

Supplementary figures and tables

Figure S1 : Association between morbidity and mortality, all births born before 32 weeks of gestation, all components of the morbidity score

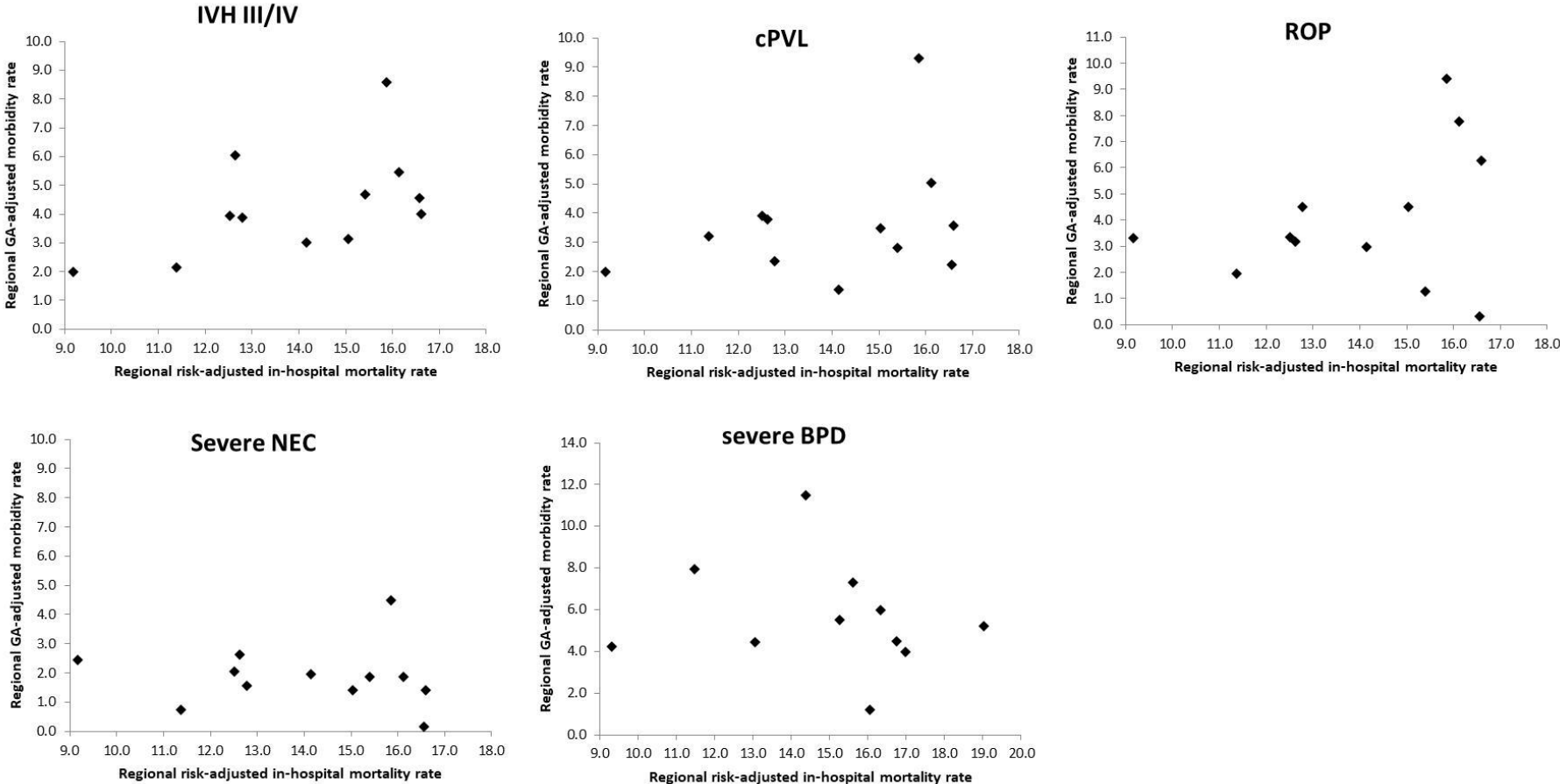


Figure S2 : Association between morbidity and mortality, births born before 28 weeks of gestation, all components of the morbidity score

