

Appendix 1.

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The authors provided this information as a supplement to their article.

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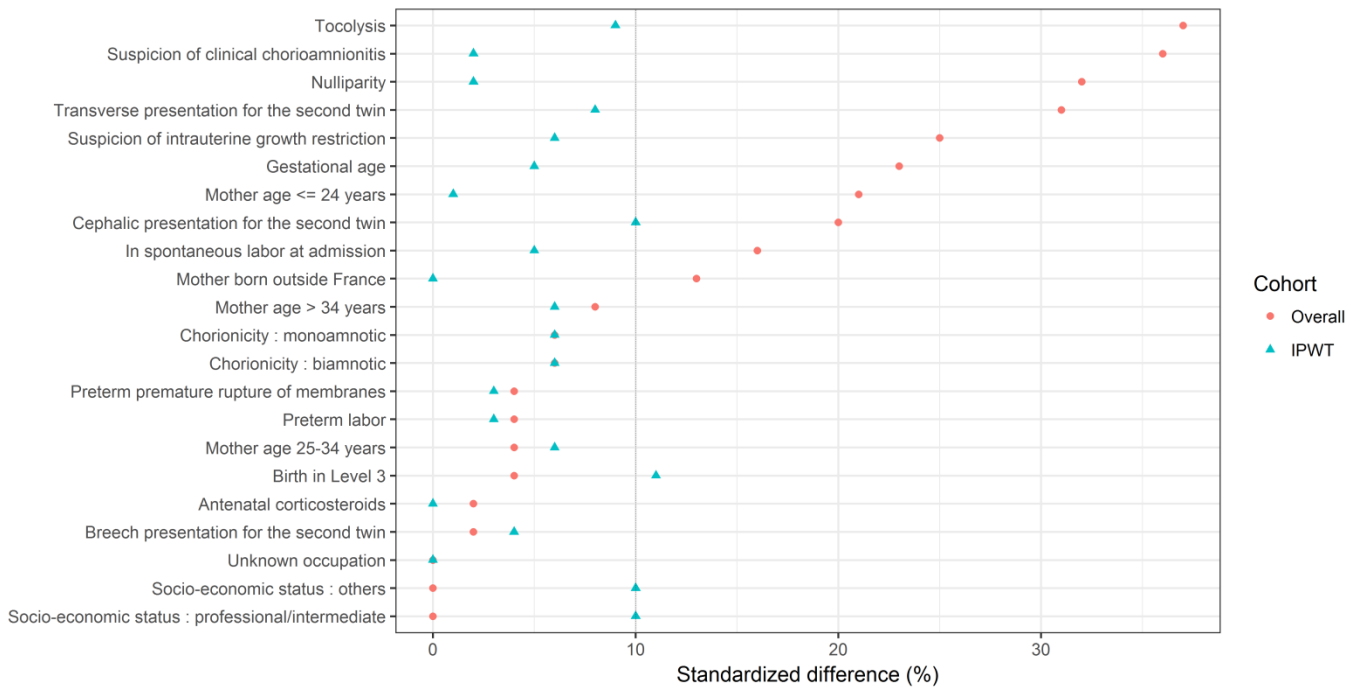
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All the collaborators of the EPIPAGE2 Obstetric writing group have no conflict of interest or compensation in relation with this article to disclose. All of them consented to such acknowledgment.

Sentilhes L, Lorthe E, Marchand-Martin L, Marret S, Ancel PY, Delorme P, et al. Planned mode of delivery of preterm twins and neonatal and 2-Year outcomes. *Obstet Gynecol* 2019; 133.

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Appendix 2. Standardized differences for covariates used in the propensity score. Each point illustrates the standardized difference for each variable in the overall cohort (*red circles*) and the propensity score inverse probability of treatment weighting (IPTW) cohort (*blue triangle*). The vertical line at 10% illustrates the standard cut-off for acceptable imbalance between groups.



