

THE OPTIMALITY INDEX - US
The Perinatal Background Index
The Optimality Index
Patricia A. Murphy, Dr.P.H., CNM Judith T. Fullerton, Ph.D., CNM, FACNM
July 2010

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			I Pos	I Neg	II Pos	II Neg	III

QUALITY OF THE EVIDENCE

I (Positive): Evidence from at least 1 randomized clinical trial proving the benefit of the optimal outcome, AND/OR compelling evidence that the cost/benefit ratio favors the optimal outcome from the epidemiological or societal perspective.

I (Negative): Evidence from at least 1 randomized clinical trial proving the adverse impact of the non-optimal outcome, AND/OR compelling evidence that the presence of a non-optimal outcome has broad adverse impacts from the epidemiologic or societal perspective.

II (Positive): Evidence from at least 1 clinical trial without randomization, from cohort or case-controlled analytic studies (preferably from more than 1 center) or from multiple time-series studies, or dramatic results from uncontrolled experiments, AND/OR professional consensus, based on the midwifery philosophy of nonintervention in the absence of complications, that the cost/benefit ratio favors the optimal outcome.

II (Negative): Evidence from at least 1 clinical trial without randomization, from cohort or case-controlled analytic studies (preferably from more than 1 center) or from multiple time-series studies, or dramatic results from uncontrolled experiment, AND/OR professional consensus, based on the midwifery philosophy of nonintervention in the absence of complications, that the presence of a non-optimal outcome has broad adverse impacts from the epidemiologic or societal perspective.

III Evidence from opinions of respected authorities based on clinical experience, descriptive studies or reports of expert committees

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Social and medical background

1. marital status	(as if) married	Auger et al., 2008			X		
		Beeckman et al., 2009				X	
		Havens et al., 2009				X	
		Homann-Marriott, 2009					X
		Kiernan & Pickett, 2006				X	
		Luo et al., 2004			X		

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		Lutgendorf et al., 2009				X	
		Raatikainen et al., 2005				X	
2. ethnic minority	No	Berg et al., 2003			X		
<ul style="list-style-type: none"> • White – nonHispanic • Hispanic • Native American/Alaskan Indian • African-American • SouthEast Asian (Vietnamese, Lao, Cambodian) or Asian Pacific Islander • Chinese • Eastern Asian (Korean, Japanese) • East Indian/Pakistani 							
		Bryant et al., 2010					X
		Forna et al., 2003			X	X	
		Goedhart et al., 2008			X		
		MacDorman & Mathews, 2009				X	
		Rich-Edwards & Grizzard, 2005					X
		Stewart et al., 2007			X		

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		Whitehead et al., 2009			X		
3. smoking	None	Aagaard-Tillery et al., 2008			X		
		Delpisheh et al., 2008			X		
		Johansson et al., 2009				X	
		Malik et al., 2008				X	
		Nabet et al., 2005				X	
		Rogers, 2009					X
		Usta et al., 2005				X	
		Wisborg et al., 2001				X	
4. alcohol	None	Aliyu et al., 2008				X	
		Burd et al., 2007					X
		Floyd et al., 2009					X
		Henriksen et al., 2004				X	
		Jaddoe et al., 2007				X	
		Maconochie et al., 2007				X	
		Sen & Swaminathan, 2007				X	
		Standberg-Larsen et al., 2008				X	

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		Standberg-Larsen et al. 2009				X	
5. drug use	None	Arlettaz et al., 2005				X	
		Bada et al., 2007				X	
		Dashe et al., 2002				X	
		Hurd et al., 2005				X	
		Ludlow et al., 2004				X	
		Ogunyemi & Hernandez-Loera, 2004				X	
		Richardson et al., 2007				X	
		Wolfe et al., 2005				X	
6. pre-pregnancy body mass index (weight [in kg] / height [in meters] ²) [Institute of Medicine and WHO Standards]	Normal weight range BMI 18.5 – 24.9	Chu et al. 2009				X	
		Kristensen et al., 2005				X	
		Torloni, Betrán, Horta et al. 2009	X				
		Torloni, Betrán, Daher et al., 2009	X				
		WHO 2004				X	

