Table 1: Observed relationship between gestational age and stillbirth risk

Study	Location	Dates	N	Stillbirth Risk per 1,000													
				Denominator: 1,000 Deliveries in Specified Gestational Week							Denominator: 1,000 Continuing Pregnancies						
				37	38	39	40	41	42	43	37	38	39	40	41	42	43
Yudkin, Wood, and Redman, 1987	Oxford	1978-1985	40,888	2.14		0.43		1.24			0.42		0.29		1.24		
Hilder, Costeloe, and Thilaganathan, 1998	London	1989-1991	171,527	6.2	3.8	2.2	1.5	1.7	1.9	2.1	0.35	0.56	0.57	0.86	1.27	1.55	2.12
Cotzias, Paterson-Brown, and Fisk, 1999	London	1989-1991	171,527	-	-	-	-	-	-	-	1.55	1.37	1.19	1.08	1.21	1.30	1.58
Smith, 2001	Scotland	1985-1996	700,878	-	-	-	-	-	-	-	0.4	0.4	0.5	0.9	1.2	1.9	6.3

Table 2: Original search strategy

1	fetal death/
2	stillbirth.tw.
3	exp fetal monitoring/
4	exp labor, induced/
5	exp cesarean section/
6	exp labor complications/
7	labor complications/
8	amniotom$.tw.
9	oxytocin/
10	misoprostol/
11	dinoprost/
12	dinoprostone/
13	carboprost/
14	mifepristone/
15	fetal macrosomia/
16	or/1-15
17	pregnancy,prolonged/
18	post$ pregnan$.tw.
19	or/17-18
20	and/16,19
21	limit 20 to human
22	limit 21 to english language
23	limit 22 to yr=1977-2001
24	limit 23 to abstracts
25	limit 22 to yr=1980-2001
26	limit 25 to abstracts

Table 3: Additional search terms suggested by advisory panel

1	nipple stimulation.mp.
2	exp ACUPUNCTURE/ or acupuncture.mp.
3	exp Transcutaneous Electric Nerve Stimulation/ or transcutaneous nerve stimulation.mp.
4	exp Castor Oil/ or castor oil.mp.
5	exp HERBS/ or herb.mp.
6	PROSTAGLANDINS F, SYNTHETIC/ or exp PROSTAGLANDINS/ or prostaglandins.mp. or PROSTAGLANDINS E/ or PROSTAGLANDINS E, SYNTHETIC/ or PROSTAGLANDINS F/
7	or/1-6
8	pregnancy, prolonged/
9	post$ pregnan$.tw.
10	8 or 9
11	7 and 10
12	limit 11 to (human and english language and yr=1980-2001) (44)
13	from 12 keep 1-44 (44)
14	limit 13 to english language (44)
15	limit 14 to human (44)
16	limit 15 to yr=1980-2001 (44)

Table 4: Number of articles identified, by literature database

Database	Number of unduplicated articles	Percent of total	Number of articles included	Percent of included articles
MEDLINE	458	65.3	257	56.1
EMBASE	162	23.1	60	37.0
CINAHL, HealthSTAR	22	3.1	9	40.9
Cochrane Database of Systematic Reviews, DARE	25	3.6	15	60.0
Other (e.g., manual screening of references lists)	34	4.9	23	67.6
Total	701	100.0	364	--

Table 5: Results of abstract screening and full-text article reviews

Description	No. of Unduplicated Articles Identified	Percent
Abstracts		
Number of titles and abstracts reviewed	701	
Number of abstracts included:	511	72.9
Management	317	
Testing	173	
Testing & Management	21	
Number of abstracts excluded:	190	27.1
Management	169	
Testing	11	
Testing & Management	10	
Full-Text Articles		
Number of full-text articles reviewed	511	
Number of full-text articles included:	364	71.2
Management	231	
Testing	107	
Testing & Management	26	
Classification of included articles:		
Management-RCT	85	
Management-Review	41	
Management-Other (e.g., epidemiology)	41	
Management-Basic Science	10	
Management-Background	54	
Testing-Case Report	0	
Testing-Small Case Series	5	
Testing-Large Case Series	36	
Testing-Non-Randomized Comparison	0	
Testing-RCT	0	
Testing-Review	8	
Testing-Other	3	
Testing-Basic Science	5	
Testing-Background	50	
Testing & Management -Large Case Series	3	
Testing & Management -Non-Randomized Comparison	0	
Testing & Management -RCT	4	
Testing & Management -Review	16	
Testing & Management -Background	3	
Number of full-text articles excluded:	147	28.8
Management	80	
Testing	60	
Testing & Management	4	
Other (e.g., not English, inaccurate reference)	3	

Table 6: Number of articles providing sensitivity and specificity data, by test studied

Test	Number of articles
Amniotic fluid volume	11
Nonstress test	11
Fetal weight estimation by ultrasound	5
Biophysical profile – simple	4
Biophysical profile – complex	2
Doppler umbilical artery flow	2
Fetal breathing movements	2
Fetal heart rate (bradycardia, tachycardia,	2
Fibronectin	2
Amniocentesis (meconium staining)	1
Cervical exam	1
Combination	1
Contraction stress test	1
Fetal motion on ultrasound	1
Fetal weight estimation – clinical exam	1
Kick counts	1

Table 7: Outcomes reported in association with test results in 2-by-2 tables

Outcome	Number of 2-by-2 Tables
1-minute Apgar score	6
5-minute Apgar score	7
Any	2
Cesarean section for fetal distress	5
Fetal distress	3
Fetal growth restriction	1
Macrosomia	2
Meconium aspiration	2
Meconium staining	1
Neonatal mortality	3
NICU Admission	3
pH	1
Postmaturity syndrome	2
Stillbirth	2

NICU = Neonatal intensive care unit

Table 8: Nonstress test performance characteristics

Study	Result	Rate of Abnormal Tests	Outcome	Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Fleischer, Schulman, Farmakides, et al., 1985	Inconclusive	0.17	1-min Apgar	< 7	0.07	0.40	0.85	0.16	0.95
Fleischer, Schulman, Farmakides, et al., 1985	Abnormal	0.04	1-min Apgar	< 7	0.07	0.27	0.97	0.40	0.95
Tongsong and Srisomboon, 1993	Abnormal	0.20	1-min Apgar	< 7	0.07	0.41	0.81	0.14	0.95
Eden, Gergely, Schifrin, et al., 1982	Abnormal	0.13	1-min Apgar	< 7	0.15	0.42	0.92	0.50	0.90
Small, Phelan, Smith, et al., 1987	Abnormal	0.11	1-min Apgar	< 7	0.18	0.13	0.90	0.22	0.82
Phelan, Platt, Yeh, et al., 1984	Abnormal	0.13	1-min Apgar	< 7	0.20	0.23	0.89	0.34	0.83
Fleischer, Schulman, Farmakides, et al., 1985	Inconclusive	0.17	5-min Apgar	< 7	0.03	0.29	0.84	0.05	0.97
Tongsong and Srisomboon, 1993	Abnormal	0.20	5-min Apgar	< 7	0.02	0.33	0.80	0.04	0.98

Table 8: Nonstress test performance characteristics (continued)

Study	Result	Rate of Abnormal Tests	Outcome	Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Small, Phelan, Smith, et al., 1987	Abnormal	0.11	5-min Apgar	< 7	0.02	0.11	0.89	0.02	0.98
Devoe and Sholl, 1983	Abnormal	0.16	5-min Apgar	< 7	0.03	0.00	0.84	0.00	0.97
Eden, Gergely, Schifrin, et al., 1982	Abnormal	0.13	5-min Apgar	< 7	0.10	0.50	0.91	0.40	0.94
Phelan, Platt, Yeh, et al., 1984	Abnormal	0.13	5-min Apgar	< 7	0.03	0.33	0.87	0.06	0.98
Fleischer, Schulman, Farmakides, et al., 1985	Abnormal	0.04	5-min Apgar	< 7	0.03	0.14	0.96	0.10	0.97
Weiner, Reichler, Zlozover, et al., 1993	Abnormal	0.00	Any	Yes	0.08	0.08	0.95	0.14	0.92
Arias, 1987	Abnormal	0.13	Any	Yes	0.16	0.33	0.91	0.43	0.88
Fleischer, Schulman, Farmakides, et al., 1985	Inconclusive	0.17	C-section for FD	Yes	0.11	0.42	0.87	0.29	0.92
Small, Phelan, Smith, et al., 1987	Abnormal	0.11	C-section for FD	Yes	0.04	0.21	0.90	0.08	0.96

