Intrauterine Transfusion for Rh Incompatibility

When an Rh-negative mother is exposed to her Rh-positive baby's blood due to fetomaternal hemorrhage or other prenatal event, her immune system will treat her baby's blood cells as a foreign antigen to be destroyed. The destruction of the fetus's blood cells may cause severe fetal anemia, which in turn can result in heart failure and death.

Creighton University Medical Center's Center for Maternal-Fetal medicine is one of only a few centers in the Midwest that performs intrauterine blood transfusions to treat Rh-incompatibility. Typically performed through the umbilical vein, an intrauterine transfusion involves transfusing the fetus with Rh-negative blood that will be accepted by the mother's immune system. Multiple transfusions are typically necessary to sustain the fetus until delivery.

The procedure is performed with the mother temporarily paralyzed in order to keep her still. The specialist (typically Dr. Barsoom) then uses ultrasound to guide the needle through the mother's abdomen into the fetus's umbilical vein. Typically performed around the 20th week of pregnancy, intrauterine transfusion may be performed as early as the 17th week.

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Meet the Specialists

Alfred D. Fleming, M.D., FACOG, Professor and Chairman of the Department of Obstetrics and Gynecology. Dr. Fleming is a graduate of Creighton University School of Medicine and holds his Masters degree in Biology from Creighton as well. Dr. Fleming served as an intern and resident in the Department of Obstetrics and Gynecology at Creighton University and then completed a fellowship in Maternal-Fetal Medicine at the University of Connecticut Health Center. He is the Medical Director for Creighton University Medical Center's Family Birth Center and serves as Chairman of the medical center's Perinatal Committee.

Michael Barsoom, M.D., FACOG, Associate Professor in the Department of Obstetrics and Gynecology's Division of Maternal-Fetal Medicine. Dr. Barsoom also serves as the Director of Perinatal Ultrasound within the department. Dr. Barsoom completed his undergraduate and graduate education at Creighton University, and then attended Saint Francis Hospital in Hartford, Connecticut for his residency. He then went on to The University of Connecticut, where he completed his fellowship in Maternal-Fetal Medicine. Dr. Barsoom returned to Omaha and joined the faculty of the Creighton University School of Medicine in 2002. When not seeing patients, Dr. Barsoom is actively involved with contributing to the education of our medical students and residents.

Factors constituting a "high-risk" pregnancy may include:

- Multiple gestations
- Recurrent pregnancy loss
- Diabetes (type I & II)
- Chronic hypertension
- Ulcerative colitis
- Rheumatoid arthritis
- Lupus
- Heart disease
- Cancer
- Certain gynecologic conditions (incompetent cervix, etc.)
- A family history of birth defects

The Center for Maternal-Fetal Medicine provides:

- Screening for fetal abnormalities
- First-trimester and sequential screening for Down syndrome
- Genetic ultrasound
- Amniocentesis
- Special expertise in the evaluation of the fetal heart
- Shunt placement for obstructive uropathies and drainage of other fetal cystic abnormalities
- Preconceptional counseling, antepartum fetal testing, prenatal screening and in-utero diagnosis and treatment
- Transabdominal chorionic villus sampling (CVS)
- Percutaneous umbilical blood sampling (PUBS) for evaluation and treatment of fetal anemia and thrombocytopenia, as well as fetal karyotyping
- A Level III Neonatal Intensive Care Unit staffed by five board-certified neonatologists, taking care of critically ill neonates
- Outreach clinics in Sioux City, IA, Grand Island, NE, and Norfolk, NE
- Outcomes benchmarked against the Vermont Oxford Group, a national quality databank
- The Center is led by Dr. Al Fleming and Dr. Michael Barsoom, two of the region's most respected maternal-fetal specialists.
- As one of the region's leading academic medical centers, Creighton University Medical Center is at the forefront of medical advancement and through its participation in private and NIH-funded clinical trials may offer treatment modalities not available at other facilities.
- Creighton University Medical Center operates one of only two Level I trauma centers in the state of Nebraska
- In case of complications, Creighton University Medical Center offers anesthesiologists, pediatrics and cardiology fellows on site, 24/7
- Creighton University Medical Center is easily accessible via I-480 and offers valet parking service.