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		Yogev et al., 2005				X	
7. age	18 – 40	Canterino et al., 2004				X	
		Cleary-Goldman et al., 2005				X	
		Jacobsson et al., 2004				X	
		Phipps et al., 2002				X	
		Smith & Pell, 2001				X	
8. preexisting, major, chronic, disease	No						
• hypertension		Abalos et al., 2007	X				
		Chappell et al., 2008		X			
		Gilbert et al., 2007				X	
		Ray et al., 2001				X	
		Zetterström et al., 2006				X	
• chronic renal disease		Fischer et al., 2004				X	
		Imbasciati et al. 2009			X		
		Piccoli, Attini, et al., 2010			X		
		Piccoli, Conijn, et al., 2010				X	
• diabetes (nongestational)		ACOG, 2005					X

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		Allen et al., 2007					X
		Balsells et al., 2009				X	
		Kitzmilller et al., 2008					X
		Lapolla et al., 2008					X
		Melamed et al., 2008				X	
		National Collaborating Centre, 2008					X
		Persson et al., 2009				X	
		Peticca et al., 2009				X	
		Shand et al., 2008				X	
		Temple et al., 2006				X	
• heart disease class II-IV		Chalupczak et al., 2004				X	
		Sidlik et al., 2007				X	
		Siu et al., 2001			X		
		Siu et al., 2002				X	
		Stangl et al., 2008				X	
		Thanajiraprapa & Phupong, 2009					X

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<ul style="list-style-type: none"> HIV antibody positive 		Aebi-Popp et al., 2010				X	
		Haeri et al., 2009				X	
		Massad et al., 2004			X		
		Sturt et al., 2010		X			
		Volmink et al., 2010		X			
		Watts et al., 2009				X	
<ul style="list-style-type: none"> major psychiatric history (treated with drugs or inpatient therapy) 		Harlow et al., 2007				X	
		Hizkiyahu et al., 2010				X	
		Howard et al., 2003				X	
		Lee & Lin, 2010				X	
		Lin et al., 2010				X	
		MacCabe et al., 2007				X	
		Schneid-Kofman et al., 2008				X	
9. inter-pregnancy interval between index pregnancy and previous viable birth > 18 months and < 60 months	Yes	Basso et al., 2001				X	
		Conde-Agudelo et al, 2006		X			

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		Conde-Agudelo et al., 2007		X			
		Zhu & Le, 2003			X		
		Zhu et al., 2001				X	
10. previous preterm delivery < 37 weeks	No	Bloom et al., 2001				X	
		Buchmayer et al., 2004				X	
		Smith et al., 2007				X	
		Surkan, 2004			X		
		Varner & Esplin, 2005					X
11. previous intrauterine fetal death	No	Black et al., 2008			X		
		Kovac et al., 2010				X	
		Menezes, 2009		X			
		Menezes, Yakoob, et al., 2009		X			
		Rasmussen et al., 2009				X	
		Said et al., 2010				X	
		Sharma et al., 2006			X		
		Sharma et al., 2007				X	
12. previous Cesarean section	No	Algert et al, 2008					

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		Daltveit et al., 2008				X	
		Galyean et al., 2009				X	
		Getahun et al., 2006				X	
		Gray et al., 2007				X	
		Grobman et al., 2009				X	
		Hansen et al, 2008				X	
		Kennare et al., 2007				X	
		Knight et al., 2008				X	
		Macones et al., 2005				X	
		Richter et al. 2007				X	
		Silver et al., 2006				X	
		Villar et al., 2007				X	
		Wu et al., 2005				X	
		Yang et al., 2007				X	
13. previous baby < 5 1/2 pounds at birth	No	Getahun et al., 2007				X	
		Lykke et al., 2010				X	
		Oron et al., 2001			X		