Table 8: Nonstress test performance characteristics (continued)

Study	Result	Rate of Abnormal Tests	Outcome	Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Phelan, Platt, Yeh, et al., 1984	Abnormal	0.13	C-section for FD	Yes	0.05	0.31	0.88	0.13	0.96
Farmakides, Schulman, Winter, et al., 1988	Abnormal	0.43	C-section for FD	Yes	0.28	0.67	0.66	0.43	0.84
Fleischer, Schulman, Farmakides, et al., 1985	Abnormal	0.04	C-section for FD	Yes	0.11	0.23	0.98	0.60	0.91
Tongsong and Srisomboon, 1993	Abnormal	0.20	Fetal distress	Yes	0.04	0.64	0.82	0.14	0.98
Weiner, Farmakides, Schulman, et al., 1994	Abnormal	0.00	Fetal distress	Yes	0.12	0.28	1.00	0.92	0.91
Devoe and Sholl, 1983	Abnormal	0.16	Fetal distress	Yes	0.17	0.28	0.87	0.31	0.85
Farmakides, Schulman, Winter, et al., 1988	Abnormal	0.43	FGR	Not defined	0.11	0.60	0.59	0.15	0.93

Table 8: Nonstress test performance characteristics (continued)

Study	Result	Rate of Abnormal Tests	Outcome	Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Small, Phelan, Smith, et al., 1987	Abnormal	0.11	Macrosomia	> 4000 g	0.21	0.05	0.88	0.10	0.78
Phelan, Platt, Yeh, et al., 1984	Abnormal	0.13	Macrosomia	> 4000 g	0.22	0.08	0.85	0.13	0.77
Eden, Gergely, Schifrin, et al., 1982	Abnormal	0.13	Meconium aspiration	Yes	0.08	0.17	0.88	0.10	0.93
Phelan, Platt, Yeh, et al., 1984	Abnormal	0.13	Meconium aspiration	Yes	0.08	0.26	0.88	0.16	0.93
Ramrekersingh-White, Farkas, Chard, et al., 1993	Abnormal	0.10	Meconium staining	Yes	0.09	0.33	0.93	0.31	0.93
Fleischer, Schulman, Farmakides, et al., 1985	Abnormal	0.04	Neonatal mortality	Yes	0.01	1.00	0.97	0.30	1.00
Fleischer, Schulman, Farmakides, et al., 1985	Inconclusive	0.17	Neonatal mortality	Yes	0.01	1.00	0.84	0.08	1.00

Table 8: Nonstress test performance characteristics (continued)

Study	Result	Rate of Abnormal Tests	Outcome	Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Weiner, Farmakides, Schulman, et al., 1994	Abnormal	0.04	Neonatal mortality	Yes	0.06	0.50	0.97	0.08	1.00
Fleischer, Schulman, Farmakides, et al., 1985	Abnormal	0.04	NICU Admission	Yes	0.03	0.57	0.97	0.40	0.99
Fleischer, Schulman, Farmakides, et al., 1985	Inconclusive	0.17	NICU Admission	Yes	0.03	0.57	0.85	0.11	0.98
Farmakides, Schulman, Winter, et al., 1988	Abnormal	0.43	NICU Admission	Yes	0.17	0.54	0.59	0.22	0.86
Weiner, Farmakides, Schulman, et al., 1994	Abnormal	0.04	pH	< 7.2	0.03	0.70	0.98	0.58	0.99
Small, Phelan, Smith, et al., 1987	Abnormal	0.11	Postmaturity syndrome	Yes	0.07	0.13	0.89	0.08	0.93
Phelan, Platt, Yeh, et al., 1984	Abnormal	0.13	Postmaturity syndrome	Yes	0.17	0.10	0.86	0.13	0.83

Table 8: Nonstress test performance characteristics (continued)

Study	Result	Rate of Abnormal Tests	Outcome	Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Fleischer, Schulman, Farmakides, et al., 1985	Inconclusive	0.17	Stillbirth	Yes	0.09	0.00	0.83	0.00	0.99
Fleischer, Schulman, Farmakides, et al., 1985	Abnormal	0.04	Stillbirth	Yes	0.09	0.00	0.96	0.00	0.99

C-section = Cesarean section

FD = Fetal distress

FGR = Fetal growth restriction

NICU = Neonatal intensive care unit

Table 9: Specific fetal heart rate abnormalities on antepartum testing

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Rayburn, Motley, Stempel, et al., 1982	Abnormal	0.02	Postmaturity syndrome	Yes	0.22	0.09	1.00	1.00	0.80
Sherer, Onyeije, Binder, et al., 1998	Bradycardia	0.26	5-min Apgar	< 7	0.23	0.21	0.72	0.18	0.75
Sherer, Onyeije, Binder, et al., 1998	Bradycardia	0.26	Meconium aspiration	Yes	0.06	0.25	0.74	0.05	0.94
Sherer, Onyeije, Binder, et al., 1998	Bradycardia	0.26	NICU Admission	Yes	0.11	0.35	0.75	0.14	0.91
Sherer, Onyeije, Binder, et al., 1998	Tachycardia	0.32	5-min Apgar	< 7	0.18	0.41	0.70	0.23	0.85
Sherer, Onyeije, Binder, et al., 1998	Tachycardia	0.32	Meconium aspiration	Yes	0.03	0.67	0.69	0.06	0.98
Sherer, Onyeije, Binder, et al., 1998	Tachycardia	0.32	NICU Admission	Yes	0.05	0.40	0.68	0.06	0.95

NICU = Neonatal intensive care unit

Table 10: Test performance characteristics of contraction stress testing using oxytocin

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Devoe and Sholl, 1983	Abnormal	0.09	Fetal distress	Yes	0.17	0.14	0.92	0.27	0.84
Devoe and Sholl, 1983	Abnormal	0.09	5-min Apgar	<7	0.03	0.00	0.91	0.00	0.97

Table 11: Amniotic fluid volume measurement for oligohydramnios based on various criteria

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Montan and Malcus, 1995	< 5 cm	0.13	1-min Apgar	< 7	0.03	0.00	0.87	0.00	0.96
Tongsong and Srisomboon, 1993	Abnormal	0.12	1-min Apgar	< 7	0.07	0.47	0.91	0.27	0.96
O'Reilly-Green and Divon, 1996	< 5 cm	0.11	1-min Apgar	< 8	0.15	0.08	0.88	0.10	0.85
Phelan, Platt, Yeh, et al., 1985	< 1 cm	0.03	1-min Apgar	< 7	0.21	0.12	0.99	0.86	0.81
Phelan, Platt, Yeh, et al., 1985	Decreased (subjective)	0.19	1-min Apgar	< 7	0.21	0.37	0.86	0.40	0.84
Eden, Gergely, Schifrin, et al., 1982	Abnormal	0.28	1-min Apgar	< 7	0.11	0.52	0.75	0.21	0.93
O'Reilly-Green and Divon, 1996	< 5 cm	0.11	5-min Apgar	< 9	0.05	0.08	0.89	0.04	0.94
Montan and Malcus, 1995	< 5 cm	0.13	5-min Apgar	< 7	0.02	0.00	0.87	0.00	0.97
Tongsong and Srisomboon, 1993	Abnormal	0.12	5-min Apgar	< 7	0.02	0.33	0.89	0.07	0.98
Sarkar and Duthie, 1997	Decreased	0.10	5-min Apgar	< 7	0.05	0.00	0.90	0.00	0.95
Phelan, Platt, Yeh, et al., 1985	< 1 cm	0.03	5-min Apgar	< 7	0.03	0.25	0.98	0.29	0.97
Phelan, Platt, Yeh, et al., 1985	Decreased (subjective)	0.19	5-min Apgar	< 7	0.03	0.38	0.82	0.07	0.97

