LIST OF REVISIONS

REVISION No.	DATE	REVISED BY:	PAGE/S	DESCRIPTION
1	05/10/2018	GDSP	7	Initial Version
2	10/10/2019	GDSP	7	Updated the document with the details of disorders MPS I, ALD, Pompe

NEWBORN SCREENING RESULTS – HIE FAQ

General

1) **How are NBS HL7 results exchanged?**
   Ans: GDSP generates NBS HL7 results and uploads .zip file in FTP location. The details of FTP location will be shared before Interface Testing phase.

2) **What is the timeframe for sending acknowledgement (ACK) message for the NBS HL7 result messages?**
   Ans: GDSP monitors the acknowledgements received for each test result it sends. GDSP expects to receive the ACK message for every message within 5 days of successful transmission.

3) **How frequently does the password for FTP site need to be changed?**
   Ans: FTP password should be changed every 60 days. An email will be sent out to the technical point of contact for your organization 15 days prior to password expiration

4) **What should be done if there are any infrastructure issues? (E.g. FTP password expires, issues in network connectivity to FTP location etc.)**
   Ans: Contact GDSP at nbshie@cdph.ca.gov to report any infrastructure issues.

Functional

1) **Which test results are sent by GDSP in the electronic HL7 file?**
   Ans: Results for the following are sent:
   - Adrenoleukodystrophy (ALD)
   - Biotinidase Deficiency
   - Congenital Adrenal Hyperplasia
   - Cystic Fibrosis
   - Galactosemia
   - MS/MS Acylcarnitine Panel
   - MS/MS Amino Acid Panel
   - Mucopolysaccharidosis I (MPS I)
   - Pompe Disease
   - Primary Congenital Hypothyroidism
   - Severe Combined Immunodeficiency (SCID)
   - Hemoglobinopathies

2) **How can NBS HL7 result be matched to a patient?**
   Ans: These are few ways in which the NBS HL7 result can be matched to a patient:

   a)   Hospital Order Number (for newborn screening providers only) – The NBS Test Request Form (TRF) has a field labeled Hospital Order Number which can be used by the newborn screening provider as a unique identifier. In the NBS HL7 result, ORC.22 field has Hospital Order Number which can be used by the message broker system of hospital to identify the record.

   b)   Use patient and mother details - Combination of baby's last name, DOB, mother's last name, mother's DOB, medical record number and TRF number can be used to identify the patient record in the hospital system.

3) **What is GDSP's unique identifier for a patient?**
   Ans: GDSP uses our own Accession Number to uniquely identify a patient. Accession Number is specified under OBR|3| (Newborn screen card data panel) and OBX with local code as 99717-5^ CA Accession Number

Technical

1) **Which version of HL7 does GDSP use for transmitting NBS results electronically? Ans:** 2.5.1

2) **Which HL7 schema does GDSP use for transmitting NBS results electronically? Ans:** GDSP uses HL7 standard Observation Reporting schema - ORU_R01. For details, please refer section 3.1 of *NBS Data Exchange Specification.docx* document from the *Step 2 – Implementation* onboarding packet.
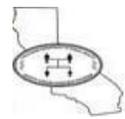
3) **What is the Sending Application field value required in the Acknowledgement message?**
   Ans: Sending Application field in MSH segment of Acknowledgement should be same as the value provided in the NBS HL7 result message at MSH.4 field i.e. SISHIERECEIVER

4) **Which HL7 schema does GDSP accept as ACK message?**
   Ans: GDSP uses HL7 standard**: ACK_R01. For details, please refer section 4.1 of *NBS Data Exchange Specification.docx* document from the *Step 2 – Implementation* onboarding packet

5) **Where is Narrative Summary specified in the HL7 result?**
   Ans: Narrative Summary is specified in OBX segment with LOINC code of 57724-7 within OBR|2| segment. For more details, please refer spreadsheet OBXs-OBR2 of *HL7 NBS Results Message Structure.xlsm* document from the *Step 2 - Implementation* onboarding packet.

6) **What are the components of the Narrative Summary section? Ans:** Narrative Summary segment consists of
   • Testing Lab Name
   • Lab Director details
   • Action Identifier

Action Identifier	Scenario
ACTION REQUIRED	The case is positive or indeterminate for any disorder and there is a Follow-up message
DUPLICATE	The NBS HL7 result is resent on request
MODIFIED	The test result for any disorder changes after sending the initial NBS HL7 result

- Follow-up message
- Disclaimer

7) **What are the HL7 ACK message requirements?**
   Ans: The HL7 ACK format and field specifications are described in section 4.0 of *HIE NBS Data Exchange Specification.docx* document from the *Step 2 - Implementation* onboarding packet

8) **Does every NBS HL7 Result have a unique ID?**
   Ans: Yes, every result will have a unique identifier in MSH.10 field, which should be returned in the acknowledgement in MSH.10 and MSA.2 fields. For details, please refer section 3.1 of *HIE NBS Data Exchange Specification.docx* document from the *Step 2 - Implementation* onboarding packet

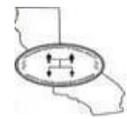9) **What are the ACK types supported by GDSP**
   Ans: GDSP supports the following acknowledgement types for NBS HL7 test results

   a) AA – accepted without errors (Positive Acknowledgement)
   b) AE – accepted with errors (Negative Acknowledgement)
   c) AR – rejected (Negative Acknowledgement)

   For additional details, please refer section 4.0 of *HIE NBS Data Exchange Specification.docx* document from the *Step 2 - Implementation* onboarding packet

10) **What escape sequences are used in the NBS HL7 test results? Ans:** The following escape sequences are used in NBS HL7 result

Special Character	Escape sequence
Ampersand(&)	\T\
Tilde(~)	\R\
Pipe(|)	\F\
Carat(^)	\S\
Line break(\r\n)	\.br\

11) **Where is the Medical Record Number (MRN) specified in NBS HL7 test result? Ans:**
Medical Record Number (MRN) is specified in the PID.3 field

12) **How does GDSP specify multiple births in NBS HL7 test result?**
Ans: Baby's Test Request Form (TRF) has only Last Name as identifier. So, if NBS HL7 results for the twins are sent separately then HIE Partner system can match the results to the corresponding babies in the following manner.

