



NEWBORN SCREENING NEWS

The California Newborn Screening Program

Winter 1997

Special Bulletin

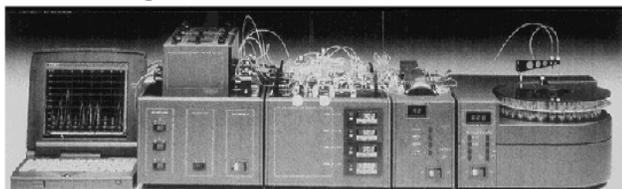
The California Newborn Screening (NBS) Program is pleased to announce the installation of new fully automated testing systems in the newborn screening contract laboratories and the Genetic Disease Laboratory. The switch to the new systems is scheduled to occur on or before December 9, 1997.



Parallel testing using the existing and the new systems is currently in process. Cuts-offs will be changed to maintain the current level of sensitivity for each of the tests. Program staff will be monitoring the screening data closely over the next few months to determine if additional adjustments are needed.

The new methodology for the initial screen for each disorder is as follows.

- Phenylketonuria (PKU): Continuous flow fluorometric analyzer which measures phenylalanine level
- Galactosemia: Continuous flow fluorometric analyzer which measures uridyl transferase level
- Primary Congenital Hypothyroidism: Time-resolved fluoro-immunoassay which measures thyroid stimulating hormone (TSH) level
- Sickle Cell Disease and Related Hemoglobin Disorders: Specimen preparation for hemoglobin analysis has been upgraded; however, the high performance liquid chromatography (HPLC) equipment and methodology has not been changed.



Important changes as a result of the new equipment/methodology:

PKU Cut-off:

The cut-off for the phenylalanine level will change with the new system. A reference range will be provided on the results mailer. Values below the detection limit will be reported only as below the limit. For example, if the detection limit is determined to be 0.5 mg/dL, those below this amount will be reported out as "< 0.5 mg/dL."

The chance of missing a case of PKU with a specimen collected **after** 12 hours of age is extremely remote with the fluorometric method used in California. Therefore, the Program continues to strongly recommend collection of specimens after twelve hours of age or immediately prior to a blood transfusion. Test results mailed to physicians and hospitals provide the age at collection and the phenylalanine level. The newborn's physician is responsible for a complete evaluation of the NBS results and for any individual follow-up that is deemed necessary. If you are concerned about an infant's screening result because of age at specimen collection (e.g., a result close to the cut-off that was collected in the first 24 hours of life) contact your Area Genetic Center NBS Coordinator for assistance.

TSH only testing:

The Newborn Screening test for primary congenital hypothyroidism (PCH) will no longer consist of a two-tier thyroxine/thyroid stimulating hormone (T_4 /TSH) test. T_4 testing has been discontinued and all specimens will be tested for TSH levels only.



Since the inception of California's Newborn Screening Program, the screening test was designed to detect primary congenital hypothyroidism (which accounts for approximately 80-90% of cases of congenital hypothyroidism), and not the less prevalent forms of congenital hypothyroidism such as hypopituitary hypothyroidism or transient forms of the disorder. The program may at times identify newborns with some of these other forms of hypothyroidism, however, it is not designed to reliably screen for these conditions. Physicians need to be alert to early signs or symptoms and order appropriate diagnostic tests. Because the hallmark of PCH is an elevated TSH, TSH screening is a reliable method of detection for this type of hypothyroidism.

Use of Capillary Tubes in Collection of NBS Specimens Affects Screening Results

The State continues to warn against the use of capillary tubes in newborn screening specimen collection. A study conducted by California's Newborn Screening Program¹ demonstrated that mean phenylalanine levels are statistically lower with the use of capillary tubes and when blood is collected from a dorsal hand vein as compared to heel stick samples with direct spotting on filter paper. Since Program cut-offs are based on heel stick samples spotted directly onto filter paper, a borderline elevated value when collected with a capillary tube or from a dorsal hand vein, could be misinterpreted as a negative result in an infant with PKU. The instructions on the NBS Specimen Collection Form state, "DO NOT USE CAPILLARY TUBES FOR COLLECTION OF BLOOD SPOT SPECIMEN." To avoid the possibility of a missed case and the resulting litigation against the facility and/or provider responsible for collection of the specimen, the standard collection method of heel stick with direct spotting of blood on filter paper should routinely be followed.

NBS Program Streamlines Process for Pediatric Care Providers to Obtain Copies of Newborn Screening Results.

Both the American Academy of Pediatrics Committee on Genetics and California State Department of Health Services strongly recommend that pediatric care providers review the newborn screening results on every patient under one year of age. The physi-

¹ Lorey, FW, et al. Effect of specimen collection method on newborn screening for PKU. Screening 1994; 3:57-65.

cian providing well child care will not automatically receive a copy of the results unless he or she is listed by the hospital of birth as the pediatric care provider on the NBS specimen collection form. Pediatric care providers can obtain a copy of the NBS results from their Area Genetic Center NBS Coordinator, or by contacting the State NBS Program Office in Berkeley. A NBS results request phone line, (510) 540-2747, has been established for this purpose.

Limitations of Screening

The California Program has screened over 8 million newborns with remarkable accuracy and as a result has earned the confidence of the medical community. However, it must be emphasized that screening programs, by their very nature, are imperfect. In designing a screening program a balance must be struck between the cost of false positives in terms of workload, recall testing and parental anxiety, and minimizing the number of missed cases. Care should be taken to follow the screening protocol and regulations which are designed to accomplish this objective. The rare "missed" cases in our program have been the result of not following protocol. Even when the protocol is carefully followed and analysis and reporting is completely without error, screening programs are not diagnostic and some cases will be missed. Therefore, the possibility of a disorder should not be ruled out solely on the basis of a newborn screening test result. Any signs or symptoms of one of these disorders should be followed up and any diagnosed case not picked up by screening should be reported to the Newborn Screening Program.

Newborn Screening Coordinators at Area Genetic Centers (AGCs)



UC San Francisco	(415) 476-5048
UC Davis	(530) 754-5400
Children's Hospital, Oakland	(510) 428-3127
Stanford University	(650) 723-7987
Fresno Valley Children's Hospital	(209) 246-6416
Loma Linda University	(909) 824-4191
UC Los Angeles	(310) 825-9719
Children's Hospital, Los Angeles	(213) 669-2226
Harbor/UCLA Medical Center	(310) 222-3751
UC Irvine Medical Center	(714) 456-6878
San Diego-Imperial Counties Developmental Services	(619) 576-2975
Kaiser-Permanente, Northern CA	(510) 596-6192
Kaiser-Permanente, Southern CA	(626) 564-3326