

Supplementary Online Content

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eFigure. Survival by Postnatal Age and Antenatal Corticosteroid Treatment

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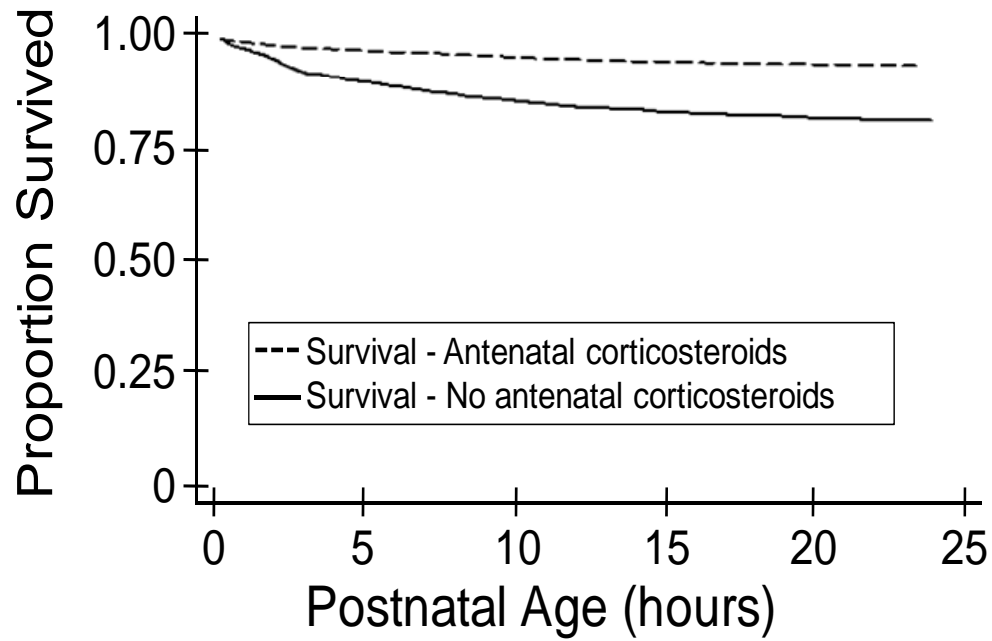
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This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure. Survival by Postnatal Age and Antenatal Corticosteroid Treatment



Number at risk

No ANS	2690	2352	2209	2150	2079	2046
ANS	7715	7441	7308	7200	7147	7112

eTable 1. Hospital Mortality of Infants 22-25 Weeks Gestation by Antenatal Corticosteroid Treatment—Subgroup Analysis

	ANS		No ANS		Unadjusted p value	Unadjusted OR (95% CI)
	n/N	%	n/N	%		
Singleton	1975/5905	0.33	1161/2181	0.53	<0.001	0.44 (0.40-0.49)
Multiple births	789/1891	0.42	369/551	0.67	<0.001	0.35 (0.29-0.43)
Partial treatment	1205/3037	0.40	1530/2732	0.56	<0.001	0.52 (0.47-0.57)
Full treatment	1548/4730	0.33	1530/2732	0.56	<0.001	0.38 (0.35-0.42)
Betamethasone*	1315/3637	0.36	622/1027	0.61	<0.001	0.37 (0.32-0.43)
Dexamethasone*	270/733	0.37	622/1027	0.61	<0.001	0.38 (0.31-0.46)
Maternal hypertension/Pre-E/E	418/1199	0.35	100/215	0.47	0.001	0.62 (0.46-0.83)
No maternal hypertension/Pre-E/E	2344/6595	0.36	1426/2510	0.57	<0.001	0.42 (0.38-0.46)
Maternal diabetes	82/243	0.34	37/60	0.62	<0.001	0.32 (0.18-0.57)
No maternal diabetes	2681/7551	0.36	1490/2666	0.56	<0.001	0.44 (0.40-0.48)
Rupture of membranes						
<24 hours	1974/5406	0.37	1174/2102	0.56	<0.001	0.46 (0.41-0.50)
≥24 hours - <48 hours	110/330	0.33	74/136	0.54	<0.001	0.42 (0.28-0.63)
≥48 hours - <7 days	312/1037	0.30	105/193	0.54	<0.001	0.36 (0.26-0.49)
≥7 days	279/817	34%	100/160	0.63	<0.001	0.31 (0.22-0.44)
Chorioamnionitis †	325/877	0.34	115/192	0.60	<0.001	0.34 (0.25-0.47)

