Antepartum Surveillance Guidelines

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Guideline is updated to reflect a change in antenatal testing recommendations for FGR.

Background

Antenatal fetal surveillance is performed to reduce the risk of stillbirth. It has been suggested that when determining the conditions for which antenatal fetal testing should be performed, one should consider the risk of false-negative antenatal fetal surveillance test (defined as incidence of stillbirth occurring within one week of normal test):

- NST: 1.9/1000
- BPP: 0.8/1000
- Modified BPP: 0.8/1000
- CST: 0.3/1000

Additionally, based on expert consensus, ACOG felt that antenatal fetal surveillance could be considered for conditions that would result in at least twice the increased risk of stillbirth as compared to the risk if the condition were not present. ACOG provides guidance on and suggests surveillance for conditions for which stillbirth is reported to occur more frequently than 0.8 per 1,000 (the false-negative rate of a BPP or modified BPP) and which are associated with a RR or odds ratio for stillbirth of more than 2.0 compared with pregnancies without the condition.[1]

Based on ACOG Committee Opinion 828, Indications for Outpatient Antenatal Fetal Surveillance, the following guidelines (Table 2) have been adapted by the BCM OB/Gyn Perinatal Guidelines Committee for antenatal fetal surveillance. In cases where ACOG has recommended once or twice weekly testing or recommends individualization, we have provided specific recommendations. Some indications have been removed and can be individualized based on provider assessment. Initiation of testing at an earlier gestational age, alteration of the frequency of testing from these guidelines, or the addition of such tests as umbilical artery Doppler should be undertaken in consultation with a Maternal-Fetal Medicine specialist. Delivery recommendations have been adapted from ACOG Committee Opinion 831, Medically Indicated Late Preterm and Early Term Deliveries, with some modifications.[2]

We also agree with the following statement from ACOG, “As with all testing and interventions, shared decision making between the pregnant individual and the clinician is critically important when considering or offering antenatal fetal surveillance for individuals with pregnancies at high risk for stillbirth or with multiple comorbidities that increase the risk of stillbirth. It is important to emphasize that the guidance offered in this Committee Opinion should be construed only as suggestions; this guidance should not be construed as mandates or as all encompassing. Ultimately, individualization about if and when to offer antenatal fetal surveillance is advised.”

Equivalent tests

- Modified BPP (NST+AFI/DVP) = 8 point BPP = 10 point BPP
- For testing before 32 weeks, an 8 point BPP can be used
- Reactive NST: 15x15 accel ≥ 32w0d = 10x10 accel <32w0d

Weekly = every 7 days,
Twice weekly = Mon/Thur, Tue/Fri, or Wed/Sat (holidays may lead to earlier testing)

Management of Decreased Fetal Movement in Triage

For a pregnant individual reporting decreased fetal movement after viability, one-time antenatal fetal surveillance at the time the decreased movement is reported may be considered. Unless decreased fetal movement reoccurs, antenatal fetal surveillance for a single episode does not need to be repeated if the initial results are reassuring and there is no other indication for antenatal fetal surveillance.[1] **The BCM Ob/Gyn Perinatal Guidelines Committee makes the following recommendations regarding evaluation of decreased fetal movement in triage (Women's Assessment Center [WAC] at PFW and OB Intake [OBI] at Ben Taub Hospital**):

Gestational age <24 0/7 weeks
Assess fetal heart tones with Doppler → are they within normal limits for gestational age?

- Yes → Reassure patient, no further testing
- No → Ultrasound to determine gestational age

NST can be considered but should be individualized between 23 0/7 and 24 0/7 with shared decision making.

Gestational age 24 0/7 weeks or greater
Perform modified BPP → is NST reactive and Deepest Vertical Pocket (DVP) >2 cm?

- Yes → Reassure patient, no further testing
- No → Perform 10 Point BPP and manage based on BPP score or consider delivery based on gestational age

