



QUICK GUIDE

NBS01-Ed7-QG

How to Collect an Acceptable Blood Spot Specimen

For complete details on collecting dried blood spot specimens for newborn screening, see CLSI document NBS01.¹

A1 Preliminary and Precautionary Steps

- A1.1** Check the specimen collection device expiration date and, if needed, obtain a specimen collection device that has not expired.
- A1.2** Confirm the newborn's identity and ensure that all data required on the specimen collection device are complete, accurate, and consistent.
- A1.3** Wash hands vigorously.
- A1.4** Wear powder-free gloves and change gloves between newborns.

A2 Site Preparation

- A2.1** Warm the newborn's heel, as needed, around the intended area of the skin puncture site. Alternatively, cover the puncture site for three to five minutes with a moist towel warmed to a temperature no higher than 42°C.
- A2.2** Position the newborn's leg at the level of the heart or lower to increase venous pressure.
- A2.3** Wearing gloves, wipe newborn's heel with 70% isopropanol or chlorhexidine gluconate (< 2%) (see Figure A1). **NOTE:** Refer to local regulations and institutional policies.



Figure A1. Clean Puncture Site^a

- A2.4** Allow the skin to air dry.

A3 Puncture

- A3.1** Use a sterile retractable puncture device.
- A3.2** Position the puncture device to target the puncture site near the medial or lateral plantar surface of the heel (see green gridded areas in Figure A2) and apply gentle pressure.



Figure A2. Plantar Surface of Heel

- A3.3** Puncture the newborn's heel (depth of < 0.85 mm for preterm newborns or < 2.0 mm for term newborns) in the green gridded areas to obtain sufficient blood flow (see Figure A3).

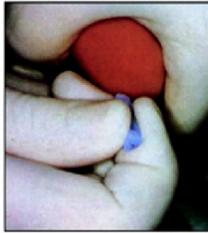


Figure A3. Heel Puncture^b

A4 Direct Application, Collection, and Preparation for Transport

- A4.1** Gently wipe off the first drop of blood with a clean or sterile gauze pad. **NOTE:** Some NBS programs prefer not to wipe away the first drop of blood; refer to local regulations and institutional policies.
- A4.2** Gently squeeze the newborn's heel to allow a round drop of blood to form.
- A4.3** Apply gentle pressure with your thumb around the newborn's heel and ease the pressure as drops of blood form. Do not excessively "milk" or squeeze the puncture site.
- A4.4** Gently touch the filter paper to the blood drop and fill each preprinted circle with a **single** application of blood (see Figure A4). Do not touch the filter paper to the heel. Apply blood to one side only. Observe the saturation of each preprinted circle as the blood flows through the filter paper. After collection, examine both sides of the filter paper to ensure saturation.



Figure A4. Blood Collection^b

- A4.5** After the specimen is collected, elevate the newborn's foot above the heart. Using a clean or sterile gauze pad, briefly apply gentle pressure to the puncture site until the bleeding stops. Do not apply adhesive bandages.

- A4.6** Dispose of all used items in an appropriate biohazard container.

- A4.7** On a horizontally level, nonabsorbent, open surface, such as a drying rack (see Figure A5), allow the blood spots to **air dry thoroughly for a minimum of three hours** at ambient temperature. Keep the specimen away from direct sunlight.



Figure A5. Drying Rack^c

- A4.8** After the blood spots have dried, place the specimen in an approved container for transport (refer to local regulations).

A5 Precautions

- Do not allow materials to come into contact with the specimen collection device before or after use.
- Failure to allow residual alcohol to dry might dilute the specimen and adversely affect test results.
- Do not use previous puncture sites.
- Do not layer successive drops of blood on the preprinted circle.
- Do not place the specimens in the transport container until thoroughly dry.

^a Photo provided courtesy of Wadsworth Center, New York State Department of Health.

^b Photo reprinted with permission from Dr. Manuel Saborio Rocafort.

^c Photo reprinted with permission from Whatman, Inc.

¹ CLSI. *Dried Blood Spot Specimen Collection for Newborn Screening*. 7th ed. CLSI standard NBS01. Clinical and Laboratory Standards Institute; 2021.

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