



Educational Activities for Improved Timeliness in Newborn Screening

The Colorado Experience

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Objectives

- Identify strengths and weaknesses of the Colorado NBS program in 2014
- Describe early efforts and lessons learned from a hospital pilot study
- Describe expansion of educational efforts through NewSTEPs CoIIN
- Review improved outcomes
- Next steps with NewSTEPs 360

2014: Strengths and Weaknesses

- Strengths

- Statewide courier: but only 5 days a week
- Quarterly performance “report cards” to birth facilities
- Good collaboration with hospitals

- Weaknesses and barriers

- Limited education to hospitals and providers
- Lacked appropriate staff for education and quality improvement
- Large geographical region
 - Average transit time in Colorado: 2.82 days with only 60% of specimens received within 72 hours of collection.
- Rural communities served by small community hospitals
- Home births >1%

Colorado's groundwork leading up to CoIIN

- In 2014, the Colorado NBS Program collaborated with the Colorado Hospital Association.
- Proposed the “Timeliness Improvement Project” in April 2014 following a successful workgroup meeting.
 - Goal of identifying best NBS practices at Colorado Hospitals
 - 4 pilot hospitals selected
- Partnership with Kangaroo Express, our state contracted courier service



Timeliness Improvement Pilot Project

- Launched the pilot project from October – December 2014 at 4 hospitals with focus on improving specific quality indicators.
 - Collection time
 - Goal of all specimens collected at 24-48 hours, with aim of 24 hours
 - Reduction unsatisfactory specimens
 - Utilized existing resources of informational posters and CLSI collection DVD
 - Initiated “spot checker” program
 - Completion of NBS card demographics
 - Development of “accuracy poster” to emphasize accurate, complete, and legible documentation.
 - Transit time
 - Switched pilot hospitals to Kangaroo Express courier 7 days/week
 - Used standard envelope and “Chain of Custody”

Every time you fill out a newborn screening form you hold a baby's life in your hands.

Filling out the newborn screening form

- ✓ **Accurately**
- ✓ **Completely**
- ✓ **Legibly**

A sample newborn screening form with a barcode and various fields for patient information. The form includes sections for 'Patient Information', 'Physician Information', and 'Medical History'. It also has checkboxes for race and ethnicity: White, Black, Hispanic, Asian, and Other.

could be a matter of life and death!

In the event of a positive screening test, the information you provide is essential to locate the baby and a provider!

It's not just a form ... It's a baby.



COLORADO
Laboratory Services Division
Department of Public Health & Environment

Newborn Screening Blood Spot Specimens



Chain of Custody

Today's Date: _____ # Specimens _____

Facility of Origin: _____ Phone: _____

Type of Facility: Clinic Clinical Lab Hospital Midwifery Other _____

Manifest Enclosed No blood spot specimens are available today for pickup*

*This envelope must be completed and transported via courier daily, even when no blood spot specimens are available.

Packed for pickup by :						
First / Last Name (Please Print)	Init	Date (m/d/yr)	Time	AM	PM	
1						
Picked up from facility of origin by:						
First / Last Name (Please Print)	Init	Date (m/d/yr)	Time	AM	PM	
2						
Transferred to 3, otherwise sign on line 5						
3						
Transferred to 4, otherwise sign on line 5						
4						
Dropped off at CDPHE Laboratory by:						
First / Last Name (Please Print)	Init	Date (m/d/yr)	Time	AM	PM	
5						
CDPHE drop Site (check appropriate box):		<input type="checkbox"/> Receiving Desk (8 am - 5 pm) <input type="checkbox"/> After-hours drop box				
Received at CDPHE Laboratory by:						
First / Last Name (Please Print)	Init	Date (m/d/yr)	Time	AM	PM	
6						

(Newborn Screening Lab Use Only) # Specimens received: _____ by (Init/date): _____/_____

Please Note: The CDPHE Laboratory business hours are Monday-Friday, 8am-5pm.

The after-hours drop box is available to the left of the specimen receiving door.

Please do not use the drop box during regular CDPHE Laboratory business hours.

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Every Hour Counts!

