

**Intrauterine
Fetal Demise
> 20 weeks'
gestation**

- 1) Full history and physical
- 2) Attempt to discern timing of demise
- 3) Detailed history regarding family history of thrombosis
- 4) Question regarding history of domestic violence
- 5) Discuss delivery methods and autopsy
- 6) Targeted ultrasound (if patient willing)
- 7) Laboratory evaluation
 - a) Lupus anticoagulant ¹
 - b) Anti-cardiolipin antibody ¹
 - c) Factor V Leiden mutation analysis ²
 - d) Factor II (G20210) mutation ²
 - e) Protein S (if low, repeat at 3 months postpartum) ²
 - f) Type and screen
 - g) Hb A1C ³
 - h) Fetal cell stain ⁴
 - i) Urine drug screen ⁵
 - j) VDRL
 - k) Offer HIV if not previously done

Yes

- Additional laboratory studies:
- a) Protein C
 - b) Anti-thrombin III level

Intrapartum

- 1) Obtain thawed tissue media from core laboratory (**cytogenetics specimen collection media, is located in freezer CF-2 in the core laboratory**) for collection of placental tissue. If not available, use room-temperature normal saline without preservative.
- 2) Social work / pastoral care consultation.
- 3) Consider amniocentesis after epidural placed for karyotype. ⁶ (**see box to right**)
- 4) If declines amniocentesis, consider transcervical amniocentesis prior to AROM using pundental trumpet. If done, label sample specifically as *trans-vaginal amniocentesis*.
- 5) Notify cytogenetics lab during daytime to notify them that a specimen has been sent (phone # 6-1595).
- 6) Notify UNC perinatal genetic counselors if no prior genetic counseling done this pregnancy (phone # 6-2229).

**Amniocentesis
Instructions:**

Use only the Turemo brand syringes located in the attending office outside Labor and Delivery

Obtain three tubes of amniotic fluid if possible (blue top tubes also located in attending office should be used for specimens):

First, draw a 5 cc syringe, to be put into tube #1

Using a 20 cc syringe, placed equal amounts of amniotic fluid into tubes #2 and #3, respectively

Send all 3 samples to cytogenetics

Postpartum

- 1) Document full examination of fetus, cord, and placenta.
- 2) Sample placental chorionic villi adjacent to cord insertion, immerse in cytogenetics media.
- 3) Obtain both GBS and aerobic culture between placental amnion/chorion. ⁷
- 4) Offer autopsy ⁸; if declines, consider noninvasive studies (ie. X-ray, MRI).
- 5) Send placenta to pathology.

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References for IUFD Evaluation

- 1) Alfirevic Z, Roberts D, Martlew V. How strong is the association between maternal thrombophilia and adverse pregnancy outcome? A systematic review. **Eur J Obstet Gynecol Reprod Biol** 2002;**101:6-14**. *Unexplained stillbirth, when compared with controls, was more often associated with heterozygous factor V Leiden mutation, protein S deficiency, activated protein C resistance, anticardiolipin IgG antibodies or lupus anticoagulant. Women with intrauterine growth restriction had a higher prevalence of heterozygous G20210A prothrombin gene mutation, homozygous MTHFR C677T gene mutation, protein S deficiency or anticardiolipin IgG antibodies than controls.*
- 2) Rey E, Kahn SR, David M, Shrier I. Thrombophilic disorders and fetal loss: a meta-analysis. **Lancet** 2003;**361:901-8**. *Late (greater than 20 weeks' gestation) non-recurrent fetal loss is associated with factor V Leiden, prothrombin G20210A mutation, and protein S deficiency.*
- 3) Smulian JC, Ananth CV, Vintzeleos AM, Scorza WE, Knuppel RA. Fetal deaths in the United States. Influence of high-risk conditions and implications for management. **Obstet Gynecol** 2002;**100:1183-9**. *Diabetes is associated with a fetal loss rate of 3.6/1000 versus a low-risk pregnancy loss rate of 1.6/1000.*
- 4) Incerpi MH, Miller DA, Samadi R, Settlege RH, Goodwin TM. Stillbirth evaluation: what tests are needed? **Am J Obstet Gynecol** 1998;**178:1121-5**. *Feto-maternal hemorrhage was associated with 5% of fetal deaths.*
- 5) Ornoy A. The effects of alcohol and illicit drugs on the human embryo and fetus. **Isr J Psychiatry Relat Sci** 2002;**39:120-32**. *Cocaine use during pregnancy may apparently result in an increase in the rate of congenital anomalies, of stillbirth and of intrauterine growth retardation. The use of heroin and opiates does not seem to increase the rate of major congenital anomalies, but it reduces fetal growth and increases the rate of intrauterine fetal death.*
- 6) Smith NM. Broadsheet number 56: Mechanisms of fetal loss. **Pathology** 2000;**32:107-15**. *Chromosomal abnormalities are associated with 5-10% of late pregnancy losses.*
- 7) Petersson K, Bremme K, Bottinga R, et al. Diagnostic evaluation of intrauterine fetal deaths in Stockholm 1998-99. **Acta Obstet Gynecol Scand** 2002;**81:284-92**. *Infection was a contributing factor in stillbirth in 24% of cases. The most common pathogens were E. coli, Enterococcus, and GBS.*
- 8) Rey E, Kahn SR, David M, Shrier I. Thrombophilic disorders and fetal loss: a meta-analysis. **Lancet** 2003;**361:901-8**. *In our study, when autopsy was not performed, 44% of stillbirths went unexplained compared with only 31% when autopsy was performed.*

NOTIFICATION TO USERS

These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur in pregnancy. They should not be interpreted as *standard of care* but instead represent *guidelines* for the management of these patients. Variation in practice should be taken into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities. The algorithms remain the intellectual property of the University of North Carolina School of Medicine at Chapel Hill. They cannot be reproduced in whole or part without the *expressed* permission of the school.

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