



Very low birth weight twins: an analysis of survival and major morbidities

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Background

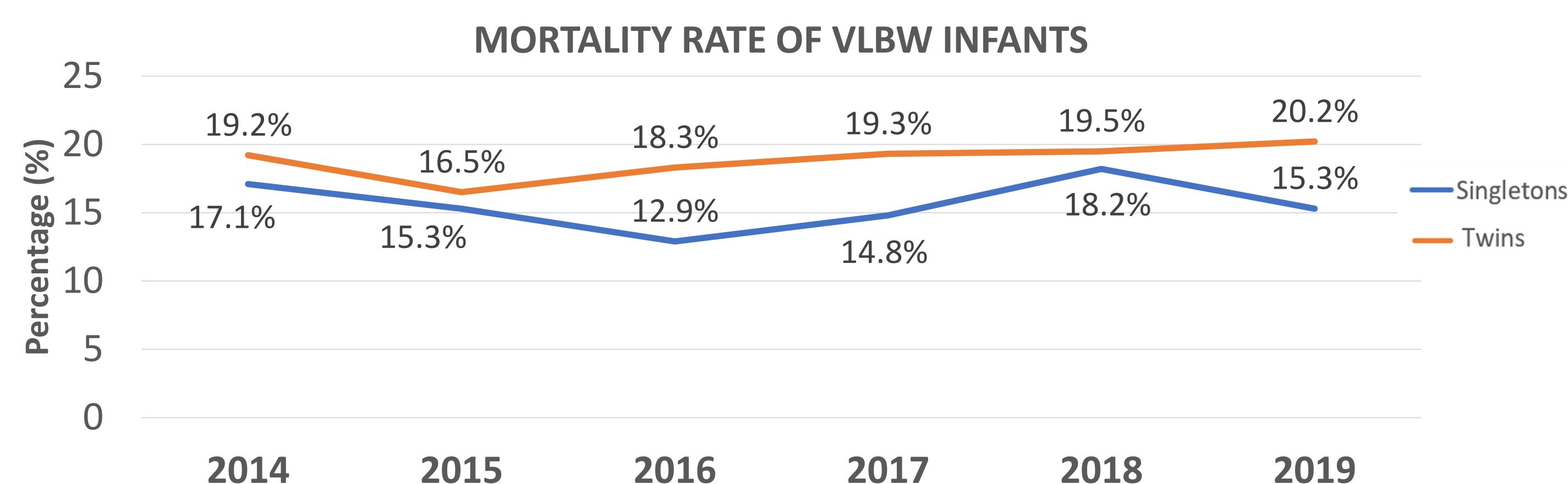
The birth rate is declining in Ireland; however, the twin rate has remained constant, due in part to artificial reproductive therapy and delayed childbearing. Twin pregnancies are associated with an increased risk of neonatal morbidity and mortality compared to singleton pregnancies. Preterm births and very low birth weight infants (VLBW) are two major contributors to this increased risk of neonatal morbidity and mortality. National data on VLBW infants are available in few countries and the ability to improve perinatal care for twin pregnancies is facilitated in part by an assessment of these reported findings.

This study aims to examine the survival rates and major morbidities of VLBW infants from twin pregnancies compared to singletons.

