

Table 1. Characteristics of 70 hospitals providing care for very preterm infants in 10 European regions in 2003 and 2011/12

Characteristics of units	MOSAIC 2003		EPICE 2011/2012		p [*]
	n/median	%/IQR	n/median	%/IQR	
Maternity units:					
Level 3 units (%)**	54	77.1	53	75.7	>.99
Number of total deliveries (median/IQR)	2271	[1453-3015]	2516	[1627-3530]	<0.01
Caesarean section rate for all deliveries (median/IQR)	23.7	[19.6-30.5]	27.7	[22.3-37.3]	<0.01
Number of very preterm deliveries (median/IQR) ***	53.3	[33-81]	62.5	[40-84]	0.01
Percent VPT deliveries <27 weeks GA (median/IQR)	41.6	[34.5-47.3]	40.2	[35.0-47.2]	0.40
Neonatal units:					
Number of total admissions (median/IQR)	464	[321-602]	463	[306-677]	0.60
Number of very preterm admissions**** (median/IQR)	35.0	[23-64]	48.5	[28-67]	<0.01
Percent of VPT admissions < 27 weeks GA (median/IQR)	27.6	[20.0-35.3]	30.8	[23.0-36.8]	0.7
Units with service/facility on-site (n/%)					
Mechanical ventilation for more than 24h	65	92.9	64	91.4	>.99
Parenteral nutrition through central venous catheter	69	98.6	67	95.7	>.99
Neonatal surgery	32	45.7	35	50.0	0.30

IQR: interquartile range * McNemar's test or Wilcoxon signed-rank test, Wilcoxon rank-sum test; **highest level of care according to local definitions; ***calculated from observed very preterm births in the cohorts; **** very preterm admissions for the first consecutive 48 hours after birth or death when it occurred in the first 48 hours calculated from observed admissions in the cohorts.

Table 2. Reported policies regarding active treatment and withholding or withdrawing treatment for extremely preterm infants in 70 European hospitals in 2003 and 2011/12

	2003		2011/2012		
	n	%	n	%	p*
Maternity unit questionnaire					
The earliest gestational age at which caesarean would be performed because of acute fetal distress for a singleton non-malformed fetus					
Parents want to have everything done					
No policy	15	21.4	11	15.7	
Starting at 22 weeks	1	1.4	3	4.3	
Starting at 23 weeks	5	7.1	10	14.3	
Starting at 24 weeks	24	34.3	27	38.6	
Starting at 25 weeks	11	15.7	12	17.1	
Starting at 26 weeks	12	17.1	7	10.0	
Starting at 27 + weeks	2	3.0	0	0.0	
Mean GA** (50 units)	24.7 (1.2)		24.1 (1.0)		<0.0001
Parents don't want active management					
No policy	27	38.6	24	34.3	
Starting at 22 weeks	1	1.4	1	1.4	
Starting at 23 weeks	2	2.9	2	2.9	
Starting at 24 weeks	10	14.3	16	22.9	
Starting at 25 weeks	2	2.9	6	8.6	
Starting at 26 weeks	16	22.9	15	21.4	
Starting at 27 + weeks	12	17.0	6	8.5	
Mean GA** (29 units)	26.1 (1.7)		25.2 (1.2)		0.01
The earliest gestational age a neonatologist would be called in case of spontaneous labour for a singleton non-malformed foetus					
Parents want to have everything done					
No policy	12	17.1	5	7.1	
Starting at 22 weeks	11	15.7	22	31.4	
Starting at 23 weeks	16	22.9	13	18.6	
Starting at 24 weeks	24	34.3	27	38.6	
Starting at 25 weeks	6	8.6	3	4.3	
Starting at 26 weeks	1	1.4	0	0.0	
Starting at 27 + weeks	0	0.0	0	0.0	
Mean GA** (57 units)	23.5 (1.0)		23.3 (0.9)		0.2
Parents don't want active management					
No policy	19	27.2	8	11.4	
Starting at 22 weeks	8	11.4	19	27.1	
Starting at 23 weeks	11	15.7	7	10.0	
Starting at 24 weeks	20	28.6	29	41.4	
Starting at 25 weeks	8	11.4	4	5.7	
Starting at 26 weeks	4	5.7	3	4.4	
Starting at 27 + weeks	0	0.0	0	0.0	
Mean GA** (49 units)	23.8 (1.1)		23.6 (1.1)		0.3
Neonatal unit questionnaire					
Who usually decides about active resuscitation for an infant < 25 weeks GA					
Obstetrician	0	0.0	1	1.4	0.03***
Neonatologist	20	28.6	34	48.6	
Multidisciplinary team	48	68.6	35	50.0	
No Response	2	2.8	0	0.0	
Decisions were ever taken to withhold or withdraw mechanical ventilation					
Because a baby has no chance of survival (yes)	57	83.8	60	87.0	0.3
Because poor prognosis in case of survival (yes)	49	73.1	49	72.1	0.8
Role of parents in decisions to withhold or withdraw mechanical ventilation					
Parents informed about decisions	14	20.0	7	10.0	0.4***
Parents involved in the decision process	38	54.3	48	68.6	
Parents allowed to make the decision	8	11.4	7	10.0	
No response	10	14.3	8	11.3	

* Significance tests: McNemar's chi² test for proportions; paired t-tests for means ; **Exact McNemar's chi² test for units with a policy with gestational age limits; ***test of symmetry