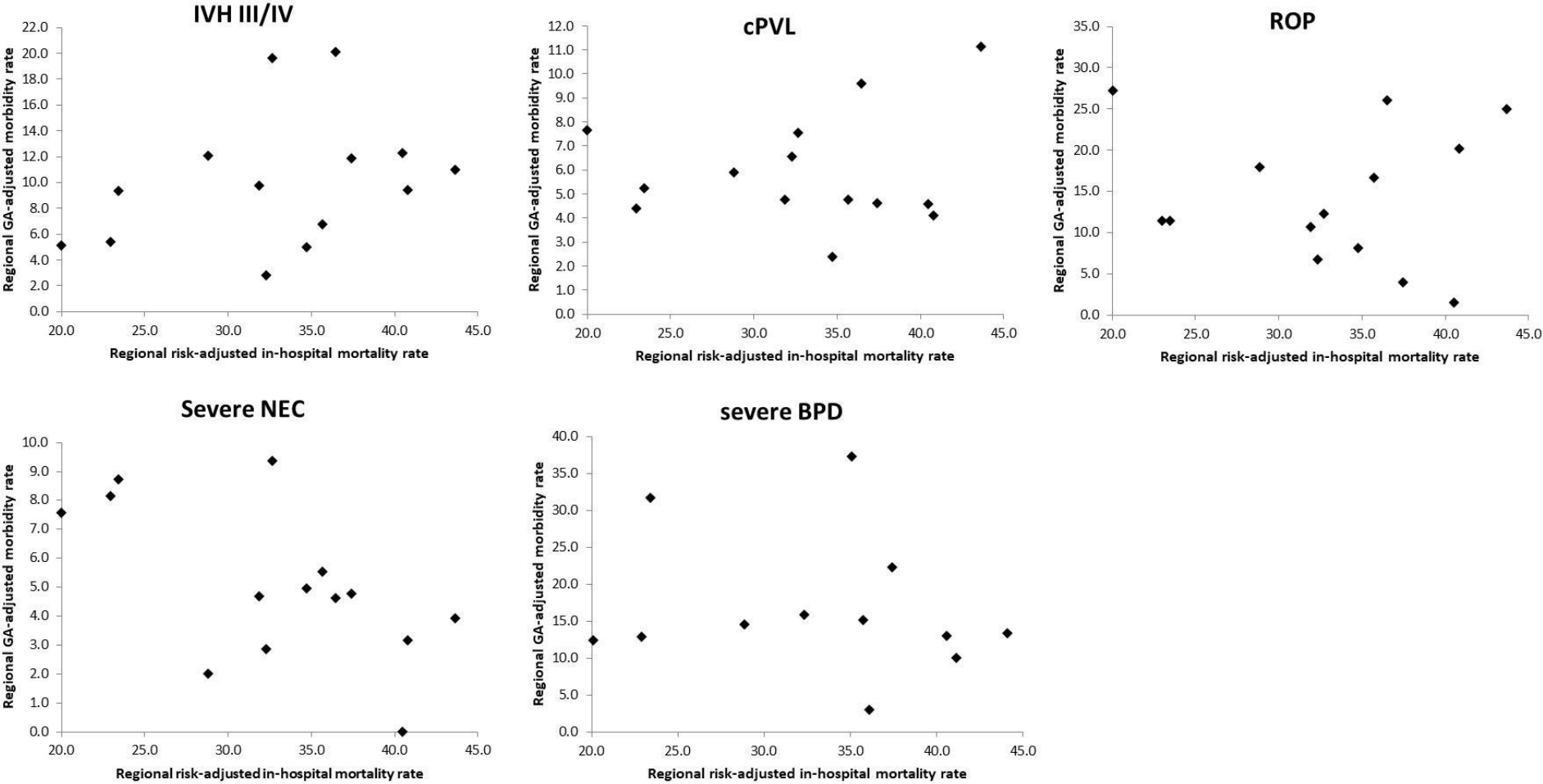
