

Supplementary Material

Duration of and Trends in Respiratory Support among Extremely Preterm Infants

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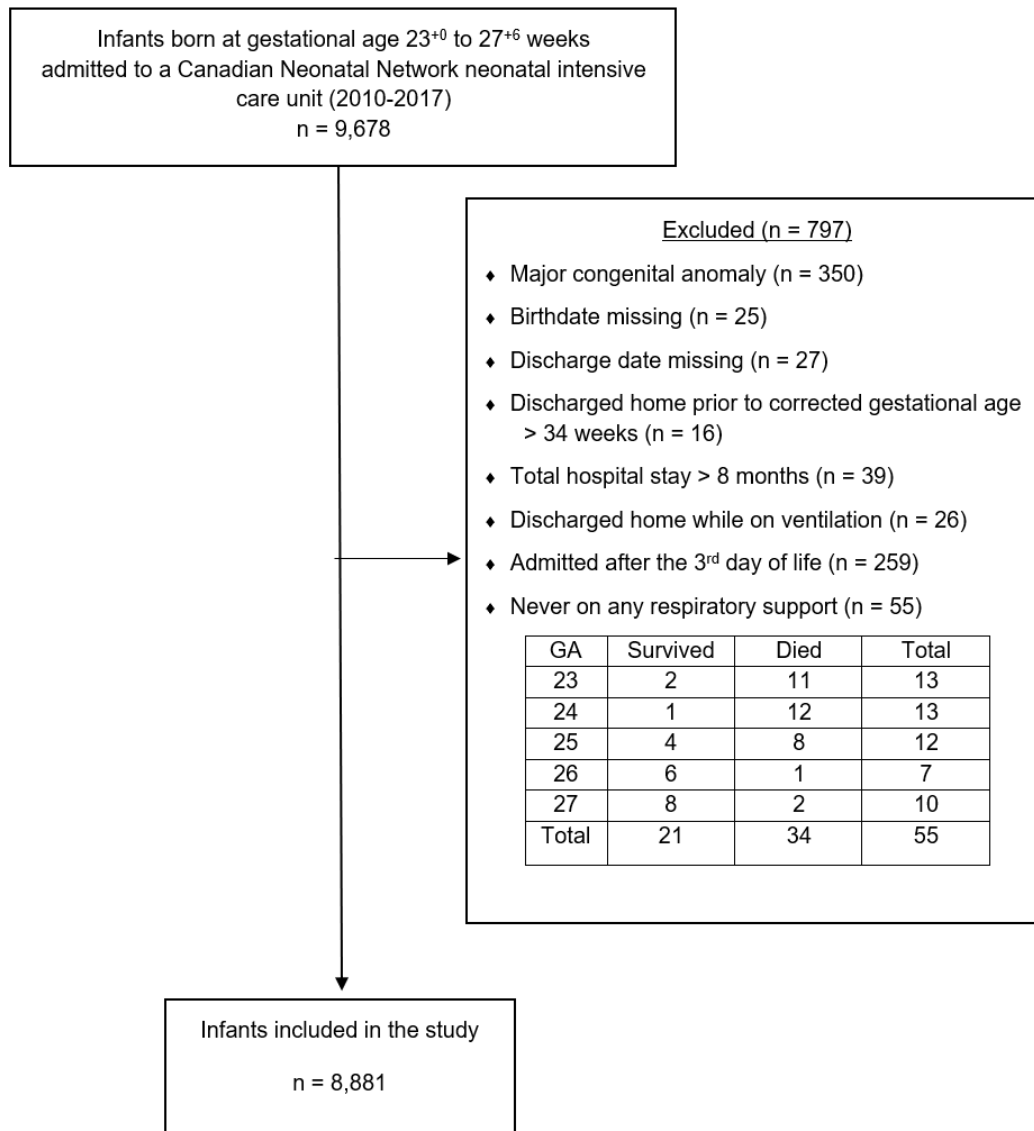
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Supplementary Table S1. Method of Determination of the Duration of Respiratory Support and Event Status for Infants with Missing Data or Infants Who Died or Were Transferred Prior to Weaning from Respiratory Support

