

# Transitions Doula Service

Pregnancy • Labor • Postpartum

birthworks



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*“If you believe you can, you probably can. If you believe you won’t, you most assuredly won’t.”*

- Denis Waitley

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## Amniotic Fluid Index

Weeks	Percentile				
	2.5 <sup>th</sup>	5 <sup>th</sup>	50 <sup>th</sup> (median)	95 <sup>th</sup>	97 <sup>th</sup>
36	6.8	7.7	13.8	24.9	27.9
37	6.6	7.5	13.5	24.4	27.5
38	6.5	7.3	13.2	23.9	26.9
39	6.4	7.2	12.7	22.6	25.5
40	6.3	7.1	12.3	21.4	24.0
41	6.3	7.0	11.6	19.4	21.6
42	6.3	6.9	11.0	17.5	19.2

Moore TR, Cayle JE. “The amniotic fluid index in normal human pregnancy.” *Am J Obstet Gynecol.* 1990 May;162(5):1168-73.

One parameter of the Biophysical Profile (BPP) is the Amniotic Fluid Index (AFI). This is an estimate made via ultrasound of the amount of fluid surrounding your baby. There are two common methods for determining this value and you should ask your care provider which one will be used to assess your baby’s amniotic fluid volume (single deepest vertical pocket versus 4-quadrant method) and why.

The amniotic fluid volume is highly variable at term, changing from hour to hour and in response to your own level of hydration. It is important to remain well hydrated throughout pregnancy, and if you are scheduled for a BPP test it is particularly important to be sure you’ve had plenty to drink before the test to avoid inaccurate results, including avoiding an early morning appointment if possible. AFI values are sometimes used as the sole basis for labor induction or scheduled cesarean, even when all other measures of the BPP test are normal. There is no research to support the benefit of induction or cesarean based solely on a single low AFI value at term.

You may wish to discuss the following studies with your care provider if they are recommending labor induction or cesarean surgery based on AFI alone with an otherwise reassuring Biophysical Profile or reactive Non-Stress Test.

- Hofmeyr GJ, Gülmezoglu AM. “Maternal hydration for increasing amniotic fluid volume in oligohydramnios and normal amniotic fluid volume (Cochrane Review).” In: *The Cochrane Library*, Issue 1, 2004. Chichester, UK: John Wiley & Sons, Ltd.

CONCLUSIONS: Simple maternal hydration appears to increase amniotic fluid volume and may be beneficial in the management of oligohydramnios and prevention of oligohydramnios during labour or prior to external cephalic version. Controlled trials are needed to assess the clinical benefits and possible risks of maternal hydration for specific clinical purposes.

- Fait G, Pauzner D, Gull I, Lessing JB, Jaffa AJ, Wolman I. “Effect of 1 week of oral hydration on the amniotic fluid index.” *J Reprod Med.* 2003 Mar;48(3):187-90.

CONCLUSION: Long-term maternal oral hydration seems to significantly increase the AFI in selected women with reduced fluid and possibly prevents oligohydramnios.

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- Stigter RH, Mulder EJ, Bruinse HW, Visser GH. "The amniotic fluid index in late pregnancy." *J Matern Fetal Neonatal Med.* 2002 Nov;12(5):291-7.

CONCLUSIONS: The reduction of the AFI in pregnancies progressing beyond term is related to the labor process itself rather than to the exact gestational age.

- Morris JM, Thompson K, Smithey J, Gaffney G, Cooke I, Chamberlain P, Hope P, Altman D, Mackenzie IZ. "The usefulness of ultrasound assessment of amniotic fluid in predicting adverse outcome in prolonged pregnancy: a prospective blinded observational study." *BJOG.* 2003 Nov;110(11):989-94.

CONCLUSIONS: The AFI is superior to a measure of the single deepest pool as an assessment of the fetus at or after 40 weeks but has a poor sensitivity for adverse pregnancy outcome. Routine use is likely to lead to increased obstetric intervention without improvement in perinatal outcomes.

- Kreiser D, el-Sayed Y, Sorem KA, Chitkara U, Holbrook RH Jr, Druzin ML. "Decreased amniotic fluid index in low-risk pregnancy." *J Reprod Med.* 2001 Aug;46(8):743-6.

CONCLUSION: With antepartum monitoring, perinatal outcome in low-risk pregnancies with an isolated decreased AFI after 30 weeks' gestation ( $\leq 5$  or  $> 5$  cm but  $< 2.5$ th percentile) appears to be good.

- Rainford M, Adair R, Scialli AR, Ghidini A, Spong CY. "Amniotic fluid index in the uncomplicated term pregnancy. Prediction of outcome." *J Reprod Med.* 2001 Jun;46(6):589-92.

CONCLUSION: In the uncomplicated pregnancy at term, an amniotic fluid index  $< \text{or} = 5$  cm increases the incidence of labor induction but does not appear to affect the rate of operative delivery for abnormal fetal heart rate tracings.

