

Appendix 2 (as supplied by the authors): Power calculation, implementation of practice changes at individual sites and odds ratios for composite outcome and individual outcomes (comparison of each intervention year with baseline year)

Power calculation

Based on the ongoing number of infants enrolled in the CNN database annually, we estimated that 1400 to 1450 infants per year were eligible for this study. An *a priori* decision was made to compare change in the rate of the composite outcome between baseline and year III of the intervention period. The composite outcome rate in the year prior to baseline was 70%. Based on these estimates and assuming a two-sided hypothesis, an uncorrected Chi-square test with 90% power and 5% type I error in an annual sample of 1400 to 1450 patients would be able to detect at minimum a true reduction to 64.3% (8.1% reduction) or an increase to 75.4% (7.7% increase) in the rate of the composite outcome in year III patients.

It should be noted that prior to the study we were unaware of the number of confounders that would need to be adjusted for in the final statistical analysis. As such, using the chi-square test to estimate sample size and power does not reflect the complexity of the final analysis. However, the final analyses were adjusted for confounding and clustering to provide accurate and robust results.

Table: Practice changes implemented by participating sites during the intervention years

Practice changes grouped by targeted outcome	Sites																							Total		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W		X	Y
Bronchopulmonary dysplasia																										
Use of T-piece resuscitator						X			X	X						X	X			X			X			7
Enhancing or ensuring early CPAP use						X											X				X	X			X	5
Controlled oxygen use / review oxygen saturations	X				X	X						X													X	5
Early surfactant and/or early extubation		X	X											X						X		X				5
Ventilator weaning algorithm				X								X						X								3
Prophylactic surfactant																							X			1
Severe neurological injury																										
Delayed cord clamping		X	X					X			X	X					X				X					7
Use of antenatal MgSO ₄	X										X	X													X	4
Minimize volume expanders																				X						1
Minimize use of inotropes																				X						1
Retinopathy of prematurity																										
Controlled oxygen use	X						X					X	X	X	X	X	X			X	X		X			11
Improved screening protocol																						X				1
Necrotizing enterocolitis																										
Feeding guideline				X				X				X	X	X	X		X	X		X					X	11
Early feeding		X	X			X					X														X	5
Use of donor milk				X	X																	X			X	4
Colostrum / enhanced EBM				X	X																			X		3
Early total parenteral nutrition			X		X																					2
Hold enteral feeds during PRBC transfusions							X				X															2
Nosocomial infection																										
Central line management bundle		X		X		X	X	X			X	X		X	X	X				X				X	X	13
Hand hygiene		X			X	X	X		X						X			X	X		X				X	10
Central line management – single intervention only		X				X	X	X						X	X		X				X				X	9
Education, audit, team building				X			X		X	X	X									X						6
Reduce skin breaks		X								X					X					X	X					5
Skin-to-skin care	X	X		X				X																		4
Checklist for central lines							X					X										X				3
Total	4	8	4	7	5	7	6	6	2	4	6	4	6	5	5	4	6	3	5	6	7	3	3	3	8	130

CPAP = continuous positive airway pressure, EBM = expressed breast milk, PRBC = packed red blood cells.

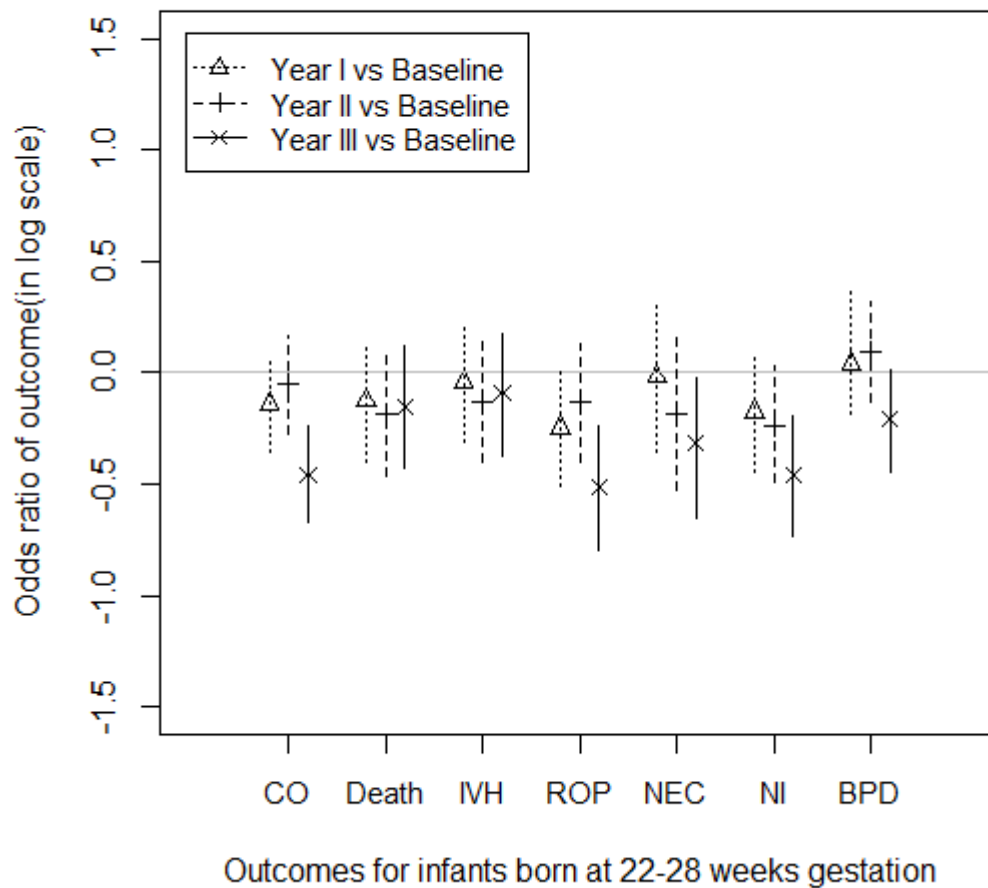


Figure: Adjusted odds ratios for composite outcome and individual outcomes comparing each of three intervention years with baseline

CO indicates composite outcome of mortality or any one of the five major morbidities.

BPD indicates bronchopulmonary dysplasia.

IVH indicates severe neurological injury.

ROP indicates severe retinopathy of prematurity.

NEC indicates stage two or three necrotizing enterocolitis.

NI indicates nosocomial infection.

Error bars indicate 95% confidence intervals.