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Appendix 3. Outcomes by Pregnancy and by Planned Route of Delivery

	Planned route of delivery				P value
	PVD (n=276)		PCD (n=107)		
	n	(%)*	n	(%)*	
Survival at discharge (n=383 twin / co-twin)					
Both alive	240	(94.5)	98	(96.2)	.81
Both dead	10	(1.1)	2	(0.7)	
First twin alive	16	(3.2)	5	(2.2)	
Second twin alive	10	(1.2)	2	(1.0)	
Severe morbidity among survivors at discharge† (n=310 twin / co-twin)					
Both without severe morbidity	188	(94.1)	71	(82.7)	.011
Both severe morbidity	5	(0.7)	6	(2.7)	
First twin with severe morbidity	13	(2.8)	7	(5.7)	
Second twin with severe morbidity	11	(2.5)	9	(8.9)	
Survival at 2 years corrected age without severe or moderate neuromotor or sensory disabilities‡ (n=383 twin / co-twin)					
Both alive without disabilities	226	(91.1)	93	(87.1)	.84
Both dead or with disabilities	14	(2.1)	2	(0.9)	
First twin alive without disabilities	22	(5.0)	9	(8.2)	
Second twin alive without disabilities	14	(1.9)	3	(3.7)	

Abbreviations : PVD, Planned Vaginal Delivery; PCD, Planned Cesarean Delivery; IVH, intraventricular haemorrhage; cPVL, cystic periventricular leukomalacia; BPD, bronchopulmonary dysplasia; NEC, necrotizing enterocolitis; ROP, retinopathy of prematurity.

* Percentages are weighted to account for differences in sampling process between gestational age groups.

† Survival at discharge without severe IVH, cPVL, severe BDP, NEC or ROP.

‡ Severe or moderate neuromotor or sensory disabilities without neuromotor or sensory disabilities: cerebral palsy who were not walking at 2 years of age without aids, blindness or deafness. Results based on data using multiple imputation.

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Appendix 4. Association Between Planned Route of Delivery and Outcomes for First and Second Twins (Complete Cases Analysis)

	IPTW cohort*	
	OR (95% CI)	P value
Survival at discharge		
First twin (n=316)		
Planned vaginal delivery	ref	
Planned cesarean delivery	0.7 (0.2-3.4)	.71
Second twin (n=316)		
Planned vaginal delivery	ref	
Planned cesarean delivery	0.8 (0.3-2.6)	.72
Survival at discharge without severe morbidity†		
First twin (n=300)		
Planned vaginal delivery	ref	
Planned cesarean delivery	1.0 (0.4-2.7)	.95
Second twin (n=300)		
Planned vaginal delivery	ref	
Planned cesarean delivery	0.9 (0.4-2.1)	.78

Abbreviations : IPTW, inverse probability of treatment weighting; GA, Gestational Age; IVH, intraventricular haemorrhage; cPVL, cystic periventricular leukomalacia; BPD, bronchopulmonary dysplasia; NEC, necrotizing enterocolitis; ROP, retinopathy of prematurity.

* Propensity score analysis, results are weighted by the inverse of propensity score, estimated via marginal model (GEE) to take into account correlation between twins and are based on complete case analysis.

† Survival at discharge without severe IVH, cPVL, severe BDP, NEC or ROP.

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Appendix 5. Association Adjusted Between Planned Route of Delivery and Outcomes for First and Second Twins (Propensity Score Analysis*)

	IPTW cohort adjusted on GA*		IPTW cohort adjusted on GA, fetus sex and birth weight *	
	OR (95% CI)	P value	OR (95% CI)	P value
Survival at discharge				
First twin (n=383)				
Planned vaginal delivery	ref		ref	
Planned cesarean delivery	0.7 (0.2-2.8)	0.60	0.7 (0.2-2.8)	.61
Second twin (n=383)				
Planned vaginal delivery	ref		ref	
Planned cesarean delivery	0.7 (0.2-2.3)	0.57	0.7 (0.2-2.2)	.51
Survival at discharge without severe morbidity†				
First twin (n=383)				
Planned vaginal delivery	ref		ref	
Planned cesarean delivery	0.8 (0.4-1.9)	0.67	0.8 (0.4-1.9)	.64
Second twin (n=383)				
Planned vaginal delivery	ref		ref	
Planned cesarean delivery	0.7 (0.4-1.4)	0.31	0.7 (0.3-1.3)	.26
Survival at 2 years corrected age without severe or moderate neuromotor or sensory disabilities‡				
First twin (n=383)				
Planned vaginal delivery	ref		ref	
Planned cesarean delivery	1.1 (0.3-4.1)	0.88	1.1 (0.3-3.8)	.85
Second twin (n=383)				
Planned vaginal delivery	ref		ref	
Planned cesarean delivery	0.6 (0.2-1.6)	0.30	0.6 (0.2-1.5)	.26