	ANS		No ANS		Unadjusted p value	Unadjusted OR (95% CI)
No chorioamnionitis†	365/964	0.38	133/230	0.58	<0.001	0.44 (0.33-0.60)
Antepartum hemorrhage	574/1533	0.37	365/640	0.57	<0.001	0.45 (0.37-0.54)
No antepartum hemorrhage	2188/6259	0.35	1165/2091	0.56	<0.001	0.43 (0.39-0.47)
Cesarean section	1345/4115	0.33	456/999	0.46	<0.001	0.58 (0.50-0.67)
Vaginal birth	1418/3676	0.39	1073/1730	0.62	<0.001	0.39 (0.34-0.43)
Male	1577/4089	0.39	887/1473	0.60	<0.001	0.42 (0.37-0.47)
Female‡	1187/3707	0.32	643/1259	0.51	<0.001	0.45 (0.40-0.51)
Small for gestational age	265/475	0.56	60/97	0.62	0.27	0.78 (0.50-1.22)
Not small for gestational age	2499/7321	0.34	1470/2635	0.56	<0.001	0.41 (0.38-0.45)
Black (including Hispanic)	1126/3336	0.34	846/1558	0.54	<0.001	0.43 (0.38-0.49)
White (including Hispanic)	1505/4105	0.37	633/1078	0.59	<0.001	0.41 (0.36-0.47)
Other	114/310	0.37	45/87	0.52	0.01	0.54 (0.34-0.88)
All Hispanic	436/1272	0.34	231/415	0.56	<0.001	0.42 (0.33-0.52)

ANS = antenatal corticosteroid; No ANS = no antenatal corticosteroid; Pre-E/E = pre-eclampsia/eclampsia

*These data were collected starting in 2002; the No ANS column only includes infants born \geq 2002.

†Chorioamnionitis data were collected starting in 2006. The definition includes chorioamnionitis documented in mother's medical record and/or histologic chorioamnionitis.

‡Ambiguous gender infants were included in female (N=7).

eTable 2. Mortality by 18-22 Months of Infants by Antenatal Corticosteroid Treatment for 1993-2008 Births—Subgroup Analysis

	ANS		No ANS		Unadjusted p value	Unadjusted OR (95% CI)
	n/N	%	n/N	%		
Singleton	1930/5498	0.35	1145/2101	0.55	<0.001	0.45 (0.41-0.50)
Multiple births	754/1752	0.43	358/527	0.68	<0.001	0.36 (0.29-0.44)
Partial treatment	1186/2894	0.41	1503/2628	0.57	<0.001	0.52 (0.47-0.58)
Full treatment	1487/4331	0.34	1503/2628	0.57	<0.001	0.39 (0.35-0.43)
Betamethasone*	1194/3102	0.38	573/923	0.62	<0.001	0.38 (0.33-0.45)
Dexamethasone*	271/716	0.38	573/923	0.62	<0.001	0.37 (0.30-0.46)
Maternal hypertension/Pre-E/E	394/1071	0.37	95/202	0.47	0.006	0.66 (0.48-0.89)
No maternal hypertension/Pre-E/E	2288/6177	0.37	1405/2420	0.58	<0.001	0.43 (0.39-0.47)
Maternal diabetes	71/211	0.34	35/56	0.63	<0.001	0.30 (0.17-0.56)
No maternal diabetes	2612/7037	0.37	1466/2567	0.57	<0.001	0.44 (0.40-0.49)
Rupture of membranes						
<24 hours	1905/4998	0.38	1158/2024	0.57	<0.001	0.46 (0.42-0.51)
≥24 hours - <48 hours	108/312	0.35	73/132	0.55	<0.001	0.43 (0.28-0.65)
≥48 hours - <7 days	320/978	0.33	103/186	0.55	<0.001	0.39 (0.29-0.54)
≥7 days	267/779	0.34	98/157	0.62	<0.001	0.31 (0.22-0.45)
Chorioamnionitis†	325/877	0.37	82/141	0.58	<0.001	0.42 (0.30-0.61)