		Outcome known for subsequent 7 days after respiratory support removed		Outcome not known for subsequent 7 days after respiratory support removed (missing data)		
		Remains off respiratory support	Re-administration of respiratory support	Died within 7 days	Transfer before 7 days to Level 2	Transfer before 7 days to another Level 3 or out of province
Weaned from respiratory support	<i>Duration</i>	Time until weaned off respiratory support	-	Time until death	Time until transfer	Time until transfer
	<i>Status</i>	Successfully weaned off respiratory support	NOT successfully weaned off respiratory support	Died	Successfully weaned off respiratory support	Censored
Transferred or discharge home while still on respiratory support	<i>Duration</i>	Time until transfer				
	<i>Status</i>	Censored				
Died while still on respiratory support	<i>Duration</i>	Time until death				
	<i>Status</i>	Died				

This framework applies to all outcomes pertaining to duration of respiratory support, including first successful extubation, definitive extubation, weaning from all positive pressure ventilation (endotracheal and/or non-invasive), and weaning from all positive pressure ventilation and/or low flow oxygen.

Supplementary Figure S2. Flow Chart of Infants Included in and Excluded from the Study

Abbreviation: GA, gestational age.

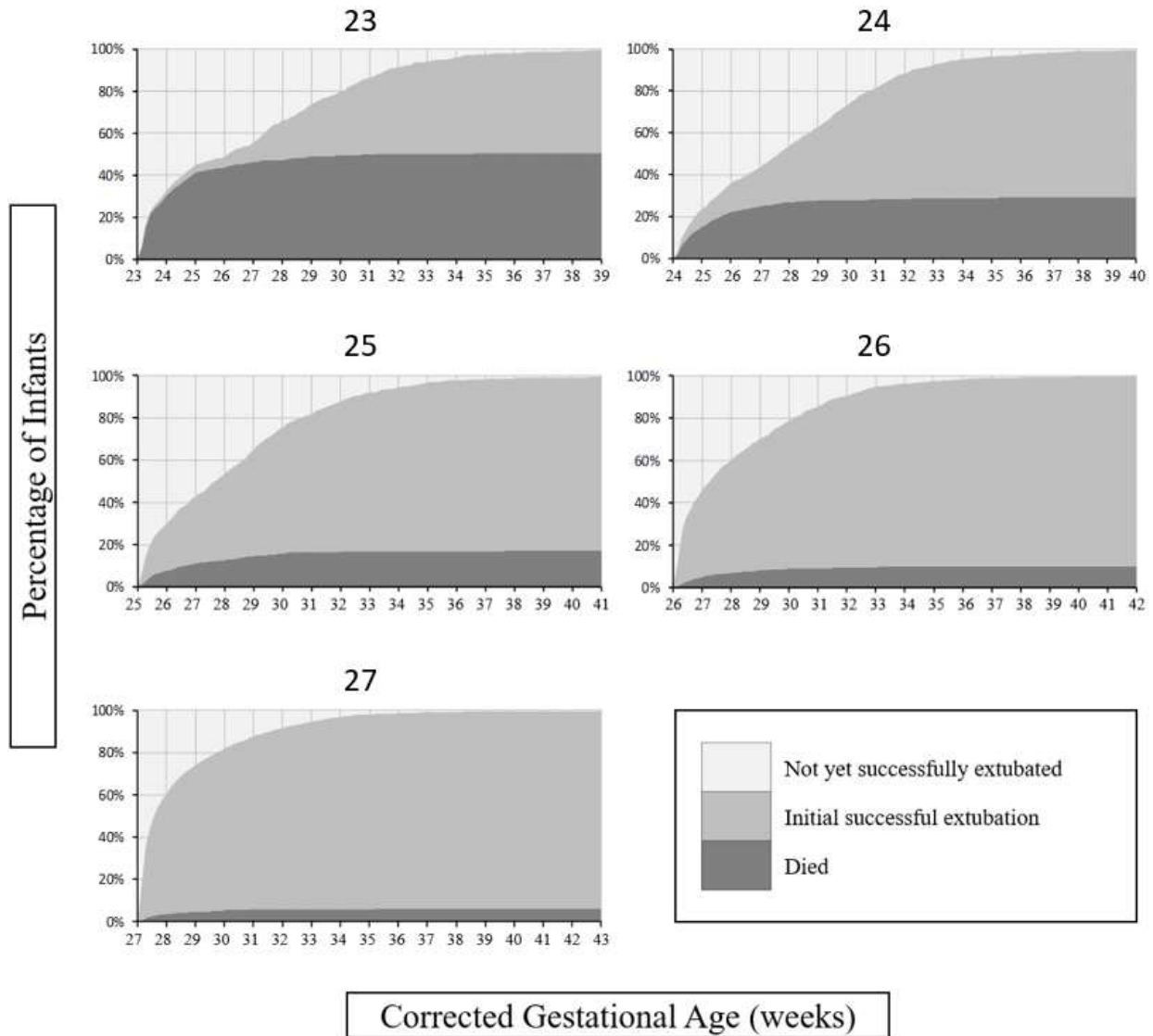
Supplementary Table S3. Antenatal and Perinatal Characteristics of Study Infants