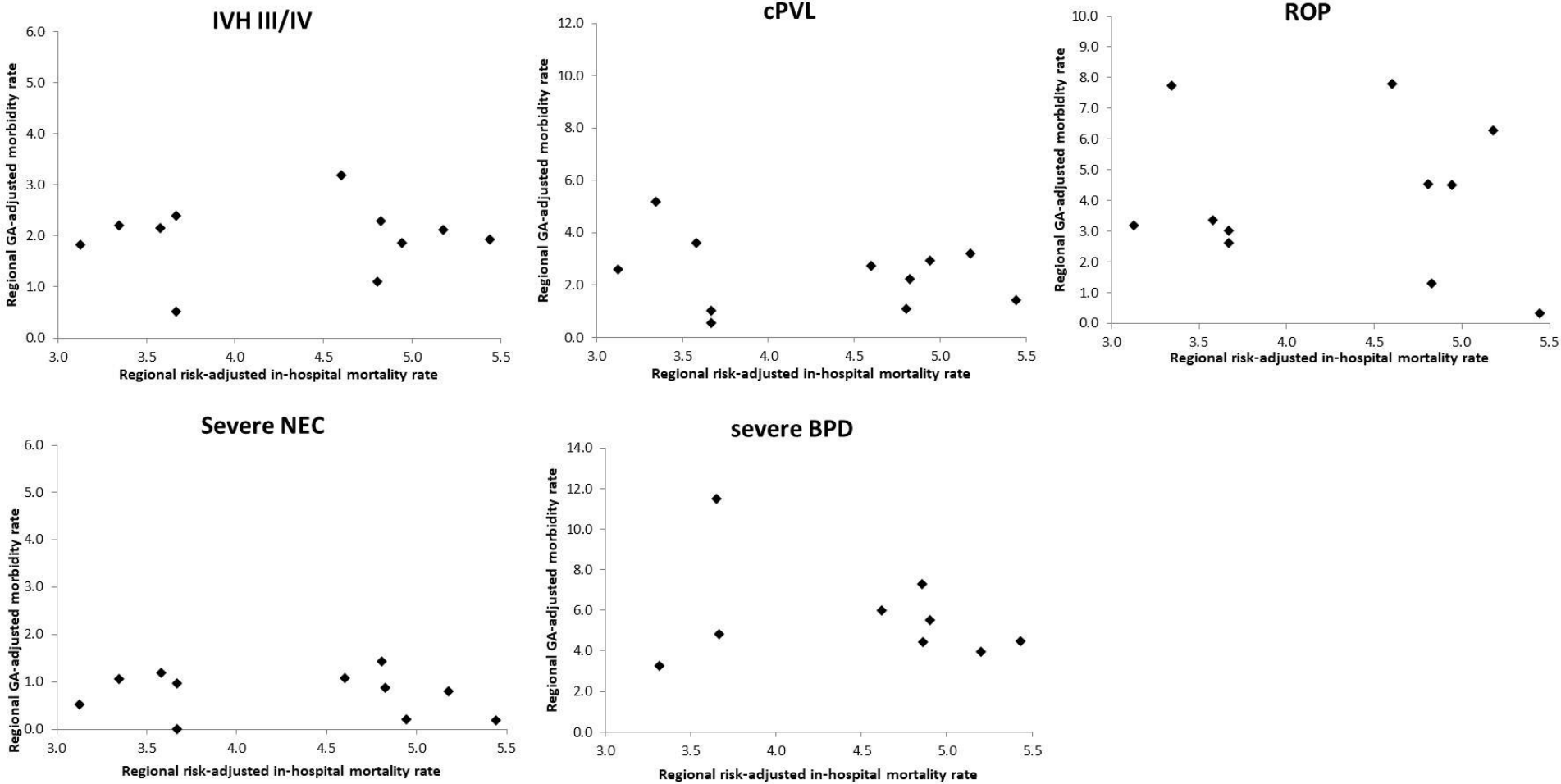