	ANS		No ANS		Unadjusted p value	Unadjusted OR (95% CI)
No chorioamnionitis†	296/715	0.41	111/177	0.63	<0.001	0.42 (0.30-0.59)
Antepartum hemorrhage	553/1429	0.39	364/610	0.60	<0.001	0.43 (0.35-0.52)
No antepartum hemorrhage	2129/5818	0.37	1139/2017	0.56	<0.001	0.45 (0.40-0.49)
Cesarean section	1298/3787	0.34	458/957	0.48	<0.001	0.57 (0.49-0.66)
Vaginal birth	1385/3458	0.40	1044/1668	0.63	<0.001	0.40 (0.35-0.45)
Male	1529/3808	0.40	864/1413	0.61	<0.001	0.43 (0.38-0.48)
Female‡	1155/3442	0.34	639/1215	0.53	<0.001	0.46 (0.40-0.52)
Small for gestational age	250/433	0.58	58/93	0.62	0.41	0.82 (0.52-1.31)
Not small for gestational age	2434/6817	0.36	1445/2535	0.57	<0.001	0.42 (0.38-0.46)
Black (including Hispanic)	1116/3107	0.36	827/1495	0.55	<0.001	0.45 (0.40-0.51)
White (including Hispanic)	1445/3824	0.38	624/1042	0.60	<0.001	0.41 (0.35-0.47)
Other	104/280	0.37	45/83	0.54	0.006	0.50 (0.30-0.82)
All Hispanic	415/1190	0.35	224/397	0.56	<0.001	0.41 (0.33-0.52)

eTable 3. Hospital Outcomes of Infants 22 to 25 Weeks Gestation by Antenatal Corticosteroid Treatment

Outcome	22 weeks p-values			23 weeks p-values			24 weeks p-values			25 weeks p-values			22-25 weeks p-values		
	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch
Death	0.02*	0.90	0.29	<0.001	0.45	0.80	0.008	0.054	0.17	<0.001	0.95	0.42	<0.001	0.12	0.99
Death and/or BPD	--	--	--	0.01	0.54	0.62	0.50	0.15	0.62	0.47	0.18	0.52	0.29	0.01	0.96
BPD	--	--	--	0.68*	0.12	0.85	0.04	0.18	0.98	0.12	0.03	0.37	0.009	0.002	0.72
Death and/or IVH 3-4 and/or PVL	0.09*	0.77	0.51	<0.001	0.29	0.14	0.02	0.12	0.09	<0.001	0.99	0.91	<0.001	0.15	0.13
IVH 3-4 and/or PVL	--	--	--	0.43	0.02	0.03	0.40	0.48	0.39	0.0497	0.99	0.46	0.049	0.03	0.008
Death and/or NEC	0.03*	0.995	0.42	<0.001	0.85	0.68	0.002	0.03	0.14	0.001	0.92	0.44	<0.001	0.21	0.95
NEC	--	--	--	0.08*	0.77	0.65	0.12	0.32	0.22	0.15	0.17	0.41	0.49	0.20	0.38

ANS = antenatal corticosteroids, No ANS = no antenatal corticosteroid, BPD = bronchopulmonary dysplasia, IVH/PVL = intraventricular hemorrhage/periventricular leukomalacia, NEC= necrotizing enterocolitis
 Outcomes not corrected for mortality are only given for the survivors.

Cohort includes inborn infants born 1993-2009, with birthweight 401-1000g, and gestational age 22-25 weeks. Infants who died within 12 hours without DR resuscitation are excluded.

Logistic regressions are adjusted for the following covariates: maternal variables (age, marital status, race, diabetes, hypertension/pre-eclampsia, rupture of membranes > 24 hours, antepartum hemorrhage, emergency c-section), multiple births, gender, center, epoch, and ANS*epoch interaction.

*Model does not include center (model did not converge with center included).