		All (includes infants who received any form of positive pressure support) (n = 8,881)	Only infants who received endotracheal ventilation (n = 7,788)
GA at birth, No. (%)	23 weeks	638 (7%)	636 (8%)
	24 weeks	1432 (16%)	1413 (18%)
	25 weeks	1959 (22%)	1873 (24%)
	26 weeks	2251 (25%)	1940 (25%)
	27 weeks	2601 (29%)	1926 (25%)
Male, No. (%)		4745 (53%)	4219 (54%)
Birth weight, mean (SD)		846 (207)	825 (202)
Multiple births, No. (%)		2212 (30%)	1968 (25%)
Antenatal corticosteroids, No. (%)		7691 (88%)	6647 (87%)
Outborn, No. (%)		1255 (14%)	1193 (15%)
C-section, No. (%)		4970 (56%)	4410 (57%)
Death, No. (%)	23 weeks GA at birth	338 (53%)	336 (53%)
	24 weeks GA at birth	452 (32%)	450 (32%)
	25 weeks GA at birth	375 (19%)	373 (20%)
	26 weeks GA at birth	262 (12%)	262 (14%)
	27 weeks GA at birth	161 (6%)	161 (8%)

Abbreviation: GA, gestational age.

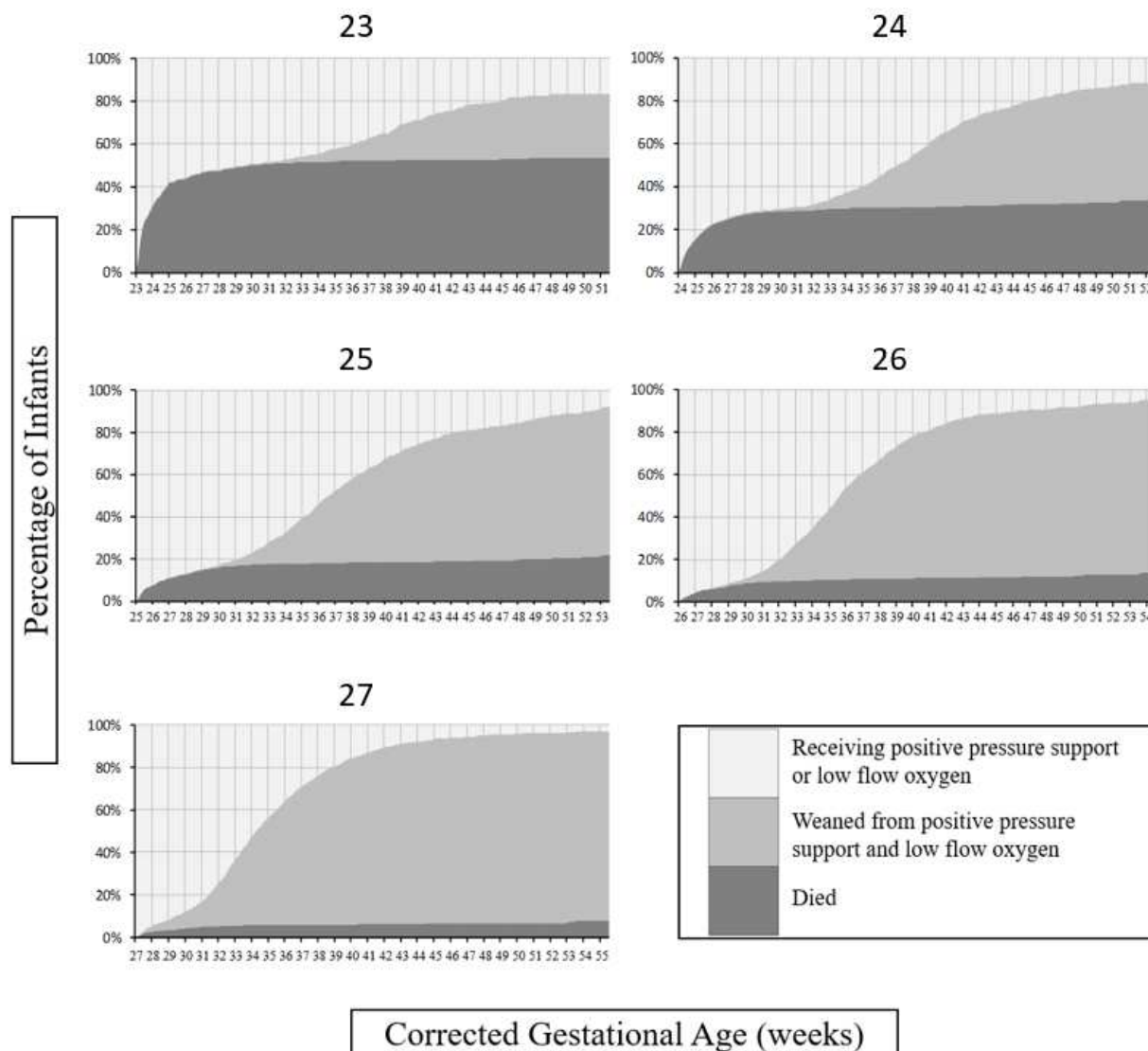
Supplementary Figure S4. Cumulative Incidence Plot: Time to First Successful Extubation

First successful extubation was defined as 7 days without reintubation. Plot displays the percentages of infants over time who died before successful extubation (dark grey), were successfully extubated (intermediate grey), or continued to be treated with endotracheal ventilation without being successfully extubated (light grey). A total of 7,788 infants were treated with endotracheal ventilation and were included in the analysis.



Supplementary Figure S5. Cumulative Incidence Plot: Time to Weaning Off All Positive Pressure Support and Supplemental Oxygen