Table 11: Amniotic fluid volume measurement for oligohydramnios based on various criteria (continued)

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Eden, Gergely, Schifrin, et al., 1982	Abnormal	0.28	5-min Apgar	< 7	0.04	0.88	0.74	0.13	0.99
O'Reilly-Green and Divon, 1996	< 5 cm	0.11	Any	Yes	0.06	0.14	0.89	0.08	0.94
Leveno, Quirk, Cunningham, et al., 1984	Abnormal	0.39	Any	Yes	0.01	1.00	0.61	0.02	1.00
Weiner, Reichler, Zlozover, et al., 1993	Decreased	0.08	Any	Yes	0.08	0.25	0.94	0.27	0.93
Montan and Malcus, 1995	< 5 cm	0.13	C-section	Yes	0.14	0.08	0.87	0.09	0.86
Tongsong and Srisomboon, 1993	< 3 cm	0.12	C-section for FD	Yes	0.04	0.73	0.91	0.27	0.99
Leveno, Quirk, Cunningham, et al., 1984	Abnormal	0.39	C-section for FD	Yes	0.08	0.61	0.63	0.13	0.95
Phelan, Platt, Yeh, et al., 1985	Oligohydramnios	0.03	C-section for FD	Yes	0.06	0.23	0.98	0.43	0.96
Phelan, Platt, Yeh, et al., 1985	Decreased (subjective)	0.19	C-section for FD	Yes	0.06	0.69	0.84	0.20	0.98
Sarkar and Duthie, 1997	Decreased	0.10	C-section for FD	Yes	0.20	0.17	0.92	0.33	0.82
Monaghan, O'Herlihy, and Boylan, 1987	Abnormal	0.16	C-section for FD	Yes	0.02	0.33	0.84	0.03	0.99
Crowley, O'Herlihy, and Boylan, 1984	< 3 cm	0.19	C-section for FD	Yes	0.03	0.78	0.82	0.11	0.99

Table 11: Amniotic fluid volume measurement for oligohydramnios based on various criteria (continued)

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Leveno, Quirk, Cunningham, et al., 1984	Abnormal	0.39	FGR	Yes	0.08	0.50	0.61	0.10	0.94
Monaghan, O'Herlihy, and Boylan, 1987	Abnormal	0.16	FGR	< 10th centile	0.12	0.48	0.88	0.34	0.93
Sarkar and Duthie, 1997	Decreased	0.10	FGR	Yes	0.01	1.00	0.91	0.11	1.00
Crowley, O'Herlihy, and Boylan, 1984	< 3 cm	0.19	FGR	< 10th centile	0.11	0.46	0.84	0.26	0.93
Sarkar and Duthie, 1997	Decreased	0.10	Intubation	Yes	0.03	0.00	0.90	0.00	0.97
Phelan, Platt, Yeh, et al., 1985	Decreased (subjective)	0.19	Macrosomia	> 4000 g	0.22	0.12	0.79	0.13	0.76
Phelan, Platt, Yeh, et al., 1985	< 1 cm	0.03	Macrosomia	> 4000 g	0.22	0.00	0.96	0.00	0.77
Eden, Gergely, Schifrin, et al., 1982	Abnormal	0.28	Meconium aspiration	Yes	0.03	0.80	0.73	0.08	0.99
Monaghan, O'Herlihy, and Boylan, 1987	Abnormal	0.16	Neonatal mortality	Yes	0.01	0.00	0.84	0.00	0.99
Sarkar and Duthie, 1997	Decreased	0.10	NICU admission	Yes	0.01	1.00	0.91	0.06	1.00
Monaghan, O'Herlihy, and Boylan, 1987	Abnormal	0.16	NICU admission	Yes	0.09	0.17	0.84	0.09	0.91

Table 11: Amniotic fluid volume measurement for oligohydramnios based on various criteria (continued)

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Crowley, O'Herlihy, and Boylan, 1984	< 3 cm	0.19	NICU admission	Yes	0.07	0.38	0.82	0.14	0.94
Monaghan, O'Herlihy, and Boylan, 1987	Abnormal	0.16	pH	< 7.25	0.07	0.23	0.84	0.09	0.94
Rayburn, Motley, Stempel, et al., 1982	Oligohydramnios	0.56	Postmaturity syndrome	Yes	0.22	0.91	0.54	0.35	0.95
Rayburn, Motley, Stempel, et al., 1982	Pockets	0.20	Postmaturity syndrome	Yes	0.22	0.75	0.96	0.83	0.93

C-section = Cesarean section; FD = Fetal distress; FGR = Fetal growth restriction; NICU = Neonatal intensive care unit

Table 12: Components of biophysical profile scores in included studies

Study	NST	Amniotic Fluid Measurement		Fetal Breathing Movements	Fetal Tone/ Movements	Fetal Body Measurements	Uterine Artery Resistance	Fetal Dopplers	Fetal Reflexes (Magnitude and Speed)	Placental Grading
		Maximum Pool Depth	Amniotic Fluid Index							
Alfirervic and Walkinshaw, 1995: "Simple"	X	X								
Alfirervic and Walkinshaw, 1995: "Complex"	X		X	X	X	X				
Arias, 1987	X	X				X				X
Bochner, Medearis, Ross, et al., 1987	X	X			X					
Bochner, Williams, Castro, et al., 1988	X	X			X					
Brar, Horenstein, Medearis, et al., 1989	X		X				X	Umbilical		
Eden, Gergely, Schifrin, et al., 1982: “modified biophysical profile”	X	X		X	X					
Arabin, Snyjders, Mohnhaupt, et al., 1993: "traditional	X	X		X	X					

Table 12: Components of biophysical profile scores in included studies (continued)

Study	NST	Amniotic Fluid Measurement		Fetal Breathing Movements	Fetal Tone/ Movements	Fetal Body Measurements	Uterine Artery Resistance	Fetal Dopplers	Fetal Reflexes (Magnitude and Speed)	Placental Grading
		Maximum Pool Depth	Amniotic Fluid Index							
biophysical profile"										
Arabin, Snyjders, Mohnhaupt, et al., 1993: "fetal assessment score"	X				X		X	Carotid	X	
Hann, McArdle, and Sachs, 1987	X	X		X	X					X
Gilson, O'Brien, Vera, et al., 1988	X	X		X	X					

NST = Nonstress test

Table 13: Simple biophysical profile test performance characteristics

Study	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Bochner, Medearis, Ross, et al., 1987	0.23	1-min Apgar	< 7	0.39	0.25	0.79	0.43	0.63
Bochner, Medearis, Ross, et al., 1987	0.23	5-min Apgar	< 7	0.02	1.00	0.79	0.07	1.00
Brar, Horenstein, Medearis, et al., 1989	0.42	5-min Apgar	< 7	0.18	0.88	0.68	0.37	0.96
Arias, 1987	0.29	Any	Yes	0.39	0.37	0.77	0.50	0.65
Bochner, Medearis, Ross, et al., 1987	0.23	C-section for FD	Yes	0.21	0.85	0.94	0.79	0.96
Brar, Horenstein, Medearis, et al., 1989	0.42	C-section for FD	Yes	0.29	0.69	0.69	0.47	0.85
Bochner, Williams, Castro, et al., 1988	0.22	Fetal distress	Yes	0.06	0.81	0.82	0.22	0.99
Bochner, Williams, Castro, et al., 1988	0.15	Fetal distress	Yes	0.03	0.70	0.87	0.12	0.99
Bochner, Medearis, Ross, et al., 1987	0.23	FGR	< 10th percentile	0.11	0.29	0.78	0.14	0.90
Bochner, Medearis, Ross, et al., 1987	0.23	Meconium aspiration	Yes	0.05	0.33	0.78	0.07	0.96
Bochner, Medearis, Ross, et al., 1987	0.23	Neonatal mortality	Yes	0.00		0.77	0.00	1.00
Brar, Horenstein, Medearis, et al., 1989	0.42	NICU Admission	Yes	0.13	0.83	0.64	0.26	0.96

