

Blood Spot Collection Timing in the NICU & TPN Recommendations

NICU babies often receive interventions that can interfere with screening results. Therefore, the timing of blood spot collections for NICU babies should be adjusted with the following considerations:

Recommended collection timing for NICU babies and reasoning:

WHEN	REASONING
Upon admission to the NICU	<ul style="list-style-type: none"> • Reduces the chance that a baby will miss a screening. • If before 24 hours after birth, will be invalid for <i>some</i> conditions. • Still valid for several <i>time critical</i> disorders.
Again, at 48-72 hours after birth	<ul style="list-style-type: none"> • Capture a valid specimen for disorders that could not be screened on prior specimen
Again, at discharge or 28 days - whichever is earlier	<ul style="list-style-type: none"> • Detect conditions that may have delayed detectability in pre-term infants. • Resolve out-of-range screens common with pre-term infants.

Other considerations that affect NICU collection timing:

- Collect **before transferring** to another institution (to reduce the chance that a baby will miss a screening)
- Collect **before** these interventions that can interfere with screening results
 - Transfusion
 - TPN
 - Antibiotics

For a full description of the advantages and disadvantages of the above protocol, view the Clinical and Laboratory Standards Institute (CLSI) guidelines in [NBS03 – Newborn Screening for Preterm, Low Birth Weight, and Sick Newborns, 2nd Edition](#).

Considerations for TPN:

Facts & Recommendations -

TPN artificially increase the analyte levels for amino, fatty, and organic acid disorders, resulting in false-positives and an increased need for repeat screens.

The Kansas Newborn Screening Program's Advisory Council recommends holding TPN for 3 hours before collecting blood spot specimens.

This practice is not mandated by Kansas Newborn Screening statutes and regulations. Evidence for the practice is still emerging, but the available literature is compelling.

Benefits -

Replacing TPN with a glucose solution for 3 hours prior to a blood spot collection can significantly reduce the number of out-of-range screens caused by TPN, while maintaining infants' blood glucose levels.

Holding TPN reduces the costs of newborn screening and improves families' experiences with newborn screening by reducing the number of repeat screenings, false-positives, and stress.

Alternate TPN Protocol References:

- Johnston Tim-Aroon, T., Harmon, H., Nock, M., Viswanathan, S., McCandless, S., (2015). Stopping parenteral nutrition for 3 hours reduces false positives in newborn screening. *The Journal of Pediatrics*, 167(2), 312-316. <https://doi.org/10.1016/j.jpeds.2015.04.063>
- Morris M., Fischer K., Leydiker K., Elliott L., Newby J., Abdenur JE. (2014). Reduction in newborn screening metabolic false-positive results following a new collection protocol. *Genetics in Medicine*. 16,477-83. <https://doi.org/10.1038/gim.2013.171>