Birth Order in PID segment and Birth Plurality in OBR|3|→OBX|4| is used to identify results in case of multiple births.

Case A: For single birth, the PID & OBR|3| segments are as follows:
PID|1||^^^1801088422&NPI^MR||JOHNSON^BABY BOY^^^^^B||201308261018|M||2131-1^Other Race||||||||||||2135-2^Hispanic or Latino^^^^||**N**|**1**
OBX|4|CE|57722-1^Birth plurality of Pregnancy^LN^^^|1|LA12411-7\S**Singleton**\S\LN|||N|||F|||
20131114082023

Multiple Birth Indicator (PID.24) = N
Birth Order (PID.25) = 1
Birth Plurality (OBR|3|→OBX.4) = Singleton

Case B: For twin (or more) birth, the PID & OBR|3| segments are as follows: **Baby 1 result:**
PID|1||^^^1801088422&NPI^MR||JOHNSON^BABY BOY^^^^^B||201308261018|M||2131-1^Other Race||||||||||||2135-2^Hispanic or Latino^^^^||**Y**|**1**
OBX|4|CE|57722-1^Birth plurality of Pregnancy^LN^^^|1|LA12411-7\S**Twins**\S\LN|||N|||F|||
20131114082023

Multiple Birth Indicator (PID.24) = Y
Birth Order (PID.25) = 1
Birth Plurality (OBR|3|→OBX.4) = Twins

Baby 2 result:
PID|1||^^^1801088422&NPI^MR||JOHNSON^BABY BOY^^^^^B||201308261018|M||2131-1^Other Race||||||||||||2135-2^Hispanic or Latino^^^^||**Y**|**2**
OBX|4|CE|57722-1^Birth plurality of Pregnancy^LN^^^|1|LA12411-7\S**Twins**\S\LN|||N|||F|||
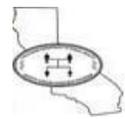20131114082023

Multiple Birth Indicator (PID.24) = Y
Birth Order (PID.25) = 2
Birth Plurality (OBR|3|→OBX.4) = Twins
Note: [Triplets (3)/ Quadruplets (4)/Quintuplets (5)/ Sextuplets (6)/Other (>6)]

13) **How does GDSP expect to receive acknowledgement (ACK) messages?**
Ans: GDSP expects to receive ACK messages in a ZIP file format. All the acknowledgements should be zipped in one file per day.

14) **What is the acknowledgement (ACK) zip file name format? Ans:** Acknowledgement zip files must be in the following format *<Org Name>_Ack<YYYYMMDD>.zip*

15) **How does GDSP communicate addition of new disorders in NBS HL7 result?**
    Ans: GDSP will notify any changes in the result format via email before moving the changes to Production. The version history in the About tab of HIE Tools would also reflect such changes.

16) **How does GDSP communicate changes in LOINC codes for NBS test results? Ans:** These changes if happens, will happen twice in a year and will be notified via email. The version history in the About tab of HIE Tools would also reflect such changes.

HIE Tools

1) What are the different Additional Result types in HL7 Result Generator?

Ans: Additional Result types are different from the NBS HL7 results generated for a normal or specific positive case. They are as follows:

a) NBS Result – Initial (Inadequate Specimen)
- This type of result is generated when the initial specimen collected from a patient was inadequate for testing and deriving interpretations
- Narrative Summary will have Action Identifier as ACTION REQUIRED and Follow-up message as "** This specimen was inadequate for testing for the following reason" -   Other disorder panels will not be present in this type of message

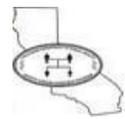*b) NBS Result – Initial (Too Early or Missing Information)*
- This type of result is generated if the specimen collection time was within 12 hours of baby's birth
- Narrative Summary will have Action Identifier as ACTION REQUIRED and a Follow-up message

c) NBS Result – Repeat
- This type of result is generated when second specimen is collected since the first specimen collected was inadequate for testing. This result is similar to the result of a specific positive case.
- This result is sent in addition to a previous NBS HL7 Result – Initial (Inadequate Specimen) or NBS Result – Initial (Too Early or Missing Information)
- This result will have all disorder panels

d) NBS Result – Repeat (SCID Test)
- This type of result is generated when second specimen is collected to specifically re-test for SCID disorder.
- This result is sent in addition to an Initial NBS Result sent before
- The result will have Newborn Screening Report summary panel with Reason for lab test in Dried blood spot as "Subsequent screen - for clarification of initial results (not by law or protocol)"
- The result will contain disorder panel for only the SCID disorder

e) NBS Result – CFTR DNA Sequencing
- This type of result is generated when specimen collected is found to be positive for Cystic Fibrosis disorder.
- This result is sent in addition to an Initial NBS Result sent before
- Apart from the complete result message, additional CF specific result will be sent

Contact Directory

Please email to nbshie@cdph.ca.gov for any queries related to Onboarding processes, Missing results, Result discrepancy, Requests to resend test results, Tech Support and Infrastructure issues.

Glossary

HIE Partner: Any entity agreeing to receive electronic test results from GDSP.

Newborn Screening Provider: Hospitals and Clinicians who collect newborn screening specimens.