operating room. Providing state of the art support, the U of M ECMO Program is the oldest and one of the largest ECMO Programs in the nation. The Program cares for newborns in the NICU in along with the neonatal nurses and physicians. Each patient on ECMO is cared for both by an ECMO Specialist as well as a NICU nurse. The ECMO Specialists are highly skilled nurses and respiratory therapists who are trained in operation of the ECMO circuit and provide complete, patient centered care during a critical time in their hospital stay.