Figure S3 : Association between morbidity and mortality, births between 28 and 31 weeks of gestation, all components of the morbidity score



Supplementary tables

Table S1a: Severe neonatal morbidity among very preterm infants born before 32 weeks of gestation admitted to a neonatal unit in 16 European regions

	IVH III/IV n/N (%)	cPVL n/N (%)	ROP III+ n/N (%)	Severe NEC n/N (%)	Severe morbidity no BPD n/N (%)	Severe BPD n/N (%)	Severe morbidity with severe BPD n/N (%)
All regions	467/6925 (6.7)	236/6928 (3.4)	244/6906 (3.5)	185/7051 (2.6)	941/6809 (13.8)	296/5063 (5.8)	965/5219 (18.5)
Belgium: Flanders	34/668 (5.1)	24/693 (3.5)	24/686 (3.5)	12/705 (1.7)	83/650 (12.8)	34/646 (5.3)	109/624 (17.5)
Denmark: Eastern	20/304 (6.6)	4/302 (1.3)	9/303 (3.0)	9/318 (2.8)	38/293 (13.0)	34/268 (12.7)	65/270 (24.1)
Estonia	6/148 (4.1)	8/148 (5.4)	13/148 (8.8)	4/148 (2.7)	24/148 (16.2)	7/142 (4.9)	28/144 (19.4)
France: Northern	16/293 (5.5)	12/293 (4.1)	5/284 (1.8)	2/294 (0.7)	32/285 (11.2)	21/245 (8.6)	49/258 (19)
France: Ile-de-France	59/812 (7.3)	24/815 (2.9)	2/794 (0.3)	1/818 (0.1)	77/791 (9.7)	29/697 (4.2)	104/726 (14.3)
Germany: Hesse	24/563 (4.3)	12/559 (2.1)	23/558 (4.1)	21/566 (3.7)	69/559 (12.3)	27/524 (5.2)	85/542 (15.7)
Italy: Lazio	33/532 (6.2)	19/531 (3.6)	24/522 (4.6)	9/539 (1.7)	74/525 (14.1)	17/460 (3.7)	84/483 (17.4)
Italy: Emilia	30/429 (7.0)	10/429 (2.3)	19/432 (4.4)	10/432 (2.3)	58/429 (13.5)	17/387 (4.4)	65/405 (16)
Netherlands: East-Central	28/367 (7.6)	10/365 (2.7)	4/366 (1.1)	11/371 (3.0)	47/366 (12.8)	27/331 (8.2)	66/346 (19.1)
Poland: Wielkopolska	33/261 (12.6)	26/258 (10.1)	25/260 (9.6)	15/262 (5.7)	69/259 (26.6)	4/237 (1.7)	69/248 (27.8)
Portugal: Northern	26/272 (9.6)	14/272 (5.1)	14/272 (5.1)	7/273 (2.6)	43/271 (15.9)	14/247 (5.7)	52/262 (19.8)
Portugal: Lisbon	46/420 (11.0)	16/420 (3.8)	14/422 (3.3)	15/423 (3.5)	75/419 (17.9)	18/359 (5.0)	83/393 (21.1)
UK: Northern	15/368 (4.1)	5/373 (1.3)	17/380 (4.5)	18/413 (4.4)	45/352 (12.8)	30/285 (10.5)	66/279 (23.7)
UK: East Midlands	39/538 (7.2)	18/530 (3.4)	15/538 (2.8)	18/538 (3.3)	73/530 (13.8)	NA	NA
UK: Yorkshire & Humber	44/698 (6.3)	27/688 (3.9)	26/697 (3.7)	25/698 (3.6)	107/688 (15.6)	NA	NA
Sweden: Stockholm	14/252 (5.6)	7/252 (2.8)	10/244 (4.1)	8/253 (3.2)	27/244 (11.1)	17/235 (7.2)	40/239 (16.7)

