



Newborn Screening Pre-Analytic Initiatives
Developing an Electronic Birth Notification
System to Improve NBS Processes
The Montana Experience

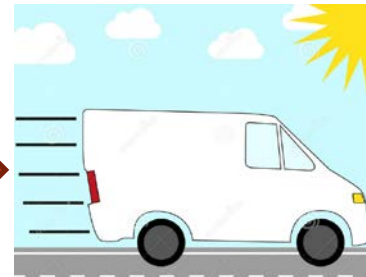
Susanne Norris Zanto, MPH, MLS(ASCP)^{CM}, SM

Montana Newborn Screening Program

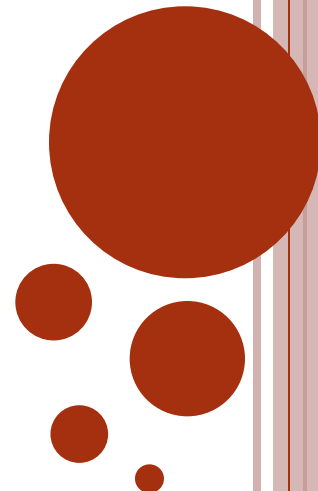
Montana has a birth rate of ~12,000

Only one screen is mandated

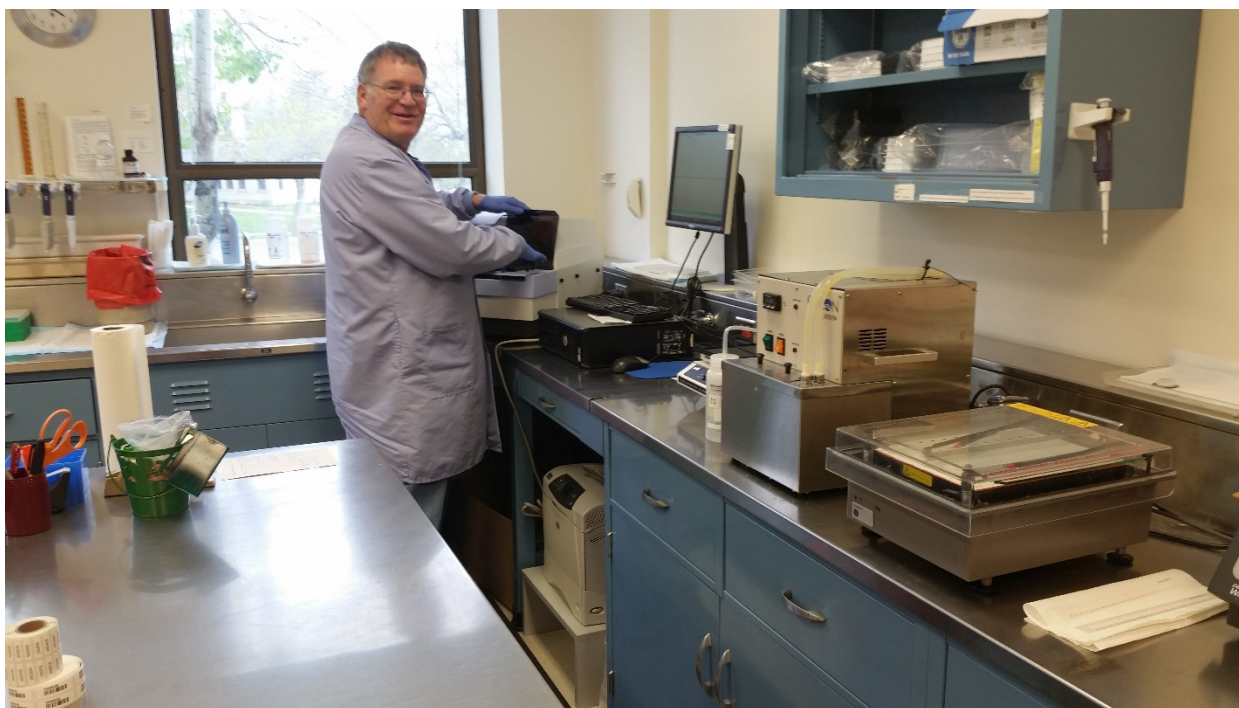
Courier System picks up at major birth hospitals M-F



