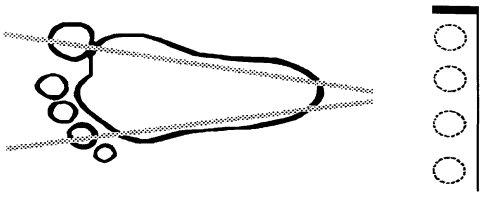
NEWBORN SCREENING



Be Kind To Tiny Feet

A newsletter of the Newborn Screening Program and the Newborn Screening Laboratory

REVISITING UNSATIFACTORY BLOOD SPOT SPECIMENS

This entire newsletter is about Unsatisfactory Blood Spot Specimens

The Utah Department of Health, State Laboratory Services receives blood spot specimens that can not be tested. Following is the Utah Statute, verbatim, for Newborn Screening, Section R398-1-10:

(1) If the department finds an inconclusive result, inadequate specimen, or QNS (Quantity Not Sufficient) specimen, the department shall inform the practitioner noted on the screening specimen form.
(2) The practitioner shall submit an appropriate specimen in accordance with Section R398-1-8. The specimen shall be collected and submitted within two days of notice, and the form shall be labeled for testing as directed by the department.
(3) The parent or legal guardian of a newborn identified with an inconclusive result, inadequate specimen or QNS specimen shall promptly take the newborn to the practitioner to have an appropriate specimen collected.

THANK YOU for responding to our "Unsatisfactory Specimen" letters, as soon as possible. Your help is **greatly appreciated**.

Editor's Corner: Teamwork is the key in the newborn screening process. Thank you for being an important part of the team.

Jan Bagley, RN

Top Five

The Utah State Lab receives blood spot specimens in conditions that are unacceptable for testing. Unsatisfactory specimens are known to give invalid results. Submitting unsatisfactory specimens can result in delays, placing the newborn at risk. Specimen Receiving, a division of the Utah State Lab, uses the "Simple Spot Check," to determine which specimens are unsatisfactory. (2). Trained employees carefully examine every specimen.

Have the "Simple Spot Check" Mailed to you. Call 801-584-8256

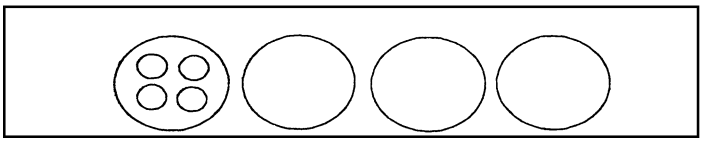
Why are so many specimens marked unsatisfactory when it looks like there is plenty of blood in the circles? The key for *accurate* testing is to have an even penetration of blood on the filter paper. The blood must soak through the filter paper, with one application, filling the whole circle. The filter paper is manufactured taking extreme care to meet national standards, for paper absorption rates. (1 & 2). The purpose of these national standards is to produce a uniform technique for collecting blood spot samples. The primary goal of the national standards is to provide accurate test results.

"The only justification for refusing to analyze a specimen and declaring it unacceptable is that its results may yield unreliable, misleading, or clinically inaccurate values for a particular analyte. Since, by this definition, an unacceptable specimen gives no useable information, such specimens should not be analyzed, and those responsible for collecting them should be informed so that an acceptable specimen can be obtained as soon as possible. If a specimen is analyzed, the laboratory is, in effect, acknowledging the specimen's adequacy and assumes responsibility for the analytical values." (1) .

Utah Department of Health

Division of Community & Family Health Services, Newborn Screening Program: (801) 584-8256 fax: (801) 536-0966
Division of Epidemiology & Laboratory Services, Newborn Screening Laboratory: (801) 584-8400 fax: (801) 584-8486

To prepare the specimen for testing, machines, simultaneously, make four 1/8-inch punches from each "circle" of blood on the filter paper.



The Wallac DBS Puncher, DELFIA® instrument, is used to make the punches. Each circle on the filter paper absorbs 100 µL of blood. Each 1/8-inch punch contains 3µL of blood. (3). Filter paper circles that are filled inadequately, improperly, or are contaminated (see Top 5 Table) will yield a ***quantity*** of blood that is *not sufficient* for testing. (1).