Table 3. Characteristics, outcomes and care of extremely preterm babies born between 22 and 26 weeks of gestation overall and by changes in maternity units policies of active management between 2003 and 2011/12

	All units (N=71)			More active management in 2012* (N=44)			Less active management or no change in 2012** (N=27)		
	2003 n / %	2011/2012 n / %	p	2003 n / %	2011/2012 n / %	p	2003 n / %	2011/2012 n / %	p
Live and still births (N)	1240	1293		759	892		481	401	
Stillbirths (%)	32.8	29.1	0.04	32.0	28.7	0.14	34.1	29.9	0.19
Gestational age- mean (sd)	24.4 (1.4)	24.4 (1.4)	0.48	24.3 (1.4)	24.3 (1.4)	0.69	24.5 (1.4)	24.5 (1.3)	0.80
Birth weight –mean(sd)	672 (210)	688 (221)	0.07	671 (221)	684 (228)	0.22	675 (208)	696 (205)	0.13
Live births (N)	833	917		516	636		317	281	
Gestational age in weeks – mean(sd)	24.8 (1.2)	24.7 (1.2)	0.06	24.8 (1.2)	24.7 (1.2)	0.22	24.9 (1.1)	24.8 (1.2)	0.23
Birth weight in grams– mean(sd)	740 (181)	737 (181)	0.70	739 (183)	734 (185)	0.66	742 (178)	743 (171)	0.95
Small for gestational age*** (%)	9.7	10.3	0.67	9.1	11.1	0.30	10.6	8.6	0.43
Male (%)	52.7	52.6	0.97	54.0	50.7	0.27	50.5	56.8	0.12
Multiples (%)	27.5	31.8	0.05	27.1	33.0	0.03	28.1	29.2	0.77
Inborn (%)	93.6	91.7	0.15	95.9	92.3	0.02	89.9	90.2	0.90
Antenatal steroids (%) †	74.9	80.7	0.009	71.3	77.9	0.02	80.5	87.2	0.05
Spontaneous onset of labour	69.6	76.2	0.002	67.8	74.4	0.013	72.6	80.1	0.03
Cesarean delivery (%)	42.3	43.7	0.38	43.1	47.2	0.16	41.8	38.9	0.48
Any mechanical ventilation (%)	89.8	90.1	0.78	85.4	87.8	0.28	96.8	95.7	0.48
Any surfactant (%)	80.1	87.6	<0.001	72.3	84.2	<0.001	92.6	94.5	0.38
In-hospital mortality, overall (%)	50.3	41.8	<0.001	54.7	44.0	<0.001	43.2	36.7	0.10
by gestational age									
22 weeks (n) %	(41) 100	(45) 100		(30)100	(32) 100		(11) 100	(13) 100	
23 weeks (n) %	(80) 90.9	(87) 85.3	0.24	(53) 94.6	(67) 87.0	0.14	(27) 84.4	(20) 80.0	0.67
24 weeks (n) %	(91) 60.1	(113) 50.7	0.05	(59) 66.3	(81) 52.3	0.03	(32) 53.3	(32) 47.1	0.48

25 weeks (n) %	(121) 47.1	(76) 30.9	<0.001	(81) 47.9	(55) 32.5	0.004	(40) 45.5	(21) 27.3	0.02
26 weeks (n) %	(86) 28.9	(62) 20.6	0.02	(59) 34.3	(45) 22.2	0.009	(27) 21.4	(17) 17.4	0.45
Survivors to discharge (N)	414	534		234	356		180	178	
PVL/IVH (%)	16.7	16.1	0.80	16.9	15.3	0.62	16.4	17.5	0.77
BPD (%)	50.3	42.2	0.02	46.6	37.5	0.03	55.1	51.7	0.53

PVL/IVH: periventricular leukomalacia/intraventricular hemorrhage; BPD: bronchopulmonary dysplasia

* hospital policy was to perform CS at a lowest gestational age in 2012 than in 2003 for acute fetal distress in singleton non-malformed fetus; ** hospitals policy was to perform CS at a higher gestational age in 2012 than in 2003 or no change in policies over time; *** <10th percentile of birthweight standards from the MOSAIC and EPICE cohorts; † excluding Germany

Table 4. Changes in in-hospital mortality of extremely preterm infants born less than 27 weeks of gestation according to changes in maternity unit policies between 2003 and 2011/12 - Conditional logistic regressions

In-hospital mortality	All units (N=70)		More active policies* in 2012 (N=43)		Less active or no changes in policies† in 2012 (N=27)	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Crude OR	0.68	(0.55-0.83)	0.62	(0.49-0.80)	0.80	(0.56-1.14)
Adjusted OR for gestational age (GA)	0.52	(0.41-0.65)	0.44	(0.33-0.59)	0.70	(0.47-1.05)
Adjusted OR for GA, sex,multiple	0.51	(0.40-0.65)	0.44	(0.33-0.59)	0.69	(0.46-1.04)
Adjusted OR for GA, sex,multiple, antenatal steroids‡	0.48	(0.37-0.62)	0.38	(0.27-0.53)	0.77	(0.49-1.21)

* reported decrease in threshold for lower GA for performing CS for cases of acute fetal distress in singleton non-malformed fetuses in 2012 compared to 2003 ; † GA threshold stayed the same or increased; ‡excluding Germany.