Table S1b: Severe neonatal morbidity among very preterm infants born before 28 weeks of gestation admitted to a neonatal unit in 16 European regions

	IVH III/IV n/N (%)	cPVL n/N (%)	ROP III+ n/N (%)	Severe NEC n/N (%)	Severe morbidity no BPD n/N (%)	Severe BPD n/N (%)	Severe morbidity with severe BPD n/N (%)
All regions	343/2012 (17.0)	111/2010 (5.5)	206/2014 (10.2)	133/2063 (6.4)	645/1984 (32.5)	204/1244 (16.4)	654/1439 (45.4)
Belgium: Flanders	24/156 (15.4)	8/164 (4.9)	21/163 (12.9)	11/168 (6.5)	57/158 (36.1)	21/125 (16.8)	72/142 (50.7)
Denmark: Eastern	12/108 (11.1)	2/106 (1.9)	6/105 (5.7)	7/112 (6.3)	24/102 (23.5)	27/77 (35.1)	44/86 (51.2)
Estonia	4/45 (8.9)	3/45 (6.7)	12/45 (26.7)	3/45 (6.7)	17/45 (37.8)	7/41 (17.1)	21/43 (48.8)
France: Northern	12/92 (13.0)	7/92 (7.6)	4/89 (4.5)	2/93 (2.2)	23/90 (25.6)	10/67 (14.9)	30/79 (38)
France: Ile-de-France	40/222 (18.0)	11/223 (4.9)	2/221 (0.9)	0/224 (0.0)	48/220 (21.8)	20/163 (12.3)	66/184 (35.9)
Germany: Hesse	20/186 (10.8)	8/184 (4.3)	21/181 (11.6)	19/187 (10.2)	57/182 (31.3)	22/154 (14.3)	70/170 (41.2)
Italy: Lazio	25/148 (16.9)	6/147 (4.1)	18/143 (12.6)	6/149 (4.0)	49/145 (33.8)	9/94 (9.6)	53/115 (46.1)
Italy: Emilia	24/132 (18.2)	7/132 (5.3)	19/133 (14.3)	6/133 (4.5)	45/132 (34.1)	14/99 (14.1)	51/116 (44)
Netherlands: East-Central	21/116 (18.1)	5/116 (4.3)	3/116 (2.6)	8/117 (6.8)	31/116 (26.7)	20/88 (22.7)	44/101 (43.6)
Poland: Wielkopolska	20/78 (25.6)	8/75 (10.7)	18/77 (23.4)	6/78 (7.7)	36/76 (47.4)	3/64 (4.7)	36/71 (50.7)
Portugal: Northern	20/85 (23.5)	9/85 (10.6)	10/86 (11.6)	5/86 (5.8)	31/85 (36.5)	7/65 (10.8)	35/80 (43.8)
Portugal: Lisbon	34/140 (24.3)	10/140 (7.1)	13/142 (9.2)	8/142 (5.6)	52/140 (37.1)	14/91 (15.4)	57/117 (48.7)
UK: Northern	12/106 (11.3)	5/114 (4.4)	14/119 (11.8)	13/131 (9.9)	35/108 (32.4)	20/54 (37.0)	46/67 (68.7)
UK: East Midlands	31/132 (23.5)	8/128 (6.3)	14/132 (10.6)	15/132 (11.4)	53/128 (41.4)	NA	NA
UK: Yorkshire & Humber	33/193 (17.1)	8/186 (4.3)	21/192 (10.9)	17/193 (8.8)	65/186 (34.9)	NA	NA
Sweden: Stockholm	11/73 (15.1)	6/73 (8.2)	10/70 (14.3)	7/73 (9.6)	22/71 (31.0)	10/62 (16.1)	29/68 (42.6)

