Letter - Can we estimate the length of stay of very preterm multiples?

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Dear Editors,

In our recent paper [1] we provided estimates of length of stay for very preterm (24 to 31 weeks gestational age) singleton babies admitted for neonatal care in units within England. As with much neonatal research, we chose to exclude multiples (twins, triplets and higher order; in this letter referred to as 'multiples') from this initial work. However as around 1 in 10 twins are born before 32 weeks, compared to around 1 in 100 singleton births [2], it is important to be able to also estimate the length of stay for these babies to aid the planning of healthcare resources and facilitate the counselling of their parents.

We were interested in whether the estimates of length of stay from the singleton population could be applied to multiples without the need to calculate new estimates. Data related to multiples admitted to neonatal units in England equivalent to the singletons was extracted from the National Neonatal Research Database. A total of 7,496 babies met the inclusion criteria as described elsewhere [1]: 6,755 twins and 741 triplets or higher order.

We calculated the observed median (25<sup>th</sup>, 75<sup>th</sup> centiles) length of stay for multiples by week of gestational age at birth and compared it to that estimated previously for singletons (Table). Across all gestational ages, the median length of stay for multiples was very similar to their singleton peers, with the largest difference being three days. Larger differences were observed at the 25<sup>th</sup> centile, indicating that the discharge of multiples began later than for singletons. The discharge of sibling multiples is not likely to be independent, with units potentially attempting to get siblings home at the same time. Indeed in our data, for sets of twins who survived to discharge, 68% were discharged on the same day.

We have demonstrated that the length of stay for multiples is similar to singletons, and therefore the broad estimates used for singletons may be appropriate for all very preterm babies. However, we do not suggest that the exact estimates provided here should be used, but rather they can complement clinical knowledge. For example, for babies with an estimated median length of stay of 126 days, clinicians may wish to describe this as "around four months" when a conversation about length of stay is appropriate. This conversation should be considered alongside the risk of mortality, and clinical complications which an individual baby may experience.

As with singleton babies, there is no evidence to suggest that there is an optimal length of stay that is appropriate or safe for the baby. Future work is needed to consider length of stay against longer term outcomes including readmission following discharge from neonatal care. However, the counselling around potential length of stay is vital to ensure parents feel prepared [3, 4] for their baby's discharge home. These estimates can be used for all very preterm babies, alongside clinical knowledge, to facilitate the conversations between clinicians and parents.

Gestational age	Days to due date	Observed multiples	Singleton model	Difference between multiples and singletons
24	112	126 (114, 145)	123 (104, 139)	+3 (+10, +6)
25	105	108 (96, 124)	107 (88, 125)	+1 (+8, -1)
26	98	95 (80, 109)	92 (74, 109)	+3 (+6, 0)
27	91	80 (68, 94)	79 (63, 96)	+1 (+5, -2)
28	84	67 (58, 79)	66 (52, 82)	+1 (+6, -3)
29	77	53 (47, 65)	53 (43, 66)	0 (+4, -1)
30	70	45 (37, 53)	42 (34, 52)	+3 (+3, +1)
31	63	35 (29, 42)	34 (28, 41)	+1 (+1, +1)

Table: Observed median length of stay (25<sup>th</sup>, 75<sup>th</sup> centile) for multiples who survive to discharge from neonatal care compared with the prediction from the singleton model

## References

- 1. Seaton SE, et al., *Estimating neonatal length of stay for babies born very preterm*. Archives of Disease in Childhood Fetal and Neonatal Edition, 2018.
- 2. Blondel B, et al., *The impact of the increasing number of multiple births on the rates of preterm birth and low birthweight: an international study.* 2002. **92**(8): p. 1323-30.
- 3. Fleming PJ, et al., *Estimating discharge dates using routinely collected data: improving the preparedness of parents of preterm infants for discharge home.* Archives of Disease in Childhood: Fetal and Neonatal Edition, 2016.
- 4. Turner M, Winefield H, and Chur-Hansen A, *The emotional experiences and supports for parents with babies in a neonatal nursery*. Advances in Neonatal Care, 2013. **13**(6): p. 438-46.