Lessons Learned

- Collaboration and education work!
 - Improved collection time and completion of NBS cards at all participating hospitals.
- Importance of a state-wide courier.
 - Both hospitals and courier appreciated having “chain of custody” form
 - Allowed NBS lab to accurately determine time of drying, packaging, transport, and receipt of NBS specimens.
- Spot checker initiative resulted in ZERO unsats at pilot hospitals for 6 consecutive months.
- Pilot hospitals reported that success was a result of partnership within the hospital between nurses and lab staff.
 - Emphasized importance of buy-in from all parties involved

CollN with



NewSTEPS

A Program of the Association of Public Health Laboratories*

- How do we expand the successes of our pilot project to the remaining birth facilities in Colorado (and Wyoming)?
- NewSTEPS began a **Collaborative Improvement and Innovation Network (CollN) for timeliness in NBS.**
 - January 2015 through April 2016 (15 month collaboration)
- Seven newborn screening (NBS) programs were selected (Arizona, Colorado/Wyoming, California, Iowa, New Hampshire, Tennessee, Texas)
 - CO/WY Team included representatives from Colorado NBS Program, Wyoming Department of Health (WDH), hospital lab staff, and a midwife.
- Goal: Engaging in quality improvement through shared collaborative learning of evidence-based strategies for improvement of timeliness within NBS, contributing to improved health outcomes.

SMART Goals

- Established SMART goals
 - Specific, Measurable, Attainable, Relevant, and Time-bound
- Goals
 - Reduce transit time
 - Reduce by 1 day with 95% of initial screens received within 72 hours of collection.
 - Ideally receipt within 24 hours of collection
 - Ensure 100% of initial newborn screens are collected prior to 48 hours.
 - Reduce unsatisfactory specimens
 - ***Develop sustainable education program***

Aims for our Goals

- EDUCATION!
- Development and dissemination of a hospital survey
- Educate hospital to improve utilization of courier
- Improve lay-out of our performance report cards.
 - Begin monthly dissemination of report cards
- Reinstitute site visits
 - Educate hospitals with poor transit time
 - Educate hospitals with high unsatisfactory rates with spot checker initiative
 - Educate hospitals that continue to collect specimens >48 hours of age
- Conduct conferences and webinars for all hospitals

Hospital Survey

- Conducted survey via survey monkey to all birth facilities in CO and WY.
- Goals of survey:
 - Gain knowledge regarding NBS processes at each hospital
 - Identify key players and organizational structure
 - Identify gaps and barriers to getting specimens to NBS lab within 24 hours
 - Identify educational needs
- Relationship building with hospitals



Hospital Survey Results

- Completed by 85.5% of CO hospitals and 90.9% of WY hospitals.
- Identified issues at many of the hospitals
 - 68.67% of hospitals drying specimens >4 hours
 - 6% of hospitals reported that weekend courier pick-up would be an issue due to staffing
- Confirmed that report cards are being reviewed but many stated that they were not being shared with nursing and lab staff.
- Showed that previous distribution of the CLSI DVD distribution was unsuccessful (costly).
 - Only 36.2% of CO hospitals recalled receiving the video with even less stating that they have utilized the video 1 year post distribution.
- Identified the need to go “back to the basics” for education.

Every Hour Counts!

Timing is critical for saving babies

Newborn Screening

- Collect the newborn screening specimen at **24 - 48** hours of life. Aim for **24**.
- Fill out the screening card completely, accurately, and legibly.
- Check the specimen. Is it a good specimen? If there is any doubt, recollect immediately.
- Dry the specimen horizontally for **3 - 4** hours.
- Package dried specimens **daily** for the courier – know your courier's pick-up time.
- Specimens should arrive at the newborn screening lab within **24** hours of collection.



COLORADO
Department of Public
Health & Environment

Revised Report Cards



303-692-3482

Newborn Screening Report Card

Submitter: **Rose Medical Center**

Report Period: December 01, 2015 - December 31, 2015

	Submitter	Colorado
Total Specimens Submitted	283	5,461

Unsatisfactory Specimens

Goal: EVERY specimen is collected properly and is valid for analysis.

	Submitter	Colorado	Goal
Total unsatisfactory specimens	0	39	0
Percentage of unsatisfactory specimen	0.0	0.7	0

Missing Demographics

Goal: All essential demographics are completed allowing for proper analysis and rapid follow-up.