Table S1c: Severe neonatal morbidity among very preterm infants born between 28 and 31 weeks of gestation admitted to a neonatal unit in 16 European regions

	IVH III/IV n/N (%)	cPVL n/N (%)	ROP III+ n/N (%)	Severe NEC n/N (%)	Severe morbidity no BPD n/N (%)	Severe BPD n/N (%)	Severe morbidity with severe BPD n/N (%)
All regions	124/4913 (2.5)	125/4918 (2.5)	38/4892 (0.8)	52/4988 (1.0)	296/4825 (6.1)	92/3819 (2.4)	311/3780 (8.2)
Belgium: Flanders	10/512 (2.0)	16/529 (3.0)	3/523 (0.6)	1/537 (0.2)	26/492 (5.3)	13/521 (2.5)	37/482 (7.7)
Denmark: Eastern	8/196 (4.1)	2/196 (1.0)	3/198 (1.5)	2/206 (1.0)	14/191 (7.3)	7/191 (3.7)	21/184 (11.4)
Estonia	2/103 (1.9)	5/103 (4.9)	1/103 (1.0)	1/103 (1.0)	7/103 (6.8)	0/101 (0.0)	7/101 (6.9)
France: Northern	4/201 (2.0)	5/201 (2.5)	1/195 (0.5)	0/201 (0.0)	9/195 (4.6)	11/178 (6.2)	19/179 (10.6)
France: Ile-de-France	19/590 (3.2)	13/592 (2.2)	0/573 (0.0)	1/594 (0.2)	29/571 (5.1)	9/534 (1.7)	38/542 (7)
Germany: Hesse	4/377 (1.1)	4/375 (1.1)	2/377 (0.5)	2/379 (0.5)	12/377 (3.2)	5/370 (1.4)	15/372 (4)
Italy: Lazio	8/384 (2.1)	13/384 (3.4)	6/379 (1.6)	3/390 (0.8)	25/380 (6.6)	8/366 (2.2)	31/368 (8.4)
Italy: Emilia	6/297 (2.0)	3/297 (1.0)	0/299 (0.0)	4/299 (1.3)	13/297 (4.4)	3/288 (1.0)	14/289 (4.8)
Netherlands: East-Central	7/251 (2.8)	5/249 (2.0)	1/250 (0.4)	3/254 (1.2)	16/250 (6.4)	7/243 (2.9)	22/245 (9)
Poland: Wielkopolska	13/183 (7.1)	18/183 (9.8)	7/183 (3.8)	9/184 (4.9)	33/183 (18)	1/173 (0.6)	33/177 (18.6)
Portugal: Northern	6/187 (3.2)	5/187 (2.7)	4/186 (2.2)	2/187 (1.1)	12/186 (6.5)	7/182 (3.8)	17/182 (9.3)
Portugal: Lisbon	12/280 (4.3)	6/280 (2.1)	1/280 (0.4)	7/281 (2.5)	23/279 (8.2)	4/268 (1.5)	26/276 (9.4)
UK: Northern	3/262 (1.1)	0/259 (0.0)	3/261 (1.1)	5/282 (1.8)	10/244 (4.1)	10/231 (4.3)	20/212 (9.4)
UK: East Midlands	8/406 (2.0)	10/402 (2.5)	1/406 (0.2)	3/406 (0.7)	20/402 (5.0)	NA	NA
UK: Yorkshire & Humber	11/505 (2.2)	19/502 (3.8)	5/505 (1.0)	8/505 (1.6)	42/502 (8.4)	NA	NA
Sweden: Stockholm	3/179 (1.7)	1/179 (0.6)	0/174 (0.0)	1/180 (0.6)	5/173 (2.9)	7/173 (4.0)	11/171 (6.4)