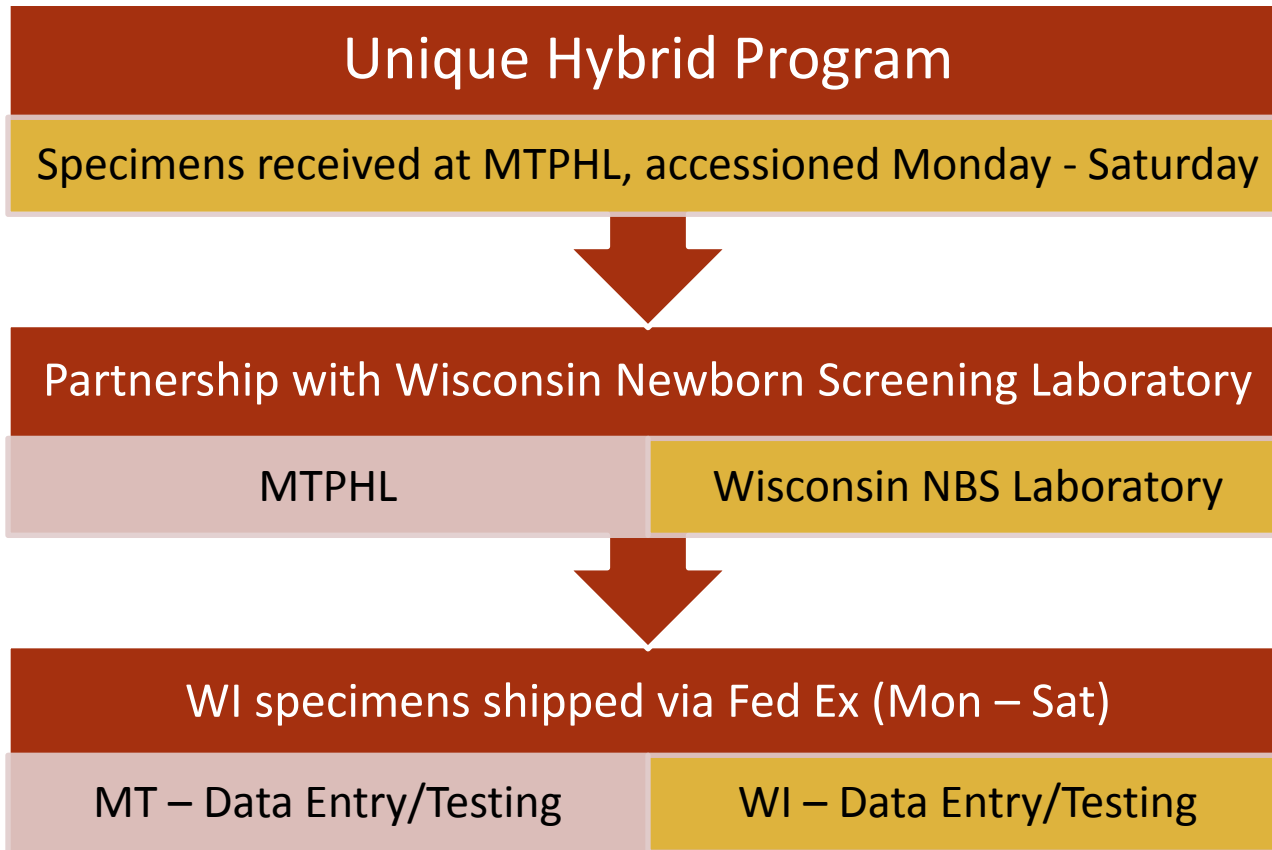
Montana Public Health Laboratory



Montana Public Health Laboratory



MT Newborn Screening Program (cont'd)



Montana Newborn Screening Card

MONTANA DPHHS NEWBORN SCREENING
 Public Health Laboratory, P.O. Box 4369, Helena, MT 59604-4369
 (800) 821-7284 CLIA ID # 27D0652531

6979314
W121
LOT

2017-03
IVD

MONTANA DPHHS NEWBORN SCREENING
 Public Health Laboratory
 P.O. Box 4369, Helena, MT 59604-4369