C-section = Cesarean section
FD = Fetal distress
FGR = Fetal growth restriction
NICU = Neonatal intensive care unit

Table 14: Complex biophysical profile test performance characteristics

Study	Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Arabin, Snyjders, Mohnhaupt, et al., 1993	Multiple	Varies	C-section for fetal distress	Yes	0.35	NR	NR	NR	NR
Arabin, Snyjders, Mohnhaupt, et al., 1993	Multiple	Varies	1-min Apgar	< 7	0.09	NR	NR	NR	NR
Arabin, Snyjders, Mohnhaupt, et al., 1993	Multiple	Varies	PH	Yes	0.08	NR	NR	NR	NR
Gilson, O'Brien, Vera, et al., 1988	< 8	0.11	1-min Apgar	< 7	0.20	0.08	0.88	0.14	0.79
Gilson, O'Brien, Vera, et al., 1988	< 8	0.20	5-min Apgar	< 7	0	Undefined	0.80	0	1
Hann, McArdle, and Sachs, 1987	< 6	0.06	Any	Yes	0.05	0.14	0.94	0.13	0.95
Gilson, O'Brien, Vera, et al., 1988	< 8	0.02	C-section for fetal distress	Yes	0.20	0.08	0.99	0.67	0.81
Gilson, O'Brien, Vera, et al., 1988	< 8	0.12	Fetal distress	Yes	0.20	0.15	0.89	0.27	0.81
Gilson, O'Brien, Vera, et al., 1988	< 8	0.10	Postmaturity syndrome	Yes	0.20	0.27	0.94	0.54	0.83

C-section = Cesarean section
NR = Not reported

Table 15: Doppler examination of umbilical artery flow test performance characteristics

Study	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Battaglia, Larocca, Lanzani, et al., 1991	0.29	Any	Yes	0.01	1.00	0.72	0.04	1.00
Battaglia, Larocca, Lanzani, et al., 1991	0.29	Cesarean section	Yes	0.29	0.58	0.83	0.58	0.83
Battaglia, Larocca, Lanzani, et al., 1991	0.29	Cesarean section for fetal distress	Yes	0.12	0.80	0.78	0.33	0.97
Farmakides, Schulman, Winter, et al., 1988	0.31	Fetal distress	Abnormal	0.43	0.27	0.65	0.36	0.54
Battaglia, Larocca, Lanzani, et al., 1991	0.29	Meconium staining	Yes	0.29	0.92	0.97	0.92	0.97
Battaglia, Larocca, Lanzani, et al., 1991	0.29	Nonstress test	Abnormal	0.16	1.00	0.84	0.54	1.00
Battaglia, Larocca, Lanzani, et al., 1991	0.29	Oligohydramnios	Yes	0.30	0.64	0.86	0.67	0.84

Table 16: Accuracy of antenatal fetal weight estimation for predicting macrosomia

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Chauhan, Sullivan, Lutton, et al., 1995	> 4,000 gm	0.21	> 4,000 gm	0.26	0.61	0.92	0.73	0.87
O'Reilly-Green and Divon, 1997	> 3,710 gm	0.42	> 4,000 gm	0.24	0.85	0.72	0.49	0.94
Chervenak, Divon, Hirsch, et al., 1989	> 4,000 gm	0.22	> 4,000 gm	0.26	0.60	0.91	0.69	0.87
Pollack, Hauer-Pollack, and Divon, 1992	> 4,000 gm	0.20	> 4,000 gm	0.23	0.56	0.91	0.65	0.88
Jazayeri, Heffron, Phillips, et al., 1999	Abdominal circumference > 34 cm	0.48	> 4,000 gm	0.50	0.89	0.93	0.93	0.90
Gilby, Williams, and Spellacy, 2000	Abdominal circumference > 38 cm	0.05	> 4,500 gm	0.03	0.54	0.97	0.37	0.98
O'Reilly-Green and Divon, 1997	> 4500 gm	0.02	> 4,500 gm	0.04	0.22	0.99	0.44	0.97
O'Reilly-Green and Divon, 1997	> 4,191 gm	0.11	> 4,500 gm	0.04	0.83	0.92	0.30	0.99
Pollack, Hauer-Pollack, and Divon, 1992	> 4,500 gm	0.02	> 4,500 gm	0.04	0.14	0.99	0.33	0.96
Gilby, Williams, and Spellacy, 2000	Abdominal circumference >34 cm	0.38	> 4,500 gm	0.03	0.99	0.65	0.09	1.00

Table 17: Components of the Bishop score

Exam Findings	Score			
	0	**1**	**2**	**3**
Dilatation (cm)	Closed	1-2	3-4	≥ 5
Effacement (%)	0-30	40-50	60-70	≥ 80
Station	-3	-2	-1 or 0	+1, +2
Consistency	Firm	Medium	Soft	-
Position of cervix	Posterior	Midposition	Anterior	-

Table 18: Bishop score test performance characteristics

Study	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Mouw, Egberts, Kragt, et al., 1998	NR	Birth date	< 4 days	0.5	0.67	0.77	NR	NR
Witter and Weitz, 1989	0.41	Cesarean section	Yes	0.34	0.77	0.78	0.65	0.87
Witter and Weitz, 1989	0.24	Cesarean section	Yes	0.34	0.46	0.88	0.67	0.76
Witter and Weitz, 1989	0.54	Cesarean section	Yes	0.34	0.73	0.56	0.46	0.80

NR = Not reported

Table 19: Fetal fibronectin test performance characteristics

Study	Screening Test Threshold	Rate of Abnormal Tests	Outcome	Outcome Threshold	Rate of Outcome Event	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Tam, Tai, and Rogers, 1999	Positive	0.33	Vaginal Delivery	Yes	0.84	0.36	0.84	0.86	0.32
Mouw, Egberts, Kragt, et al., 1998	> 50 ng/ml	0.54	Birth date	< 4 days	0.50	0.71	0.64	0.67	0.69

Table 20: Perinatal mortality (excluding deaths due to congenital abnormalities)

Study	Induction	Monitoring	Cause(s) of Death
Augensen, Bergsjø, Eikeland, et al., 1987	0/214	0/195	–
Bergsjø, Huang, Yu, et al., 1989	0/94	1/94	Pneumonia
Cardozo, Fysh, and Pearce, 1986	0/195	1/156	Stillbirth
Dyson, Miller, and Armstrong, 1987	0/152	1/150	Infant was delivered by emergency C-section 14 minutes after onset of bradycardia, with venous cord pH = 7.04; subsequently died of complications of meconium aspiration and persistent fetal circulation
Egarter, Kofler, Fitz, et al., 1989	0/180	1/165	Stillbirth (died because of a “cord complication”)
El-Torkey and Grant, 1992	0/33	0/32	–
Hannah, Hannah, Hellmann, et al., 1992	0/1701	2/1706	Both stillbirths
Heden, Ingemarsson, Ahlstrom, et al., 1991	NR	NR	–
Herabutya, Prasertsawat, Tongyai, et al., 1992	0/57	0/51	–
Katz, Yemini, Lancet, et al., 1983	0/78	1/78	Emergency C-section performed; baby died 24 hours after birth with autopsy showing asphyxia.
Martin, Sessums, Howard, et al., 1989	0/12	0/10	–
National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units, 1994	0/265	0/175	–
Ohel, Rahav, Rothbart, et al., 1996	NR	NR	–
Witter and Weitz, 1987	NR	NR	–