Table 2. Antepartum Surveillance Guidelines

Indication	GA to initiate testing	Frequency	Delivery Time
MATERNAL CONDITIONS			
Diabetes			
- A1 well-controlled on diet/exercise[2,3]	None	None	39 0/7 – 40 6/7
- A2DM well-controlled (no fetal growth abnormalities, no fluid abnormalities, minimal medication titration) [2,3]	32 weeks	Once weekly	39 0/7-39 6/7
- A2DM poorly-controlled (with associated risk factors – fetal growth concerns, fluid abnormalities, frequent medication titration)[2,3]	32 weeks	Twice weekly (2nd test NST only)	36 0/7-38 6/7 (individualized to situation)
-Type 1 or 2 diabetes[2]	32 weeks	Twice weekly (2nd test NST only)	Well controlled: 39 0/7 – 39 6/7. Vascular complications, poor glucose control, or prior stillbirth: 36 0/7 – 38 6/7
Hypertension[2]			
-Well controlled without meds, AGA fetus	No testing recommended		38 0/7-39 6/7
-Well controlled with meds, AGA fetus	32 weeks	Once weekly	37 0/7-39 6/7
-On meds poorly controlled (requiring frequent medication increase or other comorbidities)	At diagnosis ≥ 28 weeks	Twice weekly (2nd test NST only)	36 0/7- 37 6/7
-Gestational HTN and preeclampsia without severe features	At diagnosis ≥ 28 weeks	Twice weekly (2nd test NST only)	37 0/7
-Pre-Eclampsia with severe features	Inpatient admission recommended		34 0/7 weeks or earlier based on maternal or fetal status
Other			
IVF	36 weeks[4]	Once weekly	At or after 39 0/7
Antiphospholipid antibody syndrome (supported by laboratory and clinical data)	32 weeks[4]	Twice weekly	37 0/7-39 6/7
Cyanotic heart disease	32 weeks	Once weekly	38 0/7-38 6/7
Hemoglobinopathies other than Hb SS disease (SC disease, Sickle-Beta Thalassemia)	32 weeks	Once weekly	39 0/7 if no associated risk factors
Uncomplicated sickle cell disease	32 weeks[5]	Once weekly	39 0/7 if no associated risk factors
Complicated sickle cell disease (maternal hypertension, vaso-occlusive crisis, placental insufficiency, fetal growth restriction)	At diagnosis ≥ 28 weeks	Twice weekly	Individualized based on risk factors
Thyroid disorder, poorly controlled	32 weeks	Once weekly	39 0/7

Indication	GA to initiate testing	Frequency	Delivery Time
Alloimmunization without suspected anemia	32 weeks[6]	Once weekly	37 0/7 – 38 6/7[6]
Alloimmunization with suspected anemia (ie: undergoing serial intrauterine transfusions)	At diagnosis ≥ 28 weeks	Once weekly	Individualized to situation
Renal disease with Cr>1.4 g/dL	32 weeks[1]	Once weekly	38 0/7-39 0/7
Uncomplicated SLE (no flares)	32 weeks[1]	Once weekly	39w0d
Complicated SLE (active lupus nephritis, recent lupus flare, antiphospholipid antibodies with prior fetal loss, anti-RO/SSA or anti-La/SSB antibodies, thrombosis, fetal growth restriction, other comorbidities)	At diagnosis ≥ 28 weeks	Twice weekly	37 0/7-38 6/7
Age 40 or older at EDD	37 weeks	Once weekly	39 0/7-39 6/7
Obesity -Pre-pregnancy BMI 35 - 39.9 kg/m^2 -Pre-pregnancy BMI ≥ 40 kg/m^2	 37 weeks[1] 34 weeks[1]	Once weekly	individualized to situation (can await spontaneous labor)
Intrahepatic Cholestasis of Pregnancy[a] -Total serum bile acid level ≥10 but <40 µmol/L -Total serum bile acid level ≥40 but <100 µmol/L -Total serum bile acid levels ≥100 µmol/L[2] -Severe pruritus, hx stillbirth <36 weeks 2/2 ICP, or worsening hepatic function[a]	At diagnosis ≥ 28 weeks	 Once weekly Once weekly Once weekly Twice weekly	 38 0/7-39 0/7 37 0/7 36 0/7 34 0/7 – 36 0/7
FETAL CONDITIONS			
Fetal Anomaly			
Gastroschisis	28 weeks	Twice weekly	37 0/7[7]
Hydrops	At diagnosis ≥ 28 weeks	Twice weekly	Individualized to situation
FGR (EFW or AC<10%) in a singleton[8,9]			
-Uncomplicated FGR (EFW or AC<10% but >3rd percentile, normal amniotic fluid, no concurrent conditions) -Uncomplicated FGR, EFW <3rd percentile	At diagnosis ≥ 24-28 weeks[b]	Once weekly Once weekly	38 0/7-39 0/7 37 0/7 or at diagnosis if diagnosed later

[a] Deliveries before 39 weeks gestation are associated with an increased risk of admission to the NICU for respiratory complication and other neonatal morbidities; however, maternal anxiety with a history of stillbirth should be considered and may warrant an early term delivery (37 0/7-38 6/7) in women who are educated regarding, and accept, the associated neonatal risks.