SN **287062**

Do Not Write in This Space

Baby's Last Name _____

Baby's First Name _____

Baby's ID Number _____ Gender M F

Mother's Last Name _____

Mother's First Name _____

Baby's Physician _____

Medicaid ID Number _____

Physician NPI # _____ MTPHL 0112

Submitting Facility: _____

RACE OF BABY (Check all that apply)
 White Black Native Amer. Asian Other Unk

ETHNICITY OF BABY (Check only one)
 Non-Hispanic Hispanic Unknown

BIRTH DATE AND TIME
 ____/____/____ : ____ AM PM

SPECIMEN COLLECTION DATE AND TIME
 ____/____/____ : ____ AM PM

SINGLE BIRTH IF MULTIPLE A B _____

BIRTH WEIGHT (grams)

HAS THE BABY RECEIVED A RBC TRANSFUSION? Y N

DATE OF TRANSFUSION _____

MISCELLANEOUS INFORMATION

FEEDING METHOD
 TPN Breast Formula, Soy Formula, Lactose

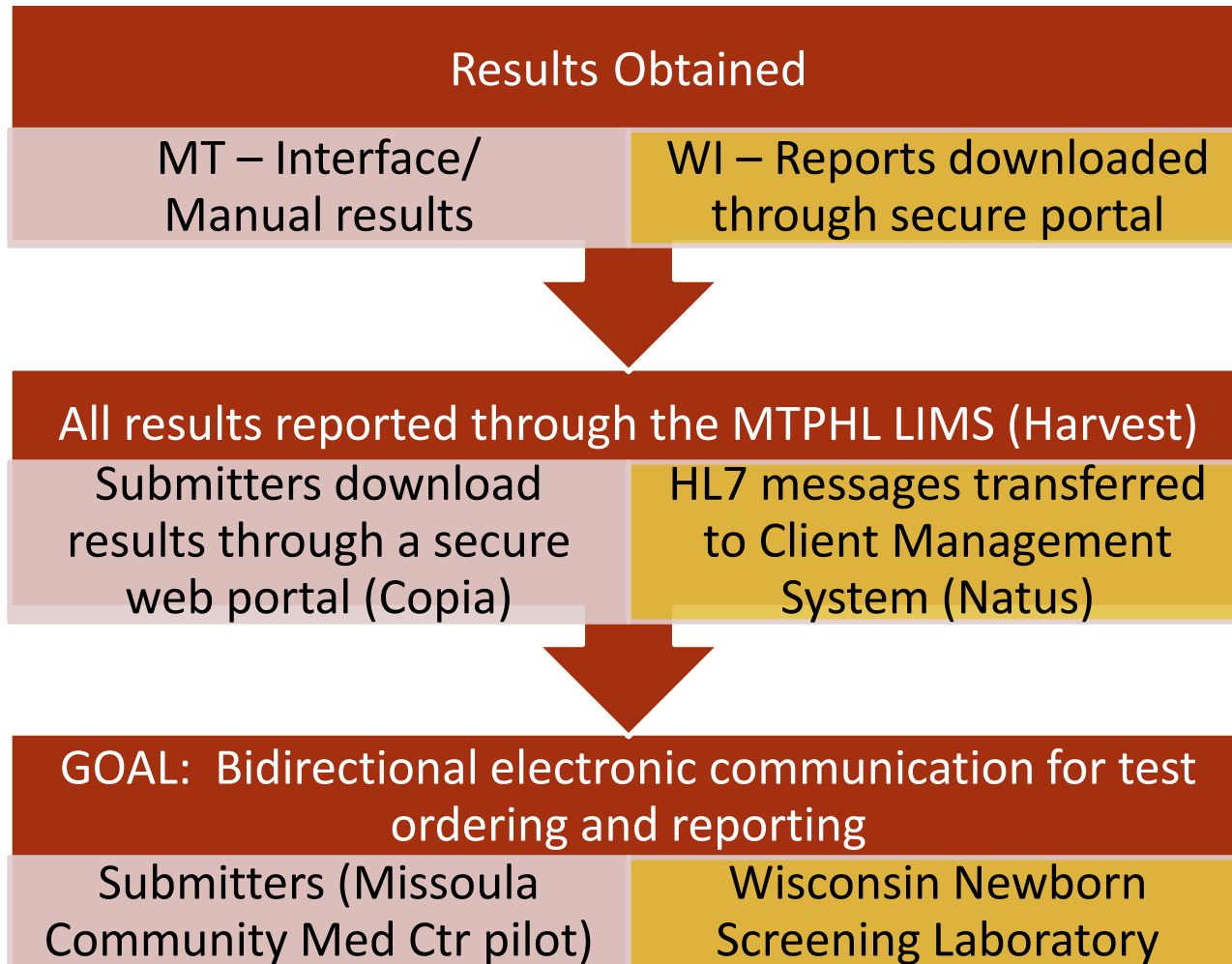
IS MOTHER OR INFANT ON STEROIDS? Y N

IS MOTHER OR INFANT ON ANTIBIOTICS? Y N

OTHER CONSIDERATIONS
 NICU Adopted _____

SPECIMEN
 1st Repeat

MT Newborn Screening Program (cont'd)



MT NBS Quality Assurance Program

Provide Facility Report Cards

- Turnaround Time
- Unsatisfactory Rates
- Missing Information

Track Non-compliant Events in iPassport

- Changes in Demographic Information
- Amended or Corrected Reports

Short Term Follow-up Metrics

- Time from Birth to NBS Report
- Time from Request to Receipt of Follow-up Specimen
- Time from Birth to Diagnosis

Current Tracking of Quality Indicators

Category	Measurable Metric
Pre-Analytic Process Metrics	Time from birth to NBS specimen collection
	Time from collection to receipt at the MTPHL
	Percentage of unsatisfactory specimens, separated out by reason
	Number of NBS specimens with missing relevant data
	Number of NBS specimens with inaccurate relevant data
Post-Analytic Process Metrics	Number of corrected or amended NBS reports
	Time from request for additional specimen to receipt at MTPHL (more timely follow-up practices)