NR = not reported

Table 21: Overall cesarean section rates†

Study	Induction Group	Monitoring Group
Augensen, Bergsjø, Eikeland, et al., 1987	14/214 (6.5%)	15/195 (7.7%)
Bergsjø, Huang, Yu, et al., 1989	27/94 (28.7%)*	39/94 (41.5%)*
Cardozo, Fysh, and Pearce, 1986	25/195 (13%)	18/207 (9%)
Dyson, Miller, and Armstrong, 1987	22/152 (14.5%)*	41/150 (27.3%)*
Egarter, Kofler, Fitz, et al., 1989	2/180 (1.1%)	3/165 (1.8%)
El-Torkey and Grant, 1992	5/33 (15%)	4/32 (12.5%)
Hannah, Hannah, Hellmann, et al., 1992	360/1701 (21.2%)*	418/1706 (24.5%)*
Heden, Ingemarsson, Ahlstrom, et al., 1991	10/109 (9.2%)	9/127 (7.0%)
Herabutya, Prasertsawat, Tongyai, et al., 1992	27/57 (47.4%)	24/51 (47.1%)
Katz, Yemini, Lancet, et al., 1983	16/78 (20.5%)*	7/78 (8.8%)*
Martin, Sessums, Howard, et al., 1989	2/12 (17 %)*	1/10 (10 %)*
National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units, 1994	55/265 (20.8%)	32/175 (18.3%)
Ohel, Rahav, Rothbart, et al., 1996	4/70 (5.7%)	6/104 (5.8%)
Witter and Weitz, 1987	30/103 (29.1%)	27/97 (27.8%)

† Rates given represent overall cesarean section rates except in the case of Cardozo, Fysh, and Pearce (1986), which reported only emergency cesarean section rates.

* Statistically significant difference

Table 22: Summary odds ratios for cesarean section in randomized trials of elective induction versus expectant management†

Group	Odds Ratio	95% Confidence Interval
By gestational age:		
< 41 weeks	0.6	0.35 to 1.03
> 41 weeks	0.87	0.77 to 0.99
By parity:		
Primigravid	0.75	0.64 to 0.88
Multigravid		
Bishop Score ≤ 6	1.02	0.75 to 1.38
By overall cesarean section rate:		
< 10%	0.89	0.58 to 1.39
> 10%	0.87	0.77 to 1.00
By class of induction agent:		
Oxytocin	0.85	0.74 to 0.98
Prostaglandins	0.84	0.65 to 1.08

† Data from Crowley (2000); odds ratios < 1 indicate that the cesarean section rate was lower in the elective induction group.

Table 23: Mean maternal length of stay, induction versus expectant management

Study	Mean Maternal Length of Stay (in Days)		P-value
	Induction	Expectant Management	
Augensen, Bergsjø, Eikeland, et al., 1987	7.05	6.69	< 0.02
Martin, Sessums, Howard, et al., 1989	3.4	2.6	NS
Witter and Weitz, 1987	4.74	4.06	< 0.02
Bergsjø, Huang, Yu, et al., 1989	7.9	8.1	Not reported
Dyson, Miller, and Armstrong, 1987	3.2	3.5	< 0.04
Hannah, Hannah, Hellman, et al., 1992	3.9	4.0	Not reported

NS = Not significant

Table 24: Perinatal outcomes, induction versus monitoring

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Perinatal Outcomes		
					Induction	Monitoring	P-value
Ohel, Rahav, Rothbart, et al., 1996; Ohel, Rahav, Rothbart, et al., 1996	40 weeks	200	PGE_2	Fetal monitoring: 2x/week	Perinatal death: NR Apgar (mean @ 5 min) 9.5 NICU admission: NR	Perinatal death: NR Apgar (mean@ 5 min) 9.4 NICU admission: NR	NS
Egarter, Kofler, Fitz, et al., 1989	40 weeks	356	PGE_2, repeated if necessary	Nonstress test: q 2-3 days	Perinatal death: 0 Apgar - low scores were not different between gps NICU admission: NR	Perinatal death: 1 Apgar (see induction) NICU admission: NR	NR
El-Torkey and Grant, 1992	41 weeks	65	Membrane sweeping	No vaginal examination	Perinatal death: 0 Apgar < 6 @ 5 min: 3% NICU admission: NR	Perinatal death:) Apgar < 6@5 min: 3% NICU admission: NR	NR 0.98
Dyson, Miller, and Armstrong, 1987	41 weeks	302	PGE_2 as outpatient, repeated if necessary, then oxytocin if needed	Nonstress test: 2x/week, Amniotic fluid index: once between 41 and 42 weeks, twice weekly after 42 weeks	Perinatal death: 0 Apgar < 7 @ 5 min: 11.2% NICU admission: NR	Perinatal death: 1 Apgar < 7 @ 5 min: 21.3% NICU admission: NR	NS <0.02
National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units, 1994	41 weeks	440	1) PGE_2 only 2) PGE_2 plus oxytocin	Nonstress test: 2x/week AFI: 2x/week	Perinatal death: 0 Apgar < 4 @ 5 min: 0 NICU admission: NR	Perinatal death: 0 Apgar<4@5 min: <1% NICU admission: NR	NR NR
Hannah, Hannah, Hellmann, et al., 1992	41 weeks	3418	PGE_2, oxytocin	Kick counts once a day Nonstress test: 3x/week Amniotic fluid index: 2-3x/week	Perinatal death: 0 Apgar < 7 @ 5 min: 1.1% NICU admission:4%	Perinatal death: 2 Apgar<7@5min: 1.2% NICU admission: 1%	NR NS NS

Table 24: Perinatal outcomes, induction versus monitoring (continued)

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Perinatal Outcomes		
					Induction	Monitoring	P-value
Cardozo, Fysh, and Pearce, 1986	41-5/7 weeks	402	PGE_2 and oxytocin	Kick counts daily Ultrasound: AFI once, US also done to determine ratio of head circumference to abdominal circumference Fetal monitoring: NST every other day	Perinatal death: 0 Apgar < 5@ 5 min: 1% NICU admission: 3%	Perinatal death: 1 Apgar < 7@5 min: 2% NICU admission:1.5%	NR NS NS
Pearce and Cardozo, 1988	41-5/7 weeks	281	PGE_2 and oxytocin	Kick counts daily Ultrasound: AFI once, US also done to determine ratio of head circumference to abdominal circumference Fetal monitoring: NST every other day	Perinatal death: 0 Apgar < 5 @ 5 min: 1% NICU admission: 4%	Perinatal death: 1 Apgar < 5@ 5 min:1% NICU admission: 1%	NR NS NS
Augensen, Bergsjø, Eikeland, et al., 1987	41-5/7 weeks	409	Oxytocin, amniotomy	Nonstress test: immediate NST, repeated 3-4 days if undelivered	Perinatal death: 0 Apgar scores were "evenly distributed" NICU admission: 5.6%	Perinatal death: 0 Apgar (see induction) NICU admission: 7.7%	NR NR NR
Martin, Sessums, Howard, et al., 1989	42 weeks	22	Laminaria, oxytocin	NST/CST weekly Amniotic fluid index: weekly	Perinatal death: 0 Apgar (mean) 9.75 NICU admission: NR	Perinatal death: 0 Apgar (mean): 9.7 NICU admission: NR	NR NS
Herabutya, Prasertsawat, Tongyai, et al., 1992	42 weeks	108	PGE_2, amniotomy, oxytocin	NST: weekly until 43 weeks, then 2x/week	Perinatal death: 0 Apgar < 7 @ 5 min: 1.8% NICU admission:1.8%	Perinatal death: 0 Apgar < 7 @ 5 min: 7.8% NICU admission: 7.8%	NR 0.19 0.19
Katz, Yemini, Lancet, et al., 1983	42 weeks	156	Amniotomy, oxytocin	Fetal monitoring: twice daily fetal movement counts Amnioscopy and OCT every 3 days	Perinatal death: 1.3% Apgar < 7 @ 5 min: 3.8% NICU admission: NR	Perinatal death: 1.3% Apgar< 7@ 5min: 1.3% NICU admission: NR	NS NR