Weaning off all positive pressure support (endotracheal or non-invasive) or low flow oxygen was defined as 7 days without readministration of respiratory support. Plot displays the percentages of infants over time who died before weaning off all positive pressure support and supplemental oxygen (dark grey), were successfully weaned off all positive pressure support and supplemental oxygen (intermediate grey), or continued to be treated in the neonatal intensive care unit with positive pressure support or supplemental oxygen (light grey). A total of 8,881 infants were treated with positive pressure support and were included in the analysis.



Supplementary Table S6. Association of Year of Birth with the Hazard of Remaining on Respiratory Support and the Odds of Survival during the Study Period (2010-2017)

GA at birth, weeks	Initial successful extubation, hazard ratio (95% CI)	Definitive extubation, hazard ratio (95% CI)	Off positive pressure support, hazard ratio (95% CI)	Survival, odds ratio (95% CI)
23	1.06 (1.01, 1.11)	1.06 (1.01, 1.11)	1.06 (1.01, 1.11)	1.11 (1.03, 1.18)
24	1.05 (1.03, 1.08)	1.05 (1.02, 1.08)	1.02 (0.99, 1.05)	1.09 (1.03, 1.14)
25	1.02 (0.99, 1.04)	1.02 (1.00, 1.04)	0.98 (0.96, 1.01)	1.04 (0.99, 1.10)
26	0.99 (0.97, 1.01)	1.01 (0.99, 1.03)	0.97 (0.95, 0.98)	1.04 (0.98, 1.10)
27	0.99 (0.98, 1.01)	1.01 (0.99, 1.03)	0.97 (0.95, 0.99)	1.05 (0.99, 1.14)

CI, confidence interval; GA gestational age.