MT NBS Proof of Concept Project

Extension of the CMC ETORs Project

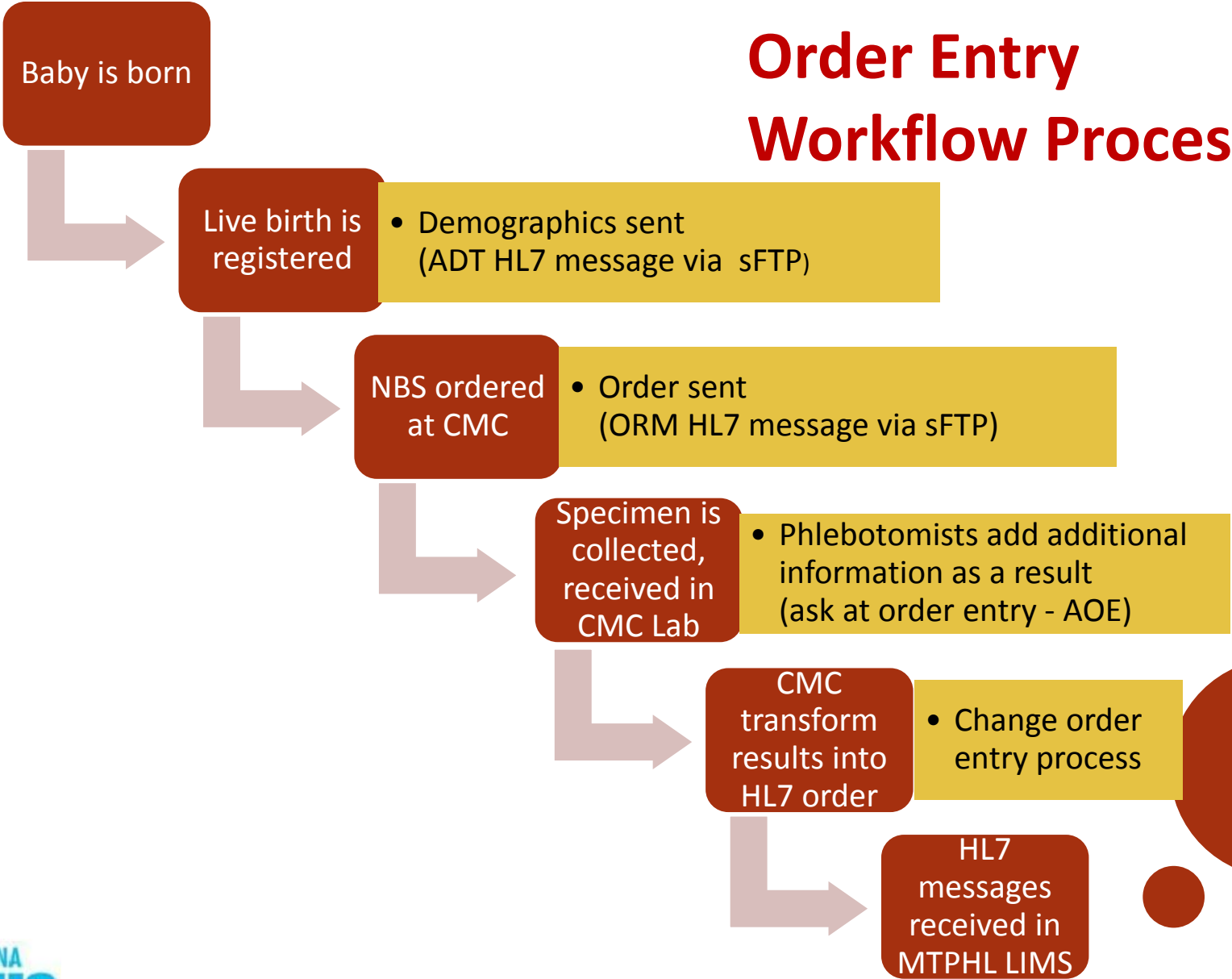
CMC accounts for ~15% of births in MT

Cerner is CMC's LIMS vendor

Demographic information is transmitted at birth
(birth notification)

Data to be used for improving pre-analytic quality indicators

Order Entry Workflow Process



MT NBS Proof of Concept Challenges

sFTP processes took time to work out (push/pull)

Not all newborn screening data is easily accessed from Electronic Health Record

Adopted?

On Steroids?

On Antibiotics?

Repeat Specimen?

CMC needed to modify processes

Ask At Order Entry (AOE) Questions

Risk of resulting other fields besides the AOE questions

Generates an ORM (HL7 result message)

Needed to convert this ORU into an order message (ORM)

MT NBS Proof of Concept Barriers

NICU data in HL7 message, no field in Copia

Was able to use a patient level “user defined field”

Demographic information not easily accessed in Copia
prior to specimen collection

No reports – each record is reviewed individually

Multiple screens need to be reviewed to see all information

Copia not currently configured to accept time of birth

Needed to compute < 24 hour collections

Cerner configuration issues for results reporting

MT NBS Proof of Concept Successes

Messages can be received before specimens are collected (Birth Notification)

