

Kentucky Uses Quality Improvement to Improve Newborn Screening Timeliness

Over the past decade, Kentucky has created a culture of quality in the state laboratory where its newborn screening program is housed. The focus on quality has resulted in state laboratory staffing changes and improved newborn screening transit times.

Kentucky has implemented several initiatives for improving the newborn screening (NBS) system since 2008. The NBS lab is part of the central state lab and is not connected to any other hospital or facility. Therefore, a quality improvement (QI) initiative to improve NBS transit times required examining and implementing QI across the entire state lab.

In 2006, the Kentucky Cabinet for Health and Family Services implemented the Kentucky Child system, a web-based data collection system connected to all of the state's birthing centers. This system facilitates the collection of newborn demographic, vital statistics, and other NBS information, such as data on hearing and critical congenital heart defects (CCHDs), and electronically compiles them. The state laboratory, Office of Vital Statistics, Kentucky Birth Surveillance Registry, NBS Follow-up Program, and other cabinet agencies then use the data for different purposes, depending upon the department. For example, when the system reports an abnormal result, the NBS Follow-up Program uses the information for case management and follow up on CCHD screenings.

Additionally, the NBS lab has ensured testing coverage for major holidays since 2006. At that time, staff informed all carriers that the NBS lab was open on holidays and ran specimens in shifts to ensure all specimens were tested in a timely fashion. On weekends, hospital staff who were concerned about a specific case could call a 24-hour phone number to run those specimens. NBS supervisors were in short supply on weekends, so staff were borrowed from other labs to ensure managers were available. Although this process worked, the staffing issues that it created were unsustainable.

Steps Taken:

- In 2012, Dr. Stephanie Mayfield, director of the Kentucky Department for Public Health (KDPH) State Public Health Laboratory, became the KDPH commissioner. Under her leadership, the University of Kentucky was brought on to help run the state lab in 2013, and three pathologist directors rotated schedules. At this time, Dr. Mayfield requested that all weekends and holidays be covered with a more sustainable staffing schedule.

- In 2005, Kentucky implemented wide-scale quality assurance efforts to improve the state's NBS program.
- In 2013, all NBS personnel were designated essential so that testing could be performed on weekends and holidays.
- NBS transit time has improved, with a 200 percent increase in the number of specimens received within 48 hours of collection.

- In November 2013, the *Milwaukee Journal Sentinel* published [a series of articles](#) on many states' failing NBS systems. This series highlighted the importance of timely NBS and emphasized that newborns could die or suffer lifelong illness as a result of delayed screenings. This series provided momentum in Kentucky to change state lab employees' status. State lab staff were made essential employees and required to work holidays and shifts that covered weekends.
- To address transit time issues, the Kentucky NBS Advisory Committee—comprised of key staff from the University of Kentucky, University of Louisville, the state Title V director, several physicians and geneticists, state laboratory staff, and NBS Follow-up Program staff—regularly reviews quality metrics, including NBS turnaround time for hospitals. It also reviews best practice standards to ensure NBS processes and referral processes are current.
- The Kentucky NBS Advisory Committee utilizes multiple quality assurance metrics to improve NBS turnaround time, including the staffing ratio, tracers that follow specimens from the time they leave the hospital to their arrival at the lab, and various parameters, such as temperature, instruments, and quality of specimens. The state lab also has monthly quality assurance meetings at which it reviews individual submitter and aggregate transit times.
- Lab staff review timeliness reports and contact providers to provide support. If needed, the staff make onsite visits to determine the reason for timeliness issues and offer feedback, trainings, or materials on ways to improve the process.
- Monthly report cards are also mailed to both providers in healthcare facilities and nurse midwives who administer home births. These report cards include average times from birth to blood sample collection and receipt at the laboratory. Providers and facilities also receive their own average transit times, as well as overall average times across the state.
- The state lab has relationships with individual hospitals and works directly with the Kentucky Hospital Association, which has been an invaluable resource to communicate with hospitals around the state.
- All birthing hospitals have an NBS coordinator who serves as the state lab's point of contact regarding NBS QI efforts.
- In 2016, the state lab plans to partner with the Kentucky Health Information Exchange so the exchange will show NBS test results when credentialed users initiate a query.
- The Kentucky NBS laboratory is accredited by the College of American Pathologists, which defines and reinforces a culture of quality in the NBS laboratory and across the entire clinical laboratory.

Results:

- A major accomplishment from the recent QI project was reclassifying lab personnel as essential, ensuring that weekends, holidays, and inclement weather would not stand in the way of timely NBS results.
- NBS transit times have improved. Between June-November 2015, the amount of specimens received at the state laboratory within 48 hours of collection increased by nearly 200 percent, going from 15 percent in June to 43 percent in November.

Lessons Learned:

- It is important to involve staff from the start in all cultural changes.
- Partnerships are critical to successfully implementing QI programs. The state lab works closely on NBS issues with the University of Kentucky, University of Louisville, and Mayo Clinic. Both

State Story



universities have designated staff to address questions and concerns for the specialty needed for any referred labs. They also have designated contact people for referrals and follow-up until confirmatory diagnosis has been made. Additionally, a Mayo Clinic physician has served as a consultant to the NBS program and provided education and training programs to NBS staff.

- Lab directors and other senior-level staff must buy into the essential nature of NBS. Competent, qualified staff should be recruited to run the laboratory.
- Quality assurance is an ongoing process and should not stop once goals are achieved.
- Starting in January 2016, the state lab and NBS Follow-up Program began coordinating a review of hospital protocols and timelines by birthing facility to further determine reasons for delays in obtaining and transporting labs to the state lab.

For more information:

Jeremy Hart, MD, FCAP
Director, Division of Laboratory Services
Kentucky Department for Public Health
Email: deb.colston@ky.gov

Claire M. Rudolph, MPH, MCHES
Senior Analyst, Maternal and Child Health
Association of State and Territorial Health Officials
Email: crudolph@astho.org
Website: www.astho.org