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			I Pos	I Neg	II Pos	II Neg	III
		Smith & Shah, 2007				X	
		Surkan et al., 2004				X	
14. other serious antepartum complications (history of)	No						
• gestational diabetes		Alwan et al., 2009	X				
		Golden et al., 2009	X				
		Holmes et al., 2010				X	
		Kwak et al., 2008				X	
		Vambergue et al., 2007				X	
• intrauterine fetal demise		Black et al., 2008			X		
		Measey et al., 2009			X		
		Sharma et al., 2007			X		
• placenta previa		Grobman et al., 2007				X	
• preeclampsia		Brown et al., 2007				X	
		Lykke et al., 2009				X	
		McDonald et al., 2009				X	
		Rasmussen et al., 2009				X	

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			I Pos	I Neg	II Pos	II Neg	III
• eclampsia		Zhang et al., 2001				X	
• pyelonephritis		Luders et al., 2010				X	
•		Millar et al., 2003				X	
• Rh sensitization		Cotter et al., 2005					X
		Crowther & Middleton, 2003			X		
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Present pregnancy, diagnostic and therapeutic measures							
15. intrauterine fetal demise	No	Froen et al., 2004				X	
		Magann et al., 2001				X	
		Menezes, 2009					X
		Sundby & Vangen, 2009				X	
16. domestic violence (includes intimate partner)	No	Boy & Salihu, 2004.					X
		Kaye et al., 2006				X	
		Kiely et al., 2010	X				
		Rosen et al., 2007				X	
		Sharps et al., 2007					X

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			I Pos	I Neg	II Pos	II Neg	III
		Silverman et al., 2006				X	
17. other serious antepartum complications (current pregnancy)	No						
• anemia (Hgb < 10 gm in any trimester) – not improved with treatment		Brabin et al., 2001				X	
		Kidanto, 2009					X
		Lone et al., 2004				X	
		Rasmussen, 2001				X	
		Reveiz, 2007					X
		Scanlon et al., 2000				X	
		Sloan et al., 2002		X			
• diabetes diagnosed in pregnancy		Crowther et al., 2005		X			
		Langer et al., 2005				X	
		Metzger et al., 2008			X		
		Moore et al., 2002				X	
		Yang et al., 2002				X	

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<ul style="list-style-type: none"> major psychiatric history (formally diagnosed or treated with drugs/inpatient therapy) 		Jablensky et al, 2005				X	
		Webb, 2008				X	
		Wisner, 2009				X	
<ul style="list-style-type: none"> multiple birth (twins or higher number of births anticipated) 		Conde-Aguedelo et al., 2000				X	
		Ortibus, 2009				X	
		Tang et al., 2006				X	
<ul style="list-style-type: none"> placenta praevia 		Bahar et al., 2009				X	
		Getahun et al., 2004				X	
		Madan et al., 2010				X	
		Sheiner et al., 2001			X		
<ul style="list-style-type: none"> pre-eclampsia (diagnosed in antepartum period) 		Tang et al., 2009				X	
		Villar et al., 2006				X	
		Xiao et al., 2003				X	
<ul style="list-style-type: none"> pyelonephritis 		Archabald et al., 2009					X

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		Foxman, 2002			X		
		Hill et al., 2005				X	
• Rh sensitization		Ben-David et al., 2008				X	
		Crowther, 2003	X				
• Vaginal bleeding in 2nd or 3rd trimester, from cause other than placenta praevia.		Harlev et al., 2008				X	
		Koifman et al., 2008				X	
18. prenatal care: initiation in first trimester (<14 weeks) and minimum of 5 visits	Yes	Carrolli et al., 2001	X				
		Herbst et al., 2003				X	
		Raatikainen et al., 2007				X	
		Villar et al., 2001	X				
19. amniocentesis NOTE: that if CVS is documented, a note should be added to the abstraction record	No	Alfirevic, 2003		X			
		Alfirevic et al., 2003		X			
		Cederholm et al., 2003				X	
		Cederholm et al., 2005				X	