The top five reasons that blood specimens are rejected, by the Utah State Lab, were extrapolated from the Newborn Screening Program DataBase. Totals are from March 1, 2000 to September 30, 2000. Thanks to Fay Keune, RN for identifying the top five reasons from this time period.

FILL OUT THE NEWBORN SCREENING FORM-*COMPLETELY*

Did you know that ***not*** filling in the Newborn Screening Form (Demographic Information) could lead to an Unsatisfactory Specimen? You may have collected an excellent, perfect blood spot sample, but the tests can not be run until we have positive identification of the infant. (4 & 5). *The Demographic Information is vital for identification and location of infants for follow-up of abnormal test results*. (4)

The Newborn Screening Program only assumes responsibility for testing and tracking abnormal test results. The person collecting and submitting the specimen must assume the liability for proper identification, collection of blood, and delivery to the Utah State Lab.

PLEASE double check that the form is accurate, legible, and complete. This is an important part of collecting the specimen. Name, birth date, and the date the specimen is collected (this date is forgotten the most) are the most important. Include mother's name and other critical identifiers (twin A, triplet C, etc.). Rapid follow-up of an abnormal screening test result depends on identifying the physician who is caring for the infant.

For this reason, every effort should be made to ensure that the physician information is accurate and complete. Medical information about the infant; *bottle* or *breast fed*, *transfusion, antibiotics*, and *premature* or *sick*, is needed by the screening team to interpret test results and determine appropriate follow-up procedures. (6). Knowing if the infant is *ADOPTED* helps the follow-up process. Confidentiality is strictly maintained.

Complete the required information on the Specimen Collection Card using only BLACK ink and BLOCK CAPITAL letters. Try to stay within the prescribed limits of the computer intake BOXES. This helps the Data Entry employees put the correct information into the computer. Be careful NOT to touch the filter paper blood collection circles while you are filling out the form. (5).

The first screen is linked to the second screen using the infant's surname, mother's name, date of birth, and KIT I.D. Number. The Kit number can be found on the top of the forms (by the UPC codes).

PLEASE WRITE ORIGINAL KIT NUMBERS ON MISCELLANOUS SCREENING FORMS.

The Newborn Screening Follow-up Team receives an average of 120 cards, each week, with incomplete information. We have received BLANK cards and many other variations on the theme.

Suggestions for filling out the Screening Form-***Completely***:

- Use the Newborn Screening Collection Instructions (this is the sheet of paper on top of the form) as a checklist for collecting the sample.
- Take advantage of the Newborn Screening Educators to come teach your employees about filling out the demographics and collecting an appropriate Blood Spot Specimen. (Call 801-584-8256 to schedule).
- Double-check that the patient information section has been ***completely*** filled out before mailing the specimen.
- Educate families about the newborn screening program and the form.
- Remind families to take the second screening form to their health care providers.

If you need help with filling out the form
Call: 801-584-8256

TOP FIVE TABLE
UNSATISFACTORY SPECIMENS✳ (6)

TOP FIVE	CAUSES	LAB SPECIFICATION	PREVENTION
Blood filter paper circles are torn, scratched, or wrinkled	Card is damaged in mail ⇨Applying blood with capillary tube or other device Filter paper is scraped	Affects the ***quantity*** of blood (each circle must hold 100 µL of blood)	⃠Don't touch filter paper or press it against the heel ⃠Don't stack specimens together !Protect Kits that are stored Touch filter paper ***gently*** against a large drop of blood
Serum Rings or tissue fluid in blood	⃠Milking or squeezing puncture site ⃠Not wiping alcohol from puncture site ⃠Drying specimen improperly	Sample must be whole blood, not separated blood, with NO tissue fluid	⃠Milking or squeezing the puncture causes hemolysis of the blood & adds tissue fluids to the specimen Dry in a horizontal position ✹Protect from excessive heat Wipe away the first drop of blood (contains unwanted cells)
Blood Application Problems Blood clots Blood "caked" or layered Blood applied too heavy Blood applied to both sides of filter paper Blood did not soak through	Waiting too long to apply the blood to the paper (Clots) "Dabbing" blood drops to fill circles (Cakes) Lancet did not make 2.4 mm puncture (Poor blood flow)	Quantity of blood is ***not*** sufficient, each circle must hold 100 µL, each 1/8 Inch punch must hold 3 µL of blood	Allow a large drop of blood to soak through the filter paper & fill the pre-printed circles Only apply blood to one side of the filter paper
Outdated or expired Kits Blood specimen too old	Kits are stored without checking expiration dates Stock is not rotated Waiting to mail specimen	Blood will not elute (wash) from the filter paper.	Check the expiration date before collecting a sample Mail, properly dried specimens, within 24 hrs. of collection
Unevenly distributed blood	!Applying excess blood-usually with a device Applying blood to both sides of paper	NOT able to punch a uniform dot	Warm heel before collecting specimen ➢Use lancet that makes a wound 2.4 ml deep