Table 24: Perinatal outcomes, induction versus monitoring (continued)

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Perinatal Outcomes		
					Induction	Monitoring	P-value
Bergsjø, Huang, Yu, et al., 1989	42 weeks	188	Membrane stripping and oxytocin	Monitored group was admitted to hospital for one week w/ close daily clinical surveillance "fetal movement test, atropine test, ultrasound and urinary estriol excretion tests were also employed"	Perinatal death: 0 Apgar no quantitative data "distributions were almost equal between the groups" NICU admission: NR	Perinatal death: 1 Apgar (see induction) NICU admission: NR	
Witter and Weitz, 1987	42 weeks	200	Oxytocin, amniotomy	Fetal movement counts 3x/day OCT if decreased FM Urinary estriol once (41-42 wks), twice during 42-43 wks, and 3x if >43 wks	Perinatal death: NR Apgar < 7 @ 5 min: 0 NICU admission: NR	Perinatal death: NR Apgar < 7 @ 5 min: 2.08% NICU admission: NR	NS
Hedén, Ingemarsson, Ahlström, et al., 1991	42 weeks	238	Amniotomy, oxytocin	Nonstress test every other day Amniotic fluid index: once weekly Oxytocin challenge test: if nonreactive nonstress test	Perinatal death: NR Apgar < 7 @ 5 min: 2.8% NICU admission: 9.2%	Perinatal death: NR Apgar <7@5 min: 0.8% NICU admission: 6.2%	NS NS

*At randomization
NICU = Neonatal intensive care unit; NR = Not reported; NS = Not significant
OCT = Oxytocin challenge test; FM = Fetal movement

Table 25: Maternal outcomes, induction vs. monitoring

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Maternal Outcomes		
					Induction	Monitoring	P-value
Ohel, Rahav, Rothbart, et al., 1996	40 weeks	200	PGE_2	Fetal monitoring: 2x/week	Cesarean section: 5.7% Operative vaginal delivery: NR	Cesarean section: 5.8% Operative vaginal delivery: NR	NS
Egarter, Kofler, Fitz, et al., 1989	40 weeks	356	PGE2, repeated if necessary	Nonstress test: q 2-3 days	Cesarean section: 1.1% Operative vaginal delivery: 2%	Cesarean section: 1.8% Operative vaginal delivery: 1.8%	NR NR
El-Torkey and Grant, 1992	41 weeks	65	Membrane sweeping	No vaginal examination	Cesarean section: 15% Operative vaginal delivery: 6%	Cesarean section: 12.5% Operative vaginal delivery: 9%	0.76 0.62
Dyson, Miller, and Armstrong, 1987	41 weeks	302	PGE_2 as outpatient, repeated if necessary, then oxytocin if needed	Nonstress test: 2x/week, Amniotic fluid index: once between 41 and 42 weeks, twice weekly after 42 weeks	Cesarean section: 14.5% Operative vaginal delivery: NR	Cesarean section: 27.3% Operative vaginal delivery: NR	< 0.01
National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units, 1994	41 weeks	440	1) PGE_2 only 2) PGE_2 plus oxytocin	Nonstress test: 2x/week AFI: 2x/week	Cesarean section: 20.8% Operative vaginal delivery: NR	Cesarean section: 18.3% Operative vaginal delivery: NR	NS
Hannah, Hannah, Hellmann, et al., 1992	41 weeks	3418	PGE_2, oxytocin	Kick counts: once a day Nonstress test: 3x/week Amniotic fluid index: 2-3x/week	Cesarean section: 21.2% Operative vaginal delivery: 35.3%	Cesarean section: 24.5% Operative vaginal delivery: 34.9%	= 0.03 NR
Pearce and Cardozo, 1988	41-5/7 weeks	281	PGE_2 and oxytocin	Kick counts daily Ultrasound: AFI once, US also done to determine ratio of head circumference to abdominal circumference	Cesarean section: 3% Operative vaginal delivery: 26%	Cesarean section: 1% Operative vaginal delivery: 28%	NS NS

Table 25: Maternal outcomes, induction vs. monitoring (continued)

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Maternal Outcomes		
					Induction	Monitoring	P-value
				Fetal monitoring: NST every other day			
Cardozo, Fysh, and Pearce, 1986	41-5/7 weeks	402	PGE_2 and oxytocin	Kick counts daily Ultrasound: AFI once, US also done to determine ratio of head circumference to abdominal circumference Fetal monitoring: NST every other day	Cesarean section: 13% Operative vaginal delivery: 20% Only reported Emergency C/S	Cesarean section: 9% Operative vaginal delivery: 26%	NS NS
Augensen, Bergsjø, Eikeland, et al., 1987	41-5/7 weeks	409	Oxytocin, amniotomy	Nonstress test: immediate NST, repeated 3-4 days if undelivered	Cesarean section: 6.5% Operative vaginal delivery: 17.2%	Cesarean section: 7.7% Operative vaginal delivery: 20.5%	NR NR
Martin, Sessums, Howard, et al., 1989	42 weeks	22	Laminaria, oxytocin	NST/CST weekly Amniotic fluid index: weekly	Cesarean section: 17% Operative vaginal delivery: 25%	Cesarean section: 10% Operative vaginal delivery: 25%	NS NS
Herabutya, Prasertsawat, Tongyai, et al., 1992	42 weeks	108	PGE2, amniotomy, oxytocin	NST: weekly until 43 weeks, then 2x/week	Cesarean section: 47.4% Operative vaginal delivery: 19.3%	Cesarean section: 47.1% Operative vaginal delivery: 17.6%	0.87 0.98
Katz, Yemini, Lancet, et al., 1983	42 weeks	156	Amniotomy, oxytocin	Fetal monitoring: twice daily fetal mvmt counts Amnioscopy and OCT every 3 days	Cesarean section: 20.5% Operative vaginal delivery: NR	Cesarean section: 8.8% Operative vaginal delivery: NR	< 0.05
Bergsjø, Huang, Yu, et al., 1989	42 weeks	188	Membrane stripping and oxytocin	Monitored gp was admitted to hospital for one week w/close daily clinical surveillance "fetal movement test, atropine test, ultrasound	Cesarean section: 28.7% Operative vaginal delivery: 22.4%	Cesarean section: 41.5% Operative vaginal delivery: 26.6% *only p value reported	

Table 25: Maternal outcomes, induction vs. monitoring (continued)

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Maternal Outcomes		
					Induction	Monitoring	P-value
				and urinary estriol excretion tests were also employed"		compared operative deliveries (c-section. Forceps, and vacuum)	< 0.05
Witter and Weitz, 1987	42 weeks	200	Oxytocin, amniotomy	Fetal movement counts 3x/day OCT if decreased FM Urinary estriol once (41-42 wks), twice during 42-43 wks, and 3x if >43 wks	Cesarean section: 29.13% Operative vaginal delivery: NR	Cesarean section: 27.83% Operative vaginal delivery: NR	NS
Hedén, Ingemarsson, Ahlström, et al., 1991	42 weeks	238	Amniotomy, oxytocin	Nonstress test every other day Amniotic fluid index: once weekly Oxytocin challenge test: if nonreactive nonstress test	Cesarean section: 9.2% Operative vaginal delivery: 2.8%	Cesarean section: 7.0% Operative vaginal delivery: 15.5%	NS < 0.01

*At randomization
NR = Not reported; NS = Not significant
OCT = Oxytocin challenge test; FM = Fetal movement