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		Eddleman et al., 2006			X		
		Grobman et al., 2009				X	
20. nonstress test/contraction stress test/biophysical profile	No	Alfirevic & Neilson, 2003		X			
		Grivell et al., 2009		X			
21. medication use	No	Briggs et al., 2002					X
		Shaw et al., 2004				X	
Parturition							
22. period of time between first digital examination following rupture of membranes and birth	24 hours	ACOG, 2002					X
		Ezra et al., 2004			X		
		Flenady & King, 2003		X			
23. amniotic fluid	Clear	Liu et al., 2005				X	
		Locatelli et al., 2005			X		
		Tran et al., 2003				X	
		Wong et al., 2002				X	
		Ziadeh & Sunna, 2000				X	

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24. induction/augmentation of labor	No	Ben-Haroush et al., 2004				X	
		Cammu et al., 2002				X	
		Lin & Raynor, 2004				X	
		Vahratian et al., 2005				X	
25. amniotomy	No	Smyth, 2007		X			
26. oral or injectable (IM or IV) medication during first or second stage of labor	None	Elbourne et al., 2003	X				
		Hill et al., 2003		X			
27. epidural analgesia for labor and/or birth	No	Decca et al., 2004				X	
		Howell, 2003	X				
		Howell et al., 2002	X				
		Jain et al., 2003		X			
		Nystedt et al., 2004				X	
		O'Connell et al., 2003				X	
		Reynolds et al., 2002		X			
		Volmanen et al., 2004					X

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28. fetoscope, Doppler, or intermittent electronic monitoring during labor (rather than continuous electronic fetal monitoring)	Yes	Bailey, 2007		X			
		Gourounti & Sandall, 2007		X			
		Kassanos et al., 2003			X		
		Natale & Dodman, 2003					X
		Thacker et al., 2003			X		
		Williams et al., 2003		X			
29. fetal heart rate abnormalities that altered management of the labor process (SEE CODE BOOK!)	No	Althaus et al., 2005				X	
		Larma et al., 2007				X	
		Ridgeway et al., 2004				X	
		Williams & Galerneau, 2002				X	
30. presence of a support person during labor (other than care provider)	Yes	Hodnett, 2003	X				
		Hodnett et al., 2007					
31. nondirected pushing	Yes	Hanson et al., 2002	X				

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		Roberts, 2002					X
		Simpson & James, 2005	X				
		Wong et al., 2003		X			
32. delivery occurred in the place originally intended at the onset of labor	Yes	Olsen & Jewell, 2003	X				
		Sheiner, Shohan-Vardi, et al., 2002				X	
33. nonsupine position at birth	Yes	Gupta & Nikodem, 2000	X				
		Gupta & Hofmeyr, 2003	X				
		Soong & Barnes, 2005			X		
34. presentation at birth	Cephalic	Stitely & Gherman, 2005			X		
35. instrumental (vaginal) delivery	No	Demissie et al., 2004					X
		Johanson & Menon, 2005	X				
36. Cesarean section	No	Dodd et al. 2004	4				X
37. episiotomy	No	Carroli & Mignini, 2009	X				
		Hartmann et al., 2005				X	
		Viswanathan et al., 2005			X		

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		Youseff et al., 2005			X		
38. 1st or 2nd degree laceration of perineum or perineal tissue <i>requiring sutures</i> (including sulcus and cervical lacerations)	No	Lai et al., 2009			X		
39. 3rd or 4th degree extension of either an episiotomy or a 1st or 2nd degree laceration	No	Fernando et al., 2006	X				
		Fleming et al., 2003		X			
		Lundquist et al., 2000	X				
40. medication (other than oxytocin or local anesthetic for perineal repair) during the third stage of labor	No	McDonald et al., 2002	X				
41. skin-to-skin contact	Yes	Anderson et al., 2003	X				
		Carfoot et al. 2003	X				
		Charpak et al., 2001	X				
		Conde-Agudelo et al., 2003	X				
		Moore et al., 2007	X				
		Rojas et al., 2003	X				
42. placental retention (≥ 30 minutes)	No	Sosa et al., 2009					X

