Newborn screening is a public health activity carried out in every state in the nation and in most developed countries. Newborn screening can identify conditions that are present but not clinically evident in the newborn period. Early identification and subsequent treatment of selected disorders can prevent permanent mental or physical damage, or death in affected children. The goal of newborn screening is to identify newborns who have rare and clinically unapparent but treatable syndromes. This can prevent developmental impairments, delayed physical growth, severe illness and death.

Newborn screening has been under scrutiny by public health officials since a November 2013 article was published in the Milwaukee Journal Sentinel. The article reported that thousands of hospitals throughout the country were late in sending newborn blood samples to state labs that perform the screening tests. The newspaper described cases from several states where late deliveries delayed diagnosis, including an Arkansas case where the hospital was late in sending a sample for testing. The newborn was critically ill by the time his blood sample reached the state lab, five days after collection, due to a state holiday followed by the lab being closed for inclement weather. It took an additional six days from receipt of sample by the lab until full testing was completed and the treating physician notified. The newborn experienced significant developmental delay from an easily treatable condition because of the delay in sending his blood sample for testing.²

Arkansas hospitals were slow in sending newborn screening samples to the Arkansas Department of Health’s (ADH) Public Health Laboratory for testing. At the end of the 2013 state fiscal year, only about 13 percent of the samples had been delivered within the specified period.

RECOMMENDED TIME PERIODS

The American Academy of Pediatrics recommends that newborns’ samples arrive at a testing lab within three days after collection, with a five-day maximum elapsed time between birth and the availability of test results. With some of these abnormal conditions, a newborn baby often appears healthy at birth, becoming extremely ill within days, leading to disability or death within a few weeks without treatment.

The American Foundation for Medical Care, Inc. (AFMC) works collaboratively with providers, community groups and other stakeholders to promote the quality of care in Arkansas through education and evaluation. For more information about AFMC quality improvement projects, call 1-877-375-5700.
blood specimen collection is 24 to 72 hours after birth. The collected specimen should be submitted to the ADH’s Public Health Laboratory in Little Rock within one business day, (previously 48 hours) of collection.

In Arkansas, the newborn screen is collected between 24 and 72 hours after birth. Blood samples from the newborn are collected by pricking the heel of the baby and collecting drops of blood on a piece of filter paper. The blood sample should be sent to the state lab within one business day.

The ADH laboratory tests newborn blood samples for 28 genetic disorders, providing an invaluable snapshot of information about the newborn’s health. Some health disorders can cause serious lifelong damage within five days after birth. The earlier the lab processes the tests, the sooner families can be notified of health concerns and consult with their physicians about further testing or treatment.

Hospital and public health officials in many states, including Arkansas, have pledged to end delays by changing processes and improving how samples get to state labs. Arkansas offers a courier service to transport blood samples from county health units to the ADH lab at no charge to hospitals. Hospitals also have the option to utilize overnight delivery services. Recently the ADH lab added Saturday hours of operation for newborn blood samples.

**TIMELY SUBMISSION IMPROVES 400%**

In January 2014, the ADH, Arkansas’ Division of Medicaid Services (DMS), Arkansas Foundation for Medical Care (AFMC), Arkansas Hospital Association, and Arkansas birthing hospitals began a coordinated effort to reduce newborn screening delays. Leveraging the innovative and successful Arkansas Medicaid Inpatient Quality Incentive (IQI) program, AFMC and DMS developed two newborn screening quality measures. These measures both challenge and incentivize Arkansas hospitals to reduce the time between taking newborns’ blood-screening samples and sending them to the ADH lab.

Newborn screening specimen collection and submission requirements from the Arkansas Board of Health were the basis for development of the IQI newborn screening quality measures. The two quality measures are:

- Newborn Screen 1 (NBS-1): Timely Collection of Newborn Screening Specimen
- Newborn Screen 2 (NBS-2): Timely Submission of Newborn Screening Specimen

These quality measures complement ongoing efforts in birthing facilities to examine their current process for collection and submission of newborns’ blood samples and enhance their ongoing quality improvement efforts. Each facility must determine the best approach to meet its needs and assist the facility in reaching established targets.

Since Nov. 2013, the ADH reports that Arkansas’ hospitals have attained an almost 400 percent improvement in the timely submission of blood samples for testing by the ADH lab. From July through September 2014, about half of newborn blood samples collected at Arkansas hospitals arrived at the state lab within 48 hours. Arkansas hospitals are working hard to achieve the more stringent target of one working day. Many hospitals in Arkansas have addressed and eliminated issues with collection and delivery of newborn blood samples.

Time is critical, and the newborn screening process is a team effort. Hospital physicians, nurses, and related staff take care of newborns. Newborns’ blood samples are typically drawn from the baby before it is released from the hospital. After blood samples are sent to the state lab and the results obtained, the ADH sends test results to the physician for follow-up. The physician can then advise and assist families in finding the right resources and team of specialists to get appropriate treatment.

Getting the right treatment, which starts with timely collection and testing of blood samples, makes a great difference in affected infants’ chances for a healthy outcome. ▲

Mr. Chasteen is manager of quality programs for the Arkansas Foundation for Medical Care; Dr. Golden is professor of medicine and public health at the University of Arkansas for Medical Sciences and medical director of Arkansas Medicaid and Dr. Smith is director and state health officer of the Arkansas Department of Health.

**REFERENCES**