Improving Turnaround Time for Newborn Screening Testing: A Two Year Experience in Michigan

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Background

- In 1965, Dr. Stanley Read at the Michigan Department of Public Health and Dr. Richard Allen at the University of Michigan introduced newborn screening (NBS) for phenylketonuria (PKU) to Michigan.
- Currently, Michigan’s NBS Program screens for 50 disorders.
- Michigan is geographically a large state with 90 hospitals with birthing units located across two peninsulas (Figure 1); the distance from Ironwood, MI to Lansing, MI is 550 miles.
- The time from specimen collection to laboratory receipt is an important quality assurance indicator because it measures how quickly specimens are shipped from birthing centers/midwives to the state NBS laboratory.
- The target time from specimen collection to laboratory receipt is one to three days.
- Treatment initiation recommendations vary from seven days of life for infants with PKU1 to three months of age for infants with sickle cell disease.2

Goal

- Improve the turnaround time for NBS through a variety of quality improvement measures (Figure 2) in order to decrease the time from birth to treatment initiation for newborns with disorders included in the NBS panel.

Changes Made to Achieve Goal continued

- The NBS Program Coordinator and Nurse Consultant conducted site visits at individual hospitals to review the entire NBS process.
- The NBS lab hired and trained new scientists, as well as cross-trained existing staff for Saturday testing (4/08).
- The NBS Program began operating six days per week (Monday-Saturday) to provide a partial panel of results (6/08).
- Extensive training & revised schedules for lab staff allowed for the complete panel to be provided for Saturday testing (9/09).
- The NBS Program held eight regional trainings around the state (Figure 3).
- 80% of hospitals sent at least one representative to a training.

Evaluation of Courier System

- The NBS Program evaluated the courier system by examining transit times (time from collection to laboratory receipt) for infants born 7/07, 7/08, & 7/09.
- The number of hospitals with an average transit time >3 days decreased from 70% in 2007 to 17% in 2009 (Table 1).
- The largest hospitals had the fastest transit times, though the smallest hospitals had the greatest percent improvement in transit time (Table 2).
- The Upper Peninsula region improved the most, reducing the average transit time by more than one day (Table 3, Figure 4).

Conclusions and Future Directions

- NBS Program improvements have significantly improved specimen transit and laboratory times and thus time to treatment initiation.
- Some anticipated improvements for 2010 include continued educational efforts for hospital personnel, expanded courier coverage and additional changes in lab operations.

Acknowledgments: William Young, PhD; Steven Korzeniewski, MA, MSc; John Dyke, PhD