- Conway D, Adkins W, Schroeder B, Langer O. "Isolated oligohydramnios in the term pregnancy: is it a clinical entity?" *J Matern Fetal Med.* 1998 Jul-Aug;7(4):197-200.

CONCLUSION: We conclude that isolated oligohydramnios in the otherwise normal term pregnancy may not be a marker for fetal compromise, and induction of labor may not be warranted in most cases.

- Pasquini L, Nasto R, Mie ME, Giuliani B, Periti E. "Amniotic fluid analysis as a screening test in term and post-term pregnancy" *Minerva Ginecol.* 2003 Feb;55(1):69-73.

CONCLUSIONS: In patients with oligohydramnios without risk factors, the modality of delivery and neonatal outcome do not differ compared with those with normal amniotic fluid volume.

- Driggers RW, Hoolcroft CJ, Blakemore KJ, Graham EM. "An amniotic fluid index  $\leq 5$  cm within 7 days of delivery in the third trimester is not associated with decreasing umbilical arterial pH and base excess." *J Perinatol.* 2004 Feb; 24(2):72-6.

RESULTS: In all, 131 neonates with an AFI  $\leq 5.0$  cm were matched to 131 controls with an AFI  $> 5$  cm. There was no difference in gestational age (37.6 $\pm$ 3.0, 37.7 $\pm$ 3.0 weeks) or birth weight (2897 $\pm$ 810, 2762 $\pm$ 788 g). There was no difference in umbilical artery pH (7.25 $\pm$ 0.07, 7.26 $\pm$ 0.07) or base excess (-3.32 $\pm$ 2.59, -2.83 $\pm$ 2.45 mmol/l), even in small for gestational age (SGA) infants in both groups. There was no difference in the number of SGA neonates, 5-minute Apgar  $< 7$ , respiratory distress syndrome, necrotizing enterocolitis, or neurologic morbidity.

- Redzko S, Przepiesc J, Urban J, Jozwik M, Skotnicki MZ, Urban R. "Antepartum amniotic fluid index and pregnancy outcome" *Ginekol Pol.* 1998 Apr;69(4):163-7.

CONCLUSION: Summarizing the results, our investigation showed that amniotic fluid index is only one point in the prognosis of perinatal outcome.

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- O'Reilly-Green CP, Divon MY. "Predictive value of amniotic fluid index for oligohydramnios in patients with prolonged pregnancies." *J Matern Fetal Med.* 1996 Jul-Aug;5(4):218-26.

ABSTRACT HIGHLIGHTS: The amniotic fluid index did not possess significant predictive value for measures of newborn morbidity. The amniotic fluid index is only a fair predictor of clinical observations consistent with oligohydramnios. Induction of labor in postdates patients with a low amniotic fluid index needs to be evaluated in a yet-to-be-performed prospective randomized control trial before a low amniotic fluid index is assumed to be the sole indicator for induction of labor. More stringent cutoff values [e.g. 3-4] for amniotic fluid index may be justified.

- Dizon-Townson D, Kennedy KA, Dildy GA, Wu J, Egger M, Clark SL. "Amniotic fluid index and perinatal morbidity." *Am J Perinatol.* 1996 May;13(4):231-4.

CONCLUSION: The addition of AFI assessment to the standard NST allows better prediction of perinatal morbidity than the NSTs alone. Seven centimeters appears to be a reasonable cut-off for clinical concern.

- Williams K. "Amniotic fluid assessment." *Obstet Gynecol Surv.* 1993 Dec;48(12):795-800.

CONCLUSION: Amniotic fluid volume is a weak predictor of morbidity and should be used in conjunction with other fetal biophysical variables to predict perinatal outcome.

- Zhang J, Troendle J, Meikle S, Klebanoff MA, Rayburn WF. "Isolated oligohydramnios is not associated with adverse perinatal outcomes." *BJOG.* 2004 Mar;111(3):220-5.

CONCLUSION: Isolated oligohydramnios is not associated with impaired fetal growth or an increased risk of adverse perinatal outcomes.

While many studies demonstrate an increase in labor inductions and cesarean section for presumed fetal distress when the AFI is below 5, these same studies also indicate that at the time of birth APGAR scores, cord pH, and NICU admissions were not significantly different between groups. Different studies use different measures of "poor outcomes" so whenever possible, see if your care provider has access to the full text of any article so that the two of you can discuss the information together.

These studies above are relevant to singleton (one baby), term pregnancies (after 37 weeks) in which other measures of fetal well being (such as non-stress testing, fetal kick counts, biophysical profile measurement of fetal movements, etc.) are reassuring. AFI can be a useful tool as part of an overall approach when determining whether expectant management or active intervention such as induction or cesarean is warranted in your unique situation.