†Because of convergence problems due to low outcome prevalence, this model adjusts only for gender, epoch, and interaction.

eTable 4. Outcomes by 18-22 Months Corrected Age of Infants 22 to 25 Weeks Gestation by Antenatal Corticosteroid Treatment, 1993-2008

Outcome	22 weeks p-values			23 weeks p-values			24 weeks p-values			25 weeks p-values			22-25 weeks p-values		
	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch	ANS	Epoch	ANS* Epoch
Death by follow up	0.02*	0.74	0.28	<0.001	0.50	0.76	0.02	0.06	0.28	<0.001	0.71	0.39	<0.001	0.08	0.88
Death and/or NDI	0.91*	0.38	0.52	0.08	0.11	0.55	0.04	0.08	0.39	<0.001	0.90	0.38	<0.001	0.07	0.42
NDI	0.31†	0.04	0.12	0.50	0.25	0.53	0.35	0.89	0.88	0.36	0.84	0.97	0.61	0.43	0.36
MDI < 70	0.48*	0.66	0.71	0.28	0.046	0.36	0.35	0.67	0.89	0.97	0.71	0.86	0.88	0.10	0.41
PDI < 70	0.03†	0.08	0.02	0.98	0.15	0.82	0.06	0.77	0.91	0.9997	0.97	0.47	0.53	0.45	0.36
Bayley III cognitive score < 70	(No epoch effect – Bayley III only available for 2005+)														
Moderate-severe cerebral palsy	---	---	---	0.69*	0.07	0.34	0.79§	0.77	0.72	0.08	0.16	0.04	0.30	0.01	0.008
Blindness	---	---	---	0.54*	0.53	0.78	---	---	---	0.37†	0.87	0.97	0.41*	0.35	0.31
Deafness	---	---	---	0.11§	0.75	0.31	---	---	---	0.67†	0.84	0.80	0.53*	0.53	0.26

ANS = antenatal corticosteroid, No ANS = no antenatal corticosteroid, NDI = neurodevelopmental impairment, MDI = mental developmental index, PDI = psychomotor developmental index.

Outcomes not corrected for mortality are only given for the survivors.

Follow up cohort includes inborn infants born 1993-2008, with birth weight 401-1000 g, and gestational age 22-25 weeks. Infants who died within 12 hours without DR resuscitation are excluded. Bayley II is used for infants born between 1993 and 2005; Bayley III is used for infants born after 2005. For all Death/NDI and NDI models, a cohort effect was included in the model to indicate Bayley II versus Bayley III.

Logistic regressions are adjusted for the following covariates: maternal variables (age, marital status, race, diabetes, hypertension/pre-eclampsia, rupture of membranes > 24 hours, antepartum hemorrhage, emergency c-section), multiple births, gender, center, epoch, and ANS*epoch interaction.

*Model does not include center (model did not converge with center included).

†Because of convergence problems due to low outcome prevalence, this model adjusts only for gender, epoch, and interaction.

§ Because of convergence problems due to low outcome prevalence, this model adjusts only for gender, race, epoch, and interaction.

¶Because of convergence problems due to low outcome prevalence, this model adjusts only for gender, race, center, epoch, and interaction.

eTable 5. Hospital Mortality of Infants 22 to 25 Weeks Gestation by Antenatal Corticosteroid Treatment Including the 1,848 Deaths the First 12 Hours of Infants Who Did Not Receive Delivery Room Resuscitation

	22 weeks			23 weeks			24 weeks			25 weeks		
	ANS	No ANS		ANS	No ANS		ANS	No ANS		ANS	No ANS	
	n/N	n/N	OR	n/N	n/N	OR	n/N	n/N,	OR	n/N	n/N	OR
	%	%	95% CI	%	%	95% CI	%	%	95% CI	%	%	95% CI
Death	163/195	1097/1147	0.26†	809/1289	1145/1370	0.37	1250/3049	521/920	0.57	834/3575	300/828	0.54
	83.6%	95.6%	0.16- 0.44	62.8%	83.6%	0.30- 0.45	41.0%	56.6%	0.48- 0.67	23.9%	36.2%	0.45-0.65

Odds ratios and 95% confidence interval are estimated within each week of gestational age, with the No ANS group used as the referent category

†Model does not include center (model did not converge with center included).