GENERAL RECOMMENDATIONS FOR PREMATURE, LBW OR SICK INFANTS

Blood Spot Screening Primary Recommendation

Newborns admitted to NICU are at risk of missed, unreliable, or incomplete blood spot screening due to multiple factors associated with an infant or treatments given. For blood spot screening, it is unrealistic to expect a single specimen, no matter when it is collected, to be adequate for this population, particularly if the screening panel includes testing for hemoglobinopathies and analyses dependent on measurement of enzyme activity. Serial screening, with the collection of three (3) specimens (the first on admission to the NICU, the second at 48 to 72 hours of age, and the third specimen at 28 days of age or at discharge, is proposed as the most expedient and efficient paradigm.

Upon admission to the NICU, every newborn should have a Newborn Screen collected regardless of age, medical condition, or feeding status. Specimens collected upon admission before any treatments are begun provide reliable screening for hemoglobins, GALT, and biotinidase enzymes and provide baseline amino acids and acylcarnitines, although normal results do not rule out the presence of a condition on this specimen. Virtually all babies in the first 48 hours are catabolic, which increases the likelihood of detection of a Fatty Acid Oxidation disorder.

A repeat Newborn Screen should be collected between 48 to 72 hours of life only on infants who were less than 24 hours of age at admission and specimen collection. If an infant is 24 hours of age or older on admission to the NICU, repeat screening should be done according to local program recommendations for normal infants unless there are abnormalities on the initial specimen.

A final/third Newborn Screen should be collected on the 28th day of life or upon discharge, whichever occurs first. Premature newborns may take up to a month for thyroid function to mature to expected newborn levels. A specimen collected on the 28^{th} day of life should provide a reasonable measure of the infant's thyroid status, and should also allow detection of preterm infants with CH and delayed TSH rise, as well as later onset CAH and homocystinuria in preterm infants. In most cases, this specimen should resolve previous minor abnormalities such as multiple amino acid or carnitine elevations related to PN. This specimen should not be used to resolve minor abnormalities in IRT and acylcarnitines, which are known to decline with age, unless the screening laboratory has age-adjusted cutoffs.

Recommendations for NICU Infants Not Screened as Recommended

Previous recommendations have focused on protocols that aim to optimize the process of Newborn Screening for infants who are premature, of low birth weight, or seriously ill. Compliance with these established protocols minimizes issues related to requests for multiple Newborn Screen specimens, delay in screening and treatment, and loss to follow-up that can occur when additional screening is necessary following hospital discharge. However, at times, these protocols may not be followed. This table focuses on guidelines for these specific situations.

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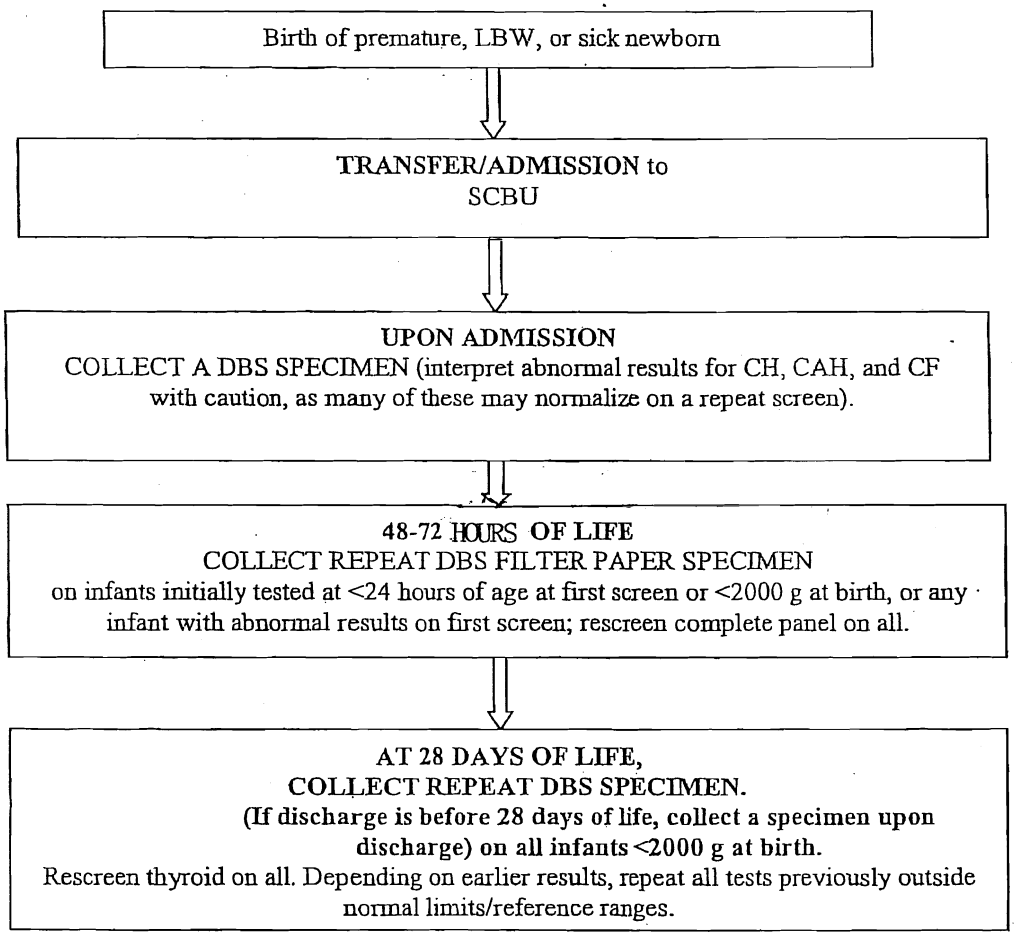
Birth of premature, LBW, or sick newborn
TRANSFER/ADMISSION to SCBU
UPON ADMISSION
COLLECT A DBS SPECIMEN (interpret abnormal results for CH, CAH, and CF with caution, as many of these may normalize on a repeat screen).
48-72 HOURS OF LIFE
COLLECT REPEAT DBS FILTER PAPER SPECIMEN
on infants initially tested at <24 hours of age at first screen or <2000 g at birth, or any infant with abnormal results on first screen; rescreen complete panel on all.
AT 28 DAYS OF LIFE,
COLLECT REPEAT DBS SPECIMEN.
(If discharge is before 28 days of life, collect a specimen upon discharge) on all infants <2000 g at birth.
Rescreen thyroid on all. Depending on earlier results, repeat all tests previously outside normal limits/reference ranges.

CONDITION	BEST SCREENING WINDOW (BEST AGE TO RESCREEN)
RBC transfusion/ECLS	90 days after last transfusion
Post PN	Some programs recommend waiting until 48-72 hours after PN is discontinued, but a shorter amount of time might be sufficient and is under investigation
Post carnitine supplementation	Approximately 4 days
Post MCT oil supplementation	Approximately 1 days
Post medications	3 half-lives of the medication - depends on drug kinetics
Post ECMO	72 hours