Will provide opportunities to give advice for improving pre-analytics

Ensuring NICU babies have a specimen collected prior to treatment

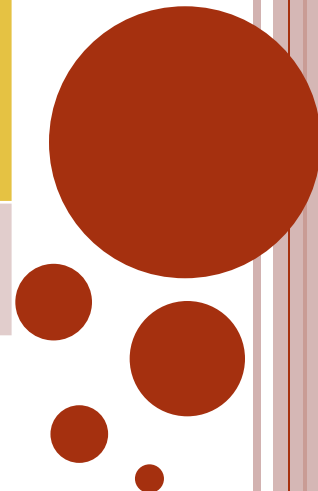
Recommend collection times to ensure timely courier pickup and delivery

Improved Communication and Collaboration

Success at CMC → Billings Clinic

MT NBS Proof of Concept Baseline Data

Measure Sept 2014 – Feb 2016	Total Baseline	CMC Baseline	CMC Electronic
Average time from birth to NBS specimen collection	2.81	2.51	
Average time from collection to receipt at the MTPHL	2.38	2.40	
Percentage of unsatisfactory specimens	1.84%	0.34%	
Number of NBS specimens with missing/inaccurate relevant data	34	3	
Number of corrected or amended NBS reports	3	0	



MT NBS Proof of Concept Findings

Electronic interfaces take longer than anticipated

It is possible to receive birth notification data to be used to improve pre-analytics

Even in pilot, able to compare electronic and paper requisitions – QA opportunities

Can already see improvements in data accuracy

MT NBS Proof of Concept Findings

Pilot is solving process questions in Copia and Cerner (other vendors will benefit)

Communications -
Developing long term relationships

Once Proof of Concept is successful,
others will participate

See the value for the future