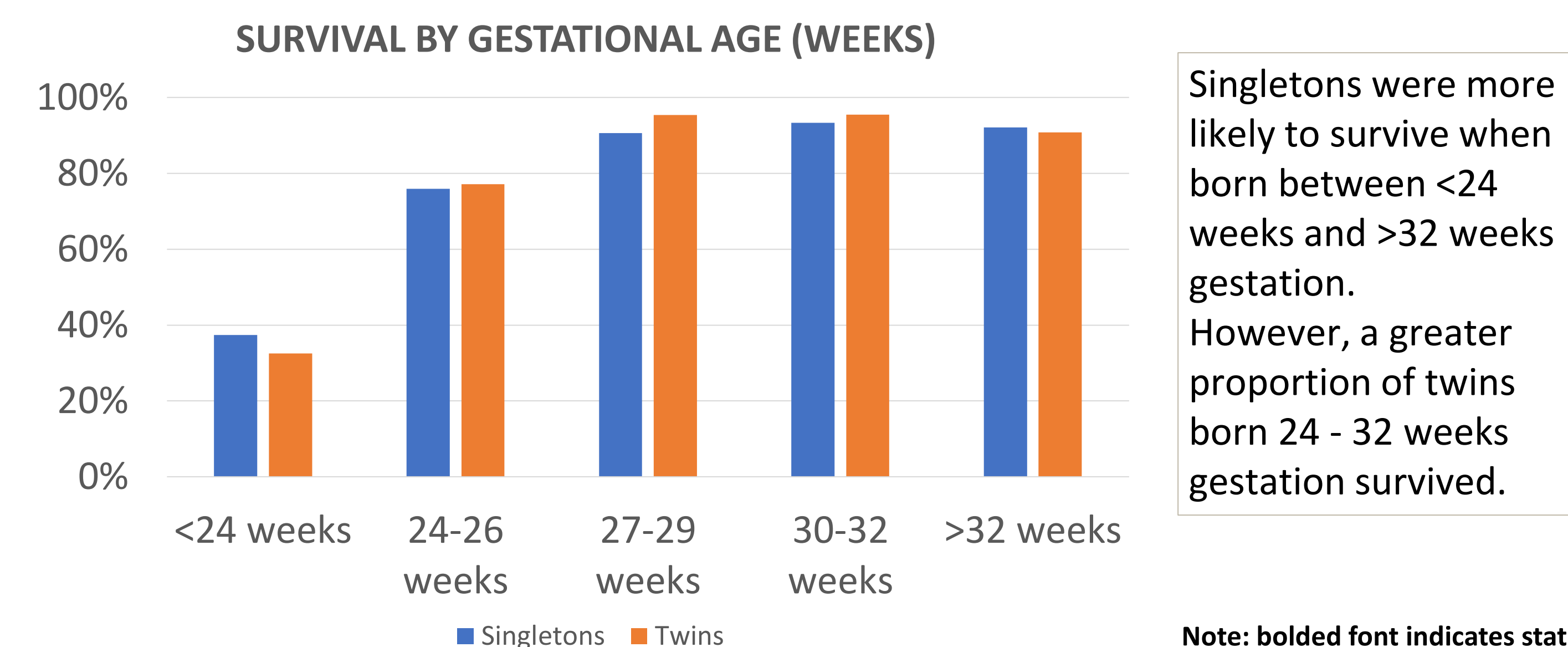
Methods

This retrospective study includes data from the National Perinatal Epidemiology Centre and Vermont Oxford Network (VON) annual audit on VLBW infants born in all of the 19 maternities in Ireland, from 2014-2019. This national database captures all infants born between 401g-1500g and/or with a gestational age between 22+0 and 29+6 weeks. Survival and major morbidities were analysed. Pearson chi-squared tests studied the difference between VLBW multiples and singletons. Poisson regression was used to compute a crude relative risk (RR) and adjusted RR comparing outcomes in twins versus singletons. The RR was adjusted for: gestational age at birth, small for gestational age, gender, maternal race, maternal hypertension, maternal antenatal corticosteroid administration, type of hospital unit at delivery, mode of delivery, congenital anomaly and chorioamnionitis.

- Study population: **949 VLBW twin infants** and **2327 VLBW singleton** infants.
- Proportion of singleton and twins in the VLBW population remained similar through the years: proportion of singletons was 71% in 2014 and 74.8% in 2019; twins 29% in 2014 and 25.2 % in 2019.



Overall, a higher proportion of twin infants survived compared to singleton infants (84.5% vs 81.2%, p = .025), including infants with major congenital anomalies (MCA). When MCAs are excluded survival rate is 86.6% in twins vs 84.7% in singletons, p=.197



Singletons were more likely to survive when born between <24 weeks and >32 weeks gestation. However, a greater proportion of twins born 24 - 32 weeks gestation survived.

Note: bolded font indicates statistical significance.

Results

Table 1: Maternal characteristics

Maternal Characteristics	Twin	Singleton	p value
Race			
White	867 (91.5%)	2021 (87.1%)	
Black	18 (1.9%)	97 (4.2%)	<0.001
Asian	29 (3.1%)	108 (4.7%)	
Other	34 (3.6%)	90 (3.9%)	
Hypertension	150 (16.0%)	709 (31.0%)	<0.001
Antenatal care	921 (98.1%)	2245 (97.3%)	0.199
Chorioamnionitis	107 (11.6%)	429 (19.0%)	<0.001
Antenatal corticosteroids	852 (91.0%)	2016 (87.9%)	0.01
Antenatal magnesium sulphate	603 (64.4%)	1480 (65.1%)	0.694
Type of hospital unit at delivery			
Tertiary	720 (75.9%)	1602 (68.8%)	
Regional	156 (16.4%)	457 (19.9%)	0.002
Peripheral	65 (6.8%)	246 (10.6%)	
Mode of delivery			
C section	688 (72.6%)	1556 (69.0%)	0.002