Indication	GA to initiate testing	Frequency	Delivery Time
-FGR with additional risk factors (e.g., oligohydramnios, maternal co-morbidities, concerns for worsening FGR)	At diagnosis ≥ 24-28 weeks[b]	Twice weekly	34 0/7-37 6/7
FGR with elevated UA PI (decreased end diastolic flow without absent end diastolic flow)	At diagnosis ≥ 24-28 weeks[b]	**Once** weekly	37 0/7
FGR with absent end diastolic flow *MFM consultation recommended	At diagnosis ≥ 24-28 weeks[b] Consider inpatient admission at time of initial diagnosis for potential steroid administration and short term observation.	Twice weekly	33 0/7-34 0/7
FGR with reversed end-diastolic flow *MFM consultation recommended	Inpatient admission recommended		30 0/7 – 32 0/7
Multiple gestation			
-uncomplicated monochorionic/diamniotic twins[4]	32 weeks	Once weekly	36 0/7 -36 6/7
-monochorionic/diamniotic twins with isolated fetal growth restriction	At diagnosis ≥ 24-28 weeks[b]	Once weekly Twice weekly if concern for worsening FGR or abnormal UA Doppler PI	32 0/7-34 6/7[2]
- uncomplicated dichorionic/diamniotic twins	36 weeks[4]	Once weekly	38 0/7-38 6/7[2]
-dichorionic/diamniotic twins with fetal growth restriction or ≥20% discordance	At diagnosis ≥ 24-28 weeks[b]	Once weekly Twice weekly if concern for worsening FGR or abnormal UA Doppler	-36 0/7-37 6/7 -32 0/7 – 36 0/7 if complicated by other risk factors (eg preeclampsia) or abnormal Doppler studies (recommend considering delivery timing based on singleton recs for AEDF and REDF)
-triplets or higher-order multiples	32 weeks	Once weekly unless with FGR	35 0/7-36 0/7 but should be individualized[2]
OBSTETRIC CONDITIONS			
Abnormal Serum Markers			
PAPP-A ≤ 5% (0.4 MoMs)	36 weeks[4]	Once weekly	At or after 39 0/7

[b] Refer to the Fetal Growth Restriction Perinatal Guideline for recommendations on antenatal testing initiation in pregnancies 24-28 weeks gestation. This should be individualized based on clinical risk factors and shared decision making with the patient. MFM Consult is recommended.

Indication	GA to initiate testing	Frequency	Delivery Time
2nd trimester Inhibin A ≥ 2.0MoM	36 weeks[4]	Once weekly	At or after 39 0/7
History of other adverse pregnancy outcomes			
Previous SGA requiring preterm delivery **in *immediately preceding pregnancy***	32 weeks[4]	Once weekly	At or after 39 0/7
Previous preeclampsia requiring preterm delivery **in *immediately preceding pregnancy***	32 weeks[4]	Once weekly	After 39 0/7
Previous 3rd trimester stillbirth	32 weeks or 1 week prior to previous stillbirth	Once weekly	Individualized but no earlier than 37 0/7[c]
PLACENTAL CONDITIONS			
Single umbilical artery	36 weeks[4]	Once weekly	At or after 39 0/7
Velamentous cord insertion	36 weeks[4]	Once weekly	At or after 39 0/7
Chronic placental abruption	At diagnosis ≥ 28 weeks	Once weekly	At or after 39 0/7
Vasa Previa	Recommend inpatient admission at 30-32 weeks		34 0/7 – 37 0/7 (no later than 35-36 weeks based on local data)[2]
Isolated oligohydramnios (DVP<2 cm) - stop testing if resolved after 2 visits	≥ 28 weeks at diagnosis	Twice weekly	36 0/7-37 6/7[2]
Idiopathic moderate to severe polyhydramnios (AFI ≥30 cm or DVP ≥12 cm) - stop testing if resolved after 2 visits	32 weeks[4]	Once weekly	39 0/7
Late term in a well-dated pregnancy (Pregnancies WITH a sonographic exam confirming or revising the EDD before 22 0/7 weeks)	41 weeks[4]	Twice weekly	41 0/7 - 42 0/7
Late term in a suboptimally dated pregnancy (Pregnancies WITHOUT a sonographic exam confirming or revising the EDD before 22 0/7 weeks)	39-40 weeks[10]	Twice weekly	41 0/7[10]

[c] Deliveries before 39 weeks gestation are associated with an increased risk of admission to the NICU for respiratory complication and other neonatal morbidities; however, maternal anxiety with a history of stillbirth should be considered and may warrant an early term delivery (37 0/7-38 6/7) in women who are educated regarding, and accept, the associated neonatal risks.

