



*Georgia Department of Public Health*

# Implementing ETOR for Newborn Screening in Georgia

Presentation to: APHL Annual Meeting

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*We Protect Lives.*

# Background

- 2011 – Laboratory Information System updated
  - Perkin Elmer Screening Center
  - HL7 used to send nightly files to NBS Program and Emory Dept of Human Genetics (Follow-up)
- 2013 – Federal funding available for electronic data exchange projects
  - Quote obtained from Perkin Elmer to create HL7 messages
    - Used Library of Medicine Standards
    - Included LOINC codes

# Background

- 2013 – 2015 – Searched for Partners
  - A number of hospitals were contacted
  - Generally, labs and newborn screening coordinators were interested in project
  - Hospital administrations and/or IT departments were not that interested or had higher priorities
  - Funding was not sufficient to pay hospital costs
- 2015 – 2016 – Sporadic interest from hospitals, but no funding

# Current Project

- July 2016 – Contacted by Ruvos
  - Had just completed a project interfacing the Florida newborn screening laboratory with a large hospital
  - Interested in working on a similar project in Georgia
  - Had funding available from APHL
  - Search for partner hospital renewed
- January 2017 – Piedmont Hospital lab manager expressed interest (primarily in reporting)
  - Large hospital system in Atlanta with >7 locations

# Current Project

- March 2017 – GPHL and Ruvos met with Piedmont Hospital lab manager and nurses
  - Lab manager very enthusiastic, because newborn screening results were the only send-out labs not being received electronically
  - Nursing staff initially very skeptical, but interested, because completing the NBS form requires about 10 minutes per form
- June 2017 – Project plan finalized

# Project Plan

- Project included multiple entities
  - Georgia Public Health Laboratory (GPHL) & IT
  - Piedmont Hospital Laboratory & IT
  - Perkin Elmer
    - Creating HL7 export file and order entry holding table
  - Ruvos
    - Writing bidirectional interface between GPHL and Piedmont
  - APHL
    - Established contracts with Perkin Elmer and Ruvos, allowed for use of AIMS through membership
  - CDC – Provided funding for project

# Project Plan

- Electronic Laboratory Reporting (ELR)
  - First phase of project, because it is highest priority for Piedmont Hospital
  - To be completed by June 30, 2018
- Electronic Laboratory Ordering (ELO)
  - Second phase of project
  - To be completed by September 30, 2018

# ELR

- HL7 export file will be created nightly
  - File will include all specimens reported that day
  - File will include:
    - Patient demographic data;
    - Assay identification and test results;
    - Result determinations (e.g., normal, abnormal, elevated);
    - Reference ranges (i.e., cutoff values);
    - Sample-level messages (e.g., unsatisfactory reason);
    - Disorder-level messages
      - Which marker is out of range, associated disorder, recommended actions



# ELO

- HL7 import of patient demographic data and specimen data from hospital information system
  - Piedmont uses Epic HIS
- Data will be temporarily stored in holding table on lab server
  - Data will be associated with specimen, when specimen barcode is scanned at GPLH
- Specimen form will include label with patient name, DOB, and MRN
  - Data not available from HIS will be entered by hand

# Georgia NBS Submission Form

IVD 2017-07 LOT 102277 / 314132 Anlstrom 226 PerkinElmer	Submitting Healthcare Provider (Report and Invoice to): _____ State _____ Submitter Code: _____	<b>For GA State Lab Use Only</b>	Georgia Public Health Laboratory - Newborn Screening 1749 Clairmont Road, Decatur, GA 30033 Telephone: (404) 327-7900 Fax: (404) 327-7919 Form 3491 (Rev 07/2014)
	Submitting Facility's Address: _____ City _____ State _____ ZIP Code _____ Street _____ County _____		
<b>PEDIATRICIAN</b>	Pediatrician After Discharge: _____ Submitter Code: _____ Pediatrician's Phone Number: _____ (Area Code) _____ Number _____	Pediatrician's Mailing Address (Report Copy To): _____ City _____ State _____ ZIP Code _____ Street _____ County _____	
<b>BABY</b>	Reason for Test: <input type="checkbox"/> 1 <sup>st</sup> Test <input type="checkbox"/> Routine Retest <input type="checkbox"/> Retest - Prior Unsatisfactory <input type="checkbox"/> Retest - Prior Abnormal Chart Number/Medical Record Number: _____ Hospital Lab Access No.: _____ Infant's Last Name: _____ Birth Date: _____ Birth Time: _____ (Military) _____ Infant's First Name: _____ Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown Birth Weight (Grams): _____ Collection Weight (Grams): _____ Gest. Age (Birth) (Weeks): _____ Transfusion: <input type="checkbox"/> No <input type="checkbox"/> Yes Date of Last: _____ Protein Feed: <input type="checkbox"/> Breast <input type="checkbox"/> Formula <input type="checkbox"/> Both Single Birth: <input type="checkbox"/> Multiple Birth A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D Infant's Race: <input type="checkbox"/> White <input type="checkbox"/> Black <input type="checkbox"/> Asian <input type="checkbox"/> Pacific Islander/ Native Hawaiian <input type="checkbox"/> American Indian/ Alaskan Native <input type="checkbox"/> Multiracial <input type="checkbox"/> Unknown Parenteral Nutrition: <input type="checkbox"/> Yes <input type="checkbox"/> No Formula Trade Name: _____		State Lab Use Only Unsat Code: _____ NICU: <input type="checkbox"/> No <input type="checkbox"/> Yes Adoption: <input type="checkbox"/> No <input type="checkbox"/> Yes Collected By (Initials): _____ Collection Date: _____ Collection Time (Military): _____
<b>MOTHER</b>	Mother's Last Name: _____ Mother's Birth Date: _____ Mother's or Contact's Number: _____ (Area Code) _____ Mother's First Name: _____ Emergency Contact Number: _____ (Area Code) _____ Mother's Address: _____ City _____ State _____ Zip Code _____ Street _____ County _____		300047070 SN
<b>HEARING</b> Final Screen Date: _____ Right Ear: <input type="checkbox"/> Pass <input type="checkbox"/> Refer Screen Method: <input type="checkbox"/> aABR <input type="checkbox"/> aOAE <input type="checkbox"/> aABR and aOAE Left Ear: <input type="checkbox"/> Pass <input type="checkbox"/> Refer Not Screened: <input type="checkbox"/> Delayed/WBN <input type="checkbox"/> Parental Refusal <input type="checkbox"/> Other: _____ <input type="checkbox"/> Delayed/NICU <input type="checkbox"/> Equipment Down <input type="checkbox"/> Transfer/Hospital		<b>CCHD Results</b> Date: _____ Initial: Right Hand _____ Foot _____ Time _____ Repeat #1: Right Hand _____ Foot _____ Time _____ Repeat #2: Right Hand _____ Foot _____ Time _____ Final Outcome: <input type="checkbox"/> Pass <input type="checkbox"/> Fail Referred To: _____	
STATE LAB DATA ENTRY COPY			

# Future Expansion

- File created by Perkin Elmer will contain data for all hospitals
  - Ruvos interface will extract only data for Piedmont Hospital
  - It will be relatively easy to implement ELR for other hospitals
    - PE/GPHL will only need to maintain and support one process for exporting data
    - Interface will need to be written for each subsequent hospital
- Holding table created by Perkin Elmer will be usable by other hospitals for ELO

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