

Estimation of Frequency of Use of Tom Thumb Resuscitators

Tom Thumb Infant Resuscitators are designed to be an always-ready resuscitation solution, primarily deployed in Labour Wards / Delivery Suites for resuscitation immediately after delivery (if required) and in Neonatal Units for resuscitation of newborns that have not yet been discharged.

There are varying degrees of frequency of use depending upon the application; delivery rooms see the highest frequency of use and can be estimated with some degree of confidence, however, in Neonatal Units, the Tom Thumb operates in a standby-by role and sees less frequent use on average.

In the delivery room, the Tom Thumb is mounted in a wall-mounted resuscitation cabinet system, which is designed to act as a platform to allow immediate care of the newborn. The Tom Thumb is not used on every delivery; *approximately 10% of newborns require some assistance to begin breathing at birth. Less than 1% require extensive resuscitation measures [1].*

Using the statistics for the number of deliveries per annum for some of Viamed's customers that employ the Tom Thumb in the delivery room, we can estimate the upper and typical usage frequency.

Case 1 – Hull Royal Infirmary (Labour Ward / Post Natal Ward model)

The Labour Ward at Hull Royal Infirmary has approximately 6000 deliveries per year across 15 delivery rooms [2], which equates to an average of 400 births per Tom Thumb equipped room per year. Based on approximately 10% of newborns requiring resuscitation, this equates to **40 uses per year, or 1 use every 9 days.**

The Labour Ward moves patients to the Post Natal ward after delivery, allowing a faster throughput. Staff working on this department consider it to be a very busy Labour Ward working close to maximum occupancy, such, it represents the upper estimate of usage for the Tom Thumb.

Case 2 – Stoke Mandeville Hospital (Labour Ward / Post Natal Ward model)

The Labour Ward at Stoke Mandeville Hospital has approximately 4200 deliveries per year across 15 delivery rooms [3], which equates to an average of 280 births per Tom Thumb equipped room per year. Based on approximately 10% of newborns requiring resuscitation, this equates to **28 uses per year, or 1 use every 13 days.**

1. Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: Neonatal Resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2015; 132:S543.
2. <https://www.hey.nhs.uk/maternity/labour-ward/>
3. [https://democracy.buckscc.gov.uk/documents/s85221/Overview of BHT Maternity Services 6 Sept.pdf](https://democracy.buckscc.gov.uk/documents/s85221/Overview%20of%20BHT%20Maternity%20Services%206%20Sept.pdf)
4. <https://chsft.nhs.uk/patients-visitors/services-z/maternity>
5. <https://www.which.co.uk/birth-choice/maternity-units/ou-the-delivery-suite-south-tyneside-district-hospital>

Case 3 – Sunderland Royal Infirmary (LDRP Room model)

The Delivery Suite at Sunderland Royal Infirmary has approximately 3500 deliveries per year [4], across 22 Tom Thumb equipped delivery rooms. This equates to an average of 159 births per Tom Thumb equipped room per year. Based on approximately 10% of newborns requiring resuscitation, this equates to **16 uses per year, or 1 use every 23 days**.

This Delivery Suite employs LDRP rooms (labour, delivery, recovery and postnatal) in which patients that have an uncomplicated labour/delivery remain in the room until discharge. This lowers throughput and has replaced the Labour Ward and Post Natal Ward model as the model of choice for many modern Maternity Units.

Case 4 – South Tyneside District Hospital (LDRP Room model)

The Delivery Suite at South Tyneside District Hospital has approximately 1300 deliveries per year [5], across 9 Tom Thumb equipped delivery rooms. This equates to an average of 144 births per Tom Thumb equipped room per year. Based on approximately 10% of newborns requiring resuscitation, this equates to **14.4 uses per year, or 1 use every 25 days**.

Neonatal Units

Neonatal Units often employ stand-alone Tom Thumbs for emergency resuscitation purposes that will be used very infrequently.

As an example, Sunderland Royal Hospital has 24 Tom Thumb units in their Neonatal Unit, they are mounted to medirail on the wall behind every low-dependency crib, as well as being mounted on every incubator in the high-dependency area and again on the walls behind each incubator position. This adds a great deal of redundancy to ensure that Tom Thumbs are available anywhere that they may be needed.

In addition to Tom Thumbs, the Neonatal Unit at SRH also employs a large number of neonatal ventilators, which are the primary devices for ventilation and resuscitation; the Tom Thumbs are considered for emergency resuscitation only, and from comments from the staff, we are told that most will never be used from one annual service to the next.

No data is available for the average number of uses in the Neonatal environment but anecdotal evidence suggests that it is considerably lower than the Labour Ward or Delivery suite environment.

1. Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: Neonatal Resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2015; 132:S543.
2. <https://www.hey.nhs.uk/maternity/labour-ward/>
3. [https://democracy.buckscc.gov.uk/documents/s85221/Overview of BHT Maternity Services 6 Sept.pdf](https://democracy.buckscc.gov.uk/documents/s85221/Overview%20of%20BHT%20Maternity%20Services%206%20Sept.pdf)
4. <https://chsft.nhs.uk/patients-visitors/services-z/maternity>
5. <https://www.which.co.uk/birth-choice/maternity-units/ou-the-delivery-suite-south-tyneside-district-hospital>

Summary

The estimate of the maximum frequency of use for a Tom Thumb resuscitator in different clinical environments is as follows:

Clinical Environment	Uses per Year	Days between uses
High Occupancy Labour Ward	40	9
Medium Occupancy Labour Ward	28	13
LDRP Delivery Suite	14 - 16	23 - 25
Neonatal Unit	Not quantifiable	Not quantifiable

Other Factors to Consider

The estimates of frequency of use are based on the statistic that approximately 10% of newborns require some assistance to begin breathing at birth. It is common practice to anticipate problematic deliveries with the use of ante-natal monitoring devices and, if the need for additional resuscitation is deemed likely, a mobile resuscitaire will be brought into the room to allow for resuscitation and possible transport to the Neonatal Intensive Care Unit.

As such, the frequency of usage estimates err on the high side.

1. Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: Neonatal Resuscitation: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation 2015; 132:S543.
2. <https://www.hey.nhs.uk/maternity/labour-ward/>
3. [https://democracy.buckscc.gov.uk/documents/s85221/Overview of BHT Maternity Services 6 Sept.pdf](https://democracy.buckscc.gov.uk/documents/s85221/Overview%20of%20BHT%20Maternity%20Services%206%20Sept.pdf)
4. <https://chsft.nhs.uk/patients-visitors/services-z/maternity>
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