Risk of mortality & morbidities

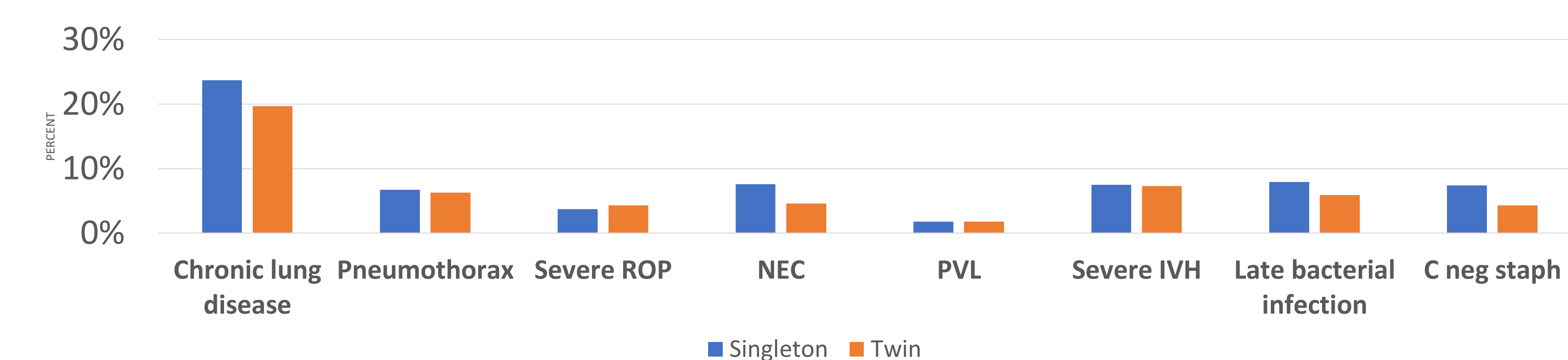
- Twins had a **lower crude risk of dying compared to singletons**; when adjusted for risk factors (Adjusted RR), there was no difference in risk between the two groups.
- Similarly, the lower risk of CLD, NEC and late bacterial infections, was not significant in the adjusted RR.
- The adjusted RR was significantly lower for C Neg Staph infection in twins when compared to singletons. The risk of this infection in twins was also lower.

A higher proportion of twins survived without morbidities compared to singletons (60.3% vs 51.5%).

Table 2: Infant characteristics

Infant Characteristics	Twin	Singleton	p value
Mean (SD)			
Gestational Age (weeks)	28.4 (2.98)	28.0 (2.98)	0.001
Birthweight (g)	1087 (316)	1065 (327)	0.078
Apgar score at 1 minute	6.34 (5.8)	6.21 (7.2)	0.62
Apgar score at 5 minutes	8.02 (5.7)	7.99 (5.6)	0.914
Length of stay (days)	57.5 (46.16)	55.57 (43.76)	0.347
n/N (%)			
Sex (female)	472/949 (49.7%)	1076/2327 (46.2%)	0.069
Small for gestational age (SGA)	216/947 (22.8%)	509/2319 (21.9%)	0.592
Congenital Anomaly	61/946 (6.4%)	218/2318 (9.4%)	0.006
Died in the delivery room	56/949 (5.9%)	165/2327 (7.1%)	0.218
Died	147/949 (15.5%)	436/2319 (18.8%)	0.025
Hospitalised at first birthday	2/532 (0.4%)	5/1239 (0.4%)	0.904

INFANT OUTCOMES



Conclusion

- Differences in the crude rates for mortality and certain neonatal morbidities were noted among VLBW twins. However, the majority of the differences disappeared once adjustments were made for the profile of the infants. Yet, **risks associated with VLBW twins remain high and, hence, should not be overlooked** or downplayed.
- **These results provide clinicians with better data to counsel parents of twins regarding associated risks.**
- These findings can contribute to improve care of twin pregnancies as **they highlight the need to focus on gaining infant maturity and/or planning for delivery in tertiary centres should early delivery be anticipated.**