References

References

1. Indications for Outpatient Antenatal Fetal Surveillance: ACOG Committee Opinion, Number 828. *Obstet Gynecol*. Jun 1 2021;137(6):e177-e197. doi:10.1097/AOG.0000000000004407
2. American College of O, Gynecologists' Committee on Obstetric Practice SfM-FM. Medically Indicated Late-Preterm and Early-Term Deliveries: ACOG Committee Opinion, Number 831. *Obstet Gynecol*. Jul 1 2021;138(1):e35-e39. doi:10.1097/AOG.0000000000004447
3. ACOG Practice Bulletin No. 190: Gestational Diabetes Mellitus. *Obstet Gynecol*. Feb 2018;131(2):e49-e64. doi:10.1097/aog.0000000000002501
4. Antepartum Fetal Surveillance: ACOG Practice Bulletin, Number 229. *Obstet Gynecol*. Jun 1 2021;137(6):e116-e127. doi:10.1097/AOG.0000000000004410
5. Sinkey RG, Ogunsile FJ, Kanter J, Bean C, Greenberg M. Society for Maternal-Fetal Medicine Consult Series #68: Sickle cell disease in pregnancy. *Am J Obstet Gynecol*. 2024;230(2):B17-B40. doi:10.1016/j.ajog.2023.10.031
6. Moise KJ, Jr., Abels EA. Management of Red Cell Alloimmunization in Pregnancy. *Obstet Gynecol*. Oct 1 2024;144(4):465-480. doi:10.1097/aog.0000000000005709
7. Baud D, Lausman A, Alfaraj MA, et al. Expectant management compared with elective delivery at 37 weeks for gastroschisis. *Obstet Gynecol*. May 2013;121(5):990-998. doi:10.1097/AOG.0b013e31828ec299
8. American College of O, Gynecologists' Committee on Practice B-O, the Society f-F. ACOG Practice Bulletin No. 204: Fetal Growth Restriction. *Obstet Gynecol*. Feb 2019;133(2):e97-e109. doi:10.1097/AOG.0000000000003070
9. Martins JG, Biggio JR, Abuhamad A. Society for Maternal-Fetal Medicine Consult Series #52: Diagnosis and management of fetal growth restriction: (Replaces Clinical Guideline Number 3, April 2012). *Am J Obstet Gynecol*. 2020;223(4):B2-B17. doi:10.1016/j.ajog.2020.05.010
10. Committee Opinion No. 688: Management of Suboptimally Dated Pregnancies. *Obstet Gynecol*. Mar 2017;129(3):e29-e32. doi:10.1097/aog.0000000000001949
11. ACOG Practice Bulletin No. 106: Intrapartum fetal heart rate monitoring: nomenclature, interpretation, and general management principles. *Obstet Gynecol*. Jul 2009;114(1):192-202. doi:10.1097/AOG.0b013e3181aef106
12. ACOG Practice Bulletin No. 201: Pregestational Diabetes Mellitus. *Obstet Gynecol*. Dec 2018;132(6):e228-e248. doi:10.1097/aog.0000000000002960
13. Management of Stillbirth: Obstetric Care Consensus No, 10. *Obstet Gynecol*. Mar 2020;135(3):e110-e132. doi:10.1097/AOG.0000000000003719
14. Bahtiyar MO, Funai EF, Rosenberg V, et al. Stillbirth at term in women of advanced maternal age in the United States: when could the antenatal testing be initiated? *Am J Perinatol*. May 2008;25(5):301-4. doi:10.1055/s-2008-1076605
15. Clark SL, Sabey P, Jolley K. Nonstress testing with acoustic stimulation and amniotic fluid volume assessment: 5973 tests without unexpected fetal death. *Am J Obstet Gynecol*. Mar 1989;160(3):694-7. doi:10.1016/s0002-9378(89)80062-6
16. Devoe LD. Antenatal fetal assessment: contraction stress test, nonstress test, vibroacoustic stimulation, amniotic fluid volume, biophysical profile, and modified biophysical profile--an overview. *Semin Perinatol*. Aug 2008;32(4):247-52. doi:10.1053/j.semperi.2008.04.005
17. Freeman RK, Anderson G, Dorchester W. A prospective multi-institutional study of antepartum fetal heart rate monitoring. II. Contraction stress test versus nonstress test for primary surveillance. *Am J Obstet Gynecol*. Aug 1 1982;143(7):778-81. doi:10.1016/0002-9378(82)90009-6
18. Freeman RK, Anderson G, Dorchester W. A prospective multi-institutional study of antepartum fetal heart rate monitoring. I. Risk of perinatal mortality and morbidity according to antepartum fetal heart rate test results. *Am J Obstet Gynecol*. Aug 1 1982;143(7):771-7. doi:10.1016/0002-9378(82)90008-4
19. Ghaffari N, Srinivas SK, Durnwald CP. The multidisciplinary approach to the care of the obese parturient. *Am J Obstet Gynecol*. Sep 2015;213(3):318-25. doi:10.1016/j.ajog.2015.03.001