Table 26: Resource use, induction versus monitoring

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Resource Utilization		
					Induction	Monitoring	P-value
Ohel, Rahav, Rothbart, et al., 1996	40 weeks	200	PGE_2	Fetal monitoring: 2x/week	Total costs: NR Length of stay: NR Time to delivery (days to delivery from entrance into trial = 1.6 ± 1.9	Total costs: NR Length of stay: NR Time to delivery (see induction) = 5.2 ± 3.7	NR < 0.001
Egarter, Kofler, Fitz, et al., 1989	40 weeks	356	PGE_2, repeated if necessary	Nonstress test: every 2-3 days	Total costs: NR Length of stay: NR Time to delivery (onset of contractions to delivery = 7.1 hours	Total costs: NR Length of stay: NR Time to delivery = 10.6 hrs p-value not reported, but authors report "statistically significant"	See text
El-Torkey and Grant, 1992	41 weeks	65	Membrane sweeping	No vaginal examination	Total costs: NR Length of stay: NR Time to delivery: NR	Total costs: NR Length of stay: NR Time to delivery: NR	
Dyson, Miller, and Armstrong, 1987	41 weeks	302	PGE_2 as outpatient, repeated if necessary, then oxytocin if needed	Nonstress test: 2x/week, Amniotic fluid index: once between 41 and 42 weeks, twice weekly after 42 weeks	Total costs: NR Length of stay (maternal hospital stay/mean = 3.2 days Time to delivery: NR	Total costs: NR Length of stay: 3.5 days Time to delivery: NR	< 0.04 < 0.001
National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units, 1994	41 weeks	440	1) PGE_2 only 2) PGE_2 plus oxytocin	Nonstress test: 2x/week AFI: 2x/week	Total costs: NR Length of stay: NR Time to delivery: 36 hours and 35 hours (2 induction gps)	Total costs: NR Length of stay: NR Time to delivery: 85 hours	< 0.001
Hannah, Hannah, Hellmann, et al., 1992	41 weeks	3418	PGE2, oxytocin	Kick counts once a day Nonstress test: 3x/week Amniotic fluid index: 2-3x/week	Total costs: $ 2502 Length of stay: 3.9 days Time to delivery: "women in the induction group were less likely not to have delivered their babies	Total costs: $2684 Length of stay: 4.0 days Time to delivery: see induction	

Table 26: Resource utilization, induction versus monitoring (continued)

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Resource Utilization		
					Induction	Monitoring	P-value
					seven or more days after randomization" 5.1% vs 26% p<0.001		
Pearce and Cardozo, 1988	41-5/7 weeks	281	PGE_2 and oxytocin	Kick counts daily Ultrasound: AFI once, US also done to determine ratio of head circumference to abdominal circumference Fetal monitoring: NST every other day	Total costs: NR Length of stay: NR Time to delivery: NR	Total costs: NR Length of stay: NR Time to delivery: NR	
Cardozo, Fysh, and Pearce, 1986	41-5/7 weeks	402	PGE_2 and oxytocin	Kick counts daily Ultrasound: AFI once, US also done to determine ratio of head circumference to abdominal circumference Fetal monitoring: NST every other day	Total costs: NR Length of stay: NR Time to delivery: NR	Total costs: NR Length of stay: NR Time to delivery: NR	
Augensen, Bergsjø, Eikeland, et al., 1987	41-5/7 weeks	409	Oxytocin, amniotomy	Nonstress test: immediate NST, repeated 3-4 days if undelivered	Total costs: NR Length of stay: 7.05 days Time to delivery: 1.4 days	Total costs: NR Length of stay: 6.69 days Time to delivery: 4.0 days	0.02 NR
Martin, Sessums, Howard, et al., 1989	42 weeks	22	Laminaria, oxytocin	NST/CST weekly Amniotic fluid index: weekly	Total costs: NR Length of stay: 3.41 days Time to delivery (length of labor): 6.3 hours	Total costs: NR Length of stay: 2.6 days Time to delivery: 8.3 hours	NS NS
Herabutya, Prasertsawat, Tongyai, et al., 1992	42 weeks	108	PGE_2, amniotomy, oxytocin	NST: weekly until 43 weeks, then 2x/week	Total costs: NR Length of stay: NR Time to delivery: NR	Total costs: NR Length of stay: NR Time to delivery: NR	

Table 26: Resource utilization, induction versus monitoring (continued)

Study	Gesta-tional age*	N	Induction Method	Monitoring Method	Resource Utilization		
					Induction	Monitoring	P-value
Katz, Yemini, Lancet, et al., 1983	42 weeks	156	Amniotomy, oxytocin	Fetal monitoring: twice daily fetal mvmt counts Amnioscopy and OCT every 3 days	Total costs: NR Length of stay: NR Time to delivery (duration of labor): 9.4 hrs	Total costs: NR Length of stay: NR Time to delivery: 6.7 hrs	< 0.01
Bergsjø, Huang, Yu, et al., 1989	42 weeks	188	Membrane stripping and oxytocin	Monitored gp was admitted to hospital for one week w/close daily clinical surveillance "fetal movement test, atropine test, ultrasound and urinary estriol excretion tests were also employed"	Total costs: NR Length of stay: 7.9 days Time to delivery: -reported only in vaginal deliveries (no c/s), duration of labor from start of painful contractions of 10 min interval to birth was = 12 hrs 10 mins	Total costs: NR Length of stay: 8.1 days Time to delivery (see induction): 10 hrs 38 min	NR
Witter and Weitz, 1987	42 weeks	200	Oxytocin, amniotomy	Fetal movement counts 3x/day OCT if decreased FM Urinary estriol once (41-42 wks), twice during 42-43 wks, and 3x if >43 wks	Total costs: NR Length of stay: 4.06 Time to delivery: NR	Total costs: NR Length of stay: 4.74 Time to delivery: NR	< 0.05
Hedén, Ingemarsson, Ahlström, et al., 1991	42 weeks	238	Amniotomy, oxytocin	Nonstress test every other day Amniotic fluid index: once weekly Oxytocin challenge test: if nonreactive nonstress test	Total costs: NR Length of stay: NR Time to delivery: NR	Total costs: NR Length of stay: NR Time to delivery: NR	

* At randomization
NR = Not reported
OCT = Oxytocin challenge test; FM = Fetal movement

Table 27: Sweeping of the membranes to promote labor and reduce need for induction

Study	Membrane stripping	Comparison	N	Statistically Significant Differences
Idrisa, Obisesan, and Adeleye, 1993	41 weeks, once	Not described	200	Spontaneous labor within one week: 92% sweeping vs. 33% control
Magann, McNamara, Whitworth, et al., 1998	39 weeks, stripping every 3 days	Vaginal examination	65	Inductions at 42 weeks: 0 stripping vs. 56% controls
Salamalekis, Vitoratos, Kassanos, et al., 2000	40-41 weeks, membrane stripping once	6-hour oxytocin infusion or cervical examination	104	Spontaneous labor: 68% stripping, 51% oxytocin vs. 34% control Induction of labor: 2.9% stripping, 5.7% oxytocin vs. 20% control
Gupta, Vasishta, Sawhney, et al., 1998	38 weeks, not specified if repeated	Cervical examination	100	Mean gestational age at delivery: 38.7 weeks stripping vs. 39.8 control Mean days from randomization to delivery: 4.6 stripping vs. 11.9 control Pregnancies beyond 40 weeks: 4% stripping vs. 34% control Induction of labor: 2% stripping vs. 32% control
Wiriyasirivaj, Vutyavanich, and Ruangsri, 1996	38 weeks, repeated weekly	Cervical examination	120	Proportion delivering with 7 days: 41% stripping vs. 20.3% control
Cammu and Haitsma, 1998	39 weeks, repeated weekly	“Routine pelvic examination”	278	Proportion reaching 41 weeks: 19% stripping vs. 33% control Induction of labor: 11% stripping vs. 26% control
Berghella, Rogers, and Lescale, 1996	38 weeks, repeated weekly	“Gentle cervical examination”	139	Delivery after 41 weeks: 5% stripping vs. 22% control Mean days to delivery: 8.2 days stripping vs. 12.2 days control
McColgin, Hampton, McCaul et al., 1990	38 weeks, repeated weekly	“Atraumatic assessment of cervix”	180	Delivery beyond 42 weeks: 3.3% stripping vs. 15.6% control Mean days to delivery: 8.6 days stripping vs. 15.1 days control Delivery within 1 week: 54.5% stripping vs. 15.6% control
Allott and Palmer, 1993	40+ weeks, one time	Cervical examination for Bishop score	195	Induction of labor: 8.1% stripping vs. 18.8% control Time to delivery: 2.24 days stripping vs. 5.18 days control (No differences in primigravidas with high Bishop score)
El-Torkey and Grant. 1992	41-42 weeks, twice weekly	No vaginal examination	65	Spontaneous labor prior to scheduled induction at 42 weeks: 76% stripping vs. 38% control
Crane, Bennett, Young, et al., 1997	38-40 weeks, once	Cervical examination	150	Epidural anesthesia: 66% stripping vs. 43% control Premature rupture of membranes: 6.6% stripping vs. 22% control
McColgin, Patrissi, and Morrison, 1990	38-42 weeks, repeated weekly	Cervical examination for Bishop score	99	Days to delivery: 6.7 stripping vs. 13.3 control Proportion delivering after 1 week: 59% stripping vs. 21% control