Supplementary Table S7. Numbers of Infants Who Died, Were Censored, or Were Successfully Extubated, According to Gestational Age

GA at Birth, Weeks (No.)	Never Treated with ETTV, No. (%)	First Successful Extubation			Definitive Extubation		
		First Successful Extubation, No. (%)	Death While on ETTV or Within 7 Days After First Successful Extubation, No. (%)	Censored, No. (%)	Definitive Extubation, No. (%)	Death While on ETTV or Within 7 Days After Definitive Extubation, No. (%)	Censored, No. (%)
23 (n=638)	2 (0.3%)	304 (47.6%)	320 (50.2%)	12 (1.9%)	287 (45.0%)	332 (52.0%)	17 (2.7%)
24 (n=1432)	19 (1.3%)	987 (68.9%)	415 (29.0%)	11 (0.8%)	959 (67.0%)	442 (30.9%)	12 (0.8%)
25 (n=1959)	86 (4.4%)	1529 (78.1%)	324 (16.5%)	20 (1.0%)	1468 (74.9%)	365 (18.6%)	40 (2.0%)
26 (n=2251)	311 (13.8%)	1731 (76.9%)	197 (8.8%)	12 (0.5%)	1673 (74.3%)	242 (10.8%)	25 (1.1%)
27 (n=2601)	675 (26.0%)	1797 (69.1%)	120 (4.6%)	9 (0.3%)	1752 (67.4%)	153 (5.9%)	21 (0.8%)
Total (n=8881)	1093 (12.3%)	6348 (71.5%)	1376 (15.5%)	64 (0.7%)	6139 (69.1%)	1534 (17.3%)	115 (1.3%)