Abbreviations : PVD, Planned Vaginal Delivery; PCD, Planned Cesarean Delivery; IVH, intraventricular haemorrhage; cPVL, cystic periventricular leukomalacia; BPD, bronchopulmonary dysplasia; NEC, necrotizing enterocolitis; ROP, retinopathy of prematurity.

* Propensity score analysis, results are weighted by the inverse of propensity score, estimated via marginal model (GEE) to take into account correlation between twins and are based on multiple imputation.

† Survival at discharge without severe IVH, cPVL, severe BDP, NEC or ROP.

‡ Severe or moderate neuromotor or sensory disabilities without neuromotor or sensory disabilities : cerebral palsy who were not walking at 2 years of age without aids, blindness or deafness.

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Appendix 6. Association Between Planned Route of Delivery and Outcomes (Sensitivity Analyses)

	Women not in labor at admission		Births at 26+0 - 31+6 weeks		Women with no previous cesarean section	
	OR [95% CI]*	P value	OR [95% CI]*	P value	OR [95% CI]*	P value
Survival at discharge						
First twin	(n=273)		(n=223)		(n=358)	
Planned vaginal delivery	ref		ref		ref	
Planned cesarean delivery	1.5 (0.4-5.7)	.58	1.2 (0.2-6.3)	.86	1.5 (0.3-6.8)	.61
Second twin	(n=273)		(n=223)		(n=358)	
Planned vaginal delivery	ref		ref		ref	
Planned cesarean delivery	1.8 (0.6-6.0)	.31	0.8 (0.2-3.2)	.69	1.5 (0.4-4.9)	.53
Survival at discharge without severe morbidity†						
First twin	(n=273)		(n=223)		(n=358)	
Planned vaginal delivery	ref		ref		ref	
Planned cesarean delivery	1.0 (0.4-2.3)	.99	1.2 (0.5-2.6)	.71	1.0 (0.4-2.3)	.98
Second twin	(n=273)		(n=223)		(n=358)	
Planned vaginal delivery	ref		ref		ref	
Planned cesarean delivery	0.9 (0.5-1.9)	.83	0.9 (0.4-2.1)	.81	0.9 (0.4-1.9)	.76
Survival at 2 years corrected age without severe or moderate neuromotor or sensory disabilities‡						
First twin	(n=273)		(n=223)		(n=358)	
Planned vaginal delivery	ref		ref		ref	
Planned cesarean delivery	1.5 (0.4-5.2)	.51	2.9 (0.6-14.4)	.20	1.9 (0.5-7.0)	.37
Second twin	(n=273)		(n=223)		(n=358)	
Planned vaginal delivery	ref		ref		ref	
Planned cesarean delivery	1.3 (0.5-3.5)	.65	1.1 (0.4-3.3)	.87	1.0 (0.4-2.4)	.93

Abbreviations : PVD, Planned Vaginal Delivery; PCD, Planned Cesarean Delivery; IVH, intraventricular haemorrhage; cPVL, cystic periventricular leukomalacia; BPD, bronchopulmonary dysplasia; NEC, necrotizing enterocolitis; ROP, retinopathy of prematurity.

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† Survival at discharge without severe IVH, cPVL, severe BDP, NEC or ROP.

‡ Severe or moderate neuromotor or sensory disabilities without neuromotor or sensory disabilities : cerebral palsy who were not walking at 2 years of age without aids, blindness or deafness.

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