	Submitter	Colorado	Goal
Total missing demographics	17	582	0
Percentage of missing demographics	6.0	10.7	0

Collection Time

Goal: Collect specimens between 24 to 48 hours of age - aim for 24 hours!

	Submitter	Colorado	Goal
Percentage of specimens collected less than 24 hours	10.6	11.2	0
Percentage of specimens collected between 24 - 48 hours	88.3	83.1	100
Percentage of specimens collected greater than 48 hours	0.4	3.8	0

Transit Time

Goal: Specimens received by NBS lab ideally within 24 hours of collection.

	Submitter	Colorado	Goal
Percentage of specimens received within 24 hours	10.2	1.8	100
Percentage of specimens received between 24 - 48 hours	69.3	48.4	0
Percentage of specimens received between 48 - 72 hours	19.1	28.5	0
Percentage of specimens received greater than 72 hours	1.4	20.5	0

Average Time of Transit	1.61 days	2.56 days	1.0 days
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- Goals clearly stated
- Hospitals compared to Colorado/Wyoming as well as stated goals
- Developed “outlier” report to identify specific specimens that fell short of stated goals.
- Disseminated monthly to key personnel with “Honor Roll” of best performing hospitals.
- Poor performers receive follow-up phone call.

Site visits

- Re-initiated site visits as component of our NBS programs.
- Visited largest birth hospital in Colorado in February 2015 to give educational presentation to nursery and lab staff.
 - Spent time reviewing their NBS process
 - Identified multiple issues regarding timeliness
 - Had second site visit to address unsatisfactory specimens
 - CDPHE lab staff and lab staff from another hospital
- Follow-up included multiple conversations with lab supervisor and monthly analysis of report cards.
- Reinforced that “Boots on the Ground” works and identification of a champion at each hospital is key.
- Some facilities may require more than one visit and sustainability can be difficult!

Improved Outcomes

- Unsatisfactory Specimens
 - 2014: 0.96%
 - 2015: 0.73%
 - 2016 Goal: 0.50%
- Missing Essential Demographics (14 in all)
 - 2014: 32%
 - 2015: 8.3%
 - 2016 Goal: 7.5%
- Collection Time < 48 hours of age
 - 2014: 94.4%
 - 2015: 95.1%
 - 2016 Goal: 97%
- Transit Time <72 hours
 - 2014: 60%
 - 2015: 82%
 - 2016 Goal: 95%

NewSTEPs 360

- Our experiences through COLLN allowed us to identify areas of continued educational focus.
- Goals
 - Create a video for hospitals and midwives addressing timely collection and transport of NBS specimens.
 - Complete an educational module to accompany the video for hospital staff and midwives.
 - Develop a standardized site-visit curriculum including a pre-site needs assessments, an educational presentation, and post visit evaluation identifying strengths and weaknesses of the birth facility.
 - Complete the accreditation of the educational module for laboratorians, nurses and physicians for acquisition of continuing educational credits.
 - Conduct yearly NBS conference for hospital staff, “NBS 101”.

Thank you!

- Other CoIIIN states for freely sharing their experiences, resources, and advice
- Our team:
 - CDPHE representatives
 - Mark Dymerski, lab supervisor
 - Emily Fields, NBS follow-up coordinator
 - Jeana Foster, physical scientist (spearheaded our pilot)
 - Laura Taylor, NBS follow-up coordinator
 - Dan Wright, NBS Program Manager
 - Erica Wright, NBS follow-up supervisor
 - Wyoming Health Department (WDH) representative
 - Carleigh Soule, NBS and Genetics coordinator
 - Danielle Marks,
 - Hospital representatives
 - Sandy Towne, referral testing, Rose Hospital , Denver, CO
 - Dawn Schultz, pre-analytic supervisor, Mercy Regional Medical Center, Durango, CO
 - Karen Flynn, lab manager, Memorial Hospital, Colorado Springs, CO
 - Bev Alden, lab, Cheyenne Regional Medical Center, Cheyenne WY
 - Erin Rooney, lab, Cheyenne Regional Medical Center, Cheyenne WY
 - Certified Midwife
 - Gina Gerboth

Contact Information

Please feel free to contact me if you are interested in receiving any of our developed resources.

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