To refer a patient or seek a consultation, contact The Center for Maternal Fetal Medicine:

Phone: 402.280.4434

Toll Free: 1-888-XXX-XXXX

FAX: 402.280.4582

Creighton UNIVERSITY Medical Center

Maternal-Fetal
REFERRAL NOTES

September 2009

Optimal Referral Time Frame for High Risk Patients

The Center for Maternal-Fetal Medicine at Creighton University Medical Center is staffed by neonatologists, perinatologists and nurses and support personnel who are specially trained in the management of high-risk pregnancy. As a Jesuit-affiliated facility, Creighton University Medical Center is dedicated to the concept of Cura Personalis – care for the whole individual. This means not only managing a high-risk pregnancy medically, but also taking into account psychosocial and spiritual factors.

Apart from the obvious multiple gestations, many factors can cause a pregnancy to be classified as "high risk." Whether due to the age of the mother or recurrent pregnancy loss or chronic conditions such as hypertension, diabetes or rheumatoid arthritis, the term high risk may apply to many more women who are pregnant or are considering becoming pregnant than realize it – or, for that matter, whose OB/GYNs realize it.

While it is natural for a primary-care physician to want to manage his or her patient as long as possible, it is often critical to the successful outcome of a high-risk pregnancy for that patient to be referred to a maternal-fetal specialist as soon as possible, ideally before the 17th week of pregnancy in the case of twins and before the 12th week in the case of triplets, quads or other multiple gestations.

For patients with chronic conditions such as diabetes or hypertension, referral to a high-risk OB specialist is recommended as soon as possible – even prior to conception, if the pregnancy is planned. In the case of diabetes, for instance, the ideal situation would include preconception discussions with the specialist, blood sugar control before the patient becomes pregnant and prescribing the appropriate medications that may help prevent birth defects.

According to Michael Barsoom, M.D., FACOG, Associate Professor, Division of Maternal-Fetal Medicine, patients who are managing a chronic condition such as diabetes may be so comfortable with the disease in its managed state that they don't understand that what constitutes management changes radically when they become pregnant. As he puts it, "What's managed when you're not pregnant is not even close to being managed when you are pregnant. What most patients consider managed is not anywhere close."

Creighton University Medical Center and the Center for Maternal-Fetal Medicine recognize that the physicians throughout the region who refer patients to its facility are a critical component of the continuum of care. As such, the hospital does its utmost to ensure that physicians are kept in the loop regarding the patients they refer. Once referred to the Center for Maternal-Fetal Medicine, a patient is actively co-managed by both the Center's specialists and the patient's primary-care physician.

Vesicoamniotic Shunting for Posterior Urethral Valves

This is a closed fetal surgical procedure in which a tube is placed in the baby's bladder to drain urine into the surrounding amniotic space. The procedure is performed under maternal local anesthesia and ultrasound guidance.

Posterior urethral valves (PUV) are the most common cause of male pediatric obstructive uropathy – a condition in which the fetus is unable to void urine into the amniotic cavity, which can in turn result in renal failure, poor lung development and fetal death.

One method of treating PUV employed by the maternal-fetal specialists at Creighton University Medical Center is the vesicoamniotic shunt. This is a closed fetal surgical procedure in which a tube is placed in the baby's bladder to drain urine into the surrounding amniotic space. The procedure is performed under maternal local anesthesia and ultrasound guidance.

A cannula on a trocar is inserted through the mother's abdominal and uterine walls into the amniotic cavity and subsequently into the bladder of the fetus. A catheter is inserted through the cannula and positioned with one end in the bladder and the other in the amniotic cavity. The cannula is then removed and the final position of the catheter confirmed by ultrasonography. If the fluid reaccumulates or the catheter is dislodged, the procedure can be repeated.