Table 28: Misoprostol tablets versus PGE_2 gel

Study	Misoprostol Dose	PGE_2 Dose	N	% Postterm	Statistically Significant Differences
Buser, Mora, and Arias, 1997	50 µg, posterior fornix	0.5 mg, intracervical	155	35%	Nonreassuring FHR tracing: 14% misoprostol vs. 0% PGE_2 Time to delivery: 15.8 hours misoprostol vs. 24.2 hours PGE_2 C-section for nonreassuring FHR: 25% misoprostol vs. 5% PGE_2
Chuck and Huffaker, 1995	50 µg, posterior fornix	0.5 mg, intracervical	99	18%	Vaginal delivery with 24 hours: 100% misoprostol vs. 68% PGE_2 Time to vaginal delivery: 11.4 hours misoprostol vs. 18.9 hours PGE_2
Fletcher, Mitchell, Frederick, et al., 1994	100 µg, posterior fornix	3 mg, posterior fornix	63	33%	None
Gottschall, Borgida, Mihalek, et al., 1997	100 µg, posterior fornix	5 mg, posterior fornix	75	40%	Time to vaginal delivery: 31.3 hours misoprostol vs. 58.5 hours PGE_2
Herabutya, Prasertsa-wat, and Pokpirom, 1992	100 µg, posterior fornix	1.5 mg, intracervical	110	34%	None
Howarth, Funk, Steytler, et al., 1996	100 µg, posterior fornix	1 mg, posterior fornix	72	42% misoprostol, 25% PGE_2	C-sections: 17% misoprostol vs. 42% PGE_2 Delivery within 12 hours: 83% misoprostol vs. 36% PGE_2 Tachysystole: 39% misoprostol vs. 8% PGE_2
Kadanali, Küçüközkan, Zor, et al., 1996	100 µg, posterior fornix	Dose not specified	224	41%	Time to delivery: 9.2 hours misoprostol vs. 15.2 PGE_2 Cesarean section for failed induction: 6.3% misoprostol vs. 13.4% PGE_2
Mundle and Young, 1996	50 µg, upper vagina	0.5 mg, intracervical or 1-2 mg, intravaginal	222	78%	Time from induction to delivery: 753 minutes misoprostol vs. 941 minutes PGE_2
Varaklis, Gumina, and Stubblefield, 1995	25 µg, intravaginal	0.5 mg, intracervical	69	Not stated	Time to vaginal delivery: 15.7 hours misoprostol vs. 20.7 hours PGE_2
Wing, Jones, Rahall, et al., 1995	50 µg, posterior fornix	0.5 mg, intracervical	135	10%	Time to vaginal delivery: 903 minutes misoprostol vs. 1411 minutes PGE_2 Vaginal delivery within 24 hours: 70.6% misoprostol vs. 47.8% PGE_2 Tachysystole: 36.7% misoprostol vs. 11.9% PGE_2 Need for neonatal resuscitation: 22.1% misoprostol vs. 7.5% PGE_2 Meconium aspiration: 4.4% misoprostol vs. 1.5% PGE_2
Wing, Rahall, Jones, et al., 1995	25 µg, posterior fornix	0.5 mg, intracervical	275	16%	Time to vaginal delivery: 1323 minutes misoprostol vs. 1532 minutes PGE_2 Vaginal delivery with 24 hours: 65.5% misoprostol vs. 41.4% PGE_2

Table 29: Births by race of mother (1998 birth certificate data)

Race	Total births	% ≥ 40 weeks	% ≥ 41 weeks	% ≥ 42 weeks	% ≥ 42 weeks and < 2,500 g	% ≥ 42 weeks and > 4,000 g
Total	3,941,553	39.6%	18.7%	7.4%	2.2%	14.6%
White, non-Hispanic	2,361,462	41.8%	19.4%	7.5%	1.8%	16.8%
Black, non-Hispanic	593,127	35.3%	16.6%	7.2%	4.0%	8.0%
Hispanic	734,661	40.2%	18.7%	7.7%	2.0%	12.8%

Table 30: Percent distribution of selected secondary discharge diagnoses, by race, in patients with discharge diagnosis of "prolonged pregnancy"

Race	None	IUFD	IUGR	Fetal distress	Oligo-hydramnios	Macrosomia	Shoulder dystocia	Perineal trauma	Labor abnormalities	Failed induction
White	36.38%	0.02%	0.38%	8.55%	2.30%	3.80%	1.86%	28.26%	14.57%	3.87%
Black	35.92%	0.00%	0.71%	14.34%	4.20%	2.73%	2.02%	21.29%	14.91%	3.87%
Hispanic	37.63%	0.02%	0.36%	11.39%	3.83%	3.77%	1.25%	23.28%	13.67%	4.79%
Asian/ Pacific Islander	30.34%	0.00%	0.64%	7.50%	4.27%	8.91%	0.81%	24.64%	19.65%	3.23%
Native American	40.62%	0.00%	0.00%	10.92%	5.60%	2.80%	0.00%	25.49%	11.48%	3.08%
Other	33.53%	0.00%	0.48%	10.15%	3.10%	2.61%	1.90%	29.52%	14.24%	4.47%

IUFD = Intrauterine fetal demise
IUGR = Intrauterine growth restriction

Table 31: Percent distribution of selected secondary discharge diagnoses, by payer, in patients with discharge diagnosis of "prolonged pregnancy"

Payer	None	IUFD	IUGR	Fetal distress	Oligo-hydramnios	Macrosomia	Shoulder dystocia	Perineal trauma	Labor abnormalities	Failed induction
Medicare	37.14%	0.00%	0.00%	13.69%	0.83%	5.60%	0.00%	22.61%	17.22%	2.90%
Medicaid	37.53%	0.06%	0.58%	10.50%	3.46%	2.79%	1.66%	25.75%	13.77%	3.90%
Private/HMO	35.05%	0.01%	0.34%	9.47%	2.43%	4.24%	1.80%	27.82%	15.13%	3.72%
Self-pay/ No insurance	40.22%	0.00%	0.61%	10.16%	4.18%	2.47%	1.90%	26.71%	11.02%	2.73%
"No charge"	40.72%	0.00%	0.00%	0.52%	1.55%	6.19%	0.00%	33.51%	7.73%	9.79%
Other	37.11%	0.00%	0.73%	10.64%	1.86%	3.75%	2.09%	27.66%	12.73%	3.43%

IUFD = Intrauterine fetal demise
IUGR = Intrauterine growth restriction