20. Groome LJ, Owen J, Neely CL, Hauth JC. Oligohydramnios: antepartum fetal urine production and intrapartum fetal distress. *Am J Obstet Gynecol*. Oct 1991;165(4 Pt 1):1077-80. doi:10.1016/0002-9378(91)90474-6
21. Manning FA, Harman CR, Morrison I, Menticoglou SM, Lange IR, Johnson JM. Fetal assessment based on fetal biophysical profile scoring. IV. An analysis of perinatal morbidity and mortality. *Am J Obstet Gynecol*. Mar 1990;162(3):703-9. doi:10.1016/0002-9378(90)90990-o
22. Manning FA, Morrison I, Harman CR, Lange IR, Menticoglou S. Fetal assessment based on fetal biophysical profile scoring: experience in 19,221 referred high-risk pregnancies. II. An analysis of false-negative fetal deaths. *Am J Obstet Gynecol*. Oct 1987;157(4 Pt 1):880-4. doi:10.1016/s0002-9378(87)80077-7
23. Miller DA, Rabello YA, Paul RH. The modified biophysical profile: antepartum testing in the 1990s. *Am J Obstet Gynecol*. Mar 1996;174(3):812-7. doi:10.1016/s0002-9378(96)70305-8
24. Rutherford SE, Phelan JP, Smith CV, Jacobs N. The four-quadrant assessment of amniotic fluid volume: an adjunct to antepartum fetal heart rate testing. *Obstet Gynecol*. Sep 1987;70(3 Pt 1):353-6.
25. Salihu HM. Maternal obesity and stillbirth. *Semin Perinatol*. Dec 2011;35(6):340-4. doi:10.1053/j.semperi.2011.05.019
26. Salihu HM, Wilson RE, Alio AP, Kirby RS. Advanced maternal age and risk of antepartum and intrapartum stillbirth. *J Obstet Gynaecol Res*. Oct 2008;34(5):843-50. doi:10.1111/j.1447-0756.2008.00855.x
27. Signore C, Freeman RK, Spong CY. Antenatal testing-a reevaluation: executive summary of a Eunice Kennedy Shriver National Institute of Child Health and Human Development workshop. *Obstet Gynecol*. Mar 2009;113(3):687-701. doi:10.1097/AOG.0b013e318197bd8a
28. Society for Maternal-Fetal Medicine . Electronic address pso, Dashe JS, Pressman EK, Hibbard JU. SMFM Consult Series #46: Evaluation and management of polyhydramnios. *Am J Obstet Gynecol*. Oct 2018;219(4):B2-B8. doi:10.1016/j.ajog.2018.07.016
29. Spong CY, Mercer BM, D'Alton M, Kilpatrick S, Blackwell S, Saade G. Timing of indicated late-preterm and early-term birth. *Obstet Gynecol*. Aug 2011;118(2 Pt 1):323-333. doi:10.1097/AOG.0b013e3182255999
30. Vintzileos AM, Campbell WA, Nochimson DJ, Weinbaum PJ. The use and misuse of the fetal biophysical profile. *Am J Obstet Gynecol*. Mar 1987;156(3):527-33. doi:10.1016/0002-9378(87)90044-5
31. Vintzileos AM, Campbell WA, Rodis JF, McLean DA, Fleming AD, Scorza WE. The relationship between fetal biophysical assessment, umbilical artery velocimetry, and fetal acidosis. *Obstet Gynecol*. Apr 1991;77(4):622-6.