✳There are more than five types of Unsatisfactory Specimens

***UNSAT**isfactory Newborn Screening Specimens*

By Shelley Morrill
Newborn Screening Health Program Representative

Hi! I'm Shelley. I'm the Health Program Representative for the Newborn Screening Program. I have worked for the State Department of Health/Community and Family Health Services/Children with Special Health Care Needs for five years, four years in Community Based Services and one year in the Newborn Screening Program. One part of my position is the responsibility of tracking and performing follow-up on all Unsatisfactory (UNSAT) Newborn Screening specimens.

UNSATS are created when hospital staff or provider staff submits a newborn screening specimen that fits into the state lab's rejection or unsatisfactory criteria. When the specimen is received at the State lab it is either logged in as a good specimen or rejected as an UNSAT specimen. If the specimen is rejected/ UNSATED it is given to me, where I process it in the following manner:

1. Notification letter, specimen rejection form, and a replacement miscellaneous newborn screening form are sent to the submitting hospital* or provider.**
2. Notification letter sent to mother 1-2 days after hospital/provider letter.
3. Two weeks after 1st notification letter sent, if no specimen has been submitted/received, a reminder letter is sent. If a recall specimen has been submitted/received the case is closed at this time.
4. Two weeks after the reminder letter is sent if no specimen has been submitted/ received, a final reminder letter is sent. If a recall specimen has been submitted/received the case is closed at this time.
5. Four weeks after final letter is sent, if no specimen has been submitted/ received, case is closed for failure to respond to letters.

*1st specimen is submitted by the place of birth and notices will be sent to who submitted the specimen.
**2nd specimen is submitted by physician and notices will be sent to that office.

All infants having an UNSAT are then entered into the Newborn Screening Database. A hard copy of all the tracking and follow-up letters are kept as a permanent record.

I also receive about 500 (per month) newborn screening forms that are *not* completely filled out.
I must call and try to get the information before the specimen can be tested. If I can't get the information, the specimen becomes an UNSAT.

FYI

Address Clarifications:

Utah State Department of Health Newborn Screening Laboratory,
Laboratory testing of all newborn screenings
Location: 46 N Medical Drive, Salt Lake City, UT 84113-9903

RIGHT NEXT DOOR

Utah State Department of Health Newborn Screening Program,
Follow- up on all abnormal results, Transfusions and UNSATS
Location: 44 N Medical Drive, PO Box 144710, Salt Lake City, UT 84114-4710

Utah Department of Health
Division of Community and Family
Health Services
Newborn Screening Program
P.O. Box 144660
Salt Lake City, Utah 84114-4460

BULK RATE
U.S. POSTAGE
PAID
Salt Lake City, Utah
Permit No. 4621

References

1. National Committee for Clinical Laboratory Standards. Blood collection on filter paper for neonatal screening programs; Approved Standard. NCCLS publication LA4-A2. Villanova, PA: NCCLS, 1992:1-25.

2. Schleicher & Schuell, Inc. Simple spot check. Keene, NH. 2000.

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4. Georgia Dept. of Human Resources. Georgia newborn screening manual for metabolic diseases & hemoglobinopathies. A Practitioner's Guide. 1999: 5-10.

5. Texas Department of Health. Newborn Screening Program. http://tdh.state.tx.us Oct. 25, 2000.

6. Mountain States Regional Genetics Service Network. Newborn screening, practitioner's manual. (2end ed.). 1996: 8-11.