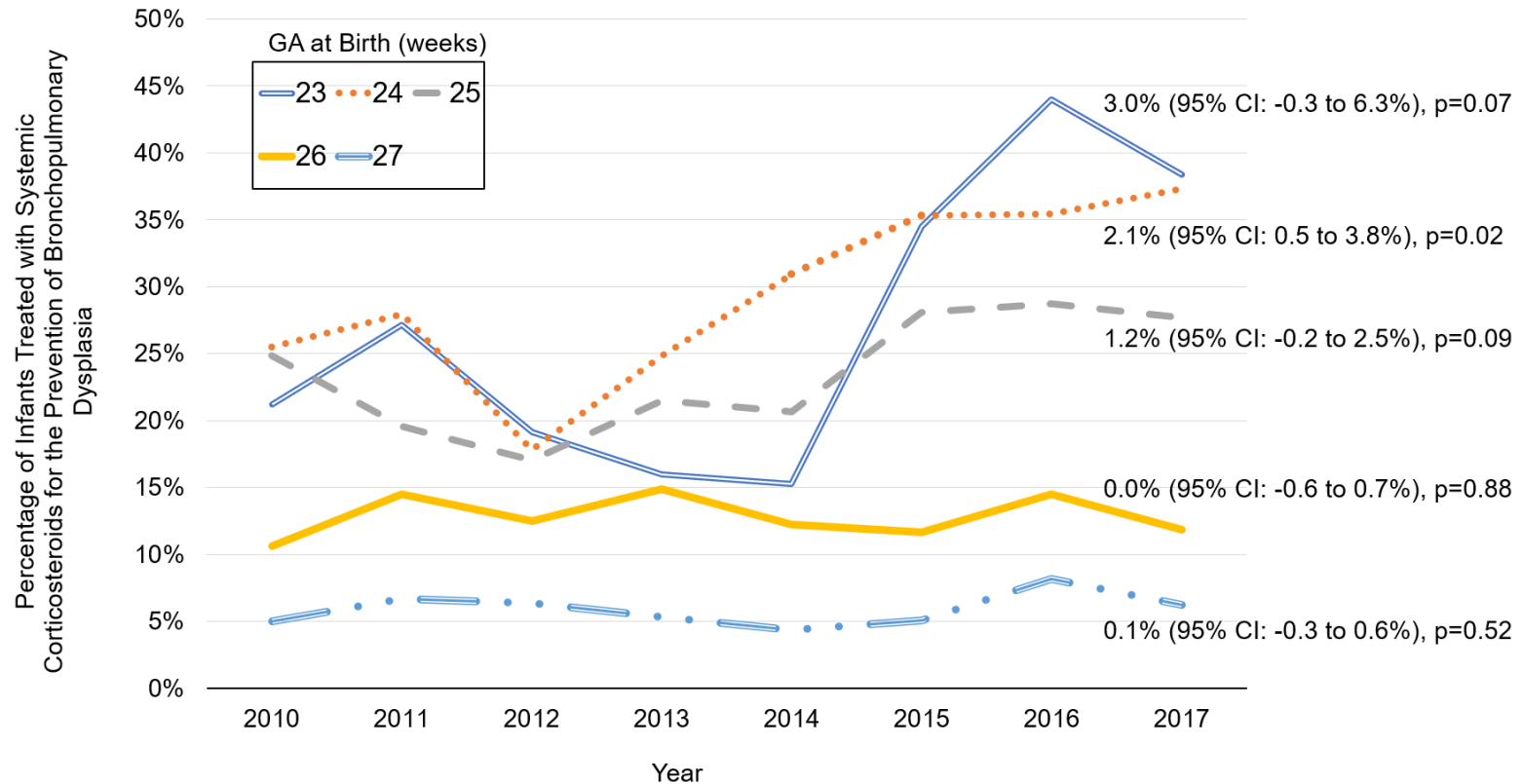
ETTV, endotracheal ventilation; GA, gestational age

Supplementary Table S8. Numbers of Infants Who Died, Were Censored, or Were Successfully Weaned Off Respiratory Support, According to Gestational Age

GA at Birth, Weeks (No.)	Weaning Off All PPV (Invasive and Non-invasive)			Weaning Off All Respiratory Support (Invasive and Non-Invasive PPV and LFO ₂)		
	Weaned Off All PPV, No. (%)	Death While on PPV or Within 7 Days After Weaning Off, No. (%)	Censored, No. (%)	Weaned Off All PPV and LFO ₂ , No. (%)	Death While on [PPV or LFO ₂] or Within 7 Days After Weaning Off, No. (%)	Censored, No. (%)
23 (n=638)	262 (41.1%)	336 (52.7%)	40 (6.3%)	142 (22.3%)	336 (52.7%)	160 (25.1%)
24 (n=1432)	909 (63.5%)	452 (31.6%)	71 (5.0%)	590 (41.2%)	452 (31.6%)	390 (27.2%)
25 (n=1959)	1416 (72.3%)	377 (19.2%)	166 (8.5%)	1021 (52.1%)	377 (19.2%)	561 (28.6%)
26 (n=2251)	1804 (80.1%)	257 (11.4%)	190 (8.4%)	1407 (62.5%)	257 (11.4%)	587 (26.1%)
27 (n=2601)	2190 (84.2%)	161 (6.2%)	250 (9.6%)	1855 (71.3%)	162 (6.2%)	584 (22.5%)
Total (n=8881)	6581 (74.1%)	1583 (17.8%)	717 (8.1%)	5015 (56.5%)	1584 (17.8%)	2282 (25.7%)

GA, gestational age; LFO₂, low flow oxygen; PPV, positive pressure ventilation

Supplementary Figure S9. Annual Trends in the Percentages of Infants Treated with Systemic Corticosteroids for the Prevention of Bronchopulmonary Dysplasia, According to Gestational Age



Trend presented as year-over-year percentage change with 95% confidence interval.

Abbreviations: CI, confidence interval; GA, gestational age