Table S2 - Percent of deaths with a diagnosis of major morbidity

	Total deaths N	Any morbidity %	IVH III/IV %	cPVL %	NEC %	ROP %	Severe BPD %
BE:Flanders	98	23.5	18.4	3.1	4.1	0.0	3.1
DK:Eastern	62	25.8	21.0	0.0	4.8	0.0	1.6
Estonia	11	27.3	18.2	0.0	0.0	9.1	18.2
FR:Northern	36	30.6	27.8	8.3	0.0	0.0	2.8
FR:IDF	140	22.1	20.0	5.7	0.0	0.0	0.7
DE:Hesse	69	26.1	17.4	1.4	8.7	0.0	0.0
IT:Lazio	91	22.0	17.6	3.3	3.3	0.0	1.1
IT:Emilia	53	35.8	28.3	1.9	7.5	1.9	0.0
NL:East-Central	62	27.4	21.0	1.6	8.1	0.0	4.8
PL:Wielkopolska	63	23.8	20.6	6.3	6.3	1.6	1.6
PT:Northern	36	41.7	38.9	5.6	8.3	0.0	2.8
PT:Lisbon	77	45.5	40.3	5.2	10.4	0.0	0.0
UK:Northern	38	21.1	7.9	0.0	10.5	2.6	2.6
UK:East Mid	63	27.0	20.6	0.0	9.5	1.6	--
UK:Yorkshire and Humber	89	30.3	19.1	2.2	12.4	1.1	--
SE:Stockholm	26	38.5	23.1	3.8	19.2	7.7	11.5
Total	1014	28.1	22.1	3.3	6.5	0.8	2.1

NOTE: includes all in-hospital deaths after live birth.

Table S3. Crude and adjusted in-hospital mortality rates for live born infants before 32 weeks of gestation and by gestational age sub-groups

	<32 weeks GA			< 28 weeks of GA			28-31 weeks GA		
	n/N	unadjusted rate	adjusted rate	n/N	unadjusted rate	adjusted rate	n/N	unadjusted rate	adjusted rate
All regions	1014/7438	13.6	13.7	804/2397	33.5	33.9	210/5041	4.2	4.2
Belgium: Flanders	98/749	13.1	15.0	76/203	37.4	35.7	22/546	4.0	4.9
Denmark: Eastern	62/348	17.8	14.1	51/138	37.0	34.7	11/210	5.2	3.7
Estonia	11/151	7.3	8.4	8/47	17.0	20.0	3/104	2.9	3.3
France: Northern	36/311	11.6	11.4	33/110	30.0	32.3	3/201	1.5	1.6
France: Ile-de-France	140/886	15.8	16.6	109/285	38.2	40.5	31/601	5.2	5.4
Germany: Hesse	69/597	11.6	9.2	59/216	27.3	23	10/381	2.6	2.4
Italy: Lazio	91/563	16.2	16.6	71/169	42.0	40.8	20/394	5.1	5.2
Italy: Emilia	53/444	11.9	12.8	39/141	27.7	28.8	14/303	4.6	4.8
Netherlands: East-Central	62/392	15.9	15.4	50/138	36.2	37.4	12/254	4.7	4.8
Poland: Wielkopolska	63/299	21.1	15.9	49/112	43.8	36.5	14/187	7.5	5.6
Portugal: Northern	36/282	12.8	16.1	28/93	30.1	43.7	8/189	4.2	4.6
Portugal: Lisbon	77/437	17.6	18.8	60/151	39.7	45.4	17/286	5.9	6.0
UK: Northern	38/419	9.1	8.4	32/135	23.7	23.4	6/284	2.1	1.4
UK: East Midlands	63/570	11.1	12.6	51/159	32.1	32.7	12/411	2.9	3.1
UK: Yorkshire & Humber	89/727	12.2	12.5	69/218	31.7	31.9	20/509	3.9	3.6
Sweden: Stockholm	26/263	9.9	8.7	19/82	23.2	19.4	7/181	3.9	3.7

NOTE: Adjusted for population characteristics: maternal age, parity, pregnancy complications, multiplicity, gestational age, sex, small for gestational age and congenital anomalies.