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43. postpartum hemorrhage (provider's documentation that this did not occur; actual amount of blood loss not relevant)	No	Al-Zirqi et al., 2008				X	
		Bateman et al., 2010					X
44. blood transfusion	No	Jansen et al., 2005					X
45. other serious intrapartum complications	No						
• chorioamnionitis		Aziz et al., 2009				X	
		Blume et al., 2008				X	
		Botet et al., 2010				X	
		Holzman et al., 2007				X	
		Soraisham et al., 2009				X	
• cord prolapse		Kahana et al., 2004				X	
		Onwuhafua et al., 2007				X	
• eclampsia		Duley 2009					X
		Knight, 2007				X	
		Zwart et al., 2008				X	
• placental abruption		Ananth & Wilcox, 2001				X	

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		Pitaphrom & Sukcharoen, 2006				X	
		Sheiner, Shoham-Vardi, Hadar, et al., 2002				X	
• pre-eclampsia present during intrapartum period		Gul et al., 2005				X	
		Yücesoy et al., 2005					X
• shoulder dystocia		Bjørstad et al., 2010				X	
		Rahman et al., 2009				X	
Neonatal condition							
46. estimate of gestational age	37-42 weeks	Erez et al., 2005				X	
		Khashu et al., 2009				X	
		Zhang & Kramer, 2009			X		
47. birth weight	2500-4000 grams	Esakoff et al., 2009				X	
48. Apgar score at 5 minutes	7, 8,9 or 10	AAP and ACOG, 2006					X
		Harrington et al., 2007				X	
		Odd et al., 2008				X	
		Thorngren-Jerneck & Herbst, 2001				X	

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			I Pos	I Neg	II Pos	II Neg	III
49. transfer to high risk neonatal care setting	No	Brady, 2005					X
50. congenital anomalies	No	Tennant et al., 2010				X	
51. birth trauma, or other serious medical problem	no						
• bacterial infections other than sepsis		Volante et al., 2004					X
• bronchopulmonary dysplasia		Christou & Brodsky, 2005					X
• cardiac failure		Hoch & Netz, 2005					X
• hypovolemia, hypotension, shock		Dasgupta & Gill, 2003					X
• intraventricular hemorrhage		Owens, 2005					X
• necrotizing enterocolitis		Guner et al., 2008				X	
• pneumonia		Hoffman et al., 2003				X	
• persistent pulmonary hypertension		Kinsella & Abman, 1995					X
		Konduri, 2004					X
• renal failure		Andreoli, 2004					X
• respiratory distress syndrome		Soll, 2005	X				
• Rh disease		Bussel, 2003					X
• seizures		Granelli & McGrath, 2004					X

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• sepsis		Osrin et al., 2004					X
		Schrag & Schuchat, 2005					X
		Vergnano et al., 2005					X
52. breastfeeding (time period: at time of mother's discharge from birth setting or up to 72 hours postpartum)	yes	Donnelly et al., 2005	X				
		Dyson et al., 2005	X				
		Horvath et al., 2009	X				
		Sadauskaite-Kuehne et al., 2004				X	
		Sikorski et al., 2005	X				
		PAHO, 2002					X
53. perinatal death: (time period birth: up to 72 hours of age)	no	Simhan, 2010					X
Condition of the mother prior to discharge from birth facility or from provider's care (to 72 hours)							
54. fever (100.4 degrees F or higher) while mother remains in the birth setting, OR provider diagnosis of infectious process or major complication	no	Shipp et al., 2003				X	

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			I Pos	I Neg	II Pos	II Neg	III
		Smulian et al., 2001					X
		Yokoe et al., 2001					X
• cystitis		Evron et al., 2008				X	
• endometritis		Chaim et al., 2000				X	
		French & Smaill, 2002	X				
		French, 2003					X
• hematoma		Saleem & Rydhström, 2004				X	
• local infection of sutures		Normand & Damato, 2001				X	
		Yokoe et al., 2004					X
• mastitis		Barbosa-Cesnik et al., 2003					X
55. prescription medications for conditions newly identified in IP or PP period (exception: iron and vitamins, oral contraceptives, RhoGam©, rubella vaccine)	no	Briggs, 2008					X
56. maternal mortality	no	Khan et al., 2006		X			
		Ronsmans et al., 2006					X
		WHO, 2005					X
		WHO, 2006					X

